

# KENWOOD

## SERVICE MANUAL

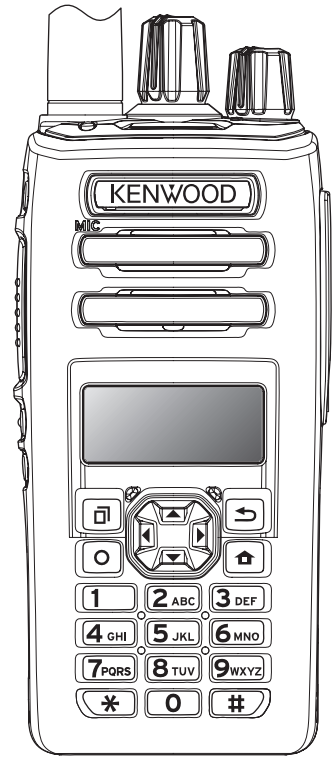
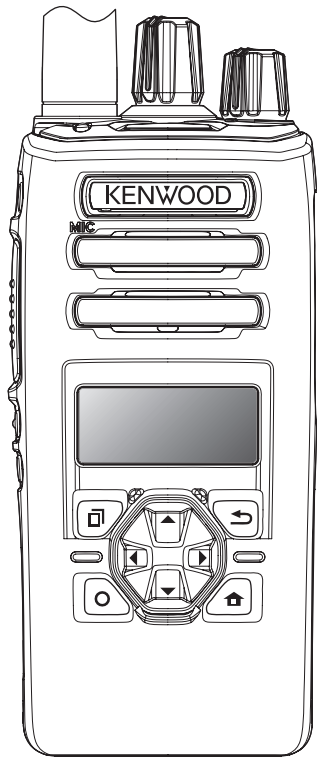
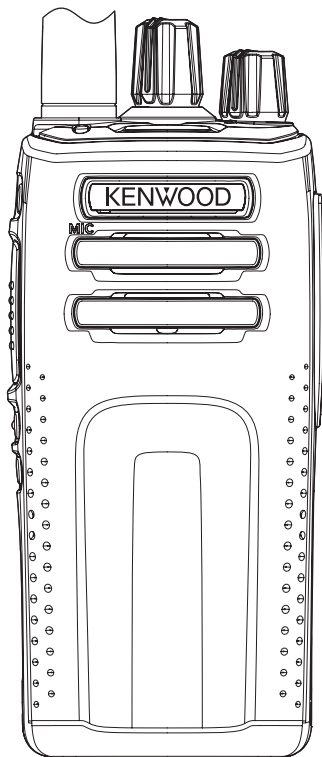
VHF DIGITAL TRANSCEIVER, UHF DIGITAL TRANSCEIVER

### NX-3200, NX-3300

NX-3200, NX-3300 K,E3

NX-3200, NX-3300 K2,E2

NX-3200, NX-3300 K3,E



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This product complies with the **RoHS** directive for the European market.



This product uses Lead Free solder.

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## NOTE

- This equipment should be serviced by only qualified technicians.
- Danger of explosion if the battery is incorrectly replaced; replace only with the same type.
- To dispose of batteries, be sure to comply with the laws and regulations in your country or region.

# SPECIFICATION

(NX-3200(K,K2,K3) TYPE)

| GENERAL                                                |                               |                                                                                                     |
|--------------------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------|
| Frequency Range                                        |                               | 136-174 MHz                                                                                         |
| Max. Channels per Radio                                |                               | Up to 1000 channels with option                                                                     |
| Number of Channels                                     |                               | 512 (64 for no LCD models)                                                                          |
| Number of Zones                                        |                               | 128 (4 for no LCD models)                                                                           |
| Channel Spacing                                        | Analog                        | 12.5/15/20/25*1/30*1 kHz                                                                            |
|                                                        | Digital                       | 6.25 / 12.5 kHz                                                                                     |
| Power Supply                                           |                               | 7.5V DC±20%                                                                                         |
| Battery Life (FDMA/TDMA)<br>5-5-90 duty cycle          | With KNB-55L (1,480 mAh)      | Approx. 8 hours / Approx. 9.5 hours                                                                 |
|                                                        | With KNB-56N (1,400 mAh)      | Approx. 8 hours / Approx. 9 hours                                                                   |
|                                                        | With KNB-57L (2,000 mAh)      | Approx. 11 hours / Approx. 13.5 hours                                                               |
| Operating Temperature                                  |                               | -22°F to +140°F (-30°C to +60°C)                                                                    |
| Frequency Stability                                    |                               | ±2.0ppm                                                                                             |
| Antenna Impedance                                      |                               | 50ohm                                                                                               |
| Dimensions (W x H x D)*2<br>(Projections not included) | Radio only                    | 2.20 x 4.71 x 1.43 in (56 x 119.6 x 36.4 mm)                                                        |
|                                                        | With KNB-55L                  | 2.20 x 4.71 x 1.43 in (56 x 119.6 x 36.4 mm)                                                        |
|                                                        | With KNB-56N                  | 2.20 x 4.71 x 1.68 in (56 x 119.6 x 42.7 mm)                                                        |
|                                                        | With KNB-57L                  | 2.20 x 4.71 x 1.53 in (56 x 119.6 x 39 mm)                                                          |
| Weight (net)*3                                         | Radio only                    | 7.8 oz (220 g)                                                                                      |
|                                                        | With KNB-55L                  | 11.1 oz (315 g)                                                                                     |
|                                                        | With KNB-56N                  | 14.5 oz (410 g)                                                                                     |
|                                                        | With KNB-57L                  | 12.0 oz (340 g)                                                                                     |
| RECEIVER                                               |                               |                                                                                                     |
| Sensitivity                                            | NXDN 6.25kHz Digital(3%BER)   | 0.20μV                                                                                              |
|                                                        | NXDN 12.5kHz Digital(3%BER)   | 0.25μV                                                                                              |
|                                                        | DMR 12.5 kHz Digital (5% BER) | 0.30μV                                                                                              |
|                                                        | DMR 12.5 kHz Digital (1% BER) | 0.45μV                                                                                              |
|                                                        | Analog (12dB SINAD)           | 0.25μV                                                                                              |
| Selectivity                                            | Analog@12.5kHz                | 65dB                                                                                                |
|                                                        | Analog@25kHz                  | 72dB                                                                                                |
| Intermodulation                                        |                               | 70dB                                                                                                |
| Spurious Rejection                                     |                               | 70dB                                                                                                |
| Audio Distortion                                       |                               | 3%                                                                                                  |
| Audio Output (Internal Speaker)                        | 3% Distortion                 | 500mW / 8ohm                                                                                        |
|                                                        | 5% Distortion                 | 1000mW / 8ohm                                                                                       |
| TRANSMITTER                                            |                               |                                                                                                     |
| RF Power Output                                        |                               | 5 W / 4 W / 1 W                                                                                     |
| Spurious Emission                                      |                               | -70dB                                                                                               |
| FM Hum & Noise                                         | Analog @ 25 kHz               | 45dB                                                                                                |
|                                                        | Analog @ 12.5 kHz             | 40dB                                                                                                |
| Audio Distortion                                       |                               | 3%                                                                                                  |
| Emission Designator                                    |                               | 16K0F3E*1, 11K0F3E, 8K30F1E, 8K30F1D, 8K30F7W, 4K00F1E, 4K00F1D, 4K00F7W, 7K60FXE, 7K60FXD, 4K00F2D |

\*1 25 and 30 kHz are not included in the models sold in USA or US territories.

\*2 Full Keypad/Std Keypad Models

\*3 Full Keypad Model

Analog measurements made per TIA603. Specifications are measured according to applicable standards.

JVC KENWOOD Corporation reserves the right to change specifications without prior notice or obligation.

# SPECIFICATION

## (NX-3200(E,E2,E3) TYPE)

| GENERAL                                                |                                          |                                                                                                                                       |
|--------------------------------------------------------|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Frequency Range                                        |                                          | 136-174 MHz                                                                                                                           |
| Max. Channels per Radio                                |                                          | Up to 1000 channels with option                                                                                                       |
| Number of Channels                                     |                                          | 512 (64 for no LCD models)                                                                                                            |
| Number of Zones                                        |                                          | 128 (4 for no LCD models)                                                                                                             |
| Channel Spacing                                        | Analog                                   | 12.5/20/25 kHz                                                                                                                        |
|                                                        | Digital                                  | 6.25 / 12.5 kHz                                                                                                                       |
| Power Supply                                           |                                          | 7.5V DC±20%                                                                                                                           |
| Battery Life (FDMA/TDMA)<br>5-5-90 duty cycle          | With KNB-55L (1,480 mAh)                 | Approx. 8 hours / Approx. 9.5 hours                                                                                                   |
|                                                        | With KNB-56N (1,400 mAh)                 | Approx. 8 hours / Approx. 9 hours                                                                                                     |
|                                                        | With KNB-57L (2,000 mAh)                 | Approx. 11 hours / Approx. 13.5 hours                                                                                                 |
| Operating Temperature                                  |                                          | -30°C to +60°C                                                                                                                        |
| Frequency Stability                                    |                                          | ±2.0ppm                                                                                                                               |
| Antenna Impedance                                      |                                          | 50ohm                                                                                                                                 |
| Dimensions (W x H x D)*1<br>(Projections not included) | Radio only                               | 56 x 119.6 x 36.4 mm                                                                                                                  |
|                                                        | With KNB-55L                             | 56 x 119.6 x 36.4 mm                                                                                                                  |
|                                                        | With KNB-56N                             | 56 x 119.6 x 42.7 mm                                                                                                                  |
|                                                        | With KNB-57L                             | 56 x 119.6 x 39 mm                                                                                                                    |
| Weight (net)*2                                         | Radio only                               | 220 g                                                                                                                                 |
|                                                        | With KNB-55L                             | 315 g                                                                                                                                 |
|                                                        | With KNB-56N                             | 410 g                                                                                                                                 |
|                                                        | With KNB-57L                             | 340 g                                                                                                                                 |
| RECEIVER                                               |                                          |                                                                                                                                       |
| Sensitivity                                            | NXDN 3 % BER (6.25 kHz/12.5 kHz)         | 0.20 µV / 0.25 µV                                                                                                                     |
|                                                        | NXDN 1 % BER (6.25 kHz/12.5 kHz)         | -4.0 dBµV (0.32µV) / -1 dBµV (0.45µV)                                                                                                 |
|                                                        | DMR 12.5 kHz Digital (5 % BER)           | -4.5 dBµV (0.30µV)                                                                                                                    |
|                                                        | DMR 12.5 kHz Digital (1 % BER)           | -1 dBµV (0.45µV)                                                                                                                      |
|                                                        | Analog, EIA 12 dB SINAD (12.5/20&25 kHz) | 0.25 µV                                                                                                                               |
|                                                        | Analog, EN 20 dB SINAD (12.5/20&25 kHz)  | -1 dBµV (0.45 µV) / -3 dBµV (0.35 µV)                                                                                                 |
| Selectivity                                            | Analog@12.5kHz                           | 68dB                                                                                                                                  |
|                                                        | Analog@20kHz                             | 74dB                                                                                                                                  |
|                                                        | Analog@25kHz                             | 76dB                                                                                                                                  |
| Intermodulation                                        |                                          | 65dB                                                                                                                                  |
| Spurious Rejection                                     |                                          | 75dB                                                                                                                                  |
| Audio Distortion                                       |                                          | 3%                                                                                                                                    |
| Audio Output (Internal Speaker)                        | 3% Distortion                            | 500mW / 8ohm                                                                                                                          |
|                                                        | 5% Distortion                            | 1000mW / 8ohm                                                                                                                         |
| TRANSMITTER                                            |                                          |                                                                                                                                       |
| RF Power Output                                        |                                          | 5 W / 4 W / 1 W                                                                                                                       |
| Spurious Emission                                      |                                          | -36 dBm ≤1 GHz, -30 dBm > 1 GHz                                                                                                       |
| FM Hum & Noise                                         | Analog @ 25 kHz                          | 45dB                                                                                                                                  |
|                                                        | Analog @ 20 kHz                          | 45dB                                                                                                                                  |
|                                                        | Analog @ 12.5 kHz                        | 40dB                                                                                                                                  |
| Audio Distortion                                       |                                          | 3%                                                                                                                                    |
| Emission Designator                                    |                                          | 16K0F3E, 14K0F2D, 14K0F3E, 12K0F2D, 8K50F3E, 7K50F2D, 8K30F1E, 8K30F1D, 8K30F7W, 4K00F1E, 4K00F1D, 4K00F7W, 7K60FXE, 7K60FXD, 4K00F2D |

\*1 Full Keypad/Std Keypad Models

\*2 Full Keypad Model

Analog measurements made per TIA603. Specifications are measured according to applicable standards.

JVC KENWOOD Corporation reserves the right to change specifications without prior notice or obligation.

# SPECIFICATION

(NX-3300(K,K2,K3) TYPE)

| GENERAL                                                |                               |                                                                                                     |
|--------------------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------|
| Frequency Range                                        |                               | 400-520 MHz                                                                                         |
| Max. Channels per Radio                                |                               | Up to 1000 channels with option                                                                     |
| Number of Channels                                     |                               | 512 (64 for no LCD models)                                                                          |
| Number of Zones                                        |                               | 128 (4 for no LCD models)                                                                           |
| Channel Spacing                                        | Analog                        | 12.5/25*1 kHz                                                                                       |
|                                                        | Digital                       | 6.25 / 12.5 kHz                                                                                     |
| Power Supply                                           |                               | 7.5V DC±20%                                                                                         |
| Battery Life (FDMA/TDMA)<br>5-5-90 duty cycle          | With KNB-55L (1,480 mAh)      | Approx. 8 hours / Approx. 9.5 hours                                                                 |
|                                                        | With KNB-56N (1,400 mAh)      | Approx. 8 hours / Approx. 9 hours                                                                   |
|                                                        | With KNB-57L (2,000 mAh)      | Approx. 11 hours / Approx. 13.5 hours                                                               |
| Operating Temperature                                  |                               | -22°F to +140°F (-30°C to +60°C)                                                                    |
| Frequency Stability                                    |                               | ±1.0ppm                                                                                             |
| Antenna Impedance                                      |                               | 50ohm                                                                                               |
| Dimensions (W x H x D)*2<br>(Projections not included) | Radio only                    | 2.20 x 4.71 x 1.43 in (56 x 119.6 x 36.4 mm)                                                        |
|                                                        | With KNB-55L                  | 2.20 x 4.71 x 1.43 in (56 x 119.6 x 36.4 mm)                                                        |
|                                                        | With KNB-56N                  | 2.20 x 4.71 x 1.68 in (56 x 119.6 x 42.7 mm)                                                        |
|                                                        | With KNB-57L                  | 2.20 x 4.71 x 1.53 in (56 x 119.6 x 39 mm)                                                          |
| Weight (net)*3                                         | Radio only                    | 7.8 oz (220 g)                                                                                      |
|                                                        | With KNB-55L                  | 11.1 oz (315 g)                                                                                     |
|                                                        | With KNB-56N                  | 14.5 oz (410 g)                                                                                     |
|                                                        | With KNB-57L                  | 12.0 oz (340 g)                                                                                     |
| RECEIVER                                               |                               |                                                                                                     |
| Sensitivity                                            | NXDN 6.25kHz Digital(3%BER)   | 0.20μV                                                                                              |
|                                                        | NXDN 12.5kHz Digital(3%BER)   | 0.25μV                                                                                              |
|                                                        | DMR 12.5 kHz Digital (5% BER) | 0.30μV                                                                                              |
|                                                        | DMR 12.5 kHz Digital (1% BER) | 0.45μV                                                                                              |
|                                                        | Analog (12dB SINAD)           | 0.25μV                                                                                              |
| Selectivity                                            | Analog@12.5kHz                | 65dB                                                                                                |
|                                                        | Analog@25kHz                  | 72dB                                                                                                |
| Intermodulation                                        |                               | 70dB                                                                                                |
| Spurious Rejection                                     |                               | 70dB                                                                                                |
| Audio Distortion                                       |                               | 3%                                                                                                  |
| Audio Output (Internal Speaker)                        | 3% Distortion                 | 500mW / 8ohm                                                                                        |
|                                                        | 5% Distortion                 | 1000mW / 8ohm                                                                                       |
| TRANSMITTER                                            |                               |                                                                                                     |
| RF Power Output                                        |                               | 5 W / 4 W / 1 W                                                                                     |
| Spurious Emission                                      |                               | -70dB                                                                                               |
| FM Hum & Noise                                         | Analog @ 25 kHz               | 45dB                                                                                                |
|                                                        | Analog @ 12.5 kHz             | 40dB                                                                                                |
| Audio Distortion                                       |                               | 3%                                                                                                  |
| Emission Designator                                    |                               | 16K0F3E*1, 11K0F3E, 8K30F1E, 8K30F1D, 8K30F7W, 4K00F1E, 4K00F1D, 4K00F7W, 7K60FXE, 7K60FXD, 4K00F2D |

\*1 25 kHz are not included in the models sold in USA or US territories.

\*2 Full Keypad/Std Keypad Models

\*3 Full Keypad Model

Analog measurements made per TIA603. Specifications are measured according to applicable standards.

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# SPECIFICATION

## (NX-3300(E,E2,E3) TYPE)

| GENERAL                                                |                                          |                                                                                                                                       |
|--------------------------------------------------------|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Frequency Range                                        |                                          | 400-520MHz                                                                                                                            |
| Max. Channels per Radio                                |                                          | Up to 1000 channels with option                                                                                                       |
| Number of Channels                                     |                                          | 512 (64 for no LCD models)                                                                                                            |
| Number of Zones                                        |                                          | 128 (4 for no LCD models)                                                                                                             |
| Channel Spacing                                        | Analog                                   | 12.5/20/25kHz                                                                                                                         |
|                                                        | Digital                                  | 6.25 / 12.5 kHz                                                                                                                       |
| Power Supply                                           |                                          | 7.5V DC±20%                                                                                                                           |
| Battery Life (FDMA/TDMA)<br>5-5-90 duty cycle          | With KNB-55L (1,480 mAh)                 | Approx. 8 hours / Approx. 9.5 hours                                                                                                   |
|                                                        | With KNB-56N (1,400 mAh)                 | Approx. 8 hours / Approx. 9 hours                                                                                                     |
|                                                        | With KNB-57L (2,000 mAh)                 | Approx. 11 hours / Approx. 13.5 hours                                                                                                 |
| Operating Temperature                                  |                                          | -30°C to +60°C                                                                                                                        |
| Frequency Stability                                    |                                          | ±1.0ppm                                                                                                                               |
| Antenna Impedance                                      |                                          | 50ohm                                                                                                                                 |
| Dimensions (W x H x D)*1<br>(Projections not included) | Radio only                               | 56 x 119.6 x 36.4 mm                                                                                                                  |
|                                                        | With KNB-55L                             | 56 x 119.6 x 36.4 mm                                                                                                                  |
|                                                        | With KNB-56N                             | 56 x 119.6 x 42.7 mm                                                                                                                  |
|                                                        | With KNB-57L                             | 56 x 119.6 x 39 mm                                                                                                                    |
| Weight (net)*2                                         | Radio only                               | 220 g                                                                                                                                 |
|                                                        | With KNB-55L                             | 315 g                                                                                                                                 |
|                                                        | With KNB-56N                             | 410 g                                                                                                                                 |
|                                                        | With KNB-57L                             | 340 g                                                                                                                                 |
| RECEIVER                                               |                                          |                                                                                                                                       |
| Sensitivity                                            | NXDN 3 % BER (6.25 kHz/12.5 kHz)         | 0.20 μV / 0.25 μV                                                                                                                     |
|                                                        | NXDN 1 % BER (6.25 kHz/12.5 kHz)         | -4.0 dBμV (0.32μV) / -1 dBμV (0.45μV)                                                                                                 |
|                                                        | DMR 12.5 kHz Digital (5 % BER)           | -4.5 dBμV (0.30μV)                                                                                                                    |
|                                                        | DMR 12.5 kHz Digital (1 % BER)           | -1 dBμV (0.45μV)                                                                                                                      |
|                                                        | Analog, EIA 12 dB SINAD (12.5/20&25 kHz) | 0.25 μV                                                                                                                               |
|                                                        | Analog, EN 20 dB SINAD (12.5/20&25 kHz)  | -1 dBμV (0.45 μV) / -3 dBμV (0.35 μV)                                                                                                 |
| Selectivity                                            | Analog@12.5kHz                           | 68dB                                                                                                                                  |
|                                                        | Analog@20kHz                             | 74dB                                                                                                                                  |
|                                                        | Analog@25kHz                             | 76dB                                                                                                                                  |
| Intermodulation                                        |                                          | 65dB                                                                                                                                  |
| Spurious Rejection                                     |                                          | 75dB                                                                                                                                  |
| Audio Distortion                                       |                                          | 3%                                                                                                                                    |
| Audio Output (Internal Speaker)                        | 3% Distortion                            | 500mW / 8ohm                                                                                                                          |
|                                                        | 5% Distortion                            | 1000mW / 8ohm                                                                                                                         |
| TRANSMITTER                                            |                                          |                                                                                                                                       |
| RF Power Output                                        |                                          | 5 W / 4 W / 1 W                                                                                                                       |
| Spurious Emission                                      |                                          | -36 dBm ≤1 GHz, -30 dBm > 1 GHz                                                                                                       |
| FM Hum & Noise                                         | Analog @ 25 kHz                          | 45dB                                                                                                                                  |
|                                                        | Analog @ 20 kHz                          | 45dB                                                                                                                                  |
|                                                        | Analog @ 12.5 kHz                        | 40dB                                                                                                                                  |
| Audio Distortion                                       |                                          | 3%                                                                                                                                    |
| Emission Designator                                    |                                          | 16K0F3E, 14K0F2D, 14K0F3E, 12K0F2D, 8K50F3E, 7K50F2D, 8K30F1E, 8K30F1D, 8K30F7W, 4K00F1E, 4K00F1D, 4K00F7W, 7K60FXE, 7K60FXD, 4K00F2D |

\*1 Full Keypad/Std Keypad Models

\*2 Full Keypad Model

Analog measurements made per TIA603. Specifications are measured according to applicable standards.

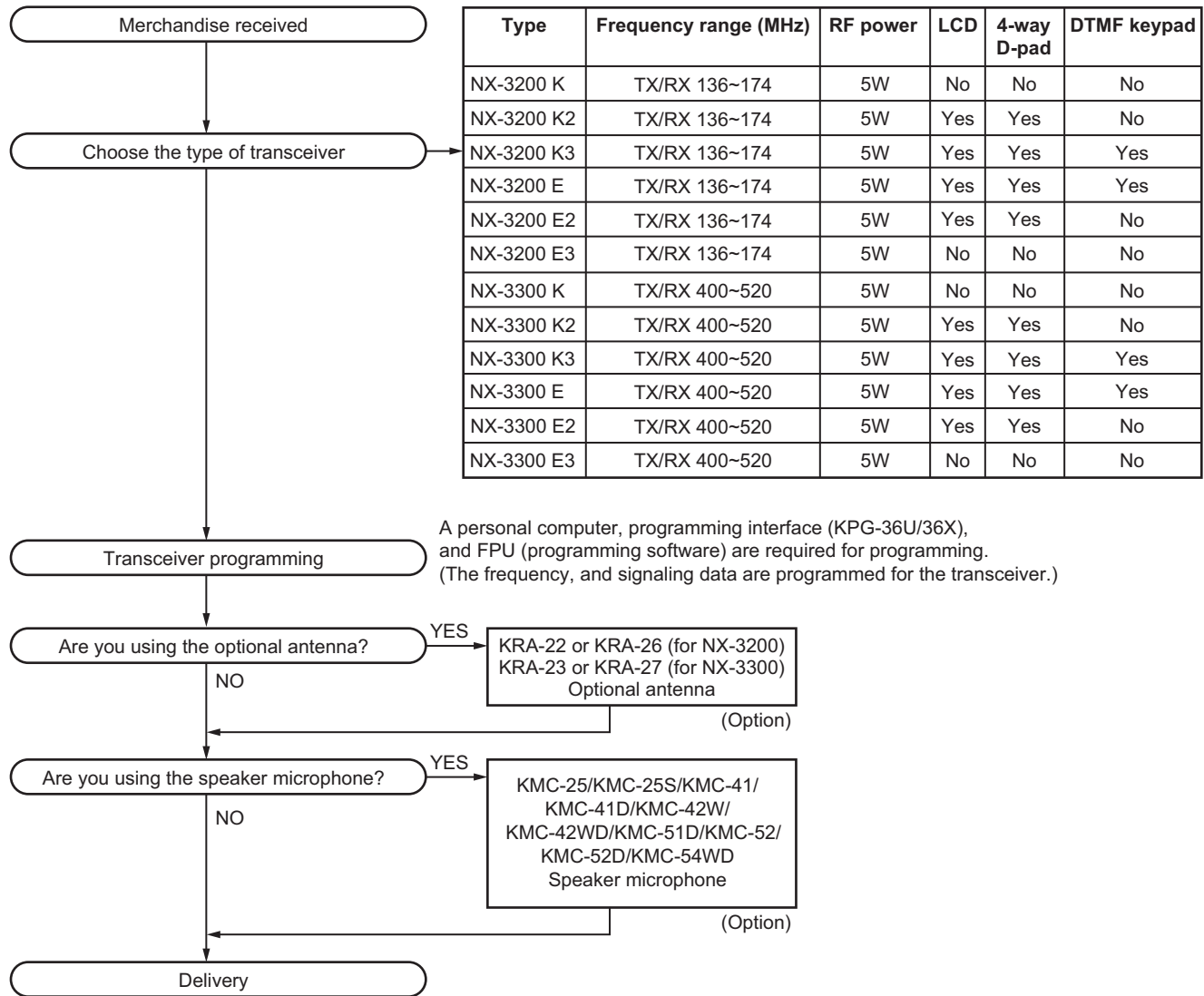
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## SECTION 1 PRECAUTION

This service manual does not describe PRECAUTION.

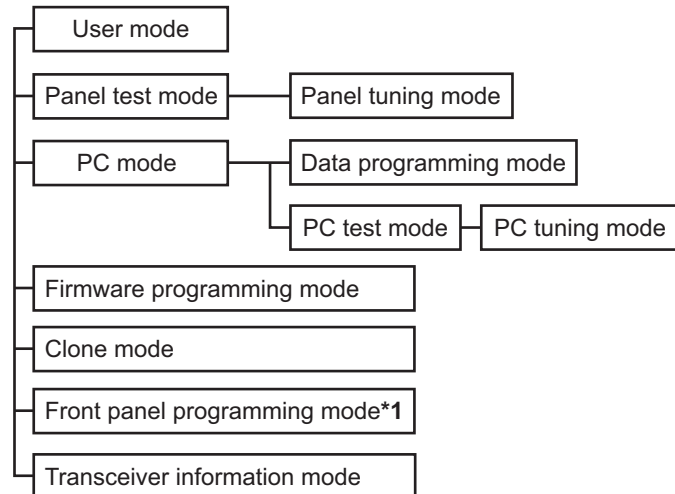
## SECTION 2 SPECIFIC SERVICE INSTRUCTIONS

### 2.1 SYSTEM SET-UP



## 2.2 REALIGNMENT

### 2.2.1 Modes



\*1: In order to use the Front panel programming mode, it is necessary to purchase the "Front panel program" feature option.

| Mode                         | Function                                                                              |
|------------------------------|---------------------------------------------------------------------------------------|
| User mode                    | For normal use.                                                                       |
| Panel test mode              | Used by the dealer to check the fundamental characteristics.                          |
| Panel tuning mode            | Used by the dealer to tune the transceiver.                                           |
| PC mode                      | Used for communication between the transceiver and PC.                                |
| Data programming mode        | Used to read and write frequency data and other features to and from the transceiver. |
| PC test mode                 | Used to check the transceiver using the PC. This feature is included in the FPU.      |
| Firmware programming mode    | Used when changing the main program of the flash memory.                              |
| Clone mode                   | Used to transfer programming data from one transceiver to another.                    |
| Front panel programming mode | Frequency, signaling and features write to the transceiver.                           |
| Transceiver information mode | Used to confirm the transceiver firmware version, Encryption Library version.         |

### 2.2.2 How to Enter Each Mode

| Mode                              | Operation                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| User mode                         | Power ON                                                                                                                                                                                                                                                                                                                                                                                                 |
| Panel test mode*2,*3              | <ul style="list-style-type: none"> <li>• [  ] + Power ON</li> <li>• [  ] + Power ON *3</li> </ul> Select the "Panel Test" using the [▲] / [▼] button.<br>Press the [  ] button.                                                                                                                                                                                                                          |
| PC mode                           | Received commands from PC                                                                                                                                                                                                                                                                                                                                                                                |
| Panel tuning mode *2              | [Panel test mode] + [  ]                                                                                                                                                                                                                                                                                                                                                                                 |
| Firmware programming mode*3       | <ul style="list-style-type: none"> <li>• [AUX (Orange)] + Power ON</li> <li>• [  ] + Power ON *2</li> </ul> Select the "Firmware Prog" using the [▲] / [▼] button.<br>Press the [  ] button. <ul style="list-style-type: none"> <li>• If Write is performed by KFL, Firmware programming mode will start automatically.</li> </ul>                                                                       |
| Clone mode*2,*3                   | <ul style="list-style-type: none"> <li>• [  ] + Power ON</li> <li>• [  ] + Power ON</li> </ul> Select the "Clone" using the [▲] / [▼] button.<br>Press the [  ] button.                                                                                                                                                                                                                                  |
| Front panel programming mode*2,*3 | <ul style="list-style-type: none"> <li>• Press the PF button to which Front panel programming mode is set during the user mode.</li> <li>• Press the [  ] button and enter the Menu mode.</li> </ul> Select the any icon assigned the Front panel programming mode using the [▲] / [▼] button.<br>Press [  ] button.<br>Select the "Panel Program" using the [▲] / [▼] button.<br>Press the [  ] button. |
| Transceiver information mode*2,*3 | <ul style="list-style-type: none"> <li>• [Side 1] + Power ON</li> <li>• [  ] + Power ON</li> </ul> Select the "Transceiver Info" using the [▲] / [▼] button.<br>Press the [  ] button.                                                                                                                                                                                                                   |

\*2: K2, K3, E and E2 types only.

\*3: There is the two or three as how to enter.

### 2.2.3 Panel Test Mode (K2, K3, E and E2 types only)

Setting method refer to ADJUSTMENT.

### 2.2.4 Panel Tuning Mode (K2, K3, E and E2 types only)

Setting method refer to ADJUSTMENT.

## 2.2.5 PC Mode

### 2.2.5.1 Preface

The transceiver is programmed by using a personal computer (PC), a USB programming cable(KPG-36U/36X) and a Programming software (FPU).

The programming software can be used with a PC. Figure 1 shows the setup of a PC for programming.

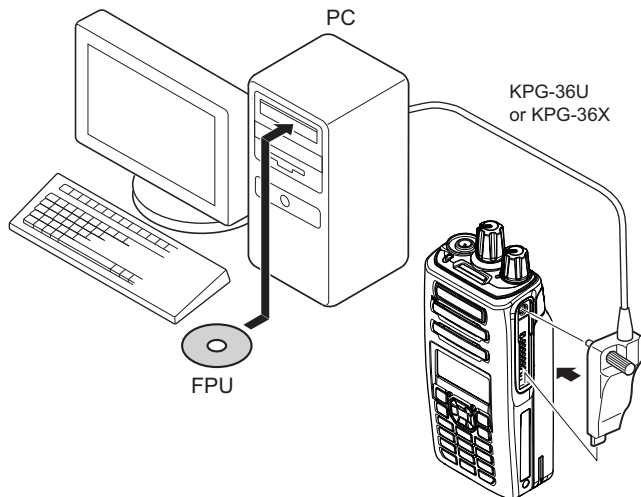


Fig.1

### 2.2.5.2 Connection procedure

- (1) Connects the transceiver to the personal computer using the KPG-36U/36X.

#### Note:

You must install the KPG-36U/36X USB driver in the computer to use the KPG-36U/36X.

- (2) When the POWER switch on, user mode can be entered immediately. When PC sends command the transceiver enter Data programming mode (PC mode), and "PROGRAM" is displayed on the LCD.

When data transmitting from the transceiver, the red LED lights.

When data receiving to the transceiver, the green LED light.

#### Note:

The data stored in the computer must match the "Model Name" when it is written into the flash memory.

### 2.2.5.3 KPG-36U/KPG-36X description (USB programming interface cable: Option)

The KPG-36U/36X is a cable which connects to a USB port on a computer.

When using the KPG-36U/36X, install the supplied CD (with driver software) in the computer. The KPG-36U/36X driver runs under Windows 7, 8.1, 10.

The latest version of the USB driver is available for download from the following URL:

<http://www.kenwood.com/usb-com/>

(This URL may change without notice.)

### 2.2.5.4 Programming software KPG-D3 (Ver. 1.10 or later) description

The FPU is the programming software for the transceiver supplied on a CD. This software runs under Windows 7, 8.1, 10. The data can be input to or read from the transceiver and edited on the screen.

#### Note:

KPG-D3N can't be used for E, E2 and E3 types.

## 2.2.6 Firmware Programming Mode

### 2.2.6.1 Preface

Flash memory is mounted on the transceiver. This allows the transceiver to be upgrade when new features are released in the future. (For details on how to obtain the firmware, contact Customer Service.)

### 2.2.6.2 Connection procedure

Connect the transceiver to the personal computer using the programming interface (KPG-36U/36X). (Connection is same as in the PC mode.)

### 2.2.6.3 Programming

- (1) Start up the firmware programming software (KENWOOD Firmware Loader). The KFL.exe exists in the KPG-D3 installed folder.
- (2) Set the baud rate to "auto" or 1152000, 576000, 115200, and 57600.
- (3) Set the firmware to be upgrade by file name item.
- (4) Enter the Firmware programming mode by using section "2.2.2 How to Enter Each Mode". Then, the yellow LED on the transceiver light and "FIRMWARE PROG" is displayed.
- (5) Check the connection between the transceiver and the personal computer, and make sure that the transceiver is in the Program mode.
- (6) Press "Write" button in the window. When the transceiver starts to receive data, the "LOADING" display lights.
- (7) If writing ends successfully, the checksum is calculated and a result is displayed.
- (8) If you want to continue programming other transceivers, repeat step (4) to (7).

#### Note:

If write is performed by KFL, Firmware programming mode will start automatically even if Firmware programming is set to disable in the programming software.

### 2.2.6.4 Function

If you press the [  ] button while "FIRMWARE PROG" is displayed, the checksum is calculated, and a result is displayed. If you press the [  ] button again while checksum of the Encryption Library is displayed. If you press the [  ] button again while checksum of the Encryption Library is displayed, "FIRMWARE PROG" is redisplayed.

#### Note:

The text message are displayed for K2, K3, E and E2 types only.

### 2.2.7 Clone Mode (K2, K3, E and E2 types only)

Programming data can be transferred from one transceiver to another by connecting them via their external universal connectors. The operation is as follows.

#### ■The following data cannot be cloned.

- Tuning data
- Transceiver Embedded Message
- ESN (Electronic Serial Number) data

#### ■Button guide on the Clone/ Front Panel Programming Password input screen.

- Confirm ([  ] button): The password confirmation
- Delete ([  ] button): Delete the latest digit from the current password number (Press and hold to delete all password numbers)
- Select([  ] button): Determine the latest digit of the password number.

(1) In the source transceiver, enter the clone mode by using section "2.2.2 How to Enter Each Mode". When the Clone/ Front Panel Programming Password is set to the transceiver, "Input Password" is displayed on the LCD. If the password is not set, the transceiver displays "CLONE MODE".

(2) When you enter the correct password, "CLONE MODE" is displayed, the transceiver can be used as the cloning source. The following describes how to enter the password.

- (3)
- **How to enter the password using the keypad;**  
If one of the buttons 0 to 9 is pressed while the "Input Password" is displayed, the password number is displayed on the LCD.  
Each press of the button shifts the display in order to the left.  
When you enter the password and press [  ] or [\*] button, "CLONE MODE" displayed if the entered password is correct. If password is incorrect, "Input Password" is redisplayed.

- **How to enter password using the [▲] and [▼] buttons;**

If the [▲] / [▼] button is pressed while "Input Password" is displayed, the Clone/ Front Panel Programming Password input screen is displayed.

If the [▲] or [▼] button is pressed while the clone/ Front Panel Programming Password input screen is displayed, the number (0 to 9) blinks on the LCD. When you press the [  ] button, currently selected number is determined. If you press the [  ] button after entering password in this procedure, "CLONE MODE" is displayed if entered password is correct. If the password is incorrect, "Input Password" is redisplayed.

- (4) Power ON the target transceiver.
- (5) Connecting the cloning cable (part No.E30-3325-05) to the universal connectors on the source and target.
- (6) Press [  ] button on the source while the source displays "CLONE MODE". The data of the source is sent to the target. While the target is receiving the data, "PROGRAM" is displayed. When cloning of the data is completed, the source displays "END", and the target automatically operates in the User mode. The target can then be operated by the same program as the source.

- (7) The other target can be continuously cloned. When the [  ] button on the source is pressed while the source displays "END", the source displays "CLONE MODE". Carry out the operation in step (4) to (6).

#### Note:

- Cannot be cloned if the Password (Write) is programmed to the target.
- "Model name" must be same to clone the transceiver.

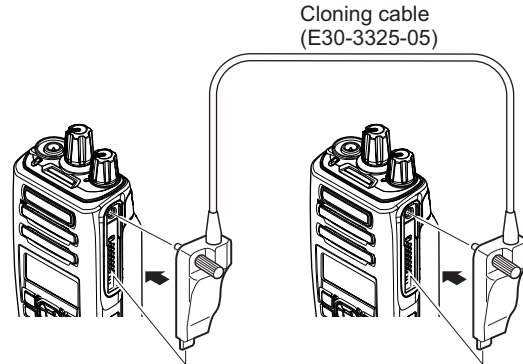


Fig.2

### 2.2.8 Front Panel Programming Mode (K2, K3, E and E2 types only)

If the Front Panel Programming Mode is used, the frequency or other data of the conventional channel is rewritable only by the transceiver.

Moreover, the conventional channel can be added.

#### ■The following setup items can be changed or added by using the Front panel programming mode.

- RX/TX Frequency
- Channel Type
- Transmit Mode (Mixed mode only)
- Channel Spacing
- Decode QT/DQT/RAN, Encode QT/DQT/RAN
- Color Code
- Slot Selection
- Transmit Power
- Channel Name

#### ■Button guide on the Clone/ Front Panel Programming Password input screen.

- Confirm ([  ] button): The password confirmation
- Delete ([  ] button): Delete the latest digit from the current password number (Press and hold to delete all password numbers)
- Select ([  ] button): Determine the latest digit of the password number.

#### 2.2.8.1 Enter to the Front panel programming mode.

Enter to the Menu Mode by pressing [Panel Program] PF button or [Menu] button. When the "Panel Program" is selected, it can enter to the Front panel programming mode.

If the Clone/Front panel programming Password is not set to the transceiver, "Panel Program" is displayed on the LCD.

If the Clone/Front panel programming Password is set to the transceiver, "Panel Program" is displayed on the LCD when you enter the correct password while "Input Password" is displayed.

### 2.2.8.2 Data Writing

Before moving to next Zone/Channel, “Keep This Change?” appears on the LCD, if you select “OK”, the new data is written to memory. If you select “Cancel”, the new data not be written; the new data will be erased.

- The setup items for Front panel programming mode are as follows.

| No. | Setup item      | Display       | Remarks                                                                               |
|-----|-----------------|---------------|---------------------------------------------------------------------------------------|
| 1   | RX Frequency    | RX Frequency  | Receive Frequency                                                                     |
| 2   | TX Frequency    | TX Frequency  | Transmit Frequency                                                                    |
| 3   | Channel Type    | Channel Type  | Analog/NXDN/DMR                                                                       |
| 4   | Transmit Mode*4 | Transmit Mode | Analog/NXDN/DMR                                                                       |
| 5   | Channel Spacing | Channel Space | Analog:<br>12.5kHz/20kHz/25kHz<br>Note: 20kHz is applied for E, E2 and E3 types only. |
|     |                 |               | NXDN:<br>6.25kHz/12.5kHz                                                              |
|     |                 |               | DMR: 12.5kHz                                                                          |

| No. | Setup item     | Display        | Remarks         |
|-----|----------------|----------------|-----------------|
| 6   | RX Signaling   | RX QT/DQT      | Receive QT/DQT  |
| 7   | TX Signaling   | TX QT/DQT      | Transmit QT/DQT |
| 8   | RX RAN         | RX RAN         | None, 1~63      |
| 9   | TX RAN         | TX RAN         | None, 1~63      |
| 10  | Color Code     | Color Code     | 0 ~15           |
| 11  | Slot Selection | Slot Selection | Slot 1, Slot 2  |
| 12  | Transmit Power | Transmit Power | Low/Medium/High |
| 13  | Channel Name   | Channel Name   |                 |

\*4: In "Channel Type" display, "Transmit Mode" can be entered only when Mixed mode is selected.

- Button operation (1/2)

| Button\ Item                                                                            | Zone Select             | Channel Select            | RX Frequency                | TX Frequency              | Channel Type                          | Transmit Mode *7                     | Channel Spacing                  |
|-----------------------------------------------------------------------------------------|-------------------------|---------------------------|-----------------------------|---------------------------|---------------------------------------|--------------------------------------|----------------------------------|
| [  ]   | Decision                | Decision                  | Decision                    | Decision                  | Decision                              | Decision                             | Decision                         |
| [  ]  | Unused                  | Back to the previous item | Back to the previous item   | Back to the previous item | Back to the previous item             | Back to the previous item            | Back to the previous item        |
| [  ] | Unused                  | Unused                    | Unused                      | TX Frequency OFF          | Unused                                | Unused                               | Unused                           |
| [  ] | Exit panel program mode | Exit panel program mode   | Exit panel program mode     | Exit panel program mode   | Exit panel program mode               | Exit panel program mode              | Exit panel program mode          |
| [  ] | Zone change             | Channel change            | Frequency up                | Frequency up              | Channel type change                   | Transmit Mode Change                 | Channel Spacing Change           |
| [  ] | Zone change             | Channel change            | Frequency down              | Frequency down            | Channel type change                   | Transmit Mode Change                 | Channel Spacing Change           |
| [  ] | Unused                  | Unused                    | Frequency step change       | Frequency step change     | Unused                                | Unused                               | Unused                           |
| [  ] | Unused                  | Unused                    | Frequency step change       | Frequency step change     | Unused                                | Unused                               | Unused                           |
| Keypad [0] ~ [9] *5                                                                     | Zone number select      | Channel number select     | Go to the direct enter mode |                           | Channel Type number select (1,2 or 3) | Transmit Mode number select (1 or 2) | Channel spacing number select *6 |
| Keypad [*] *5                                                                           | Decision                | Decision                  | Decision                    | Decision                  | Decision                              | Decision                             | Decision                         |
| Keypad [#] *5                                                                           | Unused                  | Back to the previous item | Back to the previous item   | Back to the previous item | Back to the previous item             | Back to the previous item            | Back to the previous item        |

• Button operation (2/2)

| Button\ Item                                                                         | RX Signaling                | TX Signaling              | RX RAN                    | TX RAN                    | Color Code                | Slot Selection                        | Transmit Power                           | Channel Name                         |
|--------------------------------------------------------------------------------------|-----------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------------------|------------------------------------------|--------------------------------------|
| [  ] | Decision                    | Decision                  | Decision                  | Decision                  | Decision                  | Decision                              | Decision                                 | Decision                             |
| [  ] | Back to the previous item   | Back to the previous item | Back to the previous item | Back to the previous item | Back to the previous item | Back to the previous item             | Back to the previous item                | Back to the previous item/<br>Delete |
| [  ] | Unused                      | Unused                    | Unused                    | Unused                    | Unused                    | Unused                                | Unused                                   | Go to the direct enter mode          |
| [  ] | Exit panel program mode     | Exit panel program mode   | Exit panel program mode   | Exit panel program mode   | Exit panel program mode   | Exit panel program mode               | Exit panel program mode                  | Exit panel program mode              |
| [  ] | Signaling number change     | Signaling number change   | RX RAN up                 | TX RAN up                 | Color Code up             | Slot up                               | Transmit power change                    | Go to the direct enter mode          |
| [  ] | Signaling number change     | Signaling number change   | RX RAN down               | TX RAN down               | Color Code down           | Slot down                             | Transmit power change                    |                                      |
| [  ] | Signaling type change       | Signaling type change     | RX RAN ON/OFF             | TX RAN ON/OFF             | Unused                    | Unused                                | Unused                                   |                                      |
| [  ] | Signaling type change       | Signaling type change     | RX RAN ON/OFF             | TX RAN ON/OFF             | Unused                    | Unused                                | Unused                                   |                                      |
| Keypad [0] ~ [9] *5                                                                  | Go to the direct enter mode |                           |                           |                           |                           | Slot Selection number select (1 or 2) | Transmit power number select (1, 2 or 3) |                                      |
| Keypad [*] *5                                                                        | Decision                    | Decision                  | Decision                  | Decision                  | Decision                  | Decision                              | Decision                                 | Decision                             |
| Keypad [#] *5                                                                        | Back to the previous item   | Back to the previous item | Back to the previous item | Back to the previous item | Back to the previous item | Back to the previous item             | Back to the previous item                | Back to the previous item            |

\*5: K3, E types only

\*6: K2, K3 type

Channel spacing number select (1 or 2)

E, E2 type

Channel spacing number select (1, 2 or 3)

\*7: Mixed Mode only

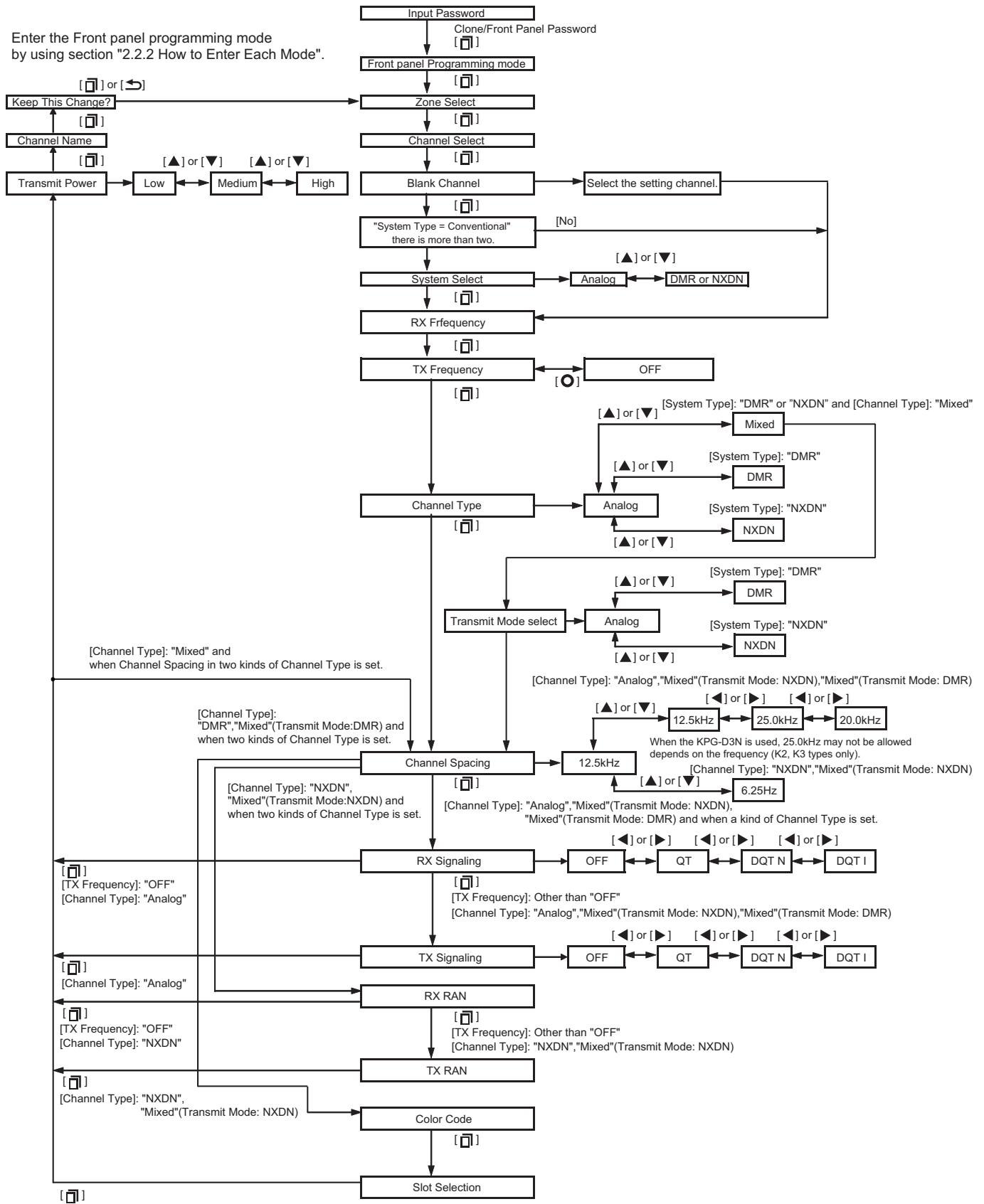
• Direct enter mode

| Button\ Item                                                                           | RX Frequency                      | TX Frequency | RX Signaling | TX Signaling | RX RAN | TX RAN | Color Code | Channel Name                                                                                        |
|----------------------------------------------------------------------------------------|-----------------------------------|--------------|--------------|--------------|--------|--------|------------|-----------------------------------------------------------------------------------------------------|
| [  ] | Decision                          |              |              |              |        |        |            | Character/Channel name decision                                                                     |
| [  ] | Delete                            |              |              |              |        |        |            |                                                                                                     |
| [  ] | Unused                            |              |              |              |        |        |            | Input character switching                                                                           |
| [  ] | Exit panel program mode           |              |              |              |        |        |            |                                                                                                     |
| [  ] | Unused                            |              |              |              |        |        |            | Character selection (upper case character → lower-case character → digit → upper case character...) |
| [  ] |                                   |              |              |              |        |        |            | Character selection (upper case character → digit → lower-case character → upper case character...) |
| [  ] |                                   |              |              |              |        |        |            | Move a cursor to the right                                                                          |
| [  ] |                                   |              |              |              |        |        |            | Move a cursor to the left                                                                           |
| Keypad [0] ~ [9] *8                                                                    | Add a digit to the current number |              |              |              |        |        |            |                                                                                                     |
| Keypad [*] *8                                                                          | Decision                          |              |              |              |        |        |            | Input character switching                                                                           |
| Keypad [#] *8                                                                          | Delete/Back to the previous item  |              |              |              |        |        |            | Delete                                                                                              |

\*8: K3, E types only

## • Front panel programming mode flow chart

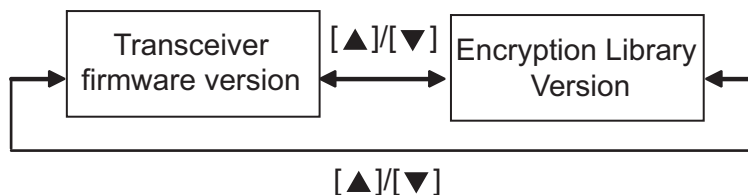
Enter the Front panel programming mode by using section "2.2.2 How to Enter Each Mode".



### 2.2.9 Transceiver Information Mode (K2, K3, E and E2 types only)

Use this function to confirm the transceiver firmware version, Encryption Library Version.

- (1) Enter the Transceiver Information mode by using section "2.2.2 How to Enter Each Mode".
- (2) The transceiver firmware version appears on the LCD.
- (3) Use the [▲] and [▼] buttons to select the confirmation items.



- (4) To exit the transceiver information mode, turn the transceiver power OFF.

**Note:**

The Encryption Library Version will also display Radio Feature License (KWD-3503AE) as Inactive.

## 2.3 CIRCUIT DESCRIPTION

### 2.3.1 Overview

The NX-3200 is a VHF Analog FM & Digital Portable transceiver designed to operate in the frequency range of 136 to 174MHz. The NX-3300 is a UHF Analog FM & Digital Portable transceiver designed to operate in the frequency range of 400 to 520MHz. The unit consists of a transceiver IC, a transmitter, a digital control unit, and a power supply circuit.

### 2.3.2 Frequency Configuration

The receiver uses the direct conversion system. Incoming signals from the antenna are mixed with the local signal from the PLL circuit and converted to the baseband signal. The transmit signal frequency is generated by the VCO/PLL, and modulated by the signal from the DSP. It is then amplified and fed to the antenna.

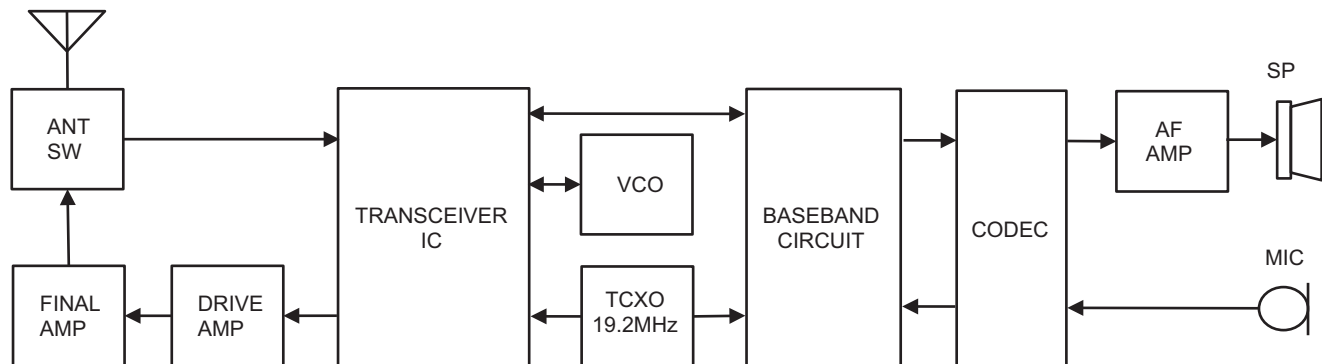


Fig.1 Frequency configuration

### 2.3.3 Receiver System

#### 2.3.3.1 RF circuit

The receive signal from ANT SW (D201, D202, D203 and D205 (D205 is the NX-3200 only.)) passes through the high-pass filter (L302, L307, L308, L312, L313, L314 and L315) to remove unwanted signals and amplified by a RF amplifier (incorporated in IC303). The signal is then fed to the mixer (incorporated in IC303) and converted to the baseband signal.

#### 2.3.3.2 Baseband circuit

The baseband signal is then be fed into an ADC (incorporated in IC303), generates the I and Q data. This data is in the form of Serial Interface, and sent to the MPU/DSP (IC401).

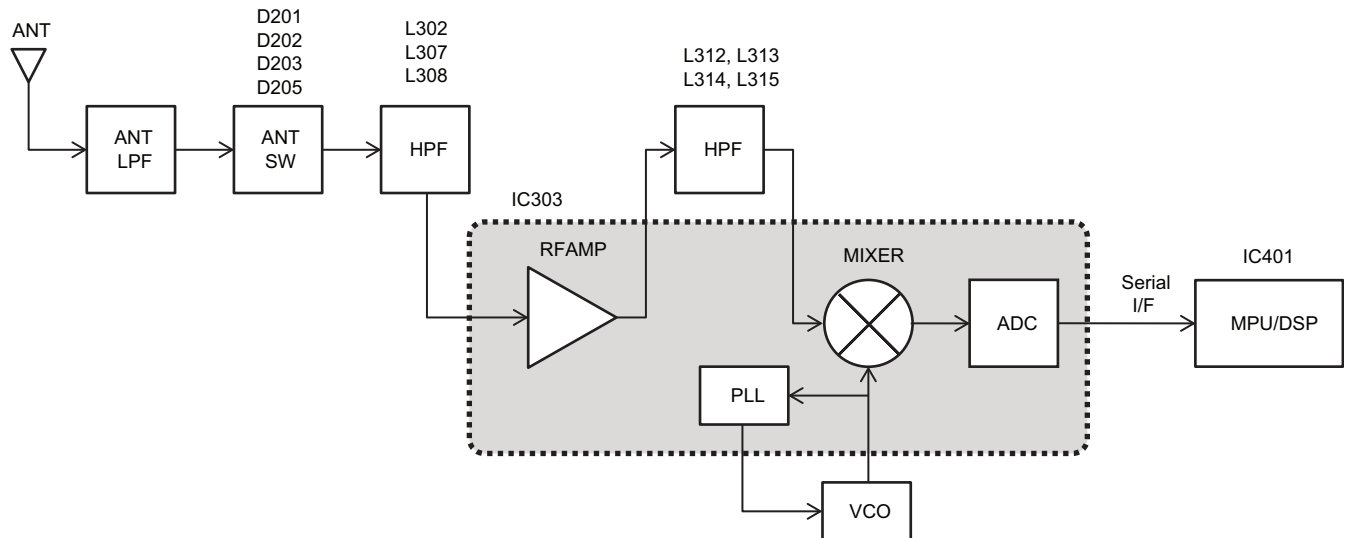


Fig.2 RF and Baseband circuit

#### 2.3.3.3 Audio amplifier circuit

Audio processing (high-pass filter, low-pass filter, de-emphasized and so on) at Analog FM mode and decoding at Digital mode are processed by DSP. I2S signal from DSP is converted to audio signal at IC601. The signal goes to internal speaker or universal connector for external speaker through the internal Class D amplifier.

Audio path inside the Codec is controlled by I2C.

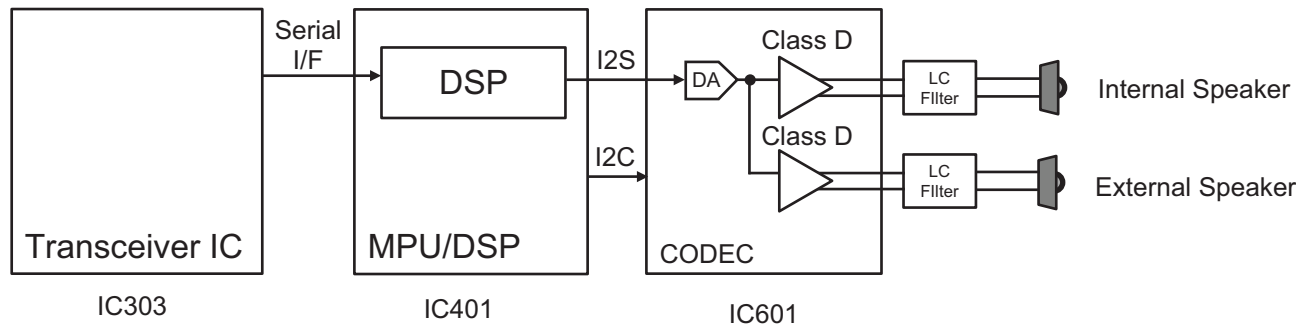


Fig.3 Audio amplifier circuit

### 2.3.4 Transmitter System

#### 2.3.4.1 Audio Band Circuit

The signal from microphone is amplified and converted to digital signal by IC601, IC601 includes AGC function. Digital signal is transferred to IC401.

#### 2.3.4.2 Baseband Circuit

The audio signal transferred from IC601 is processed at IC401.

Voice signals of 300Hz or lower and frequencies of 3kHz or higher are cut off and an audio range 300Hz to 3kHz is extracted. The audio signal is then pre-emphasized in FM mode and synthesized with the signals, such as QT and DQT, as required, and is transferred to PLL Frequency Synthesizer block in IC303. The DTMF and MSK baseband signals are also generated by IC401.

In Digital mode, the audio signal is converted to the 4-Level FSK baseband signal and is transferred to PLL Frequency Synthesizer block in IC303.

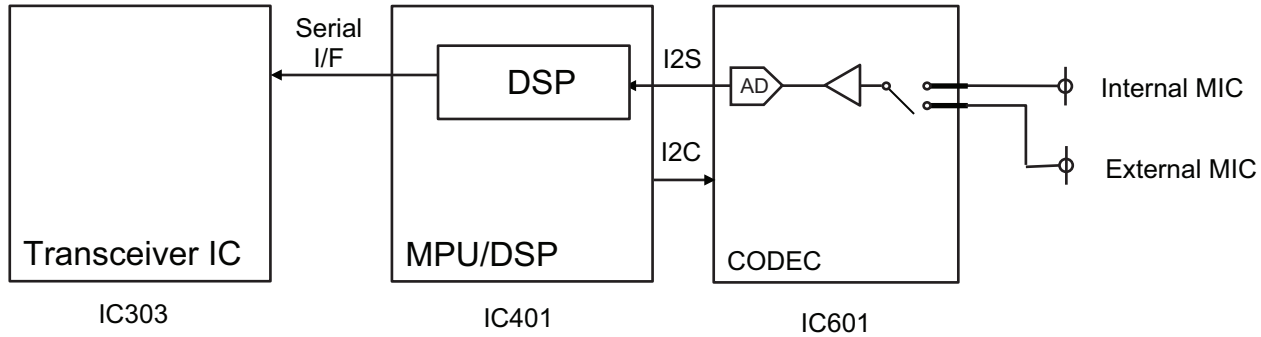


Fig.4 Audio and Baseband circuit

#### 2.3.4.3 Drive and Final amplifier

The signal from the IC303 is amplified by pre-drive amplifier (IC202). The output of the pre-drive amplifier is amplified by the drive amplifier (Q201) and final amplifier (Q202) to 5W (1W when the power is low). IC202 is MMIC. Q201 and Q202 are MOS FET. The output of the final amplifier is then passed through the harmonic filter (LPF) and antenna switch (D201, D202 and D203) and applied to the antenna terminal.

#### 2.3.4.4 APC circuit

The APC circuit always monitors the current flowing through the drive amplifier (Q201) and final amplifier (Q202). And APC keeps current constant.

The voltage drop at R248 and R250 is caused by the current flowing through the RF power amplifier and this voltage is applied to APC circuit. Output voltage from APC controls the VGG of Q201 and Q202 to keep the current constant. The change of power high/low is carried out by the change of the reference voltage.

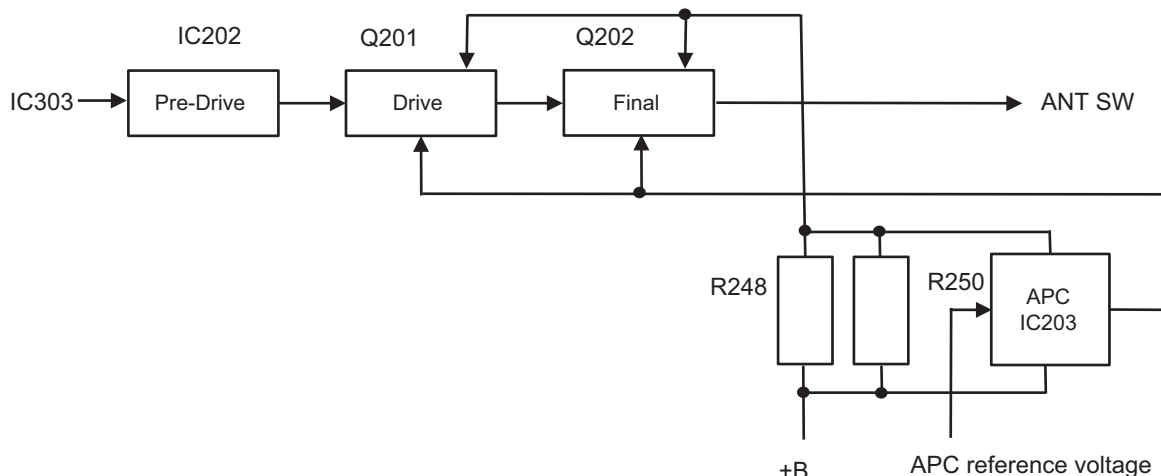


Fig.5 Drive and Final amplifier and APC circuit

### 2.3.5 PLL Frequency Synthesizer

#### 2.3.5.1 TCXO (X401)

TCXO (X401) generates a reference frequency of 19.2MHz for the PLL frequency synthesizer. This reference signal is buffered by Q401. And it is distributed to PLL (IC303), IC401 and IC351.

The oscillation frequency is adjusted TCXO directly by controlled the D/A converter of FCNT.

### 2.3.5.2 VCO

#### • NX-3200

There is one VCO contain TX VCO and RX VCO.

The VCO (Q131) generates the carrier for the transmitter and the receiver. VCO oscillation frequency range is 272 to 348MHz. The transmit frequency range is same as receiver frequency range.

The local signal frequency range is also 272 to 348MHz.

The oscillation frequency is divided into two by IC 303 and it becomes the use frequency.

The VCO oscillation frequency is determined by voltage control terminals "CP" and "ASSIST".

The voltage control terminal "CP" is controlled by PLL (IC303). The voltage control terminal "ASSIST" is controlled by the control voltage from D/A converter (IC410).

For the modulation input terminal, "VCO\_MOD" of PLL (IC303), the output frequency changes according to the applied voltage. This is used to modulate the VCO output.

#### • NX-3300

There are two VCO contain VCO\_L and VCO\_H.

The VCO\_H (Q131) generates the carrier for the transmitter and the receiver. VCO oscillation frequency range is 920 to 1040MHz.

The transmit frequency range is same as receiver frequency range.

The local signal frequency range is also 920 to 1040MHz.

The VCO\_L (Q151) generates the carrier for the transmitter and the receiver. VCO oscillation frequency range is 800 to 920MHz.

The transmit frequency range is same as receiver frequency range.

The local signal frequency range is also 800 to 920MHz.

The oscillation frequency is divided into two by IC 303 and it becomes the use frequency.

The VCO oscillation frequency is determined by voltage control terminals "CP" and "ASSIST".

The voltage control terminal "CP" is controlled by PLL (IC303). The voltage control terminal "ASSIST" is controlled by the control voltage from D/A converter (IC410).

For the modulation input terminal, "VCO\_MOD" of PLL (IC303), the output frequency changes according to the applied voltage. This is used to modulate the VCO output.

### 2.3.5.3 PLL

PLL (IC303) compares the difference in phases of the VCO oscillation signal and the TCXO (X401) reference frequency. And it returns the difference voltage to the VCO CP terminal and realizes the "Phase Locked Loop". This allows the VCO oscillation frequency to accurately match (lock) the desired frequency.

When the frequency is controlled by the PLL, the frequency convergence time increases as the frequency difference increases when the set frequency is changed. To supplement this, The ASSIST Voltage from D/A converter (IC410) is used before control by the PLL (IC303) to bring the VCO oscillation frequency close to the desired frequency. As a result, the VCO CP voltage does not change and is always stable at approx. 2.5V.

The desired frequency is set for the PLL (IC303) by the MPU/DSP (IC401) through the 3-line "/DCR\_CS", "DCR\_DO", "BCLK" serial bus for PLL. IC401 monitors through the "PLD", whether the PLL (IC303) is locked or not. If the VCO does not lock to desired frequency (unlock), the "PLD" logic is low.

### 2.3.6 Control Circuit

The control circuit consists of MPU/DSP (IC401) and its peripheral circuits. IC401 mainly performs the following;

- (1) Switching between transmission and reception by PTT signal input.
- (2) Reading system, zone, frequency, and program data from the memory circuit.
- (3) Sending frequency program data to the PLL.
- (4) Controlling the audio mute circuit by decode data input.

#### 2.3.6.1 MPU

The MPU/DSP (IC401) is 32bit RISC processor and Fixed/Floating-Point VLIW DSP, equipped with peripheral function.

This MPU operates at 288MHz (MAX) clock and 3.2V /1.8V/1.2V DC. Controls the flash memory, Mobile DDR, the receive circuit, the transmitter circuit, the control circuit, and the display circuit and transfers data to or from an external device.

#### 2.3.6.2 Memory Circuit

Memory circuit consists of the MPU/DSP (IC401) and the Mobile DDR (IC402), the flash memory (IC404). The flash memory has capacity of 512Mbit that contains the transceiver control program for the MPU and stores the data. It also stores the data for transceiver channels and operating parameter that are written by the FPU. This program can be easily written from external devices. The Mobile DDR has capacity of 512Mbit. The MPU copies the program to the Mobile DDR from Flash memory. And MPU is used as a work area Mobile DDR.

##### ■Flash memory

###### Note:

The flash memory stores the data that is written by the FPU (KPG-D3/D3N), tuning data (Deviation, Squelch, etc.), and firmware program (User mode, Test mode, Tuning mode, etc.). This data must be rewritten when replacing the flash memory.

##### ■Mobile DDR (static memory)

###### Note:

Mobile DDR is used as a work area of the MPU.

### 2.3.6.3 LCD

The LCD is controlled using parallel interface from MPU /DSP (IC401).

### 2.3.6.4 Button Detection Circuit

Buttons are detected using MPU/DSP (IC401).

### 2.3.6.5 Low Battery Warning

The battery voltage is divided using R65 and R66, it is detected by A/D converter (IC409).

When the battery voltage falls below the voltage set by the Low battery warning adjustment, the red LED blinks to notify the operator that it is time to replace the battery. If the battery voltage falls even more (approx. 5.8V), a beep sounds and transmission stops.

| Low battery warning                                                            | Battery condition                                                           |
|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| The red LED blinks during transmission.                                        | The battery voltage is low but the transceiver is still usable.             |
| The red LED blinks and the warning tone beeps while the PTT switch is pressed. | The battery voltage is low and the transceiver is not usable to make calls. |

### 2.3.6.6 DSP

The DSP circuit consists of a MPU/DSP (IC401) and processes the baseband signal. The DSP operates at 288MHz (MAX) clock, the I/O section operates at 3.2V/1.8V and the core section operates at 1.2V.

The DSP carries out the following processes:

- 4Level FSK processing
- Analog FM pre-emphasis/de-emphasis
- Vocoder processing between audio codec and modulation/demodulation
- CAI processing, such as error correction encoding
- QT/DQT encoding/decoding
- DTMF encoding/decoding
- MSK encoding/decoding
- 2-tone /5-tone encoding/decoding
- Compressor/expander processing
- Voice scrambler processing
- Transmit/receive audio filtering processing
- Microphone amplifier AGC processing
- Audio mute processing
- Modulation level processing
- Active Noise Reduction
- Voice recording/playback processing
- Voice announce processing

### 2.3.7 Power Supply Circuit

The battery voltage (+B) is provided from battery terminal. The battery voltage passes through the 3.15A fuse (F1), and goes to RF final amplifier, AVR ICs (IC9, IC17, IC602, IC6, IC15) , DC/DC converter (IC3), transistor (Q7 through the 0.5A fuse(F2)), and voltage detector IC (IC1). Voltage detector (IC1) watches battery voltage. If the battery voltage is enough higher than 5.6V, detector outputs High. Then, IC9 (31BU) outputs 3.1V, and IC10 (12BU) outputs 1.2V.

When the VOL SW is turned on, SB1 becomes high (battery voltage). DC/DC (IC3) operates if both SB1 and output of detector are high. IC3 (38M) outputs 3.8V, and IC2 (12M) outputs 1.2V. Then, IC4 (18M) outputs 1.8V. Then, IC5 (32M) outputs 3.2V. Then, IC8 (18BT) outputs 1.8V. Then, IC7 (32BT) outputs 3.2V. Then, IC11 (32A) outputs 3.2V, and IC17 (50A) outputs 5.0V. Then, IC12 (18M\_3) outputs 1.8V, and Q7 (53AF) is turned on. Voltage detector (IC403) watches IC3 (38M) output voltage. If the 38M output voltage is enough higher than 3.5V, detector outputs High.

As a result, MPU/DSP operated.

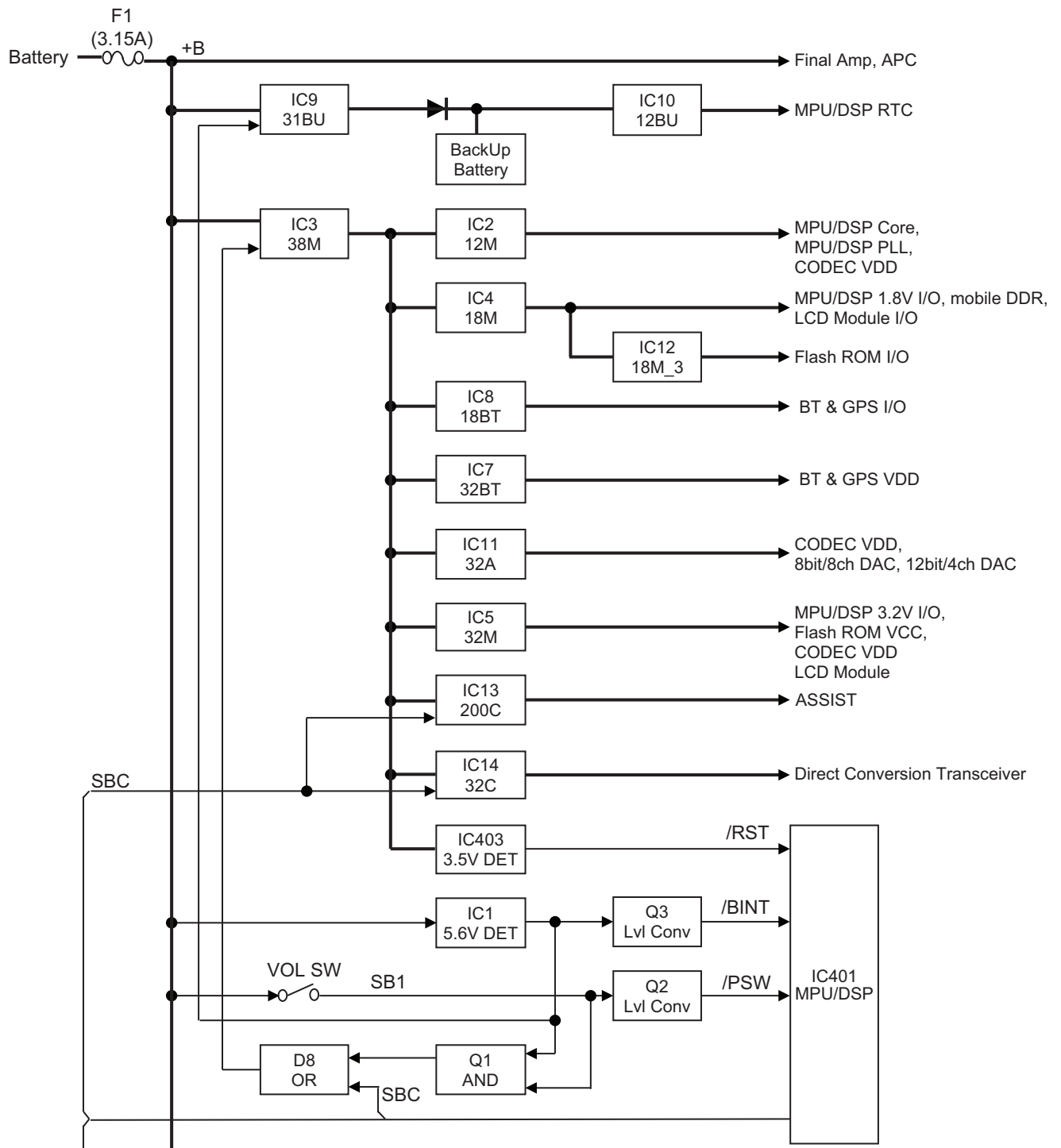
SBC signal becomes High after MPU/DSP operates, and IC13(200C),and IC14 (32C),and IC6 (50C), and Q4 (SB2) are turned on.

When 5UC signal becomes High, IC602 (50U) operates. When TXC signal becomes High, IC15 (50T) operates. IC15 (50T) is turned on in transmit mode. Switches are controlled by MPU/DSP.

When the VOL SW is turned off /PSW signal becomes Low. After detecting /PSW signal, MPU/DSP changes SBC signal to Low.

38M is fed to IC13 (200C). IC13 (200C) is the DC/DC boost converter. IC13, D10, C50 consist of a voltage quadrupler.

The 200C circuit then outputs approximately +20VDC.



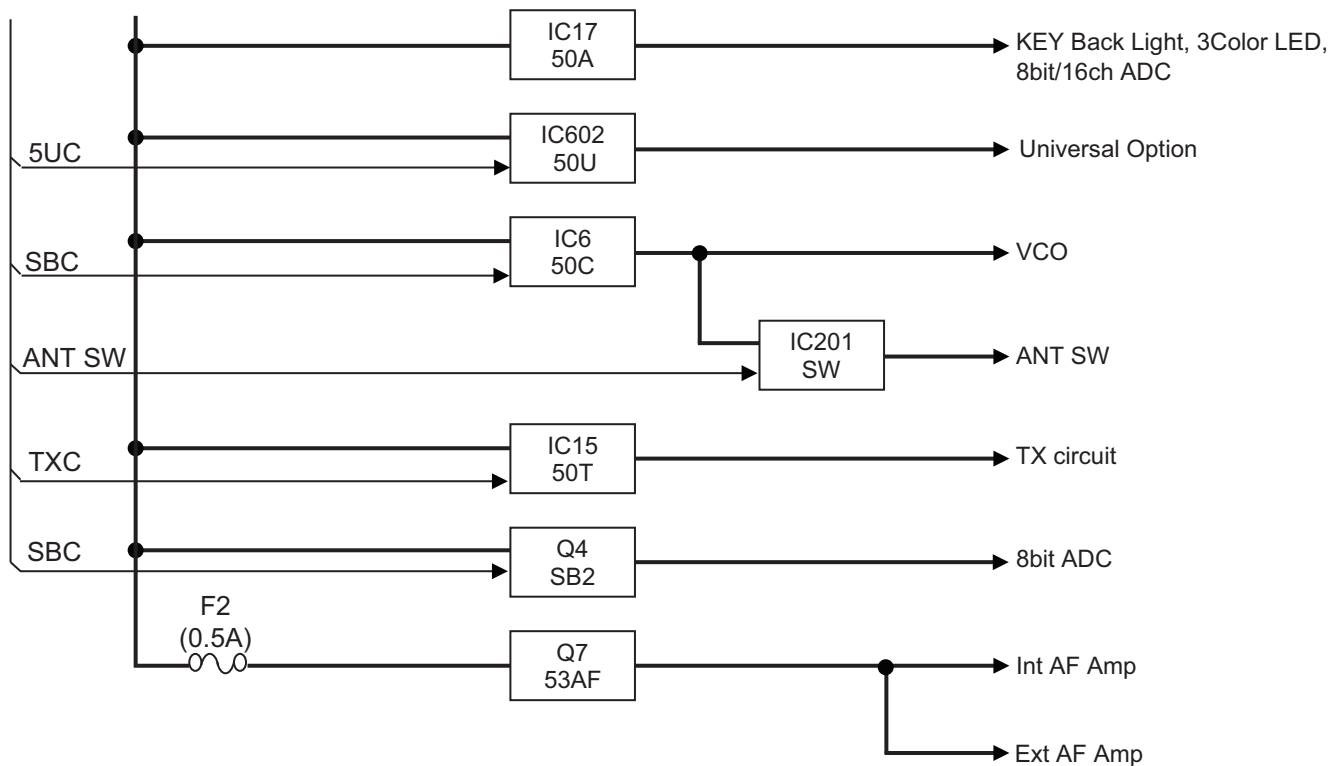


Fig.6 Power supply circuit

## 2.3.8 Signaling Circuit

### 2.3.8.1 Encode (QT/DQT/DTMF/2-tone/MSK)

Each signaling data signal of QT, DQT, DTMF, 2-tone and MSK is generated by IC401, superposed on a modulation signal and output to VCO and PLL.

### 2.3.8.2 Decode (QT/DQT/DTMF/2-tone/MSK)

The audio signal and signaling data (QT, DQT, DTMF, 2-tone and MSK) are separated by IC401. Next IC401 decode the signaling data.

## 2.3.9 Bluetooth/GPS Circuit

The main component of the Bluetooth/GPS circuit is Bluetooth /GPS IC (IC351).

The clocks of Bluetooth/GPS IC require 19.2MHz for core and 32.768kHz slow clock (X351) for UART. 19.2MHz clock (X401) is shared with MPU/DSP (IC401), and is supplied through the Clock buffer amplifier (Q401).

Bluetooth/GPS IC communicates to the MPU/DSP (IC401) on the HCI UART. Interface of UART & Digital audio (PCM) between the MPU/DSP (IC401) and the Bluetooth/GPS IC (IC351), have level conversion at the level conversion IC (IC352, IC353).

The Bluetooth/GPS IC is powered by 1.8V and 3.2V which are supplied from 2 discrete external regulators (IC8 and IC7). The input of these regulators is sourced from a switching regulator (IC3) which regulates the battery voltage to 3.8V.

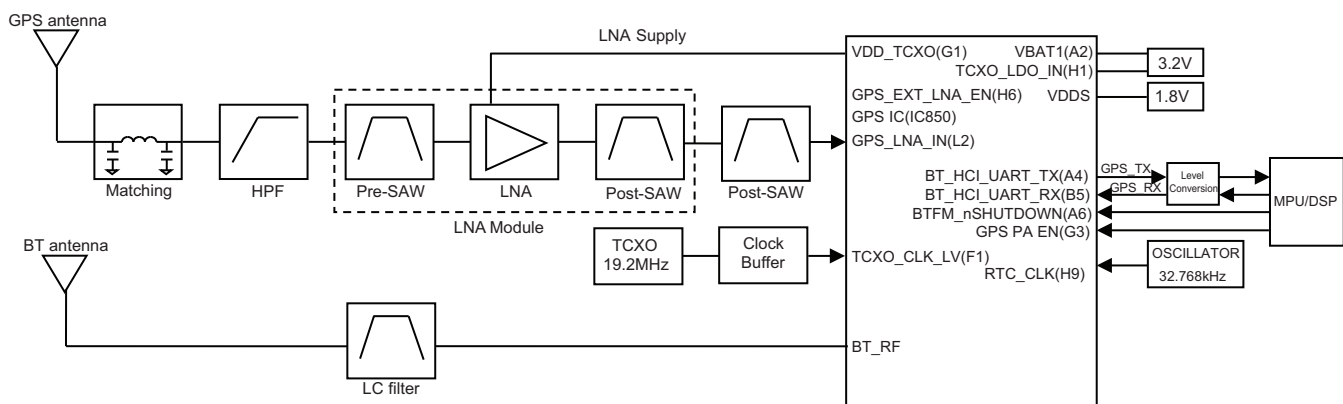


Fig.7 Bluetooth/GPS circuit

### 2.3.9.1 Bluetooth Circuit

TX/RX frequency is 2400-2483.5MHz (79ch Hopping, 2402-2480MHz, 1MHz step). Transmitting power is +0dBm at Bluetooth antenna input.

Bluetooth antenna is made of sheet metal, and connected to the Bluetooth / GPS IC (IC351) through the LC filter (L361).

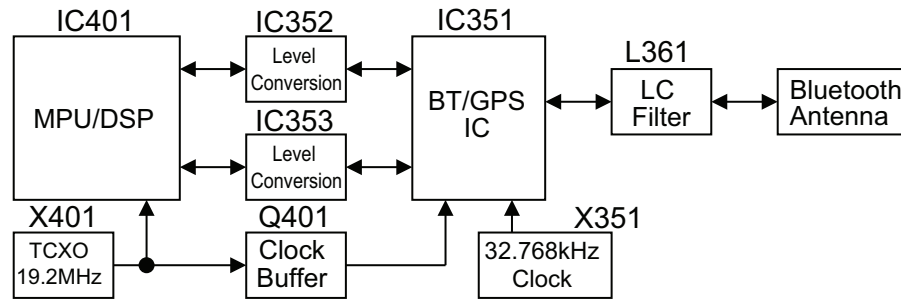


Fig.8 Bluetooth circuit

Frequency configuration for Bluetooth is following:

There are two LO modes: 2X and Offset LO (OSLO). 2X where LO is  $2 \times \text{RF\_FREQ}$  (e.g. when transmitting at 2441MHz it is at 4882MHz). OSLO where LO is at  $(2/3) \times \text{RF\_FREQ}$  (e.g. when transmitting at 2441MHz it is at 1627.333MHz).

In RX the 2X is always used.

In GFSK TX if power is  $>10\text{dBm}$  then OSLO is used

In EDR2 TX if power is  $>-12\text{dBm}$  then OSLO is used

In EDR3 TX if power is  $>-12\text{dBm}$  then OSLO is used

Otherwise 2X is used for TX as well.

### 2.3.9.2 GPS Circuit

The RF signal is received by the antenna matched by the matching circuit. The matching circuit consists of L173, C172 on DISPLAY Unit. And this signal applied to a high-pass filter. The filter consists of C175, C177, C179, L176 and L178 on DISPLAY Unit. The filtered RF signal is then applied to a LNA Module (A151).

The output of the LNA Module is fed into the SAW Filter (L359) after through the Attenuator comprised of R354, R355 and R356.

The output of the second SAW filter is passed to pin L2 of the GPS IC. The input match for pin L2 comprises of C867, C866 and L852.

The control and data lines for the GPS IC are GPS\_PA\_EN, BTFM\_nSHUTDOWN, GPS\_TX and GPS\_RX. GPS\_TX and GPS\_RX are shared with Bluetooth data line.

Frequency configuration for GPS is following:

Lo is GPS: 1571.324MHz

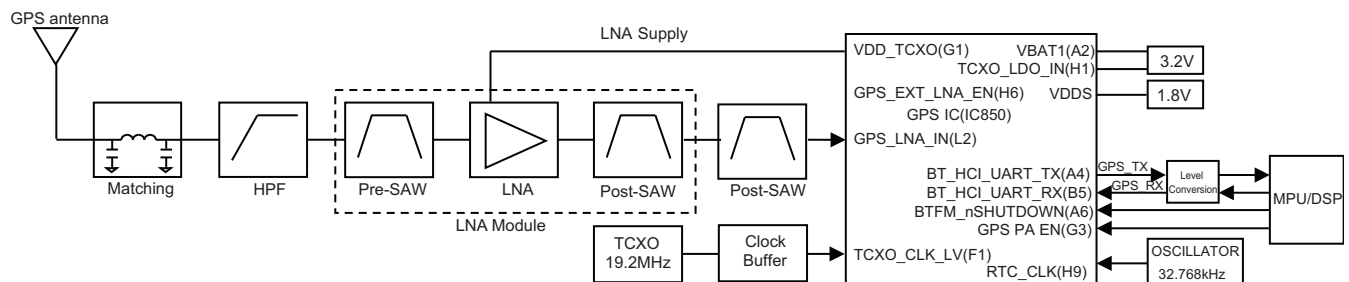


Fig.9 GPS circuit

## 2.4 COMPONENTS DESCRIPTION

### 2.4.1 TX-RX unit (XC1-179K-00,XC1-181K-00)

| Ref. No.  | Part Name  | Use / Function            |
|-----------|------------|---------------------------|
| IC1       | IC         | Voltage detector          |
| IC2       | IC         | DC/DC converter (12M)     |
| IC3       | IC         | DC/DC converter (38M)     |
| IC4       | IC         | DC/DC converter (18M)     |
| IC5       | IC         | Voltage regulator (32M)   |
| IC6       | IC         | Voltage regulator (50C)   |
| IC7       | IC         | Voltage regulator (32BT)  |
| IC8       | IC         | Voltage regulator (18BT)  |
| IC9       | IC         | Voltage regulator (31BU)  |
| IC10      | IC         | Voltage regulator (12BU)  |
| IC11      | IC         | Voltage regulator (32A)   |
| IC12      | IC         | Switch IC (18M_3 )        |
| IC13      | IC         | DC/DC converter (200C)    |
| IC14      | IC         | Voltage regulator (32C)   |
| IC15      | IC         | Voltage regulator (50T)   |
| IC17      | IC         | Voltage regulator (50A)   |
| IC18      | IC         | DC amplifier              |
| IC101     | IC         | DC amplifier (Assist)     |
| IC102     | IC         | DC amplifier (CV)         |
| IC201     | IC         | DC amplifier (Antenna SW) |
| IC202     | IC         | MMIC (Pre-drive)          |
| IC203     | IC         | DC amplifier (APC)        |
| IC303     | IC         | Transceiver IC            |
| IC351     | IC         | GPS/Bluetooth             |
| IC352,353 | IC         | Level converter           |
| IC401     | IC         | MPU/DSP                   |
| IC402     | IC         | SDRAM                     |
| IC403     | IC         | Voltage detector          |
| IC404     | IC         | Flash memory              |
| IC405     | IC         | AND gate (2 input)        |
| IC406     | IC         | Motion sensor             |
| IC409     | IC         | A/D converter             |
| IC410     | IC         | D/A converter             |
| IC601     | IC         | Codec                     |
| IC602     | IC         | Voltage regulator (50U)   |
| IC603     | IC         | Analog switch             |
| IC604     | IC         | Level converter           |
| IC605-607 | IC         | Logic control             |
| Q1        | Transistor | 38M control               |
| Q2        | FET        | Detector (Power Switch)   |
| Q3        | FET        | Detector (BINT)           |
| Q4        | FET        | DC switch (SB2)           |
| Q5        | FET        | 18M control               |
| Q6        | Transistor | DC switch (Codec IC)      |

| Ref. No. | Part Name                  | Use / Function                        |
|----------|----------------------------|---------------------------------------|
| Q7       | Transistor                 | DC switch (Codec IC)                  |
| Q102     | FET                        | DC switch (Assist)                    |
| Q103     | FET                        | DC switch (VCO Buffer)                |
| Q113     | Transistor                 | Ripple filter                         |
| Q114     | FET                        | DC switch (VCO)                       |
| Q131     | FET                        | VCO                                   |
| Q151     | Transistor                 | VCO buffer (NX-3200)<br>VCO (NX-3300) |
| Q181     | Transistor                 | VCO buffer                            |
| Q201     | FET                        | Drive amplifier                       |
| Q202     | FET                        | RF final amplifier                    |
| Q203,204 | Transistor                 | APC switch                            |
| Q205,206 | FET                        | APC switch                            |
| Q207     | Transistor                 | APC switch                            |
| Q351     | FET                        | DC switch                             |
| Q401     | Transistor                 | Clock buffer                          |
| Q402     | Transistor                 | DC switch                             |
| D1       | Diode                      | Reverse protection                    |
| D8       | Diode                      | 38M control                           |
| D9       | Diode                      | Back up battery charge                |
| D10      | Diode                      | DC/DC converter                       |
| D102     | Zener diode                | Over voltage protection               |
| D111     | Diode                      | Ripple filter                         |
| D131     | Variable capacitance diode | VCO frequency control                 |
| D132-135 | Variable capacitance diode | VCO frequency control                 |
| D136     | Variable capacitance diode | VCO frequency control                 |
| D201-203 | Diode                      | Antenna switch                        |
| D204     | Zener diode                | Over voltage protection               |
| D205     | Diode                      | Antenna switch                        |
| D301-304 | Diode                      | Excessive input protection            |
| D401,402 | Diode                      | Reverse current protection            |
| D403-407 | Diode                      | Reverse current protection            |
| D601     | Diode                      | Over voltage protection               |
| D609     | Diode                      | Over voltage protection               |
| D620,621 | Zener diode                | Over voltage protection               |
| D622,623 | Diode                      | Over voltage protection               |
| D624-628 | Diode                      | Over voltage protection               |
| D629,630 | Diode                      | Surge protection                      |
| D632-634 | Diode                      | Surge protection                      |

## 2.4.2 Display unit (XC1-209K-XX)

| Ref. No. | Part Name  | Use / Function             |
|----------|------------|----------------------------|
| A151     | IC         | GPS frontend module        |
| IC201    | IC         | AND gate (2 input)         |
| Q141     | Transistor | DC switch (Key backlight)  |
| Q201     | Transistor | DC switch (LCD)            |
| Q221-223 | Transistor | DC switch (TX/busy)        |
| Q227-229 | Transistor | DC switch (Light bar)      |
| D111-120 | LED        | Key backlight              |
| D132     | LED        | Key backlight              |
| D141-144 | Diode      | Reverse current protection |
| D180,181 | Diode      | Excessive input protection |
| D201,202 | LED        | LCD backlight              |
| D221     | LED        | TX/busy                    |
| D227     | LED        | Light bar                  |

## 2.5 TERMINAL FUNCTION

### 2.5.1 TX-RX unit (XC1-179K-00,XC1-181K-00)

| Pin No.      | Name    | I/O | Function                                    |
|--------------|---------|-----|---------------------------------------------|
| <b>CN1</b>   |         |     |                                             |
| 1            | NC      | -   | No connection                               |
| 2            | ENC0    | I   | Rotary switch input                         |
| 3            | ENC0    | I   | Rotary switch input                         |
| 4            | ENC1    | I   | Rotary switch input                         |
| 5            | GND     | -   | GND                                         |
| 6            | ENC3    | I   | Rotary switch input                         |
| 7            | ENC2    | I   | Rotary switch input                         |
| 8            | +B      | O   | Power output after passing through the fuse |
| 9            | 50A     | O   | DC 5.0V output                              |
| 10           | VOL     | I   | Volume level input                          |
| 11           | GND     | -   | GND                                         |
| 12           | SB      | I   | Switched B input                            |
| 13           | NC      | -   | No connection                               |
| <b>CN7</b>   |         |     |                                             |
| 1            | /EMG    | I   | Emergency input                             |
| 2            | GND     | -   | GND                                         |
| 3            | /SIDE2  | I   | Side 2 input                                |
| 4            | /SIDE1  | I   | Side 1 input                                |
| 5            | /PTT    | I   | PTT input                                   |
| 6            | NC      | -   | No connection                               |
| <b>CN402</b> |         |     |                                             |
| 1            | 32LCD   | O   | DC 3.2V output                              |
| 2            | 32LCD   | O   | DC 3.2V output                              |
| 3            | 18M     | O   | DC 1.8V output                              |
| 4            | LCD_VSS | -   | GND                                         |
| 5            | LCD_/CS | O   | LCD CS signal                               |

| Pin No.      | Name           | I/O | Function                          |
|--------------|----------------|-----|-----------------------------------|
| 6            | LCD_A0         | O   | Data/Command control signal       |
| 7            | LCD_E          | O   | LCD read signal                   |
| 8            | WR0_R/W        | O   | LCD write signal                  |
| 9            | LCD_/RST       | O   | LCD reset signal                  |
| 10           | LCD_DB0        | I/O | LCD Data Bus 0                    |
| 11           | LCD_DB1        | I/O | LCD Data Bus 1                    |
| 12           | LCD_DB2        | I/O | LCD Data Bus 2                    |
| 13           | LCD_DB3        | I/O | LCD Data Bus 3                    |
| 14           | LCD_DB4        | I/O | LCD Data Bus 4                    |
| 15           | LCD_DB5        | I/O | LCD Data Bus 5                    |
| 16           | LCD_DB6        | I/O | LCD Data Bus 6                    |
| 17           | LCD_DB7        | I/O | LCD Data Bus 7                    |
| 18           | LCD_BLC        | O   | LCD backlight control             |
| 19           | GND            | -   | GND                               |
| 20           | GND            | -   | GND                               |
| 21           | ME             | -   | MIC GND                           |
| 22           | MIC            | I   | Main MIC input                    |
| 23           | 50A            | O   | DC 5.0V output                    |
| 24           | 50A            | O   | DC 5.0V output                    |
| 25           | /KEYI4         | I   | Key matrix input                  |
| 26           | /KEYI3         | I   | Key matrix input                  |
| 27           | /KEYI2         | I   | Key matrix input                  |
| 28           | /KEYI1         | I   | Key matrix input                  |
| 29           | /KEYI0         | I   | Key matrix input                  |
| 30           | KEYO3          | O   | Key matrix output                 |
| 31           | KEYO2          | O   | Key matrix output                 |
| 32           | KEYO1          | O   | Key matrix output                 |
| 33           | KEYO0          | O   | Key matrix output                 |
| 34           | LED_G          | O   | LED Green control                 |
| 35           | LED_B          | O   | LED Red control                   |
| 36           | LED_R          | O   | LED Blue control                  |
| 37           | LBC_G          | O   | Light Bar Green Control           |
| 38           | LBC_R          | O   | Light Bar Red Control             |
| 39           | LBC_B          | O   | Light Bar Blue Control            |
| 40           | GND            | -   | GND                               |
| 41           | GND            | -   | GND                               |
| <b>CN602</b> |                |     |                                   |
| 1            | SP-            | O   | BTL output for internal speaker - |
| 2            | SP+            | O   | BTL output for internal speaker + |
| <b>CN625</b> |                |     |                                   |
| 1            | SMIC           | I   | External MIC input                |
| 2            | RXD/<br>USB_DM | I/O | Serial data input / USB DM        |
| 3            | TXD/<br>USB_DP | I/O | Serial data output / USB DP       |
| 4            | 5U             | O   | 5V power supply output            |
| 5            | GND            | -   | GND                               |

| Pin No. | Name     | I/O | Function                          |
|---------|----------|-----|-----------------------------------|
| 6       | OPT      | I   | MIC identification                |
| 7       | PF       | I   | Programmable function key input   |
| 8       | PTT      | I   | PTT input                         |
| 9       | ME       | -   | MIC GND                           |
| 10      | EMC/VBUS | I   | External MIC input / USB VBUS     |
| 11      | MSW      | I   | Ext/Int MIC switch Input          |
| 12      | SP-      | O   | BTL output for external speaker - |
| 13      | SP+      | O   | BTL output for external speaker + |
| 14      | SSW      | I   | Ext/Int speaker switch input      |

### 2.5.2 Display unit (XC1-209K-XX A/2)

| Pin No.      | Name  | I/O | Function                                           |
|--------------|-------|-----|----------------------------------------------------|
| <b>CN201</b> |       |     |                                                    |
| 1            | NC    | -   | No connection                                      |
| 2            | K-    | -   | Cathode for backlight(GND)                         |
| 3            | A+    | O   | Anode for backlight                                |
| 4            | VSS   | -   | GND                                                |
| 5            | DB7   | I/O | LCD Data Bus 7                                     |
| 6            | DB6   | I/O | LCD Data Bus 6                                     |
| 7            | DB5   | I/O | LCD Data Bus 5                                     |
| 8            | DB4   | I/O | LCD Data Bus 4                                     |
| 9            | DB3   | I/O | LCD Data Bus 3                                     |
| 10           | DB2   | I/O | LCD Data Bus 2                                     |
| 11           | DB1   | I/O | LCD Data Bus 1                                     |
| 12           | DB0   | I/O | LCD Data Bus 0                                     |
| 13           | /RST  | O   | LCD reset signal                                   |
| 14           | R/W   | O   | LCD write signal                                   |
| 15           | E     | O   | LCD read signal                                    |
| 16           | A0    | O   | Data/Command control signal                        |
| 17           | /CS0  | O   | LCD CS signal                                      |
| 18           | VSS   | -   | GND                                                |
| 19           | VDDI  | O   | LCD I/O Power Supply(DC 1.8V output)               |
| 20           | VDDA  | O   | LCD Analog Power Supply (DC 3.2V output)           |
| 21           | VB0+  | -   | LCD bias voltage. Connect to VB0- via a capacitor. |
| 22           | VB1+  | -   | LCD bias voltage. Connect to VB1- via a capacitor. |
| 23           | VB1-  | -   | LCD bias voltage. Connect to VB1+ via a capacitor. |
| 24           | VB0-  | -   | LCD bias voltage. Connect to VB0+ via a capacitor. |
| 25           | VLCD  | O   | Main LCD power supply                              |
| <b>CN202</b> |       |     |                                                    |
| 1            | GND   | -   | GND                                                |
| 2            | GND   | -   | GND                                                |
| 3            | LBC_B | O   | Light Bar Blue Control                             |
| 4            | LBC_R | O   | Light Bar Red Control                              |

| Pin No. | Name     | I/O | Function                    |
|---------|----------|-----|-----------------------------|
| 5       | LBC_G    | O   | Light Bar Green Control     |
| 6       | LED_R    | O   | LED Blue control            |
| 7       | LED_B    | O   | LED Red control             |
| 8       | LED_G    | O   | LED Green control           |
| 9       | KEYO0    | O   | Key matrix output           |
| 10      | KEYO1    | O   | Key matrix output           |
| 11      | KEYO2    | O   | Key matrix output           |
| 12      | KEYO3    | O   | Key matrix output           |
| 13      | /KEYI0   | I   | Key matrix input            |
| 14      | /KEYI1   | I   | Key matrix input            |
| 15      | /KEYI2   | I   | Key matrix input            |
| 16      | /KEYI3   | I   | Key matrix input            |
| 17      | /KEYI4   | I   | Key matrix input            |
| 18      | 50A      | O   | DC 5.0V output              |
| 19      | 50A      | O   | DC 5.0V output              |
| 20      | MIC      | I   | Main MIC input              |
| 21      | ME       | -   | MIC GND                     |
| 22      | GND      | -   | GND                         |
| 23      | GND      | -   | GND                         |
| 24      | LCD_BLC  | O   | LCD backlight control       |
| 25      | LCD_DB7  | I/O | LCD Data Bus 7              |
| 26      | LCD_DB6  | I/O | LCD Data Bus 6              |
| 27      | LCD_DB5  | I/O | LCD Data Bus 5              |
| 28      | LCD_DB4  | I/O | LCD Data Bus 4              |
| 29      | LCD_DB3  | I/O | LCD Data Bus 3              |
| 30      | LCD_DB2  | I/O | LCD Data Bus 2              |
| 31      | LCD_DB1  | I/O | LCD Data Bus 1              |
| 32      | LCD_DB0  | I/O | LCD Data Bus 0              |
| 33      | LCD_/RST | O   | LCD reset signal            |
| 34      | WR0_R/W  | O   | LCD write signal            |
| 35      | WR1_E    | O   | LCD read signal             |
| 36      | LCD_A0   | O   | Data/Command control signal |
| 37      | LCD_/CS  | O   | LCD CS signal               |
| 38      | LCD_VSS  | -   | GND                         |
| 39      | 18M      | O   | DC 1.8V output              |
| 40      | 32LCD    | O   | DC 3.2V output              |
| 41      | 32LCD    | O   | DC 3.2V output              |

### 2.5.3 Display unit (XC1-209K-XX B/2)

| Pin No.      | Name   | I/O | Function        |
|--------------|--------|-----|-----------------|
| <b>CN301</b> |        |     |                 |
| 1            | /EMG   | I   | Emergency input |
| 2            | GND    | -   | GND             |
| 3            | /SIDE2 | I   | Side 2 input    |
| 4            | /SIDE1 | I   | Side 1 input    |
| 5            | /PTT   | I   | PTT input       |
| 6            | NC     | -   | No connection   |

#### 2.5.4 14Pin Universal Connector Specification

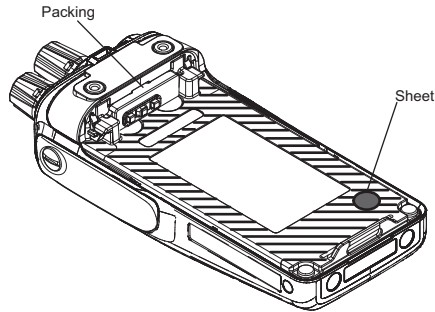
| Pin No. | Pin Name | I/O | Signal Type | Description                                                                                  | Rating and Condition             |      |      |        |      |
|---------|----------|-----|-------------|----------------------------------------------------------------------------------------------|----------------------------------|------|------|--------|------|
|         |          |     |             |                                                                                              | Parameter                        | Min  | Typ  | Max    | Unit |
| 1       | SSW      | I   | Digital     | Ext/Int speaker switch input<br>Internal Pull Up@1.8V<br>MaxCurrent 310uA                    | VIH                              | 2.5  | -    | 5.3    | V    |
|         |          |     |             |                                                                                              | VIL                              | 0.0  | -    | 0.15   | V    |
| 2       | SP+      | O   | Analog      | BTL output for external speaker                                                              | [ 8 ohm load ]                   |      |      |        |      |
|         |          |     |             |                                                                                              | Max output power                 | -    | 1.2  | 1.5    | W    |
|         |          |     |             |                                                                                              | (1kHz , Batt=7.5V)               | -    | -    | -      |      |
|         |          |     |             |                                                                                              | DC Bias                          | -    | 2.6  | -      | V    |
|         |          |     |             |                                                                                              | Allowable Frequency              | 300  | -    | 3000   | Hz   |
| 3       | SP-      | O   | Analog      |                                                                                              | [ 16 ohm load ]                  |      |      |        |      |
|         |          |     |             |                                                                                              | Max output power                 | -    | 0.8  | 1.0    | W    |
|         |          |     |             |                                                                                              | (1kHz , Batt=7.5V)               | -    | -    | -      | -    |
|         |          |     |             |                                                                                              | DC Bias                          | -    | 2.6  | -      | V    |
|         |          |     |             |                                                                                              | Allowable Frequency              | 300  | -    | 3000   | Hz   |
| 4       | MSW      | I   | Digital     | Ext/Int MIC switch Input External Pull Up<br>@3.2V 47kohm<br>& External Pull Up@5.0V 100kohm | VIH                              | 3.5  | -    | 5.3    | V    |
|         |          |     |             |                                                                                              | VIL                              | 0.0  | -    | 0.15   | V    |
| 5       | EMC      | I   | Analog      | External MIC input                                                                           | Audio Level                      | 7.7  | 12.5 | 17.3   | mV   |
|         |          |     |             |                                                                                              | (STD deviation)                  | -    | -    | -      | -    |
|         |          |     |             |                                                                                              | Input impedance                  | -    | 2.2  | -      | kohm |
|         |          |     |             |                                                                                              | DC Bias                          | -    | 3.2  | -      | V    |
|         |          |     |             |                                                                                              | Allowable Frequency              | 300  | -    | 3000   | Hz   |
|         | VBUS     |     | Analog      | USB VBUS(5V) input                                                                           | VIH                              | 4.75 | -    | 5.25   | V    |
|         |          |     |             |                                                                                              | VIL                              | 0.0  | -    | 0.50   | V    |
| 6       | ME       | -   | -           | MIC Ground                                                                                   | -                                | -    | -    | -      | -    |
| 7       | PTT      | I   | Digital     | Ext PTT switch input<br>Internal Pull Up@3.2V 10.6kohm~47.1kohm                              | VIH                              | 2.5  | -    | 5.3    | V    |
|         |          |     |             |                                                                                              | VIL                              | 0.0  | -    | 0.40   | V    |
| 8       | PF       | I   | Analog      | Programmable function key input<br>(Pull Up:3.2V/8.2k)                                       | V(PF2)                           | 3.5  | -    | 3.94   | V    |
|         |          |     |             |                                                                                              | V(PF1)                           | 2.5  | -    | 3.5    | V    |
|         |          |     |             |                                                                                              | V(BOTH)                          | 1.5  | -    | 2.5    | V    |
|         |          |     |             |                                                                                              | V(FIPS)                          | 0.0  | -    | 1.5    | V    |
| 9       | OPT      | I   | Digital     | MIC identification<br>External Pull Up@5.0V 2.2kohm                                          | VIH                              | 4.0  | -    | 5.3    | V    |
|         |          |     |             |                                                                                              | VIL                              | 0.0  | -    | 0.4    | V    |
| 10      | GND      | -   | -           | Ground                                                                                       | -                                | -    | -    | -      | -    |
| 11      | 5U       | -   | Power       | 5V power supply output                                                                       | Output Voltage<br>(Iout = 100mA) | 4.9  | 5.0  | 5.1    | V    |
|         |          |     |             |                                                                                              | Maximum Current                  | -    | -    | 0.2    | A    |
| 12      | TXD      | O   | Digital     | Serial data output<br>CMOS                                                                   | VOH(Io=-5mA)                     | 4.1  | -    | 5.1    | V    |
|         |          |     |             |                                                                                              | VOL(Io=5mA)                      | 0.0  | -    | 0.8    | V    |
|         |          |     |             |                                                                                              | Baud Rate                        | -    | -    | 1.1875 | Mbps |
|         | USB_DP   | I/O | Analog      | USB DP                                                                                       | VIH                              | 2.7  | -    | 3.6    | V    |
|         |          |     |             |                                                                                              | VIL                              | -    | -    | 0.8    | V    |
|         |          |     |             |                                                                                              | VOH                              | 2.8  | -    | 3.5    | V    |
|         |          |     |             |                                                                                              | VOL                              | 0.0  | -    | 0.3    | V    |
|         |          |     |             |                                                                                              | Baud Rate<br>(Full-Speed)        | -    | -    | 12     | Mbps |

| Pin No. | Pin Name | I/O | Signal Type | Description                                               | Rating and Condition           |     |      |        |      |
|---------|----------|-----|-------------|-----------------------------------------------------------|--------------------------------|-----|------|--------|------|
|         |          |     |             |                                                           | Parameter                      | Min | Typ  | Max    | Unit |
| 13      | RXD      | I   | Digital     | Serial data input<br>CMOS<br>External Pull Up@3.2V 10kohm | VIH                            | 2.0 | -    | 5.3    | V    |
|         |          |     |             |                                                           | VIL                            | 0.0 | -    | 0.8    | V    |
|         |          |     |             |                                                           | Baud Rate                      | -   | -    | 1.1875 | Mbps |
|         | USB_DM   | I/O | Analog      | USB DM                                                    | VIH                            | 2.7 | -    | 3.6    | V    |
|         |          |     |             |                                                           | VIL                            | -   | -    | 0.8    | V    |
|         |          |     |             |                                                           | VOH                            | 2.8 | -    | 3.5    | V    |
|         |          |     |             |                                                           | VOL                            | 0.0 | -    | 0.3    | V    |
|         |          |     |             |                                                           | Baud Rate<br>(Full-Speed)      | -   | -    | 12     | Mbps |
|         |          |     |             |                                                           |                                |     |      |        |      |
| 14      | SMIC     | I   | Analog      | External MIC input                                        | Audio Level<br>(STD deviation) | 7.7 | 12.5 | 17.3   | mV   |
|         |          |     |             |                                                           | Input impedance                | -   | 2.2  | -      | kohm |
|         |          |     |             |                                                           | DC Bias                        | -   | 3.2  | -      | V    |
|         |          |     |             |                                                           | Allowable Frequency            | 300 | -    | 3000   | Hz   |

## SECTION 3 DISASSEMBLY

### 3.1 Precautions for Waterproof

- Do not remove the black sheet from the reverse side of the transceiver (refer to the illustration below). Removal of this sheet decreases the waterproof efficiency of the transceiver and may cause malfunctions if water seeps into the transceiver.
  - The black packing material on the reverse side of the transceiver is important with respect to the waterproof efficiency of the transceiver.
  - Do not place stickers or other materials on the shaded area that the battery contacts shown in the figure. Doing so will impair the waterproof efficiency of the transceiver and may cause it to break down.
- Additionally, in order to prevent damage to the packing material, do not allow it to come in contact with foreign materials.



### 3.2 Precautions for Disassembly

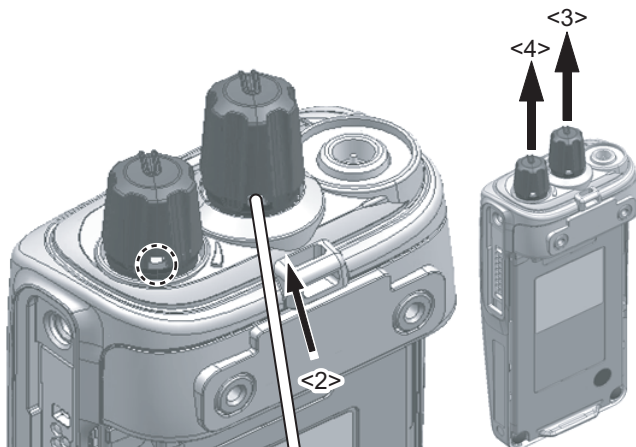
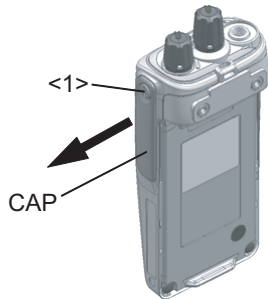
#### 3.2.1 Removing the selector knob and volume knob

- (1) Loosen the screw <1> then remove the cap.
- (2) Using a thin tool, insert it in the hole on the selector knob side and push the knob spring. <2>

**Note:**

When you push the knob spring, take care not to damage the resin of the knob.

- (3) Lift and remove the selector knob <3> while pushing the knob spring.
- (4) Repeat steps 2 and 3 for the volume knob, to remove the volume knob <4>.



**Note:**

Perform the following procedures when installing the selector knob and volume knob.

- a) Match the direction for the hole of the knob and the knob spring.
- b) Push the knob onto the knob spring until a click sounds.

#### 3.2.2 Removing the selector knob spring and volume knob spring

- (1) Lightly grasp the left and right sides of the selector knob spring together, and lift up as shown in the figure. <1>

**Note:**

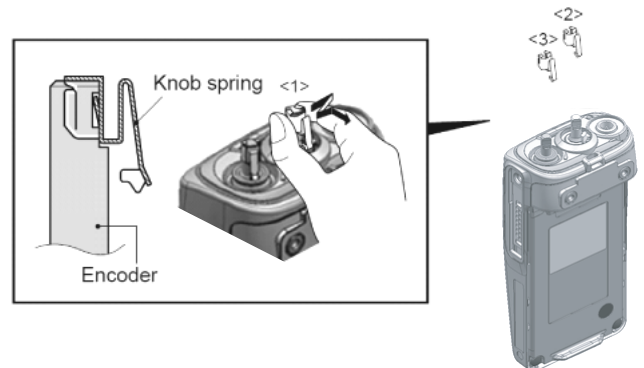
Do not grasp the knob spring tightly.

- (2) Remove the selector knob spring <2>.

**Note:**

Use minimal contact with your fingers on the knob spring.

- (3) Repeat steps 1 and 2 for the volume knob spring, to remove the volume knob spring <3>.



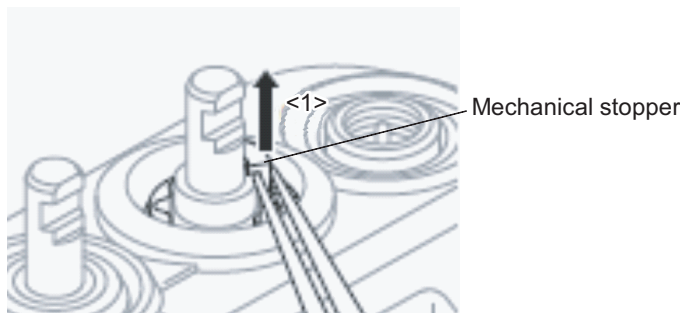
### 3.2.3 Removing the mechanical stopper (without LCD models only)

- (1) Pick up and lift the tab of a mechanical stopper using a pair of tweezers.

**Note:**

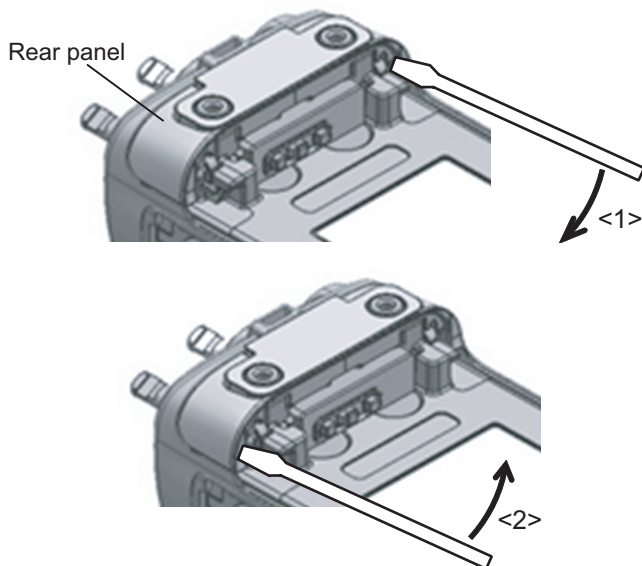
Take care not to damage the packing.

- (2) Remove the mechanical stopper. <1>



### 3.2.4 Removing the front case from the chassis

- (1) Remove the rear panel with a flat-head screwdriver. Insert the screwdriver between the rear panel (right side) and the chassis, push it in the direction of the arrow <1>, and remove the right side of the rear panel. Repeat the above action for the left side of the rear panel <2>.



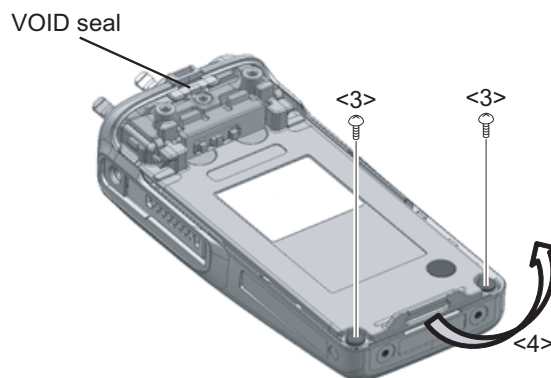
- (2) Remove the two screws <3>.

- (3) Peel off the void seal.

- (4) Lift the base of the chassis and remove the chassis from the front case. <4>

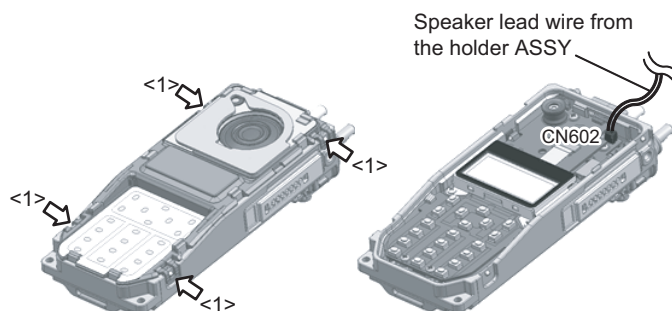
**Note:**

- Once the void seal is peeled off, it cannot be used again.
- When the chassis cannot be removed from the front case, remove by pushing in the button top with the finger.
- Regarding VOID, confirm the service policy of the NX-3200 and NX-3300 to KENWOOD (or authorized distributor).



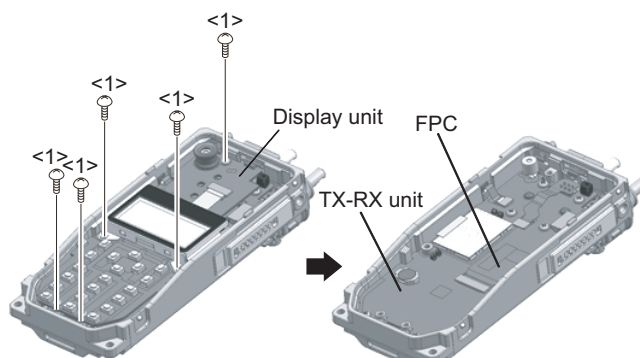
### 3.2.5 Remove the holder ASSY from the chassis

- (1) Remove the four tabs on the holder ASSY from the chassis. <1>
- (2) Lift up the holder ASSY, then remove the speaker lead wire from the connector (CN602).



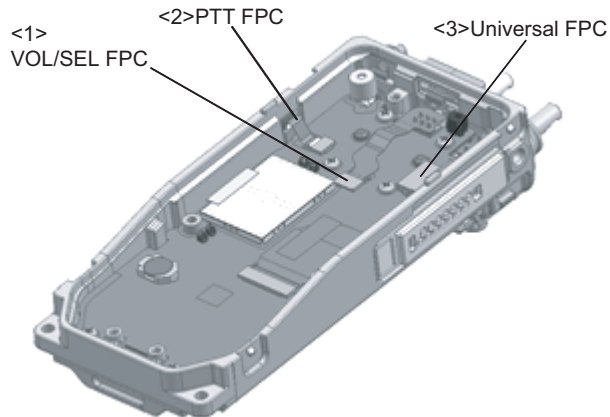
### 3.2.6 Removing the Display unit from the chassis

- (1) Remove the five screws <1>.
- (2) While lifting the Display unit, remove the FPC from the connector (CN202) of the Display unit.



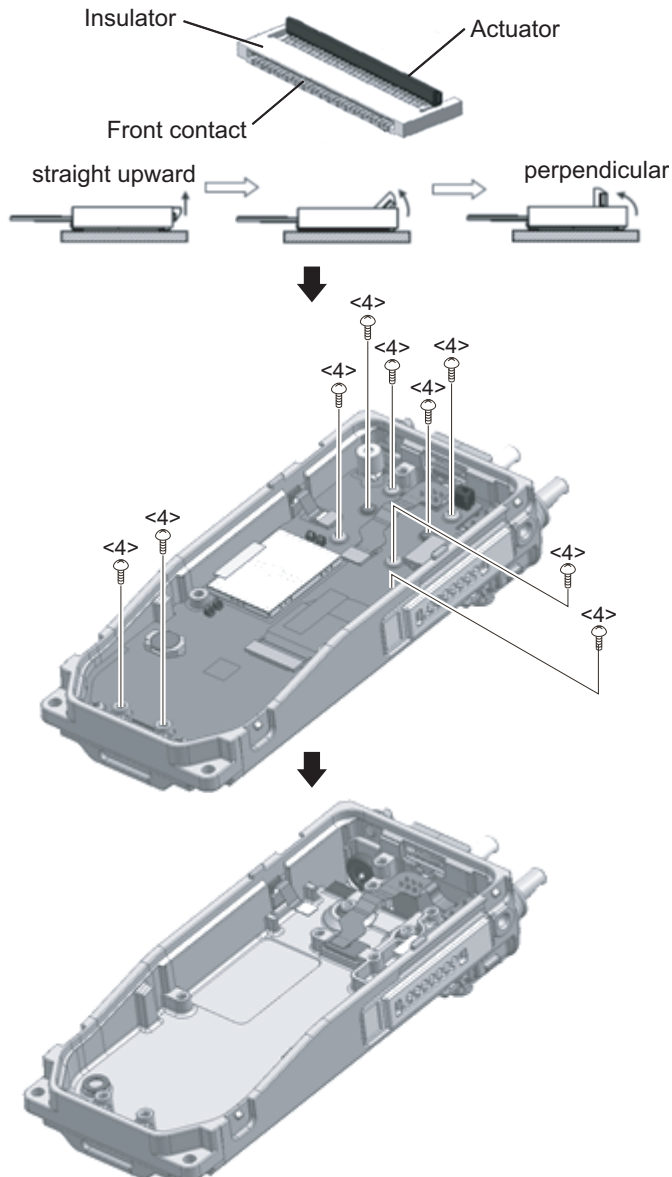
### 3.2.7 Removing the TX-RX unit from the chassis

- (1) Remove the following parts in numerical order.  
 <1>VOL/SEL FPC <2>PTT FPC <3>Universal FPC  
 <4> nine screws



#### Note:

The FPC is locked with an actuator.  
 Raise the actuator straight upward, then make sure the actuator is perpendicular to the insulator.



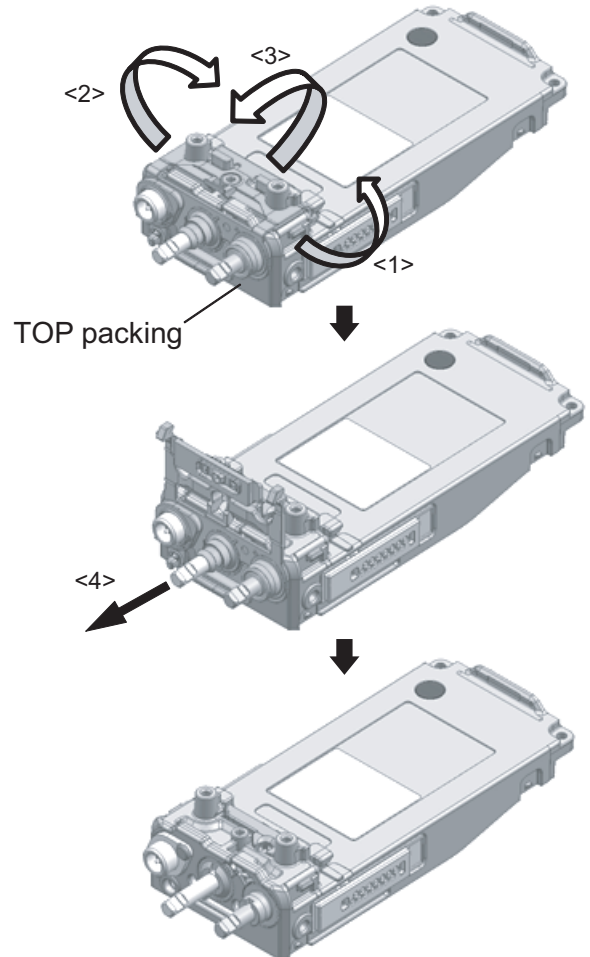
### 3.2.8 Removing the TOP packing

- (1) Pull the TOP packing to the left to remove the packing that is fit into the left groove of the chassis. <1>  
 (2) Pull the TOP packing to the right to remove the packing that is fit into the right groove of the chassis. <2>  
 (3) Pull the TOP packing to the center to remove the packing that is fit into the center groove of the chassis. <3>  
 (4) Remove the TOP packing. <4>

#### Note:

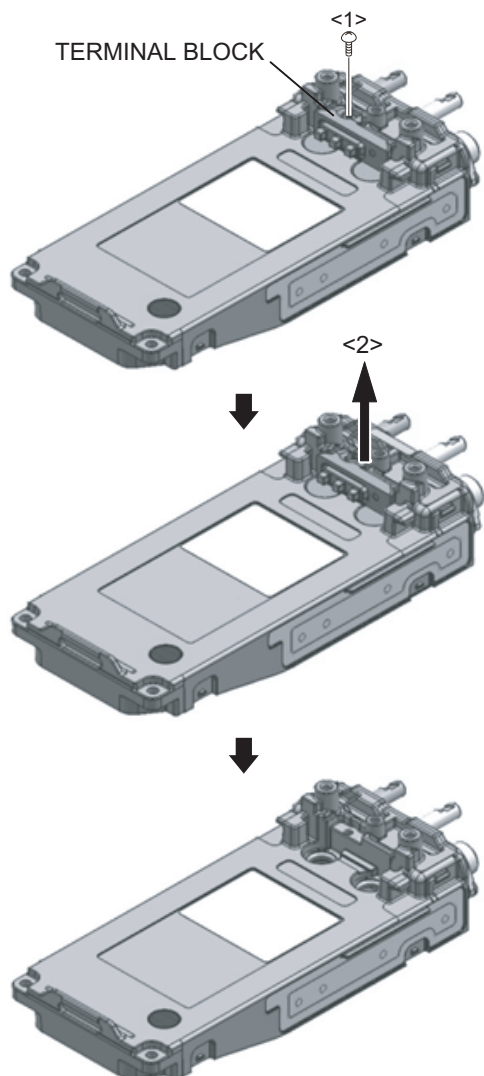
Remove the packing slowly, as the packing of the selector part might be overset when the TOP packing is removed.

If the packing is turned over, return it to the original position using a soft tipped item (e.g., your finger).



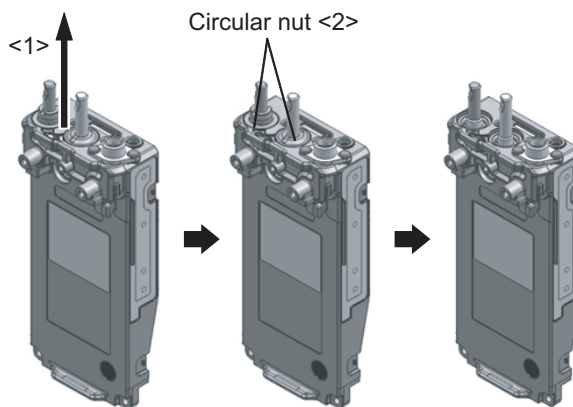
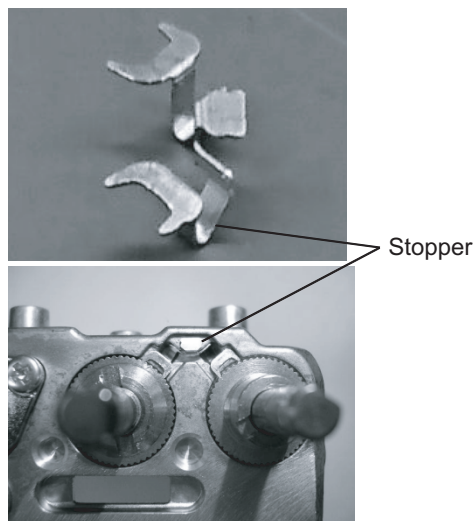
### 3.2.9 Removing the TERMINAL BLOCK (with PACKING)

- (1) Remove the screw. <1>
- (2) Remove the TERMINAL BLOCK (with PACKING). <2>



### 3.2.10 Removing the stopper of the selector circle nut and volume circle nut

- (1) Remove the stopper using a pair of tweezers. <1>
- (2) Remove the circular nut <2> using the nut wrench (W05-1123-00).

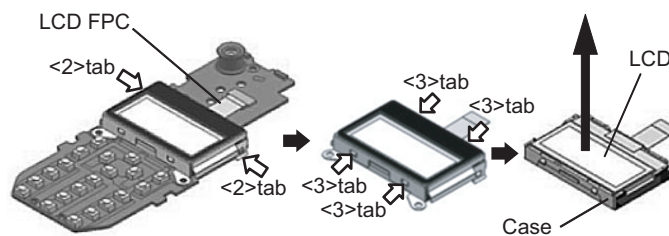


#### Note:

When reassembling, make sure the stopper and the circular nut are engaged.

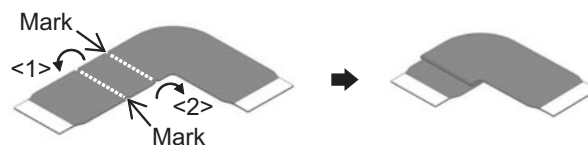
### 3.2.11 Removing the LCD from the Display unit

- (1) Remove the LCD FPC from the connector. <1>
- (2) Remove the Display ASSY fixed with two tabs. <2>
- (3) Remove the shielding case fixed with four tabs. <3>
- (4) Take the LCD out of the case.



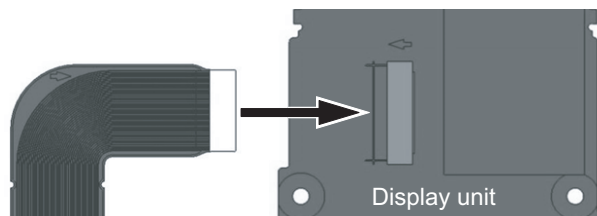
### 3.2.12 Forming the FPC (for connection of DISPLAY UNIT and TX-RX UNIT)

Bend the FPC twice along the mark. <1> <2>



### 3.2.13 Insert direction for the FPC (for connection of DISPLAY UNIT and TX-RX UNIT)

Insert the FPC with the electrode surface downward.



### 3.3 Precautions for Reassembly

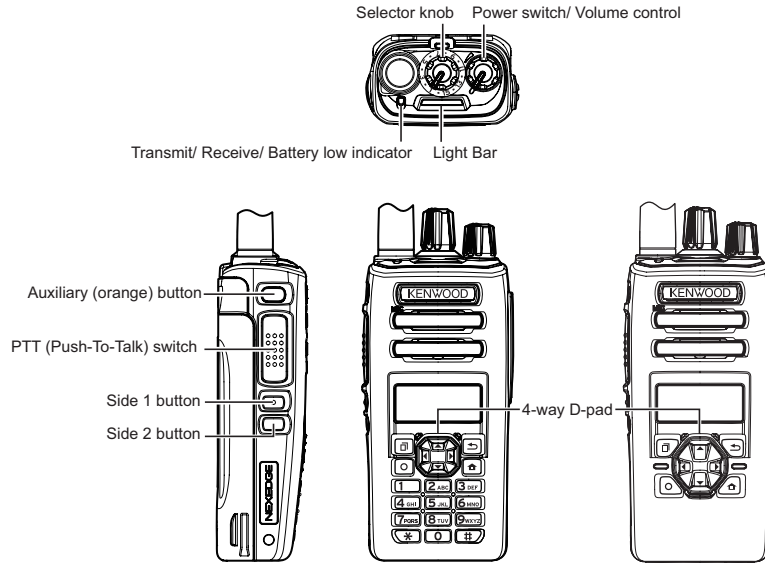
#### 3.3.1 Assembly Information (Sheet/Cushion)

When “Main Parts” is changed (ordered), “Assembled Sheet / Cushion” should also be changed (ordered) together.  
The Sticker and Sheet etc are non-reusable parts. It requires the new one to get the radio's performance after repairs.

| Main Parts                                                                                      |             | Assembled Sheet/ Cushion                                  |                            |
|-------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------------|----------------------------|
| Part Name                                                                                       | Part Number | Part Name                                                 | Part Number                |
| CHASSIS                                                                                         | A1A-0106-00 | FIBROUS SHEET (AIR LEAK)                                  | G1A-0063-00                |
|                                                                                                 |             | CUSHION (AIR LEAK)                                        | G1D-0204-00                |
|                                                                                                 |             | CUSHION (ANT)                                             | G13-2220-04                |
|                                                                                                 |             | SHEET (AIR LEAK)                                          | G11-4440-04                |
|                                                                                                 |             | SHEET (PTT)                                               | G1G-0075-00                |
|                                                                                                 |             | ADHESIVE SHEET (UNIV CN)                                  | J99-0715-08                |
| CABINET ASSY (BASIC)                                                                            | A0C-0174-00 | STICKER (NEXEDGE)                                         | B42-7417-04                |
|                                                                                                 |             | KENWOOD BADGE                                             | B4D-0044-00                |
|                                                                                                 |             | FIBROUS SHEET                                             | G1A-0053-00                |
| CABINET ASSY (STANDARD)                                                                         | A0C-0175-00 | STICKER (NEXEDGE)                                         | B42-7417-04                |
|                                                                                                 |             | KENWOOD BADGE                                             | B4D-0044-00                |
|                                                                                                 |             | FIBROUS SHEET                                             | G1A-0053-00                |
| CABINET ASSY (FULL)                                                                             | A0C-0176-00 | STICKER (NEXEDGE)                                         | B42-7417-04                |
|                                                                                                 |             | KENWOOD BADGE                                             | B4D-0044-00                |
|                                                                                                 |             | FIBROUS SHEET                                             | G1A-0053-00                |
| HOLDER                                                                                          | J1K-0493-00 | FIBROUS SHEET (MIC)                                       | G1A-0057-00                |
|                                                                                                 |             | CUSHION (SP)                                              | G1D-0203-00                |
|                                                                                                 |             | SHEET (KEY)                                               | G1G-0076-00                |
|                                                                                                 |             | SHEET (SP)                                                | G1G-0077-00                |
|                                                                                                 |             | SHEET (STD model only)                                    | G1G-0080-00                |
|                                                                                                 |             | ANTENNA ELEMENT (GPS)                                     | T9A-0058-00                |
|                                                                                                 |             | ANTENNA ELEMENT (BT)                                      | T9A-0059-00                |
| MOUNTING HARDWARE                                                                               | J2B-0350-20 | CUSHION (2 pieces)                                        | G1D-0205-00                |
|                                                                                                 |             | SHEET (LIGHT LEAKAGE)                                     | G1B-0300-00                |
| CAP                                                                                             | B0K-0076-00 | PACKING                                                   | G5D-0027-00                |
| ILLUMINATION GUIDE                                                                              | B1B-0105-00 | REFLECTION SHEET                                          | B1B-0110-00                |
| R.RECEPTACLE (UNIV CN)                                                                          | E58-0532-05 | FLEX P.BOARD                                              | J8C-0021-00                |
| When open the BLS<br>(The situation that need to repair or inspection the chip part in the BLS) |             | SHIELDING COVER                                           | F10-3227-05                |
|                                                                                                 |             | SHIELDING COVER                                           | F1B-0084-00                |
|                                                                                                 |             | SHIELDING COVER<br>with CONDUCT CUSHION<br>(NX-3300 only) | F1B-0086-00<br>G13-2102-34 |
|                                                                                                 |             | SHIELDING COVER                                           | F1B-0088-00                |

## SECTION 4 ADJUSTMENT

### 4.1 NX-3200(K, K2, K3) TYPE Controls



#### 4.1.1 Preparations for checking/tuning the transceiver

Before attempting to check/tune the transceiver, connect the unit to a suitable power supply.

Whenever the transmitter is turned on, the unit must be connected to a suitable dummy load (i.e. power meter).

The speaker output connector must be terminated with an 8ohm dummy load and connected to an AC voltmeter and an audio distortion meter or a SINAD measurement meter at all times during checking/tuning.

### 4.2 Panel Test Mode (K2 and K3 types only)

#### 4.2.1 Test mode operation features

This transceiver has a test mode. To enter test mode, press and hold the [↵] button while turning the transceiver power ON or press the [□] button and select the "Panel Test". Before the transceiver enters test mode, the frequency version information appears on the LCD momentarily. Test mode can be inhibited by programming. To exit test mode, turn the transceiver power OFF. The following functions are available in test mode.

- When the panel test mode is activated, the channel selected with the 4-way D-pad and the last used signaling number are displayed. When it is activated for the first time, the signaling number is 1.

#### 4.2.2 Button operation

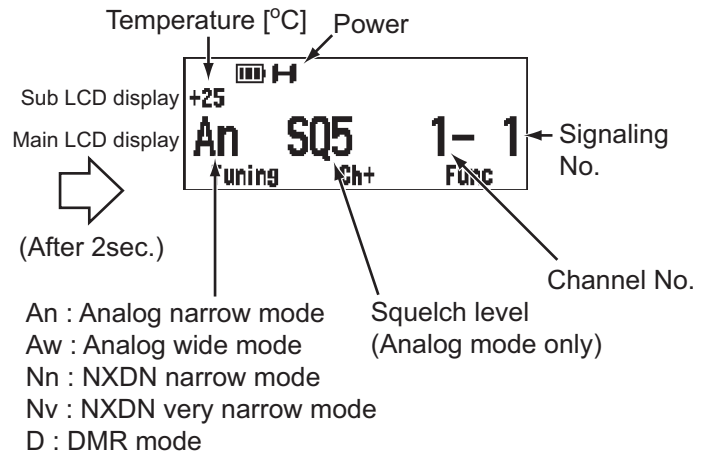
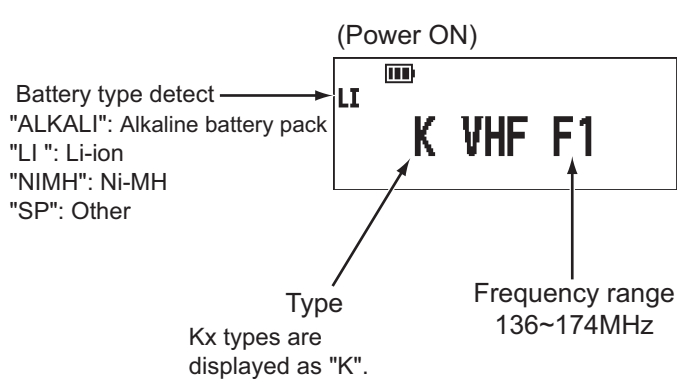
| Button                  | "Func" not appears on the sub LCD display                       |                                              |
|-------------------------|-----------------------------------------------------------------|----------------------------------------------|
|                         | Function                                                        | Display                                      |
| [Selector]              | -                                                               | -                                            |
| [▲]                     | Push: Test channel up<br>Hold: Test channel up continuously     | Channel No.                                  |
| [▼]                     | Push: Test channel down<br>Hold: Test channel down continuously | Channel No.                                  |
| [◀]                     | Push: Squelch level up *1<br>Hold: Squelch off                  | Squelch level<br>Squelch off:  icon appears  |
| [▶]                     | Wide/Narrow/<br>Very Narrow                                     | Wide: "w"<br>Narrow: "n"<br>Very Narrow: "v" |
| [Side1]                 | -                                                               | -                                            |
| [Side2]                 | -                                                               | -                                            |
| [□]                     | Shift to panel tuning mode                                      | -                                            |
| [↵]                     | Function on                                                     | "Func" appears on the sub LCD display        |
| [○]                     | -                                                               | -                                            |
| [⬆]                     | Push: Test signaling up<br>Hold: Test signaling up continuously | Signaling No.                                |
| [AUX (Orange)]          | MSK 1200bps and 2400bps *1                                      | 2400bps:  icon appears                       |
| [PTT]                   | Transmit                                                        | -                                            |
| [0] to [9] and [#], [*] | -                                                               | -                                            |

\*1: When the mode is selected as Analog, this function is enabled.

| Button     | "Func" appears on the sub LCD display |                                                                       |
|------------|---------------------------------------|-----------------------------------------------------------------------|
|            | Function                              | Display                                                               |
| [Selector] | -                                     | -                                                                     |
| [▲]        | Function off                          | -                                                                     |
| [▼]        | Analog/NXDN/DMR                       | Analog: "A"<br>NXDN: "N"<br>DMR: "D"                                  |
| [◀]        | Function off                          | -                                                                     |
| [▶]        | Button/LCD check                      | The position of the selector knob, etc., appear.                      |
| [Side1]    | Function off                          | -                                                                     |
| [Side2]    | Function off                          | -                                                                     |
| []         | High power/Medium power/Low power     | High:[] icon appears<br>Medium:[] icon appears<br>Low:[] icon appears |
| [↩]        | Function off                          | -                                                                     |

| Button                  | "Func" appears on the sub LCD display |                     |
|-------------------------|---------------------------------------|---------------------|
|                         | Function                              | Display             |
| [○]                     | Function off                          | -                   |
| [🏠]                     | Function off                          | -                   |
| [AUX (Orange)]          | Compander On/Off                      | On: [] icon appears |
| [PTT]                   | Transmit                              | -                   |
| [0] to [9] and [#], [*] | Function off                          | -                   |

#### • LCD display in panel test mode



#### 4.2.3 Frequency and Signaling

The transceiver has been adjusted for the frequencies shown in the following table. When required, readjust them following the adjustment procedure to obtain the frequencies you want in actual operation.

##### (1) Test frequency

| CH   | RX (MHz)  | TX (MHz)  |
|------|-----------|-----------|
| 1    | 155.05000 | 155.10000 |
| 2    | 136.05000 | 136.10000 |
| 3    | 173.95000 | 173.90000 |
| 4    | 155.00000 | 155.00000 |
| 5    | 155.20000 | 155.20000 |
| 6    | 155.40000 | 155.40000 |
| 7~16 | -         | -         |

##### (2) Signaling

##### ■Analog Type Signaling

| No. | RX                                      | TX                                      |
|-----|-----------------------------------------|-----------------------------------------|
| 1   | None                                    | None                                    |
| 2   | None                                    | Square Wave                             |
| 3   | LTR Data                                | LTR Data                                |
| 4   | QT:67.0Hz                               | QT:67.0Hz                               |
| 5   | QT:151.4Hz                              | QT:151.4Hz                              |
| 6   | QT:210.7Hz                              | QT:210.7Hz                              |
| 7   | QT:254.1Hz                              | QT:254.1Hz                              |
| 8   | DQT:D023N                               | DQT:D023N                               |
| 9   | DQT:D754I                               | DQT:D754I                               |
| 10  | DTMF Decode (CODE: 159D)                | DTMF Encode (CODE: 159D)                |
| 11  | None                                    | DTMF Encode (CODE: 9)                   |
| 12  | 2-tone Decode (A: 304.7Hz, B: 3106.0Hz) | 2-tone Encode (A: 304.7Hz, B: 3106.0Hz) |

| No. | RX                           | TX                           |
|-----|------------------------------|------------------------------|
| 13  | Single Tone Decode (979.9Hz) | Single Tone Encode (979.9Hz) |
| 14  | None                         | Single Tone Encode (1000Hz)  |
| 15  | None                         | MSK PN9                      |
| 16  | MSK Decode                   | MSK Encode                   |

#### ■NXDN Type Signaling

| No.  | RX                    | TX                        |
|------|-----------------------|---------------------------|
| 1    | RAN1                  | RAN1                      |
| 2    | None                  | PN9                       |
| 3    | RAN1                  | Maximum Deviation Pattern |
| 7 *2 | FSW + PN9             | FSW + PN9                 |
| 9 *2 | Tone Pattern (1031Hz) | Tone Pattern (1031Hz)     |

RAN: Radio Access Number  
PN9: Pseudo-Random Pattern  
\*2: PC test mode only

#### ■DMR Type Signaling

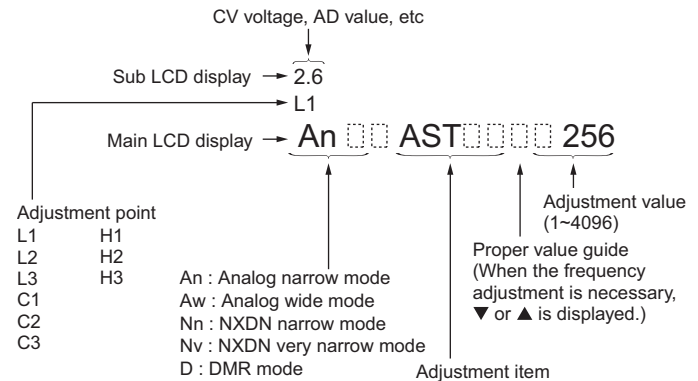
| No. | RX                                     | TX                                     |
|-----|----------------------------------------|----------------------------------------|
| 1   | CC 00 Burst                            | CC 00 Burst                            |
| 2   | PN9                                    | PN9                                    |
| 3   | CC 00 Burst                            | Maximum Deviation Pattern              |
| 4   | CC 00 Burst                            | 1/3 Deviation Pattern                  |
| 5   | CC 00 Burst                            | 0 Continuous Pattern                   |
| 6   | SYNC (Each Slot) + PN9 Burst Pattern   | SYNC (Each Slot) + PN9 Burst Pattern   |
| 7   | SYNC (Super Frame) + PN9 Burst Pattern | SYNC (Super Frame) + PN9 Burst Pattern |
| 8   | CC 00 Burst                            | 0 Burst Pattern                        |
| 9   | Tone Pattern                           | Tone Test Burst Pattern                |
| 10  | Silence Pattern                        | Silence Burst Pattern                  |
| 11  | Audio Test Pattern                     | Audio Test Burst Pattern               |
| 12  | Vocoder Loop                           | None                                   |

### 4.3 Panel Tuning Mode (K2 and K3 types only)

#### 4.3.1 Transceiver tuning (To enter tuning mode)

To enter tuning mode, press the [  ] button while the transceiver is in test mode. Use the [  ] button to write tuning data through tuning modes, and the [  ]/[  ] button to adjust tuning requirements (1 to 4096 appears on the LCD). Use the [  ] button to select the adjustment item through tuning modes. Use the [  ] button to adjust 5 or 9 reference level adjustments, and use the [  ] button to switch between Wide/ Narrow.

- LCD display in panel tuning mode



#### 4.3.2 Button operation

| Button                                                                                  | Function                                    |                                                                                                         |
|-----------------------------------------------------------------------------------------|---------------------------------------------|---------------------------------------------------------------------------------------------------------|
|                                                                                         | Push                                        | Hold (1 second)                                                                                         |
| [Selector]                                                                              | -                                           |                                                                                                         |
| [  ] | Adjustment value up                         | Continuation up                                                                                         |
| [  ] | Adjustment value down                       | Continuation down                                                                                       |
| [  ] | Auto adjustment start                       | Output tone pattern change of balance adjustment (A change is possible only during balance adjustment.) |
| [  ] | Wide/Narrow/NXDN/DMR                        | -                                                                                                       |
| [ Side1 ]                                                                               | -                                           |                                                                                                         |
| [ Side2 ]                                                                               | -                                           |                                                                                                         |
| [  ] | Shift to panel test mode                    | -                                                                                                       |
| [  ] | To enter 5 or 9 reference level adjustments | -                                                                                                       |
| [  ] | Writes the adjustment value                 | -                                                                                                       |
| [  ] | Go to next adjustment item                  | Back to last adjustment item (At the time of 5 or 9 point adjustment: Adjustment point change)          |
| [AUX (Orange)]                                                                          | -                                           | -                                                                                                       |
| [PTT]                                                                                   | Transmit                                    |                                                                                                         |
| [0] to [9] and [#],[*]                                                                  | -                                           |                                                                                                         |

#### 4.3.3 5 or 9 reference level adjustments frequency

High Transmit Power, Medium Transmit Power, Low Transmit Power, Balance, Maximum Deviation, NXDN High Deviation, DMR High Deviation, QT Deviation, DQT Deviation, LTR Deviation, DTMF Deviation, Single Tone Deviation, MSK Deviation, CW ID Deviation, IQ Phase, RSSI Reference 1 DSP (Receive), RSSI Reference 2 RF IC (Receive), RSSI Reference 3 DSP (Standby), RSSI Reference 4 RF IC (Standby), Squelch Open, Squelch Tight, Low RSSI, High RSSI

| Tuning point | Display | RX (MHz)  | TX (MHz)  |
|--------------|---------|-----------|-----------|
| 1            | L1      | 136.05000 | 136.10000 |
| 2            | L3      | 145.55000 | 145.60000 |
| 3            | C2      | 155.05000 | 155.10000 |
| 4            | H1      | 164.55000 | 164.60000 |
| 5            | H3      | 173.95000 | 173.90000 |

#### VCO Assist

| Tuning point | Display | RX (MHz)  | TX (MHz)  |
|--------------|---------|-----------|-----------|
| 1            | L1      | 136.05000 | 136.10000 |
| 2            | L2      | 140.80000 | 140.85000 |
| 3            | L3      | 145.55000 | 145.60000 |
| 4            | C1      | 150.30000 | 150.35000 |
| 5            | C2      | 155.05000 | 155.10000 |
| 6            | C3      | 159.80000 | 159.85000 |
| 7            | H1      | 164.55000 | 164.60000 |
| 8            | H2      | 169.30000 | 169.35000 |
| 9            | H3      | 173.95000 | 173.90000 |

#### 4.3.4 Adjustment item supplement

| Adjustment Item     | Description                                                                                                                                                                                                                                    |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LCD Contrast        | The contrast of LCD display can be changed.                                                                                                                                                                                                    |
| VCO Assist          | The lock voltage of VCO is adjusted. This item must be adjusted before receiver and transmitter adjustment items.                                                                                                                              |
| Frequency           | Frequency is adjusted under receiving condition with SSG. The SSG needs 0.001ppm accuracy so please use a standard oscillator if necessary. This item can be adjusted only in PC Test Mode so that the adjustment value is not changed easily. |
| RTC Correction      | Real Time Clock is adjusted. This item uses the internal clock. (Any measurement equipment is not required.)                                                                                                                                   |
| High Transmit Power | High Transmit Power is adjusted.                                                                                                                                                                                                               |
| Mid Transmit Power  | Medium Transmit Power is adjusted.                                                                                                                                                                                                             |
| Low Transmit Power  | Low Transmit Power is adjusted.                                                                                                                                                                                                                |

| Adjustment Item                         | Description                                                                                                                                                                                                                         |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ramp Offset                             | Adjust this item to the optimal Ramp voltage.                                                                                                                                                                                       |
| Balance                                 | The transmit modulation frequency response is adjusted. This item is adjusted so that the deviation of 2kHz becomes the same deviation of 20Hz. This item must be adjusted before all adjustment items for deviations are adjusted. |
| Maximum Deviation (Analog Wide/ Narrow) | Maximum Deviation of Analog (Wide / Narrow) is adjusted. This item must be adjusted before all adjustment items for tone deviations are adjusted.                                                                                   |
| High Deviation                          | NXDN/DMR high deviation is adjusted.                                                                                                                                                                                                |
| QT Deviation                            | QT deviation is adjusted.                                                                                                                                                                                                           |
| DQT Deviation                           | DQT deviation is adjusted.                                                                                                                                                                                                          |
| LTR Deviation                           | LTR deviation is adjusted.                                                                                                                                                                                                          |
| DTMF Deviation                          | DTMF deviation is adjusted.                                                                                                                                                                                                         |
| Single Tone Deviation                   | The deviation of Single Tone used in "2-tone" and "5-tone" is adjusted.                                                                                                                                                             |
| MSK Deviation                           | MSK deviation is adjusted.                                                                                                                                                                                                          |
| CW ID Deviation                         | CWID tone deviation is adjusted. CWID is used to inform the others who is transmitting on a 6.25kHz spacing channel. (In FCC rule, Analog mode or CWID is required for each channel-spacing.)                                       |
| Battery Warning Level                   | Battery Warning Level (LED blinking level) is adjusted. Battery Warning Level minus 0.4V is the transmission inhibited level.                                                                                                       |
| IQ Phase                                | Correction of phase difference shift between I and Q.                                                                                                                                                                               |
| RSSI Reference                          | The minimum RSSI level for scan stop is adjusted.                                                                                                                                                                                   |
| Squelch Open                            | The squelch level at level "1" is adjusted.                                                                                                                                                                                         |
| Squelch Tight                           | The squelch level at level "9" is adjusted.                                                                                                                                                                                         |
| Low RSSI                                | RSSI display level " $\nabla$ " is adjusted.                                                                                                                                                                                        |
| High RSSI                               | Both "Low RSSI" and "High RSSI" must be adjusted. (The curve data of RSSI level is applied.)                                                                                                                                        |

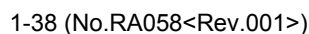
#### 4.3.5 Adjustment item and Display

| Order | Adjustment item                | Main LCD display | Sub LCD display                       | AW<br>(Analog Wide)                | AN<br>(Analog Narrow) | Nn<br>(NXDN Narrow) | Nv<br>(NXDN Very Narrow) | D<br>(DMR) | Adjust item Number     |
|-------|--------------------------------|------------------|---------------------------------------|------------------------------------|-----------------------|---------------------|--------------------------|------------|------------------------|
|       |                                |                  |                                       | Adjustment range                   |                       |                     |                          |            |                        |
| 1     | LCD Contrast                   | CNTR             | -                                     | 1 point ADJ                        |                       |                     |                          |            | Common Section 2       |
|       |                                |                  |                                       | 1~256                              |                       |                     |                          |            |                        |
| 2     | VCO Assist                     | AST              | (CV voltage)                          | -                                  | 9                     | -                   | -                        | -          | Common Section 3       |
|       |                                |                  |                                       | 1~4096                             |                       |                     |                          |            |                        |
| 3     | RTC Correction                 | RTC              | -                                     | -                                  |                       |                     |                          |            | Common Section 5       |
|       |                                |                  |                                       | -2.00 ~ -0.01 ,0.00 ,+0.01 ~ +2.00 |                       |                     |                          |            |                        |
| 4     | High Transmit Power            | H_PWR            | -                                     | -                                  | 5                     | -                   | -                        | -          | Transmitter Section 1  |
|       |                                |                  |                                       | 1~1024                             |                       |                     |                          |            |                        |
| 5     | Medium Transmit Power          | M_PWR            | -                                     | -                                  | 5                     | -                   | -                        | -          | Transmitter Section 2  |
|       |                                |                  |                                       | 1~1024                             |                       |                     |                          |            |                        |
| 6     | Low Transmit Power             | L_PWR            | -                                     | -                                  | 5                     | -                   | -                        | -          | Transmitter Section 3  |
|       |                                |                  |                                       | 1~1024                             |                       |                     |                          |            |                        |
| 7     | Ramp Offset                    | RAMP             | (ADC measurement value)               | 1 point ADJ                        |                       |                     |                          |            | Transmitter Section 4  |
|       |                                |                  |                                       | 1~1024                             |                       |                     |                          |            |                        |
| 8     | Balance                        | BAL              | (Encode frequency)                    | -                                  | 5                     | -                   | -                        | -          | Transmitter Section 5  |
|       |                                |                  |                                       | 1~1024                             |                       |                     |                          |            |                        |
| 9     | Maximum Deviation              | ADEV             | -                                     | 5                                  | 5                     | -                   | -                        | -          | Transmitter Section 6  |
|       |                                |                  |                                       | 1~1024                             |                       |                     |                          |            |                        |
| 10    | NXDN High Deviation            | NDEV             | -                                     | -                                  | -                     | 5                   | 5                        | -          | Transmitter Section 7  |
|       |                                |                  |                                       | 1~1024                             |                       |                     |                          |            |                        |
| 11    | DMR High Deviation             | DDEV             | -                                     | -                                  | -                     | -                   | -                        | 5          | Transmitter Section 8  |
|       |                                |                  |                                       | 1~1024                             |                       |                     |                          |            |                        |
| 12    | QT Deviation                   | QT               | -                                     | 5                                  | 5                     | -                   | -                        | -          | Transmitter Section 9  |
|       |                                |                  |                                       | 1~1024                             |                       |                     |                          |            |                        |
| 13    | DQT Deviation                  | DQT              | -                                     | 5                                  | 5                     | -                   | -                        | -          | Transmitter Section 10 |
|       |                                |                  |                                       | 1~1024                             |                       |                     |                          |            |                        |
| 14    | LTR Deviation                  | LTR              | -                                     | 5                                  | 5                     | -                   | -                        | -          | Transmitter Section 11 |
|       |                                |                  |                                       | 1~1024                             |                       |                     |                          |            |                        |
| 15    | DTMF Deviation                 | DTMF             | -                                     | 5                                  | 5                     | -                   | -                        | -          | Transmitter Section 12 |
|       |                                |                  |                                       | 1~1024                             |                       |                     |                          |            |                        |
| 16    | Single Tone Deviation          | TONE             | -                                     | 5                                  | 5                     | -                   | -                        | -          | Transmitter Section 13 |
|       |                                |                  |                                       | 1~1024                             |                       |                     |                          |            |                        |
| 17    | MSK Deviation                  | MSK              | -                                     | 5                                  | 5                     | -                   | -                        | -          | Transmitter Section 14 |
|       |                                |                  |                                       | 1~1024                             |                       |                     |                          |            |                        |
| 18    | CW ID Deviation                | CWID             | -                                     | -                                  | 5                     | -                   | -                        | -          | Transmitter Section 15 |
|       |                                |                  |                                       | 1~1024                             |                       |                     |                          |            |                        |
| 19    | Battery Warning Level          | BATT             | (BATT measurement value)              | 1 point ADJ                        |                       |                     |                          |            | Transmitter Section 16 |
|       |                                |                  |                                       | 1~256                              |                       |                     |                          |            |                        |
| 20    | IQ Phase                       | IQ               | (RSSI DSP(Receive) measurement value) | -                                  | 5                     | -                   | -                        | -          | Receive Section 2      |
|       |                                |                  |                                       | 1~63                               |                       |                     |                          |            |                        |
| 21    | RSSI Reference 1 DSP (Receive) | RSSI1            | (RSSI DSP(Receive) measurement value) | -                                  | 5                     | -                   | -                        | -          | Receive Section 3      |
|       |                                |                  |                                       | 1~256                              |                       |                     |                          |            |                        |

| Order | Adjustment item                  | Main LCD display | Sub LCD display                          | AW<br>(Analog Wide) | AN<br>(Analog Narrow) | Nn<br>(NXDN Narrow) | Nv<br>(NXDN Very Narrow) | D<br>(DMR) | Adjust item Number |
|-------|----------------------------------|------------------|------------------------------------------|---------------------|-----------------------|---------------------|--------------------------|------------|--------------------|
|       |                                  |                  |                                          | Adjustment range    |                       |                     |                          |            |                    |
| 22    | RSSI Reference 2 RF IC(Receive)  | RSSI2            | (RSSI RF IC(Receive) measurement value)  | -<br>1~256          | 5                     | -                   | -                        | -          | Receive Section 3  |
| 23    | RSSI Reference 3 DSP (Standby)   | RSSI3            | (RSSI DSP (Standby) measurement value)   | -<br>1~256          | 5                     | -                   | -                        | -          | Receive Section 3  |
| 24    | RSSI Reference 4 RF IC (Standby) | RSSI4            | (RSSI RF IC (Standby) measurement value) | -<br>1~256          | 5                     | -                   | -                        | -          | Receive Section 3  |
| 25    | Squelch Open                     | SQL              | (ASQDET measurement value)               | 5<br>1~256          | 5                     | 5                   | 5                        | 5          | Receive Section 4  |
| 26    | Squelch Tight                    | SQLT             | (ASQDET measurement value)               | 5<br>1~256          | 5                     | -                   | -                        | -          | Receive Section 5  |
| 27    | Low RSSI                         | LRSSI            | (RSSI DSP (Receive) measurement value)   | -<br>1~256          | 5                     | -                   | -                        | -          | Receive Section 6  |
| 28    | High RSSI                        | HRSSI            | (RSSI DSP (Receive) measurement value)   | -<br>1~256          | 5                     | -                   | -                        | -          | Receive Section 7  |

**Note:**

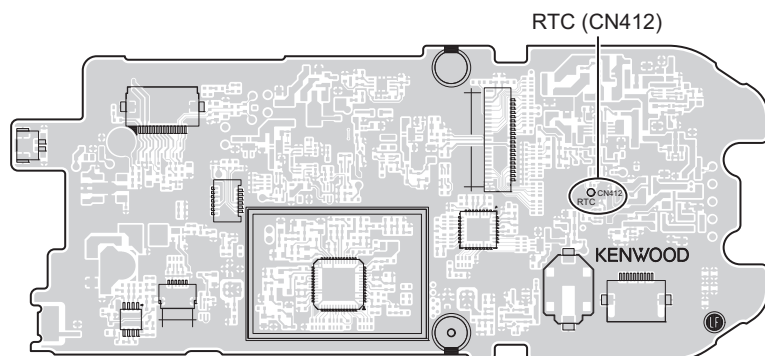
- \* In this Panel tuning mode flow chart, the Adjustment item name is modified.



#### 4.4 Adjustment points

TX-RX UNIT (XC1-179)

Component Side



#### 4.5 Test Equipment Required for Alignment

| Test Equipment                     | Major Specifications                                                                                                                                     |                                                   |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| 1. Standard Signal Generator (SSG) | Frequency Range                                                                                                                                          | 100 to 900MHz                                     |
|                                    | Modulation                                                                                                                                               | Frequency modulation and external modulation      |
|                                    | Output                                                                                                                                                   | -127dBm/0.1uV to greater than -20dBm/22.4mV       |
|                                    | When performing the Frequency adjustment, the following accuracy is necessary.                                                                           |                                                   |
|                                    | <ul style="list-style-type: none"> <li>• 0.003ppm</li> </ul>                                                                                             |                                                   |
|                                    | Use a standard oscillator for adjustments, if necessary.                                                                                                 |                                                   |
| 2. Power Meter                     | Input Impedance                                                                                                                                          | 50ohm                                             |
|                                    | Operation Frequency                                                                                                                                      | 100 to 900MHz                                     |
|                                    | Measurement Capability                                                                                                                                   | Vicinity of 10W                                   |
| 3. Deviation Meter                 | Frequency Range                                                                                                                                          | 100 to 900MHz                                     |
| 4. Digital Volt Meter (DVM)        | Measuring Range                                                                                                                                          | 10mV to 10V DC                                    |
|                                    | Input Impedance                                                                                                                                          | High input impedance for minimum circuit loading  |
| 5. Oscilloscope                    |                                                                                                                                                          | DC through 30MHz                                  |
| 6. Frequency Counter               | Frequency Range                                                                                                                                          | 10Hz to 1000MHz                                   |
|                                    | Frequency Stability                                                                                                                                      | 0.2ppm or less                                    |
|                                    | To measure the oscillating frequency of the internal clock 32766.00Hz~32770.00Hz for RTC Correction Resolution 0.01Hz is better for accuracy adjustment. |                                                   |
| 7. Ammeter                         |                                                                                                                                                          | 5A                                                |
| 8. AF Volt Meter (AF VM)           | Frequency Range                                                                                                                                          | 50Hz to 10kHz                                     |
|                                    | Voltage Range                                                                                                                                            | 1mV to 10V                                        |
| 9. Audio Generator (AG)            | Frequency Range                                                                                                                                          | 50Hz to 5kHz or more                              |
|                                    | Output                                                                                                                                                   | 0 to 1V                                           |
| 10. Distortion Meter               | Capability                                                                                                                                               | 3% or less at 1kHz                                |
|                                    | Input Level                                                                                                                                              | 50mV to 10Vrms                                    |
| 11. Spectrum Analyzer              | Measuring Range                                                                                                                                          | DC to 1GHz or more                                |
| 12. 8ohm Dummy Load                |                                                                                                                                                          | Approx. 8ohm, 3W                                  |
| 13. Regulated Power Supply         |                                                                                                                                                          | 5V to 10V, approx. 3A, Useful if ammeter equipped |

\* The test equipment which is not used for adjustment is contained in this table.

### ■Antenna connector adapter

The antenna connector of this transceiver uses an SMA terminal.

Use an antenna connector adapter [SMA(f) - BNC(f) or SMA(f) - N(f)] for adjustment. (The adapter is not provided as an option, so buy a commercially-available one.)

### ■Nut wrench

In order to turn the volume nut and the channel selector nut, use a recommendation tool.

Part No.: W05-1123-00

### ■Battery Jig (W05-0909-00)

Connect the power cable properly between the battery jig installed in the transceiver and the power supply, and be sure output voltage and the power supply polarity prior to switching the power supply ON, otherwise over voltage and reverse connection may damage the transceiver, or the power supply or both.

When using the battery jig in user mode, the transceiver assumes that a lithium-ion battery pack is attached to the transceiver. In adjustment mode, battery type detection is not performed.

### ■Universal connector

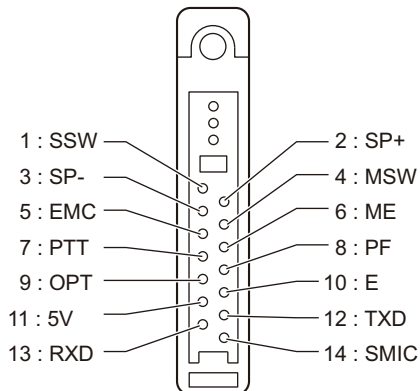
Use the interface cable (KPG-36U/36X) for PC tuning or the lead wire with plug (E30-3287-28) and screw (N08-0535-08) for panel tuning. Connect the plug to the universal connector of the transceiver and tighten the screw.

The lead wire with plug (E30-3287-28) and screw (N08-0535-08) terminals are as follows. Numbers are universal connector terminal numbers.

#### Caution

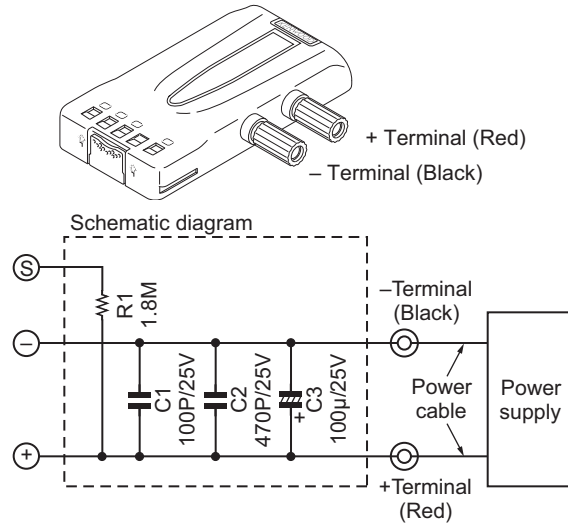
- (1) When connecting the plug to the universal connector of the transceiver, a short circuit may occur. To prevent this, be sure to turn the transceiver POWER switch off.
- (2) Since the RX AF output is a BTL output, there is a DC component. Isolate this with a capacitor or transformer as shown in the figure.
- (3) Do not connect an instrument between red or black and GND.

#### • \*Universal connector

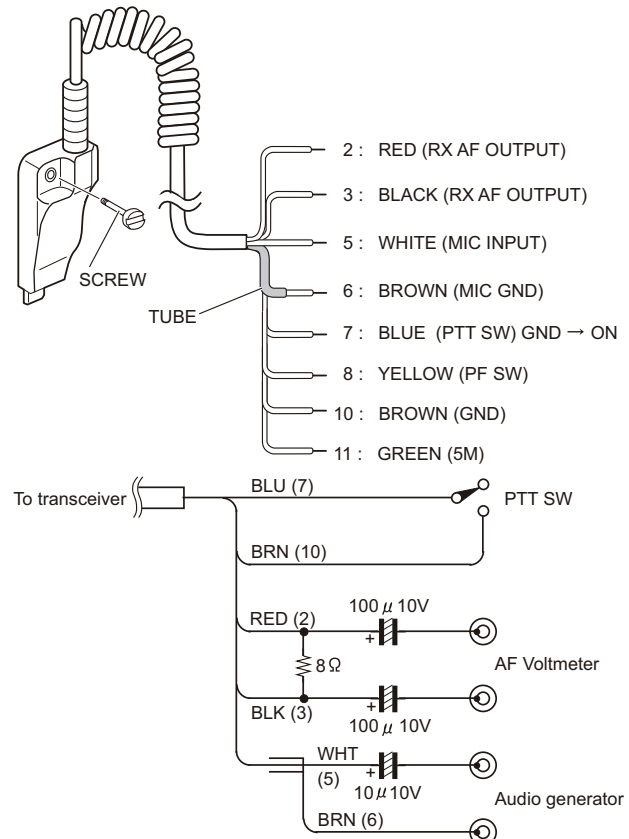


#### Note:

When using the battery jig, you must measure the voltage at the terminals of the battery jig. Otherwise, a slight voltage drop may occur within the power cable, between the power supply and the battery jig, especially while the transceiver transmits.

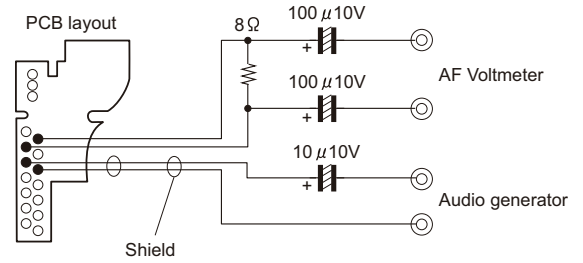
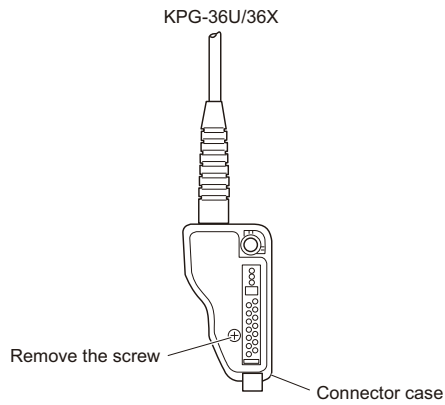


#### • \*Panel tuning



**Note:** Pin 1 (SSW) and Pin 4 (MSW) are connected to Pin 10 (GND) to active External SP and External MIC.

- \*PC tuning  
Connect the wires to the PCB in the connector case of interface cable.  
For output the wires out of the connector case, need to process the connector case.



#### 4.6 Radio check Section

| Item                                           | Condition                |                                                                                                              | Measurement            |       |          | Adjustment |       |                                                           | Specifications /Remarks         |
|------------------------------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------|------------------------|-------|----------|------------|-------|-----------------------------------------------------------|---------------------------------|
|                                                | Panel test mode          | PC test mode                                                                                                 | Test-equipment         | Unit  | Terminal | Unit       | Parts | Method                                                    |                                 |
| 1. Frequency check                             | 1)CH-Sig: 1-1<br>PTT: ON | 1)Test Channel<br>Channel: 1<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button. | f. counter             | Panel | ANT      |            |       | Check an internal temperature of radio from 20°C to 33°C. | ±0.5ppm<br>±77.5Hz@<br>155.1MHz |
| 2. High power check<br>(Battery voltage: 7.5V) | 1)CH-Sig: 1-1<br>PTT: ON | 1)Test Channel<br>Channel: 1<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button. | Power meter<br>Ammeter | Panel | ANT      |            |       | Check                                                     | 4.0~6.0W<br>2.0A or less        |
|                                                | 2)CH-Sig: 2-1<br>PTT: ON | 2)Test Channel<br>Channel: 2<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button. |                        |       |          |            |       |                                                           |                                 |
|                                                | 3)CH-Sig: 3-1<br>PTT: ON | 3)Test Channel<br>Channel: 3<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button. |                        |       |          |            |       |                                                           |                                 |

| Item                                             | Condition                                                                                                                                 |                                                                                                                                                                                             | Measurement                                                            |       |                            | Adjustment |       |                                        | Specifications /Remarks  |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|-------|----------------------------|------------|-------|----------------------------------------|--------------------------|
|                                                  | Panel test mode                                                                                                                           | PC test mode                                                                                                                                                                                | Test-equipment                                                         | Unit  | Terminal                   | Unit       | Parts | Method                                 |                          |
| 3.<br>Low power check<br>(Battery voltage: 7.5V) | 1)CH-Sig: 1-1<br>PTT: ON                                                                                                                  | 1)Test Channel<br>Channel: 1<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button.                                                                                | Power meter<br>Ammeter                                                 | Panel | ANT                        |            |       | Check                                  | 0.7~1.4W<br>1.0A or less |
|                                                  | 2)CH-Sig: 2-1<br>PTT: ON                                                                                                                  | 2)Test Channel<br>Channel: 2<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button.                                                                                |                                                                        |       |                            |            |       |                                        |                          |
|                                                  | 3)CH-Sig: 3-1<br>PTT: ON                                                                                                                  | 3)Test Channel<br>Channel: 3<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button.                                                                                |                                                                        |       |                            |            |       |                                        |                          |
| 4.<br>MIC sensitivity check                      | 1)CH-Sig: 1-1<br>AG: 1kHz<br>PTT: ON                                                                                                      | 1)Test Channel<br>Channel: 1<br>Test Signaling Type: Analog<br>Signaling: 1<br>AG: 1kHz<br>PTT: Press [Transmit] button.                                                                    | Deviation meter<br>Oscilloscope<br>AG<br>AF VM                         | Panel | ANT<br>Universal connector |            |       | Adjust AG input to get a standard MOD. | 12.5mV<br>±5.8mV         |
| 5.<br>Sensitivity check                          | 1)CH-Sig: 1-1<br>SSG output<br>Wide:<br>-117dBm<br>(0.32μV)<br>(MOD: 1kHz/±3kHz)<br>Narrow:<br>-117dBm<br>(0.32μV)<br>(MOD: 1kHz/±1.5kHz) | 1)Test Channel<br>Channel: 1<br>Test Signaling Type: Analog<br>Signaling: 1<br>SSG output<br>Wide: -117dBm (0.32μV)<br>(MOD: 1kHz/±3kHz)<br>Narrow: -117dBm (0.32μV)<br>(MOD: 1kHz/±1.5kHz) | SSG<br>AF VM<br>Oscilloscope<br>Distortion meter<br>8ohm<br>Dummy load | Panel | ANT<br>Universal connector |            |       | Check                                  | 12dB SINAD or more       |

#### 4.7 Common Section

| Item           | Condition                                                                                                                                                                         |                                                                                                          | Measurement    |      |          | Adjustment |                                                                  |                                                             | Specifications /Remarks |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|----------------|------|----------|------------|------------------------------------------------------------------|-------------------------------------------------------------|-------------------------|
|                | Panel tuning mode                                                                                                                                                                 | PC test mode                                                                                             | Test-equipment | Unit | Terminal | Unit       | Parts                                                            | Method                                                      |                         |
| 1.<br>Setting  | 1) DC voltage:7.5V<br>2) SSG standard modulation<br>[Wide] MOD:1kHz,DEV:3kHz<br>[Narrow] MOD:1kHz,DEV:1.5kHz                                                                      |                                                                                                          |                |      |          |            |                                                                  |                                                             |                         |
| 2.LCD Contrast | 1) Adj item<br>[CNTR]<br>Adjust:[****]<br><br>Press [  ] button to store the adjustment value. | 1) Adj item<br>[LCD Contrast]<br>Data: [****]<br><br>Press [Apply] button to store the adjustment value. |                |      |          | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the value as followings.<br><br>126 (Reference value) |                         |

| Item             | Condition                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Measurement    |       |          | Adjustment |                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Specifications /Remarks                                                                                                                                                                                                                                                                                                                  |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|----------|------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | Panel tuning mode                                                                                                                                                                                                                                                                           | PC test mode                                                                                                                                                                                                                                                                                                                                                                                                                                         | Test-equipment | Unit  | Terminal | Unit       | Parts                                                            | Method                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                          |
| 3.<br>VCO Assist | 1) Adj item: [AST]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L2]→<br>[L3]→<br>[C1]→<br>[C2]→<br>[C3]→<br>[H1]→<br>[H2]→<br>[H3]→<br><br>Adjust:[****]<br>Press [  ] button to store the adjustment value. | 1) Adj item: [VCO Assist]<br>2) Adj item: [Low1],[Low2],[Low3],<br>[Center1],[Center2],[Center3],<br>[High1],[High2],[High3]<br><br>Press [Apply] button to store the adjustment value.                                                                                                                                                                                                                                                              |                |       |          | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | <b>[PC test mode]</b><br><b>[Automatic Adjustment]</b><br>1) Press [Autotune] button.<br>2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished.<br><b>[Manual Adjustment]</b><br>[V] indicator on the PC window shows VCO lock voltage. Change the adjustment value to get VCO lock voltage within the limit of the specified voltage.<br><b>Note:</b><br>Confirm the VCO lock voltage approximately 3 seconds after the adjustment value is changed. | 2.5V±0.1V<br><b>[Automatic Adjustment]</b><br>After the automatic adjustment is performed, verify that the VCO lock voltage is within the voltage range which is specified by the manual adjustment.<br><b>[Manual Adjustment]</b><br>Press [Apply] button to store the adjustment value after all adjustment points have been adjusted. |
| 4.<br>Frequency  | *The Frequency adjustment can be performed only in PC test mode.                                                                                                                                                                                                                            | 1) Adj item: [Frequency]<br>SSG output: -20dBm (22.4mV) (CW (without modulation))<br><b>Caution:</b><br>Perform the frequency adjustment under the following conditions.<br>• Temperature range of +20°C to +33°C (+68.0°F to +91.4°F). (The temperature is displayed on the Frequency adjustment screen of the KPG-D3/ D3N and the LCD of the transceiver.)<br>• Use an accuracy of 0.003ppm for the SSG. (Use a standard oscillator if necessary.) | SSG            | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | <b>[PC test mode]</b><br>Press [Start] button of "Auto Tuning". Press [Apply] button to store the adjustment value after the automatic adjustment has finished.                                                                                                                                                                                                                                                                                                                                   | <b>[PC test mode]</b><br>"IF20" value = Within 0±10 digits. The value of "IF20" will become around "0" after the adjustment has finished.<br><br><b>Remark:</b><br>"Frequency" is adjusted under receiving condition with SSG.                                                                                                           |

| Item              | Condition                                                                                                                                                                |                                                                                                      | Measurement       |       |                    | Adjustment |       |        | Specifications /Remarks                                                                 |
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|                   | Panel tuning mode                                                                                                                                                        | PC test mode                                                                                         | Test-equipment    | Unit  | Terminal           | Unit       | Parts | Method |                                                                                         |
| 5. RTC Correction | 1) Adj item: [RTC]<br>Adjust:[****]<br>Press [  ] button to store the adjustment value. | 1) Adj item: [RTC Correction]<br>Data: [****]<br>Press [Apply] button to store the adjustment value. | Frequency Counter | TX-RX | TEST POINT (CN412) |            |       |        | <b>Remark:</b><br>The adjustment value should input the display of a Frequency Counter. |

#### 4.8 Transmitter Section

| Item                                              | Condition                                                                                                                                                                                                                                         |                                                                                                                                                                                                 | Measurement            |       |          | Adjustment |                                                                                                                                                                                                                                          |        | Specifications /Remarks |
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|                                                   | Panel tuning mode                                                                                                                                                                                                                                 | PC test mode                                                                                                                                                                                    | Test-equipment         | Unit  | Terminal | Unit       | Parts                                                                                                                                                                                                                                    | Method |                         |
| 1. High transmit power (Battery voltage : 7.5V)   | 1) Adj item: [H_PWR]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>PTT : ON<br>Press [  ] button to store the adjustment value.   | 1) Adj item: [High Transmit Power]<br>2) Adj item: [Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.   | Power meter<br>Ammeter | Panel | ANT      | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-]     | 5.0W   | ±0.1W<br>2.0A or less   |
| 2. Medium transmit power (Battery voltage : 7.5V) | 1) Adj item: [M_PWR]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>PTT : ON<br>Press [  ] button to store the adjustment value. | 1) Adj item: [Medium Transmit Power]<br>2) Adj item: [Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Power meter<br>Ammeter | Panel | ANT      | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-] | 4.0W   | ±0.1W<br>2.0A or less   |
| 3. Low transmit power (Battery voltage : 7.5V)    | 1) Adj item: [L_PWR]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>PTT : ON<br>Press [  ] button to store the adjustment value. | 1) Adj item: [Low Transmit Power]<br>2) Adj item: [Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.    | Power meter<br>Ammeter | Panel | ANT      | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-] | 1.0W   | ±0.1W<br>1.0A or less   |

| Item              | Condition                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                     | Measurement                     |       |          | Adjustment |                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Specifications /Remarks                                      |
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|                   | Panel tuning mode                                                                                                                                                                                                                                                                                                     | PC test mode                                                                                                                                                                                                                        | Test-equipment                  | Unit  | Terminal | Unit       | Parts                                                                                                                                                                                                                                        | Method                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                              |
| 4.<br>Ramp Offset | 1)Adj item:<br>[RAMP]<br>Adjust:[****]<br>PTT : ON<br>Press [  ] button to store the adjustment value.                                                                                                                               | 1) Adj item:<br>[Ramp Offset]<br>Press<br>[Autotune(TX Starts)] button.<br>Press [Apply] button to store the adjustment value.                                                                                                      | Power meter<br>Ammeter          | Panel | ANT      | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-]     | <b>[PC test mode]</b><br><b>[Automatic Adjustment]</b><br>1) Press [Autotune(TX starts)] button.<br>2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished.<br><b>[Manual Adjustment]</b><br>1) Set the adjustment value to "1".<br>2) Press [Transmit] button and increase the adjustment value slowly while monitoring the offset monitor value.<br>3) Set the adjustment value when the offset monitor value exceeds "51".               |                                                              |
| 5.<br>Balance     | 1) Adj item:<br>[An BAL]<br>Adjust:[****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [  ] button to store the adjustment value. | 1) Adj item:<br>[Balance]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-] | The Deviation of 20Hz frequency is fixed.<br>Change the 2kHz adjustment value to become the same deviation of 20Hz within the specified range.<br><b>[Panel tuning mode]</b><br>PTT: ON<br>While PTT:ON, press the [  ] button to change the 20Hz/ 2kHz.<br><b>[PC test mode]</b><br>PTT: Press [Transmit] button.<br>While PTT:ON, click the check box "2kHz Sine Wave" to change the 20Hz/2kHz. | 2kHz Tone deviation is within ± 1.0% of 20Hz tone deviation. |

| Item                                    | Condition                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                               | Measurement                     |       |          | Adjustment |                                                                  |                                                                                                                                                                                                                                                                     | Specifications /Remarks |
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|                                         | Panel tuning mode                                                                                                                                                                                                                                         | PC test mode                                                                                                                                                                                                                                                  | Test-equipment                  | Unit  | Terminal | Unit       | Parts                                                            | Method                                                                                                                                                                                                                                                              |                         |
| 6. Maximum Deviation<br>[Analog Wide]   | 1) Adj item:<br>[Aw ADEV]<br>Adjust:[****]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <input type="radio"/> ] button to store the adjustment value. | 1) Adj item:<br>[Maximum Deviation (Analog Wide)]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [OK] button to store the adjustment value.     | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write fixed value "497" for each adjustment point.<br>Transmit at each adjustment point and check that the deviation is between 4150Hz and 4250Hz.<br><br><b>[Panel tuning mode]</b><br>PTT: ON<br><br><b>[PC test mode]</b><br>PTT: Press [Transmit] button        | 4150~4250Hz             |
| [Analog Narrow]                         | 1) Adj item:<br>[An ADEV]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <input type="radio"/> ] button to store the adjustment value.                                              | 1) Adj item:<br>[Maximum Deviation (Analog Narrow)]<br>Deviation meter<br>Oscilloscope<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.          | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write fixed value "497" for each adjustment point. Transmit at each adjustment point and check that the deviation is between 2050Hz and 2150Hz.<br><br><b>[Panel tuning mode]</b><br>PTT: ON<br><br><b>[PC test mode]</b><br>PTT: Press [Transmit] button           | 2050~2150Hz             |
| 7. NXDN High Deviation<br>[NXDN Narrow] | 1) Adj item:<br>[Nn NDEV]<br>Adjust:[****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <input type="radio"/> ] button to store the adjustment value.  | 1) Adj item:<br>[NXDN High Deviation (NXDN Narrow)]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write fixed value "498" for each adjustment point.<br>Transmit at each adjustment point and check that the Analog deviation is between 2995Hz and 3117Hz.<br><br><b>[Panel tuning mode]</b><br>PTT: ON<br><br><b>[PC test mode]</b><br>PTT: Press [Transmit] button | 2995~3117Hz             |

| Item                             | Condition                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                             | Measurement                     |       |          | Adjustment |                                                               |                                                                                                                                                                                                                                                                  | Specifications /Remarks |
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|                                  | Panel tuning mode                                                                                                                                                                                                                              | PC test mode                                                                                                                                                                                                                                                | Test-equipment                  | Unit  | Terminal | Unit       | Parts                                                         | Method                                                                                                                                                                                                                                                           |                         |
| [NXDN Very Narrow]               | 1) Adj item:<br>[Nv NDEV]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <b>O</b> ]<br>button to store the adjustment value.                                             | 1) Adj item:<br>[NXDN High Deviation (NXDN Very Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.                                      | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲], [▼]<br>[PC test mode]<br>[+], [-] | Write fixed value "497" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is between 1311Hz and 1363Hz.<br><br><b>[Panel tuning mode]</b><br>PTT: ON<br><br><b>[PC test mode]</b><br>PTT: Press [Transmit] button | 1311~1363Hz             |
| 8. DMR High Deviation            | 1) Adj item:<br>[D DDEV]<br>Adjust: [****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <b>O</b> ]<br>button to store the adjustment value. | 1) Adj item:<br>[DMR High Deviation (DMR Narrow)]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲], [▼]<br>[PC test mode]<br>[+], [-] | Write fixed value "497" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is between 2695Hz and 2803Hz.<br><br><b>[Panel tuning mode]</b><br>PTT: ON<br><br><b>[PC test mode]</b><br>PTT: Press [Transmit] button | 2695~2803Hz             |
| 9. QT Deviation<br>[Analog Wide] | 1) Adj item:<br>[Aw QT]<br>Adjust:[****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <b>O</b> ]<br>button to store the adjustment value.   | 1) Adj item:<br>[QT Deviation (Analog Wide)]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.      | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲], [▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "517" for each adjustment points.                                                                                                                                                                                                          | 0.75kHz±0.05 kHz        |

| Item                               | Condition                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                   | Measurement                     |       |          | Adjustment |                                                                  |                                                         | Specifications /Remarks |
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|                                    | Panel tuning mode                                                                                                                                                                                                                                 | PC test mode                                                                                                                                                                                                                                      | Test-equipment                  | Unit  | Terminal | Unit       | Parts                                                            | Method                                                  |                         |
| [Analog Narrow]                    | 1) Adj item: [An QT]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <input type="radio"/> ] button to store the adjustment value.                                              | 1) Adj item: [QT Deviation (Analog Narrow)]<br>2) Adj item: [Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.                                            | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "517" for each adjustment points. | 0.35kHz±0.05 kHz        |
| 10. DQT Deviation<br>[Analog Wide] | 1) Adj item: [Aw DQT]<br>Adjust:[****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item: [L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <input type="radio"/> ] button to store the adjustment value. | 1) Adj item: [DQT Deviation (Analog Wide)]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item: [Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "415" for each adjustment points. | 0.75kHz±0.05 kHz        |
| [Analog Narrow]                    | 1) Adj item: [An DQT]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <input type="radio"/> ] button to store the adjustment value.                                             | 1) Adj item: [DQT Deviation (Analog Narrow)]<br>2) Adj item: [Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.                                           | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "415" for each adjustment points. | 0.35kHz±0.05 kHz        |

| Item                                | Condition                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                           | Measurement                     |       |          | Adjustment |                                                                  |                                                         | Specifications /Remarks |
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|                                     | Panel tuning mode                                                                                                                                                                                                                               | PC test mode                                                                                                                                                                                                                                              | Test-equipment                  | Unit  | Terminal | Unit       | Parts                                                            | Method                                                  |                         |
| 11. LTR Deviation<br>[Analog Wide]  | 1) Adj item:<br>[Aw LTR]<br>Adjust:[****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <b>O</b> ]<br>button to store the adjustment value.   | 1) Adj item:<br>[LTR Deviation (Analog Wide)]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.   | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "508" for each adjustment points. | 1.00kHz±0.05 kHz        |
| [Analog Narrow]                     | 1) Adj item:<br>[An LTR]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <b>O</b> ]<br>button to store the adjustment value.                                               | 1) Adj item:<br>[LTR Deviation (Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.                                             | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "496" for each adjustment points. | 0.75kHz±0.05 kHz        |
| 12. DTMF Deviation<br>[Analog Wide] | 1) Adj item:<br>[Aw DTMF]<br>Adjust:[****]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <b>O</b> ]<br>button to store the adjustment value. | 1) Adj item:<br>[DTMF Deviation (Analog Wide)]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "547" for each adjustment points. | 2.50kHz±0.05 kHz        |

| Item                                       | Condition                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                  | Measurement                     |       |          | Adjustment |                                                                  |                                                         | Specifications /Remarks |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------|----------|------------|------------------------------------------------------------------|---------------------------------------------------------|-------------------------|
|                                            | Panel tuning mode                                                                                                                                                                                                                                                                                                          | PC test mode                                                                                                                                                                                                                                                     | Test-equipment                  | Unit  | Terminal | Unit       | Parts                                                            | Method                                                  |                         |
| [Analog Narrow]                            | 1) Adj item:<br>[An DTMF]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [  ]<br>button to store the adjustment value.                                                | 1) Adj item:<br>[DTMF Deviation (Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.                                                   | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "547" for each adjustment points. | 1.25kHz±0.05 kHz        |
| 13. Single Tone Deviation<br>[Analog Wide] | 1) Adj item:<br>[Aw TONE]<br>Adjust:[****]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [  ]<br>button to store the adjustment value. | 1) Adj item:<br>[Single Tone Deviation (Analog Wide)]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "515" for each adjustment points. | 3.00kHz±0.05 kHz        |
| [Analog Narrow]                            | 1) Adj item:<br>[An TONE]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [  ]<br>button to store the adjustment value.                                              | 1) Adj item:<br>[Single Tone Deviation (Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.                                            | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "514" for each adjustment points. | 1.50kHz±0.05 kHz        |

| Item                                  | Condition                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                             | Measurement                     |       |          | Adjustment |                                                                  |                                                         | Specifications /Remarks |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------|----------|------------|------------------------------------------------------------------|---------------------------------------------------------|-------------------------|
|                                       | Panel tuning mode                                                                                                                                                                                                                               | PC test mode                                                                                                                                                                                                                                                | Test-equipment                  | Unit  | Terminal | Unit       | Parts                                                            | Method                                                  |                         |
| 14. MSK Deviation<br>[Analog Wide]    | 1) Adj item:<br>[Aw MSK]<br>Adjust:[****]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <b>O</b> ]<br>button to store the adjustment value.  | 1) Adj item:<br>[MSK Deviation (Analog Wide)]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.    | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "505" for each adjustment points. | 3.00kHz±0.05 kHz        |
| [Analog Narrow]                       | 1) Adj item:<br>[An MSK]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <b>O</b> ]<br>button to store the adjustment value.                                               | 1) Adj item:<br>[MSK Deviation (Analog Narrow)]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.  | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "505" for each adjustment points. | 1.50kHz±0.05 kHz        |
| 15. CWID Deviation<br>[Analog Narrow] | 1) Adj item:<br>[An CWID]<br>Adjust:[****]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <b>O</b> ]<br>button to store the adjustment value. | 1) Adj item:<br>[CWID Deviation (Analog Narrow)]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "511" for each adjustment points. | 1.10kHz±0.10 kHz        |

| Item                                 | Condition                                                                                     |                                                                                                                                                                | Measurement        |       |                      | Adjustment |       |                                                                                                                                                                                                                                                                                                                                                                                                                         | Specifications /Remarks                                     |
|--------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------|----------------------|------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
|                                      | Panel tuning mode                                                                             | PC test mode                                                                                                                                                   | Test-equipment     | Unit  | Terminal             | Unit       | Parts | Method                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                             |
| 16.<br>Battery Warning Level writing | 1) Adj item: [BATT]<br>Adjust:[****]<br>BATT terminal voltage: 6.2V while transmitting.       | 1) Adj item: [Battery Warning Level]<br>BATT terminal voltage: 6.2V while transmitting.                                                                        | Power meter<br>DVM | Panel | ANT<br>BATT terminal |            |       | <b>[Panel tuning mode]</b><br>PTT: ON<br>Press [  ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>1) Press [Transmit] button.<br>2) Press [Acquire Monitored Value] button.<br>3) Press [Apply] button to store the adjustment value.<br>Confirm that one predetermined numeric in the range 1 to 256 appears. |                                                             |
| 17.<br>Battery Warning Level check   | <b>[Panel test mode]</b><br>1) CH-Sig: 1-1<br>BATT terminal voltage: 6.0V while transmitting. | <b>[Panel test mode]</b><br>1) Test Channel<br>Channel: 1<br>Test Signaling<br>Type: Analog<br>Signaling: 1<br>BATT terminal voltage: 6.0V while transmitting. |                    |       |                      |            |       | Check                                                                                                                                                                                                                                                                                                                                                                                                                   | The transceiver can transmit with causing the LED to blink. |

#### 4.8.1 Necessary Deviation adjustment item for each signaling and mode

The following shows the necessary adjustment items for each signaling deviation. Please read the following table like the following example. In the case of the signaling "QT (Analog Wide)", this signaling is composed of three elements [Balance, Maximum Deviation (Analog Wide) and QT Deviation (Analog Wide)]. Please adjust Balance and Maximum Deviation (Analog Wide) before adjusting QT Deviation (Analog Wide).

| Mode   | Signaling        | Necessary adjustment and order                                                                    |                                                                                                       |                                                                                                |
|--------|------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
|        |                  | Wide                                                                                              | Narrow                                                                                                | Very Narrow                                                                                    |
| Analog | Audio            | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide]                                           | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]                                             | -                                                                                              |
|        | QT               | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide]<br>3. QT Deviation [Analog Wide]          | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]<br>3. QT Deviation [Analog Narrow]          | -                                                                                              |
|        | DQT              | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide]<br>3. DQT Deviation [Analog Wide]         | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]<br>3. DQT Deviation [Analog Narrow]         | -                                                                                              |
|        | LTR              | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide]<br>3. LTR Deviation [Analog Wide]         | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]<br>3. LTR Deviation [Analog Narrow]         | -                                                                                              |
|        | DTMF             | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide]<br>3. DTMF Deviation [Analog Wide]        | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]<br>3. DTMF Deviation [Analog Narrow]        | -                                                                                              |
|        | 2TONE            | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide]<br>3. Single Tone Deviation [Analog Wide] | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]<br>3. Single Tone Deviation [Analog Narrow] | -                                                                                              |
|        | MSK (Fleet sync) | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide]<br>3. MSK Deviation [Analog Wide]         | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]<br>3. MSK Deviation [Analog Narrow]         | -                                                                                              |
| NXDN   | Audio            | -                                                                                                 | 1. Balance adjust<br>2. NXDN High Deviation [NXDN Narrow]                                             | 1. Balance adjust<br>2. NXDN High Deviation [NXDN Very Narrow]                                 |
|        | CWID             | -                                                                                                 | -                                                                                                     | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]<br>3. CWID Deviation [Analog Narrow] |
| DMR    | Audio            | -                                                                                                 | 1. Balance adjust<br>2. DMR High Deviation                                                            | -                                                                                              |

- Balance is common with all the above deviation adjustments. If Balance (Transmitter Section 5) has already adjusted, please skip Step1 and adjust from Step2.
- Maximum Deviation (Analog Wide/Narrow) is common with all the analog signaling deviations and CWID Deviation (NXDN Very Narrow).

If Balance and Maximum Deviation (Analog Wide /Narrow) (Transmitter Section 6) have already adjusted, please skip Step2 and adjust from Step3.

#### 4.9 Receiver Section

| Item                              | Condition                                                                                                                                                                 |                                                                                                                                                                                                | Measurement                             |       |                            | Adjustment |                                                               |                                                                                                                                                                                                                                                                                                                                                                                       | Specifications<br>/Remarks |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------|----------------------------|------------|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                                   | Panel tuning mode                                                                                                                                                         | PC test mode                                                                                                                                                                                   | Test-equipment                          | Unit  | Terminal                   | Unit       | Parts                                                         | Method                                                                                                                                                                                                                                                                                                                                                                                |                            |
| 1. AF level setting               | [Panel test mode]<br>1) CH-Sig: 1-1<br>SSG output: -47dBm (1mV) (MOD: 1kHz/±1.5kHz)                                                                                       | 1) Test Channel<br>Channel: 1<br>Test Signaling<br>Type: Analog<br>Signaling: 1<br>SSG output: -47dBm (1mV) (MOD:1kHz/±1.5kHz)                                                                 | SSG<br>DVM<br>AF VM<br>Dummy load       | Panel | ANT<br>Universal connector | Panel      | Volume knob                                                   | Turn the Volume knob to obtain 0.63V AF output.                                                                                                                                                                                                                                                                                                                                       | 0.63V<br>±0.1V             |
| 2. IQ Phase                       | 1) Adj item: [An IQ]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output: Freq: Tune<br>Freq +8kHz<br>level: -53dBm (500μV) (MOD:OFF) | 1) Adj item: [IQ Phase]<br>2) Adj item: [Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output: Freq: Tune Freq<br>+8kHz<br>level: -53dBm (500μV) (MOD:OFF)                     | SSG                                     | Panel | ANT<br>Universal connector | Panel      | [Panel tuning mode]<br>[▲], [▼]<br>[PC test mode]<br>[+], [-] | <b>[Panel tuning mode]</b><br>After input signal from SSG, Increase or decrease the adjustment value so that the RSSI indicator level becomes minimum.<br><b>[PC test mode]</b><br><b>[Automatic Adjustment]</b><br>After input signal from SSG,<br>1) Press [Autotune] button.<br>2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished. |                            |
| 3. RSSI reference [DSP (Receive)] | 1) Adj item: [An RSSI 1]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)               | 1) Adj item: [RSSI Reference (Analog Narrow) 1 DSP (Receive)]<br>2) Adj item: [Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz) | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |                                                               | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ O ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value.                                                                                                     |                            |

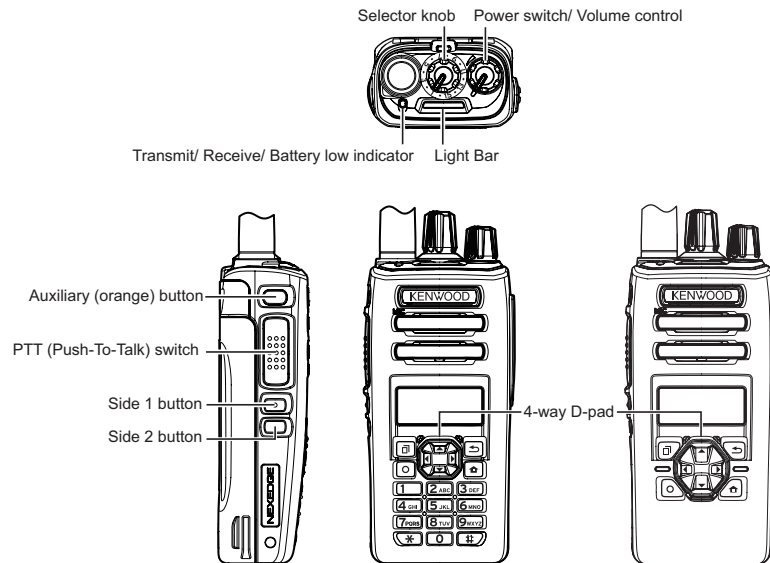
| Item              | Condition                                                                                                                                                                     |                                                                                                                                                                                                                          | Measurement                                |       |                               | Adjustment |       |                                                                                                                                                                                                                                                                                                                                                                                               | Specifications<br>/Remarks |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------|-------------------------------|------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                   | Panel tuning mode                                                                                                                                                             | PC test mode                                                                                                                                                                                                             | Test-equipment                             | Unit  | Terminal                      | Unit       | Parts | Method                                                                                                                                                                                                                                                                                                                                                                                        |                            |
| [RF IC (Receive)] | 1) Adj item:<br>[An RSSI 2]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>12dB SINAD<br>level -3dB<br>(MOD:<br>1kHz/±1.5kHz) | 1) Adj item:<br>[RSSI Reference<br>(Analog Narrow)<br>2 RF IC (Receive)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output:<br>12dB SINAD level<br>-3dB<br>(MOD:<br>1kHz/±1.5kHz) | SSG<br>Distortion<br>meter<br>Oscilloscope | Panel | ANT<br>Universal<br>connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from<br>SSG, press [  ]<br>button to store the<br>adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from<br>SSG,<br>1) Press [Acquire<br>Monitored Value]<br>button.<br>2) Press [Apply]<br>button to store the<br>adjustment value.   |                            |
| [DSP (Standby)]   | 1) Adj item:<br>[An RSSI 3]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>12dB SINAD<br>level -3dB<br>(MOD:<br>1kHz/±1.5kHz) | 1) Adj item:<br>[RSSI Reference<br>(Analog Narrow)<br>3 DSP (Standby)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output:<br>12dB SINAD level<br>-3dB<br>(MOD:<br>1kHz/±1.5kHz)   | SSG<br>Distortion<br>meter<br>Oscilloscope | Panel | ANT<br>Universal<br>connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from<br>SSG, press [  ]<br>button to store the<br>adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from<br>SSG,<br>1) Press [Acquire<br>Monitored Value]<br>button.<br>2) Press [Apply]<br>button to store the<br>adjustment value.   |                            |
| [RF IC (Standby)] | 1) Adj item:<br>[An RSSI 4]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>12dB SINAD<br>level -3dB<br>(MOD:<br>1kHz/±1.5kHz) | 1) Adj item:<br>[RSSI Reference<br>(Analog Narrow)<br>4 RF IC (Standby)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output:<br>12dB SINAD level<br>-3dB<br>(MOD:<br>1kHz/±1.5kHz) | SSG<br>Distortion<br>meter<br>Oscilloscope | Panel | ANT<br>Universal<br>connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from<br>SSG, press [  ]<br>button to store the<br>adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from<br>SSG,<br>1) Press [Acquire<br>Monitored Value]<br>button.<br>2) Press [Apply]<br>button to store the<br>adjustment value. |                            |

| Item                             | Condition                                                                                                                                                                                  |                                                                                                                                                                                                           | Measurement                             |       |                            | Adjustment |       |                                                                                                                                                                                                                                                                                          | Specifications<br>/Remarks |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------|----------------------------|------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                                  | Panel tuning mode                                                                                                                                                                          | PC test mode                                                                                                                                                                                              | Test-equipment                          | Unit  | Terminal                   | Unit       | Parts | Method                                                                                                                                                                                                                                                                                   |                            |
| 4. Squelch Open<br>[Analog Wide] | 1) Adj item:<br>[Aw SQL]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>12dB SINAD level -3dB<br>(MOD: 1kHz/<br>±3kHz)                     | 1) Adj item:<br>[Squelch Open (Analog Wide)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output:<br>12dB SINAD level -3dB<br>(MOD: 1kHz/<br>±3kHz)                  | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ <b>○</b> ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |
| [Analog Narrow]                  | 1) Adj item:<br>[An SQL]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>12dB SINAD level -3dB<br>(MOD: 1kHz/<br>±1.5kHz)                   | 1) Adj item:<br>[Squelch Open (Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output:<br>12dB SINAD level -3dB<br>(MOD: 1kHz/<br>±1.5kHz)              | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ <b>○</b> ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |
| [NXDN Narrow]                    | 1) Adj item:<br>[Nn SQL]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>12dB SINAD level at Analog Narrow -5dB<br>(MOD: 400Hz/<br>±1.5kHz) | 1) Adj item:<br>[Squelch Open (NXDN Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output: 12dB SINAD level at Analog Narrow -5dB<br>(MOD: 400Hz/<br>±1.5kHz) | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ <b>○</b> ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |

| Item                              | Condition                                                                                                                                                    |                                                                                                                                                                                        | Measurement                       |       |                         | Adjustment |       |                                                                                                                                                                                                                                                                                                                                                                     | Specifications<br>/Remarks |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-------|-------------------------|------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                                   | Panel tuning mode                                                                                                                                            | PC test mode                                                                                                                                                                           | Test-equipment                    | Unit  | Terminal                | Unit       | Parts | Method                                                                                                                                                                                                                                                                                                                                                              |                            |
| [NXDN Very Narrow]                | 1) Adj item: [Nv SQL] Adjust:[****]<br>2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3]<br>SSG output: 12dB SINAD level at Analog Narrow -2dB (MOD: 400Hz/ ±1.5kHz) | 1) Adj item: [Squelch Open (NXDN Very Narrow)]<br>2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3]<br>SSG output: 12dB SINAD level at Analog Narrow -2dB (MOD: 400Hz/ ±1.5kHz) | SSG Distortion meter Oscilloscope | Panel | ANT Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [  ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |
| [DMR]                             | 1) Adj item: [D SQL] Adjust:[****]<br>2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3]<br>SSG output: 12dB SINAD level at Analog Narrow -4dB (MOD: 400Hz/ ±1.8kHz)  | 1) Adj item: [Squelch Open (DMR)]<br>2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3]<br>SSG output: 12dB SINAD level at Analog Narrow -4dB (MOD: 400Hz/ ±1.8kHz)              | SSG Distortion meter Oscilloscope | Panel | ANT Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [  ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |
| 5. Squelch Tight<br>[Analog Wide] | 1) Adj item: [Aw SFLT] Adjust:[****]<br>2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3]<br>SSG output: 12dB SINAD level +6dB (MOD: 1kHz/ ±3kHz)                    | 1) Adj item: [Squelch Tight (Analog Wide)]<br>2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3]<br>SSG output: 12dB SINAD level +6dB (MOD: 1kHz/ ±3kHz)                         | SSG Distortion meter Oscilloscope | Panel | ANT Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [  ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG, press [Apply] button to store the adjustment value.                                                   |                            |

| Item            | Condition                                                                                                                                                                 |                                                                                                                                                                                               | Measurement                             |       |                            | Adjustment |       |                                                                                                                                                                                                                                                                                          | Specifications<br>/Remarks |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------|----------------------------|------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                 | Panel tuning mode                                                                                                                                                         | PC test mode                                                                                                                                                                                  | Test-equipment                          | Unit  | Terminal                   | Unit       | Parts | Method                                                                                                                                                                                                                                                                                   |                            |
| [Analog Narrow] | 1) Adj item:<br>[An SQLT]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>12dB SINAD level +6dB<br>(MOD: 1kHz/<br>±1.5kHz) | 1) Adj item:<br>[Squelch Tight (Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output:<br>12dB SINAD level +6dB<br>(MOD: 1kHz/<br>±1.5kHz) | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ <b>○</b> ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |
| 6. Low RSSI     | 1) Adj item:<br>[An LRSSI]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>-118dBm (0.28μV)<br>(MOD: 1kHz/<br>±1.5kHz)     | 1) Adj item:<br>[Low RSSI (Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output:<br>-118dBm (0.28μV)<br>(MOD: 1kHz/<br>±1.5kHz)           | SSG                                     | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ <b>○</b> ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |
| 7. High RSSI    | 1) Adj item:<br>[An HRSSI]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>-80dBm (22.4μV)<br>(MOD: 1kHz/<br>±1.5kHz)      | 1) Adj item:<br>[High RSSI (Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output:<br>-80dBm (22.4μV)<br>(MOD: 1kHz/<br>±1.5kHz)           | SSG                                     | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ <b>○</b> ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |

## 4.10 NX-3200(E, E2, E3) TYPE Controls



### 4.10.1 Preparations for checking/tuning the transceiver

Before attempting to check/tune the transceiver, connect the unit to a suitable power supply.

Whenever the transmitter is turned on, the unit must be connected to a suitable dummy load (i.e. power meter).

The speaker output connector must be terminated with an 8ohm dummy load and connected to an AC voltmeter and an audio distortion meter or a SINAD measurement meter at all times during checking/tuning.

## 4.11 Panel Test Mode (E and E2 types only)

### 4.11.1 Test mode operation features

This transceiver has a test mode. To enter test mode, press and hold the [↵] button while turning the transceiver power ON or press the [□] button and select the "Panel Test". Before the transceiver enters test mode, the frequency version information appears on the LCD momentarily. Test mode can be inhibited by programming. To exit test mode, turn the transceiver power OFF. The following functions are available in test mode.

- When the panel test mode is activated, the channel selected with the 4-way D-pad and the last used signaling number are displayed. When it is activated for the first time, the signaling number is 1.

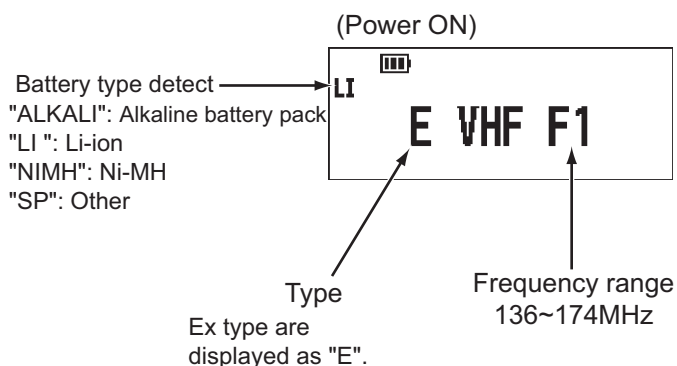
### 4.11.2 Button operation

| Button                  | "Func" not appears on the sub LCD display                       |                                                                 |
|-------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|
|                         | Function                                                        | Display                                                         |
| [Selector]              | -                                                               | -                                                               |
| [▲]                     | Push: Test channel up<br>Hold: Test channel up continuously     | Channel No.                                                     |
| [▼]                     | Push: Test channel down<br>Hold: Test channel down continuously | Channel No.                                                     |
| [◀]                     | Push: Squelch level up *1<br>Hold: Squelch off                  | Squelch level<br>Squelch off: 🔊 icon appears                    |
| [▶]                     | Wide 5k/Wide 4k/Narrow/<br>Very Narrow                          | Wide 5k: "w"<br>Wide 4k: "s"<br>Narrow: "n"<br>Very Narrow: "v" |
| [Side1]                 | -                                                               | -                                                               |
| [Side2]                 | -                                                               | -                                                               |
| [□]                     | Shift to panel tuning mode                                      | -                                                               |
| [↵]                     | Function on                                                     | "Func" appears on the sub LCD display                           |
| [○]                     | -                                                               | -                                                               |
| [🏠]                     | Push: Test signaling up<br>Hold: Test signaling up continuously | Signaling No.                                                   |
| [AUX (Orange)]          | MSK 1200bps and 2400bps *1                                      | 2400bps: [✉] icon appears                                       |
| [PTT]                   | Transmit                                                        | -                                                               |
| [0] to [9] and [#], [✖] | -                                                               | -                                                               |

\*1: When the mode is selected as Analog, this function is enabled.

| Button     | "Func" appears on the sub LCD display |                                                                          |
|------------|---------------------------------------|--------------------------------------------------------------------------|
|            | Function                              | Display                                                                  |
| [Selector] | -                                     | -                                                                        |
| [▲]        | Function off                          | -                                                                        |
| [▼]        | Analog/NXDN/DMR                       | Analog: "A"<br>NXDN: "N"<br>DMR: "D"                                     |
| [◀]        | Function off                          | -                                                                        |
| [▶]        | Button/LCD check                      | The position of the selector knob, etc., appear.                         |
| [Side1]    | Function off                          | -                                                                        |
| [Side2]    | Function off                          | -                                                                        |
| [□]        | High power/Medium power/Low power     | High:[H] icon appears<br>Medium:[M] icon appears<br>Low:[L] icon appears |
| [↶]        | Function off                          | -                                                                        |

#### • LCD display in panel test mode



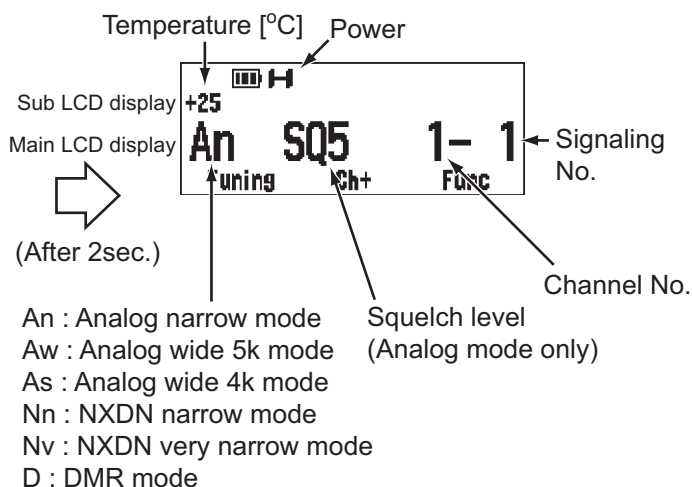
| Button                      | "Func" appears on the sub LCD display |                      |
|-----------------------------|---------------------------------------|----------------------|
|                             | Function                              | Display              |
| [○]                         | Function off                          | -                    |
| [🏠]                         | Function off                          | -                    |
| [AUX (Orange)]              | Compander On/Off                      | On: [🔊] icon appears |
| [PTT]                       | Transmit                              | -                    |
| [0] to [9] and [ # ], [ * ] | Function off                          | -                    |

#### • LED indicator

Red LED Lights during transmission.  
Green LED Lights when there is carrier.

#### • Sub LCD indicator

"Func" Appears at function on.



#### 4.11.3 Frequency and Signaling

The transceiver has been adjusted for the frequencies shown in the following table. When required, readjust them following the adjustment procedure to obtain the frequencies you want in actual operation.

##### (1) Test frequency

| CH   | RX (MHz)  | TX (MHz)  |
|------|-----------|-----------|
| 1    | 155.05000 | 155.10000 |
| 2    | 136.05000 | 136.10000 |
| 3    | 173.95000 | 173.90000 |
| 4    | 155.00000 | 155.00000 |
| 5    | 155.20000 | 155.20000 |
| 6    | 155.40000 | 155.40000 |
| 7~16 | -         | -         |

##### (2) Signaling

#### ■Analog Type Signaling

| No. | RX                                      | TX                                      |
|-----|-----------------------------------------|-----------------------------------------|
| 1   | None                                    | None                                    |
| 2   | None                                    | Square Wave                             |
| 3   | LTR Data                                | LTR Data                                |
| 4   | QT:67.0Hz                               | QT:67.0Hz                               |
| 5   | QT:151.4Hz                              | QT:151.4Hz                              |
| 6   | QT:210.7Hz                              | QT:210.7Hz                              |
| 7   | QT:254.1Hz                              | QT:254.1Hz                              |
| 8   | DQT:D023N                               | DQT:D023N                               |
| 9   | DQT:D754I                               | DQT:D754I                               |
| 10  | DTMF Decode (CODE: 159D)                | DTMF Encode (CODE: 159D)                |
| 11  | None                                    | DTMF Encode (CODE: 9)                   |
| 12  | 2-tone Decode (A: 304.7Hz, B: 3106.0Hz) | 2-tone Encode (A: 304.7Hz, B: 3106.0Hz) |

| No. | RX                           | TX                           |
|-----|------------------------------|------------------------------|
| 13  | Single Tone Decode (979.9Hz) | Single Tone Encode (979.9Hz) |
| 14  | None                         | Single Tone Encode (1000Hz)  |
| 15  | None                         | MSK PN9                      |
| 16  | MSK Decode                   | MSK Encode                   |

#### ■NXDN Type Signaling

| No.  | RX                    | TX                        |
|------|-----------------------|---------------------------|
| 1    | RAN1                  | RAN1                      |
| 2    | None                  | PN9                       |
| 3    | RAN1                  | Maximum Deviation Pattern |
| 7 *2 | FSW + PN9             | FSW + PN9                 |
| 9 *2 | Tone Pattern (1031Hz) | Tone Pattern (1031Hz)     |

RAN: Radio Access Number

PN9: Pseudo-Random Pattern

\*2: PC test mode only

#### ■DMR Type Signaling

| No. | RX                                     | TX                                     |
|-----|----------------------------------------|----------------------------------------|
| 1   | CC 00 Burst                            | CC 00 Burst                            |
| 2   | PN9                                    | PN9                                    |
| 3   | CC 00 Burst                            | Maximum Deviation Pattern              |
| 4   | CC 00 Burst                            | 1/3 Deviation Pattern                  |
| 5   | CC 00 Burst                            | 0 Continuous Pattern                   |
| 6   | SYNC (Each Slot) + PN9 Burst Pattern   | SYNC (Each Slot) + PN9 Burst Pattern   |
| 7   | SYNC (Super Frame) + PN9 Burst Pattern | SYNC (Super Frame) + PN9 Burst Pattern |
| 8   | CC 00 Burst                            | 0 Burst Pattern                        |
| 9   | Tone Pattern                           | Tone Test Burst Pattern                |
| 10  | Silence Pattern                        | Silence Burst Pattern                  |
| 11  | Audio Test Pattern                     | Audio Test Burst Pattern               |
| 12  | Vocoder Loop                           | None                                   |

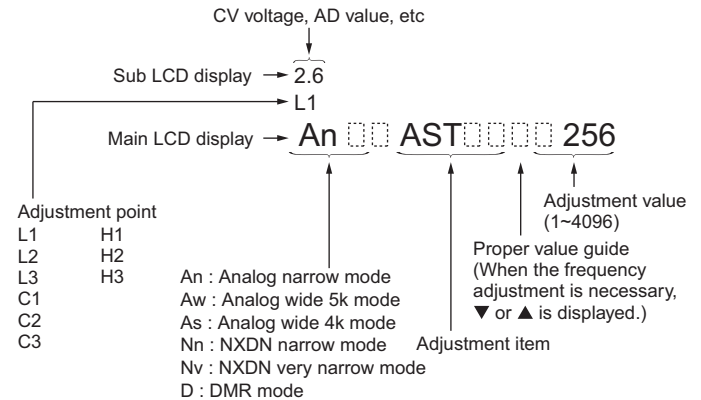
### 4.12 Panel Tuning Mode (E and E2 types only)

#### 4.12.1 Transceiver tuning (To enter tuning mode)

To enter tuning mode, press the [  ] button while the transceiver is in test mode. Use the [  ] button to write tuning data through tuning modes, and the [  ]/[  ] button to adjust tuning requirements (1 to 4096 appears on the LCD).

Use the [  ] button to select the adjustment item through tuning modes. Use the [  ] button to adjust 5 or 9 reference level adjustments, and use the [  ] button to switch between Wide/Narrow.

- LCD display in panel tuning mode



#### 4.12.2 Button operation

| Button                                                                                  | Function                                    |                                                                                                         |
|-----------------------------------------------------------------------------------------|---------------------------------------------|---------------------------------------------------------------------------------------------------------|
|                                                                                         | Push                                        | Hold (1 second)                                                                                         |
| [Selector]                                                                              | -                                           | -                                                                                                       |
| [  ] | Adjustment value up                         | Continuation up                                                                                         |
| [  ] | Adjustment value down                       | Continuation down                                                                                       |
| [  ] | Auto adjustment start                       | Output tone pattern change of balance adjustment (A change is possible only during balance adjustment.) |
| [  ] | Wide 5k/Wide 4k/Narrow/NXDN/DMR             | -                                                                                                       |
| [ Side1 ]                                                                               | -                                           | -                                                                                                       |
| [ Side2 ]                                                                               | -                                           | -                                                                                                       |
| [  ] | Shift to panel test mode                    | -                                                                                                       |
| [  ] | To enter 5 or 9 reference level adjustments | -                                                                                                       |
| [  ] | Writes the adjustment value                 | -                                                                                                       |
| [  ] | Go to next adjustment item                  | Back to last adjustment item (At the time of 5 or 9 point adjustment: Adjustment point change)          |
| [AUX (Orange)]                                                                          | -                                           | -                                                                                                       |
| [PTT]                                                                                   | Transmit                                    | -                                                                                                       |
| [0] to [9] and [#],[*]                                                                  | -                                           | -                                                                                                       |

#### 4.12.3 5 or 9 reference level adjustments frequency

High Transmit Power, Medium Transmit Power, Low Transmit Power, Balance, Maximum Deviation, NXDN High Deviation, DMR High Deviation, QT Deviation, DQT Deviation, LTR Deviation, DTMF Deviation, Single Tone Deviation, MSK Deviation, CW ID Deviation, IQ Phase, RSSI Reference 1 DSP (Receive), RSSI Reference 2 RF IC (Receive), RSSI Reference 3 DSP (Standby), RSSI Reference 4 RF IC (Standby), Squelch Open, Squelch Tight, Low RSSI, High RSSI

| Tuning point | Display | RX (MHz)  | TX (MHz)  |
|--------------|---------|-----------|-----------|
| 1            | L1      | 136.05000 | 136.10000 |
| 2            | L3      | 145.55000 | 145.60000 |
| 3            | C2      | 155.05000 | 155.10000 |
| 4            | H1      | 164.55000 | 164.60000 |
| 5            | H3      | 173.95000 | 173.90000 |

#### VCO Assist

| Tuning point | Display | RX (MHz)  | TX (MHz)  |
|--------------|---------|-----------|-----------|
| 1            | L1      | 136.05000 | 136.10000 |
| 2            | L2      | 140.80000 | 140.85000 |
| 3            | L3      | 145.55000 | 145.60000 |
| 4            | C1      | 150.30000 | 150.35000 |
| 5            | C2      | 155.05000 | 155.10000 |
| 6            | C3      | 159.80000 | 159.85000 |
| 7            | H1      | 164.55000 | 164.60000 |
| 8            | H2      | 169.30000 | 169.35000 |
| 9            | H3      | 173.95000 | 173.90000 |

#### 4.12.4 Adjustment item supplement

| Adjustment Item     | Description                                                                                                                                                                                                                                    |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LCD Contrast        | The contrast of LCD display can be changed.                                                                                                                                                                                                    |
| VCO Assist          | The lock voltage of VCO is adjusted. This item must be adjusted before receiver and transmitter adjustment items.                                                                                                                              |
| Frequency           | Frequency is adjusted under receiving condition with SSG. The SSG needs 0.001ppm accuracy so please use a standard oscillator if necessary. This item can be adjusted only in PC Test Mode so that the adjustment value is not changed easily. |
| RTC Correction      | Real Time Clock is adjusted. This item uses the internal clock. (Any measurement equipment is not required.)                                                                                                                                   |
| High Transmit Power | High Transmit Power is adjusted.                                                                                                                                                                                                               |
| Mid Transmit Power  | Medium Transmit Power is adjusted.                                                                                                                                                                                                             |
| Low Transmit Power  | Low Transmit Power is adjusted.                                                                                                                                                                                                                |

| Adjustment Item                         | Description                                                                                                                                                                                                                         |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ramp Offset                             | Adjust this item to the optimal Ramp voltage.                                                                                                                                                                                       |
| Balance                                 | The transmit modulation frequency response is adjusted. This item is adjusted so that the deviation of 2kHz becomes the same deviation of 20Hz. This item must be adjusted before all adjustment items for deviations are adjusted. |
| Maximum Deviation (Analog Wide/ Narrow) | Maximum Deviation of Analog (Wide/ Narrow) is adjusted. This item must be adjusted before all adjustment items for tone deviations are adjusted.                                                                                    |
| High Deviation                          | NXDN/DMR high deviation is adjusted.                                                                                                                                                                                                |
| QT Deviation                            | QT deviation is adjusted.                                                                                                                                                                                                           |
| DQT Deviation                           | DQT deviation is adjusted.                                                                                                                                                                                                          |
| LTR Deviation                           | LTR deviation is adjusted.                                                                                                                                                                                                          |
| DTMF Deviation                          | DTMF deviation is adjusted.                                                                                                                                                                                                         |
| Single Tone Deviation                   | The deviation of Single Tone used in "2-tone" and "5-tone" is adjusted.                                                                                                                                                             |
| MSK Deviation                           | MSK deviation is adjusted.                                                                                                                                                                                                          |
| CW ID Deviation                         | CWID tone deviation is adjusted. CWID is used to inform the others who is transmitting on a 6.25-kHz spacing channel. (In FCC rule, Analog mode or CWID is required for each channel-spacing.)                                      |
| Battery Warning Level                   | Battery Warning Level (LED blinking level) is adjusted. Battery Warning Level minus 0.4V is the transmission inhibited level.                                                                                                       |
| IQ Phase                                | Correction of phase difference shift between I and Q.                                                                                                                                                                               |
| RSSI Reference                          | The minimum RSSI level for scan stop is adjusted.                                                                                                                                                                                   |
| Squelch Open                            | The squelch level at level "1" is adjusted.                                                                                                                                                                                         |
| Squelch Tight                           | The squelch level at level "9" is adjusted.                                                                                                                                                                                         |
| Low RSSI                                | RSSI display level " $\nabla$ " is adjusted.                                                                                                                                                                                        |
| High RSSI                               | Both "Low RSSI" and "High RSSI" must be adjusted. (The curve data of RSSI level is applied.)                                                                                                                                        |

#### 4.12.5 Adjustment item and Display

| Order | Adjustment item                | Main LCD display | Sub LCD display                       | AW<br>(Analog Wide 5k)                  | AS<br>(Analog Wide 4k) | AN<br>(Analog Narrow) | Nn<br>(NXDN Narrow) | Nv<br>(NXDN Very Narrow) | D<br>(DMR) | Adjust item Number     |
|-------|--------------------------------|------------------|---------------------------------------|-----------------------------------------|------------------------|-----------------------|---------------------|--------------------------|------------|------------------------|
|       |                                |                  |                                       | Adjustment range                        |                        |                       |                     |                          |            |                        |
| 1     | LCD Contrast                   | CNTR             | -                                     | 1 point ADJ<br>1~256                    |                        |                       |                     |                          |            | Common Section 2       |
| 2     | VCO Assist                     | AST              | (CV voltage)                          | -                                       | -                      | 9                     | -                   | -                        | -          | Common Section 3       |
| 3     | RTC Correction                 | RTC              | -                                     | -<br>-2.00 ~ -0.01 ,0.00 ,+0.01 ~ +2.00 |                        |                       |                     |                          |            | Common Section 5       |
| 4     | High Transmit Power            | H_PWR            | -                                     | -                                       | -                      | 5                     | -                   | -                        | -          | Transmitter Section 1  |
| 5     | Medium Transmit Power          | M_PWR            | -                                     | -                                       | -                      | 5                     | -                   | -                        | -          | Transmitter Section 2  |
| 6     | Low Transmit Power             | L_PWR            | -                                     | -                                       | -                      | 5                     | -                   | -                        | -          | Transmitter Section 3  |
| 7     | Ramp Offset                    | RAMP             | (ADC measurement value)               | 1 point ADJ<br>1~1024                   |                        |                       |                     |                          |            | Transmitter Section 4  |
| 8     | Balance                        | BAL              | (Encode frequency)                    | -                                       | -                      | 5                     | -                   | -                        | -          | Transmitter Section 5  |
| 9     | Maximum Deviation              | ADEV             | -                                     | 5                                       | 5                      | 5                     | -                   | -                        | -          | Transmitter Section 6  |
| 10    | NXDN High Deviation            | NDEV             | -                                     | -                                       | -                      | -                     | 5                   | 5                        | -          | Transmitter Section 7  |
| 11    | DMR High Deviation             | DDEV             | -                                     | -                                       | -                      | -                     | -                   | -                        | 5          | Transmitter Section 8  |
| 12    | QT Deviation                   | QT               | -                                     | 5                                       | 5                      | 5                     | -                   | -                        | -          | Transmitter Section 9  |
| 13    | DQT Deviation                  | DQT              | -                                     | 5                                       | 5                      | 5                     | -                   | -                        | -          | Transmitter Section 10 |
| 14    | LTR Deviation                  | LTR              | -                                     | 5                                       | 5                      | 5                     | -                   | -                        | -          | Transmitter Section 11 |
| 15    | DTMF Deviation                 | DTMF             | -                                     | 5                                       | 5                      | 5                     | -                   | -                        | -          | Transmitter Section 12 |
| 16    | Single Tone Deviation          | TONE             | -                                     | 5                                       | 5                      | 5                     | -                   | -                        | -          | Transmitter Section 13 |
| 17    | MSK Deviation                  | MSK              | -                                     | 5                                       | 5                      | 5                     | -                   | -                        | -          | Transmitter Section 14 |
| 18    | CW ID Deviation                | CWID             | -                                     | -                                       | -                      | 5                     | -                   | -                        | -          | Transmitter Section 15 |
| 19    | Battery Warning Level          | BATT             | (BATT measurement value)              | 1 point ADJ<br>1~256                    |                        |                       |                     |                          |            | Transmitter Section 16 |
| 20    | IQ Phase                       | IQ               | (RSSI DSP(Receive) measurement value) | -                                       | -                      | 5                     | -                   | -                        | -          | Receive Section 2      |
| 21    | RSSI Reference 1 DSP (Receive) | RSSI1            | (RSSI DSP(Receive) measurement value) | -                                       | -                      | 5                     | -                   | -                        | -          | Receive Section 3      |

| Order | Adjustment item                  | Main LCD display | Sub LCD display                          | AW<br>(Analog Wide 5k) | AS<br>(Analog Wide 4k) | AN<br>(Analog Narrow) | Nn<br>(NXDN Narrow) | Nv<br>(NXDN Very Narrow) | D<br>(DMR) | Adjust item Number |
|-------|----------------------------------|------------------|------------------------------------------|------------------------|------------------------|-----------------------|---------------------|--------------------------|------------|--------------------|
|       |                                  |                  |                                          | Adjustment range       |                        |                       |                     |                          |            |                    |
| 22    | RSSI Reference 2 RF IC(Receive)  | RSSI2            | (RSSI RF IC(Receive) measurement value)  | -                      | -                      | 5                     | -                   | -                        | -          | Receive Section 3  |
|       |                                  |                  |                                          | 1~256                  |                        |                       |                     |                          |            |                    |
| 23    | RSSI Reference 3 DSP (Standby)   | RSSI3            | (RSSI DSP (Standby) measurement value)   | -                      | -                      | 5                     | -                   | -                        | -          | Receive Section 3  |
|       |                                  |                  |                                          | 1~256                  |                        |                       |                     |                          |            |                    |
| 24    | RSSI Reference 4 RF IC (Standby) | RSSI4            | (RSSI RF IC (Standby) measurement value) | -                      | -                      | 5                     | -                   | -                        | -          | Receive Section 3  |
|       |                                  |                  |                                          | 1~256                  |                        |                       |                     |                          |            |                    |
| 25    | Squelch Open                     | SQL              | (ASQDET measurement value)               | 5                      | 5                      | 5                     | 5                   | 5                        | 5          | Receive Section 4  |
|       |                                  |                  |                                          | 1~256                  |                        |                       |                     |                          |            |                    |
| 26    | Squelch Tight                    | SQLT             | (ASQDET measurement value)               | 5                      | 5                      | 5                     | -                   | -                        | -          | Receive Section 5  |
|       |                                  |                  |                                          | 1~256                  |                        |                       |                     |                          |            |                    |
| 27    | Low RSSI                         | LRSSI            | (RSSI DSP (Receive) measurement value)   | -                      | -                      | 5                     | -                   | -                        | -          | Receive Section 6  |
|       |                                  |                  |                                          | 1~256                  |                        |                       |                     |                          |            |                    |
| 28    | High RSSI                        | HRSSI            | (RSSI DSP (Receive) measurement value)   | -                      | -                      | 5                     | -                   | -                        | -          | Receive Section 7  |
|       |                                  |                  |                                          | 1~256                  |                        |                       |                     |                          |            |                    |

**Note:**

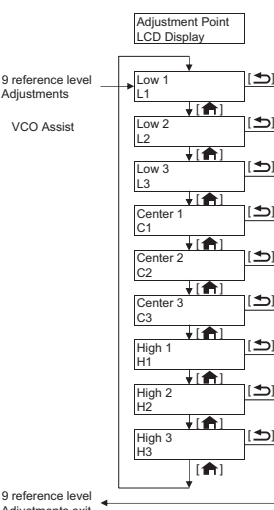
**Panel Test Mode**

**Adjustment Item**      **N/W/V/N**

For all adjustment items, press the [O] button to write the adjustment value.

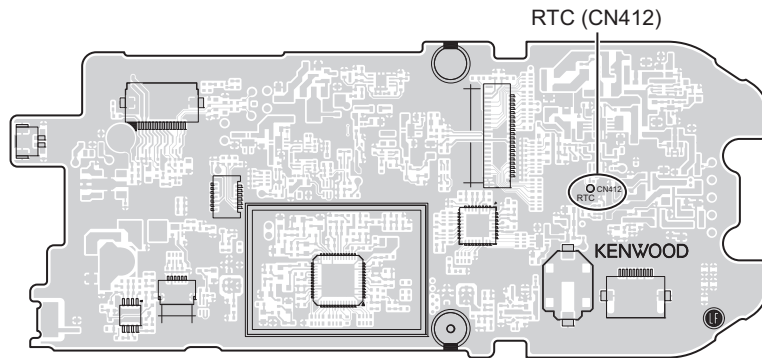
**Adjustment Items and Reference Levels:**

- LCD Contrast: 9 reference level Adjustments
- VCO Assist: 5 reference level Adjustments
- RTC Correction: 5 reference level Adjustments
- High Power H\_PWR: 5 reference level Adjustments
- Medium Power M\_PWR: 5 reference level Adjustments
- Low Power L\_PWR: 5 reference level Adjustments
- Ramp Offset RAMP: 5 reference level Adjustments
- Balance BAL: 5 reference level Adjustments
- Analog Max Deviation ADEV: 5 reference level Adjustments
- NXDN High Deviation NDEV: 5 reference level Adjustments
- DMR High Deviation DDEV: 5 reference level Adjustments
- QT Deviation QT: 5 reference level Adjustments
- DQT Deviation DQT: 5 reference level Adjustments
- LTR Deviation LTR: 5 reference level Adjustments
- DTMF Deviation DTMF: 5 reference level Adjustments
- Single Tone Deviation TONE: 5 reference level Adjustments
- MSK Deviation MSK: 5 reference level Adjustments
- CW ID Deviation CWID: 5 reference level Adjustments
- Battery BATT: 5 reference level Adjustments
- IQ Phase IQ: 5 reference level Adjustments
- RSSI Reference 1 RSSI1: 5 reference level Adjustments
- RSSI Reference 2 RSSI2: 5 reference level Adjustments
- RSSI Reference 3 RSSI3: 5 reference level Adjustments
- RSSI Reference 4 RSSI4: 5 reference level Adjustments
- Squelch (Open) SQL: 5 reference level Adjustments
- Squelch (Tight) SOLT: 5 reference level Adjustments
- RSSI (Low) LRSSI: 5 reference level Adjustments
- RSSI (High) HRSSI: 5 reference level Adjustments



#### 4.13 Adjustment points

TX-RX UNIT (XC1-179)  
Component Side



#### 4.14 Test Equipment Required for Alignment

| Test Equipment                     | Major Specifications                                                                                                                                     |                                                   |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| 1. Standard Signal Generator (SSG) | Frequency Range                                                                                                                                          | 100 to 900MHz                                     |
|                                    | Modulation                                                                                                                                               | Frequency modulation and external modulation      |
|                                    | Output                                                                                                                                                   | -127dBm/0.1uV to greater than -20dBm/22.4mV       |
|                                    | When performing the Frequency adjustment, the following accuracy is necessary.                                                                           |                                                   |
|                                    | <ul style="list-style-type: none"> <li>• 0.003ppm</li> </ul>                                                                                             |                                                   |
|                                    | Use a standard oscillator for adjustments, if necessary.                                                                                                 |                                                   |
| 2. Power Meter                     | Input Impedance                                                                                                                                          | 50ohm                                             |
|                                    | Operation Frequency                                                                                                                                      | 100 to 900MHz                                     |
|                                    | Measurement Capability                                                                                                                                   | Vicinity of 10W                                   |
| 3. Deviation Meter                 | Frequency Range                                                                                                                                          | 100 to 900MHz                                     |
| 4. Digital Volt Meter (DVM)        | Measuring Range                                                                                                                                          | 10mV to 10V DC                                    |
|                                    | Input Impedance                                                                                                                                          | High input impedance for minimum circuit loading  |
| 5. Oscilloscope                    |                                                                                                                                                          | DC through 30MHz                                  |
| 6. Frequency Counter               | Frequency Range                                                                                                                                          | 10Hz to 1000MHz                                   |
|                                    | Frequency Stability                                                                                                                                      | 0.2ppm or less                                    |
|                                    | To measure the oscillating frequency of the internal clock 32766.00Hz~32770.00Hz for RTC Correction Resolution 0.01Hz is better for accuracy adjustment. |                                                   |
| 7. Ammeter                         |                                                                                                                                                          | 5A                                                |
| 8. AF Volt Meter (AF VM)           | Frequency Range                                                                                                                                          | 50Hz to 10kHz                                     |
|                                    | Voltage Range                                                                                                                                            | 1mV to 10V                                        |
| 9. Audio Generator (AG)            | Frequency Range                                                                                                                                          | 50Hz to 5kHz or more                              |
|                                    | Output                                                                                                                                                   | 0 to 1V                                           |
| 10. Distortion Meter               | Capability                                                                                                                                               | 3% or less at 1kHz                                |
|                                    | Input Level                                                                                                                                              | 50mV to 10Vrms                                    |
| 11. Spectrum Analyzer              | Measuring Range                                                                                                                                          | DC to 1GHz or more                                |
| 12. 8ohm Dummy Load                |                                                                                                                                                          | Approx. 8ohm, 3W                                  |
| 13. Regulated Power Supply         |                                                                                                                                                          | 5V to 10V, approx. 3A, Useful if ammeter equipped |

\* The test equipment which is not used for adjustment is contained in this table.

### ■Antenna connector adapter

The antenna connector of this transceiver uses an SMA terminal.

Use an antenna connector adapter [SMA(f) - BNC(f) or SMA(f) - N(f)] for adjustment. (The adapter is not provided as an option, so buy a commercially-available one.)

### ■ Nut wrench

In order to turn the volume nut and the channel selector nut, use a recommendation tool.

Part No.: W05-1123-00

## ■Battery Jig (W05-0909-00)

Connect the power cable properly between the battery jig installed in the transceiver and the power supply, and be sure output voltage and the power supply polarity prior to switching the power supply ON, otherwise over voltage and reverse connection may damage the transceiver, or the power supply or both.

When using the battery jig in user mode, the transceiver assumes that a lithium-ion battery pack is attached to the transceiver. In adjustment mode, battery type detection is not performed.

## ■ Universal connector

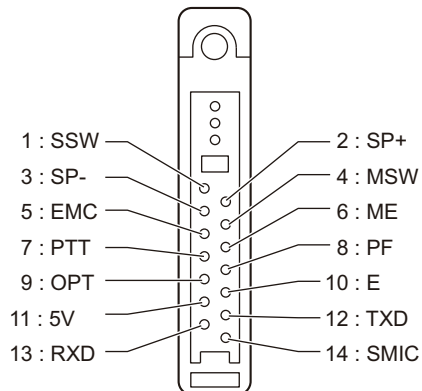
Use the interface cable (KPG-36U/36X) for PC tuning or the lead wire with plug (E30-3287-28) and screw (N08-0535-08) for panel tuning. Connect the plug to the universal connector of the transceiver and tighten the screw.

The lead wire with plug (E30-3287-28) and screw (N08-0535-08) terminals are as follows. Numbers are universal connector terminal numbers.

### Caution

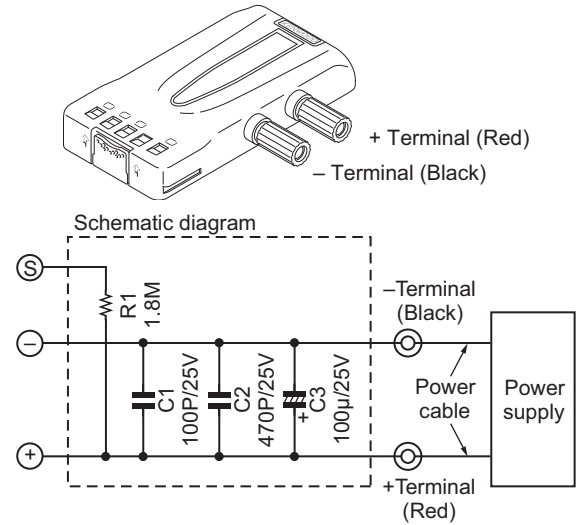
- (1) When connecting the plug to the universal connector of the transceiver, a short circuit may occur. To prevent this, be sure to turn the transceiver POWER switch off.
- (2) Since the RX AF output is a BTL output, there is a DC component. Isolate this with a capacitor or transformer as shown in the figure.
- (3) Do not connect an instrument between red or black and GND.

- \*Universal connector

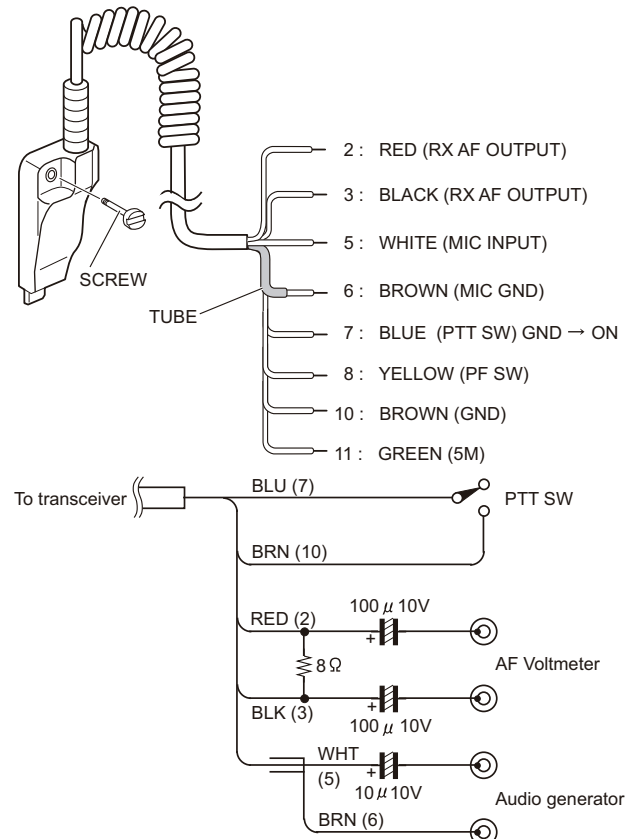


**Note:**

When using the battery jig, you must measure the voltage at the terminals of the battery jig. Otherwise, a slight voltage drop may occur within the power cable, between the power supply and the battery jig, especially while the transceiver transmits.

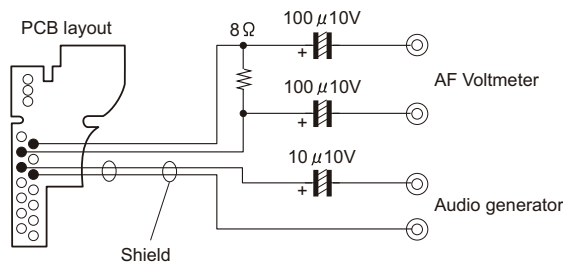
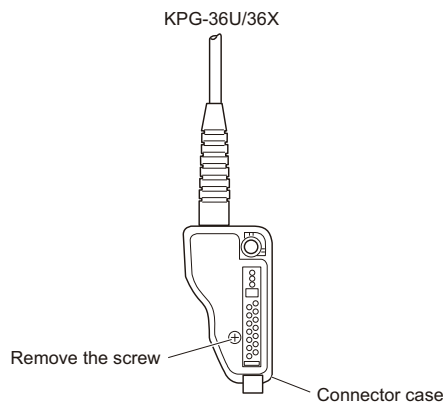


- \*Panel tuning



**Note:** Pin 1 (SSW) and Pin 4 (MSW) are connected to Pin 10 (GND) to active External SP and External MIC.

- \*PC tuning  
Connect the wires to the PCB in the connector case of interface cable.  
For output the wires out of the connector case, need to process the connector case.



#### 4.15 Radio check Section

| Item                                           | Condition                |                                                                                                              | Measurement            |       |          | Adjustment |       |                                                           | Specifications /Remarks         |
|------------------------------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------|------------------------|-------|----------|------------|-------|-----------------------------------------------------------|---------------------------------|
|                                                | Panel test mode          | PC test mode                                                                                                 | Test-equipment         | Unit  | Terminal | Unit       | Parts | Method                                                    |                                 |
| 1. Frequency check                             | 1)CH-Sig: 1-1<br>PTT: ON | 1)Test Channel<br>Channel: 1<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button. | f. counter             | Panel | ANT      |            |       | Check an internal temperature of radio from 20°C to 33°C. | ±0.5ppm<br>±77.5Hz@<br>155.1MHz |
| 2. High power check<br>(Battery voltage: 7.5V) | 1)CH-Sig: 1-1<br>PTT: ON | 1)Test Channel<br>Channel: 1<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button. | Power meter<br>Ammeter | Panel | ANT      |            |       | Check                                                     | 4.0~6.0W<br>2.0A or less        |
|                                                | 2)CH-Sig: 2-1<br>PTT: ON | 2)Test Channel<br>Channel: 2<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button. |                        |       |          |            |       |                                                           |                                 |
|                                                | 3)CH-Sig: 3-1<br>PTT: ON | 3)Test Channel<br>Channel: 3<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button. |                        |       |          |            |       |                                                           |                                 |

| Item                                             | Condition                                                                                                                                                                                     |                                                                                                                                                                                                                                                             | Measurement                                                            |       |                            | Adjustment |       |                                        | Specifications /Remarks  |
|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|-------|----------------------------|------------|-------|----------------------------------------|--------------------------|
|                                                  | Panel test mode                                                                                                                                                                               | PC test mode                                                                                                                                                                                                                                                | Test-equipment                                                         | Unit  | Terminal                   | Unit       | Parts | Method                                 |                          |
| 3.<br>Low power check<br>(Battery voltage: 7.5V) | 1)CH-Sig: 1-1<br>PTT: ON                                                                                                                                                                      | 1)Test Channel<br>Channel: 1<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button.                                                                                                                                                | Power meter<br>Ammeter                                                 | Panel | ANT                        |            |       | Check                                  | 0.7~1.4W<br>1.0A or less |
|                                                  | 2)CH-Sig: 2-1<br>PTT: ON                                                                                                                                                                      | 2)Test Channel<br>Channel: 2<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button.                                                                                                                                                |                                                                        |       |                            |            |       |                                        |                          |
|                                                  | 3)CH-Sig: 3-1<br>PTT: ON                                                                                                                                                                      | 3)Test Channel<br>Channel: 3<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button.                                                                                                                                                |                                                                        |       |                            |            |       |                                        |                          |
| 4.<br>MIC sensitivity check                      | 1)CH-Sig: 1-1<br>AG: 1kHz<br>PTT: ON                                                                                                                                                          | 1)Test Channel<br>Channel: 1<br>Test Signaling Type: Analog<br>Signaling: 1<br>AG: 1kHz<br>PTT: Press [Transmit] button.                                                                                                                                    | Deviation meter<br>Oscilloscope<br>AG<br>AF VM                         | Panel | ANT<br>Universal connector |            |       | Adjust AG input to get a standard MOD. | 12.5mV<br>±5.8mV         |
| 5.<br>Sensitivity check                          | 1)CH-Sig: 1-1<br>SSG output<br>Wide 5k:<br>-117dBm (0.32μV)<br>(MOD: 1kHz/±3kHz)<br>Wide 4k:<br>-117dBm (0.32μV)<br>(MOD: 1kHz/±2.4kHz)<br>Narrow:<br>-117dBm (0.32μV)<br>(MOD: 1kHz/±1.5kHz) | 1)Test Channel<br>Channel: 1<br>Test Signaling Type: Analog<br>Signaling: 1<br>SSG output<br>Wide 5k:<br>-117dBm (0.32μV)<br>(MOD: 1kHz/±3kHz)<br>Wide 4k:<br>-117dBm (0.32μV)<br>(MOD: 1kHz/±2.4kHz)<br>Narrow:<br>-117dBm (0.32μV)<br>(MOD: 1kHz/±1.5kHz) | SSG<br>AF VM<br>Oscilloscope<br>Distortion meter<br>8ohm<br>Dummy load | Panel | ANT<br>Universal connector |            |       | Check                                  | 12dB SINAD or more       |

#### 4.16 Common Section

| Item           | Condition                                                                                                                                                                         |                                                                                                          | Measurement    |      |          | Adjustment |                                                                                                                                                                                                                                              |                                                             | Specifications /Remarks |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|----------------|------|----------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-------------------------|
|                | Panel tuning mode                                                                                                                                                                 | PC test mode                                                                                             | Test-equipment | Unit | Terminal | Unit       | Parts                                                                                                                                                                                                                                        | Method                                                      |                         |
| 1.<br>Setting  | 1) DC voltage:7.5V<br>2) SSG standard modulation<br>[Wide 5k] MOD:1kHz,DEV:3kHz<br>[Wide 4k] MOD:1kHz,DEV:2.4kHz<br>[Narrow] MOD:1kHz,DEV:1.5kHz                                  |                                                                                                          |                |      |          |            |                                                                                                                                                                                                                                              |                                                             |                         |
| 2.LCD Contrast | 1) Adj item<br>[CNTR]<br>Adjust:[****]<br><br>Press [  ] button to store the adjustment value. | 1) Adj item<br>[LCD Contrast]<br>Data: [****]<br><br>Press [Apply] button to store the adjustment value. |                |      |          | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-] | Write the value as followings.<br><br>126 (Reference value) |                         |

| Item             | Condition                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                               | Measurement    |       |          | Adjustment |                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Specifications /Remarks                                                                                                                                                                                                                                                                                                                  |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|----------|------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | Panel tuning mode                                                                                                                                                                                                                                                                           | PC test mode                                                                                                                                                                                                                                                                                                                                                                                                                  | Test-equipment | Unit  | Terminal | Unit       | Parts                                                            | Method                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                          |
| 3.<br>VCO Assist | 1) Adj item: [AST]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L2]→<br>[L3]→<br>[C1]→<br>[C2]→<br>[C3]→<br>[H1]→<br>[H2]→<br>[H3]→<br><br>Adjust:[****]<br>Press [  ] button to store the adjustment value. | 1) Adj item: [VCO Assist]<br>2) Adj item: [Low1],[Low2],[Low3],<br>[Center1], [Center2], [Center3],<br>[High1],[High2] [High3]<br><br>Press [Apply] button to store the adjustment value.                                                                                                                                                                                                                                     |                |       |          | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | <b>[PC test mode]</b><br><b>[Automatic Adjustment]</b><br>1) Press [Autotune] button.<br>2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished.<br><b>[Manual Adjustment]</b><br>[V] indicator on the PC window shows VCO lock voltage. Change the adjustment value to get VCO lock voltage within the limit of the specified voltage.<br><b>Note:</b><br>Confirm the VCO lock voltage approximately 3 seconds after the adjustment value is changed. | 2.5V±0.1V<br><b>[Automatic Adjustment]</b><br>After the automatic adjustment is performed, verify that the VCO lock voltage is within the voltage range which is specified by the manual adjustment.<br><b>[Manual Adjustment]</b><br>Press [Apply] button to store the adjustment value after all adjustment points have been adjusted. |
| 4.<br>Frequency  | *The Frequency adjustment can be performed only in PC test mode.                                                                                                                                                                                                                            | 1) Adj item: [Frequency]<br>SSG output: -20dBm (22.4mV) (CW (without modulation))<br><b>Caution:</b><br>Perform the frequency adjustment under the following conditions.<br>• Temperature range of +20°C to +33°C.<br>(The temperature is displayed on the Frequency adjustment screen of the KPG-D3 and the LCD of the transceiver.)<br>• Use an accuracy of 0.003ppm for the SSG. (Use a standard oscillator if necessary.) | SSG            | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | <b>[PC test mode]</b><br>Press [Start] button of "Auto Tuning". Press [Apply] button to store the adjustment value after the automatic adjustment has finished.                                                                                                                                                                                                                                                                                                                                   | <b>[PC test mode]</b><br>"IF20" value = Within 0±10 digits. The value of "IF20" will become around "0" after the adjustment has finished.<br><br><b>Remark:</b><br>"Frequency" is adjusted under receiving condition with SSG.                                                                                                           |

| Item              | Condition                                                                                                                                                                |                                                                                                      | Measurement       |       |                    | Adjustment |       |        | Specifications /Remarks                                                                 |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------|-------|--------------------|------------|-------|--------|-----------------------------------------------------------------------------------------|
|                   | Panel tuning mode                                                                                                                                                        | PC test mode                                                                                         | Test-equipment    | Unit  | Terminal           | Unit       | Parts | Method |                                                                                         |
| 5. RTC Correction | 1) Adj item: [RTC]<br>Adjust:[****]<br>Press [  ] button to store the adjustment value. | 1) Adj item: [RTC Correction]<br>Data: [****]<br>Press [Apply] button to store the adjustment value. | Frequency Counter | TX-RX | TEST POINT (CN412) |            |       |        | <b>Remark:</b><br>The adjustment value should input the display of a Frequency Counter. |

#### 4.17 Transmitter Section

| Item                                              | Condition                                                                                                                                                                                                                                         |                                                                                                                                                                                                 | Measurement            |       |          | Adjustment |                                                                                                                                                                                                                                          |        | Specifications /Remarks |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------|----------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------|
|                                                   | Panel tuning mode                                                                                                                                                                                                                                 | PC test mode                                                                                                                                                                                    | Test-equipment         | Unit  | Terminal | Unit       | Parts                                                                                                                                                                                                                                    | Method |                         |
| 1. High transmit power (Battery voltage : 7.5V)   | 1) Adj item: [H_PWR]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>PTT : ON<br>Press [  ] button to store the adjustment value.   | 1) Adj item: [High Transmit Power]<br>2) Adj item: [Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.   | Power meter<br>Ammeter | Panel | ANT      | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-]     | 5.0W   | ±0.1W<br>2.0A or less   |
| 2. Medium transmit power (Battery voltage : 7.5V) | 1) Adj item: [M_PWR]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>PTT : ON<br>Press [  ] button to store the adjustment value. | 1) Adj item: [Medium Transmit Power]<br>2) Adj item: [Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Power meter<br>Ammeter | Panel | ANT      | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-] | 4.0W   | ±0.1W<br>2.0A or less   |
| 3. Low transmit power (Battery voltage : 7.5V)    | 1) Adj item: [L_PWR]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>PTT : ON<br>Press [  ] button to store the adjustment value. | 1) Adj item: [Low Transmit Power]<br>2) Adj item: [Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.    | Power meter<br>Ammeter | Panel | ANT      | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-] | 1.0W   | ±0.1W<br>1.0A or less   |

| Item           | Condition                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                               | Measurement                     |       |          | Adjustment |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Specifications /Remarks                                      |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------|----------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
|                | Panel tuning mode                                                                                                                                                                                                                                                                                               | PC test mode                                                                                                                                                                                                                  | Test-equipment                  | Unit  | Terminal | Unit       | Parts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Method                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                              |
| 4. Ramp Offset | 1)Adj item: [RAMP]<br>Adjust:[****]<br>PTT : ON<br>Press [  ] button to store the adjustment value.                                                                                                                            | 1) Adj item: [Ramp Offset]<br>Press [Autotune(TX Starts)] button.<br>Press [Apply] button to store the adjustment value.                                                                                                      | Power meter<br>Ammeter          | Panel | ANT      | Panel      | [Panel tuning mode] [  ], [  ]<br>[PC test mode] [+], [-]                                                                                                                                                                                                                                                                                                                                                    | <b>[PC test mode]</b><br><b>[Automatic Adjustment]</b><br>1) Press [Autotune(TX starts)] button.<br>2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished.<br><b>[Manual Adjustment]</b><br>1) Set the adjustment value to “1”.<br>2) Press [Transmit] button and increase the adjustment value slowly while monitoring the offset monitor value.<br>3) Set the adjustment value when the offset monitor value exceeds “51”. |                                                              |
| 5. Balance     | 1) Adj item: [An BAL]<br>Adjust:[****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item: [L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [  ] button to store the adjustment value. | 1) Adj item: [Balance]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item: [Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode] [  ], [  ]<br>[PC test mode] [+], [-]<br><br><b>[Panel tuning mode]</b><br>PTT: ON<br>While PTT:ON, press the[  ] button to change the 20Hz/ 2kHz.<br><br><b>[PC test mode]</b><br>PTT: Press [Transmit] button.<br>While PTT:ON, click the check box "2kHz Sine Wave" to change the 20Hz/2kHz. | The Deviation of 20Hz frequency is fixed.<br>Change the 2kHz adjustment value to become the same deviation of 20Hz within the specified range.                                                                                                                                                                                                                                                                                                                           | 2kHz Tone deviation is within ± 1.0% of 20Hz tone deviation. |

| Item                                        | Condition                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                              | Measurement                     |       |          | Adjustment |                                                               |                                                                                                                                                                                                                                                | Specifications /Remarks |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------|----------|------------|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
|                                             | Panel tuning mode                                                                                                                                                                                                                                         | PC test mode                                                                                                                                                                                                                                                 | Test-equipment                  | Unit  | Terminal | Unit       | Parts                                                         | Method                                                                                                                                                                                                                                         |                         |
| 6.<br>Maximum Deviation<br>[Analog Wide 5k] | 1) Adj item:<br>[Aw ADEV]<br>Adjust:[****]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <input type="radio"/> ] button to store the adjustment value. | 1) Adj item:<br>[Maximum Deviation (Analog Wide 5k)]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [OK] button to store the adjustment value. | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲], [▼]<br>[PC test mode]<br>[+], [-] | Write fixed value "497" for each adjustment point.<br>Transmit at each adjustment point and check that the deviation is between 4150Hz and 4250Hz.<br><br>[Panel tuning mode]<br>PTT: ON<br><br>[PC test mode]<br>PTT: Press [Transmit] button | 4150~4250Hz             |
| [Analog Wide 4k]                            | 1) Adj item:<br>[As ADEV]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <input type="radio"/> ] button to store the adjustment value.                                              | 1) Adj item:<br>[Maximum Deviation (Analog Wide 4k)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [OK] button to store the adjustment value.                                              | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲], [▼]<br>[PC test mode]<br>[+], [-] | Write fixed value "497" for each adjustment point.<br>Transmit at each adjustment point and check that the deviation is between 3310Hz and 3410Hz.<br><br>[Panel tuning mode]<br>PTT: ON<br><br>[PC test mode]<br>PTT: Press [Transmit] button | 3310~3410Hz             |
| [Analog Narrow]                             | 1) Adj item:<br>[An ADEV]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <input type="radio"/> ] button to store the adjustment value.                                              | 1) Adj item:<br>[Maximum Deviation (Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.                                            | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲], [▼]<br>[PC test mode]<br>[+], [-] | Write fixed value "497" for each adjustment point. Transmit at each adjustment point and check that the deviation is between 2050Hz and 2150Hz.<br><br>[Panel tuning mode]<br>PTT: ON<br><br>[PC test mode]<br>PTT: Press [Transmit] button    | 2050~2150Hz             |

| Item                                 | Condition                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                               | Measurement                     |       |          | Adjustment |                                                                  |                                                                                                                                                                                                                                                                     | Specifications /Remarks |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------|----------|------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
|                                      | Panel tuning mode                                                                                                                                                                                                                                        | PC test mode                                                                                                                                                                                                                                                  | Test-equipment                  | Unit  | Terminal | Unit       | Parts                                                            | Method                                                                                                                                                                                                                                                              |                         |
| 7. NXDN High Deviation [NXDN Narrow] | 1) Adj item:<br>[Nn NDEV]<br>Adjust:[****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <input type="radio"/> ] button to store the adjustment value. | 1) Adj item:<br>[NXDN High Deviation (NXDN Narrow)]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write fixed value "498" for each adjustment point.<br>Transmit at each adjustment point and check that the Analog deviation is between 2995Hz and 3117Hz.<br><br><b>[Panel tuning mode]</b><br>PTT: ON<br><br><b>[PC test mode]</b><br>PTT: Press [Transmit] button | 2995~3117Hz             |
| [NXDN Very Narrow]                   | 1) Adj item:<br>[Nv NDEV]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <input type="radio"/> ] button to store the adjustment value.                                             | 1) Adj item:<br>[NXDN High Deviation (NXDN Very Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.                                        | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write fixed value "497" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is between 1311Hz and 1363Hz.<br><br><b>[Panel tuning mode]</b><br>PTT: ON<br><br><b>[PC test mode]</b><br>PTT: Press [Transmit] button    | 1311~1363Hz             |
| 8. DMR High Deviation                | 1) Adj item:<br>[D DDEV]<br>Adjust: [****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <input type="radio"/> ] button to store the adjustment value. | 1) Adj item:<br>[DMR High Deviation (DMR Narrow)]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.   | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write fixed value "497" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is between 2695Hz and 2803Hz.<br><br><b>[Panel tuning mode]</b><br>PTT: ON<br><br><b>[PC test mode]</b><br>PTT: Press [Transmit] button    | 2695~2803Hz             |

| Item                                | Condition                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                           | Measurement                     |       |          | Adjustment |                                                                  |                                                         | Specifications /Remarks |
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|                                     | Panel tuning mode                                                                                                                                                                                                                            | PC test mode                                                                                                                                                                                                                                              | Test-equipment                  | Unit  | Terminal | Unit       | Parts                                                            | Method                                                  |                         |
| 9. QT Deviation<br>[Analog Wide 5k] | 1) Adj item:<br>[Aw QT]<br>Adjust:[****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <b>O</b> ]<br>button to store the adjustment value. | 1) Adj item:<br>[QT Deviation (Analog Wide 5k)]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "517" for each adjustment points. | 0.75kHz±0.05 kHz        |
| [Analog Wide 4k]                    | 1) Adj item:<br>[As QT]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <b>O</b> ]<br>button to store the adjustment value.                                             | 1) Adj item:<br>[QT Deviation (Analog Wide 4k)]<br>Deviation meter<br>Oscilloscope<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.          | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "517" for each adjustment points. | 0.60kHz±0.05 kHz        |
| [Analog Narrow]                     | 1) Adj item:<br>[An QT]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <b>O</b> ]<br>button to store the adjustment value.                                             | 1) Adj item:<br>[QT Deviation (Analog Narrow)]<br>Deviation meter<br>Oscilloscope<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.           | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "517" for each adjustment points. | 0.35kHz±0.05 kHz        |

| Item                                      | Condition                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                            | Measurement                     |       |          | Adjustment |                                                                                                                                                                                                                                          |                                                         | Specifications /Remarks |
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|                                           | Panel tuning mode                                                                                                                                                                                                                                                                                                   | PC test mode                                                                                                                                                                                                                                               | Test-equipment                  | Unit  | Terminal | Unit       | Parts                                                                                                                                                                                                                                    | Method                                                  |                         |
| 10. DQT Deviation<br><br>[Analog Wide 5k] | 1) Adj item:<br>[Aw DQT]<br>Adjust:[****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [  ] button to store the adjustment value. | 1) Adj item:<br>[DQT Deviation (Analog Wide 5k)]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-]     | Write the fixed value "415" for each adjustment points. | 0.75kHz±0.05 kHz        |
| [Analog Wide 4k]                          | 1) Adj item:<br>[As DQT]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [  ] button to store the adjustment value.                                           | 1) Adj item:<br>[DQT Deviation (Analog Wide 4k)]<br>Deviation meter<br>Oscilloscope<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.          | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-]     | Write the fixed value "415" for each adjustment points. | 0.60kHz±0.05 kHz        |
| [Analog Narrow]                           | 1) Adj item:<br>[An DQT]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [  ] button to store the adjustment value.                                           | 1) Adj item:<br>[DQT Deviation (Analog Narrow)]<br>Deviation meter<br>Oscilloscope<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.           | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-] | Write the fixed value "415" for each adjustment points. | 0.35kHz±0.05 kHz        |

| Item                                  | Condition                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                            | Measurement                     |       |          | Adjustment |                                                                  |                                                         | Specifications /Remarks |
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|                                       | Panel tuning mode                                                                                                                                                                                                                             | PC test mode                                                                                                                                                                                                                                               | Test-equipment                  | Unit  | Terminal | Unit       | Parts                                                            | Method                                                  |                         |
| 11. LTR Deviation<br>[Analog Wide 5k] | 1) Adj item:<br>[Aw LTR]<br>Adjust:[****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <b>O</b> ]<br>button to store the adjustment value. | 1) Adj item:<br>[LTR Deviation (Analog Wide 5k)]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "508" for each adjustment points. | 1.00kHz±0.05 kHz        |
| [Analog Wide 4k]                      | 1) Adj item:<br>[As LTR]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <b>O</b> ]<br>button to store the adjustment value.                                             | 1) Adj item:<br>[LTR Deviation (Analog Wide 4k)]<br>Deviation meter<br>Oscilloscope<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.          | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "496" for each adjustment points. | 0.90kHz±0.05 kHz        |
| [Analog Narrow]                       | 1) Adj item:<br>[An LTR]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <b>O</b> ]<br>button to store the adjustment value.                                             | 1) Adj item:<br>[LTR Deviation (Analog Narrow)]<br>Deviation meter<br>Oscilloscope<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.           | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "496" for each adjustment points. | 0.75kHz±0.05 kHz        |

| Item                                       | Condition                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                              | Measurement                     |       |          | Adjustment |                                                                  |                                                         | Specifications /Remarks |
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|                                            | Panel tuning mode                                                                                                                                                                                                                                                                                                     | PC test mode                                                                                                                                                                                                                                                 | Test-equipment                  | Unit  | Terminal | Unit       | Parts                                                            | Method                                                  |                         |
| 12. DTMF Deviation<br><br>[Analog Wide 5k] | 1) Adj item:<br>[Aw DTMF]<br>Adjust:[****]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [  ] button to store the adjustment value. | 1) Adj item:<br>[DTMF Deviation (Analog Wide 5k)]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "547" for each adjustment points. | 2.50kHz±0.05 kHz        |
| [Analog Wide 4k]                           | 1) Adj item:<br>[As DTMF]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [  ] button to store the adjustment value.                                            | 1) Adj item:<br>[DTMF Deviation (Analog Wide 4k)]<br>Deviation meter<br>Oscilloscope<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.           | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "547" for each adjustment points. | 2.00kHz±0.05 kHz        |
| [Analog Narrow]                            | 1) Adj item:<br>[An DTMF]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [  ] button to store the adjustment value.                                            | 1) Adj item:<br>[DTMF Deviation (Analog Narrow)]<br>Deviation meter<br>Oscilloscope<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.            | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "547" for each adjustment points. | 1.25kHz±0.05 kHz        |

| Item                                          | Condition                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                     | Measurement                     |       |          | Adjustment |                                                                  |                                                         | Specifications /Remarks |
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|                                               | Panel tuning mode                                                                                                                                                                                                                                         | PC test mode                                                                                                                                                                                                                                                        | Test-equipment                  | Unit  | Terminal | Unit       | Parts                                                            | Method                                                  |                         |
| 13. Single Tone Deviation<br>[Analog Wide 5k] | 1) Adj item:<br>[Aw TONE]<br>Adjust:[****]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <input type="radio"/> ] button to store the adjustment value. | 1) Adj item:<br>[Single Tone Deviation (Analog Wide 5k)]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "515" for each adjustment points. | 3.00kHz±0.05 kHz        |
| [Analog Wide 4k]                              | 1) Adj item:<br>[As TONE]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <input type="radio"/> ] button to store the adjustment value.                                              | 1) Adj item:<br>[Single Tone Deviation (Analog Wide 4k)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.                                              | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "515" for each adjustment points. | 2.40kHz±0.05 kHz        |
| [Analog Narrow]                               | 1) Adj item:<br>[An TONE]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [ <input type="radio"/> ] button to store the adjustment value.                                              | 1) Adj item:<br>[Single Tone Deviation (Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.                                               | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "514" for each adjustment points. | 1.50kHz±0.05 kHz        |

| Item                                      | Condition                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                             | Measurement                     |       |          | Adjustment |                                                                                                                                                                                                                                          |                                                         | Specifications /Remarks |
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|                                           | Panel tuning mode                                                                                                                                                                                                                                                                                                    | PC test mode                                                                                                                                                                                                                                                | Test-equipment                  | Unit  | Terminal | Unit       | Parts                                                                                                                                                                                                                                    | Method                                                  |                         |
| 14. MSK Deviation<br><br>[Analog Wide 5k] | 1) Adj item:<br>[Aw MSK]<br>Adjust:[****]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [  ] button to store the adjustment value. | 1) Adj item:<br>[MSK Deviation (Analog Wide 5k)]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-]     | Write the fixed value "505" for each adjustment points. | 3.00kHz±0.05 kHz        |
| [Analog Wide 4k]                          | 1) Adj item:<br>[As MSK]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [  ] button to store the adjustment value.                                            | 1) Adj item:<br>[MSK Deviation (Analog Wide 4k)]<br>Deviation meter<br>Oscilloscope<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.           | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-]     | Write the fixed value "505" for each adjustment points. | 2.40kHz±0.05 kHz        |
| [Analog Narrow]                           | 1) Adj item:<br>[An MSK]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [  ] button to store the adjustment value.                                            | 1) Adj item:<br>[MSK Deviation (Analog Narrow)]<br>Deviation meter<br>Oscilloscope<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.            | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-] | Write the fixed value "505" for each adjustment points. | 1.50kHz±0.05 kHz        |

| Item                                               | Condition                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                         | Measurement                        |       |                         | Adjustment |                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Specifications /Remarks                                                    |
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|                                                    | Panel tuning mode                                                                                                                                                                                                                                                                                                              | PC test mode                                                                                                                                                                                                                                                            | Test-equipment                     | Unit  | Terminal                | Unit       | Parts                                                                                                                                                                                                                                            | Method                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                            |
| 15.<br>CWID<br>Deviation<br><br>[Analog<br>Narrow] | 1) Adj item:<br>[An CWID]<br>Adjust:[****]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>Adjust:[****]<br>PTT : ON<br>Press [  ]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[CWID Deviation<br>(Analog Narrow)]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value. | Deviation<br>meter<br>Oscilloscope | Panel | ANT                     | Panel      | [Panel<br>tuning<br>mode]<br>[  ],<br>[  ]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"511" for each<br>adjustment points.                                                                                                                                                                                                                                                                                                                                                                                           | 1.10kHz±0.10<br>kHz                                                        |
| 16.<br>Battery<br>Warning<br>Level<br>writing      | 1) Adj item:<br>[BATT]<br>Adjust:[****]<br>BATT terminal<br>voltage: 6.2V<br>while<br>transmitting.                                                                                                                                                                                                                            | 1) Adj item:<br>[Battery Warning<br>Level]<br>BATT terminal<br>voltage: 6.2V<br>while<br>transmitting.                                                                                                                                                                  | Power<br>meter<br>DVM              | Panel | ANT<br>BATT<br>terminal |            |                                                                                                                                                                                                                                                  | <b>[Panel tuning mode]</b><br>PTT: ON<br>Press [  ] button to<br>store the adjustment<br>value.<br><br><b>[PC test mode]</b><br>1) Press [Transmit]<br>button.<br>2) Press [Acquire<br>Monitored Value]<br>button.<br>3) Press [Apply] button<br>to store the<br>adjustment value.<br>Confirm that one<br>predetermined<br>numeric in the range<br>1 to 256 appears. |                                                                            |
| 17.<br>Battery<br>Warning<br>Level<br>check        | <b>[Panel test<br/>mode]</b><br>1) CH-Sig: 1-1<br>BATT terminal<br>voltage: 6.0V<br>while<br>transmitting.                                                                                                                                                                                                                     | <b>[Panel test mode]</b><br>1) Test Channel<br>Channel: 1<br>Test Signaling<br>Type: Analog<br>Signaling: 1<br>BATT terminal<br>voltage: 6.0V<br>while<br>transmitting.                                                                                                 |                                    |       |                         |            |                                                                                                                                                                                                                                                  | Check                                                                                                                                                                                                                                                                                                                                                                                                                                                   | The<br>transceiver<br>can transmit<br>with causing<br>the LED to<br>blink. |

#### 4.17.1 Necessary Deviation adjustment item for each signaling and mode

The following shows the necessary adjustment items for each signaling deviation. Please read the following table like the following example. In the case of the signaling "QT (Analog Wide 5k)", this signaling is composed of three elements [Balance, Maximum Deviation (Analog Wide 5k) and QT Deviation (Analog Wide 5k)]. Please adjust Balance and Maximum Deviation (Analog Wide 5k) before adjusting QT Deviation (Analog Wide 5k).

| Mode   | Signaling           | Necessary adjustment and order                                                                                |                                                                                                               |                                                                                                             |                                                                                                      |
|--------|---------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
|        |                     | Wide 5k                                                                                                       | Wide 4k                                                                                                       | Narrow                                                                                                      | Very Narrow                                                                                          |
| Analog | Audio               | 1. Balance adjust<br>2. Maximum Deviation<br>[Analog Wide 5k]                                                 | 1. Balance adjust<br>2. Maximum Deviation<br>[Analog Wide 4k]                                                 | 1. Balance adjust<br>2. Maximum Deviation<br>[Analog Narrow]                                                | -                                                                                                    |
|        | QT                  | 1. Balance adjust<br>2. Maximum Deviation<br>[Analog Wide 5k]<br>3. QT Deviation<br>[Analog Wide 5k]          | 1. Balance adjust<br>2. Maximum Deviation<br>[Analog Wide 4k]<br>3. QT Deviation<br>[Analog Wide 4k]          | 1. Balance adjust<br>2. Maximum Deviation<br>[Analog Narrow]<br>3. QT Deviation<br>[Analog Narrow]          | -                                                                                                    |
|        | DQT                 | 1. Balance adjust<br>2. Maximum Deviation<br>[Analog Wide 5k]<br>3. DQT Deviation<br>[Analog Wide 5k]         | 1. Balance adjust<br>2. Maximum Deviation<br>[Analog Wide 4k]<br>3. DQT Deviation<br>[Analog Wide 4k]         | 1. Balance adjust<br>2. Maximum Deviation<br>[Analog Narrow]<br>3. DQT Deviation<br>[Analog Narrow]         | -                                                                                                    |
|        | LTR                 | 1. Balance adjust<br>2. Maximum Deviation<br>[Analog Wide 5k]<br>3. LTR Deviation<br>[Analog Wide 5k]         | 1. Balance adjust<br>2. Maximum Deviation<br>[Analog Wide 4k]<br>3. LTR Deviation<br>[Analog Wide 4k]         | 1. Balance adjust<br>2. Maximum Deviation<br>[Analog Narrow]<br>3. LTR Deviation<br>[Analog Narrow]         | -                                                                                                    |
|        | DTMF                | 1. Balance adjust<br>2. Maximum Deviation<br>[Analog Wide 5k]<br>3. DTMF Deviation<br>[Analog Wide 5k]        | 1. Balance adjust<br>2. Maximum Deviation<br>[Analog Wide 4k]<br>3. DTMF Deviation<br>[Analog Wide 4k]        | 1. Balance adjust<br>2. Maximum Deviation<br>[Analog Narrow]<br>3. DTMF Deviation<br>[Analog Narrow]        | -                                                                                                    |
|        | 5TONE               | 1. Balance adjust<br>2. Maximum Deviation<br>[Analog Wide 5k]<br>3. Single Tone Deviation<br>[Analog Wide 5k] | 1. Balance adjust<br>2. Maximum Deviation<br>[Analog Wide 4k]<br>3. Single Tone Deviation<br>[Analog Wide 4k] | 1. Balance adjust<br>2. Maximum Deviation<br>[Analog Narrow]<br>3. Single Tone Deviation<br>[Analog Narrow] | -                                                                                                    |
|        | MSK<br>(Fleet sync) | 1. Balance adjust<br>2. Maximum Deviation<br>[Analog Wide 5k]<br>3. MSK Deviation<br>[Analog Wide 5k]         | 1. Balance adjust<br>2. Maximum Deviation<br>[Analog Wide 4k]<br>3. MSK Deviation<br>[Analog Wide 4k]         | 1. Balance adjust<br>2. Maximum Deviation<br>[Analog Narrow]<br>3. MSK Deviation<br>[Analog Narrow]         | -                                                                                                    |
| NXDN   | Audio               | -                                                                                                             | -                                                                                                             | 1. Balance adjust<br>2. NXDN High Deviation<br>[NXDN Narrow]                                                | 1. Balance adjust<br>2. NXDN High Deviation<br>[NXDN Very Narrow]                                    |
|        | CWID                | -                                                                                                             | -                                                                                                             | -                                                                                                           | 1. Balance adjust<br>2. Maximum Deviation<br>[Analog Narrow]<br>3. CWID Deviation<br>[Analog Narrow] |
| DMR    | Audio               | -                                                                                                             | -                                                                                                             | 1. Balance adjust<br>2. DMR High Deviation                                                                  | -                                                                                                    |

- Balance is common with all the above deviation adjustments. If Balance (Transmitter Section 5) has already adjusted, please skip Step1 and adjust from Step2.
- Maximum Deviation (Analog Wide 5k/Wide 4k/Narrow) is common with all the analog signaling deviations and CWID Deviation (NXDN Very Narrow).  
If Balance and Maximum Deviation (Analog Wide 5k/Wide 4k/Narrow) (Transmitter Section 6) have already adjusted, please skip Step2 and adjust from Step3.

#### 4.18 Receiver Section

| Item                              | Condition                                                                                                                                                              |                                                                                                                                                                                                | Measurement                             |       |                            | Adjustment |                                                             |                                                                                                                                                                                                                                                                                                                                                                                       | Specifications<br>/Remarks |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------|----------------------------|------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                                   | Panel tuning mode                                                                                                                                                      | PC test mode                                                                                                                                                                                   | Test-equipment                          | Unit  | Terminal                   | Unit       | Parts                                                       | Method                                                                                                                                                                                                                                                                                                                                                                                |                            |
| 1. AF level setting               | [Panel test mode]<br>1) CH-Sig: 1-1<br>SSG output: -47dBm (1mV) (MOD: 1kHz/ ±1.5kHz)                                                                                   | 1) Test Channel Channel: 1<br>Test Signaling Type: Analog<br>Signaling: 1<br>SSG output: -47dBm (1mV) (MOD:1kHz/ ±1.5kHz)                                                                      | SSG<br>DVM<br>AF VM<br>Dummy load       | Panel | ANT<br>Universal connector | Panel      | Volume knob                                                 | Turn the Volume knob to obtain 0.63V AF output.                                                                                                                                                                                                                                                                                                                                       | 0.63V<br>±0.1V             |
| 2. IQ Phase                       | 1) Adj item: [An IQ]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output: Freq: Tune Freq +8kHz<br>level: -53dBm (500μV) (MOD:OFF) | 1) Adj item: [IQ Phase]<br>2) Adj item: [Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output: Freq: Tune Freq +8kHz<br>level: -53dBm (500μV) (MOD:OFF)                        | SSG                                     | Panel | ANT<br>Universal connector | Panel      | [Panel tuning mode] [▲], [▼]<br>[PC test mode] [ + ], [ - ] | <b>[Panel tuning mode]</b><br>After input signal from SSG, Increase or decrease the adjustment value so that the RSSI indicator level becomes minimum.<br><b>[PC test mode]</b><br><b>[Automatic Adjustment]</b><br>After input signal from SSG,<br>1) Press [Autotune] button.<br>2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished. |                            |
| 3. RSSI reference [DSP (Receive)] | 1) Adj item: [An RSSI 1]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)            | 1) Adj item: [RSSI Reference (Analog Narrow) 1 DSP (Receive)]<br>2) Adj item: [Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz) | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |                                                             | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ O ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value.                                                                                                     |                            |

| Item              | Condition                                                                                                                                                                     |                                                                                                                                                                                                                          | Measurement                                |       |                               | Adjustment |       |                                                                                                                                                                                                                                                                                          | Specifications<br>/Remarks |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------|-------------------------------|------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                   | Panel tuning mode                                                                                                                                                             | PC test mode                                                                                                                                                                                                             | Test-equipment                             | Unit  | Terminal                      | Unit       | Parts | Method                                                                                                                                                                                                                                                                                   |                            |
| [RF IC (Receive)] | 1) Adj item:<br>[An RSSI 2]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>12dB SINAD<br>level -3dB<br>(MOD:<br>1kHz/±1.5kHz) | 1) Adj item:<br>[RSSI Reference<br>(Analog Narrow)<br>2 RF IC (Receive)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output:<br>12dB SINAD level<br>-3dB<br>(MOD:<br>1kHz/±1.5kHz) | SSG<br>Distortion<br>meter<br>Oscilloscope | Panel | ANT<br>Universal<br>connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ <b>○</b> ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |
| [DSP (Standby)]   | 1) Adj item:<br>[An RSSI 3]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>12dB SINAD<br>level -3dB<br>(MOD:<br>1kHz/±1.5kHz) | 1) Adj item:<br>[RSSI Reference<br>(Analog Narrow)<br>3 DSP (Standby)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output:<br>12dB SINAD level<br>-3dB<br>(MOD:<br>1kHz/±1.5kHz)   | SSG<br>Distortion<br>meter<br>Oscilloscope | Panel | ANT<br>Universal<br>connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ <b>○</b> ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |
| [RF IC (Standby)] | 1) Adj item:<br>[An RSSI 4]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>12dB SINAD<br>level -3dB<br>(MOD:<br>1kHz/±1.5kHz) | 1) Adj item:<br>[RSSI Reference<br>(Analog Narrow)<br>4 RF IC (Standby)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output:<br>12dB SINAD level<br>-3dB<br>(MOD:<br>1kHz/±1.5kHz) | SSG<br>Distortion<br>meter<br>Oscilloscope | Panel | ANT<br>Universal<br>connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ <b>○</b> ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |

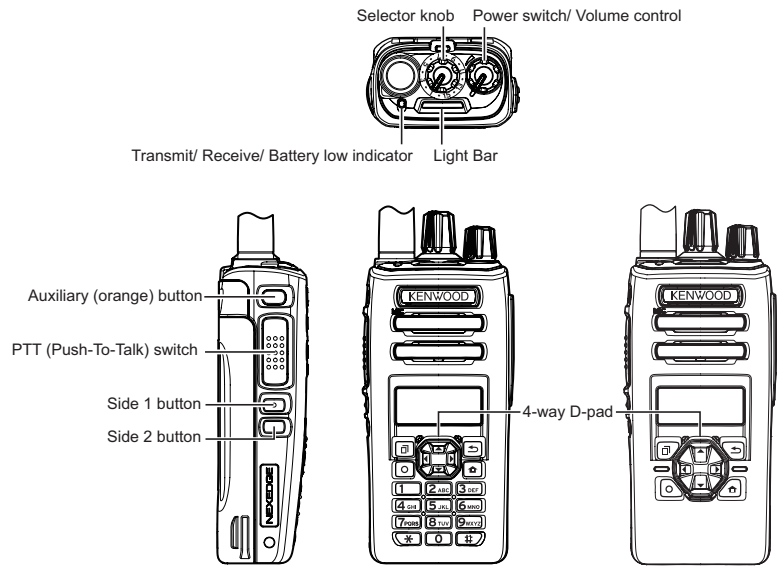
| Item                                | Condition                                                                                                                                                                |                                                                                                                                                                                               | Measurement                             |       |                            | Adjustment |       |                                                                                                                                                                                                                                                                                                                                                                       | Specifications<br>/Remarks |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------|----------------------------|------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                                     | Panel tuning mode                                                                                                                                                        | PC test mode                                                                                                                                                                                  | Test-equipment                          | Unit  | Terminal                   | Unit       | Parts | Method                                                                                                                                                                                                                                                                                                                                                                |                            |
| 4. Squelch Open<br>[Analog Wide 5k] | 1) Adj item:<br>[Aw SQL]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>12dB SINAD level -3dB<br>(MOD: 1kHz/<br>±3kHz)   | 1) Adj item:<br>[Squelch Open (Analog Wide 5k)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output:<br>12dB SINAD level -3dB<br>(MOD: 1kHz/<br>±3kHz)   | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [  ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value.   |                            |
| [Analog Wide 4k]                    | 1) Adj item:<br>[As SQL]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>12dB SINAD level -3dB<br>(MOD: 1kHz/<br>±2.4kHz) | 1) Adj item:<br>[Squelch Open (Analog Wide 4k)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output:<br>12dB SINAD level -3dB<br>(MOD: 1kHz/<br>±2.4kHz) | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [  ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value.   |                            |
| [Analog Narrow]                     | 1) Adj item:<br>[An SQL]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>12dB SINAD level -3dB<br>(MOD: 1kHz/<br>±1.5kHz) | 1) Adj item:<br>[Squelch Open (Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output:<br>12dB SINAD level -3dB<br>(MOD: 1kHz/<br>±1.5kHz)  | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [  ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |

| Item               | Condition                                                                                                                                                                                           |                                                                                                                                                                                                                               | Measurement                                |       |                               | Adjustment |       |                                                                                                                                                                                                                                                                                                                  | Specifications<br>/Remarks |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------|-------------------------------|------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                    | Panel tuning mode                                                                                                                                                                                   | PC test mode                                                                                                                                                                                                                  | Test-equipment                             | Unit  | Terminal                      | Unit       | Parts | Method                                                                                                                                                                                                                                                                                                           |                            |
| [NXDN Narrow]      | 1) Adj item:<br>[Nn SQL]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>12dB SINAD<br>level at Analog<br>Narrow -5dB<br>(MOD: 400Hz/<br>±1.5kHz)    | 1) Adj item:<br>[Squelch Open<br>(NXDN Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output: 12dB<br>SINAD level at<br>Analog Narrow<br>-5dB<br>(MOD: 400Hz/<br>±1.5kHz)         | SSG<br>Distortion<br>meter<br>Oscilloscope | Panel | ANT<br>Universal<br>connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from<br>SSG, press [ <b>○</b> ]<br>button to store the<br>adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from<br>SSG,<br>1) Press [Acquire<br>Monitored Value]<br>button.<br>2) Press [Apply]<br>button to store the<br>adjustment value. |                            |
| [NXDN Very Narrow] | 1) Adj item:<br>[Nv SQL]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>12dB SINAD<br>level at Analog<br>Narrow<br>-2dB<br>(MOD: 400Hz/<br>±1.5kHz) | 1) Adj item:<br>[Squelch Open<br>(NXDN Very<br>Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output: 12dB<br>SINAD level at<br>Analog Narrow<br>-2dB<br>(MOD: 400Hz/<br>±1.5kHz) | SSG<br>Distortion<br>meter<br>Oscilloscope | Panel | ANT<br>Universal<br>connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from<br>SSG, press [ <b>○</b> ]<br>button to store the<br>adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from<br>SSG,<br>1) Press [Acquire<br>Monitored Value]<br>button.<br>2) Press [Apply]<br>button to store the<br>adjustment value. |                            |
| [DMR]              | 1) Adj item:<br>[D SQL]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>12dB SINAD<br>level at Analog<br>Narrow<br>-4dB<br>(MOD: 400Hz/<br>±1.8kHz)  | 1) Adj item:<br>[Squelch Open<br>(DMR)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output: 12dB<br>SINAD level at<br>Analog Narrow<br>-4dB<br>(MOD: 400Hz/<br>±1.8kHz)                 | SSG<br>Distortion<br>meter<br>Oscilloscope | Panel | ANT<br>Universal<br>connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from<br>SSG, press [ <b>○</b> ]<br>button to store the<br>adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from<br>SSG,<br>1) Press [Acquire<br>Monitored Value]<br>button.<br>2) Press [Apply]<br>button to store the<br>adjustment value. |                            |

| Item                                        | Condition                                                                                                                                                             |                                                                                                                                                                                            | Measurement                             |       |                            | Adjustment |       |                                                                                                                                                                                                                                                                                                                                                                       | Specifications<br>/Remarks |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------|----------------------------|------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                                             | Panel tuning mode                                                                                                                                                     | PC test mode                                                                                                                                                                               | Test-equipment                          | Unit  | Terminal                   | Unit       | Parts | Method                                                                                                                                                                                                                                                                                                                                                                |                            |
| 5.<br>Squelch Tight<br><br>[Analog Wide 5k] | 1) Adj item:<br>[Aw SQLT]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>12dB SINAD level +6dB<br>(MOD: 1kHz/±3kHz)   | 1) Adj item:<br>[Squelch Tight (Analog Wide 5k)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output:<br>12dB SINAD level +6dB<br>(MOD: 1kHz/±3kHz)   | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [  ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG, press [Apply] button to store the adjustment value.                                                       |                            |
| [Analog Wide 4k]                            | 1) Adj item:<br>[As SQLT]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>12dB SINAD level +6dB<br>(MOD: 1kHz/±2.4kHz) | 1) Adj item:<br>[Squelch Tight (Analog Wide 4k)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output:<br>12dB SINAD level +6dB<br>(MOD: 1kHz/±2.4kHz) | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [  ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG, press [Apply] button to store the adjustment value.                                                       |                            |
| [Analog Narrow]                             | 1) Adj item:<br>[An SQLT]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>12dB SINAD level +6dB<br>(MOD: 1kHz/±1.5kHz) | 1) Adj item:<br>[Squelch Tight (Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output:<br>12dB SINAD level +6dB<br>(MOD: 1kHz/±1.5kHz)  | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [  ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |
| 6.<br>Low RSSI                              | 1) Adj item:<br>[An LRSSI]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>-118dBm (0.28μV)<br>(MOD: 1kHz/±1.5kHz)     | 1) Adj item:<br>[Low RSSI (Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output:<br>-118dBm (0.28μV)<br>(MOD: 1kHz/±1.5kHz)            | SSG                                     | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [  ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |

| Item            | Condition                                                                                                                                                               |                                                                                                                                                                                        | Measurement    |       |                               | Adjustment |       |                                                                                                                                                                                                                                                                                                                  | Specifications<br>/Remarks |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|-------------------------------|------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                 | Panel tuning mode                                                                                                                                                       | PC test mode                                                                                                                                                                           | Test-equipment | Unit  | Terminal                      | Unit       | Parts | Method                                                                                                                                                                                                                                                                                                           |                            |
| 7.<br>High RSSI | 1) Adj item:<br>[An HRSSI]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[C2]→<br>[H1]→<br>[H3]<br>SSG output:<br>-80dBm<br>(22.4μV)<br>(MOD: 1kHz/<br>±1.5kHz) | 1) Adj item:<br>[High RSSI<br>(Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Center2]→<br>[High1]→<br>[High3]<br>SSG output:<br>-80dBm (22.4μV)<br>(MOD: 1kHz/<br>±1.5kHz) | SSG            | Panel | ANT<br>Universal<br>connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from<br>SSG, press [ <b>O</b> ]<br>button to store the<br>adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from<br>SSG,<br>1) Press [Acquire<br>Monitored Value]<br>button.<br>2) Press [Apply]<br>button to store the<br>adjustment value. |                            |

### 4.19 NX-3300(K, K2, K3) TYPE Controls



#### 4.19.1 Preparations for checking/tuning the transceiver

Before attempting to check/tune the transceiver, connect the unit to a suitable power supply.

Whenever the transmitter is turned on, the unit must be connected to a suitable dummy load (i.e. power meter).

The speaker output connector must be terminated with an 8ohm dummy load and connected to an AC voltmeter and an audio distortion meter or a SINAD measurement meter at all times during checking/tuning.

### 4.20 Panel Test Mode (K2 and K3 types only)

#### 4.20.1 Test mode operation features

This transceiver has a test mode. To enter test mode, press and hold the [↵] button while turning the transceiver power ON or press the [□] button and select the "Panel Test". Before the transceiver enters test mode, the frequency version information appears on the LCD momentarily. Test mode can be inhibited by programming. To exit test mode, turn the transceiver power OFF. The following functions are available in test mode.

- When the panel test mode is activated, the channel selected with the 4-way D-pad and the last used signaling number are displayed. When it is activated for the first time, the signaling number is 1.

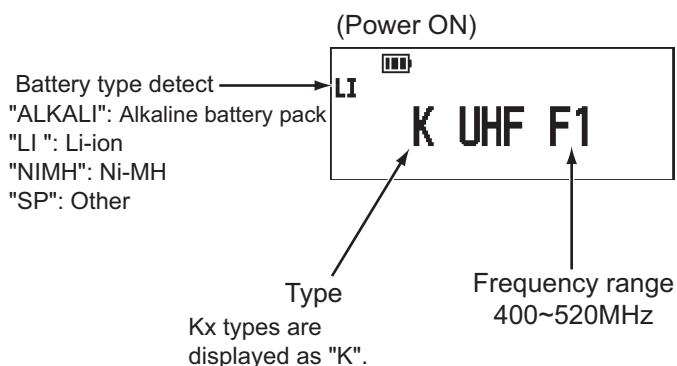
#### 4.20.2 Button operation

| Button                  | "Func" not appears on the sub LCD display                       |                                              |
|-------------------------|-----------------------------------------------------------------|----------------------------------------------|
|                         | Function                                                        | Display                                      |
| [Selector]              | -                                                               | -                                            |
| [▲]                     | Push: Test channel up<br>Hold: Test channel up continuously     | Channel No.                                  |
| [▼]                     | Push: Test channel down<br>Hold: Test channel down continuously | Channel No.                                  |
| [◀]                     | Push: Squelch level up *1<br>Hold: Squelch off                  | Squelch level<br>Squelch off:  icon appears  |
| [▶]                     | Wide/Narrow/<br>Very Narrow                                     | Wide: "w"<br>Narrow: "n"<br>Very Narrow: "v" |
| [Side1]                 | -                                                               | -                                            |
| [Side2]                 | -                                                               | -                                            |
| [□]                     | Shift to panel tuning mode                                      | -                                            |
| [↵]                     | Function on                                                     | "Func" appears on the sub LCD display        |
| [○]                     | -                                                               | -                                            |
| [🏠]                     | Push: Test signaling up<br>Hold: Test signaling up continuously | Signaling No.                                |
| [AUX (Orange)]          | MSK 1200bps and 2400bps *1                                      | 2400bps:  icon appears                       |
| [PTT]                   | Transmit                                                        | -                                            |
| [0] to [9] and [#], [✖] | -                                                               | -                                            |

\*1: When the mode is selected as Analog, this function is enabled.

| Button     | "Func" appears on the sub LCD display |                                                                          |
|------------|---------------------------------------|--------------------------------------------------------------------------|
|            | Function                              | Display                                                                  |
| [Selector] | -                                     | -                                                                        |
| [▲]        | Function off                          | -                                                                        |
| [▼]        | Analog/NXDN/DMR                       | Analog: "A"<br>NXDN: "N"<br>DMR: "D"                                     |
| [◀]        | Function off                          | -                                                                        |
| [▶]        | Button/LCD check                      | The position of the selector knob, etc., appear.                         |
| [Side1]    | Function off                          | -                                                                        |
| [Side2]    | Function off                          | -                                                                        |
| [□]        | High power/Medium power/Low power     | High:[H] icon appears<br>Medium:[M] icon appears<br>Low:[L] icon appears |
| [↶]        | Function off                          | -                                                                        |

#### • LCD display in panel test mode



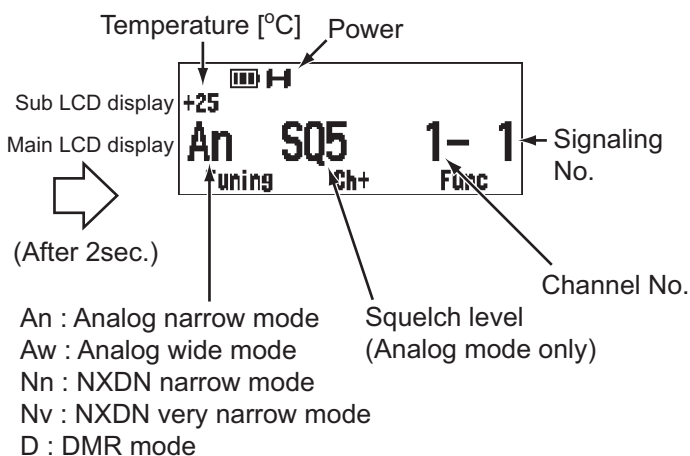
| Button                      | "Func" appears on the sub LCD display |                      |
|-----------------------------|---------------------------------------|----------------------|
|                             | Function                              | Display              |
| [○]                         | Function off                          | -                    |
| [🏠]                         | Function off                          | -                    |
| [AUX (Orange)]              | Compander On/Off                      | On: [🔊] icon appears |
| [PTT]                       | Transmit                              | -                    |
| [0] to [9] and [ # ], [ * ] | Function off                          | -                    |

#### • LED indicator

Red LED Lights during transmission.  
Green LED Lights when there is carrier.

#### • Sub LCD indicator

"Func" Appears at function on.



### 4.20.3 Frequency and Signaling

The transceiver has been adjusted for the frequencies shown in the following table. When required, readjust them following the adjustment procedure to obtain the frequencies you want in actual operation.

#### (1) Test frequency

| CH   | RX (MHz)  | TX (MHz)  |
|------|-----------|-----------|
| 1    | 460.05000 | 460.10000 |
| 2    | 400.05000 | 400.10000 |
| 3    | 519.95000 | 519.90000 |
| 4    | 460.00000 | 460.00000 |
| 5    | 460.20000 | 460.20000 |
| 6    | 460.40000 | 460.40000 |
| 7~16 | -         | -         |

#### (2) Signaling

##### ■Analog Type Signaling

| No. | RX                                      | TX                                      |
|-----|-----------------------------------------|-----------------------------------------|
| 1   | None                                    | None                                    |
| 2   | None                                    | Square Wave                             |
| 3   | LTR Data                                | LTR Data                                |
| 4   | QT:67.0Hz                               | QT:67.0Hz                               |
| 5   | QT:151.4Hz                              | QT:151.4Hz                              |
| 6   | QT:210.7Hz                              | QT:210.7Hz                              |
| 7   | QT:254.1Hz                              | QT:254.1Hz                              |
| 8   | DQT:D023N                               | DQT:D023N                               |
| 9   | DQT:D754I                               | DQT:D754I                               |
| 10  | DTMF Decode (CODE: 159D)                | DTMF Encode (CODE: 159D)                |
| 11  | None                                    | DTMF Encode (CODE: 9)                   |
| 12  | 2-tone Decode (A: 304.7Hz, B: 3106.0Hz) | 2-tone Encode (A: 304.7Hz, B: 3106.0Hz) |

| No. | RX                           | TX                           |
|-----|------------------------------|------------------------------|
| 13  | Single Tone Decode (979.9Hz) | Single Tone Encode (979.9Hz) |
| 14  | None                         | Single Tone Encode (1000Hz)  |
| 15  | None                         | MSK PN9                      |
| 16  | MSK Decode                   | MSK Encode                   |

#### ■NXDN Type Signaling

| No.  | RX                    | TX                        |
|------|-----------------------|---------------------------|
| 1    | RAN1                  | RAN1                      |
| 2    | None                  | PN9                       |
| 3    | RAN1                  | Maximum Deviation Pattern |
| 7 *2 | FSW + PN9             | FSW + PN9                 |
| 9 *2 | Tone Pattern (1031Hz) | Tone Pattern (1031Hz)     |

RAN: Radio Access Number  
PN9: Pseudo-Random Pattern  
\*2: PC test mode only

#### ■DMR Type Signaling

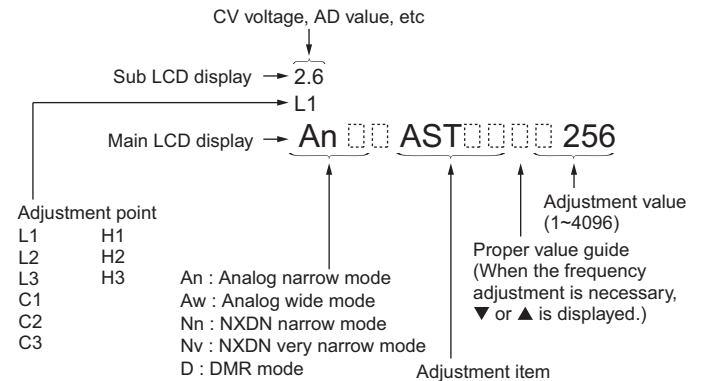
| No. | RX                                     | TX                                     |
|-----|----------------------------------------|----------------------------------------|
| 1   | CC 00 Burst                            | CC 00 Burst                            |
| 2   | PN9                                    | PN9                                    |
| 3   | CC 00 Burst                            | Maximum Deviation Pattern              |
| 4   | CC 00 Burst                            | 1/3 Deviation Pattern                  |
| 5   | CC 00 Burst                            | 0 Continuous Pattern                   |
| 6   | SYNC (Each Slot) + PN9 Burst Pattern   | SYNC (Each Slot) + PN9 Burst Pattern   |
| 7   | SYNC (Super Frame) + PN9 Burst Pattern | SYNC (Super Frame) + PN9 Burst Pattern |
| 8   | CC 00 Burst                            | 0 Burst Pattern                        |
| 9   | Tone Pattern                           | Tone Test Burst Pattern                |
| 10  | Silence Pattern                        | Silence Burst Pattern                  |
| 11  | Audio Test Pattern                     | Audio Test Burst Pattern               |
| 12  | Vocoder Loop                           | None                                   |

### 4.21 Panel Tuning Mode (K2 and K3 types only)

#### 4.21.1 Transceiver tuning (To enter tuning mode)

To enter tuning mode, press the [  ] button while the transceiver is in test mode. Use the [  ] button to write tuning data through tuning modes, and the [  ]/[  ] button to adjust tuning requirements (1 to 4096 appears on the LCD). Use the [  ] button to select the adjustment item through tuning modes. Use the [  ] button to adjust 5, 9 or 17 reference level adjustments, and use the [  ] button to switch between Wide/Narrow.

- LCD display in panel tuning mode



#### 4.21.2 Button operation

| Button                                                                                  | Function                                        |                                                                                                         |
|-----------------------------------------------------------------------------------------|-------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|                                                                                         | Push                                            | Hold (1 second)                                                                                         |
| [Selector]                                                                              | -                                               | -                                                                                                       |
| [  ] | Adjustment value up                             | Continuation up                                                                                         |
| [  ] | Adjustment value down                           | Continuation down                                                                                       |
| [  ] | Auto adjustment start                           | Output tone pattern change of balance adjustment (A change is possible only during balance adjustment.) |
| [  ] | Wide/Narrow/NXDN/DMR                            | -                                                                                                       |
| [ Side1 ]                                                                               | -                                               | -                                                                                                       |
| [ Side2 ]                                                                               | -                                               | -                                                                                                       |
| [  ] | Shift to panel test mode                        | -                                                                                                       |
| [  ] | To enter 5, 9 or 17 reference level adjustments | -                                                                                                       |
| [  ] | Writes the adjustment value                     | -                                                                                                       |
| [  ] | Go to next adjustment item                      | Back to last adjustment item (At the time of 5, 9 or 17 point adjustment: Adjustment point change)      |
| [AUX (Orange)]                                                                          | -                                               | -                                                                                                       |
| [PTT]                                                                                   | Transmit                                        | -                                                                                                       |
| [0] to [9] and [#],[*]                                                                  | -                                               | -                                                                                                       |

#### 4.21.3 5, 9 or 17 reference level adjustments frequency

High Transmit Power, Medium Transmit Power, Low Transmit Power, IQ Phase, RSSI Reference 1 DSP (Receive), RSSI Reference 2 RF IC (Receive), RSSI Reference 3 DSP (Standby), RSSI Reference 4 RF IC (Standby), Squelch Open, Squelch Tight, Low RSSI, High RSSI

| Tuning point | Display | RX (MHz)  | TX (MHz)  |
|--------------|---------|-----------|-----------|
| 1            | L1      | 400.05000 | 400.10000 |
| 2            | L5      | 430.05000 | 430.10000 |
| 3            | C3      | 460.05000 | 460.10000 |
| 4            | H2      | 490.05000 | 490.10000 |
| 5            | H6      | 519.95000 | 519.90000 |

Balance, Maximum Deviation, NXDN High Deviation, DMR High Deviation, QT Deviation, DQT Deviation, LTR Deviation, DTMF Deviation, Single Tone Deviation, MSK Deviation, CW ID Deviation

| Tuning point | Display | RX (MHz)  | TX (MHz)  |
|--------------|---------|-----------|-----------|
| 1            | L1      | 400.05000 | 400.10000 |
| 2            | L3      | 415.05000 | 415.10000 |
| 3            | L5      | 430.05000 | 430.10000 |
| 4            | C1      | 445.05000 | 445.10000 |
| 5            | C3      | 460.05000 | 460.10000 |
| 6            | C5      | 475.05000 | 475.10000 |
| 7            | H2      | 490.05000 | 490.10000 |
| 8            | H4      | 505.05000 | 505.10000 |
| 9            | H6      | 519.95000 | 519.90000 |

#### VCO Assist

| Tuning point | Display | RX (MHz)  | TX (MHz)  |
|--------------|---------|-----------|-----------|
| 1            | L1      | 400.05000 | 400.10000 |
| 2            | L2      | 407.55000 | 407.60000 |
| 3            | L3      | 415.05000 | 415.10000 |
| 4            | L4      | 422.55000 | 422.60000 |
| 5            | L5      | 430.05000 | 430.10000 |
| 6            | L6      | 437.55000 | 437.60000 |
| 7            | C1      | 445.05000 | 445.10000 |
| 8            | C2      | 452.55000 | 452.60000 |
| 9            | C3      | 460.05000 | 460.10000 |
| 10           | C4      | 467.55000 | 467.60000 |
| 11           | C5      | 475.05000 | 475.10000 |
| 12           | H1      | 482.55000 | 482.60000 |
| 13           | H2      | 490.05000 | 490.10000 |
| 14           | H3      | 497.55000 | 497.60000 |
| 15           | H4      | 505.05000 | 505.10000 |
| 16           | H5      | 512.55000 | 512.60000 |
| 17           | H6      | 519.95000 | 519.90000 |

#### 4.21.4 Adjustment item supplement

| Adjustment Item                         | Description                                                                                                                                                                                                                                    |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LCD Contrast                            | The contrast of LCD display can be changed.                                                                                                                                                                                                    |
| VCO Assist                              | The lock voltage of VCO is adjusted. This item must be adjusted before receiver and transmitter adjustment items.                                                                                                                              |
| Frequency                               | Frequency is adjusted under receiving condition with SSG. The SSG needs 0.001ppm accuracy so please use a standard oscillator if necessary. This item can be adjusted only in PC Test Mode so that the adjustment value is not changed easily. |
| RTC Correction                          | Real Time Clock is adjusted. This item uses the internal clock. (Any measurement equipment is not required.)                                                                                                                                   |
| High Transmit Power                     | High Transmit Power is adjusted.                                                                                                                                                                                                               |
| Mid Transmit Power                      | Medium Transmit Power is adjusted.                                                                                                                                                                                                             |
| Low Transmit Power                      | Low Transmit Power is adjusted.                                                                                                                                                                                                                |
| Ramp Offset                             | Adjust this item to the optimal Ramp voltage.                                                                                                                                                                                                  |
| Balance                                 | The transmit modulation frequency response is adjusted. This item is adjusted so that the deviation of 2kHz becomes the same deviation of 20Hz. This item must be adjusted before all adjustment items for deviations are adjusted.            |
| Maximum Deviation (Analog Wide/ Narrow) | Maximum Deviation of Analog (Wide/ Narrow) is adjusted. This item must be adjusted before all adjustment items for tone deviations are adjusted.                                                                                               |
| High Deviation                          | NXDN/DMR high deviation is adjusted.                                                                                                                                                                                                           |
| QT Deviation                            | QT deviation is adjusted.                                                                                                                                                                                                                      |
| DQT Deviation                           | DQT deviation is adjusted.                                                                                                                                                                                                                     |
| LTR Deviation                           | LTR deviation is adjusted.                                                                                                                                                                                                                     |
| DTMF Deviation                          | DTMF deviation is adjusted.                                                                                                                                                                                                                    |
| Single Tone Deviation                   | The deviation of Single Tone used in "2-tone" and "5-tone" is adjusted.                                                                                                                                                                        |
| MSK Deviation                           | MSK deviation is adjusted.                                                                                                                                                                                                                     |
| CW ID Deviation                         | CWID tone deviation is adjusted. CWID is used to inform the others who is transmitting on a 6.25-kHz spacing channel. (In FCC rule, Analog mode or CWID is required for each channel-spacing.)                                                 |
| Battery Warning Level                   | Battery Warning Level (LED blinking level) is adjusted. Battery Warning Level minus 0.4V is the transmission inhibited level.                                                                                                                  |

| Adjustment Item | Description                                                                                  |
|-----------------|----------------------------------------------------------------------------------------------|
| IQ Phase        | Correction of phase difference shift between I and Q.                                        |
| RSSI Reference  | The minimum RSSI level for scan stop is adjusted.                                            |
| Squelch Open    | The squelch level at level “1” is adjusted.                                                  |
| Squelch Tight   | The squelch level at level “9” is adjusted.                                                  |
| Low RSSI        | RSSI display level “ $\overline{\text{T}}$ ” is adjusted.                                    |
| High RSSI       | Both “Low RSSI” and “High RSSI” must be adjusted. (The curve data of RSSI level is applied.) |

#### 4.21.5 Adjustment item and Display

| Order            | Adjustment item       | Main LCD display | Sub LCD display         | AW<br>(Analog Wide)                       | AN<br>(Analog Narrow) | Nn<br>(NXDN Narrow) | Nv<br>(NXDN Very Narrow) | D<br>(DMR) | Adjust item Number     |
|------------------|-----------------------|------------------|-------------------------|-------------------------------------------|-----------------------|---------------------|--------------------------|------------|------------------------|
| Adjustment range |                       |                  |                         |                                           |                       |                     |                          |            |                        |
| 1                | LCD Contrast          | CNTR             | -                       | 1 point ADJ<br>1~256                      |                       |                     |                          |            | Common Section 2       |
| 2                | VCO Assist            | AST              | (CV voltage)            | -                                         | 17                    | -                   | -                        | -          | Common Section 3       |
|                  |                       |                  |                         | 1~4096                                    |                       |                     |                          |            |                        |
| 3                | RTC Correction        | RTC              | -                       | -<br>-2.00 ~ -0.01 , 0.00 , +0.01 ~ +2.00 |                       |                     |                          |            | Common Section 5       |
| 4                | High Transmit Power   | H_PWR            | -                       | -                                         | 5                     | -                   | -                        | -          | Transmitter Section 1  |
|                  |                       |                  |                         | 1~1024                                    |                       |                     |                          |            |                        |
| 5                | Medium Transmit Power | M_PWR            | -                       | -                                         | 5                     | -                   | -                        | -          | Transmitter Section 2  |
|                  |                       |                  |                         | 1~1024                                    |                       |                     |                          |            |                        |
| 6                | Low Transmit Power    | L_PWR            | -                       | -                                         | 5                     | -                   | -                        | -          | Transmitter Section 3  |
|                  |                       |                  |                         | 1~1024                                    |                       |                     |                          |            |                        |
| 7                | Ramp Offset           | RAMP             | (ADC measurement value) | 1 point ADJ<br>1~1024                     |                       |                     |                          |            | Transmitter Section 4  |
| 8                | Balance               | BAL              | (Encode frequency)      | -                                         | 9                     | -                   | -                        | -          | Transmitter Section 5  |
|                  |                       |                  |                         | 1~1024                                    |                       |                     |                          |            |                        |
| 9                | Maximum Deviation     | ADEV             | -                       | 9                                         | 9                     | -                   | -                        | -          | Transmitter Section 6  |
|                  |                       |                  |                         | 1~1024                                    |                       |                     |                          |            |                        |
| 10               | NXDN High Deviation   | NDEV             | -                       | -                                         | -                     | 9                   | 9                        | -          | Transmitter Section 7  |
|                  |                       |                  |                         | 1~1024                                    |                       |                     |                          |            |                        |
| 11               | DMR High Deviation    | DDEV             | -                       | -                                         | -                     | -                   | -                        | 9          | Transmitter Section 8  |
|                  |                       |                  |                         | 1~1024                                    |                       |                     |                          |            |                        |
| 12               | QT Deviation          | QT               | -                       | 9                                         | 9                     | -                   | -                        | -          | Transmitter Section 9  |
|                  |                       |                  |                         | 1~1024                                    |                       |                     |                          |            |                        |
| 13               | DQT Deviation         | DQT              | -                       | 9                                         | 9                     | -                   | -                        | -          | Transmitter Section 10 |
|                  |                       |                  |                         | 1~1024                                    |                       |                     |                          |            |                        |
| 14               | LTR Deviation         | LTR              | -                       | 9                                         | 9                     | -                   | -                        | -          | Transmitter Section 11 |
|                  |                       |                  |                         | 1~1024                                    |                       |                     |                          |            |                        |
| 15               | DTMF Deviation        | DTMF             | -                       | 9                                         | 9                     | -                   | -                        | -          | Transmitter Section 12 |
|                  |                       |                  |                         | 1~1024                                    |                       |                     |                          |            |                        |

| Order | Adjustment item                  | Main LCD display | Sub LCD display                          | AW<br>(Analog Wide) | AN<br>(Analog Narrow) | Nn<br>(NXDN Narrow) | Nv<br>(NXDN Very Narrow) | D<br>(DMR) | Adjust item Number     |
|-------|----------------------------------|------------------|------------------------------------------|---------------------|-----------------------|---------------------|--------------------------|------------|------------------------|
|       |                                  |                  |                                          | Adjustment range    |                       |                     |                          |            |                        |
| 16    | Single Tone Deviation            | TONE             | -                                        | 9                   | 9                     | -                   | -                        | -          | Transmitter Section 13 |
|       |                                  |                  |                                          | 1~1024              |                       |                     |                          |            |                        |
| 17    | MSK Deviation                    | MSK              | -                                        | 9                   | 9                     | -                   | -                        | -          | Transmitter Section 14 |
|       |                                  |                  |                                          | 1~1024              |                       |                     |                          |            |                        |
| 18    | CW ID Deviation                  | CWID             | -                                        | -                   | 9                     | -                   | -                        | -          | Transmitter Section 15 |
|       |                                  |                  |                                          | 1~1024              |                       |                     |                          |            |                        |
| 19    | Battery Warning Level            | BATT             | (BATT measurement value)                 | 1 point ADJ         |                       |                     |                          |            | Transmitter Section 16 |
|       |                                  |                  |                                          | 1~256               |                       |                     |                          |            |                        |
| 20    | IQ Phase                         | IQ               | (RSSI DSP(Receive) measurement value)    | -                   | 5                     | -                   | -                        | -          | Receive Section 2      |
|       |                                  |                  |                                          | 1~63                |                       |                     |                          |            |                        |
| 21    | RSSI Reference 1 DSP (Receive)   | RSSI1            | (RSSI DSP(Receive) measurement value)    | -                   | 5                     | -                   | -                        | -          | Receive Section 3      |
|       |                                  |                  |                                          | 1~256               |                       |                     |                          |            |                        |
| 22    | RSSI Reference 2 RF IC(Receive)  | RSSI2            | (RSSI RF IC(Receive) measurement value)  | -                   | 5                     | -                   | -                        | -          | Receive Section 3      |
|       |                                  |                  |                                          | 1~256               |                       |                     |                          |            |                        |
| 23    | RSSI Reference 3 DSP (Standby)   | RSSI3            | (RSSI DSP (Standby) measurement value)   | -                   | 5                     | -                   | -                        | -          | Receive Section 3      |
|       |                                  |                  |                                          | 1~256               |                       |                     |                          |            |                        |
| 24    | RSSI Reference 4 RF IC (Standby) | RSSI4            | (RSSI RF IC (Standby) measurement value) | -                   | 5                     | -                   | -                        | -          | Receive Section 3      |
|       |                                  |                  |                                          | 1~256               |                       |                     |                          |            |                        |
| 25    | Squelch Open                     | SQL              | (ASQDET measurement value)               | 5                   | 5                     | 5                   | 5                        | 5          | Receive Section 4      |
|       |                                  |                  |                                          | 1~256               |                       |                     |                          |            |                        |
| 26    | Squelch Tight                    | SQLT             | (ASQDET measurement value)               | 5                   | 5                     | -                   | -                        | -          | Receive Section 5      |
|       |                                  |                  |                                          | 1~256               |                       |                     |                          |            |                        |
| 27    | Low RSSI                         | LRSSI            | (RSSI DSP (Receive) measurement value)   | -                   | 5                     | -                   | -                        | -          | Receive Section 6      |
|       |                                  |                  |                                          | 1~256               |                       |                     |                          |            |                        |
| 28    | High RSSI                        | HRSSI            | (RSSI DSP (Receive) measurement value)   | -                   | 5                     | -                   | -                        | -          | Receive Section 7      |
|       |                                  |                  |                                          | 1~256               |                       |                     |                          |            |                        |

**Note:**

**Panel Test Mode**

**Adjustment Item LCD Display**  
For all adjustment items, press the [O] button to write the adjustment value.

**Navigation:** Home, Left, Right, Up, Down, Enter, Exit

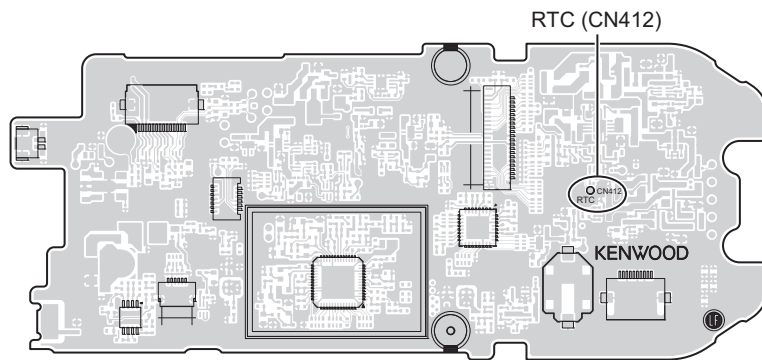
**Adjustment Items:**

- LCD Contrast CNTR
- VCO Assist AST → 17 reference level Adjustments
- RTC Correction RTC
- High Power H\_PWR Narrow An → 5 reference level Adjustments
- Medium Power M\_PWR Narrow An → 5 reference level Adjustments
- Low Power L\_PWR Narrow An → 5 reference level Adjustments
- Ramp Offset RAMP
- Balance BAL Narrow An → 9 reference level Adjustments
- Analog Max Deviation ADEV Narrow An → Analog Max Deviation ADEV Wide Aw → 9 reference level Adjustments
- NXDN High Deviation NDEV Narrow Nn → NXDN High Deviation NDEV VeryNarrow Nv → 9 reference level Adjustments
- DMR High Deviation DDEV DMR D → 9 reference level Adjustments
- QT Deviation QT Narrow An → QT Deviation QT Wide Aw → 9 reference level Adjustments
- DQT Deviation DQT Narrow An → DQT Deviation DQT Wide Aw → 9 reference level Adjustments
- LTR Deviation LTR Narrow An → LTR Deviation LTR Wide Aw → 9 reference level Adjustments
- DTMF Deviation DTMF Narrow An → DTMF Deviation DTMF Wide Aw → 9 reference level Adjustments
- Single Tone Deviation TONE Narrow An → Single Tone Deviation TONE Wide Aw → 9 reference level Adjustments
- MSK Deviation MSK Narrow An → MSK Deviation MSK Wide Aw → 9 reference level Adjustments
- CW ID Deviation CWID Narrow An → 9 reference level Adjustments
- Battery BATT
- IQ Phase IQ Narrow An → 5 reference level Adjustments
- RSSI Reference 1 RSSI1 Narrow An → 5 reference level Adjustments
- RSSI Reference 2 RSSI2 Narrow An → 5 reference level Adjustments
- RSSI Reference 3 RSSI3 Narrow An → 5 reference level Adjustments
- RSSI Reference 4 RSSI4 Narrow An → 5 reference level Adjustments
- Squelch (Open) SQL Narrow An → Squelch (Open) SQL Wide Aw → Squelch (Open) SQL Narrow Nn → 5 reference level Adjustments
- Squelch (Tight) SQT Narrow An → Squelch (Tight) SQT Wide Aw → 5 reference level Adjustments
- RSSI (Low) LRSSI Narrow An → 5 reference level Adjustments
- RSSI (High) HRSSI Narrow An → 5 reference level Adjustments



## 4.22 Adjustment points

TX-RX UNIT (XC1-181)  
Component Side



## 4.23 Test Equipment Required for Alignment

| Test Equipment                     | Major Specifications                                                                                                                                     |                                                   |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| 1. Standard Signal Generator (SSG) | Frequency Range                                                                                                                                          | 100 to 900MHz                                     |
|                                    | Modulation                                                                                                                                               | Frequency modulation and external modulation      |
|                                    | Output                                                                                                                                                   | -127dBm/0.1uV to greater than -20dBm/22.4mV       |
|                                    | When performing the Frequency adjustment, the following accuracy is necessary.                                                                           |                                                   |
|                                    | <ul style="list-style-type: none"> <li>• 0.001ppm</li> </ul>                                                                                             |                                                   |
|                                    | Use a standard oscillator for adjustments, if necessary.                                                                                                 |                                                   |
| 2. Power Meter                     | Input Impedance                                                                                                                                          | 50ohm                                             |
|                                    | Operation Frequency                                                                                                                                      | 100 to 900MHz                                     |
|                                    | Measurement Capability                                                                                                                                   | Vicinity of 10W                                   |
| 3. Deviation Meter                 | Frequency Range                                                                                                                                          | 100 to 900MHz                                     |
| 4. Digital Volt Meter (DVM)        | Measuring Range                                                                                                                                          | 10mV to 10V DC                                    |
|                                    | Input Impedance                                                                                                                                          | High input impedance for minimum circuit loading  |
| 5. Oscilloscope                    |                                                                                                                                                          | DC through 30MHz                                  |
| 6. Frequency Counter               | Frequency Range                                                                                                                                          | 10Hz to 1000MHz                                   |
|                                    | Frequency Stability                                                                                                                                      | 0.2ppm or less                                    |
|                                    | To measure the oscillating frequency of the internal clock 32766.00Hz~32770.00Hz for RTC Correction Resolution 0.01Hz is better for accuracy adjustment. |                                                   |
| 7. Ammeter                         |                                                                                                                                                          | 5A                                                |
| 8. AF Volt Meter (AF VM)           | Frequency Range                                                                                                                                          | 50Hz to 10kHz                                     |
|                                    | Voltage Range                                                                                                                                            | 1mV to 10V                                        |
| 9. Audio Generator (AG)            | Frequency Range                                                                                                                                          | 50Hz to 5kHz or more                              |
|                                    | Output                                                                                                                                                   | 0 to 1V                                           |
| 10. Distortion Meter               | Capability                                                                                                                                               | 3% or less at 1kHz                                |
|                                    | Input Level                                                                                                                                              | 50mV to 10Vrms                                    |
| 11. Spectrum Analyzer              | Measuring Range                                                                                                                                          | DC to 1GHz or more                                |
| 12. 8ohm Dummy Load                |                                                                                                                                                          | Approx. 8ohm, 3W                                  |
| 13. Regulated Power Supply         |                                                                                                                                                          | 5V to 10V, approx. 3A, Useful if ammeter equipped |

\* The test equipment which is not used for adjustment is contained in this table.

### ■Antenna connector adapter

The antenna connector of this transceiver uses an SMA terminal.

Use an antenna connector adapter [SMA(f) - BNC(f) or SMA(f) - N(f)] for adjustment. (The adapter is not provided as an option, so buy a commercially-available one.)

### ■Nut wrench

In order to turn the volume nut and the channel selector nut, use a recommendation tool.

Part No.: W05-1123-00

### ■Battery Jig (W05-0909-00)

Connect the power cable properly between the battery jig installed in the transceiver and the power supply, and be sure output voltage and the power supply polarity prior to switching the power supply ON, otherwise over voltage and reverse connection may damage the transceiver, or the power supply or both.

When using the battery jig in user mode, the transceiver assumes that a lithium-ion battery pack is attached to the transceiver. In adjustment mode, battery type detection is not performed.

### ■Universal connector

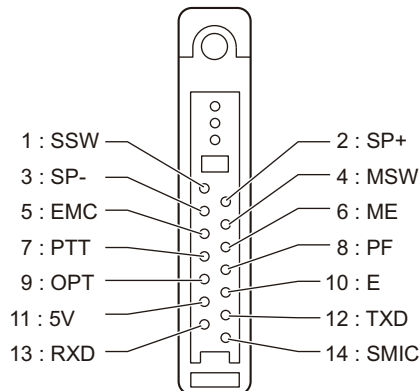
Use the interface cable (KPG-36U/36X) for PC tuning or the lead wire with plug (E30-3287-28) and screw (N08-0535-08) for panel tuning. Connect the plug to the universal connector of the transceiver and tighten the screw.

The lead wire with plug (E30-3287-28) and screw (N08-0535-08) terminals are as follows. Numbers are universal connector terminal numbers.

#### Caution

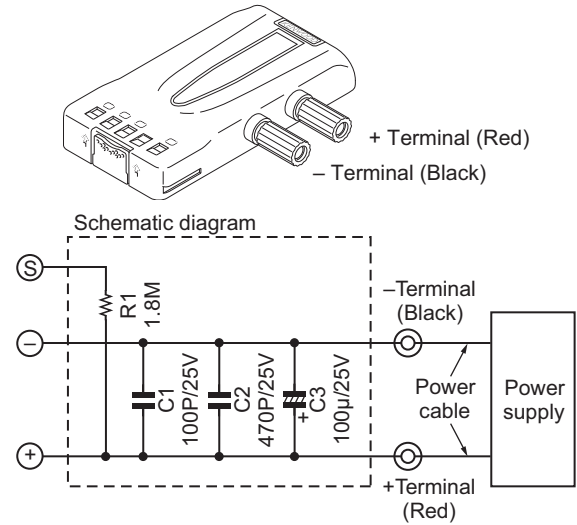
- (1) When connecting the plug to the universal connector of the transceiver, a short circuit may occur. To prevent this, be sure to turn the transceiver POWER switch off.
- (2) Since the RX AF output is a BTL output, there is a DC component. Isolate this with a capacitor or transformer as shown in the figure.
- (3) Do not connect an instrument between red or black and GND.

#### • \*Universal connector

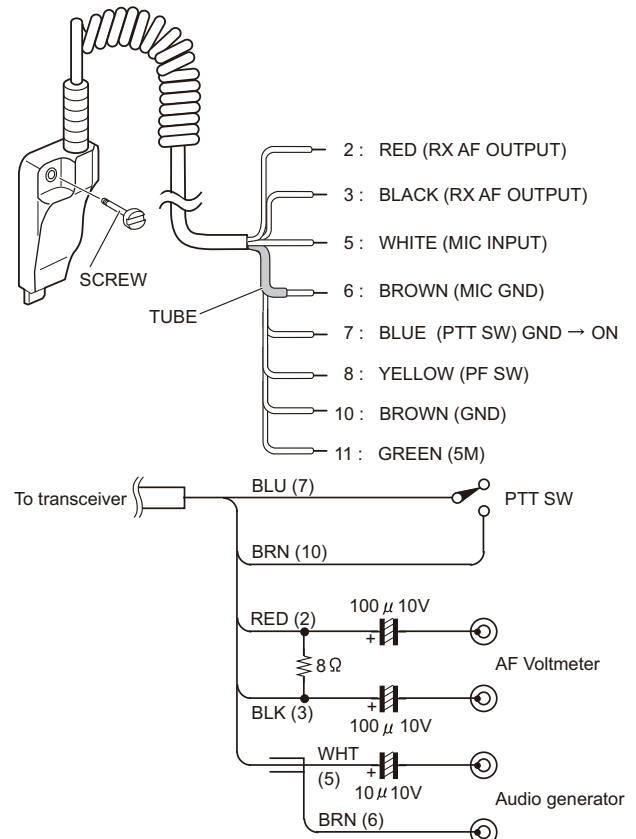


#### Note:

When using the battery jig, you must measure the voltage at the terminals of the battery jig. Otherwise, a slight voltage drop may occur within the power cable, between the power supply and the battery jig, especially while the transceiver transmits.

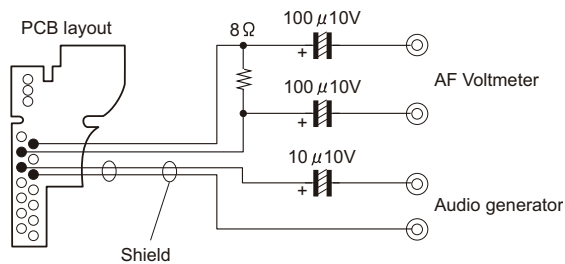
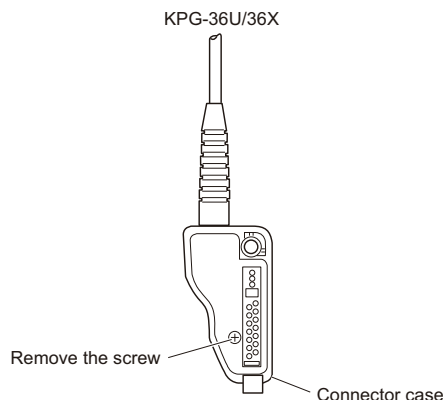


#### • \*Panel tuning



**Note:** Pin 1 (SSW) and Pin 4 (MSW) are connected to Pin 10 (GND) to active External SP and External MIC.

- \*PC tuning  
Connect the wires to the PCB in the connector case of interface cable.  
For output the wires out of the connector case, need to process the connector case.



#### 4.24 Radio check Section

| Item                                           | Condition                |                                                                                                              | Measurement            |       |          | Adjustment |       |                                                           | Specifications /Remarks               |
|------------------------------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------|------------------------|-------|----------|------------|-------|-----------------------------------------------------------|---------------------------------------|
|                                                | Panel test mode          | PC test mode                                                                                                 | Test-equipment         | Unit  | Terminal | Unit       | Parts | Method                                                    |                                       |
| 1. Frequency check                             | 1)CH-Sig: 1-1<br>PTT: ON | 1)Test Channel<br>Channel: 1<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button. | f. counter             | Panel | ANT      |            |       | Check an internal temperature of radio from 20°C to 33°C. | +/-0.25ppm<br>+/-115.0Hz<br>@460.1MHz |
| 2. High power check<br>(Battery voltage: 7.5V) | 1)CH-Sig: 1-1<br>PTT: ON | 1)Test Channel<br>Channel: 1<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button. | Power meter<br>Ammeter | Panel | ANT      |            |       | Check                                                     | 4.0~6.0W<br>2.3A or less              |
|                                                | 2)CH-Sig: 2-1<br>PTT: ON | 2)Test Channel<br>Channel: 2<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button. |                        |       |          |            |       |                                                           |                                       |
|                                                | 3)CH-Sig: 3-1<br>PTT: ON | 3)Test Channel<br>Channel: 3<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button. |                        |       |          |            |       |                                                           |                                       |

| Item                                             | Condition                                                                                                                        |                                                                                                                                                                                          | Measurement                                                            |       |                            | Adjustment |       |                                        | Specifications /Remarks  |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|-------|----------------------------|------------|-------|----------------------------------------|--------------------------|
|                                                  | Panel test mode                                                                                                                  | PC test mode                                                                                                                                                                             | Test-equipment                                                         | Unit  | Terminal                   | Unit       | Parts | Method                                 |                          |
| 3.<br>Low power check<br>(Battery voltage: 7.5V) | 1)CH-Sig: 1-1<br>PTT: ON                                                                                                         | 1)Test Channel<br>Channel: 1<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button.                                                                             | Power meter<br>Ammeter                                                 | Panel | ANT                        |            |       | Check                                  | 0.7~1.4W<br>1.1A or less |
|                                                  | 2)CH-Sig: 2-1<br>PTT: ON                                                                                                         | 2)Test Channel<br>Channel: 2<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button.                                                                             |                                                                        |       |                            |            |       |                                        |                          |
|                                                  | 3)CH-Sig: 3-1<br>PTT: ON                                                                                                         | 3)Test Channel<br>Channel: 3<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button.                                                                             |                                                                        |       |                            |            |       |                                        |                          |
| 4.<br>MIC sensitivity check                      | 1)CH-Sig: 1-1<br>AG: 1kHz<br>PTT: ON                                                                                             | 1)Test Channel<br>Channel: 1<br>Test Signaling Type: Analog<br>Signaling: 1<br>AG: 1kHz<br>PTT: Press [Transmit] button.                                                                 | Deviation meter<br>Oscilloscope<br>AG<br>AF VM                         | Panel | ANT<br>Universal connector |            |       | Adjust AG input to get a standard MOD. | 12.5mV<br>±5.8mV         |
| 5.<br>Sensitivity check                          | 1)CH-Sig: 1-1<br>SSG output Wide:<br>-117dBm (0.32μV)<br>(MOD: 1kHz/±3kHz)<br>Narrow:<br>-117dBm (0.32μV)<br>(MOD: 1kHz/±1.5kHz) | 1)Test Channel<br>Channel: 1<br>Test Signaling Type: Analog<br>Signaling: 1<br>SSG output Wide: -117dBm (0.32μV)<br>(MOD: 1kHz/±3kHz)<br>Narrow: -117dBm (0.32μV)<br>(MOD: 1kHz/±1.5kHz) | SSG<br>AF VM<br>Oscilloscope<br>Distortion meter<br>8ohm<br>Dummy load | Panel | ANT<br>Universal connector |            |       | Check                                  | 12dB SINAD or more       |

#### 4.25 Common Section

| Item           | Condition                                                                                                                                                                      |                                                                                                       | Measurement    |      |          | Adjustment |                                                                                                                                                                                                                                              |                                                             | Specifications /Remarks |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------|------|----------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-------------------------|
|                | Panel tuning mode                                                                                                                                                              | PC test mode                                                                                          | Test-equipment | Unit | Terminal | Unit       | Parts                                                                                                                                                                                                                                        | Method                                                      |                         |
| 1.<br>Setting  | 1) DC voltage:7.5V<br>2) SSG standard modulation<br>[Wide] MOD:1kHz,DEV:3kHz<br>[Narrow] MOD:1kHz,DEV:1.5kHz                                                                   |                                                                                                       |                |      |          |            |                                                                                                                                                                                                                                              |                                                             |                         |
| 2.LCD Contrast | 1) Adj item [CNTR]<br>Adjust:[****]<br><br>Press [  ] button to store the adjustment value. | 1) Adj item [LCD Contrast]<br>Data: [****]<br><br>Press [Apply] button to store the adjustment value. |                |      |          | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-] | Write the value as followings.<br><br>126 (Reference value) |                         |

| Item             | Condition                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Measurement    |       |          | Adjustment |                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Specifications /Remarks                                                                                                                                                                                                                                                                                                                  |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|----------|------------|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | Panel tuning mode                                                                                                                                                                                                                                                                                                                   | PC test mode                                                                                                                                                                                                                                                                                                                                                                                                                                             | Test-equipment | Unit  | Terminal | Unit       | Parts                                                         | Method                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                          |
| 3.<br>VCO Assist | 1) Adj item: [AST]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L2]→<br>[L3]→<br>[L4]→<br>[L5]→<br>[L6]→<br>[C1]→<br>[C2]→<br>[C3 RxOL:L]→<br>[C4]→<br>[C5]→<br>[H1]→<br>[H2]→<br>[H3]→<br>[H4]→<br>[H5]→<br>[H6]→<br>[C3 RxOL:H (Long press the [▶] button)]<br><br>Adjust:[****]<br>Press [○] button to store the adjustment value. | 1) Adj item: [VCO Assist]<br>2) Adj item: [Low1],[Low2],[Low3],[Low4],[Low5],[Low6]<br>[Center1], [Center2],[Center3],[Center4],[Center5],[High1],[High2],[High3],[High4],[High5],[High6]<br>[Overlap]<br><br>Press [Apply] button to store the adjustment value.                                                                                                                                                                                        |                |       |          | Panel      | [Panel tuning mode]<br>[▲], [▼]<br>[PC test mode]<br>[+], [-] | <b>[PC test mode]</b><br><b>[Automatic Adjustment]</b><br>1) Press [Autotune] button.<br>2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished.<br><b>[Manual Adjustment]</b><br>[V] indicator on the PC window shows VCO lock voltage. Change the adjustment value to get VCO lock voltage within the limit of the specified voltage.<br><br><b>Note:</b><br>Confirm the VCO lock voltage approximately 3 seconds after the adjustment value is changed. | 2.5V±0.1V<br><b>[Automatic Adjustment]</b><br>After the automatic adjustment is performed, verify that the VCO lock voltage is within the voltage range which is specified by the manual adjustment.<br><b>[Manual Adjustment]</b><br>Press [Apply] button to store the adjustment value after all adjustment points have been adjusted. |
| 4.<br>Frequency  | *The Frequency adjustment can be performed only in PC test mode.                                                                                                                                                                                                                                                                    | 1) Adj item: [Frequency]<br>SSG output: -20dBm (22.4mV) (CW (without modulation))<br><br><b>Caution:</b><br>Perform the frequency adjustment under the following conditions.<br>• Temperature range of +20°C to +33°C (+68.0°F to +91.4°F). (The temperature is displayed on the Frequency adjustment screen of the KPG-D3/ D3N and the LCD of the transceiver.)<br>• Use an accuracy of 0.001ppm for the SSG. (Use a standard oscillator if necessary.) | SSG            | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲], [▼]<br>[PC test mode]<br>[+], [-] | <b>[PC test mode]</b><br>Press [Start] button of “Auto Tuning”. Press [Apply] button to store the adjustment value after the automatic adjustment has finished.                                                                                                                                                                                                                                                                                                                                       | <b>[PC test mode]</b><br>“IF20” value = Within 0±30 digits. The value of “IF20” will become around “0” after the adjustment has finished.<br><br><b>Remark:</b><br>“Frequency” is adjusted under receiving condition with SSG.                                                                                                           |

| Item              | Condition                                                                                                                                                                |                                                                                                      | Measurement       |       |                    | Adjustment |       |        | Specifications /Remarks                                                                 |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------|-------|--------------------|------------|-------|--------|-----------------------------------------------------------------------------------------|
|                   | Panel tuning mode                                                                                                                                                        | PC test mode                                                                                         | Test-equipment    | Unit  | Terminal           | Unit       | Parts | Method |                                                                                         |
| 5. RTC Correction | 1) Adj item: [RTC]<br>Adjust:[****]<br>Press [  ] button to store the adjustment value. | 1) Adj item: [RTC Correction]<br>Data: [****]<br>Press [Apply] button to store the adjustment value. | Frequency Counter | TX-RX | TEST POINT (CN412) |            |       |        | <b>Remark:</b><br>The adjustment value should input the display of a Frequency Counter. |

#### 4.26 Transmitter Section

| Item                                              | Condition                                                                                                                                                                                                                                         |                                                                                                                                                                                                 | Measurement            |       |          | Adjustment |                                                                                                                                                                                                                                          |        | Specifications /Remarks |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------|----------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------|
|                                                   | Panel tuning mode                                                                                                                                                                                                                                 | PC test mode                                                                                                                                                                                    | Test-equipment         | Unit  | Terminal | Unit       | Parts                                                                                                                                                                                                                                    | Method |                         |
| 1. High transmit power (Battery voltage : 7.5V)   | 1) Adj item: [H_PWR]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>PTT : ON<br>Press [  ] button to store the adjustment value.   | 1) Adj item: [High Transmit Power]<br>2) Adj item: [Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.   | Power meter<br>Ammeter | Panel | ANT      | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-]     | 5.0W   | ±0.1W<br>2.3A or less   |
| 2. Medium transmit power (Battery voltage : 7.5V) | 1) Adj item: [M_PWR]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>PTT : ON<br>Press [  ] button to store the adjustment value. | 1) Adj item: [Medium Transmit Power]<br>2) Adj item: [Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Power meter<br>Ammeter | Panel | ANT      | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-] | 4.0W   | ±0.1W<br>2.3A or less   |
| 3. Low transmit power (Battery voltage : 7.5V)    | 1) Adj item: [L_PWR]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>PTT : ON<br>Press [  ] button to store the adjustment value. | 1) Adj item: [Low Transmit Power]<br>2) Adj item: [Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.    | Power meter<br>Ammeter | Panel | ANT      | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-] | 1.0W   | ±0.1W<br>1.1A or less   |

| Item              | Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                      | Measurement                     |       |          | Adjustment |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Specifications /Remarks                                      |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------|----------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
|                   | Panel tuning mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | PC test mode                                                                                                                                                                                                                                                                                         | Test-equipment                  | Unit  | Terminal | Unit       | Parts                                                                                                                                                                                                                                      | Method                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                              |
| 4.<br>Ramp Offset | 1)Adj item:<br>[RAMP]<br>Adjust:[****]<br>PTT : ON<br>Press [  ] button to store the adjustment value.                                                                                                                                                                                                                                                                                                                | 1) Adj item:<br>[Ramp Offset]<br>Press<br>[Autotune(TX Starts)] button.<br>Press [Apply] button to store the adjustment value.                                                                                                                                                                       | Power meter<br>Ammeter          | Panel | ANT      | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-]     | <b>[PC test mode]</b><br><b>[Automatic Adjustment]</b><br>1) Press [Autotune(TX starts)] button.<br>2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished.<br><b>[Manual Adjustment]</b><br>1) Set the adjustment value to "1".<br>2) Press [Transmit] button and increase the adjustment value slowly while monitoring the offset monitor value.<br>3) Set the adjustment value when the offset monitor value exceeds "31".          |                                                              |
| 5.<br>Balance     | 1) Adj item:<br>[An BAL]<br>Adjust:[****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[  ] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [  ] button to store the adjustment value. | 1) Adj item:<br>[Balance]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-] | The Deviation of 20Hz frequency is fixed. Change the 2kHz adjustment value to become the same deviation of 20Hz within the specified range.<br><b>[Panel tuning mode]</b><br>PTT:ON<br>While PTT:ON, press the [  ] button to change the 20Hz/ 2kHz.<br><b>[PC test mode]</b><br>PTT: Press [Transmit] button.<br>While PTT:ON, click the check box "2kHz Sine Wave" to change the 20Hz/2kHz. | 2kHz Tone deviation is within ± 1.0% of 20Hz tone deviation. |

| Item                                     | Condition                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                        | Measurement                     |       |          | Adjustment |                                                                  |                                                                                                                                                                                                                                                                     | Specifications /Remarks |
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|                                          | Panel tuning mode                                                                                                                                                                                                                                                                                                                             | PC test mode                                                                                                                                                                                                                                                                                                                           | Test-equipment                  | Unit  | Terminal | Unit       | Parts                                                            | Method                                                                                                                                                                                                                                                              |                         |
| 6.<br>Maximum Deviation<br>[Analog Wide] | 1) Adj item:<br>[Aw ADEV]<br>Adjust:[****]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[ ▶ ] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [ ○ ]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[Maximum Deviation (Analog Wide)]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value. | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write fixed value "490"<br>for each adjustment<br>point.<br>Transmit at each<br>adjustment point and<br>check that the<br>deviation is between<br>4150Hz and 4250Hz.<br><br>[Panel tuning mode]<br>PTT: ON<br><br>[PC test mode]<br>PTT: Press [Transmit]<br>button | 4150~4250Hz             |
| [Analog Narrow]                          | 1) Adj item:<br>[An ADEV]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[ ▶ ] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [ ○ ]<br>button to store<br>the adjustment<br>value.                                              | 1) Adj item:<br>[Maximum Deviation (Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value.                                            | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | Write fixed value "490"<br>for each adjustment<br>point. Transmit at each<br>adjustment point and<br>check that the<br>deviation is between<br>2050Hz and 2150Hz.<br><br>[Panel tuning mode]<br>PTT: ON<br><br>[PC test mode]<br>PTT: Press [Transmit]<br>button    | 2050~2150Hz             |

| Item                                 | Condition                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                              | Measurement                        |       |          | Adjustment |                                                                              |                                                                                                                                                                                                                                                                                          | Specifications /Remarks |
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|                                      | Panel tuning mode                                                                                                                                                                                                                                                                                                                            | PC test mode                                                                                                                                                                                                                                                                                                                                 | Test-equipment                     | Unit  | Terminal | Unit       | Parts                                                                        | Method                                                                                                                                                                                                                                                                                   |                         |
| 7. NXDN High Deviation [NXDN Narrow] | 1) Adj item:<br>[Nn NDEV]<br>Adjust:[****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[ ▶ ] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [ ○ ]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[NXDN High<br>Deviation (NXDN<br>Narrow]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value. | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write fixed value “500”<br>for each adjustment<br>point.<br>Transmit at each<br>adjustment point and<br>check that the Analog<br>deviation is between<br>2995Hz and 3117Hz.<br><br><b>[Panel tuning mode]</b><br>PTT: ON<br><br><b>[PC test mode]</b><br>PTT: Press [Transmit]<br>button | 2995~3117Hz             |
| [NXDN Very Narrow]                   | 1) Adj item:<br>[Nv NDEV]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[ ▶ ] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [ ○ ]<br>button to store<br>the adjustment<br>value.                                             | 1) Adj item:<br>[NXDN High<br>Deviation (NXDN<br>Very Narrow]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value.                                        | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write fixed value “500”<br>for each adjustment<br>point. Transmit at each<br>adjustment point and<br>check that the Analog<br>deviation is between<br>1311Hz and 1363Hz.<br><br><b>[Panel tuning mode]</b><br>PTT: ON<br><br><b>[PC test mode]</b><br>PTT: Press [Transmit]<br>button    | 1311~1363Hz             |

| Item                                 | Condition                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                              | Measurement                     |       |          | Adjustment |                                                               |                                                                                                                                                                                                                                                                  | Specifications /Remarks |
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|                                      | Panel tuning mode                                                                                                                                                                                                                                                                                                              | PC test mode                                                                                                                                                                                                                                                                                                                 | Test-equipment                  | Unit  | Terminal | Unit       | Parts                                                         | Method                                                                                                                                                                                                                                                           |                         |
| 8. DMR High Deviation                | 1) Adj item:<br>[D DDEV]<br>Adjust:[****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○] button to store the adjustment value. | 1) Adj item:<br>[DMR High Deviation (DMR Narrow)]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲], [▼]<br>[PC test mode]<br>[+], [-] | Write fixed value "500" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is between 2695Hz and 2803Hz.<br><br><b>[Panel tuning mode]</b><br>PTT: ON<br><br><b>[PC test mode]</b><br>PTT: Press [Transmit] button | 2695~2803Hz             |
| 9. QT Deviation<br><br>[Analog Wide] | 1) Adj item:<br>[Aw QT]<br>Adjust:[****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○] button to store the adjustment value.  | 1) Adj item:<br>[QT Deviation (Analog Wide)]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.      | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲], [▼]<br>[PC test mode]<br>[+], [-] | Write the fixed value "540" for each adjustment points.                                                                                                                                                                                                          | 0.75kHz±0.05 kHz        |

| Item                                     | Condition                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                      | Measurement                        |       |          | Adjustment |                                                                              |                                                               | Specifications /Remarks |
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|                                          | Panel tuning mode                                                                                                                                                                                                                                                                                                                           | PC test mode                                                                                                                                                                                                                                                                                                                         | Test-equipment                     | Unit  | Terminal | Unit       | Parts                                                                        | Method                                                        |                         |
| [Analog Narrow]                          | 1) Adj item:<br>[An QT]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[ ▶ ] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [ ○ ]<br>button to store<br>the adjustment<br>value.                                              | 1) Adj item:<br>[QT Deviation<br>(Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value.                                            | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"540" for each<br>adjustment points. | 0.35kHz±0.05<br>kHz     |
| 10. DQT<br>Deviation<br>[Analog<br>Wide] | 1) Adj item:<br>[Aw DQT]<br>Adjust:[****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[ ▶ ] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [ ○ ]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[DQT Deviation<br>(Analog Wide)]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value. | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"440" for each<br>adjustment points. | 0.75kHz±0.05<br>kHz     |

| Item                                         | Condition                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                      | Measurement                        |       |          | Adjustment |                                                                              |                                                               | Specifications /Remarks |
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|                                              | Panel tuning mode                                                                                                                                                                                                                                                                                                                       | PC test mode                                                                                                                                                                                                                                                                                                                         | Test-equipment                     | Unit  | Terminal | Unit       | Parts                                                                        | Method                                                        |                         |
| [Analog Narrow]                              | 1) Adj item:<br>[An DQT]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○]<br>button to store<br>the adjustment<br>value.                                             | 1) Adj item:<br>[DQT Deviation<br>(Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value.                                           | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"440" for each<br>adjustment points. | 0.35kHz±0.05<br>kHz     |
| 11. LTR<br>Deviation<br><br>[Analog<br>Wide] | 1) Adj item:<br>[Aw LTR]<br>Adjust:[****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[LTR Deviation<br>(Analog Wide)]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value. | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"530" for each<br>adjustment points. | 1.00kHz±0.05<br>kHz     |

| Item                                      | Condition                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                        | Measurement                        |       |          | Adjustment |                                                                              |                                                               | Specifications /Remarks |
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|                                           | Panel tuning mode                                                                                                                                                                                                                                                                                                                             | PC test mode                                                                                                                                                                                                                                                                                                                           | Test-equipment                     | Unit  | Terminal | Unit       | Parts                                                                        | Method                                                        |                         |
| [Analog Narrow]                           | 1) Adj item:<br>[An LTR]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[ ▶ ] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [ ○ ]<br>button to store<br>the adjustment<br>value.                                               | 1) Adj item:<br>[LTR Deviation<br>(Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value.                                             | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"530" for each<br>adjustment points. | 0.75kHz±0.05<br>kHz     |
| 12. DTMF<br>Deviation<br>[Analog<br>Wide] | 1) Adj item:<br>[Aw DTMF]<br>Adjust:[****]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[ ▶ ] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [ ○ ]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[DTMF Deviation<br>(Analog Wide)]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value. | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"545" for each<br>adjustment points. | 2.50kHz±0.05<br>kHz     |

| Item                                                    | Condition                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                  | Measurement                        |       |          | Adjustment |                                                                              |                                                               | Specifications /Remarks |
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|                                                         | Panel tuning mode                                                                                                                                                                                                                                                                                                                         | PC test mode                                                                                                                                                                                                                                                                                                                                     | Test-equipment                     | Unit  | Terminal | Unit       | Parts                                                                        | Method                                                        |                         |
| [Analog Narrow]                                         | 1) Adj item:<br>[An DTMF]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○]<br>button to store<br>the adjustment<br>value.                                              | 1) Adj item:<br>[DTMF Deviation<br>(Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value.                                                      | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"545" for each<br>adjustment points. | 1.25kHz±0.05<br>kHz     |
| 13. Single<br>Tone<br>Deviation<br><br>[Analog<br>Wide] | 1) Adj item:<br>[Aw TONE]<br>Adjust:[****]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[Single Tone<br>Deviation (Analog<br>Wide)]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value. | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"520" for each<br>adjustment points. | 3.00kHz±0.05<br>kHz     |

| Item                                     | Condition                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                       | Measurement                        |       |          | Adjustment |                                                                              |                                                               | Specifications /Remarks |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------|----------|------------|------------------------------------------------------------------------------|---------------------------------------------------------------|-------------------------|
|                                          | Panel tuning mode                                                                                                                                                                                                                                                                                                                            | PC test mode                                                                                                                                                                                                                                                                                                                          | Test-equipment                     | Unit  | Terminal | Unit       | Parts                                                                        | Method                                                        |                         |
| [Analog Narrow]                          | 1) Adj item:<br>[An TONE]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[ ▶ ] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [ ○ ]<br>button to store<br>the adjustment<br>value.                                             | 1) Adj item:<br>[Single Tone<br>Deviation (Analog<br>Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value.                                 | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"520" for each<br>adjustment points. | 1.50kHz±0.05<br>kHz     |
| 14. MSK<br>Deviation<br>[Analog<br>Wide] | 1) Adj item:<br>[Aw MSK]<br>Adjust:[****]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[ ▶ ] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [ ○ ]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[MSK Deviation<br>(Analog Wide)]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value. | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"510" for each<br>adjustment points. | 3.00kHz±0.05<br>kHz     |

| Item                                               | Condition                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                          | Measurement                        |       |          | Adjustment |                                                                              |                                                               | Specifications /Remarks |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------|----------|------------|------------------------------------------------------------------------------|---------------------------------------------------------------|-------------------------|
|                                                    | Panel tuning mode                                                                                                                                                                                                                                                                                                                         | PC test mode                                                                                                                                                                                                                                                                                                                             | Test-equipment                     | Unit  | Terminal | Unit       | Parts                                                                        | Method                                                        |                         |
| [Analog Narrow]                                    | 1) Adj item:<br>[An MSK]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○]<br>button to store<br>the adjustment<br>value.                                               | 1) Adj item:<br>[MSK Deviation<br>(Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value.                                               | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"510" for each<br>adjustment points. | 1.50kHz±0.05<br>kHz     |
| 15.<br>CWID<br>Deviation<br><br>[Analog<br>Narrow] | 1) Adj item:<br>[An CWID]<br>Adjust:[****]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[CWID Deviation<br>(Analog Narrow)]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value. | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"500" for each<br>adjustment points. | 1.10kHz±0.10<br>kHz     |

| Item                                          | Condition                                                                                                  |                                                                                                                                                                         | Measurement           |       |                         | Adjustment |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Specifications /Remarks                                                    |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------|-------------------------|------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
|                                               | Panel tuning mode                                                                                          | PC test mode                                                                                                                                                            | Test-equipment        | Unit  | Terminal                | Unit       | Parts | Method                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                            |
| 16.<br>Battery<br>Warning<br>Level<br>writing | 1) Adj item:<br>[BATT]<br>Adjust:[****]<br>BATT terminal<br>voltage: 6.2V<br>while<br>transmitting.        | 1) Adj item:<br>[Battery Warning<br>Level]<br>BATT terminal<br>voltage: 6.2V<br>while<br>transmitting.                                                                  | Power<br>meter<br>DVM | Panel | ANT<br>BATT<br>terminal |            |       | <b>[Panel tuning mode]</b><br>PTT: ON<br>Press [  ] button to<br>store the adjustment<br>value.<br><br><b>[PC test mode]</b><br>1) Press [Transmit]<br>button.<br>2) Press [Acquire<br>Monitored Value]<br>button.<br>3) Press [Apply] button<br>to store the<br>adjustment value.<br>Confirm that one<br>predetermined<br>numeric in the range<br>1 to 256 appears. |                                                                            |
| 17.<br>Battery<br>Warning<br>Level<br>check   | <b>[Panel test<br/>mode]</b><br>1) CH-Sig: 1-1<br>BATT terminal<br>voltage: 6.0V<br>while<br>transmitting. | <b>[Panel test mode]</b><br>1) Test Channel<br>Channel: 1<br>Test Signaling<br>Type: Analog<br>Signaling: 1<br>BATT terminal<br>voltage: 6.0V<br>while<br>transmitting. |                       |       |                         |            |       | Check                                                                                                                                                                                                                                                                                                                                                                                                                                                 | The<br>transceiver<br>can transmit<br>with causing<br>the LED to<br>blink. |

#### 4.26.1 Necessary Deviation adjustment item for each signaling and mode

The following shows the necessary adjustment items for each signaling deviation. Please read the following table like the following example. In the case of the signaling "QT (Analog Wide)", this signaling is composed of three elements [Balance, Maximum Deviation (Analog Wide) and QT Deviation (Analog Wide)]. Please adjust Balance and Maximum Deviation (Analog Wide) before adjusting QT Deviation (Analog Wide).

| Mode   | Signaling        | Necessary adjustment and order                                                                    |                                                                                                       |                                                                                                |
|--------|------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
|        |                  | Wide                                                                                              | Narrow                                                                                                | Very Narrow                                                                                    |
| Analog | Audio            | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide]                                           | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]                                             | -                                                                                              |
|        | QT               | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide]<br>3. QT Deviation [Analog Wide]          | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]<br>3. QT Deviation [Analog Narrow]          | -                                                                                              |
|        | DQT              | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide]<br>3. DQT Deviation [Analog Wide]         | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]<br>3. DQT Deviation [Analog Narrow]         | -                                                                                              |
|        | LTR              | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide]<br>3. LTR Deviation [Analog Wide]         | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]<br>3. LTR Deviation [Analog Narrow]         | -                                                                                              |
|        | DTMF             | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide]<br>3. DTMF Deviation [Analog Wide]        | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]<br>3. DTMF Deviation [Analog Narrow]        | -                                                                                              |
|        | 2TONE            | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide]<br>3. Single Tone Deviation [Analog Wide] | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]<br>3. Single Tone Deviation [Analog Narrow] | -                                                                                              |
|        | MSK (Fleet sync) | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide]<br>3. MSK Deviation [Analog Wide]         | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]<br>3. MSK Deviation [Analog Narrow]         | -                                                                                              |
| NXDN   | Audio            | -                                                                                                 | 1. Balance adjust<br>2. NXDN High Deviation [NXDN Narrow]                                             | 1. Balance adjust<br>2. NXDN High Deviation [NXDN Very Narrow]                                 |
|        | CWID             | -                                                                                                 | -                                                                                                     | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]<br>3. CWID Deviation [Analog Narrow] |
| DMR    | Audio            | -                                                                                                 | 1. Balance adjust<br>2. DMR High Deviation                                                            | -                                                                                              |

- Balance is common with all the above deviation adjustments. If Balance (Transmitter Section 5) has already adjusted, please skip Step1 and adjust from Step2.
- Maximum Deviation (Analog Wide/Narrow) is common with all the analog signaling deviations and CWID Deviation (NXDN Very Narrow).

If Balance and Maximum Deviation (Analog Wide /Narrow) (Transmitter Section 6) have already adjusted, please skip Step2 and adjust from Step3.

#### 4.27 Receiver Section

| Item                              | Condition                                                                                                                                                                 |                                                                                                                                                                                                | Measurement                             |       |                            | Adjustment |                                                               |                                                                                                                                                                                                                                                                                                                                                                                       | Specifications<br>/Remarks |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------|----------------------------|------------|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                                   | Panel tuning mode                                                                                                                                                         | PC test mode                                                                                                                                                                                   | Test-equipment                          | Unit  | Terminal                   | Unit       | Parts                                                         | Method                                                                                                                                                                                                                                                                                                                                                                                |                            |
| 1. AF level setting               | [Panel test mode]<br>1) CH-Sig: 1-1<br>SSG output: -47dBm (1mV) (MOD: 1kHz/±1.5kHz)                                                                                       | 1) Test Channel<br>Channel: 1<br>Test Signaling<br>Type: Analog<br>Signaling: 1<br>SSG output: -47dBm (1mV) (MOD:1kHz/±1.5kHz)                                                                 | SSG<br>DVM<br>AF VM<br>Dummy load       | Panel | ANT<br>Universal connector | Panel      | Volume knob                                                   | Turn the Volume knob to obtain 0.63V AF output.                                                                                                                                                                                                                                                                                                                                       | 0.63V<br>±0.1V             |
| 2. IQ Phase                       | 1) Adj item: [An IQ]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output: Freq: Tune<br>Freq +8kHz<br>level: -53dBm (500μV) (MOD:OFF) | 1) Adj item: [IQ Phase]<br>2) Adj item: [Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output: Freq: Tune<br>Freq +8kHz<br>level: -53dBm (500μV) (MOD:OFF)                     | SSG                                     | Panel | ANT<br>Universal connector | Panel      | [Panel tuning mode]<br>[▲], [▼]<br>[PC test mode]<br>[+], [-] | <b>[Panel tuning mode]</b><br>After input signal from SSG, Increase or decrease the adjustment value so that the RSSI indicator level becomes minimum.<br><b>[PC test mode]</b><br><b>[Automatic Adjustment]</b><br>After input signal from SSG,<br>1) Press [Autotune] button.<br>2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished. |                            |
| 3. RSSI reference [DSP (Receive)] | 1) Adj item: [An RSSI 1]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)               | 1) Adj item: [RSSI Reference (Analog Narrow) 1 DSP (Receive)]<br>2) Adj item: [Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz) | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |                                                               | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [O] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value.                                                                                                       |                            |

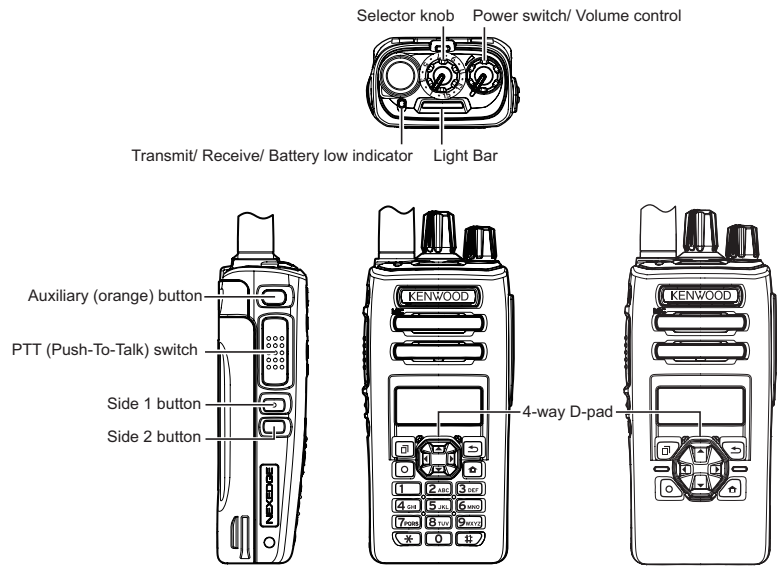
| Item              | Condition                                                                                                                                                                     |                                                                                                                                                                                                                          | Measurement                                |       |                               | Adjustment |       |                                                                                                                                                                                                                                                                                                                                                                                               | Specifications<br>/Remarks |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------|-------------------------------|------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                   | Panel tuning mode                                                                                                                                                             | PC test mode                                                                                                                                                                                                             | Test-equipment                             | Unit  | Terminal                      | Unit       | Parts | Method                                                                                                                                                                                                                                                                                                                                                                                        |                            |
| [RF IC (Receive)] | 1) Adj item:<br>[An RSSI 2]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output:<br>12dB SINAD<br>level -3dB<br>(MOD:<br>1kHz/±1.5kHz) | 1) Adj item:<br>[RSSI Reference<br>(Analog Narrow)<br>2 RF IC (Receive)]<br>2) Adj item:<br>[Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output:<br>12dB SINAD level<br>-3dB<br>(MOD:<br>1kHz/±1.5kHz) | SSG<br>Distortion<br>meter<br>Oscilloscope | Panel | ANT<br>Universal<br>connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from<br>SSG, press [  ]<br>button to store the<br>adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from<br>SSG,<br>1) Press [Acquire<br>Monitored Value]<br>button.<br>2) Press [Apply]<br>button to store the<br>adjustment value.   |                            |
| [DSP (Standby)]   | 1) Adj item:<br>[An RSSI 3]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output:<br>12dB SINAD<br>level -3dB<br>(MOD:<br>1kHz/±1.5kHz) | 1) Adj item:<br>[RSSI Reference<br>(Analog Narrow)<br>3 DSP (Standby)]<br>2) Adj item:<br>[Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output:<br>12dB SINAD level<br>-3dB<br>(MOD:<br>1kHz/±1.5kHz)   | SSG<br>Distortion<br>meter<br>Oscilloscope | Panel | ANT<br>Universal<br>connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from<br>SSG, press [  ]<br>button to store the<br>adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from<br>SSG,<br>1) Press [Acquire<br>Monitored Value]<br>button.<br>2) Press [Apply]<br>button to store the<br>adjustment value.   |                            |
| [RF IC (Standby)] | 1) Adj item:<br>[An RSSI 4]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output:<br>12dB SINAD<br>level -3dB<br>(MOD:<br>1kHz/±1.5kHz) | 1) Adj item:<br>[RSSI Reference<br>(Analog Narrow)<br>4 RF IC (Standby)]<br>2) Adj item:<br>[Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output:<br>12dB SINAD level<br>-3dB<br>(MOD:<br>1kHz/±1.5kHz) | SSG<br>Distortion<br>meter<br>Oscilloscope | Panel | ANT<br>Universal<br>connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from<br>SSG, press [  ]<br>button to store the<br>adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from<br>SSG,<br>1) Press [Acquire<br>Monitored Value]<br>button.<br>2) Press [Apply]<br>button to store the<br>adjustment value. |                            |

| Item                             | Condition                                                                                                                                                                                  |                                                                                                                                                                                                           | Measurement                             |       |                            | Adjustment |       |                                                                                                                                                                                                                                                                                          | Specifications<br>/Remarks |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------|----------------------------|------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                                  | Panel tuning mode                                                                                                                                                                          | PC test mode                                                                                                                                                                                              | Test-equipment                          | Unit  | Terminal                   | Unit       | Parts | Method                                                                                                                                                                                                                                                                                   |                            |
| 4. Squelch Open<br>[Analog Wide] | 1) Adj item:<br>[Aw SQL]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output:<br>12dB SINAD level -3dB<br>(MOD: 1kHz/<br>±3kHz)                     | 1) Adj item:<br>[Squelch Open (Analog Wide)]<br>2) Adj item:<br>[Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output:<br>12dB SINAD level -3dB<br>(MOD: 1kHz/<br>±3kHz)                  | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ <b>O</b> ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |
| [Analog Narrow]                  | 1) Adj item:<br>[An SQL]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output:<br>12dB SINAD level -3dB<br>(MOD: 1kHz/<br>±1.5kHz)                   | 1) Adj item:<br>[Squelch Open (Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output:<br>12dB SINAD level -3dB<br>(MOD: 1kHz/<br>±1.5kHz)              | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ <b>O</b> ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |
| [NXDN Narrow]                    | 1) Adj item:<br>[Nn SQL]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output:<br>12dB SINAD level at Analog Narrow -5dB<br>(MOD: 400Hz/<br>±1.5kHz) | 1) Adj item:<br>[Squelch Open (NXDN Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output: 12dB SINAD level at Analog Narrow -5dB<br>(MOD: 400Hz/<br>±1.5kHz) | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ <b>O</b> ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |

| Item                              | Condition                                                                                                                                                    |                                                                                                                                                                                        | Measurement                             |       |                         | Adjustment |       |                                                                                                                                                                                                                                                                                                                                                                       | Specifications<br>/Remarks |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------|-------------------------|------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                                   | Panel tuning mode                                                                                                                                            | PC test mode                                                                                                                                                                           | Test-equipment                          | Unit  | Terminal                | Unit       | Parts | Method                                                                                                                                                                                                                                                                                                                                                                |                            |
| [NXDN Very Narrow]                | 1) Adj item: [Nv SQL] Adjust:[****]<br>2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6]<br>SSG output: 12dB SINAD level at Analog Narrow -2dB (MOD: 400Hz/ ±1.5kHz) | 1) Adj item: [Squelch Open (NXDN Very Narrow)]<br>2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6]<br>SSG output: 12dB SINAD level at Analog Narrow -2dB (MOD: 400Hz/ ±1.5kHz) | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [  ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value.   |                            |
| [DMR]                             | 1) Adj item: [D SQL] Adjust:[****]<br>2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6]<br>SSG output: 12dB SINAD level at Analog Narrow -4dB (MOD: 400Hz/ ±1.8kHz)  | 1) Adj item: [Squelch Open (DMR)]<br>2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6]<br>SSG output: 12dB SINAD level at Analog Narrow -4dB (MOD: 400Hz/ ±1.8kHz)              | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [  ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value.   |                            |
| 5. Squelch Tight<br>[Analog Wide] | 1) Adj item: [Aw SFLT] Adjust:[****]<br>2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6]<br>SSG output: 12dB SINAD level +6dB (MOD: 1kHz/ ±3kHz)                    | 1) Adj item: [Squelch Tight (Analog Wide)]<br>2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6]<br>SSG output: 12dB SINAD level +6dB (MOD: 1kHz/ ±3kHz)                         | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [  ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |

| Item            | Condition                                                                                                                                                                 |                                                                                                                                                                                               | Measurement                             |       |                            | Adjustment |       |                                                                                                                                                                                                                                                                                          | Specifications<br>/Remarks |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------|----------------------------|------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                 | Panel tuning mode                                                                                                                                                         | PC test mode                                                                                                                                                                                  | Test-equipment                          | Unit  | Terminal                   | Unit       | Parts | Method                                                                                                                                                                                                                                                                                   |                            |
| [Analog Narrow] | 1) Adj item:<br>[An SQLT]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output:<br>12dB SINAD level +6dB<br>(MOD: 1kHz/<br>±1.5kHz) | 1) Adj item:<br>[Squelch Tight (Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output:<br>12dB SINAD level +6dB<br>(MOD: 1kHz/<br>±1.5kHz) | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ <b>○</b> ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |
| 6. Low RSSI     | 1) Adj item:<br>[An LRSSI]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output:<br>-118dBm (0.28μV)<br>(MOD: 1kHz/<br>±1.5kHz)     | 1) Adj item:<br>[Low RSSI (Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output:<br>-118dBm (0.28μV)<br>(MOD: 1kHz/<br>±1.5kHz)           | SSG                                     | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ <b>○</b> ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |
| 7. High RSSI    | 1) Adj item:<br>[An HRSSI]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output:<br>-80dBm (22.4μV)<br>(MOD: 1kHz/<br>±1.5kHz)      | 1) Adj item:<br>[High RSSI (Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output:<br>-80dBm (22.4μV)<br>(MOD: 1kHz/<br>±1.5kHz)           | SSG                                     | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ <b>○</b> ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |

#### 4.28 NX-3300(E, E2, E3) TYPE Controls



##### 4.28.1 Preparations for checking/tuning the transceiver

Before attempting to check/tune the transceiver, connect the unit to a suitable power supply.

Whenever the transmitter is turned on, the unit must be connected to a suitable dummy load (i.e. power meter).

The speaker output connector must be terminated with an 8ohm dummy load and connected to an AC voltmeter and an audio distortion meter or a SINAD measurement meter at all times during checking/tuning.

#### 4.29 Panel Test Mode (E and E2 types only)

##### 4.29.1 Test mode operation features

This transceiver has a test mode. To enter test mode, press and hold the [↵] button while turning the transceiver power ON or press the [□] button and select the "Panel Test". Before the transceiver enters test mode, the frequency version information appears on the LCD momentarily. Test mode can be inhibited by programming. To exit test mode, turn the transceiver power OFF. The following functions are available in test mode.

- When the panel test mode is activated, the channel selected with the 4-way D-pad and the last used signaling number are displayed. When it is activated for the first time, the signaling number is 1.

##### 4.29.2 Button operation

| Button                  | "Func" not appears on the sub LCD display                       |                                                                 |
|-------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|
|                         | Function                                                        | Display                                                         |
| [Selector]              | -                                                               | -                                                               |
| [▲]                     | Push: Test channel up<br>Hold: Test channel up continuously     | Channel No.                                                     |
| [▼]                     | Push: Test channel down<br>Hold: Test channel down continuously | Channel No.                                                     |
| [◀]                     | Push: Squelch level up *1<br>Hold: Squelch off                  | Squelch level<br>Squelch off: 🔊 icon appears                    |
| [▶]                     | Wide 5k/Wide 4k/Narrow/<br>Very Narrow                          | Wide 5k: "w"<br>Wide 4k: "s"<br>Narrow: "n"<br>Very Narrow: "v" |
| [Side1]                 | -                                                               | -                                                               |
| [Side2]                 | -                                                               | -                                                               |
| [□]                     | Shift to panel tuning mode                                      | -                                                               |
| [↵]                     | Function on                                                     | "Func" appears on the sub LCD display                           |
| [○]                     | -                                                               | -                                                               |
| [🏠]                     | Push: Test signaling up<br>Hold: Test signaling up continuously | Signaling No.                                                   |
| [AUX (Orange)]          | MSK 1200bps and 2400bps *1                                      | 2400bps: [✉] icon appears                                       |
| [PTT]                   | Transmit                                                        | -                                                               |
| [0] to [9] and [#], [✖] | -                                                               | -                                                               |

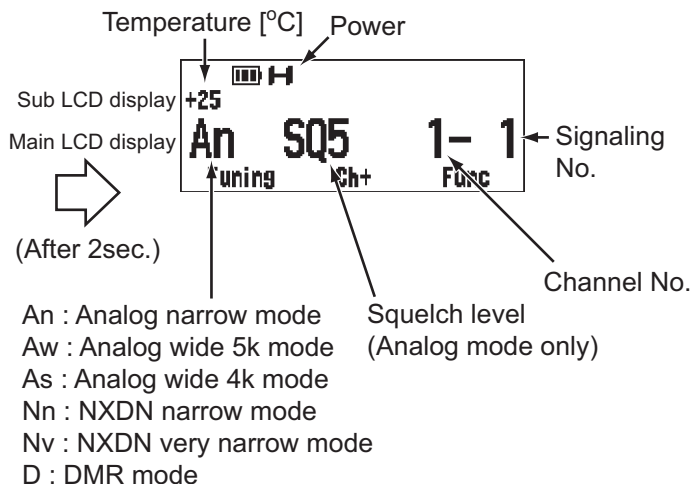
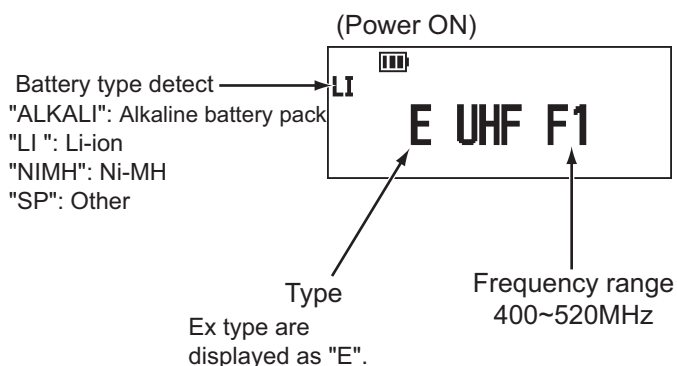
\*1: When the mode is selected as Analog, this function is enabled.

| Button     | "Func" appears on the sub LCD display |                                                                          |
|------------|---------------------------------------|--------------------------------------------------------------------------|
|            | Function                              | Display                                                                  |
| [Selector] | -                                     | -                                                                        |
| [▲]        | Function off                          | -                                                                        |
| [▼]        | Analog/NXDN/DMR                       | Analog: "A"<br>NXDN: "N"<br>DMR: "D"                                     |
| [◀]        | Function off                          | -                                                                        |
| [▶]        | Button/LCD check                      | The position of the selector knob, etc., appear.                         |
| [Side1]    | Function off                          | -                                                                        |
| [Side2]    | Function off                          | -                                                                        |
| [□]        | High power/Medium power/Low power     | High:[H] icon appears<br>Medium:[M] icon appears<br>Low:[L] icon appears |
| [↶]        | Function off                          | -                                                                        |

| Button                  | "Func" appears on the sub LCD display |                      |
|-------------------------|---------------------------------------|----------------------|
|                         | Function                              | Display              |
| [○]                     | Function off                          | -                    |
| [🏠]                     | Function off                          | -                    |
| [AUX (Orange)]          | Compander On/Off                      | On: [🔊] icon appears |
| [PTT]                   | Transmit                              | -                    |
| [0] to [9] and [♯], [✖] | Function off                          | -                    |

- **LED indicator**  
Red LED Lights during transmission.  
Green LED Lights when there is carrier.
- **Sub LCD indicator**  
"Func" Appears at function on.

#### • LCD display in panel test mode



#### 4.29.3 Frequency and Signaling

The transceiver has been adjusted for the frequencies shown in the following table. When required, readjust them following the adjustment procedure to obtain the frequencies you want in actual operation.

##### (1) Test frequency

| CH   | RX (MHz)  | TX (MHz)  |
|------|-----------|-----------|
| 1    | 460.05000 | 460.10000 |
| 2    | 400.05000 | 400.10000 |
| 3    | 519.95000 | 519.90000 |
| 4    | 460.00000 | 460.00000 |
| 5    | 460.20000 | 460.20000 |
| 6    | 460.40000 | 460.40000 |
| 7~16 | -         | -         |

##### (2) Signaling

##### ■Analog Type Signaling

| No. | RX                                      | TX                                      |
|-----|-----------------------------------------|-----------------------------------------|
| 1   | None                                    | None                                    |
| 2   | None                                    | Square Wave                             |
| 3   | LTR Data                                | LTR Data                                |
| 4   | QT:67.0Hz                               | QT:67.0Hz                               |
| 5   | QT:151.4Hz                              | QT:151.4Hz                              |
| 6   | QT:210.7Hz                              | QT:210.7Hz                              |
| 7   | QT:254.1Hz                              | QT:254.1Hz                              |
| 8   | DQT:D023N                               | DQT:D023N                               |
| 9   | DQT:D754I                               | DQT:D754I                               |
| 10  | DTMF Decode (CODE: 159D)                | DTMF Encode (CODE: 159D)                |
| 11  | None                                    | DTMF Encode (CODE: 9)                   |
| 12  | 2-tone Decode (A: 304.7Hz, B: 3106.0Hz) | 2-tone Encode (A: 304.7Hz, B: 3106.0Hz) |

| No. | RX                           | TX                           |
|-----|------------------------------|------------------------------|
| 13  | Single Tone Decode (979.9Hz) | Single Tone Encode (979.9Hz) |
| 14  | None                         | Single Tone Encode (1000Hz)  |
| 15  | None                         | MSK PN9                      |
| 16  | MSK Decode                   | MSK Encode                   |

#### ■NXDN Type Signaling

| No.  | RX                    | TX                        |
|------|-----------------------|---------------------------|
| 1    | RAN1                  | RAN1                      |
| 2    | None                  | PN9                       |
| 3    | RAN1                  | Maximum Deviation Pattern |
| 7 *2 | FSW + PN9             | FSW + PN9                 |
| 9 *2 | Tone Pattern (1031Hz) | Tone Pattern (1031Hz)     |

RAN: Radio Access Number

PN9: Pseudo-Random Pattern

\*2: PC test mode only

#### ■DMR Type Signaling

| No. | RX                                     | TX                                     |
|-----|----------------------------------------|----------------------------------------|
| 1   | CC 00 Burst                            | CC 00 Burst                            |
| 2   | PN9                                    | PN9                                    |
| 3   | CC 00 Burst                            | Maximum Deviation Pattern              |
| 4   | CC 00 Burst                            | 1/3 Deviation Pattern                  |
| 5   | CC 00 Burst                            | 0 Continuous Pattern                   |
| 6   | SYNC (Each Slot) + PN9 Burst Pattern   | SYNC (Each Slot) + PN9 Burst Pattern   |
| 7   | SYNC (Super Frame) + PN9 Burst Pattern | SYNC (Super Frame) + PN9 Burst Pattern |
| 8   | CC 00 Burst                            | 0 Burst Pattern                        |
| 9   | Tone Pattern                           | Tone Test Burst Pattern                |
| 10  | Silence Pattern                        | Silence Burst Pattern                  |
| 11  | Audio Test Pattern                     | Audio Test Burst Pattern               |
| 12  | Vocoder Loop                           | None                                   |

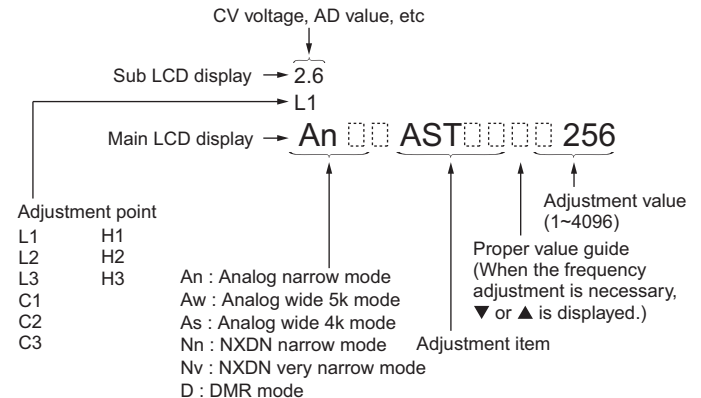
### 4.30 Panel Tuning Mode (E and E2 types only)

#### 4.30.1 Transceiver tuning (To enter tuning mode)

To enter tuning mode, press the [  ] button while the transceiver is in test mode. Use the [  ] button to write tuning data through tuning modes, and the [  ]/[  ] button to adjust tuning requirements (1 to 4096 appears on the LCD).

Use the [  ] button to select the adjustment item through tuning modes. Use the [  ] button to adjust 5, 9 or 17 reference level adjustments, and use the [  ] button to switch between Wide/ Narrow.

- LCD display in panel tuning mode



#### 4.30.2 Button operation

| Button                                                                                  | Function                                        |                                                                                                         |
|-----------------------------------------------------------------------------------------|-------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|                                                                                         | Push                                            | Hold (1 second)                                                                                         |
| [Selector]                                                                              | -                                               | -                                                                                                       |
| [  ] | Adjustment value up                             | Continuation up                                                                                         |
| [  ] | Adjustment value down                           | Continuation down                                                                                       |
| [  ] | Auto adjustment start                           | Output tone pattern change of balance adjustment (A change is possible only during balance adjustment.) |
| [  ] | Wide 5k/Wide 4k/Narrow/NXDN/DMR                 | -                                                                                                       |
| [ Side1 ]                                                                               | -                                               | -                                                                                                       |
| [ Side2 ]                                                                               | -                                               | -                                                                                                       |
| [  ] | Shift to panel test mode                        | -                                                                                                       |
| [  ] | To enter 5, 9 or 17 reference level adjustments | -                                                                                                       |
| [  ] | Writes the adjustment value                     | -                                                                                                       |
| [  ] | Go to next adjustment item                      | Back to last adjustment item (At the time of 5, 9 or 17 point adjustment: Adjustment point change)      |
| [AUX (Orange)]                                                                          | -                                               | -                                                                                                       |
| [PTT]                                                                                   | Transmit                                        | -                                                                                                       |
| [0] to [9] and [#],[*]                                                                  | -                                               | -                                                                                                       |

#### 4.30.3 5, 9 or 17 reference level adjustments frequency

High Transmit Power, Medium Transmit Power, Low Transmit Power, IQ Phase, RSSI Reference 1 DSP (Receive), RSSI Reference 2 RF IC (Receive), RSSI Reference 3 DSP (Standby), RSSI Reference 4 RF IC (Standby), Squelch Open, Squelch Tight, Low RSSI, High RSSI

| Tuning point | Display | RX (MHz)  | TX (MHz)  |
|--------------|---------|-----------|-----------|
| 1            | L1      | 400.05000 | 400.10000 |
| 2            | L5      | 430.05000 | 430.10000 |
| 3            | C3      | 460.05000 | 460.10000 |
| 4            | H2      | 490.05000 | 490.10000 |
| 5            | H6      | 519.95000 | 519.90000 |

Balance, Maximum Deviation, NXDN High Deviation, DMR High Deviation, QT Deviation, DQT Deviation, LTR Deviation, DTMF Deviation, Single Tone Deviation, MSK Deviation, CW ID Deviation

| Tuning point | Display | RX (MHz)  | TX (MHz)  |
|--------------|---------|-----------|-----------|
| 1            | L1      | 400.05000 | 400.10000 |
| 2            | L3      | 415.05000 | 415.10000 |
| 3            | L5      | 430.05000 | 430.10000 |
| 4            | C1      | 445.05000 | 445.10000 |
| 5            | C3      | 460.05000 | 460.10000 |
| 6            | C5      | 475.05000 | 475.10000 |
| 7            | H2      | 490.05000 | 490.10000 |
| 8            | H4      | 505.05000 | 505.10000 |
| 9            | H6      | 519.95000 | 519.90000 |

#### VCO Assist

| Tuning point | Display | RX (MHz)  | TX (MHz)  |
|--------------|---------|-----------|-----------|
| 1            | L1      | 400.05000 | 400.10000 |
| 2            | L2      | 407.55000 | 407.60000 |
| 3            | L3      | 415.05000 | 415.10000 |
| 4            | L4      | 422.55000 | 422.60000 |
| 5            | L5      | 430.05000 | 430.10000 |
| 6            | L6      | 437.55000 | 437.60000 |
| 7            | C1      | 445.05000 | 445.10000 |
| 8            | C2      | 452.55000 | 452.60000 |
| 9            | C3      | 460.05000 | 460.10000 |
| 10           | C4      | 467.55000 | 467.60000 |
| 11           | C5      | 475.05000 | 475.10000 |
| 12           | H1      | 482.55000 | 482.60000 |
| 13           | H2      | 490.05000 | 490.10000 |
| 14           | H3      | 497.55000 | 497.60000 |
| 15           | H4      | 505.05000 | 505.10000 |
| 16           | H5      | 512.55000 | 512.60000 |
| 17           | H6      | 519.95000 | 519.90000 |

#### 4.30.4 Adjustment item supplement

| Adjustment Item                                    | Description                                                                                                                                                                                                                                    |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LCD Contrast                                       | The contrast of LCD display can be changed.                                                                                                                                                                                                    |
| VCO Assist                                         | The lock voltage of VCO is adjusted. This item must be adjusted before receiver and transmitter adjustment items.                                                                                                                              |
| Frequency                                          | Frequency is adjusted under receiving condition with SSG. The SSG needs 0.001ppm accuracy so please use a standard oscillator if necessary. This item can be adjusted only in PC Test Mode so that the adjustment value is not changed easily. |
| RTC Correction                                     | Real Time Clock is adjusted. This item uses the internal clock. (Any measurement equipment is not required.)                                                                                                                                   |
| High Transmit Power                                | High Transmit Power is adjusted.                                                                                                                                                                                                               |
| Mid Transmit Power                                 | Medium Transmit Power is adjusted.                                                                                                                                                                                                             |
| Low Transmit Power                                 | Low Transmit Power is adjusted.                                                                                                                                                                                                                |
| Ramp Offset                                        | Adjust this item to the optimal Ramp voltage.                                                                                                                                                                                                  |
| Balance                                            | The transmit modulation frequency response is adjusted. This item is adjusted so that the deviation of 2kHz becomes the same deviation of 20Hz. This item must be adjusted before all adjustment items for deviations are adjusted.            |
| Maximum Deviation (Analog Wide 5K/ Wide 4K/Narrow) | Maximum Deviation of Analog (Wide 5K/ Wide 4K/Narrow) is adjusted. This item must be adjusted before all adjustment items for tone deviations are adjusted.                                                                                    |
| High Deviation                                     | NXDN/DMR high deviation is adjusted.                                                                                                                                                                                                           |
| QT Deviation                                       | QT deviation is adjusted.                                                                                                                                                                                                                      |
| DQT Deviation                                      | DQT deviation is adjusted.                                                                                                                                                                                                                     |
| LTR Deviation                                      | LTR deviation is adjusted.                                                                                                                                                                                                                     |
| DTMF Deviation                                     | DTMF deviation is adjusted.                                                                                                                                                                                                                    |
| Single Tone Deviation                              | The deviation of Single Tone used in "2-tone" and "5-tone" is adjusted.                                                                                                                                                                        |
| MSK Deviation                                      | MSK deviation is adjusted.                                                                                                                                                                                                                     |
| CW ID Deviation                                    | CWID tone deviation is adjusted. CWID is used to inform the others who is transmitting on a 6.25-kHz spacing channel. (In FCC rule, Analog mode or CWID is required for each channel-spacing.)                                                 |
| Battery Warning Level                              | Battery Warning Level (LED blinking level) is adjusted. Battery Warning Level minus 0.4V is the transmission inhibited level.                                                                                                                  |

| Adjustment Item | Description                                                                                  |
|-----------------|----------------------------------------------------------------------------------------------|
| IQ Phase        | Correction of phase difference shift between I and Q.                                        |
| RSSI Reference  | The minimum RSSI level for scan stop is adjusted.                                            |
| Squelch Open    | The squelch level at level “1” is adjusted.                                                  |
| Squelch Tight   | The squelch level at level “9” is adjusted.                                                  |
| Low RSSI        | RSSI display level “ $\overline{\text{T}}$ ” is adjusted.                                    |
| High RSSI       | Both “Low RSSI” and “High RSSI” must be adjusted. (The curve data of RSSI level is applied.) |

#### 4.30.5 Adjustment item and Display

| Order            | Adjustment item       | Main LCD display | Sub LCD display         | AW<br>(Analog Wide 5k)                    | AS<br>(Analog Wide 4k) | AN<br>(Analog Narrow) | Nn<br>(NXDN Narrow) | Nv<br>(NXDN Very Narrow) | D<br>(DMR) | Adjust item Number     |
|------------------|-----------------------|------------------|-------------------------|-------------------------------------------|------------------------|-----------------------|---------------------|--------------------------|------------|------------------------|
| Adjustment range |                       |                  |                         |                                           |                        |                       |                     |                          |            |                        |
| 1                | LCD Contrast          | CNTR             | -                       | 1 point ADJ<br>1~256                      |                        |                       |                     |                          |            | Common Section 2       |
| 2                | VCO Assist            | AST              | (CV voltage)            | -                                         | -                      | 17                    | -                   | -                        | -          | Common Section 3       |
|                  |                       |                  |                         | 1~4096                                    |                        |                       |                     |                          |            |                        |
| 3                | RTC Correction        | RTC              | -                       | -<br>-2.00 ~ -0.01 , 0.00 , +0.01 ~ +2.00 |                        |                       |                     |                          |            | Common Section 5       |
| 4                | High Transmit Power   | H_PWR            | -                       | -                                         | -                      | 5                     | -                   | -                        | -          | Transmitter Section 1  |
|                  |                       |                  |                         | 1~1024                                    |                        |                       |                     |                          |            |                        |
| 5                | Medium Transmit Power | M_PWR            | -                       | -                                         | -                      | 5                     | -                   | -                        | -          | Transmitter Section 2  |
|                  |                       |                  |                         | 1~1024                                    |                        |                       |                     |                          |            |                        |
| 6                | Low Transmit Power    | L_PWR            | -                       | -                                         | -                      | 5                     | -                   | -                        | -          | Transmitter Section 3  |
|                  |                       |                  |                         | 1~1024                                    |                        |                       |                     |                          |            |                        |
| 7                | Ramp Offset           | RAMP             | (ADC measurement value) | 1 point ADJ<br>1~1024                     |                        |                       |                     |                          |            | Transmitter Section 4  |
| 8                | Balance               | BAL              | (Encode frequency)      | -                                         | -                      | 9                     | -                   | -                        | -          | Transmitter Section 5  |
|                  |                       |                  |                         | 1~1024                                    |                        |                       |                     |                          |            |                        |
| 9                | Maximum Deviation     | ADEV             | -                       | 9                                         | 9                      | 9                     | -                   | -                        | -          | Transmitter Section 6  |
|                  |                       |                  |                         | 1~1024                                    |                        |                       |                     |                          |            |                        |
| 10               | NXDN High Deviation   | NDEV             | -                       | -                                         | -                      | -                     | 9                   | 9                        | -          | Transmitter Section 7  |
|                  |                       |                  |                         | 1~1024                                    |                        |                       |                     |                          |            |                        |
| 11               | DMR High Deviation    | DDEV             | -                       | -                                         | -                      | -                     | -                   | -                        | 9          | Transmitter Section 8  |
|                  |                       |                  |                         | 1~1024                                    |                        |                       |                     |                          |            |                        |
| 12               | QT Deviation          | QT               | -                       | 9                                         | 9                      | 9                     | -                   | -                        | -          | Transmitter Section 9  |
|                  |                       |                  |                         | 1~1024                                    |                        |                       |                     |                          |            |                        |
| 13               | DQT Deviation         | DQT              | -                       | 9                                         | 9                      | 9                     | -                   | -                        | -          | Transmitter Section 10 |
|                  |                       |                  |                         | 1~1024                                    |                        |                       |                     |                          |            |                        |
| 14               | LTR Deviation         | LTR              | -                       | 9                                         | 9                      | 9                     | -                   | -                        | -          | Transmitter Section 11 |
|                  |                       |                  |                         | 1~1024                                    |                        |                       |                     |                          |            |                        |
| 15               | DTMF Deviation        | DTMF             | -                       | 9                                         | 9                      | 9                     | -                   | -                        | -          | Transmitter Section 12 |
|                  |                       |                  |                         | 1~1024                                    |                        |                       |                     |                          |            |                        |

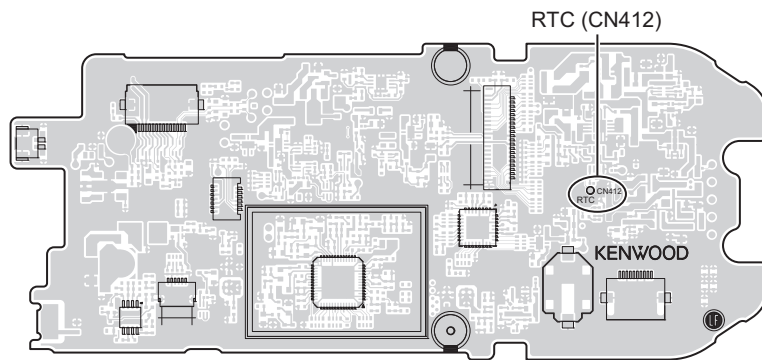
| Order | Adjustment item                  | Main LCD display | Sub LCD display                          | AW<br>(Analog Wide 5k) | AS<br>(Analog Wide 4k) | AN<br>(Analog Narrow) | Nn<br>(NXDN Narrow) | Nv<br>(NXDN Very Narrow) | D<br>(DMR) | Adjust item Number     |
|-------|----------------------------------|------------------|------------------------------------------|------------------------|------------------------|-----------------------|---------------------|--------------------------|------------|------------------------|
|       |                                  |                  |                                          | Adjustment range       |                        |                       |                     |                          |            |                        |
| 16    | Single Tone Deviation            | TONE             | -                                        | 9                      | 9                      | 9                     | -                   | -                        | -          | Transmitter Section 13 |
|       |                                  |                  |                                          | 1~1024                 |                        |                       |                     |                          |            |                        |
| 17    | MSK Deviation                    | MSK              | -                                        | 9                      | 9                      | 9                     | -                   | -                        | -          | Transmitter Section 14 |
|       |                                  |                  |                                          | 1~1024                 |                        |                       |                     |                          |            |                        |
| 18    | CW ID Deviation                  | CWID             | -                                        | -                      | -                      | 9                     | -                   | -                        | -          | Transmitter Section 15 |
|       |                                  |                  |                                          | 1~1024                 |                        |                       |                     |                          |            |                        |
| 19    | Battery Warning Level            | BATT             | (BATT measurement value)                 | 1 point ADJ            |                        |                       |                     |                          |            | Transmitter Section 16 |
|       |                                  |                  |                                          | 1~256                  |                        |                       |                     |                          |            |                        |
| 20    | IQ Phase                         | IQ               | (RSSI DSP(Receive) measurement value)    | -                      | -                      | 5                     | -                   | -                        | -          | Receive Section 2      |
|       |                                  |                  |                                          | 1~63                   |                        |                       |                     |                          |            |                        |
| 21    | RSSI Reference 1 DSP (Receive)   | RSSI1            | (RSSI DSP(Receive) measurement value)    | -                      | -                      | 5                     | -                   | -                        | -          | Receive Section 3      |
|       |                                  |                  |                                          | 1~256                  |                        |                       |                     |                          |            |                        |
| 22    | RSSI Reference 2 RF IC(Receive)  | RSSI2            | (RSSI RF IC(Receive) measurement value)  | -                      | -                      | 5                     | -                   | -                        | -          | Receive Section 3      |
|       |                                  |                  |                                          | 1~256                  |                        |                       |                     |                          |            |                        |
| 23    | RSSI Reference 3 DSP (Standby)   | RSSI3            | (RSSI DSP (Standby) measurement value)   | -                      | -                      | 5                     | -                   | -                        | -          | Receive Section 3      |
|       |                                  |                  |                                          | 1~256                  |                        |                       |                     |                          |            |                        |
| 24    | RSSI Reference 4 RF IC (Standby) | RSSI4            | (RSSI RF IC (Standby) measurement value) | -                      | -                      | 5                     | -                   | -                        | -          | Receive Section 3      |
|       |                                  |                  |                                          | 1~256                  |                        |                       |                     |                          |            |                        |
| 25    | Squelch Open                     | SQL              | (ASQDET measurement value)               | 5                      | 5                      | 5                     | 5                   | 5                        | 5          | Receive Section 4      |
|       |                                  |                  |                                          | 1~256                  |                        |                       |                     |                          |            |                        |
| 26    | Squelch Tight                    | SQLT             | (ASQDET measurement value)               | 5                      | 5                      | 5                     | -                   | -                        | -          | Receive Section 5      |
|       |                                  |                  |                                          | 1~256                  |                        |                       |                     |                          |            |                        |
| 27    | Low RSSI                         | LRSSI            | (RSSI DSP (Receive) measurement value)   | -                      | -                      | 5                     | -                   | -                        | -          | Receive Section 6      |
|       |                                  |                  |                                          | 1~256                  |                        |                       |                     |                          |            |                        |
| 28    | High RSSI                        | HRSSI            | (RSSI DSP (Receive) measurement value)   | -                      | -                      | 5                     | -                   | -                        | -          | Receive Section 7      |
|       |                                  |                  |                                          | 1~256                  |                        |                       |                     |                          |            |                        |

\* In this Panel tuning mode flow chart, the Adjustment item name is modified.



#### 4.31 Adjustment points

TX-RX UNIT (XC1-181)  
Component Side



#### 4.32 Test Equipment Required for Alignment

| Test Equipment                     | Major Specifications                                                                                                                                     |                                                   |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| 1. Standard Signal Generator (SSG) | Frequency Range                                                                                                                                          | 100 to 900MHz                                     |
|                                    | Modulation                                                                                                                                               | Frequency modulation and external modulation      |
|                                    | Output                                                                                                                                                   | -127dBm/0.1uV to greater than -20dBm/22.4mV       |
|                                    | When performing the Frequency adjustment, the following accuracy is necessary.                                                                           |                                                   |
|                                    | <ul style="list-style-type: none"> <li>• 0.001ppm</li> </ul>                                                                                             |                                                   |
|                                    | Use a standard oscillator for adjustments, if necessary.                                                                                                 |                                                   |
| 2. Power Meter                     | Input Impedance                                                                                                                                          | 50ohm                                             |
|                                    | Operation Frequency                                                                                                                                      | 100 to 900MHz                                     |
|                                    | Measurement Capability                                                                                                                                   | Vicinity of 10W                                   |
| 3. Deviation Meter                 | Frequency Range                                                                                                                                          | 100 to 900MHz                                     |
| 4. Digital Volt Meter (DVM)        | Measuring Range                                                                                                                                          | 10mV to 10V DC                                    |
|                                    | Input Impedance                                                                                                                                          | High input impedance for minimum circuit loading  |
| 5. Oscilloscope                    |                                                                                                                                                          | DC through 30MHz                                  |
| 6. Frequency Counter               | Frequency Range                                                                                                                                          | 10Hz to 1000MHz                                   |
|                                    | Frequency Stability                                                                                                                                      | 0.2ppm or less                                    |
|                                    | To measure the oscillating frequency of the internal clock 32766.00Hz~32770.00Hz for RTC Correction Resolution 0.01Hz is better for accuracy adjustment. |                                                   |
| 7. Ammeter                         |                                                                                                                                                          | 5A                                                |
| 8. AF Volt Meter (AF VM)           | Frequency Range                                                                                                                                          | 50Hz to 10kHz                                     |
|                                    | Voltage Range                                                                                                                                            | 1mV to 10V                                        |
| 9. Audio Generator (AG)            | Frequency Range                                                                                                                                          | 50Hz to 5kHz or more                              |
|                                    | Output                                                                                                                                                   | 0 to 1V                                           |
| 10. Distortion Meter               | Capability                                                                                                                                               | 3% or less at 1kHz                                |
|                                    | Input Level                                                                                                                                              | 50mV to 10Vrms                                    |
| 11. Spectrum Analyzer              | Measuring Range                                                                                                                                          | DC to 1GHz or more                                |
| 12. 8ohm Dummy Load                |                                                                                                                                                          | Approx. 8ohm, 3W                                  |
| 13. Regulated Power Supply         |                                                                                                                                                          | 5V to 10V, approx. 3A, Useful if ammeter equipped |

\* The test equipment which is not used for adjustment is contained in this table.

### ■Antenna connector adapter

The antenna connector of this transceiver uses an SMA terminal.

Use an antenna connector adapter [SMA(f) - BNC(f) or SMA(f) - N(f)] for adjustment. (The adapter is not provided as an option, so buy a commercially-available one.)

### ■Nut wrench

In order to turn the volume nut and the channel selector nut, use a recommendation tool.

Part No.: W05-1123-00

### ■Battery Jig (W05-0909-00)

Connect the power cable properly between the battery jig installed in the transceiver and the power supply, and be sure output voltage and the power supply polarity prior to switching the power supply ON, otherwise over voltage and reverse connection may damage the transceiver, or the power supply or both.

When using the battery jig in user mode, the transceiver assumes that a lithium-ion battery pack is attached to the transceiver. In adjustment mode, battery type detection is not performed.

### ■Universal connector

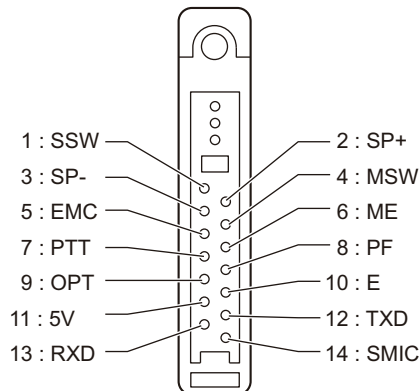
Use the interface cable (KPG-36U/36X) for PC tuning or the lead wire with plug (E30-3287-28) and screw (N08-0535-08) for panel tuning. Connect the plug to the universal connector of the transceiver and tighten the screw.

The lead wire with plug (E30-3287-28) and screw (N08-0535-08) terminals are as follows. Numbers are universal connector terminal numbers.

#### Caution

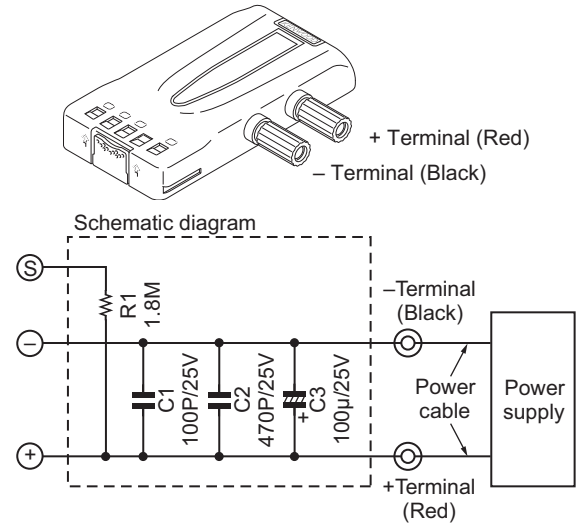
- (1) When connecting the plug to the universal connector of the transceiver, a short circuit may occur. To prevent this, be sure to turn the transceiver POWER switch off.
- (2) Since the RX AF output is a BTL output, there is a DC component. Isolate this with a capacitor or transformer as shown in the figure.
- (3) Do not connect an instrument between red or black and GND.

#### • \*Universal connector

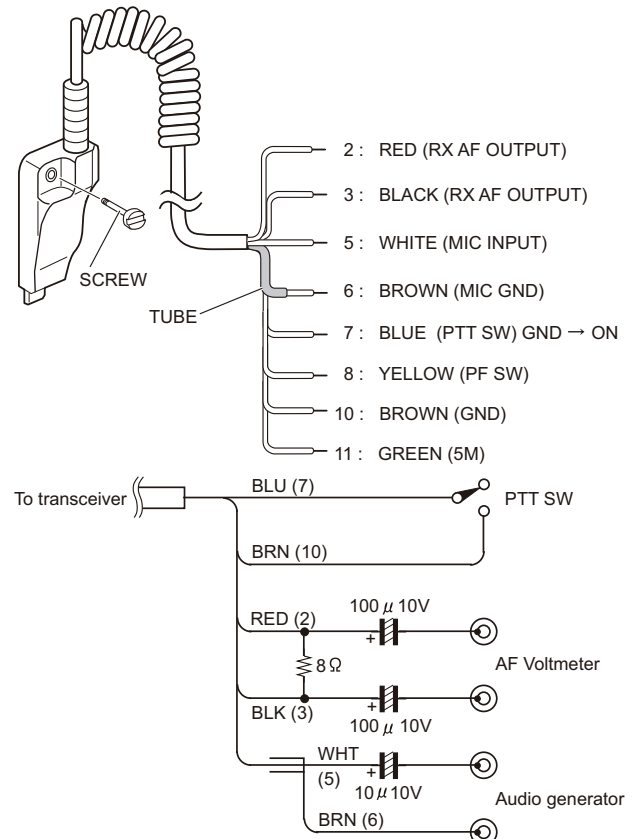


#### Note:

When using the battery jig, you must measure the voltage at the terminals of the battery jig. Otherwise, a slight voltage drop may occur within the power cable, between the power supply and the battery jig, especially while the transceiver transmits.

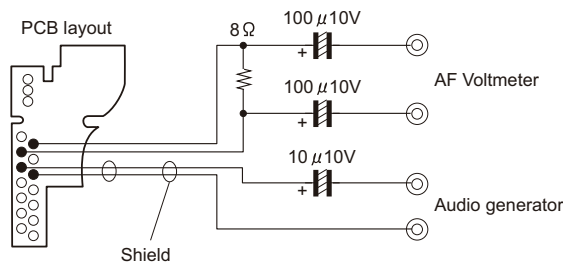
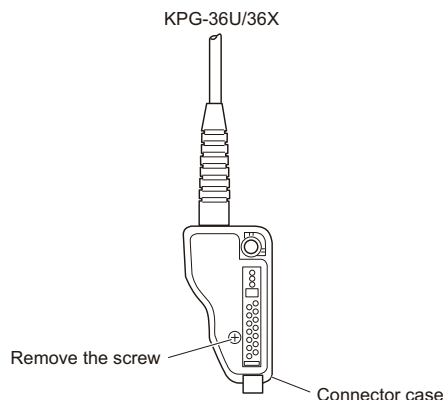


#### • \*Panel tuning



**Note:** Pin 1 (SSW) and Pin 4 (MSW) are connected to Pin 10 (GND) to active External SP and External MIC.

- \*PC tuning  
Connect the wires to the PCB in the connector case of interface cable.  
For output the wires out of the connector case, need to process the connector case.



#### 4.33 Radio check Section

| Item                                           | Condition                |                                                                                                              | Measurement            |       |          | Adjustment |       |                                                           | Specifications /Remarks               |
|------------------------------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------|------------------------|-------|----------|------------|-------|-----------------------------------------------------------|---------------------------------------|
|                                                | Panel test mode          | PC test mode                                                                                                 | Test-equipment         | Unit  | Terminal | Unit       | Parts | Method                                                    |                                       |
| 1. Frequency check                             | 1)CH-Sig: 1-1<br>PTT: ON | 1)Test Channel<br>Channel: 1<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button. | f. counter             | Panel | ANT      |            |       | Check an internal temperature of radio from 20°C to 33°C. | +/-0.25ppm<br>+/-115.0Hz<br>@460.1MHz |
| 2. High power check<br>(Battery voltage: 7.5V) | 1)CH-Sig: 1-1<br>PTT: ON | 1)Test Channel<br>Channel: 1<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button. | Power meter<br>Ammeter | Panel | ANT      |            |       | Check                                                     | 4.0~6.0W<br>2.3A or less              |
|                                                | 2)CH-Sig: 2-1<br>PTT: ON | 2)Test Channel<br>Channel: 2<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button. |                        |       |          |            |       |                                                           |                                       |
|                                                | 3)CH-Sig: 3-1<br>PTT: ON | 3)Test Channel<br>Channel: 3<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button. |                        |       |          |            |       |                                                           |                                       |

| Item                                             | Condition                                                                                                                                                                            |                                                                                                                                                                                                                                                    | Measurement                                                            |       |                            | Adjustment |       |                                        | Specifications /Remarks  |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|-------|----------------------------|------------|-------|----------------------------------------|--------------------------|
|                                                  | Panel test mode                                                                                                                                                                      | PC test mode                                                                                                                                                                                                                                       | Test-equipment                                                         | Unit  | Terminal                   | Unit       | Parts | Method                                 |                          |
| 3.<br>Low power check<br>(Battery voltage: 7.5V) | 1)CH-Sig: 1-1<br>PTT: ON                                                                                                                                                             | 1)Test Channel<br>Channel: 1<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button.                                                                                                                                       | Power meter<br>Ammeter                                                 | Panel | ANT                        |            |       | Check                                  | 0.7~1.4W<br>1.1A or less |
|                                                  | 2)CH-Sig: 2-1<br>PTT: ON                                                                                                                                                             | 2)Test Channel<br>Channel: 2<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button.                                                                                                                                       |                                                                        |       |                            |            |       |                                        |                          |
|                                                  | 3)CH-Sig: 3-1<br>PTT: ON                                                                                                                                                             | 3)Test Channel<br>Channel: 3<br>Test Signaling Type: Analog<br>Signaling: 1<br>PTT: Press [Transmit] button.                                                                                                                                       |                                                                        |       |                            |            |       |                                        |                          |
| 4.<br>MIC sensitivity check                      | 1)CH-Sig: 1-1<br>AG: 1kHz<br>PTT: ON                                                                                                                                                 | 1)Test Channel<br>Channel: 1<br>Test Signaling Type: Analog<br>Signaling: 1<br>AG: 1kHz<br>PTT: Press [Transmit] button.                                                                                                                           | Deviation meter<br>Oscilloscope<br>AG<br>AF VM                         | Panel | ANT<br>Universal connector |            |       | Adjust AG input to get a standard MOD. | 12.5mV<br>±5.8mV         |
| 5.<br>Sensitivity check                          | 1)CH-Sig: 1-1<br>SSG output<br>Wide 5k: -117dBm (0.32μV)<br>(MOD: 1kHz/±3kHz)<br>Wide 4k: -117dBm (0.32μV)<br>(MOD: 1kHz/±2.4kHz)<br>Narrow: -117dBm (0.32μV)<br>(MOD: 1kHz/±1.5kHz) | 1)Test Channel<br>Channel: 1<br>Test Signaling Type: Analog<br>Signaling: 1<br>SSG output<br>Wide 5k: -117dBm (0.32μV)<br>(MOD: 1kHz/±3kHz)<br>Wide 4k: -117dBm (0.32μV)<br>(MOD: 1kHz/±2.4kHz)<br>Narrow: -117dBm (0.32μV)<br>(MOD: 1kHz/±1.5kHz) | SSG<br>AF VM<br>Oscilloscope<br>Distortion meter<br>8ohm<br>Dummy load | Panel | ANT<br>Universal connector |            |       | Check                                  | 12dB SINAD or more       |

#### 4.34 Common Section

| Item           | Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                     | Measurement    |      |          | Adjustment |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                          | Specifications /Remarks |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------|----------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
|                | Panel tuning mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | PC test mode                                                                                                                                                                                                                                                                                        | Test-equipment | Unit | Terminal | Unit       | Parts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Method                                                                                                                                                                                                                                                                                                                                   |                         |
| 1. Setting     | 1) DC voltage:7.5V<br>2) SSG standard modulation<br>[Wide 5k] MOD:1kHz,DEV:3kHz<br>[Wide 4k] MOD:1kHz,DEV:2.4kHz<br>[Narrow] MOD:1kHz,DEV:1.5kHz                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                     |                |      |          |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                          |                         |
| 2.LCD Contrast | 1) Adj item<br>[CNTR]<br>Adjust:[****]<br><br>Press [  ] button to store the adjustment value.                                                                                                                                                                                                                                                                                                                                             | 1) Adj item<br>[LCD Contrast]<br>Data: [****]<br><br>Press [Apply] button to store the adjustment value.                                                                                                                                                                                            |                |      |          | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Write the value as followings.<br><br>126 (Reference value)                                                                                                                                                                                                                                                                              |                         |
| 3. VCO Assist  | 1) Adj item:<br>[AST]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L2]→<br>[L3]→<br>[L4]→<br>[L5]→<br>[L6]→<br>[C1]→<br>[C2]→<br>[C3 RxOL:L]→<br>[C4]→<br>[C5]→<br>[H1]→<br>[H2]→<br>[H3]→<br>[H4]→<br>[H5]→<br>[H6]→<br>[C3 RxOL:H<br>(Long press the  button)]<br><br>Adjust:[****]<br>PTT: ON<br>Press [  ] button to store the adjustment value. | 1) Adj item:<br>[VCO Assist]<br>2) Adj item:<br>[Low1],[Low2],<br>[Low3],[Low4],<br>[Low5], [Low6]<br>[Center1], [Center2],<br>[Center3],<br>[Center4], [Center5],<br>[High1],[High2]<br>[High3],[High4],<br>[High5][High6]<br>[Overlap]<br><br>Press [Apply] button to store the adjustment value. |                |      |          | Panel      | [Panel tuning mode]<br>[  ],<br>[  ]<br>[PC test mode]<br>[+], [-]<br><br><b>[PC test mode]</b><br><b>[Automatic Adjustment]</b><br>1) Press [Autotune] button.<br>2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished.<br><b>[Manual Adjustment]</b><br>[V] indicator on the PC window shows VCO lock voltage. Change the adjustment value to get VCO lock voltage within the limit of the specified voltage.<br><br><b>Note:</b><br>Confirm the VCO lock voltage approximately 3 seconds after the adjustment value is changed. | 2.5V±0.1V<br><b>[Automatic Adjustment]</b><br>After the automatic adjustment is performed, verify that the VCO lock voltage is within the voltage range which is specified by the manual adjustment.<br><b>[Manual Adjustment]</b><br>Press [Apply] button to store the adjustment value after all adjustment points have been adjusted. |                         |

| Item              | Condition                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                | Measurement       |       |                    | Adjustment |                                                               |                                                                                                                                                                 | Specifications /Remarks                                                                                                                                                                                                        |
|-------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------|--------------------|------------|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | Panel tuning mode                                                                      | PC test mode                                                                                                                                                                                                                                                                                                                                                                                                                   | Test-equipment    | Unit  | Terminal           | Unit       | Parts                                                         | Method                                                                                                                                                          |                                                                                                                                                                                                                                |
| 4. Frequency      | *The Frequency adjustment can be performed only in PC test mode.                       | 1) Adj item: [Frequency]<br>SSG output: -20dBm (22.4mV) (CW (without modulation))<br><br><b>Caution:</b><br>Perform the frequency adjustment under the following conditions.<br>• Temperature range of +20°C to +33°C. (The temperature is displayed on the Frequency adjustment screen of the KPG-D3 and the LCD of the transceiver.)<br>• Use an accuracy of 0.001ppm for the SSG. (Use a standard oscillator if necessary.) | SSG               | Panel | ANT                | Panel      | [Panel tuning mode]<br>[▲], [▼]<br>[PC test mode]<br>[+], [-] | <b>[PC test mode]</b><br>Press [Start] button of "Auto Tuning". Press [Apply] button to store the adjustment value after the automatic adjustment has finished. | <b>[PC test mode]</b><br>"IF20" value = Within 0±30 digits. The value of "IF20" will become around "0" after the adjustment has finished.<br><br><b>Remark:</b><br>"Frequency" is adjusted under receiving condition with SSG. |
| 5. RTC Correction | 1) Adj item: [RTC]<br>Adjust:[****]<br>Press [○] button to store the adjustment value. | 1) Adj item: [RTC Correction]<br>Data: [****]<br>Press [Apply] button to store the adjustment value.                                                                                                                                                                                                                                                                                                                           | Frequency Counter | TX-RX | TEST POINT (CN412) |            |                                                               |                                                                                                                                                                 | <b>Remark:</b><br>The adjustment value should input the display of a Frequency Counter.                                                                                                                                        |

#### 4.35 Transmitter Section

| Item                                            | Condition                                                                                                                                                     |                                                                                                                                                                                               | Measurement            |       |          | Adjustment |                                                               |        | Specifications /Remarks |
|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------|----------|------------|---------------------------------------------------------------|--------|-------------------------|
|                                                 | Panel tuning mode                                                                                                                                             | PC test mode                                                                                                                                                                                  | Test-equipment         | Unit  | Terminal | Unit       | Parts                                                         | Method |                         |
| 1. High transmit power (Battery voltage : 7.5V) | 1) Adj item: [H_PWR]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>PTT : ON<br>Press [○] button to store the adjustment value. | 1) Adj item: [High Transmit Power]<br>2) Adj item: [Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Power meter<br>Ammeter | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲], [▼]<br>[PC test mode]<br>[+], [-] | 5.0W   | ±0.1W<br>2.3A or less   |

| Item                                              | Condition                                                                                                                                                                                                                                       |                                                                                                                                                                                                 | Measurement            |       |          | Adjustment |                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Specifications /Remarks |
|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------|----------|------------|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
|                                                   | Panel tuning mode                                                                                                                                                                                                                               | PC test mode                                                                                                                                                                                    | Test-equipment         | Unit  | Terminal | Unit       | Parts                                                            | Method                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                         |
| 2. Medium transmit power (Battery voltage : 7.5V) | 1) Adj item: [M_PWR]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>PTT : ON<br>Press [  ] button to store the adjustment value. | 1) Adj item: [Medium Transmit Power]<br>2) Adj item: [Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Power meter<br>Ammeter | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | 4.0W                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ±0.1W<br>2.3A or less   |
| 3. Low transmit power (Battery voltage : 7.5V)    | 1) Adj item: [L_PWR]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>PTT : ON<br>Press [  ] button to store the adjustment value. | 1) Adj item: [Low Transmit Power]<br>2) Adj item: [Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.    | Power meter<br>Ammeter | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | 1.0W                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ±0.1W<br>1.1A or less   |
| 4. Ramp Offset                                    | 1)Adj item: [RAMP]<br>Adjust:[****]<br>PTT : ON<br>Press [  ] button to store the adjustment value.                                                          | 1) Adj item: [Ramp Offset]<br>Press [Autotune(TX Starts)] button.<br>Press [Apply] button to store the adjustment value.                                                                        | Power meter<br>Ammeter | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[+], [-] | <b>[PC test mode]<br/>[Automatic Adjustment]</b><br>1) Press [Autotune(TX starts)] button.<br>2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished.<br><b>[Manual Adjustment]</b><br>1) Set the adjustment value to "1".<br>2) Press [Transmit] button and increase the adjustment value slowly while monitoring the offset monitor value.<br>3) Set the adjustment value when the offset monitor value exceeds "31". |                         |

| Item                                                  | Condition                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                 | Measurement                        |       |          | Adjustment |                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                | Specifications /Remarks                                                  |
|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------|----------|------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
|                                                       | Panel tuning mode                                                                                                                                                                                                                                                                                                                         | PC test mode                                                                                                                                                                                                                                                                                                                                    | Test-equipment                     | Unit  | Terminal | Unit       | Parts                                                                        | Method                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                          |
| 5.<br>Balance                                         | 1) Adj item:<br>[An BAL]<br>Adjust:[****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○]<br>button to store<br>the adjustment<br>value.   | 1) Adj item:<br>[Balance]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value.                                   | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | The Deviation of 20Hz<br>frequency is fixed.<br>Change the 2kHz<br>adjustment value to<br>become the same<br>deviation of 20Hz<br>within the specified<br>range.<br><br><b>[Panel tuning mode]</b><br>PTT:ON<br>While PTT:ON, press<br>the [◀] button to<br>change the 20Hz/<br>2kHz.<br><br><b>[PC test mode]</b><br>PTT: Press [Transmit]<br>button.<br>While PTT:ON, click<br>the check box "2kHz<br>Sine Wave" to change<br>the 20Hz/2kHz. | 2kHz Tone<br>deviation is<br>within ± 1.0%<br>of 20Hz tone<br>deviation. |
| 6.<br>Maximum<br>Deviation<br><br>[Analog<br>Wide 5k] | 1) Adj item:<br>[Aw ADEV]<br>Adjust:[****]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[Maximum<br>Deviation (Analog<br>Wide 5k)]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value. | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write fixed value "490"<br>for each adjustment<br>point.<br>Transmit at each<br>adjustment point and<br>check that the<br>deviation is between<br>4150Hz and 4250Hz.<br><br><b>[Panel tuning mode]</b><br>PTT: ON<br><br><b>[PC test mode]</b><br>PTT: Press [Transmit]<br>button                                                                                                                                                              | 4150~4250Hz                                                              |

| Item             | Condition                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                    | Measurement                        |       |          | Adjustment |                                                                              |                                                                                                                                                                                                                                                                                   | Specifications /Remarks |
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|                  | Panel tuning mode                                                                                                                                                                                                                                                                                | PC test mode                                                                                                                                                                                                                                                                                       | Test-equipment                     | Unit  | Terminal | Unit       | Parts                                                                        | Method                                                                                                                                                                                                                                                                            |                         |
| [Analog Wide 4k] | 1) Adj item:<br>[As ADEV]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[ ▶ ] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [ ○ ]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[Maximum<br>Deviation (Analog<br>Wide 4k)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value. | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write fixed value "490"<br>for each adjustment<br>point.<br>Transmit at each<br>adjustment point and<br>check that the<br>deviation is between<br>3310Hz and 3410Hz.<br><br><b>[Panel tuning mode]</b><br>PTT: ON<br><br><b>[PC test mode]</b><br>PTT: Press [Transmit]<br>button | 3310~3410Hz             |
| [Analog Narrow]  | 1) Adj item:<br>[An ADEV]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[ ▶ ] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [ ○ ]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[Maximum<br>Deviation (Analog<br>Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value.  | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write fixed value "490"<br>for each adjustment<br>point. Transmit at each<br>adjustment point and<br>check that the<br>deviation is between<br>2050Hz and 2150Hz.<br><br><b>[Panel tuning mode]</b><br>PTT: ON<br><br><b>[PC test mode]</b><br>PTT: Press [Transmit]<br>button    | 2050~2150Hz             |

| Item                                 | Condition                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                              | Measurement                     |       |          | Adjustment |                                                                              |                                                                                                                                                                                                                                                                                          | Specifications /Remarks |
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|                                      | Panel tuning mode                                                                                                                                                                                                                                                                                                                            | PC test mode                                                                                                                                                                                                                                                                                                                                 | Test-equipment                  | Unit  | Terminal | Unit       | Parts                                                                        | Method                                                                                                                                                                                                                                                                                   |                         |
| 7. NXDN High Deviation [NXDN Narrow] | 1) Adj item:<br>[Nn NDEV]<br>Adjust:[****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[ ▶ ] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [ ○ ]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[NXDN High<br>Deviation (NXDN<br>Narrow]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value. | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write fixed value "500"<br>for each adjustment<br>point.<br>Transmit at each<br>adjustment point and<br>check that the Analog<br>deviation is between<br>2995Hz and 3117Hz.<br><br><b>[Panel tuning mode]</b><br>PTT: ON<br><br><b>[PC test mode]</b><br>PTT: Press [Transmit]<br>button | 2995~3117Hz             |
| [NXDN Very Narrow]                   | 1) Adj item:<br>[Nv NDEV]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[ ▶ ] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [ ○ ]<br>button to store<br>the adjustment<br>value.                                             | 1) Adj item:<br>[NXDN High<br>Deviation (NXDN<br>Very Narrow]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value.                                        | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write fixed value "500"<br>for each adjustment<br>point. Transmit at each<br>adjustment point and<br>check that the Analog<br>deviation is between<br>1311Hz and 1363Hz.<br><br><b>[Panel tuning mode]</b><br>PTT: ON<br><br><b>[PC test mode]</b><br>PTT: Press [Transmit]<br>button    | 1311~1363Hz             |

| Item                                    | Condition                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                              | Measurement                     |       |          | Adjustment |                                                                                                                                                                                |                                                                                                                                                        | Specifications /Remarks |
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|                                         | Panel tuning mode                                                                                                                                                                                                                                                                                                               | PC test mode                                                                                                                                                                                                                                                                                                                 | Test-equipment                  | Unit  | Terminal | Unit       | Parts                                                                                                                                                                          | Method                                                                                                                                                 |                         |
| 8. DMR High Deviation                   | 1) Adj item:<br>[D DDEV]<br>Adjust: [****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○] button to store the adjustment value. | 1) Adj item:<br>[DMR High Deviation (DMR Narrow)]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value. | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[ + ], [ - ]<br><br><b>[Panel tuning mode]</b><br>PTT: ON<br><br><b>[PC test mode]</b><br>PTT: Press [Transmit] button | Write fixed value "500" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is between 2695Hz and 2803Hz. | 2695~2803Hz             |
| 9. QT Deviation<br><br>[Analog Wide 5k] | 1) Adj item:<br>[Aw QT]<br>Adjust:[****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○] button to store the adjustment value.   | 1) Adj item:<br>[QT Deviation (Analog Wide 5k)]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit] button.<br>Press [Apply] button to store the adjustment value.   | Deviation meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel tuning mode]<br>[▲],<br>[▼]<br>[PC test mode]<br>[ + ], [ - ]                                                                                                           | Write the fixed value "540" for each adjustment points.                                                                                                | 0.75kHz±0.05 kHz        |

| Item             | Condition                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                            | Measurement                        |       |          | Adjustment |                                                                              |                                                               | Specifications /Remarks |
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|                  | Panel tuning mode                                                                                                                                                                                                                                                                          | PC test mode                                                                                                                                                                                                                                                                               | Test-equipment                     | Unit  | Terminal | Unit       | Parts                                                                        | Method                                                        |                         |
| [Analog Wide 4k] | 1) Adj item:<br>[As QT]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[QT Deviation<br>(Analog Wide 4k)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value. | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"540" for each<br>adjustment points. | 0.60kHz±0.05<br>kHz     |
| [Analog Narrow]  | 1) Adj item:<br>[An QT]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[QT Deviation<br>(Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value.  | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"540" for each<br>adjustment points. | 0.35kHz±0.05<br>kHz     |

| Item                                      | Condition                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                         | Measurement                        |       |          | Adjustment |                                                                              |                                                               | Specifications /Remarks |
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|                                           | Panel tuning mode                                                                                                                                                                                                                                                                                                                           | PC test mode                                                                                                                                                                                                                                                                                                                            | Test-equipment                     | Unit  | Terminal | Unit       | Parts                                                                        | Method                                                        |                         |
| 10. DQT Deviation<br><br>[Analog Wide 5k] | 1) Adj item:<br>[Aw DQT]<br>Adjust:[****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[ ▶ ] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [ ○ ]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[DQT Deviation<br>(Analog Wide 5k)]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value. | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"440" for each<br>adjustment points. | 0.75kHz±0.05<br>kHz     |
| [Analog Wide 4k]                          | 1) Adj item:<br>[As DQT]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[ ▶ ] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [ ○ ]<br>button to store<br>the adjustment<br>value.                                             | 1) Adj item:<br>[DQT Deviation<br>(Analog Wide 4k)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value.                                             | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"440" for each<br>adjustment points. | 0.60kHz±0.05<br>kHz     |

| Item                                            | Condition                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                         | Measurement                        |       |          | Adjustment |                                                                              |                                                               | Specifications /Remarks |
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|                                                 | Panel tuning mode                                                                                                                                                                                                                                                                                                                       | PC test mode                                                                                                                                                                                                                                                                                                                            | Test-equipment                     | Unit  | Terminal | Unit       | Parts                                                                        | Method                                                        |                         |
| [Analog Narrow]                                 | 1) Adj item:<br>[An DQT]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○]<br>button to store<br>the adjustment<br>value.                                             | 1) Adj item:<br>[DQT Deviation<br>(Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value.                                              | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"440" for each<br>adjustment points. | 0.35kHz±0.05<br>kHz     |
| 11. LTR<br>Deviation<br><br>[Analog<br>Wide 5k] | 1) Adj item:<br>[Aw LTR]<br>Adjust:[****]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[LTR Deviation<br>(Analog Wide 5k)]<br>Deviation meter<br>LPF: 3kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value. | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"530" for each<br>adjustment points. | 1.00kHz±0.05<br>kHz     |

| Item             | Condition                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                             | Measurement                        |       |          | Adjustment |                                                                              |                                                               | Specifications /Remarks |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------|----------|------------|------------------------------------------------------------------------------|---------------------------------------------------------------|-------------------------|
|                  | Panel tuning mode                                                                                                                                                                                                                                                                           | PC test mode                                                                                                                                                                                                                                                                                | Test-equipment                     | Unit  | Terminal | Unit       | Parts                                                                        | Method                                                        |                         |
| [Analog Wide 4k] | 1) Adj item:<br>[As LTR]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[LTR Deviation<br>(Analog Wide 4k)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value. | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"530" for each<br>adjustment points. | 0.90kHz±0.05<br>kHz     |
| [Analog Narrow]  | 1) Adj item:<br>[An LTR]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[LTR Deviation<br>(Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value.  | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"530" for each<br>adjustment points. | 0.75kHz±0.05<br>kHz     |

| Item                                   | Condition                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                           | Measurement                        |       |          | Adjustment |                                                                              |                                                               | Specifications /Remarks |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------|----------|------------|------------------------------------------------------------------------------|---------------------------------------------------------------|-------------------------|
|                                        | Panel tuning mode                                                                                                                                                                                                                                                                                                                         | PC test mode                                                                                                                                                                                                                                                                                                                              | Test-equipment                     | Unit  | Terminal | Unit       | Parts                                                                        | Method                                                        |                         |
| 12. DTMF Deviation<br>[Analog Wide 5k] | 1) Adj item:<br>[Aw DTMF]<br>Adjust:[****]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[DTMF Deviation<br>(Analog Wide 5k)]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value. | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"545" for each<br>adjustment points. | 2.50kHz±0.05<br>kHz     |
| [Analog Wide 4k]                       | 1) Adj item:<br>[As DTMF]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○]<br>button to store<br>the adjustment<br>value.                                              | 1) Adj item:<br>[DTMF Deviation<br>(Analog Wide 4k)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value.                                              | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"545" for each<br>adjustment points. | 2.00kHz±0.05<br>kHz     |

| Item                                                       | Condition                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                     | Measurement                        |       |          | Adjustment |                                                                              |                                                               | Specifications /Remarks |
|------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------|----------|------------|------------------------------------------------------------------------------|---------------------------------------------------------------|-------------------------|
|                                                            | Panel tuning mode                                                                                                                                                                                                                                                                                                                             | PC test mode                                                                                                                                                                                                                                                                                                                                        | Test-equipment                     | Unit  | Terminal | Unit       | Parts                                                                        | Method                                                        |                         |
| [Analog Narrow]                                            | 1) Adj item:<br>[An DTMF]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[ ▶ ] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [ ○ ]<br>button to store<br>the adjustment<br>value.                                              | 1) Adj item:<br>[DTMF Deviation<br>(Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value.                                                         | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"545" for each<br>adjustment points. | 1.25kHz±0.05<br>kHz     |
| 13. Single<br>Tone<br>Deviation<br><br>[Analog<br>Wide 5k] | 1) Adj item:<br>[Aw TONE]<br>Adjust:[****]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[ ▶ ] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [ ○ ]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[Single Tone<br>Deviation (Analog<br>Wide 5k)]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value. | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"520" for each<br>adjustment points. | 3.00kHz±0.05<br>kHz     |

| Item             | Condition                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                        | Measurement                        |       |          | Adjustment |                                                                              |                                                               | Specifications /Remarks |
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|                  | Panel tuning mode                                                                                                                                                                                                                                                                            | PC test mode                                                                                                                                                                                                                                                                                           | Test-equipment                     | Unit  | Terminal | Unit       | Parts                                                                        | Method                                                        |                         |
| [Analog Wide 4k] | 1) Adj item:<br>[As TONE]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[Single Tone<br>Deviation (Analog<br>Wide 4k)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value. | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"520" for each<br>adjustment points. | 2.40kHz±0.05<br>kHz     |
| [Analog Narrow]  | 1) Adj item:<br>[An TONE]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[Single Tone<br>Deviation (Analog<br>Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value.  | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"520" for each<br>adjustment points. | 1.50kHz±0.05<br>kHz     |

| Item                                      | Condition                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                          | Measurement                        |       |          | Adjustment |                                                                              |                                                               | Specifications /Remarks |
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|                                           | Panel tuning mode                                                                                                                                                                                                                                                                                                                            | PC test mode                                                                                                                                                                                                                                                                                                                             | Test-equipment                     | Unit  | Terminal | Unit       | Parts                                                                        | Method                                                        |                         |
| 14. MSK Deviation<br><br>[Analog Wide 5k] | 1) Adj item:<br>[Aw MSK]<br>Adjust:[****]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[ ▶ ] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [ ○ ]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[MSK Deviation<br>(Analog Wide 5k)]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value. | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"510" for each<br>adjustment points. | 3.00kHz±0.05<br>kHz     |
| [Analog Wide 4k]                          | 1) Adj item:<br>[As MSK]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[ ▶ ] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [ ○ ]<br>button to store<br>the adjustment<br>value.                                              | 1) Adj item:<br>[MSK Deviation<br>(Analog Wide 4k)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value.                                              | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"510" for each<br>adjustment points. | 2.40kHz±0.05<br>kHz     |

| Item                                               | Condition                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                          | Measurement                        |       |          | Adjustment |                                                                              |                                                               | Specifications /Remarks |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------|----------|------------|------------------------------------------------------------------------------|---------------------------------------------------------------|-------------------------|
|                                                    | Panel tuning mode                                                                                                                                                                                                                                                                                                                         | PC test mode                                                                                                                                                                                                                                                                                                                             | Test-equipment                     | Unit  | Terminal | Unit       | Parts                                                                        | Method                                                        |                         |
| [Analog Narrow]                                    | 1) Adj item:<br>[An MSK]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○]<br>button to store<br>the adjustment<br>value.                                               | 1) Adj item:<br>[MSK Deviation<br>(Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value.                                               | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"510" for each<br>adjustment points. | 1.50kHz±0.05<br>kHz     |
| 15.<br>CWID<br>Deviation<br><br>[Analog<br>Narrow] | 1) Adj item:<br>[An CWID]<br>Adjust:[****]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[L1]→<br>[L3]→<br>[L5]→<br>[C1]→<br>[C3 TxOL:L]→<br>[C5]→<br>[H2]→<br>[H4]→<br>[H6]→<br>[C3 TxOL:H<br>(Long press the<br>[▶] button)]<br>Adjust:[****]<br>PTT : ON<br>Press [○]<br>button to store<br>the adjustment<br>value. | 1) Adj item:<br>[CWID Deviation<br>(Analog Narrow)]<br>Deviation meter<br>LPF: 15kHz<br>HPF: OFF<br>2) Adj item:<br>[Low1]→<br>[Low3]→<br>[Low5]→<br>[Center1]→<br>[Center3]→<br>[Center5]→<br>[High2]→<br>[High4]→<br>[High6]→<br>[Overlap]<br>Press [Transmit]<br>button.<br>Press [Apply]<br>button to store the<br>adjustment value. | Deviation<br>meter<br>Oscilloscope | Panel | ANT      | Panel      | [Panel<br>tuning<br>mode]<br>[▲],<br>[▼]<br>[PC<br>test<br>mode]<br>[+], [-] | Write the fixed value<br>"500" for each<br>adjustment points. | 1.10kHz±0.10<br>kHz     |

| Item                                          | Condition                                                                                                  |                                                                                                                                                                         | Measurement           |       |                         | Adjustment |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Specifications /Remarks                                                    |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------|-------------------------|------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
|                                               | Panel tuning mode                                                                                          | PC test mode                                                                                                                                                            | Test-equipment        | Unit  | Terminal                | Unit       | Parts | Method                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                            |
| 16.<br>Battery<br>Warning<br>Level<br>writing | 1) Adj item:<br>[BATT]<br>Adjust:[****]<br>BATT terminal<br>voltage: 6.2V<br>while<br>transmitting.        | 1) Adj item:<br>[Battery Warning<br>Level]<br>BATT terminal<br>voltage: 6.2V<br>while<br>transmitting.                                                                  | Power<br>meter<br>DVM | Panel | ANT<br>BATT<br>terminal |            |       | <b>[Panel tuning mode]</b><br>PTT: ON<br>Press [  ] button to<br>store the adjustment<br>value.<br><br><b>[PC test mode]</b><br>1) Press [Transmit]<br>button.<br>2) Press [Acquire<br>Monitored Value]<br>button.<br>3) Press [Apply] button<br>to store the<br>adjustment value.<br>Confirm that one<br>predetermined<br>numeric in the range<br>1 to 256 appears. |                                                                            |
| 17.<br>Battery<br>Warning<br>Level<br>check   | <b>[Panel test<br/>mode]</b><br>1) CH-Sig: 1-1<br>BATT terminal<br>voltage: 6.0V<br>while<br>transmitting. | <b>[Panel test mode]</b><br>1) Test Channel<br>Channel: 1<br>Test Signaling<br>Type: Analog<br>Signaling: 1<br>BATT terminal<br>voltage: 6.0V<br>while<br>transmitting. |                       |       |                         |            |       | Check                                                                                                                                                                                                                                                                                                                                                                                                                                                 | The<br>transceiver<br>can transmit<br>with causing<br>the LED to<br>blink. |

#### 4.35.1 Necessary Deviation adjustment item for each signaling and mode

The following shows the necessary adjustment items for each signaling deviation. Please read the following table like the following example. In the case of the signaling "QT (Analog Wide 5k)", this signaling is composed of three elements [Balance, Maximum Deviation (Analog Wide 5k) and QT Deviation (Analog Wide 5k)]. Please adjust Balance and Maximum Deviation (Analog Wide 5k) before adjusting QT Deviation (Analog Wide 5k).

| Mode   | Signaling        | Necessary adjustment and order                                                                          |                                                                                                         |                                                                                                       |                                                                                                |
|--------|------------------|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
|        |                  | Wide 5k                                                                                                 | Wide 4k                                                                                                 | Narrow                                                                                                | Very Narrow                                                                                    |
| Analog | Audio            | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide 5k]                                              | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide 4k]                                              | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]                                             | -                                                                                              |
|        | QT               | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide 5k]<br>3. QT Deviation [Analog Wide 5k]          | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide 4k]<br>3. QT Deviation [Analog Wide 4k]          | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]<br>3. QT Deviation [Analog Narrow]          | -                                                                                              |
|        | DQT              | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide 5k]<br>3. DQT Deviation [Analog Wide 5k]         | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide 4k]<br>3. DQT Deviation [Analog Wide 4k]         | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]<br>3. DQT Deviation [Analog Narrow]         | -                                                                                              |
|        | LTR              | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide 5k]<br>3. LTR Deviation [Analog Wide 5k]         | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide 4k]<br>3. LTR Deviation [Analog Wide 4k]         | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]<br>3. LTR Deviation [Analog Narrow]         | -                                                                                              |
|        | DTMF             | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide 5k]<br>3. DTMF Deviation [Analog Wide 5k]        | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide 4k]<br>3. DTMF Deviation [Analog Wide 4k]        | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]<br>3. DTMF Deviation [Analog Narrow]        | -                                                                                              |
|        | 5STONE           | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide 5k]<br>3. Single Tone Deviation [Analog Wide 5k] | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide 4k]<br>3. Single Tone Deviation [Analog Wide 4k] | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]<br>3. Single Tone Deviation [Analog Narrow] | -                                                                                              |
|        | MSK (Fleet sync) | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide 5k]<br>3. MSK Deviation [Analog Wide 5k]         | 1. Balance adjust<br>2. Maximum Deviation [Analog Wide 4k]<br>3. MSK Deviation [Analog Wide 4k]         | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]<br>3. MSK Deviation [Analog Narrow]         | -                                                                                              |
| NXDN   | Audio            | -                                                                                                       | -                                                                                                       | 1. Balance adjust<br>2. NXDN High Deviation [NXDN Narrow]                                             | 1. Balance adjust<br>2. NXDN High Deviation [NXDN Very Narrow]                                 |
|        | CWID             | -                                                                                                       | -                                                                                                       | -                                                                                                     | 1. Balance adjust<br>2. Maximum Deviation [Analog Narrow]<br>3. CWID Deviation [Analog Narrow] |
| DMR    | Audio            | -                                                                                                       | -                                                                                                       | 1. Balance adjust<br>2. DMR High Deviation                                                            | -                                                                                              |

- Balance is common with all the above deviation adjustments. If Balance (Transmitter Section 5) has already adjusted, please skip Step1 and adjust from Step2.
- Maximum Deviation (Analog Wide 5k/Wide 4k/Narrow) is common with all the analog signaling deviations and CWID Deviation (NXDN Very Narrow).  
If Balance and Maximum Deviation (Analog Wide 5k/Wide 4k/Narrow) (Transmitter Section 6) have already adjusted, please skip Step2 and adjust from Step3.

#### 4.36 Receiver Section

| Item                              | Condition                                                                                                                                                              |                                                                                                                                                                                                | Measurement                             |       |                            | Adjustment |                                                               |                                                                                                                                                                                                                                                                                                                                                                                       | Specifications<br>/Remarks |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------|----------------------------|------------|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                                   | Panel tuning mode                                                                                                                                                      | PC test mode                                                                                                                                                                                   | Test-equipment                          | Unit  | Terminal                   | Unit       | Parts                                                         | Method                                                                                                                                                                                                                                                                                                                                                                                |                            |
| 1. AF level setting               | [Panel test mode]<br>1) CH-Sig: 1-1<br>SSG output: -47dBm (1mV) (MOD: 1kHz/±1.5kHz)                                                                                    | 1) Test Channel<br>Channel: 1<br>Test Signaling<br>Type: Analog<br>Signaling: 1<br>SSG output: -47dBm (1mV) (MOD:1kHz/±1.5kHz)                                                                 | SSG<br>DVM<br>AF VM<br>Dummy load       | Panel | ANT<br>Universal connector | Panel      | Volume knob                                                   | Turn the Volume knob to obtain 0.63V AF output.                                                                                                                                                                                                                                                                                                                                       | 0.63V<br>±0.1V             |
| 2. IQ Phase                       | 1) Adj item: [An IQ]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output: Freq: Tune Freq +8kHz<br>level: -53dBm (500μV) (MOD:OFF) | 1) Adj item: [IQ Phase]<br>2) Adj item: [Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output: Freq: Tune Freq +8kHz<br>level: -53dBm (500μV) (MOD:OFF)                        | SSG                                     | Panel | ANT<br>Universal connector | Panel      | [Panel tuning mode]<br>[▲], [▼]<br>[PC test mode]<br>[+], [-] | <b>[Panel tuning mode]</b><br>After input signal from SSG, Increase or decrease the adjustment value so that the RSSI indicator level becomes minimum.<br><b>[PC test mode]</b><br><b>[Automatic Adjustment]</b><br>After input signal from SSG,<br>1) Press [Autotune] button.<br>2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished. |                            |
| 3. RSSI reference [DSP (Receive)] | 1) Adj item: [An RSSI 1]<br>Adjust:[****]<br>2) Adj item: [L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)            | 1) Adj item: [RSSI Reference (Analog Narrow) 1 DSP (Receive)]<br>2) Adj item: [Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz) | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |                                                               | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [O] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value.                                                                                                       |                            |

| Item              | Condition                                                                                                                                                                     |                                                                                                                                                                                                                          | Measurement                                |       |                               | Adjustment |       |                                                                                                                                                                                                                                                                                                                                                                                               | Specifications<br>/Remarks |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------|-------------------------------|------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                   | Panel tuning mode                                                                                                                                                             | PC test mode                                                                                                                                                                                                             | Test-equipment                             | Unit  | Terminal                      | Unit       | Parts | Method                                                                                                                                                                                                                                                                                                                                                                                        |                            |
| [RF IC (Receive)] | 1) Adj item:<br>[An RSSI 2]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output:<br>12dB SINAD<br>level -3dB<br>(MOD:<br>1kHz/±1.5kHz) | 1) Adj item:<br>[RSSI Reference<br>(Analog Narrow)<br>2 RF IC (Receive)]<br>2) Adj item:<br>[Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output:<br>12dB SINAD level<br>-3dB<br>(MOD:<br>1kHz/±1.5kHz) | SSG<br>Distortion<br>meter<br>Oscilloscope | Panel | ANT<br>Universal<br>connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from<br>SSG, press [  ]<br>button to store the<br>adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from<br>SSG,<br>1) Press [Acquire<br>Monitored Value]<br>button.<br>2) Press [Apply]<br>button to store the<br>adjustment value.   |                            |
| [DSP (Standby)]   | 1) Adj item:<br>[An RSSI 3]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output:<br>12dB SINAD<br>level -3dB<br>(MOD:<br>1kHz/±1.5kHz) | 1) Adj item:<br>[RSSI Reference<br>(Analog Narrow)<br>3 DSP (Standby)]<br>2) Adj item:<br>[Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output:<br>12dB SINAD level<br>-3dB<br>(MOD:<br>1kHz/±1.5kHz)   | SSG<br>Distortion<br>meter<br>Oscilloscope | Panel | ANT<br>Universal<br>connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from<br>SSG, press [  ]<br>button to store the<br>adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from<br>SSG,<br>1) Press [Acquire<br>Monitored Value]<br>button.<br>2) Press [Apply]<br>button to store the<br>adjustment value.   |                            |
| [RF IC (Standby)] | 1) Adj item:<br>[An RSSI 4]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output:<br>12dB SINAD<br>level -3dB<br>(MOD:<br>1kHz/±1.5kHz) | 1) Adj item:<br>[RSSI Reference<br>(Analog Narrow)<br>4 RF IC (Standby)]<br>2) Adj item:<br>[Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output:<br>12dB SINAD level<br>-3dB<br>(MOD:<br>1kHz/±1.5kHz) | SSG<br>Distortion<br>meter<br>Oscilloscope | Panel | ANT<br>Universal<br>connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from<br>SSG, press [  ]<br>button to store the<br>adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from<br>SSG,<br>1) Press [Acquire<br>Monitored Value]<br>button.<br>2) Press [Apply]<br>button to store the<br>adjustment value. |                            |

| Item                                    | Condition                                                                                                                                                                    |                                                                                                                                                                                                      | Measurement                             |       |                            | Adjustment |       |                                                                                                                                                                                                                                                                                          | Specifications<br>/Remarks |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------|----------------------------|------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                                         | Panel tuning mode                                                                                                                                                            | PC test mode                                                                                                                                                                                         | Test-equipment                          | Unit  | Terminal                   | Unit       | Parts | Method                                                                                                                                                                                                                                                                                   |                            |
| 4. Squelch Open<br><br>[Analog Wide 5k] | 1) Adj item:<br>[Aw SQL]<br>Adjust:[****]<br><br>2) Adj item:<br>[L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output:<br>12dB SINAD level -3dB<br>(MOD: 1kHz/<br>±3kHz)   | 1) Adj item:<br>[Squelch Open<br>(Analog Wide 5k)]<br><br>2) Adj item:<br>[Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output:<br>12dB SINAD level -3dB<br>(MOD: 1kHz/<br>±3kHz)   | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ <b>○</b> ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |
| [Analog Wide 4k]                        | 1) Adj item:<br>[As SQL]<br>Adjust:[****]<br><br>2) Adj item:<br>[L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output:<br>12dB SINAD level -3dB<br>(MOD: 1kHz/<br>±2.4kHz) | 1) Adj item:<br>[Squelch Open<br>(Analog Wide 4k)]<br><br>2) Adj item:<br>[Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output:<br>12dB SINAD level -3dB<br>(MOD: 1kHz/<br>±2.4kHz) | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ <b>○</b> ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |
| [Analog Narrow]                         | 1) Adj item:<br>[An SQL]<br>Adjust:[****]<br><br>2) Adj item:<br>[L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output:<br>12dB SINAD level -3dB<br>(MOD: 1kHz/<br>±1.5kHz) | 1) Adj item:<br>[Squelch Open<br>(Analog Narrow)]<br><br>2) Adj item:<br>[Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output:<br>12dB SINAD level -3dB<br>(MOD: 1kHz/<br>±1.5kHz)  | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ <b>○</b> ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |

| Item               | Condition                                                                                                                                                    |                                                                                                                                                                                        | Measurement                             |       |                         | Adjustment |       |                                                                                                                                                                                                                                                                                                                                                                       | Specifications<br>/Remarks |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------|-------------------------|------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                    | Panel tuning mode                                                                                                                                            | PC test mode                                                                                                                                                                           | Test-equipment                          | Unit  | Terminal                | Unit       | Parts | Method                                                                                                                                                                                                                                                                                                                                                                |                            |
| [NXDN Narrow]      | 1) Adj item: [Nn SQL] Adjust:[****]<br>2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6]<br>SSG output: 12dB SINAD level at Analog Narrow -5dB (MOD: 400Hz/ ±1.5kHz) | 1) Adj item: [Squelch Open (NXDN Narrow)]<br>2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6]<br>SSG output: 12dB SINAD level at Analog Narrow -5dB (MOD: 400Hz/ ±1.5kHz)      | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [  ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value.   |                            |
| [NXDN Very Narrow] | 1) Adj item: [Nv SQL] Adjust:[****]<br>2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6]<br>SSG output: 12dB SINAD level at Analog Narrow -2dB (MOD: 400Hz/ ±1.5kHz) | 1) Adj item: [Squelch Open (NXDN Very Narrow)]<br>2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6]<br>SSG output: 12dB SINAD level at Analog Narrow -2dB (MOD: 400Hz/ ±1.5kHz) | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [  ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value.   |                            |
| [DMR]              | 1) Adj item: [D SQL] Adjust:[****]<br>2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6]<br>SSG output: 12dB SINAD level at Analog Narrow -4dB (MOD: 400Hz/ ±1.8kHz)  | 1) Adj item: [Squelch Open (DMR)]<br>2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6]<br>SSG output: 12dB SINAD level at Analog Narrow -4dB (MOD: 400Hz/ ±1.8kHz)              | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [  ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |

| Item                                        | Condition                                                                                                                                                                  |                                                                                                                                                                                                   | Measurement                             |       |                            | Adjustment |       |                                                                                                                                                                                                                                                                                          | Specifications<br>/Remarks |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------|----------------------------|------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                                             | Panel tuning mode                                                                                                                                                          | PC test mode                                                                                                                                                                                      | Test-equipment                          | Unit  | Terminal                   | Unit       | Parts | Method                                                                                                                                                                                                                                                                                   |                            |
| 5.<br>Squelch Tight<br><br>[Analog Wide 5k] | 1) Adj item:<br>[Aw SQLT]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output:<br>12dB SINAD level +6dB<br>(MOD: 1kHz/<br>±3kHz)    | 1) Adj item:<br>[Squelch Tight<br>(Analog Wide 5k)]<br>2) Adj item:<br>[Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output:<br>12dB SINAD level +6dB<br>(MOD: 1kHz/<br>±3kHz)   | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ <b>○</b> ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG, press [Apply] button to store the adjustment value.                                                     |                            |
| [Analog Wide 4k]                            | 1) Adj item:<br>[As SQLT]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output:<br>12dB SINAD level +6dB<br>(MOD: 1kHz/<br>±2.4kHz)  | 1) Adj item:<br>[Squelch Tight<br>(Analog Wide 4k)]<br>2) Adj item:<br>[Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output:<br>12dB SINAD level +6dB<br>(MOD: 1kHz/<br>±2.4kHz) | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ <b>○</b> ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG, press [Apply] button to store the adjustment value.                                                     |                            |
| [Analog Narrow]                             | 1) Adj item:<br>[An SSQLT]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output:<br>12dB SINAD level +6dB<br>(MOD: 1kHz/<br>±1.5kHz) | 1) Adj item:<br>[Squelch Tight<br>(Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output:<br>12dB SINAD level +6dB<br>(MOD: 1kHz/<br>±1.5kHz)  | SSG<br>Distortion meter<br>Oscilloscope | Panel | ANT<br>Universal connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ <b>○</b> ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |
| 6.<br>Low RSSI                              | 1) Adj item:<br>[An LRSSI]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output:<br>-118dBm (0.28μV)<br>(MOD: 1kHz/<br>±1.5kHz)      | 1) Adj item:<br>[Low RSSI (Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output:<br>-118dBm (0.28μV)<br>(MOD: 1kHz/<br>±1.5kHz)               | SSG                                     | Panel | ANT<br>Ext. SP connector   | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from SSG, press [ <b>○</b> ] button to store the adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from SSG,<br>1) Press [Acquire Monitored Value] button.<br>2) Press [Apply] button to store the adjustment value. |                            |

| Item                      | Condition                                                                                                                                                               |                                                                                                                                                                                        | Measurement    |       |                               | Adjustment |       |                                                                                                                                                                                                                                                                                                                                                                                             | Specifications<br>/Remarks |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|-------------------------------|------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                           | Panel tuning mode                                                                                                                                                       | PC test mode                                                                                                                                                                           | Test-equipment | Unit  | Terminal                      | Unit       | Parts | Method                                                                                                                                                                                                                                                                                                                                                                                      |                            |
| 7.<br>High RSSI<br>adjust | 1) Adj item:<br>[An HRSSI]<br>Adjust:[****]<br>2) Adj item:<br>[L1]→<br>[L5]→<br>[C3]→<br>[H2]→<br>[H6]<br>SSG output:<br>-80dBm<br>(22.4μV)<br>(MOD: 1kHz/<br>±1.5kHz) | 1) Adj item:<br>[High RSSI<br>(Analog Narrow)]<br>2) Adj item:<br>[Low1]→<br>[Low5]→<br>[Center3]→<br>[High2]→<br>[High6]<br>SSG output:<br>-80dBm (22.4μV)<br>(MOD: 1kHz/<br>±1.5kHz) | SSG            | Panel | ANT<br>Universal<br>connector | Panel      |       | <b>[Panel tuning mode]</b><br>After input signal from<br>SSG, press [  ]<br>button to store the<br>adjustment value.<br><br><b>[PC test mode]</b><br>After input signal from<br>SSG,<br>1) Press [Acquire<br>Monitored Value]<br>button.<br>2) Press [Apply]<br>button to store the<br>adjustment value. |                            |

## SECTION 5 TROUBLESHOOTING

### 5.1 Fault Diagnosis of the BGA (Ball Grid Array) IC

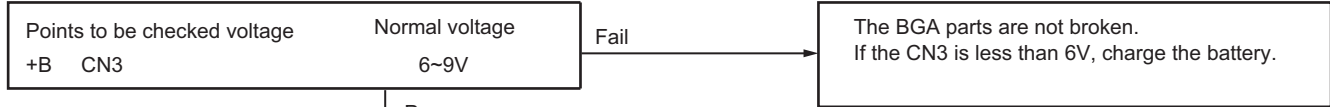
#### ■ Overview

A flowchart for determining whether or not the transceiver can be powered on (the LCD does not function even if the power switch is turned on) due to broken BGA parts.

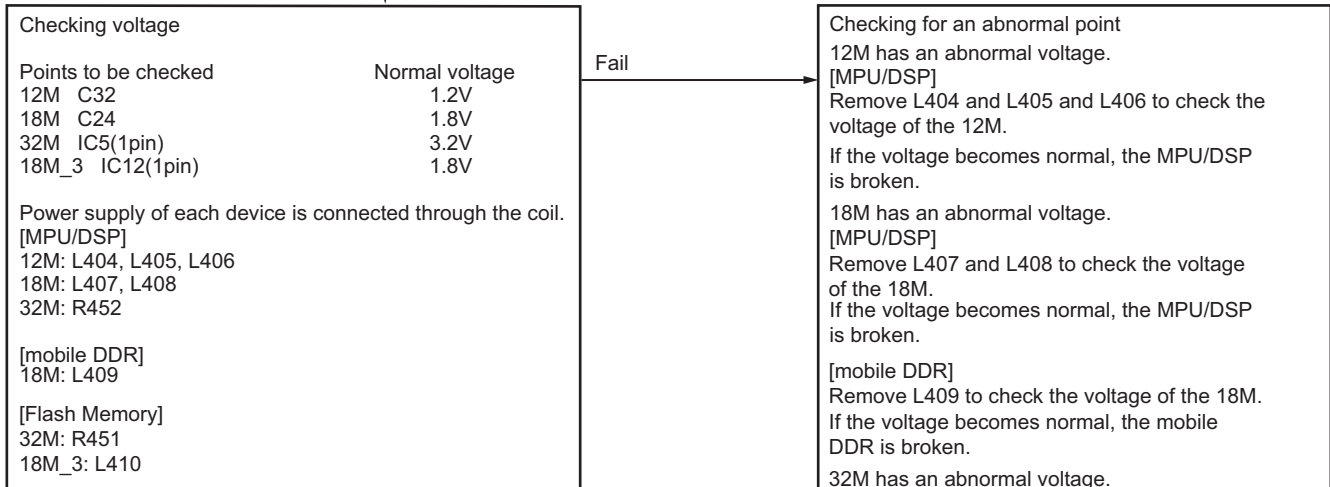
#### ■ BGA parts

MPU/DSP(C401), mobile DDR(IC402), Flash Memory(IC404)

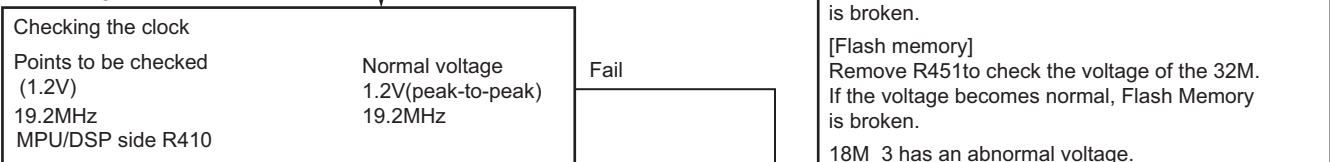
- Checking battery voltage



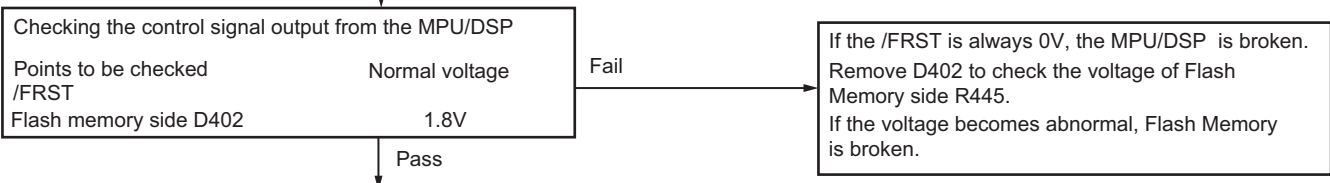
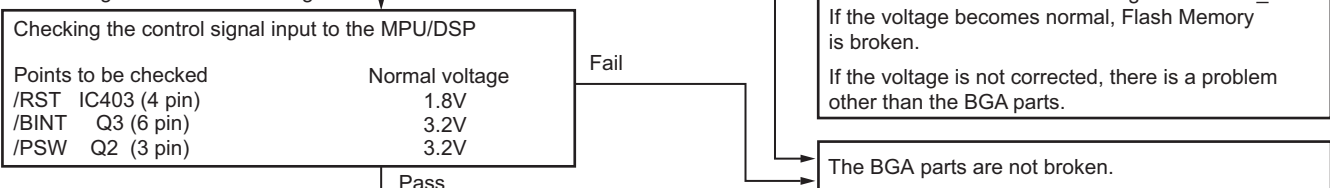
- Checking power supply voltage

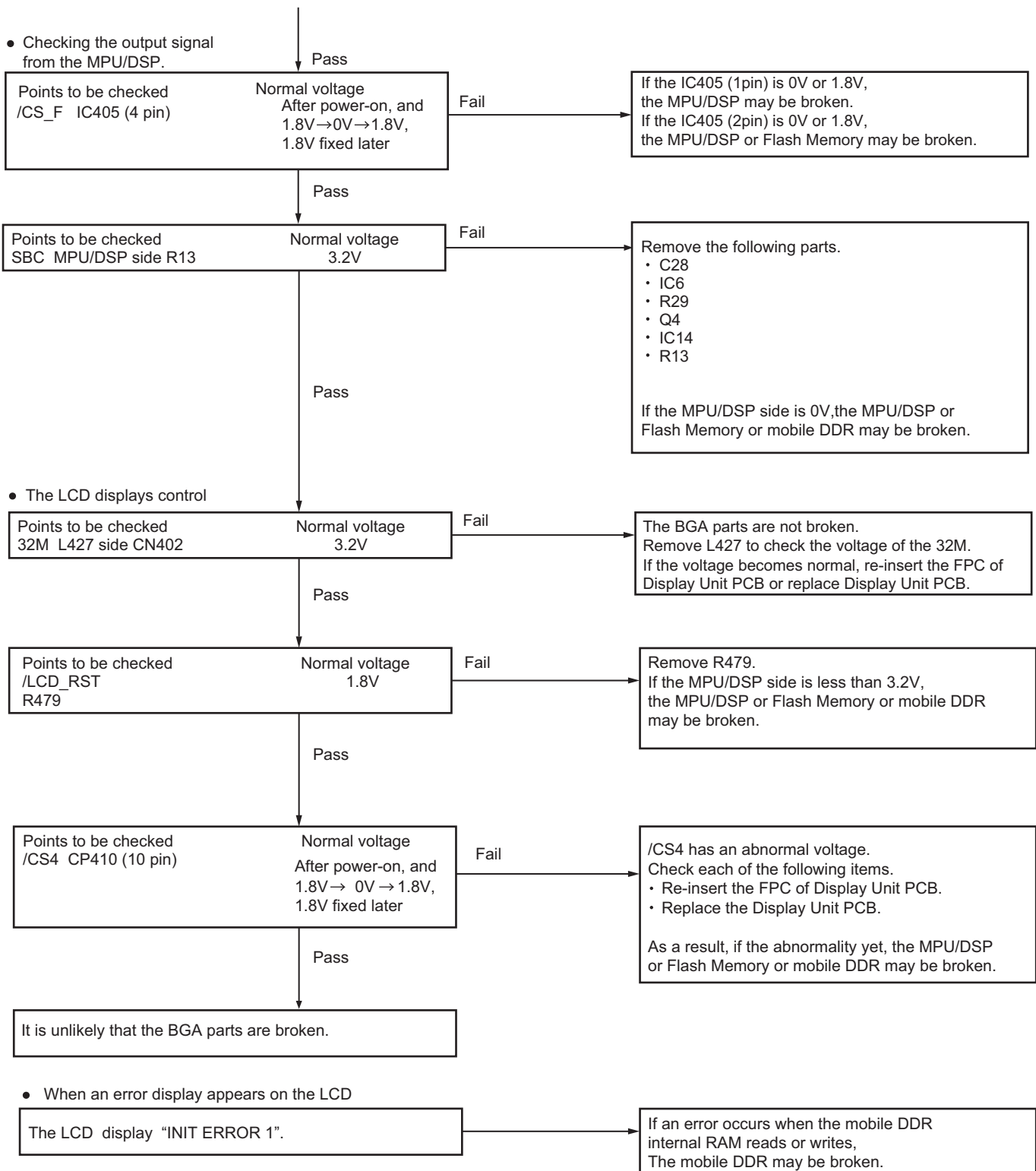


- Checking the clock



- Checking the Reset/Control signal





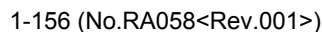
## ■ Descriptions of signal names

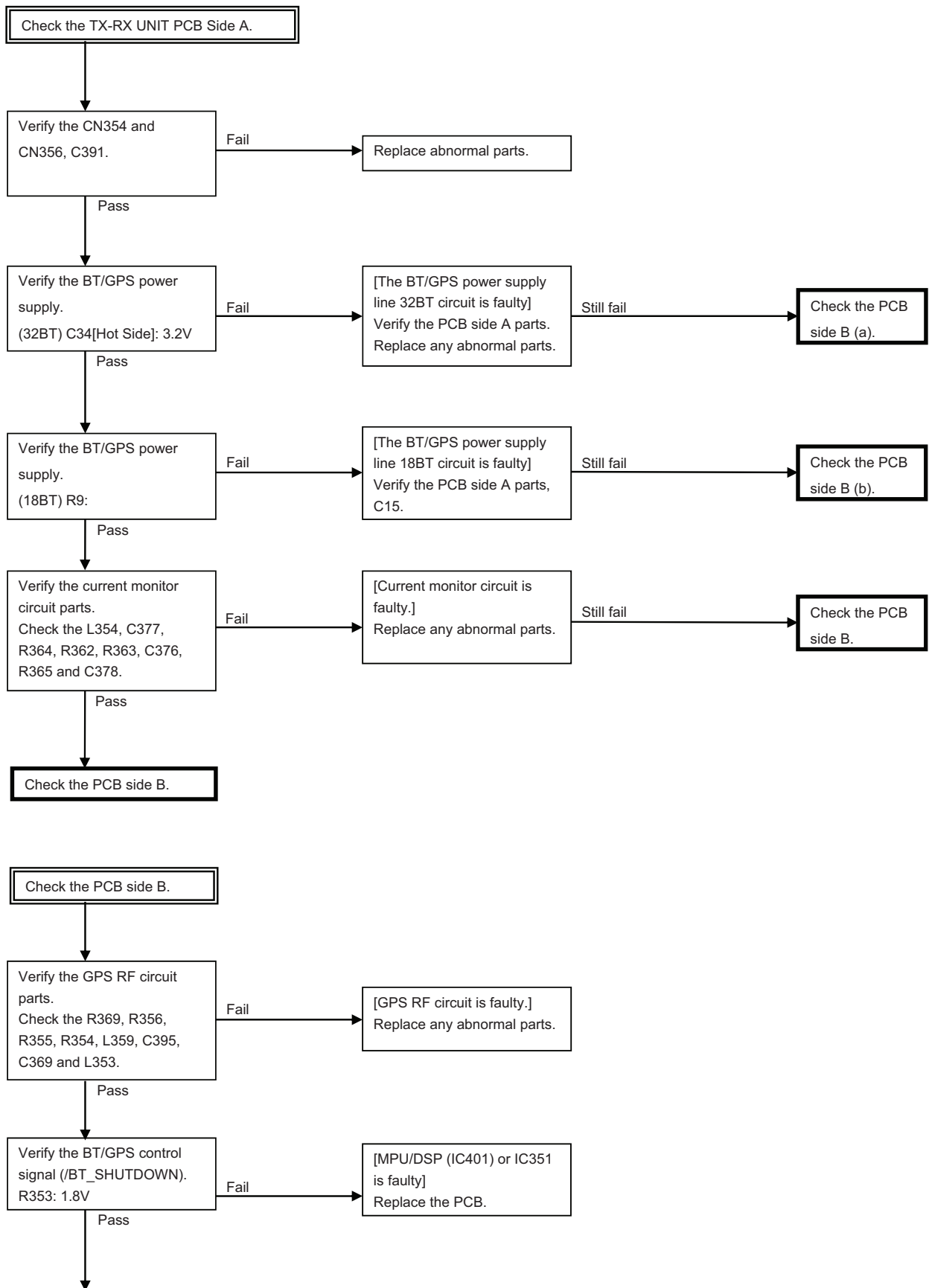
|            |                                     |                    |
|------------|-------------------------------------|--------------------|
| 1) /RST    | : MPU/DSP reset signal              | LOW→ Reset         |
| 2) /BINT   | : Battery final voltage monitoring  | LOW→ Final voltage |
| 3) /PSW    | : Power switch signal               | LOW→ ON            |
| 4) /FRST   | : Flash memory reset signal         | LOW→ Reset         |
| 5) /CS_F   | : Flash memory chip select signal   | LOW→ Active        |
| 6) SBC     | : Switch +B control                 | HIGH→ ON           |
| 7) LCD_RST | : LCD reset signal                  | LOW→ Reset         |
| 8) /CS4    | : LCD controller chip select signal | LOW→ Active        |

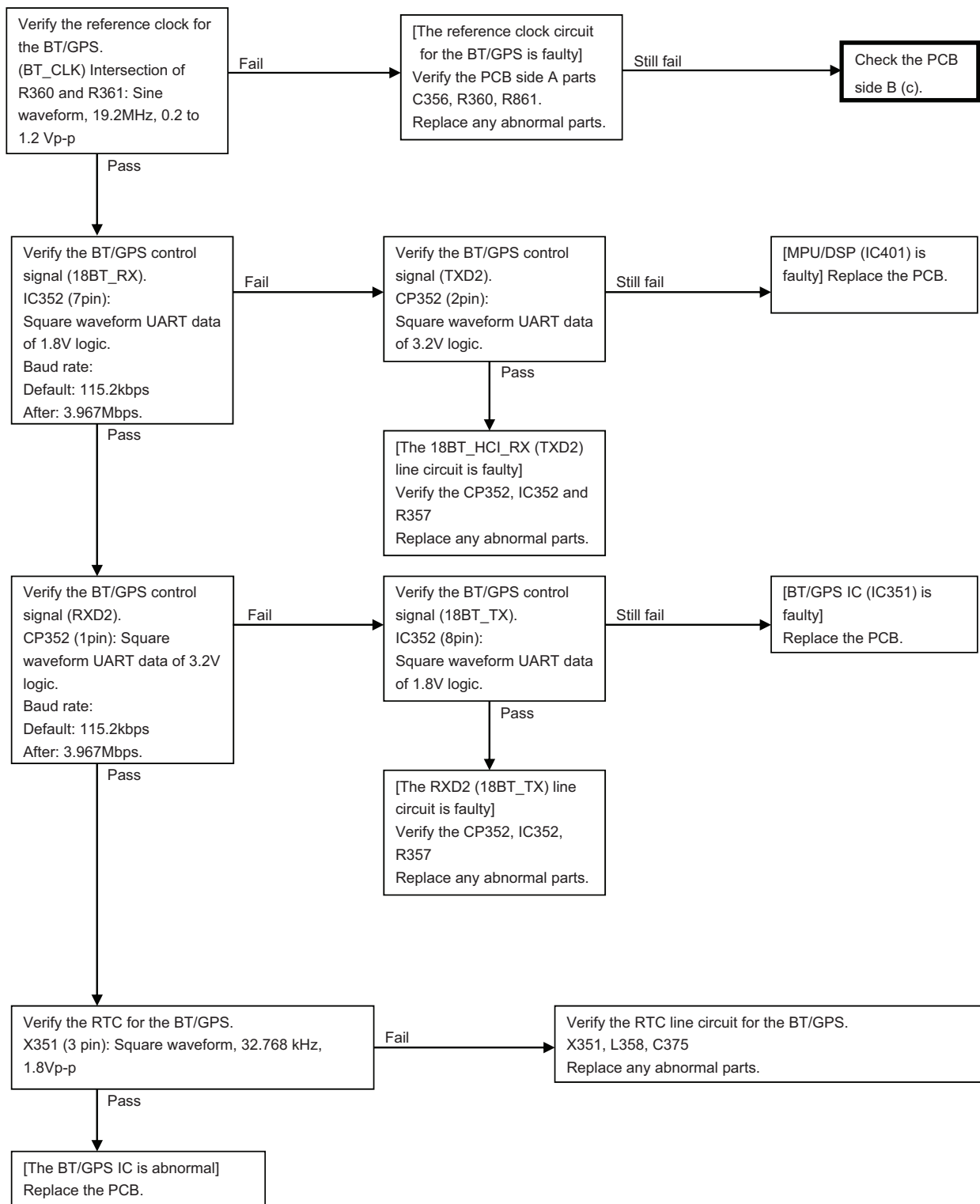
## Overview:

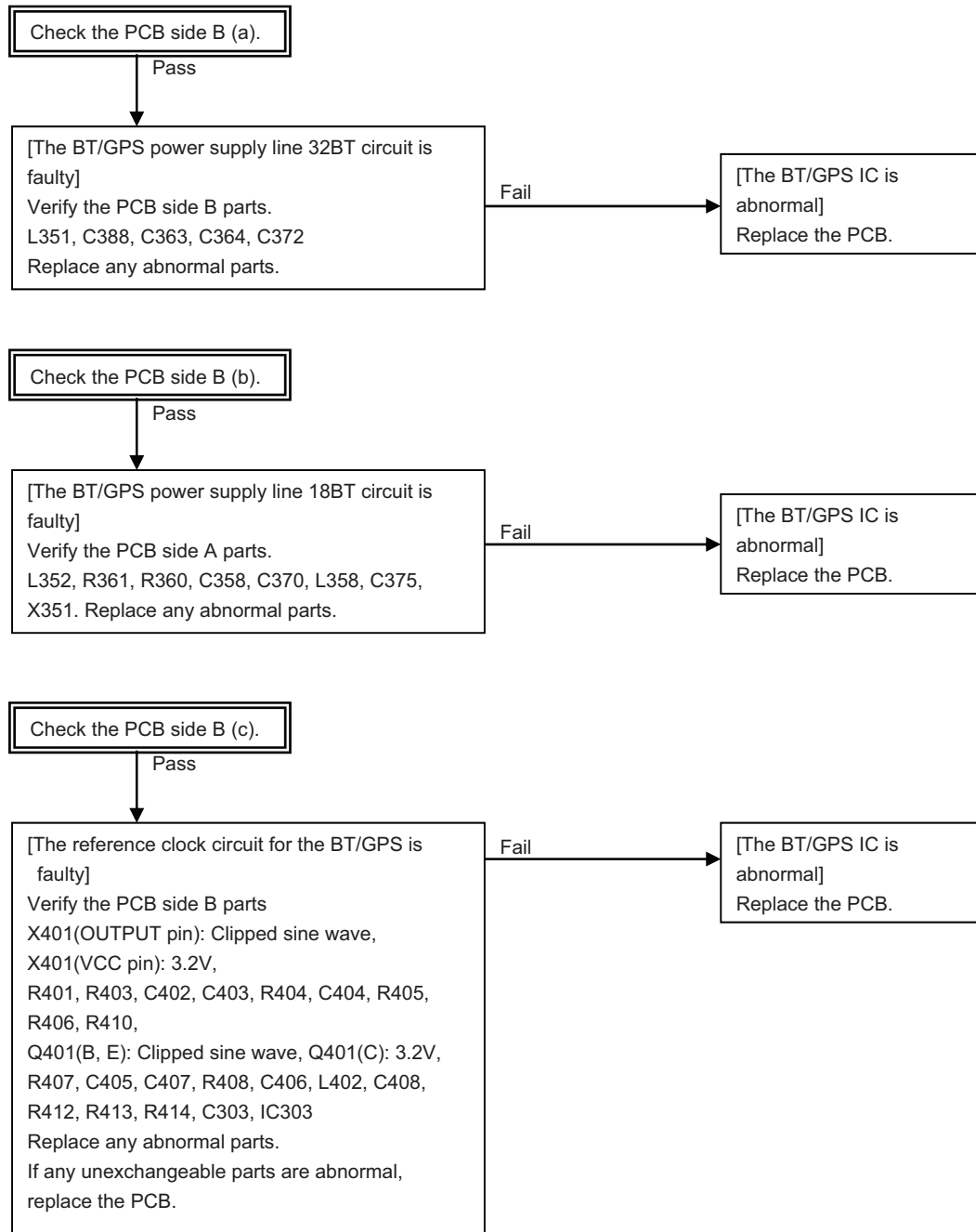
### Major parts for a GPS circuit

- 
- The block diagram illustrates the system architecture. It features a central processing unit (IC401) containing an MPU/DSP IC, which is connected via UART to a Level conversion IC (IC352). IC352 is further connected via UART to a BT/GPS IC (IC351). IC351 is also connected via PCM to another Level conversion IC (IC353), which in turn connects back to the MPU/DSP IC. A TCXO (19.2MHz) provides a clock signal (X401) to the MPU/DSP IC. A 32.768KHz Clock provides a signal (X351) to the BT/GPS IC. The BT/GPS IC is connected to a TX-RX UNIT, which includes an RF Matching component, a SAW Filter, an ATT (Attenuator), and a Hyper Pogo connection. The TX-RX UNIT is also connected to a DISPLAYUNIT, which contains an A151 component, an HPF (High Pass Filter), an ANT Matching component, and a GPS ANT. The DISPLAYUNIT is connected to a SheetMetal component. Additionally, the TX-RX UNIT is connected to a Current Monitor Circuit, which is linked to CN354 and CN356.









#### Descriptions of signal names

- (1) 32BT: BT/GPS IC 3.2V power supply
- (2) 18BT: BT/GPS IC 1.8V power supply
- (3) TXD2: BT/GPS serial data line connected to UART TX of MPU/DSP IC (MPU/DSP to BT/GPS IC)
- (4) RXD2: BT/GPS serial data line connected to UART RX of MPU/DSP IC (MPU/DSP to BT/GPS IC)
- (5) 18BT\_HCI\_RX: BT/GPS serial data line connected to UART RX of BT/GPS IC (MPU to BT/GPS IC)
- (6) 18BT\_HCI\_TX: BT/GPS serial data line connected to UART TX of GPS IC (BT/GPS IC to MPU)
- (7) /BT\_SHUTDOWN: BT/GPS active control of MPU/DSP IC (MPU/DSP to BT/GPS IC) High → Active, Low → Reset

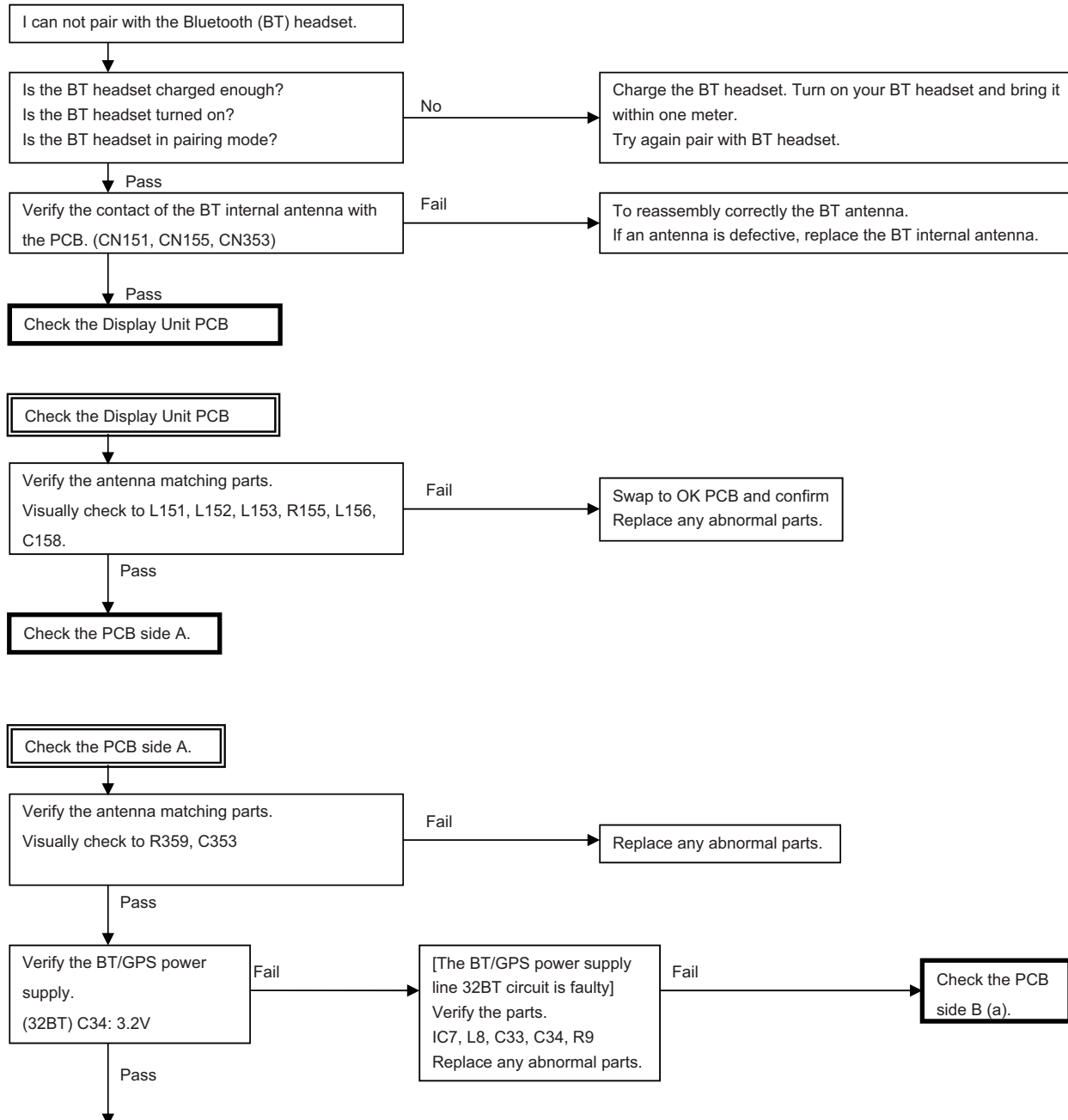
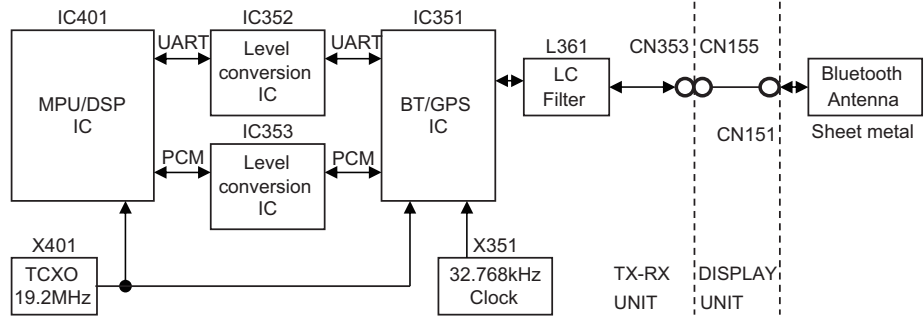
### 5.3 Failure diagnosis of the Bluetooth section

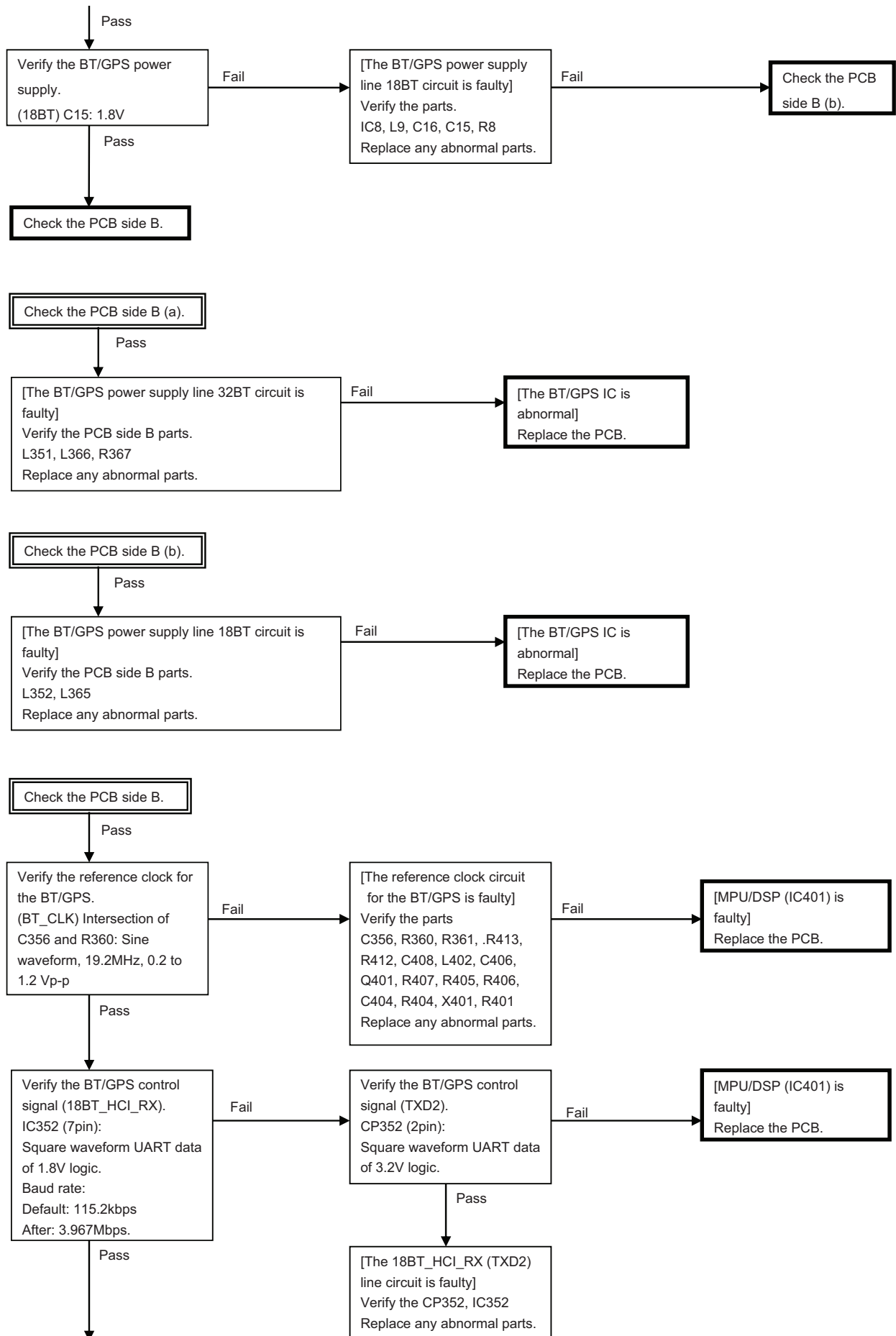
#### Overview:

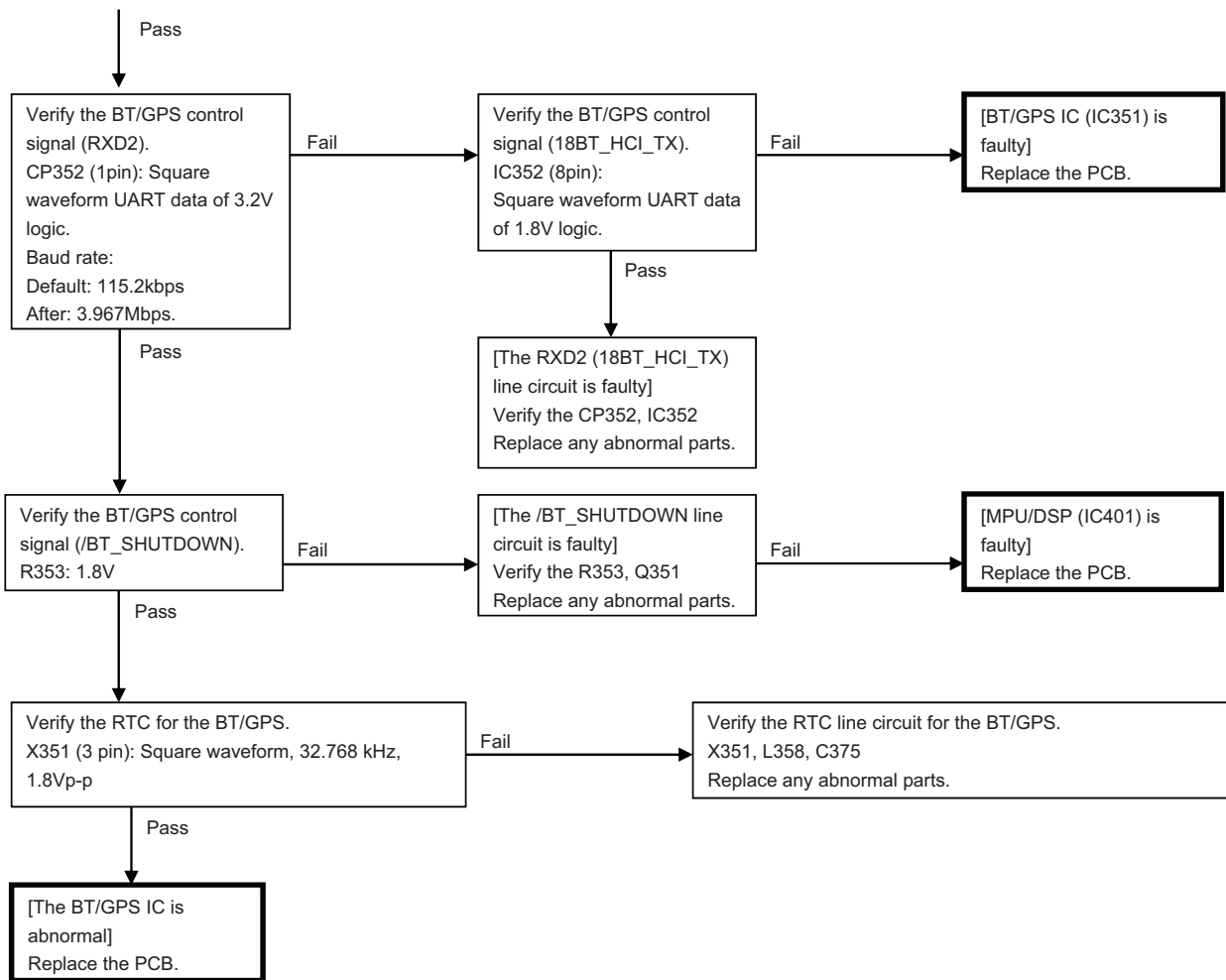
When the Bluetooth function does not operate, use this flowchart to determine the problem.

Major parts for a Bluetooth circuit

- Bluetooth antenna (Sheet metal)
- LC filter (L351)
- Bluetooth/GPS IC (IC351)
- Level conversion IC (IC352, IC353)
- TCXO 19.2MHz (X401)
- 32.768 kHz clock (X351)
- 32BT Regulator (IC7)
- 18BT Regulator (IC8)
- MPU/DSP IC (IC401)







#### Descriptions of signal names

- (1) 32BT: BT/GPS IC 3.2V power supply
- (2) 18BT: BT/GPS IC 1.8V power supply
- (3) TXD2: BT/GPS serial data line connected to UART TX of MPU/DSP IC (MPU/DSP to BT/GPS IC)
- (4) RXD2: BT/GPS serial data line connected to UART RX of MPU/DSP IC (MPU/DSP to BT/GPS IC)
- (5) 18BT\_HCI\_RX: BT/GPS serial data line connected to UART RX of BT/GPS IC (MPU to BT/GPS IC)
- (6) 18BT\_HCI\_TX: BT/GPS serial data line connected to UART TX of GPS IC (BT/GPS IC to MPU)
- (7) /BT\_SHUTDOWN: BT/GPS active control of MPU/DSP IC (MPU/DSP to BT/GPS IC) High → Active, Low → Reset

## 5.4 Failure diagnosis of the VCO section (NX-3200)

### [Overview]

The VCO circuit is mounted inside the BLS. BLS stands for "Board Level Shield".

This BLS has no lid and provides high shielding performance. Because BLS is difficult to solder, components inside the BLS can't be soldered.

When there is a problem with the VCO circuit, the VCO can't be repaired.

If the VCO function doesn't work, use this flow chart to identify the problem.

The following is explained about failure diagnosis of VCO circuit inside a BLS<E101>.

### [About a BLS]

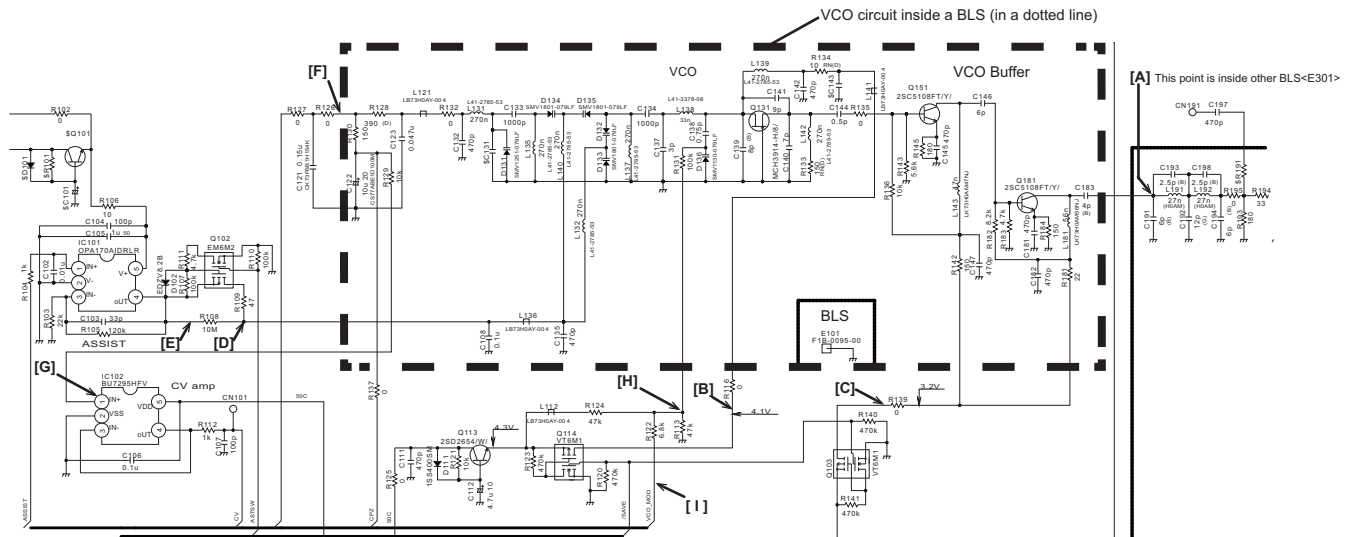
BLS is shielding case

BLS for VCO area is integrated type and can not be removed

### [Prediction problem related to the VCO circuit]

- PLL Unlock
  - <Radio state>
    - Unlock beep
    - VCO Assist voltage tuning is impossible
  - <The cause>
    - VCO control voltage is abnormal
    - VCO Assist voltage is abnormal
    - VCO power supply is abnormal
    - VCO signal output circuit is abnormal

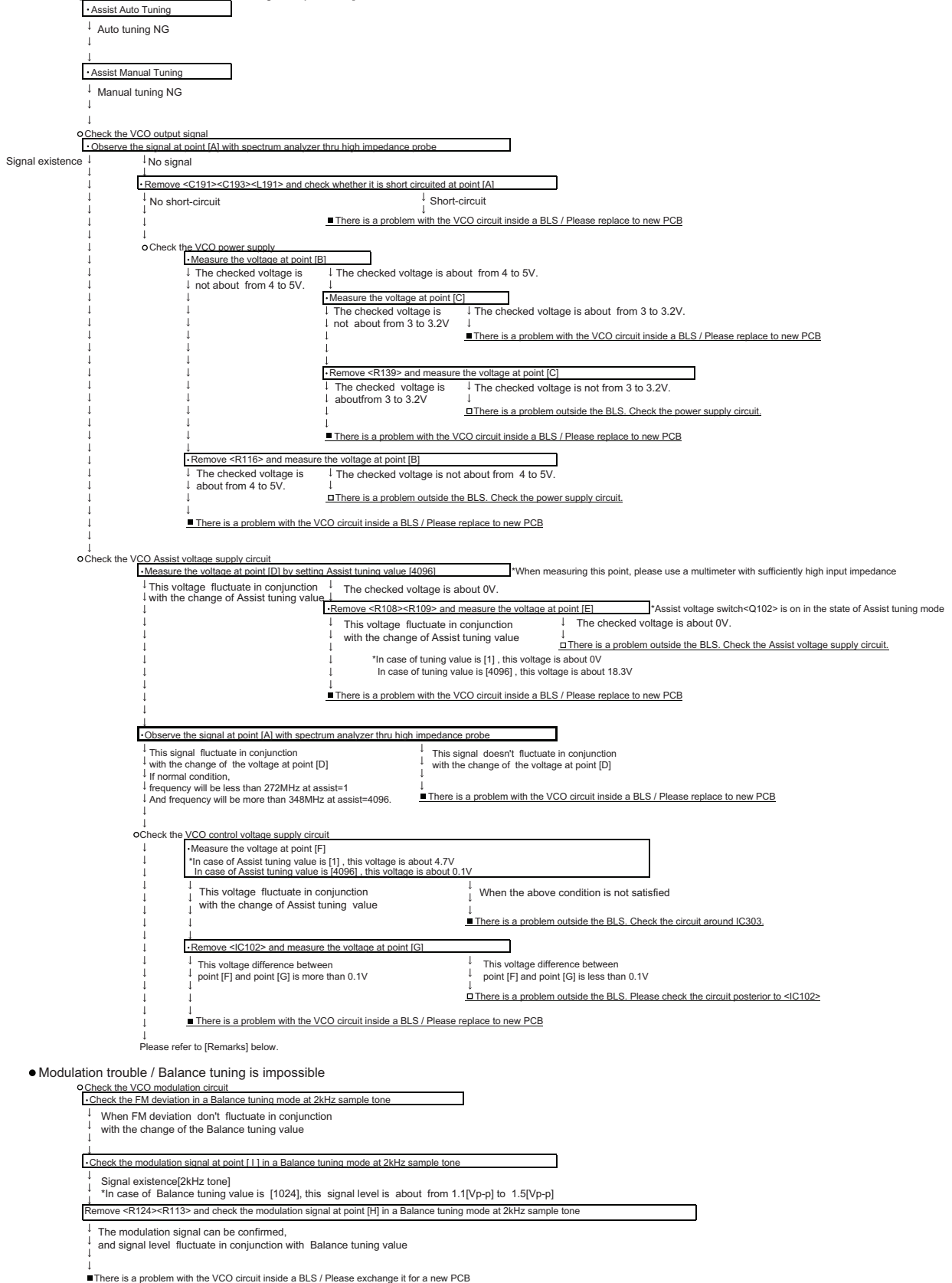
### [VCO circuit inside a BLS<E101>]



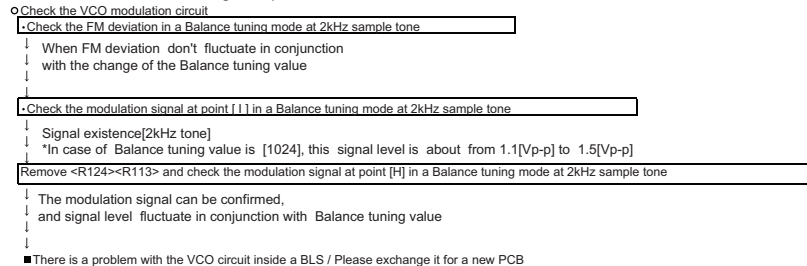


## [Inspection procedure]

- Unlock[Unlock beep / VCO assist tuning is impossible]



- Modulation trouble / Balance tuning is impossible



## [Remarks]

The following things are assumed as causes of trouble besides the above

- PLL data is abnormal
- VCO/PLL lock judgment is abnormal[<IC401>OMAP]

## 5.5 Failure diagnosis of the VCO section (NX-3300)

### [Overview]

The VCO circuit is mounted inside the BLS. BLS stands for "Board Level Shield".

This BLS has no lid and provides high shielding performance. Because BLS is difficult to solder, components inside the BLS can't be soldered.

When there is a problem with the VCO circuit, the VCO can't be repaired.

If the VCO function doesn't work, use this flow chart to identify the problem.

The following is explained about failure diagnosis of VCO circuit inside a BLS<E101>.

### [About a BLS]

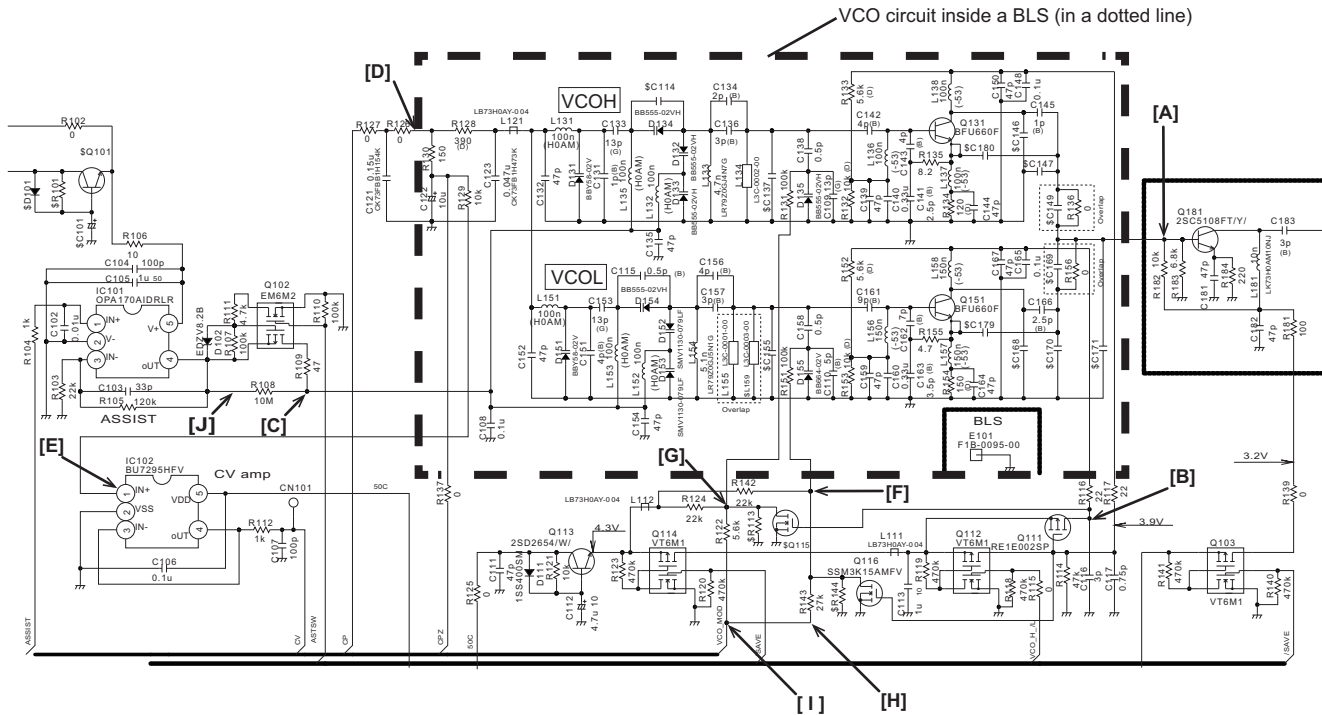
BLS is shielding case

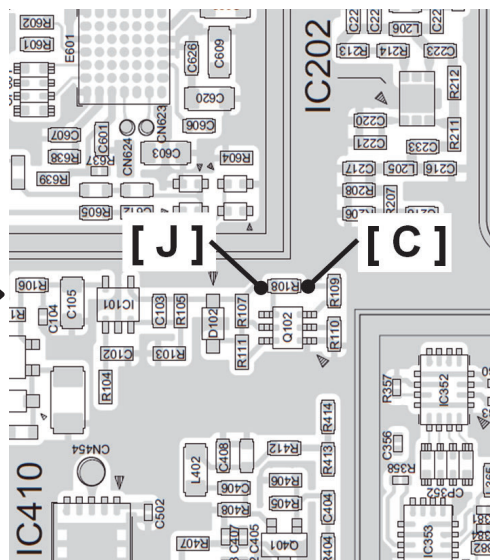
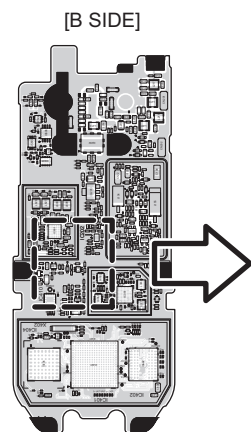
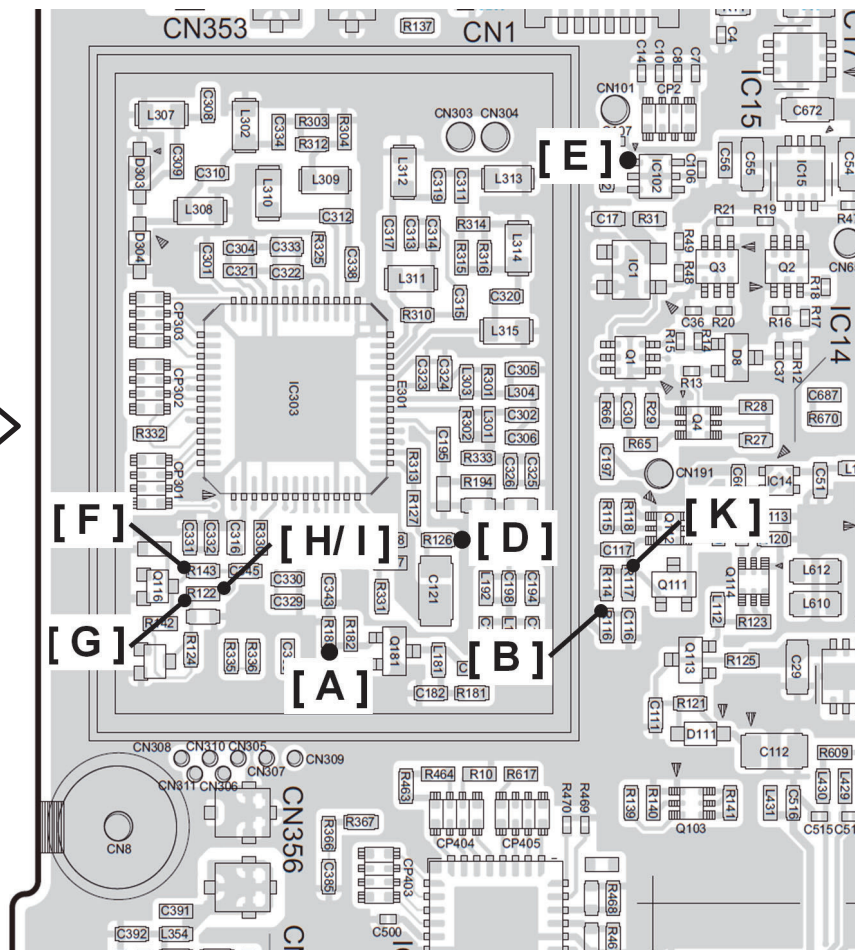
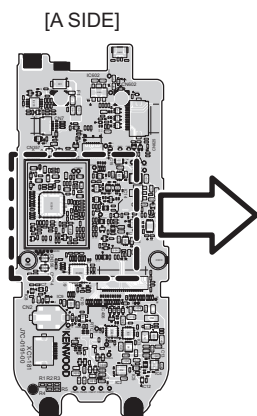
BLS for VCO area is integrated type and can not be removed

### [Prediction problem related to the VCO circuit]

- PLL Unlock
  - <Radio state>
    - Unlock beep
    - VCO Assist voltage tuning is impossible
  - <The cause>
    - VCO control voltage is abnormal
    - VCO Assist voltage is abnormal
    - VCO power supply is abnormal
    - VCO signal output circuit is abnormal

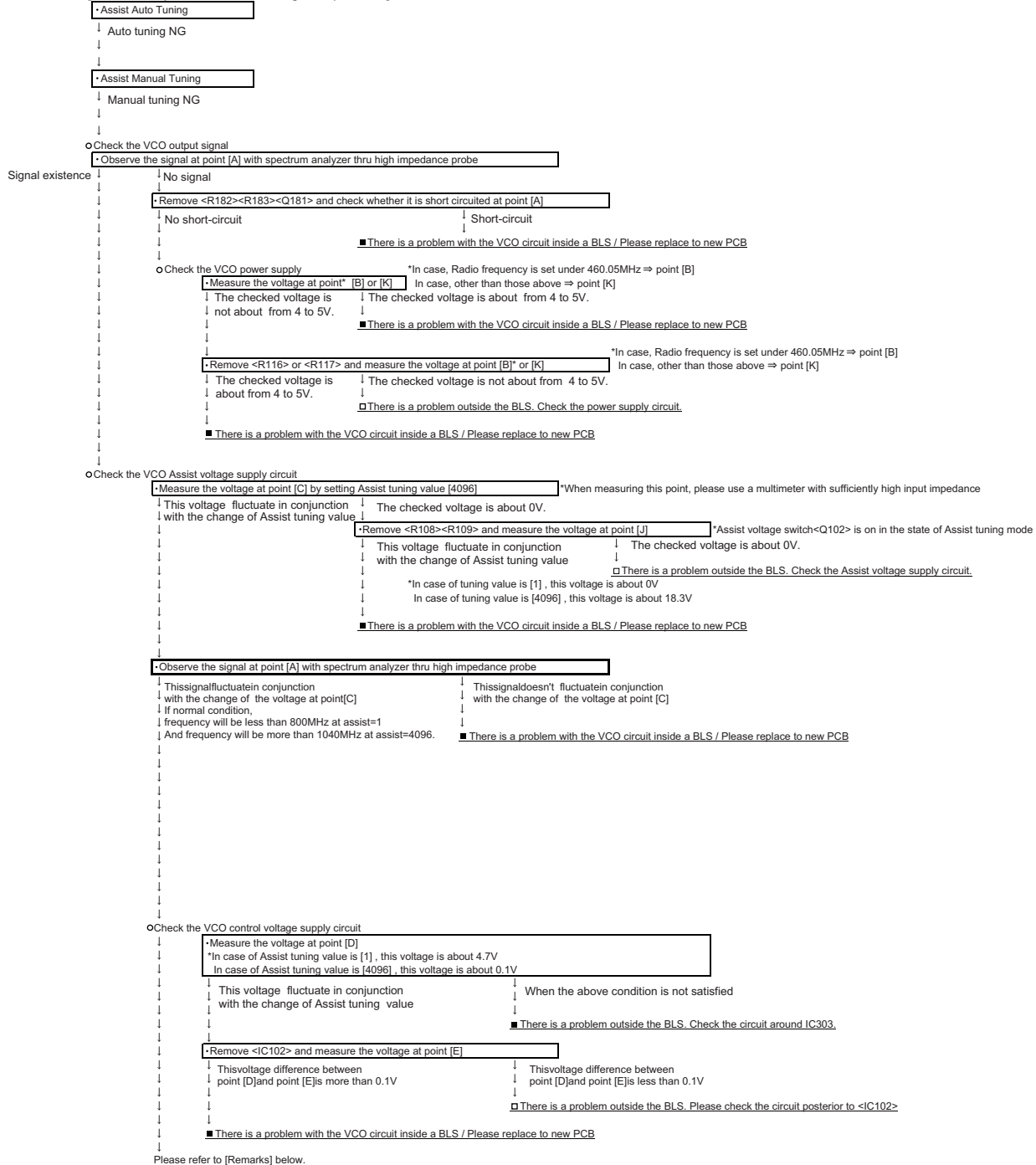
### [VCO circuit inside a BLS<E101>]





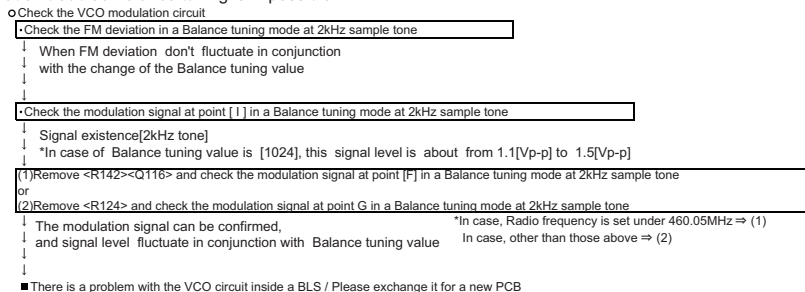
## [Inspection procedure]

### ● Unlock[Unlock beep / VCO assist tuning is impossible]



Please refer to [Remarks] below.

### ● Modulation trouble / Balance tuning is impossible



## [Remarks]

The following things are assumed as causes of trouble besides the above

- PLL data is abnormal
- VCO/PLL lock judgment is abnormal[<IC401>OMAP]

## 5.6 Operating Method of Enforced Firmware Overwriting Mode

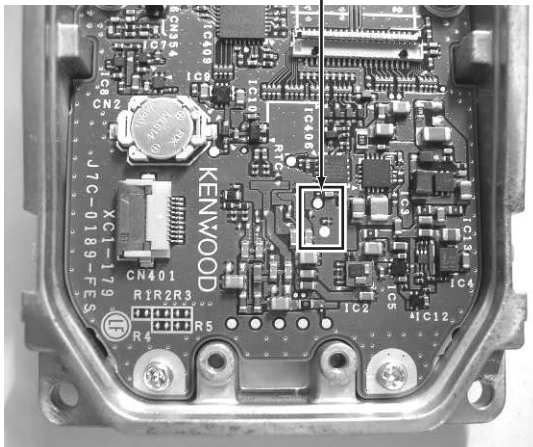
Enforced firmware overwriting mode is a mode to forcibly overwrite the transceiver firmware when the operations as instructed in Section 2.2.2 "How to Enter Each Mode" does not allow the transceiver to enter the firmware programming mode, for instance, when the transceiver fails to start up due to the transceiver failure.

- (1) Prepare the followings:
  - Transceiver (NX-3200 or NX-3300)
  - Battery (KNB-55L, KNB-56N or KNB-57L)
  - Programming interface cable (KPG-36U or KPG-36X)
- (2) Disassemble the transceiver to the condition shown in the figure.



- (3) Connect a transceiver, battery and programming interface cable (KPG-36U or KPG-36X).
- (4) While FLDM terminal has a short-circuit with GND terminal on the PCB, turn its power ON.

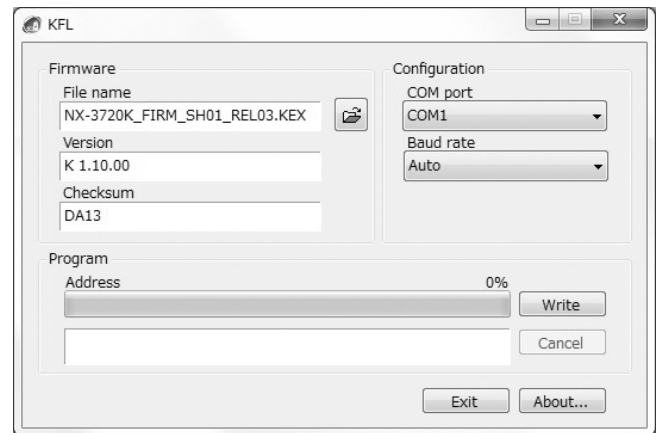
Upper: FLDM terminal  
Lower: GND terminal



- (5) Upon startup of FLDM loader, "FIRMWARE PROG" appears on an LCD screen.
- (6) Start KFL up, select the desired firmware you wish to overwrite, select the COM port number and baud rate, and then click the "Write" button.

### Note:

Configuring "Auto" for baud rate automatically apply the maximal speed of baud rate allowed for a programming cable connected to the selected COM port number.  
Upon start of overwriting on the transceiver, "LOADING" appears on an LCD screen.



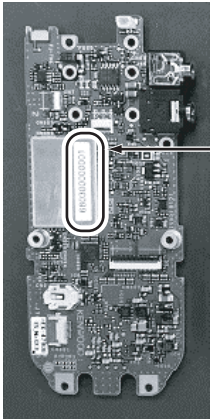
- (7) Upon completion of the firmware overwriting, "CHECKSUM xxxx" appears on an LCD screen.

## 5.7 Replacing TX-RX Unit

### ■TX-RX unit information

| Model Name        | Original TX-RX unit Number | For Service TX-RX unit Number |
|-------------------|----------------------------|-------------------------------|
| NX-3200 (K,K2,K3) | XC1-179K-00                | XCA-031K-00                   |
| NX-3200 (E,E2,E3) | XC1-179K-00                | XCA-031E-01                   |
| NX-3300 (K,K2,K3) | XC1-181K-00                | XCA-032K-00                   |
| NX-3300 (E,E2,E3) | XC1-181K-00                | XCA-032E-01                   |

### ■Method of confirming “Original TX-RX unit” and “Service TX-RX unit”



The following marking seals are affixed on the shield cover of the service TX-RX unit (XCA-031K-00/XCA-031E-01/XCA-032K-00/XCA-032E-01).

| Model Name        | Marking seal |
|-------------------|--------------|
| NX-3200 (K,K2,K3) | XCA-031K-00  |
| NX-3200 (E,E2,E3) | XCA-031E-01  |
| NX-3300 (K,K2,K3) | XCA-032K-00  |
| NX-3300 (E,E2,E3) | XCA-032E-01  |

### ■Supplied Accessories of “Service TX-RX unit”

| Item (Including Parts Number)                        | Quantity |
|------------------------------------------------------|----------|
| TX-RX Unit (XC1-179, XC1-181)                        | 1        |
| KENWOOD ESN/ NXDN ESN/ Product Number/ MPT ESN Label | 1        |

### ■“Service TX-RX unit” Data

The following data is written on the service unit:

| Data Type                         | Description                                                                                                                                           |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| KENWOOD ESN                       | Model name: [XCA-031/XCA-032]<br>NX-3200S (K, E)/NX-3300S (K, E)<br>Type:K, K2, K3, E, E2, E3<br>The same number as the KENWOOD ESN label is written. |
| NXDN ESN/ MPT ESN/ Product number | The same number as the NXDN ESN/ MPT ESN/ Prduct Number label is written.                                                                             |

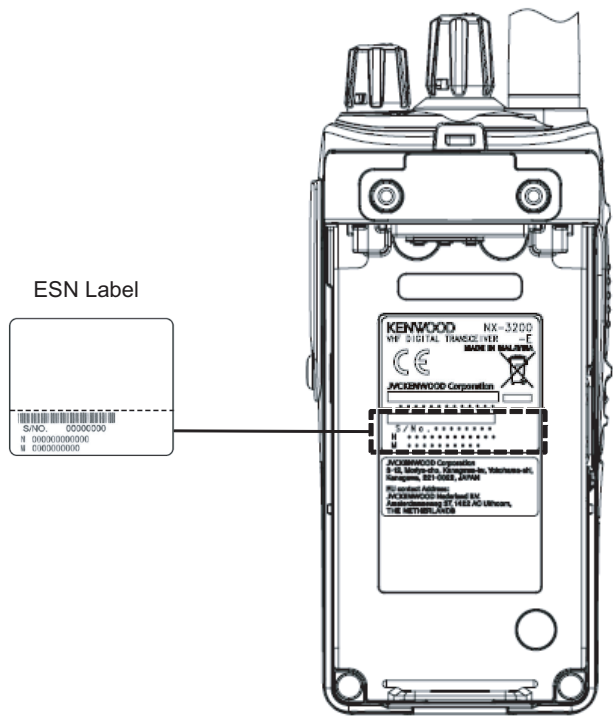
### ■After Changing the PCB

- After changing the printed circuit board, write the up-to-date Firmware following the instructions in the “2.2 REALIGNMENT - 2.2.6 Firmware Programming Mode”.
  - Write the Firmware in accordance to the Market. If you write different Market Firmware, there are times communication with the FPU is not possible.
- Using the KPG-D3/D3N, select your desired item (Model Name) from the Radio Configuration> Product Information menu, then use Read/ Write > Write Configuration to the Transceiver to write the FPU data (PC Programming mode). When writing to the transceiver, a Warning Message, corresponding to the item selected, appears. Click [OK] to continue writing the data.
- Tools > Test/Tuning, then adjust the various adjustment data (PC Test Mode) as described in the "SECTION 4 ADJUSTMENT".
- Attach the new labels corresponding to the new printed circuit board. (Refer to the images below for label placement.)
- If necessary, write the FPU data used by the customer with the KPG-D3/D3N.

#### Note:

- When using the ESN Validation function of NXDN Trunking, the NXDN ESN number changes when the circuit board is changed (the number is written on the circuit board); the NXDN Trunking System cannot be accessed. Use the KPG-110SM on the NXDN Trunking System side to reprogram the NXDN ESN number.
- When a new printed circuit board is used, the KENWOOD ESN changes, as does the Transceiver Information display of the KPG-D3/D3N, but this does not have any effect on the operation of the transceiver.
- If changing to the original ESN, please contact our service center.
- KPG-D3N can't be used for E, E2, E3 types.

■ ESN Label Layout



**Note:**  
Cut a ESN Label at dotted line.

# MEMO

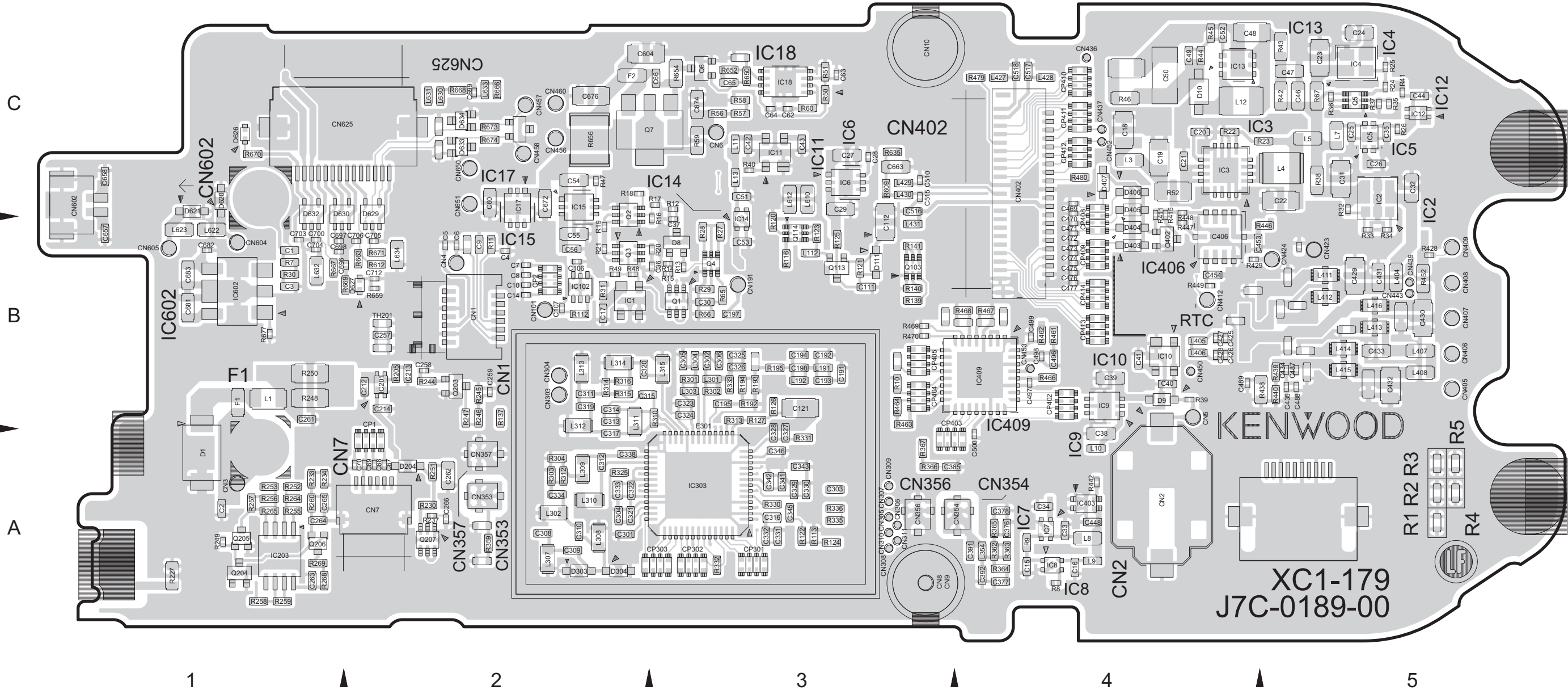
## PRECAUTIONS ON SCHEMATIC DIAGRAMS

- \* Due to the improvement in performance, some part numbers shown in the circuit diagrams may not agree with those indicated in the Parts List.
- \* The parts numbers, values and rated voltage etc. in the Schematic Diagrams are for reference only.
- \* Since the circuit diagrams are standard ones, the circuits and circuit constants may be subject to change for improvement without any notice.
- \* The parts of the symbol with " \* " may vary depending on model. Refer to the parts list for details.
- \* The parts of the symbol with " \$ " are unmounted parts.

PRINTED CIRCUIT BOARD

■ TX-RX UNIT (XC1-179K-00 (NX-3200))

--- Component side view/Side A (J7C-0189-00) ---



--- Foil side view/Side B (J7C-0189-00) ---



● ADDRESS TABLE OF BOARD PARTS

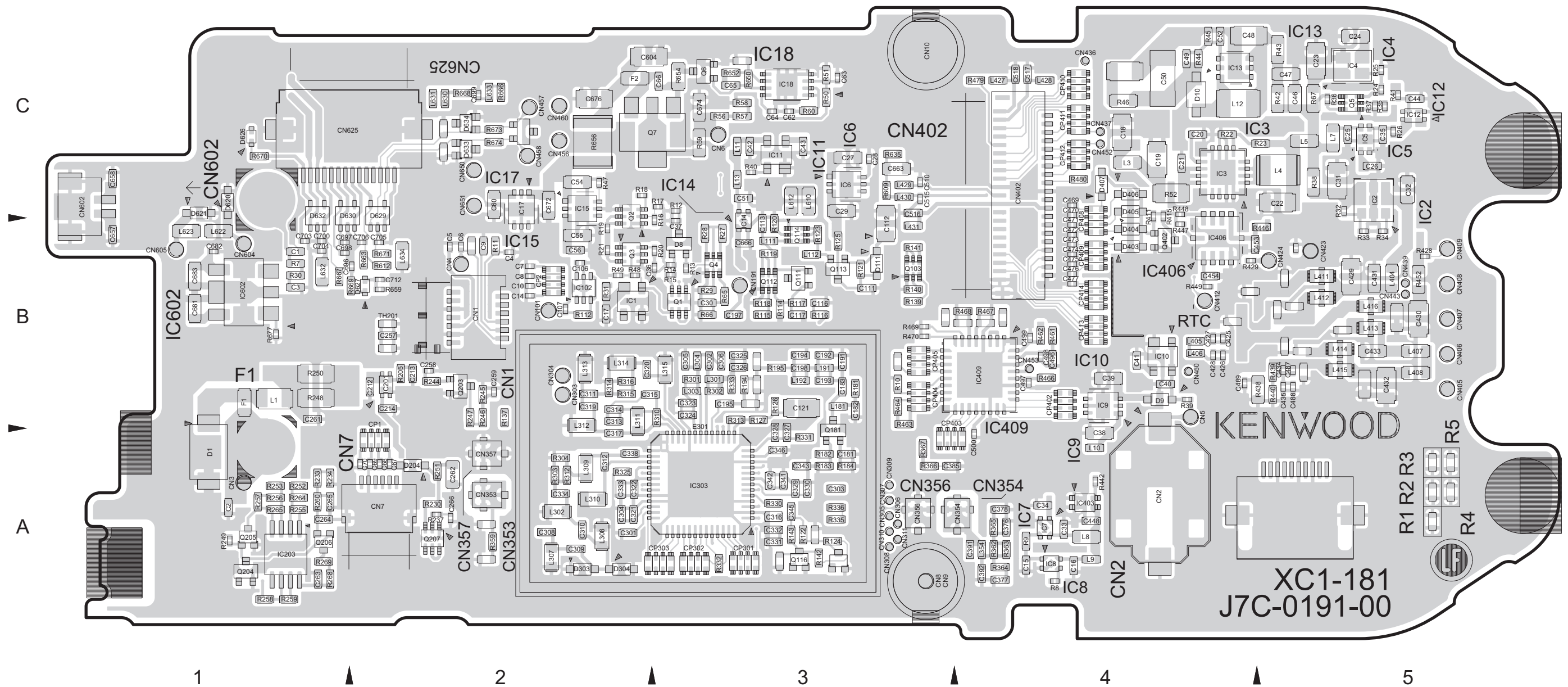
Each address may have an address error by one interval.



| REF.NO. LOCATION | REF.NO. LOCATION | REF.NO. LOCATION | REF.NO. LOCATION | REF.NO. LOCATION | REF.NO. LOCATION | REF.NO. LOCATION | REF.NO. LOCATION | REF.NO. LOCATION | REF.NO. LOCATION | REF.NO. LOCATION | REF.NO. LOCATION | REF.NO. LOCATION | REF.NO. LOCATION | REF.NO. LOCATION | REF.NO. LOCATION | REF.NO. LOCATION |            |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|
| IC               |                  | Q202 B- 2B       | R9 A- 4A         | R109 B- 3B       | R228 B- 2B       | R363 A- 4A       | R467 A- 4B       | C15 A- 4A        | C112 A- 3B       | C248 B- 1A       | C356 B- 4B       | C436 B- 5A       | C606 B- 3C       | X402 B- 4C       | CN447 B- 4B      | L13 A- 3C        | L404 A- 5B |
| IC1 A- 2B        | Q203 A- 2B       | R10 A- 3B        | R110 B- 3B       | R230 A- 2A       | R364 A- 4A       | R468 A- 4B       | C16 A- 4A        | C121 A- 3B       | C249 B- 1A       | C357 B- 4B       | C437 B- 4A       | C607 B- 3C       |                  | CN450 A- 4B      | L112 A- 3B       | L405 A- 4B       |            |
| IC2 A- 5C        | Q204 A- 1A       | R11 A- 2B        | R111 B- 3B       | R233 A- 1A       | R365 A- 4A       | R469 A- 3B       | C17 A- 2B        | C122 B- 2B       | C250 B- 1A       | C358 B- 4B       | C438 B- 5A       | C608 B- 3C       | TH201 A- 2B      | CN452 A- 4C      | L121 B- 2A       | L406 A- 4B       |            |
| IC3 A- 4C        | Q205 A- 1A       | R12 A- 3C        | R112 A- 2B       | R234 A- 1A       | R366 A- 3A       | R470 A- 3B       | C18 A- 4C        | C123 B- 2A       | C251 B- 1A       | C359 B- 4B       | C439 B- 5A       | C609 B- 3B       | TH401 B- 4C      | CN453 A- 4B      | L131 B- 2A       | L407 A- 5B       |            |
| IC4 A- 5C        | Q206 A- 1A       | R13 A- 3B        | R113 A- 3A       | R237 A- 2A       | R367 A- 3A       | R479 A- 4C       | C19 A- 4C        | C132 B- 2A       | C252 B- 2B       | C360 B- 4B       | C440 B- 5A       | C610 B- 3C       |                  | CN454 B- 4C      | L132 B- 2A       | L408 A- 5B       |            |
| IC5 A- 5C        | Q207 A- 2A       | R14 A- 3B        | R116 A- 3B       | R244 A- 2B       | R369 B- 4A       | R480 A- 4C       | C20 A- 4C        | C133 B- 2A       | C253 B- 3B       | C361 B- 4B       | C441 B- 5A       | C612 B- 3C       | CN1 A- 2B        | CN456 A- 2C      | L135 B- 2A       | L409 B- 5A       |            |
| IC6 A- 3C        | Q351 B- 3A       | R15 A- 3B        | R120 A- 3B       | R245 A- 2B       | R401 B- 4B       | R601 B- 3C       | C21 A- 4C        | C134 B- 3A       | C255 B- 1B       | C363 B- 4B       | C442 B- 5A       | C614 B- 3C       | CN2 A- 4A        | CN457 A- 2C      | L136 B- 2A       | L410 B- 4C       |            |
| IC7 A- 4A        | Q401 B- 4B       | R16 A- 3B        | R121 A- 3B       | R246 A- 2B       | R402 B- 4B       | R602 B- 3C       | C22 A- 5C        | C135 B- 2A       | C257 A- 2B       | C364 B- 4B       | C443 B- 4A       | C615 B- 3C       | CN3 A- 1A        | CN458 A- 2C      | L137 B- 3A       | L411 A- 5B       |            |
| IC8 A- 4A        | Q402 A- 4B       | R17 A- 3C        | R122 A- 3A       | R247 A- 2B       | R403 B- 4C       | R603 B- 3C       | C23 A- 5C        | C137 B- 3A       | C258 A- 2B       | C365 B- 4A       | C444 B- 4A       | C617 B- 2B       | CN4 A- 2B        | CN460 A- 2C      | L138 B- 3A       | L412 A- 5B       |            |
| IC9 A- 4B        |                  | R18 A- 2C        | R123 A- 3B       | R248 A- 1B       | R404 B- 4B       | R604 B- 3B       | C24 A- 5C        | C138 B- 3A       | C259 A- 2B       | C366 B- 4A       | C445 B- 5C       | C618 B- 2C       | CN5 A- 4B        | CN602 A- 1C      | L139 B- 3A       | L413 A- 5B       |            |
| IC10 A- 4B       | DIODE            | R19 A- 2B        | R124 A- 3A       | R249 A- 1A       | R405 B- 4B       | R605 B- 3C       | C25 A- 5C        | C139 B- 3A       | C260 B- 3B       | C367 B- 4A       | C446 B- 5C       | C620 B- 3C       | CN6 A- 3C        | CN604 A- 1B      | L140 B- 2A       | L414 A- 5B       |            |
| IC11 A- 3C       | D1 A- 1A         | R20 A- 3B        | R125 A- 3B       | R250 A- 1B       | R406 B- 4B       | R606 B- 3C       | C26 A- 5C        | C140 B- 3A       | C261 A- 1B       | C368 B- 4A       | C447 B- 5C       | C621 B- 3C       | CN7 A- 2A        | CN605 A- 1B      | L141 B- 3B       | L415 A- 5B       |            |
| IC12 A- 5C       | D8 A- 3B         | R21 A- 2B        | R126 A- 3B       | R251 A- 2A       | R407 B- 4C       | R607 B- 3C       | C27 A- 3C        | C141 B- 3A       | C262 A- 2A       | C369 B- 4A       | C448 A- 4A       | C622 B- 3B       | CN8 A- 3A        | CN623 B- 3C      | L142 B- 3A       | L416 A- 5B       |            |
| IC13 A- 4C       | D9 A- 4B         | R22 A- 4C        | R127 A- 3B       | R252 A- 1A       | R408 B- 4B       | R608 B- 3C       | C28 A- 3C        | C142 B- 3A       | C263 A- 1A       | C370 B- 4A       | C449 B- 4C       | C625 B- 2B       | CN9 A- 3A        | CN624 B- 3C      | L143 B- 3A       | L417 B- 5B       |            |
| IC14 A- 3B       | D10 A- 4C        | R23 A- 5C        | R128 B- 2A       | R253 A- 1A       | R410 B- 4B       | R609 A- 3C       | C29 A- 3C        | C144 B- 3A       | C264 A- 1A       | C371 B- 4A       | C450 B- 5B       | C626 B- 3C       | CN10 A- 3C       | CN625 A- 1C      | L181 B- 3B       | L427 A- 4C       |            |
| IC15 A- 2C       | D102 B- 3B       | R24 A- 5C        | R129 B- 2B       | R255 A- 1A       | R411 A- 4C       | R610 B- 3C       | C30 A- 3B        | C145 B- 3A       | C265 A- 1A       | C372 B- 4A       | C451 B- 5C       | C627 B- 2C       | CN101 A- 2B      | CN650 A- 2C      | L191 A- 3B       | L428 A- 4C       |            |
| IC17 A- 2C       | D111 A- 3B       | R25 A- 5C        | R130 B- 2B       | R256 A- 1A       | R412 B- 4B       | R611 B- 3C       | C31 A- 5C        | C146 B- 3A       | C266 A- 2A       | C373 B- 4A       | C452 B- 4C       | C657 A- 1B       | CN191 A- 3B      | CN651 A- 2C      | L192 A- 3B       | L429 A- 3C       |            |
| IC18 A- 3C       | D131 B- 2A       | R26 A- 5C        | R131 B- 3A       | R257 A- 1A       | R413 B- 4B       | R612 A- 2B       | C32 A- 5C        | C147 B- 3A       | C269 B- 1A       | C374 B- 4A       | C453 A- 4B       | C658 A- 1C       | CN201 B- 1A      |                  | L201 B- 2A       | L430 A- 3C       |            |
| IC101 B- 3C      | D132 B- 2A       | R27 A- 3B        | R132 B- 2A       | R258 A- 1A       | R414 B- 4B       | R635 A- 3C       | C33 A- 4A        | C181 B- 3A       | C301 A- 2A       | C375 B- 4A       | C454 A- 4B       | C659 B- 3C       | CN202 B- 2A      | CP1 A- 2A        | L203 B- 2A       | L431 A- 3B       |            |
| IC102 A- 2B      | D133 B- 2A       | R28 A- 3B        | R133 B- 3A       | R259 A- 1A       | R415 A- 4C       | R636 B- 3B       | C34 A- 4A        | C182 B- 3B       | C302 A- 3B       | C376 A- 4A       | C455 B- 4B       | C660 B- 3C       | CN203 B- 1B      | CP2 A- 2B        | L206 B- 3B       | L601 B- 3C       |            |
| IC201 A- 2B      | D134 B- 2A       | R29 A- 3B        | R134 B- 3A       | R260 A- 1A       | R419 B- 5C       | R637 B- 3C       | C35 A- 5C        | C183 B- 3B       | C303 A- 3A       | C377 A- 4A       | C456 B- 4A       | C663 A- 3C       | CN303 A- 2B      | CP301 A- 3A      | L209 B- 3B       | L604 B- 2C       |            |
| IC202 B- 3B      | D135 B- 2A       | R30 A- 1B        | R135 B- 3A       | R264 A- 1A       | R420 B- 5B       | R638 B- 3C       | C36 A- 3B        | C191 A- 3B       | C304 A- 2A       | C378 A- 4A       | C457 B- 5A       | C672 A- 2C       | CN304 A- 2B      | CP302 A- 3A      | L210 B- 1B       | L605 B- 2C       |            |
| IC203 A- 1A      | D136 B- 3A       | R31 A- 2B        | R136 B- 3A       | R265 A- 1A       | R421 B- 5B       | R639 B- 3C       | C37 A- 3B        | C192 A- 3B       | C305 A- 3B       | C379 B- 3A       | C458 B- 5A       | C674 A- 3C       | CN305 A- 3A      | CP303 A- 3A      | L211 B- 2B       | L608 B- 3C       |            |
| IC303 A- 3A      | D201 B- 1A       | R32 A- 5C        | R137 A- 2B       | R267 B- 2B       | R422 B- 5B       | R650 A- 3C       | C38 A- 4A        | C193 A- 3B       | C306 A- 3B       | C380 B- 3B       | C459 B- 5A       | C676 A- 2C       | CN306 A- 3A      | CP351 B- 4B      | L213 B- 2B       | L609 B- 3C       |            |
| IC351 B- 4A      | D202 B- 2A       | R33 A- 5B        | R139 A- 3B       | R268 A- 1A       | R423 B- 5B       | R652 A- 3C       | C39 A- 4B        | C194 A- 3B       | C307 B- 2A       | C381 B- 4B       | C469 A- 4C       | C681 A- 1B       | CN307 A- 3A      | CP352 B- 4B      | L214 B- 2B       | L610 A- 3C       |            |
| IC352 B- 4B      | D203 B- 2A       | R34 A- 5B        | R140 A- 3B       | R269 A- 1A       | R424 B- 5B       | R654 A- 3C       | C40 A- 4B        | C195 A- 3B       | C308 A- 2A       | C382 B- 4B       | C470 A- 4C       | C682 A- 1B       | CN308 A- 3A      | CP401 B- 4A      | L215 B- 1A       | L612 A- 3C       |            |
| IC353 B- 4B      | D204 A- 2A       | R35 A- 5C        | R141 A- 3B       | R270 B- 3B       | R425 B- 5B       | R656 A- 2C       | C41 A- 4B        | C197 A- 3B       | C309 A- 2A       | C383 B- 4B       | C471 A- 4B       | C683 A- 1B       | CN309 A- 3A      | CP402 A- 4B      | L216 B- 1A       | L613 B- 3C       |            |
| IC401 B- 5B      | D205 B- 1A       | R36 A- 5C        | R142 B- 3A       | R271 B- 3B       | R426 B- 5B       | R659 A- 2B       | C42 A- 3C        | C198 A- 3B       | C310 A- 2A       | C384 B- 4B       | C472 A- 4B       | C685 B- 2C       | CN310 A- 3A      | CP403 A- 3A      | L217 B- 1A       | L622 A- 1B       |            |
| IC402 B- 5A      | D301 B- 2A       | R37 A- 5C        | R143 B- 3A       | R272 B- 3B       | R427 B- 5B       | R660 B- 2C       | C43 A- 3C        | C202 B- 1B       | C311 A- 2B       | C385 A- 3A       | C473 A- 4B       | C686 B- 2C       | CN311 A- 3A      | CP404 A- 3B      | L218 B- 2B       | L623 A- 1B       |            |
| IC403 A- 4A      | D302 B- 2A       | R38 A- 5C        | R145 B- 3A       | R273 B- 3B       | R428 A- 5B       | R661 B- 2C       | C44 A- 5C        | C203 B- 1B       | C312 A- 2A       | C386 B- 4B       | C474 A- 4B       | C687 B- 2C       | CN351 B- 3B      | CP405 A- 3B      | L219 B- 1B       | L624 B- 2C       |            |
| IC404 B- 5C      | D303 A- 2A       | R39 A- 4B        | R181 B- 3B       | R301 A- 3B       | R429 A- 4B       | R662 B- 1C       | C46 A- 5C        | C204 B- 1A       | C313 A- 2B       | C387 B- 4B       | C475 A- 4B       | C688 B- 4A       | CN352 B- 4A      | CP406 B- 4C      | L220 B- 1B       | L625 B- 2C       |            |
| IC405 B- 4C      | D304 A- 2A       | R40 A- 5C        | R182 B- 3A       | R302 A- 3B       | R430 B- 4B       | R663 A- 2B       | C47 A- 5C        | C205 B- 1B       | C314 A- 2B       | C388 B- 4B       | C476 A- 4B       | C689 B- 2C       | CN353 A- 2A      | CP408 A- 4B      | L221 B- 3B       | L626 B- 3C       |            |
| IC406 A- 4B      | D401 B- 4A       | R41 A- 5C        | R183 B- 3A       | R303 A- 2A       | R431 B- 4A       | R664 B- 1C       | C48 A- 4C        | C206 B- 1B       | C315 A- 2B       | C389 B- 4A       | C477 A- 4B       | C690 B- 2C       | CN354 A- 4A      | CP409 A- 4B      | L222 B- 2B       | L627 B- 3C       |            |
| IC409 A- 4B      | D402 B- 4C       | R42 A- 5C        | R184 B- 3A       | R304 A- 2A       | R432 B- 4B       | R665 B- 2C       | C49 A- 4C        | C207 B- 1B       | C316 A- 3A       | C391 A- 4A       | C480 B- 5A       | C691 B- 1C       | CN355 B- 3A      | CP410 A- 4C      | L223 B- 2B       | L628 B- 1C       |            |
| IC410 B- 4C      | D403 A- 4B       | R43 A- 5C        | R192 A- 3B       | R310 A- 3B       | R433 B- 4B       | R666 A- 2C       | C50 A- 4C        | C209 B- 2A       | C317 A- 2A       | C392 A- 4A       | C481 B- 4A       | C692 B- 1C       | CN356 A- 3A      | CP411 A- 4C      | L301 A- 3B       | L629 B- 1C       |            |
| IC601 B- 3C      | D404 A- 4B       | R44 A- 4C        | R193 A- 3B       | R312 A- 2A       | R434 B- 4B       | R667 A- 1B       | C51 A- 3C        | C211 B- 2A       | C319 A- 2B       | C395 B- 4A       | C482 B- 4A       | C693 B- 2C       | CN357 A- 2A      | CP412 A- 4C      | L302 A- 2A       | L630 A- 2C       |            |
| IC602 A- 1B      | D405 A- 4C       | R45 A- 4C        | R194 A- 3B       | R313 A- 3B       | R435 B- 4B       | R668 A- 2C       | C52 A- 4C        | C212 A- 2B       | C320 A- 2B       | C401 B- 4C       | C483 B- 4A       | C694 B- 1C       | CN402 A- 4C      | CP413 A- 4B      | L303 A- 3B       | L631 A- 2C       |            |
| IC603 B- 2C      | D406 A- 4C       | R46 A- 4C        | R195 A- 3B       | R314 A- 2B       | R436 B- 4A       | R669 A- 2B       | C53 A- 3B        | C213 A- 2B       | C321 A- 2A       | C402 B- 4B       | C484 B- 4A       | C695 B- 2C       | CN405 A- 5B      | CP414 A- 4B      | L304 A- 3B       | L632 A- 1B       |            |
| IC604 B- 1C      | D407 A- 4C       | R47 A- 2C        | R201 B- 3B       | R315 A- 2B       | R437 B- 4B       | R670 A- 1C       | C54 A- 2C        | C214 A- 2B       | C322 A- 2A       | C403 B- 4B       | C485 B- 4A       | C696 A- 2B       | CN406 A- 5B      | CP601 B- 3C      | L305 B- 2A       | L633 A- 2C       |            |
| IC605 B- 2C      | D601 B- 2C       | R48 A- 2B        | R202 B- 3B       | R316 A- 2B       | R438 A- 5B       | R671 A- 2B       | C55 A- 2B        | C218 B- 3B       | C323 A- 3B       | C404 B- 4B       | C486 B- 4A       | C697 A- 1B       | CN407 A- 5B      |                  | L307 A- 2A       | L634 A- 2B       |            |
| IC606 B- 2C      | D609 B- 3C       | R49 A- 2B        | R204 B- 2A       | R325 A- 2A       | R439 A- 5B       | R672 B- 2C       | C56 A- 2B        | C220 B- 3B       | C324 A- 3B       | C405 B- 4B       | C487 A- 5B       | C698 A- 1B       | CN408 A- 5B      | E101 B- 3A       | L308 A- 2A       |                  |            |
| IC607 B- 2C      | D620 A- 1C       | R50 A- 3C        | R205 A- 2B       | R330 A- 3A       | R440 A- 5B       | R673 A- 2C       | C60 A- 2C        | C221 B- 3B       | C325 A- 3B       | C406 B- 4B       | C488 A- 5B       | C699 A- 2C       | CN409 A- 5B      | E301 A- 3A       | L309 A- 2A       |                  |            |
|                  | D621 A- 1C       | R51 A- 3C        | R206 B- 3B       | R331 A- 3A       | R442 A- 4A       | R674 A- 2C       | C62 A- 3C        | C222 B- 3B       | C326 A- 3B       | C407 B- 4B       | C489 A- 4B       | C700 A- 1B       | CN412 A- 4B      | E351 B- 4B       | L310 A- 2A       |                  |            |
| TRANSISTOR       |                  | D622 B- 3C       | R52 A- 4C        | R207 B- 3B       | R332 A- 3A       | R443 B- 4C       | C63 A- 3C        | C223 B- 3B       | C327 A- 3A       | C408 B- 4B       | C496 A- 4B       | C701 B- 1C       | CN413 B- 5A      | E401 B- 5B       | L311 A- 2B       |                  |            |
| Q1 A- 3B         | D623 B- 3C       | R56 A- 3C        | R208 B- 3B       | R333 A- 3B       | R444 B- 4C       | R676 B- 1C       | C64 A- 3C        | C224 B- 3B       | C328 A- 3A       | C421 B- 4B       | C497 A- 4B       | C702 B- 1C       | CN414 B- 4A      | E601 B- 3C       | L312 A- 2B       |                  |            |
| Q2 A- 2C         | D624 B- 2C       | R57 A- 3C        | R209 B- 3B       | R335 A- 3A       | R445 B- 4C       | R677 A- 1B       | C65 A- 3C        | C225 B- 3B       | C329 A- 3A       | C422 B- 4B       | C498 A- 4B       | C703 A- 1B       | CN415 B- 5A      |                  | L313 A- 2B       |                  |            |
| Q3 A- 2B         | D625 B- 2C       | R58 A- 3C        | R210 B- 2B       | R336 A- 3A       | R446 A- 5B       |                  | C66 A- 3C        | C226 B- 1B       | C330 A- 3A       | C423 B- 4B       | C499 A- 4B       | C704 A- 1B       | CN416 B- 5A      | F1 A- 1B         | L314 A- 2B       |                  |            |
| Q4 A- 3B         | D626 A- 1C       | R59 A- 3C        | R211 B- 3B       | R351 B- 3A       | R447 A- 4B       | CAPACITOR        | C67 A- 2A        | C227 B- 1B       | C331 A- 3A       | C424 B- 4B       | C500 A- 4A       | C705 A- 2B       | CN417 B- 5A      | F2 A- 2C         | L315 A- 3B       |                  |            |
| Q5 A- 5C         | D627 A- 2B       | R60 A- 3C        | R212 B- 3B       | R352 B- 4B       | R448 A- 4C       | C1 A- 1B         | C68 A- 2A        | C228 B- 1A       | C332 A- 3A       | C425 A- 4B       | C501 B- 4C       | C706 A- 2B       | CN418 B- 5A      |                  | L351 B- 3B       |                  |            |
| Q6 A- 3C         | D628 B- 2C       | R65 A- 3B        | R213 B- 3B       | R353 B- 4A       | R449 A- 4B       | C2 A- 1A         | C69 A- 2A        | C233 B- 3B       | C333 A- 2A       | C426 A- 4B       | C502 B- 4C       | C707 B- 2C       | CN419 B- 4A      | L1 A- 1B         | L352 B- 4B       |                  |            |
| Q7 A- 3C         | D629 A- 2C       | R66 A- 3B        | R214 B- 3B       | R354 B- 4A       | R450 B- 5B       | C3 A- 1B         | C70 A- 2A        | C234 B- 3B       | C334 A- 2A       | C427 A- 4B       | C510 A- 3C       | C708 B- 2C       | CN421 B- 4B      | L3 A- 4C         | L353 B- 4B       |                  |            |
| Q102 B- 3B       | D630 A- 1C       | R67 A- 5C        | R215 B- 3B       | R355 B- 4A       | R451 B- 5C       | C4 A- 2B         | C102 B- 3C       | C235 B- 2B       | C338 A- 2A       | C428 A- 4B       | C515 A- 3C       | C709 B- 1C       | CN422 B- 5B      | L4 A- 5C         | L354 A- 4A       |                  |            |
| Q103 A- 3B       | D632 A- 1C       | R102 B- 3C       | R216 B- 3B       | R356 B- 4A       | R452 A- 5B       | C5 A- 2B         | C103 B- 3C       | C237 B- 2B       | C341 A- 3A       | C429 A- 5B       | C516 A- 3C       | C710 B- 2C       | CN423 A- 5B      | L5 A- 5C         | L358 B- 4A       |                  |            |
| Q113 A- 3B       | D633 A- 2C       | R103 B- 3C       | R218 B- 2B       | R357 B- 3B       | R453 B- 5B       | C6 A- 2B         | C104 B- 3C       | C238 B- 1B       | C342 A- 3A       | C430 A- 5B       | C517 A- 4C       | C711 B- 2C       | CN424 A- 5B      | L7 A- 5C         | L359 B- 4A       |                  |            |
| Q114 A- 3B       | D634 A- 2C       | R104 B- 3C       | R219 B- 2B       | R358 B- 4B       | R461 A- 4B       | C7 A- 2B         | C105 B- 3C       | C239 B- 2B       | C343 A- 3A       | C431 A- 5B       | C518 A- 4C       | C712 A- 2B       | CN               |                  |                  |                  |            |

--- Component side view/Side A (J7C-0191-00) ---

--- Component side view/Side A (J7C-0191-00) ---



■ TX-RX UNIT (XC1-181K-00 (NX-3300))

--- Foil side view/Side B (J7C-0191-00) ---



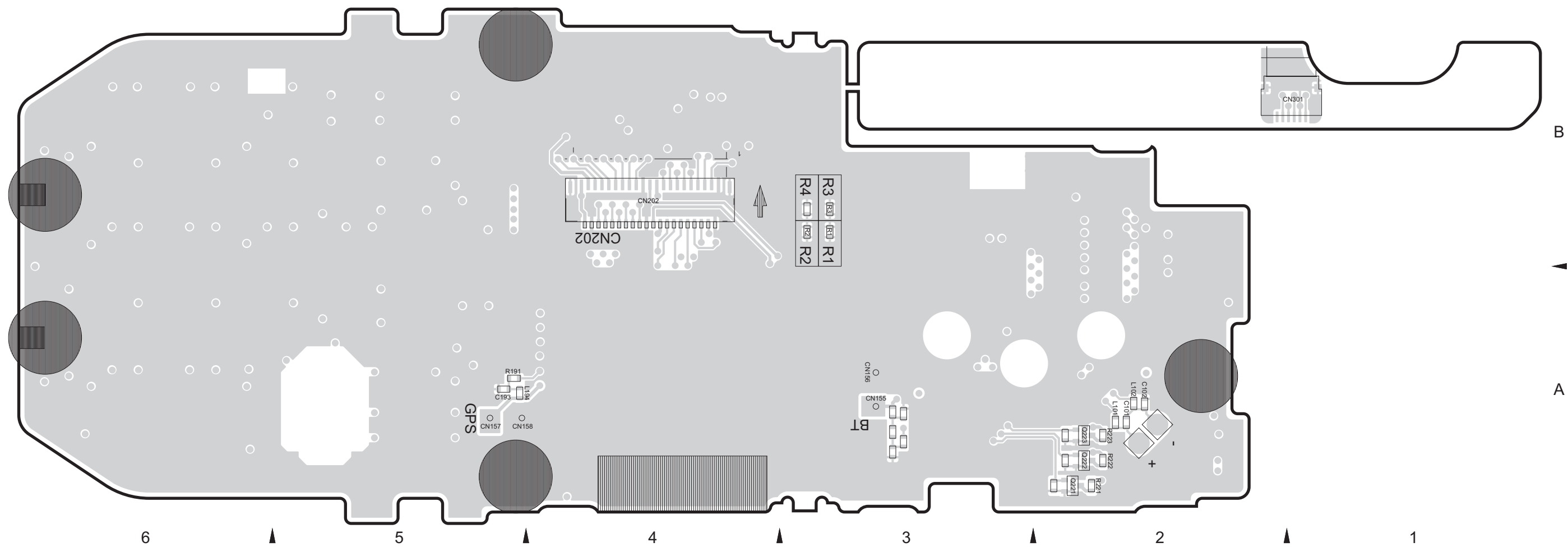
● **ADDRESS TABLE OF BOARD PARTS**  
Each address may have an address error by one interval.

| REF.NO.    | LOCATION | REF.NO. | LOCATION | REF.NO. | LOCATION | REF.NO. | LOCATION | REF.NO. | LOCATION | REF.NO. | LOCATION | REF.NO.   | LOCATION | REF.NO. | LOCATION | REF.NO. | LOCATION | REF.NO. | LOCATION | REF.NO. | LOCATION | REF.NO. | LOCATION | REF.NO. | LOCATION | REF.NO. | LOCATION | REF.NO. | LOCATION | REF.NO. | LOCATION | REF.NO. | LOCATION |      |
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| IC         | A-2B     | Q203    | A-2B     | R10     | A-3B     | R115    | A-3B     | R233    | A-1A     | R403    | B-4C     | R607      | B-3C     | C31     | A-5C     | C143    | B-3A     | C241    | B-2B     | C346    | A-3A     | C438    | B-5A     | C614    | B-3C     | CN5     | A-4B     | CN625   | A-1C     | L157    | B-3A     | L429    | A-3C     |      |
| IC1        | A-2B     | Q204    | A-1A     | R11     | A-2B     | R116    | A-3B     | R234    | A-1A     | R404    | B-4B     | R608      | B-3C     | C32     | A-5C     | C144    | B-3B     | C243    | B-2B     | C354    | B-3A     | C439    | B-5A     | C615    | B-3C     | CN6     | A-3C     | CN650   | A-2C     | L158    | B-3A     | L430    | A-3C     |      |
| IC2        | A-5C     | Q205    | A-1A     | R12     | A-3C     | R117    | A-3B     | R237    | A-2A     | R405    | B-4B     | R609      | A-3C     | C33     | A-4A     | C145    | B-3A     | C244    | B-1B     | C356    | B-4B     | C440    | B-5A     | C617    | B-2B     | CN7     | A-2A     | CN651   | A-2C     | L181    | A-3B     | L431    | A-3B     |      |
| IC3        | A-4C     | Q206    | A-1A     | R13     | A-3B     | R118    | A-3B     | R244    | A-2B     | R406    | B-4B     | R610      | B-3C     | C34     | A-4A     | C148    | B-3B     | C245    | B-1B     | C357    | B-4B     | C441    | B-5A     | C618    | B-2C     | CN8     | A-3A     |         | L191     | A-3B    | L601     | B-3C    |          |      |
| IC4        | A-5C     | Q207    | A-2A     | R14     | A-3B     | R119    | A-3B     | R245    | A-2B     | R407    | B-4C     | R611      | B-3C     | C35     | A-5C     | C150    | B-3B     | C246    | B-1A     | C358    | B-4B     | C442    | B-5A     | C620    | B-3C     | CN9     | A-3A     | CP1     | A-2A     | L192    | A-3B     | L604    | B-2C     |      |
| IC5        | A-5C     | Q351    | B-3A     | R15     | A-3B     | R120    | A-3B     | R246    | A-2B     | R408    | B-4B     | R612      | A-2B     | C36     | A-3B     | C151    | B-2A     | C247    | B-1A     | C359    | B-4B     | C443    | B-4A     | C621    | B-3C     | CN10    | A-3C     | CP2     | A-2B     | L201    | B-2A     | L605    | B-2C     |      |
| IC6        | A-3C     | Q401    | B-4B     | R16     | A-3B     | R121    | A-3B     | R247    | A-2B     | R410    | B-4B     | R635      | A-3C     | C37     | A-3B     | C152    | B-2A     | C248    | B-1A     | C360    | B-4B     | C444    | B-4A     | C622    | B-3B     | CN101   | A-2B     | CP301   | A-3A     | L202    | B-2A     | L608    | B-3C     |      |
| IC7        | A-4A     | Q402    | A-4B     | R17     | A-3C     | R122    | A-3A     | R248    | A-1B     | R411    | A-4C     | R636      | B-3B     | C38     | A-4A     | C153    | B-2A     | C249    | B-1A     | C361    | B-4B     | C445    | B-5C     | C625    | B-2B     | CN191   | A-3B     | CP302   | A-3A     | L203    | B-2A     | L609    | B-3C     |      |
| IC8        | A-4A     |         |          | R18     | A-2C     | R123    | A-3B     | R249    | A-1A     | R412    | B-4B     | R637      | B-3C     | C39     | A-4B     | C154    | B-2A     | C250    | B-1A     | C363    | B-4B     | C446    | B-5C     | C626    | B-3C     | CN201   | B-1A     | CP303   | A-3A     | L204    | B-1A     | L610    | A-3C     |      |
| IC9        | A-4B     | DIODE   |          | R19     | A-2B     | R124    | A-3A     | R250    | A-1B     | R413    | B-4B     | R638      | B-3C     | C40     | A-4B     | C156    | B-3A     | C251    | B-1A     | C364    | B-4B     | C447    | B-5C     | C627    | B-2C     | CN202   | B-2A     | CP351   | B-4B     | L205    | B-3B     | L612    | A-3C     |      |
| IC10       | A-4B     |         | D1       | A-1A    | R20      | A-3B    | R125     | A-3B    | R251     | A-2A    | R414     | B-4B      | R639     | B-3C    | C41      | A-4B    | C157     | B-3A    | C252     | B-2A    | C365     | B-4A    | C448     | A-4A    | C657     | A-1B    | CN303    | A-2B    | CP352    | B-4B    | L206     | B-3B    | L613     | B-3C |
| IC11       | A-3C     |         | D8       | A-3B    | R21      | A-2B    | R126     | A-3B    | R252     | A-1A    | R415     | A-4C      | R650     | A-3C    | C42      | A-3C    | C158     | B-3A    | C253     | B-3B    | C366     | B-4A    | C449     | B-4C    | C658     | A-1C    | CN304    | A-2B    | CP401    | B-4A    | L207     | B-3B    | L622     | A-1B |
| IC12       | A-5C     |         | D9       | A-4B    | R22      | A-4C    | R127     | A-3B    | R253     | A-1A    | R419     | B-5C      | R652     | A-3C    | C43      | A-3C    | C159     | B-3A    | C255     | B-1B    | C367     | B-4A    | C450     | B-5B    | C659     | B-3C    | CN305    | A-3A    | CP402    | A-4B    | L208     | B-3B    | L623     | A-1B |
| IC13       | A-4C     |         | D10      | A-4C    | R23      | A-5C    | R128     | B-2A    | R255     | A-1A    | R420     | B-5B      | R654     | A-3C    | C44      | A-5C    | C160     | B-3A    | C257     | A-2B    | C368     | B-4A    | C451     | B-5C    | C660     | B-3C    | CN306    | A-3A    | CP403    | A-3A    | L209     | B-3B    | L624     | B-2C |
| IC14       | A-3B     |         | D102     | B-3B    | R24      | A-5C    | R129     | B-2B    | R256     | A-1A    | R421     | B-5B      | R656     | A-2C    | C46      | A-5C    | C161     | B-3A    | C258     | A-2B    | C369     | B-4A    | C452     | B-4C    | C663     | A-3C    | CN307    | A-3A    | CP404    | A-3B    | L210     | B-1B    | L625     | B-2C |
| IC15       | A-2C     | D11     | A-3B     | R25     | A-5C     | R130    | B-2B     | R257    | A-1A     | R422    | B-5B     | R659      | A-2B     | C47     | A-5C     | C162    | B-3A     | C259    | A-2B     | C370    | B-4A     | C453    | A-4B     | C666    | A-3B     | CN308   | A-3A     | CP405   | A-3B     | L211    | B-2B     | L626    | B-3C     |      |
| IC17       | A-2C     | D131    | B-2A     | R26     | A-5C     | R131    | B-3A     | R258    | A-1A     | R423    | B-5B     | R660      | B-2C     | C48     | A-4C     | C163    | B-3A     | C261    | A-1B     | C371    | B-4A     | C454    | A-4B     | C672    | A-2C     | CN309   | A-3A     | CP406   | B-4C     | L212    | B-3B     | L627    | B-3C     |      |
| IC18       | A-3C     | D132    | B-2A     | R27     | A-3B     | R132    | B-3B     | R259    | A-1A     | R424    | B-5B     | R661      | B-2C     | C49     | A-4C     | C164    | B-3A     | C262    | A-2A     | C372    | B-4A     | C455    | B-4B     | C674    | A-3C     | CN310   | A-3A     | CP408   | A-4B     | L213    | B-2B     | L628    | B-1C     |      |
| IC101      | B-3C     | D133    | B-2A     | R28     | A-3B     | R133    | B-3B     | R260    | A-1A     | R425    | B-5B     | R662      | B-1C     | C50     | A-4C     | C165    | B-3A     | C263    | A-1A     | C373    | B-4A     | C456    | B-4A     | C676    | A-2C     | CN311   | A-3A     | CP409   | A-4B     | L214    | B-2B     | L629    | B-1C     |      |
| IC102      | A-2B     | D134    | B-2A     | R29     | A-3B     | R134    | B-3B     | R264    | A-1A     | R426    | B-5B     | R663      | A-2B     | C51     | A-3C     | C166    | B-3A     | C264    | A-1A     | C374    | B-4A     | C457    | B-5A     | C681    | A-1B     | CN351   | B-3B     | CP410   | A-4C     | L215    | B-1A     | L630    | A-2C     |      |
| IC201      | A-2B     | D135    | B-3B     | R30     | A-1B     | R135    | B-3A     | R265    | A-1A     | R427    | B-5B     | R664      | B-1C     | C52     | A-4C     | C167    | B-3A     | C265    | A-1A     | C375    | B-4A     | C458    | B-5A     | C682    | A-1B     | CN352   | B-4A     | CP411   | A-4C     | L216    | B-1A     | L631    | A-2C     |      |
| IC202      | B-3B     | D151    | B-2A     | R31     | A-2B     | R136    | B-3A     | R266    | B-2B     | R428    | A-5B     | R665      | B-2C     | C54     | A-2C     | C181    | A-3A     | C266    | A-2A     | C376    | A-4A     | C459    | B-5A     | C683    | A-1B     | CN353   | A-2A     | CP412   | A-4C     | L217    | B-1A     | L632    | A-1B     |      |
| IC203      | A-1A     | D152    | B-3A     | R32     | A-5C     | R137    | A-2B     | R267    | B-2B     | R429    | A-4B     | R666      | A-2C     | C55     | A-2B     | C182    | A-3B     | C267    | B-3B     | C377    | A-4A     | C469    | A-4C     | C685    | B-2C     | CN354   | A-4A     | CP413   | A-4B     | L218    | B-2B     | L633    | A-2C     |      |
| IC303      | A-3A     | D153    | B-2A     | R33     | A-5B     | R139    | A-3B     | R268    | A-1A     | R430    | B-4B     | R667      | A-1B     | C56     | A-2B     | C183    | A-3B     | C268    | B-2B     | C378    | A-4A     | C470    | A-4C     | C686    | B-2C     | CN355   | B-3A     | CP414   | A-4B     | L301    | A-3B     | L634    | A-2B     |      |
| IC351      | B-4A     | D154    | B-3A     | R34     | A-5B     | R140    | A-3B     | R269    | A-1A     | R431    | B-4A     | R668      | A-2C     | C60     | A-2C     | C191    | A-3B     | C270    | B-2A     | C379    | B-3A     | C471    | A-4B     | C687    | B-2C     | CN356   | A-3A     | CP601   | B-3C     | L302    | A-2A     |         |          |      |
| IC352      | B-4B     | D155    | B-3A     | R35     | A-5C     | R141    | A-3B     | R270    | B-1B     | R432    | B-4B     | R669      | A-2B     | C62     | A-3C     | C192    | A-3B     | C301    | A-2A     | C380    | B-3B     | C472    | A-4B     | C688    | B-2C     | CN357   | A-2A     |         |          | L303    | A-3B     |         |          |      |
| IC353      | B-4B     | D201    | B-1A     | R36     | A-5C     | R142    | A-3A     | R301    | A-3B     | R433    | B-4B     | R670      | A-1C     | C63     | A-3C     | C193    | A-3B     | C302    | A-3B     | C381    | B-4B     | C473    | A-4B     | C689    | B-2C     | CN402   | A-4C     | E101    | B-3A     | L304    | A-3B     |         |          |      |
| IC401      | B-5B     | D202    | B-2A     | R37     | A-5C     | R143    | A-3A     | R302    | A-3B     | R434    | B-4B     | R671      | A-2B     | C64     | A-3C     | C194    | A-3B     | C303    | A-3A     | C382    | B-4B     | C474    | A-4B     | C690    | B-2C     | CN405   | A-5B     | E301    | A-3A     | L307    | A-2A     |         |          |      |
| IC402      | B-5A     | D203    | B-2A     | R38     | A-5C     | R151    | B-3A     | R303    | A-2A     | R435    | B-4B     | R672      | B-2C     | C65     | A-3C     | C195    | A-3B     | C304    | A-2A     | C383    | B-4B     | C475    | A-4B     | C691    | B-1C     | CN406   | A-5B     | E351    | B-4B     | L308    | A-2A     |         |          |      |
| IC403      | A-4A     | D204    | A-2A     | R39     | A-4B     | R152    | B-3A     | R304    | A-2A     | R436    | B-4A     | R673      | A-2C     | C66     | A-3C     | C197    | A-3B     | C305    | A-3B     | C384    | B-4B     | C476    | A-4B     | C692    | B-1C     | CN407   | A-5B     | E401    | B-5B     | L309    | A-2A     |         |          |      |
| IC404      | B-5C     | D206    | B-1A     | R40     | A-3C     | R153    | B-3A     | R310    | A-2B     | R437    | B-4B     | R674      | A-2C     | C67     | A-2A     | C198    | A-3B     | C306    | A-3B     | C385    | A-3A     | C477    | A-4B     | C693    | B-2C     | CN408   | A-5B     | E601    | B-3C     | L310    | A-2A     |         |          |      |
| IC405      | B-4C     | D301    | B-2A     | R41     | A-5C     | R154    | B-3A     | R312    | A-2A     | R438    | A-5B     | R675      | B-2C     | C68     | A-2A     | C203    | B-1B     | C308    | A-2A     | C386    | B-4B     | C480    | B-5A     | C694    | B-1C     | CN409   | A-5B     |         |          | L311    | A-2B     |         |          |      |
| IC406      | A-4B     | D302    | B-2A     | R42     | A-5C     | R155    | B-3A     | R313    | A-2B     | R439    | A-5B     | R676      | B-1C     | C69     | A-2A     | C208    | B-2A     | C309    | A-2A     | C387    | B-4B     | C481    | B-4A     | C695    | B-2C     | CN412   | A-4B     | F1      | A-1B     | L312    | A-2B     |         |          |      |
| IC409      | A-4B     | D303    | A-2A     | R43     | A-5C     | R156    | B-3A     | R314    | A-2B     | R440    | A-5B     | R677      | A-1B     | C70     | A-2A     | C209    | B-2A     | C310    | A-2A     | C388    | B-4B     | C482    | B-4A     | C696    | A-2B     | CN413   | B-5A     | F2      | A-2C     | L313    | A-2B     |         |          |      |
| IC410      | B-4C     | D304    | A-2A     | R44     | A-4C     | R181    | A-3B     | R315    | A-2B     | R442    | A-4A     |           |          | C102    | B-3C     | C211    | B-2A     | C311    | A-2B     | C389    | B-4A     | C483    | B-4A     | C697    | A-1B     | CN414   | B-4A     |         |          | L314    | A-2B     |         |          |      |
| IC601      | B-3C     | D401    | B-4A     | R45     | A-4C     | R182    | A-3A     | R316    | A-2B     | R443    | B-4C     | CAPACITOR |          | C103    | B-3C     | C212    | A-2B     | C312    | A-2A     | C391    | A-4A     | C484    | B-4A     | C698    | A-1B     | CN415   | B-5A     | L1      | A-1B     | L315    | A-3B     |         |          |      |
| IC602      | A-1B     | D402    | B-4C     | R46     | A-4C     | R183    | A-3A     | R325    | A-2A     | R444    | B-4C     |           | C1       | A-1B    | C104     | B-3C    | C213     | A-2B    | C313     | A-2B    | C392     | A-4A    | C485     | B-4A    | C699     | A-2C    | CN416    | B-5A    | L3       | A-4C    | L351     | B-3B    |          |      |
| IC603      | B-2C     | D403    | A-4B     | R47     | A-2C     | R184    | A-3A     | R330    | A-2A     | R445    | B-4C     |           | C2       | A-1A    | C105     | B-3C    | C214     | A-2B    | C314     | A-2B    | C395     | B-4A    | C486     | B-4A    | C700     | A-1B    | CN417    | B-5A    | L4       | A-5C    | L352     | B-4B    |          |      |
| IC604      | B-1C     | D404    | A-4B     | R48     | A-2B     | R194    | A-3B     | R331    | A-3A     | R446    | A-5B     |           | C3       | A-1B    | C106     | A-2B    | C215     | B-1A    | C315     | A-2B    | C401     | B-4C    | C487     | A-5B    | C701     | B-1C    | CN418    | B-5A    | L5       | A-5C    | L353     | B-4B    |          |      |
| IC605      | B-2C     | D405    | A-4C     | R49     | A-2B     | R195    | A-3B     | R332    | A-3A     | R447    | A-4B     |           | C4       | A-2B    | C107     | A-2B    | C216     | B-3B    | C316     | A-3A    | C402     | B-4B    | C488     | A-5B    | C702     | B-1C    | CN419    | B-4A    | L7       | A-5C    | L354     | A-4A    |          |      |
| IC606      | B-2C     | D406    | A-4C     | R50     | A-3C     | R204    | B-2A     | R333    | A-3B     | R448    | A-4C     |           | C5       | A-2B    | C108     | B-2A    | C217     | B-3B    | C317     | A-2A    | C403     | B-4B    | C489     | A-4B    | C703     | A-1B    | CN421    | B-4B    | L8       | A-4A    | L358     | B-4A    |          |      |
| IC607      | B-2C     | D407    | A-4C     | R51     | A-3C     | R205    | A-2B     | R335    | A-3A     | R449    | A-4B     | C6        | A-2B     | C109    | B-3A     | C218    | B-3B     | C319    | A-2B     | C404    | B-4B     | C496    | A-4B     | C704    | A-1B     | CN422   | B-5B     | L9      | A-4A     | L359    | B-4A     |         |          |      |
| TRANSISTOR |          | D601    | B-2C     | R52     | A-4C     | R206    | B-3B     | R336    | A-3A     | R450    | B-5B     | C7        | A-2B     | C110    | B-3A     | C219    | B-3B     | C320    | A-2B     | C405    | B-4B     | C497    | A-4B     | C705    | A-2B     | CN423   | A-5B     | L10     | A-4A     | L361    | B-4A     |         |          |      |
|            |          | D609    | B-3C     | R56     | A-3C     | R207    | B-3B     | R351    | B-3A     | R451    | B-5C     | C8        | A-2B     | C111    | A-3B     | C220    | B-3B     | C321    | A-2A     | C406    | B-4B     | C498    | A-4B     | C706    | A-2B     | CN424   | A-5B     | L11     | A-3C     | L365    | B-4B     |         |          |      |
|            | Q1       | A-3B    | D620     | A-1C    | R57      | A-3C    | R208     | B-3B    | R352     | B-4B    | R452     | A-5B      | C9       | A-2B    | C112     | A-3B    | C221     | B-3B    | C322     | A-2A    | C407     | B-4B    | C499     | A-4B    | C707     | B-2C    | CN436    | A-4C    | L12      | A-4C    | L366     | B-3B    |          |      |
|            | Q2       | A-2C    | D621     |         |          |         |          |         |          |         |          |           |          |         |          |         |          |         |          |         |          |         |          |         |          |         |          |         |          |         |          |         |          |      |



■ DISPLAY UNIT (XC1-209K-00 (NX-3200(K,E3),NX-3300(K,E3)), XC1-209K-01 (NX-3200(K2,E2),NX-3300(K2,E2)), XC1-209K-02 (NX-3200(K3,E),NX-3300(K3,E)))

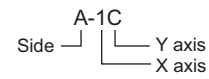
--- Foil side view/Side B (J7C-0217-10) ---



● ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.

| REF.NO.           | LOCATION | REF.NO.          | LOCATION | REF.NO. | LOCATION |
|-------------------|----------|------------------|----------|---------|----------|
| <b>TRANSISTOR</b> |          | R222             | B- 2A    | CN157   | B- 5A    |
| Q221              | B- 2A    | R223             | B- 2A    | CN158   | B- 5A    |
| Q222              | B- 2A    | <b>CAPACITOR</b> |          | CN202   | B- 4B    |
| Q223              | B- 2A    | C101             | B- 2A    | CN301   | B- 1B    |
| <b>RESISTOR</b>   |          | C102             | B- 2A    | L101    | B- 2A    |
| R1                | B- 3B    | C193             | B- 5A    | L102    | B- 2A    |
| R2                | B- 3B    | <b>OTHER</b>     |          | L194    | B- 5A    |
| R3                | B- 3B    | CN155            | B- 3A    |         |          |
| R191              | B- 5A    | CN156            | B- 3A    |         |          |
| R221              | B- 2A    |                  |          |         |          |



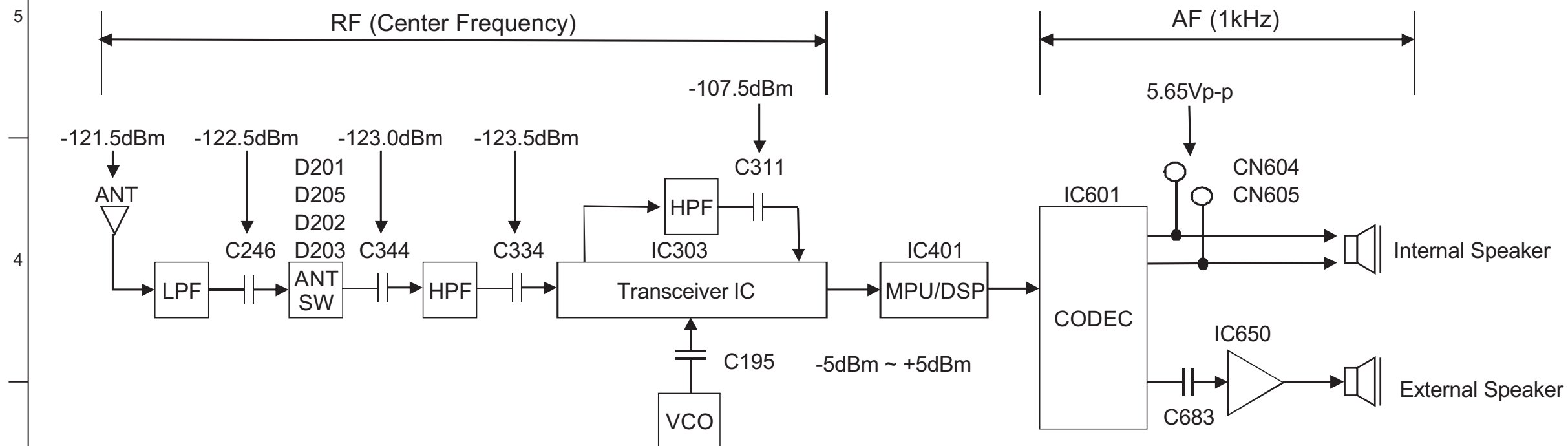
## 5



# LEVEL DIAGRAM

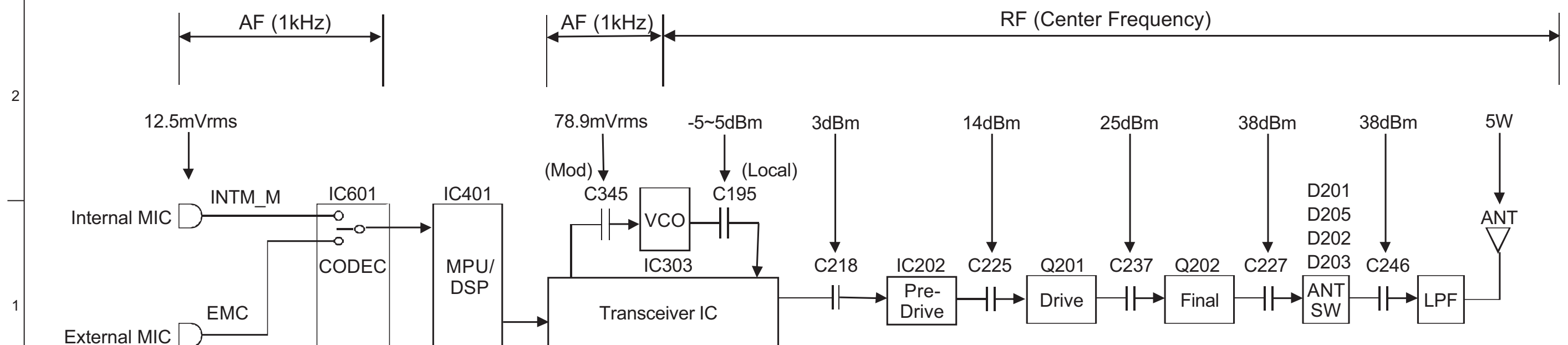
■ NX-3200

## Receiver Section



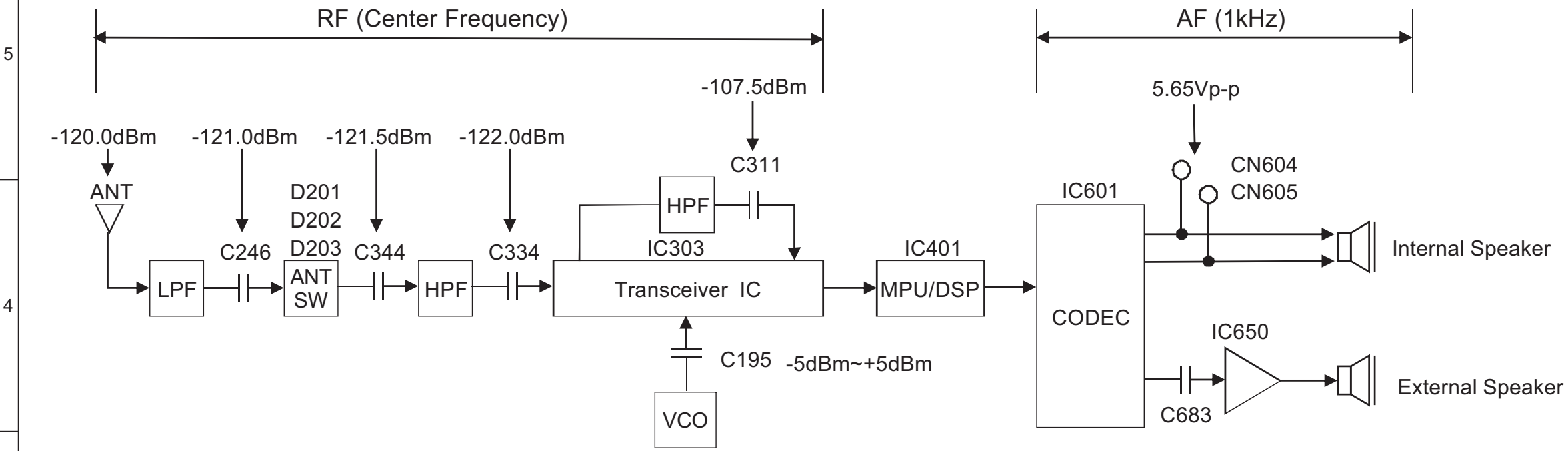
To make measurements in the AF section, connect the AC level meter.  
 (ANT input: -53dBm, 1kHz FM, 3kHz DEV (Wide). SP output: 500mW@8ohm Load)  
 In the RF section, use 470pF coupling capacitor.  
 (The display shows the SSG input value required to obtain 12dB SINAD.)

## Transmitter Section



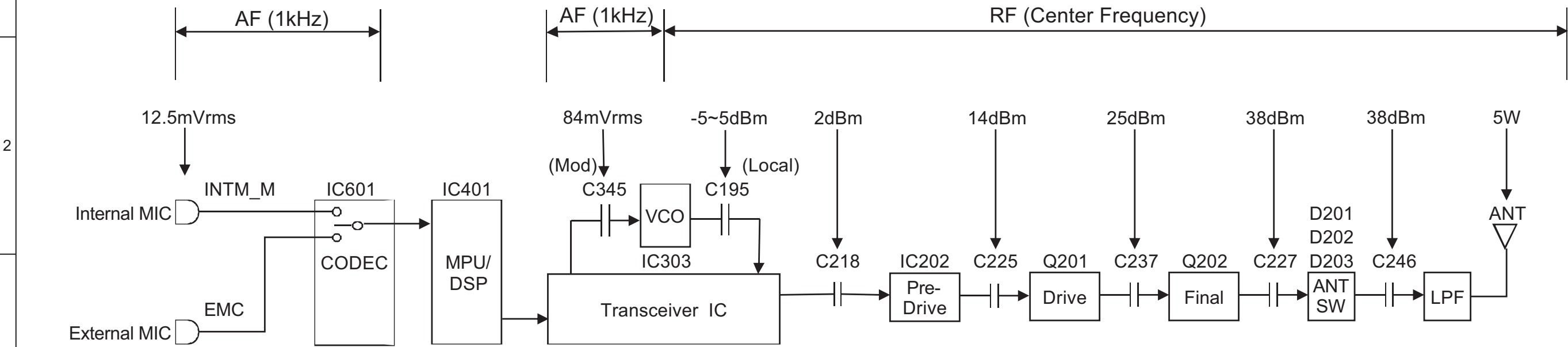
\* Transmit frequency : 155MHz

Receiver Section



To make measurements in the AF section, connect the AC level meter.  
(ANT input: -53dBm, 1kHz FM, 3kHz DEV (Wide). SP output: 500mW@8ohm Load)  
In the RF section, use 470pF coupling capacitor.  
(The display shows the SSG input value required to obtain 12dB SINAD.)

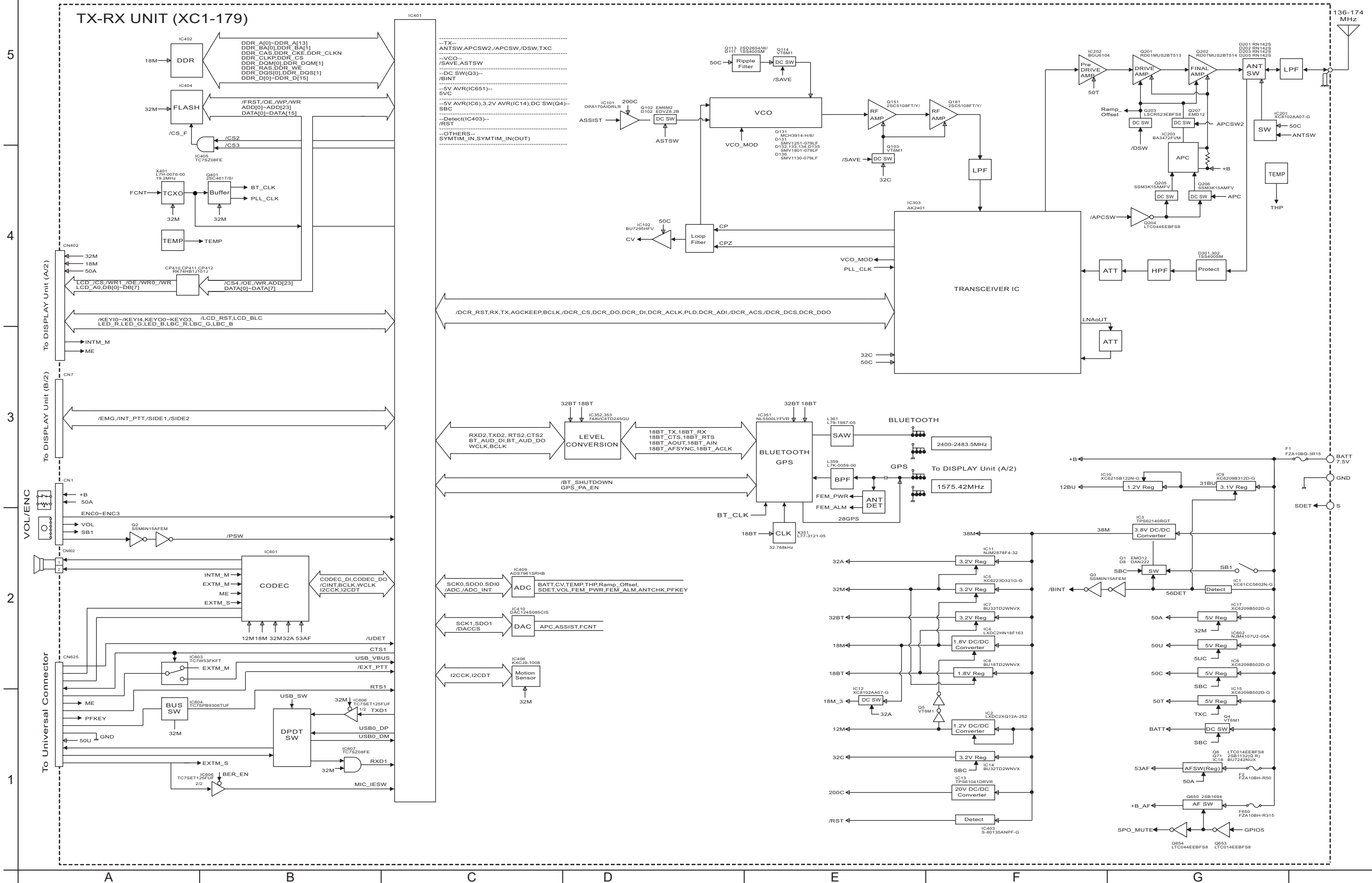
Transmitter Section



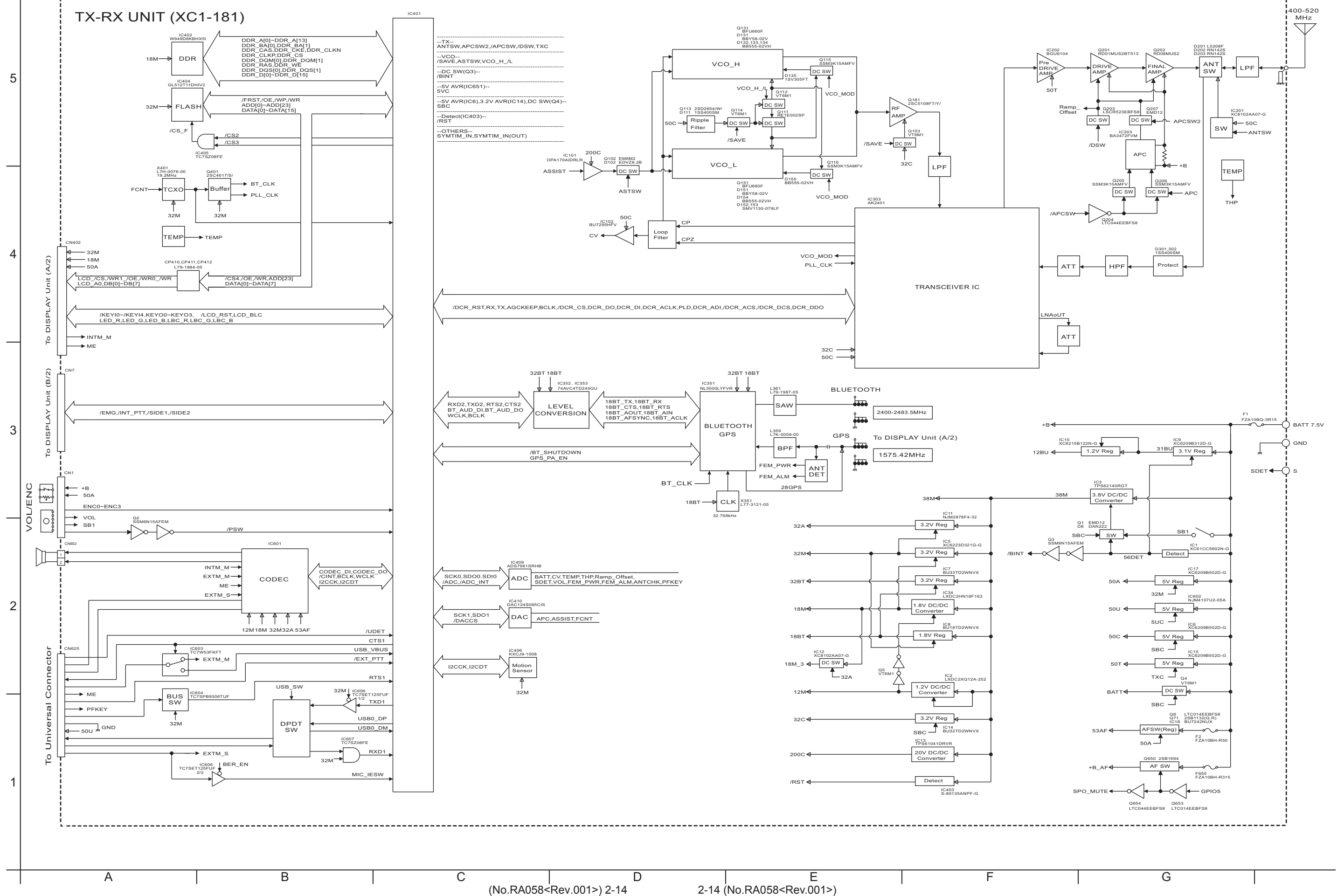
\* Transmit frequency : 485MHz

# BLOCK DIAGRAM

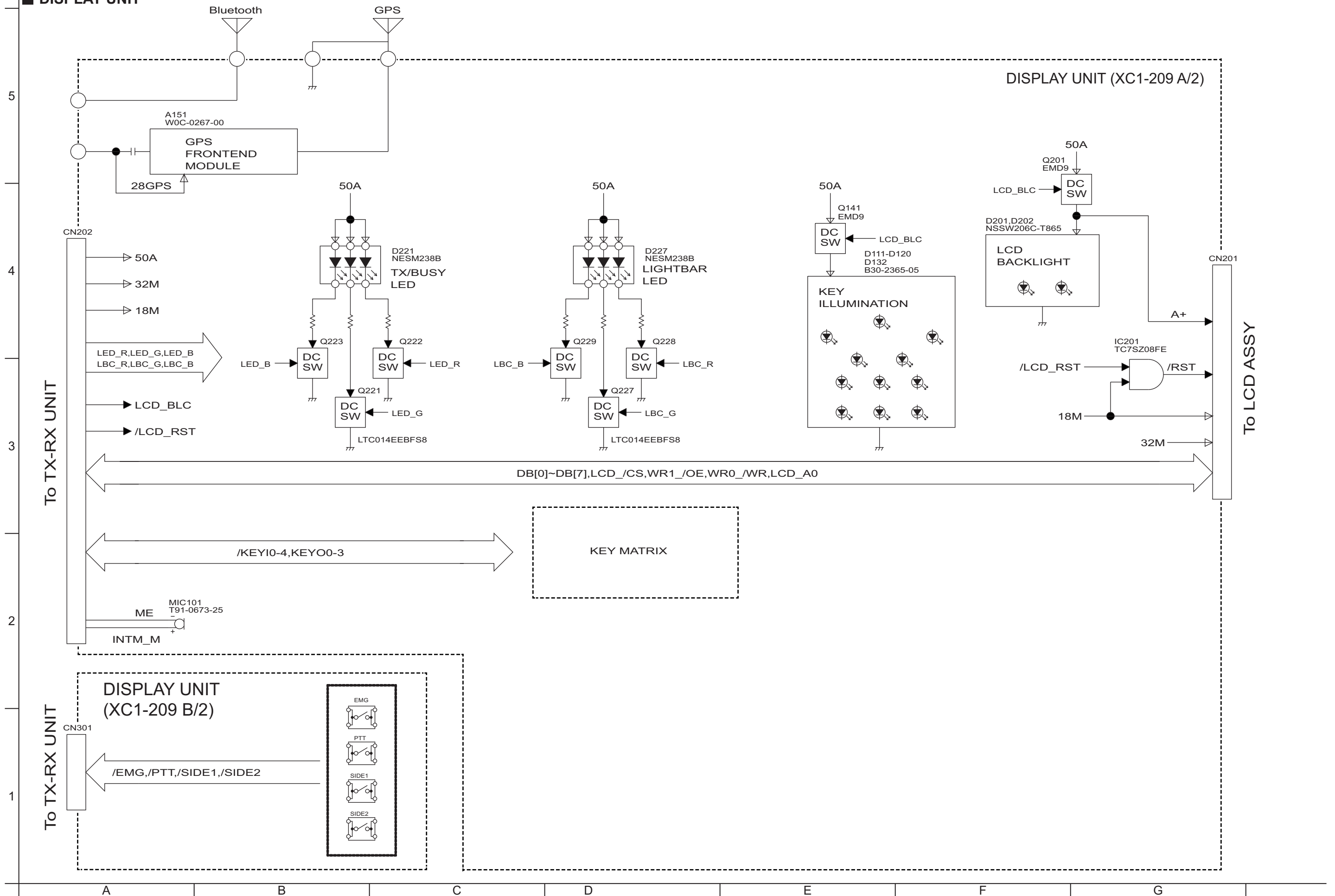
## TX-RX UNIT (NX-3200)



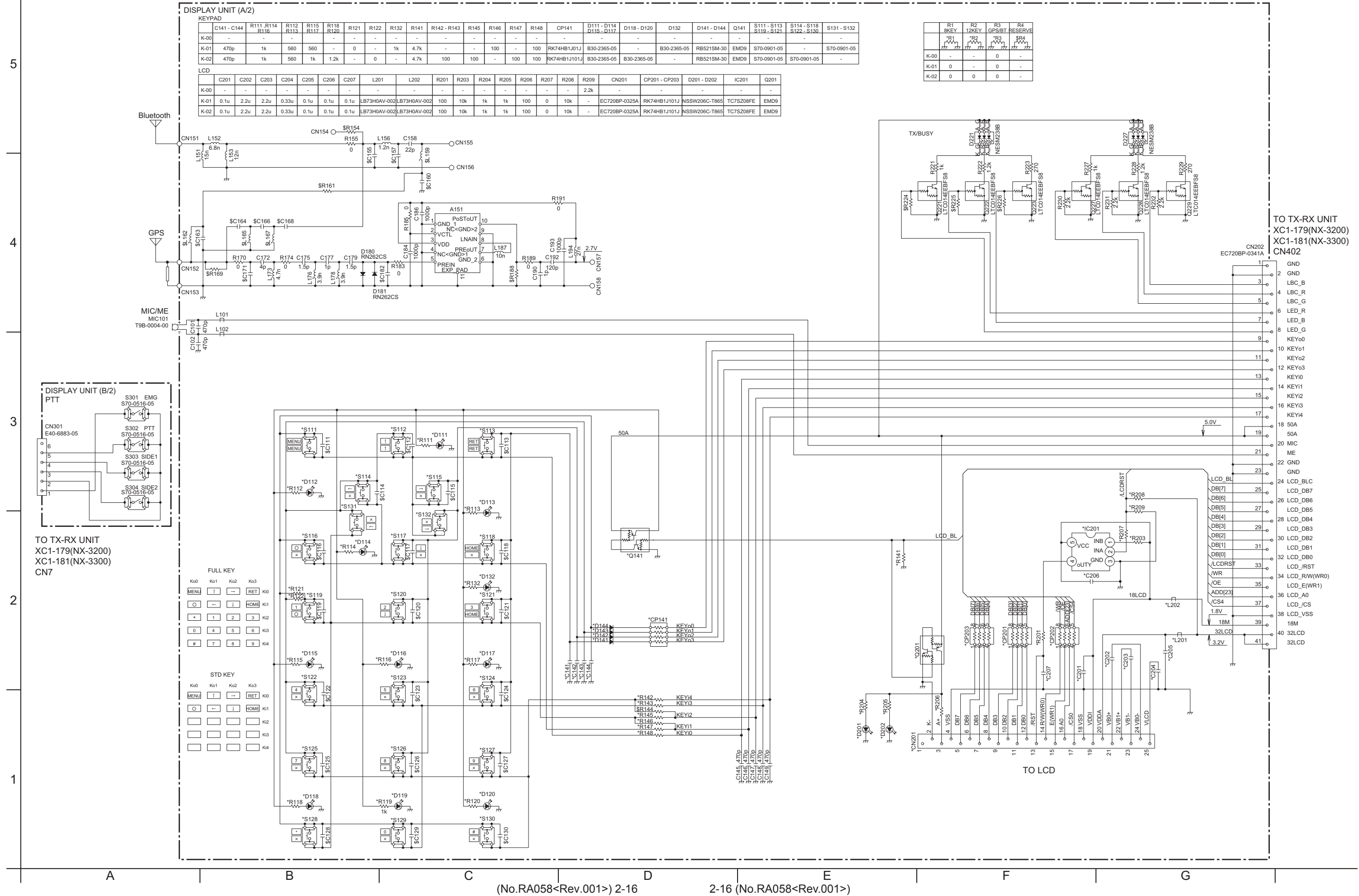
■ TX-RX UNIT (NX-3300)



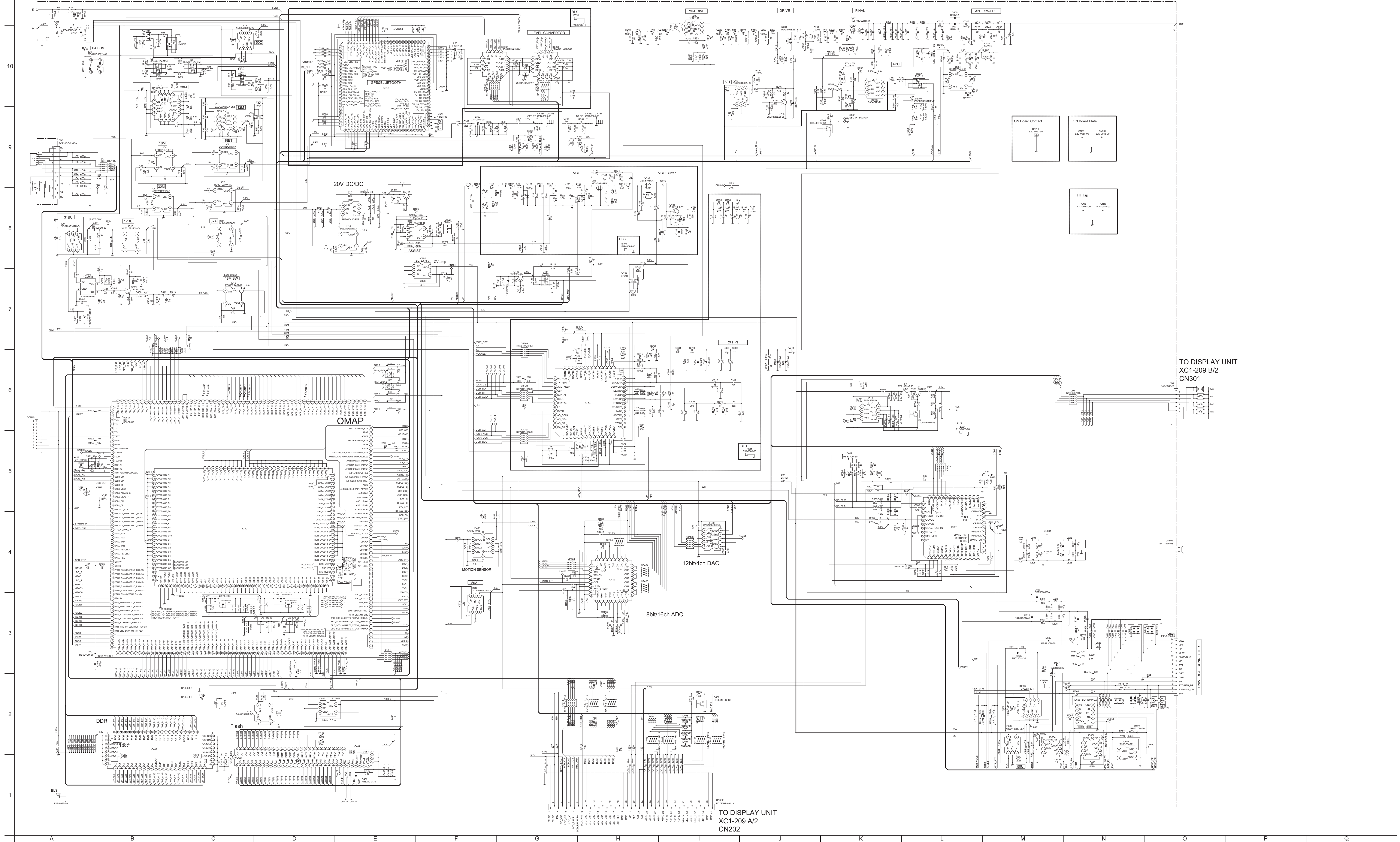
# ■ DISPLAY UNIT



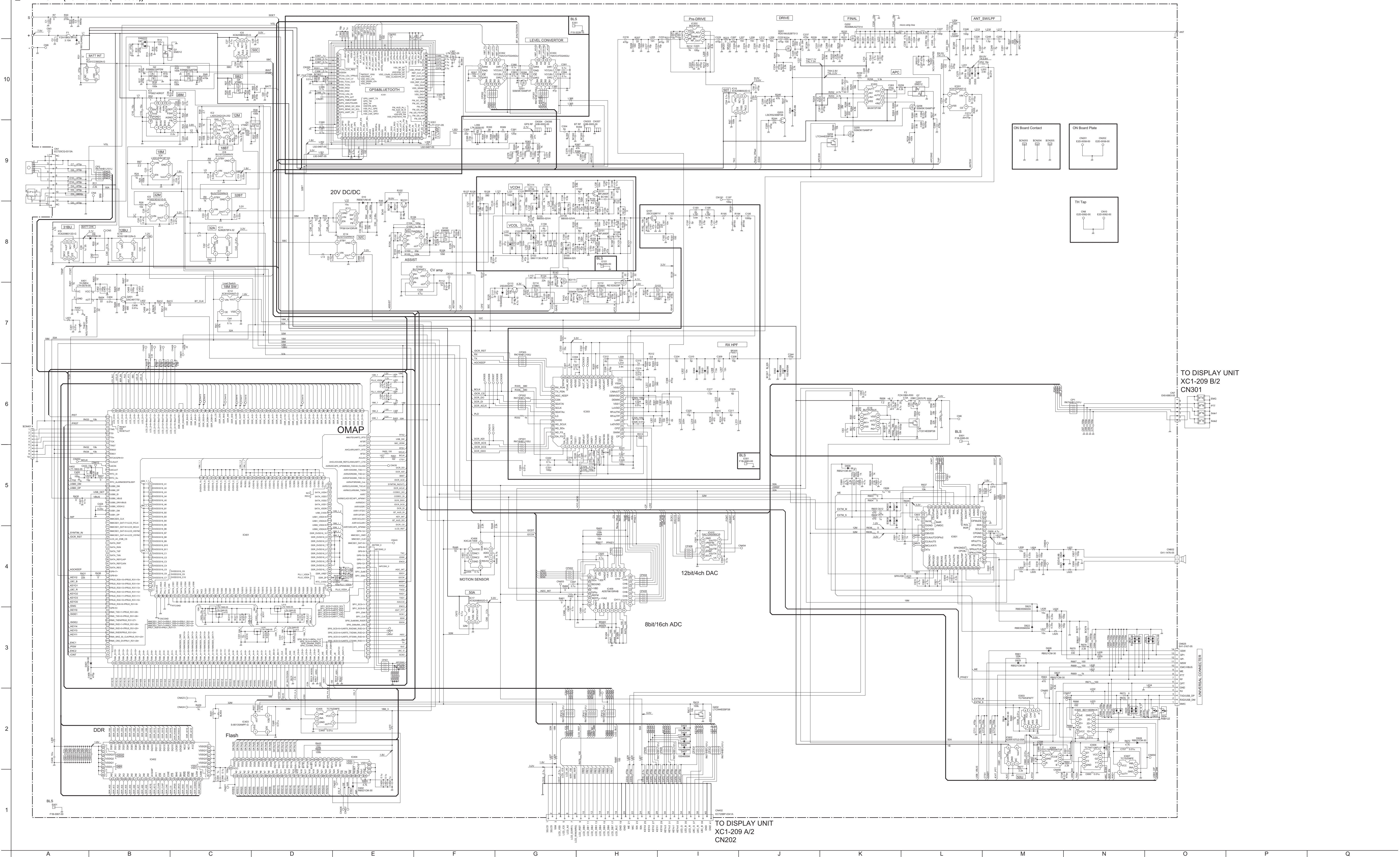
■ DISPLAY UNIT (XC1-209K-00 (NX-3200(K,E3),NX-3300(K,E3)), XC1-209K-01 (NX-3200(K2,E2),NX-3300(K2,E2)), XC1-209K-02 (NX-3200(K3,E),NX-3300(K3,E)))



■ TX-RX UNIT (XC1-179K-00 (NX-3200))



■ TX-RX UNIT (XC1-181K-00 (NX-3300))



# PARTS LIST

[NX-3200,NX-3300]

\* SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

\* BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine parts be used.

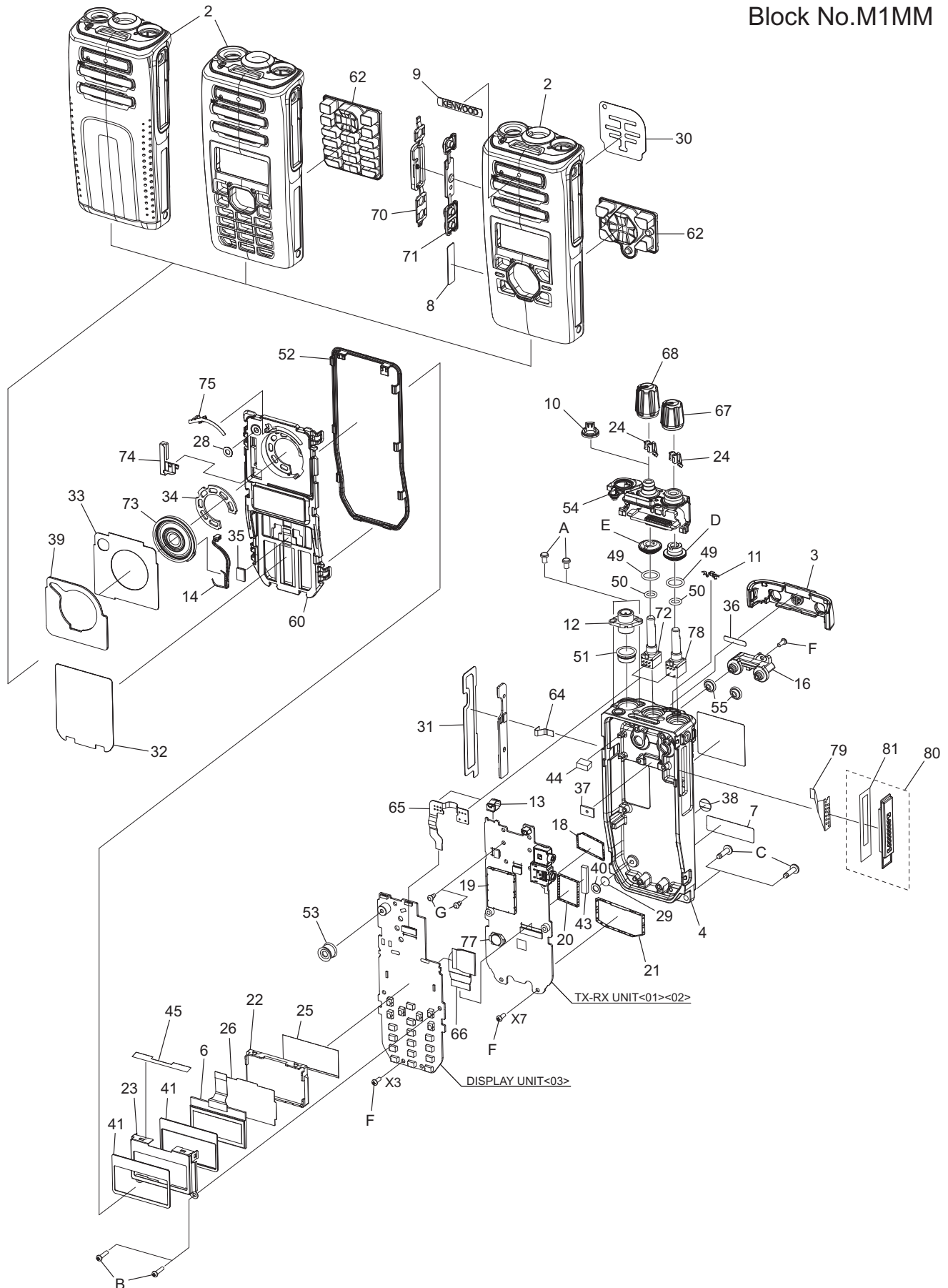
\* (x\_) in a description column shows the number of the used part.

## - Contents -

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| Electrical parts list .....                            | 3-5  |
| Packing materials and accessories parts list .....     | 3-19 |

# Exploded view of general assembly and parts list

Block No.M1MM



# General assembly

Block No. [M][1][M][M]

| △ Symbol No. | Part No.    | Part Name       | Description         | Local                                                 |
|--------------|-------------|-----------------|---------------------|-------------------------------------------------------|
| 2            | A0C-0174-00 | P.CABINET ASSY  | BASIC UNIV          | 3200K,3200E3,3300K,3300E3                             |
| 2            | A0C-0175-00 | P.CABINET ASSY  | STD UNIV            | 3200K2,3200E2,3300K2,3300E2                           |
| 2            | A0C-0176-00 | P.CABINET ASSY  | FULL UNIV           | 3200K3,3200E,3300K3,3300E                             |
| 3            | A8A-0050-00 | REAR PANEL      |                     |                                                       |
| 4            | A1A-0106-00 | CHASSIS         | UNIV                |                                                       |
| 6            | B3H-0062-00 | LCD ASSY        |                     | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| 7            | B4B-0006-00 | CAUTION STICKER | FCC                 | 3200K,3200K2,3200K3,3300K,3300K2,3300K3               |
| 7            | B4C-0545-10 | STANDARD LABEL  | ADDRESS             | 3200E,3200E2,3200E3,3300E,3300E2,3300E3               |
| 8            | B42-7417-04 | STICKER         | NEXEDGE             |                                                       |
| 9            | B4D-0044-00 | KENWOOD BADGE   |                     |                                                       |
| 10           | D32-0454-04 | STOPPER         | CH KNOB             | 3200K,3200E3,3300K,3300E3                             |
| 11           | D3C-0003-00 | STOPPER         | NUT                 |                                                       |
| 12           | E04-0467-15 | C.RECEPTACLE-SM | SMA                 |                                                       |
| 13           | E2D-0083-00 | TERMINAL        | ANT                 |                                                       |
| 14           | E3K-0275-00 | LEAD.WIRE W.C.  | SP                  |                                                       |
| 16           | E7C-0018-00 | TERMINAL BLOCK  | BATT                |                                                       |
| 18           | F10-3227-05 | SHIELDING COVER | BLS/GPS             |                                                       |
| 19           | F1B-0084-00 | SHIELDING COVER | BLS/AK2401          |                                                       |
| 20           | F1B-0086-00 | SHIELDING COVER |                     |                                                       |
| 21           | F1B-0088-00 | SHIELDING COVER |                     |                                                       |
| 22           | B1B-0105-00 | ILL.GUIDE       | LCD                 | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| 23           | J2B-0350-20 | MOUNTING        | LCD                 | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| 24           | G0K-0012-00 | KNOB SPRING     | (x2)                |                                                       |
| 25           | B1B-0110-00 | REF.SHEET       | LCD                 | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| 26           | B1B-0138-00 | FILTER          | LCD                 | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| 28           | G1A-0057-00 | FIBROUS SHEET   | ECM                 |                                                       |
| 29           | G1A-0063-00 | FIBROUS SHEET   | AIR LEAK GORE       |                                                       |
| 30           | G1A-0053-00 | FIBROUS SHEET   | SP                  |                                                       |
| 31           | G1G-0075-00 | SHEET           | PTT                 |                                                       |
| 32           | G1G-0076-00 | SHEET           | KEY                 |                                                       |
| 33           | G1G-0077-00 | SHEET           | SP/BT/GPS           |                                                       |
| 34           | G1B-0266-00 | RUBBER SHEET    | SP                  |                                                       |
| 35           | G1G-0080-00 | SHEET           | KEY 4DIRECTIONS     | 3200K2,3200E2,3300K2,3300E2                           |
| 36           | -----       | SEAL            | VOID                |                                                       |
| 37           | G11-4090-14 | SHEET           | FINAL               |                                                       |
| 38           | G11-4440-04 | SHEET           | LEAK COVER          |                                                       |
| 39           | G1D-0203-00 | CUSHION         | SP/ECM              |                                                       |
| 40           | G1D-0204-00 | CUSHION         | AIR LEAK            |                                                       |
| 41           | G1D-0205-00 | CUSHION         | LCD(x2)             | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| 43           | G13-2102-34 | CONDUCT CUSHION | BLS                 | 3300K,3300K2,3300K3,3300E,3300E2,3300E3               |
| 44           | G13-2220-04 | CUSHION         | ANT                 |                                                       |
| 45           | G1B-0300-00 | SHEET           | LIGHT LEAKAGE       | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| 49           | G53-1792-04 | PACKING         | O RING-NUT(x2)      |                                                       |
| 50           | G53-2211-04 | O RING          | VOL/CH(x2)          |                                                       |
| 51           | G5D-0133-00 | PACKING         | ANT                 |                                                       |
| 52           | G5D-0121-00 | PACKING         | HOLDER              |                                                       |
| 53           | G5D-0122-00 | PACKING         | ECM                 |                                                       |
| 54           | G5D-0120-00 | PACKING         | TOP                 |                                                       |
| 55           | G5D-0128-00 | PACKING         | TER.BLOCK/RING(x2)  |                                                       |
| 60           | J1K-0493-00 | HOLDER          | SP/LCD/KEY          |                                                       |
| 62           | K2K-0247-00 | KEY TOP         | STD                 | 3200K2,3200E2,3300K2,3300E2                           |
| 62           | K2K-0248-00 | KEY TOP         | FULL                | 3200K3,3200E,3300K3,3300E                             |
| 64           | J87-0027-15 | FPC(LEAD FREE)  | PTT                 |                                                       |
| 65           | J8C-0020-00 | FLEX P.BOARD    | VOL/ROSW            |                                                       |
| 66           | J8C-0022-00 | FLEX P.BOARD    | KEY-MAIN            |                                                       |
| 67           | K2K-0249-00 | KNOB            | VOL                 |                                                       |
| 68           | K2K-0250-00 | KNOB            | ROSW                |                                                       |
| 70           | K2K-0251-00 | KNOB            | PTT                 |                                                       |
| 71           | K2K-0252-00 | BUTTON KNOB     | PTT                 |                                                       |
| 72           | S6A-0004-00 | ROTARY SWITCH   |                     |                                                       |
| 73           | T0H-0025-10 | SPEAKER         | D28                 |                                                       |
| 74           | T9A-0058-00 | ANTENNA ELEMENT | GPS                 |                                                       |
| 75           | T9A-0059-00 | ANTENNA ELEMENT | BT                  |                                                       |
| 77           | W09-0971-05 | LITHIUM CELL    |                     |                                                       |
| 78           | R31-0692-15 | V RESISTOR      |                     |                                                       |
| 79           | J8C-0021-00 | FLEX P.BOARD    | UNIV                |                                                       |
| 80           | E58-0532-15 | R.RECEPTACLE    | UNIV                |                                                       |
| 81           | J99-0715-08 | ADHESIVE SHEET  | SA*UNIV             | 3200K,3200K2,3200K3,3200E,3200E2,3200E3               |
| A            | N09-6554-05 | PAN HEAD SCREW  | SMA(x2)             |                                                       |
| B            | N79-2080-43 | P.HEAD T.SCREW  | LCD(x2)             |                                                       |
| C            | N09-6646-05 | SPECIAL SCREW   | CASE(x2)            |                                                       |
| D            | N14-1011-00 | CIRCULAR NUT    | VOL                 |                                                       |
| E            | N14-1012-00 | CIRCULAR NUT    | ROSW                |                                                       |
| F            | N83-2005-48 | P.HEAD T.SCREW  | UNIT(x11)           |                                                       |
| G            | N84-2004-43 | P.HEAD T.SCREW  | TER.BLOCK (+,-)(x2) |                                                       |
| -            | XCA-031K-00 | TX-RX UNIT      | SERVICE UNIT        | 3200K,3200K2,3200K3                                   |
| -            | XCA-031E-01 | TX-RX UNIT      | SERVICE UNIT        | 3200E,3200E2,3200E3                                   |
| -            | XCA-032K-00 | TX-RX UNIT      | SERVICE UNIT        | 3300K,3300K2,3300K3                                   |
| -            | XCA-032E-01 | TX-RX UNIT      | SERVICE UNIT        | 3300E,3300E2,3300E3                                   |

| △ Symbol No. | Part No.    | Part Name    | Description | Local                       |
|--------------|-------------|--------------|-------------|-----------------------------|
| -            | XC1-209K-00 | DISPLAY UNIT | BASIC       | 3200K,3200E3,3300K,3300E3   |
| -            | XC1-209K-01 | DISPLAY UNIT | STD         | 3200K2,3200E2,3300K2,3300E2 |
| -            | XC1-209K-02 | DISPLAY UNIT | FULL        | 3200K3,3200E,3300K3,3300E   |

# Electrical parts list

## TX-RX UNIT

**XC1-179K-00 (NX-3200K,NX-3200K2,  
NX-3200K3,NX-3200E,NX-3200E2,NX-3200E3)**

**\*Note : This part cannot be replaced. Therefore,  
this part is not supplied as a service part.**

Block No. [0][1]

| △ Symbol No. | Part No.       | Part Name       | Description | Local |
|--------------|----------------|-----------------|-------------|-------|
| IC1          | XC61CC5602N-G  | IC              |             |       |
| IC2          | LXDC2XQ12A-252 | IC              |             |       |
| IC3          | TPS62140RGT    | IC              |             |       |
| IC4          | LXDC2HN18F163  | IC              |             |       |
| IC5          | -----          | IC              | *Note       |       |
| IC6          | XC6209B502D-G  | IC              |             |       |
| IC7          | -----          | IC              | *Note       |       |
| IC8          | BU18TD2WNVX    | IC              |             |       |
| IC9          | XC6209B312D-G  | IC              |             |       |
| IC10         | XC6215B122N-G  | IC              |             |       |
| IC11         | NJM2878F4-32   | IC              |             |       |
| IC12         | XC8102AA07-G   | IC              |             |       |
| IC13         | TPS61041DRVR   | IC              |             |       |
| IC14         | -----          | IC              | *Note       |       |
| IC15         | XC6209B502D-G  | IC              |             |       |
| IC17         | XC6209B502D-G  | IC              |             |       |
| IC18         | BU7442NXX      | IC              |             |       |
| IC101        | OPA170AIDRLR   | IC              |             |       |
| IC102        | BU7295HFV      | IC              |             |       |
| IC201        | XC8102AA07-G   | IC              |             |       |
| IC202        | BGU6104        | IC              |             |       |
| IC203        | BA3472FVM      | IC              |             |       |
| IC303        | -----          | IC              | *Note       |       |
| IC351        | -----          | IC              | *Note       |       |
| IC352        | 74AVC4TD245GU  | IC              |             |       |
| IC353        | 74AVC4TD245GU  | IC              |             |       |
| IC401        | -----          | IC              | *Note       |       |
| IC402        | -----          | IC              | *Note       |       |
| IC403        | S-80135ANPF-G  | IC              |             |       |
| IC404        | -----          | IC              | *Note       |       |
| IC405        | TC7SZ08FE      | IC              |             |       |
| IC406        | KXCJ9-1008     | IC              |             |       |
| IC409        | ADS7961SRHB    | IC              |             |       |
| IC410        | DAC124S085CIS  | IC              |             |       |
| IC601        | -----          | IC              | *Note       |       |
| IC602        | NJW4107U2-05A  | IC              |             |       |
| IC603        | TC7W53FKFT     | IC              |             |       |
| IC604        | TC7SPB9306TUF  | IC              |             |       |
| IC605        | BD11600NXX     | IC              |             |       |
| IC606        | TC7WT126FU-F   | IC              |             |       |
| IC607        | TC7SZ08FE      | IC              |             |       |
| Q1           | EMD12          | TRANSISTOR      |             |       |
| Q2           | SSM6N15AFEM    | DUAL FET        |             |       |
| Q3           | SSM6N15AFEM    | DUAL FET        |             |       |
| Q4           | VT6M1          | FET             |             |       |
| Q5           | VT6M1          | FET             |             |       |
| Q6           | LTC014EEBFS8   | DIGI TRANSISTOR |             |       |
| Q7           | 2SB1132(Q,R)   | TRANSISTOR      |             |       |
| Q102         | EM6M2          | FET             |             |       |
| Q103         | VT6M1          | FET             |             |       |
| Q113         | 2SD2654/W/     | TRANSISTOR      |             |       |
| Q114         | VT6M1          | FET             |             |       |
| Q131         | MCH3914-H/8/   | FET             |             |       |
| Q151         | 2SC5108F/Y/    | TRANSISTOR      |             |       |
| Q181         | 2SC5108F/Y/    | TRANSISTOR      |             |       |
| Q201         | RD01MUS2BT513  | FET             |             |       |
| Q202         | RD07MUS2BT514  | FET             |             |       |
| Q203         | LSCR523EBFS8   | TRANSISTOR      |             |       |
| Q204         | LTC044EEBFS8   | DIGI TRANSISTOR |             |       |
| Q205         | SSM3K15AMFVF   | FET             |             |       |
| Q206         | SSM3K15AMFVF   | FET             |             |       |
| Q207         | EMD12          | TRANSISTOR      |             |       |
| Q351         | SSM3K15AMFVF   | FET             |             |       |
| Q401         | 2SC4617/S/     | TRANSISTOR      |             |       |
| Q402         | LTC044EEBFS8   | DIGI TRANSISTOR |             |       |

| △ Symbol No. | Part No.      | Part Name      | Description  | Local |
|--------------|---------------|----------------|--------------|-------|
| D1           | RR1LAM4S      | DIODE          |              |       |
| D8           | DAN222        | DIODE ARRAY    |              |       |
| D9           | RB520SM-30    | DIODE          |              |       |
| D10          | RB561VM-40    | SCHOTTKY DIODE |              |       |
| D102         | EDZV8.2B      | ZENER DIODE    |              |       |
| D111         | 1SS400SM      | DIODE          |              |       |
| D131         | SMV1251-079LF | VARI CAP DIODE |              |       |
| D132         | SMV1801-079LF | VARI CAP DIODE |              |       |
| D133         | SMV1801-079LF | VARI CAP DIODE |              |       |
| D134         | SMV1801-079LF | VARI CAP DIODE |              |       |
| D135         | SMV1801-079LF | VARI CAP DIODE |              |       |
| D136         | SMV1130-079LF | VARI CAP DIODE |              |       |
| D201         | RN142S        | DIODE          |              |       |
| D202         | RN142S        | DIODE          |              |       |
| D203         | RN142S        | DIODE          |              |       |
| D204         | EDZV5.6B      | ZENER DIODE    |              |       |
| D205         | RN142S        | DIODE          |              |       |
| D301         | 1SS400SM      | DIODE          |              |       |
| D302         | 1SS400SM      | DIODE          |              |       |
| D303         | 1SS390        | DIODE          |              |       |
| D304         | 1SS390        | DIODE          |              |       |
| D401         | RB521CM-30    | DIODE          |              |       |
| D402         | RB521CM-30    | DIODE          |              |       |
| D403         | 1SS400SM      | DIODE          |              |       |
| D404         | 1SS400SM      | DIODE          |              |       |
| D405         | 1SS400SM      | DIODE          |              |       |
| D406         | 1SS400SM      | DIODE          |              |       |
| D407         | 1SS400SM      | DIODE          |              |       |
| D601         | RB521CM-30    | DIODE          |              |       |
| D609         | RB521CM-30    | DIODE          |              |       |
| D620         | EDZV6.8B      | ZENER DIODE    |              |       |
| D621         | EDZV6.8B      | ZENER DIODE    |              |       |
| D622         | RBE05SM20A    | DIODE          |              |       |
| D623         | RBE05SM20A    | DIODE          |              |       |
| D624         | RB521CM-30    | DIODE          |              |       |
| D625         | RB521CM-30    | DIODE          |              |       |
| D626         | RB521CM-30    | DIODE          |              |       |
| D627         | RB521CM-30    | DIODE          |              |       |
| D628         | RB521CM-30    | DIODE          |              |       |
| D629         | EMZT6.8E      | ZENER DIODE    |              |       |
| D630         | EMZT6.8E      | ZENER DIODE    |              |       |
| D632         | EMZT6.8E      | ZENER DIODE    |              |       |
| D633         | RSB12Z        | ZENER DIODE    |              |       |
| D634         | RSB12Z        | ZENER DIODE    |              |       |
| C1           | CK73HBB1H102K | C CAPACITOR    | 1000pF 50V K |       |
| C2           | CC73HCH1H220G | C CAPACITOR    | 22pF 50V G   |       |
| C3           | CK73HBB1H682K | C CAPACITOR    | 6800pF 50V K |       |
| C4           | C93-1967-05   | C CAPACITOR    | 470pF 50V    |       |
| C5           | C93-1967-05   | C CAPACITOR    | 470pF 50V    |       |
| C6           | C93-1967-05   | C CAPACITOR    | 470pF 50V    |       |
| C7           | C93-1967-05   | C CAPACITOR    | 470pF 50V    |       |
| C8           | C93-1967-05   | C CAPACITOR    | 470pF 50V    |       |
| C9           | CK73HBB1H682K | C CAPACITOR    | 6800pF 50V K |       |
| C10          | C93-1967-05   | C CAPACITOR    | 470pF 50V    |       |
| C14          | C93-1967-05   | C CAPACITOR    | 470pF 50V    |       |
| C15          | CK73HB1A224K  | C CAPACITOR    | 0.22uF 10V K |       |
| C16          | CK73HB1A224K  | C CAPACITOR    | 0.22uF 10V K |       |
| C17          | CK73HBB1H471K | C CAPACITOR    | 470pF 50V K  |       |
| C18          | CK73FB1C106K  | C CAPACITOR    | 10uF 16V K   |       |
| C19          | CK73FB1C106K  | C CAPACITOR    | 10uF 16V K   |       |
| C20          | CK73HBB1H332K | C CAPACITOR    | 3300pF 50V K |       |
| C21          | CK73HB1E104K  | C CAPACITOR    | 0.10uF 25V K |       |
| C22          | CK73FXR0J226M | C CAPACITOR    | 22uF 6.3V M  |       |
| C23          | CK73FXR1E475K | C CAPACITOR    | 4.7uF 25V K  |       |
| C24          | CK73GB0J106K  | C CAPACITOR    | 10uF 6.3V K  |       |
| C25          | CK73HB1A474K  | C CAPACITOR    | 0.47uF 10V K |       |
| C26          | CK73HB1A474K  | C CAPACITOR    | 0.47uF 10V K |       |
| C27          | CK73GB1E104K  | C CAPACITOR    | 0.1uF 25V K  |       |
| C28          | C93-1967-05   | C CAPACITOR    | 470pF 50V    |       |
| C29          | CK73GXR1C225K | C CAPACITOR    | 2.2uF 16V K  |       |
| C30          | CK73HBB1H471K | C CAPACITOR    | 470pF 50V K  |       |
| C31          | CK73FB1C106K  | C CAPACITOR    | 10uF 16V K   |       |
| C32          | CK73GB0J106K  | C CAPACITOR    | 10uF 6.3V K  |       |
| C33          | CK73HB1A224K  | C CAPACITOR    | 0.22uF 10V K |       |

| △ Symbol No. | Part No.      | Part Name      | Description   | Local |
|--------------|---------------|----------------|---------------|-------|
| C34          | CK73HB1A224K  | C CAPACITOR    | 0.22uF 10V K  |       |
| C35          | CK73HB1E104K  | C CAPACITOR    | 0.10uF 25V K  |       |
| C36          | C93-1967-05   | C CAPACITOR    | 470pF 50V     |       |
| C37          | C93-1967-05   | C CAPACITOR    | 470pF 50V     |       |
| C38          | CK73GB1E104K  | C CAPACITOR    | 0.1uF 25V K   |       |
| C39          | CK73GB1E105K  | C CAPACITOR    | 1uF 25V K     |       |
| C40          | CK73HB1E104K  | C CAPACITOR    | 0.10uF 25V K  |       |
| C41          | CK73HB1E104K  | C CAPACITOR    | 0.10uF 25V K  |       |
| C42          | CK73HB1E104K  | C CAPACITOR    | 0.10uF 25V K  |       |
| C43          | CK73HB1A474K  | C CAPACITOR    | 0.47uF 10V K  |       |
| C44          | CK73HB1E104K  | C CAPACITOR    | 0.10uF 25V K  |       |
| C46          | CK73GXR1E475K | C CAPACITOR    | 4.7uF 25V K   |       |
| C47          | CK73GB1A335K  | C CAPACITOR    | 3.3uF 10V K   |       |
| C48          | CK73FXR1E475K | C CAPACITOR    | 4.7uF 25V K   |       |
| C49          | CK73HBB1H681K | C CAPACITOR    | 680pF 50V K   |       |
| C50          | CK730JM1H684K | C CAPACITOR    | 0.68uF 50V K  |       |
| C51          | CK73HB1A224K  | C CAPACITOR    | 0.22uF 10V K  |       |
| C52          | CK73HBB1H681K | C CAPACITOR    | 680pF 50V K   |       |
| C53          | CK73HB1A224K  | C CAPACITOR    | 0.22uF 10V K  |       |
| C54          | CK73GB1E104K  | C CAPACITOR    | 0.1uF 25V K   |       |
| C55          | CK73GXR1C225K | C CAPACITOR    | 2.2uF 16V K   |       |
| C56          | CK73HBB1H102K | C CAPACITOR    | 1000pF 50V K  |       |
| C60          | CK73GXR1C225K | C CAPACITOR    | 2.2uF 16V K   |       |
| C62          | C93-1959-05   | C CAPACITOR    | 0.1uF 16V     |       |
| C63          | C93-1959-05   | C CAPACITOR    | 0.1uF 16V     |       |
| C64          | C93-1959-05   | C CAPACITOR    | 0.1uF 16V     |       |
| C65          | CK73HBB1H102K | C CAPACITOR    | 1000pF 50V K  |       |
| C66          | CK73HBB1H471K | C CAPACITOR    | 470pF 50V K   |       |
| C67          | CC73JCH1H101J | C CAPACITOR    | 100pF 50V J   |       |
| C68          | CC73JCH1H101J | C CAPACITOR    | 100pF 50V J   |       |
| C69          | CC73JCH1H101J | C CAPACITOR    | 100pF 50V J   |       |
| C70          | CC73JCH1H101J | C CAPACITOR    | 100pF 50V J   |       |
| C102         | CK73HB1H103K  | C CAPACITOR    | 10000pF 50V K |       |
| C103         | CC73HCH1H330G | C CAPACITOR    | 33pF 50V G    |       |
| C104         | CC73JCH1H101J | C CAPACITOR    | 100pF 50V J   |       |
| C105         | CK73GB1H105K  | C CAPACITOR    | 1uF 50V K     |       |
| C106         | C93-1959-05   | C CAPACITOR    | 0.1uF 16V     |       |
| C107         | CC73JCH1H101J | C CAPACITOR    | 100pF 50V J   |       |
| C108         | CC730AD1H104J | C CAPACITOR    | 0.1uF 50V J   |       |
| C111         | CK73HBB1H471K | C CAPACITOR    | 470pF 50V K   |       |
| C112         | CS77BP1A4R7M  | TA E CAPACITOR | 4.7uF 10V M   |       |
| C121         | CK73FBB1H154K | C CAPACITOR    | 0.15uF 50V K  |       |
| C122         | CS77ABE1D100M | TA E CAPACITOR | 10uF 20V M    |       |
| C123         | CK73FB1H473K  | C CAPACITOR    | 0.047uF 50V K |       |
| C132         | CK73HBB1H471K | C CAPACITOR    | 470pF 50V K   |       |
| C133         | CK73HBB1H102K | C CAPACITOR    | 1000pF 50V K  |       |
| C134         | CK73HBB1H102K | C CAPACITOR    | 1000pF 50V K  |       |
| C135         | CK73HBB1H471K | C CAPACITOR    | 470pF 50V K   |       |
| C137         | CC73HCH1H030B | C CAPACITOR    | 3pF 50V B     |       |
| C138         | CC73HCH1HR75B | C CAPACITOR    | 0.75pF 50V B  |       |
| C139         | CC73HCH1H080B | C CAPACITOR    | 8pF 50V B     |       |
| C140         | CC73HCH1H070B | C CAPACITOR    | 7pF 50V B     |       |
| C141         | CC73HCH1H090B | C CAPACITOR    | 9pF 50V B     |       |
| C142         | CK73HBB1H471K | C CAPACITOR    | 470pF 50V K   |       |
| C144         | CC73HCH1H0R5B | C CAPACITOR    | 0.5pF 50V B   |       |
| C145         | CK73HBB1H471K | C CAPACITOR    | 470pF 50V K   |       |
| C146         | CC73HCH1H060B | C CAPACITOR    | 6pF 50V B     |       |
| C147         | CK73HBB1H471K | C CAPACITOR    | 470pF 50V K   |       |
| C181         | CK73HBB1H471K | C CAPACITOR    | 470pF 50V K   |       |
| C182         | CK73HBB1H471K | C CAPACITOR    | 470pF 50V K   |       |
| C183         | CC73HCH1H040B | C CAPACITOR    | 4pF 50V B     |       |
| C191         | CC73HCH1H060B | C CAPACITOR    | 6pF 50V B     |       |
| C192         | CC73HCH1H120G | C CAPACITOR    | 12pF 50V G    |       |
| C193         | CC73HCH1H2R5B | C CAPACITOR    | 2.5pF 50V B   |       |
| C194         | CC73HCH1H060B | C CAPACITOR    | 6pF 50V B     |       |
| C195         | CK73HBB1H102K | C CAPACITOR    | 1000pF 50V K  |       |
| C197         | CK73HBB1H471K | C CAPACITOR    | 470pF 50V K   |       |
| C198         | CC73HCH1H2R5B | C CAPACITOR    | 2.5pF 50V B   |       |
| C202         | CC73GCH1H120G | C CAPACITOR    | 12pF 50V G    |       |
| C203         | CC73GCH1H020B | C CAPACITOR    | 2pF 50V B     |       |
| C204         | CC73GCH1H090B | C CAPACITOR    | 9pF 50V B     |       |
| C205         | CC73GCH1H150G | C CAPACITOR    | 15pF 50V G    |       |
| C206         | CC73GCH1H470G | C CAPACITOR    | 47pF 50V G    |       |
| C207         | CC73GCH1H220G | C CAPACITOR    | 22pF 50V G    |       |
| C209         | CC73HCH1H150G | C CAPACITOR    | 15pF 50V G    |       |
| C211         | CK73HBB1H102K | C CAPACITOR    | 1000pF 50V K  |       |
| C212         | CK73HBB1H102K | C CAPACITOR    | 1000pF 50V K  |       |
| C213         | CK73HBB1H102K | C CAPACITOR    | 1000pF 50V K  |       |

| △ Symbol No. | Part No.      | Part Name   | Description   | Local |
|--------------|---------------|-------------|---------------|-------|
| C214         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C218         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C220         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C221         | CK73HB1E473K  | C CAPACITOR | 0.047uF 25V K |       |
| C222         | CK73HBB1H472K | C CAPACITOR | 4700pF 50V K  |       |
| C223         | CC73HCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C224         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C225         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C226         | CC73GCH1H100B | C CAPACITOR | 10pF 50V B    |       |
| C227         | CC73GCH1H391J | C CAPACITOR | 390pF 50V J   |       |
| C228         | CC73GCH1H060B | C CAPACITOR | 6pF 50V B     |       |
| C233         | CC73HCH1H680J | C CAPACITOR | 68pF 50V J    |       |
| C234         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C235         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C237         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C238         | CC73GCH1H151J | C CAPACITOR | 150pF 50V J   |       |
| C239         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C240         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K  |       |
| C241         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C246         | CC73GCH1H102J | C CAPACITOR | 1000pF 50V J  |       |
| C247         | CC73GCH1H180G | C CAPACITOR | 18pF 50V G    |       |
| C248         | CC73GCH1H090B | C CAPACITOR | 9pF 50V B     |       |
| C249         | CC73GCH1H150G | C CAPACITOR | 15pF 50V G    |       |
| C250         | CC73GCH1H040B | C CAPACITOR | 4pF 50V B     |       |
| C251         | CC73GCH1H080B | C CAPACITOR | 8pF 50V B     |       |
| C252         | CC73HCH1H270G | C CAPACITOR | 27pF 50V G    |       |
| C253         | CC73HCH1H180J | C CAPACITOR | 18pF 50V J    |       |
| C255         | CC73GCH1H030B | C CAPACITOR | 3pF 50V B     |       |
| C257         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C258         | C93-1969-05   | C CAPACITOR | 1000pF 50V    |       |
| C259         | C93-1969-05   | C CAPACITOR | 1000pF 50V    |       |
| C260         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C261         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C262         | CK73GB1C563K  | C CAPACITOR | 0.056uF 16V K |       |
| C263         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C264         | CK73HB1H822K  | C CAPACITOR | 8200pF 50V K  |       |
| C265         | CK73HB1H822K  | C CAPACITOR | 8200pF 50V K  |       |
| C266         | C93-1969-05   | C CAPACITOR | 1000pF 50V    |       |
| C269         | CC73GCH1H180G | C CAPACITOR | 18pF 50V G    |       |
| C301         | CK73HB0J225K  | C CAPACITOR | 2.2uF 6.3V K  |       |
| C302         | CC73HCH1H030B | C CAPACITOR | 3pF 50V B     |       |
| C303         | CK73HB1H103K  | C CAPACITOR | 10000pF 50V K |       |
| C304         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K     |       |
| C305         | CC73HCH1H020B | C CAPACITOR | 2pF 50V B     |       |
| C306         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C307         | CC73HCH1H030B | C CAPACITOR | 3pF 50V B     |       |
| C308         | CC73HCH1H270J | C CAPACITOR | 27pF 50V J    |       |
| C309         | CC73HCH1H150G | C CAPACITOR | 15pF 50V G    |       |
| C310         | CC73HCH1H150G | C CAPACITOR | 15pF 50V G    |       |
| C311         | CC73HCH1H150G | C CAPACITOR | 15pF 50V G    |       |
| C312         | CC73HCH1H120G | C CAPACITOR | 12pF 50V G    |       |
| C313         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C314         | CK73HB1H103K  | C CAPACITOR | 10000pF 50V K |       |
| C315         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K     |       |
| C316         | CK730BS0J106M | C CAPACITOR | 10uF 6.3V M   |       |
| C317         | CC73HCH1H030B | C CAPACITOR | 3pF 50V B     |       |
| C319         | CC73HCH1H040B | C CAPACITOR | 4pF 50V B     |       |
| C320         | CC73HCH1H390G | C CAPACITOR | 39pF 50V G    |       |
| C321         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K  |       |
| C322         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C323         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C324         | CK73HB1H103K  | C CAPACITOR | 10000pF 50V K |       |
| C325         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C326         | CK73HB1H103K  | C CAPACITOR | 10000pF 50V K |       |
| C327         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K  |       |
| C328         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C329         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K  |       |
| C330         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C331         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C332         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K  |       |
| C333         | CK730BS0J106M | C CAPACITOR | 10uF 6.3V M   |       |
| C334         | CC73HCH1H390G | C CAPACITOR | 39pF 50V G    |       |
| C338         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C341         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C342         | CK730BS0J106M | C CAPACITOR | 10uF 6.3V M   |       |
| C343         | CK73HB1A474K  | C CAPACITOR | 0.47uF 10V K  |       |
| C344         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C345         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K     |       |

| △ Symbol No. | Part No.      | Part Name   | Description   | Local | △ Symbol No. | Part No.      | Part Name   | Description   | Local |
|--------------|---------------|-------------|---------------|-------|--------------|---------------|-------------|---------------|-------|
| C346         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       | C453         | CK73HB1H103K  | C CAPACITOR | 10000pF 50V K |       |
| C354         | CC73HCH1H040B | C CAPACITOR | 4pF 50V B     |       | C454         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K  |       |
| C356         | C93-1953-05   | C CAPACITOR | 0.01uF 25V    |       | C455         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C357         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K     |       | C456         | C93-1967-05   | C CAPACITOR | 470pF 50V     |       |
| C358         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C457         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C359         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C458         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C360         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C459         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C361         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C469         | C93-1967-05   | C CAPACITOR | 470pF 50V     |       |
| C363         | CC73HCH1H180G | C CAPACITOR | 18pF 50V G    |       | C470         | C93-1967-05   | C CAPACITOR | 470pF 50V     |       |
| C364         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K     |       | C471         | C93-1967-05   | C CAPACITOR | 470pF 50V     |       |
| C365         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K     |       | C472         | C93-1967-05   | C CAPACITOR | 470pF 50V     |       |
| C366         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C473         | C93-1967-05   | C CAPACITOR | 470pF 50V     |       |
| C367         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C474         | C93-1967-05   | C CAPACITOR | 470pF 50V     |       |
| C368         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C475         | C93-1967-05   | C CAPACITOR | 470pF 50V     |       |
| C369         | CC73HCH1H220G | C CAPACITOR | 22pF 50V G    |       | C476         | C93-1967-05   | C CAPACITOR | 470pF 50V     |       |
| C370         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K     |       | C477         | C93-1967-05   | C CAPACITOR | 470pF 50V     |       |
| C371         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C480         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C372         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C481         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C373         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C482         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C374         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C483         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C375         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C484         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C376         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       | C485         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C377         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       | C486         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C378         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       | C487         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C379         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       | C488         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C380         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C489         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C381         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C496         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K     |       |
| C382         | CC73HCH1H470J | C CAPACITOR | 47pF 50V J    |       | C497         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       |
| C383         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C498         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       |
| C384         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C499         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       |
| C385         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       | C500         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       |
| C386         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C501         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K     |       |
| C387         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C502         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       |
| C388         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K     |       | C510         | C93-1967-05   | C CAPACITOR | 470pF 50V     |       |
| C389         | CC73HCH1H100B | C CAPACITOR | 10pF 50V B    |       | C515         | C93-1967-05   | C CAPACITOR | 470pF 50V     |       |
| C391         | CC73HCH1H121J | C CAPACITOR | 120pF 50V J   |       | C516         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K  |       |
| C392         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       | C517         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K  |       |
| C395         | CC73HCH1H2R5B | C CAPACITOR | 2.5pF 50V B   |       | C518         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K  |       |
| C401         | CK73HB1H103K  | C CAPACITOR | 10000pF 50V K |       | C601         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K  |       |
| C402         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       | C602         | CK73FXR1E475K | C CAPACITOR | 4.7uF 25V K   |       |
| C403         | C93-1953-05   | C CAPACITOR | 0.01uF 25V    |       | C603         | CK73GXR0J475K | C CAPACITOR | 4.7uF 6.3V K  |       |
| C404         | CK73HB1H103K  | C CAPACITOR | 10000pF 50V K |       | C604         | CK73FXR1E475K | C CAPACITOR | 4.7uF 25V K   |       |
| C405         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       | C606         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K     |       |
| C406         | CK73HB1H103K  | C CAPACITOR | 10000pF 50V K |       | C607         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K     |       |
| C407         | C93-1953-05   | C CAPACITOR | 0.01uF 25V    |       | C608         | CK73GXR1C225K | C CAPACITOR | 2.2uF 16V K   |       |
| C408         | CC73HCH1H050B | C CAPACITOR | 5pF 50V B     |       | C609         | CK73GXR0J475K | C CAPACITOR | 4.7uF 6.3V K  |       |
| C421         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C610         | CK73GXR1C225K | C CAPACITOR | 2.2uF 16V K   |       |
| C422         | CC73HCH1H180G | C CAPACITOR | 18pF 50V G    |       | C612         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K     |       |
| C423         | CC73HCH1H150G | C CAPACITOR | 15pF 50V G    |       | C614         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K     |       |
| C424         | CK73HB1A224K  | C CAPACITOR | 0.22uF 10V K  |       | C615         | CK73FXR1E475K | C CAPACITOR | 4.7uF 25V K   |       |
| C425         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C617         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C426         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C618         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C427         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C620         | CK73GXR0J475K | C CAPACITOR | 4.7uF 6.3V K  |       |
| C428         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C621         | CK73GXR0J475K | C CAPACITOR | 4.7uF 6.3V K  |       |
| C429         | CK73FB1C106K  | C CAPACITOR | 10uF 16V K    |       | C622         | CK73GXR1C225K | C CAPACITOR | 2.2uF 16V K   |       |
| C430         | CK73FB1C106K  | C CAPACITOR | 10uF 16V K    |       | C625         | CK73HB1A334K  | C CAPACITOR | 0.33uF 10V K  |       |
| C431         | CK73GXR0J475K | C CAPACITOR | 4.7uF 6.3V K  |       | C626         | CK73HB1H103K  | C CAPACITOR | 10000pF 50V K |       |
| C432         | CK73FB1C106K  | C CAPACITOR | 10uF 16V K    |       | C627         | CK73HB1A334K  | C CAPACITOR | 0.33uF 10V K  |       |
| C433         | CK73GXR0J475K | C CAPACITOR | 4.7uF 6.3V K  |       | C657         | CC73HCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C434         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C658         | CC73HCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C435         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C659         | CK73GXR0J475K | C CAPACITOR | 4.7uF 6.3V K  |       |
| C436         | CK73FB1C106K  | C CAPACITOR | 10uF 16V K    |       | C660         | CK73GXR0J475K | C CAPACITOR | 4.7uF 6.3V K  |       |
| C437         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C663         | CK73GXR0J475K | C CAPACITOR | 4.7uF 6.3V K  |       |
| C438         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C672         | CK73GB1E104K  | C CAPACITOR | 0.1uF 25V K   |       |
| C439         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C674         | CK73GB1E105K  | C CAPACITOR | 1uF 25V K     |       |
| C440         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C676         | CK73FXR1E475K | C CAPACITOR | 4.7uF 25V K   |       |
| C441         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C681         | CK73GB1E474K  | C CAPACITOR | 0.47uF 25V K  |       |
| C442         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C682         | C93-1953-05   | C CAPACITOR | 0.01uF 25V    |       |
| C443         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C683         | CK73GXR1C225K | C CAPACITOR | 2.2uF 16V K   |       |
| C444         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C685         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C445         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K     |       | C686         | CK73HB1A334K  | C CAPACITOR | 0.33uF 10V K  |       |
| C446         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C687         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C447         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       | C688         | CK73HB1A334K  | C CAPACITOR | 0.33uF 10V K  |       |
| C448         | CK73HB1H103K  | C CAPACITOR | 10000pF 50V K |       | C689         | C93-1953-05   | C CAPACITOR | 0.01uF 25V    |       |
| C449         | C93-1953-05   | C CAPACITOR | 0.01uF 25V    |       | C690         | C93-1953-05   | C CAPACITOR | 0.01uF 25V    |       |
| C450         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C691         | C93-1953-05   | C CAPACITOR | 0.01uF 25V    |       |
| C451         | C93-1959-05   | C CAPACITOR | 0.1uF 16V     |       | C692         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C452         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K     |       | C693         | C93-1953-05   | C CAPACITOR | 0.01uF 25V    |       |

| △ Symbol No. | Part No.      | Part Name   | Description   | Local |
|--------------|---------------|-------------|---------------|-------|
| C694         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C695         | C93-1953-05   | C CAPACITOR | 0.01uF 25V    |       |
| C696         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C697         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C698         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C699         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C700         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C701         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C702         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C703         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C704         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C705         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C706         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C707         | C93-1953-05   | C CAPACITOR | 0.01uF 25V    |       |
| C708         | C93-1967-05   | C CAPACITOR | 470pF 50V     |       |
| C709         | C93-1953-05   | C CAPACITOR | 0.01uF 25V    |       |
| C710         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C711         | C93-1967-05   | C CAPACITOR | 470pF 50V     |       |
| C712         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| R7           | RK73HB1J000J  | MG RESISTOR | 0Ω 1/16W J    |       |
| R8           | RK73JB1H102J  | MG RESISTOR | 1kΩ 1/20W J   |       |
| R9           | RK73HB1J102J  | MG RESISTOR | 1kΩ 1/16W J   |       |
| R10          | RK73HH1J184D  | MG RESISTOR | 180kΩ 1/16W D |       |
| R11          | RK73HB1J222J  | MG RESISTOR | 2.2kΩ 1/16W J |       |
| R12          | RK73JB1H474J  | MG RESISTOR | 470kΩ 1/20W J |       |
| R13          | RK73JB1H103J  | MG RESISTOR | 10kΩ 1/20W J  |       |
| R14          | RK73JB1H474J  | MG RESISTOR | 470kΩ 1/20W J |       |
| R15          | RK73JB1H103J  | MG RESISTOR | 10kΩ 1/20W J  |       |
| R16          | RK73JB1H474J  | MG RESISTOR | 470kΩ 1/20W J |       |
| R17          | RK73JB1H474J  | MG RESISTOR | 470kΩ 1/20W J |       |
| R18          | RK73JB1H104J  | MG RESISTOR | 100kΩ 1/20W J |       |
| R19          | RK73JB1H104J  | MG RESISTOR | 100kΩ 1/20W J |       |
| R20          | RK73JB1H104J  | MG RESISTOR | 100kΩ 1/20W J |       |
| R21          | RK73JB1H104J  | MG RESISTOR | 100kΩ 1/20W J |       |
| R22          | RK73HH1J183D  | MG RESISTOR | 18kΩ 1/16W D  |       |
| R23          | RK73HH1J683D  | MG RESISTOR | 68kΩ 1/16W D  |       |
| R24          | RK73JB1H102J  | MG RESISTOR | 1kΩ 1/20W J   |       |
| R25          | RK73JB1H104J  | MG RESISTOR | 100kΩ 1/20W J |       |
| R26          | RK73JB1H103J  | MG RESISTOR | 10kΩ 1/20W J  |       |
| R27          | RK73HB1J274J  | MG RESISTOR | 270kΩ 1/16W J |       |
| R28          | RK73HB1J224J  | MG RESISTOR | 220kΩ 1/16W J |       |
| R29          | RK73HB1J474J  | MG RESISTOR | 470kΩ 1/16W J |       |
| R30          | RK73HH1J274D  | MG RESISTOR | 270kΩ 1/16W D |       |
| R31          | RK73HB1J000J  | MG RESISTOR | 0Ω 1/16W J    |       |
| R32          | RK73JB1H102J  | MG RESISTOR | 1kΩ 1/20W J   |       |
| R33          | RK73JB1H104J  | MG RESISTOR | 100kΩ 1/20W J |       |
| R34          | RK73JB1H473J  | MG RESISTOR | 47kΩ 1/20W J  |       |
| R35          | RK73JB1H101J  | MG RESISTOR | 100Ω 1/20W J  |       |
| R36          | RK73JB1H104J  | MG RESISTOR | 100kΩ 1/20W J |       |
| R37          | RK73JB1H104J  | MG RESISTOR | 100kΩ 1/20W J |       |
| R38          | RZ73G0BK2R7J  | RESISTOR    | 2.7Ω 0.25W J  |       |
| R39          | RK73JB1H102J  | MG RESISTOR | 1kΩ 1/20W J   |       |
| R40          | RK73JB1H102J  | MG RESISTOR | 1kΩ 1/20W J   |       |
| R41          | RK73JB1H473J  | MG RESISTOR | 47kΩ 1/20W J  |       |
| R42          | R92-3774-05   | MG RESISTOR | 27Ω 0.25W     |       |
| R43          | R92-3774-05   | MG RESISTOR | 27Ω 0.25W     |       |
| R44          | RK73HB1J474J  | MG RESISTOR | 470kΩ 1/16W J |       |
| R45          | RK73HB1J333J  | MG RESISTOR | 33kΩ 1/16W J  |       |
| R46          | RK73GB2A220J  | MG RESISTOR | 22Ω 1/10W J   |       |
| R47          | RK73JB1H104J  | MG RESISTOR | 100kΩ 1/20W J |       |
| R48          | RK73JB1H474J  | MG RESISTOR | 470kΩ 1/20W J |       |
| R49          | RK73JB1H474J  | MG RESISTOR | 470kΩ 1/20W J |       |
| R50          | RK73HH1J473D  | MG RESISTOR | 47kΩ 1/16W D  |       |
| R51          | RK73HH1J473D  | MG RESISTOR | 47kΩ 1/16W D  |       |
| R52          | RK73FB2B1R0J  | MG RESISTOR | 1Ω 1/8W J     |       |
| R56          | RK73HB1J332J  | MG RESISTOR | 3.3kΩ 1/16W J |       |
| R57          | RK73HH1J183D  | MG RESISTOR | 18kΩ 1/16W D  |       |
| R58          | RK73HH1J223D  | MG RESISTOR | 22kΩ 1/16W D  |       |
| R59          | RK73GB2A000J  | MG RESISTOR | 0Ω 1/10W J    |       |
| R60          | RK73HB1J471J  | MG RESISTOR | 470Ω 1/16W J  |       |
| R65          | RK73HH1J474D  | MG RESISTOR | 470kΩ 1/16W D |       |
| R66          | RK73HH1J474D  | MG RESISTOR | 470kΩ 1/16W D |       |
| R67          | RK73GB2A2R2J  | MG RESISTOR | 2.2Ω 1/10W J  |       |
| R102         | RK73HB1J000J  | MG RESISTOR | 0Ω 1/16W J    |       |
| R103         | RK73HB1J223J  | MG RESISTOR | 22kΩ 1/16W J  |       |
| R104         | RK73HB1J102J  | MG RESISTOR | 1kΩ 1/16W J   |       |
| R105         | RK73HB1J124J  | MG RESISTOR | 120kΩ 1/16W J |       |

| △ Symbol No. | Part No.     | Part Name   | Description   | Local |
|--------------|--------------|-------------|---------------|-------|
| R106         | RK73HB1J100J | MG RESISTOR | 10Ω 1/16W J   |       |
| R107         | RK73HB1J104J | MG RESISTOR | 100kΩ 1/16W J |       |
| R108         | RK73HB1J106J | MG RESISTOR | 10MΩ 1/16W J  |       |
| R109         | RK73HB1J470J | MG RESISTOR | 47Ω 1/16W J   |       |
| R110         | RK73HB1J104J | MG RESISTOR | 100kΩ 1/16W J |       |
| R111         | RK73HB1J472J | MG RESISTOR | 4.7kΩ 1/16W J |       |
| R112         | RK73HB1J102J | MG RESISTOR | 1kΩ 1/16W J   |       |
| R113         | RK73HB1J473J | MG RESISTOR | 47kΩ 1/16W J  |       |
| R116         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       |
| R120         | RK73HB1J474J | MG RESISTOR | 470kΩ 1/16W J |       |
| R121         | RK73HB1J103J | MG RESISTOR | 10kΩ 1/16W J  |       |
| R122         | RK73HB1J682J | MG RESISTOR | 6.8kΩ 1/16W J |       |
| R123         | RK73HB1J474J | MG RESISTOR | 470kΩ 1/16W J |       |
| R124         | RK73HB1J473J | MG RESISTOR | 47kΩ 1/16W J  |       |
| R125         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       |
| R126         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       |
| R127         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       |
| R128         | RK73HH1J391D | MG RESISTOR | 390Ω 1/16W D  |       |
| R129         | RK73HB1J103J | MG RESISTOR | 10kΩ 1/16W J  |       |
| R130         | RK73HB1J151J | MG RESISTOR | 150Ω 1/16W J  |       |
| R131         | RK73HB1J104J | MG RESISTOR | 100kΩ 1/16W J |       |
| R132         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       |
| R133         | RN73HH1J151D | MG RESISTOR | 150Ω 0.063W D |       |
| R134         | RN73HH1J100D | MF RESISTOR | 10Ω 0.063W D  |       |
| R135         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       |
| R136         | RK73HB1J103J | MG RESISTOR | 10kΩ 1/16W J  |       |
| R137         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       |
| R139         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       |
| R140         | RK73HB1J474J | MG RESISTOR | 470kΩ 1/16W J |       |
| R141         | RK73HB1J474J | MG RESISTOR | 470kΩ 1/16W J |       |
| R142         | RK73HB1J151J | MG RESISTOR | 150Ω 1/16W J  |       |
| R143         | RK73HB1J562J | MG RESISTOR | 5.6kΩ 1/16W J |       |
| R145         | RK73HB1J181J | MG RESISTOR | 180Ω 1/16W J  |       |
| R181         | RK73HB1J220J | MG RESISTOR | 22Ω 1/16W J   |       |
| R182         | RK73HB1J822J | MG RESISTOR | 8.2kΩ 1/16W J |       |
| R183         | RK73HB1J472J | MG RESISTOR | 4.7kΩ 1/16W J |       |
| R184         | RK73HB1J151J | MG RESISTOR | 150Ω 1/16W J  |       |
| R192         | RK73HB1J181J | MG RESISTOR | 180Ω 1/16W J  |       |
| R193         | RK73HB1J181J | MG RESISTOR | 180Ω 1/16W J  |       |
| R194         | RK73HB1J330J | MG RESISTOR | 33Ω 1/16W J   |       |
| R195         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       |
| R201         | RK73HB1J181J | MG RESISTOR | 180Ω 1/16W J  |       |
| R202         | RK73HB1J181J | MG RESISTOR | 180Ω 1/16W J  |       |
| R204         | R92-3785-05  | MG RESISTOR | 120Ω 0.25W    |       |
| R205         | RK73HB1J102J | MG RESISTOR | 1kΩ 1/16W J   |       |
| R206         | RK73HB1J271J | MG RESISTOR | 270Ω 1/16W J  |       |
| R207         | RK73HB1J180J | MG RESISTOR | 18Ω 1/16W J   |       |
| R208         | RK73HB1J271J | MG RESISTOR | 270Ω 1/16W J  |       |
| R209         | RK73HB1J562J | MG RESISTOR | 5.6kΩ 1/16W J |       |
| R210         | RK73HB1J682J | MG RESISTOR | 6.8kΩ 1/16W J |       |
| R211         | RK73HB1J220J | MG RESISTOR | 22Ω 1/16W J   |       |
| R212         | RK73HB1J102J | MG RESISTOR | 1kΩ 1/16W J   |       |
| R213         | RK73HB1J121J | MG RESISTOR | 120Ω 1/16W J  |       |
| R214         | RK73HB1J103J | MG RESISTOR | 10kΩ 1/16W J  |       |
| R215         | RK73HB1J332J | MG RESISTOR | 3.3kΩ 1/16W J |       |
| R216         | RK73HB1J470J | MG RESISTOR | 47Ω 1/16W J   |       |
| R218         | RK73HB1J101J | MG RESISTOR | 100Ω 1/16W J  |       |
| R219         | RK73HB1J100J | MG RESISTOR | 10Ω 1/16W J   |       |
| R220         | RK73GB2A000J | MG RESISTOR | 0Ω 1/10W J    |       |
| R222         | RK73HB1J332J | MG RESISTOR | 3.3kΩ 1/16W J |       |
| R223         | RK73HB1J330J | MG RESISTOR | 33Ω 1/16W J   |       |
| R227         | RK73GB2A823J | MG RESISTOR | 82kΩ 1/10W J  |       |
| R228         | RK73GB2A000J | MG RESISTOR | 0Ω 1/10W J    |       |
| R230         | RK73HB1J221J | MG RESISTOR | 220Ω 1/16W J  |       |
| R233         | RK73HB1J392J | MG RESISTOR | 3.9kΩ 1/16W J |       |
| R234         | RK73HB1J104J | MG RESISTOR | 100kΩ 1/16W J |       |
| R237         | RK73JB1H102J | MG RESISTOR | 1kΩ 1/20W J   |       |
| R244         | RK73HB1J273J | MG RESISTOR | 27kΩ 1/16W J  |       |
| R245         | RK73HB1J473J | MG RESISTOR | 47kΩ 1/16W J  |       |
| R246         | RK73HB1J473J | MG RESISTOR | 47kΩ 1/16W J  |       |
| R247         | RK73HB1J470J | MG RESISTOR | 47Ω 1/16W J   |       |
| R248         | R92-3756-05  | MG RESISTOR | 0.22Ω 1/3W    |       |
| R249         | RK73JB1H103J | MG RESISTOR | 10kΩ 1/20W J  |       |
| R250         | R92-3756-05  | MG RESISTOR | 0.22Ω 1/3W    |       |
| R251         | RK73HB1J270J | MG RESISTOR | 27Ω 1/16W J   |       |
| R252         | RK73HH1J472D | MG RESISTOR | 4.7kΩ 1/16W D |       |
| R253         | RK73HH1J472D | MG RESISTOR | 4.7kΩ 1/16W D |       |
| R255         | RK73HH1J393D | MG RESISTOR | 39kΩ 1/16W D  |       |

| △ Symbol No. | Part No.     | Part Name   | Description   | Local | △ Symbol No. | Part No.      | Part Name     | Description   | Local |
|--------------|--------------|-------------|---------------|-------|--------------|---------------|---------------|---------------|-------|
| R256         | RK73HH1J682D | MG RESISTOR | 6.8kΩ 1/16W D |       | R434         | RK73JB1H103J  | MG RESISTOR   | 10kΩ 1/20W J  |       |
| R257         | RK73HB1J221J | MG RESISTOR | 220Ω 1/16W J  |       | R435         | RK73JB1H105J  | MG RESISTOR   | 1mΩ 1/20W J   |       |
| R258         | RK73HB1J332J | MG RESISTOR | 3.3kΩ 1/16W J |       | R436         | RK73HB1J000J  | MG RESISTOR   | 0Ω 1/16W J    |       |
| R259         | RK73HB1J822J | MG RESISTOR | 8.2kΩ 1/16W J |       | R437         | RK73HB1J000J  | MG RESISTOR   | 0Ω 1/16W J    |       |
| R260         | RK73HB1J392J | MG RESISTOR | 3.9kΩ 1/16W J |       | R438         | RK73GH2A49R9D | MG RESISTOR   | 49.9Ω 1/10W D |       |
| R264         | RK73HH1J682D | MG RESISTOR | 6.8kΩ 1/16W D |       | R439         | RK73HH1J102D  | MG RESISTOR   | 1kΩ 1/16W D   |       |
| R265         | RK73HH1J393D | MG RESISTOR | 39kΩ 1/16W D  |       | R440         | RK73HH1J102D  | MG RESISTOR   | 1kΩ 1/16W D   |       |
| R267         | RK73GB2A000J | MG RESISTOR | 0Ω 1/10W J    |       | R442         | RK73JB1H472J  | MG RESISTOR   | 4.7kΩ 1/20W J |       |
| R268         | RK73HB1J104J | MG RESISTOR | 100kΩ 1/16W J |       | R443         | RK73JB1H104J  | MG RESISTOR   | 100kΩ 1/20W J |       |
| R269         | RK73HB1J102J | MG RESISTOR | 1kΩ 1/16W J   |       | R444         | RK73JB1H104J  | MG RESISTOR   | 100kΩ 1/20W J |       |
| R270         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       | R445         | RK73JB1H472J  | MG RESISTOR   | 4.7kΩ 1/20W J |       |
| R271         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       | R446         | RK73HB1J100J  | MG RESISTOR   | 10Ω 1/16W J   |       |
| R272         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       | R447         | RK73JB1H222J  | MG RESISTOR   | 2.2kΩ 1/20W J |       |
| R273         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       | R448         | RK73JB1H222J  | MG RESISTOR   | 2.2kΩ 1/20W J |       |
| R301         | RK73HB1J101J | MG RESISTOR | 100Ω 1/16W J  |       | R449         | RK73JB1H472J  | MG RESISTOR   | 4.7kΩ 1/20W J |       |
| R302         | RK73HB1J101J | MG RESISTOR | 100Ω 1/16W J  |       | R450         | RK73HB1J331J  | MG RESISTOR   | 330Ω 1/16W J  |       |
| R303         | RK73HB1J821J | MG RESISTOR | 820Ω 1/16W J  |       | R451         | RK73GB2A000J  | MG RESISTOR   | 0Ω 1/10W J    |       |
| R304         | RK73HB1J821J | MG RESISTOR | 820Ω 1/16W J  |       | R452         | RK73GB2A000J  | MG RESISTOR   | 0Ω 1/10W J    |       |
| R310         | RK73HB1J271J | MG RESISTOR | 270Ω 1/16W J  |       | R453         | RK73JB1H101J  | MG RESISTOR   | 100Ω 1/20W J  |       |
| R312         | RK73HB1J5R6J | MG RESISTOR | 5.6Ω 1/16W J  |       | R461         | RK73HB1J000J  | MG RESISTOR   | 0Ω 1/16W J    |       |
| R313         | RK73HB1J101J | MG RESISTOR | 100Ω 1/16W J  |       | R462         | RK73HB1J000J  | MG RESISTOR   | 0Ω 1/16W J    |       |
| R314         | RK73HB1J271J | MG RESISTOR | 270Ω 1/16W J  |       | R463         | RK73HH1J104D  | MG RESISTOR   | 100kΩ 1/16W D |       |
| R315         | RK73HB1J180J | MG RESISTOR | 18Ω 1/16W J   |       | R464         | RK73HH1J103D  | MG RESISTOR   | 10kΩ 1/16W D  |       |
| R316         | RK73HB1J271J | MG RESISTOR | 270Ω 1/16W J  |       | R466         | RK73HB1J000J  | MG RESISTOR   | 0Ω 1/16W J    |       |
| R325         | RK73HH1J473D | MG RESISTOR | 47kΩ 1/16W D  |       | R467         | RK73HB1J101J  | MG RESISTOR   | 100Ω 1/16W J  |       |
| R330         | RK73HH1J273D | MG RESISTOR | 27kΩ 1/16W D  |       | R468         | RK73HB1J101J  | MG RESISTOR   | 100Ω 1/16W J  |       |
| R331         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       | R469         | RK73JB1H101J  | MG RESISTOR   | 100Ω 1/20W J  |       |
| R332         | RK73HB1J102J | MG RESISTOR | 1kΩ 1/16W J   |       | R470         | RK73JB1H101J  | MG RESISTOR   | 100Ω 1/20W J  |       |
| R333         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       | R479         | RK73HB1J101J  | MG RESISTOR   | 100Ω 1/16W J  |       |
| R335         | RK73HB1J681J | MG RESISTOR | 680Ω 1/16W J  |       | R480         | RK73HB1J101J  | MG RESISTOR   | 100Ω 1/16W J  |       |
| R336         | RK73HB1J681J | MG RESISTOR | 680Ω 1/16W J  |       | R601         | RK73HB1J101J  | MG RESISTOR   | 100Ω 1/16W J  |       |
| R351         | RK73JB1H101J | MG RESISTOR | 100Ω 1/20W J  |       | R602         | RK73HB1J101J  | MG RESISTOR   | 100Ω 1/16W J  |       |
| R352         | RK73JB1H101J | MG RESISTOR | 100Ω 1/20W J  |       | R603         | RK73HB1J000J  | MG RESISTOR   | 0Ω 1/16W J    |       |
| R353         | RK73JB1H101J | MG RESISTOR | 100Ω 1/20W J  |       | R604         | RK73HB1J000J  | MG RESISTOR   | 0Ω 1/16W J    |       |
| R354         | RK73HB1J151J | MG RESISTOR | 150Ω 1/16W J  |       | R605         | RK73HB1J471J  | MG RESISTOR   | 470Ω 1/16W J  |       |
| R355         | RK73HB1J390J | MG RESISTOR | 39Ω 1/16W J   |       | R606         | RK73HB1J471J  | MG RESISTOR   | 470Ω 1/16W J  |       |
| R356         | RK73HB1J151J | MG RESISTOR | 150Ω 1/16W J  |       | R607         | RK73HB1J102J  | MG RESISTOR   | 1kΩ 1/16W J   |       |
| R357         | RK73JB1H103J | MG RESISTOR | 10kΩ 1/20W J  |       | R608         | RK73HB1J102J  | MG RESISTOR   | 1kΩ 1/16W J   |       |
| R358         | RK73JB1H103J | MG RESISTOR | 10kΩ 1/20W J  |       | R609         | RK73HB1J222J  | MG RESISTOR   | 2.2kΩ 1/16W J |       |
| R359         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       | R610         | RK73HB1J222J  | MG RESISTOR   | 2.2kΩ 1/16W J |       |
| R360         | RK73JB1H103J | MG RESISTOR | 10kΩ 1/20W J  |       | R611         | RK73HB1J222J  | MG RESISTOR   | 2.2kΩ 1/16W J |       |
| R361         | RK73JB1H473J | MG RESISTOR | 47kΩ 1/20W J  |       | R612         | RK73HB1J822J  | MG RESISTOR   | 8.2kΩ 1/16W J |       |
| R362         | RK73HB1J221J | MG RESISTOR | 220Ω 1/16W J  |       | R635         | RK73HB1J102J  | MG RESISTOR   | 1kΩ 1/16W J   |       |
| R363         | RK73HB1J221J | MG RESISTOR | 220Ω 1/16W J  |       | R636         | RK73HB1J000J  | MG RESISTOR   | 0Ω 1/16W J    |       |
| R364         | RK73HB1J102J | MG RESISTOR | 1kΩ 1/16W J   |       | R637         | RK73JB1H103J  | MG RESISTOR   | 10kΩ 1/20W J  |       |
| R365         | RK73HB1J102J | MG RESISTOR | 1kΩ 1/16W J   |       | R638         | RK73HB1J000J  | MG RESISTOR   | 0Ω 1/16W J    |       |
| R366         | RK73HB1J102J | MG RESISTOR | 1kΩ 1/16W J   |       | R639         | RK73HB1J000J  | MG RESISTOR   | 0Ω 1/16W J    |       |
| R367         | RK73HB1J473J | MG RESISTOR | 47kΩ 1/16W J  |       | R650         | RK73HB1J683J  | MG RESISTOR   | 68kΩ 1/16W J  |       |
| R369         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       | R652         | RK73HB1J103J  | MG RESISTOR   | 10kΩ 1/16W J  |       |
| R401         | RK73HB1J102J | MG RESISTOR | 1kΩ 1/16W J   |       | R654         | RK73GB2A471J  | MG RESISTOR   | 470Ω 1/10W J  |       |
| R402         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       | R656         | RK73PB2H1R2J  | MG RESISTOR   | 1.2Ω 1/2W J   |       |
| R403         | RK73HB1J100J | MG RESISTOR | 10Ω 1/16W J   |       | R659         | RK73JB1H104J  | MG RESISTOR   | 100kΩ 1/20W J |       |
| R404         | RK73HB1J220J | MG RESISTOR | 22Ω 1/16W J   |       | R660         | RK73JB1H102J  | MG RESISTOR   | 1kΩ 1/20W J   |       |
| R405         | RK73HB1J153J | MG RESISTOR | 15kΩ 1/16W J  |       | R661         | RK73JB1H104J  | MG RESISTOR   | 100kΩ 1/20W J |       |
| R406         | RK73HB1J333J | MG RESISTOR | 33kΩ 1/16W J  |       | R662         | RK73HB1J222J  | MG RESISTOR   | 2.2kΩ 1/16W J |       |
| R407         | RK73HB1J100J | MG RESISTOR | 10Ω 1/16W J   |       | R663         | RK73HB1J471J  | MG RESISTOR   | 470Ω 1/16W J  |       |
| R408         | RK73HB1J681J | MG RESISTOR | 680Ω 1/16W J  |       | R664         | RK73HB1J222J  | MG RESISTOR   | 2.2kΩ 1/16W J |       |
| R410         | RK73HB1J220J | MG RESISTOR | 22Ω 1/16W J   |       | R665         | RK73JB1H102J  | MG RESISTOR   | 1kΩ 1/20W J   |       |
| R411         | RK73JB1H103J | MG RESISTOR | 10kΩ 1/20W J  |       | R666         | RK73HB1J101J  | MG RESISTOR   | 100Ω 1/16W J  |       |
| R412         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       | R667         | RK73HB1J101J  | MG RESISTOR   | 100Ω 1/16W J  |       |
| R413         | RK73HB1J220J | MG RESISTOR | 22Ω 1/16W J   |       | R668         | RK73HB1J101J  | MG RESISTOR   | 100Ω 1/16W J  |       |
| R414         | RK73HB1J220J | MG RESISTOR | 22Ω 1/16W J   |       | R669         | RK73HB1J102J  | MG RESISTOR   | 1kΩ 1/16W J   |       |
| R415         | RK73JB1H104J | MG RESISTOR | 100kΩ 1/20W J |       | R670         | RK73HB1J331J  | MG RESISTOR   | 330Ω 1/16W J  |       |
| R419         | RK73JB1H222J | MG RESISTOR | 2.2kΩ 1/20W J |       | R671         | RK73HB1J101J  | MG RESISTOR   | 100Ω 1/16W J  |       |
| R420         | RK73JB1H222J | MG RESISTOR | 2.2kΩ 1/20W J |       | R672         | RK73JB1H472J  | MG RESISTOR   | 4.7kΩ 1/20W J |       |
| R421         | RK73JB1H222J | MG RESISTOR | 2.2kΩ 1/20W J |       | R673         | RK73HB1J000J  | MG RESISTOR   | 0Ω 1/16W J    |       |
| R422         | RK73JB1H222J | MG RESISTOR | 2.2kΩ 1/20W J |       | R674         | RK73HB1J000J  | MG RESISTOR   | 0Ω 1/16W J    |       |
| R423         | RK73JB1H222J | MG RESISTOR | 2.2kΩ 1/20W J |       | R675         | RK73JB1H473J  | MG RESISTOR   | 47kΩ 1/20W J  |       |
| R424         | RK73JB1H222J | MG RESISTOR | 2.2kΩ 1/20W J |       | R676         | RK73HB1J222J  | MG RESISTOR   | 2.2kΩ 1/16W J |       |
| R425         | RK73JB1H222J | MG RESISTOR | 2.2kΩ 1/20W J |       | R677         | RK73JB1H222J  | MG RESISTOR   | 2.2kΩ 1/20W J |       |
| R426         | RK73JB1H102J | MG RESISTOR | 1kΩ 1/20W J   |       |              |               |               |               |       |
| R427         | RK73JB1H222J | MG RESISTOR | 2.2kΩ 1/20W J |       | L1           | LB73F0AW-002  | CHIP FERRITE  |               |       |
| R428         | RK73JB1H220J | MG RESISTOR | 22Ω 1/20W J   |       | L3           | LB73G0AM-004  | CHIP FERRITE  |               |       |
| R429         | RK73JB1H102J | MG RESISTOR | 1kΩ 1/20W J   |       | L4           | LR73Z0AY2R2M  | CHIP INDUCTOR |               |       |
| R430         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       | L5           | LB73G0AM-004  | CHIP FERRITE  |               |       |
| R431         | RK73HB1J223J | MG RESISTOR | 22kΩ 1/16W J  |       | L7           | LB73G0AM-004  | CHIP FERRITE  |               |       |
| R432         | RK73JB1H103J | MG RESISTOR | 10kΩ 1/20W J  |       | L8           | LB73G0AM-004  | CHIP FERRITE  |               |       |
| R433         | RK73JB1H103J | MG RESISTOR | 10kΩ 1/20W J  |       | L9           | LB73H0AV-002  | CHIP FERRITE  |               |       |

| △ Symbol No. | Part No.      | Part Name       | Description | Local | △ Symbol No. | Part No.      | Part Name      | Description  | Local |
|--------------|---------------|-----------------|-------------|-------|--------------|---------------|----------------|--------------|-------|
| L10          | LB73H0AV-002  | CHIP FERRITE    |             |       | L429         | LB73H0AV-002  | CHIP FERRITE   |              |       |
| L11          | LB73H0AV-002  | CHIP FERRITE    |             |       | L430         | LB73H0AV-002  | CHIP FERRITE   |              |       |
| L12          | L41-1502-70   | CHIP INDUCTOR   |             |       | L431         | LB73H0AV-002  | CHIP FERRITE   |              |       |
| L13          | LB73H0AV-002  | CHIP FERRITE    |             |       | L601         | LB73G0AM-004  | CHIP FERRITE   |              |       |
| L112         | LB73H0AY-004  | CHIP FERRITE    |             |       | L604         | LB73G0AM-004  | CHIP FERRITE   |              |       |
| L121         | LB73H0AY-004  | CHIP FERRITE    |             |       | L605         | LB73G0AM-004  | CHIP FERRITE   |              |       |
| L131         | L41-2785-53   | CHIP INDUCTOR   |             |       | L608         | LR73Z0AY100M  | CHIP INDUCTOR  |              |       |
| L132         | L41-2785-53   | CHIP INDUCTOR   |             |       | L609         | LR73Z0AY100M  | CHIP INDUCTOR  |              |       |
| L135         | L41-2785-53   | CHIP INDUCTOR   |             |       | L610         | LB73G0AM-004  | CHIP FERRITE   |              |       |
| L136         | LB73H0AY-004  | CHIP FERRITE    |             |       | L612         | LB73G0AM-004  | CHIP FERRITE   |              |       |
| L137         | L41-2785-53   | CHIP INDUCTOR   |             |       | L613         | LB73G0AM-004  | CHIP FERRITE   |              |       |
| L138         | L41-3378-08   | CHIP INDUCTOR   |             |       | L622         | LB73G0AM-004  | CHIP FERRITE   |              |       |
| L139         | L41-2785-53   | CHIP INDUCTOR   |             |       | L623         | LB73G0AM-004  | CHIP FERRITE   |              |       |
| L140         | L41-2785-53   | CHIP INDUCTOR   |             |       | L624         | LB73G0AM-004  | CHIP FERRITE   |              |       |
| L141         | LB73H0AY-004  | CHIP FERRITE    |             |       | L625         | LB73G0AM-004  | CHIP FERRITE   |              |       |
| L142         | L41-2785-53   | CHIP INDUCTOR   |             |       | L626         | LR73Z0AY100M  | CHIP INDUCTOR  |              |       |
| L143         | LK73H0AM47NJ  | M.CHIP INDUCTOR | 47nH        |       | L627         | LR73Z0AY100M  | CHIP INDUCTOR  |              |       |
| L181         | LK73H0AM56NJ  | M.CHIP INDUCTOR | 56nH        |       | L628         | LB73G0AM-004  | CHIP FERRITE   |              |       |
| L191         | LK73H0AM27NJ  | M.CHIP INDUCTOR | 27nH        |       | L629         | LB73G0AM-004  | CHIP FERRITE   |              |       |
| L192         | LK73H0AM27NJ  | M.CHIP INDUCTOR | 27nH        |       | L630         | LB73H0AV-002  | CHIP FERRITE   |              |       |
| L201         | LR79Z0DC45N5J | CHIP INDUCTOR   | 45.5nH      |       | L631         | LB73H0AV-002  | CHIP FERRITE   |              |       |
| L203         | LR73Z0AE2R2J  | CHIP INDUCTOR   | 2.2uH       |       | L632         | LB73G0AM-004  | CHIP FERRITE   |              |       |
| L206         | LK73H0AMR27J  | M.CHIP INDUCTOR |             |       | L633         | LB73H0AV-002  | CHIP FERRITE   |              |       |
| L209         | LK73H0AM56NJ  | M.CHIP INDUCTOR | 56nH        |       | L634         | LB73G0AM-004  | CHIP FERRITE   |              |       |
| L210         | LR79Z0DC22NJ  | CHIP INDUCTOR   | 22nH        |       |              |               |                |              |       |
| L211         | LB73F0AW-002  | CHIP FERRITE    |             |       | CN1          | EC720CQ-0313A | FFC FPC CONNE  |              |       |
| L213         | LR79Z0DC27N9J | CHIP INDUCTOR   | 27.9nH      |       | CN2          | J19-5386-05   | HOLDER         |              |       |
| L214         | LB73F0AW-002  | CHIP FERRITE    |             |       | CN7          | E40-6883-05   | F.C.CONNECTOR  |              |       |
| L215         | LR79Z0DD43N6J | CHIP INDUCTOR   | 43.6nH      |       | CN8          | -----         | TERMINAL       | *Note        |       |
| L216         | LR79Z0DD43N6J | CHIP INDUCTOR   | 43.6nH      |       | CN10         | -----         | TERMINAL       | *Note        |       |
| L217         | LR79Z0DD43N6J | CHIP INDUCTOR   | 43.6nH      |       | CN201        | E2D-0058-00   | TERMINAL       |              |       |
| L218         | LR79Z0CA68NJ  | CHIP INDUCTOR   |             |       | CN202        | E2D-0058-00   | TERMINAL       |              |       |
| L219         | LR79Z0DC16N7J | CHIP INDUCTOR   | 16.7nH      |       | CN203        | E2D-0022-00   | TERMINAL       |              |       |
| L220         | LR79Z0DD12N2J | CHIP INDUCTOR   | 12.2nH      |       | CN353        | G0B-0005-00   | EARTH SPRING   |              |       |
| L221         | LK73H0AM56NJ  | M.CHIP INDUCTOR | 56nH        |       | CN354        | G0B-0005-00   | EARTH SPRING   |              |       |
| L222         | L41-8265-53   | CHIP INDUCTOR   |             |       | CN356        | G0B-0005-00   | EARTH SPRING   |              |       |
| L223         | L41-6865-53   | CHIP INDUCTOR   |             |       | CN357        | G0B-0005-00   | EARTH SPRING   |              |       |
| L301         | LK73H0AM33NJ  | M.CHIP INDUCTOR | 33nH        |       | CN402        | EC720BP-0341A | FFC FPC CONNE  |              |       |
| L302         | LR79G0CQ47NG  | CHIP INDUCTOR   |             |       | CN602        | E41-1476-05   | PIN ASSY       |              |       |
| L303         | LK73H0AM27NJ  | M.CHIP INDUCTOR | 27nH        |       | CN625        | E41-3167-05   | F.C.CONNECTOR  |              |       |
| L304         | LK73H0AM33NJ  | M.CHIP INDUCTOR | 33nH        |       | CP1          | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| L305         | LR79G0CQR18G  | CHIP INDUCTOR   |             |       | CP2          | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| L307         | LR79G0CQ56NG  | CHIP INDUCTOR   |             |       | CP301        | RK74HB1J100J  | NET RESISTOR   | 10Ω 1/16W J  |       |
| L308         | LR79G0CQ47NG  | CHIP INDUCTOR   |             |       | CP302        | RK74HB1J100J  | NET RESISTOR   | 10Ω 1/16W J  |       |
| L309         | LR79G0CQ82NG  | CHIP INDUCTOR   |             |       | CP303        | RK74HB1J100J  | NET RESISTOR   | 10Ω 1/16W J  |       |
| L310         | LR79G0CQ8N2C  | CHIP INDUCTOR   |             |       | CP351        | RK74HB1J100J  | NET RESISTOR   | 10Ω 1/16W J  |       |
| L311         | LR79G0CQR22G  | CHIP INDUCTOR   |             |       | CP352        | RK74HB1J100J  | NET RESISTOR   | 10Ω 1/16W J  |       |
| L312         | LR79G0CQR15G  | CHIP INDUCTOR   |             |       | CP401        | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| L313         | LR79G0CQ82NG  | CHIP INDUCTOR   |             |       | CP402        | RK74HB1J100J  | NET RESISTOR   | 10Ω 1/16W J  |       |
| L314         | LR79G0CQ82NG  | CHIP INDUCTOR   |             |       | CP403        | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| L315         | LR79G0CQR33G  | CHIP INDUCTOR   |             |       | CP404        | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| L351         | L92-0487-05   | CHIP FERRITE    |             |       | CP405        | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| L352         | L92-0487-05   | CHIP FERRITE    |             |       | CP406        | RK74HB1J100J  | NET RESISTOR   | 10Ω 1/16W J  |       |
| L353         | LK73H0AM10NJ  | M.CHIP INDUCTOR | 10nH        |       | CP408        | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| L354         | LK73H0AM27NJ  | M.CHIP INDUCTOR | 27nH        |       | CP409        | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| L358         | L92-0487-05   | CHIP FERRITE    |             |       | CP410        | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| L359         | L7K-0059-00   | FILTER          |             |       | CP411        | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| L361         | L79-1987-05   | FILTER          |             |       | CP412        | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| L365         | L92-0487-05   | CHIP FERRITE    |             |       | CP413        | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| L366         | L92-0487-05   | CHIP FERRITE    |             |       | CP414        | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| L401         | LB73H0AV-002  | CHIP FERRITE    |             |       | CP601        | RK74HB1J100J  | NET RESISTOR   | 10Ω 1/16W J  |       |
| L402         | LK73G0AQ4R7K  | M.CHIP INDUCTOR | 4.7uH       |       | E101         | -----         | SHIELDING CASE | *Note        |       |
| L404         | LB73G0AM-004  | CHIP FERRITE    |             |       | E301         | -----         | SHIELDING CASE | *Note        |       |
| L405         | L92-1101-05   | CHIP FERRITE    |             |       | E351         | F10-3228-15   | SHIELDING CASE |              |       |
| L406         | L92-1101-05   | CHIP FERRITE    |             |       | E401         | -----         | SHIELDING CASE | *Note        |       |
| L407         | LB73G0AM-004  | CHIP FERRITE    |             |       | E601         | -----         | SHIELDING CASE | *Note        |       |
| L408         | LB73G0AM-004  | CHIP FERRITE    |             |       | F1           | FZA10BQ-3R15  | FUSE (CC)      |              |       |
| L409         | LB73G0AM-004  | CHIP FERRITE    |             |       | F2           | FZA10BH-R50   | FUSE (CC)      | 0.5A         |       |
| L410         | LB73G0AM-004  | CHIP FERRITE    |             |       | TH201        | NCU15WF104F6S | N THERMISTOR   |              |       |
| L411         | L79-1946-05   | FILTER          |             |       | TH401        | NCU15WF104F6S | N THERMISTOR   |              |       |
| L412         | L79-1946-05   | FILTER          |             |       | X351         | L77-3121-05   | QUARTZ CRYSTAL |              |       |
| L413         | L79-1946-05   | FILTER          |             |       | X401         | L7H-0076-00   | TCXO           |              |       |
| L414         | L79-1946-05   | FILTER          |             |       | X402         | L77-1802-05   | QUARTZ CRYSTAL |              |       |
| L415         | L79-1946-05   | FILTER          |             |       |              |               |                |              |       |
| L416         | L79-1946-05   | FILTER          |             |       |              |               |                |              |       |
| L417         | LB73H0AV-002  | CHIP FERRITE    |             |       |              |               |                |              |       |
| L427         | LB73H0AV-002  | CHIP FERRITE    |             |       |              |               |                |              |       |
| L428         | LB73H0AV-002  | CHIP FERRITE    |             |       |              |               |                |              |       |

## TX-RX UNIT

**XC1-181K-00 (NX-3300K,NX-3300K2,  
NX-3300K3,NX-3300E,NX-3300E2,NX-3300E3)**

**\*Note : This part cannot be replaced.Therefore,  
this part is not supplied as a service part.**

Block No. [0][2]

| △ Symbol No. | Part No.       | Part Name       | Description | Local |
|--------------|----------------|-----------------|-------------|-------|
| IC1          | XC61CC5602N-G  | IC              |             |       |
| IC2          | LXDC2XQ12A-252 | IC              |             |       |
| IC3          | TPS62140RGT    | IC              |             |       |
| IC4          | LXDC2HN18F163  | IC              |             |       |
| IC5          | -----          | IC              | *Note       |       |
| IC6          | XC6209B502D-G  | IC              |             |       |
| IC7          | -----          | IC              | *Note       |       |
| IC8          | BU18TD2WNVX    | IC              |             |       |
| IC9          | XC6209B312D-G  | IC              |             |       |
| IC10         | XC6215B122N-G  | IC              |             |       |
| IC11         | NJM2878F4-32   | IC              |             |       |
| IC12         | XC8102AA07-G   | IC              |             |       |
| IC13         | TPS61041DRVR   | IC              |             |       |
| IC14         | BU32TD2WNVX    | IC              |             |       |
| IC15         | XC6209B502D-G  | IC              |             |       |
| IC17         | XC6209B502D-G  | IC              |             |       |
| IC18         | BU7442NUX      | IC              |             |       |
| IC101        | OPA170AIDRLR   | IC              |             |       |
| IC102        | BU7295HFV      | IC              |             |       |
| IC201        | XC8102AA07-G   | IC              |             |       |
| IC202        | BGU6104        | IC              |             |       |
| IC203        | BA3472FVM      | IC              |             |       |
| IC303        | -----          | IC              | *Note       |       |
| IC351        | -----          | IC              | *Note       |       |
| IC352        | 74AVC4TD245GU  | IC              |             |       |
| IC353        | 74AVC4TD245GU  | IC              |             |       |
| IC401        | -----          | IC              | *Note       |       |
| IC402        | -----          | IC              | *Note       |       |
| IC403        | S-80135ANPF-G  | IC              |             |       |
| IC404        | -----          | IC              | *Note       |       |
| IC405        | TC7SZ08FE      | IC              |             |       |
| IC406        | KXCJ9-1008     | IC              |             |       |
| IC409        | ADS7961SRHB    | IC              |             |       |
| IC410        | DAC124S085CIS  | IC              |             |       |
| IC601        | -----          | IC              | *Note       |       |
| IC602        | NJW4107U2-05A  | IC              |             |       |
| IC603        | TC7W53FKFT     | IC              |             |       |
| IC604        | TC7SPB9306TUF  | IC              |             |       |
| IC605        | BD11600NUX     | IC              |             |       |
| IC606        | TC7WT126FU-F   | IC              |             |       |
| IC607        | TC7SZ08FE      | IC              |             |       |
| Q1           | EMD12          | TRANSISTOR      |             |       |
| Q2           | SSM6N15AFEM    | DUAL FET        |             |       |
| Q3           | SSM6N15AFEM    | DUAL FET        |             |       |
| Q4           | VT6M1          | FET             |             |       |
| Q5           | VT6M1          | FET             |             |       |
| Q6           | LTC014EEBFS8   | DIGI TRANSISTOR |             |       |
| Q7           | 2SB1132(Q,R)   | TRANSISTOR      |             |       |
| Q102         | EM6M2          | FET             |             |       |
| Q103         | VT6M1          | FET             |             |       |
| Q111         | RE1E002SP      | FET             |             |       |
| Q112         | VT6M1          | FET             |             |       |
| Q113         | 2SD2654/W/     | TRANSISTOR      |             |       |
| Q114         | VT6M1          | FET             |             |       |
| Q116         | SSM3K15AMFVF   | FET             |             |       |
| Q131         | BFU660F        | TRANSISTOR      |             |       |
| Q151         | BFU660F        | TRANSISTOR      |             |       |
| Q181         | 2SC5108F/Y/    | TRANSISTOR      |             |       |
| Q201         | RD01MUS2BT513  | FET             |             |       |
| Q202         | RD08MUS2T514   | FET             |             |       |
| Q203         | LSCR523EBFS8   | TRANSISTOR      |             |       |
| Q204         | LTC044EEBFS8   | DIGI TRANSISTOR |             |       |
| Q205         | SSM3K15AMFVF   | FET             |             |       |
| Q206         | SSM3K15AMFVF   | FET             |             |       |
| Q207         | EMD12          | TRANSISTOR      |             |       |
| Q351         | SSM3K15AMFVF   | FET             |             |       |

| △ Symbol No. | Part No.      | Part Name       | Description  | Local |
|--------------|---------------|-----------------|--------------|-------|
| Q401         | 2SC4617/S/    | TRANSISTOR      |              |       |
| Q402         | LTC044EEBFS8  | DIGI TRANSISTOR |              |       |
| D1           | RR1LAM4S      | DIODE           |              |       |
| D8           | DAN222        | DIODE ARRAY     |              |       |
| D9           | RB520SM-30    | DIODE           |              |       |
| D10          | RB561VM-40    | SCHOTTKY DIODE  |              |       |
| D102         | EDZV8.2B      | ZENER DIODE     |              |       |
| D111         | 1SS400SM      | DIODE           |              |       |
| D131         | BBY58-02V     | VARI CAP DIODE  |              |       |
| D132         | BB555-02VH    | VARI CAP DIODE  |              |       |
| D133         | BB555-02VH    | VARI CAP DIODE  |              |       |
| D134         | BB555-02VH    | VARI CAP DIODE  |              |       |
| D135         | BB555-02VH    | VARI CAP DIODE  |              |       |
| D151         | BBY58-02V     | VARI CAP DIODE  |              |       |
| D152         | SMV1130-079LF | VARI CAP DIODE  |              |       |
| D153         | SMV1130-079LF | VARI CAP DIODE  |              |       |
| D154         | BB555-02VH    | VARI CAP DIODE  |              |       |
| D155         | BB664-02V     | VARI CAP DIODE  |              |       |
| D201         | L5208F        | DIODE           |              |       |
| D202         | RN142S        | DIODE           |              |       |
| D203         | RN142S        | DIODE           |              |       |
| D204         | EDZV5.6B      | ZENER DIODE     |              |       |
| D206         | SPC10501A01   | VARISTOR        |              |       |
| D301         | 1SS400SM      | DIODE           |              |       |
| D302         | 1SS400SM      | DIODE           |              |       |
| D303         | 1SS390        | DIODE           |              |       |
| D304         | 1SS390        | DIODE           |              |       |
| D401         | RB521CM-30    | DIODE           |              |       |
| D402         | RB521CM-30    | DIODE           |              |       |
| D403         | 1SS400SM      | DIODE           |              |       |
| D404         | 1SS400SM      | DIODE           |              |       |
| D405         | 1SS400SM      | DIODE           |              |       |
| D406         | 1SS400SM      | DIODE           |              |       |
| D407         | 1SS400SM      | DIODE           |              |       |
| D601         | RB521CM-30    | DIODE           |              |       |
| D609         | RB521CM-30    | DIODE           |              |       |
| D620         | EDZV6.8B      | ZENER DIODE     |              |       |
| D621         | EDZV6.8B      | ZENER DIODE     |              |       |
| D622         | RBE05SM20A    | DIODE           |              |       |
| D623         | RBE05SM20A    | DIODE           |              |       |
| D624         | RB521CM-30    | DIODE           |              |       |
| D625         | RB521CM-30    | DIODE           |              |       |
| D626         | RB521CM-30    | DIODE           |              |       |
| D627         | RB521CM-30    | DIODE           |              |       |
| D628         | RB521CM-30    | DIODE           |              |       |
| D629         | EMZT6.8E      | ZENER DIODE     |              |       |
| D630         | EMZT6.8E      | ZENER DIODE     |              |       |
| D632         | EMZT6.8E      | ZENER DIODE     |              |       |
| D633         | RSB12Z        | ZENER DIODE     |              |       |
| D634         | RSB12Z        | ZENER DIODE     |              |       |
| C1           | CK73HBB1H102K | C CAPACITOR     | 1000pF 50V K |       |
| C2           | CC73HCH1H220G | C CAPACITOR     | 22pF 50V G   |       |
| C3           | CK73HBB1H682K | C CAPACITOR     | 6800pF 50V K |       |
| C4           | C93-1967-05   | C CAPACITOR     | 470pF 50V    |       |
| C5           | C93-1967-05   | C CAPACITOR     | 470pF 50V    |       |
| C6           | C93-1967-05   | C CAPACITOR     | 470pF 50V    |       |
| C7           | C93-1967-05   | C CAPACITOR     | 470pF 50V    |       |
| C8           | C93-1967-05   | C CAPACITOR     | 470pF 50V    |       |
| C9           | CK73HBB1H682K | C CAPACITOR     | 6800pF 50V K |       |
| C10          | C93-1967-05   | C CAPACITOR     | 470pF 50V    |       |
| C14          | C93-1967-05   | C CAPACITOR     | 470pF 50V    |       |
| C15          | CK73HB1A224K  | C CAPACITOR     | 0.22uF 10V K |       |
| C16          | CK73HB1A224K  | C CAPACITOR     | 0.22uF 10V K |       |
| C17          | CK73HBB1H471K | C CAPACITOR     | 470pF 50V K  |       |
| C18          | CK73FB1C106K  | C CAPACITOR     | 10uF 16V K   |       |
| C19          | CK73FB1C106K  | C CAPACITOR     | 10uF 16V K   |       |
| C20          | CK73HBB1H332K | C CAPACITOR     | 3300pF 50V K |       |
| C21          | CK73HB1E104K  | C CAPACITOR     | 0.10uF 25V K |       |
| C22          | CK73FXR0J226M | C CAPACITOR     | 22uF 6.3V M  |       |
| C23          | CK73FXR1E475K | C CAPACITOR     | 4.7uF 25V K  |       |
| C24          | CK73GB0J106K  | C CAPACITOR     | 10uF 6.3V K  |       |
| C25          | CK73HB1A474K  | C CAPACITOR     | 0.47uF 10V K |       |
| C26          | CK73HB1A474K  | C CAPACITOR     | 0.47uF 10V K |       |
| C27          | CK73GB1E104K  | C CAPACITOR     | 0.1uF 25V K  |       |
| C28          | C93-1967-05   | C CAPACITOR     | 470pF 50V    |       |
| C29          | CK73GXR1C225K | C CAPACITOR     | 2.2uF 16V K  |       |

| △ Symbol No. | Part No.      | Part Name      | Description   | Local |
|--------------|---------------|----------------|---------------|-------|
| C30          | CK73HBB1H471K | C CAPACITOR    | 470pF 50V K   |       |
| C31          | CK73FB1C106K  | C CAPACITOR    | 10uF 16V K    |       |
| C32          | CK73GB0J106K  | C CAPACITOR    | 10uF 6.3V K   |       |
| C33          | CK73HB1A224K  | C CAPACITOR    | 0.22uF 10V K  |       |
| C34          | CK73HB1A224K  | C CAPACITOR    | 0.22uF 10V K  |       |
| C35          | CK73HB1E104K  | C CAPACITOR    | 0.10uF 25V K  |       |
| C36          | C93-1967-05   | C CAPACITOR    | 470pF 50V     |       |
| C37          | C93-1967-05   | C CAPACITOR    | 470pF 50V     |       |
| C38          | CK73GB1E104K  | C CAPACITOR    | 0.1uF 25V K   |       |
| C39          | CK73GB1E105K  | C CAPACITOR    | 1uF 25V K     |       |
| C40          | CK73HB1E104K  | C CAPACITOR    | 0.10uF 25V K  |       |
| C41          | CK73HB1E104K  | C CAPACITOR    | 0.10uF 25V K  |       |
| C42          | CK73HB1E104K  | C CAPACITOR    | 0.10uF 25V K  |       |
| C43          | CK73HB1A474K  | C CAPACITOR    | 0.47uF 10V K  |       |
| C44          | CK73HB1E104K  | C CAPACITOR    | 0.10uF 25V K  |       |
| C46          | CK73GXR1E475K | C CAPACITOR    | 4.7uF 25V K   |       |
| C47          | CK73GB1A335K  | C CAPACITOR    | 3.3uF 10V K   |       |
| C48          | CK73FXR1E475K | C CAPACITOR    | 4.7uF 25V K   |       |
| C49          | CK73HBB1H681K | C CAPACITOR    | 680pF 50V K   |       |
| C50          | CK730JM1H684K | C CAPACITOR    | 0.68uF 50V K  |       |
| C51          | CK73HB1A224K  | C CAPACITOR    | 0.22uF 10V K  |       |
| C52          | CK73HBB1H681K | C CAPACITOR    | 680pF 50V K   |       |
| C54          | CK73GB1E104K  | C CAPACITOR    | 0.1uF 25V K   |       |
| C55          | CK73GXR1C225K | C CAPACITOR    | 2.2uF 16V K   |       |
| C56          | CK73HBB1H471K | C CAPACITOR    | 470pF 50V K   |       |
| C60          | CK73GXR1C225K | C CAPACITOR    | 2.2uF 16V K   |       |
| C62          | C93-1959-05   | C CAPACITOR    | 0.1uF 16V     |       |
| C63          | C93-1959-05   | C CAPACITOR    | 0.1uF 16V     |       |
| C64          | C93-1959-05   | C CAPACITOR    | 0.1uF 16V     |       |
| C65          | CK73HBB1H102K | C CAPACITOR    | 1000pF 50V K  |       |
| C66          | CK73HBB1H471K | C CAPACITOR    | 470pF 50V K   |       |
| C67          | CC73JCH1H101J | C CAPACITOR    | 100pF 50V J   |       |
| C68          | CC73JCH1H101J | C CAPACITOR    | 100pF 50V J   |       |
| C69          | CC73JCH1H101J | C CAPACITOR    | 100pF 50V J   |       |
| C70          | CC73JCH1H101J | C CAPACITOR    | 100pF 50V J   |       |
| C102         | CK73HB1H103K  | C CAPACITOR    | 10000pF 50V K |       |
| C103         | CC73HCH1H330G | C CAPACITOR    | 33pF 50V G    |       |
| C104         | CC73JCH1H101J | C CAPACITOR    | 100pF 50V J   |       |
| C105         | CK73GB1H105K  | C CAPACITOR    | 1uF 50V K     |       |
| C106         | C93-1959-05   | C CAPACITOR    | 0.1uF 16V     |       |
| C107         | CC73JCH1H101J | C CAPACITOR    | 100pF 50V J   |       |
| C108         | CC730AD1H104J | C CAPACITOR    | 0.1uF 50V J   |       |
| C109         | CC73HCH1H130G | C CAPACITOR    | 13pF 50V G    |       |
| C110         | CC73HCH1H050B | C CAPACITOR    | 5pF 50V B     |       |
| C111         | CC73HCH1H470G | C CAPACITOR    | 47pF 50V G    |       |
| C112         | CS77BP1A4R7M  | TA E CAPACITOR | 4.7uF 10V M   |       |
| C113         | CK73HB1A105K  | C CAPACITOR    | 1uF 10V K     |       |
| C115         | CC73HCH1H0R5B | C CAPACITOR    | 0.5pF 50V B   |       |
| C116         | CC73HCH1H030B | C CAPACITOR    | 3pF 50V B     |       |
| C117         | CC73HCH1HR75B | C CAPACITOR    | 0.75pF 50V B  |       |
| C121         | CK73FBB1H154K | C CAPACITOR    | 0.15uF 50V K  |       |
| C122         | CS77ABE1D100M | TA E CAPACITOR | 10uF 20V M    |       |
| C123         | CK73FB1H473K  | C CAPACITOR    | 0.047uF 50V K |       |
| C131         | CC73HCH1H010B | C CAPACITOR    | 1pF 50V B     |       |
| C132         | CC73HCH1H470G | C CAPACITOR    | 47pF 50V G    |       |
| C133         | CC73HCH1H130G | C CAPACITOR    | 13pF 50V G    |       |
| C134         | CC73HCH1H020B | C CAPACITOR    | 2pF 50V B     |       |
| C135         | CC73HCH1H470G | C CAPACITOR    | 47pF 50V G    |       |
| C136         | CC73HCH1H030B | C CAPACITOR    | 3pF 50V B     |       |
| C138         | CC73HCH1H0R5B | C CAPACITOR    | 0.5pF 50V B   |       |
| C139         | CC73HCH1H470G | C CAPACITOR    | 47pF 50V G    |       |
| C140         | CK73HB1A334K  | C CAPACITOR    | 0.33uF 10V K  |       |
| C141         | CC73HCH1H2R5B | C CAPACITOR    | 2.5pF 50V B   |       |
| C142         | CC73HCH1H040B | C CAPACITOR    | 4pF 50V B     |       |
| C143         | CC73HCH1H040B | C CAPACITOR    | 4pF 50V B     |       |
| C144         | CC73HCH1H470G | C CAPACITOR    | 47pF 50V G    |       |
| C145         | CC73HCH1H010B | C CAPACITOR    | 1pF 50V B     |       |
| C148         | CK73HB1E104K  | C CAPACITOR    | 0.10uF 25V K  |       |
| C150         | CC73HCH1H470G | C CAPACITOR    | 47pF 50V G    |       |
| C151         | CC73HCH1H040B | C CAPACITOR    | 4pF 50V B     |       |
| C152         | CC73HCH1H470G | C CAPACITOR    | 47pF 50V G    |       |
| C153         | CC73HCH1H130G | C CAPACITOR    | 13pF 50V G    |       |
| C154         | CC73HCH1H470G | C CAPACITOR    | 47pF 50V G    |       |
| C156         | CC73HCH1H040B | C CAPACITOR    | 4pF 50V B     |       |
| C157         | CC73HCH1H030B | C CAPACITOR    | 3pF 50V B     |       |
| C158         | CC73HCH1H0R5B | C CAPACITOR    | 0.5pF 50V B   |       |
| C159         | CC73HCH1H470G | C CAPACITOR    | 47pF 50V G    |       |
| C160         | CK73HB1A334K  | C CAPACITOR    | 0.33uF 10V K  |       |

| △ Symbol No. | Part No.      | Part Name   | Description   | Local |
|--------------|---------------|-------------|---------------|-------|
| C161         | CC73HCH1H090B | C CAPACITOR | 9pF 50V B     |       |
| C162         | CC73HCH1H070B | C CAPACITOR | 7pF 50V B     |       |
| C163         | CC73HCH1H3R5B | C CAPACITOR | 3.5pF 50V B   |       |
| C164         | CC73HCH1H470G | C CAPACITOR | 47pF 50V G    |       |
| C165         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K  |       |
| C166         | CC73HCH1H2R5B | C CAPACITOR | 2.5pF 50V B   |       |
| C167         | CC73HCH1H470G | C CAPACITOR | 47pF 50V G    |       |
| C181         | CC73HCH1H470G | C CAPACITOR | 47pF 50V G    |       |
| C182         | CC73HCH1H470G | C CAPACITOR | 47pF 50V G    |       |
| C183         | CC73HCH1H030B | C CAPACITOR | 3pF 50V B     |       |
| C191         | CC73HCH1H020B | C CAPACITOR | 2pF 50V B     |       |
| C192         | CC73HCH1H2R5B | C CAPACITOR | 2.5pF 50V B   |       |
| C193         | CC73HCH1H020B | C CAPACITOR | 2pF 50V B     |       |
| C194         | CC73HCH1H1R5B | C CAPACITOR | 1.5pF 50V B   |       |
| C195         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C197         | CC73HCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C198         | CC73HCH1H020B | C CAPACITOR | 2pF 50V B     |       |
| C203         | C93-0871-05   | C CAPACITOR | 1.0pF 100V    |       |
| C208         | CC73GCH1H030B | C CAPACITOR | 3pF 50V B     |       |
| C209         | CC73HCH1H050B | C CAPACITOR | 5pF 50V B     |       |
| C211         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K   |       |
| C212         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K   |       |
| C213         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K   |       |
| C214         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K   |       |
| C215         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K   |       |
| C216         | CC73HCH1H100B | C CAPACITOR | 10pF 50V B    |       |
| C217         | CC73HCH1H100B | C CAPACITOR | 10pF 50V B    |       |
| C218         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K   |       |
| C219         | CC73HCH1H100B | C CAPACITOR | 10pF 50V B    |       |
| C220         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K   |       |
| C221         | CK73HB1E473K  | C CAPACITOR | 0.047uF 25V K |       |
| C222         | CK73HBB1H472K | C CAPACITOR | 4700pF 50V K  |       |
| C223         | CC73HCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C224         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K   |       |
| C225         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K   |       |
| C226         | CC730AP1H330G | C CAPACITOR | 33pF 50V G    |       |
| C227         | CC73GCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C228         | CC73GCH1H010B | C CAPACITOR | 1pF 50V B     |       |
| C229         | CC73HCH1H050B | C CAPACITOR | 5pF 50V B     |       |
| C230         | CC73HCH1H150G | C CAPACITOR | 15pF 50V G    |       |
| C231         | CC73HCH1H150G | C CAPACITOR | 15pF 50V G    |       |
| C232         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K   |       |
| C233         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K   |       |
| C234         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K   |       |
| C235         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K   |       |
| C236         | C93-0979-05   | C CAPACITOR | 4.7pF 50V     |       |
| C237         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K   |       |
| C239         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K   |       |
| C240         | CC73HCH1H151J | C CAPACITOR | 150pF 50V J   |       |
| C241         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K   |       |
| C243         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K  |       |
| C244         | C93-0941-05   | C CAPACITOR | 18pF 50V      |       |
| C245         | C93-0941-05   | C CAPACITOR | 18pF 50V      |       |
| C246         | CC73GCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C247         | CC73GCH1H070B | C CAPACITOR | 7pF 50V B     |       |
| C248         | CC73GCH1H1R5B | C CAPACITOR | 1.5pF 50V B   |       |
| C249         | CC73GCH1H070B | C CAPACITOR | 7pF 50V B     |       |
| C250         | CC73GCH1H010B | C CAPACITOR | 1pF 50V B     |       |
| C251         | CC73GCH1H040B | C CAPACITOR | 4pF 50V B     |       |
| C252         | CC73HCH1H180G | C CAPACITOR | 18pF 50V G    |       |
| C253         | CC73HCH1H220G | C CAPACITOR | 22pF 50V G    |       |
| C255         | C93-0935-05   | C CAPACITOR | 10pF 50V      |       |
| C257         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K   |       |
| C258         | C93-1967-05   | C CAPACITOR | 470pF 50V     |       |
| C259         | C93-1967-05   | C CAPACITOR | 470pF 50V     |       |
| C261         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K   |       |
| C262         | CK73GB1C563K  | C CAPACITOR | 0.056uF 16V K |       |
| C263         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K   |       |
| C264         | CK73HB1H822K  | C CAPACITOR | 8200pF 50V K  |       |
| C265         | CK73HB1H822K  | C CAPACITOR | 8200pF 50V K  |       |
| C266         | C93-1967-05   | C CAPACITOR | 470pF 50V     |       |
| C267         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K   |       |
| C268         | CC73HCH1H390G | C CAPACITOR | 39pF 50V G    |       |
| C270         | CC73GCH1H030B | C CAPACITOR | 3pF 50V B     |       |
| C301         | CK73HB0J225K  | C CAPACITOR | 2.2uF 6.3V K  |       |
| C302         | CC73HCH1H030B | C CAPACITOR | 3pF 50V B     |       |
| C303         | CK73HB1H103K  | C CAPACITOR | 10000pF 50V K |       |
| C304         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K     |       |

| △ Symbol No. | Part No.      | Part Name   | Description  | Local | △ Symbol No. | Part No.      | Part Name   | Description  | Local |
|--------------|---------------|-------------|--------------|-------|--------------|---------------|-------------|--------------|-------|
| C305         | CC73HCH1H020B | C CAPACITOR | 2pF 50V B    |       | C407         | C93-1953-05   | C CAPACITOR | 0.01uF 25V   |       |
| C306         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K  |       | C408         | CC73HCH1H050B | C CAPACITOR | 5pF 50V B    |       |
| C308         | CC73HCH1H100B | C CAPACITOR | 10pF 50V B   |       | C421         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C309         | CC73HCH1H050B | C CAPACITOR | 5pF 50V B    |       | C422         | CC73HCH1H180G | C CAPACITOR | 18pF 50V G   |       |
| C310         | CC73HCH1H050B | C CAPACITOR | 5pF 50V B    |       | C423         | CC73HCH1H150G | C CAPACITOR | 15pF 50V G   |       |
| C311         | CC73HCH1H040B | C CAPACITOR | 4pF 50V B    |       | C424         | CK73HB1A224K  | C CAPACITOR | 0.22uF 10V K |       |
| C312         | CC73HCH1H040B | C CAPACITOR | 4pF 50V B    |       | C425         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C313         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K |       | C426         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C314         | CK73HB1H103K  | C CAPACITOR | 1000pF 50V K |       | C427         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C315         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K    |       | C428         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C316         | CK730BS0J106M | C CAPACITOR | 10uF 6.3V M  |       | C429         | CK73FB1C106K  | C CAPACITOR | 10uF 16V K   |       |
| C317         | CC73HCH1H1R5B | C CAPACITOR | 1.5pF 50V B  |       | C430         | CK73FB1C106K  | C CAPACITOR | 10uF 16V K   |       |
| C319         | CC73HCH1H060B | C CAPACITOR | 6pF 50V B    |       | C431         | CK73GXR0J475K | C CAPACITOR | 4.7uF 6.3V K |       |
| C320         | CC73HCH1H150G | C CAPACITOR | 15pF 50V G   |       | C432         | CK73FB1C106K  | C CAPACITOR | 10uF 16V K   |       |
| C321         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K |       | C433         | CK73GXR0J475K | C CAPACITOR | 4.7uF 6.3V K |       |
| C322         | CC73HCH1H101J | C CAPACITOR | 100pF 50V J  |       | C434         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C323         | CC73HCH1H101J | C CAPACITOR | 100pF 50V J  |       | C435         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C324         | CK73HB1H103K  | C CAPACITOR | 1000pF 50V K |       | C436         | CK73FB1C106K  | C CAPACITOR | 10uF 16V K   |       |
| C325         | CC73HCH1H101J | C CAPACITOR | 100pF 50V J  |       | C437         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C326         | CK73HB1H103K  | C CAPACITOR | 1000pF 50V K |       | C438         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C327         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K |       | C439         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C328         | CC73HCH1H101J | C CAPACITOR | 100pF 50V J  |       | C440         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C329         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K |       | C441         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C330         | CC73HCH1H101J | C CAPACITOR | 100pF 50V J  |       | C442         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C331         | CC73HCH1H101J | C CAPACITOR | 100pF 50V J  |       | C443         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C332         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K |       | C444         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C333         | CK730BS0J106M | C CAPACITOR | 10uF 6.3V M  |       | C445         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K    |       |
| C334         | CC73HCH1H080B | C CAPACITOR | 8pF 50V B    |       | C446         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C338         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K  |       | C447         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J  |       |
| C341         | CC73HCH1H101J | C CAPACITOR | 100pF 50V J  |       | C448         | CK73HB1H103K  | C CAPACITOR | 1000pF 50V K |       |
| C342         | CK730BS0J106M | C CAPACITOR | 10uF 6.3V M  |       | C449         | C93-1953-05   | C CAPACITOR | 0.01uF 25V   |       |
| C343         | CK73HB1A474K  | C CAPACITOR | 0.47uF 10V K |       | C450         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C344         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K  |       | C451         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C345         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K    |       | C452         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K    |       |
| C346         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K |       | C453         | CK73HB1H103K  | C CAPACITOR | 1000pF 50V K |       |
| C354         | CC73HCH1H040B | C CAPACITOR | 4pF 50V B    |       | C454         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K |       |
| C356         | C93-1953-05   | C CAPACITOR | 0.01uF 25V   |       | C455         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J  |       |
| C357         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K    |       | C456         | C93-1967-05   | C CAPACITOR | 470pF 50V    |       |
| C358         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       | C457         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J  |       |
| C359         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       | C458         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J  |       |
| C360         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       | C459         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J  |       |
| C361         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       | C469         | C93-1967-05   | C CAPACITOR | 470pF 50V    |       |
| C363         | CC73HCH1H180G | C CAPACITOR | 18pF 50V G   |       | C470         | C93-1967-05   | C CAPACITOR | 470pF 50V    |       |
| C364         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K    |       | C471         | C93-1967-05   | C CAPACITOR | 470pF 50V    |       |
| C365         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K    |       | C472         | C93-1967-05   | C CAPACITOR | 470pF 50V    |       |
| C366         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       | C473         | C93-1967-05   | C CAPACITOR | 470pF 50V    |       |
| C367         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       | C474         | C93-1967-05   | C CAPACITOR | 470pF 50V    |       |
| C368         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       | C475         | C93-1967-05   | C CAPACITOR | 470pF 50V    |       |
| C369         | CC73HCH1H220G | C CAPACITOR | 22pF 50V G   |       | C476         | C93-1967-05   | C CAPACITOR | 470pF 50V    |       |
| C370         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K    |       | C477         | C93-1967-05   | C CAPACITOR | 470pF 50V    |       |
| C371         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       | C480         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J  |       |
| C372         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       | C481         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J  |       |
| C373         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       | C482         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J  |       |
| C374         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       | C483         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J  |       |
| C375         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       | C484         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J  |       |
| C376         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K |       | C485         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J  |       |
| C377         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K |       | C486         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J  |       |
| C378         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K |       | C487         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J  |       |
| C379         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K |       | C488         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J  |       |
| C380         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       | C489         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J  |       |
| C381         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       | C496         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K    |       |
| C382         | CC73HCH1H470G | C CAPACITOR | 47pF 50V G   |       | C497         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C383         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       | C498         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C384         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       | C499         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C385         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K |       | C500         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C386         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       | C501         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K    |       |
| C387         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       | C502         | C93-1959-05   | C CAPACITOR | 0.1uF 16V    |       |
| C388         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K    |       | C510         | C93-1967-05   | C CAPACITOR | 470pF 50V    |       |
| C389         | CC73HCH1H100B | C CAPACITOR | 10pF 50V B   |       | C515         | C93-1967-05   | C CAPACITOR | 470pF 50V    |       |
| C391         | CC73HCH1H121J | C CAPACITOR | 120pF 50V J  |       | C516         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K |       |
| C392         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K |       | C517         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K |       |
| C395         | CC73HCH1H2R5B | C CAPACITOR | 2.5pF 50V B  |       | C518         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K |       |
| C401         | CK73HB1H103K  | C CAPACITOR | 1000pF 50V K |       | C601         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K |       |
| C402         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J  |       | C602         | CK73FXR1E475K | C CAPACITOR | 4.7uF 25V K  |       |
| C403         | C93-1953-05   | C CAPACITOR | 0.01uF 25V   |       | C603         | CK73GXR0J475K | C CAPACITOR | 4.7uF 6.3V K |       |
| C404         | CK73HB1H103K  | C CAPACITOR | 1000pF 50V K |       | C604         | CK73FXR1E475K | C CAPACITOR | 4.7uF 25V K  |       |
| C405         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J  |       | C606         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K    |       |
| C406         | CK73HB1H103K  | C CAPACITOR | 1000pF 50V K |       | C607         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K    |       |

| △ Symbol No. | Part No.      | Part Name   | Description   | Local |
|--------------|---------------|-------------|---------------|-------|
| C608         | CK73GXR1C225K | C CAPACITOR | 2.2uF 16V K   |       |
| C609         | CK73GXR0J475K | C CAPACITOR | 4.7uF 6.3V K  |       |
| C610         | CK73GXR1C225K | C CAPACITOR | 2.2uF 16V K   |       |
| C612         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K     |       |
| C614         | CK73HB1A105K  | C CAPACITOR | 1uF 10V K     |       |
| C615         | CK73FXR1E475K | C CAPACITOR | 4.7uF 25V K   |       |
| C617         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C618         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C620         | CK73GXR0J475K | C CAPACITOR | 4.7uF 6.3V K  |       |
| C621         | CK73GXR0J475K | C CAPACITOR | 4.7uF 6.3V K  |       |
| C622         | CK73GXR1C225K | C CAPACITOR | 2.2uF 16V K   |       |
| C625         | CK73HB1A334K  | C CAPACITOR | 0.33uF 10V K  |       |
| C626         | CK73HB1H103K  | C CAPACITOR | 10000pF 50V K |       |
| C627         | CK73HB1A334K  | C CAPACITOR | 0.33uF 10V K  |       |
| C657         | CC73HCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C658         | CC73HCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C659         | CK73GXR0J475K | C CAPACITOR | 4.7uF 6.3V K  |       |
| C660         | CK73GXR0J475K | C CAPACITOR | 4.7uF 6.3V K  |       |
| C663         | CK73GXR0J475K | C CAPACITOR | 4.7uF 6.3V K  |       |
| C666         | CK73HB1A224K  | C CAPACITOR | 0.22uF 10V K  |       |
| C672         | CK73GB1E104K  | C CAPACITOR | 0.1uF 25V K   |       |
| C674         | CK73GB1E105K  | C CAPACITOR | 1uF 25V K     |       |
| C676         | CK73FXR1E475K | C CAPACITOR | 4.7uF 25V K   |       |
| C681         | CK73GB1E474K  | C CAPACITOR | 0.47uF 25V K  |       |
| C682         | C93-1953-05   | C CAPACITOR | 0.01uF 25V    |       |
| C683         | CK73GXR1C225K | C CAPACITOR | 2.2uF 16V K   |       |
| C685         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C686         | CK73HB1A334K  | C CAPACITOR | 0.33uF 10V K  |       |
| C687         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C688         | CK73HB1A334K  | C CAPACITOR | 0.33uF 10V K  |       |
| C689         | C93-1953-05   | C CAPACITOR | 0.01uF 25V    |       |
| C690         | C93-1953-05   | C CAPACITOR | 0.01uF 25V    |       |
| C691         | C93-1953-05   | C CAPACITOR | 0.01uF 25V    |       |
| C692         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C693         | C93-1953-05   | C CAPACITOR | 0.01uF 25V    |       |
| C694         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K  |       |
| C695         | C93-1953-05   | C CAPACITOR | 0.01uF 25V    |       |
| C696         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C697         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C698         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C699         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C700         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C701         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C702         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C703         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C704         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C705         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C706         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C707         | C93-1953-05   | C CAPACITOR | 0.01uF 25V    |       |
| C708         | C93-1967-05   | C CAPACITOR | 470pF 50V     |       |
| C709         | C93-1953-05   | C CAPACITOR | 0.01uF 25V    |       |
| C710         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| C711         | C93-1967-05   | C CAPACITOR | 470pF 50V     |       |
| C712         | CC73JCH1H101J | C CAPACITOR | 100pF 50V J   |       |
| R7           | RK73HB1J000J  | MG RESISTOR | 0Ω 1/16W J    |       |
| R8           | RK73JB1H102J  | MG RESISTOR | 1kΩ 1/20W J   |       |
| R9           | RK73HB1J102J  | MG RESISTOR | 1kΩ 1/16W J   |       |
| R10          | RK73HH1J184D  | MG RESISTOR | 180kΩ 1/16W D |       |
| R11          | RK73HB1J222J  | MG RESISTOR | 2.2kΩ 1/16W J |       |
| R12          | RK73JB1H474J  | MG RESISTOR | 470kΩ 1/20W J |       |
| R13          | RK73JB1H103J  | MG RESISTOR | 10kΩ 1/20W J  |       |
| R14          | RK73JB1H474J  | MG RESISTOR | 470kΩ 1/20W J |       |
| R15          | RK73JB1H103J  | MG RESISTOR | 10kΩ 1/20W J  |       |
| R16          | RK73JB1H474J  | MG RESISTOR | 470kΩ 1/20W J |       |
| R17          | RK73JB1H474J  | MG RESISTOR | 470kΩ 1/20W J |       |
| R18          | RK73JB1H104J  | MG RESISTOR | 100kΩ 1/20W J |       |
| R19          | RK73JB1H104J  | MG RESISTOR | 100kΩ 1/20W J |       |
| R20          | RK73JB1H104J  | MG RESISTOR | 100kΩ 1/20W J |       |
| R21          | RK73JB1H104J  | MG RESISTOR | 100kΩ 1/20W J |       |
| R22          | RK73HH1J183D  | MG RESISTOR | 18kΩ 1/16W D  |       |
| R23          | RK73HH1J683D  | MG RESISTOR | 68kΩ 1/16W D  |       |
| R24          | RK73JB1H102J  | MG RESISTOR | 1kΩ 1/20W J   |       |
| R25          | RK73JB1H104J  | MG RESISTOR | 100kΩ 1/20W J |       |
| R26          | RK73JB1H103J  | MG RESISTOR | 10kΩ 1/20W J  |       |
| R27          | RK73HB1J274J  | MG RESISTOR | 270kΩ 1/16W J |       |
| R28          | RK73HB1J224J  | MG RESISTOR | 220kΩ 1/16W J |       |
| R29          | RK73HB1J474J  | MG RESISTOR | 470kΩ 1/16W J |       |

| △ Symbol No. | Part No.     | Part Name   | Description   | Local |
|--------------|--------------|-------------|---------------|-------|
| R30          | RK73HH1J274D | MG RESISTOR | 270kΩ 1/16W D |       |
| R31          | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       |
| R32          | RK73JB1H102J | MG RESISTOR | 1kΩ 1/20W J   |       |
| R33          | RK73JB1H104J | MG RESISTOR | 100kΩ 1/20W J |       |
| R34          | RK73JB1H473J | MG RESISTOR | 47kΩ 1/20W J  |       |
| R35          | RK73JB1H101J | MG RESISTOR | 100Ω 1/20W J  |       |
| R36          | RK73JB1H104J | MG RESISTOR | 100kΩ 1/20W J |       |
| R37          | RK73JB1H104J | MG RESISTOR | 100kΩ 1/20W J |       |
| R38          | RZ73G0BK2R7J | RESISTOR    | 2.7Ω 0.25W J  |       |
| R39          | RK73JB1H102J | MG RESISTOR | 1kΩ 1/20W J   |       |
| R40          | RK73JB1H102J | MG RESISTOR | 1kΩ 1/20W J   |       |
| R41          | RK73JB1H473J | MG RESISTOR | 47kΩ 1/20W J  |       |
| R42          | R92-3774-05  | MG RESISTOR | 27Ω 0.25W     |       |
| R43          | R92-3774-05  | MG RESISTOR | 27Ω 0.25W     |       |
| R44          | RK73HB1J474J | MG RESISTOR | 470kΩ 1/16W J |       |
| R45          | RK73HB1J333J | MG RESISTOR | 33kΩ 1/16W J  |       |
| R46          | RK73GB2A220J | MG RESISTOR | 22Ω 1/10W J   |       |
| R47          | RK73JB1H104J | MG RESISTOR | 100kΩ 1/20W J |       |
| R48          | RK73JB1H474J | MG RESISTOR | 470kΩ 1/20W J |       |
| R49          | RK73JB1H474J | MG RESISTOR | 470kΩ 1/20W J |       |
| R50          | RK73HH1J473D | MG RESISTOR | 47kΩ 1/16W D  |       |
| R51          | RK73HH1J473D | MG RESISTOR | 47kΩ 1/16W D  |       |
| R52          | RK73FB2B1R0J | MG RESISTOR | 1Ω 1/8W J     |       |
| R56          | RK73HB1J332J | MG RESISTOR | 3.3kΩ 1/16W J |       |
| R57          | RK73HH1J183D | MG RESISTOR | 18kΩ 1/16W D  |       |
| R58          | RK73HH1J223D | MG RESISTOR | 22kΩ 1/16W D  |       |
| R59          | RK73GB2A000J | MG RESISTOR | 0Ω 1/10W J    |       |
| R60          | RK73HB1J471J | MG RESISTOR | 470Ω 1/16W J  |       |
| R65          | RK73HH1J474D | MG RESISTOR | 470kΩ 1/16W D |       |
| R66          | RK73HH1J474D | MG RESISTOR | 470kΩ 1/16W D |       |
| R67          | RK73GB2A2R2J | MG RESISTOR | 2.2Ω 1/10W J  |       |
| R102         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       |
| R103         | RK73HB1J223J | MG RESISTOR | 22kΩ 1/16W J  |       |
| R104         | RK73HB1J102J | MG RESISTOR | 1kΩ 1/16W J   |       |
| R105         | RK73HB1J124J | MG RESISTOR | 120kΩ 1/16W J |       |
| R106         | RK73HB1J100J | MG RESISTOR | 10Ω 1/16W J   |       |
| R107         | RK73HB1J104J | MG RESISTOR | 100kΩ 1/16W J |       |
| R108         | RK73HB1J106J | MG RESISTOR | 10MΩ 1/16W J  |       |
| R109         | RK73HB1J470J | MG RESISTOR | 47Ω 1/16W J   |       |
| R110         | RK73HB1J104J | MG RESISTOR | 100kΩ 1/16W J |       |
| R111         | RK73HB1J472J | MG RESISTOR | 4.7kΩ 1/16W J |       |
| R112         | RK73HB1J102J | MG RESISTOR | 1kΩ 1/16W J   |       |
| R114         | RK73HB1J473J | MG RESISTOR | 47kΩ 1/16W J  |       |
| R115         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       |
| R116         | RK73HB1J220J | MG RESISTOR | 22Ω 1/16W J   |       |
| R117         | RK73HB1J220J | MG RESISTOR | 22Ω 1/16W J   |       |
| R118         | RK73HB1J474J | MG RESISTOR | 470kΩ 1/16W J |       |
| R119         | RK73HB1J474J | MG RESISTOR | 470kΩ 1/16W J |       |
| R120         | RK73HB1J474J | MG RESISTOR | 470kΩ 1/16W J |       |
| R121         | RK73HB1J103J | MG RESISTOR | 10kΩ 1/16W J  |       |
| R122         | RK73HB1J562J | MG RESISTOR | 5.6kΩ 1/16W J |       |
| R123         | RK73HB1J474J | MG RESISTOR | 470kΩ 1/16W J |       |
| R124         | RK73HB1J223J | MG RESISTOR | 22kΩ 1/16W J  |       |
| R125         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       |
| R126         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       |
| R127         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       |
| R128         | RK73HH1J391D | MG RESISTOR | 390Ω 1/16W D  |       |
| R129         | RK73HB1J103J | MG RESISTOR | 10kΩ 1/16W J  |       |
| R130         | RK73HB1J151J | MG RESISTOR | 150Ω 1/16W J  |       |
| R131         | RK73HB1J104J | MG RESISTOR | 100kΩ 1/16W J |       |
| R132         | RN73HH1J103D | MF RESISTOR | 10kΩ 0.063W D |       |
| R133         | RN73H0AJ562D | MF RESISTOR | 5.6kΩ D       |       |
| R134         | RN73H0AJ121D | MF RESISTOR | 120Ω D        |       |
| R135         | RK73HB1J8R2J | MG RESISTOR | 8.2Ω 1/16W J  |       |
| R136         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       |
| R137         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       |
| R139         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       |
| R140         | RK73HB1J474J | MG RESISTOR | 470kΩ 1/16W J |       |
| R141         | RK73HB1J474J | MG RESISTOR | 470kΩ 1/16W J |       |
| R142         | RK73HB1J223J | MG RESISTOR | 22kΩ 1/16W J  |       |
| R143         | RK73HB1J273J | MG RESISTOR | 27kΩ 1/16W J  |       |
| R151         | RK73HB1J104J | MG RESISTOR | 100kΩ 1/16W J |       |
| R152         | RN73H0AJ562D | MF RESISTOR | 5.6kΩ D       |       |
| R153         | RN73HH1J103D | MF RESISTOR | 10kΩ 0.063W D |       |
| R154         | RN73HH1J151D | MG RESISTOR | 150Ω 0.063W D |       |
| R155         | RK73HB1J4R7J | MG RESISTOR | 4.7Ω 1/16W J  |       |
| R156         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       |
| R181         | RK73HB1J101J | MG RESISTOR | 100Ω 1/16W J  |       |

| △ Symbol No. | Part No.     | Part Name   | Description   | Local | △ Symbol No. | Part No.      | Part Name   | Description   | Local |
|--------------|--------------|-------------|---------------|-------|--------------|---------------|-------------|---------------|-------|
| R182         | RK73HB1J103J | MG RESISTOR | 10kΩ 1/16W J  |       | R358         | RK73JB1H103J  | MG RESISTOR | 10kΩ 1/20W J  |       |
| R183         | RK73HB1J682J | MG RESISTOR | 6.8kΩ 1/16W J |       | R359         | RK73HB1J000J  | MG RESISTOR | 0Ω 1/16W J    |       |
| R184         | RK73HB1J221J | MG RESISTOR | 220Ω 1/16W J  |       | R360         | RK73JB1H103J  | MG RESISTOR | 10kΩ 1/20W J  |       |
| R194         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       | R361         | RK73JB1H473J  | MG RESISTOR | 47kΩ 1/20W J  |       |
| R195         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       | R362         | RK73HB1J221J  | MG RESISTOR | 220Ω 1/16W J  |       |
| R204         | R92-3785-05  | MG RESISTOR | 120Ω 0.25W    |       | R363         | RK73HB1J221J  | MG RESISTOR | 220Ω 1/16W J  |       |
| R205         | RK73HB1J102J | MG RESISTOR | 1kΩ 1/16W J   |       | R364         | RK73HB1J102J  | MG RESISTOR | 1kΩ 1/16W J   |       |
| R206         | RK73HB1J181J | MG RESISTOR | 180Ω 1/16W J  |       | R365         | RK73HB1J102J  | MG RESISTOR | 1kΩ 1/16W J   |       |
| R207         | RK73HB1J330J | MG RESISTOR | 33Ω 1/16W J   |       | R366         | RK73HB1J102J  | MG RESISTOR | 1kΩ 1/16W J   |       |
| R208         | RK73HB1J181J | MG RESISTOR | 180Ω 1/16W J  |       | R367         | RK73HB1J473J  | MG RESISTOR | 47kΩ 1/16W J  |       |
| R209         | RK73HB1J272J | MG RESISTOR | 2.7kΩ 1/16W J |       | R369         | RK73HB1J000J  | MG RESISTOR | 0Ω 1/16W J    |       |
| R210         | RK73HB1J392J | MG RESISTOR | 3.9kΩ 1/16W J |       | R401         | RK73HB1J102J  | MG RESISTOR | 1kΩ 1/16W J   |       |
| R211         | RK73HB1J220J | MG RESISTOR | 22Ω 1/16W J   |       | R402         | RK73HB1J000J  | MG RESISTOR | 0Ω 1/16W J    |       |
| R212         | RK73HB1J102J | MG RESISTOR | 1kΩ 1/16W J   |       | R403         | RK73HB1J100J  | MG RESISTOR | 10Ω 1/16W J   |       |
| R213         | RK73HB1J121J | MG RESISTOR | 120Ω 1/16W J  |       | R404         | RK73HB1J220J  | MG RESISTOR | 22Ω 1/16W J   |       |
| R214         | RK73HB1J822J | MG RESISTOR | 8.2kΩ 1/16W J |       | R405         | RK73HB1J153J  | MG RESISTOR | 15kΩ 1/16W J  |       |
| R215         | RK73HB1J332J | MG RESISTOR | 3.3kΩ 1/16W J |       | R406         | RK73HB1J333J  | MG RESISTOR | 33kΩ 1/16W J  |       |
| R216         | RK73HB1J470J | MG RESISTOR | 47Ω 1/16W J   |       | R407         | RK73HB1J100J  | MG RESISTOR | 10Ω 1/16W J   |       |
| R218         | RK73HB1J331J | MG RESISTOR | 330Ω 1/16W J  |       | R408         | RK73HB1J681J  | MG RESISTOR | 680Ω 1/16W J  |       |
| R219         | RK73HB1J100J | MG RESISTOR | 10Ω 1/16W J   |       | R410         | RK73HB1J220J  | MG RESISTOR | 22Ω 1/16W J   |       |
| R221         | RK73GB2A000J | MG RESISTOR | 0Ω 1/10W J    |       | R411         | RK73JB1H103J  | MG RESISTOR | 10kΩ 1/20W J  |       |
| R222         | RK73HB1J332J | MG RESISTOR | 3.3kΩ 1/16W J |       | R412         | RK73HB1J000J  | MG RESISTOR | 0Ω 1/16W J    |       |
| R223         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       | R413         | RK73HB1J220J  | MG RESISTOR | 22Ω 1/16W J   |       |
| R224         | RK73HB1J101J | MG RESISTOR | 100Ω 1/16W J  |       | R414         | RK73HB1J220J  | MG RESISTOR | 22Ω 1/16W J   |       |
| R225         | RK73GB2A000J | MG RESISTOR | 0Ω 1/10W J    |       | R415         | RK73JB1H104J  | MG RESISTOR | 100kΩ 1/20W J |       |
| R227         | RK73GB2A823J | MG RESISTOR | 82kΩ 1/10W J  |       | R419         | RK73JB1H222J  | MG RESISTOR | 2.2kΩ 1/20W J |       |
| R228         | RK73GB2A000J | MG RESISTOR | 0Ω 1/10W J    |       | R420         | RK73JB1H222J  | MG RESISTOR | 2.2kΩ 1/20W J |       |
| R230         | RK73HB1J221J | MG RESISTOR | 220Ω 1/16W J  |       | R421         | RK73JB1H222J  | MG RESISTOR | 2.2kΩ 1/20W J |       |
| R233         | RK73HB1J392J | MG RESISTOR | 3.9kΩ 1/16W J |       | R422         | RK73JB1H222J  | MG RESISTOR | 2.2kΩ 1/20W J |       |
| R234         | RK73HB1J104J | MG RESISTOR | 100kΩ 1/16W J |       | R423         | RK73JB1H222J  | MG RESISTOR | 2.2kΩ 1/20W J |       |
| R237         | RK73JB1H102J | MG RESISTOR | 1kΩ 1/20W J   |       | R424         | RK73JB1H222J  | MG RESISTOR | 2.2kΩ 1/20W J |       |
| R244         | RK73HB1J273J | MG RESISTOR | 27kΩ 1/16W J  |       | R425         | RK73JB1H222J  | MG RESISTOR | 2.2kΩ 1/20W J |       |
| R245         | RK73HB1J473J | MG RESISTOR | 47kΩ 1/16W J  |       | R426         | RK73JB1H102J  | MG RESISTOR | 1kΩ 1/20W J   |       |
| R246         | RK73HB1J473J | MG RESISTOR | 47kΩ 1/16W J  |       | R427         | RK73JB1H222J  | MG RESISTOR | 2.2kΩ 1/20W J |       |
| R247         | RK73HB1J470J | MG RESISTOR | 47Ω 1/16W J   |       | R428         | RK73JB1H220J  | MG RESISTOR | 22Ω 1/20W J   |       |
| R248         | R92-3756-05  | MG RESISTOR | 0.22Ω 1/3W    |       | R429         | RK73JB1H102J  | MG RESISTOR | 1kΩ 1/20W J   |       |
| R249         | RK73JB1H103J | MG RESISTOR | 10kΩ 1/20W J  |       | R430         | RK73HB1J000J  | MG RESISTOR | 0Ω 1/16W J    |       |
| R250         | R92-3756-05  | MG RESISTOR | 0.22Ω 1/3W    |       | R431         | RK73HB1J223J  | MG RESISTOR | 22kΩ 1/16W J  |       |
| R251         | RK73HB1J270J | MG RESISTOR | 27Ω 1/16W J   |       | R432         | RK73JB1H103J  | MG RESISTOR | 10kΩ 1/20W J  |       |
| R252         | RK73HH1J472D | MG RESISTOR | 4.7kΩ 1/16W D |       | R433         | RK73JB1H103J  | MG RESISTOR | 10kΩ 1/20W J  |       |
| R253         | RK73HH1J472D | MG RESISTOR | 4.7kΩ 1/16W D |       | R434         | RK73JB1H103J  | MG RESISTOR | 10kΩ 1/20W J  |       |
| R255         | RK73HH1J393D | MG RESISTOR | 39kΩ 1/16W D  |       | R435         | RK73JB1H105J  | MG RESISTOR | 1mΩ 1/20W J   |       |
| R256         | RK73HH1J682D | MG RESISTOR | 6.8kΩ 1/16W D |       | R436         | RK73HB1J000J  | MG RESISTOR | 0Ω 1/16W J    |       |
| R257         | RK73HB1J221J | MG RESISTOR | 220Ω 1/16W J  |       | R437         | RK73HB1J000J  | MG RESISTOR | 0Ω 1/16W J    |       |
| R258         | RK73HB1J332J | MG RESISTOR | 3.3kΩ 1/16W J |       | R438         | RK73GH2A49R9D | MG RESISTOR | 49.9Ω 1/10W D |       |
| R259         | RK73HB1J822J | MG RESISTOR | 8.2kΩ 1/16W J |       | R439         | RK73HH1J102D  | MG RESISTOR | 1kΩ 1/16W D   |       |
| R260         | RK73HB1J392J | MG RESISTOR | 3.9kΩ 1/16W J |       | R440         | RK73HH1J102D  | MG RESISTOR | 1kΩ 1/16W D   |       |
| R264         | RK73HH1J682D | MG RESISTOR | 6.8kΩ 1/16W D |       | R442         | RK73JB1H472J  | MG RESISTOR | 4.7kΩ 1/20W J |       |
| R265         | RK73HH1J393D | MG RESISTOR | 39kΩ 1/16W D  |       | R443         | RK73JB1H104J  | MG RESISTOR | 100kΩ 1/20W J |       |
| R266         | RK73GB2A000J | MG RESISTOR | 0Ω 1/10W J    |       | R444         | RK73JB1H104J  | MG RESISTOR | 100kΩ 1/20W J |       |
| R267         | RK73GB2A000J | MG RESISTOR | 0Ω 1/10W J    |       | R445         | RK73JB1H472J  | MG RESISTOR | 4.7kΩ 1/20W J |       |
| R268         | RK73HB1J104J | MG RESISTOR | 100kΩ 1/16W J |       | R446         | RK73HB1J100J  | MG RESISTOR | 10Ω 1/16W J   |       |
| R269         | RK73HB1J102J | MG RESISTOR | 1kΩ 1/16W J   |       | R447         | RK73JB1H222J  | MG RESISTOR | 2.2kΩ 1/20W J |       |
| R270         | RK73GB2A000J | MG RESISTOR | 0Ω 1/10W J    |       | R448         | RK73JB1H222J  | MG RESISTOR | 2.2kΩ 1/20W J |       |
| R301         | RK73HB1J101J | MG RESISTOR | 100Ω 1/16W J  |       | R449         | RK73JB1H472J  | MG RESISTOR | 4.7kΩ 1/20W J |       |
| R302         | RK73HB1J101J | MG RESISTOR | 100Ω 1/16W J  |       | R450         | RK73HB1J331J  | MG RESISTOR | 330Ω 1/16W J  |       |
| R303         | RK73HB1J821J | MG RESISTOR | 820Ω 1/16W J  |       | R451         | RK73GB2A000J  | MG RESISTOR | 0Ω 1/10W J    |       |
| R304         | RK73HB1J821J | MG RESISTOR | 820Ω 1/16W J  |       | R452         | RK73GB2A000J  | MG RESISTOR | 0Ω 1/10W J    |       |
| R310         | RK73HB1J391J | MG RESISTOR | 390Ω 1/16W J  |       | R453         | RK73JB1H101J  | MG RESISTOR | 100Ω 1/20W J  |       |
| R312         | RK73HB1J5R6J | MG RESISTOR | 5.6Ω 1/16W J  |       | R461         | RK73HB1J000J  | MG RESISTOR | 0Ω 1/16W J    |       |
| R313         | RK73HB1J101J | MG RESISTOR | 100Ω 1/16W J  |       | R462         | RK73HB1J000J  | MG RESISTOR | 0Ω 1/16W J    |       |
| R314         | RK73HB1J471J | MG RESISTOR | 470Ω 1/16W J  |       | R463         | RK73HH1J104D  | MG RESISTOR | 100kΩ 1/16W D |       |
| R315         | RK73HB1J120J | MG RESISTOR | 12Ω 1/16W J   |       | R464         | RK73HH1J103D  | MG RESISTOR | 10kΩ 1/16W D  |       |
| R316         | RK73HB1J471J | MG RESISTOR | 470Ω 1/16W J  |       | R466         | RK73HB1J000J  | MG RESISTOR | 0Ω 1/16W J    |       |
| R325         | RK73HH1J473D | MG RESISTOR | 47kΩ 1/16W D  |       | R467         | RK73HB1J101J  | MG RESISTOR | 100Ω 1/16W J  |       |
| R330         | RK73HH1J273D | MG RESISTOR | 27kΩ 1/16W D  |       | R468         | RK73HB1J101J  | MG RESISTOR | 100Ω 1/16W J  |       |
| R331         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       | R469         | RK73JB1H101J  | MG RESISTOR | 100Ω 1/20W J  |       |
| R332         | RK73HB1J102J | MG RESISTOR | 1kΩ 1/16W J   |       | R470         | RK73JB1H101J  | MG RESISTOR | 100Ω 1/20W J  |       |
| R333         | RK73HB1J000J | MG RESISTOR | 0Ω 1/16W J    |       | R479         | RK73HB1J101J  | MG RESISTOR | 100Ω 1/16W J  |       |
| R335         | RK73HB1J681J | MG RESISTOR | 680Ω 1/16W J  |       | R480         | RK73HB1J101J  | MG RESISTOR | 100Ω 1/16W J  |       |
| R336         | RK73HB1J681J | MG RESISTOR | 680Ω 1/16W J  |       | R601         | RK73HB1J101J  | MG RESISTOR | 100Ω 1/16W J  |       |
| R351         | RK73JB1H101J | MG RESISTOR | 100Ω 1/20W J  |       | R602         | RK73HB1J101J  | MG RESISTOR | 100Ω 1/16W J  |       |
| R352         | RK73JB1H101J | MG RESISTOR | 100Ω 1/20W J  |       | R603         | RK73HB1J000J  | MG RESISTOR | 0Ω 1/16W J    |       |
| R353         | RK73JB1H101J | MG RESISTOR | 100Ω 1/20W J  |       | R604         | RK73HB1J000J  | MG RESISTOR | 0Ω 1/16W J    |       |
| R354         | RK73HB1J151J | MG RESISTOR | 150Ω 1/16W J  |       | R605         | RK73HB1J471J  | MG RESISTOR | 470Ω 1/16W J  |       |
| R355         | RK73HB1J390J | MG RESISTOR | 39Ω 1/16W J   |       | R606         | RK73HB1J471J  | MG RESISTOR | 470Ω 1/16W J  |       |
| R356         | RK73HB1J151J | MG RESISTOR | 150Ω 1/16W J  |       | R607         | RK73HB1J102J  | MG RESISTOR | 1kΩ 1/16W J   |       |
| R357         | RK73JB1H103J | MG RESISTOR | 10kΩ 1/20W J  |       | R608         | RK73HB1J102J  | MG RESISTOR | 1kΩ 1/16W J   |       |

| △ Symbol No. | Part No.      | Part Name       | Description   | Local |
|--------------|---------------|-----------------|---------------|-------|
| R609         | RK73HB1J222J  | MG RESISTOR     | 2.2kΩ 1/16W J |       |
| R610         | RK73HB1J222J  | MG RESISTOR     | 2.2kΩ 1/16W J |       |
| R611         | RK73HB1J222J  | MG RESISTOR     | 2.2kΩ 1/16W J |       |
| R612         | RK73HB1J822J  | MG RESISTOR     | 8.2kΩ 1/16W J |       |
| R635         | RK73HB1J102J  | MG RESISTOR     | 1kΩ 1/16W J   |       |
| R636         | RK73HB1J000J  | MG RESISTOR     | 0Ω 1/16W J    |       |
| R637         | RK73JB1H103J  | MG RESISTOR     | 10kΩ 1/20W J  |       |
| R638         | RK73HB1J000J  | MG RESISTOR     | 0Ω 1/16W J    |       |
| R639         | RK73HB1J000J  | MG RESISTOR     | 0Ω 1/16W J    |       |
| R650         | RK73HB1J683J  | MG RESISTOR     | 68kΩ 1/16W J  |       |
| R652         | RK73HB1J103J  | MG RESISTOR     | 10kΩ 1/16W J  |       |
| R654         | RK73GB2A471J  | MG RESISTOR     | 470Ω 1/10W J  |       |
| R656         | RK73PB2H1R2J  | MG RESISTOR     | 1.2Ω 1/2W J   |       |
| R659         | RK73JB1H104J  | MG RESISTOR     | 100kΩ 1/20W J |       |
| R660         | RK73JB1H102J  | MG RESISTOR     | 1kΩ 1/20W J   |       |
| R661         | RK73JB1H104J  | MG RESISTOR     | 100kΩ 1/20W J |       |
| R662         | RK73HB1J222J  | MG RESISTOR     | 2.2kΩ 1/16W J |       |
| R663         | RK73HB1J471J  | MG RESISTOR     | 470Ω 1/16W J  |       |
| R664         | RK73HB1J222J  | MG RESISTOR     | 2.2kΩ 1/16W J |       |
| R665         | RK73JB1H102J  | MG RESISTOR     | 1kΩ 1/20W J   |       |
| R666         | RK73HB1J101J  | MG RESISTOR     | 100Ω 1/16W J  |       |
| R667         | RK73HB1J101J  | MG RESISTOR     | 100Ω 1/16W J  |       |
| R668         | RK73HB1J101J  | MG RESISTOR     | 100Ω 1/16W J  |       |
| R669         | RK73HB1J102J  | MG RESISTOR     | 1kΩ 1/16W J   |       |
| R670         | RK73HB1J331J  | MG RESISTOR     | 330Ω 1/16W J  |       |
| R671         | RK73HB1J101J  | MG RESISTOR     | 100Ω 1/16W J  |       |
| R672         | RK73JB1H472J  | MG RESISTOR     | 4.7kΩ 1/20W J |       |
| R673         | RK73HB1J000J  | MG RESISTOR     | 0Ω 1/16W J    |       |
| R674         | RK73HB1J000J  | MG RESISTOR     | 0Ω 1/16W J    |       |
| R675         | RK73JB1H473J  | MG RESISTOR     | 47kΩ 1/20W J  |       |
| R676         | RK73HB1J222J  | MG RESISTOR     | 2.2kΩ 1/16W J |       |
| R677         | RK73JB1H222J  | MG RESISTOR     | 2.2kΩ 1/20W J |       |
| L1           | LB73F0AW-002  | CHIP FERRITE    |               |       |
| L3           | LB73G0AM-004  | CHIP FERRITE    |               |       |
| L4           | LR73Z0AY2R2M  | CHIP INDUCTOR   |               |       |
| L5           | LB73G0AM-004  | CHIP FERRITE    |               |       |
| L7           | LB73G0AM-004  | CHIP FERRITE    |               |       |
| L8           | LB73G0AM-004  | CHIP FERRITE    |               |       |
| L9           | LB73H0AV-002  | CHIP FERRITE    |               |       |
| L10          | LB73H0AV-002  | CHIP FERRITE    |               |       |
| L11          | LB73H0AV-002  | CHIP FERRITE    |               |       |
| L12          | L41-1502-70   | CHIP INDUCTOR   |               |       |
| L13          | LB73H0AV-002  | CHIP FERRITE    |               |       |
| L111         | LB73H0AY-004  | CHIP FERRITE    |               |       |
| L112         | LB73H0AY-004  | CHIP FERRITE    |               |       |
| L121         | LB73H0AY-004  | CHIP FERRITE    |               |       |
| L131         | LK73H0AMR10J  | M.CHIP INDUCTOR | 0.1uH         |       |
| L132         | LK73H0AMR10J  | M.CHIP INDUCTOR | 0.1uH         |       |
| L133         | LR79Z0GJ4N7G  | CHIP INDUCTOR   |               |       |
| L134         | L3C-0002-00   | OSC-COIL        |               |       |
| L135         | LK73H0AMR10J  | M.CHIP INDUCTOR | 0.1uH         |       |
| L136         | L41-1085-53   | CHIP INDUCTOR   |               |       |
| L137         | L41-1085-53   | CHIP INDUCTOR   |               |       |
| L138         | L41-1085-53   | CHIP INDUCTOR   |               |       |
| L151         | LK73H0AMR10J  | M.CHIP INDUCTOR | 0.1uH         |       |
| L152         | LK73H0AMR10J  | M.CHIP INDUCTOR | 0.1uH         |       |
| L153         | LK73H0AMR10J  | M.CHIP INDUCTOR | 0.1uH         |       |
| L154         | LR79Z0GJ5N1G  | CHIP INDUCTOR   |               |       |
| L155         | L3C-0001-00   | OSC-COIL        |               |       |
| L156         | L41-1585-53   | CHIP INDUCTOR   |               |       |
| L157         | L41-1585-53   | CHIP INDUCTOR   |               |       |
| L158         | L41-1585-53   | CHIP INDUCTOR   |               |       |
| L181         | LK73H0AM10NJ  | M.CHIP INDUCTOR | 10nH          |       |
| L191         | LK73H0AM5N6S  | M.CHIP INDUCTOR | 5.6nH         |       |
| L192         | LK73H0AM4N7S  | M.CHIP INDUCTOR | 4.7nH         |       |
| L201         | LR79Z0DD21N9J | CHIP INDUCTOR   | 21.9nH        |       |
| L202         | LR79G0CQ3N9C  | CHIP INDUCTOR   |               |       |
| L203         | LR79Z0CAR22J  | CHIP INDUCTOR   | 0.22uH        |       |
| L204         | LR79G0GKR12G  | CHIP INDUCTOR   |               |       |
| L205         | LK73H0AM12NJ  | M.CHIP INDUCTOR | 12nH          |       |
| L206         | LK73H0AMR12J  | M.CHIP INDUCTOR | 0.12uH        |       |
| L207         | LK73H0AM15NJ  | M.CHIP INDUCTOR | 15nH          |       |
| L208         | LK73H0AM15NJ  | M.CHIP INDUCTOR | 15nH          |       |
| L209         | LK73H0AM10NJ  | M.CHIP INDUCTOR | 10nH          |       |
| L210         | LR79G0GK9N1C  | CHIP INDUCTOR   |               |       |
| L211         | LB73G0AM-004  | CHIP FERRITE    |               |       |
| L212         | LK73H0AM10NJ  | M.CHIP INDUCTOR | 10nH          |       |

| △ Symbol No. | Part No.      | Part Name       | Description | Local |
|--------------|---------------|-----------------|-------------|-------|
| L213         | LR79Z0DC45N5J | CHIP INDUCTOR   | 45.5nH      |       |
| L214         | LB73F0AW-002  | CHIP FERRITE    |             |       |
| L215         | LR79Z0DD16N9J | CHIP INDUCTOR   | 16.9nH      |       |
| L216         | LR79Z0DD16N9J | CHIP INDUCTOR   | 16.9nH      |       |
| L217         | LR79Z0DD16N9J | CHIP INDUCTOR   | 16.9nH      |       |
| L218         | LR79Z0CA39NG  | CHIP INDUCTOR   | 39nH        |       |
| L301         | LK73H0AM33NJ  | M.CHIP INDUCTOR | 33nH        |       |
| L302         | LR79G0CQ10NG  | CHIP INDUCTOR   |             |       |
| L303         | LK73H0AMR27J  | M.CHIP INDUCTOR |             |       |
| L304         | LK73H0AM33NJ  | M.CHIP INDUCTOR | 33nH        |       |
| L307         | LR79G0CQ12NG  | CHIP INDUCTOR   |             |       |
| L308         | LR79G0CQ7N5C  | CHIP INDUCTOR   |             |       |
| L309         | LR79G0CQ22NG  | CHIP INDUCTOR   | 22nH        |       |
| L310         | LR79G0CQ3N9C  | CHIP INDUCTOR   |             |       |
| L311         | LR79G0CQ39NG  | CHIP INDUCTOR   |             |       |
| L312         | LR79G0CQ39NG  | CHIP INDUCTOR   |             |       |
| L313         | LR79G0CQ39NG  | CHIP INDUCTOR   |             |       |
| L314         | LR79G0CQ22NG  | CHIP INDUCTOR   | 22nH        |       |
| L315         | LR79G0CQR22G  | CHIP INDUCTOR   |             |       |
| L351         | L92-0487-05   | CHIP FERRITE    |             |       |
| L352         | L92-0487-05   | CHIP FERRITE    |             |       |
| L353         | LK73H0AM10NJ  | M.CHIP INDUCTOR | 10nH        |       |
| L354         | LK73H0AM27NJ  | M.CHIP INDUCTOR | 27nH        |       |
| L358         | L92-0487-05   | CHIP FERRITE    |             |       |
| L359         | L7K-0059-00   | FILTER          |             |       |
| L361         | L79-1987-05   | FILTER          |             |       |
| L365         | L92-0487-05   | CHIP FERRITE    |             |       |
| L366         | L92-0487-05   | CHIP FERRITE    |             |       |
| L401         | LB73H0AV-002  | CHIP FERRITE    |             |       |
| L402         | LK73G0AQ4R7K  | M.CHIP INDUCTOR | 4.7uH       |       |
| L404         | LB73G0AM-004  | CHIP FERRITE    |             |       |
| L405         | L92-1101-05   | CHIP FERRITE    |             |       |
| L406         | L92-1101-05   | CHIP FERRITE    |             |       |
| L407         | LB73G0AM-004  | CHIP FERRITE    |             |       |
| L408         | LB73G0AM-004  | CHIP FERRITE    |             |       |
| L409         | LB73G0AM-004  | CHIP FERRITE    |             |       |
| L410         | LB73G0AM-004  | CHIP FERRITE    |             |       |
| L411         | L79-1946-05   | FILTER          |             |       |
| L412         | L79-1946-05   | FILTER          |             |       |
| L413         | L79-1946-05   | FILTER          |             |       |
| L414         | L79-1946-05   | FILTER          |             |       |
| L415         | L79-1946-05   | FILTER          |             |       |
| L416         | L79-1946-05   | FILTER          |             |       |
| L417         | LB73H0AV-002  | CHIP FERRITE    |             |       |
| L427         | LB73H0AV-002  | CHIP FERRITE    |             |       |
| L428         | LB73H0AV-002  | CHIP FERRITE    |             |       |
| L429         | LB73H0AV-002  | CHIP FERRITE    |             |       |
| L430         | LB73H0AV-002  | CHIP FERRITE    |             |       |
| L431         | LB73H0AV-002  | CHIP FERRITE    |             |       |
| L601         | LB73G0AM-004  | CHIP FERRITE    |             |       |
| L604         | LB73G0AM-004  | CHIP FERRITE    |             |       |
| L605         | LB73G0AM-004  | CHIP FERRITE    |             |       |
| L608         | LR73Z0AY100M  | CHIP INDUCTOR   |             |       |
| L609         | LR73Z0AY100M  | CHIP INDUCTOR   |             |       |
| L610         | LB73G0AM-004  | CHIP FERRITE    |             |       |
| L612         | LB73G0AM-004  | CHIP FERRITE    |             |       |
| L613         | LB73G0AM-004  | CHIP FERRITE    |             |       |
| L622         | LB73G0AM-004  | CHIP FERRITE    |             |       |
| L623         | LB73G0AM-004  | CHIP FERRITE    |             |       |
| L624         | LB73G0AM-004  | CHIP FERRITE    |             |       |
| L625         | LB73G0AM-004  | CHIP FERRITE    |             |       |
| L626         | LR73Z0AY100M  | CHIP INDUCTOR   |             |       |
| L627         | LR73Z0AY100M  | CHIP INDUCTOR   |             |       |
| L628         | LB73G0AM-004  | CHIP FERRITE    |             |       |
| L629         | LB73G0AM-004  | CHIP FERRITE    |             |       |
| L630         | LB73H0AV-002  | CHIP FERRITE    |             |       |
| L631         | LB73H0AV-002  | CHIP FERRITE    |             |       |
| L632         | LB73G0AM-004  | CHIP FERRITE    |             |       |
| L633         | LB73H0AV-002  | CHIP FERRITE    |             |       |
| L634         | LB73G0AM-004  | CHIP FERRITE    |             |       |
| CN1          | EC720CQ-0313A | FFC FPC CONNE   |             |       |
| CN2          | J19-5386-05   | HOLDER          |             |       |
| CN7          | E40-6883-05   | F.C.CONNECTOR   |             |       |
| CN8          | -----         | TERMINAL        | *Note       |       |
| CN10         | -----         | TERMINAL        | *Note       |       |
| CN201        | E2D-0058-00   | TERMINAL        |             |       |
| CN202        | E2D-0058-00   | TERMINAL        |             |       |

| △ Symbol No. | Part No.      | Part Name      | Description  | Local |
|--------------|---------------|----------------|--------------|-------|
| CN353        | G0B-0005-00   | EARTH SPRING   |              |       |
| CN354        | G0B-0005-00   | EARTH SPRING   |              |       |
| CN356        | G0B-0005-00   | EARTH SPRING   |              |       |
| CN357        | G0B-0005-00   | EARTH SPRING   |              |       |
| CN402        | EC720BP-0341A | FFC FPC CONNE  |              |       |
| CN602        | E41-1476-05   | PIN ASSY       |              |       |
| CN625        | E41-3167-05   | F.C.CONNECTOR  |              |       |
| CP1          | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| CP2          | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| CP301        | RK74HB1J100J  | NET RESISTOR   | 10Ω 1/16W J  |       |
| CP302        | RK74HB1J100J  | NET RESISTOR   | 10Ω 1/16W J  |       |
| CP303        | RK74HB1J100J  | NET RESISTOR   | 10Ω 1/16W J  |       |
| CP351        | RK74HB1J100J  | NET RESISTOR   | 10Ω 1/16W J  |       |
| CP352        | RK74HB1J100J  | NET RESISTOR   | 10Ω 1/16W J  |       |
| CP401        | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| CP402        | RK74HB1J100J  | NET RESISTOR   | 10Ω 1/16W J  |       |
| CP403        | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| CP404        | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| CP405        | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| CP406        | RK74HB1J100J  | NET RESISTOR   | 10Ω 1/16W J  |       |
| CP408        | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| CP409        | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| CP410        | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| CP411        | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| CP412        | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| CP413        | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| CP414        | RK74HB1J101J  | NET RESISTOR   | 100Ω 1/16W J |       |
| CP601        | RK74HB1J100J  | NET RESISTOR   | 10Ω 1/16W J  |       |
| E101         | -----         | SHIELDING CASE | *Note        |       |
| E301         | -----         | SHIELDING CASE | *Note        |       |
| E351         | F10-3228-15   | SHIELDING CASE |              |       |
| E401         | -----         | SHIELDING CASE | *Note        |       |
| E601         | -----         | SHIELDING CASE | *Note        |       |
| F1           | FZA10BQ-3R15  | FUSE (CC)      |              |       |
| F2           | FZA10BH-R50   | FUSE (CC)      | 0.5A         |       |
| TH201        | NCU15WF104F6S | N THERMISTOR   |              |       |
| TH401        | NCU15WF104F6S | N THERMISTOR   |              |       |
| X351         | L77-3121-05   | QUARTZ CRYSTAL |              |       |
| X401         | L7H-0076-00   | TCXO           |              |       |
| X402         | L77-1802-05   | QUARTZ CRYSTAL |              |       |

## DISPLAY UNIT

**XC1-209K-00 (NX-3200K,NX-3200E3,  
NX-3300K,NX-3300E3)**

**XC1-209K-01 (NX-3200K2,NX-3200E2,  
NX-3300K2,NX-3300E2)**

**XC1-209K-02 (NX-3200K3,NX-3200E,  
NX-3300K3,NX-3300E)**

**\*Note : This part cannot be replaced.Therefore,  
this part is not supplied as a service part.**

Block No. [0][3]

| △ Symbol No. | Part No.     | Part Name       | Description | Local                                                     |
|--------------|--------------|-----------------|-------------|-----------------------------------------------------------|
| IC201        | TC7SZ08FE    | IC              |             | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| Q141         | EMD9         | TRANSISTOR      |             | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| Q201         | EMD9         | TRANSISTOR      |             | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| Q221         | LTC014EEBFS8 | DIGI TRANSISTOR |             |                                                           |
| Q222         | LTC014EEBFS8 | DIGI TRANSISTOR |             |                                                           |
| Q223         | LTC014EEBFS8 | DIGI TRANSISTOR |             |                                                           |
| Q227         | LTC014EEBFS8 | DIGI TRANSISTOR |             |                                                           |
| Q228         | LTC014EEBFS8 | DIGI TRANSISTOR |             |                                                           |
| Q229         | LTC014EEBFS8 | DIGI TRANSISTOR |             |                                                           |

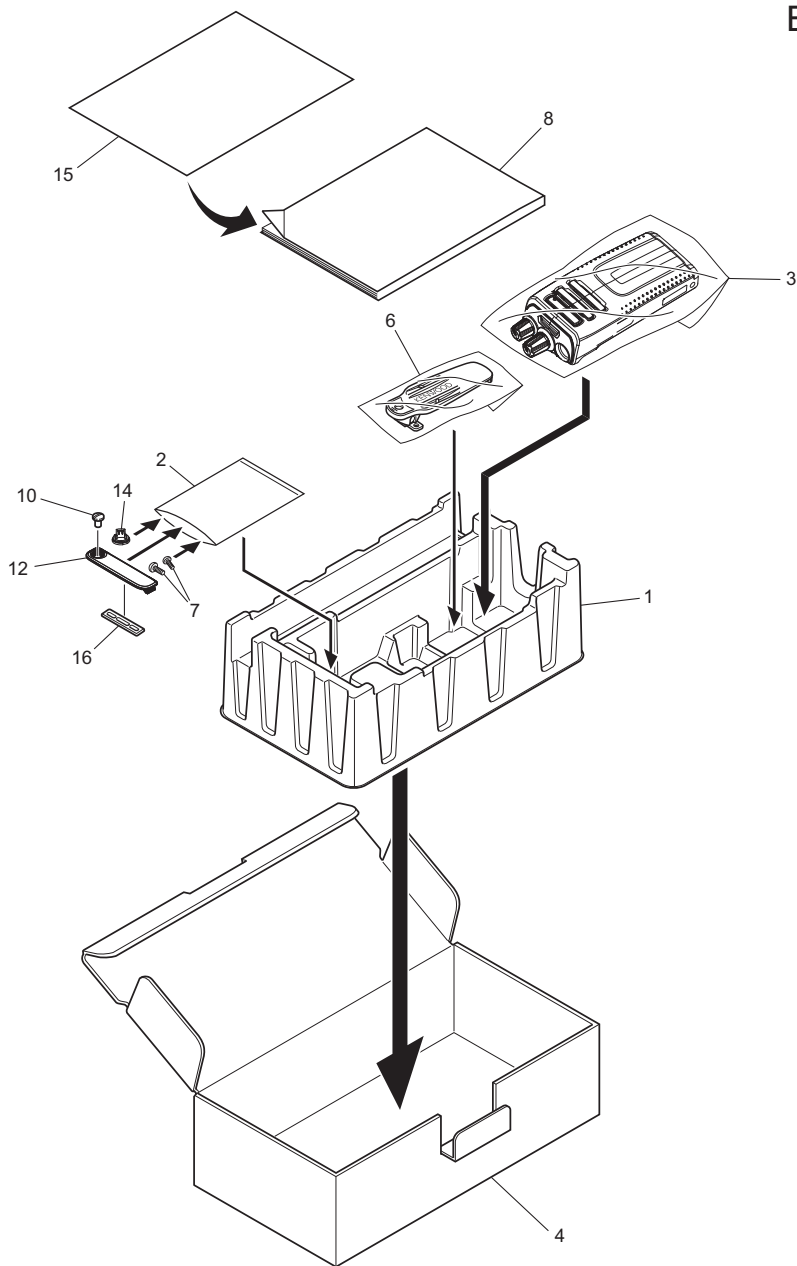
| △ Symbol No. | Part No.      | Part Name   | Description  | Local                                                     |
|--------------|---------------|-------------|--------------|-----------------------------------------------------------|
| D111         | B30-2365-05   | LED         |              | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| D112         | B30-2365-05   | LED         |              | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| D113         | B30-2365-05   | LED         |              | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| D114         | B30-2365-05   | LED         |              | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| D115         | B30-2365-05   | LED         |              | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| D116         | B30-2365-05   | LED         |              | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| D117         | B30-2365-05   | LED         |              | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| D118         | B30-2365-05   | LED         |              | 3200K3,3200E,3300K3,3300E                                 |
| D119         | B30-2365-05   | LED         |              | 3200K3,3200E,3300K3,3300E                                 |
| D120         | B30-2365-05   | LED         |              | 3200K3,3200E,3300K3,3300E                                 |
| D132         | B30-2365-05   | LED         |              | 3200K2,3200E2,3300K2,3300E2                               |
| D141         | RB521SM-30    | DIODE       |              | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| D142         | RB521SM-30    | DIODE       |              | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| D143         | RB521SM-30    | DIODE       |              | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| D144         | RB521SM-30    | DIODE       |              | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| D180         | RN262CS       | DIODE       |              |                                                           |
| D181         | RN262CS       | DIODE       |              |                                                           |
| D201         | NSSW206C-T865 | LED         |              | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| D202         | NSSW206C-T865 | LED         |              | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| D221         | NESM238B      | LED         |              |                                                           |
| D227         | NESM238B      | LED         |              |                                                           |
| C101         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K  |                                                           |
| C102         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K  |                                                           |
| C141         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K  | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| C142         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K  | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| C143         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K  | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| C144         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K  | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| C145         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K  |                                                           |
| C146         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K  |                                                           |
| C147         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K  |                                                           |
| C148         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K  |                                                           |
| C149         | CK73HBB1H471K | C CAPACITOR | 470pF 50V K  |                                                           |
| C158         | CC73HCH1H220J | C CAPACITOR | 22pF 50V J   |                                                           |
| C172         | CC73HCH1H040B | C CAPACITOR | 4pF 50V B    |                                                           |
| C175         | CC73HCH1H1R5B | C CAPACITOR | 1.5pF 50V B  |                                                           |
| C177         | CC73HCH1H010B | C CAPACITOR | 1pF 50V B    |                                                           |
| C179         | CC73HCH1H1R5B | C CAPACITOR | 1.5pF 50V B  |                                                           |
| C184         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K |                                                           |
| C186         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K |                                                           |
| C190         | CC73HCH1H010B | C CAPACITOR | 1pF 50V B    |                                                           |
| C192         | CC73HCH1H121J | C CAPACITOR | 120pF 50V J  |                                                           |
| C193         | CK73HBB1H102K | C CAPACITOR | 1000pF 50V K |                                                           |
| C201         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| C202         | CK73HB0J225K  | C CAPACITOR | 2.2uF 6.3V K | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| C203         | CK73HB0J225K  | C CAPACITOR | 2.2uF 6.3V K | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| C204         | CK73HB1E334K  | C CAPACITOR | 0.33uF 25V K | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| C205         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| C206         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| C207         | CK73HB1E104K  | C CAPACITOR | 0.10uF 25V K | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |
| R1           | RK73HB1J000J  | MG RESISTOR | 0Ω 1/16W J   | 3200K2,3200K3,3200E,3200E2,<br>3300K2,3300K3,3300E,3300E2 |

| △ Symbol No. | Part No.     | Part Name             | Description   | Local                                                 |
|--------------|--------------|-----------------------|---------------|-------------------------------------------------------|
| R2           | RK73HB1J000J | MG RESISTOR           | 0Ω 1/16W J    | 3200K3,3200E,3300K3,3300E                             |
| R3           | RK73HB1J000J | MG RESISTOR           | 0Ω 1/16W J    |                                                       |
| R111         | RK73HB1J102J | MG RESISTOR           | 1kΩ 1/16W J   | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| R112         | RK73HB1J561J | MG RESISTOR           | 560Ω 1/16W J  | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| R113         | RK73HB1J561J | MG RESISTOR           | 560Ω 1/16W J  | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| R114         | RK73HB1J102J | MG RESISTOR           | 1kΩ 1/16W J   | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| R115         | RK73HB1J561J | MG RESISTOR           | 560Ω 1/16W J  | 3200K2,3200E2,3300K2,3300E2                           |
| R115         | RK73HB1J102J | MG RESISTOR           | 1kΩ 1/16W J   | 3200K3,3200E,3300K3,3300E                             |
| R116         | RK73HB1J102J | MG RESISTOR           | 1kΩ 1/16W J   | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| R117         | RK73HB1J561J | MG RESISTOR           | 560Ω 1/16W J  | 3200K2,3200E2,3300K2,3300E2                           |
| R117         | RK73HB1J102J | MG RESISTOR           | 1kΩ 1/16W J   | 3200K3,3200E,3300K3,3300E                             |
| R118         | RK73HB1J122J | MG RESISTOR           | 1.2kΩ 1/16W J | 3200K3,3200E,3300K3,3300E                             |
| R119         | RK73HB1J122J | MG RESISTOR           | 1.2kΩ 1/16W J | 3200K3,3200E,3300K3,3300E                             |
| R120         | RK73HB1J122J | MG RESISTOR           | 1.2kΩ 1/16W J | 3200K3,3200E,3300K3,3300E                             |
| R121         | RK73HB1J000J | MG RESISTOR           | 0Ω 1/16W J    | 3200K2,3200E2,3300K2,3300E2                           |
| R122         | RK73HB1J000J | MG RESISTOR           | 0Ω 1/16W J    | 3200K3,3200E,3300K3,3300E                             |
| R132         | RK73HB1J102J | MG RESISTOR           | 1kΩ 1/16W J   | 3200K2,3200E2,3300K2,3300E2                           |
| R141         | RK73HB1J472J | MG RESISTOR           | 4.7kΩ 1/16W J | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| R142         | RK73HB1J101J | MG RESISTOR           | 100Ω 1/16W J  | 3200K3,3200E,3300K3,3300E                             |
| R143         | RK73HB1J101J | MG RESISTOR           | 100Ω 1/16W J  | 3200K3,3200E,3300K3,3300E                             |
| R145         | RK73HB1J101J | MG RESISTOR           | 100Ω 1/16W J  | 3200K3,3200E,3300K3,3300E                             |
| R146         | RK73HB1J101J | MG RESISTOR           | 100Ω 1/16W J  | 3200K2,3200E2,3300K2,3300E2                           |
| R147         | RK73HB1J101J | MG RESISTOR           | 100Ω 1/16W J  | 3200K3,3200E,3300K3,3300E                             |
| R148         | RK73HB1J101J | MG RESISTOR           | 100Ω 1/16W J  | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| R155         | RK73HB1J000J | MG RESISTOR           | 0Ω 1/16W J    |                                                       |
| R170         | RK73HB1J000J | MG RESISTOR           | 0Ω 1/16W J    |                                                       |
| R174         | RK73HB1J000J | MG RESISTOR           | 0Ω 1/16W J    |                                                       |
| R183         | RK73HB1J000J | MG RESISTOR           | 0Ω 1/16W J    |                                                       |
| R185         | RK73HB1J000J | MG RESISTOR           | 0Ω 1/16W J    |                                                       |
| R189         | RK73HB1J000J | MG RESISTOR           | 0Ω 1/16W J    |                                                       |
| R191         | RK73HB1J000J | MG RESISTOR           | 0Ω 1/16W J    |                                                       |
| R201         | RK73HB1J101J | MG RESISTOR           | 100Ω 1/16W J  | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| R203         | RK73HB1J103J | MG RESISTOR           | 10kΩ 1/16W J  | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| R204         | RK73GB2A221J | MG RESISTOR           | 220Ω 1/10W J  | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| R205         | RK73GB2A221J | MG RESISTOR           | 220Ω 1/10W J  | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| R206         | RK73HB1J101J | MG RESISTOR           | 100Ω 1/16W J  | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| R207         | RK73HB1J000J | MG RESISTOR           | 0Ω 1/16W J    | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| R208         | RK73HB1J103J | MG RESISTOR           | 10kΩ 1/16W J  | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| R209         | RK73HB1J222J | MG RESISTOR           | 2.2kΩ 1/16W J | 3200K,3200E3,3300K,3300E3                             |
| R221         | RK73HB1J102J | MG RESISTOR           | 1kΩ 1/16W J   |                                                       |
| R222         | RK73HB1J122J | MG RESISTOR           | 1.2kΩ 1/16W J |                                                       |
| R223         | RK73HB1J271J | MG RESISTOR           | 270Ω 1/16W J  |                                                       |
| R227         | RK73HB1J102J | MG RESISTOR           | 1kΩ 1/16W J   |                                                       |
| R228         | RK73HB1J122J | MG RESISTOR           | 1.2kΩ 1/16W J |                                                       |
| R229         | RK73HB1J271J | MG RESISTOR           | 270Ω 1/16W J  |                                                       |
| R230         | RK73HB1J222J | MG RESISTOR           | 2.2kΩ 1/16W J |                                                       |
| R231         | RK73HB1J222J | MG RESISTOR           | 2.2kΩ 1/16W J |                                                       |
| R232         | RK73HB1J222J | MG RESISTOR           | 2.2kΩ 1/16W J |                                                       |
| L101         | LB73H0AV-002 | CHIP FERRITE          |               |                                                       |
| L102         | LB73H0AV-002 | CHIP FERRITE          |               |                                                       |
| L151         | LK73H0AM15NJ | M.CHIP INDUCTOR 15nH  |               |                                                       |
| L152         | LK73H0AM6N8J | M.CHIP INDUCTOR 6.8nH |               |                                                       |
| L153         | LK73H0AM12NJ | M.CHIP INDUCTOR 12nH  |               |                                                       |
| L156         | LK73H0AM1N2S | M.CHIP INDUCTOR       |               |                                                       |
| L173         | LK73H0AM4N7S | M.CHIP INDUCTOR 4.7nH |               |                                                       |
| L176         | LK73H0BJ3N9S | M.CHIP INDUCTOR       |               |                                                       |
| L178         | LK73H0BJ3N9S | M.CHIP INDUCTOR       |               |                                                       |
| L187         | LK73H0AM10NJ | M.CHIP INDUCTOR 10nH  |               |                                                       |
| L194         | LK73H0AM27NJ | M.CHIP INDUCTOR 27nH  |               |                                                       |
| L201         | LB73H0AV-002 | CHIP FERRITE          |               | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |

| △ Symbol No. | Part No.      | Part Name       | Description  | Local                                                 |
|--------------|---------------|-----------------|--------------|-------------------------------------------------------|
| L202         | LB73H0AV-002  | CHIP FERRITE    |              | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| A151         | -----         | CIRCUIT MODULE  | *Note        |                                                       |
| CN201        | EC720BP-0325A | FFC FPC CONNE   |              | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| CN202        | EC720BP-0341A | FFC FPC CONNE   |              |                                                       |
| CN301        | E40-6883-05   | F.C.CONNECTOR   |              |                                                       |
| CP141        | RK74HB1J101J  | NET RESISTOR    | 100Ω 1/16W J | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| CP201        | RK74HB1J101J  | NET RESISTOR    | 100Ω 1/16W J | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| CP202        | RK74HB1J101J  | NET RESISTOR    | 100Ω 1/16W J | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| CP203        | RK74HB1J101J  | NET RESISTOR    | 100Ω 1/16W J | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| MIC101       | T9B-0004-00   | MIC ELEMENT     |              |                                                       |
| S111         | S70-0901-05   | TACTILE PUSH SW |              | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| S112         | S70-0901-05   | TACTILE PUSH SW |              | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| S113         | S70-0901-05   | TACTILE PUSH SW |              | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| S114         | S70-0901-05   | TACTILE PUSH SW |              | 3200K3,3200E,3300K3,3300E                             |
| S115         | S70-0901-05   | TACTILE PUSH SW |              | 3200K3,3200E,3300K3,3300E                             |
| S116         | S70-0901-05   | TACTILE PUSH SW |              | 3200K3,3200E,3300K3,3300E                             |
| S117         | S70-0901-05   | TACTILE PUSH SW |              | 3200K3,3200E,3300K3,3300E                             |
| S118         | S70-0901-05   | TACTILE PUSH SW |              | 3200K3,3200E,3300K3,3300E                             |
| S119         | S70-0901-05   | TACTILE PUSH SW |              | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| S120         | S70-0901-05   | TACTILE PUSH SW |              | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| S121         | S70-0901-05   | TACTILE PUSH SW |              | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| S122         | S70-0901-05   | TACTILE PUSH SW |              | 3200K3,3200E,3300K3,3300E                             |
| S123         | S70-0901-05   | TACTILE PUSH SW |              | 3200K3,3200E,3300K3,3300E                             |
| S124         | S70-0901-05   | TACTILE PUSH SW |              | 3200K3,3200E,3300K3,3300E                             |
| S125         | S70-0901-05   | TACTILE PUSH SW |              | 3200K3,3200E,3300K3,3300E                             |
| S126         | S70-0901-05   | TACTILE PUSH SW |              | 3200K3,3200E,3300K3,3300E                             |
| S127         | S70-0901-05   | TACTILE PUSH SW |              | 3200K3,3200E,3300K3,3300E                             |
| S128         | S70-0901-05   | TACTILE PUSH SW |              | 3200K3,3200E,3300K3,3300E                             |
| S129         | S70-0901-05   | TACTILE PUSH SW |              | 3200K3,3200E,3300K3,3300E                             |
| S130         | S70-0901-05   | TACTILE PUSH SW |              | 3200K3,3200E,3300K3,3300E                             |
| S131         | S70-0901-05   | TACTILE PUSH SW |              | 3200K2,3200E2,3300K2,3300E2                           |
| S132         | S70-0901-05   | TACTILE PUSH SW |              | 3200K2,3200E2,3300K2,3300E2                           |
| S301         | S70-0516-05   | TACTILE PUSH SW |              |                                                       |
| S302         | S70-0516-05   | TACTILE PUSH SW |              |                                                       |
| S303         | S70-0516-05   | TACTILE PUSH SW |              |                                                       |
| S304         | S70-0516-05   | TACTILE PUSH SW |              |                                                       |

# Packing materials and accessories parts list

Block No.M2MM



## Packing and accessories

Block No. [M][2][M][M]

| △ Symbol No. | Part No.    | Part Name       | Description  | Local                                                 |
|--------------|-------------|-----------------|--------------|-------------------------------------------------------|
| 1            | H1C-0175-00 | PACKING FIXTURE |              |                                                       |
| 2            | -----       | PROTECTION BAG  | ACC/CAP      |                                                       |
| 3            | -----       | PROTECTION BAG  | RADIO        |                                                       |
| 4            | H5A-1304-00 | ITEM CARTON     |              |                                                       |
| 6            | J29-0730-05 | HOOK            | ACC-KBH-11   |                                                       |
| 7            | N09-6585-15 | SPECIAL SCREW   | ACC-HOOK(x2) |                                                       |
| 8            | B5A-2071-00 | INST.MANUAL     | ACC-3 LANG   | 3200K,3200K2,3200K3,3300K,3300K2,3300K3               |
| 8            | B5A-2072-00 | INST.MANUAL     | ACC-9 LANG   | 3200E,3200E2,3200E3,3300E,3300E2,3300E3               |
| 10           | N08-0571-04 | DRESSED SCREW   | ACC-UNIV CAP |                                                       |
| 12           | B0K-0076-00 | CAP             | ACC-UNIV     |                                                       |
| 14           | D32-0454-04 | STOPPER         | ACC-CH KNOB  | 3200K2,3200K3,3200E,3200E2,3300K2,3300K3,3300E,3300E2 |
| 15           | -----       | PAMPHLET        | ACC-DOC      | 3200E,3200E2,3200E3,3300E,3300E2,3300E3               |
| 16           | G5D-0027-00 | PACKING         | ACC-UNIV CAP |                                                       |



# KENWOOD

**JVC KENWOOD Corporation**  
Communications Systems Division

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