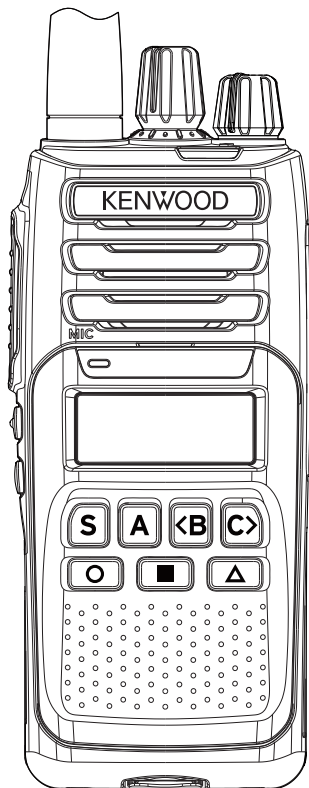


KENWOOD

SERVICE MANUAL

UHF TRANSCEIVER

TK-3710



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



This product uses Lead Free solder.

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SPECIFICATION

GENERAL		
Frequency Range *1		450 ~ 520 MHz
Max. Channels per Radio		128 channels *2
Number of Zones		128 zones
Max. Channels per Zone		128 channels
Channel Spacing		12.5 / 25 kHz
Power Supply		7.5V DC $\pm$ 20 %
Battery Life (Duty cycle: 5% TX/ 5% RX/ 90% standby)	with KNB-45L / 84L [IP67]	Approx. 11 hours
	with KNB-69L	Approx. 14 hours
Operating Temperature		-30°C to +60°C
Frequency Stability (-30°C to + 60°C; +25°C Ref.)		$\pm$ 0.5 ppm
Dimensions (W x H x D) (Projections not included)	Radio only	54 x 123 x 33.5 mm
	with KNB-45L / 84L [IP67]	54 x 123 x 33.5 mm
	with KNB-69L	54 x 123 x 37.5 mm
Weight (net)	Radio only	175 g
	with KNB-45L / 84L [IP67]	295 g
	with KNB-69L	310 g
RECEIVER		
Sensitivity	Analog (12dB SINAD) @ 12.5 / 25 kHz	0.22 / 0.26 μ V
Selectivity	@ 12.5 / 25 kHz	67 / 74 dB
Intermodulation	@ 12.5 / 25 kHz	65 dB
Spurious Rejection		70 dB
Audio Distortion		Less than 7 %
Audio Output		1 W / 12 ohm (Internal Speaker) 500 mW / 8 ohm (External Output)
TRANSMITTER		
RF Power Output		5 / 4 / 1 W
Spurious Emission		-70 dB
FM Hum & Noise	@ 12.5 / 25 kHz	40 / 45 dB
Audio Distortion		Less than 2 %
Emission Designator		16K0F3E, 11K0F3E

Specifications are measured according to applicable standards.

Specifications shown are typical.

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

*1 UHF 476.4250 - 477.4125 MHz CB frequency range (80 simplex ch, 16 semi-duplex ch: Channels 1-8, 41-48), commercial channels within the 450 to 520 MHz (TX) / 450 to 520 MHz (RX) range

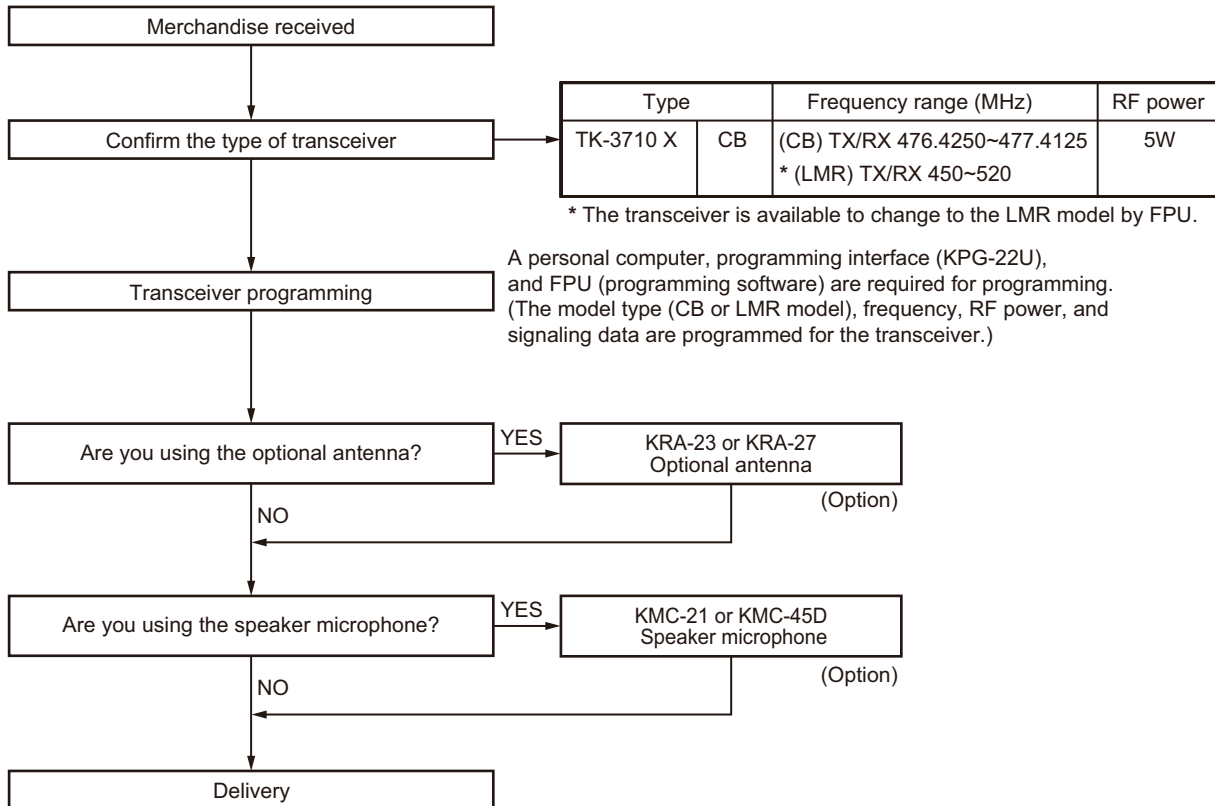
*2 AS/NZS 4295:2015 (Commercial) & AS/NZS 4365:2011 (80-channel CB)

SECTION 1 PRECAUTION

This service manual does not describe PRECAUTION.

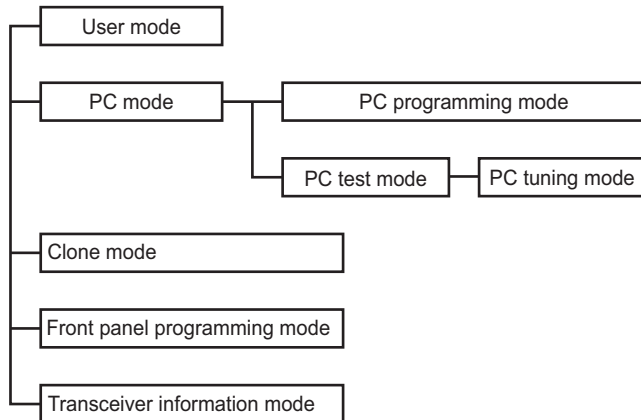
SECTION 2 SPECIFIC SERVICE INSTRUCTIONS

2.1 SYSTEM SET-UP



2.2 REALIGNMENT

2.2.1 Modes



Mode	Function
User mode	For normal use.
PC mode	Used for communication between the transceiver and PC.
PC 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.
PC tuning mode	Used to tune the transceiver using the PC.
Clone mode	Used to transfer programming data from one transceiver to another.
Front Panel Programming Mode	Used when setting some functions with the key operation for the transceiver only.
Transceiver Information Mode	Used to confirm the transceiver firmware version and checksum information.

2.2.2 How to Enter Each Mode

Mode	Operation
User mode	Power ON
PC mode	Received commands from PC
Clone mode	[Side 2] + Power ON (Two seconds)
Front Panel Programming Mode	[PTT] + [Side 1] + Power ON (Two seconds)
Transceiver Information Mode	[Side 1] + Power ON (Two seconds)

2.2.3 PC mode

2.2.3.1 Preface

The transceiver is programmed by using a personal computer (PC), a USB programming cable (KPG-22U) and a Programming software (FPU).

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

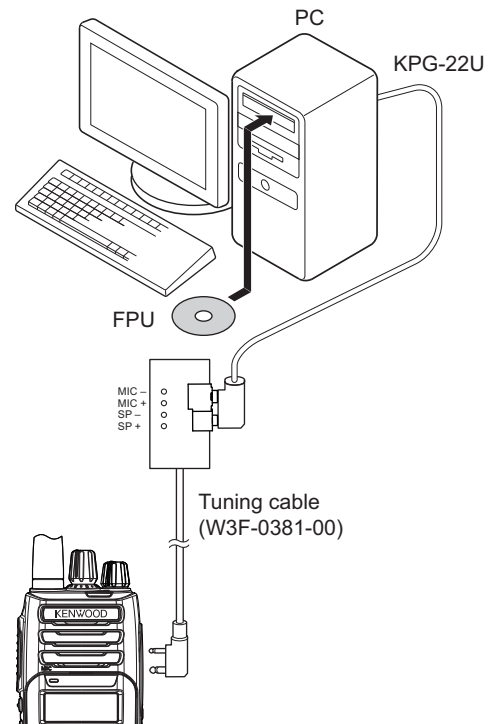


Fig.1

2.2.3.2 Connection procedure

- (1) Connect the transceiver to the PC using the KPG-22U.

Note:

You must install the KPG-22U driver in the PC to use the KPG-22U.

- (2) When the POWER is switched on, you can immediately enter user mode.
When PC sends command the transceiver enter 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 lights.

2.2.3.3 KPG-22U description (USB programming interface cable: Option)

The KPG-22U is a cable which connects to a USB port on a PC. When using the KPG-22U, install the supplied CD (with driver software) in the PC.

The KPG-22U driver runs under Windows 7, 8.1, 10.

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

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

(This URL may change without notice.)

2.2.3.4 Programming software KPG-203D 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.

2.2.4 Clone mode

2.2.4.1 Outline

"Clone Mode" copies the transceiver data to another transceiver. The dealer can copy the transceiver data to another transceiver even without the use of a PC.

2.2.4.2 Example

The transceiver programming data can be copied from transceiver to other transceivers through the cloning cable.

2.2.4.3 Operation

The following data cannot be cloned.

- ESN (Electronic Serial Number) data
- Model name
- Tuning data
- Backup data
- Embedded Message with Password

- (1) In the source transceiver, press and hold the [Side 2] button for two seconds while turning the transceiver power ON and enter the Clone Mode. The transceiver displays "CLONE".
- (2) In the target transceiver, turning the transceiver power ON.
- (3) Connecting the cloning cable (part No. E30-3410-05) to the SP/MIC connectors on the source and target.
- (4) Press the [PTT] button on the source while the source displays "CLONE". The data of the source is sent to the target. While the target is receiving the data, the green LED lights and "PROGRAM" is displayed.
- (5) When cloning of the data is completed, the source displays "CLN END", and the target automatically operates in the User mode. The target can then be operated by the same program as the source. If data transmission failed while cloning, the target displays "CLN ERR". If the cloning fails, no data will be available in the target when it is returned to User mode.
- (6) The other target can be continuously cloned. When the [PTT] button on the source is pressed while the source displays "CLN END", the source displays "CLONE". Carry out the operation in step (2) to (5).

Note:

- a) If the Clone Mode of the transceiver is configured as disabled in the FPU optional features window, the transceiver cannot enter Clone mode.
- b) If the transceiver is in Error Mode, Clone mode cannot be entered.
- c) The conditions and operations when Clone becomes impossible are as follows.
 - The Password (Write) is set to the target transceiver.
 - Between transceivers where the data with different Model Name, Frequency and Features.
 - The Radio Feature setting is enabled on the source side but the same Radio Feature License setting is disabled on the target side.
 - If the Disable Reading Key Data is enabled through the FPU.

- d) Source transceiver and Target transceiver must have same model name data for the Clone mode.
- e) Once transceiver is set to be the Source, it cannot be a target after all data has been transmitted. This is to protect the data in the Source transceiver.
- f) The CB model is unable to clone over to the LMR model and vice versa.

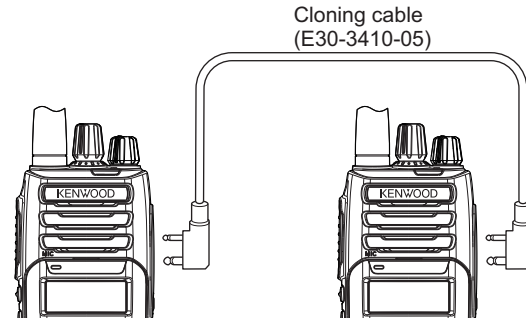


Fig.2

2.2.5 Front panel programming mode

With the Front panel programming mode, the frequency or other data of the conventional channel are 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 frequency
- TX frequency
- RX signaling (QT/ DQT/ OFF)
- TX signaling (QT/ DQT/ OFF) *CB model: Confirmation only
- Channel spacing *Only for LMR model
- TX power

Note:

If the Front panel programming mode is configured as disabled in the FPU optional features window, the transceiver cannot enter the Front panel programming mode.

2.2.5.1 Enter to the Front panel programming mode

Press and hold the [PTT] + [Side1] button for two seconds while turning the transceiver power ON to enter the Front panel programming mode.

There is no password set to the transceiver, "PANEL PG" is displayed on the LCD.

If the Transceiver Password is set to the transceiver, "PANEL PG" is displayed on the LCD when the correct password is entered while "PASSWORD" is displayed.

■Button guide to enter the Transceiver password on the Front Panel Programming mode

With the Password input mode, enter the password to refer the following Button guide.

[S] button: The password confirmation

[A] button: Delete the latest digit from the current password number (Press and hold to delete all password numbers)

[<B] button: Enter the password and decrement a digit

[>C] button: Enter the password and increment a digit

2.2.5.2 Data Writing

Before moving to next Zone, "SAVE Y/N" appears on the LCD by pressing [A] button, and the new data is written into the Transceiver by pressing [S] button.

If the current Zone/Channel is changed without pressing [S] button, the new data would not be written; and a new data programmed will be erased.

2.2.5.3 Channel setup item programming

In the Front panel programming mode, the setup item as follows can be selected by pressing [S] button.

And program the selected setup item to refer the Button operation and the **Front panel programming mode flowchart**.

■The channel setup items for Front panel programming mode

No.	Setup item	Display	Remarks
1	RX frequency	Rx FREQ	Receive Frequency *1 (CB) 476.42500~477.41250MHz (LMR) 450.00000~520.00000MHz
2	TX frequency	Tx FREQ	Transmit Frequency *1 (CB) 476.42500~477.41250MHz (LMR) 450.00000~520.00000MHz - If a configured CB Channel is 22 or 23, TX frequency is set to "OFF" automatically.
3	RX signaling	Rx SIG	QT / DQT N / DQT I / OFF *2
4	TX signaling	Tx SIG	QT / DQT N / DQT I / OFF *2, *3
5	Channelspacing (LMR model only)	CH SP A	12.5 / 25kHz
6	TX power	Tx POWER	LOW / MEDIUM / HIGH *4

*1 A frequency step size as follows can be changed by [Side 1] or [Side 2] button for LMR model only, and the transmit frequency of CB model is confirmation only.

Also a frequency step size of CB model is fixed as 12.5kHz.

Frequency step size: 3.125k / 5.00k / 6.25k / 100k / 1.00M

*2 A signaling type can be changed by [Side 1] or [Side 2] button.

The DQT I is available for the LMR model only, and if a configured CB Channel is 5 or 35, the signaling is fixed to "TONE OFF".

*3 TX signaling of CB model is confirmation only.

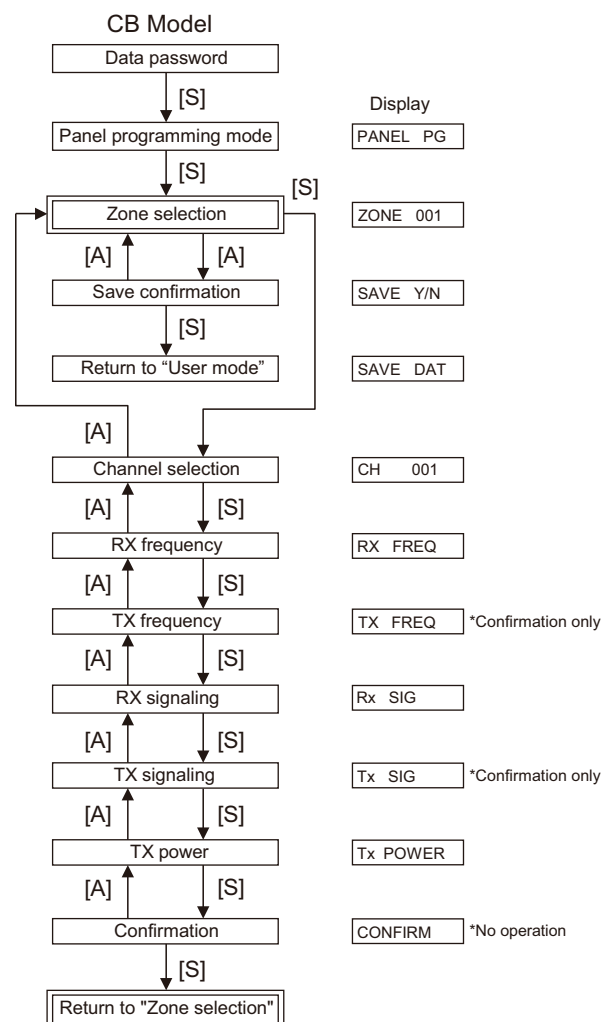
*4 If a configured CB Channel is 22 or 23, TX power is no changeable and a Error tone becomes sound.

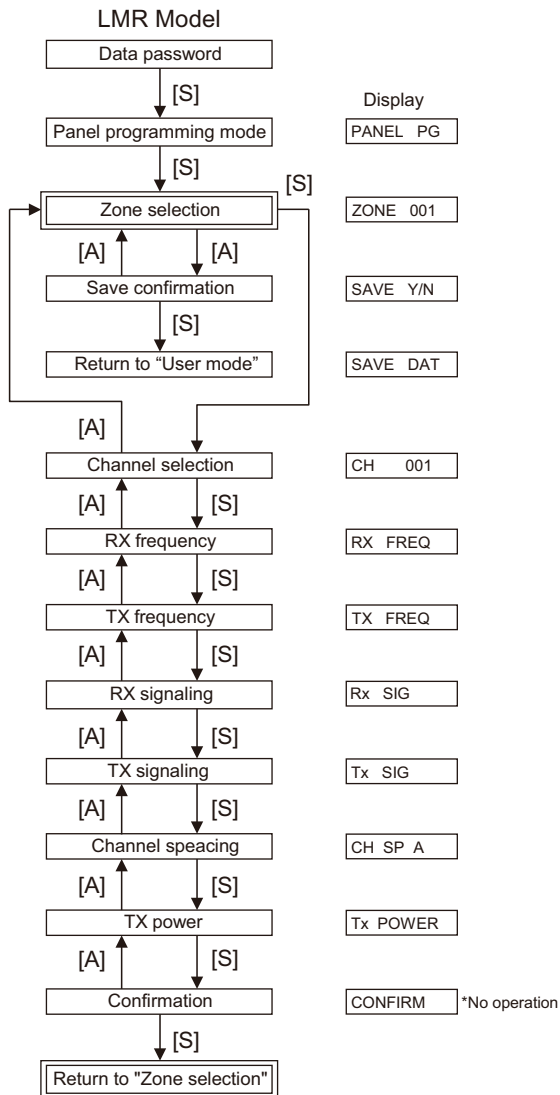
■Button operation

Button	Function
[Selector]	No function
[Side 1]	Change a channel step size and a signaling type.
[Side 2]	Change a channel step size and a signaling type.
[S]	Store the current settings and go to the Item Selection mode.
[A]	Abort the current settings and return to the Item Selection mode without backup.
[<B]	Toggle/ Decrease the selected item.
[C>]	Toggle/ Increase the selected item.

■Front panel programming mode flowchart

There is a difference of the Front panel programming mode flowchart between LMR and CB model. Refer to the following applicable flowchart of LMR or CB model.

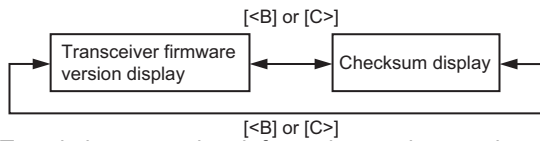




2.2.6 Transceiver information mode

Use this function to confirm the transceiver firmware version and checksum information.

- (1) Press and hold the [Side 1] button for two seconds while turning the transceiver power ON.
- (2) The transceiver firmware version appears on the LCD.
- (3) Use the [] and [<C>] buttons to select the confirmation items.



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

2.2.7 Firmware Update

When updating the transceiver firmware, use the updater. Connect the KPG-22U and execute the updater.

2.3 CIRCUIT DESCRIPTION

2.3.1 Overview

The TK-3710 is a UHF Analog FM transceiver designed to operate in the frequency range of 476.4250 to 477.4125MHz (CB), or 450 to 520MHz (LMR). 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 MPU/DSP. It is then amplified and fed to the antenna.

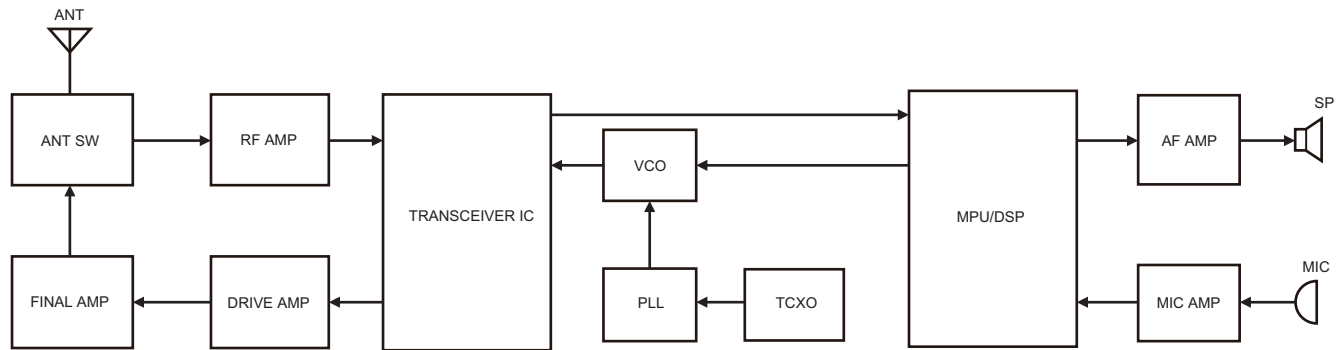


Fig.1 Frequency configuration

2.3.3 Receiver System

2.3.3.1 RF Circuit

The receive signal from the antenna switch (D101, D102, D103 and D104) passes through the band-pass filter (D200 and D201) to remove unwanted signals and amplified by a RF amplifier (Q200). The signal passes through another band-pass filter (D202 and D203) to remove unwanted signals. Then the signal is amplified again by a RF amplifier (incorporated in Transceiver IC (IC200)) and fed to the mixer (incorporated in Transceiver IC) and converted to the baseband signal.

2.3.3.2 Baseband Circuit

The baseband signal (I/Q signal) pass through amplifiers IC201 & IC202 and is then sent to the MPU/DSP (IC501).

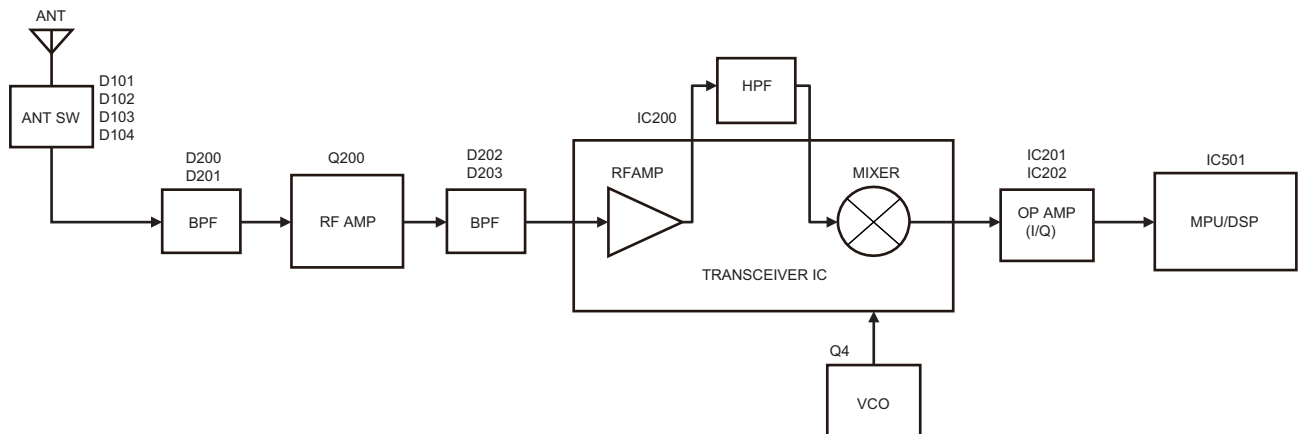


Fig.2 Receiver System

2.3.3.3 Audio Amplifier Circuit

Audio processing (high-pass filter, low-pass filter and de-emphasized and so on) at Analog FM mode are processed by MPU/DSP. The processed signal from MPU/DSP is converted to audio signal at D/A converter (IC604). The signal goes to internal speaker through the Class-D amplifier (IC302) or Jack connector for external speaker through the single-end audio power amplifier (IC300).

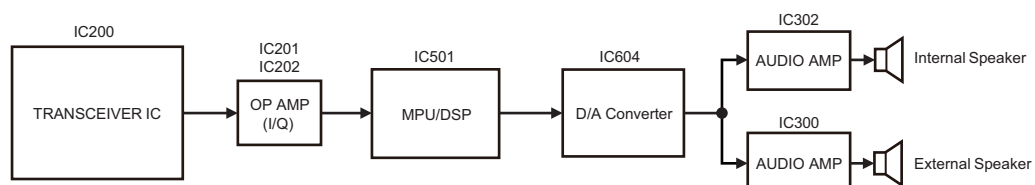


Fig.3 Audio amplifier circuit

2.3.4 Transmitter System

2.3.4.1 Audio Band Circuit

The signal from microphone is amplified through a microphone amplifier IC602 (including AGC function) and input into MPU/DSP (IC501) for audio processing. 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 (IC2). The DTMF and MSK baseband signals are also generated by IC501.

2.3.4.2 Drive and Final amplifier

The signal from the Transceiver IC (IC200) is amplified by pre-drive amplifier (Q104). The output of the pre-drive amplifier is amplified by the drive amplifier (Q106) and final amplifier (Q107) to the specific power. (Refer to transmit power in SPECIFICATION sheet.) Q106 and Q107 are MOS FET. The output of the final amplifier is then passed through the harmonic filter (LPF) and antenna switch (D101 and D102) and applied to the antenna terminal.

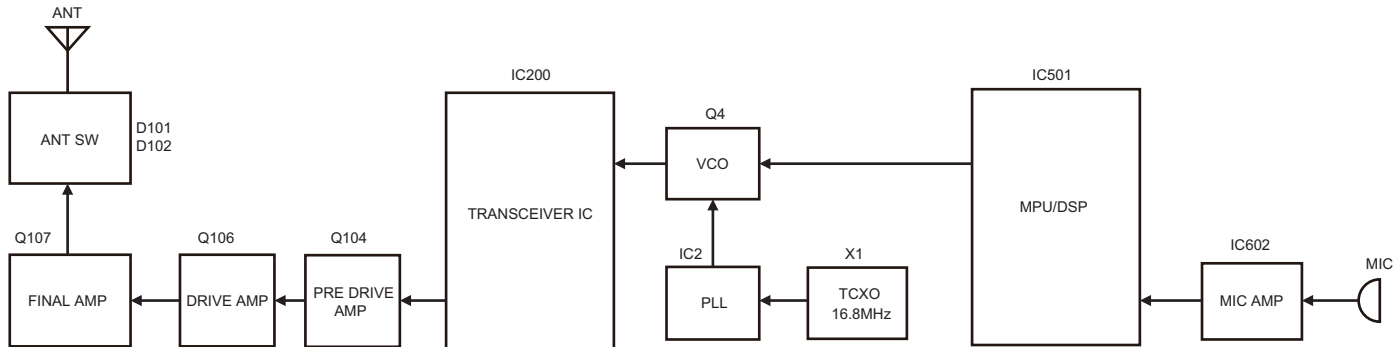


Fig.4 Transmitter System

2.3.5 PLL Frequency Synthesizer

2.3.5.1 TCXO (X1)

TCXO (X1) generates a reference frequency of 16.8MHz for the PLL frequency synthesizer. The oscillation frequency is adjusted TCXO directly by controlled the D/A converter (IC604).

2.3.5.2 VCO

There is one VCO contain TX VCO and RX VCO.

The VCO (Q4) generates the carrier for the transmitter and the receiver. The VCO oscillation frequency range is 952.8500 to 954.8250MHz (CB), or 900 to 1040MHz (LMR). The transmit frequency range is same as receiver frequency range.

The local signal frequency range is also 952.8500 to 954.8250MHz (CB), or 900 to 1040MHz (LMR).

The oscillation frequency is divided into two by IC200 and it becomes the operating frequency.

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

The voltage control terminal "CP" is controlled by PLL (IC2). The voltage control terminal "ASSIST" is controlled by the control voltage from D/A converter (IC604).

For the modulation input terminal, "MOD", the output frequency changes according to the applied voltage. This is used to modulate the VCO output.

2.3.5.3 PLL

PLL (IC2) compares the difference in phases of the VCO oscillation signal and the TCXO (X1) 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 (IC604) is used before control by the PLL (IC2) 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 (IC2) by the MPU/DSP (IC501) through the 3-line "PLL_LE", "PLL_DATA", "PLL_CLK" serial bus for PLL. IC501 monitors through the "PLL_LD", whether the PLL (IC2) is locked or not. If the VCO does not lock to desired frequency (unlock), the "PLL_LD" logic is low.

2.3.6 Control Circuit

The control circuit consists of MPU/DSP (IC501) and its peripheral circuits. IC501 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/DSP

This MPU/DSP (IC501) operates at 168MHz (MAX) clock and 3.2V DC. Controls the flash memory, the receive circuit, the transmitter circuit, the control circuit, and the display circuit.

2.3.6.2 Memory Circuit

Memory circuit consists of the MPU/DSP (IC501) and the flash memory (IC500). The flash memory has capacity of 16Mbit that contains the transceiver control program for the MPU/DSP 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.

■Flash memory

Note:

The flash memory (IC500) stores the data that is written by the FPU, tuning data (Deviation, Squelch, etc.), and other data (User mode, Test mode, Tuning mode, ESN, etc.). If changing the flash memory, please contact our service center.

2.3.6.3 LCD

The LCD is controlled using parallel interface from the MPU/DSP (IC501).

2.3.6.4 Button Detection Circuit

Buttons are detected using the LCD driver (IC700).

2.3.6.5 Low Battery Warning

The battery voltage is divided using R110 and R111, it is detected by A/D converter (incorporated in MPU/DSP (IC501)). 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 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 (IC501) and processes the baseband signal. The MPU/DSP operates at 168MHz (MAX) clock, the I/O section operates at 3.2V.

The DSP carries out the following processes:

- Analog FM pre-emphasis/de-emphasis
- Vocoder processing between audio and modulation/demodulation
- 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
- Audio mute processing
- Modulation level 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 (F400), and goes to RF Drive and final amplifier, DC/DC converter (IC407), AF amplifier (IC300 through the 1.0A fuse (F300)), and INT DET IC (IC406). IC406 monitors battery voltage. If the battery voltage is enough higher than 5.6V, IC406 outputs "High".

When the Power SW is turned on, SB becomes "High" (battery voltage). DC/DC (IC408) operates if both SB and IC406 output are "High". IC407 (38M) outputs 3.8V, and IC404 (32M) outputs 3.2V. IC408 (32MD) outputs 3.2V. IC203 (32B) outputs 3.2V. Reset IC (IC405) watches IC408 (32MD) output voltage. If the 32MD output voltage is enough higher than 2.8V, Reset IC (IC405) outputs "High". As a result, MPU/DSP (IC501) operates.

SBC signal becomes "High" after MPU/DSP (IC501) operates, and IC400 (50M), IC401 (50C), IC403 (32C), and IC1 (32MS) are turned on.

When 50VC signal becomes "High", IC402 (50V) operates. When 5TC signal becomes "High", Q400 (50T) is turned on. Q400 (50T) is turned on in transmit mode. Switches are controlled by MPU/DSP (IC501).

When the Power SW is turned off, /SB_DET signal becomes "High". After detecting /SB_DET signal, MPU/DSP (IC501) changes SBC signal to "Low".

38M is fed to IC3 (200C). IC3 (200C) is the DC/DC boost converter. IC3, D1, C34 consist of a voltage quadrupler. The 200C circuit then outputs approximately +20VDC.

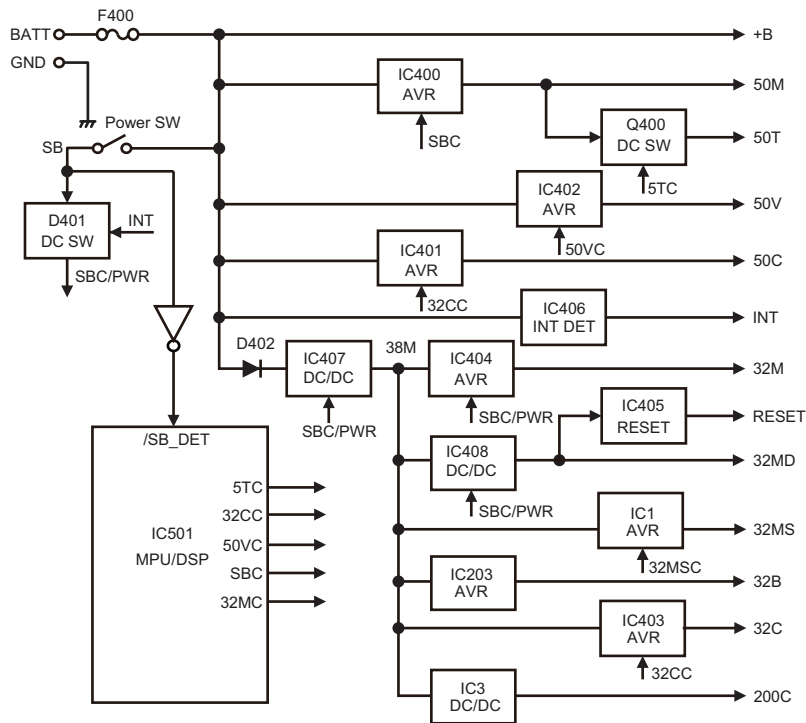


Fig.5 Power Supply Circuit

2.3.8 Signaling Circuit

2.3.8.1 Encode (QT/DQT/DTMF/2-tone/5-tone/MSK)

Each signaling data signal of QT, DQT, DTMF, 2-tone, 5-tone and MSK is generated by the MPU/DSP (IC501), superposed on a modulation signal and output to VCO and PLL.

2.3.8.2 Decode (QT/DQT/DTMF/2-tone/5-tone/MSK)

The audio signal and signaling data (QT, DQT, DTMF, 2-tone, 5-tone and MSK) are separated by the MPU/DSP (IC501). Next the MPU/DSP (IC501) decodes the signaling data.

2.4 SEMICONDUCTOR DATA

2.4.1 MPU/DSP: 2F405VGT6KHJA (TX-RX unit IC501)

Pin No.	Name	I/O	Function
1	BSHIFT	O	MPU/DSP Clock frequency Shift
2	LCD_DI	O	Data input to LCD
3	LCD_CLK	O	Clock for LCD
4	LCD_CE	O	Chip select for LCD
5	LCD_DO	I	DATA Output from LCD
6	VBAT	-	
7	/PF2	I	Programmable Function Key Input 2
8	/PF1	I	Programmable Function Key Input 1
9	EN4	I	Encoder Input 4
10	VSS	-	GND
11	VDD	-	32MD
12	XIN	I	Crystal (19.2MHz)
13	NC	-	No Connection
14	RESET	I	RESET
15	VOX	I	VOX detection
16	CURR	I	Current detection
17	BATT	I	Encoder Input 2
18	CVIN	I	VCO Lock Voltage IN
19	VDD	-	32MD
20	VSSA	-	GND
21	VREF+	-	32M
22	VDDA	-	32M
23	TH_DET2	I	Thermistor DET (Temperature detection for RX)
24	VOL	I	VOL IN
25	TH_DET1	I	Thermistor DET (Temperature detection for TX)
26	MICI	I	MIC input
27	VSS	-	GND
28	VDD	-	32MD
29	AUDIOO	O	AUDIO output
30	MOD	O	MOD output
31	APCSW	O	APC Switch
32	EN1	I	Encoder Input 1
33	EN3	I	Encoder Input 3
34	RXI	I	I signal from IC200
35	RXQ	I	Q signal from IC200
36	NC	-	No Connection
37	EN2	I	Encoder Input 2
38	NC	-	No Connection
39	EXTSPSW	O	Speaker Mute
40	3RC	O	LNA DC switch
41	1PINDET	I	1 pin detect for external speaker
42	BLULED	O	Blue LED
43	/INSPMT	O	Internal Speaker Mute

Pin No.	Name	I/O	Function
44	50VC	O	5V AVR Control for GPS MIC
45	NC	-	No Connection
46	DSW	O	APC Voltage Discharge Switch
47	DAC2_CLK	O	CLK for DAC IC605
48	DAC2_DATA	O	DATA for DAC IC605
49	VCAP_1	-	2.2uF
50	VDD	-	32MD
51	CMX_CSN	O	CSN for IC200
52	CMX_SCLK	O	CLK for IC200
53	CMX_RDATA	I	DATA from IC200
54	CMX_CDATA	O	DATA to IC200
55	TEST_TX	O	UART_TX for Test
56	TEST_RX	I	UART_TX for Test
57	SIM2	I	
58	EMPTT	O	Emergency PTT
59	PTT	I	PTT button
60	GRNLED	O	Green LED Control
61	OPTDET	I	Option Detection
62	REDLED	O	Red LED Control
63	INSPSW	O	Internal Speaker Switch
64	DAC_DI	O	Ext DAC Data
65	DAC_CLK	O	Ext DAC Clock (↑ edge data input)
66	DAC_LD	O	Ext DAC LD(↑ edge data active)
67	TX/RX	O	TX RX Switch
68	TXD	O	Serial Data to MIC JACK
69	RXD	I	Serial Data from MIC JACK
70	PLL_LD	I	Unlock for PLL
71	ASTSW	O	Assist Switch
72	SWDIO	I/O	SWDIO for SWD
73	VCAP_2	-	2.2uF
74	VSS3	-	GND
75	VDD5	-	32MD
76	SWCLK	I/O	SWCLK for SWD
77	/F_CS	O	Chip Select for Flash memory
78	F_SCLK	O	Clock for Flash memory
79	F_DATAI	I	DATA Input for Flash memory
80	F_DATAO	O	DATA Output to Flash memory
81	/F_WP	O	Write protect for Flash memory
82	3MSC	O	32MS Switch Control
83	NC	-	No Connection
84	NC	-	No Connection
85	NC	-	No Connection
86	PLL_DATA	O	Data Output for PLL
87	PLL_LE	O	Chip Select for PLL
88	PLL_CLK	O	Clock for PLL
89	SWO	O	SWO for SWD

Pin No.	Name	I/O	Function
90	SRST	I	SRST for SWD
91	SBC	O	SB switch control
92	FLDM	I	Force Flash Load Mode
93	/SB_DET	I	Power Switch detect
94	BOOT0	-	
95	SIM1	I	
96	3CC	O	5C and 32C Control
97	/INT	I	Interrupt
98	5TC	O	5T Control
99	PDR_ON	-	GND
100	VDD6	-	32MD

2.5 COMPONENTS DESCRIPTION

2.5.1 TX-RX Unit (XC1-296K-02)

Ref. No.	Part Name	Use / Function
IC1	IC	Voltage regulator (32MS) [3.2V AVR]
IC2	IC	PLL IC
IC3	IC	DC-DC Converter (200C) [20V DC-DC]
IC4,5	IC	DC amplifier [DC AMP]
IC100	IC	DC amplifier [DC AMP]
IC200	IC	Transceiver IC
IC201,202	IC	IQ AMP
IC203	IC	Voltage regulator (32B) [3.2V AVR]
IC300	IC	AF AMP
IC301	IC	Buffer amplifier [BUFF AMP]
IC302	IC	AF AMP
IC400	IC	Voltage regulator (50M) [5.0V AVR]
IC401	IC	Voltage regulator (50C) [5.0V AVR]
IC402	IC	Voltage regulator (50V) [5.0V AVR]
IC403	IC	Voltage regulator (32C) [3.2V AVR]
IC404	IC	Voltage regulator (32M) [3.2V AVR]
IC405	IC	Reset
IC406	IC	INT DET
IC407	IC	DC-DC converter (38M) [3.8V DC-DC]
IC408	IC	Voltage regulator (32MD) [3.2V AVR]
IC500	IC	Flash memory [FLASH]
IC501	IC	MPU/DSP
IC502	IC	Clock Buffer amplifier [CLK BUFF AMP]
IC600	IC	APC buffer [APC BUFF]
IC601	IC	Modulation amplifier [MOD AMP]
IC602	IC	MIC AMP
IC603	IC	AF AMP Filter [AF AMP FIL]

Ref. No.	Part Name	Use / Function
IC604,605	IC	D/A converter [DAC]
IC606	IC	VOX AMP
IC700	IC	LCD driver [LCD DRV]
Q1	FET	DC switch (assist) [DC SW]
Q3	TRANSISTOR	Ripple filter
Q4	FET	VCO
Q5	TRANSISTOR	VCO buffer [VCO BUFF]
Q100	TRANSISTOR	Buffer amplifier [BUFF AMP]
Q101	FET	DC switch (Batt DET) [DC SW]
Q102	FET	DC switch (Curr DET) [DC SW]
Q103	TRANSISTOR	DC switch [DC SW]
Q104	FET	Pre-drive [PRE-DRV]
Q105	FET	DC switch (APC) [DC SW]
Q106	FET	Drive amplifier [DRV AMP]
Q107	FET	RF final amplifier [FINAL]
Q108	FET	DC switch (APC) [DC SW]
Q200	TRANSISTOR	RF amplifier [RF AMP]
Q202	FET	DC switch (32R) [DC SW]
Q300	TRANSISTOR	DC switch (RED LED) [DC SW]
Q301	TRANSISTOR	DC switch (GREEN LED) [DC SW]
Q302	TRANSISTOR	DC switch (BLUE LED) [DC SW]
Q303,304	FET	DC switch [DC SW]
Q305	TRANSISTOR	DC switch [DC SW]
Q306,307	TRANSISTOR	DC switch (Audio amplifier) [DC SW]
Q308	FET	Level shifter
Q309,310	TRANSISTOR	DC Stabler [DC SW]
Q311	TRANSISTOR	DC switch (Audio amplifier) [DC SW]
Q312	TRANSISTOR	DC switch (Emergency PTT) [DC SW]
Q313	FET	Level shifter
Q400	FET	DC switch (5T Control) [DC SW]
Q402	FET	DC switch [DC SW]
Q403	TRANSISTOR	DC switch (Batt DET) [DC SW]
Q404	FET	DC switch (Interrupt) [DC SW]
Q600,601	TRANSISTOR	MIC AGC
Q700	TRANSISTOR	DC switch (LCD backlight) [DC SW]
Q701	TRANSISTOR	DC switch (KEY backlight) [DC SW]
D1	DIODE	DC-DC converter [DC-DC CONV]
D2	ZENER DIODE	Voltage regulator Protection
D4	DIODE	Ripple filter
D5-9	VARIABLE CAPACITANCE DIODE	VCO Frequency control [VCO]
D101-104	DIODE	Antenna switch [ANT SW]
D105	VARISTOR	Surge protection [SURGE P]

Ref. No.	Part Name	Use / Function
D200-203	VARIABLE CAPACITANCE DIODE	RF BPF control [RF BPF CTL]
D300	LED	LED indicator [IND]
D303	DIODE	DC switch [DC SW]
D304-307	VARISTOR	Surge protection [SURGE P]
D400	DIODE	Reverse current protection
D401	DIODE	DC switch [DC SW]
D402	DIODE	38M control [38M CTL]
D600, 601	DIODE	MIC AGC
D602	DIODE	VOX
D603	DIODE	VOX
D701,703	LED	LCD backlight
D704,705	LED	KEY backlight
D716-719	DIODE	Reverse current protection

2.6 TERMINAL FUNCTION

2.6.1 TX-RX unit (XC1-296K-02)

Pin No.	Name	I/O	Function
CN300			
1	VOL	I	Volume level input
2	GND	-	GND
3	SB	I	Switched B input
4	SB	I	Switched B input
5	+B	O	Power output after passing through the fuse
6	+B	O	Power output after passing through the fuse
7	32M	O	DC 3.2V output
8	EN2	I	Selector input
9	EN4	I	Selector input
10	GND	-	GND
11	EN3	I	Selector input
12	EN1	I	Selector input

2.6.2 SP/MIC Connector Specification

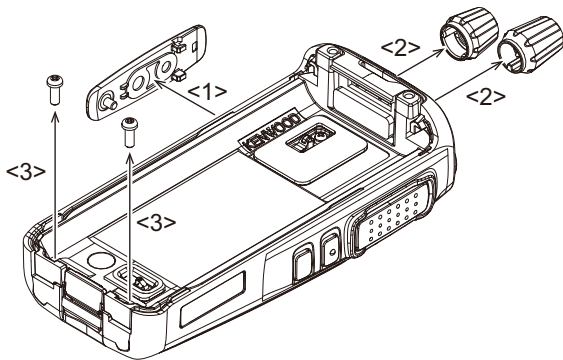
Pin No.	Pin Name	I/O	Signal Type	Description	Item and Condition	Min	Typ	Max	Unit	Note
1	PTT/RXD	I	Digital	PTT/RXD input Zin = 47kohm Internal Pull-up (5V)	Input Voltage (High)	4	5	6	V	
					Input Voltage (Low)	0		0.5	V	
					Baud Rate			0.2304	Mbps	
2	MIC	I	Analog	External MIC input Zin = 1.8kohm@1kHz Bias = 5.0V (Load=Open) Frequency range = 0.3~3kHz Before Pre-emphasis	Maximum Input Voltage			1100	mVrms	
					Standard Input Voltage	9.2	15	20.8	mVrms	AF = 1kHz 60% of system Dev MIC sens = Normal
3	MICO	O	Analog	Internal MIC output	<Unable to connect>					
4	OPTDET	I	Digital	External option detection Zin = 74kohm Internal Pull-down (0V) Active Low	<Unable to connect>					
5	50V	O	Power	DC 5V output (Controlled by MPU/DSP)	Output Voltage	4.9	5	5.1	V	Io = 30mA
					Maximum Output Current			100	mA	
6	AE	-	GND	GND	Maximum Input Current			700	mA	
7	TXD	O	Digital	TXD output Zout = 6.8kohm Internal Pull-up (5V)	Output Voltage (High)	4.9	5	5.1	V	Load = Open
					Output Voltage (Low)	0		0.1	V	Load = Open
					Baud Rate			0.2304	Mbps	
8	NC	-	-	No Connection	<Unable to connect>					
9	1PINDET	I	Digital	External Speaker Detection Zin = 47kohm Internal Pull-up (5V)	<Unable to connect>					
10	SPO	O	Analog	Internal Audio output Frequency range = 0.3~3kHz After De-emphasis	Maximum Output Power			1300	mW	AF = 0.3~3kHz FM Dev.= Maximum Load = 8ohm P.S. = 9.0V
					Standard Output Power	400	500		mW	AF = 1kHz Load = 8ohm THD = 10% P.S. = 7.5V

SECTION 3 DISASSEMBLY

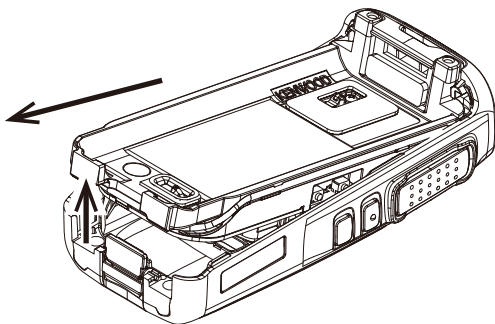
3.1 Precautions for Disassembly

3.1.1 Removing the TX-RX unit and other parts

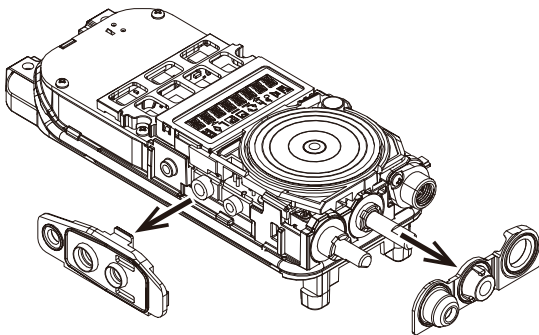
- (1) Loosen CAP screw and remove the CAP. <1>
- (2) Remove Volume Knob & Selector Knob. <2>
- (3) Remove the two screws tightened on Chassis. <3>



- (4) Lift the bottom of the chassis and remove it from the front case.



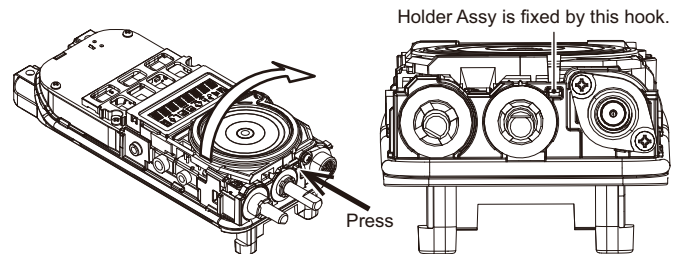
- (5) Remove Rubber Seal of phone jack and Rubber Seal at top side.



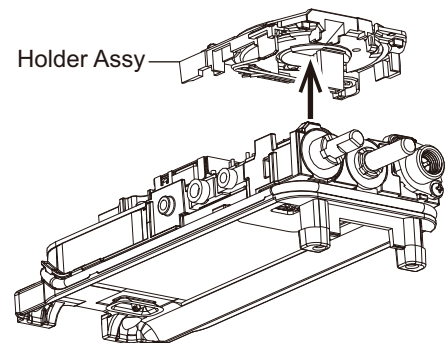
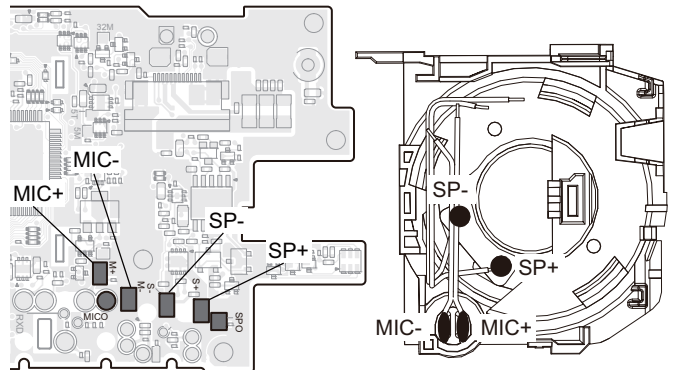
- (6) Remove Speaker Holder Assy from Chassis.
Press on the hooking portion of Speaker Holder and remove the Speaker Holder Assy from Chassis.

Note:

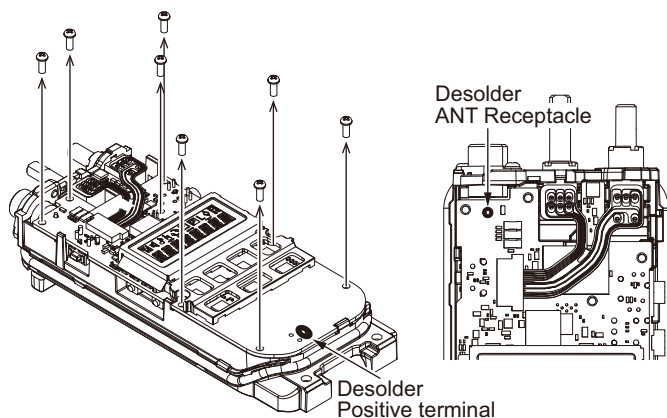
Please be cautious the wires are still connected to Speaker and MIC element.



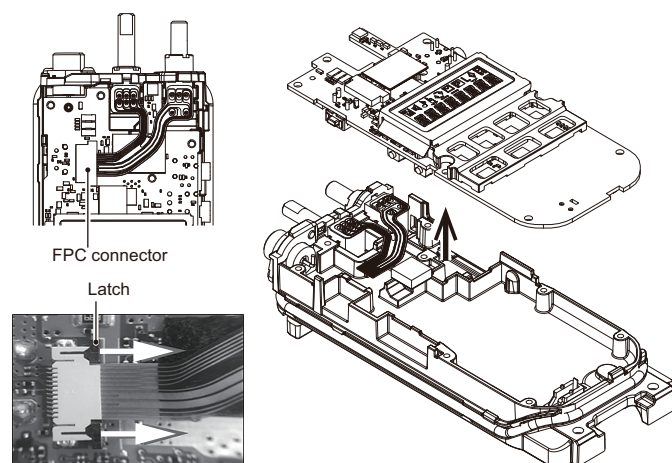
Desolder to remove the Holder Assy.
Speaker Wires x2
MIC Wires x2



- (7) Remove PCB screws (x8).
- (8) Desolder the ANT Receptacle and Positive Terminal.

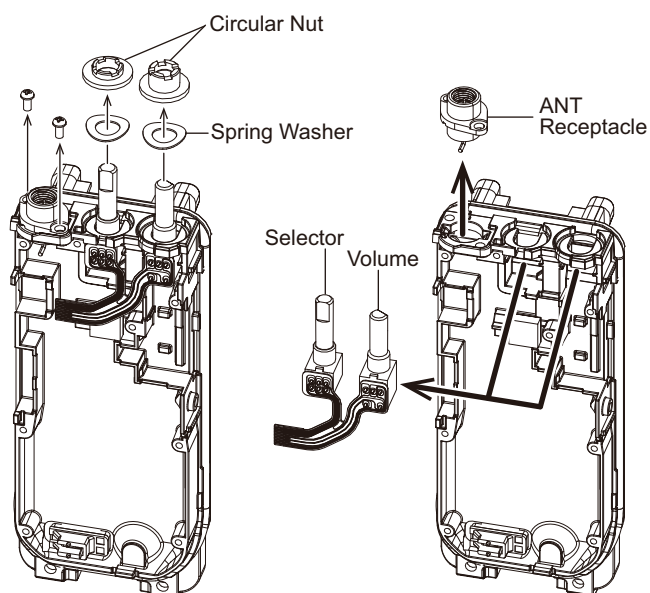


- (9) Unlock the FPC connector and remove FPC cable from it, then remove the PCB from Chassis.

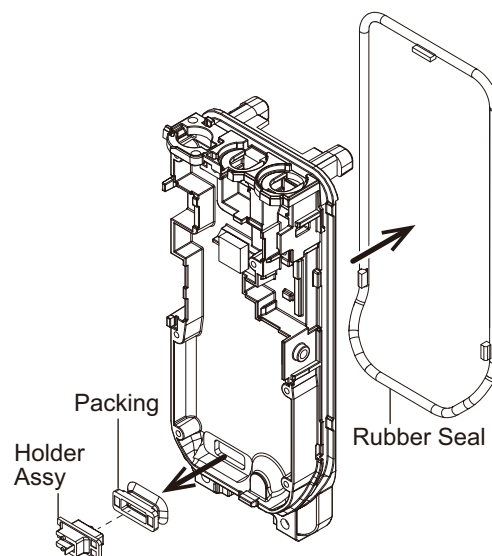


Lift the latch to unlock the FPC connector.

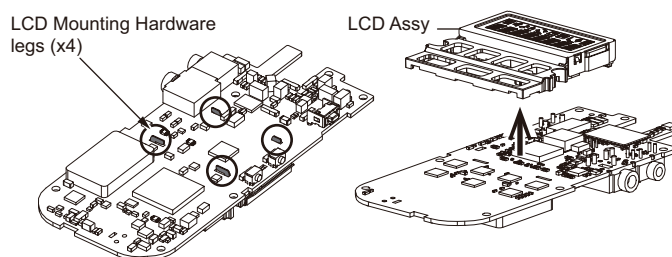
- (10) Untighten the screws of ANT Receptacle and circular nuts of Variable Resistor (Volume) & Rotary Switch (Selector), then remove ANT Receptacle, spring washers, Volume, Selector from Chassis.



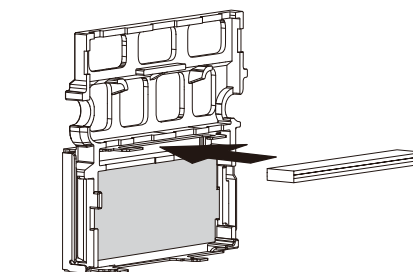
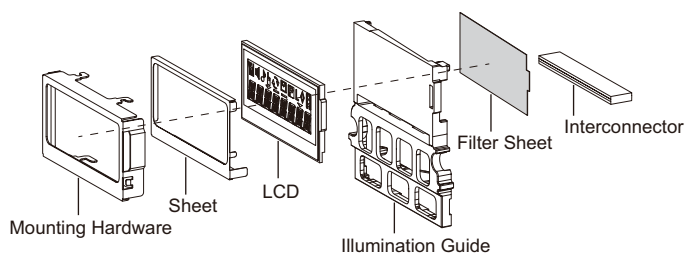
- (11) Remove Rubber Seal & Holder Assy, Packing from Chassis.



- (12) Bend the LCD Mounting Hardware legs to horizontal (PCB B-side), then remove LCD Assy from PCB.



- (13) LCD Assy can be disassembled into the following parts.



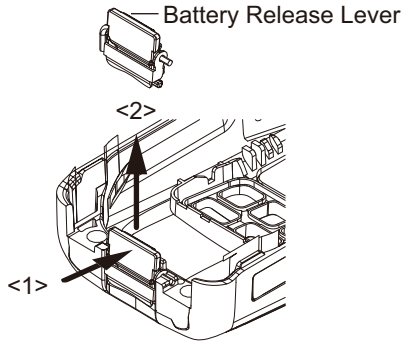
When reassembling the LCD Assy, insert the Interconnector last as shown.

- (14) Remove the Battery Release Lever from the front case.
- Press the upper part of the lever toward the inside of the front case. One side of the shaft will be removed. <1>
 - Lift and remove the battery release lever from the front case. <2>

Note:

Scratch and widen the glue hole if there is difficulty in removing the other end of the shaft.

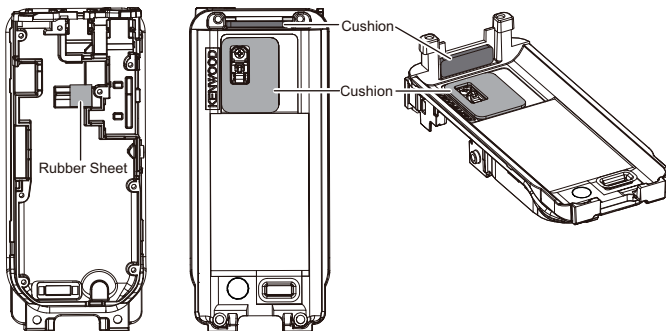
No glue is required when you reassemble the battery release lever.



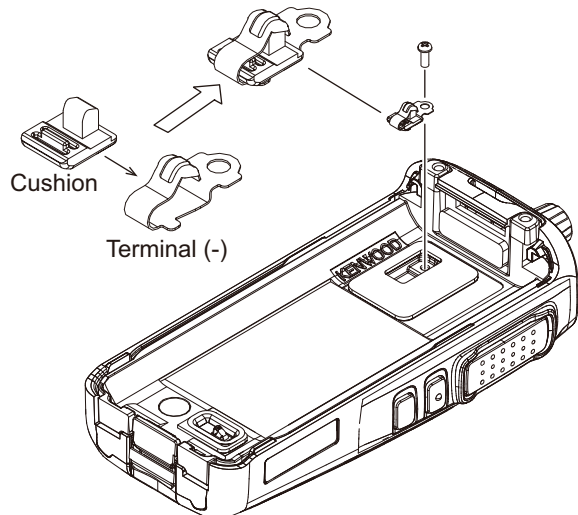
3.2 Precautions for Reassembly

3.2.1 General Reassembly

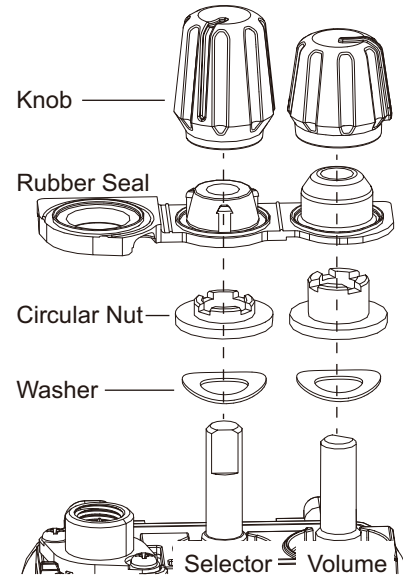
- (1) Attach Rubber Sheet & Cushion to the chassis.



- (2) Attach Terminal (-) with Cushion to the chassis.



- (3) Attach the Knob and other parts to the Volume/ Selector as shown.



Note:

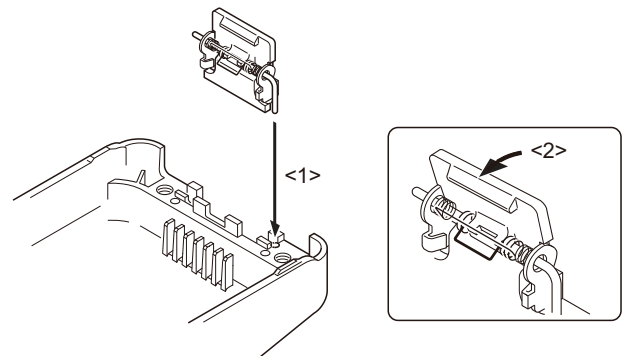
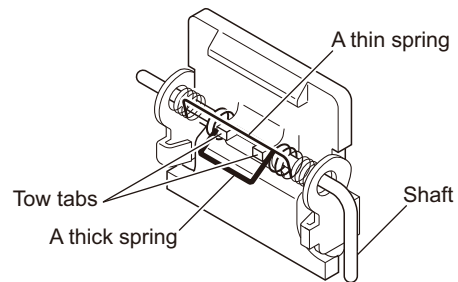
Jig for Circular Nut (Part No.: W05-1012-00)

- (4) Attaching the Battery Release Lever to the Front Case
- Insert one side of the shaft into the hole at the lever fitting section on the Front Case. <1>

Note:

The thin spring should be positioned above the two tabs of the lever.

- Tilt the battery release lever slightly forward <2>, so that the thick spring is positioned below the case surface.



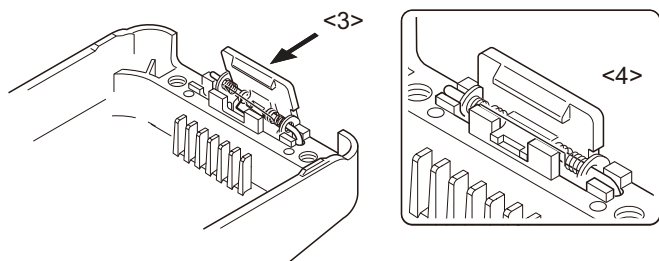
- With the thick spring positioned below the Front Case surface, attach the other side of the shaft to the Front Case by pressing the battery release lever <3> until it snaps into place <4>.

Note:

Be careful not to tilt the battery release lever too forward.

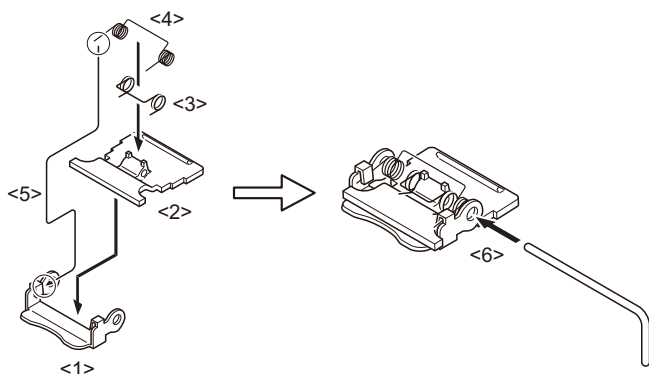
If the battery release lever is pushed in this state where the two tabs come below the Front Case surface, there is a possibility of damaging the two tabs.

Battery Release Lever is completely fixed when the chassis is assembled to the Front Case.



(5) Assembling the Battery Release Lever

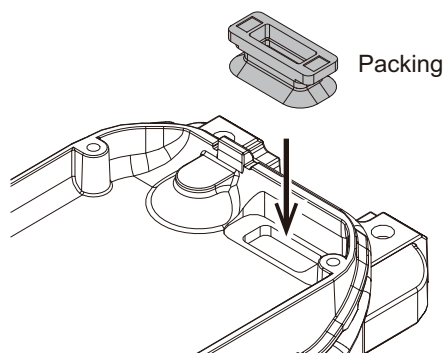
- Place the lever <2> onto the stopper <1>.
- Place the thick spring <3> onto the lever.
- Hook the right and left ends of the thin spring <4> onto the tabs of the stopper, then place the thin spring onto the lever <5>.
- Slide the shaft through the hole of the stopper and lever <6>.



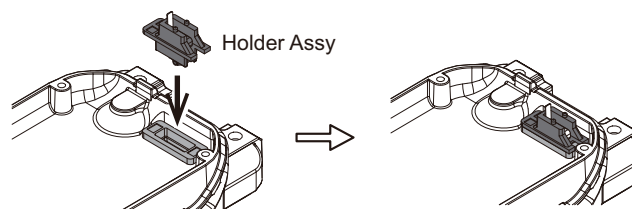
(6) Attaching the Positive Terminal to the Chassis

Always attach the positive terminal to the chassis, using the following procedures, before attaching the TX-RX unit onto the chassis.

- Attach the Packing to the chassis.



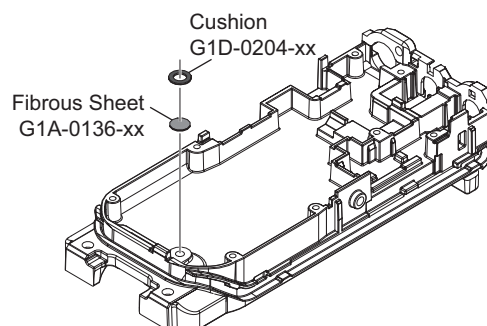
- Attach the Holder Assy to the Packing.



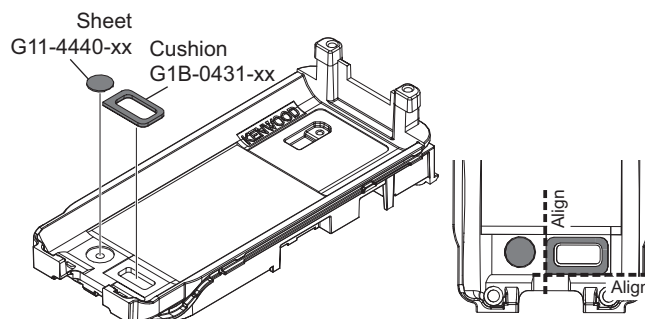
3.2.2 The parts and work that affect waterproof performance

Pay attention to the following works to ensure the waterproof performance.

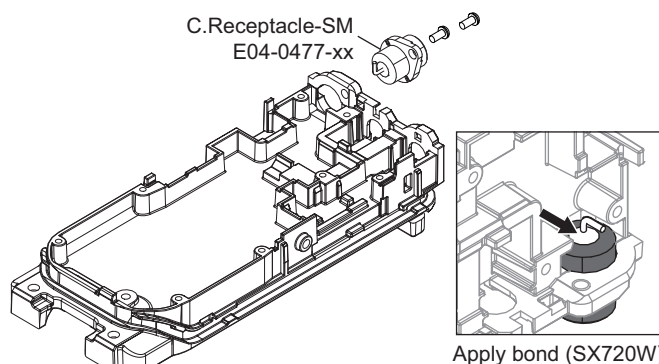
- (1) After confirming that there is no dirt, dust on the parts and chassis, attach the Fibrous Sheet to the chassis first, and then attach the Cushion.



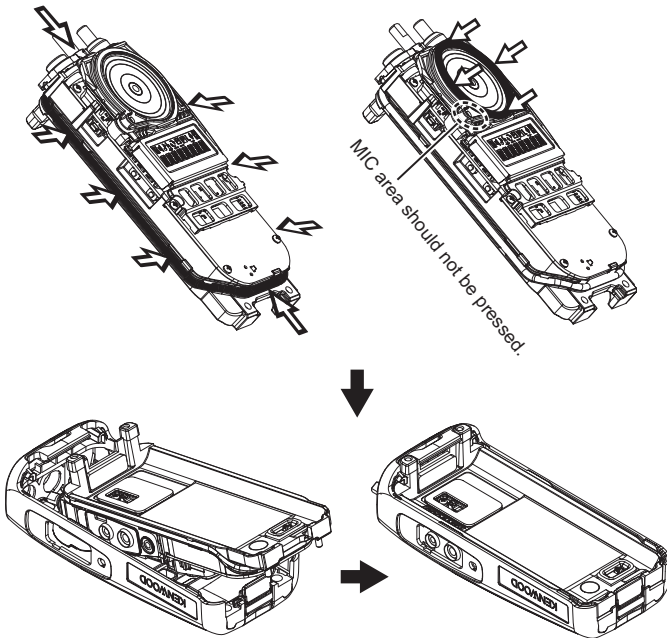
- (2) After confirming that there is no dirt, dust on the parts and chassis, attach the Sheet and Cushion to the chassis.



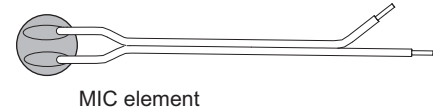
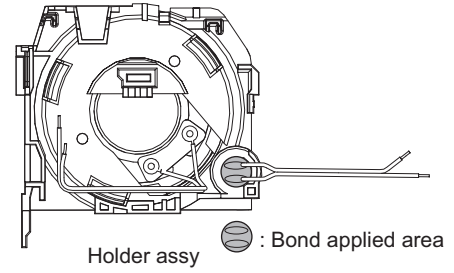
- (3) If exchange new C.Receptacle-SM, need apply bond.



- (4) Before mounting the CHASSIS to CABINET ASSY, rubber parts fitting condition should be checked.
If necessary, push rubber properly for fitting stability.

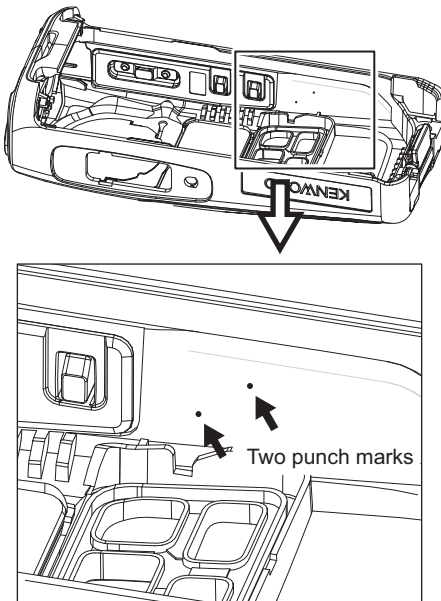


- Holder assy and MIC element have been applied the bond for waterproof.



3.2.3 Waterproof parts that are difficult to identify due to their similar appearance

- Cabinet assy with waterproof function has two small punch marks.



3.3 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 Number	Part Name	Part Number	Part Name
A1A-0131-11	CHASSIS	G13-2009-04	CUSHION
		G13-2034-24	CUSHION
		G11-4440-04	SHEET
		G1A-0136-00	FIBROUS SHEET
		G1B-0431-00	CUSHION
		G1D-0204-00	CUSHION
K2K-0411-00	BUTTON KNOB	J9K-0054-00	ADHESIVE SHEET

SECTION 4 ADJUSTMENT

4.1 Test Equipment Required for Alignment

Test Equipment	Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range	100 to 520MHz
	Modulation	Frequency modulation and external modulation
	Output	-127dBm/0.1μV to greater than -47dBm/1mV
2. Power Meter	Input Impedance	50ohm
	Operation Frequency	100 to 520MHz
	Measuring Range	Vicinity of 10W
3. Deviation Meter	Frequency Range	100 to 520MHz
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
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. 8ohm Dummy Load		Approx. 8ohm 3W
12. 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

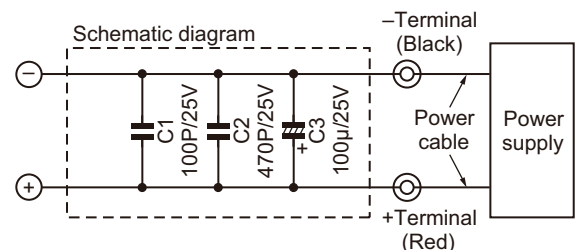
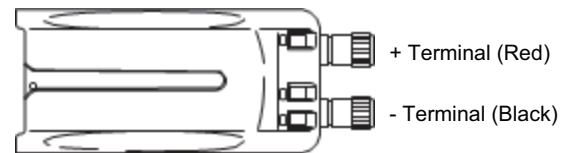
The antenna connector of this transceiver uses an SMA terminal. Use an antenna connector adapter [SMA(f) - BNC(f) or SMA(f) - N(f)] for adjustment. (The adapter is not provided as an option, so buy a commercially-available one.)

■Battery Jig (W05-1011-00)

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.

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.



4.2 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.

■Test frequency

CH	RX (MHz)	TX (MHz)
1	485.05000	485.10000
2	450.05000	450.10000
3	519.95000	519.90000
4	485.00000	485.00000
5	485.20000	485.20000
6	485.40000	485.40000
7~16	-	-

■Analog mode signaling

No.	RX	TX
1	None	None
2	None	150Hz Square Wave
3	QT 67.0Hz	QT 67.0Hz
4	QT 151.4Hz	QT 151.4Hz
5	QT 210.7Hz	QT 210.7Hz
6	QT 254.1Hz	QT 254.1Hz
7	DQT D023N	DQT D023N
8	DQT D754I	DQT D754I
9	DTMF Decode (Code: 159D)	DTMF Encode (Code: 159D)
10	None	DTMF (Code: 9)
11	None	MSK (1010..)
12	FleetSync: 100-1000	FleetSync: 100-1000
13	None	Single Tine: 1000Hz
14	2-tone Decode: A: 304.7Hz B: 3106.0Hz	2-tone Encode: A: 304.7Hz B: 3106.0Hz
15	None	DTMF Tone: 1477Hz
16	Single Tone: 979.9Hz	Single Tone: 979.9Hz
17	None	MSK PN9
18	None	DTMF (Code: 3)
19	Single Tone: 1200Hz	Single Tone: 1200Hz
20	5-tone (CCIR12345)	5-tone (CCIR12345)

4.3 PC Tuning mode

4.3.1 Preparations for Tuning the Transceiver

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

Whenever the transmitter is tuned, 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 tuning.

4.3.2 The adjustment frequency list

■5 points adjustment frequency

Tuning point	RX (MHz)	TX (MHz)
Low	450.05000	450.10000
Low'	467.55000	467.60000
Center	485.05000	485.10000
High'	502.55000	502.60000
High	519.95000	519.90000

4.3.3 Adjustment item supplement

Adjustment Item	Description
Assist Voltage	The lock voltage of VCO is adjusted. This item must be adjusted before all adjustment items.
DC Offset	Adjust this item to calibrate RF IC DC voltage within an optimal range.
Frequency	The Transmit Frequency is adjusted.
Ramp Offset	Adjust this item to the optimal Ramp voltage.
High Transmit Power	High Transmit Power is adjusted.
Medium Transmit Power	Medium Transmit Power is adjusted.
Low Transmit Power	Low Transmit Power is adjusted.
DQT Balance	The transmit audio frequency response is adjusted. This item is adjusted so that the deviation of 150Hz becomes the same deviation of 2kHz. 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.
DQT Deviation (Analog Wide / Narrow)	DQT tone deviation (Wide / Narrow) is adjusted.
QT Deviation (Analog Wide / Narrow)	QT tone deviation (Wide / Narrow) is adjusted.
DTMF Deviation (Analog Wide / Narrow)	DTMF deviation (Wide / Narrow) is adjusted.

Adjustment Item	Description
Single Tone Deviation (Analog Wide / Narrow)	The deviation of Single Tone used in "2-tone and 5-tone" is adjusted.
MSK Deviation (Analog Wide / Narrow)	MSK deviation (Wide / Narrow) is adjusted.
Receive Sensitivity	Band-Pass Filter is adjusted. The performance of Receive Sensitivity is improved. This item must be adjusted before all squelch items are adjusted.
LNA Off AGC Calibration	Adjust this item to set AGC gain when LNA is off.
Open Squelch (5) (Analog Wide / Narrow)	The squelch level at level "5" for Analog Wide / Narrow is adjusted.

Adjustment Item	Description
Tight Squelch (Analog Wide / Narrow)	The squelch level at level "9" for Analog Wide / Narrow is adjusted.
Low RSSI (Analog Narrow)	RSSI display level is adjusted. Both "Low RSSI" and "High RSSI" must be adjusted. (The curve data of RSSI level is applied.)
High RSSI (Analog Narrow)	
Battery Warning Level	Battery Warning Level (LED blinking level) is adjusted. Battery Warning Level minus 0.4V is the transmission inhibited level.

4.3.4 Adjustment item

Order	Adjustment item	Aw (Analog Wide)	An (Analog Narrow)	Adjust item Number
		Adjustment range		
1	Assist Voltage	5 point Automatic ADJ		Common Section 2
		1 ~ 256		
2	DC Offset	7 point Automatic ADJ		Common Section 3
		1 ~ 4096		
3	Frequency	1 point ADJ		Common Section 4
		1 ~ 256		
4	Ramp Offset	5 point ADJ		Transmitter Section 1
		1 ~ 256		
5	High Transmit Power	-	5	Transmitter Section 2
		1 ~ 1024		
6	Medium Transmit Power	-	5	Transmitter Section 3
		1 ~ 1024		
7	Low Transmit Power	-	5	Transmitter Section 4
		1 ~ 1024		
8	DQT Balance	-	5	Transmitter Section 5, 6
		1 ~ 256		
9	Maximum Deviation	5	5	Transmitter Section 7
		1 ~ 1024		
10	DQT Deviation	5	5	Transmitter Section 8
		1 ~ 1024		
11	QT Deviation	5	5	Transmitter Section 9
		1 ~ 1024		
12	DTMF Deviation	5	5	Transmitter Section 10
		1 - 1024		
13	Single Tone Deviation	5	5	Transmitter Section 11
		1 ~ 1024		
14	MSK Deviation	5	5	Transmitter Section 12
		1 ~ 1024		

Order	Adjustment item	Aw (Analog Wide)	An (Analog Narrow)	Adjust item Number
		Adjustment range		
15	Battery Warning Level	1 point ADJ		Transmitter Section 13
		1 ~ 4096		
16	Receive Sensitivity	-	5	Receiver Section 2, 3
		1 ~ 1024		
17	LNA off AGC Calibration	-	1	Receiver Section 4
		1 ~ 4096		
18	Open Squelch (5)	5	5	Receiver Section 5
		1 ~ 1024		
19	Low RSSI	-	5	Receiver Section 6
		1 ~ 1024		
20	High RSSI	-	5	Receiver Section 7
		1 ~ 1024		
21	Tight Squelch	5	5	Receiver Section 8
		1 ~ 1024		

4.4 Radio check Section

Item	Condition	Measurement	Adjustment		Specifications/ Remarks
	PC test mode		Point	Method	
1. Frequency check	1) Test Channel: 1 Test Signaling: 1 2) PTT: Press [Transmit] button.	f. counter -ANT		Check	485.099758~ 485.100242MHz (±0.5ppm@485.1MHz)
2. High power check (Battery voltage: 7.5V)	1) Test Channel: 1 Test Signaling: 1 2) PTT: Press [Transmit] button.	Power meter -ANT Ammeter		Check	4.0~6.0W 2.3A or less
	1) Test Channel: 2 Test Signaling: 1 2) PTT: Press [Transmit] button.	Power meter -ANT Ammeter		Check	4.0~6.0W 2.3A or less
	1) Test Channel: 3 Test Signaling: 1 2) PTT: Press [Transmit] button.	Power meter -ANT Ammeter		Check	4.0~6.0W 2.3A or less
3. Medium power check (Battery voltage: 7.5V)	1) Test Channel: 1 Test Signaling: 1 2) PTT: Press [Transmit] button.	Power meter -ANT Ammeter		Check	3.5~4.5W 2.3A or less
	1) Test Channel: 2 Test Signaling: 1 2) PTT: Press [Transmit] button.	Power meter -ANT Ammeter		Check	3.5~4.5W 2.3A or less
	1) Test Channel: 3 Test Signaling: 1 2) PTT: Press [Transmit] button.	Power meter -ANT Ammeter		Check	3.5~4.5W 2.3A or less
4. Low power check (Battery voltage: 7.5V)	1) Test Channel: 1 Test Signaling: 1 2) PTT: Press [Transmit] button.	Power meter -ANT Ammeter		Check	0.75~1.25W 1.2A or less
	1) Test Channel: 2 Test Signaling: 1 2) PTT: Press [Transmit] button.	Power meter -ANT Ammeter		Check	0.75~1.25W 1.2A or less
	1) Test Channel: 3 Test Signaling: 1 2) PTT: Press [Transmit] button.	Power meter -ANT Ammeter		Check	0.75~1.25W 1.2A or less

Item	Condition	Measurement	Adjustment		Specifications/ Remarks
	PC test mode		Point	Method	
5. MIC sensitivity check	1) Test Channel: 2 Test Signaling: 1 2) AG: 1kHz 3) PTT: Press [Transmit] button.	Deviation meter Power meter -ANT AG, AF VM Oscilloscope -MIC		Adjust AG input to get a standard MOD.	15.0mV ± 7.0mV
6. Sensitivity check	1) Test Channel: 3 Test Signaling: 1 2) SSG output Wide: -116dBm (0.35μV) (MOD: 1kHz/±3kHz) Narrow: -115dBm (0.40μV) (MOD: 1kHz/±1.5kHz)	SSG -ANT Distortion meter 8ohm Dummy load AF VM Oscilloscope -SP output		Check	12dB SINAD or more

4.5 Common Section

Item	Condition	Measurement	Adjustment		Specifications/ Remarks
	PC tuning mode		Point	Method	
1. Setting	1) BATT terminal voltage:7.5V 2) SSG standard modulation [Wide] MOD:1kHz/DEV:3kHz [Narrow] MOD:1kHz/ DEV:1.5kHz				
2. Assist Voltage	1) Adj item: [Assist Voltage] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High]		FPU [<],[>]	[Automatic Adjustment] -PC Test mode- 1) Press [Tune Assist Voltage] button. 2) Press [OK] button to store the adjustment value after all adjustment point have been adjusted. 3) Verify that the VCO lock voltage is within the specification in the PC tuning mode. [Manual Adjustment] 1) [V] indicator on the PC window shows VCO lock voltage. Change the adjustment value to get VCO lock voltage within the specified voltage. 2) Press [OK] button to store the adjustment value after all adjustment point have been adjusted.	2.4~2.6V
Note: Confirm the VCO lock voltage approximately three seconds after the adjustment value is changed.					
3. DC Offset	<PC test mode> 1) Test Channel: 1 Test Signaling: 1		FPU [<],[>]	Press [DC Offset] button. It will pop up a window after adjustment is completed.	Press [OK] button to store the adjustment value.
4. Frequency	1) Adj item: [Frequency] 2) Adj point: 1 point Transmit power: Low 3) PTT: Press [Transmit] button.	f. counter -ANT	FPU [<],[>]	Adjust to 485.100000MHz	485.099950~ 485.100050MHz Press [OK] button to store the adjustment value.

4.6 Transmitter Section

Item	Condition	Measurement	Adjustment		Specifications/Remarks
	PC tuning mode		Point	Method	
1. Ramp Offset	1) Adj item: [Ramp Offset] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) Press [Transmit] button.	Power meter -ANT	FPU [<],[>]	Write the fixed value "1" for each adjustment points. Press [OK] button to store the adjustment value after all adjustment points have been adjusted.	
2. High transmit power (Battery voltage: 7.5V)	1) Adj item: [High Transmit Power] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) Press [Transmit] button.	Power meter -ANT Power supply Ammeter	FPU [<],[>]	5.0W	±0.5W 2.3A or less Press [OK] button to store the adjustment value after all adjustment points have been adjusted.
3. Medium transmit power (Battery voltage: 7.5V)	1) Adj item: [Medium Transmit Power] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) Press [Transmit] button.	Power meter -ANT Power supply Ammeter	FPU [<],[>]	4.0W	±0.5W 2.3A or less Press [OK] button to store the adjustment value after all adjustment points have been adjusted.
4. Low transmit power (Battery voltage: 7.5V)	1) Adj item: [Low Transmit Power] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) Press [Transmit] button.	Power meter -ANT Power supply Ammeter	FPU [<],[>]	1.0W	±0.25W 1.2A or less Press [OK] button to store the adjustment value after all adjustment points have been adjusted.
5. DQT Balance 1 *1 *2	1) Adj item: [DQT Balance 1] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) Deviation meter: LPF: 3kHz/HPF: OFF 4) Press [Transmit] button.	Oscilloscope -Deviation meter demodulation wave Deviation meter Power meter -ANT	FPU [<],[>]	Make the demodulation wave into square wave.	 Press [OK] button to store the adjustment value after all adjustment points have been adjusted.
6. DQT Balance 2 *1 *2	1) Adj item: [DQT Balance 2] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) Deviation meter: LPF: 3kHz/HPF: OFF 4) Press [Transmit] button. 5) Check [2kHz Sine Wave Check box] to change 2kHz.	Deviation meter Power meter -ANT Oscilloscope	FPU [<],[>]	The Deviation of 2kHz frequency is fixed. Change the 150Hz adjustment value to become the same deviation of 2kHz within the specified range.	150Hz Tone deviation is within ±1.0% of 2kHz tone deviation. Press [OK] button to store the adjustment value after all adjustment points have been adjusted.
*1: Refer to the "4.6.1 Necessary Deviation adjustment item for each signaling and mode" table. Balance adjustment is common with the adjustment of all signaling deviations. *2: Only one DQT Balance needs to be adjusted (either DQT Balance 1 or DQT Balance 2).					

Item	Condition	Measurement	Adjustment		Specifications/Remarks
	PC tuning mode		Point	Method	
7. Maximum Deviation (Analog)*3	1) Adj item: [Maximum Deviation (Analog Wide)] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) Deviation meter: LPF: 15kHz/HPF: OFF 4) Press [Transmit] button.	Deviation meter -ANT Oscilloscope	FPU [<],[>]	Adjust to "4200Hz"	4150~4250Hz Press [OK] button to store the adjustment value after all adjustment points have been adjusted.
	1) Adj item: [Maximum Deviation (Analog Narrow)] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) Deviation meter: LPF: 15kHz/HPF: OFF 4) Press [Transmit] button.	Deviation meter -ANT Oscilloscope	FPU [<],[>]	Adjust to "2100Hz"	2050~2150Hz Press [OK] button to store the adjustment value after all adjustment points have been adjusted.
8. DQT Deviation *3	1) Adj item: [DQT Deviation (Analog Wide)] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) Deviation meter: LPF: 3kHz/HPF: OFF 4) Press [Transmit] button.	Deviation meter -ANT Oscilloscope	FPU [<],[>]	Write the reference value "156" for each adjustment points.	0.75kHz±0.05kHz Press [OK] button to store the adjustment value after all adjustment points have been adjusted.
	1) Adj item: [DQT Deviation (Analog Narrow)] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) Deviation meter: LPF: 3kHz/HPF: OFF 4) Press [Transmit] button.	Deviation meter -ANT Oscilloscope	FPU [<],[>]	Write the reference value "146" for each adjustment points.	0.35kHz±0.05kHz Press [OK] button to store the adjustment value after all adjustment points have been adjusted.
9. QT Deviation *3	1) Adj item: [QT Deviation (Analog Wide)] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) Deviation meter: LPF: 3kHz/HPF: OFF 4) Press [Transmit] button.	Deviation meter -ANT Oscilloscope	FPU [<],[>]	Write the reference value "190" for each adjustment points.	0.75kHz ± 0.05kHz Press [OK] button to store the adjustment value after all adjustment points have been adjusted.
	1) Adj item: [QT Deviation (Analog Narrow)] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) Deviation meter: LPF: 3kHz/HPF: OFF 4) Press [Transmit] button.	Deviation meter -ANT Oscilloscope	FPU [<],[>]	Write the reference value "176" for each adjustment points.	0.35kHz ± 0.05kHz Press [OK] button to store the adjustment value after all adjustment points have been adjusted.
10. DTMF Deviation *3	1) Adj item: [DTMF Deviation (Analog Wide)] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) Deviation meter: LPF: 15kHz/HPF: OFF 4) Press [Transmit] button.	Deviation meter -ANT Oscilloscope	FPU [<],[>]	Write the reference value "156" for each adjustment points.	2.50kHz±0.05kHz Press [OK] button to store the adjustment value after all adjustment points have been adjusted.
	1) Adj item: [DTMF Deviation (Analog Narrow)] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) Deviation meter: LPF: 15kHz/HPF: OFF 4) Press [Transmit] button.	Deviation meter -ANT Oscilloscope	FPU [<],[>]	Write the reference value "154" for each adjustment points.	1.25kHz±0.05kHz Press [OK] button to store the adjustment value after all adjustment points have been adjusted.

Item	Condition	Measurement	Adjustment		Specifications/Remarks
	PC tuning mode		Point	Method	
11. Single Tone Deviation *3	1) Adj item: [Single Tone Deviation (Analog Wide)] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) Deviation meter: LPF: 15kHz/HPF: OFF 4) Press [Transmit] button.	Deviation meter -ANT Oscilloscope	FPU [<],[>]	Write the reference value "738" for each adjustment points.	3.00kHz±0.05kHz Press [OK] button to store the adjustment value after all adjustment points have been adjusted.
	1) Adj item: [Single Tone Deviation (Analog Narrow)] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) Deviation meter: LPF: 15kHz/HPF: OFF 4) Press [Transmit] button.	Deviation meter -ANT Oscilloscope	FPU [<],[>]	Write the reference value "729" for each adjustment points.	1.50kHz±0.05kHz Press [OK] button to store the adjustment value after all adjustment points have been adjusted.
12. MSK Deviation *3	1) Adj item: [MSK Deviation (Analog Wide)] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) Deviation meter: LPF: 15kHz/HPF: OFF 4) Press [Transmit] button.	Deviation meter -ANT Oscilloscope	FPU [<],[>]	Write the reference value "719" for each adjustment points.	3.00kHz±0.05kHz Press [OK] button to store the adjustment value after all adjustment points have been adjusted.
	1) Adj item: [MSK Deviation (Analog Narrow)] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) Deviation meter: LPF: 15kHz/HPF: OFF 4) Press [Transmit] button.	Deviation meter -ANT Oscilloscope	FPU [<],[>]	Write the reference value "714" for each adjustment points.	1.50kHz±0.05kHz Press [OK] button to store the adjustment value after all adjustment points have been adjusted.
*3: Refer to the "4.6.1 Necessary Deviation adjustment item for each signaling and mode" table.					
13. Battery Warning Level writing	1) Adj item: [Battery Warning Level] 2) Press [Transmit] button.	DVM -Battery JIG Power meter -ANT	FPU	Adjust the voltage to 6.20V at the Battery JIG. Confirm that one pre-determined numeric in the range 1 to 4096 appears.	Press [OK] button to store the adjustment value.
14. Battery Warning Level check	<PC Test mode> 1) Test Channel: 1 Test Signaling: 1 2) Adjust the Battery JIG voltage: to 6.0V while transmitting.	DVM -Battery JIG Power meter -ANT		Check	The transceiver can transmit with causing the LED to blink.

4.6.1 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 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
Analog	Audio	1. Balance 2. Maximum Deviation [Analog Wide]	1. Balance 2. Maximum Deviation [Analog Narrow]
	DQT	1. Balance 2. Maximum Deviation [Analog Wide] 3. DQT Deviation [Analog Wide]	1. Balance 2. Maximum Deviation [Analog Narrow] 3. DQT Deviation [Analog Narrow]
	QT	1. Balance 2. Maximum Deviation [Analog Wide] 3. QT Deviation [Analog Wide]	1. Balance 2. Maximum Deviation [Analog Narrow] 3. QT Deviation [Analog Narrow]
	Single Tone	1. Balance 2. Maximum Deviation [Analog Wide] 3. Single Tone Deviation [Analog Wide]	1. Balance 2. Maximum Deviation [Analog Narrow] 3. Single Tone Deviation [Analog Narrow]
	DTMF	1. Balance 2. Maximum Deviation [Analog Wide] 3. DTMF Deviation [Analog Wide]	1. Balance 2. Maximum Deviation [Analog Narrow] 3. DTMF Deviation [Analog Narrow]
	MSK	1. Balance 2. Maximum Deviation [Analog Wide] 3. MSK Deviation [Analog Wide]	1. Balance 2. Maximum Deviation [Analog Narrow] 3. MSK Deviation [Analog Narrow]

- Balance is common with all the above deviation adjustments. If Balance (Transmitter Section 5, 6) has already adjusted, please skip Step 1 and adjust from Step 2.
- Maximum Deviation (Analog Wide / Analog Narrow) is common with all the analog signaling deviations. If Balance and Maximum Deviation (Analog Wide / Analog Narrow) (Transmitter Section 7) have already adjusted, please skip Step 2 and adjust from Step 3.

4.7 Receiver Section

Item	Condition	Measurement	Adjustment		Specifications/ Remarks
	PC tuning mode		Point	Method	
1. AF level setting	<PC test mode> 1) Test Channel: 1 Test Signaling: 1 Beat Shift: Uncheck Comander: Uncheck 2) SSG output: -47dBm (1mV) MOD:1kHz/±1.5kHz	SSG -ANT AF VM 8ohm Dummy load -SP output	Volume	Turn the Volume knob to obtain 0.63V AF output.	0.63V±0.1V
2. Receive Sensitivity (Semiautomatic) *4	1) Adj item: [Receive Sensitivity (Semiautomatic)] 2) Adj points: 5 points [Low], [Low'], [Center], [High'], [High] 3) SSG output: -90dBm (7.08 uV) MOD:1kHz/±1.5kHz	SSG -ANT Distortion meter Oscilloscope -SP output	FPU [<],[>]	Input signal from SSG, press [Start] button, and after that press [OK] button to store the adjustment value.	
3. Receive Sensitivity *4	1) Adj item: [Receive Sensitivity] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) SSG output: -120dBm (0.22uV) MOD:1kHz/±1.5kHz	SSG -ANT Distortion meter Oscilloscope -SP output	FPU [<],[>]	Increase the adjustment value to get the highest SINAD level.	Press [OK] button to store the adjustment value.
*4: Receive Sensitivity must be adjusted after Receive Sensitivity (Semiautomatic) is adjusted.					
4. LNA Off AGC Calibration	1) Adj item: [LNA Off AGC Calibration] 2) Adj point: 1 point 3) SSG output: -26dBm (11mV) MOD:1kHz/±1.5kHz	SSG -ANT Distortion meter Oscilloscope -SP output	FPU	Input signal from SSG, press [Start] button to adjust, and after that press [OK] button to store the adjustment value.	

Item	Condition	Measurement	Adjustment		Specifications/ Remarks
	PC tuning mode		Point	Method	
5. Open Squelch (5) (Analog)	1) Adj item: [Open Squelch (5) (Analog Wide)] 2) Adj points: 5 points [Low], [Low'], [Center], [High'], [High] 3) SSG output: -120dBm (0.22uV) MOD:1kHz/±3.0kHz	SSG -ANT Distortion meter Oscilloscope -SP output	FPU	Input signal from SSG, press [Start] button to adjust, and after that press [OK] button to store the adjustment value.	
	1) Adj item: [Open Squelch (5) (Analog Narrow)] 2) Adj item: 5 points [Low], [Low'], [Center], [High'], [High] 3) SSG output: -120dBm (0.22uV) MOD:1kHz/±1.5kHz	SSG -ANT Distortion meter Oscilloscope -SP output	FPU	Input signal from SSG, press [Start] button to adjust, and after that press [OK] button to store the adjustment value.	
6. Low RSSI *5	1) Adj item: [Low RSSI (Analog Narrow)] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) SSG output: -120dBm (0.22uV) MOD:1kHz/±1.5kHz	SSG -ANT Distortion meter Oscilloscope -SP output	FPU	Input signal from SSG, press [Start] button to adjust, and after that press [OK] button to store the adjustment value.	
*5: Because Low RSSI at -120dBm (Analog Wide) is adjusted by adjusting Low RSSI at -120dBm (Analog Narrow), it is not necessary to adjust Low RSSI at -120dBm (Analog Wide)).					
7. High RSSI *6	1) Adj item: [High RSSI (Analog Narrow)] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) SSG output: -80dBm (22.4uV) MOD:1kHz/±1.5kHz	SSG -ANT Distortion meter Oscilloscope -SP output	FPU	Input signal from SSG, press [Start] button to adjust, and after that press [OK] button to store the adjustment value.	
*6: Because High RSSI at -80dBm (Analog Wide) is adjusted by adjusting High RSSI at -80dBm (Analog Narrow), it is not necessary to adjust High RSSI at -80dBm (Analog Wide).					
8. Tight Squelch	1) Adj item: [Tight Squelch (Analog Wide)] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) SSG output: -116dBm (0.35uV) MOD:1kHz/±3.0kHz	SSG -ANT Distortion meter Oscilloscope -SP output	FPU	Input signal from SSG, press [Start] button to adjust, and after that press [OK] button to store the adjustment value.	
	1) Adj item: [Tight Squelch (Analog Narrow)] 2) Adj point: 5 points [Low], [Low'], [Center], [High'], [High] 3) SSG output: -116dBm (0.35uV) MOD:1kHz/±1.5kHz	SSG -ANT Distortion meter Oscilloscope -SP output	FPU	Input signal from SSG, press [Start] button to adjust, and after that press [OK] button to store the adjustment value.	

SECTION 5 TROUBLESHOOTING

5.1 Failure diagnosis of the VCO section

5.1.1 Overview

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

This BLS has no lid and provides high shielding performance. Because BLS is not removable from circuit board by hand solder, the components inside the BLS is unable to solder.

When there is problem within VCO circuit, the VCO cannot be repaired.

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

The following is explained about the failure diagnosis of VCO circuit inside a BLS <E1>.

5.1.2 BLS

BLS is shielding case.

BLS for VCO area is integrated type and cannot be removed.

When the parts in the BLS is problematic, it is necessary to replace the printed circuit board by the service unit in service.

Various ESN/default adjustment values are written on the service unit.

5.1.3 Prediction problem related to the VCO circuit

- PLL Unlock
 - <Radio state>
 - Unlock beep sound
 - VCO Assist voltage adjustment is impossible
 - <Cause>
 - VCO control voltage is abnormal
 - VCO assist voltage is abnormal
 - VCO power supply voltage is abnormal
 - VCO signal output is abnormal

5.1.4 VCO circuit inside BLS <E1> and Check point in the circuit diagram

- Unlock [Unlock beep sound / VCO assist adjustment is impossible] * Including modulation problems

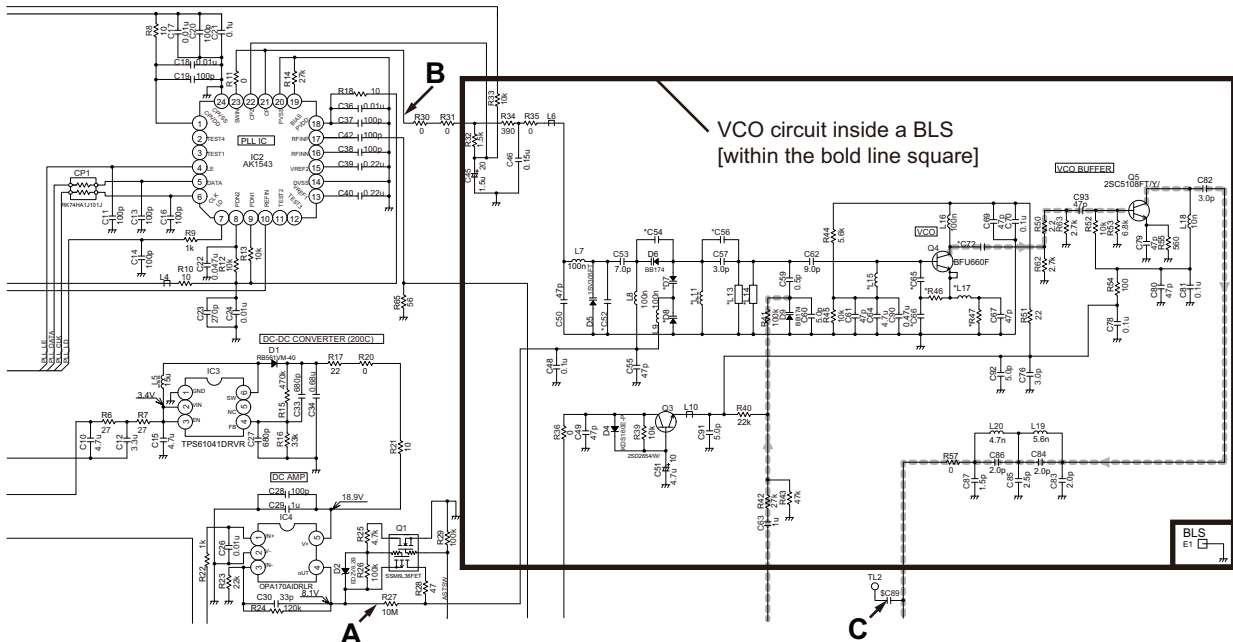
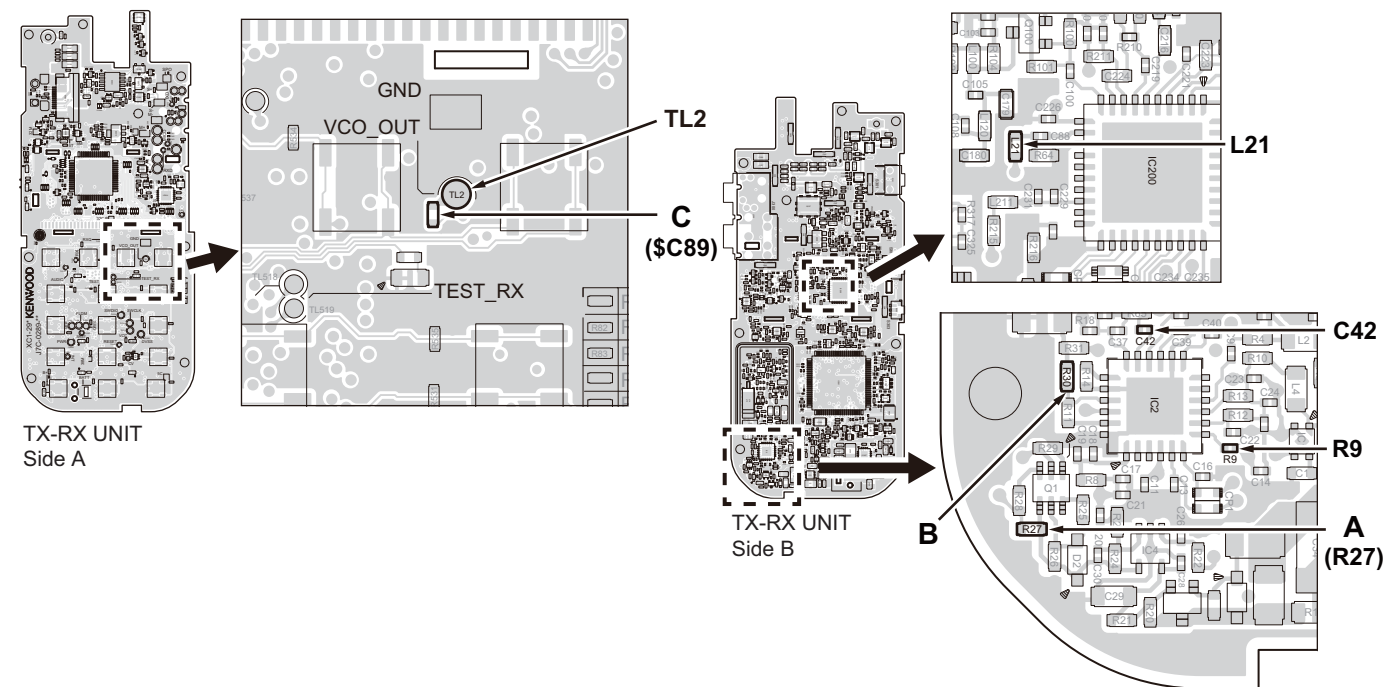
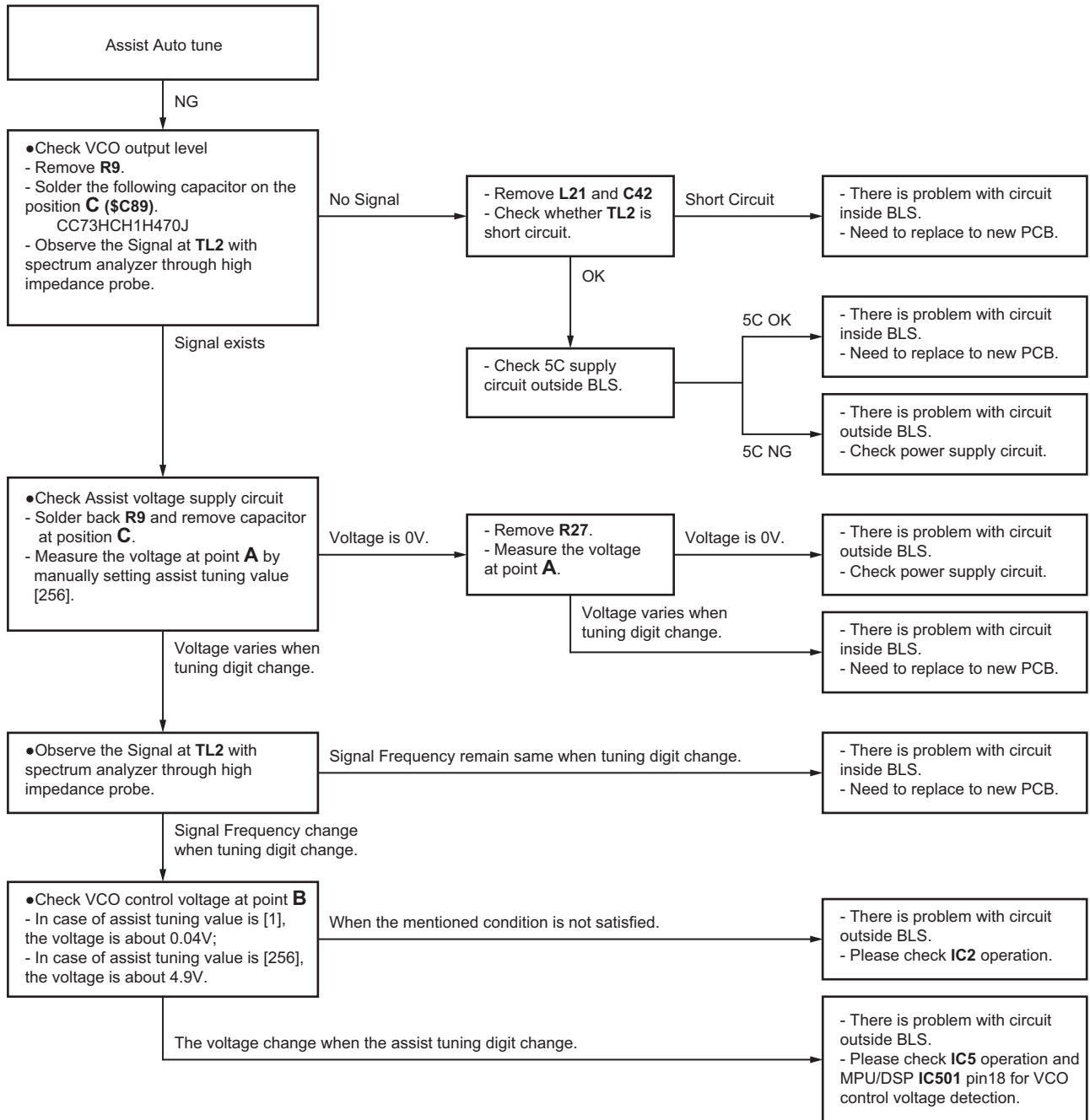


Fig.5.1.4 VCO circuit

5.1.5 Check point and Test point in the PCB



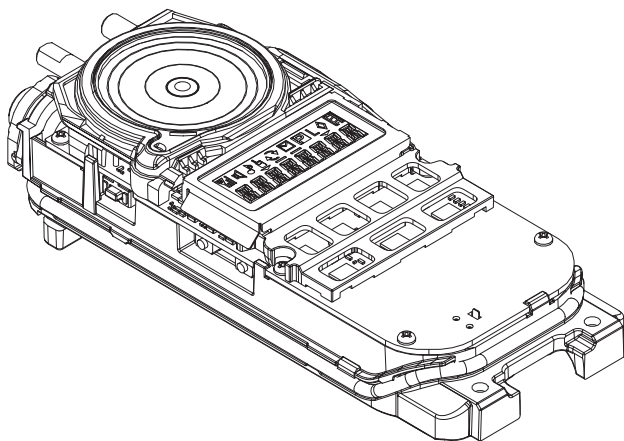
5.1.6 Inspection Procedure



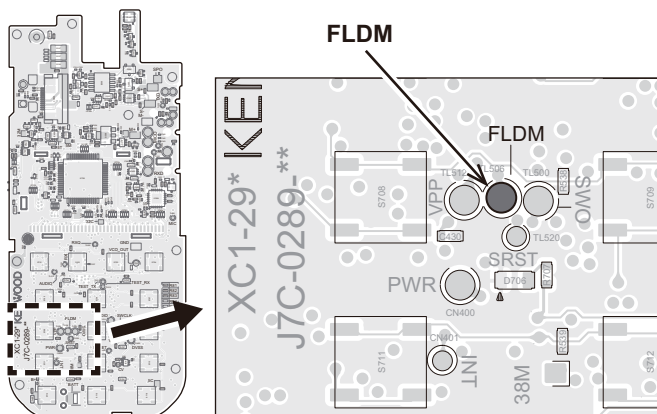
5.2 Operating Method of Enforced Firmware Overwriting Mode

Enforced firmware overwriting mode is a mode to forcibly overwrite the transceiver firmware when the transceiver cannot be updated by using Updater; for instance, when the transceiver fails to start up due to the transceiver failure.

- (1) Prepare the followings:
 - Transceiver
 - Battery jig
 - Programming interface cable (KPG-22U)
 - DC Power supply
- (2) Disassemble the transceiver to the condition shown in the figure. (Front case and chassis separation)



- (3) Connect a transceiver, battery jig and programming interface cable (KPG-22U).
- (4) While FLDM terminal has a short-circuit with GND terminal on the PCB, turn the DC Power supply output ON.



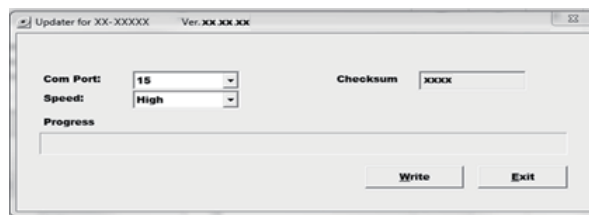
- (5) Upon startup of FLDM loader, "NO SYS" appears on an LCD screen.

- (6) Start Updater for TK-3710, select the COM port number and speed, and then click the "Write" button.

Note:

High speed is for KPG-22U, for other cable please select Normal speed.

Upon start of writing on the transceiver, "LOADING" appears on a LCD screen.



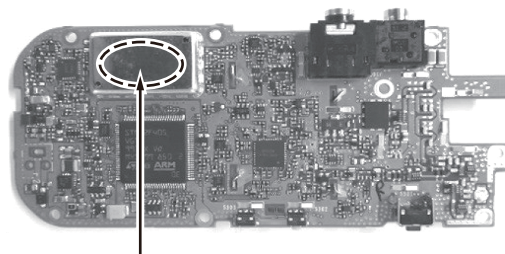
- (7) Upon completion of the firmware overwriting, the transceiver will be re-start.

5.3 Replacing TX-RX Unit

■TX-RX unit information

Model Name	For Service TX-RX unit Number	Original TX-RX unit Number
TK-3710 (X)	XCA-080X-00	XC1-296K-02

■Method of confirming "Original TX-RX unit" and "Service TX-RX unit"



Service TX-RX unit number by the marking seal is shown in this area on the BLS.

Original TX-RX unit number is not shown.

■Supplied Accessories of "Service TX-RX unit"

Item	Quantity
TX-RX Unit	1
KENWOOD ESN	1

■"Service TX-RX unit" Data

The following data is written into the service unit:

Data Type	Description
KENWOOD ESN	Model name: TK-3710S Type:X The same number as the KENWOOD ESN Label is written.

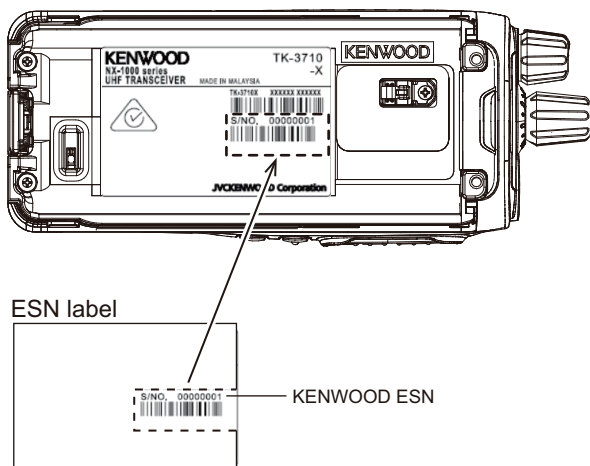
■After Changing the PCB

- (1) Using the KPG-203D, select your desired item (Model Name and Frequency) from the Model> Product Information menu, then use Program> Write Data 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.
- (2) Enter Program> Test Mode, then adjust the various adjustment data (PC Test Mode) as described in the "SECTION 4 ADJUSTMENT".
- (3) Stick the new labels corresponding to the new printed circuit board. (Refer to the next layout image for the label sticking position.)
- (4) If necessary, write the FPU data used by the customer with the KPG-203D.

Note:

- When a new printed circuit board is used, the KENWOOD ESN changes, as does the Transceiver Information display of the KPG-203D, but this does not have any effect on the operation of the transceiver.
- If changing to the original ESN, please contact our service center.

■ESN Label Layout



Note:

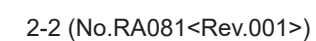
Cut a ESN label at dotted line.

MEMO

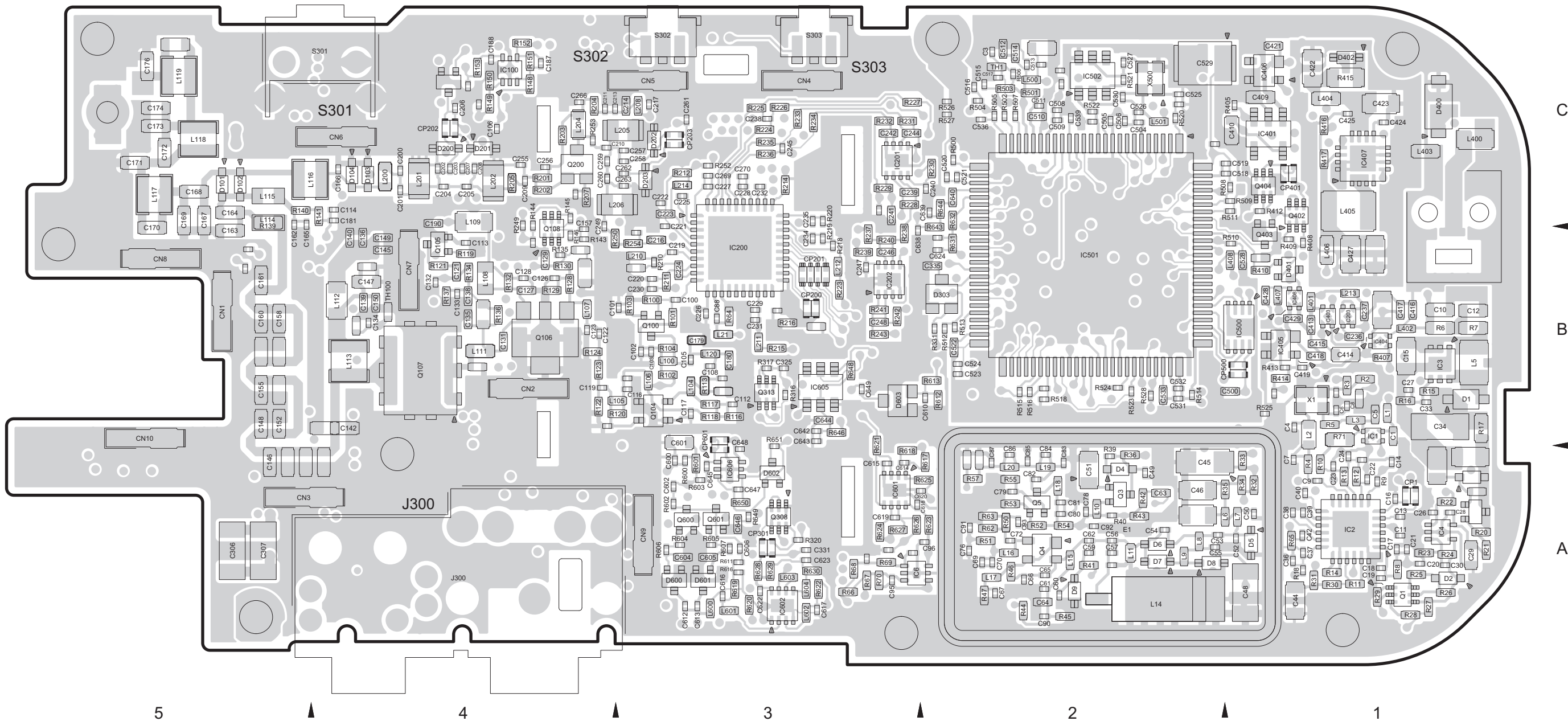
PRECAUTIONS ON SCHEMATIC DIAGRAMS

- * 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.

--- Component side view/Side A (J7C-0290-10) ---



■ TX-RX UNIT (XC1-296K-02)
--- Foil side view/Side B (J7C-0290-10) ---



● ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.



REF.NO. LOCATION	REF.NO. LOCATION	REF.NO. LOCATION	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	D2	B- 1A	R41	B- 2A	R210	B- 3B	R412	B- 1C	R630	B- 3A	C33	B- 1B	C134	B- 4B	C242	B- 3C	C416	B- 1B	C631	A- 3A	CP712	A- 3C	TL202	A- 3B
IC1	B- 1B	D4	B- 2A	R42	B- 2A	R211	B- 3B	R413	B- 1B	R631	B- 2B	C34	B- 1B	C135	B- 4B	C244	B- 3C	C417	B- 1B	C632	A- 4B	TL300	A- 4A	
IC2	B- 1A	D5	B- 1A	R43	B- 2A	R212	B- 3C	R414	B- 1B	R632	B- 2C	C36	B- 1A	C136	B- 4B	C245	B- 3C	C418	B- 1B	C633	A- 4B	TL301	A- 4A	
IC3	B- 1B	D6	B- 2A	R44	B- 2A	R214	B- 3C	R415	B- 1C	R633	A- 3A	C37	B- 1A	C138	B- 4B	C246	B- 3B	C419	B- 1B	C634	A- 4B	TL302	A- 4A	
IC4	B- 1A	D7	B- 2A	R45	B- 2A	R215	B- 3B	R416	B- 1C	R634	A- 4B	C38	B- 1A	C139	B- 4B	C247	B- 3B	C421	B- 1C	C635	A- 4B	F300	A- 4B	
IC5	A- 1B	D8	B- 2A	R46	B- 2A	R216	B- 3B	R417	B- 1C	R635	A- 3A	C39	B- 1A	C140	B- 4B	C248	B- 3B	C422	B- 1C	C638	B- 3B	F400	A- 1C	
IC6	B- 3A	D9	B- 2A	R47	B- 2A	R218	B- 3B	R500	B- 2C	R636	A- 3A	C40	B- 1A	C142	B- 4B	C249	B- 4C	C423	B- 1C	C639	B- 2C	TL500	A- 2B	
IC100	B- 4C	D101	B- 5C	R50	B- 2A	R219	B- 3B	R501	B- 2C	R637	A- 3A	C42	B- 1A	C145	B- 4B	C255	B- 4C	C424	B- 1C	C640	B- 2C	J300	A- 4A	
IC200	B- 3B	D102	B- 5C	R51	B- 2A	R220	B- 3C	R502	B- 2C	R638	A- 4B	C44	B- 1A	C146	B- 5A	C256	B- 4C	C425	B- 1C	C641	A- 3A	TL509	A- 2B	
IC201	B- 3C	D103	B- 4C	R52	B- 2A	R223	B- 3B	R503	B- 2C	R639	A- 4B	C45	B- 2A	C147	B- 4B	C257	B- 3C	C427	B- 1B	C642	B- 3B	L1	B- 1B	
IC202	B- 3B	D104	B- 4C	R53	B- 2A	R224	B- 3C	R504	B- 2C	R640	A- 4B	C46	B- 2A	C148	B- 5B	C258	B- 3C	C428	B- 1B	C643	B- 3B	L2	B- 1B	
IC203	B- 1B	D105	A- 5C	R54	B- 2A	R225	B- 3C	R505	B- 2C	R641	A- 4B	C48	B- 1A	C149	B- 4B	C259	B- 4C	C429	B- 1B	C644	B- 3B	L3	B- 1B	
IC300	A- 5B	D200	B- 4C	R55	B- 2A	R226	B- 3C	R506	B- 2C	R643	B- 2B	C49	B- 2A	C150	B- 4B	C260	B- 4C	C430	A- 1C	C645	B- 3A	L5	B- 1B	
IC301	A- 4B	D201	B- 4C	R57	B- 2A	R227	B- 3C	R507	B- 2C	R644	B- 2C	C50	B- 1A	C152	B- 5B	C261	B- 3C	C500	B- 1B	C646	B- 3A	L6	B- 1A	
IC302	A- 4A	D202	B- 3C	R62	B- 2A	R228	B- 3C	R508	B- 1C	R645	A- 3A	C51	B- 2A	C155	B- 5B	C262	B- 3C	C504	B- 2C	C647	B- 3A	L7	B- 1A	
IC400	A- 4C	D203	B- 3C	R63	B- 2A	R229	B- 3C	R509	B- 1C	R646	B- 3B	C52	B- 1A	C157	B- 4B	C263	B- 3C	C505	B- 2C	C648	B- 3A	L8	B- 2A	
IC401	B- 1C	D300	A- 5A	R64	B- 3B	R230	B- 2C	R510	B- 1B	R647	A- 3A	C53	B- 2A	C158	B- 5B	C266	B- 4C	C506	B- 2C	C649	B- 3B	L9	B- 2A	
IC402	A- 4A	D303	B- 2B	R65	B- 1A	R231	B- 3C	R511	B- 1C	R648	B- 3B	C54	B- 2A	C160	B- 5B	C269	B- 3C	C508	B- 2C	C650	A- 3A	L10	B- 2A	
IC403	B- 1B	D304	A- 4A	R66	B- 3A	R232	B- 3C	R512	B- 2B	R649	B- 3A	C55	B- 2A	C161	B- 5B	C270	B- 3C	C509	B- 2C	C711	A- 4C	L11	B- 2A	
IC404	B- 1B	D305	A- 4A	R67	B- 3A	R233	B- 3C	R513	B- 2B	R650	B- 3A	C56	B- 2A	C162	B- 5C	C271	A- 4C	C510	B- 2C	C712	A- 4C	L14	B- 2A	
IC405	B- 1B	D306	A- 4A	R68	B- 3A	R234	B- 3C	R514	B- 2B	R651	B- 3A	C57	B- 2A	C163	B- 5B	C300	A- 4C	C511	B- 2C	C713	A- 3C	L15	B- 2A	
IC406	B- 1C	D307	A- 4C	R69	B- 3A	R235	B- 3C	R515	B- 2B	R700	A- 4C	C59	B- 2A	C164	B- 5C	C301	A- 4C	C512	B- 2C	C714	A- 3C	L16	B- 2A	
IC407	B- 1C	D400	B- 1C	R70	B- 3A	R236	B- 3C	R516	B- 2B	R701	A- 4C	C60	B- 2A	C165	B- 5C	C302	A- 4C	C513	B- 2C	C715	A- 3C	L17	B- 2A	
IC408	B- 1B	D401	B- 1B	R71	B- 1B	R237	B- 3B	R518	B- 2B	R702	A- 3C	C61	B- 2A	C166	B- 4C	C303	A- 4C	C514	B- 2C	C716	A- 3C	L18	B- 2A	
IC500	B- 1B	D402	B- 1C	R83	A- 2A	R238	B- 3B	R520	B- 2C	R704	A- 3C	C62	B- 2A	C167	B- 5C	C304	A- 4C	C515	B- 2C			L19	B- 2A	
IC501	B- 2B	D600	B- 3A	R100	B- 3B	R239	B- 3B	R521	B- 2C	R705	A- 2C	C63	B- 2A	C168	B- 5C	C305	A- 4C	C516	B- 2C	OTHER		L20	B- 2A	
IC502	B- 2C	D601	B- 3A	R101	B- 3B	R240	B- 3B	R522	B- 2C	R706	A- 2A	C64	B- 2A	C169	B- 5C	C306	B- 5A	C517	B- 2C	X1	B- 1B	L21	B- 3B	
IC600	A- 3A	D602	B- 3A	R102	B- 3B	R241	B- 3B	R523	B- 2B	R718	A- 3C	C65	B- 2A	C170	B- 5B	C307	B- 5A	C518	B- 1C	X500	B- 2C	L100	B- 3B	
IC601	B- 3A	D603	B- 3B	R103	B- 3B	R242	B- 3B	R524	B- 2B	R719	A- 3C	C66	B- 2A	C171	B- 5C	C308	A- 5B	C519	B- 1C			L104	B- 3B	
IC602	B- 3A	D701	A- 4C	R104	B- 3B	R243	B- 3B	R525	B- 1B	R721	A- 3B	C67	B- 2A	C172	B- 5C	C309	A- 5B	C520	B- 2C	TH1	B- 2C	L105	B- 3B	
IC603	A- 4B	D703	A- 3C	R109	A- 4C	R249	B- 4C	R526	B- 2C	R722	A- 4C	C69	B- 2A	C173	B- 5C	C311	A- 5A	C521	B- 2C	TH100	B- 4B	L106	B- 3B	
IC604	A- 3A	D704	A- 2C	R110	A- 4C	R250	B- 4B	R527	B- 2C	R723	A- 3C	C70	B- 2A	C174	B- 5C	C313	A- 5B	C522	B- 2B			L107	B- 4B	
IC605	B- 3B	D705	A- 2A	R111	A- 4C	R252	B- 3C	R528	B- 2B	R724	A- 3C	C72	B- 2A	C176	B- 5C	C314	A- 5B	C523	B- 2B	CN1	B- 5B	L108	B- 4B	
IC606	B- 3A	D716	A- 4C	R112	A- 4C	R253	B- 4C	R530	A- 2A	R725	A- 3B	C76	B- 2A	C179	B- 3B	C315	A- 4B	C524	B- 2B	CN2	B- 4B	L109	B- 4C	
IC700	A- 3B	D717	A- 4C	R113	B- 3B	R254	B- 3B	R531	A- 2A	R726	A- 3B	C78	B- 2A	C180	B- 3B	C316	A- 4C	C525	B- 2C	CN3	B- 5A	L111	B- 4B	
		D718	A- 4C	R114	A- 4C	R300	A- 5C	R532	A- 1A	R727	A- 3B	C79	B- 2A	C181	B- 4C	C317	A- 5C	C526	B- 2C	CN4	B- 3C	L112	B- 4B	
TRANSISTOR		D719	A- 3C	R115	A- 4C	R301	A- 4C	R533	A- 1A	R728	A- 3B	C80	B- 2A	C187	B- 4C	C318	A- 4C	C527	B- 2C	CN5	B- 3C	L113	B- 4B	
Q1	B- 1A			R116	B- 3B	R302	A- 4C	R534	A- 3B	R729	A- 3B	C81	B- 2A	C188	B- 4C	C319	A- 5C	C528	B- 1B	CN6	B- 4C	L114	B- 5C	
Q3	B- 2A	RESISTOR		R117	B- 3B	R303	A- 4C	R535	A- 2A	R730	A- 3B	C82	B- 2A	C190	B- 4C	C320	A- 4B	C529	B- 2C	CN7	B- 4B	L115	B- 5C	
Q4	B- 2A	R2	B- 1B	R118	B- 3B	R304	A- 5B	R536	A- 2B	R731	A- 3B	C83	B- 2A	C200	B- 4C	C321	A- 5B	C530	B- 2C	CN8	B- 5B	L116	B- 5C	
Q5	B- 2A	R3	B- 1B	R119	B- 4B	R305	A- 5B	R537	A- 2A	R732	A- 3B	C84	B- 2A	C201	B- 4C	C322	A- 5B	C531	B- 2B	CN9	B- 3A	L117	B- 5C	
Q100	B- 3B	R4	B- 1A	R120	B- 3B	R306	A- 5A	R538	A- 2B	R733	A- 3B	C85	B- 2A	C202	B- 4C	C323	A- 5B	C532	B- 2B	CN10	B- 5B	L118	B- 5C	
Q101	A- 4C	R5	B- 1B	R121	B- 4B	R307	A- 4A	R539	A- 1B	R734	A- 3B	C86	B- 2A	C203	B- 4C	C324	A- 4B	C533	B- 2B	CN300	A- 4C	L119	B- 5C	
Q102	A- 4C	R6	B- 1B	R122	B- 4B	R308	A- 5A	R540	A- 1B	R735	A- 3B	C87	B- 2A	C204	B- 4C	C325	B- 3B	C534	A- 2C	CN400	A- 1C	L120	B- 3B	
Q103	A- 4C	R7	B- 1B	R123	B- 4B	R309	A- 5A	R541	A- 1B	R736	A- 3B	C88	B- 3B	C205	B- 4C	C326	A- 4B	C535	A- 2B	CN401	A- 1C	L200	B- 4C	
Q104	B- 3B	R8	B- 1A	R124	B- 4B	R310	A- 5B	R542	A- 3B			C90	B- 2A	C206	B- 4C	C327	A- 4B	C536	B- 2C			L201	B- 4C	
Q105	B- 4B	R9	B- 1A	R126	A- 5C	R311	A- 4B	R543	A- 2C	CAPACITOR		C91	B- 2A	C207	B- 4C	C328	A- 4B	C537	A- 2B	S301	A- 4C	L202	B- 4C	
Q106	B- 4B	R10	B- 1A	R127	A- 5C	R312	A- 5B	R600	B- 3A	C1	B- 1B	C92	B- 2A	C208	B- 4C	C329	A- 4B	C538	A- 2C	S302	B- 3C	L204	B- 4C	
Q107	B- 4B	R11	B- 1A	R128	B- 4B	R313	A- 5B	R601	B- 3A	C3	B- 2C	C93	B- 2A	C209	B- 4C	C330	A- 4B	C539	B- 2C	S303	B- 3C	L205	B- 3C	
Q108	B- 4B	R12	B- 1A	R129	B- 4B	R314	A- 5B	R602	B- 3A	C4	B- 1B	C95	B- 3A	C210	B- 4C	C331	A- 4B	C542	A- 3C	S701	A- 2C	L206	B- 3C	
Q200	B- 4C	R13	B- 1A	R130	B- 4B	R315	A- 5B	R603	B- 3A	C5	B- 1B	C96	B- 2A	C211	B- 4C	C332	A- 4B	C600	B- 3A	S702	A- 2B	L208	B- 3C	
Q202	A- 3C	R14	B- 1A	R132	B- 4B	R316	B- 3B	R604	B- 3A	C6	B- 1B	C100	B- 3B	C213	B- 4C	C334	A- 4B	C601	B- 3B	S703	A- 2B	L210	B- 3B	
Q300	A- 5A	R15	B- 1B	R134	B- 4B	R317	B- 3B	R605	B- 3A	C7	B- 1A	C101	B- 3B	C214	B- 3C	C335	B- 2B	C602	B- 3A	S704	A- 2A	L211	B- 3B	
Q301	A- 5A	R16	B- 1B	R135	B- 4B	R318	A- 4B	R606	B- 3A	C8	B- 1B	C102	B- 3B	C216	B- 3B	C336	A- 4A	C603	A- 3A	S705	A- 2C	L212	B- 3B	
Q302	A- 5A	R17	B- 1B	R136	B- 4B	R319	A- 4B	R607	B- 3A	C9	B- 1A	C103	B- 3B	C217	B- 3C	C337	A- 5A	C604	B- 3A	S706	A- 2B	L213	B- 1B	
Q303	A- 5A	R18	B- 1A	R137	B- 4B	R320	B- 3A	R608	A- 3A	C10	B- 1B	C104	A- 4C	C219	B- 3B	C340	A- 4A	C605	B- 3A	S707	A- 2A	L214	B- 3C	
Q304	A- 5A	R20	B- 1A	R139	B- 5C	R321	A- 4A	R609	A- 3A	C11	B- 1A	C105	B- 3B	C220	B- 3B	C342	A- 4A	C606	B- 3A			L400	B- 1C	
Q305	A- 5A	R21	B- 1A	R140	B- 5C	R322	A- 4B	R610	A- 3A	C12	B- 1B	C106	B- 4C	C221	B- 3C	C343	A- 4A	C607	A- 3A	CP1	B- 1A	L401	B- 1B	
Q306	A- 5B	R22	B- 1A	R141	B- 4C	R323	A- 4B	R611	B- 3A	C13	B- 1A	C108	B- 3B	C222	B- 3C	C344	A- 4A	C608	A- 3A	CP200	B- 3B	L402		

BLOCK DIAGRAM

■ TX-RX UNIT

5

4

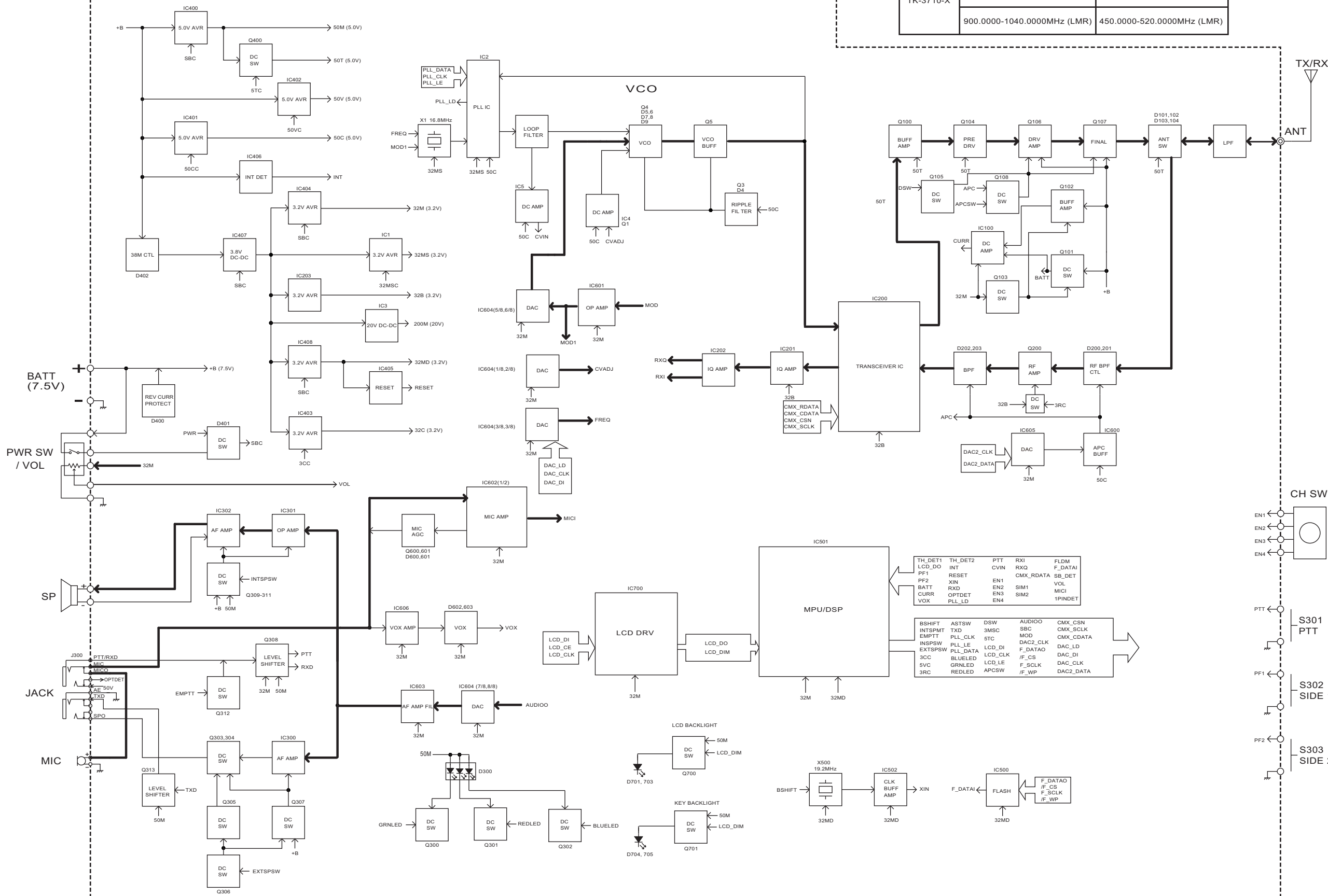
3

2

1

TX-RX UNIT (XC1-296)

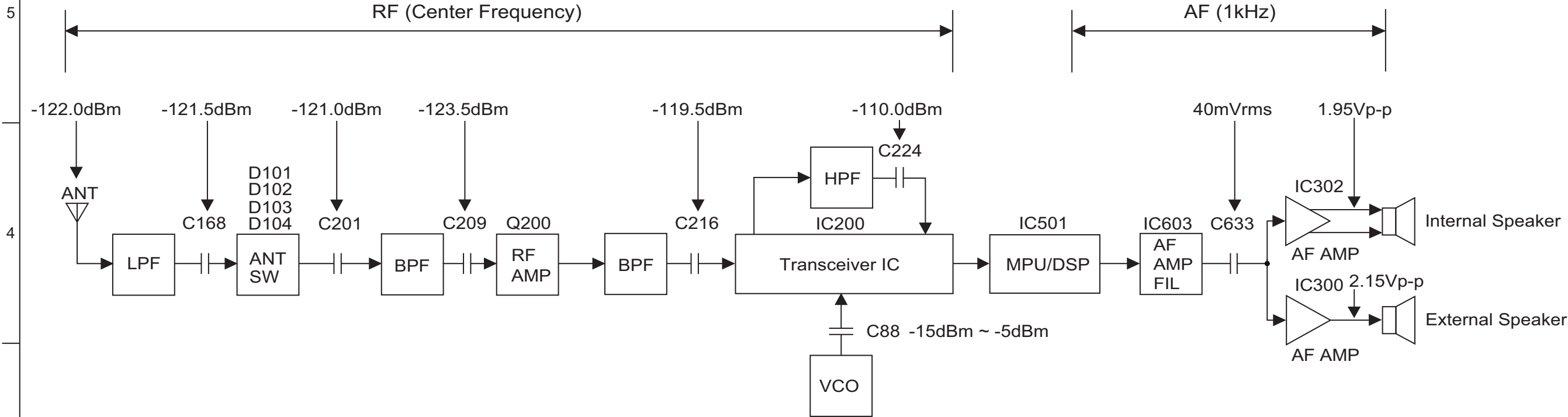
TK-3710-X	TX/RX VCO	TX/RX
	952.8500-954.8250MHz (CB)	476.4250-477.4125MHz (CB)
	900.0000-1040.0000MHz (LMR)	450.0000-520.0000MHz (LMR)



LEVEL DIAGRAM

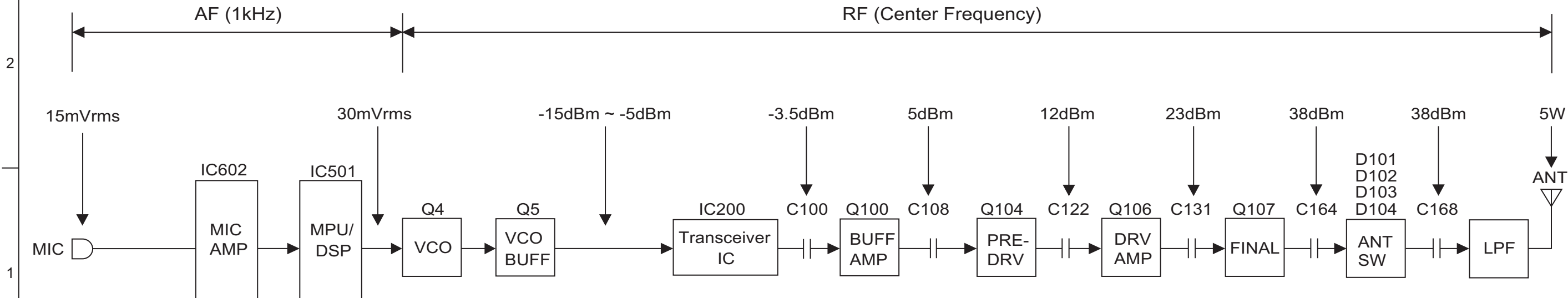
TX-RX UNIT

Receiver Section



To make measurements in the AF section, connect the AC level meter.
(ANT input: -53dBm, 1kHz FM, 1.5kHz DEV (Narrow). SP output: 0.63Vrms@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 : 477MHz (CB), 485MHz (LMR)

■ TX-RX UNIT (XC1-296K-02)



< MEMO >

PARTS LIST

[TK-3710]

* 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.

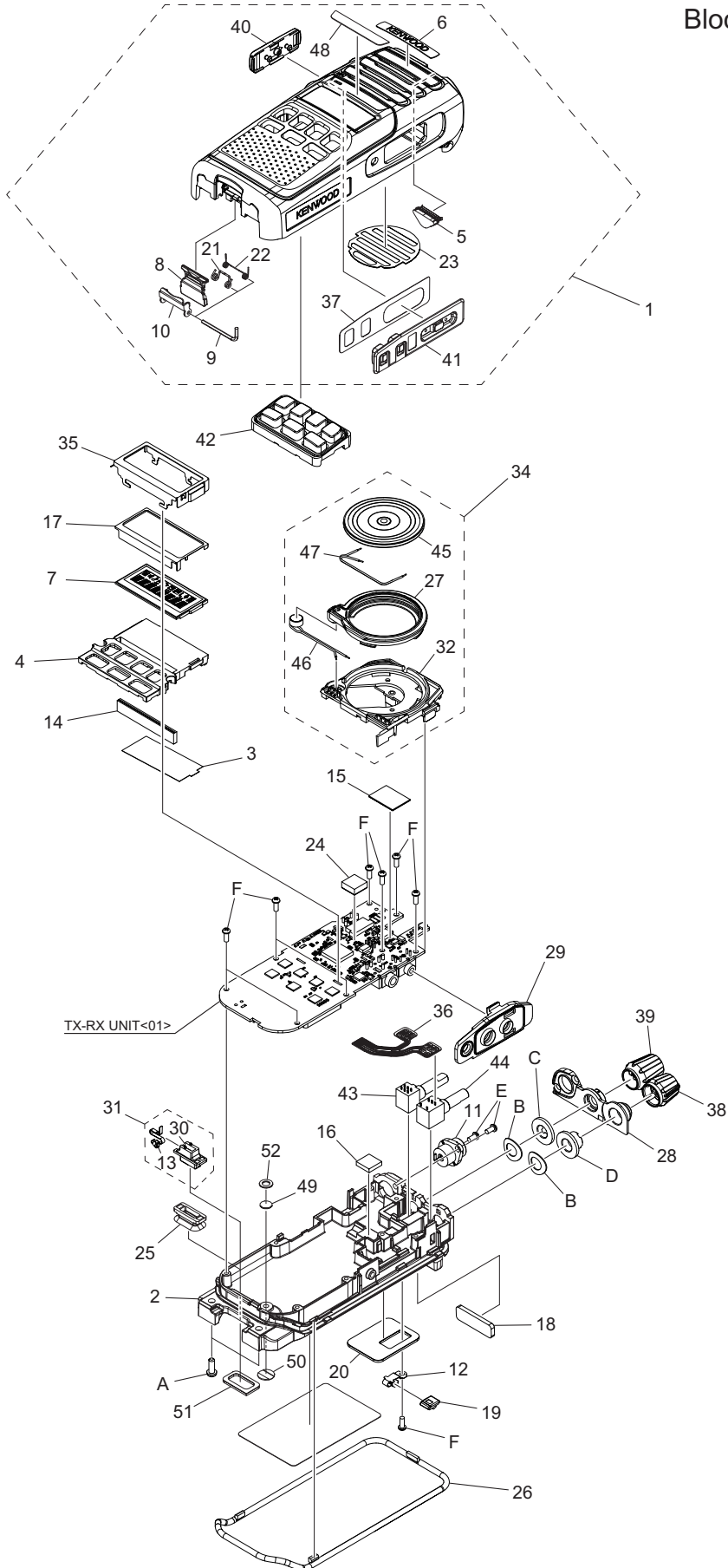
* (x_) in a description column shows the number of the used part.

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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
1	A0C-0249-02	P.CABINET ASSY	7KEY,IP67	
2	A1A-0131-11	CHASSIS	IP67	
3	B11-1877-24	FILTER	LCD	
4	B1B-0158-00	ILL.GUIDE	LCD	
5	B1B-0174-00	ILL.GUIDE		
6	B4D-0065-00	KENWOOD BADGE		
7	B38-0935-35	LCD		
8	D1A-0071-00	LEVER		
9	D2B-0066-00	SHAFT		
10	D32-0441-13	STOPPER		
11	E04-0477-15	C.RECEPTACLE-SM	SMA	
12	E23-1253-24	TERMINAL		
13	E23-1395-04	TERMINAL	+VE	
14	E29-1229-35	INTER CONNECTOR	LCD	
15	G10-1348-04	FIBROUS SHEET	AUDIO IC	
16	G11-4465-04	RUBBER SHEET	FET	
17	G11-4525-14	SHEET	LCD	
18	G13-2009-04	CUSHION		
19	G13-2033-04	CUSHION		
20	G13-2034-24	CUSHION		
21	G0A-0106-10	COIL SPRING		
22	G0A-0107-10	COIL SPRING		
23	G1A-0092-00	FIBROUS SHEET		
24	G1D-0402-00	CUSHION		
25	G53-2218-03	PACKING	+VE	
26	G5D-0191-00	RUBBER SEAL	SURROUND	
27	G5D-0192-00	RUBBER SEAL		
28	G5D-0193-10	RUBBER SEAL	TOP	
29	G5D-0194-00	RUBBER SEAL	2PIN	
30	J19-5579-03	HOLDER	+VE	
31	J19-5580-03	HOLDER ASSY	+VE	
32	J1K-0747-10	HOLDER		
34	J1K-0897-01	HOLDER ASSY	SPK,IP67	
35	J21-8619-13	MOUNTING	LCD	
36	J8C-0015-00	FLEX P.BOARD		
37	J9K-0054-00	ADHESIVE SHEET		
38	K2K-0189-10	KNOB	VOL	
39	K2K-0190-00	KNOB	CH	
40	K2K-0410-00	BUTTON KNOB		
41	K2K-0411-00	BUTTON KNOB		
42	K2K-0412-10	KEY TOP	7KEY	
43	S6A-0011-10	ROTARY SWITCH	LCD	
44	R3B-0017-10	V RESISTOR		
45	T0H-0026-00	SPEAKER	IP67	
46	T9B-0068-00	MIC ELEMENT	IP67	
47	E3F-0194-00	PARALLEL CORD		
48	B4D-0075-01	BADGE	PROTALK	
49	G1A-0136-00	FIBROUS SHEET	IP67	
50	G11-4440-04	SHEET	IP67	
51	G1B-0431-00	CUSHION	IP67	
52	G1D-0204-00	CUSHION	IP67	
A	N09-6621-05	PAN HEAD SCREW	(x2)	
B	N19-2214-05	SPECIAL WASHER	(x2)	
C	N1X-0024-00	CIRCULAR NUT	CH	
D	N1X-0038-00	CIRCULAR NUT	VOL	
E	N30-2604-48	P.HEAD M.SCREW	SMA(x2)	
F	N83-2005-48	P.HEAD T.SCREW	(x9)	
-	XCA-080X-00	TX-RX UNIT	SERVICE UNIT	

Electrical parts list

TX-RX UNIT

XC1-296K-02

Note 1:If changing this IC, please contact our service center.

Note 2: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	BU32TD2WNVX	MOS IC		
IC2	AK1543	MOS IC		
IC3	TPS61041DRVR	ANALOG IC		
IC4	OPA170AIDRLR	MOS IC		
IC5	BU7295HFV	MOS IC		
IC100	BU7465HFV	MOS IC		
IC200	RP571Q4	MOS IC		
IC201	TLV9062IDSGR	MOS IC		
IC202	TLV9062IDSGR	MOS IC		
IC203	BU32TD2WNVX	MOS IC		
IC300	TA7368PG	MOS IC		
IC301	BU7465HFV	MOS IC		
IC302	NJU7089KV1	MOS IC		
IC400	XC6209B502D-G	MOS IC		
IC401	MM1856A50N	BIPOLAR IC		
IC402	XC6209B502D-G	MOS IC		
IC403	BU32TD2WNVX	MOS IC		
IC404	BU32TD2WNVX	MOS IC		
IC405	PST8228U	MOS IC		
IC406	XC61CC5602N-G	MOS IC		
IC407	TPS62140RGT	MOS IC		
IC408	BU32TD2WNVX	MOS IC		
IC500	IS25LP016DJUL	ROM IC	Note 1	
IC501	2F405VGT6KHJA	MPU IC		
IC502	NJU6368PF1	MOS IC		
IC600	BU7465HFV	MOS IC		
IC601	TLV9062IDSGR	MOS IC		
IC602	TLV9062IDSGR	MOS IC		
IC603	BU7465HFV	MOS IC		
IC604	R2A20178NP	MCU IC		
IC605	DAC101C081CIM	MOS IC		
IC606	BU7465HFV	MOS IC		
IC700	PT16557LQ	MOS IC		
Q1	EM6M2	FET		
Q3	2SD2654/W/	TRANSISTOR		
Q4	BFU660F	TRANSISTOR		
Q5	2SC5108FT/Y/	TRANSISTOR		
Q100	2SC5108FT/Y/	TRANSISTOR		
Q101	RE1C001ZP	FET		
Q102	RE1C001ZP	FET		
Q103	LTC014EEBFS8	DIGI TRANSISTOR		
Q104	RFM00U7UF	FET		
Q105	RE1C001UN	FET		
Q106	RFM01U7PF	FET		
Q107	RD07MUS2BT514	FET		
Q108	SSM6L36FET	FET		
Q200	BFR193W	TRANSISTOR		
Q202	RE1C001ZP	FET		
Q300	LTC014EEBFS8	DIGI TRANSISTOR		
Q301	LTC014EEBFS8	DIGI TRANSISTOR		
Q302	LTC014EEBFS8	DIGI TRANSISTOR		
Q303	SSM3K324RF	FET		
Q304	SSM3K324RF	FET		

△ Symbol No.	Part No.	Part Name	Description	Local
Q305	LTC014EEBFS8	DIGI TRANSISTOR		
Q306	LTC014EEBFS8	DIGI TRANSISTOR		
Q307	2SB1694	TRANSISTOR		
Q308	SSM6N15AFEM	DUAL FET		
Q309	2SAR293P5	TRANSISTOR		
Q310	UMG3N	DIGI TR ARRAY		
Q311	LTC014EEBFS8	DIGI TRANSISTOR		
Q312	LTC014EEBFS8	DIGI TRANSISTOR		
Q313	SSM6N15AFEM	DUAL FET		
Q400	SSM6L36FET	FET		
Q402	EMD12	TRANSISTOR		
Q403	LTC044EEBFS8	DIGI TRANSISTOR		
Q404	SSM6N15AFEM	DUAL FET		
Q600	LSCR523EBFS8	TRANSISTOR		
Q601	LSAR523EBFS8	TRANSISTOR		
Q700	EMD9	TRANSISTOR		
Q701	EMD9	TRANSISTOR		
D1	RB561VM-40	SCHOTTKY DIODE		
D2	EDZV8.2B	ZENER DIODE		
D4	KDS160E-P	DIODE		
D5	1SV305FT	VARI CAP DIODE		
D6	BB174	VARI CAP DIODE		
D7	BB174	VARI CAP DIODE		
D8	BB174	VARI CAP DIODE		
D9	BB174	VARI CAP DIODE		
D101	RN142SM	DIODE		
D102	RN142SM	DIODE		
D103	RN142SM	DIODE		
D104	RN142SM	DIODE		
D105	SPC10501A01	VARISTOR		
D200	1SV305FT	VARI CAP DIODE		
D201	1SV305FT	VARI CAP DIODE		
D202	1SV305FT	VARI CAP DIODE		
D203	1SV305FT	VARI CAP DIODE		
D300	NSSM240A	LED		
D303	RB706F-40-MC	DIODE		
D304	AVRM10120MAAB	VARISTOR		
D305	AVRM10120MAAB	VARISTOR		
D306	AVRM10120MAAB	VARISTOR		
D307	AVRM10120MAAB	VARISTOR		
D400	SM4004PL	DIODE		
D401	DAN222WM	DIODE ARRAY		
D402	RB521S-30-TP	DIODE		
D600	DAN217WM	DIODE		
D601	DAN217WM	DIODE		
D602	DAN217WM	DIODE		
D603	1SS372F	SCHOTTKY DIODE		
D701	B30-2365-05	LED		
D703	B30-2365-05	LED		
D704	B30-2365-05	LED		
D705	B30-2365-05	LED		
D716	RB521CM-30	DIODE		
D717	RB521CM-30	DIODE		
D718	RB521CM-30	DIODE		
D719	RB521CM-30	DIODE		
C1	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C3	CK73JXR1H471K	C CAPACITOR	470pF 50V K	
C4	CC730CC1H100F	C CAPACITOR	10pF 50V F	
C5	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C6	CK730DX1C103K	C CAPACITOR	0.01uF 16V K	
C7	CC730CC1H100F	C CAPACITOR	10pF 50V F	
C8	CC73JCH1H101J	C CAPACITOR	100pF 50V J	

△ Symbol No.	Part No.	Part Name	Description	Local	△ Symbol No.	Part No.	Part Name	Description	Local
C9	CK730DX1C103K	C CAPACITOR	0.01uF 16V K		C86	CC730CC1H020B	C CAPACITOR	2pF 50V B	
C10	CK73GXR1E475K	C CAPACITOR	4.7uF 25V K		C87	CC730CC1H1R5B	C CAPACITOR	1.5pF 50V B	
C11	CC73JCH1H101J	C CAPACITOR	100pF 50V J		C88	CC730CC1H470G	C CAPACITOR	47pF 50V G	
C12	CK73GB0J335K	C CAPACITOR	3.3uF 6.3V K		C90	CK73JXR0J474K	C CAPACITOR	0.47uF 6.3V K	
C13	CC73JCH1H101J	C CAPACITOR	100pF 50V J		C91	CC730CC1H050B	C CAPACITOR	5pF 50V B	
C14	CC73JCH1H101J	C CAPACITOR	100pF 50V J		C92	CC730CC1H050B	C CAPACITOR	5pF 50V B	
C15	CK730PQ1E475K	C CAPACITOR	4.7uF 25V K		C93	CC730CC1H470G	C CAPACITOR	47pF 50V G	
C16	CC73JCH1H101J	C CAPACITOR	100pF 50V J		C100	CC730CC1H150G	C CAPACITOR	15pF 50V G	
C17	CK730DX1C103K	C CAPACITOR	0.01uF 16V K		C101	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C18	CK730DX1C103K	C CAPACITOR	0.01uF 16V K		C102	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C19	CC73JCH1H101J	C CAPACITOR	100pF 50V J		C103	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K	
C20	CC73JCH1H101J	C CAPACITOR	100pF 50V J		C104	CK73JXR1H471K	C CAPACITOR	470pF 50V K	
C21	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K		C105	CC730CC1H080B	C CAPACITOR	8pF 50V B	
C22	CK73JXR1A473K	C CAPACITOR	0.047uF 10V K		C106	CK730DX1C103K	C CAPACITOR	0.01uF 16V K	
C23	CK73JXR1H271K	C CAPACITOR	270pF 50V K		C108	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C24	CK730DX1C103K	C CAPACITOR	0.01uF 16V K		C112	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C26	CK730DX1C103K	C CAPACITOR	0.01uF 16V K		C113	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C27	CK73JXR1H681K	C CAPACITOR	680pF 50V K		C114	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C28	CC73JCH1H101J	C CAPACITOR	100pF 50V J		C116	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C29	CK73GXR1H105K	C CAPACITOR	1uF 50V K		C117	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C30	CC730CC1H330G	C CAPACITOR	33pF 50V G		C119	CC730CC1H070B	C CAPACITOR	7pF 50V B	
C31	CC73JCH1H101J	C CAPACITOR	100pF 50V J		C121	CK73HB0J225K	C CAPACITOR	2.2uF 6.3V K	
C32	C93-1959-05	C CAPACITOR	0.1uF 16V		C122	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C33	CK73JXR1H681K	C CAPACITOR	680pF 50V K		C123	CC730CC1H100F	C CAPACITOR	10pF 50V F	
C34	CK730PS1H684K	C CAPACITOR	0.68uF 50V K		C124	CC730EE1H100F	C CAPACITOR	10pF 50V F	
C36	CK730DX1C103K	C CAPACITOR	0.01uF 16V K		C125	CC730EE1H050B	C CAPACITOR	5pF 50V B	
C37	CC73JCH1H101J	C CAPACITOR	100pF 50V J		C126	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C38	CC73JCH1H101J	C CAPACITOR	100pF 50V J		C127	CC730EE1H100F	C CAPACITOR	10pF 50V F	
C39	CK73JXR0J224K	C CAPACITOR	0.22uF 6.3V K		C128	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C40	CK73JXR0J224K	C CAPACITOR	0.22uF 6.3V K		C129	CC730EE1H470J	C CAPACITOR	47pF 50V J	
C42	CC73JCH1H101J	C CAPACITOR	100pF 50V J		C131	CC730EE1H471K	C CAPACITOR	470pF 50V K	
C44	CK730MY1H683K	C CAPACITOR	0.068uF 50V K		C132	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C45	CS77AAV1D1R5M	TA E CAPACITOR	1.5uF 20V M		C133	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C46	CK730PP1H154K	C CAPACITOR	0.15uF 50V K		C134	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C48	CC730AD1H104J	C CAPACITOR	0.1uF 50V J		C135	CC730EE1H220G	C CAPACITOR	22pF 50V G	
C49	CC730CC1H470G	C CAPACITOR	47pF 50V G		C136	CC730EE1H470J	C CAPACITOR	47pF 50V J	
C50	CC730CC1H470G	C CAPACITOR	47pF 50V G		C138	CC730EE1H470J	C CAPACITOR	47pF 50V J	
C51	CS77BP1A4R7M	TA E CAPACITOR	4.7uF 10V M		C139	CC730EE1H151J	C CAPACITOR	150pF 50V J	
C52	CC730CC1H010B	C CAPACITOR	1pF 50V B		C140	CC730EE1H151J	C CAPACITOR	150pF 50V J	
C53	CC730CC1H070B	C CAPACITOR	7pF 50V B		C142	CC730EF1H330G	C CAPACITOR	33pF 50V G	
C54	CC730CC1H0R5B	C CAPACITOR	0.5pF 50V B		C145	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C55	CC730CC1H470G	C CAPACITOR	47pF 50V G		C146	CC730EF1H180G	C CAPACITOR	18pF 50V G	
C56	CC730CC1H020B	C CAPACITOR	2pF 50V B		C147	CK730MZ1A104K	C CAPACITOR	0.1uF 10V K	
C57	CC730CC1H030B	C CAPACITOR	3pF 50V B		C148	CC730EF1H030B	C CAPACITOR	3pF 50V B	
C59	CC730CC1H0R5A	C CAPACITOR	0.5pF 50V A		C149	CC730EE1H271J	C CAPACITOR	270pF 50V J	
C60	CC730CC1H050B	C CAPACITOR	5pF 50V B		C150	CK730PY1H103K	C CAPACITOR	0.01uF 50V K	
C61	CC730CC1H470G	C CAPACITOR	47pF 50V G		C155	CC730EF1H030B	C CAPACITOR	3pF 50V B	
C62	CC730CC1H040B	C CAPACITOR	4pF 50V B		C157	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C63	CK73HB1A105K	C CAPACITOR	1uF 10V K		C158	CC730EF1H040B	C CAPACITOR	4pF 50V B	
C64	CK73HB0J475M	C CAPACITOR	4.7uF 6.3V M		C161	CC730EF1H030B	C CAPACITOR	3pF 50V B	
C65	CC730CC1H040B	C CAPACITOR	4pF 50V B		C162	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K	
C66	CC730CC1H2R5B	C CAPACITOR	2.5pF 50V B		C163	CC730EF1H040B	C CAPACITOR	4pF 50V B	
C67	CC730CC1H470G	C CAPACITOR	47pF 50V G		C164	CC730EF1H101G	C CAPACITOR	100pF 50V G	
C69	CC730CC1H470G	C CAPACITOR	47pF 50V G		C165	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C70	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K		C166	CC730CC1H040B	C CAPACITOR	4pF 50V B	
C72	CC730CC1H010B	C CAPACITOR	1pF 50V B		C167	CC730EF1H050B	C CAPACITOR	5pF 50V B	
C76	CC730CC1H030B	C CAPACITOR	3pF 50V B		C168	CC730EF1H101G	C CAPACITOR	100pF 50V G	
C78	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K		C169	CC730EF1H1R5B	C CAPACITOR	1.5pF 50V B	
C79	CC730CC1H470G	C CAPACITOR	47pF 50V G		C170	CC730EF1H0R5B	C CAPACITOR	0.5pF 50V B	
C80	CC730CC1H470G	C CAPACITOR	47pF 50V G		C171	CC730EF1H050B	C CAPACITOR	5pF 50V B	
C81	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K		C172	CC730EF1H020B	C CAPACITOR	2pF 50V B	
C82	CC730CC1H030B	C CAPACITOR	3pF 50V B		C173	CC730EF1H040B	C CAPACITOR	4pF 50V B	
C83	CC730CC1H020B	C CAPACITOR	2pF 50V B		C174	CC730EF1H030B	C CAPACITOR	3pF 50V B	
C84	CC730CC1H020B	C CAPACITOR	2pF 50V B		C176	CC730EF1H020B	C CAPACITOR	2pF 50V B	
C85	CC730CC1H2R5B	C CAPACITOR	2.5pF 50V B		C179	CC730EE1H090B	C CAPACITOR	9pF 50V B	

△ Symbol No.	Part No.	Part Name	Description	Local
C180	CC730EE1H090B	C CAPACITOR	9pF 50V B	
C181	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K	
C187	CK73JXR1E222K	C CAPACITOR	2200pF 25V K	
C188	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K	
C190	CC730EE1H101J	C CAPACITOR	100pF 50V J	
C200	CC730CC1H040B	C CAPACITOR	4pF 50V B	
C201	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C202	CC730CC1H020B	C CAPACITOR	2pF 50V B	
C203	CC730CC1H180G	C CAPACITOR	18pF 50V G	
C204	CC730CC1H080B	C CAPACITOR	8pF 50V B	
C205	CC730CC1H080B	C CAPACITOR	8pF 50V B	
C206	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C207	CC730CC1H180G	C CAPACITOR	18pF 50V G	
C208	CC730CC1H020B	C CAPACITOR	2pF 50V B	
C209	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C210	CC730CC1H030B	C CAPACITOR	3pF 50V B	
C211	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C213	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K	
C214	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C216	CC730EE1H102K	C CAPACITOR	1000pF 50V K	
C217	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C219	CC730CC1H100F	C CAPACITOR	10pF 50V F	
C220	CK730DX1C103K	C CAPACITOR	0.01uF 16V K	
C221	CC730CC1H330G	C CAPACITOR	33pF 50V G	
C222	CK730DX1C103K	C CAPACITOR	0.01uF 16V K	
C223	CK730PY1H103K	C CAPACITOR	0.01uF 50V K	
C224	CC730EE1H102K	C CAPACITOR	1000pF 50V K	
C225	CK73JXR1H152K	C CAPACITOR	1500pF 50V K	
C226	CK730DX1C103K	C CAPACITOR	0.01uF 16V K	
C227	CK73JXR1E102J	C CAPACITOR	1000pF 25V J	
C228	CK73JXR1E102J	C CAPACITOR	1000pF 25V J	
C229	CK730DX1C103K	C CAPACITOR	0.01uF 16V K	
C230	CK730DX1C103K	C CAPACITOR	0.01uF 16V K	
C231	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C232	CK73JXR1H152K	C CAPACITOR	1500pF 50V K	
C234	CK730DX1C103K	C CAPACITOR	0.01uF 16V K	
C235	CK730DX1C103K	C CAPACITOR	0.01uF 16V K	
C236	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C237	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C238	CK73JXR1H122K	C CAPACITOR	1200pF 50V K	
C239	CC730EE1H271G	C CAPACITOR	270pF 50V G	
C240	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K	
C241	CC730EE1H221G	C CAPACITOR	220pF 50V G	
C242	CC730EE1H221G	C CAPACITOR	220pF 50V G	
C244	CC730EE1H271G	C CAPACITOR	270pF 50V G	
C245	CK73JXR1H122K	C CAPACITOR	1200pF 50V K	
C246	CC730EE1H221G	C CAPACITOR	220pF 50V G	
C247	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K	
C248	CC730EE1H221G	C CAPACITOR	220pF 50V G	
C249	CC730CC1H030B	C CAPACITOR	3pF 50V B	
C255	CC730CC1H0R5B	C CAPACITOR	0.5pF 50V B	
C256	CK73JXR1A473K	C CAPACITOR	0.047uF 10V K	
C257	CC730CC1H020B	C CAPACITOR	2pF 50V B	
C258	CC730CC1H180G	C CAPACITOR	18pF 50V G	
C259	CC730CC1H040B	C CAPACITOR	4pF 50V B	
C260	CC730CC1H1R5B	C CAPACITOR	1.5pF 50V B	
C261	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C262	CC730CC1H180G	C CAPACITOR	18pF 50V G	
C263	CC730CC1H020B	C CAPACITOR	2pF 50V B	
C266	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C269	CK73JXR1E102J	C CAPACITOR	1000pF 25V J	
C270	CK73JXR1E102J	C CAPACITOR	1000pF 25V J	
C271	CC730CC1H470G	C CAPACITOR	47pF 50V G	
C300	CK73JXR1H471K	C CAPACITOR	470pF 50V K	
C301	CK73HB1A105K	C CAPACITOR	1uF 10V K	

△ Symbol No.	Part No.	Part Name	Description	Local
C302	CK73JXR1H471K	C CAPACITOR	470pF 50V K	
C303	CK73JXR1H471K	C CAPACITOR	470pF 50V K	
C304	CK73JXR1H471K	C CAPACITOR	470pF 50V K	
C305	CK73JXR1H471K	C CAPACITOR	470pF 50V K	
C306	CK73EXR0J476M	C CAPACITOR	47uF 6.3V M	
C307	CK73EXR0J476M	C CAPACITOR	47uF 6.3V M	
C308	CK73JXR1A473K	C CAPACITOR	0.047uF 10V K	
C309	CK73JXR1H471K	C CAPACITOR	470pF 50V K	
C311	CK73JXR1H471K	C CAPACITOR	470pF 50V K	
C313	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C314	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K	
C315	CK730AY0J226M	C CAPACITOR	22uF 6.3V M	
C316	CK73JXR1H471K	C CAPACITOR	470pF 50V K	
C317	CK73JXR1H471K	C CAPACITOR	470pF 50V K	
C318	CK73JXR1H471K	C CAPACITOR	470pF 50V K	
C319	CK73JXR1H471K	C CAPACITOR	470pF 50V K	
C320	CK730AU1C225K	C CAPACITOR	2.2uF 16V K	
C321	CK73HB1C105K	C CAPACITOR	1uF 16V K	
C322	CK73JXR1H471K	C CAPACITOR	470pF 50V K	
C323	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K	
C324	CK73JXR1H471K	C CAPACITOR	470pF 50V K	
C325	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C326	CK73JXR0J224K	C CAPACITOR	0.22uF 6.3V K	
C327	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C328	CK73JXR1H471K	C CAPACITOR	470pF 50V K	
C329	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K	
C330	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C331	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C332	CK73JXR1A683K	C CAPACITOR	0.068uF 10V K	
C334	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C335	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C336	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C337	CC730EE1H271J	C CAPACITOR	270pF 50V J	
C340	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C342	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K	
C343	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C344	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C345	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C346	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C349	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C350	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C400	CC730EE1H471K	C CAPACITOR	470pF 50V K	
C401	CC730EE1H471K	C CAPACITOR	470pF 50V K	
C402	CC730EE1H470J	C CAPACITOR	47pF 50V J	
C403	CK730PX1A105K	C CAPACITOR	1uF 10V K	
C404	CK730PX1A105K	C CAPACITOR	1uF 10V K	
C405	CK73JXR1H471K	C CAPACITOR	470pF 50V K	
C406	CK73JXR1H471K	C CAPACITOR	470pF 50V K	
C409	CK730PX1A105K	C CAPACITOR	1uF 10V K	
C410	CK730PX1A105K	C CAPACITOR	1uF 10V K	
C411	CK730PX1A105K	C CAPACITOR	1uF 10V K	
C412	CK730PX1A105K	C CAPACITOR	1uF 10V K	
C413	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C414	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C415	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C416	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C417	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C418	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C419	CK730DX1C103K	C CAPACITOR	0.01uF 16V K	
C421	CK730AU1C225K	C CAPACITOR	2.2uF 16V K	
C422	CK730AY1C106K	C CAPACITOR	10uF 16V K	
C423	CK730AY1C106K	C CAPACITOR	10uF 16V K	
C424	CK73JXR1E332K	C CAPACITOR	3300pF 25V K	
C425	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K	
C427	CK730AY0J226M	C CAPACITOR	22uF 6.3V M	

△ Symbol No.	Part No.	Part Name	Description	Local	△ Symbol No.	Part No.	Part Name	Description	Local
C428	CK73HB1A105K	C CAPACITOR	1uF 10V K		C628	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C429	CK73HB1A105K	C CAPACITOR	1uF 10V K		C629	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K	
C430	CK73HB1A105K	C CAPACITOR	1uF 10V K		C631	CC73JCH1H470J	C CAPACITOR	47pF 50V J	
C500	CK73HB1A105K	C CAPACITOR	1uF 10V K		C632	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K	
C504	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K		C633	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C505	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K		C634	CK73JXR1A223K	C CAPACITOR	0.022uF 10V K	
C506	CK73JXR1H102K	C CAPACITOR	1000pF 50V K		C635	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C508	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K		C638	CK73JXR1H102K	C CAPACITOR	1000pF 50V K	
C509	CK73JXR1H102K	C CAPACITOR	1000pF 50V K		C639	CK73JXR1H102K	C CAPACITOR	1000pF 50V K	
C510	CK73HXR0J105K	C CAPACITOR	1uF 6.3V K		C640	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C511	CK730DX1C103K	C CAPACITOR	0.01uF 16V K		C641	CK73HB0J475M	C CAPACITOR	4.7uF 6.3V M	
C512	CK73HXR0J105K	C CAPACITOR	1uF 6.3V K		C642	CK73JXR1H471K	C CAPACITOR	470pF 50V K	
C513	CK730DX1C103K	C CAPACITOR	0.01uF 16V K		C643	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K	
C514	CK73HB0J475M	C CAPACITOR	4.7uF 6.3V M		C644	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C515	CK73JXR1H471K	C CAPACITOR	470pF 50V K		C645	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K	
C516	CK73JXR1H471K	C CAPACITOR	470pF 50V K		C646	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C517	CK73JXR1H471K	C CAPACITOR	470pF 50V K		C647	CC73JCH1H470J	C CAPACITOR	47pF 50V J	
C518	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K		C648	CK73JXR1H471K	C CAPACITOR	470pF 50V K	
C519	CK73JXR1H102K	C CAPACITOR	1000pF 50V K		C649	CK73JXR0J474K	C CAPACITOR	0.47uF 6.3V K	
C520	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K		C650	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C521	CK73JXR1H102K	C CAPACITOR	1000pF 50V K		C711	CK730DX1C103K	C CAPACITOR	0.01uF 16V K	
C522	CK73HB0J225K	C CAPACITOR	2.2uF 6.3V K		C712	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C523	CK73JXR1H102K	C CAPACITOR	1000pF 50V K		C713	CK73JXR1A473K	C CAPACITOR	0.047uF 10V K	
C524	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K		C714	CK73JXR1A473K	C CAPACITOR	0.047uF 10V K	
C525	CK730DX1C103K	C CAPACITOR	0.01uF 16V K		C715	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C526	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K		C716	CK73JXR1H271K	C CAPACITOR	270pF 50V K	
C527	CK730DX1C103K	C CAPACITOR	0.01uF 16V K		R2	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
C528	CK73HB0J475M	C CAPACITOR	4.7uF 6.3V M		R3	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
C529	CS77FAV0J101M	TA E CAPACITOR	100uF 6.3V M		R4	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
C530	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K		R5	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
C531	CK73JXR1H102K	C CAPACITOR	1000pF 50V K		R6	R92-3774-05	MG RESISTOR	27Ω 0.25W	
C532	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K		R7	R92-3774-05	MG RESISTOR	27Ω 0.25W	
C533	CK73HB0J225K	C CAPACITOR	2.2uF 6.3V K		R8	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
C534	CK730DX1C103K	C CAPACITOR	0.01uF 16V K		R9	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
C535	CK730DX1C103K	C CAPACITOR	0.01uF 16V K		R10	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
C536	CK730DX1C103K	C CAPACITOR	0.01uF 16V K		R11	RK73HB1J391J	MG RESISTOR	390Ω 1/16W J	
C537	CK73JXR1H271K	C CAPACITOR	270pF 50V K		R12	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
C538	CK730DX1C103K	C CAPACITOR	0.01uF 16V K		R13	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
C539	CK730DX1C103K	C CAPACITOR	0.01uF 16V K		R14	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
C542	CC730CC1H100F	C CAPACITOR	10pF 50V F		R15	RK73HB1J474J	MG RESISTOR	470kΩ 1/16W J	
C600	CK73JXR1H471K	C CAPACITOR	470pF 50V K		R16	RK73HB1J333J	MG RESISTOR	33kΩ 1/16W J	
C601	CK73GB0J106K	C CAPACITOR	10uF 6.3V K		R17	RK73GB2A220J	MG RESISTOR	22Ω 1/10W J	
C602	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K		R18	RK73JB1H100J	MG RESISTOR	10Ω 1/20W J	
C603	CK73JXR1H471K	C CAPACITOR	470pF 50V K		R20	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
C604	CK73HB0J225K	C CAPACITOR	2.2uF 6.3V K		R21	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
C605	CK73HB0J225K	C CAPACITOR	2.2uF 6.3V K		R22	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
C606	CK73JXR1A473K	C CAPACITOR	0.047uF 10V K		R23	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
C607	CK73JXR1E332K	C CAPACITOR	3300pF 25V K		R24	RK73HB1J124J	MG RESISTOR	120kΩ 1/16W J	
C608	CK73JXR1E272K	C CAPACITOR	2700pF 25V K		R25	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
C609	CK730DX1C103K	C CAPACITOR	0.01uF 16V K		R26	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
C610	CK73JXR0J474K	C CAPACITOR	0.47uF 6.3V K		R27	RK73HB1J106J	MG RESISTOR	10MΩ 1/16W J	
C612	CK73JXR0J474K	C CAPACITOR	0.47uF 6.3V K		R28	RK73HB1J470J	MG RESISTOR	47Ω 1/16W J	
C613	CK73JXR0J474K	C CAPACITOR	0.47uF 6.3V K		R29	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
C614	CC73JCH1H560J	C CAPACITOR	56pF 50V J		R30	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
C615	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K		R31	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
C616	CC73JCH1H101J	C CAPACITOR	100pF 50V J		R32	RK73HB1J152J	MG RESISTOR	1.5kΩ 1/16W J	
C617	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K		R33	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
C618	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K		R34	RK73HH1J151D	MG RESISTOR	150Ω 1/16W D	
C619	CC73JCH1H560J	C CAPACITOR	56pF 50V J		R35	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
C620	CK73JXR1H331K	C CAPACITOR	330pF 50V K		R36	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
C622	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K		R37	RK73HH1J103D	MG RESISTOR	10kΩ 1/16W D	
C623	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K		R38	RK73HH1J103D	MG RESISTOR	10kΩ 1/16W D	
C624	CK73JXR1H331K	C CAPACITOR	330pF 50V K		R39	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
C626	CK73JXR1H471K	C CAPACITOR	470pF 50V K		R40	RK73JB1H223J	MG RESISTOR	22kΩ 1/20W J	
C627	CK73JXR1C104K	C CAPACITOR	0.1uF 16V K		R41	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	

△ Symbol No.	Part No.	Part Name	Description	Local
R42	RK73HB1J683J	MG RESISTOR	68kΩ 1/16W J	
R43	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R44	RN73H0AJ562D	MF RESISTOR	5.6kΩ D	
R45	RN73HH1J103D	MF RESISTOR	10kΩ 1/16W D	
R46	RK73HB1J8R2J	MG RESISTOR	8.2Ω 1/16W J	
R47	RN73H0AJ121D	MF RESISTOR	120Ω D	
R50	RK73HB1J2R2J	MG RESISTOR	2.2Ω 1/16W J	
R51	RK73HB1J220J	MG RESISTOR	22Ω 1/16W J	
R52	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R53	RK73HB1J682J	MG RESISTOR	6.8kΩ 1/16W J	
R54	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R55	RK73HB1J561J	MG RESISTOR	560Ω 1/16W J	
R57	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R62	RK73HB1J272J	MG RESISTOR	2.7kΩ 1/16W J	
R63	RK73HB1J272J	MG RESISTOR	2.7kΩ 1/16W J	
R64	RK73HB1J560J	MG RESISTOR	56Ω 1/16W J	
R65	RK73HB1J560J	MG RESISTOR	56Ω 1/16W J	
R66	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R70	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R71	RK73GB2A100J	MG RESISTOR	10Ω 1/10W J	
R83	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R100	RK73HH1J472D	MG RESISTOR	4.7kΩ 1/16W D	
R101	RK73HH1J472D	MG RESISTOR	4.7kΩ 1/16W D	
R102	RN73HH1J220D	MF RESISTOR	22Ω 1/16W D	
R103	RK73HH1J181D	MG RESISTOR	180Ω 1/16W D	
R104	RN73HH1J222D	MF RESISTOR	2.2kΩ 1/16W D	
R109	RK73HH1J223D	MG RESISTOR	22kΩ 1/16W D	
R110	RK73HH1J223D	MG RESISTOR	22kΩ 1/16W D	
R111	RK73HH1J124D	MG RESISTOR	120kΩ 1/16W D	
R112	RK73HH1J124D	MG RESISTOR	120kΩ 1/16W D	
R113	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R114	RK73JB1H224J	MG RESISTOR	220kΩ 1/20W J	
R115	RK73JB1H224J	MG RESISTOR	220kΩ 1/20W J	
R116	RK73HH1J223D	MG RESISTOR	22kΩ 1/16W D	
R117	RK73HH1J561D	MG RESISTOR	560Ω 1/16W D	
R118	RK73HH1J473D	MG RESISTOR	47kΩ 1/16W D	
R119	RK73HB1J273J	MG RESISTOR	27kΩ 1/16W J	
R120	RN73HH1J471D	MF RESISTOR	470Ω 1/16W D	
R121	RK73HB1J470J	MG RESISTOR	47Ω 1/16W J	
R122	RK73HB1J181J	MG RESISTOR	180Ω 1/16W J	
R123	RK73HB1J270J	MG RESISTOR	27Ω 1/16W J	
R124	RK73HB1J181J	MG RESISTOR	180Ω 1/16W J	
R126	RK73EB2ER39J	MG RESISTOR	0.39Ω 1/4W J	
R127	RK73EB2ER39J	MG RESISTOR	0.39Ω 1/4W J	
R128	RK73HB1J151J	MG RESISTOR	150Ω 1/16W J	
R129	RK73HH1J562D	MG RESISTOR	5.6kΩ 1/16W D	
R130	RK73HH1J332D	MG RESISTOR	3.3kΩ 1/16W D	
R132	RK73HB1J680J	MG RESISTOR	68Ω 1/16W J	
R134	RK73HH1J562D	MG RESISTOR	5.6kΩ 1/16W D	
R135	RK73JB1H101J	MG RESISTOR	100Ω 1/20W J	
R136	RK73HB1J820J	MG RESISTOR	82Ω 1/16W J	
R137	RK73HH1J562D	MG RESISTOR	5.6kΩ 1/16W D	
R140	RN73HH1J680D	MF RESISTOR	68Ω 1/16W D	
R141	RN73HH1J680D	MF RESISTOR	68Ω 1/16W D	
R142	RK73GB2A823J	MG RESISTOR	82kΩ 1/10W J	
R143	RK73JB1H472J	MG RESISTOR	4.7kΩ 1/20W J	
R144	RK73JB1H000J	MG RESISTOR	0Ω 1/20W J	
R145	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R146	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
R147	RK73EB2ER39J	MG RESISTOR	0.39Ω 1/4W J	
R148	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R149	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R150	RK73HB1J105J	MG RESISTOR	1MΩ 1/16W J	
R151	RK73HH1J474D	MG RESISTOR	470kΩ 1/16W D	
R152	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	

△ Symbol No.	Part No.	Part Name	Description	Local
R153	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R201	RK73HB1J682J	MG RESISTOR	6.8kΩ 1/16W J	
R202	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R203	RK73HB1J682J	MG RESISTOR	6.8kΩ 1/16W J	
R204	RK73HB1J150J	MG RESISTOR	15Ω 1/16W J	
R205	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R207	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R210	RK73JB1H000J	MG RESISTOR	0Ω 1/20W J	
R211	RK73HB1J3R3J	MG RESISTOR	3.3Ω 1/16W J	
R212	RK73HB1J3R3J	MG RESISTOR	3.3Ω 1/16W J	
R214	RK73HH1J103D	MG RESISTOR	10kΩ 1/16W D	
R215	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R216	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R218	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R219	RK73JB1H100J	MG RESISTOR	10Ω 1/20W J	
R220	RK73JB1H100J	MG RESISTOR	10Ω 1/20W J	
R223	RK73HB1J150J	MG RESISTOR	15Ω 1/16W J	
R224	RK73HH1J103D	MG RESISTOR	10kΩ 1/16W D	
R225	RK73HH1J103D	MG RESISTOR	10kΩ 1/16W D	
R226	RK73HH1J822D	MG RESISTOR	8.2kΩ 1/16W D	
R227	RK73HH1J822D	MG RESISTOR	8.2kΩ 1/16W D	
R228	RK73HH1J683D	MG RESISTOR	68kΩ 1/16W D	
R229	RK73HH1J473D	MG RESISTOR	47kΩ 1/16W D	
R230	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R231	RK73HH1J683D	MG RESISTOR	68kΩ 1/16W D	
R232	RK73HH1J473D	MG RESISTOR	47kΩ 1/16W D	
R233	RK73HH1J822D	MG RESISTOR	8.2kΩ 1/16W D	
R234	RK73HH1J822D	MG RESISTOR	8.2kΩ 1/16W D	
R235	RK73HH1J103D	MG RESISTOR	10kΩ 1/16W D	
R236	RK73HH1J103D	MG RESISTOR	10kΩ 1/16W D	
R237	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R238	RK73HH1J123D	MG RESISTOR	12kΩ 1/16W D	
R239	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R240	RK73HH1J473D	MG RESISTOR	47kΩ 1/16W D	
R241	RK73HH1J473D	MG RESISTOR	47kΩ 1/16W D	
R242	RK73HH1J123D	MG RESISTOR	12kΩ 1/16W D	
R243	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R249	RK73JB1H474J	MG RESISTOR	470kΩ 1/20W J	
R250	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R252	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R253	RK73JB1H100J	MG RESISTOR	10Ω 1/20W J	
R254	RK73HB1J220J	MG RESISTOR	22Ω 1/16W J	
R300	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R301	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R302	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R303	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R304	RK73HB1J151J	MG RESISTOR	150Ω 1/16W J	
R305	RK73HB1J121J	MG RESISTOR	120Ω 1/16W J	
R306	RK73HB1J181J	MG RESISTOR	180Ω 1/16W J	
R307	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R308	RK73HB1J334J	MG RESISTOR	330kΩ 1/16W J	
R309	RK73HB1J274J	MG RESISTOR	270kΩ 1/16W J	
R310	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R311	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R312	RK73HB1J474J	MG RESISTOR	470kΩ 1/16W J	
R313	RK73HB1J152J	MG RESISTOR	1.5kΩ 1/16W J	
R314	RK73HB1J561J	MG RESISTOR	560Ω 1/16W J	
R315	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R316	RK73JB1H682J	MG RESISTOR	6.8kΩ 1/20W J	
R317	RK73JB1H473J	MG RESISTOR	47kΩ 1/20W J	
R318	RK73HB1J183J	MG RESISTOR	18kΩ 1/16W J	
R319	RK73HB1J124J	MG RESISTOR	120kΩ 1/16W J	
R320	RK73JB1H101J	MG RESISTOR	100Ω 1/20W J	
R321	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R322	RK73HB1J332J	MG RESISTOR	3.3kΩ 1/16W J	

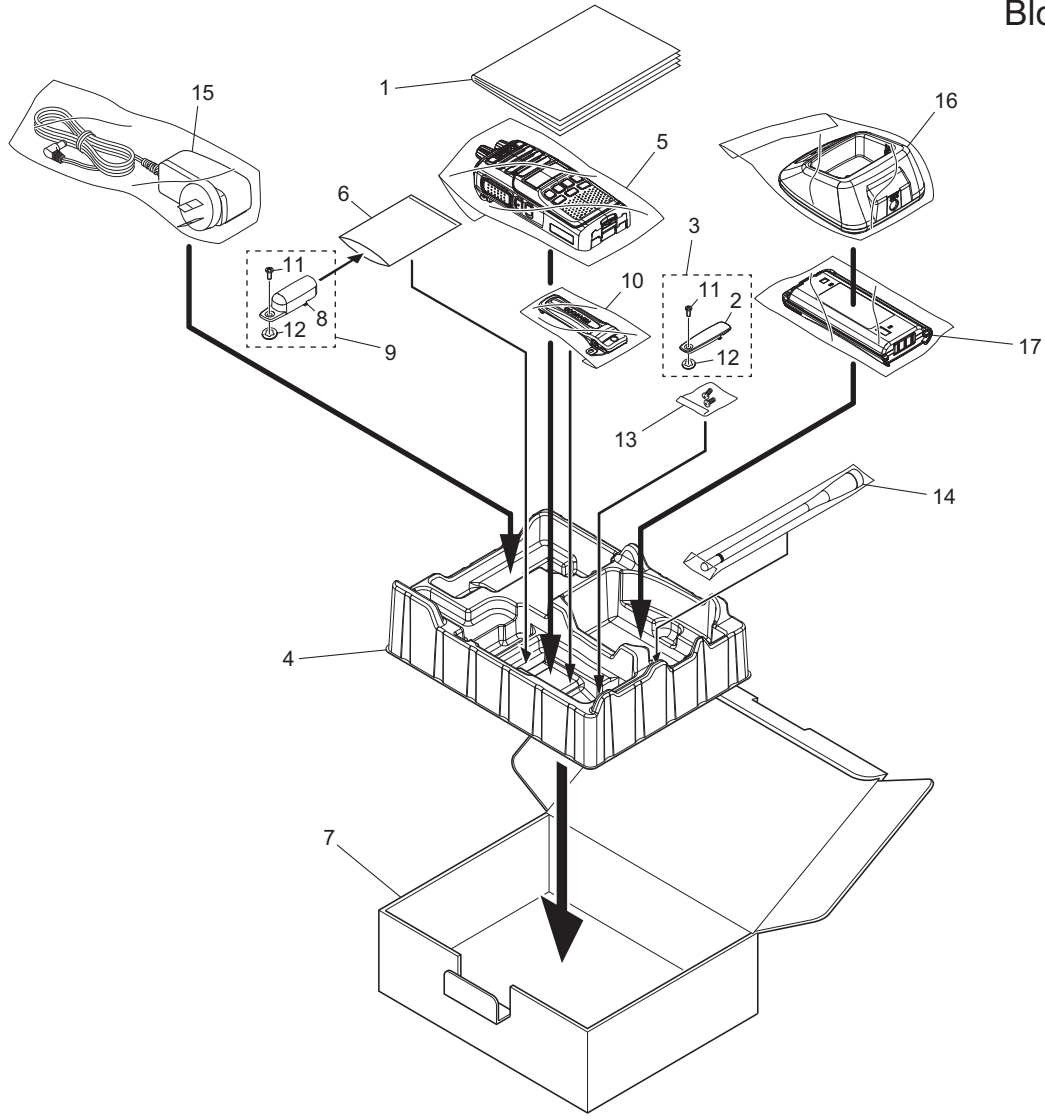
△ Symbol No.	Part No.	Part Name	Description	Local	△ Symbol No.	Part No.	Part Name	Description	Local
R323	RK73JB1H473J	MG RESISTOR	47kΩ 1/20W J		R600	RK73JB1H471J	MG RESISTOR	470Ω 1/20W J	
R324	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J		R601	RK73HB1J182J	MG RESISTOR	1.8kΩ 1/16W J	
R325	RK73HB1J823J	MG RESISTOR	82kΩ 1/16W J		R602	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R326	RK73JB1H473J	MG RESISTOR	47kΩ 1/20W J		R603	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
R327	RK73HB1J273J	MG RESISTOR	27kΩ 1/16W J		R604	RK73JB1H683J	MG RESISTOR	68kΩ 1/20W J	
R328	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J		R605	RK73JB1H683J	MG RESISTOR	68kΩ 1/20W J	
R329	RK73JB1H101J	MG RESISTOR	100Ω 1/20W J		R606	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R330	RK73JB1H000J	MG RESISTOR	0Ω 1/20W J		R607	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R331	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J		R608	RK73HB1J272J	MG RESISTOR	2.7kΩ 1/16W J	
R332	RK73JB1H473J	MG RESISTOR	47kΩ 1/20W J		R609	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R400	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J		R610	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
R401	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J		R611	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R402	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J		R612	RK73HB1J474J	MG RESISTOR	470kΩ 1/16W J	
R405	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J		R613	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R406	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J		R614	RK73HB1J563J	MG RESISTOR	56kΩ 1/16W J	
R407	RK73HB1J393J	MG RESISTOR	39kΩ 1/16W J		R615	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R408	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J		R616	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R409	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J		R617	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R410	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J		R618	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R412	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J		R619	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R413	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J		R620	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R414	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R621	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R415	RK73FB2B000J	MG RESISTOR	0Ω 1/8W J		R622	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R416	RK73HH1J103D	MG RESISTOR	10kΩ 1/16W D		R623	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R417	RK73HH1J333D	MG RESISTOR	33kΩ 1/16W D		R624	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R500	RK73JB1H000J	MG RESISTOR	0Ω 1/20W J		R625	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R501	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R626	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R502	RK73JB1H101J	MG RESISTOR	100Ω 1/20W J		R627	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R503	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J		R628	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R504	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J		R629	RK73HH1J473D	MG RESISTOR	47kΩ 1/16W D	
R505	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J		R630	RK73HH1J473D	MG RESISTOR	47kΩ 1/16W D	
R506	RK73JB1H473J	MG RESISTOR	47kΩ 1/20W J		R631	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R507	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J		R632	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R509	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J		R633	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R510	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J		R634	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R511	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J		R635	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R512	RK73JB1H473J	MG RESISTOR	47kΩ 1/20W J		R636	RK73JB1H473J	MG RESISTOR	47kΩ 1/20W J	
R513	RK73JB1H000J	MG RESISTOR	0Ω 1/20W J		R637	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R514	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J		R638	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R515	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J		R639	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R516	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J		R640	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R518	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J		R641	RK73JB1H473J	MG RESISTOR	47kΩ 1/20W J	
R520	RK73JB1H000J	MG RESISTOR	0Ω 1/20W J		R643	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R521	RK73JB1H474J	MG RESISTOR	470kΩ 1/20W J		R644	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R522	RK73JB1H820J	MG RESISTOR	82Ω 1/20W J		R645	RK73HB1J822J	MG RESISTOR	8.2kΩ 1/16W J	
R523	RK73JB1H101J	MG RESISTOR	100Ω 1/20W J		R646	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R524	RK73JB1H100J	MG RESISTOR	10Ω 1/20W J		R647	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R525	RK73JB1H000J	MG RESISTOR	0Ω 1/20W J		R648	RK73HB1J271J	MG RESISTOR	270Ω 1/16W J	
R526	RK73JB1H000J	MG RESISTOR	0Ω 1/20W J		R649	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R527	RK73JB1H000J	MG RESISTOR	0Ω 1/20W J		R650	RK73HB1J105J	MG RESISTOR	1MΩ 1/16W J	
R528	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J		R651	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R530	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R700	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R531	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R701	RK73JB1H472J	MG RESISTOR	4.7kΩ 1/20W J	
R532	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R702	RK73HB1J271J	MG RESISTOR	270Ω 1/16W J	
R533	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R704	RK73HB1J271J	MG RESISTOR	270Ω 1/16W J	
R534	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R705	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
R535	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R706	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
R536	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R718	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R537	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R719	RK73JB1H224J	MG RESISTOR	220kΩ 1/20W J	
R538	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R721	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R539	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R722	RK73JB1H000J	MG RESISTOR	0Ω 1/20W J	
R540	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R723	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R541	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R724	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R542	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R725	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R543	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R726	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	

△ Symbol No.	Part No.	Part Name	Description	Local
R727	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R728	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R729	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R730	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R731	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R732	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R733	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R734	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R735	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R736	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
L1	LB73H0AV-001	CHIP FERRITE		
L2	LK73G0BB4R7K	M.CHIP INDUCTOR		
L3	LB73H0AV-002	CHIP FERRITE		
L5	L41-1502-70	CHIP INDUCTOR		
L6	LB73H0AV-004	CHIP FERRITE		
L7	LK73H0AMR10J	M.CHIP INDUCTOR	0.1uH	
L8	LK73H0AMR10J	M.CHIP INDUCTOR	0.1uH	
L9	LK73H0AMR10J	M.CHIP INDUCTOR	0.1uH	
L10	LB73H0AV-004	CHIP FERRITE		
L11	LR79H0AZ4N7B	CHIP INDUCTOR		
L14	L3C-0021-00	OSC-COIL		
L15	LK73H0AMR10J	M.CHIP INDUCTOR	0.1uH	
L16	LK73H0AMR10J	M.CHIP INDUCTOR	0.1uH	
L17	LK73H0AMR10J	M.CHIP INDUCTOR	0.1uH	
L18	LK73H0AM10NJ	M.CHIP INDUCTOR	10nH	
L19	LK73H0AM5N6S	M.CHIP INDUCTOR	5.6nH	
L20	LK73H0AM4N7S	M.CHIP INDUCTOR	4.7nH	
L21	LK73H0AM6N8J	M.CHIP INDUCTOR	6.8nH	
L100	LK73H0BC27NJ	M.CHIP INDUCTOR		
L104	LK73H0AM56NJ	M.CHIP INDUCTOR		
L105	LK73H0BC18NJ	M.CHIP INDUCTOR		
L106	LB73H0AV-002	CHIP FERRITE		
L107	LK73H0BC12NJ	M.CHIP INDUCTOR		
L108	LR79G0GK27NG	CHIP INDUCTOR		
L109	LB73F0AV-002	CHIP FERRITE		
L111	L41-1563-53	CHIP INDUCTOR		
L112	LB73F0AV-002	CHIP FERRITE		
L113	LR79Z0DD21N9J	CHIP INDUCTOR		
L114	LR79G0GK6N0C	CHIP INDUCTOR		
L115	LR79G0GKR22G	CHIP INDUCTOR		
L116	LR79Z0DD16N9J	CHIP INDUCTOR		
L117	LR79Z0DD16N9J	CHIP INDUCTOR		
L118	LR79Z0DD16N9J	CHIP INDUCTOR		
L119	LR79Z0DD16N9J	CHIP INDUCTOR		
L120	LK73H0AM22NJ	M.CHIP INDUCTOR		
L200	L41-1575-53	CHIP INDUCTOR		
L201	L41-6868-14	CHIP INDUCTOR		
L202	L41-6868-14	CHIP INDUCTOR		
L204	LR79G0CQ12NG	CHIP INDUCTOR		
L205	L41-6868-14	CHIP INDUCTOR		
L206	L41-6868-14	CHIP INDUCTOR		
L208	LB73H0AV-002	CHIP FERRITE		
L210	LK73H0AM27NJ	M.CHIP INDUCTOR	27nH	
L211	LB73H0AV-001	CHIP FERRITE		
L212	LB73H0AV-001	CHIP FERRITE		
L213	LB73H0AV-001	CHIP FERRITE		
L214	LB73H0AV-001	CHIP FERRITE		
L400	LB73F0DD-001	CHIP FERRITE		
L401	LB73H0AV-001	CHIP FERRITE		
L402	LB73H0AV-001	CHIP FERRITE		
L403	LB73G0CQ-001	CHIP FERRITE		
L404	LB73G0CQ-001	CHIP FERRITE		
L405	LK73P0CF2R2M	M.CHIP INDUCTOR		
L406	LB73G0CQ-001	CHIP FERRITE		
L407	LB73H0AV-001	CHIP FERRITE		

△ Symbol No.	Part No.	Part Name	Description	Local
L408	LB73H0AV-001	CHIP FERRITE		
L500	LB73H0AV-002	CHIP FERRITE		
L501	LB73H0AV-002	CHIP FERRITE		
L600	LB73H0AV-003	CHIP FERRITE		
L601	LB73H0AV-003	CHIP FERRITE		
L602	LB73H0AV-003	CHIP FERRITE		
L603	LB73H0AV-003	CHIP FERRITE		
L604	LB73H0AV-003	CHIP FERRITE		
L700	LB73H0AV-002	CHIP FERRITE		
CN1	E23-1278-05	TERMINAL		
CN2	E23-1278-05	TERMINAL		
CN3	E23-1278-05	TERMINAL		
CN4	E23-1278-05	TERMINAL		
CN5	E23-1278-05	TERMINAL		
CN6	E23-1278-05	TERMINAL		
CN7	E23-1278-05	TERMINAL		
CN8	E23-1278-05	TERMINAL		
CN9	E23-1278-05	TERMINAL		
CN10	E23-1278-05	TERMINAL		
CN300	E40-6922-05	F.C.CONNECTOR		
CP1	RK74HA1J101J	MG RESISTOR	100kΩ 1/16W J	
CP200	RK74HA1J474J	MG RESISTOR	470kΩ 1/16W J	
CP201	RK74HB1J101J	NET RESISTOR	100kΩ 1/16W J	
CP202	RK74HA1J104J	MG RESISTOR	100kΩ 1/16W J	
CP203	RK74HA1J104J	MG RESISTOR	100kΩ 1/16W J	
CP300	RK74HA1J103J	MG RESISTOR	10kΩ 1/16W J	
CP301	RK74HA1J103J	MG RESISTOR	10kΩ 1/16W J	
CP401	RK74HA1J474J	MG RESISTOR	470kΩ 1/16W J	
CP500	RK74HA1J473J	MG RESISTOR	47kΩ 1/16W J	
CP501	RK74HA1J473J	MG RESISTOR	47kΩ 1/16W J	
CP600	RK74HB1J101J	NET RESISTOR	100kΩ 1/16W J	
CP601	RK74HA1J474J	MG RESISTOR	470kΩ 1/16W J	
CP701	RK74HB1J471J	MG RESISTOR	470kΩ 1/16W J	
CP702	RK74HB1J471J	MG RESISTOR	470kΩ 1/16W J	
CP703	RK74HB1J103J	NET RESISTOR	10kΩ 1/16W J	
CP704	RK74HB1J103J	NET RESISTOR	10kΩ 1/16W J	
CP705	RK74HB1J103J	NET RESISTOR	10kΩ 1/16W J	
CP706	RK74HB1J103J	NET RESISTOR	10kΩ 1/16W J	
CP709	RK74HB1J103J	NET RESISTOR	10kΩ 1/16W J	
CP711	RK74HB1J103J	NET RESISTOR	10kΩ 1/16W J	
CP712	RK74HB1J101J	NET RESISTOR	100kΩ 1/16W J	
E1	-----	SHIELDING CASE	Note 2	
F300	F53-0498-05	FUSE	1.0A	
F400	FZA10BQ-3R15	FUSE (CC)	3.15A	
J300	E1B-0021-10	PHONE JACK		
S301	S70-0414-05	TACTILE PUSH SW		
S302	S7A-0036-00	TACTILE PUSH SW		
S303	S7A-0036-00	TACTILE PUSH SW		
S701	S70-0519-05	TACTILE PUSH SW		
S702	S70-0519-05	TACTILE PUSH SW		
S703	S70-0519-05	TACTILE PUSH SW		
S704	S70-0519-05	TACTILE PUSH SW		
S705	S70-0519-05	TACTILE PUSH SW		
S706	S70-0519-05	TACTILE PUSH SW		
S707	S70-0519-05	TACTILE PUSH SW		
TH1	NCP15WF104F03	N THERMISTOR		
TH100	NCP15WF104F03	N THERMISTOR		
X1	L7H-0110-00	TCXO		
X500	L7H-0111-00	TCXO		

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	B5A-3230-00	INST.MANUAL	E	
2	B0K-0116-00	CAP		
3	B0K-0117-00	CAP ASSY	2PIN	
4	-----	PACKING FIXTURE	ACC	
5	-----	PROTECTION BAG	RADIO	
6	-----	PROTECTION BAG	CAP	
7	H5A-1916-00	ITEM CARTON	ACC	
8	J1K-0817-00	HOLDER		
9	J1K-0818-00	HOLDER ASSY	2PIN	
10	J29-0734-25	HOOK ASSY		
11	N0Z-0292-00	BI.HEAD M.SCREW	(x2)	
12	N1Y-0054-00	INS.WASHER	(x2)	
13	N99-2089-05	SCREW SET		
14	T90-1039-25	WHIP ANTENNA	KRA-27M	
15	W08-1252-15	AC ADAPTER (CC)	X	
16	W08-1249-65	CHARGER (CC)		
17	-----	LI-ION BAT.P(CC)	KNB-84L IP67	



KENWOOD

JVCKENWOOD Corporation
Communications Systems Division

(No.RA081<Rev.001>)

Printed in Japan
JKS