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NEXEDGE®

Application Notes

P25 OTAP for Trunking System

NX-5000 Series R4.5

KPG-D1 R4.5

KPG-180AP R4.0

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Contents

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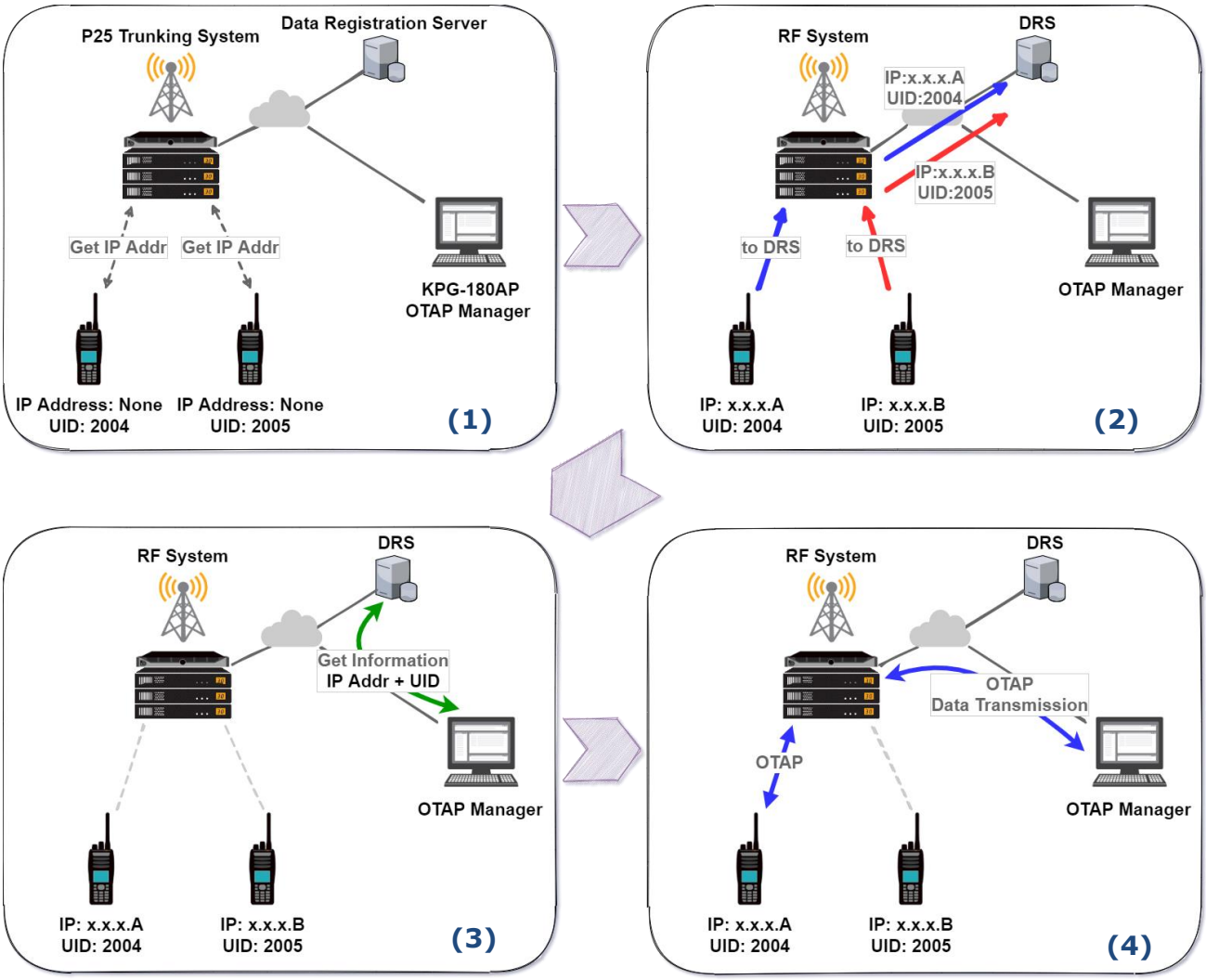
1. Overview

1.1. Outline Features

With this version updated in September 2021, OTAP (Over-the-Air-Programming) can now be used in a P25 Trunking System configuration. The figure below shows an outline of the operation of the system.



The system is divided into four elements. They are RF systems, radio transceiver, OTAP Manager, and Data Registration Server (referred to as DRS). When the radio transceiver is registered with the RF system, it is assigned an IP address (or a fixed IP address is set), and IP communication becomes possible on the Network system. [Fig. (1)]
The radio transceiver then registers UID information, and IP address information with the EFJ software DRS. [Fig. (2)]
Afterwards, the OTAP Manager obtains these radio transceivers information from the DRS. [Fig. (3)]
Since OTAP Manager stores the IP address of the radio transceiver, it will be able to communicate with the radio transceiver via an IP network and be able to execute the OTAP

process. [Fig. (4)]
The details highlighted above provide an overview of the OTAP operation in this P25 Trunking System.

1.2. Product Versions

To implement OTAP on the P25 Trunking System, you will need the following versions of Firmware, and Software released in September 2021.

Product	Supported Version
NX-5000 series	**V4.50 or later**
KPG-D1/D1N	**V4.50 or later**
KPG-180AP	**V4.00 or later**

1.3. Software License

To execute OTAP on a P25 Trunking System using KPG-180AP, you will need to purchase the following license, and will need to then apply the license using KPT-300LMC.

Model Name	License Key	Description
KPG-180AP	KWD-AP6-P25T	License for P25 Trunking System

2. Basic Configuration for OTAP: P25 Trunking

This chapter introduces the basic settings for the radio transceiver, and KPG-180AP OTAP Manager to implement an OTAP System on a P25 Trunking System.

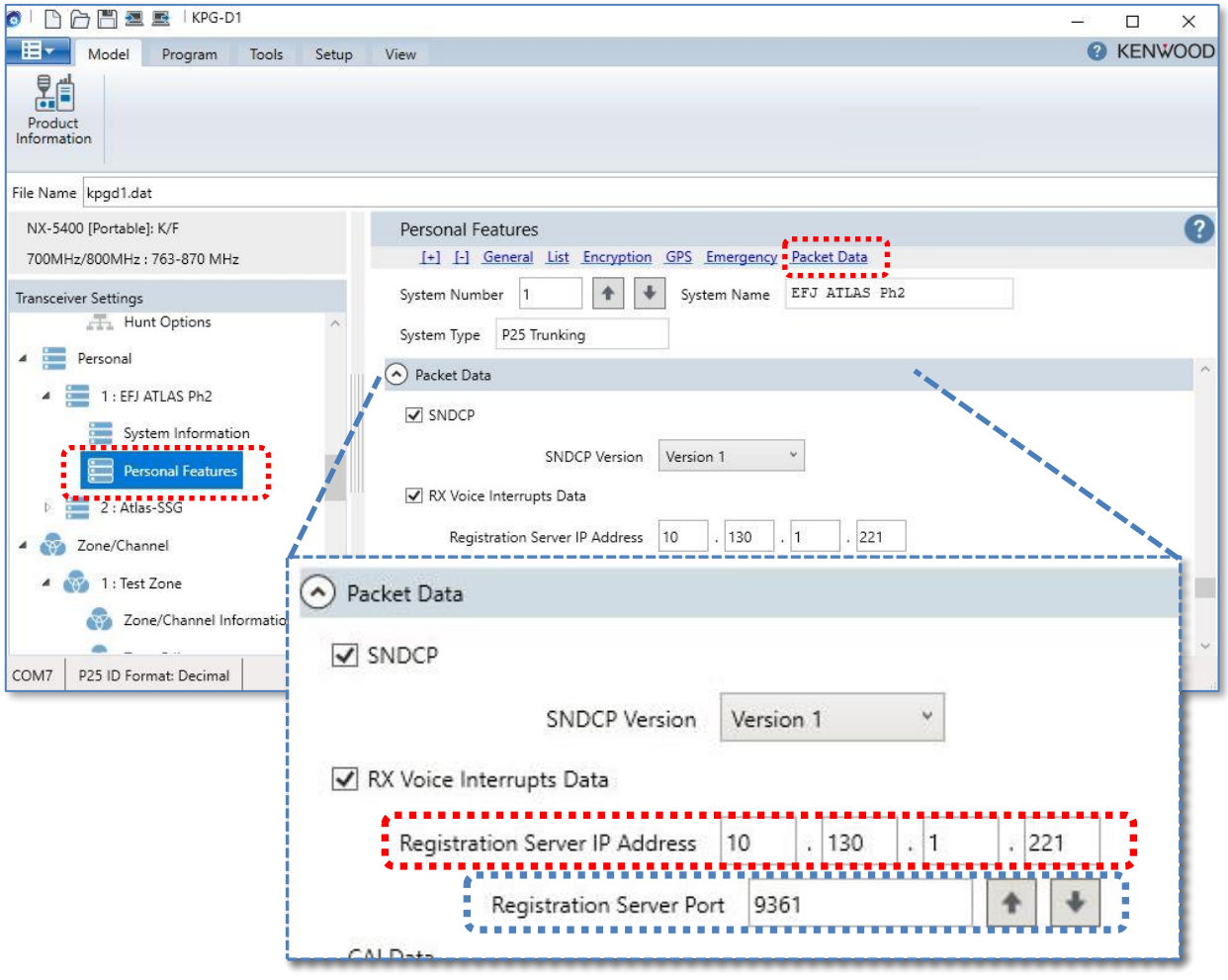
2.1. KPG-D1/D1N

2.1.1. Transceiver Settings > Personal Features > Packet Data

Prior to this configuration, you must set an IP address for the radio transceiver so that it can be used for IP communication on the P25 Trunking System. (Check "SNDCP" and specify the IP Address of "Transceiver Information> P25 Information> Packet Data" or set the check to "Dynamic".)

2.1.1.1. Registration Server IP Address

Enter the values in the "Registration Server IP Address" box which is the IP address of the DRS (Data Registration Server) which is used in the OTAP System.

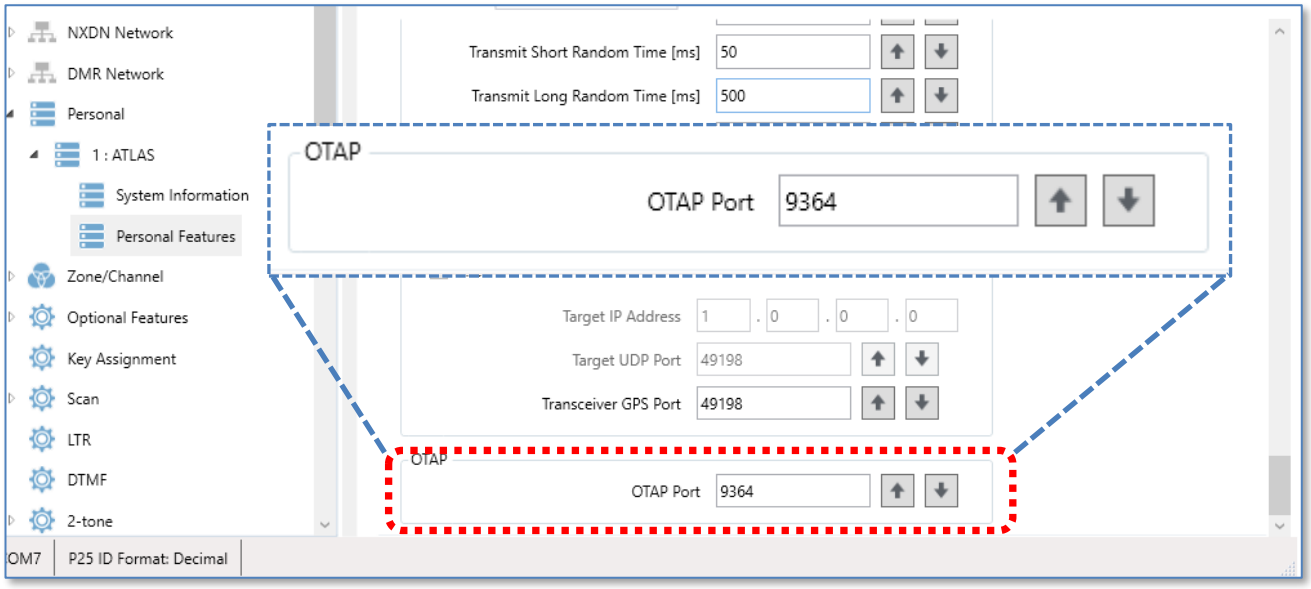


2.1.1.2. Registration Server Port

For "Registration Server Port", Enter the UDP Port number used by the DRS for the communication. When the system is using an EFJ DRS, leave the default setting as "9361".

2.1.1.3. OTAP Port

For the “OTAP Port”, Enter the UDP Port number that the radio transceiver will use to communicate with the OTAP Manager. The default value is “9364”. If you do not change this default value, it will match with the default value of the UDP port number in the OTAP Manager, so it is recommended not to change it.

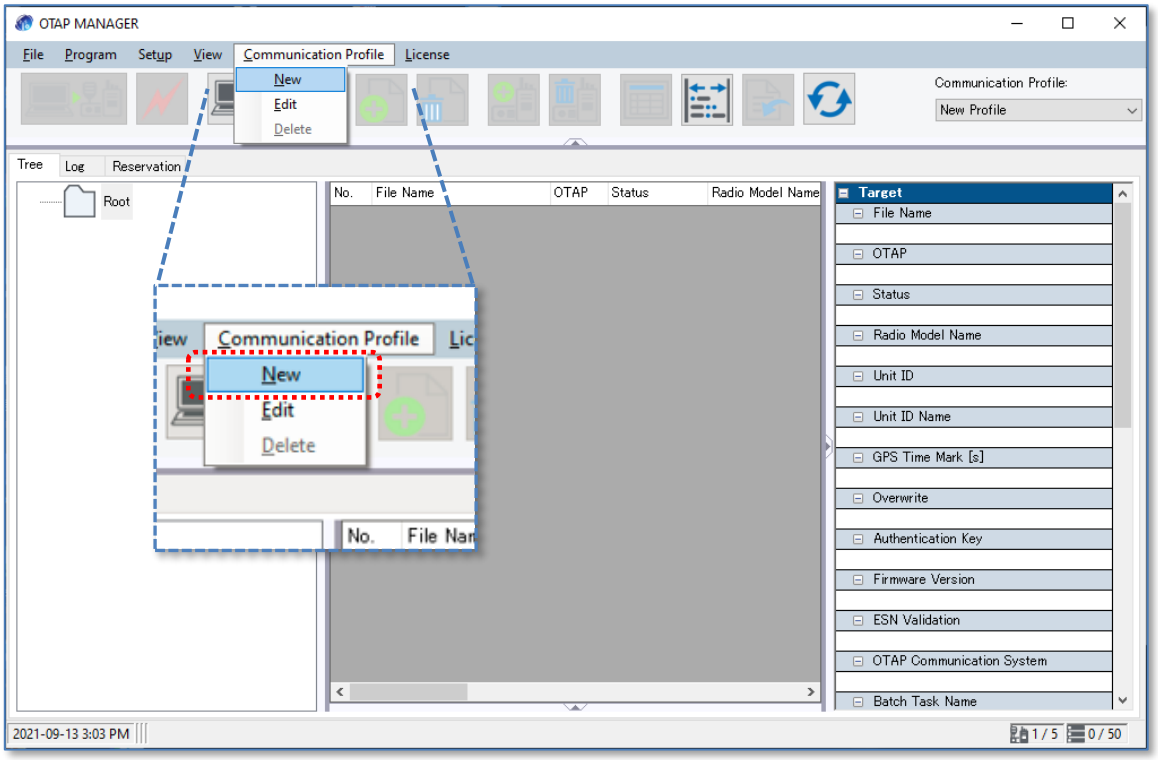


Now write the FPU data with the above configurations to your radio transceiver.

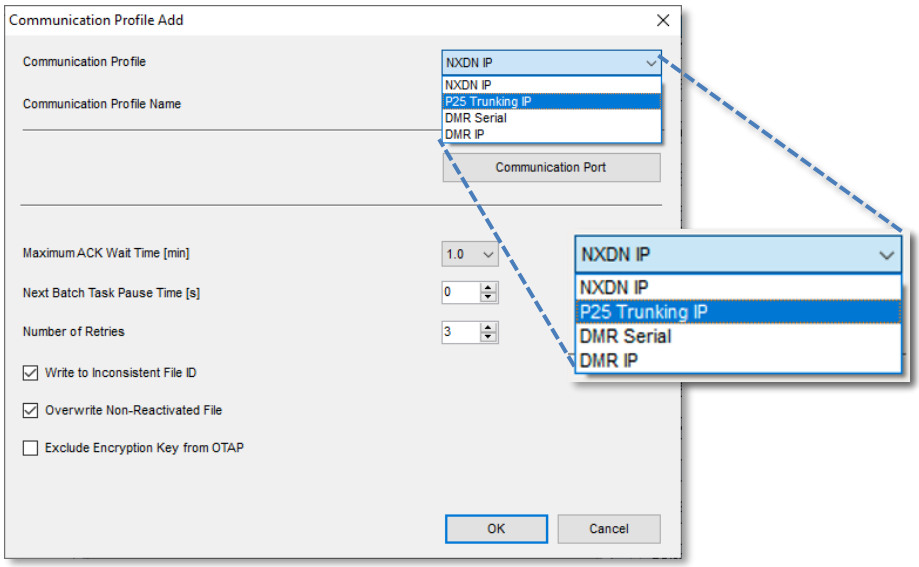
2.2. KPG-180AP OTAP Manager

2.2.1. Communication Profile

Before configuring any settings within the KPG-180AP OTAP Manager, be sure to apply the "KWD-AP6-P25T" license via KPT-300LMC. After applying, start KPG-180AP OTAP Manager and create a new “Communication Profile” by selecting “Communication Profile> New” as shown in the figure below to launch the “Communication Profile Add screen”.

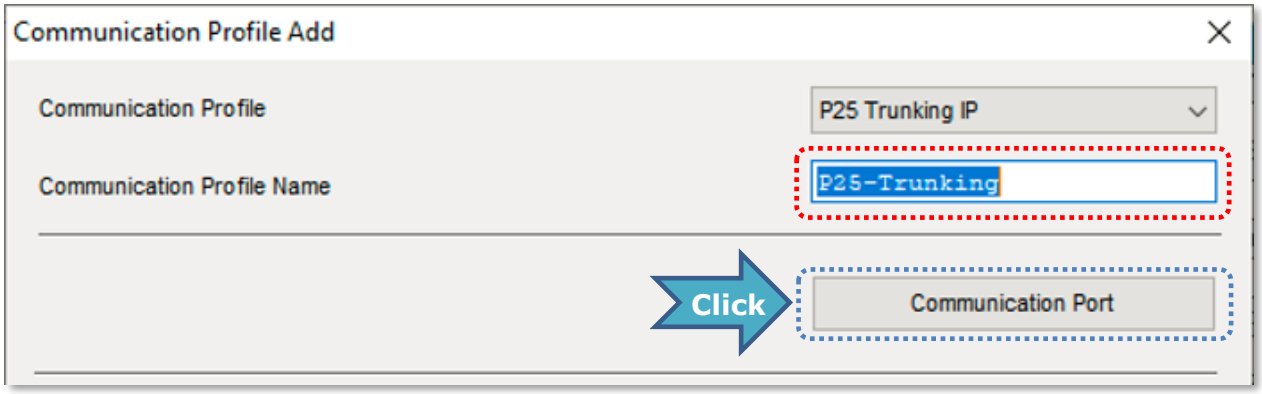


Select “P25 Trunking IP” from the “Communication Profile” menu.



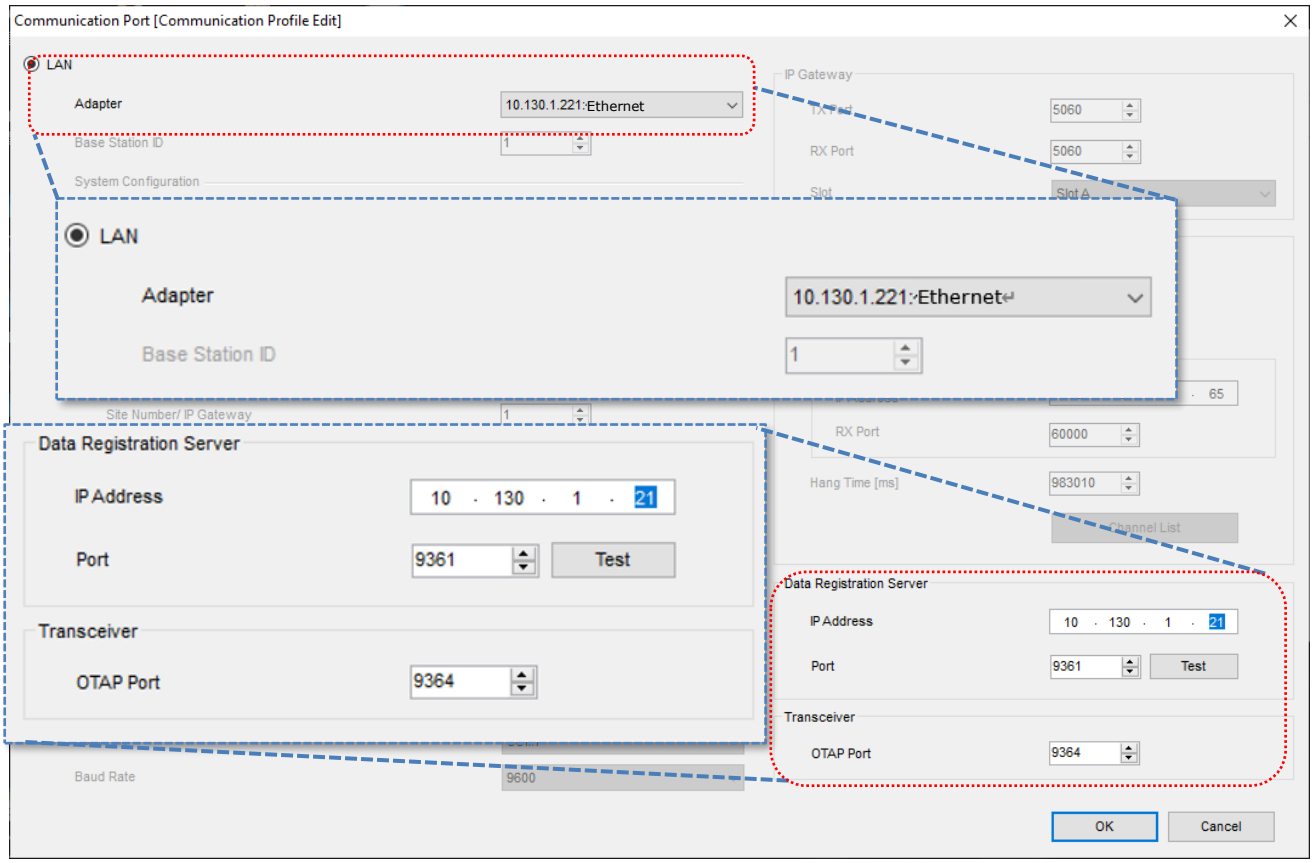
2.2.2. Communication Profile Name

Any text can be entered in “Communication Profile Name”. After entering, click the "Communication Port" button.



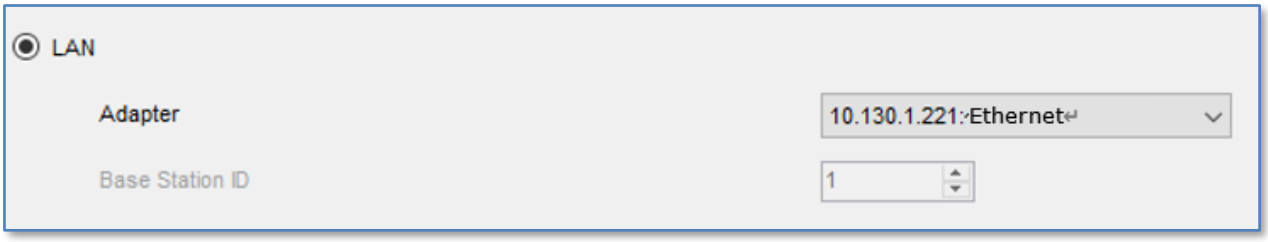
2.2.3. Communication Port

After clicking the "Communication Port" button, the following screen will appear. You will need to specify the network interface adapter of the PC for which OTAP Manager is to be used when it connects to the P25 Trunking System, and the IP address of the DRS as well.



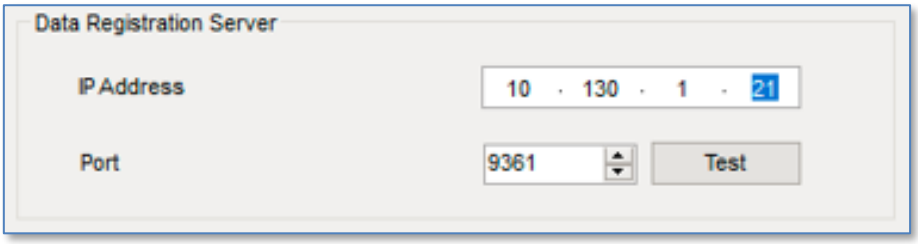
2.2.3.1. Adapter

Select the network interface in which OTAP Manager communicates with the DRS.



2.2.3.2. Data Registration Server

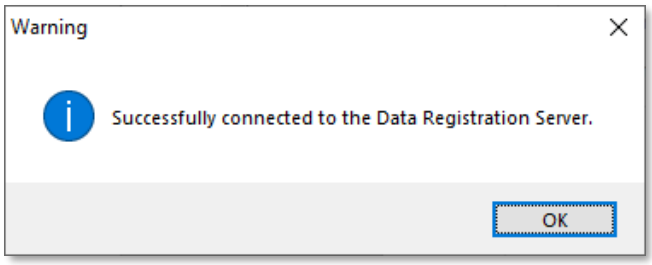
OTAP Manager performs IP communication directly with the radio transceiver and writes FPU data to the radio transceiver. To communicate directly with the radio transceiver, OTAP Manager must know the IP address of the radio transceiver that is assigned by the P25 System. Since the DRS stores the radio transceiver IDs and the IP addresses information that is assigned to those radio transceivers, the OTAP Manager can connect to the DRS and will know the IP address information of the radio transceivers to establish data



communication with.

Function Name	Value/Action	Description
IP Address	IP Address of DRS PC	Enter the IP address of the DRS.
Port	UDP Port No. of DRS PC	Enter the UDP Port number for the DRS. [Default Value: 9361]
"Test" Button	Running Connection Test	Execute the connection test between DRS.

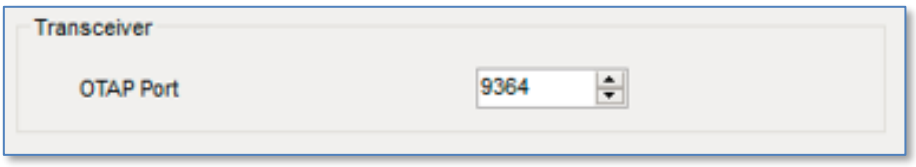
In the "IP Address" box, enter the IP address of the DRS, and then enter the UDP port number which is used by the DRS. (If it is connecting to EFJ DRS, use the default value "9361".)



The "Test" button executes the connection test for the set DRS IP address, and Port number. If the connection test is successful, this means that the OTAP Manager has established a connection with the DRS. After setting the IP address and UDP Port number, be sure to remember to push the “test” button to check the IP connection. If the connection test fails, check that the IP address value and port number are correct.

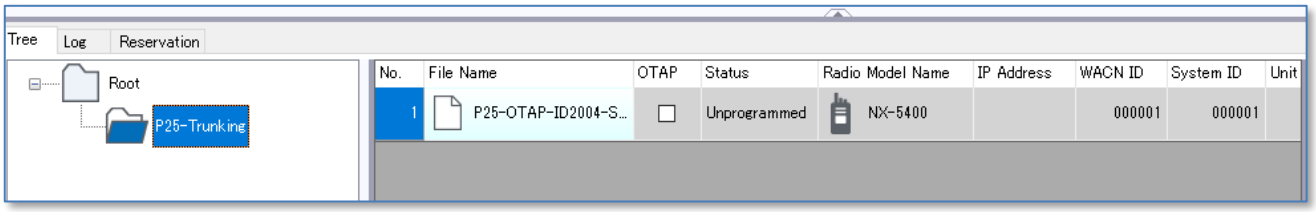
2.2.3.3. Transceiver

For “Transceiver>OTAP Port”, enter the UDP Port number used by the radio transceiver. This value should match with the UDP port number that is set in the "OTAP" menu in KPG-D1/D1N. The default port is "9364", which is the same as the default value of KPG-D1/D1N. We recommend that the radio transceiver, and KPG-180AP OTAP Manager use the default UDP port number.

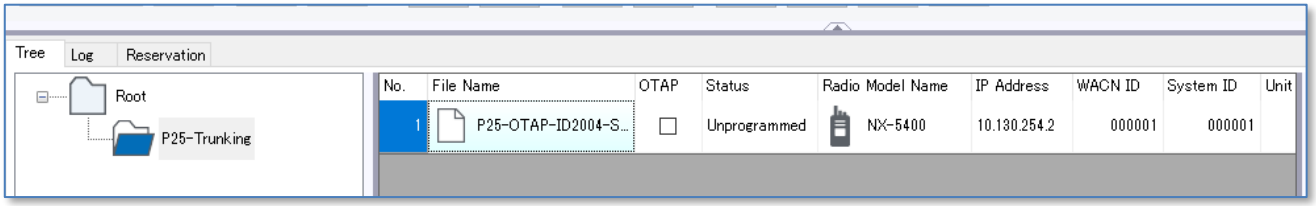


2.2.4. Operation of the OTAP Manager

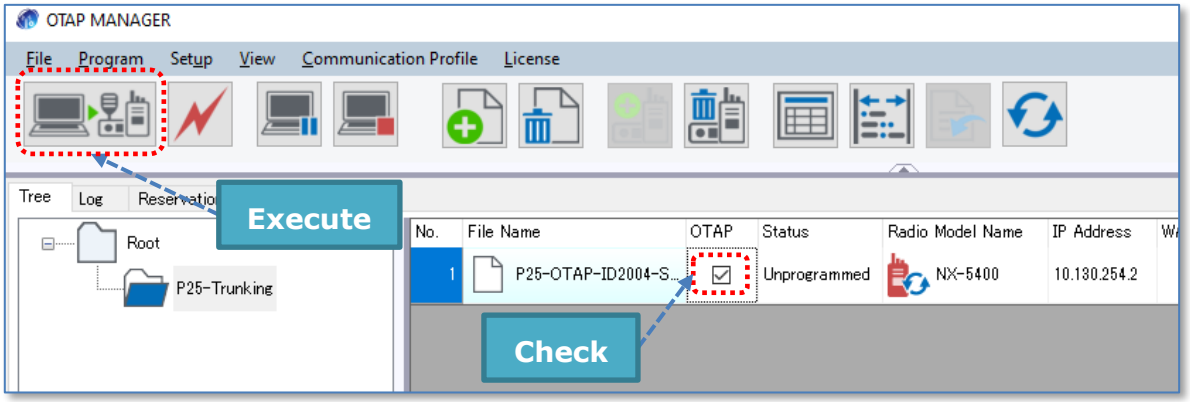
Beforehand, ensure to load the FPU data to the OTAP Manager. This operation is the same as the previous procedure. Please observe the screen below. The corresponding radio line is greyed out. This shows that this radio transceiver has not yet completed registration (In this case, registration is defined by joining the RF system, and starting to use the IP address). You cannot run OTAP while in this state.



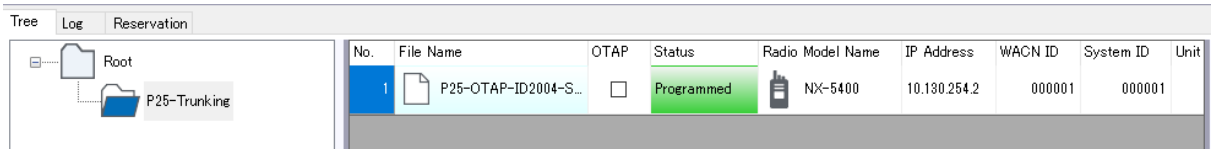
When the radio transceiver boots up and authenticates to the RF system and assigns an IP address, the radio transceiver will execute a registration operation to the DRS. After registration to DRS has been completed, OTAP Manager will no longer be greyed out as shown below, and the IP address will be filled with a value making OTAP now executable.



The procedure after this is the same as the previous version of the OTAP Manager, check the check box of the radio that executes OTAP, and click the execute button on the upper left to start the OTAP process.



The following is a successful example.



Revision History

Version	Date of issue	Note
1.00	22 September 2021	First Release