KENWOOD

Application Note

DMR Transparent function

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JVC KENWOOD

Revision History

Version	Date of issue	Note
1.00	21-Sep-2018	First edition

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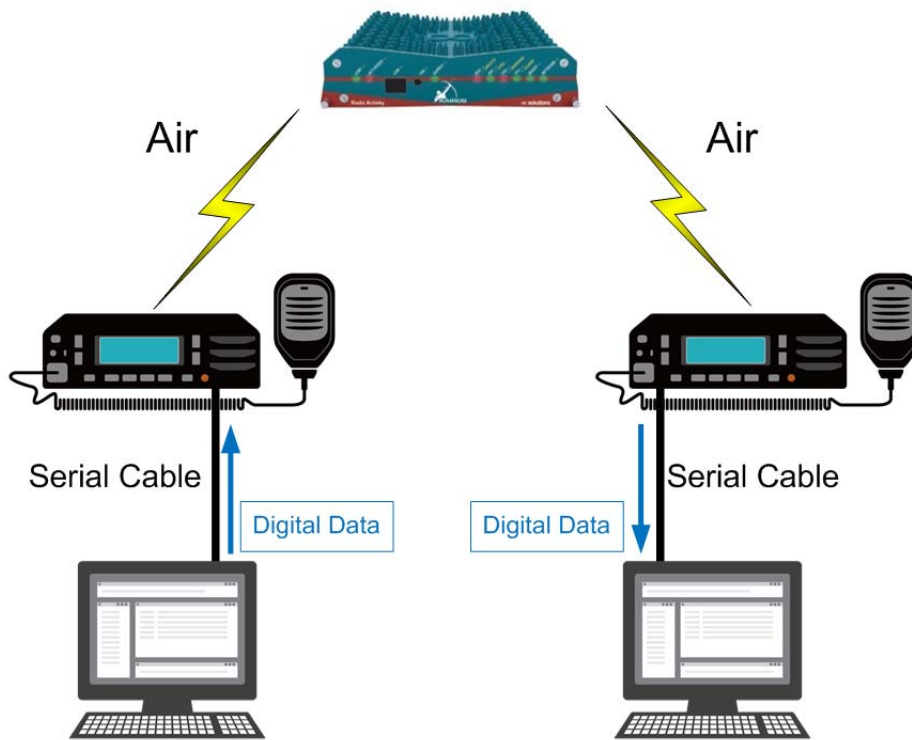
1   Outline

The document describes about Transparent function on NX-5000 and NX-3000 with DMR mode.
It is possible free data communication between DMR radios by Transparent.
Configure Transparent (Digital) for COM port or COM port Bluetooth on FPU to enable
Transparent at both radios for transmission and reception.

1.1   Direct Mode
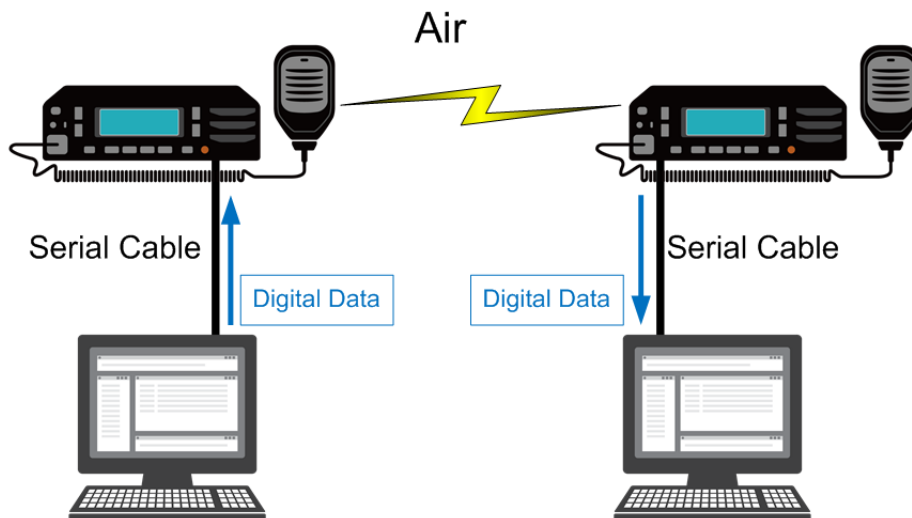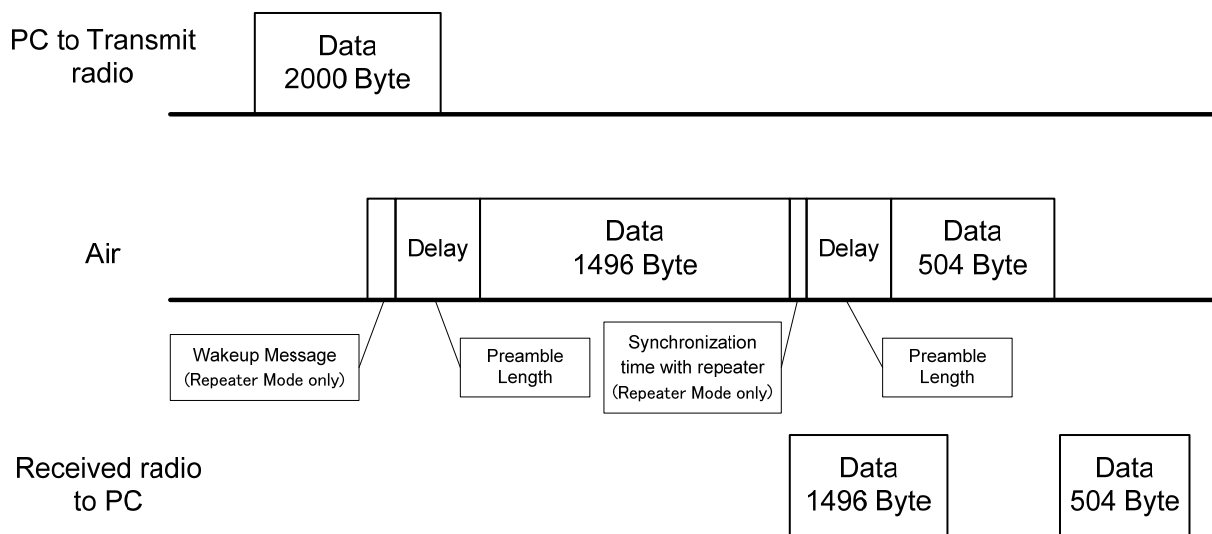

1.2   Repeater Mode

2　　　Specification

A transmitting radio transfers data (0x00 – 0xFF) coming from COM port by radio signal, and a receiving radio outputs the data on COM port.

A DMR radio starts transmitting the transparent input data when it overs 1570 Byte. If the data is less than 1570 Byte, a radio retains and waits next data during period of 16 Byte to start transmitting. For instance, in case COM port setting is 19200bps Baud Rate / Stop bit 1, a radio stays in standby during 8.3ms, then starts transmitting the input data.

DMR radio is able to transmit up to 1496 Byte transparent data for one transmission. Below figure is the example of 2000 Byte Transparent data transferring.

Average speed of Transparent (Digital) with DMR protocol is below.

Mode	Average transfer rate
Direct Mode	1492 bps
Repeater Mode	1439 bps

Reference: Preamble Length is 0 for Direct Mode and 3 for Repeater Mode.

A radio data buffer size is 2048 Byte. In case of over 2048 Byte data, it should use RTS and CTS. Otherwise, it will be discarded. Select RTS/CTS from COM port setting for Flow Control on FPU.

KPG-D1 > Transceiver Settings > Optional Features > Optional Features 1 > Serial Interface > COM port > Flow Control
KPG-D3 > Radio Configuration > Global Options > External Device > General > Serial Interface > Flow Control

● NX-5000 Mobile

Pin5 for RTS and pin4 for CTS on D-SUB 25pin connector for COM1 on NX-5000 mobile. In this case, it has to move the chip resisters.

➢ Change configuration of D-SUB 25-pin connector from AUXIO9 to CTS

The output (4 pin) of D-SUB 25-pin connector is configured AUXIO9 as default.
Remove R950 chip resister and solder the chip resister to $R952.

Ref. No.		Function
R950	Default	AUXIO9
$R952	-	CTS (RS-232C)

➢ Change configuration of D-SUB 25-pin connector from DI to RTS

The input (5 pin) of D-SUB 25-pin connector is configured DI as default.
Remove R943 chip resister and solder the chip resister to $R946.

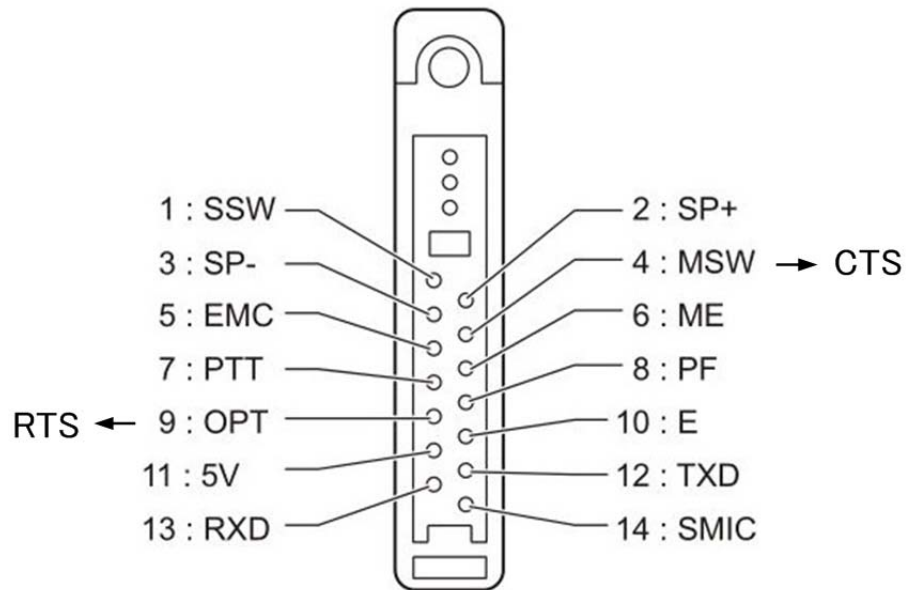| Ref. No.		Function
R943	Default	DI
$R946	-	RTS (RS-232C)

MAIN UNIT (A/2)
Component side
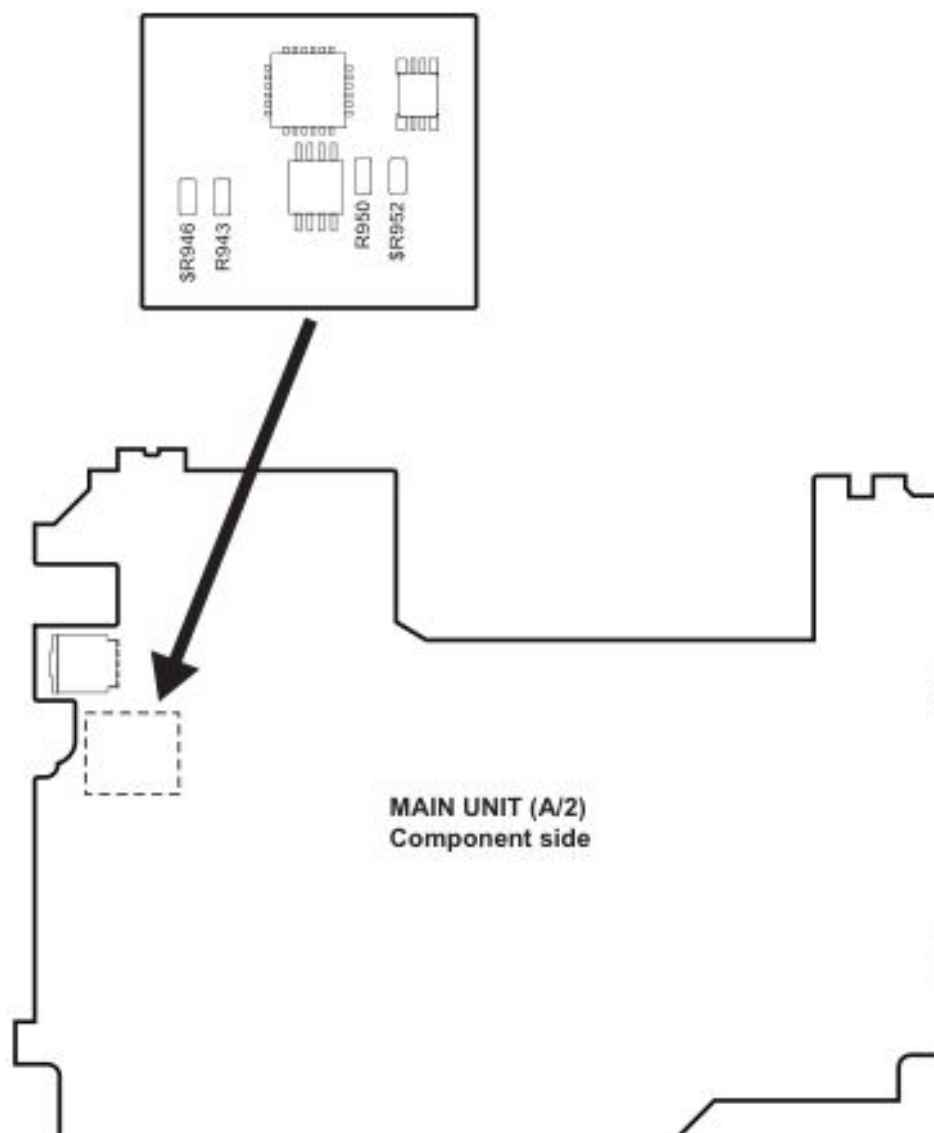
- **NX-3000 Mobile**

Pin8 for RTS and pin9 for CTS on D-SUB 15pin connector for COM1 on NX-3000 mobile.

- **NX-5000/NX-3000 Potable**

Pin9 for RTS and pin4 for CTS on 14pin universal connector on NX-5000 portable.

14-pin Universal Connector


```
1 : SSW                    2 : SP+
3 : SP-             4 : MSW  →  CTS
5 : EMC                    6 : ME
7 : PTT                    8 : PF
RTS ← 9 : OPT             10 : E
11 : 5V                   12 : TXD
13 : RXD                  14 : SMIC
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3 Product Version

Product	Supported Version in Release
Subscriber Units: NX-5000 Series	Since 2.60
FPU for NX-5000 Series: KPG-D1/D1N	Since 2.60
Subscriber Units: NX-3000 Series	Since 1.40
FPU for NX-3000 Series: KPG-D3/D3N	Since 1.40