KENWOOD

NEXEDGE™

NX-700/ NX-700H/ NX-800/ NX-800H/ NX-900/ NX-901

Customer Support Information (CSI)

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Type:	K

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About this Manual

This document was created for the product having the following design specifications.

Item	Specifications	How to Verify
Market Code	K	Printed or labeled on the outside of carton and the model name plate on the transceiver.
The transceiver firmware version	2.80.00 or later	The firmware version can be viewed in the **Transceiver Information** dialog box of KPG-111D. Or, turn the transceiver ON while pressing the transceiver **Triangle** key. The firmware version of the transceiver appears on the main display.
KPG-111D version number	V2.80 or later	The version number can be viewed in the **About KPG-111D** dialog box of KPG-111D.

K: Designed for the North American markets.

About the Transceiver Firmware Version and KPG-111D

Firmware version of the transceiver supporting each function is described in the context of this document as needed. Following are versions of KPG-111D that can be used for each firmware version.

The transceiver firmware version	KPG-111D version number
1.11.00 or later	V1.21 or later
1.18.00 or later	V1.40 or later
1.19.00 or later	V1.50 or later
1.21.00 or later	V1.60 or later
1.22.00 or later	V1.70 or later
1.25.00 or later	V1.80 or later
2.00.00 or later	V2.00 or later
2.04.00 or later	V2.10 or later
2.30.00 or later	V2.30 or later
2.50.00 or later	V2.50 or later
2.70.00 or later	V2.70 or later
2.80.00 or later	V2.80 or later

CONTENTS

Revision History

Date	Description
2008.6.30	1) Compliant with the high-power models. Added NX-700H and NX-800H to the model name. 2) Revised the description of 3.1.1 Changing the Configuration for CIM-1000K-26. 3) Revised the description in 4.3 Adjustment Procedure. 4) Corrected clerical errors. 5) Changed the version number from 1.00 to 2.00.
2008.12.31	1) Added new frequency ranges for NX-800/ NX-800H K2-type to Table 4-5 A List for Required Measuring Instruments. 2) Added values for NX-800/ NX-800H K2-type to the table for adjustment procedure 4 in Sections 4.3.6 High Transmit Power Limit and 4.3.8 High Transmit Power. 3) Added the adjustment procedure for NX-800/ NX-800H K2-type to Sections 4.3.28 Sensitivity 1 and 4.3.29 Sensitivity 2. 4) Corrected clerical errors. Revised description. 5) Changed the version number from 2.00 to 2.10.
2010.2.28	1) Added 3.3 Voice Scrambler Board (VS-1200-KW3). 2) Added the figures of the connection between the transceiver and a PC to step 1 in 4 ADJUSTING THE TRANSCEIVER. 3) Added the available frequency range (380 MHz to 400 MHz) for NX-300 in 4.2.3 Measuring Instruments Required for Adjustments. 4) Added the following chapters. 6) Added 5 VERSION UPDATE OF TRANSCEIVER FIRMWARE. 6 COPYING THE CONFIGURATION DATA OF THE TRANSCEIVER TO ANOTHER TRANSCEIVER 5) Changed the version number from 2.10 to 2.20 (issued in the Japanese version only).
2011.3.31	1) Added the model name of NXR-900. 2) Changed 4.1.4 Wide/Narrow to 4.1.4 Channel Spacing. 3) Added 4.1.10 Talk Around (NX-900 Only). 4) Added Table 4-4 Adjustment Item List (NXR-900). 5) Added the information on NXR-900 to the following. Table 4-5 Operation of Each Items Table 4-6 List of Required Measuring Instruments 6) Added the information on KPG-46U to 4 ADJUSTING THE TRANSCEIVER. 7) Added 4.4 Adjustment Procedures (NX-900). 8) Changed display samples of each window and dialog box with the version update of KPG-111D.
2011.6.30	1) Revised the description in Table 1-1. 2) Revised the supplementary information of step 1 in 4 ADJUSTING THE TRANSCEIVER. Added the figures. 3) Revised the description of the following adjustment items: 4.3.10 Balance 4.4.10 Balance 4) Changed the version number from 2.20 (issued in the Japanese version only) to 2.50 (issued in the Japanese draft version only).
2012.8.31	1) Added the model name of NXR-901. 2) Changed the version number from 2.50 (issued in the Japanese draft version only) to 2.80.

1 TERMINAL FUNCTIONS

This chapter describes the specifications of input and output terminals equipped with the transceiver.

1.1 8-pin Modular Microphone Jack (Microphone Connector)

The 8-pin modular microphone jack is located on the front panel of the transceiver and is usually used as a connector for a microphone, but also used to connect the transceiver to a PC with KPG-111D installed, which enables writing the configuration data to the transceiver or reading the configuration data from the transceiver as well as the adjustment of the transceiver.

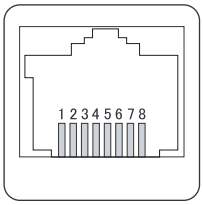


Figure 1-1 8-pin Modular Microphone Jack

Table 1-1 Signal Assignments for 8-pin Modular Microphone Jack

Pin No.	Signal Name	Input/ Output	Signal Type	Outline	Specifications	Min.	Typ.	Max.	Unit
1	BLC	Output	Digital	CMOS Output	VOH	4.2	-	5.2	V
					VOL	-	-	0.8	V
	AFO (After Modification)	Output	Analog	Audio Output	Output Amplitude (1 kHz, 60% deviation)	-	700	-	mVp-p
					Coupling Capacitor	-	0.1	-	µF
					RL	100	-	-	kΩ
					Allowable Frequency	300	-	3000	Hz
2	SB	Output	Power	Switched B Output	Output Voltage	This parameter depends on battery voltage.			
					Output Current	-	-	200	mA
3	GND	-	GND	Ground	Allowable current value	-	-	200	mA
4	PTT	Input	Digital	CMOS Input (Pull Up: 5.0 V/ 10kΩ)	VIH	4.2	-	5.0	V
					VIL	0	-	0.8	V
	TXD	Output	Digital	CMOS 3-State Buffer Output (Pull Up: 5.0 V/ 10kΩ)	VOH	4.2	-	5.2	V
					VOL	-	-	0.8	V
					Baud Rate	-	-	19200	bps
5	ME	-	GND	Mic Ground	-	This is GND port for microphone.			
6	MIC	Input	Analog	Audio Input	Output Amplitude (1 kHz, 60% deviation)	-	5	-	mVrms
					Coupling Capacitor	-	10	-	µF
					Input Impedance	-	600	-	Ω
					Allowable Frequency	300	-	3000	Hz
7	HOOK/RXD	Input	Digital	**NX-700/ NX-700H/ NX-800/ NX-800H:** DTC144EE Input (Pull UP: 5.0 V/ 4.7kΩ) **NX-900/ NX-901:** RT1N441U-T111 Input (Pull UP: 5.0 V/ 4.7kΩ)	VIH	4.2	-	5.0	V
					VIL	0	-	0.8	V
					Baud Rate	-	-	115200	bps

Pin No.	Signal Name	Input/ Output	Signal Type	Outline	Specifications	Min.	Typ.	Max.	Unit
8	DM/KVL	Input/ Output	Digital	CMOS Input/ Output (Pull UP: 5.0 V/ 47kΩ)	**Input**				
					VIH	4.2	-	5.0	V
					VIL	0	-	0.8	V
					Output				
					VOL	-	-	0.8	V

1.2 26-pin Accessory Connector

The 26-pin connector is located on the internal PCB of the transceiver, and an external device, such as an Optional Board, can be connected to this connector.

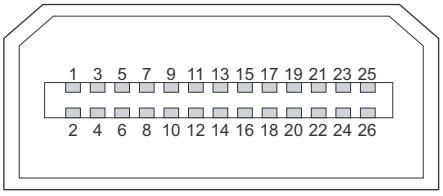


Figure 1-2 26-pin Accessory Connector

Table 1-2 Signal Assignments for 26-pin Accessory Connector

Pin No.	Signal Name	Input/ Output	Signal Type	Specifications	Min.	Typ.	Max.	Unit
1	OPT1*1	Input/ Output	Digital/ CMOS Output/ CMOS Input with Interrupt	VIH	2.7	-	3.5	V
				VIL	-0.3	-	0.7	V
				VOH (Io = -2 mA)	2.8	-	3.4	V
				VOL (Io = 2 mA)	-	-	0.7	V
2	OPT3	Input/ Output	Digital/ CMOS Output/ CMOS Input with Interrupt	VIH	2.7	-	3.5	V
				VIL	-0.3	-	0.7	V
				VOH (Io = -2 mA)	2.8	-	3.4	V
				VOL (Io = 2 mA)	-	-	0.7	V
3	26P_RD	Input	Digital/ CMOS Input with Interruput	VIH	2.7	-	3.5	V
				VIL	-0.3	-	0.7	V
				Baud Rate	-	-	19200	bps
4	26P_TD	Output	Digital/ CMOS Output	VOH (Io = -2 mA)	2.8	-	3.4	V
				VOL (Io = 2 mA)	-	-	0.7	V
				Baud Rate	-	-	19200	bps
5	NC	-	-	-	-	-	-	-
6	OPT4	Input/ Output	Digital/ CMOS Output/ CMOS Input	VIH	2.7	-	3.5	V
				VIL	-0.3	-	0.7	V
				VOH (Io = -2 mA)	2.8	-	3.4	V
				VOL (Io = 2 mA)	-	-	0.7	V
7	OPT10 (USEL)	Output	Digital/ Analog	Output Amplitude	-	0.28	-	Vp-p
				Coupling Capacitor	-	0.1	-	μF
				Allowable Load	100	-	-	kΩ
				Pull_down Resistor	-	470	-	kΩ

Pin No.	Signal Name	Input/ Output	Signal Type	Specifications	Min.	Typ.	Max.	Unit
8	OPT5	Input/ Output	Digital/ CMOS Output/ CMOS Input	VIH	2.7	-	3.5	V
				VIL	-0.3	-	0.7	V
				VOH (Io = -2 mA)	2.8	-	3.4	V
				VOL (Io = 2 mA)	-	-	0.7	V
9	DGND	-	-	-	-	-	-	-
10	AGND	-	-	-	-	-	-	-
11	AI	-	Analog	Input Amplitude	-	0.5	-	Vp-p
				Coupling Capacitor	-	0.1	-	µF
				Input Impedance	22	-	-	kΩ
12	AO	Output	Analog	Output Amplitude	-	50.0	-	mVp-p
				Coupling Capacitor	-	0.1	-	µF
				Allowable Load	220	-	-	kΩ
13	AGND	-	-	-	-	-	-	-
14	5V	-	Power	Output Voltage (Io = 200 mA)	4.7	5.0	5.1	V
				Output Current	-	-	100	mA
15	OPT9 (STON)	Input	Analog	Input Level	-	3.3	-	Vp-p
				Coupling Capacitor	-	0.01	-	µF
				Input Impedance	22	-	-	kΩ
16	DTI	Input	Analog	Input Level	-	0.6	-	Vp-p
				Coupling Capacitor	-	0.1	-	µF
				Input Impedance	22	-	-	kΩ
17	OPT8	Input/ Output	Digital/ CMOS Output/ CMOS Input with Interrupt	VIH	2.7	-	3.5	V
				VIL	-0.3	-	0.7	V
				VOH (Io = -2 mA)	2.8	-	3.4	V
				VOL (Io = 2 mA)	-	-	0.7	V
18	OPT11[*1]	Input/ Output	Digital/ CMOS Output/ CMOS Input	VIH	2.7	-	3.5	V
				VIL	-0.3	-	0.7	V
				VOH (Io = -2 mA)	2.8	-	3.4	V
				VOL (Io = 2 mA)	-	-	0.7	V
19	OPT7	Input/ Output	Digital/ CMOS Output/ CMOS Input with Interrupt	VIH	2.7	-	3.5	V
				VIL	-0.3	-	0.7	V
				VOH (Io = -2 mA)	2.8	-	3.4	V
				VOL (Io = 2 mA)	-	-	0.7	V
20	OPT2	Input/ Output	Digital/ CMOS Output/ CMOS Input with Interrupt	VIH	2.7	-	3.5	V
				VIL	-0.3	-	0.7	V
				VOH (Io = -2 mA)	2.8	-	3.4	V
				VOL (Io = 2 mA)	-	-	0.7	V
21	TXO	Output	Analog	Output Level	-	130	-	mVp-p
				Coupling Capacitor	-	0.1	-	µF
				Allowable Load	100	-	-	kΩ
22	RXEO	Output	Analog	Output Level	-	640	-	mVp-p
				Coupling Capacitor	-	0.1	-	µF
				Allowable Load	100	-	-	kΩ

Pin No.	Signal Name	Input/ Output	Signal Type	Specifications	Min.	Typ.	Max.	Unit
23	RXEI	Input	Analog	Input Level	-	640	-	mVp-p
				Coupling Capacitor	-	0.1	-	μF
				Input Impedance	22	-	-	kΩ
24	TXI	Input	Analog	Input Level	-	130	-	mVp-p
				Coupling Capacitor	-	0.1	-	μF
				Input Impedance	22	-	-	kΩ
25	OPT6	Input/ Output	Digital/ CMOS Output/ CMOS Input	VIH	2.7	-	3.5	V
				VIL	-0.3	-	0.7	V
				VOH (Io = -2 mA)	2.8	-	3.4	V
				VOL (Io = 2 mA)	-	-	0.7	V
26	POW	-	Power	Output Voltage (Io = 100 mA)	7.6	8.0	8.4	V
				Output Current	-	-	100	mA

*1 Using KPG-111D, COR, TOR or LOK (Continuous) can be assigned. (Refer to FPRG 8.27.1 Optional Board Tab.)

1.3 D-sub 25-pin Connector

The 25-pin D-sub connector is located on the rear panel of the transceiver and external devices, such as a Mobile Data Terminal, can be connected to this connector.

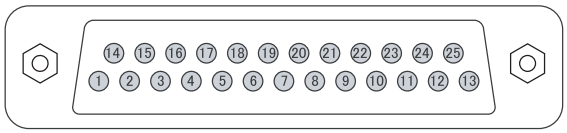


Figure 1-3 D-sub 25-pin Connector

Table 1-3 Signal Assignments for D-sub 25-pin Connector

Pin No.	Signal Name	Input/ Output	Signal Type	Specifications	Min.	Typ.	Max.	Unit
1	NC	-	-	-	-	-	-	-
2	RXD1	Input	Digital	Input Voltage Range	-30	-	30	V
				Threshold Low	0.5	1.3	-	V
				Threshold High	-	1.75	2.6	V
				Baud Rate	-	-	19200	bps
				CL	-	100	-	pF
3	TXD1	Output	Digital	Voltage Swing (3kΩ Load)	±5	±9	-	V
				Baud Rate	-	-	19200	bps
				CL	-	100	-	pF
4	AUXIO9	Input/ Output	Digital	VIH	4.0	-	5.2	V
				VIL	-0.5	-	1.0	V
				VOH (Io = -1.5 mA)	4.0	-	5.2	V
				VOL (Io = 1.5 mA)	-	-	1.1	V

Pin No.	Signal Name	Input/ Output	Signal Type	Specifications	Min.	Typ.	Max.	Unit
5	DI	Input	Analog	Input Voltage Range (STD Deviation)	-	0.5	-	Vp-p
				Frequency Response (STD Deviation) 20 Hz - 9600 Hz	-3	-	3	dB
6	MI2	Input	Analog	Audio Level (STD Deviation)	-	5.0	-	mVrms
				Allowable Frequency	300	-	3000	Hz
				Input Impedance	-	600	-	Ω
7	GND	-	GND	-	-	-	-	-
8	AUXIO8	Input/ Output	Digital	VIH	4.0	-	5.2	V
				VIL	-0.5	-	1.0	V
				VOH (Io = -1.5 mA)	4.0	-	5.2	V
				VOL (Io = 1.5 mA)	-	-	1.1	V
9	TXD2	Output	Digital	VOH (Io = -1.5 mA)	3.7	-	5.2	V
				VOL (Io = 1.5 mA)	-	-	1.1	V
				CL	-	100	-	pF
10	RXD2	Input	Digital	VIH	2.8	-	5.2	V
				VIL	-	-	0.65	V
				CL	-	100	-	pF
11	GND	-	GND	-	-	-	-	-
12	AUXIO7/ BER_DATA	Input/ Output	Digital	VIH	4.0	-	5.2	V
				VIL	-0.5	-	1.0	V
				VOH (Io = -1.5 mA)	3.7	-	5.2	V
				VOL (Io = 1.5 mA)	-	-	1.1	V
13	AUXIO6/ BER_CLK	Input/ Output	Digital	VIH	4.0	-	5.2	V
				VIL	-0.5	-	1.0	V
				VOH (Io = -1.5 mA)	3.7	-	5.2	V
				VOL (Io = 1.5 mA)	-	-	1.1	V
14	SB	-	Power	Voltage	This parameter depends on battery voltage.			
				Supply Current	-	-	2.0	A
15	AUXO2	Output	Digital	The type of this port is open collector.				
				VOL	-	-	0.4	V
				IOL	-	-	-500	mA
16	AUXO1	Output	Digital	The type of this port is open collector.				
				VOL	-	-	0.4	V
				IOL	-	-	-500	mA
17	AFO	Output	Analog	Output Level	-	0.7	-	Vp-p
				Coupling Capacitor	-	0.1	-	μF
				Allowable Load	100	-	-	kΩ
				Allowable Frequency	300	-	3000	Hz
18	GND	-	GND	-	-	-	-	-

Pin No.	Signal Name	Input/ Output	Signal Type	Specifications	Min.	Typ.	Max.	Unit
19	DEO	Output	Analog	Output Level	-	0.28	-	Vp-p
				Coupling Capacitor	-	4.7	-	μF
				Allowable Load	47	-	-	kΩ
				Frequency Response (STD Deviation)				
				Wide: 20 Hz - 4800 Hz	-6	-	1	dB
				Wide: 4800 Hz -7200Hz	-24	-	1	dB
				Narrow: 20 Hz - 4800 Hz	-15	-	1	dB
20	AUXIO5	Input/ Output	Digital	VIH	4.0	-	5.2	V
				VIL	-0.5	-	1.0	V
				VOH (Io = -1.5 mA)	4.0	-	5.2	V
				VOL (Io = 1.5 mA)	-	-	1.1	V
21	AUXIO4	Input/ Output	Digital	VIH	4.0	-	5.2	V
				VIL	-0.5	-	1.0	V
				VOH (Io = -1.5 mA)	4.0	-	5.2	V
				VOL (Io = 1.5 mA)	-	-	1.1	V
22	AUXIO3	Input/ Output	Digital	VIH	4.0	-	5.2	V
				VIL	-0.5	-	1.0	V
				VOH (Io = -1.5 mA)	4.0	-	5.2	V
				VOL (Io = 1.5 mA)	-	-	1.1	V
23	AUXIO2	Input/ Output	Digital	VIH	4.0	-	5.2	V
				VIL	-0.5	-	1.0	V
				VOH (Io = -1.5 mA)	4.0	-	5.2	V
				VOL (Io = 1.5 mA)	-	-	1.1	V
24	AUXIO1	Input/ Output	Digital	VIH	4.0	-	5.2	V
				VIL	-0.5	-	1.0	V
				VOH (Io = -1.5 mA)	4.0	-	5.2	V
				VOL (Io = 1.5 mA)	-	-	1.1	V
25	ME	-	Analog	This is GND port for microphone.				

2 INSTALLING OPTIONAL DEVICES

This chapter describes how to install the Kenwood optional devices in a transceiver.

2.1 VGS-1

The optional board (VGS-1) used to record and play voice and provide Voice Guidance can be installed in the transceiver.

2.1.1 Outline

VGS-1 is a genuine optional board, which is used to record and play back voice and provide Voice Guidance.

2.1.2 Features

- Records and plays back voice.
- Stores the digitized voice in SRAM temporarily, and plays back the voice data or stores it in flash ROM.
- Equipped with the vocal function using the fixed voice data.
- Compatible with 3.3 V and 5 V dual I/O voltage (only 5 V is required for power source).
- Contains the CPU clock oscillator circuit with a Beat Shift function.

2.1.3 Product Dimensions and Weight

Table 2-1 Product Dimensions and Weight

Items	Value
Length	33 mm (1.30 inches)
Width	23 mm (0.91 inches)
Thickness	42 mm (1.65 inches) (reference value)
Weight	20 g (0.71 oz)

2.1.4 Electrical Specifications

■ General Specifications

Table 2-2 General Specifications

No.	Items	Specifications	
1	Supply Voltage	Standard	5.0 V
		Range	4.5 V to 5.5 V
2	Temperature Range	Working	-30°C to 60°C
3	Load Impedance	Audio Output	10kΩ
		Audio Input	10kΩ
		I/O port	47kΩ

■ Connector Specifications

Table 2-3 Connector Specifications

Connector on the Unit: E40-6358-05 (8)
(26-pin Board to Board Connector)

No.	Name	Description	Input/ Output	Remarks
1	BUSY	Busy Indication	Output	Active High*1
2	PLAY	Play Indication	Output	Active High*1
3	SO	Serial Data Output	Output	*1
4	SI	Serial Data Input	Input	H: 2.2 V to SV*2, L: Less than 0.5 V
5	CLK	-	Input	H: 2.2 V to SV*2, L: Less than 0.5 V
6	EN	Enable	Input	H: 2.2 V to SV*2, L: Less than 0.5 V
7	USEL	UART Speed Select	Input	H: 115200 bps, L: 19200 bps
8	RST	Reset	Input	H: 2.2 V to SV*2, L: Less than 0.5 V
9	DGND	Digital GND	-	-
10	AGND	Analog GND	-	-
11	AO	Audio Output	Output	3.0 Vp-p/ 10kΩ max
12	AI	Audio Input	Input	100 mVp-p/ 10kΩ max
13	AGND	Analog GND	-	-
14	5C	Supply Voltage	Output	4.5 V to 5.5 V
15 to 26	Reserved	Reserved	Reserved	Not connected internally

*1 Normally, High = 3.3 V. Pull up to 5 V externally, High = 5 V.

*2 Supply Voltage: Signal timing is specified in software specification.

■ DC Characteristics

Table 2-4 DC Characteristics

	Min.	Typ.	Max.	Unit	Condition
Supply Voltage	4.5	5	5.5	V	-
Current (pin 14)	-	21	-	mA	Normal Operation
	-	44	-		Flash ROM Erase
	-	2.5	-		Standby

■ Output Characteristics

- **Conditions**
  - Provides a sine wave of 30 mVrms at 1 kHz between AI (pin 12) and AGND (pin 13) from the signal source having an output impedance of 600Ω.
  - Power Voltage: 5 V ±0.1 V
  - Terminates the AO (pin 11) and AGND (pin 10) with a 10kΩ resistor.
- **Results**
  - S/N while playing back voice: 40 dB or more
  - Distortion while playing back voice: 8% or less

2.1.5 Supplied Accessories

Table 2-5 Supplied Accessories

No.	Name	Part Number	Remarks	Qty.
1	Instruction Manual	B62-1741-x0	7 languages	1
2	Foam Tape A	G13-1974-x4	-	1
3	Foam Tape B	G13-1992-x4	-	1
4	Foam Tape C	G13-1993-x4	-	1
5	Foam Tape D	G13-1994-x4	-	1
6	Foam Tape E	G13-1995-x4	-	1
7	Spacer	J30-1292-x4	-	1

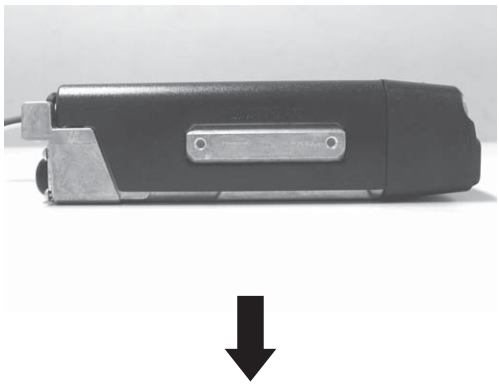
2.1.6 Installing VGS-1

WARNING

DO NOT WORK WHILE POWER SOURCE IS SUPPLIED TO THE TRANSCEIVER.

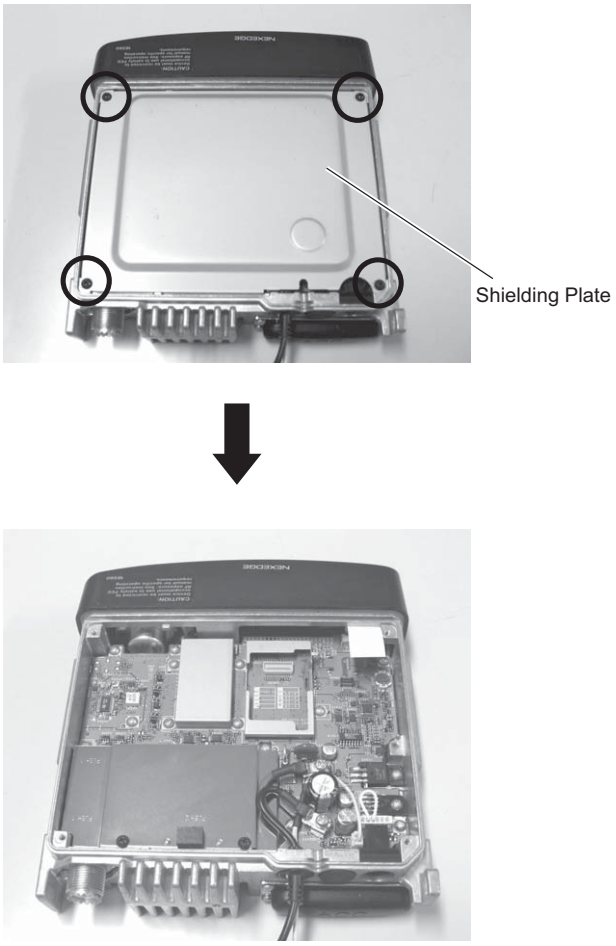
1. Remove the top cover from the transceiver.

(1-1) Lift the top cover by widening the 2 side tabs horizontally and then pull upward to remove the top cover from the transceiver chassis.



(1-2) Remove the top gasket.

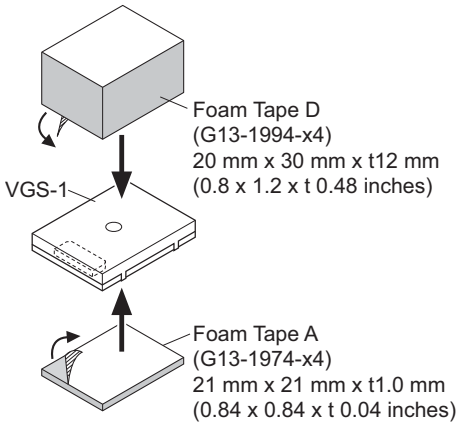
(1-3) Unscrew 4 screws and then pull out the shielding plate.



WARNING

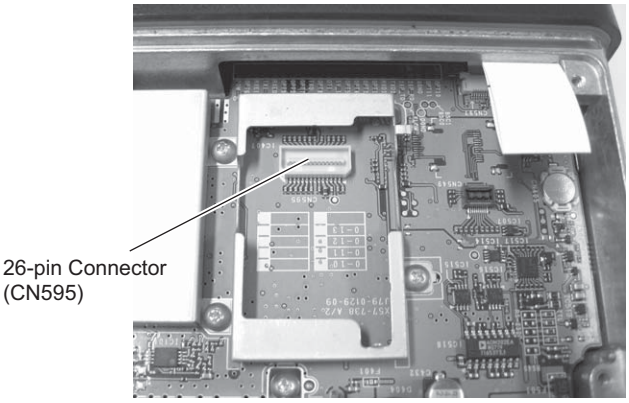
DO NOT DAMAGE THE GASKET SEALS BETWEEN THE TRANSCEIVER AND COVER. ALSO, KEEP THE GASKET SEALS AWAY FROM DUST. IF THE GASKET IS DAMAGED OR COVERED WITH DUST, THE WATERPROOF AND DUST-PROOF CHARACTERISTICS OF THE TRANSCEIVER WILL DEGRADE.

2. Attach the supplied foam tapes (G13-1974-x4 and G13-1994-x4) on both sides of the VGS-1 as illustrated in the figure.



Note: The foam tape (G13-1994-x4) cannot be attached to other surfaces when installing the VGS-1 and GPS 15L-W at the same time. (Refer to 3.2 GPS Receiver (GPS 15L-W) on page 32.)

3. Connect the connector on the VGS-1 to the 26-pin connector (CN595) on the TX-RX PCB.



4. Reinstall the shielding plate, top gasket, and top cover on the transceiver.

Note: The tightening torque for the screw is 5 kgf-cm (4.34 lbf-inch).

2.1.7 Configuration using KPG-111D

The VGS-1 information needs to be configured, and then the VGS-1 information needs to be written to the transceiver using KPG-111D after installing the VGS-1 in the transceiver in order to use the VGS-1.

Follow the procedure below.

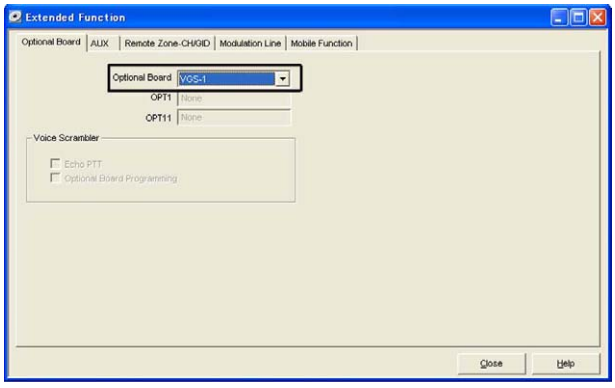
1. Run the KPG-111D software.

To add the VGS-1 information to the current configuration data, data must be read from the transceiver or data that is stored previously must be used. Refer to FPRG 9.1 Read Data from the Transceiver for instructions on how to read configuration data from the transceiver.

2. Select “Extended Function” from the **Edit** menu.

The **Extended Function** window opens.

3. Select **“VGS-1”** from the Optional Board dropdown list.



4. Configure parameters for various functions of VGS-1.

   Each function can be configured using the **VGS-1** tab in the **Optional Features 2** window. Refer to the FPRG 8.11.3 VGS-1 Tab for the details of configuration.

5. Write the configuration data to the transceiver.

   Refer to FPRG 9.2 Write Data to the Transceiver for instructions on how to write configuration data to the transceiver.

2.2 KCT-46

The Ignition Sense Cable (KCT-46) can be connected to the transceiver.

2.2.1 Outline

This product is the ignition sense cable for NX-700/ NX-700H/ NX-800/ NX-800H/ NX-900/ NX-901.

2.2.2 Features

- The cable length is 3200 mm (10.5 ft).
- The cable end has a plug-shaped terminal on the transceiver side and the terminal is covered by a plastic cap to avoid a short-circuit. The cable end for the vehicle side has no plug (bare wire).
- The mini blade fuse (3 A) and the water-proof fuse holder are used for the cable to provide water-proof capability.

2.2.3 Mechanical Specifications

■ Product Dimensions

Table 2-6 Product Dimensions and Weight

Items	Specifications
Length	3200 mm (10.5 ft)
Width	-
Thickness	-
Weight	0.06 kg

■ Cable Specifications

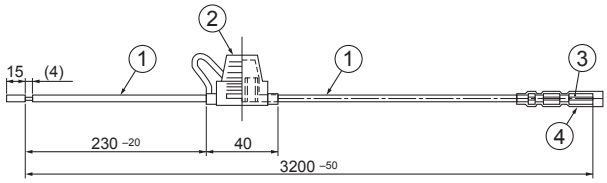


Figure 2-1 Mechanical Parts

Table 2-7 Mechanical Parts

No.	Part Name		Qty.	Remarks
1	Lead Wire		1	Color: Yellow
2	Mini Blade Fuse Holder	Body	1	Color: Black
		Terminal	2	Terminal: TCQ21
		Holder Cap	1	-
3	Bullet Terminal Record		1	300541 (or similar)
4	Conductor Sleeve		1	-

2.2.4 Standard Specifications

- Display Responses

  No remarks

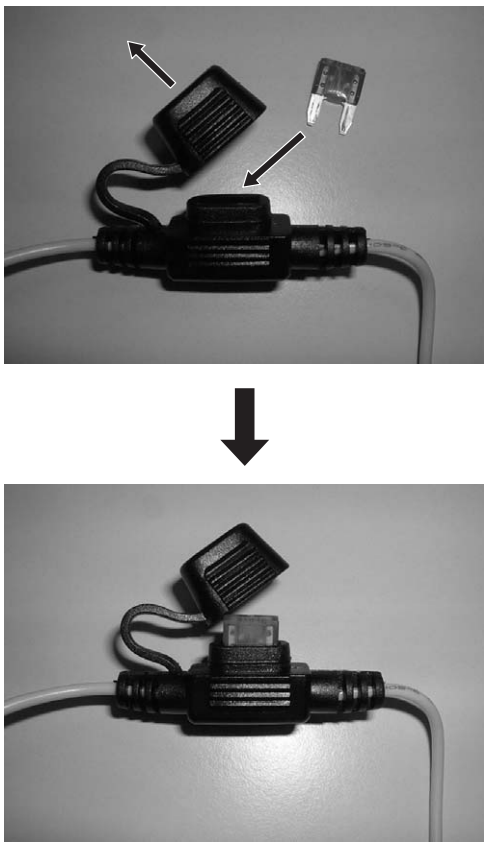
2.2.5 Supplied Accessories

Table 2-8 Supplied Accessories

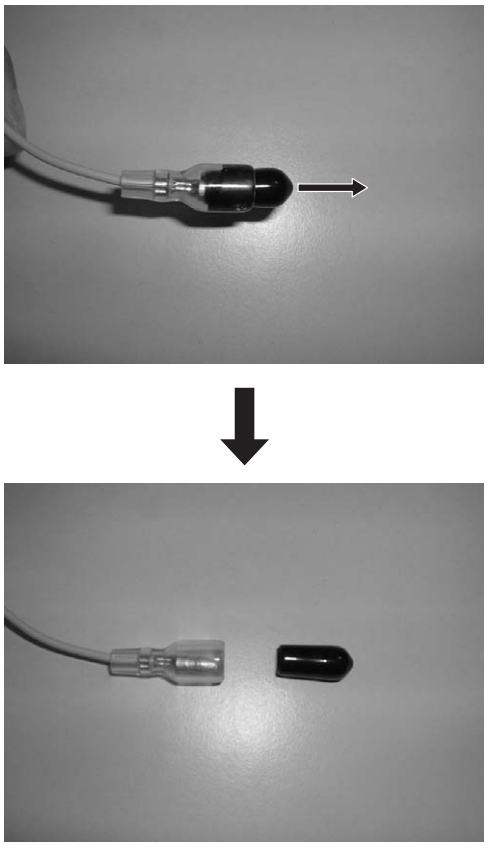
No.	Name	Part Number	Qty.	Remarks
1	Mini Blade Fuse	-	1	3 A

2.2.6 Installing the KCT-46

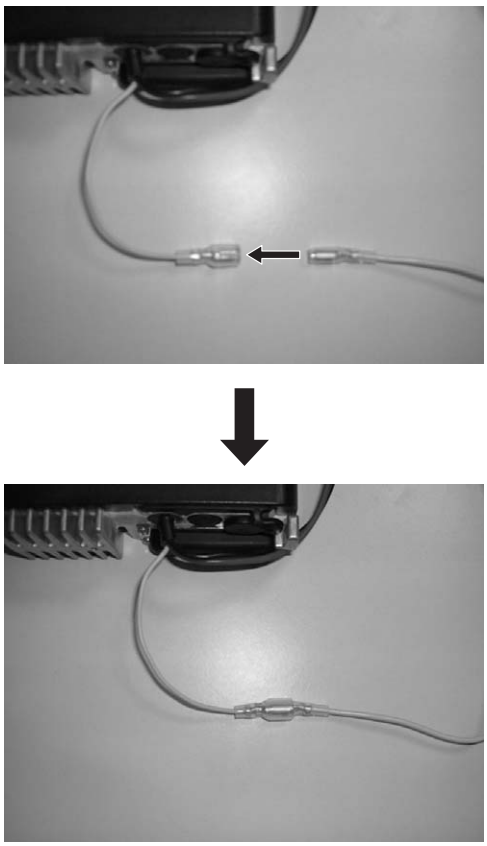
1. Open the fuse folder on the KCT-46 and then insert the mini blade fuse (3 A).



2. Remove the cover used for protecting the yellow cable connector on the transceiver.



3. Connect the plug-form end of the KCT-46 cable to the yellow cable connector on the transceiver.



4. Connect the other end of the KCT-46 cable to the Ignition Line of the vehicle.

2.2.7 Configuration using KPG-111D

In order to use the KCT-46 cable, the information of Ignition Sense needs to be configured and then written to the transceiver by using KPG-111D after the KCT-46 cable is connected to the transceiver.

Follow the procedure below.

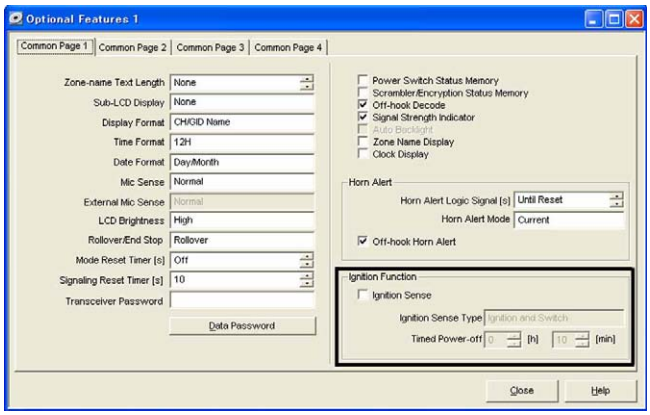
1. Run the KPG-111D software.

   To add the Ignition Sense information to the current configuration data, data must be read from the transceiver or data that is stored previously must be used. Refer to FPRG 9.1 Read Data from the Transceiver for instructions on how to read configuration data from the transceiver.

2. Select “Optional Features 1” from the **Edit** pulldown menu.

   The **Optional Features 1** window opens.

Each item in the **Ignition Function** frame can be configured. Refer to FPRG 8.10.1 Common Page 1 Tab for instructions on how to configure various functions.



3. Write the configuration data to the transceiver.

Refer to FPRG 9.2 Write Data to the Transceiver for instructions on how to write configuration data to the transceiver.

2.3 KCT-40

The connection cable for external devices (KCT-40) can be connected to the transceiver.

2.3.1 Outline

This product is the cable to connect external devices for NX-700/ NX-700H/ NX-800/ NX-800H/ NX-900/ NX-901.

2.3.2 Features

- The cable length is 400 mm (15.75 inches).
- One end of the cable has a D-sub 25-pin connector (transceiver side) and the other end has a Molex 15-pin connector.
- The Molex 15-pin connector is equipped with a dust-proof cover.

2.3.3 Mechanical Specifications

■ Product Dimensions

Table 2-9 Product Dimensions and Weight

Items	Connector	Cable
Length	55 mm (2.17 in)	400 mm (15.75 in)
Width	47.5 mm (1.87 in)	
Thickness	16.5 mm (0.65 in)	
Weight	0.06 kg (0.002 oz)	

■ Cable Specifications

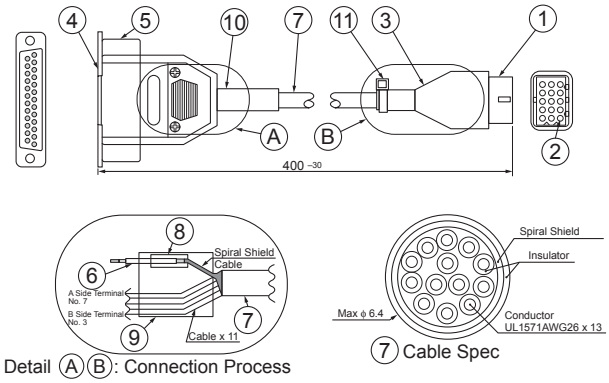


Figure 2-2 Mechanical Parts

Table 2-10 Mechanical Parts

No.	Part Name	Qty.	Remarks
1	Housing	1	39-03-3157
2	Terminal	14	1855T(L)
3	Cover	1	521156
4	D-sub Connector	1	Used inch screw (No.4-40UNC)
5	D-sub Cover Set	1	CD4225H0*00
6	Cable	2	Color: Black Length: 30 mm (1.18 in)
7	Cable	1	12-Pin Shield cable Length: 400 mm (15.75 in)
8	Heat Shrink Tubing	2	Sumi Tube ϕ 2.0×14 mm (0.55 in)
9	Heat Shrink Tubing	2	Sumi Tube ϕ 7.0×20 mm (0.79 in)
10	Tubing	1	Rubber ϕ 9.0 Clearwhite
11	Cable tie	1	Color: Black

2.3.4 Electrical Specifications

■ Connector Specifications

Pin assignment is as follows:

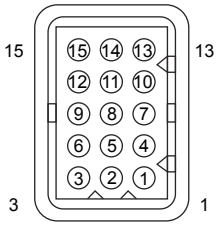


Figure 2-3 15-pin Molex Connector

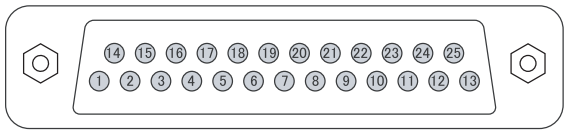


Figure 2-4 25-pin D-sub Connector

Table 2-11 Connector Specifications

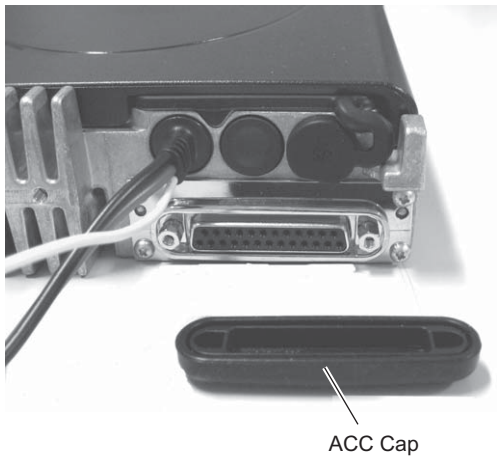
Connector at the external device side: D-sub 25-pin connector

The connector for accessory units: 15-pin Molex

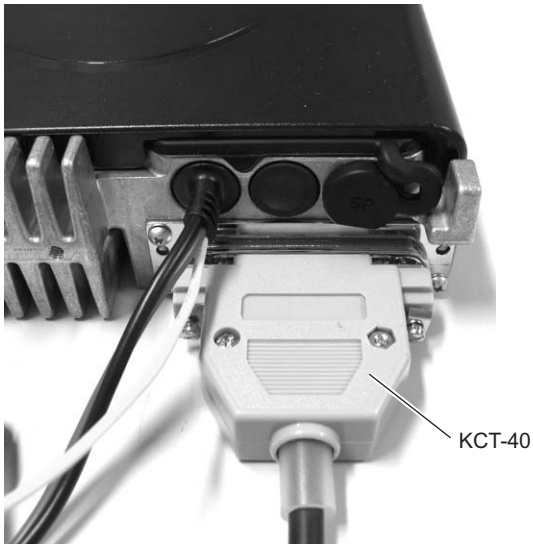
Pin Number D-sub 25-pin side	NX-700/ NX-700H/ NX-800/ NX-800H Functions	Pin Number Molex 15-Pin side
1	-	-
2	-	-
3	-	-
4	-	-
5	DI	5
6	-	-
7	GND	3
8	AIO8	9
9	TXD2	15
10	RXD2	14
11	-	-
12	AIO7	11
13	AIO6	6
14	SB	1
15	-	-
16	-	-
17	-	-
18	-	-
19	DEO	4
20	AIO5	8
21	AIO4	10
22	AIO3	13
23	AIO2	12
24	AIO1	7
25	-	-

2.3.5 Installing KCT-40

1. Remove the cap from ACC on the rear panel of the transceiver.



2. Connect the D-sub connector of the KCT-40 cable to the D-sub 25-pin connector on the rear panel of the transceiver.



2.3.6 Configuration using KPG-111D

In order to use the KCT-40, the information for AUX port on the D-sub 25-pin connector needs to be configured and then written to the transceiver by using KPG-111D after the KCT-40 is connected to the transceiver.

Follow the procedure below.

1. Run the KPG-111D software.

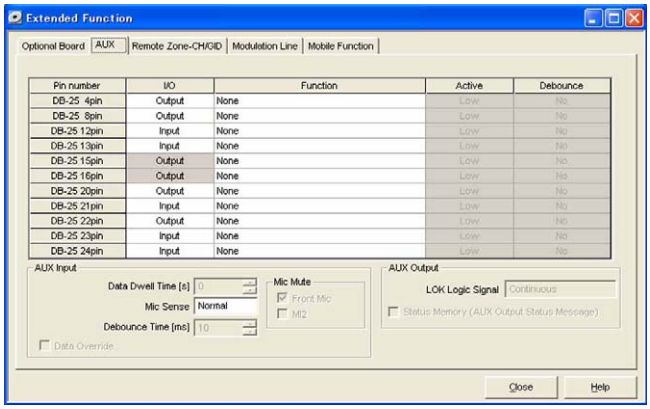
   To add the AUX port information to the current configuration data, data must be read from the transceiver or data that is stored previously must be used. Refer to FPRG 9.1 Read Data from the Transceiver for instructions on how to read configuration data from the transceiver.

2. Select “Extended Function” from the **Edit** pulldown menu.

   The **Extended Function** window opens.

3. Click the **AUX** tab.

   Functions can be assigned to AUX Input and AUX Output ports and the relevant items can be configured as necessary. Refer to the 8.27.2 AUX Tab for the details of configuration.



4. Write the configuration data to the transceiver.

   Refer to FPRG 9.2 Write Data to the Transceiver for instructions on how to write configuration data to the transceiver.

2.4 KRK-10

The remote kit (KRK-10) can be connected to the transceiver.

2.4.1 Outline

This kit allows separation of the transceiver front panel from NX-700/ NX-700H/ NX-800/ NX-800H/ NX-900/ NX-901.

2.4.2 Features

- The length of the cable to connect the transceiver to the panel is 7000 mm (22.6 ft).
- The kit has a rear panel for the transceiver front panel and a front cover for the transceiver body.
- The same optional bracket parts as that of optional KRK-9 for TK-7150 are used and installation flexibility is also maintained.
- The waterproof level of the remote panel meets IP 4/ 5 specifications.

2.4.3 Mechanical Specifications

■ Product Dimensions

Table 2-12 Product Dimensions and Weight

Items	Body Panel		Rear Panel		Cable
	A	B	A	B	
Width	160 mm (6.3 in)	160 mm (6.3 in)	160 mm (6.3 in)	160 mm (6.3 in)	-
Depth	36.7 mm (1.44 in)	40.7 mm (1.6 in)	36.2 mm (1.43 in)	40.2 mm (1.58 in)	-
Height	45 mm (1.77 in)	45 mm (1.77 in)	45 mm (1.77 in)	45 mm (1.77 in)	-
Length	-	-	-	-	7000 mm (22.6 ft)
Weight	0.83 kg (1.83 lb) (including weight of front and rear panels and cables)				

A: Dimension without projections

B: Dimension with projections

2.4.4 Appearance

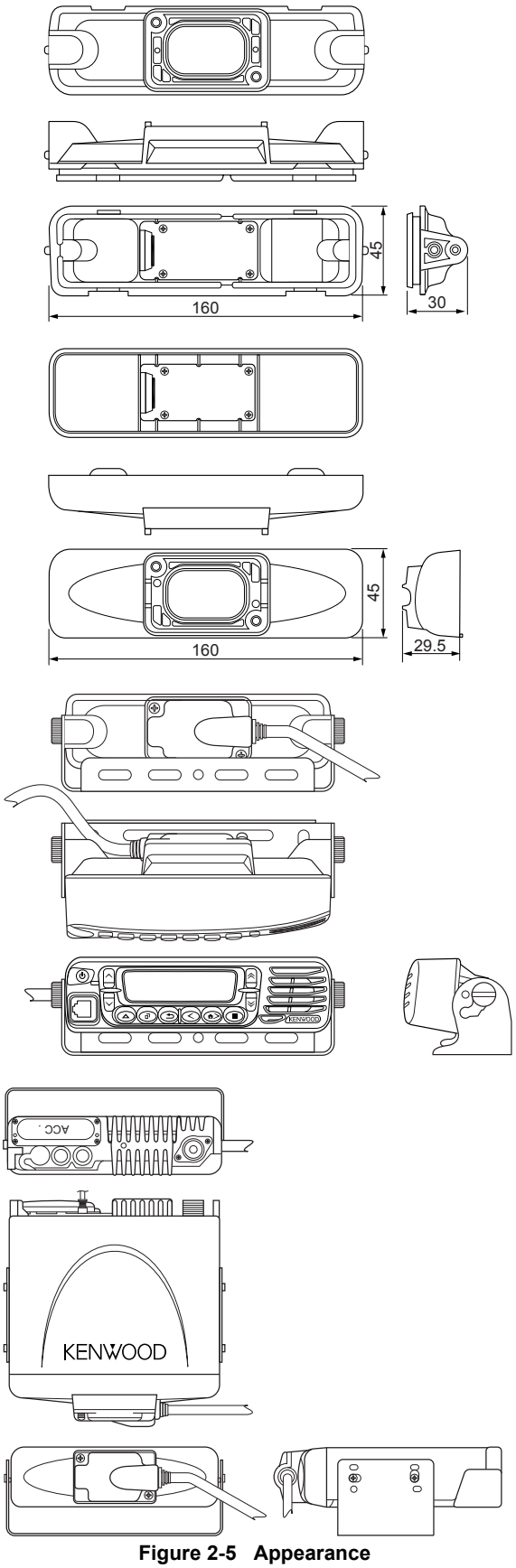


Figure 2-5 Appearance

2.4.5 Electrical Specifications

■ Connector Specifications

Table 2-13 Connector Specifications

Connector on the unit side: E40-6378-x5 (the 14-pin connector)

Panel Side		Specifications	Body Side	
Pin Number	Signal Name		Pin Number	Signal Name
1	SPI	Front Panel Speaker Input	14	SPI
2	GND	Ground	13	GND
3	8C	8 V Power Supply	12	8C
4	SB	Power Input after Power on	11	SB
5	GND	Ground	10	GND
6	PSW	Power Switch Control Signal Input	9	PSW
7	MIC	Mic Signal Input	8	MIC
8	ME	Mic Ground	7	ME
9	PSENS	Panel separate Output	6	PSENS
10	TXD	Serial Data Input	5	TXD
11	RXD	Serial Data Output	4	RXD
12	GND	Ground	3	GND
13	SHIFT	Beat Shift Output	2	SHIFT
14	RST2	Sub-microprocessor Reset Input	1	RST2

2.4.6 Standard Specifications

- **MIL STANDARD**

  If the KRK-10 is connected to the transceiver body, the KRK-10 complies with the following standards. Also, the available optional accessories are limited to KMC-35/ KMC-36 only.

Table 2-14 Standard Specifications

	MIL-810C	MIL-810D	MIL-810E	MIL-810F
Low Pressure	500. 1/ Procedure I	500. 2/ Procedure I, II	500. 3/ Procedure I, II	500. 4/ Procedure I, II
High Temp.	501. 1/ Procedure I, II	501. 2/ Procedure I, II	501. 3/ Procedure I, II	501. 4/ Procedure I, II
Low Temp.	502. 1/ Procedure I	502. 2/ Procedure I, II	502. 3/ Procedure I, II	502. 4/ Procedure I, II
Temp. Shock	503. 1/ Procedure I	503. 2/ Procedure I	503. 3/ Procedure I	503. 4/ Procedure I, II

	MIL-810C	MIL-810D	MIL-810E	MIL-810F
Solar Radiation	505. 1/ Procedure I	505. 2/ Procedure I	505. 3/ Procedure I	505. 4/ Procedure I
Rain	506. 1/ Procedure I, II	506. 2/ Procedure I, II	506. 3/ Procedure I, II	506. 4/ Procedure I, III
Humidity	507. 1/ Procedure I, II	507. 2/ Procedure II, III	507. 3/ Procedure II, III	507. 4
Salt Fog	509. 1/ Procedure I	509. 2/ Procedure I	509. 3/ Procedure I	509. 4
Dust	510. 1/ Procedure I	510. 2/ Procedure I	510. 3/ Procedure I	510. 4/ Procedure I, III
Vibration	514. 2/ Procedure VIII, X	514. 3/ Procedure I	514. 4/ Procedure I	514. 5/ Procedure I
Shock	516. 2/ Procedure I, II, III, V	516. 3/ Procedure I, IV, V	516. 4/ Procedure I, IV, V	516. 5/ Procedure I, IV, V

- **IEC 529 (IP Code) IP-XX**

  If the KRK-10 is connected to the transceiver body, the KRK-10 complies with the following standards. Also, the available optional accessories are limited to KMC-35/ KMC-36 only.

Element	Code Letters	First Code	Second Code
Numbers or Letters	IP (International Protection)	5 (Dust-protection)	4 (Splashing) 5 (Jetting) *1

*1 IP-x5 is applicable to the head unit only; IP-x4 is applicable to the transceiver body. If the transceiver is used normally without separating the panel from the transceiver, IP-x4 is applicable to the transceiver.

- **Display Responses**

  No remarks

2.4.7 Supplied Accessories

Table 2-15 Supplied Accessories

No.	Name	Part Number	Qty.	Remarks
1	Screw Set	N99-2040-x5	1	-
2	Bracket	J29-0698-x3	1	-
3	Dressed Screw	N08-0550-x4	2	-
4	Interface Cable	E30-7514-x5	1	Length: 7,000 mm
5	Molded Lid	F07-1884-x3	2	-

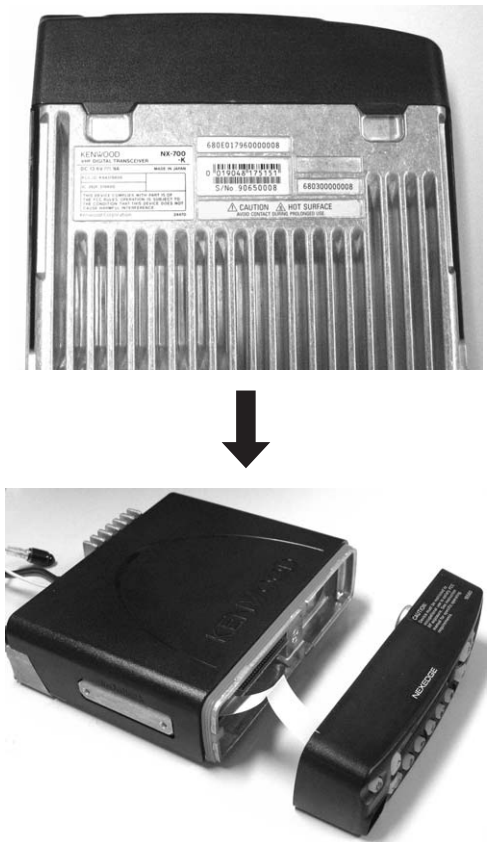
2.4.8 Installing KRK-10

WARNING

DO NOT WORK WHILE POWER SOURCE IS SUPPLIED TO THE TRANSCEIVER.

1. Remove the panel.

   Remove the rear panel by widening the 2 side tabs using a flat-head screwdriver, etc. Then, pull upward to remove the rear panel from the transceiver body.

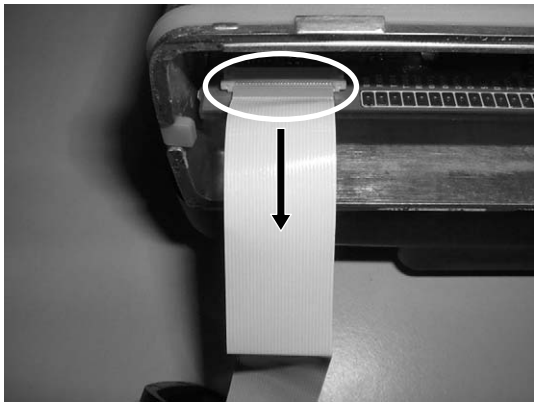


CAUTION

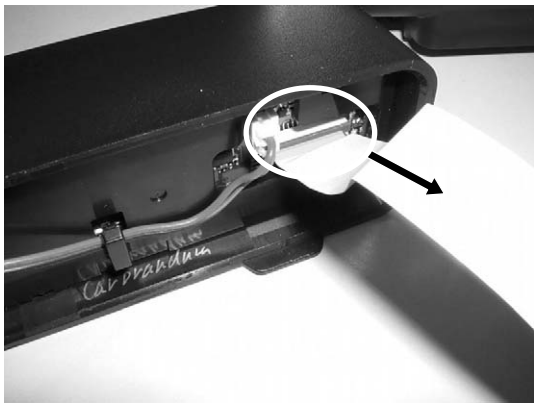
REMOVE THE PANEL GENTLY. OTHERWISE, THE FLAT CABLE MAY BE DAMAGED.

2. Remove the flat cable.

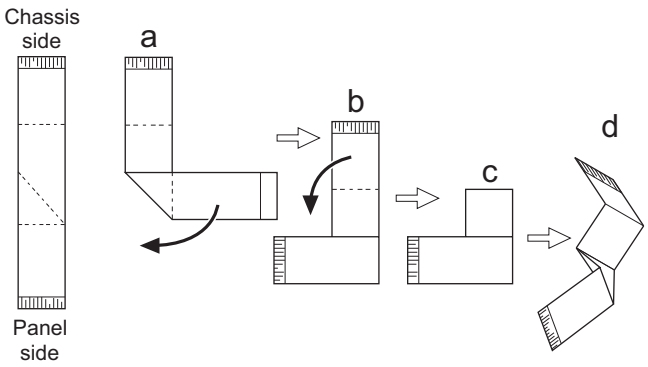
(2-1) Remove the cable from the connector on the PCB.



(2-2) Remove the cable from the panel.



3. Fold the flat cable along the black lines (3 lines).



(3-1) Fold the flat cable along the diagonal black line and then fold the cable horizontally as shown a.

(3-2) Fold the flat cable along the top black line as shown b.

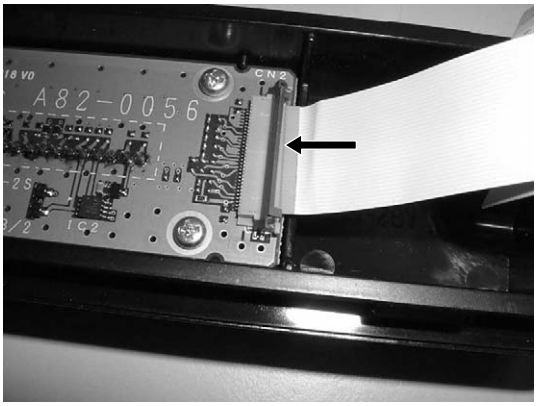
(3-3) Fold the cable as shown c.

(3-4) Expand the cable as shown d.

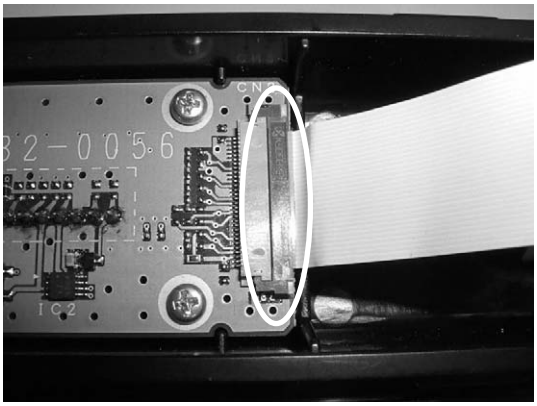
4. Prepare the main panel (A62-1101-x1) of the KRK-10.

5. Insert the flat cable folded in step 3 into the connector of the KRK-10 main panel (A62-1101-x1).

(5-1) Lift up the connector cover of the interface board (A/2) of the KRK-10 main panel (A62-1101-x1) and then insert the cable into the connector as shown in the figure.



(5-2) Place the cover back.



(5-3) Insert the other side of the flat cable into the connector of the transceiver as shown in the figure.

CAUTION

MAKE SURE THAT CONDUCTOR SIDE OF FLAT CABLE IS FACING DOWNWARD WHEN THE FLAT CABLE IS INSERTED INTO THE CONNECTOR.

6. Install the KRK-10 main panel (A62-1101-x1) on the transceiver.

Install the panel by hooking the 2 tabs to the panel.

CAUTION

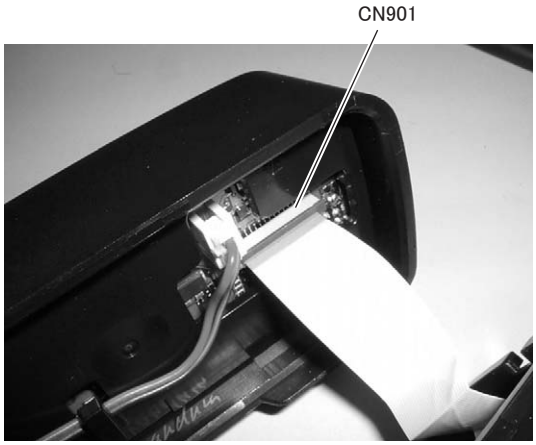
TAKE CARE THAT FLAT CABLES ARE NOT CAUGHT WHEN INSTALLING THE MAIN PANEL ON THE FRONT PART OF THE CHASSIS.

7. Prepare the rear panel (A82-0056-x1) of the KRK-10.

8. Insert the flat cable on the interface board (B/2) of the KRK-10 rear panel (A82-0056-x1) into the connector (CN901) on the display PCB on the panel.

(8-1) Pull the cover of the connector (CN901) forward and then insert the flat cable into the connector as shown in the figure.

After inserting the flat cable, push the connector cover and then secure the flat cable.

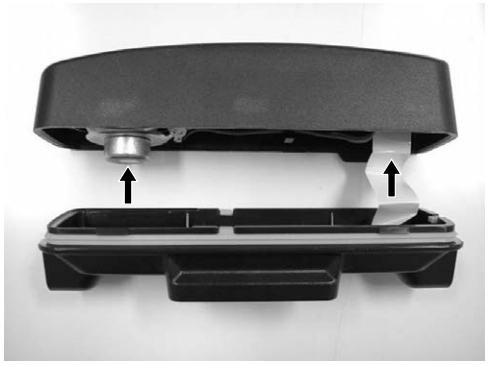


CAUTION

MAKE SURE THAT CONDUCTOR SIDE OF FLAT CABLE IS FACING DOWNWARD WHEN THE FLAT CABLE IS INSERTED INTO THE CONNECTOR.

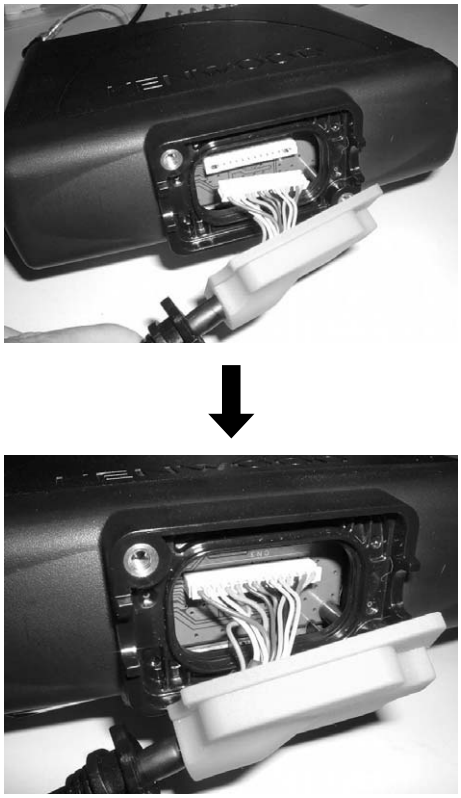
Note: The flat cable is plugged into the connector (CN2) on the rear panel as it was manufactured.

9. Install the panel by engaging the 2 tabs on the rear panel.

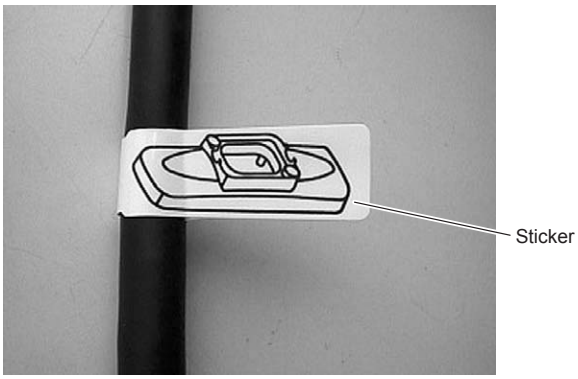


10. Prepare the interface cable (E30-7514-x5).

11. Insert the 14-pin connector at one end of the interface cable (E30-7514-x5) into the connector (CN3) of the interface board (A/2) on the main panel.

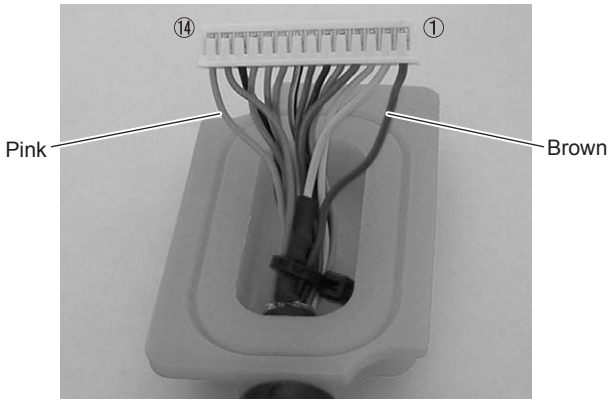


Note: The connector with a sticker (B42-7208-x4) must be connected to the main panel.

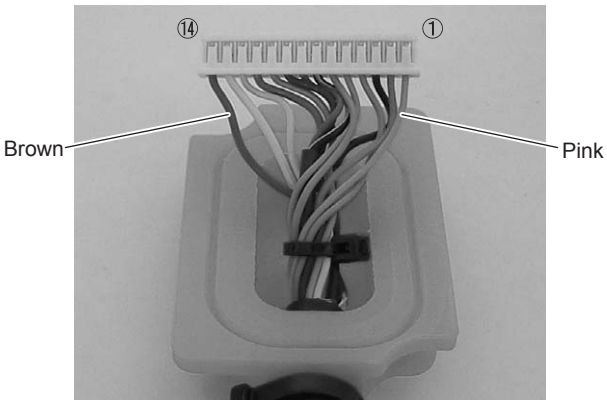


If a sticker is not attached, check the color of the wire.

- **Connector at the main panel side:**
  Pin 1: Brown wire
  Pin 14: Pink wire



- **Connector at the rear panel side:**
  Pin 1: Pink wire
  Pin 14: Brown wire



12. Secure the bushing part of the cable to the main panel and then insert the waterproof gasket (orange) firmly.

13. Attach the molded lid to the main panel and then secure it with two SEMS screws (black) (N99-2040-x5).

14. Insert the 14-pin connector at the other end of the interface cable (E30-7514-x5), which is used in step 6, into the connector (CN4) of the interface board (B/2) on the rear panel.

15. Secure the bushing part of the interface cable to the rear panel and then insert the waterproof gasket (orange) firmly.

16. Attach the molded lid to the rear panel and then secure it with two SEMS screws (black) (N99-2040-x5).

2.5 KAP-2

The cable (KAP-2) with the relay unit that adds PA, Horn Alert and EXT SP functions can be connected to the transceiver.

2.5.1 Outline

This accessory, a cable with a unit, adds PA, Horn Alert and EXT SP functions to NX-700/ NX-700H/ NX-800/ NX-800H/ NX-900/ NX-901.

2.5.2 Features

HOR1, HOR2, INT SP and EXT SP can be switched by using the jumper connector (refer to the circuit diagram for details).

2.5.3 Mechanical Specifications

■ Product Dimensions

Table 2-16 Product Dimensions and Weight

Items	Board Size	Cable
Length	30.0 mm (1.18 in)	260 mm (10.24 in)
Width	27.5 mm (1.08 in)	-
Thickness	7.8 mm (0.31 in)	-
Weight	30 g (1.06 oz)	

■ Cable Specifications

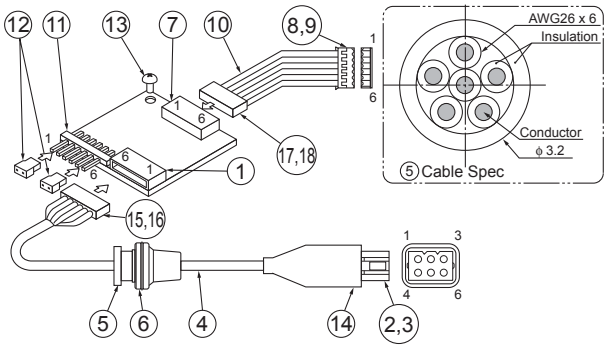


Figure 2-6 Mechanical Parts

Table 2-17 Mechanical Parts

No.	Part Name	Qty.	Remarks
1	Housing	1	53015-0610
2	Housing	1	03-06-1062
3	Terminal	6	02-06-1132
4	Cable	1	6-Pin Cable Length: 200 mm (7.87 in)
5	Bushing	1	Color: Black
6	Packing	1	-
7	Housing	1	53254-0610
8	Housing	1	51065-0600
9	Terminal	6	50212-8100
10	Cable	6	Length: 35 mm (1.38 in)
11	Pin Assy.	1	E40-6375-x5
12	Socket	2	E18-0254-x5
13	Brazier Head Taptite Screw	1	N87-2606-x8
14	CAP	1	513083
15	Housing	1	51004-0600
16	Terminal	6	50011-8100
17	Housing	1	51065-0600
18	Terminal	6	50212-8100

2.5.4 Electrical Specifications

■ Connector Specifications

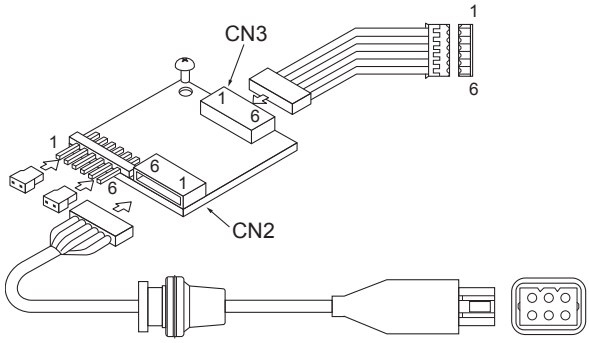


Figure 2-7 Connector Number

Table 2-18 Connector Specifications (CN3)

	CN3	Description
1	GND	Ground
2	HOR	Horn Alert Function control signal
3	PA	Public Address Function control signal
4	SPO	Speaker Output
5	SPI	Speaker Input
6	SB	Switched B

Table 2-19 Connector Specifications (CN2)

	Name	Description
1	HR2	Horn Alert Signal Output 2: 2 A max
2	GND	Ground
3	OSP	External Speaker Output (PA): 2 A max
4	ESP	External Speaker Output: 2 A max
5	GND	Ground
6	HR1	Horn Alert Signal Output 1: 2 A max

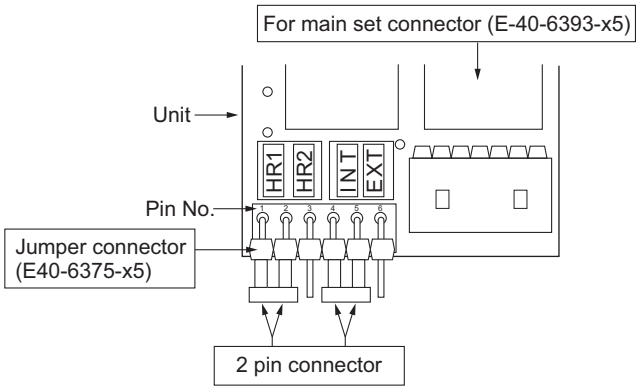


Figure 2-8 Jumper Pin Specifications (Top View)

Table 2-20 Jumper Pin Specifications (CN 5)

Connection Pattern	HOR	External Switch (HR1)	Connection Pattern	PA	AF Output
While pin 1 and pin 2 are connected.	Low	OFF (HR1-Open)	While pin 4 and pin 5 are connected.	Low	Body SP (SPI-SPO)
	High	ON (HR1-GND)		High	Microphone Amplifier (SPI-OSP)
While pin 2 and pin 3 are connected.	Low	OFF (HR1-Open)	While pin 5 and pin 6 are connected.	Low	External SP (SPI-ESP)
	High	ON (HR1-HR2)		High	Microphone Amplifier (SPI-OSP)

Note: Pin 1 and pin 2 connections (HR1) and pin 4 and pin 5 connections (INT) are default settings.

- **External Speaker**

  KES-5 can be connected to pin 4 and pin 5 on the KAP-2 CN4 (6-pin Molex) using the supplied connectors and pins.

- **Public Address (PA)**

  The relay of the PA output switch can be controlled by altering the PA function between enabled and disabled. If PA is enabled, the PA output signal flows through the following path.

  The received audio picked up by the microphone passes through the filter, amplifier and other circuits, and then is sent to pin 5 of CN3 on KAP-2. The received audio is sent to pin 2 of CN2 via the relay (K2).

  If pin 4 and pin 5 are bypassed by a jumper while the **Public Address** key is not pressed, the external speaker emits the received audio. If pin 5 and pin 6 are bypassed by a jumper, the KES-5 external speaker emits the received audio.

- **Horn Alert (HA)**

  KAP-2 can be used to change the HA function between enabled and disabled and control the Signaling Decode function. The relay accepts a maximum current of 2 A to sound the vehicle's horn.

  There are 2 types of Horn Alert configuration: HA1 and HA2.

Table 2-21 Horn Alert Configuration

CN1 Jumper	Configuration
1-2	HA1
2-3	HA2

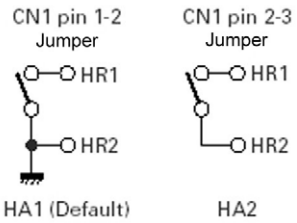


Figure 2-9 Horn Alert Configuration

2.5.5 Supplied Accessories

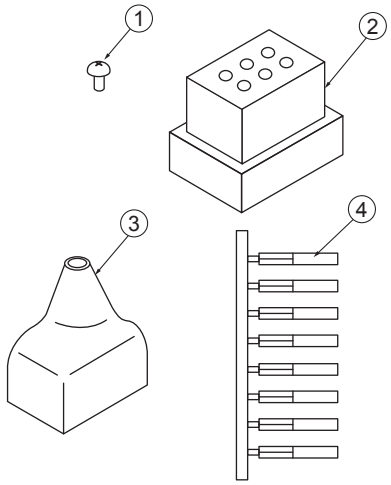


Figure 2-10 Appearance of Supplied Accessories

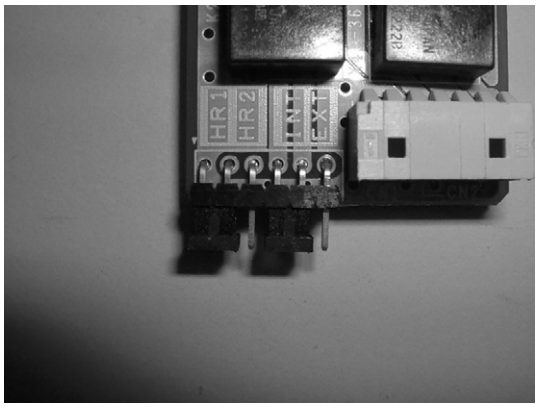
Table 2-22 Supplied Accessories

No.	Name	Part Number	Qty.	Remarks
1	Screw (Brazier Head Taptite Screw)	N87-2606-x8	1	
2	Square Plug	E59-0419-x5	1	
3	Insulating Cover	F29-0481-x5	1	
4	Crimp Terminal	E23-1257-x5	8	Chain Terminal

2.5.6 Configuration for the Jumper Pin

KAP-2 can switch HOR1, HOR2, INT SP and EXT SP through configuration of the jumper connector.

In default configuration, the jumper pins are connected between pin 1 and pin2, and between pin 4 and pin 5.



Following are specifications of the jumper pin. (Refer to Table 2-20 Jumper Pin Specifications (CN 5) on page 22.)

Table 2-23 Jumper Pin Specifications

Pin Number	Body Side	External Side	External Connector
1	GND	HR-2 (2 A MAX)	HR-2 (2 A MAX)
2	HOR	GND	GND
3	PA	OSP (2 A MAX)	OSP (2 A MAX)
4	SPO	ESP (2 A MAX)	ESP (2 A MAX)
5	SPI	GND	GND
6	SB	HR-1 (2 A MAX)	HR-1 (2 A MAX)

2.5.7 Installing KAP-2

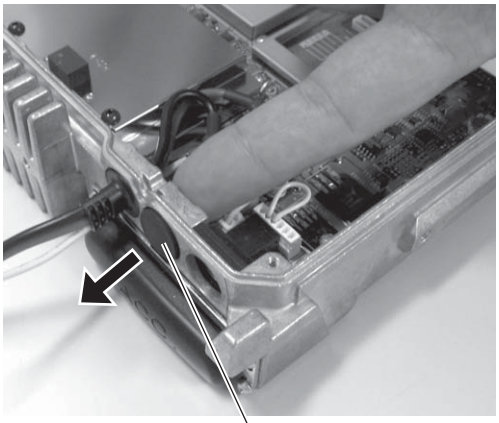
WARNING

DO NOT WORK WHILE POWER SOURCE IS SUPPLIED TO THE TRANSCEIVER.

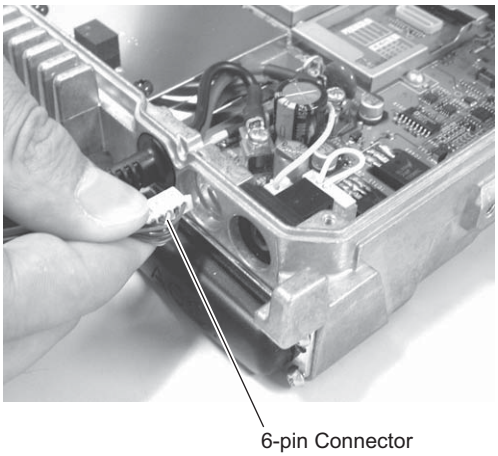
1. Remove the top cover, top gasket and shielding plate from the transceiver.

   Refer to step 1 in 2.1.6 Installing VGS-1 on page 8.

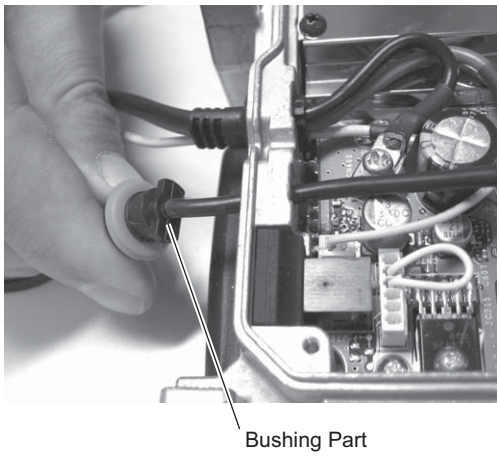
2. Push the blanking cap on the rear panel of the chassis from the inside of the chassis using a finger to remove.



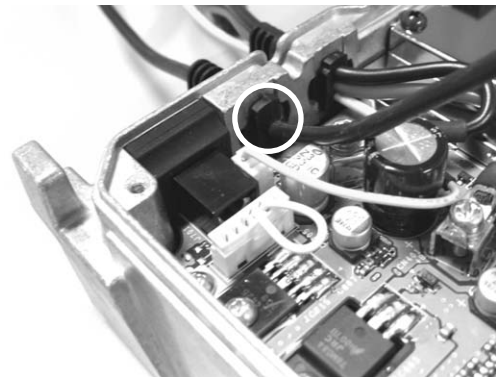
3. Hold the 6-pin connector side of the connection cable (E37-1113-x5) as illustrated in the figure and then insert the connector into the hole of the cap removed from the chassis.



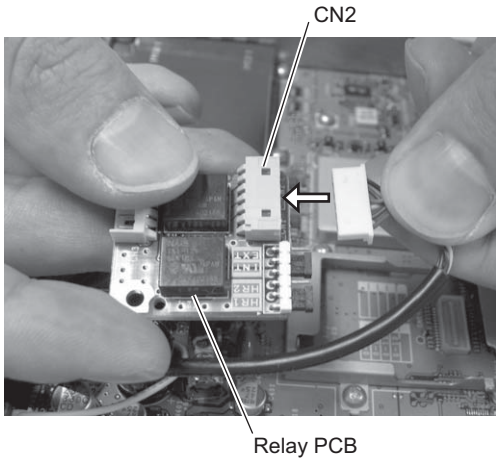
4. Insert fully the bushing part into the chassis hole in the direction illustrated in the figure.



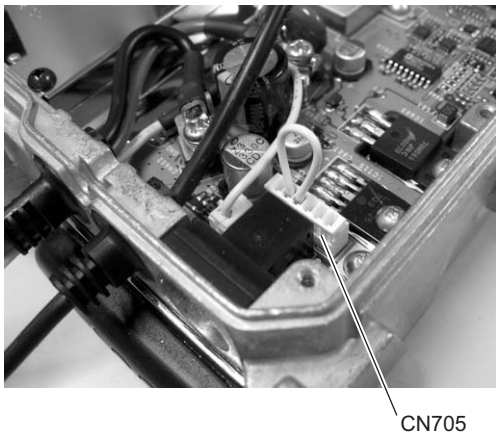
5. Rotate the bushing of the connection cable 90 degrees clockwise viewing from the inside of the chassis.



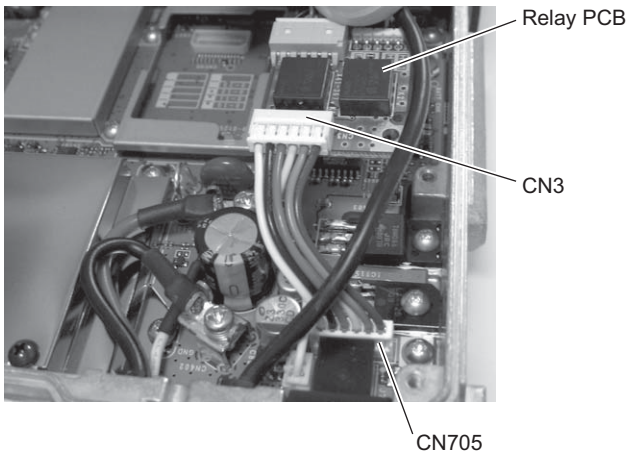
6. Insert the 6-pin connector of the connection cable into the connector (CN2) on the relay PCB.



7. Remove the wire with the connector that is inserted into the connector (CN705) on the TX-RX PCB.

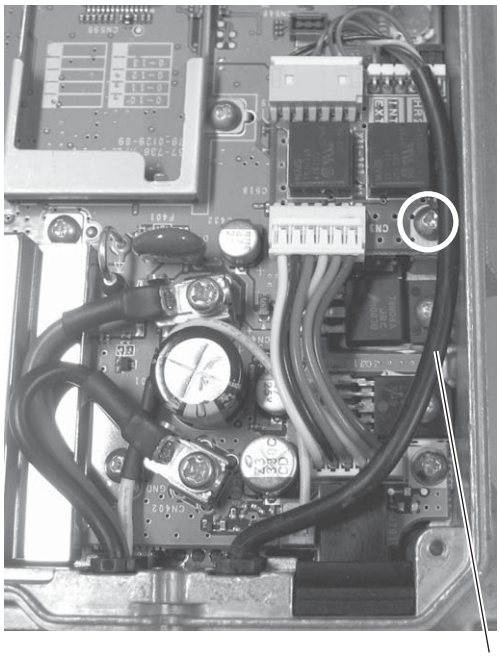


8. Insert one side of the connection cable (E37-1114-x5) into the connector (CN3) on the relay PCB, and then insert the other end into the connector (CN705) on the TX-RX PCB.



9. Place the relay PCB in the position illustrated in the figure and then secure the board to the chassis with the supplied screw (N87-2606-x8).

The connection cable (E37-1113-x5) must be dressed along the chassis as illustrated in the figure.



Connection Cable
(E37-1113-x5)

10. Reinstall the shielding plate, top gasket, and top cover on the transceiver.

Note: The tightening torque for the screw is 5 kgf-cm (4.34 lbf-inch).

3 CONNECTING THIRD PARTY OPTIONAL DEVICES

This chapter describes how to install to the transceiver optional devices supplied by a third party.

3.1 ANI Board (CIM-1000K-26)

CIM-1000K-26 manufactured by Cimarron Technologies can be installed in the transceiver.

CIM-1000K-26 is an ANI Board that can be connected to the internal 26-pin connector.

Contact Cimarron Technologies for details of CIM-1000K-26.

■ Required Items

- Transceiver
- CIM-1000K-26
- Foam Tapes

  A: 3M Polyurethane Foam Tape (White) (No.4016)

  20 mm x 25 mm/ t 1.6 mm

  (0.8 x 1 x t 0.064 inches), 1 piece of tape

  B: 3M Polyurethane Foam Tape (White) (No.4008)

  20 mm x 25 mm/ t 3.2 mm

  (0.8 x 1 x t 0.13 inches), 4 pieces of tape

Note: ANI can be used only in an Analog Conventional System and an LTR Trunking System.

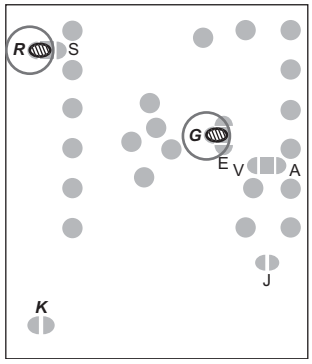
3.1.1 Changing the Configuration for CIM-1000K-26

The configuration of CIM-1000K-26 must be changed prior to installing the CIM-1000K-26 in the transceiver.

The jumper configuration must be changed as instructed in the following figures depending on the PCB type of CIM-1000K-26 to be used.

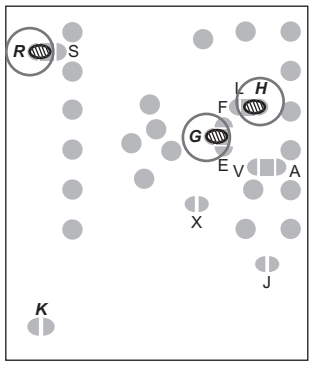
■ PCB A-type

Confirm that only 2 jumpers (R and G) are soldered and other jumpers are open.



■ PCB B-type

Confirm that only 3 jumpers (R, G and H) are soldered and other jumpers are open.



3.1.2 Basic Configuration for CIM1000K-26

CIM-1000K-26 can be connected to a PC and configured by using a terminal program.

A CIM-Cable provided by Cimarron Technologies must be used to connect the CIM-1000K-26 to a PC. Contact Cimarron Technologies for details of CIM-Cable.

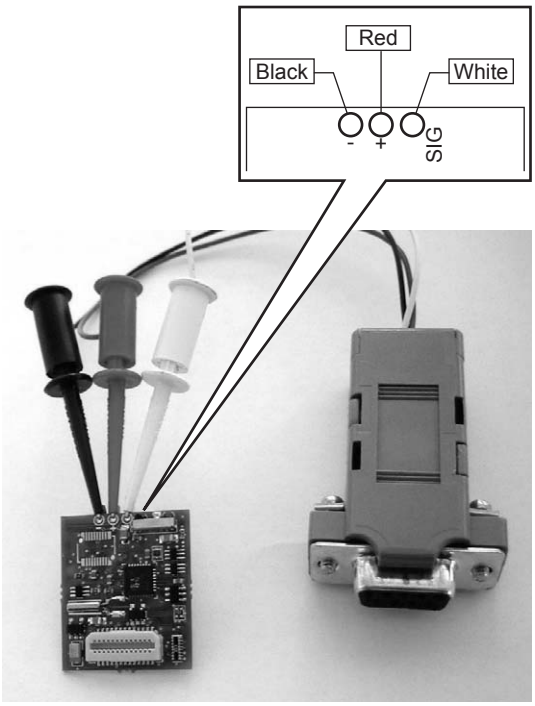
This section describes how to configure the CIM-1000K-26 by using Hyper Terminal (terminal program supplied with Windows 2000 and Windows XP). Refer to the help text of Windows for details of Hyper Terminal.

Note:

- The programming method for CIM-1000K-26 and the menu window may vary depending on the firmware version of CIM-1000K-26. Contact Cimarron Technologies for details.
- The terminal program Hyper Terminal is not supplied with Windows Vista.

■ Connecting to a PC

1. Connect the optional CIM-Cable to CIM-1000K-26 as shown in the figure.



2. Connect the 9-pin connector of the CIM-Cable to a serial port (COM1) on the PC.

■ Running the Terminal Program

1. Select the “Start” button > “Programs” (“All Programs” in Windows XP) > “Accessories” > “Communications” > “Hyper Terminal”.

   The **Connection Description** window opens.

2. Enter a name in the **Name** edit box and then click the “OK” button.

   The **Connect To** window opens.

3. Select COM1 from the **Connect Using** dropdown list and then click the “OK” button.

   The **COM1 Properties** window opens.

   Each function can be configured as below.

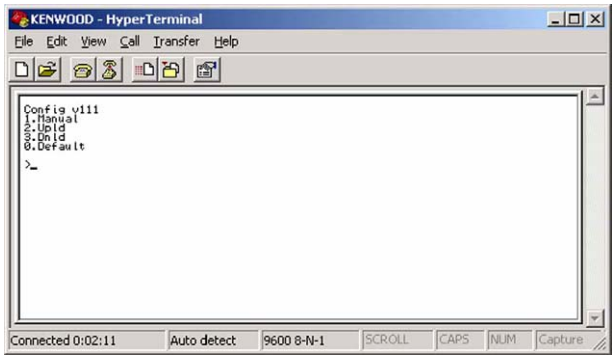
Table 3-1 COM1 Properties

Configuration Item	Value
Bits per second	9600
Data bits	8
Parity	None
Stop bits	1
Flow control	None

4. Click the “OK” button.

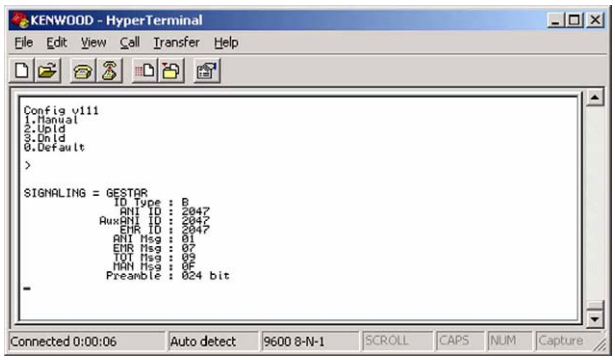
   The **HyperTerminal** window opens.

   The PC starts communicating with CIM-1000K-26 by pressing the keys on the keyboard in this order: **[$]**, **[C]**, **[I],** and **[M]**.

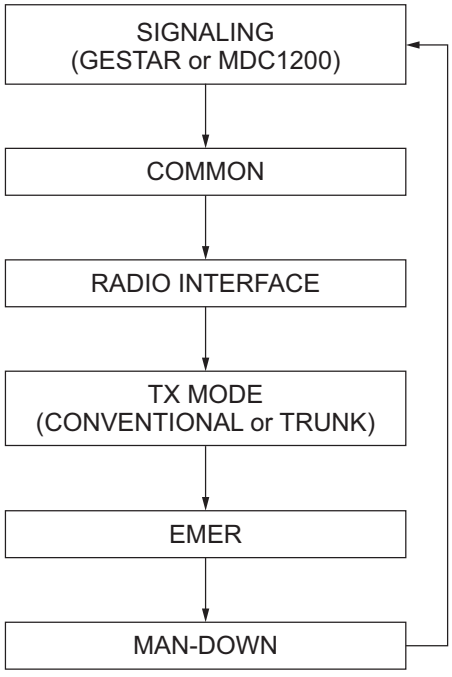


5. Press the **[1]** key on the keyboard.

   Configuration items for “SIGNALING” appears as the first configuration menu.



The configuration menu switches in the following order when the **[Tab]** or **[Enter]** key on the keyboard is pressed.

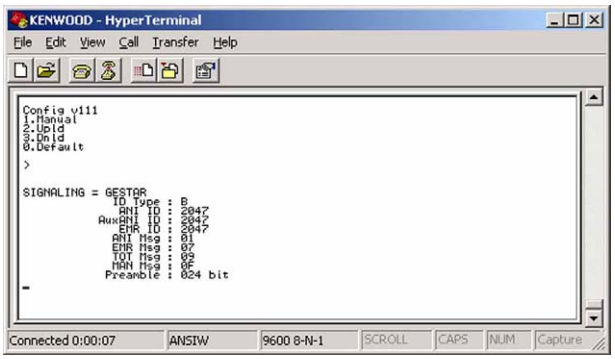


Note: The **[T]** key must be pressed to alternate “GESTAR” and “MDC1200” in the SIGNALING menu. “GESTAR” and “MDC1200” are alternated every time the **[T]** key is pressed. The same operation is used to alternate between “CONVENTIONAL” and “TRUNK” in TX MODE Menu.

■ Configuration Method

1. Select the menu to be configured.

The cursor blinks below the configuration menu.

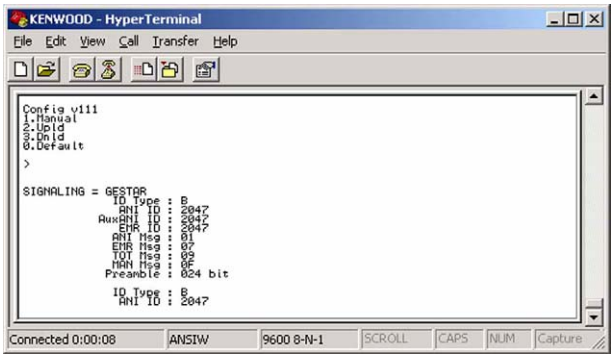


2. Press the **[Space]** key on the keyboard to select a configuration item.

- **Example if configuring “1234” for “ANI ID”:**

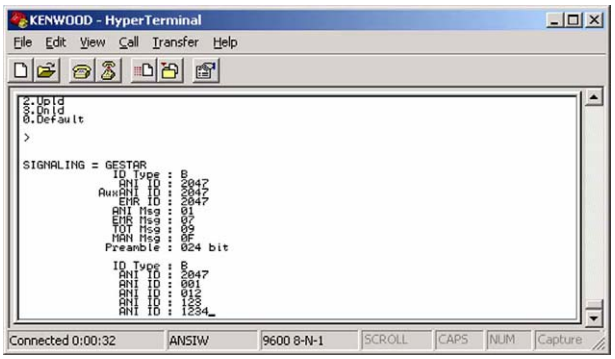
(2-1) Press the **[Space]** key twice.

The current value configured for “ANI ID” appears.



(3-2) Enter a value by pressing the **[0]** to **[9]** keys on the keyboard.

Press the **[1]**, **[2]**, **[3]** and **[4]** keys in this order.



Press the **[Space]** key to configure another item continuously.

The entered value is determined if the **[Tab]** or **[Enter]** key is pressed and the display shown in step 1 appears. The next configuration menu appears if the **[Tab]** or **[Enter]** key is pressed again.

Note: To enter alphabetic characters, press alphabetic keys on the keyboard. To select “YES” or “NO”, select a configuration item and then press the **[Y]** or **[N]** key. To configure the other functions which are configured by selecting the options, press the **[↑]** or **[↓]** key. Refer to CIM-1000K-26’s instruction manual for details.

■ Basic Configuration

- **SIGNALING**

ID and Message can be configured by selecting Signaling (GESTAR or MDC-1200).

If GESTAR is Configured:

```
SIGNALING = GESTAR
              ID Type  : B
              ANI ID   : 2047
            AuxANI ID  : 2047
              EMR ID   : 2047
              ANI Msg  : 01
              EMR Msg  : 07
              TOT Msg  : 09
              MAN Msg  : 0F
              Preamble : 024 bit
```

If MDC-1200 is Configured:

```
SIGNALING = MDC1200
              ANI ID   : 1234
            AuxANI ID  : 1234
              EMR ID   : 1234
              ANI Msg  : 8001
              EMR Msg  : 8000
              MAN Msg  : 8000
```

- **RADIO INTERFACE**
  - Configure “NO” for Cont.Data.
  - Configure “YES” for KeyFollowsPTT.
  - Configure “CritChOnce” for AuxOut.
  - Configure “027 dB” for TxLevel.
  - Configure “actLOW” for PttIn.
  - Configure “actLOW” for SleepIn.

```
RADIO INTERFACE
          Attack  : 300 ms
             TOT  : 060 Sec
       Cont. Data : NO
     KeyFollowsPTT : YES
          AuxOut  : CritChOnce
          TxLevel : 027 dB
           PttIn  : actLOW
         SleepIn  : actLOW
```

- **TX MODE**

  “CONVENTIONAL” must be selected if the transceiver is operated in Conventional Mode.

  “TRUNK” must be selected if the transceiver is operated in LTR Mode.

  “TRUNK” must be selected if the transceiver is operated in both Conventional and LTR Modes.

```
TX MODE = CONVENTIONAL
```

If “TRUNK” is selected, the following items must be configured.

- Configure “3000 mS” for KeyTime.
- Configure “000 mS” for Debounce.
- Configure “3000 mS” for Timeout.
- Configure “actLOW” for TrunkAck.

```
TX MODE = TRUNK
          KeyTime  : 3000 mS
         Debounce  : 000 mS
          Timeout  : 3000 mS
         TrunkAck  : actLOW
```

Note: The **[T]** key must be pressed to alternate between “CONVENTIONAL” and “TRUNK”. “CONVENTIONAL” and “TRUNK” are alternated every time the **[T]** key is pressed.

■ Configuration for using PTT ID

- **COMMON**
  - The transceiver transmits ANI when the transceiver starts transmitting if “YES” is configured for Start ANI.
  - The transceiver transmits ANI when the transceiver finishes transmitting if “YES” is configured for End ANI.
  - The Sidetone sounds from the transceiver when the transceiver starts transmitting the PTT ID if “YES” is configured for PTT Sidetone.
  - A beep sounds from the target transceiver when the transceiver finishes transmitting if “YES” is configured for PTT Courtesy.

```
COMMON
        Start ANI  : YES
          End ANI  : NO
      ANI RepDly   : 000 Sec
      PTT Sidetone : NO
      PTT Courtesy : NO
    ANI becomes Crit : YES
      Preamb w/Atk : NO
```

■ Configuration for using Emergency

- **EMER**
  - The number of times to transmit Emergency signals for RepQty can be configured.
  - The intervals to transmit Emergency signals for RepDly can be configured.
  - Configure “000 Sec” for ActiveDly.

    ActiveDly does not need to be configured because the Emergency-key Delay Time configured for the transceiver is used. Therefore, “000 Sec” must be configured for ActiveDly. Refer to the Field Programming Reference for instructions on how to configure Emergency-key Delay Time.
  - A Warning Tone sounds from the transceiver when transmitting an Emergency signal if “YES” is configured for WarnTone.
  - Configure “actLOW” for In.

```
EMER
          RepQty  : 005
          RepDly  : 010 Sec
        ActiveDly : 000 Sec
        WarnTone  : No
              In  : actLOW
        OpnMicTx  : 000 Sec
        OpnMicRx  : 000 Sec
```

3.1.3 Installing CIM-1000K-26

WARNING

DO NOT WORK WHILE POWER SOURCE IS SUPPLIED TO THE TRANSCEIVER.

1. Remove the top cover, top gasket and shielding plate from the transceiver.

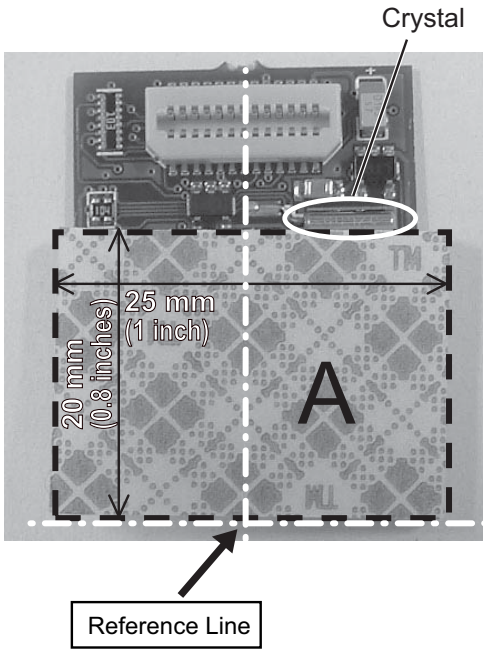
   Refer to step 1 in 2.1.6 Installing VGS-1 on page 8.

WARNING

DO NOT DAMAGE THE GASKET SEALS BETWEEN THE TRANSCEIVER AND COVER. ALSO, KEEP THE GASKET SEALS AWAY FROM DUST. IF THE GASKET IS DAMAGED OR COVERED WITH DUST, THE WATERPROOF AND DUST-PROOF CHARACTERISTICS OF THE TRANSCEIVER WILL DEGRADE.

2. Attach the foam tape A to the connector side of the CIM-1000K-26 PCB.

   The foam tape must be attached in a manner that it does not cover the crystal. In this case, do not peel off the cover sheet.

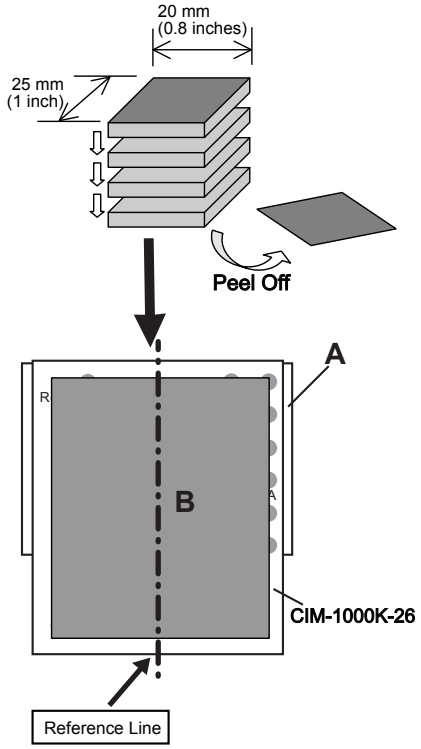


WARNING

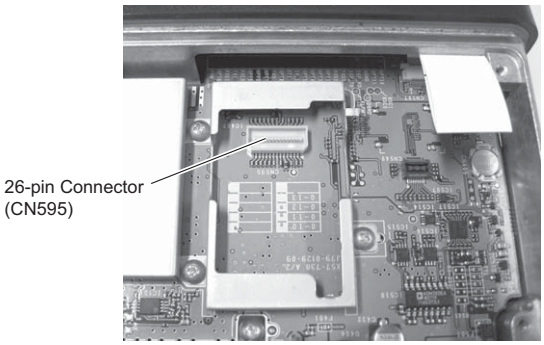
IF THE FOAM TAPE COVERS THE CRYSTAL, EXCESSIVE PRESSURE IS APPLIED TO THE PART AND IT MAY CAUSE TRANSCEIVER TO MALFUNCTION.

3. Stack 4 pieces of foam tape B and then attach them on the solder pad side of the CIM-1000K-26 PCB.

   The stacked tapes must be attached in the center of the PCB.



4. Connect the connector on the CIM-1000K-26 to the 26-pin connector (CN595) on the TX-RX PCB.



5. Reinstall the shielding plate, top gasket, and top cover on the transceiver.

Note: The tightening torque for the screw is 5 kgf-cm (4.34 lbf-inch).

WARNING

- **INSTALL THE CIM-1000K-26 AS INSTRUCTED IN THE PROCEDURE ABOVE.**
- **KEEP DUST AND DIRT AWAY FROM THE ADHESIVE SURFACE OF THE TAPE TO AVOID CONTAMINATING THE TAPE SURFACE. ALSO, DO NOT USE OLD TAPE (DUE TO LOW ADHESION). OTHERWISE, THE TRANSCEIVER AND CIM-1000K-26 MAY BE DAMAGED FROM DROPPING IMPACT AND VEHICLE VIBRATION. WE RECOMMEND USING TAPE MANUFACTURED WITHIN THE PAST YEAR. THE TAPE MUST BE STORED IN A SEALED PLASTIC BAG IN A DARK AND COLD PLACE AFTER USE. OTHERWISE, THE ADHESION CHARACTERISTICS OF THE TAPE MAY DEGRADE.**

3.1.4 Configuration using KPG-111D

In order to use the ANI function, the information of ANI Board needs to be configured and then written to the transceiver by using KPG-111D after the CIM-1000K-26 is installed in the transceiver.

Follow the procedure below.

1. Run the KPG-111D software.

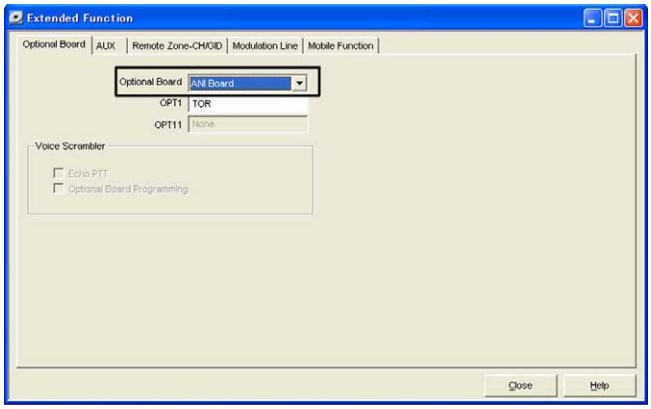
   To add the ANI Board information to the current configuration data, data must be read from the transceiver or data that is stored previously must be used. Refer to FPRG 9.1 Read Data from the Transceiver for instructions on how to read configuration data from the transceiver.

2. Select “Extended Function” from the **Edit** pulldown menu.

   The **Extended Function** window opens.

3. Select “ANI Board” from the **Optional Board** dropdown list.

   Refer to the ANI Board’s instruction manual for instructions on how to configure the ANI Board.



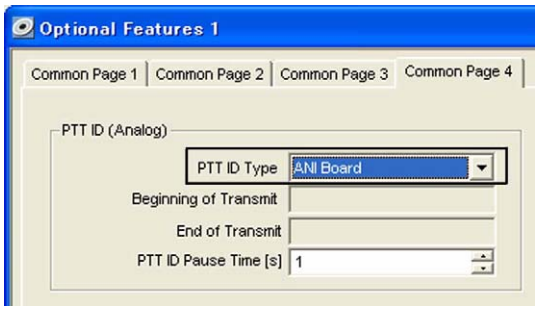
4. Select “LOK (Continuous)”, “TOR” or “COR” from the **OPT1** dropdown list.

   If Trunking is configured for ANI Board in Transmit Mode using the terminal program, LOK must be selected. If the link for LTR is established, the logic of the OPT1 terminal goes Low and a user is ready for communication. The transceiver sends the PTT ID and Emergency message when the logic of the OPT1 terminal goes Low.

   If Conventional is configured for Transmit Mode, “COR” or “TOR” must be selected to open the squelch when the transceiver receives a signal. The logic of the OPT1 terminal goes Low while the transceiver is receiving signals. While the logic of this OPT1 terminal is Low, the ANI Board does not send Emergency, Man-down or PTT ID.

5. Select “Optional Features” from the **Edit** pulldown menu, and then click the **Common Page 4** tab in the **Optional Features 1** window.

   Select “ANI Board” from the **PTT ID Type** dropdown list.



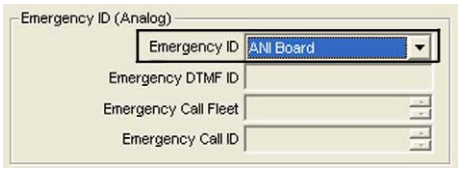
6. Select “Zone Information” from the **Edit** pulldown menu and then click the “Channel Edit” or “GID Edit” button in the **Zone Information** window.

   Select “On” from the **PTT ID (Analog)** dropdown list in the **Channel Edit** or **GID Edit** window.

7. Select “Emergency Information” from the **Edit** pulldown menu.

   Select “ANI Board” from the **Emergency ID** dropdown list in the **Emergency Information** window > **Emergency ID (Analog)** frame.

   The ANI Board controls all automatic transmissions and receptions of Emergency calls. To make an Emergency Call, Emergency of ANI Board must be configured.



8. Write the configuration data to the transceiver.

   Refer to FPRG 9.2 Write Data to the Transceiver for instructions on how to write configuration data to the transceiver.

3.2 GPS Receiver (GPS 15L-W)

The built-in GPS receiver can be installed in the transceiver. This section describes the procedure to install the Garmin GPS receiver (GPS 15L-W) in the transceiver.

Contact Garmin for details of GPS 15L-W.

■ Required Items

- Transceiver
- GPS 15L-W
- Foam Tapes

  3M Polyurethane Foam Tape (White) (No.4016 or No. 4416)

  25 mm x 30 mm/ t 1.6 mm

  (1 x 1.2 x t 0.064 in), 4 pieces of tape

3.2.1 Installing the GPS 15L-W

WARNING

DO NOT WORK WHILE POWER SOURCE IS SUPPLIED TO THE TRANSCEIVER.

1. Remove the top cover, top gasket and shielding plate from the transceiver.

Refer to step 1 in 2.1.6 Installing VGS-1 on page 8.

WARNING

DO NOT DAMAGE THE GASKET SEALS BETWEEN THE TRANSCEIVER AND COVER. ALSO, KEEP THE GASKET SEALS AWAY FROM DUST. IF THE GASKET IS DAMAGED OR COVERED WITH DUST, THE WATERPROOF AND DUST-PROOF CHARACTERISTICS OF THE TRANSCEIVER WILL DEGRADE.

2. Remove the panel.

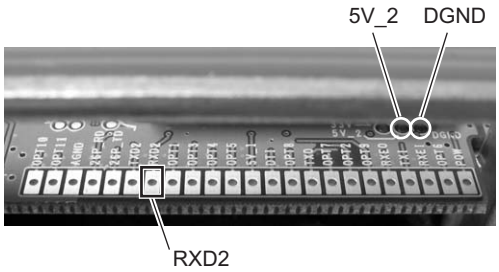
Refer to steps 1 and 2 in 2.4.8 Installing KRK-10 on page 16.

3. Solder each wire of the GPS 15L-W to each solder pad on the TX-RX PCB.

(3-1) Connect the Power terminal wire of the GPS 15L-W to the solder pad 5V_2 of the transceiver.

(3-2) Connect the Ground terminal wire of the GPS 15L-W to the solder pad DGND of the transceiver.

(3-3) Connect the TXD terminal wire of the GPS 15L-W to the solder pad RXD2 of the transceiver.

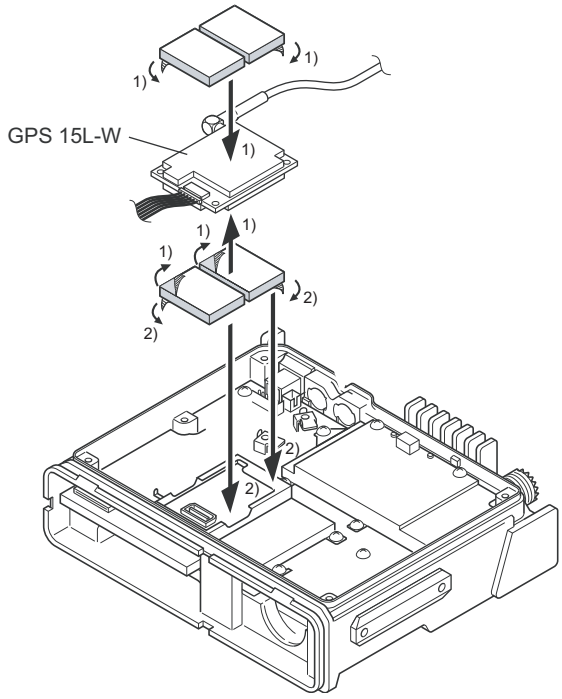


4. Install the GPS 15L-W.

● **If installing the GPS 15L-W only:**

(4-1) Attach the foam tape on both sides of the GPS 15L-W.

(4-2) Peel off the foam tape attached on the bottom of the GPS 15L-W and then install the GPS 15L-W to the TX-RX PCB.

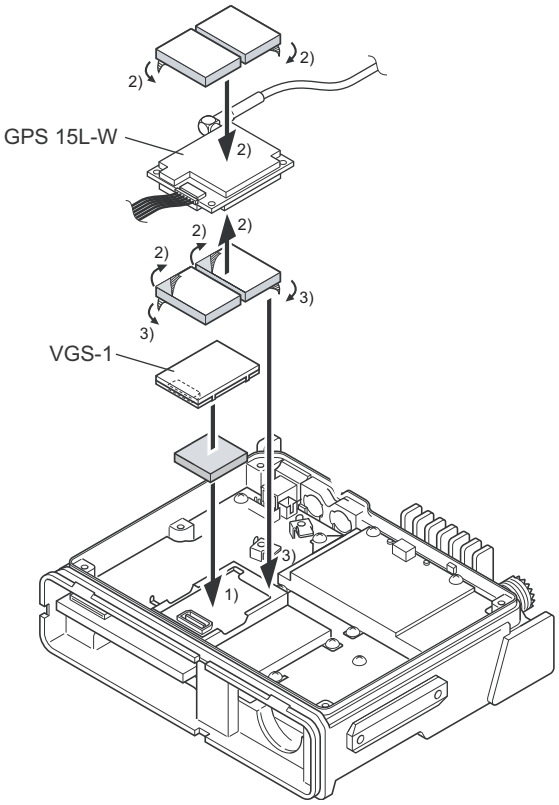


- **If installing both GPS 15L-W and VGS-1:**

(4-1) Install the VGS-1. (Refer to 2.1 VGS-1 on page 7.)

(4-2) Attach the foam tape on both sides of the GPS 15L-W.

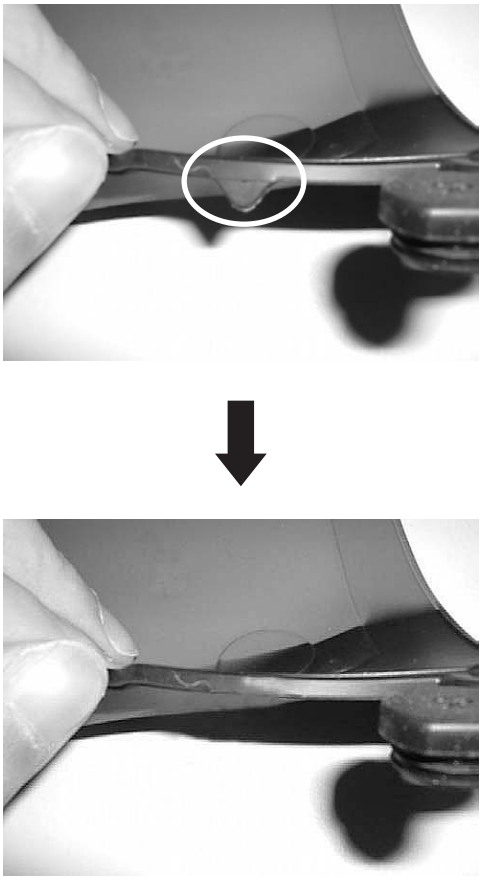
(4-3) Peel off the foam tape attached on the bottom of the GPS 15L-W, and then install the GPS 15L-W on the top of the VGS-1.



CAUTION

DO NOT PEEL OFF THE COVER OF THE FOAM TAPE ATTACHED ON TOP OF THE GPS 15L-W. OTHERWISE, THE COVER CANNOT BE REMOVED.

5. Cut off the part of the top gasket as illustrated in the figure using a nipper or similar tool.

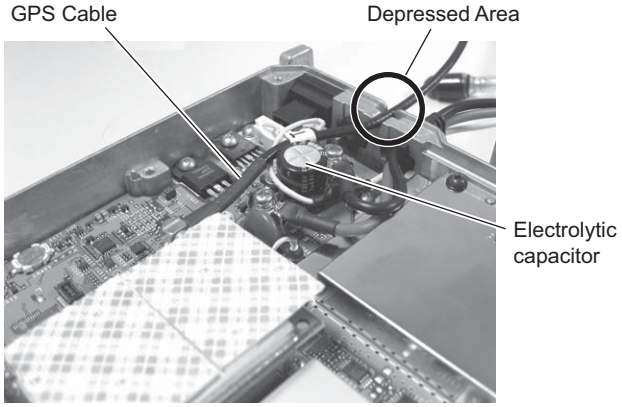


CAUTION

IF THE GASKET IS CUT AND REMOVED, THE WATER-PROOF AND DUST-PROOF CHARACTERISTICS CANNOT BE GUARANTEED.

6. Feed the GPS cable out from the unit.

Feed the GPS cable through the side of the condenser and then pull it out from the depressed area on the rear panel of the transceiver.



7. Connect the flat cable, and then attach the front panel of the transceiver.
8. Reinstall the shielding plate, top gasket, and top cover on the transceiver.

Note: The tightening torque for the screw is 5 kgf-cm (4.34 lbf-inch).

WARNING

- **INSTALL THE GPS 15L-W AS INSTRUCTED IN THE PROCEDURE ABOVE.**
- **KEEP DUST AND DIRT AWAY FROM THE ADHESIVE SURFACE OF THE TAPE TO AVOID CONTAMINATING THE TAPE SURFACE. ALSO, DO NOT USE OLD TAPE (DUE TO LOW ADHESION). OTHERWISE, THE TRANSCEIVER AND GPS 15L-W MAY BE DAMAGED FROM DROPPING IMPACT AND VEHICLE VIBRATION. WE RECOMMEND USING TAPE MANUFACTURED WITHIN THE PAST YEAR. THE TAPE MUST BE STORED IN A SEALED PLASTIC BAG IN A DARK AND COLD PLACE AFTER USE. OTHERWISE, THE ADHESION CHARACTERISTICS OF THE TAPE MAY DEGRADE.**

3.2.2 Configuration using KPG-111D

In order to use the GPS function, the information of the GPS receiver must be configured and then written to the transceiver by using KPG-111D after the GPS 15L-W is installed in the transceiver.

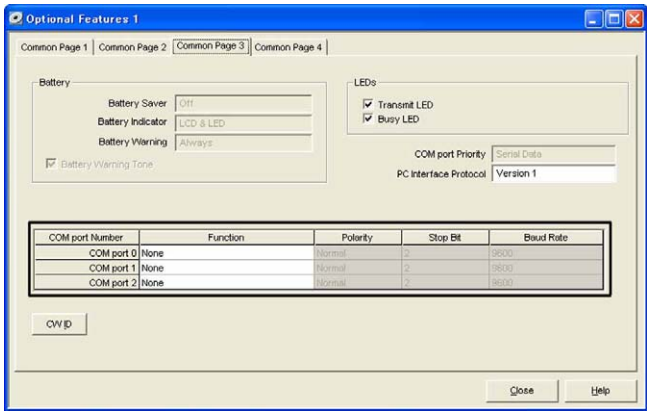
Follow the procedure below.

1. Run the KPG-111D software.

   To add the GPS receiver information to the current configuration data, data must be read from the transceiver or data that is stored previously must be used. Refer to FPRG 9.1 Read Data from the Transceiver for instructions on how to read configuration data from the transceiver.
2. Select “Optional Features 1” from the **Edit** pulldown menu.

   The **Optional Features 1** window opens.
3. Click the **Common Page 3** tab.

   COM port can be configured. Refer to FPRG 8.10.3 Common Page 3 Tab for instructions on how to configure various functions.



4. Configure the GPS function.

   Each function in the **Optional Features 2** window > **GPS** tab and **FleetSync** window > **GPS** tab can be configured if necessary. Refer to the FPRG 8.11.4 GPS Tab and 8.16.8 GPS Tab for the details of configuration.
5. Write the configuration data to the transceiver.

   Refer to FPRG 9.2 Write Data to the Transceiver for instructions on how to write configuration data to the transceiver.

3.3 Voice Scrambler Board (VS-1200-KW3)

VS-1200-KW3 manufactured by Midian Electronics can be installed in the transceiver.

VS-1200-KW3 is a Voice Scrambler Board that can be connected to the internal 26-pin connector. Voice Scrambler is the function to enhance secrecy in communications by scrambling audio signals. (Refer to FUNC 20.4 Voice Scrambler.)

Contact Midian Electronics for details of VS-1200-KW3.

■ Required Items

- Transceiver
- VS-1200-KW3
- Foam Tapes

  A: 3M Polyurethane Foam Tape (White) (No.4016)

  20 mm x 25 mm/ t 1.6 mm

  (0.8 x 1 x t 0.064 in), 1 pieces of tape

  B: 3M Polyurethane Foam Tape (White) (No.4008)

  20 mm x 25 mm/ t 3.2 mm

  (0.8 x 1 x t 0.13 inches), 4 pieces of tape

Note:

- Voice Scrambler can be used only in an Analog Conventional System and an LTR Trunking System.
- VS-1200-KW3 can be used only for a transceiver having firmware version 2.00.00 or later.
- If a Voice Scrambler Board has been installed to the transceiver, the transceiver may not transmit a signal immediately after the transceiver is turned ON. In this case, the transceiver will be able to transmit a signal in a matter of time after the transceiver is turned ON.

3.3.1 Installing VS-1200-KW3

WARNING

DO NOT WORK WHILE POWER SOURCE IS SUPPLIED TO THE TRANSCEIVER.

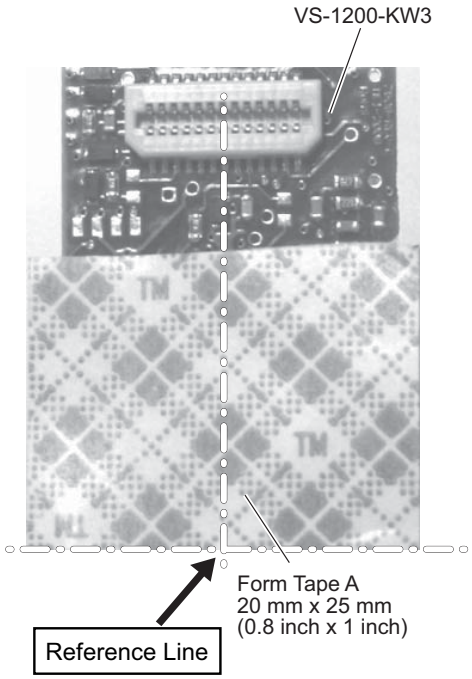
1. Remove the top cover, top gasket and shielding plate from the transceiver.

   Refer to step 1 in 2.1.6 Installing VGS-1 on page 8.

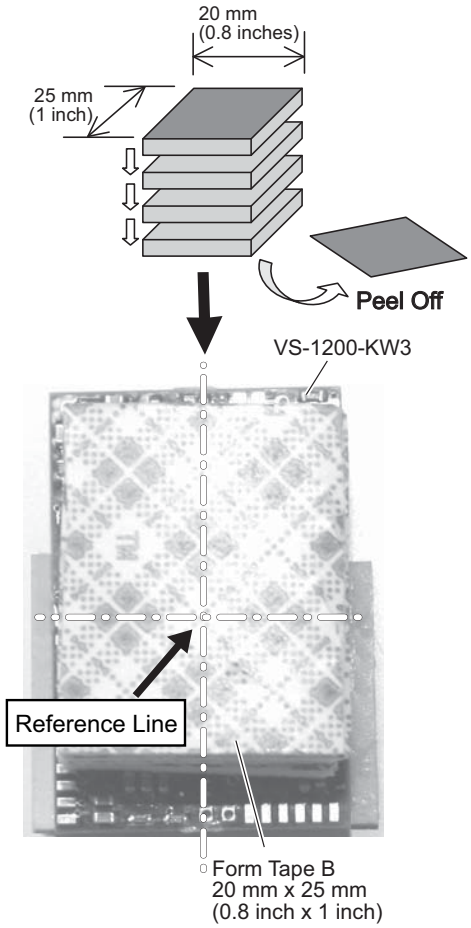
WARNING

DO NOT DAMAGE THE GASKET SEALS BETWEEN THE TRANSCEIVER AND COVER. ALSO, KEEP THE GASKET SEALS AWAY FROM DUST. IF THE GASKET IS DAMAGED OR COVERED WITH DUST, THE WATERPROOF AND DUST-PROOF CHARACTERISTICS OF THE TRANSCEIVER WILL DEGRADE.

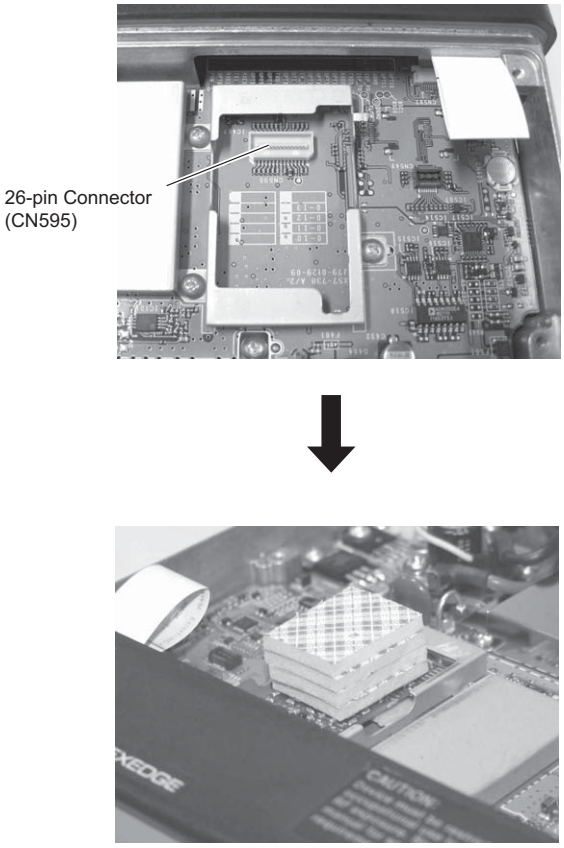
2. Attach the foam tape A to the connector side of the VS-1200-KW3 PCB.



3. Stack 4 pieces of foam tape B and then attach them on the solder pad side of the VS-1200-KW3 PCB.



4. Connect the connector on the VS-1200-KW3 to the 26-pin connector (CN595) on the TX-RX PCB.



5. Reinstall the shielding plate, top gasket, and top cover on the transceiver.

Note: The tightening torque for the screw is 5 kgf-cm (4.34 lbf-inch).

WARNING

- **INSTALL THE VS-1200-KW3 AS INSTRUCTED IN THE PROCEDURE ABOVE.**
- **KEEP DUST AND DIRT AWAY FROM THE ADHESIVE SURFACE OF THE TAPE TO AVOID CONTAMINATING THE TAPE SURFACE. ALSO, DO NOT USE OLD TAPE (DUE TO LOW ADHESION). OTHERWISE, THE TRANSCEIVER AND VS-1200-KW3 MAY BE DAMAGED FROM AN IMPACT RESULTING FROM DROPPING THE UNIT OR VEHICLE VIBRATION. WE RECOMMEND USING TAPE MANUFACTURED WITHIN THE PAST YEAR. THE TAPE MUST BE STORED IN A SEALED PLASTIC BAG IN A DARK AND COLD PLACE AFTER USE. OTHERWISE, THE ADHESION CHARACTERISTICS OF THE TAPE MAY DEGRADE.**

3.3.2 Configuration using KPG-111D

In order to use Voice Scrambler, parameters associated with the various functions of Voice Scrambler need to be configured and then written to the transceiver by using KPG-111D after VS-1200-KW3 is installed in the transceiver.

Follow the procedure below.

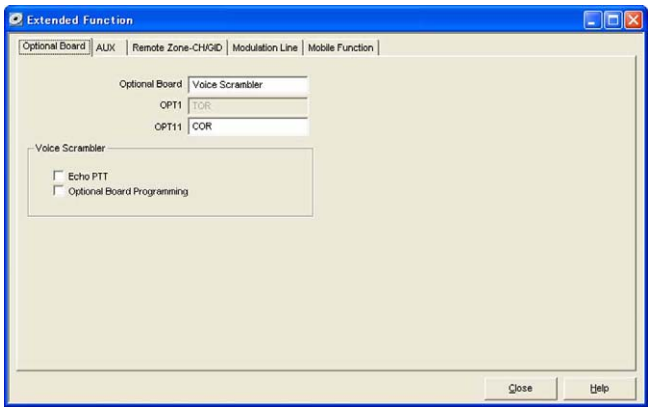
1. Run the KPG-111D software.

   The configuration data needs to be read from the transceiver or data preconfigured for the transceiver needs to be used in order to add the Voice Scrambler information to the current configuration data of the transceiver. Refer to FPRG 9.1 Read Data from the Transceiver for instructions on how to read configuration data from the transceiver.

2. Select “Extended Function” from the **Edit** menu.

   The **Extended Function** window opens.

3. Select “Voice Scrambler” from the **Optional Board** dropdown list, and select “COR” from the **OPT11** dropdown list.



   Echo PTT needs to be enabled by clicking on the **Echo PTT** checkbox in order to make the Voice Scrambler Board control the transmission behavior of the transceiver. (Refer to FUNC 20.2.4 Echo PTT.)

   In order to use Optional Board Programming Mode, click on the **Optional Board Programming** checkbox to enable Optional Board Programming. (Refer to FUNC 20.2.5 Optional Board Programming.)

4. Enable the Voice Scrambler for each channel or GID.

   (4-1) Click “Channel Edit” (or “GID Edit”) in the **Zone Information** window (Conventional Group or LTR Trunking system).

   The **Channel Edit** (or **GID Edit**) window opens.

   (4-2) Select a target zone and channel (or GID) in the **Zone** and **Channel** (or **GID**) edit boxes and then configure parameters associated with the various functions, such as transmit and receive frequencies (or Encode/ Decode ID).

   (4-3) Enable Voice Scrambler by clicking on the **Voice Scrambler** checkbox in the **Scrambler Setting** frame.

   (4-4) Select a Scrambler Code (1 to 16) to be used by the transceiver to scramble audio signals from the **Scrambler Code** dropdown list.

   Scrambler/Encryption needs to be assigned to any of the keys on the transceiver in the **Key Assignment** window as necessary. Pressing the key to which Scrambler/ Encryption is assigned toggles the status of Scrambler for the selected channel between enabled and disabled.

5. Write the configuration data to the transceiver.

   Refer to FPRG 9.2 Write Data to the Transceiver for instructions on how to write configuration data to the transceiver.

4 ADJUSTING THE TRANSCEIVER

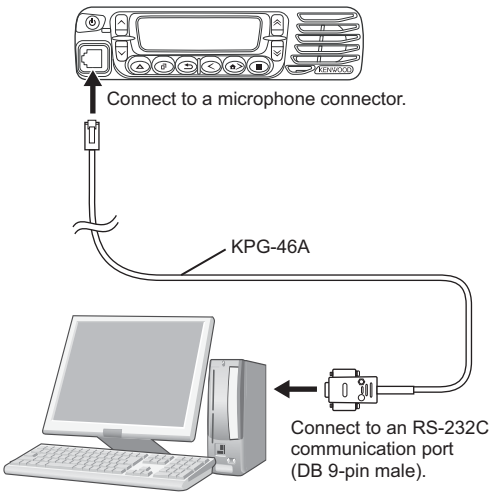
A service engineer can do various tests and adjustments using KPG-111D after activating the transceiver in Test Mode.

Follow the procedure below to activate the NX-700/ NX-800 in Test Mode.

1. Connect using the KPG-46A or KPG-46U programming cable the transceiver to a PC with KPG-111D installed.

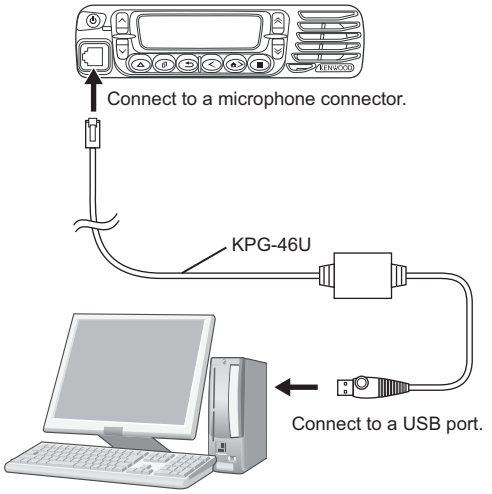
Refer to the following drawing.

- **If KPG-46A is Used:**

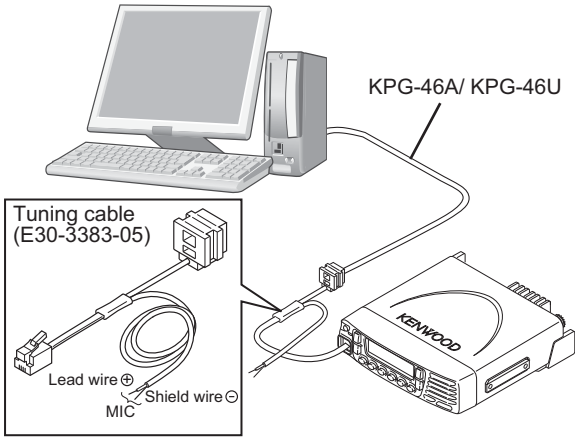


Note: If an RS-232C communication port is unavailable on a PC, the KPG-46A programming cable must be connected to a USB port on the PC after the USB port is converted into a DB 9-pin serial port by using KCT-53U.

- **If KPG-46U is Used:**



Note: To modulate a signal or to measure an output value of an audio frequency (AF) while adjusting the transceiver, the tuning cable (E30-3383-05) must be connected to the KPG-46A or KPG-46U programming cable as shown in the figure below.



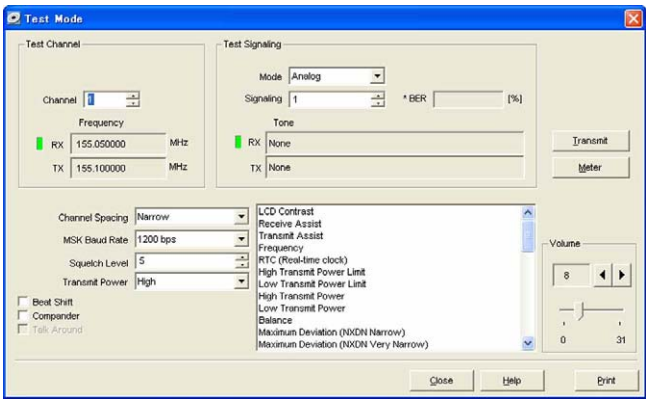
2. Start up KPG-111D, and then turn the transceiver ON.

3. Write configuration data to the transceiver.

Refer to FPRG 9.1 Read Data from the Transceiver for instructions on how to read configuration data from the transceiver.

4. Select “Test Mode” from the **Program** pulldown menu in KPG-111D.

The **Test Mode** dialog box opens.



Note:

- If there is no response from the transceiver, an error message box appears and the **Test Mode** dialog box does not open. Ensure that the transceiver is securely connected to a PC and the power source with the cable, and then try again.
- If the actual transceiver model name does not match the model name selected in KPG-111D, an error message box appears and the **Test Mode** dialog box does not open. Ensure that the transceiver Model Name and Market Code are selected correctly in KPG-111D, and then try again.
- If the Test Frequency preconfigured for the transceiver does not match the Test Frequency configured in KPG-111D, an error message box appears and the **Test Mode** dialog box does not open. Write the configuration data to the transceiver first, and then try again.

4.1 Test Mode

A service engineer can test the transceiver according to the following procedure.

1. Select the desired Test Channel number.
2. Select the desired Test Signaling number.
3. Click the “Transmit” button.

   Each time the “Transmit” button is pressed, KPG-111D toggles between transmit and receive modes.

In the **Test Mode** dialog box, a service engineer can configure data such as Test Channel and Test Signaling used for various tests and adjustments.

4.1.1 Channel (Test Channel)

Channel allows a service engineer to select the channel to be tested. Test Channel can be selected by directly entering the channel number, which is configured in the **Test Frequency** window, in the edit box or by clicking the spin buttons. (Refer to FPRG 8.29 Test Frequency Window.)

The receive frequency and transmit frequency configured for the selected channel number appear in the **RX** and **TX** information boxes for respective frequencies.

Range	1 to 16 (Channel number configured in the **Test Frequency** window)
Default	1

Note:

- A channel number that is not configured in the **Test Frequency** window cannot be selected.
- The **Channel** edit box is deactivated and the test channel cannot be changed while the transceiver is transmitting by clicking the “Transmit” button in the **Test Mode** dialog box or while the transceiver is measuring BER.

4.1.2 Mode (Test Signaling)

Mode allows a service engineer to select from the dropdown list whether to use the selected test channel as an Analog channel or an NXDN channel.

Range	Analog, NXDN
Default	Analog

Note: The **Mode** dropdown list is deactivated and the mode cannot be changed while the transceiver is transmitting by clicking the “Transmit” button in the **Test Mode** dialog box or while the transceiver is measuring BER.

4.1.3 Signaling (Test Signaling)

Signaling allows a service engineer to select the format of the test signaling. Test Signaling can be selected by directly entering the preconfigured test signaling number in the edit box or by clicking the spin buttons.

The signaling for receiving and the signaling for transmitting configured for the selected test signaling number appear in the **RX** and **TX** information boxes in Tone.

Range	**If “Analog” is selected from the Mode dropdown list:** 1 to 16 **If “NXDN” is selected from the Mode dropdown list:** 1 to 3, 7
Default	1

Table 4-1 Test Signaling (Analog)

No.	RX (Decode Signaling)	TX (Encode Signaling)
1	None	None
2	None	100 Hz Square Wave
3	LTR Data	LTR Data
4	QT 67.0 Hz	QT 67.0 Hz
5	QT 151.4 Hz	QT 151.4 Hz
6	QT 210.7 Hz	QT 210.7 Hz
7	QT 254.1 Hz	QT 254.1 Hz
8	DQT D023N	DQT D023N
9	DQT D754I	DQT D754I
10	DTMF Decode (CODE: 159D)	DTMF Encode (CODE: 159D)
11	None	DTMF Encode (CODE: 9)
12	2-tone Decode (A: 304.7 Hz, B: 3106.0 Hz)	2-tone Encode (A: 304.7 Hz, B: 3106.0 Hz)
13	Single Tone Decode (979.9 Hz)	Single Tone Encode (979.9 Hz)
14	None	Single Tone Encode (1000 Hz)
15	None	MSK PN9
16	MSK Decode	MSK Encode

Table 4-2 Test Signaling (NXDN)

No.	RX (Decode Signaling)	TX (Encode Signaling)
1	RAN 1	RAN 1
2	None	PN9
3	RAN 1	Maximum Deviation Pattern
7	None	FSW + PN9

Note:

- The test signaling format cannot be changed.
- The **Signaling** edit box is deactivated and the test signaling cannot be changed while the transceiver is transmitting by clicking the “Transmit” button in the **Test Mode** dialog box or while the transceiver is measuring BER.
- For NX-900/ NX-901, the test signaling No. 12 to 14 cannot be selected if “Analog” is selected from the **Mode** dropdown list.

4.1.4 BER (Test Signaling)

BER allows a service engineer to measure the Bit Error Rate (BER) of when the transceiver communicates on an NXDN digital channel.

1. Select “NXDN” from the **Mode** dropdown list in the **Test Signaling** frame.
2. Select “7” in the **Signaling** edit box of the **Test Signaling** frame.
3. Click on the **BER** checkbox to enable BER.

The BER measurement starts. The Bit Error Rate read from the transceiver appears in the **BER** information box and will be refreshed at 550-ms intervals.

4.1.5 Channel Spacing

Channel Spacing allows a service engineer to select bandwidth for the test channel from the dropdown list.

Available options vary depending on the transceiver model and the configuration for Test Signaling.

	Model	If “Analog” is selected from the Mode dropdown list:	If “NXDN” is selected from the Mode dropdown list:
Range	NX-700/ NX-700H/ NX-800/ NX-800H	Wide, Narrow	Narrow, Very Narrow
	NX-900	Wide 5k, Wide 4k, Narrow	Narrow, Very Narrow
	NX-901	Narrow	Narrow, Very Narrow
Default	NX-700/ NX-700H/ NX-800/ NX-800H/ NX-901	Narrow	Narrow
	NX-900	Wide 5k	Narrow

Note: The **Channel Spacing** dropdown list is deactivated and the bandwidth cannot be changed while the transceiver is transmitting by clicking the “Transmit” button in the **Test Mode** dialog box or while the transceiver is measuring BER.

4.1.6 MSK Baud Rate

MSK Baud Rate allows a service engineer to select the MSK Baud Rate used for FleetSync from the dropdown list.

Range	1200 bps, 2400 bps
Default	1200 bps

Note: The **MSK Baud Rate** dropdown list is deactivated and the MSK Baud Rate cannot be changed while the transceiver is transmitting by clicking the “Transmit” button in the **Test Mode** dialog box or while the transceiver is measuring BER.

4.1.7 Squelch Level

Squelch Level allows a service engineer to configure the Squelch Level by directly entering a value in the edit box or clicking the spin buttons.

Range	0 to 9
In steps of	1
Default	5

Note:

- The **Squelch Level** edit box is deactivated and the Squelch Level cannot be changed while the transceiver is transmitting by clicking the “Transmit” button in the **Test Mode** dialog box or while the transceiver is measuring BER.
- If “NXDN” is selected from the **Mode** dropdown list, the **Squelch Level** edit box is grayed out and the Squelch Level cannot be changed.

4.1.8 Transmit Power

Transmit Power allows a service engineer to select the transmit power for a Test Channel from the dropdown list.

Range	High, Low
Default	High

Note: The **Transmit Power** dropdown list is deactivated and the transmit power cannot be changed while the transceiver is transmitting by clicking the “Transmit” button in the **Test Mode** dialog box or while the transceiver is measuring BER.

4.1.9 Beat Shift

Beat Shift allows a service engineer to enable or disable the Beat Shift.

Beat Shift can be used to eliminate the influences of heterodyning in the transceiver caused by internal oscillators.

The harmonics of the oscillators may interfere with reception. This problem can be solved by slightly shifting the frequency of the oscillator.

Range	Check (Enable)	Enables the capability to shift the frequency of the oscillator in the transceiver.
	Uncheck (Disable)	Disables the capability to shift the frequency of the oscillator in the transceiver.
Default	Unchecked (Disabled)	

Note: The **Beat Shift** checkbox is deactivated and the configuration cannot be changed while the transceiver is transmitting by clicking the “Transmit” button in the **Test Mode** dialog box or while the transceiver is measuring BER.

4.1.10 Compander

Compander allows a service engineer to enable or disable the Compander.

Compander is a compound term made from the words “COMpressor” and “exPANDER”, and is a function designed to improve sound quality.

This function is used to improve the S/N ratio of voice communications by compressing the audio at the transmitting end of the communication path and expanding the audio at the receiving end of the path.

Range	Check (Enable)	Enables the Compander.
	Uncheck (Disable)	Disables the Compander.
Default	Unchecked (Disabled)	

Note:

- The **Compander** checkbox is deactivated and the configuration cannot be changed while the transceiver is transmitting a signal by clicking the “Transmit” button in the **Test Mode** dialog box or while the transceiver is measuring BER.
- The configuration cannot be changed if “NXDN” is selected from the **Mode** dropdown list.

4.1.11 Talk Around (NX-900/ NX-901 Only)

Talk Around allows a service engineer to enable or disable the Talk Around.

Talk Around is the function to communicate directly between transceivers without using a repeater. If the transceiver cannot communicate with a repeater since the repeater has been located in the distance, use of this function enables the direct communication between the transceivers.

Range	Check (Enable)	Enables the Talk Around.
	Uncheck (Disable)	Disables the Talk Around.
Default	Unchecked (Disabled)	

Note: The **Talk Around** checkbox is deactivated and the configuration cannot be changed while the transceiver is transmitting by clicking the “Transmit” button in the **Test Mode** dialog box or while the transceiver is measuring BER.

4.1.12 Transmit Button

A service engineer can alternate between transmit and receive by clicking the “Transmit” button.

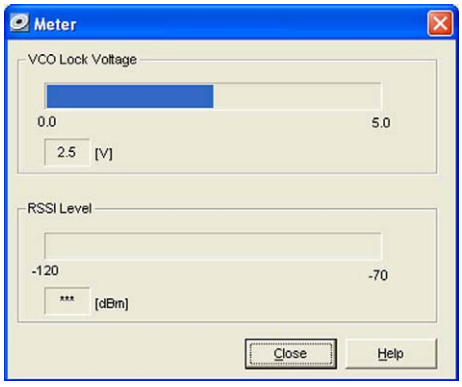
4.1.13 Meter Button

Clicking the “Meter” button activates the **Meter** dialog box to monitor the status of the transceiver. The lock voltage and RSSI level status of the transceiver can be detected.

The VCO Lock Voltage and RSSI Level values acquired from the transceiver at approximately 550 ms intervals appear respectively. The display range is as below:

- VCO Lock Voltage: 0.0 V to 5.0 V
- RSSI Level: -120 dBm to -70 dBm

“>-70” appears if the RSSI Level value is larger than -70 dBm, and “***” appears if the value is smaller than -120 dBm.



4.1.14 Print Button

A service engineer can print out adjustment values by clicking the “Print” button.

4.1.15 Volume

Volume allows a service engineer to adjust the volume level of the received audio by clicking the spin buttons or sliding the slider bar.

Range	0 to 31
In steps of	1
Default	8

Note: The **Volume** frame is deactivated and the function cannot be operated while the transceiver is transmitting by clicking the “Transmit” button in the **Test Mode** dialog box or while the transceiver is measuring BER.

4.1.16 Adjustment Item List

In the adjustment item list, the adjustment dialog box for the selected item opens by a service engineer selecting an adjustment item from the list box, and then double-clicking the item or pressing the **[Enter]** key on the keyboard. Refer to 4.3 Adjustment Procedure (NX-700/ NX-700H/ NX-800/ NX-800H) on page 48 or 4.4 Adjustment Procedure (NX-900/ NX-901) on page 91 for the adjustment method.

4.2 Tuning Mode

The adjustment dialog box for the selected item opens by selecting an adjustment item from the adjustment item list in the **Test Mode** dialog box, and then double-clicking the selected item or pressing the **[Enter]** key on the keyboard. A service engineer can adjust various items of the transceiver in each adjustment dialog box. Refer to 4.3 Adjustment Procedure (NX-700/ NX-700H/ NX-800/ NX-800H) on page 48 or 4.4 Adjustment Procedure (NX-900/ NX-901) on page 91 for the adjustment method.

4.2.1 About Adjustment Items

Following are the items that can be adjusted using KPG-111D.

■ NX-700/ NX-700H/ NX-800/ NX-800H

Table 4-3 Adjustment Item List (NX-700/ NX-700H/ NX-800/ NX-800H)

No.	Adjustment Item	Adjustment Point*1	Range	Operations for Transmission and Reception*2
1	LCD Contrast	Single Reference Level Adjustment	1 to 256	Reception only
2	Receive Assist	5 Reference Levels Adjustment	1 to 4096	Reception only
3	Transmit Assist	5 Reference Levels Adjustment	1 to 4096	Transmission/ Reception
4	Frequency	Single Reference Level Adjustment	1 to 4096	Reception only
5	RTC (Real-time clock)	Single Reference Level Adjustment Monitor	-62 to 62	Reception only
6	High Transmit Power Limit	5 Reference Levels Adjustment	1 to 256	Transmission/ Reception
7	Low Transmit Power Limit	5 Reference Levels Adjustment	1 to 256	Transmission/ Reception
8	High Transmit Power	5 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
9	Low Transmit Power	5 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
10	Balance	5 Reference Levels Adjustment	1 to 256	Transmission/ Reception
11	Maximum Deviation (NXDN Narrow)	5 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
12	Maximum Deviation (NXDN Very Narrow)	5 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
13	Maximum Deviation (Analog Narrow)	5 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
14	Maximum Deviation (Analog Wide)	5 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
15	QT Deviation (Analog Narrow)	Single Reference Level Adjustment	1 to 1024	Transmission/ Reception
16	QT Deviation (Analog Wide)	Single Reference Level Adjustment	1 to 1024	Transmission/ Reception
17	DQT Deviation (Analog Narrow)	Single Reference Level Adjustment	1 to 1024	Transmission/ Reception
18	DQT Deviation (Analog Wide)	Single Reference Level Adjustment	1 to 1024	Transmission/ Reception
19	LTR Deviation (Analog Narrow)	Single Reference Level Adjustment	1 to 1024	Transmission/ Reception
20	LTR Deviation (Analog Wide)	Single Reference Level Adjustment	1 to 1024	Transmission/ Reception
21	DTMF Deviation (Analog Narrow)	Single Reference Level Adjustment	1 to 1024	Transmission/ Reception
22	DTMF Deviation (Analog Wide)	Single Reference Level Adjustment	1 to 1024	Transmission/ Reception
23	Single Tone Deviation (Analog Narrow)	Single Reference Level Adjustment	1 to 1024	Transmission/ Reception
24	Single Tone Deviation (Analog Wide)	Single Reference Level Adjustment	1 to 1024	Transmission/ Reception
25	MSK Deviation (Analog Narrow)	Single Reference Level Adjustment	1 to 1024	Transmission/ Reception
26	MSK Deviation (Analog Wide)	Single Reference Level Adjustment	1 to 1024	Transmission/ Reception
27	CW ID Deviation (NXDN Very Narrow)	Single Reference Level Adjustment	1 to 1024	Transmission/ Reception
28	Sensitivity 1	5 Reference Levels Adjustment	1 to 256	Reception only
29	Sensitivity 2	5 Reference Levels Adjustment	1 to 256	Reception only
30	RSSI Reference (Analog Narrow)	5 Reference Levels Adjustment Monitor	1 to 256	Reception only

No.	Adjustment Item	Adjustment Point*1	Range	Operations for Transmission and Reception*2
31	RSSI Reference (Analog Wide)	5 Reference Levels Adjustment Monitor	1 to 256	Reception only
32	RSSI Reference (NXDN Very Narrow)	5 Reference Levels Adjustment Monitor	1 to 256	Reception only
33	Open Squelch (Analog Narrow)	5 Reference Levels Adjustment Monitor	1 to 256	Reception only
34	Open Squelch (Analog Wide)	5 Reference Levels Adjustment Monitor	1 to 256	Reception only
35	Open Squelch (NXDN Very Narrow)	5 Reference Levels Adjustment Monitor	1 to 256	Reception only
36	Low RSSI (Analog Narrow)	5 Reference Levels Adjustment Monitor	1 to 256	Reception only
37	Low RSSI (Analog Wide)	5 Reference Levels Adjustment Monitor	1 to 256	Reception only
38	Low RSSI (NXDN Very Narrow)	5 Reference Levels Adjustment Monitor	1 to 256	Reception only
39	High RSSI (Analog Narrow)	5 Reference Levels Adjustment Monitor	1 to 256	Reception only
40	High RSSI (Analog Wide)	5 Reference Levels Adjustment Monitor	1 to 256	Reception only
41	High RSSI (NXDN Very Narrow)	5 Reference Levels Adjustment Monitor	1 to 256	Reception only
42	Tight Squelch (Analog Narrow)	5 Reference Levels Adjustment Monitor	1 to 256	Reception only
43	Tight Squelch (Analog Wide)	5 Reference Levels Adjustment Monitor	1 to 256	Reception only

*1 For the adjustment items using single reference level adjustment monitor and 5 reference level adjustment monitor, the adjustment can be done by monitoring values sourced from the transceiver or external devices. Therefore, the values cannot directly be changed for these adjustment items.

*2 For the adjustment items to which “Reception only” applies, the “Transmit” button is grayed out and cannot be used. For the items to which “Transmission/ Reception” applies, clicking the “Transmit” button toggles the status of the transceiver between transmission and reception.

■ NX-900/ NX-901

Table 4-4 Adjustment Item List (NX-900/ NX-901)

No.	Adjustment Item	Adjustment Point*1	Range	Operations for Transmission and Reception*2
1	LCD Contrast	Single Reference Level Adjustment	1 to 256	Reception only
2	Receive Assist	2 Reference Levels Adjustment	1 to 4096	Reception only
3	Transmit Assist	4 Reference Levels Adjustment	1 to 4096	Transmission/ Reception
4	Frequency	Single Reference Level Adjustment	1 to 4096	Reception only
5	RTC (Real-time clock)	Single Reference Level Adjustment Monitor	-62 to 62	Reception only
6	High Transmit Power Limit	4 Reference Levels Adjustment	1 to 256	Transmission/ Reception
7	Low Transmit Power Limit	4 Reference Levels Adjustment	1 to 256	Transmission/ Reception
8	High Transmit Power	4 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
9	Low Transmit Power	4 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
10	Balance	4 Reference Levels Adjustment	1 to 256	Transmission/ Reception
11	Maximum Deviation (NXDN Narrow)	4 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
12	Maximum Deviation (NXDN Very Narrow)	4 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
13	Maximum Deviation (Analog Narrow)	4 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
14	Maximum Deviation (Analog Wide 4k) (NX-900 only)	4 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
15	Maximum Deviation (Analog Wide 5k) (NX-900 only)	4 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
16	QT Deviation (Analog Narrow)	2 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
17	QT Deviation (Analog Wide 4k) (NX-900 only)	2 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
18	QT Deviation (Analog Wide 5k) (NX-900 only)	2 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
19	DQT Deviation (Analog Narrow)	2 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
20	DQT Deviation (Analog Wide 4k) (NX-900 only)	2 Reference Levels Adjustment	1 to 1024	Transmission/ Reception

No.	Adjustment Item	Adjustment Point[*1]	Range	Operations for Transmission and Reception[*2]
21	DQT Deviation (Analog Wide 5k) (NX-900 only)	2 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
22	LTR Deviation (Analog Narrow)	2 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
23	LTR Deviation (Analog Wide 4k) (NX-900 only)	2 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
24	LTR Deviation (Analog Wide 5k) (NX-900 only)	2 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
25	DTMF Deviation (Analog Narrow)	2 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
26	DTMF Deviation (Analog Wide 4k) (NX-900 only)	2 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
27	DTMF Deviation (Analog Wide 5k) (NX-900 only)	2 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
28	MSK Deviation (Analog Narrow)	2 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
29	MSK Deviation (Analog Wide 4k) (NX-900 only)	2 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
30	MSK Deviation (Analog Wide 5k) (NX-900 only)	2 Reference Levels Adjustment	1 to 1024	Transmission/ Reception
31	CW ID Deviation (NXDN Very Narrow)	Single Reference Level Adjustment	1 to 1024	Transmission/ Reception
32	RSSI Reference (Analog Narrow)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only
33	RSSI Reference (Analog Wide 4k) (NX-900 only)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only
34	RSSI Reference (Analog Wide 5k) (NX-900 only)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only
35	RSSI Reference (NXDN Narrow) (NX-901 only)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only
36	RSSI Reference (NXDN Very Narrow)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only
37	Open Squelch (Analog Narrow)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only
38	Open Squelch (Analog Wide 4k) (NX-900 only)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only
39	Open Squelch (Analog Wide 5k) (NX-900 only)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only
40	Open Squelch (NXDN Narrow) (NX-901 only)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only
41	Open Squelch (NXDN Very Narrow)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only
42	Low RSSI (Analog Narrow)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only
43	Low RSSI (Analog Wide 4k) (NX-900 only)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only
44	Low RSSI (Analog Wide 5k) (NX-900 only)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only
45	Low RSSI (NXDN Narrow) (NX-901 only)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only
46	Low RSSI (NXDN Very Narrow)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only
47	High RSSI (Analog Narrow)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only
48	High RSSI (Analog Wide 4k) (NX-900 only)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only
49	High RSSI (Analog Wide 5k) (NX-900 only)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only
50	High RSSI (NXDN Narrow) (NX-901 only)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only
51	High RSSI (NXDN Very Narrow)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only
52	Tight Squelch (Analog Narrow)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only
53	Tight Squelch (Analog Wide 4k) (NX-900 only)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only
54	Tight Squelch (Analog Wide 5k) (NX-900 only)	3 Reference Levels Adjustment Monitor	1 to 256	Reception only

[*1] For the adjustment items using single reference level adjustment monitor and 3 reference level adjustment monitor, the adjustment can be done by monitoring values sourced from the transceiver or external devices. Therefore, the values cannot directly be changed for these adjustment items.

[*2] For the adjustment items to which “Reception only” applies, the “Transmit” button is grayed out and cannot be used. For the items to which “Transmission/ Reception” applies, clicking the “Transmit” button toggles the status of the transceiver between transmission and reception.

4.2.2 Adjustment Dialog Box

Following are basic operations in the adjustment dialog box.

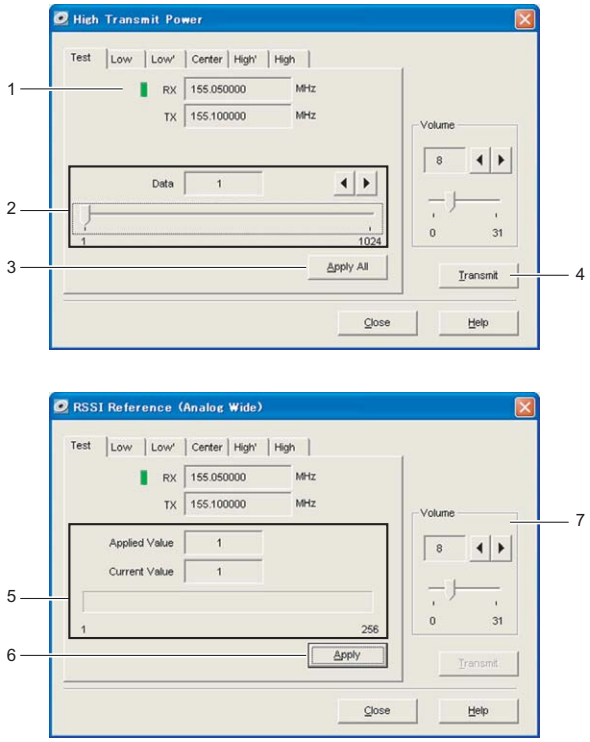


Table 4-5 Operation of each Item

No.	Items	Description
1	Transmit and Receive Frequencies	The transmit and receive frequencies configured for each adjustment item appear. The indicator lights green while the transceiver is receiving, and the indicator lights red while the transceiver is transmitting.
2	Tuning Data (Single Reference Level Adjustment, 2 Reference Levels Adjustment, 4 Reference Levels Adjustment, or 5 Reference Levels Adjustment)	The value configured for the transceiver appears. The value can be changed by clicking the spin buttons or sliding the slider bar. The value can also be changed by pressing the **[←]** or **[→]** key on the keyboard.
3	Apply All Button (2 Reference Levels Adjustment, 4 Reference Levels Adjustment and 5 Reference Levels Adjustment)	Clicking the “Apply All” button causes adjustment data in all tabs to be stored in the transceiver.
4	Transmit Button	Clicking the “Transmit” button causes the transceiver to start transmitting. Clicking the “Transmit” button again causes the transceiver to stop transmitting and restore receive mode. Refer to Table 4-3 Adjustment Item List (NX-700/ NX-700H/ NX-800/ NX-800H) on page 43 or Table 4-4 Adjustment Item List (NX-900/ NX-901) on page 44 for adjustment items for which the “Transmit” button cannot be used.
5	Tuning Data (Single Reference Level Adjustment Monitor, 3 Reference Levels Adjustment Monitor, and 5 Reference Levels Adjustment Monitor)	The value can be adjusted while viewing the Current Value. Clicking the “Apply” button will fix the current value, and the Applied Value will be renewed.
6	Apply Button (Single Reference Level Adjustment, Single Reference Level Adjustment Monitor, 3 Reference Levels Adjustment Monitor, and 5 Reference Levels Adjustment Monitor)	Clicking the “Apply” button causes the transceiver to start transmitting.
7	Volume	The volume level of the received audio can be adjusted. The volume level of the received audio can be changed by clicking the spin buttons or sliding the slider bar.

Note: There are items which require the configuration besides those mentioned above depending on the adjustment items. Refer to 4.3 Adjustment Procedure (NX-700/ NX-700H/ NX-800/ NX-800H) on page 48 or 4.4 Adjustment Procedure (NX-900/ NX-901) on page 91 for details of each adjustment item.

4.2.3 Measuring Instruments Required for Adjustments

Following is the list of measuring instruments required for adjustment of the transceiver. The transceiver can be adjusted by connecting the measuring instrument to the transceiver and adjusting the transceiver while observing various values.

Table 4-6 A List of Required Measuring Instrument

Measuring Instrument	Principal Specifications	
Standard Signal Generator (SSG)	Frequency Range	136 MHz to 174 MHz (NX-700/ NX-700H K-type) 450 MHz to 520 MHz (NX-800/ NX-800H K-type) 400 MHz to 470 MHz (NX-800/ NX-800H K2-type) 380 MHz to 400 MHz (NX-800H K3-type) 851 MHz to 870 MHz (Receive Frequency) (NX-900 K-type) 935 MHz to 941 MHz (Receive Frequency) (NX-901 K-type)
	Modulation	Frequency modulation and external modulation
	Output	-127 dBm/ 0.1 μV to greater than -20 dBm/ 22.4 mV
	* The following accuracy is required to adjust the frequency: • 0.003 ppm (NX-700/ NX-700H) • 0.001 ppm (NX-800/ NX-800H/ NX-900/ NX-901) A standard oscillator must be used if needed.	
Power Meter	Input Impedance	50Ω
	Operation Frequency	136 MHz to 174 MHz (NX-700/ NX-700H K-type) 450 MHz to 520 MHz (NX-800/ NX-800H K-type) 400 MHz to 470 MHz (NX-800/ NX-800H K2-type) 380 MHz to 400 MHz (NX-800H K3-type) 851 MHz to 870 MHz (Receive Frequency) (Talk Around) (NX-900 K-type) 806 MHz to 825 MHz (Transmit Frequency) (NX-900 K-type) 896 MHz to 902 MHz (Transmit Frequency) (NX-901 K-type)
	Measurement Capability	Vicinity of 100 W
Deviation Meter	Frequency Range	136 MHz to 174 MHz (NX-700/ NX-700H K-type) 450 MHz to 520 MHz (NX-800/ NX-800H K-type) 400 MHz to 470 MHz (NX-800/ NX-800H K2-type) 380 MHz to 400 MHz (NX-800H K3-type) 851 MHz to 870 MHz (Receive Frequency) (Talk Around) (NX-900 K-type) 806 MHz to 825 MHz (Transmit Frequency) (NX-900 K-type) 896 MHz to 902 MHz (Transmit Frequency) (NX-901 K-type)
Digital Voltmeter (DVM)	Measuring Range	10 mV to 20 V DC
	Input Impedance	High input impedance for minimum circuit loading
Oscilloscope	DC through 30 MHz	
High Sensitivity Frequency Counter	Frequency Range	10 Hz to 1000 MHz
	Frequency Stability	0.2 ppm or less
Ammeter	15 A or more	
AF Volt Meter (AFVM)	Frequency Range	50 Hz to 10 kHz
	Voltage Range	1 mV to 10 V
Audio Generator (AG)	Frequency Range	50 Hz to 5 kHz or more
	Output	0 V to 1 V
Distortion Meter	Capability	3% or less at 1 kHz
	Input Level	50 mV to 10 Vrms
4Ω Dummy Load	Approx. 4Ω, 20 W	
Regulated Power Supply	5 V to 20 V, approx. 20 A Useful if ammeter equipped	

Note: Refer to 4.3 Adjustment Procedure (NX-700/ NX-700H/ NX-800/ NX-800H) on page 48 or 4.4 Adjustment Procedure (NX-900/ NX-901) on page 91 for the adjustment method. A connection diagram illustrating connections to the instrument required for adjustment is provided in each adjustment procedure.

4.3 Adjustment Procedure (NX-700/ NX-700H/ NX-800/ NX-800H)

The adjustment procedure for the transceiver is described for each adjustment item. Ensure by referring to the connection diagram prior to starting the adjustment that the required instruments are connected to the transceiver. (Refer to 4.2.3 Measuring Instruments Required for Adjustments on page 47.)

Also, displays of KPG-111D for NX-700/ NX-700H are mainly used as display samples; however, the operating procedures for other Mobile models are identical to those for NX-700/ NX-700H.

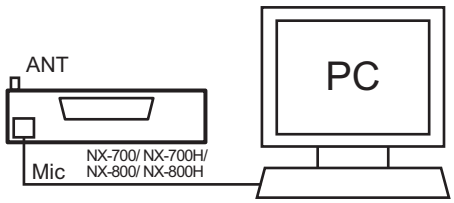
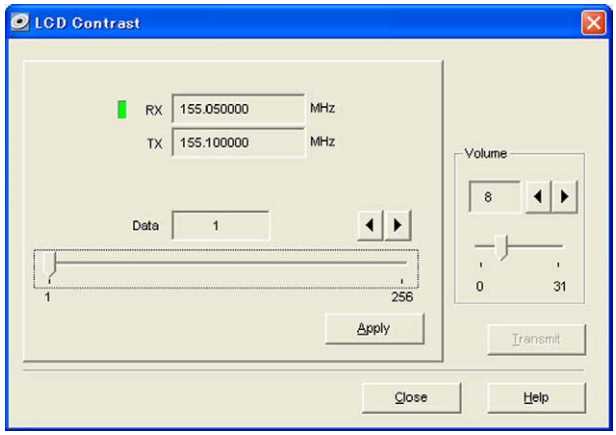
Note: The power-supply voltage while adjusting the transceiver is 13.6 V. Unless it is instructed otherwise, all adjustments must be done by setting 13.6 V for the power voltage.

4.3.1 LCD Contrast

NX-700/ NX-700H/ NX-800/ NX-800H

Outline

LCD Contrast allows a service engineer to adjust the contrast of the LCD display of the transceiver.

Connection Diagram	**Display for Operation**
	

Adjustment Procedure

1. Double-click “LCD Contrast” in the adjustment item list in the **Test Mode** dialog box.
2. Adjust data while observing the contrast of the LCD display of the transceiver.
   When the value is adjusted to larger or smaller, the contrast of the LCD display becomes darker or lighter, respectively.
3. Click the “Apply” button upon appearance of the desired display contrast.

Adjusted Value

PC Digit = 120 (reference value)

Remarks

- Since the contrast of the LCD display varies depending on the temperature, do not do this adjustment while the temperature of the transceiver is very high, such as immediately after the transceiver completes transmitting.
- This adjustment must be done after replacing the LCD assembly of the transceiver.

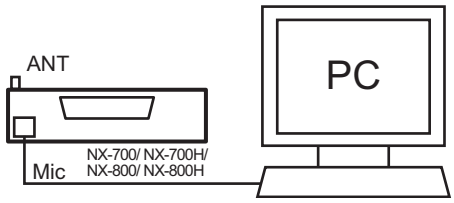
4.3.2 Receive Assist

NX-700/ NX-700H/ NX-800/ NX-800H

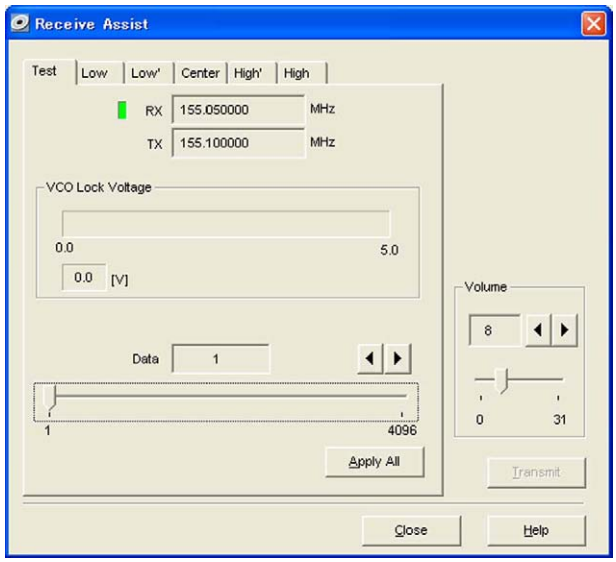
Outline

Receive Assist allows a service engineer to adjust the lock voltage of the Receive VCO in the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Receive Assist” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title (the **Low**, **Low’**, **Center**, **High’**, or **High** tab) to select an adjustment point.
3. Adjust the data until the voltage display in the **VCO Lock Voltage** frame indicates 3.0 V.
   Do not operate the transceiver for approximately 3 seconds after changing the data in order to allow the voltage to be stabilized.
4. Do the same adjustment for other adjustment points.
5. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

PC Displayed Voltage = 3.0 V (±0.1 V)

Remarks

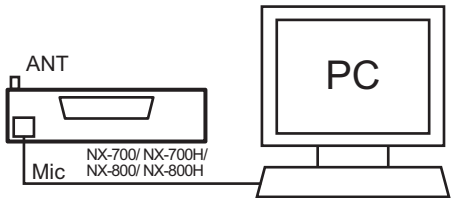
4.3.3 Transmit Assist

NX-700/ NX-700H/ NX-800/ NX-800H

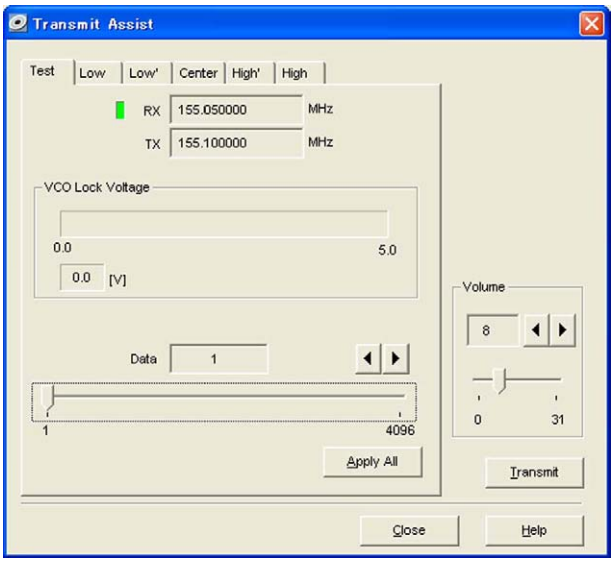
Outline

Transmit Assist allows a service engineer to adjust the lock voltage of the Transmit VCO in the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Transmit Assist” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title (the **Low**, **Low’**, **Center**, **High’**, or **High** tab) to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the voltage display in the **VCO Lock Voltage** frame indicates 3.0 V.
   Do not operate the transceiver for approximately 3 seconds after changing the data in order to allow the voltage to be stabilized.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

PC Displayed Voltage = 3.0 V (±0.1 V)

Remarks

During the Transmit Assist adjustment, no carrier is transmitted even if the transceiver is placed in transmit mode by clicking the “Transmit” button.

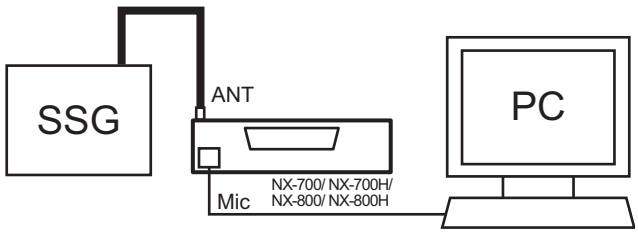
4.3.4 Frequency

NX-700/ NX-700H/ NX-800/ NX-800H

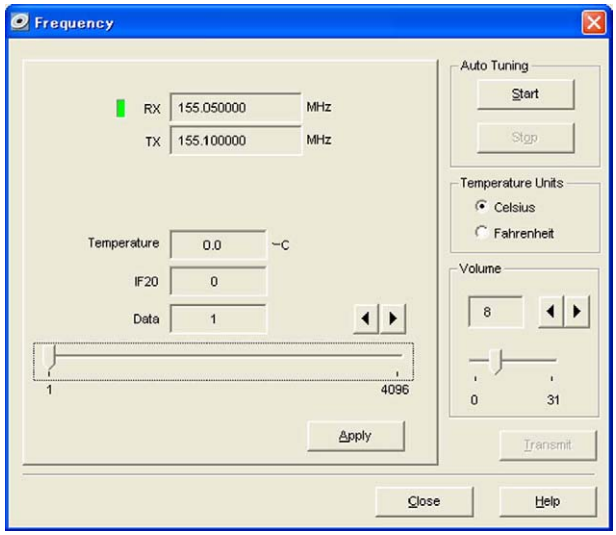
Outline

Frequency allows a service engineer to adjust the frequency of the transceiver. This adjustment can be done using SSG while the transceiver is in receive mode.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Frequency” in the adjustment item list in the **Test Mode** dialog box.
   A warning message box regarding adjustment conditions appears. Confirm the contents of the message, and then click the “OK” button to agree with the message and proceed.
2. Set the output signal level to be unmodulated and -20 dBm signal strength, and start sourcing the signal from an SSG.
   The value in the **IF20** information box will be stabilized.
3. Click the “Start” button in the **Auto Tuning** frame.
   “ADJUSTING...” appears in the dialog box during the adjustment. “AUTO TUNING OK” appears when the adjustment is completed.
4. Click the “Apply” button after the “AUTO TUNING OK” message appears.

Adjusted Value

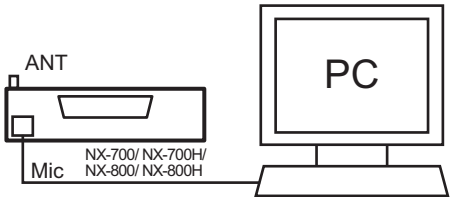
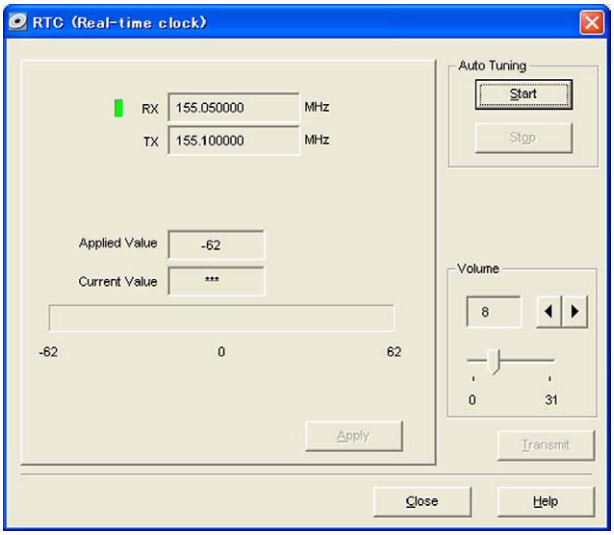
IF20 value = Within 0 ±12 digits (Digit range: -12 to +12)
The value will be adjusted to the above value automatically.

Remarks

- This adjustment must be done under the following conditions:
  Temperature Range: +23°C to +27°C (+73.4°F to +80.6°F)
  SSG accuracy: 0.003 ppm (NX-700/ NX-700H), 0.001 ppm (NX-800/ NX-800H)
- The temperature can be viewed in the **Temperature** information box. In the Temperature Unit frame, either Celsius (°C) or Fahrenheit (°F) can be selected for temperature unit.
- The following factors must be assured since these factors may result in the value in the **IF20** information box unstable:
  •The ANT input level is insufficient.
  •The input signal is modulated.
  •The entered frequency is wrong or significantly offset.
- The value in the **IF20** information box corresponds to the frequency offset when the transceiver receives a signal from SSG. If the local frequency oscillator of the transceiver has drifted, a value of 0 does not appear in the **IF20** information box. The value in the **IF20** information box should be reduced as close to 0 as possible by doing this adjustment.
- This adjustment can be done only in PC Test Mode to prevent the adjustment value from being changed easily.

4.3.5 RTC (Real-time clock)

NX-700/ NX-700H/ NX-800/ NX-800H

Outline	
RTC (Real-time clock) allows a service engineer to adjust the clock to minimize the clock drift when the clock of the transceiver time has drifted.	
Connection Diagram	**Display for Operation**
	

Adjustment Procedure

1. Double-click “RTC (Real-time clock)” in the adjustment item list of the **Test Mode** dialog box.
2. Click the “Start” button in the **Auto Tuning** frame.
   “ADJUSTING...” appears in the dialog box during the adjustment. “AUTO TUNING OK” appears when the adjustment is completed.
3. Click the “Apply” button after the “AUTO TUNING OK” message appears.

Adjusted Value

Remarks

This adjustment can be done by utilizing the microprocessor clock in the transceiver.

4.3.6 High Transmit Power Limit

NX-700/ NX-700H/ NX-800/ NX-800H

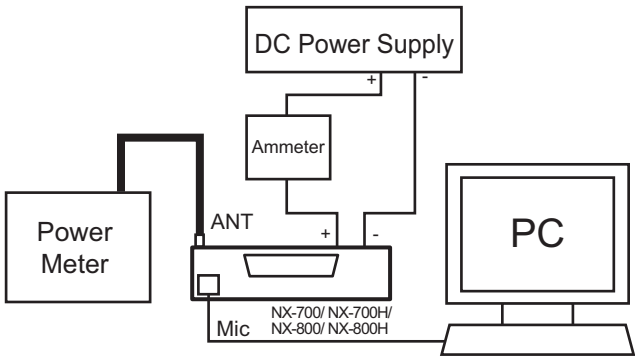
WARNING

DO NOT ATTEMPT TO ADJUST THE TRANSCEIVER'S TRANSMIT OUTPUT BEYOND ITS SPECIFICATIONS. IF THE TRANSCEIVER IS ADJUSTED BEYOND ITS SPECIFICATIONS, PARTS RELIABILITY MAY DETERIORATE AND THE OUTPUT POWER MAY DROP SUDDENLY AND BECOME UNSTABLE. THE TRANSCEIVER MAY ALSO BECOME EXTREMELY HOT.

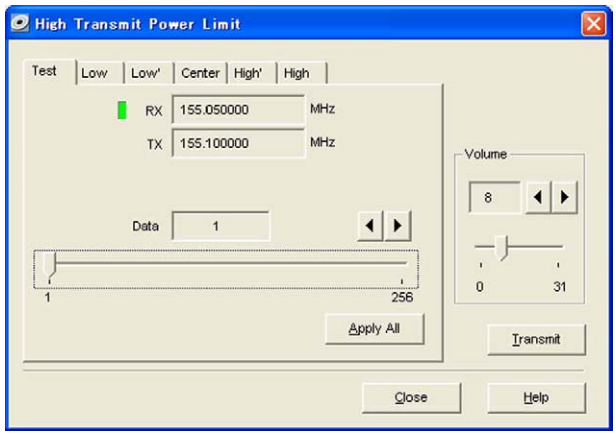
Outline

High Transmit Power Limit allows a service engineer to adjust the limit value of the transmit power (High Transmit Power) of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click "High Transmit Power Limit" in the adjustment item list in the **Test Mode** dialog box.
   A warning message box regarding adjustment of transmit power appears. Confirm the contents of the message, and then click the "OK" button to agree with the message and proceed.
2. Click a tab title (the **Low**, **Low'**, **Center**, **High'**, or **High** tab) to select an adjustment point.
3. Click the "Transmit" button.
4. Adjust the data until a power meter indicates the value below.
   The adjustment value varies depending on the transceiver model.

Model Name	Power Meter Value
NX-700 (K)	33 W (±3 W)
NX-700H (K)	53 W (±3 W)
NX-800 (K)	**Anything other than High' and High Tabs:** 33 W (±3 W) **High' and High Tabs:** 28 W (±3 W)
NX-800H (K)	**Anything other than High' and High Tabs:** 48 W (±3 W) **High' Tab:** 43 W (±3 W) **High Tab:** 38 W (±3 W)

Model Name	Power Meter Value
NX-800 (K2)	33 W (±3 W)
NX-800H (K2) (K3)	48 W (±3 W)

5. Do the same adjustment for other adjustment points.
6. Click the "Apply All" button after adjusting all adjustment points.

Adjusted Value

Refer to the table in step 4 of Adjustment Procedure.

Remarks

4.3.7 Low Transmit Power Limit

NX-700/ NX-700H/ NX-800/ NX-800H

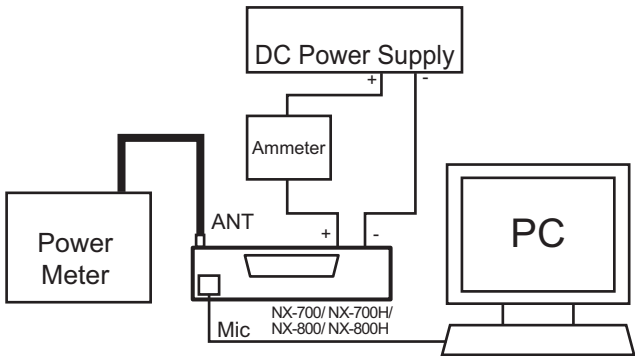
WARNING

DO NOT ATTEMPT TO ADJUST THE TRANSCEIVER'S TRANSMIT OUTPUT BEYOND ITS SPECIFICATIONS. IF THE TRANSCEIVER IS ADJUSTED BEYOND ITS SPECIFICATIONS, PARTS RELIABILITY MAY DETERIORATE AND THE OUTPUT POWER MAY DROP SUDDENLY AND BECOME UNSTABLE. THE TRANSCEIVER MAY ALSO BECOME EXTREMELY HOT.

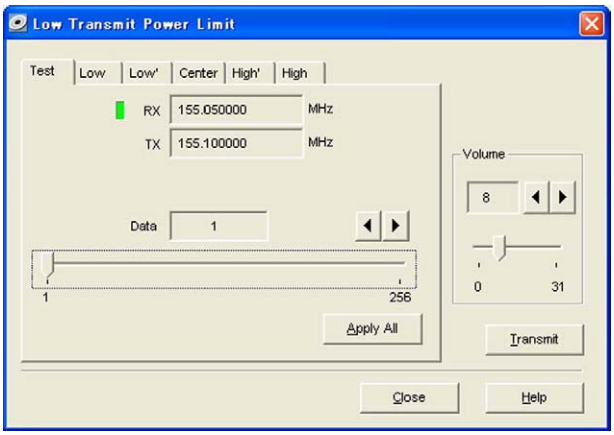
Outline

Low Transmit Power Limit allows a service engineer to adjust the limit value of the transmit power (Low Transmit Power) of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click "Low Transmit Power Limit" in the adjustment item list in the **Test Mode** dialog box.
   A warning message box regarding adjustment of transmit power appears. Confirm the contents of the message, and then click the "OK" button to agree with the message and proceed.
2. Click a tab title (the **Low**, **Low'**, **Center**, **High'**, or **High** tab) to select an adjustment point.
3. Click the "Transmit" button.
4. Adjust the data until a power meter indicates the value below.
   The adjustment value varies depending on the transceiver model.

Model Name	Power Meter Value
NX-700 (K)/ NX-800 (K) (K2)	15 W (±1 W)
NX-700H (K)/ NX-800H (K) (K2) (K3)	25 W (±1 W)

5. Do the same adjustment for other adjustment points.
6. Click the "Apply All" button after adjusting all adjustment points.

Adjusted Value

Refer to the table in step 4 of Adjustment Procedure.

Remarks

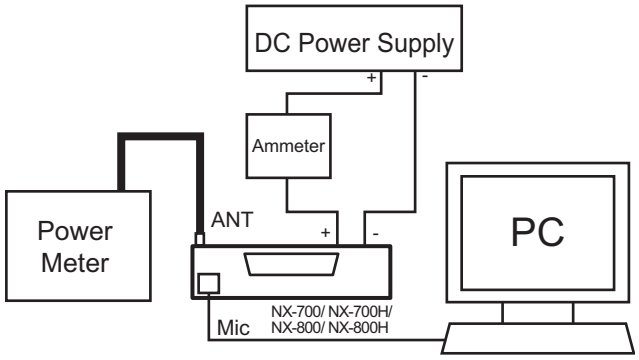
4.3.8 High Transmit Power

NX-700/ NX-700H/ NX-800/ NX-800H

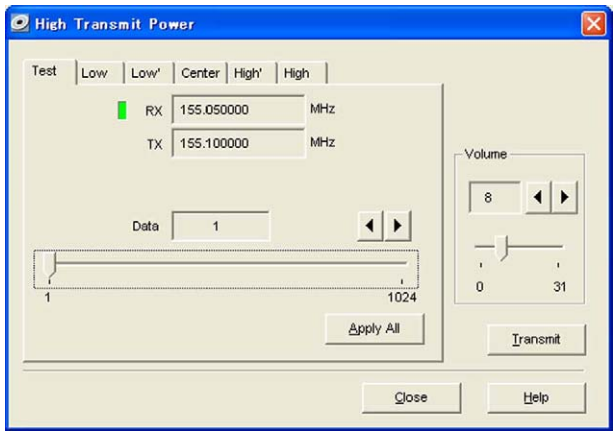
Outline

High Transmit Power allows a service engineer to adjust the High Transmit Power level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “High Transmit Power” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title (the **Low**, **Low’**, **Center**, **High’**, or **High** tab) to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until a power meter indicates the value below.
   The adjustment value varies depending on the transceiver model.

Model Name	Power Meter Value
NX-700 (K)	30 W (±1 W)
NX-700H (K)	50 W (±1 W)
NX-800 (K)	**Anything other than High’ and High Tabs:** 30 W (±1 W) **High’ and High Tabs:** 25 W (±1 W)
NX-800H (K)	**Anything other than High’ and High Tabs:** 45 W (±1 W) **High’ Tab:** 40 W (±1 W) **High Tab:** 35 W (±1 W)

Model Name	Power Meter Value
NX-800 (K2)	30 W (±1 W)
NX-800H (K2) (K3)	45 W (±1 W)

5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Refer to the table in step 4 of Adjustment Procedure.

Remarks

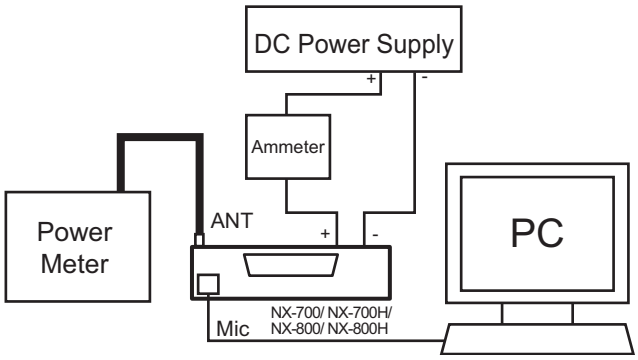
4.3.9 Low Transmit Power

NX-700/ NX-700H/ NX-800/ NX-800H

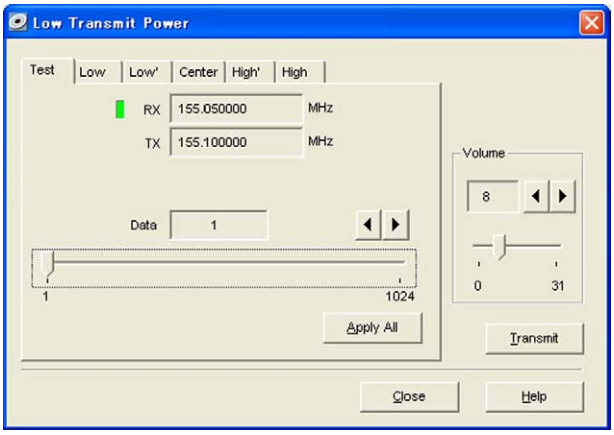
Outline

Low Transmit Power allows a service engineer to adjust the Low Transmit Power level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Low Transmit Power” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title (the **Low**, **Low’**, **Center**, **High’**, or **High** tab) to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until a power meter indicates the value below.
   The adjustment value varies depending on the transceiver model.

Model Name	Power Meter Value
NX-700 (K)/ NX-800 (K) (K2)	5 W (±0.5 W)
NX-700H (K)/ NX-800H (K) (K2) (K3)	10 W (±1 W)

5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Refer to the table in step 4 of Adjustment Procedure.

Remarks

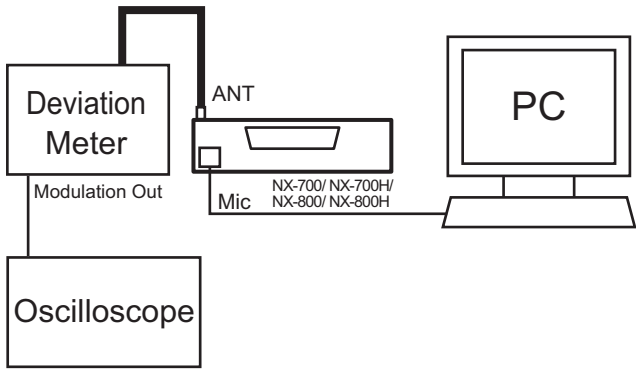
4.3.10 Balance

NX-700/ NX-700H/ NX-800/ NX-800H

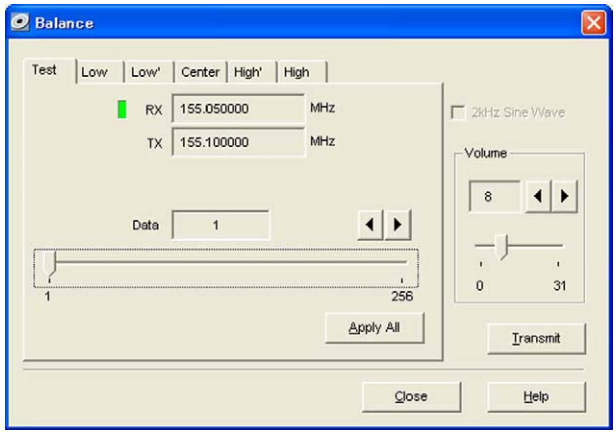
Outline

Balance allows a service engineer to adjust the deviation for audio frequency so that the transceiver can transmit a signal with the same deviation for any audio frequency.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Balance” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title (the **Low**, **Low'**, **Center**, **High'**, or **High** tab) to select an adjustment point.
3. Click the “Transmit” button.
   A 20 Hz sine wave signal is transmitted.
4. Measure the current deviation using the deviation meter.
5. Click on the **2 kHz Sine Wave** checkbox in order to enable 2 kHz Sine Wave.
   A 2 kHz Sine Wave signal is transmitted.
6. Adjust the value measured by a deviation meter.
   Transceivers except for NX-800H (K3): Adjust the data until the value measured by a deviation meter reaches a variation within ±0.2 dB of the value measured in step 4.
   NX-800H (K3): Adjust the data until the value measured by a deviation meter reaches a variation within -0.2 dB ±0.1 dB (-0.1 dB to -0.3 dB) of the value measured in step 4.
7. Do the same adjustment for other adjustment points.
8. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter: A value within ±0.2 dB after comparing a value at 20 Hz and 2 kHz (except for NX-800H (K3)).
Deviation Meter: A value within -0.2 dB ±0.1 dB (-0.1 dB to -0.3 dB) after comparing a value at 20 Hz and 2 kHz (NX-800H (K3) only).

Remarks

This adjustment must be done prior to adjusting items described in 4.3.11 Maximum Deviation (NXDN Narrow) to 4.3.27 CW ID Deviation (NXDN Very Narrow).

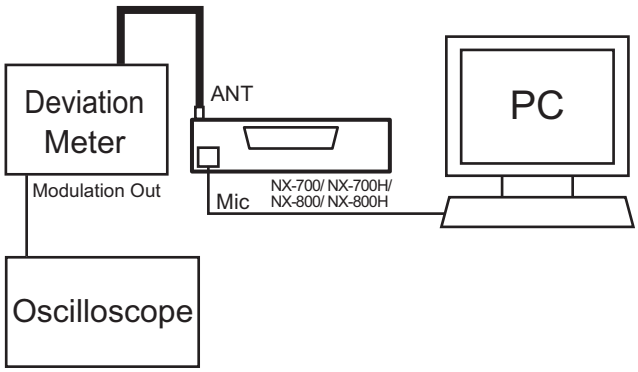
4.3.11 Maximum Deviation (NXDN Narrow)

NX-700/ NX-700H/ NX-800/ NX-800H

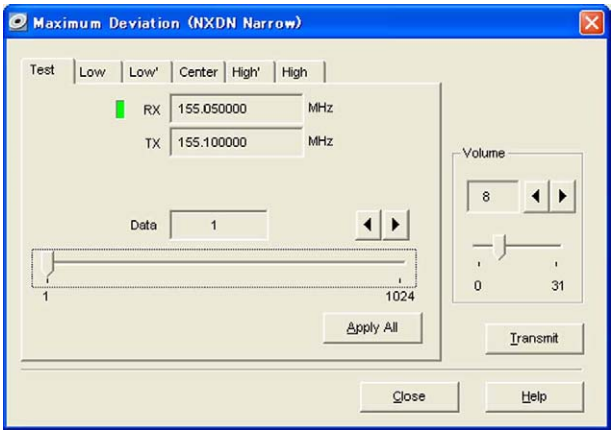
Outline

Maximum Deviation (NXDN Narrow) allows a service engineer to adjust the Maximum Deviation (NXDN Narrow) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Maximum Deviation (NXDN Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click a tab title (the **Low**, **Low’**, **Center**, **High’**, or **High** tab) to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches 3056 Hz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter = 3056 Hz (±0.05 kHz)

Remarks

Balance must be adjusted in advance. (Refer to 4.3.10 Balance on page 57.)

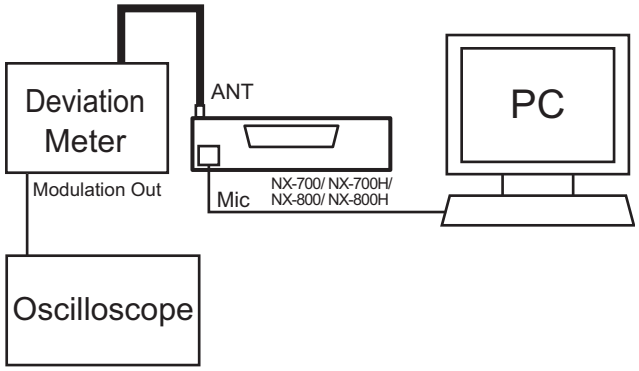
4.3.12 Maximum Deviation (NXDN Very Narrow)

NX-700/ NX-700H/ NX-800/ NX-800H

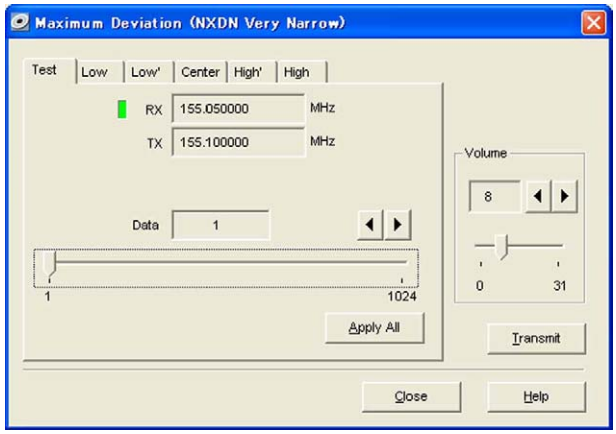
Outline

Maximum Deviation (NXDN Very Narrow) allows a service engineer to adjust the Maximum Deviation (NXDN Very Narrow) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Maximum Deviation (NXDN Very Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click a tab title (the **Low**, **Low’**, **Center**, **High’**, or **High** tab) to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches 1337 Hz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter = 1337 Hz (±0.05 kHz)

Remarks

Balance must be adjusted in advance. (Refer to 4.3.10 Balance on page 57.)

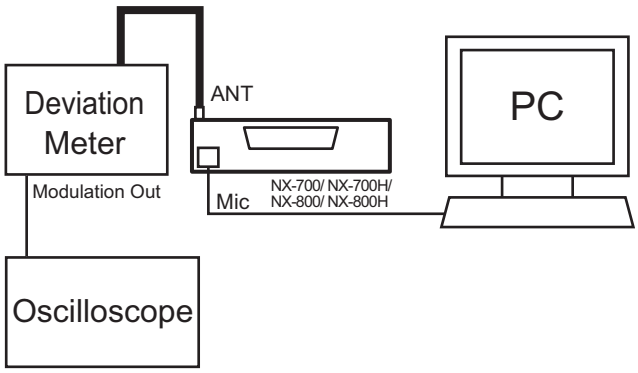
4.3.13 Maximum Deviation (Analog Narrow)

NX-700/ NX-700H/ NX-800/ NX-800H

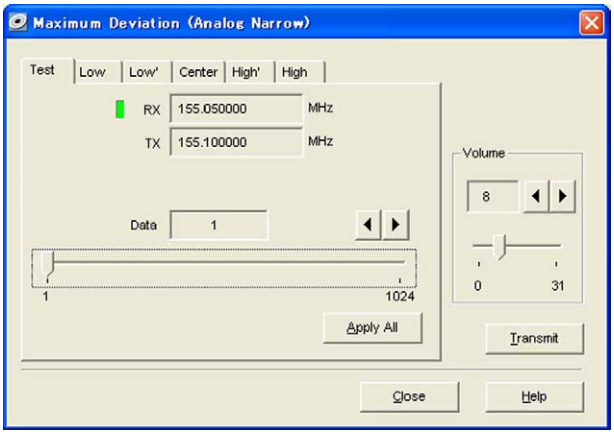
Outline

Maximum Deviation (Analog Narrow) allows a service engineer to adjust the Maximum Deviation (Analog Narrow) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Maximum Deviation (Analog Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click a tab title (the **Low**, **Low’**, **Center**, **High’**, or **High** tab) to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches in the range between 2050 Hz and 2150 Hz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 15 kHz
HPF: Off
Deviation Meter = 2050 Hz to 2150 Hz
If the same value as the value used for Maximum Deviation (NXDN Narrow) is configured, a deviation which is close to the above adjustment value can be acquired.

Remarks

Balance must be adjusted in advance. (Refer to 4.3.10 Balance on page 57.)

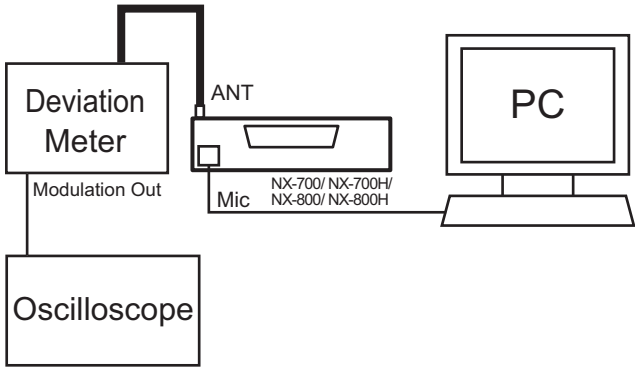
4.3.14 Maximum Deviation (Analog Wide)

NX-700/ NX-700H/ NX-800/ NX-800H

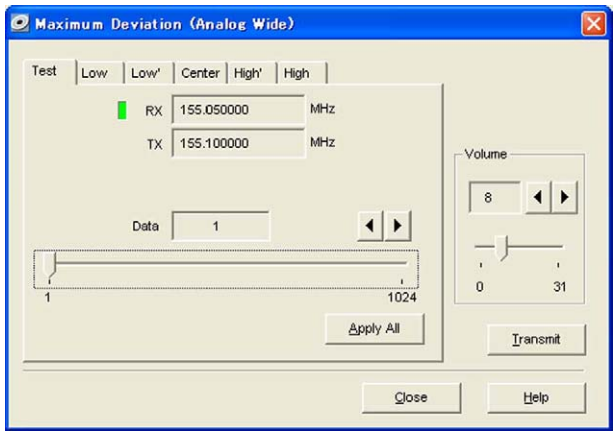
Outline

Maximum Deviation (Analog Wide) allows a service engineer to adjust the Maximum Deviation (Analog Wide) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Maximum Deviation (Analog Wide)” in the adjustment item list of the **Test Mode** dialog box.
2. Click a tab title (the **Low**, **Low’**, **Center**, **High’**, or **High** tab) to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches in the range between 4150 Hz and 4250 Hz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 15 kHz
HPF: Off
Deviation Meter = 4150 Hz to 4250 Hz
If the same value as the value used for Maximum Deviation (NXDN Narrow) is configured, a deviation which is close to the above adjustment value can be acquired.

Remarks

Balance must be adjusted in advance. (Refer to 4.3.10 Balance on page 57.)

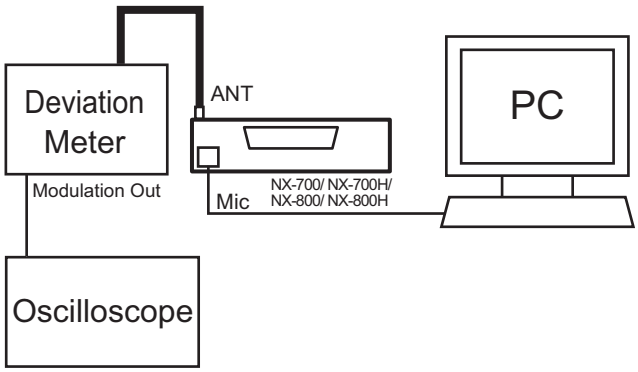
4.3.15 QT Deviation (Analog Narrow)

NX-700/ NX-700H/ NX-800/ NX-800H

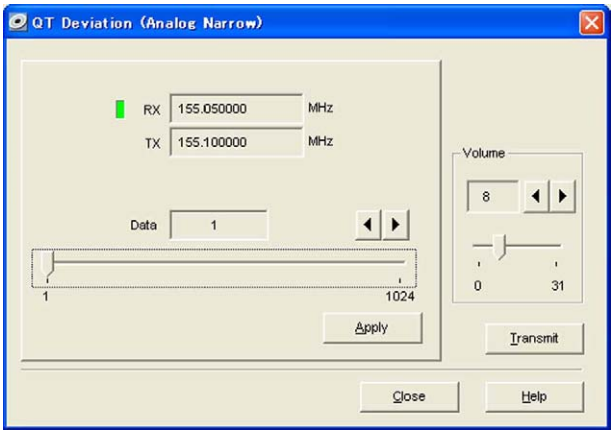
Outline

QT Deviation (Analog Narrow) allows a service engineer to adjust the QT Deviation (Analog Narrow) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “QT Deviation (Analog Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click the “Transmit” button.
3. Adjust the data until the value measured by a deviation meter reaches in the range between 0.30 kHz and 0.40 kHz.
4. Click the “Apply” button.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter = 0.30 kHz to 0.40 kHz
If a value of 513 is configured for the Data value, a deviation which is close to the above adjustment value can be acquired.

Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Narrow). (Refer to 4.3.10 Balance on page 57, 4.3.13 Maximum Deviation (Analog Narrow) on page 60.)

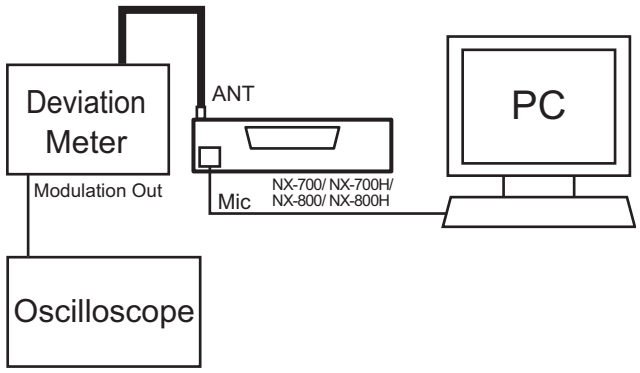
4.3.16 QT Deviation (Analog Wide)

NX-700/ NX-700H/ NX-800/ NX-800H

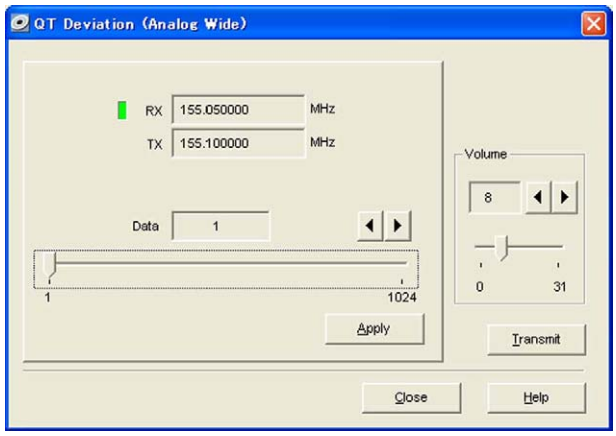
Outline

QT Deviation (Analog Wide) allows a service engineer to adjust the QT Deviation (Analog Wide) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “QT Deviation (Analog Wide)” in the adjustment item list of the **Test Mode** dialog box.
2. Click the “Transmit” button.
3. Adjust the data until the value measured by a deviation meter reaches in the range between 0.70 kHz and 0.80 kHz.
4. Click the “Apply” button.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter = 0.70 kHz to 0.80 kHz
If a value of 513 is configured for the Data value, a deviation which is close to the above adjustment value can be acquired.

Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Wide). (Refer to 4.3.10 Balance on page 57, 4.3.14 Maximum Deviation (Analog Wide) on page 61.)

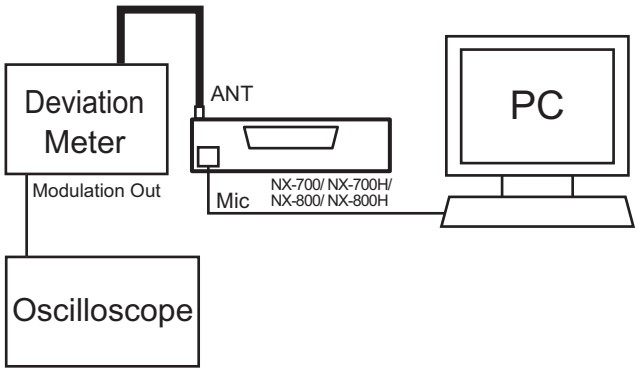
4.3.17 DQT Deviation (Analog Narrow)

NX-700/ NX-700H/ NX-800/ NX-800H

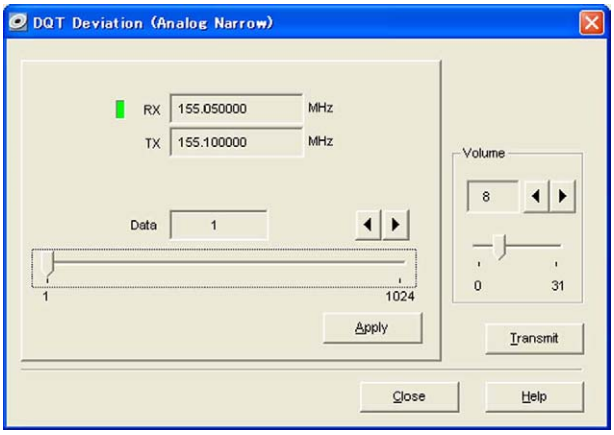
Outline

DQT Deviation (Analog Narrow) allows a service engineer to adjust the DQT Deviation (Analog Narrow) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “DQT Deviation (Analog Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click the “Transmit” button.
3. Adjust the data until the value measured by a deviation meter reaches in the range between 0.30 kHz and 0.40 kHz.
4. Click the “Apply” button.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter = 0.30 kHz to 0.40 kHz
If a value of 430 is configured for the Data value, a deviation which is close to the above adjustment value can be acquired.

Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Narrow). (Refer to 4.3.10 Balance on page 57, 4.3.13 Maximum Deviation (Analog Narrow) on page 60.)

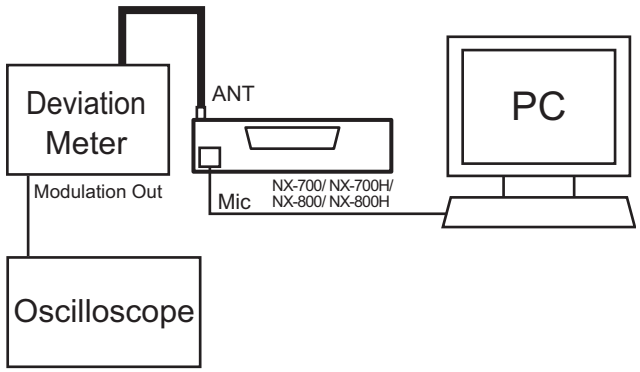
4.3.18 DQT Deviation (Analog Wide)

NX-700/ NX-700H/ NX-800/ NX-800H

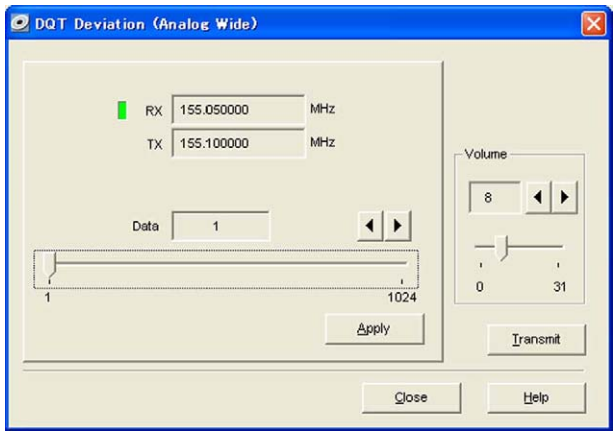
Outline

DQT Deviation (Analog Wide) allows a service engineer to adjust the DQT Deviation (Analog Wide) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “DQT Deviation (Analog Wide)” in the adjustment item list of the **Test Mode** dialog box.
2. Click the “Transmit” button.
3. Adjust the data until the value measured by a deviation meter reaches in the range between 0.70 kHz and 0.80 kHz.
4. Click the “Apply” button.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter = 0.70 kHz to 0.80 kHz
If a value of 430 is configured for the Data value, a deviation which is close to the above adjustment value can be acquired.

Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Wide). (Refer to 4.3.10 Balance on page 57, 4.3.14 Maximum Deviation (Analog Wide) on page 61.)

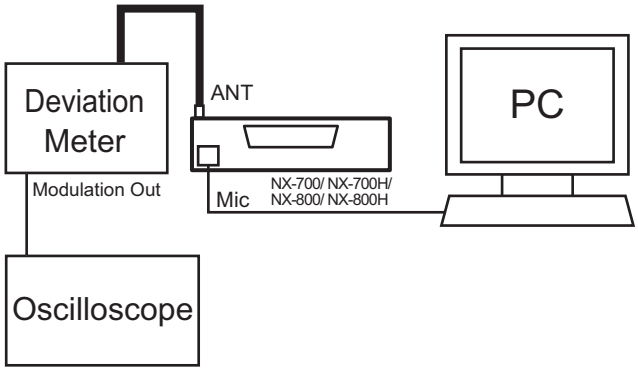
4.3.19 LTR Deviation (Analog Narrow)

NX-700/ NX-700H/ NX-800/ NX-800H

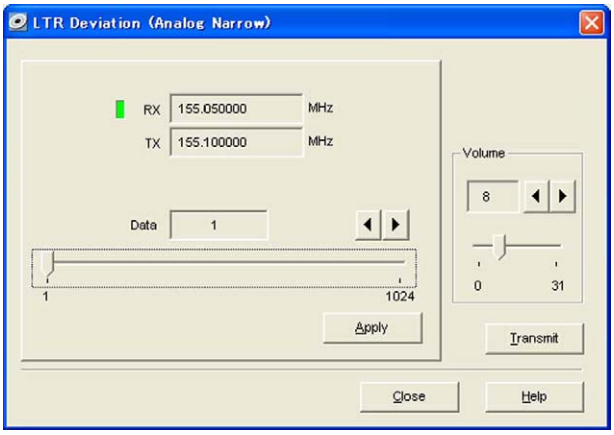
Outline

LTR Deviation (Analog Narrow) allows a service engineer to adjust the LTR Deviation (Analog Narrow) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “LTR Deviation (Analog Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click the “Transmit” button.
3. Adjust the data until the value measured by a deviation meter reaches in the range between 0.70 kHz and 0.80 kHz.
4. Click the “Apply” button.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter = 0.70 kHz to 0.80 kHz
If a value of 465 is configured for the Data value, a deviation which is close to the above adjustment value can be acquired.

Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Narrow). (Refer to 4.3.10 Balance on page 57, 4.3.13 Maximum Deviation (Analog Narrow) on page 60.)

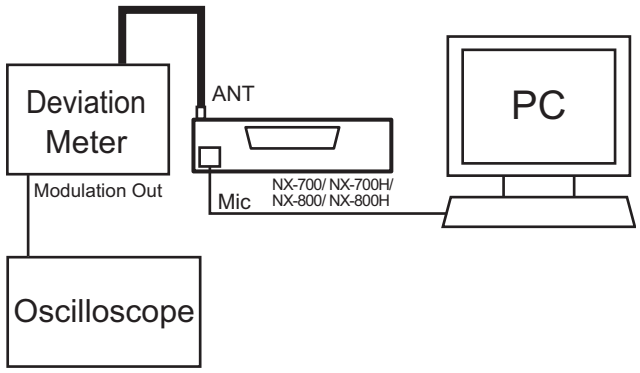
4.3.20 LTR Deviation (Analog Wide)

NX-700/ NX-700H/ NX-800/ NX-800H

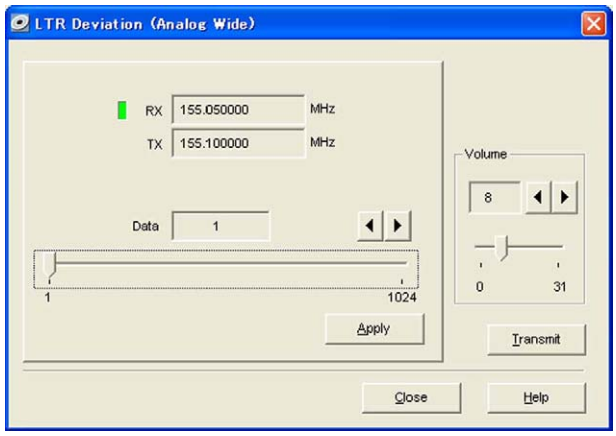
Outline

LTR Deviation (Analog Wide) allows a service engineer to adjust the LTR Deviation (Analog Wide) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “LTR Deviation (Analog Wide)” in the adjustment item list of the **Test Mode** dialog box.
2. Click the “Transmit” button.
3. Adjust the data until the value measured by a deviation meter reaches in the range between 0.95 kHz and 1.05 kHz.
4. Click the “Apply” button.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter = 0.95 kHz to 1.05 kHz
If a value of 465 is configured for the Data value, a deviation which is close to the above adjustment value can be acquired.

Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Wide). (Refer to 4.3.10 Balance on page 57, 4.3.14 Maximum Deviation (Analog Wide) on page 61.)

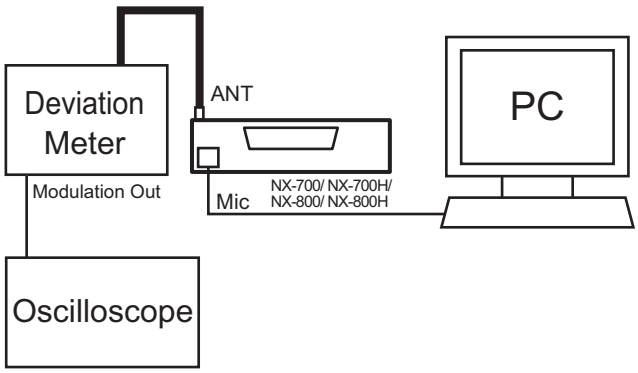
4.3.21 DTMF Deviation (Analog Narrow)

NX-700/ NX-700H/ NX-800/ NX-800H

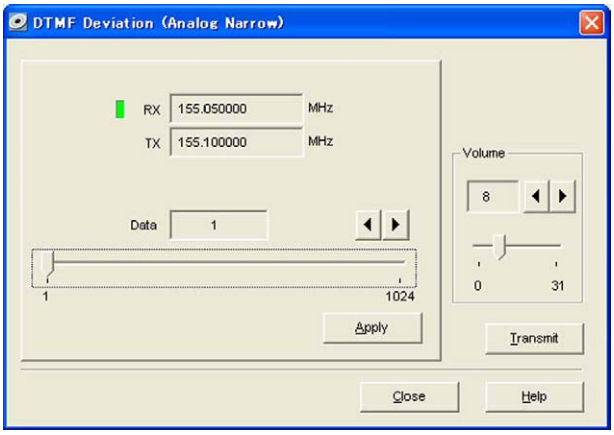
Outline

DTMF Deviation (Analog Narrow) allows a service engineer to adjust the DTMF Deviation (Analog Narrow) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “DTMF Deviation (Analog Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click the “Transmit” button.
3. Adjust the data until the value measured by a deviation meter reaches in the range between 1.45 kHz and 1.55 kHz.
4. Click the “Apply” button.

Adjusted Value

Emphasis: Off
LPF: 15 kHz
HPF: Off
Deviation Meter = 1.45 kHz to 1.55 kHz
If a value of 650 is configured for the Data value, a deviation which is close to the above adjustment value can be acquired.

Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Narrow). (Refer to 4.3.10 Balance on page 57, 4.3.13 Maximum Deviation (Analog Narrow) on page 60.)

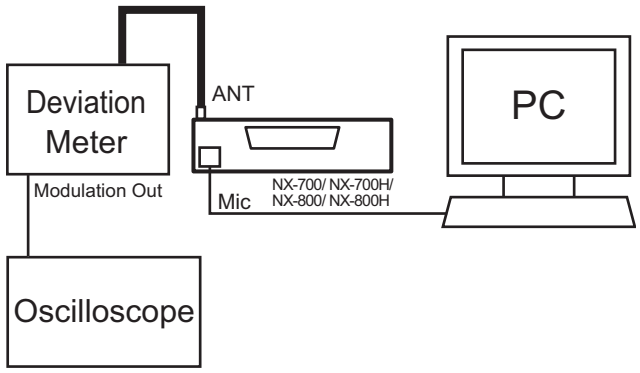
4.3.22 DTMF Deviation (Analog Wide)

NX-700/ NX-700H/ NX-800/ NX-800H

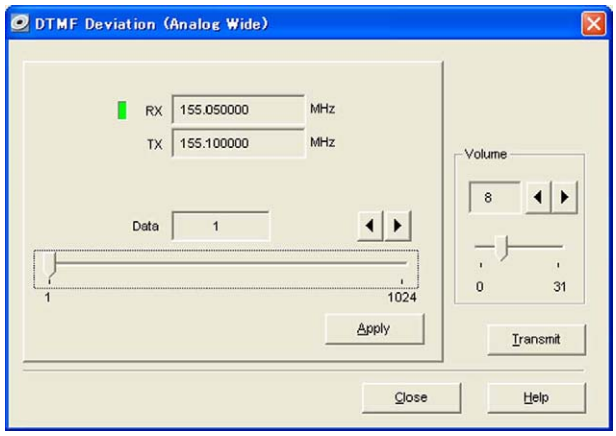
Outline

DTMF Deviation (Analog Wide) allows a service engineer to adjust the DTMF Deviation (Analog Wide) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “DTMF Deviation (Analog Wide)” in the adjustment item list of the **Test Mode** dialog box.
2. Click the “Transmit” button.
3. Adjust the data until the value measured by a deviation meter reaches in the range between 2.95 kHz and 3.05 kHz.
4. Click the “Apply” button.

Adjusted Value

Emphasis: Off
LPF: 15 kHz
HPF: Off
Deviation Meter = 2.95 kHz to 3.05 kHz
If a value of 650 is configured for the Data value, a deviation which is close to the above adjustment value can be acquired.

Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Wide). (Refer to 4.3.10 Balance on page 57, 4.3.14 Maximum Deviation (Analog Wide) on page 61.)

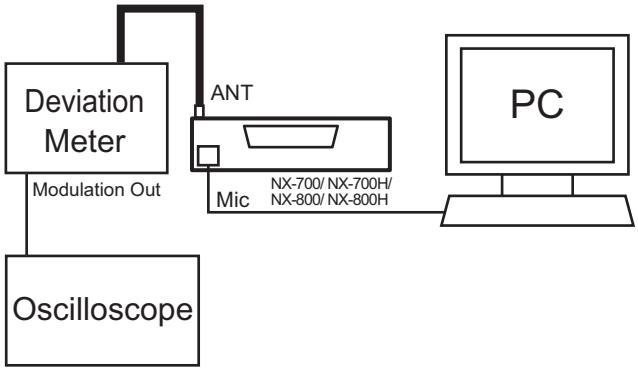
4.3.23 Single Tone Deviation (Analog Narrow)

NX-700/ NX-700H/ NX-800/ NX-800H

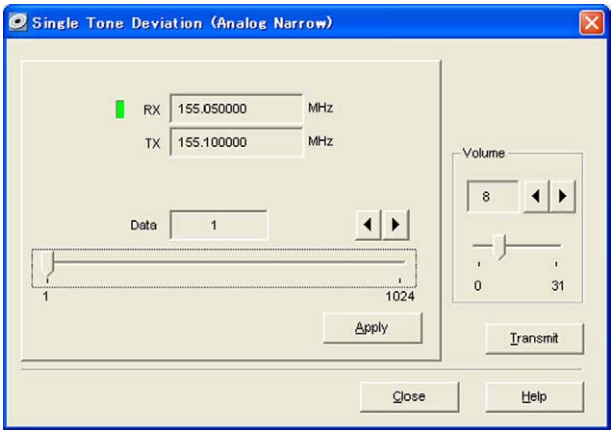
Outline

Single Tone Deviation (Analog Narrow) allows a service engineer to adjust the Deviation (Analog Narrow) level used for 2-tone code.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Single Tone Deviation (Analog Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click the “Transmit” button.
3. Adjust the data until the value measured by a deviation meter reaches in the range between 1.45 kHz and 1.55 kHz.
4. Click the “Apply” button.

Adjusted Value

Emphasis: Off
LPF: 15 kHz
HPF: Off
Deviation Meter = 1.45 kHz to 1.55 kHz
If a value of 513 is configured for the Data value, a deviation which is close to the above adjustment value can be acquired.

Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Narrow). (Refer to 4.3.10 Balance on page 57, 4.3.13 Maximum Deviation (Analog Narrow) on page 60.)

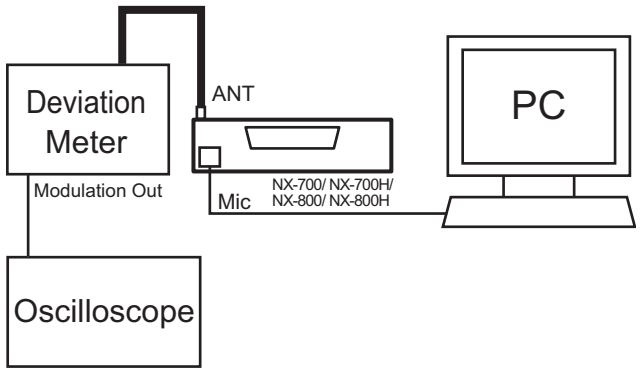
4.3.24 Single Tone Deviation (Analog Wide)

NX-700/ NX-700H/ NX-800/ NX-800H

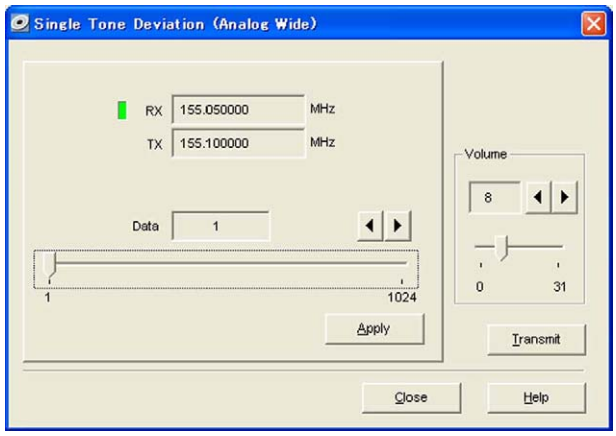
Outline

Single Tone Deviation (Analog Wide) allows a service engineer to adjust the Deviation (Analog Wide) level used for 2-tone code.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Single Tone Deviation (Analog Wide)” in the adjustment item list of the **Test Mode** dialog box.
2. Click the “Transmit” button.
3. Adjust the data until the value measured by a deviation meter reaches in the range between 2.95 kHz and 3.05 kHz.
4. Click the “Apply” button.

Adjusted Value

Emphasis: Off
LPF: 15 kHz
HPF: Off
Deviation Meter = 2.95 kHz to 3.05 kHz
If a value of 513 is configured for the Data value, a deviation which is close to the above adjustment value can be acquired.

Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Wide). (Refer to 4.3.10 Balance on page 57, 4.3.14 Maximum Deviation (Analog Wide) on page 61.)

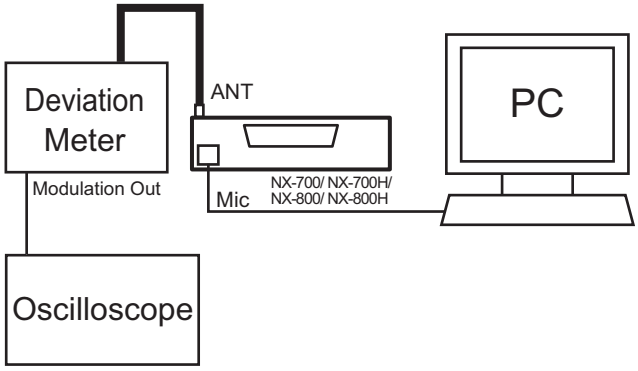
4.3.25 MSK Deviation (Analog Narrow)

NX-700/ NX-700H/ NX-800/ NX-800H

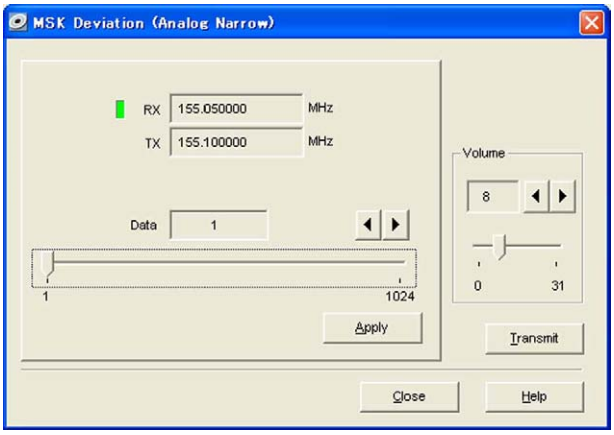
Outline

MSK Deviation (Analog Narrow) allows a service engineer to adjust the MSK Deviation (Analog Narrow) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “MSK Deviation (Analog Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click the “Transmit” button.
3. Adjust the data until the value measured by a deviation meter reaches in the range between 1.45 kHz and 1.55 kHz.
4. Click the “Apply” button.

Adjusted Value

Emphasis: Off
LPF: 15 kHz
HPF: Off
Deviation Meter = 1.45 kHz to 1.55 kHz
If a value of 513 is configured for the Data value, a deviation which is close to the above adjustment value can be acquired.

Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Narrow). (Refer to 4.3.10 Balance on page 57, 4.3.13 Maximum Deviation (Analog Narrow) on page 60.)

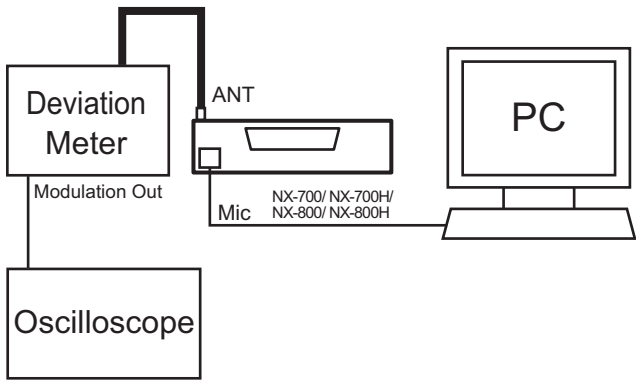
4.3.26 MSK Deviation (Analog Wide)

NX-700/ NX-700H/ NX-800/ NX-800H

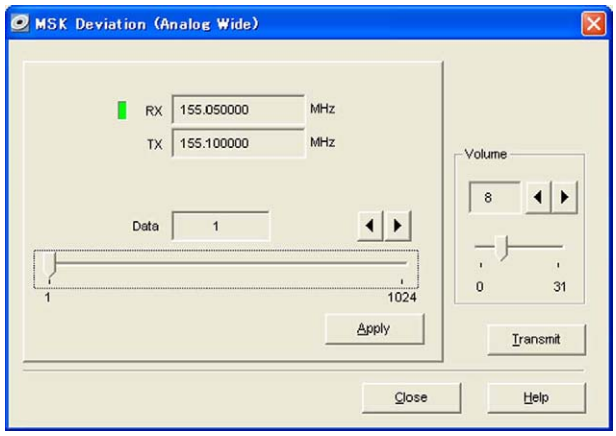
Outline

MSK Deviation (Analog Wide) allows a service engineer to adjust the MSK Deviation (Analog Wide) level used for FleetSync.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “MSK Deviation (Analog Wide)” in the adjustment item list of the **Test Mode** dialog box.
2. Click the “Transmit” button.
3. Adjust the data until the value measured by a deviation meter reaches in the range between 2.95 kHz and 3.05 kHz.
4. Click the “Apply” button.

Adjusted Value

Emphasis: Off
LPF: 15 kHz
HPF: Off
Deviation Meter = 2.95 kHz to 3.05 kHz
If a value of 513 is configured for the Data value, a deviation which is close to the above adjustment value can be acquired.

Remarks

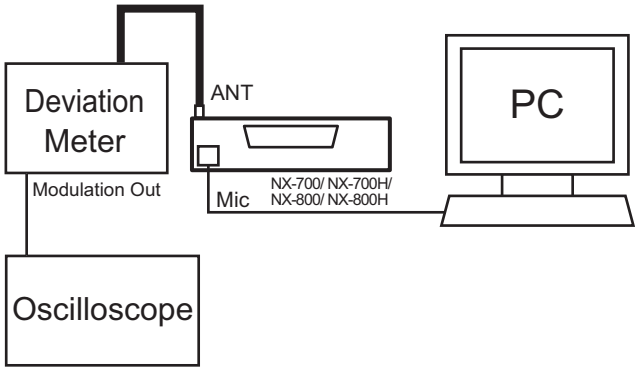
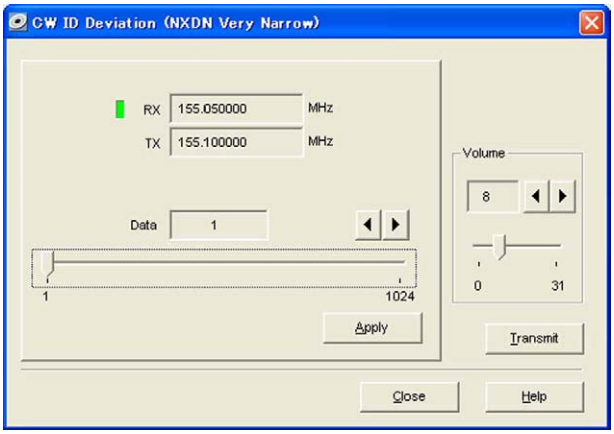
This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Wide). (Refer to 4.3.10 Balance on page 57, 4.3.14 Maximum Deviation (Analog Wide) on page 61.)

4.3.27 CW ID Deviation (NXDN Very Narrow)

NX-700/ NX-700H/ NX-800/ NX-800H

Outline

CW ID Deviation (NXDN Very Narrow) allows a service engineer to adjust the CW ID Deviation (NXDN Very Narrow) level of the transceiver.

Connection Diagram	Display for Operation
	

Adjustment Procedure

1. Double-click “CW ID Deviation (NXDN Very Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click the “Transmit” button.
3. Adjust the data until the value measured by a deviation meter reaches in the range between 1.05 kHz and 1.15 kHz.
4. Click the “Apply” button.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter = 1.05 kHz to 1.15 kHz
If a value of 375 is configured for the Data value, a deviation which is close to the above adjustment value can be acquired.

Remarks

- This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (NXDN Very Narrow). (Refer to 4.3.10 Balance on page 57, 4.3.12 Maximum Deviation (NXDN Very Narrow) on page 59.)
- CW ID is used to notify other users which user is using the channel with a 6.25 kHz channel bandwidth. (FCC requires that the transceiver has the analog mode capability or the CW ID function for each bandwidth.)

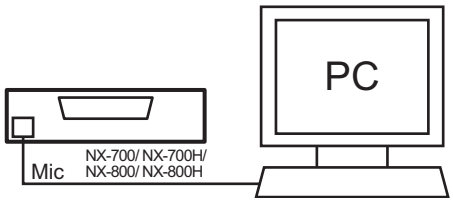
4.3.28 Sensitivity 1

NX-700/ NX-700H/ NX-800/ NX-800H

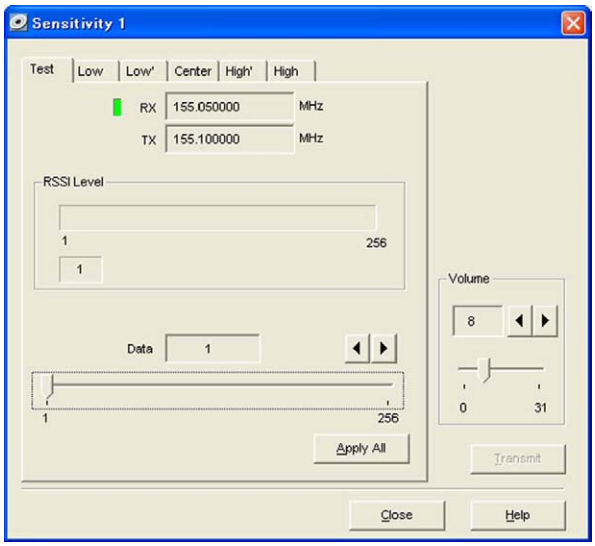
Outline

Sensitivity 1 allows a service engineer to adjust the Variable-Capacitor Tune voltage at 5 frequency points of the first stage bandpass filter that is located in the front-end circuit of the receiver. The bandpass filter characteristics can be changed by adjusting this value, and the intermodulation characteristics, receive spurious response and receive sensitivity characteristics can be optimized.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Sensitivity 1” in the adjustment item list of the **Test Mode** dialog box.
2. Adjust the data for each adjustment point (**Low**, **Low'**, **Center**, **High'**, and **High** tab) to be the following value. (Writing the fixed value.)

Adjustment Point	Adjusted Value				
	NX-700/ NX-700H (K)	NX-800/ NX-800H (K)	NX-800 (K2)	NX-800H (K2)	NX-800H (K3)
Low	110	90	114	121	72
Low’	145	119	143	147	97
Center	180	150	166	163	129
High’	180	184	193	190	158
High	180	224	218	209	184

3. Click the “Apply All” button.

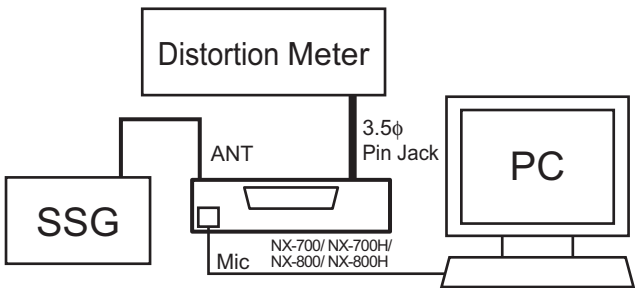
Adjusted Value

Refer to the table in step 2 of Adjustment Procedure.

Remarks

If the sensitivity is insufficient even after adjustment values for Sensitivity 1 and Sensitivity 2 are written to the transceiver, follow the procedure below to do the manual adjustment for Sensitivity 1.

Connection Diagram



Adjustment Procedure

1. Start sourcing from an SSG a signal as follows: AF (1 kHz); Deviation (1.5 kHz) at -118 dBm.
2. Increase or decrease the adjustment value by observing a SINAD value on a Distortion Meter until the SINAD value becomes 12 dB SINAD.
3. Click the “Apply All” button.

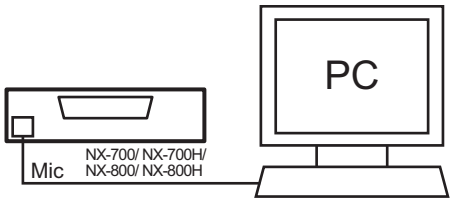
4.3.29 Sensitivity 2

NX-700/ NX-700H/ NX-800/ NX-800H

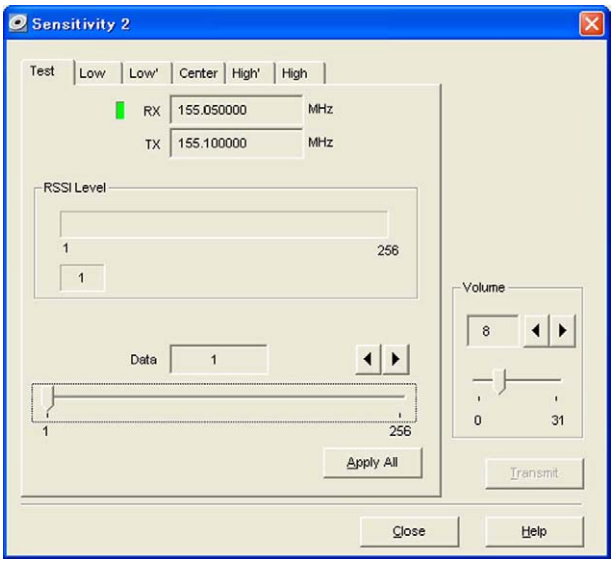
Outline

Sensitivity 2 allows a service engineer to adjust the Variable-Capacitor Tune voltage at 5 frequency points of the second stage bandpass filter that is located in the front-end circuit of the receiver. The bandpass filter characteristics can be changed by adjusting this value, and the intermodulation characteristics, receive spurious response and receive sensitivity characteristics can be optimized.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Sensitivity 2” in the adjustment item list of the **Test Mode** dialog box.
2. Adjust the data for each adjustment point (**Low**, **Low’**, **Center**, **High’**, and **High** tab) to be the following value. (Writing the fixed value.)

Adjustment Point	Adjusted Value			
	NX-700/ NX-700H (K)	NX-800/ NX-800H (K)	NX-800/ NX-800H (K2)	NX-800H (K3)
Low	70	70	81	47
Low’	87	120	117	71
Center	105	160	153	113
High’	135	206	185	150
High	185	245	206	185

3. Click the “Apply All” button.

Adjusted Value

Refer to the table in step 2 of Adjustment Procedure.

Remarks

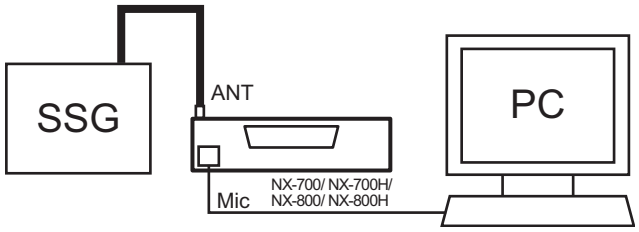
4.3.30 RSSI Reference (Analog Narrow)

NX-700/ NX-700H/ NX-800/ NX-800H

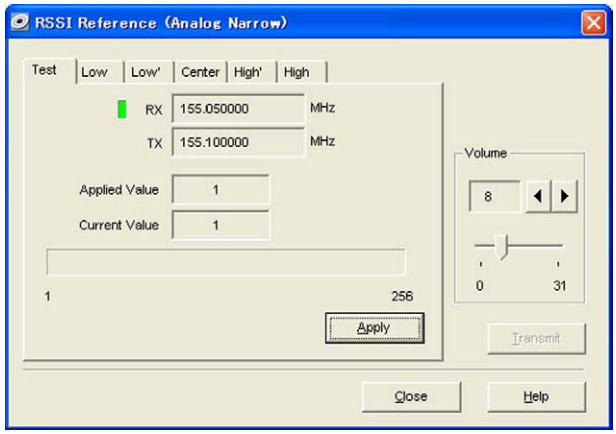
Outline

RSSI Reference (Analog Narrow) allows a service engineer to adjust the minimum RSSI (Analog Narrow and NXDN Narrow) level at which the transceiver recognizes a channel as the channel to be scanned.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “RSSI Reference (Analog Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click a tab title (the **Low**, **Low'**, **Center**, **High'**, or **High** tab) to select an adjustment point.
3. Set the output level of the signal to be 3 dB lower than the receive sensitivity for Analog Narrow, and start sourcing from an SSG the signal with audio frequency at 1 kHz and deviation at 3 kHz.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

Sensitivity of Analog Narrow must be measured for each adjustment point in advance.

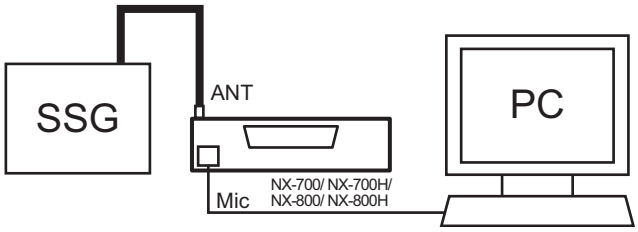
4.3.31 RSSI Reference (Analog Wide)

NX-700/ NX-700H/ NX-800/ NX-800H

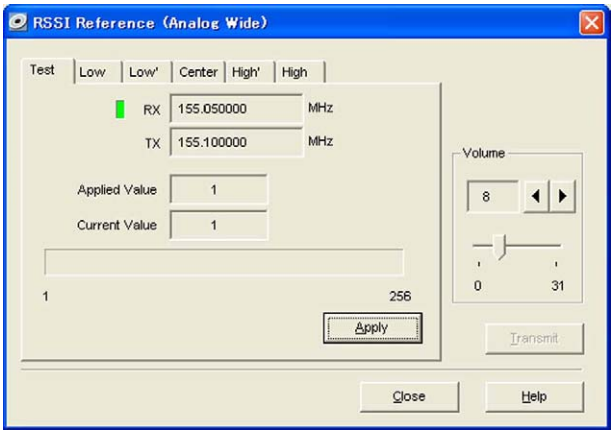
Outline

RSSI Reference (Analog Wide) allows a service engineer to adjust the minimum RSSI (Analog Wide) level at which the transceiver recognizes a channel as the channel to be scanned.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “RSSI Reference (Analog Wide)” in the adjustment item list of the **Test Mode** dialog box.
2. Click a tab title (the **Low**, **Low’**, **Center**, **High’**, or **High** tab) to select an adjustment point.
3. Set the output level of the signal to be 3 dB lower than the receive sensitivity for Analog Wide, and start sourcing from an SSG the signal with audio frequency at 1 kHz and deviation at 3 kHz.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

Sensitivity of Analog Wide must be measured for each adjustment point in advance.

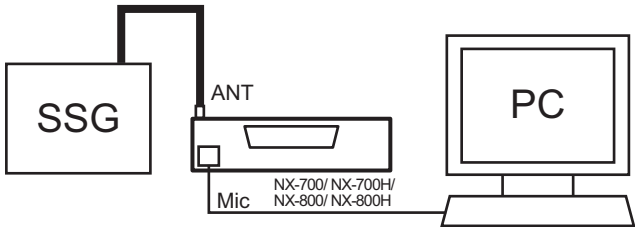
4.3.32 RSSI Reference (NXDN Very Narrow)

NX-700/ NX-700H/ NX-800/ NX-800H

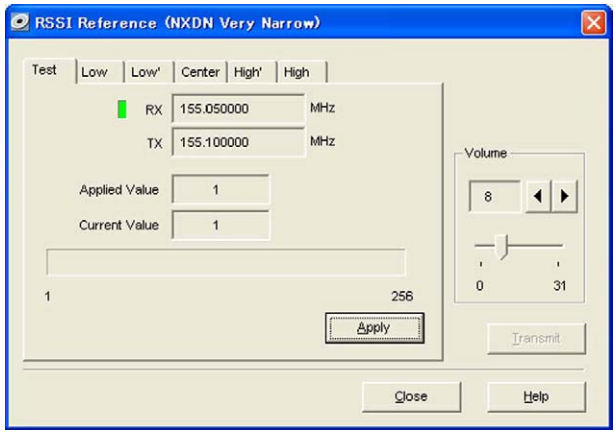
Outline

RSSI Reference (NXDN Very Narrow) allows a service engineer to adjust the minimum RSSI (NXDN Very Narrow) level at which the transceiver recognizes a channel as the channel to be scanned.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “RSSI Reference (NXDN Very Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click a tab title (the **Low**, **Low'**, **Center**, **High'**, or **High** tab) to select an adjustment point.
3. Set the output level of the signal to be 3 dB lower than the receive sensitivity for Analog Narrow, and start sourcing from an SSG the analog signal with audio frequency at 1 kHz and deviation at 1.5 kHz.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

- Sensitivity of Analog Narrow must be measured for each adjustment point in advance.
- RSSI Reference (NXDN Very Narrow) can be adjusted using analog signals; hence, digital signal equipment is not required.

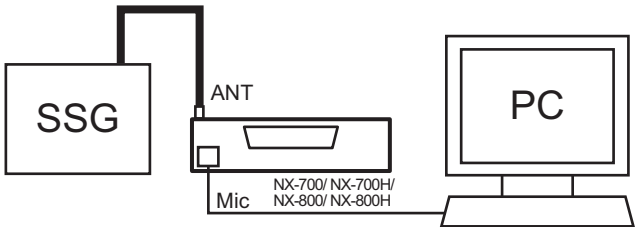
4.3.33 Open Squelch (Analog Narrow)

NX-700/ NX-700H/ NX-800/ NX-800H

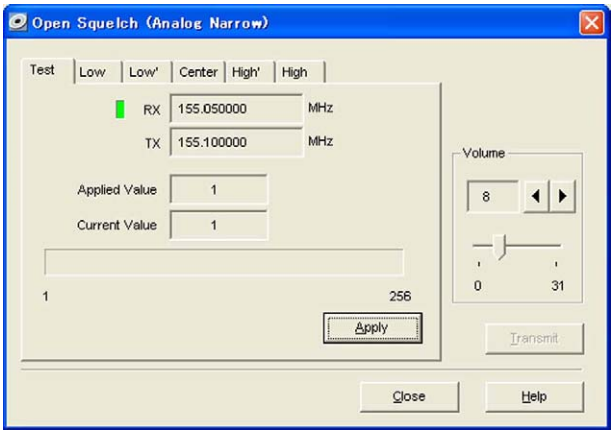
Outline

Open Squelch (Analog Narrow) allows a service engineer to adjust the Squelch (Analog Narrow and NXDN Narrow) level while a value of 5 is configured for Squelch Level.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Open Squelch (Analog Narrow)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title (the **Low**, **Low’**, **Center**, **High’**, or **High** tab) to select an adjustment point.
3. Set the output level of the signal to be 1 dB higher than the receive sensitivity for Analog Narrow, and start sourcing from an SSG the signal with audio frequency at 1 kHz and deviation at 1.5 kHz.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

Sensitivity of Analog Narrow must be measured for each adjustment point in advance.

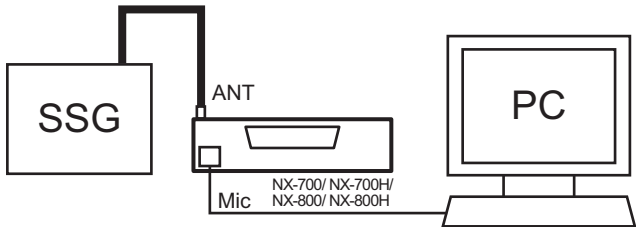
4.3.34 Open Squelch (Analog Wide)

NX-700/ NX-700H/ NX-800/ NX-800H

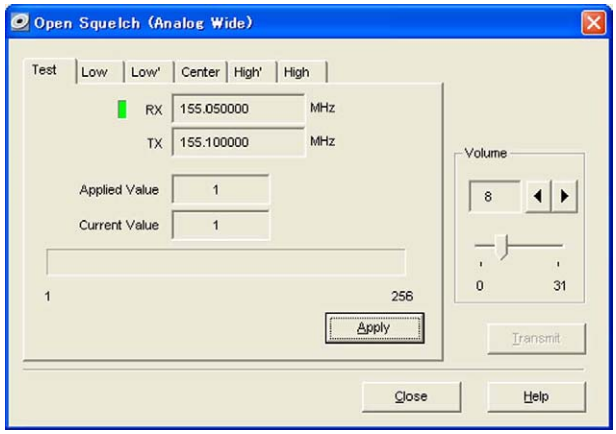
Outline

Open Squelch (Analog Wide) allows a service engineer to adjust the Squelch (Analog Wide) level while a value of 5 is configured for Squelch Level.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Open Squelch (Analog Wide)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title (the **Low**, **Low’**, **Center**, **High’**, or **High** tab) to select an adjustment point.
3. Set the output level of the signal to be 1 dB higher than the receive sensitivity for Analog Wide, and start sourcing from an SSG the signal with audio frequency at 1 kHz and deviation at 3 kHz.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

Sensitivity of Analog Wide must be measured for each adjustment point in advance.

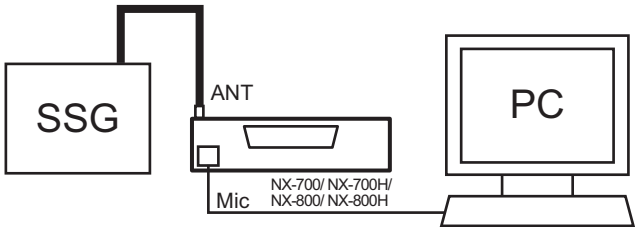
4.3.35 Open Squelch (NXDN Very Narrow)

NX-700/ NX-700H/ NX-800/ NX-800H

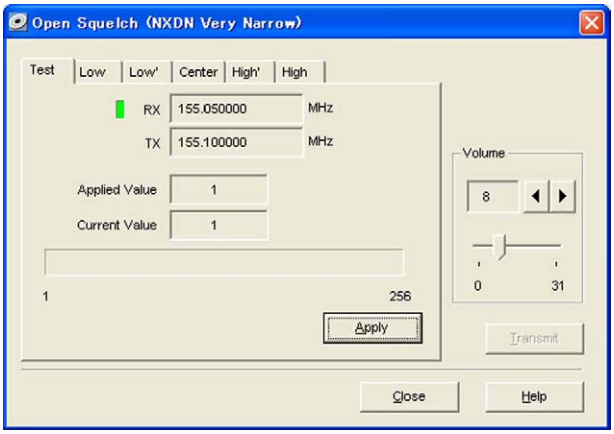
Outline

Open Squelch (NXDN Very Narrow) allows a service engineer to adjust the Squelch (NXDN Very Narrow) level while a value of 5 is configured for Squelch Level.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Open Squelch (NXDN Very Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click a tab title (the **Low**, **Low’**, **Center**, **High’**, or **High** tab) to select an adjustment point.
3. Start sourcing from an SSG an unmodulated analog signal which is 2 dB lower than the receive sensitivity for Analog Narrow.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

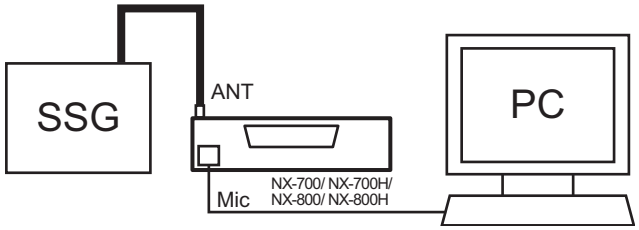
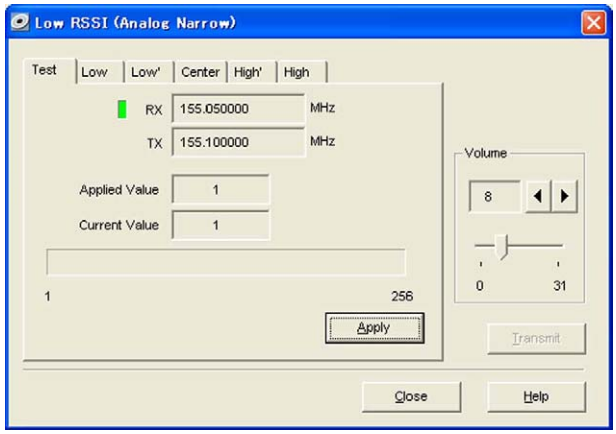
Remarks

- Sensitivity of Analog Narrow must be measured for each adjustment point in advance.
- Open Squelch (NXDN Very Narrow) can be adjusted using analog signals, hence digital signal equipment is not required.

4.3.36 Low RSSI (Analog Narrow)

NX-700/ NX-700H/ NX-800/ NX-800H

Outline
Low RSSI (Analog Narrow) allows a service engineer to adjust the signal strength of the RSSI indicator while the transceiver is operated in Analog Narrow band and NXDN Narrow band.

Connection Diagram	Display for Operation
	

Adjustment Procedure
1. Double-click “Low RSSI (Analog Narrow)” in the adjustment item list in the **Test Mode** dialog box. 2. Click a tab title (the **Low**, **Low'**, **Center**, **High'**, or **High** tab) to select an adjustment point. 3. Start sourcing from an SSG a signal as follows: AF (1 kHz); Deviation (1.5 kHz) at -118 dBm. 4. Click the “Apply” button. 5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks
Also, adjusting High RSSI (Analog Narrow) enables the RSSI indicator to display the RSSI level properly. (Refer to 4.3.39 High RSSI (Analog Narrow) on page 86.)

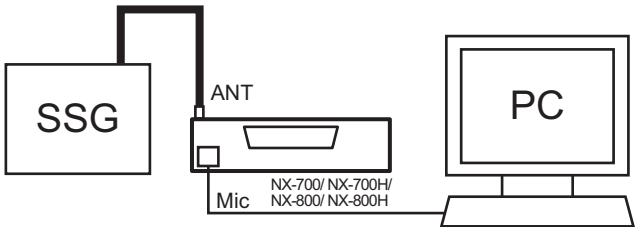
4.3.37 Low RSSI (Analog Wide)

NX-700/ NX-700H/ NX-800/ NX-800H

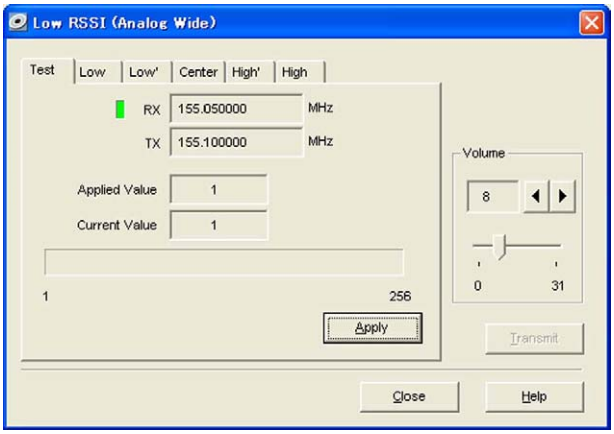
Outline

Low RSSI (Analog Wide) allows a service engineer to adjust the signal strength of the RSSI indicator while the transceiver is operated in Analog Wide band.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Low RSSI (Analog Wide)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title (the **Low**, **Low’**, **Center**, **High’**, or **High** tab) to select an adjustment point.
3. Start sourcing from an SSG a signal as follows: AF (1 kHz); Deviation (3 kHz) at -118 dBm.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

Also, adjusting High RSSI (Analog Wide) enables the RSSI indicator to display the RSSI level properly. (Refer to 4.3.40 High RSSI (Analog Wide) on page 87.)

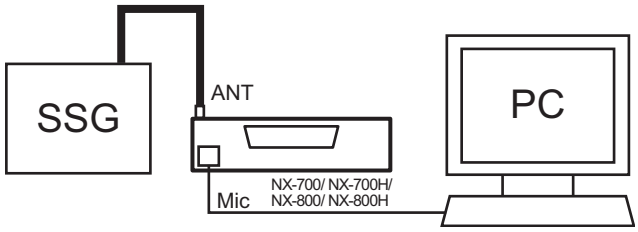
4.3.38 Low RSSI (NXDN Very Narrow)

NX-700/ NX-700H/ NX-800/ NX-800H

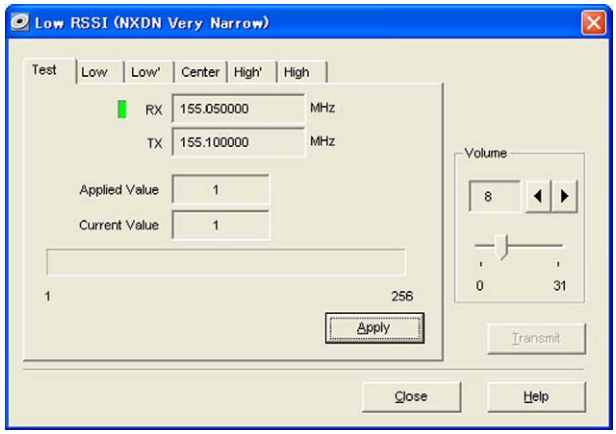
Outline

Low RSSI (NXDN Very Narrow) allows a service engineer to adjust the signal strength of the RSSI indicator while the transceiver is operated in NXDN Very Narrow band.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Low RSSI (NXDN Very Narrow)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title (the **Low**, **Low’**, **Center**, **High’**, or **High** tab) to select an adjustment point.
3. Start sourcing from an SSG an analog signal as follows: AF (1 kHz); Deviation (1.5 kHz) at -118 dBm.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

- Low RSSI (NXDN Very Narrow) can be adjusted using analog signals, hence digital signal equipment is not required.
- Also, adjusting High RSSI (NXDN Very Narrow) enables the RSSI indicator to display the RSSI level properly. (Refer to 4.3.41 High RSSI (NXDN Very Narrow) on page 88.)

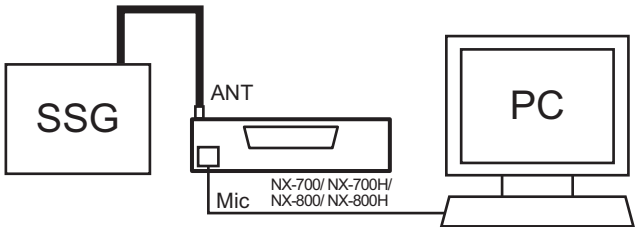
4.3.39 High RSSI (Analog Narrow)

NX-700/ NX-700H/ NX-800/ NX-800H

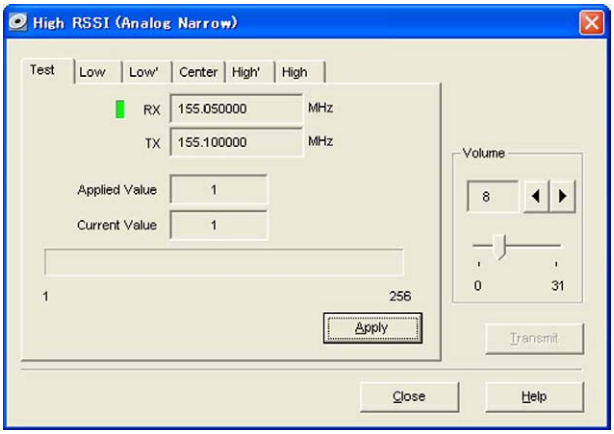
Outline

High RSSI (Analog Narrow) allows a service engineer to adjust the signal strength of the RSSI indicator while the transceiver is operated in Analog Narrow band and NXDN Narrow band.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “High RSSI (Analog Narrow)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title (the **Low**, **Low’**, **Center**, **High’**, or **High** tab) to select an adjustment point.
3. Start sourcing from an SSG a signal as follows: AF (1 kHz); Deviation (1.5 kHz) at -80 dBm.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

Also, adjusting Low RSSI (Analog Narrow) enables the RSSI indicator to display the RSSI level properly. (Refer to 4.3.36 Low RSSI (Analog Narrow) on page 83.)

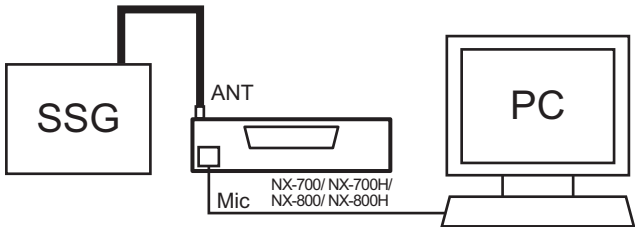
4.3.40 High RSSI (Analog Wide)

NX-700/ NX-700H/ NX-800/ NX-800H

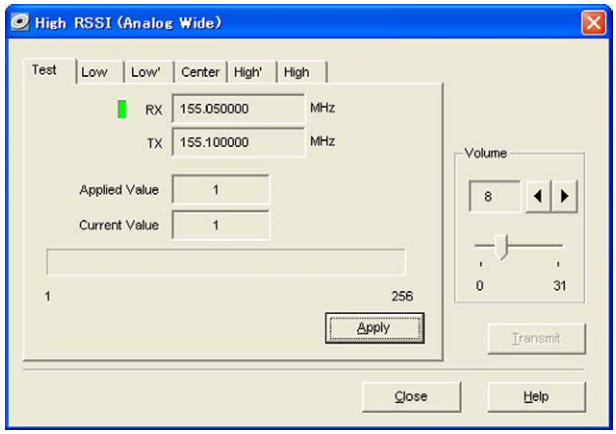
Outline

High RSSI (Analog Wide) allows a service engineer to adjust the signal strength of the RSSI indicator while the transceiver is operated in Analog Wide band.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “High RSSI (Analog Wide)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title (the **Low**, **Low'**, **Center**, **High'**, or **High** tab) to select an adjustment point.
3. Start sourcing from an SSG a signal as follows: AF (1 kHz); Deviation (3 kHz) at -80 dBm.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

Also, adjusting Low RSSI (Analog Wide) enables the RSSI indicator to display the RSSI level properly. (Refer to 4.3.37 Low RSSI (Analog Wide) on page 84.)

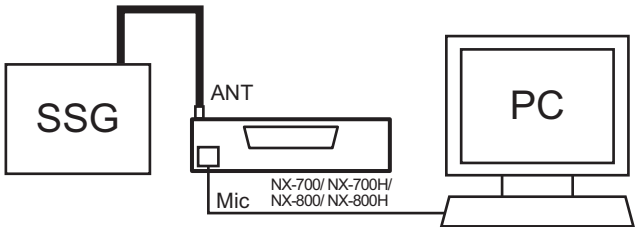
4.3.41 High RSSI (NXDN Very Narrow)

NX-700/ NX-700H/ NX-800/ NX-800H

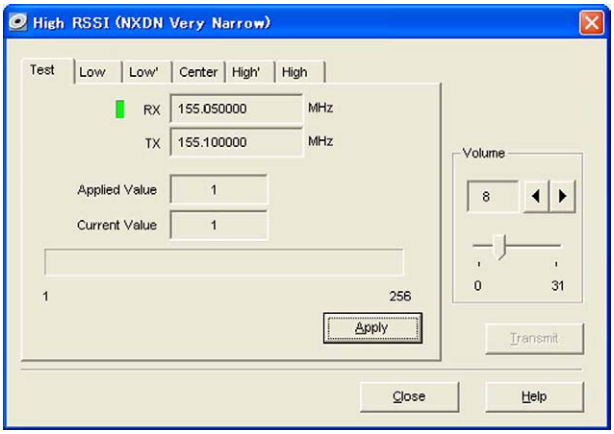
Outline

High RSSI (NXDN Very Narrow) allows a service engineer to adjust the signal strength of the RSSI indicator while the transceiver is operated in NXDN Very Narrow band.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “High RSSI (NXDN Very Narrow)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title (the **Low**, **Low’**, **Center**, **High’**, or **High** tab) to select an adjustment point.
3. Start sourcing from an SSG an analog signal as follows: AF (1 kHz); Deviation (1.5 kHz) at -80 dBm.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

- High RSSI (NXDN Very Narrow) can be adjusted using analog signals, hence digital signal equipment is not required.
- Also, adjusting Low RSSI (NXDN Very Narrow) enables the RSSI indicator to display the RSSI level properly. (Refer to 4.3.38 Low RSSI (NXDN Very Narrow) on page 85.)

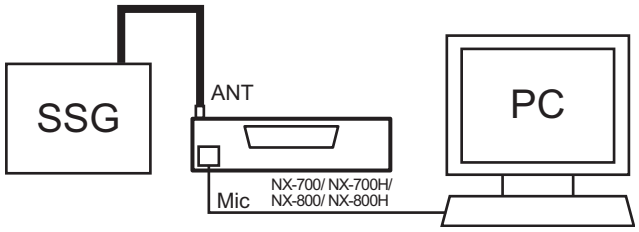
4.3.42 Tight Squelch (Analog Narrow)

NX-700/ NX-700H/ NX-800/ NX-800H

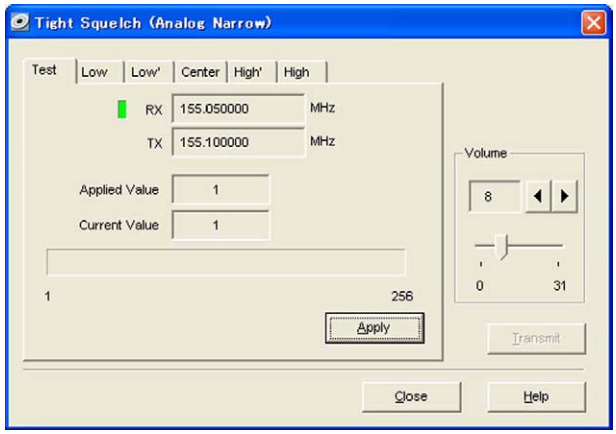
Outline

Tight Squelch (Analog Narrow) allows a service engineer to adjust the Squelch (Analog Narrow) level while a value of 9 is configured for Squelch Level.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Tight Squelch (Analog Narrow)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title (the **Low**, **Low'**, **Center**, **High'**, or **High** tab) to select an adjustment point.
3. Set the output level of the signal to be 6 dB higher than the receive sensitivity for Analog Narrow, and start sourcing from an SSG the signal with audio frequency at 1 kHz and deviation at 1.5 kHz.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

Sensitivity of Analog Narrow must be measured for each adjustment point in advance.

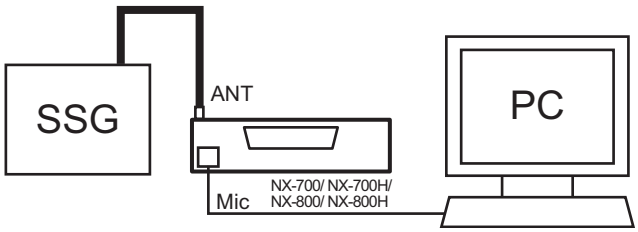
4.3.43 Tight Squelch (Analog Wide)

NX-700/ NX-700H/ NX-800/ NX-800H

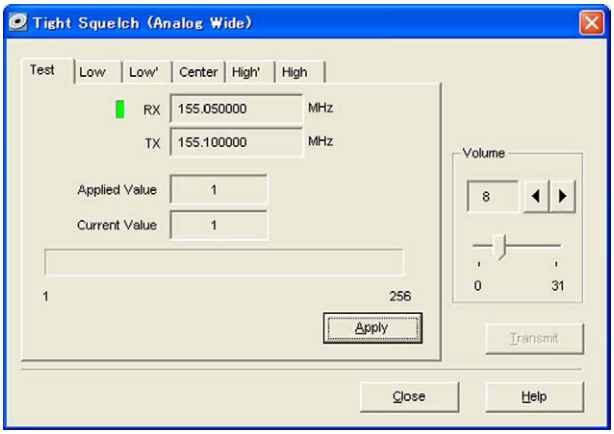
Outline

Tight Squelch (Analog Wide) allows a service engineer to adjust the Squelch (Analog Wide) level while a value of 9 is configured for Squelch Level.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Tight Squelch (Analog Wide)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title (the **Low**, **Low’**, **Center**, **High’**, or **High** tab) to select an adjustment point.
3. Set the output level of the signal to be 6 dB higher than the receive sensitivity for Analog Wide, and start sourcing from an SSG the signal with audio frequency at 1 kHz and deviation at 3 kHz.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

Sensitivity of Analog Wide must be measured for each adjustment point in advance.

4.4 Adjustment Procedure (NX-900/ NX-901)

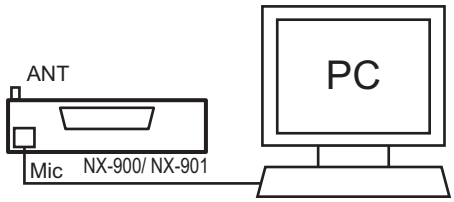
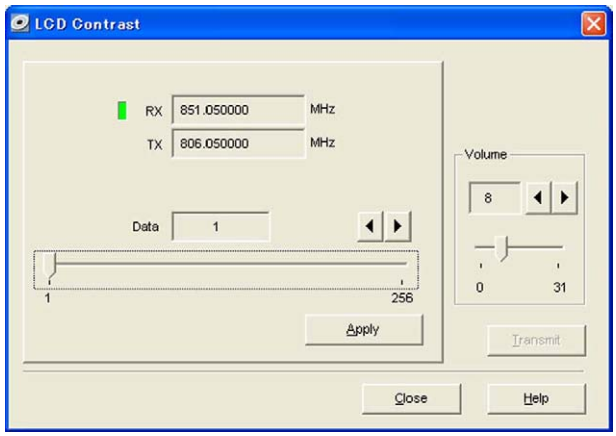
The adjustment procedure for the transceiver is described for each adjustment item. Ensure by referring to the connection diagram prior to starting the adjustment that the required instruments are connected to the transceiver. (Refer to 4.2.3 Measuring Instruments Required for Adjustments on page 47.)

About Adjusting Sensitivity
For NX-900/ NX-901, Band Pass Filter does not need to be adjusted since frequency range is narrow.

Note: The power-supply voltage while adjusting the transceiver is 13.6 V. Unless it is instructed otherwise, all adjustments must be done by setting 13.6 V for the power voltage.

4.4.1 LCD Contrast

NX-900/ NX-901

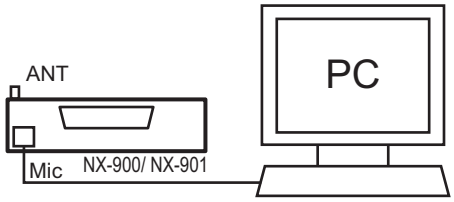
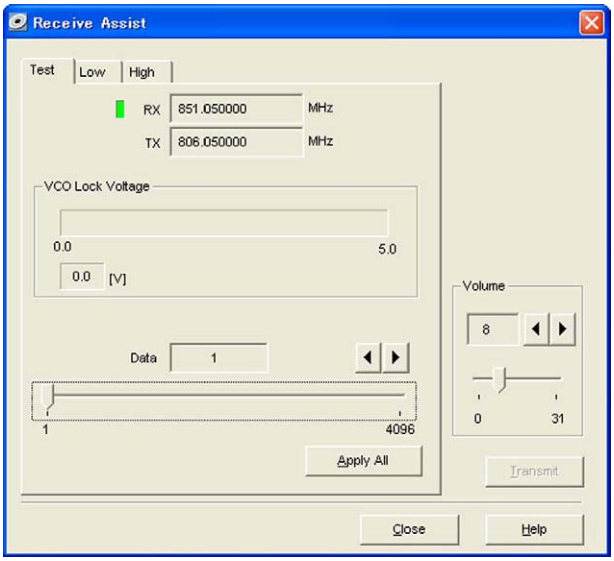
Outline	
LCD Contrast allows a service engineer to adjust the contrast of the LCD display of the transceiver.	
Connection Diagram	**Display for Operation**
	

Adjustment Procedure
1. Double-click “LCD Contrast” in the adjustment item list in the **Test Mode** dialog box. 2. Adjust data while observing the contrast of the LCD display of the transceiver. When the value is adjusted to larger or smaller, the contrast of the LCD display becomes darker or lighter, respectively. 3. Click the “Apply” button upon appearance of the desired display contrast.
Adjusted Value
PC Digit = 120 (reference value)
Remarks
• Since the contrast of the LCD display varies depending on the temperature, do not do this adjustment while the temperature of the transceiver is very high, such as immediately after the transceiver completes transmitting. • This adjustment must be done after replacing the LCD assembly of the transceiver.

4.4.2 Receive Assist

NX-900/ NX-901

Outline
Receive Assist allows a service engineer to adjust the lock voltage of the Receive VCO in the transceiver.

Connection Diagram	Display for Operation
	

Adjustment Procedure

1. Double-click “Receive Assist” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low** or **High** tab, to select an adjustment point.
3. Adjust the data until the voltage display in the **VCO Lock Voltage** frame indicates 3.0 V.
   Do not operate the transceiver for approximately 3 seconds after changing the data in order to allow the voltage to be stabilized.
4. Do the same adjustment for other adjustment points.
5. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

PC Displayed Voltage = 3.0 V (±0.1 V)

Remarks

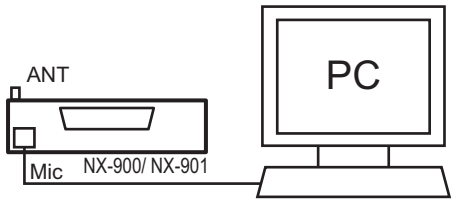
4.4.3 Transmit Assist

NX-900/ NX-901

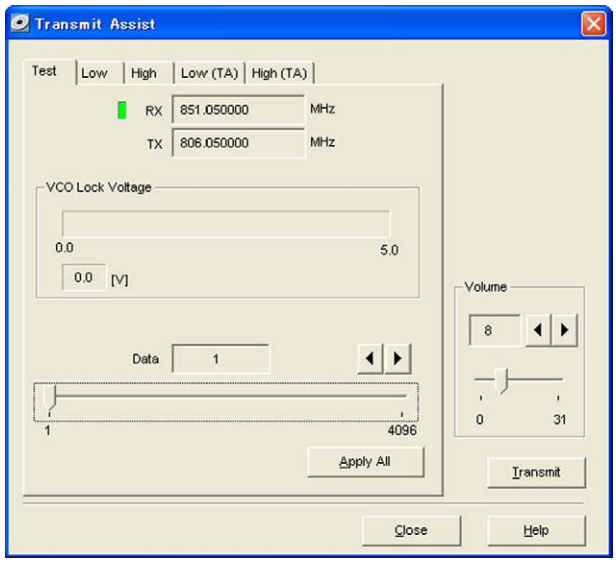
Outline

Transmit Assist allows a service engineer to adjust the lock voltage of the Transmit VCO in the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Transmit Assist” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **High**, **Low (TA)**, or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the voltage display in the **VCO Lock Voltage** frame indicates 3.0 V.
   Do not operate the transceiver for approximately 3 seconds after changing the data in order to allow the voltage to be stabilized.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

PC Displayed Voltage = 3.0 V (±0.1 V)

Remarks

During the Transmit Assist adjustment, no carrier is transmitted even if the transceiver is placed in transmit mode by clicking the “Transmit” button.

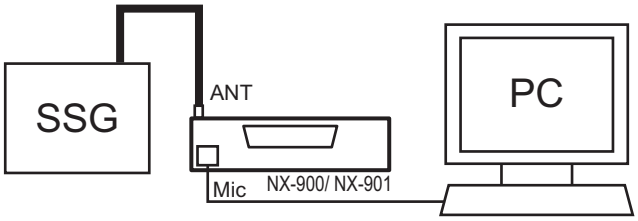
4.4.4 Frequency

NX-900/ NX-901

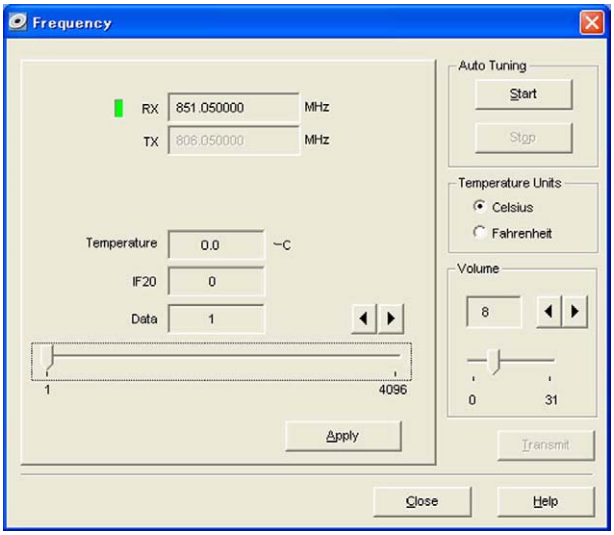
Outline

Frequency allows a service engineer to adjust the frequency of the transceiver. This adjustment can be done using SSG while the transceiver is in receive mode.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Frequency” in the adjustment item list in the **Test Mode** dialog box.
   A warning message box regarding adjustment conditions appears. Confirm the contents of the message, and then click the “OK” button to agree with the message and proceed.
2. Set the output signal level to be unmodulated and -20 dBm signal strength, and start sourcing the signal from an SSG.
   The value in the **IF20** information box will be stabilized.
3. Click the “Start” button in the **Auto Tuning** frame.
   “ADJUSTING...” appears in the dialog box during the adjustment. “AUTO TUNING OK” appears when the adjustment is completed.
4. Click the “Apply” button after the “AUTO TUNING OK” message appears.

Adjusted Value

IF20 value = Within 0 ±12 digits (Digit range: -12 to +12)
The value will be adjusted to the above value automatically.

Remarks

- This adjustment must be done under the following conditions:
  Temperature Range: +23°C to +27°C (+73.4°F to +80.6°F)
  SSG accuracy: 0.001 ppm
- The temperature can be viewed in the **Temperature** information box. In the **Temperature Unit** frame, either Celsius (°C) or Fahrenheit (°F) can be selected for temperature unit.
- The following factors must be assured since these factors may result in the value in the **IF20** information box unstable:
  - The ANT input level is insufficient.
  - The input signal is modulated.
  - The entered frequency is wrong or significantly offset.
- The value in the **IF20** information box corresponds to the frequency offset when the transceiver receives a signal from SSG. If the local frequency oscillator of the transceiver has drifted, a value of 0 does not appear in the **IF20** information box. The value in the **IF20** information box should be reduced as close to 0 as possible by doing this adjustment.
- This adjustment can be done only in PC Test Mode to prevent the adjustment value from being changed easily.

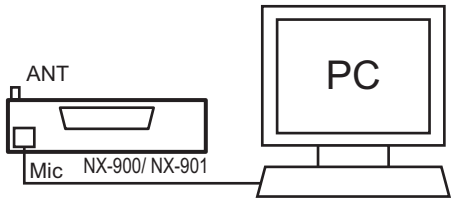
4.4.5 RTC (Real-time clock)

NX-900/ NX-901

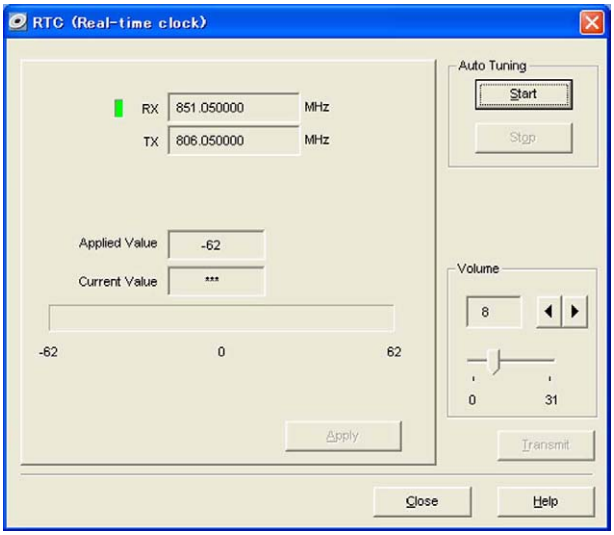
Outline

RTC (Real-time clock) allows a service engineer to adjust the clock to minimize the clock drift when the clock of the transceiver time has drifted.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “RTC (Real-time clock)” in the adjustment item list of the **Test Mode** dialog box.
2. Click the “Start” button in the **Auto Tuning** frame.
   “ADJUSTING...” appears in the dialog box during the adjustment. “AUTO TUNING OK” appears when the adjustment is completed.
3. Click the “Apply” button after the “AUTO TUNING OK” message appears.

Adjusted Value

Remarks

This adjustment can be done by utilizing the microprocessor clock in the transceiver.

4.4.6 High Transmit Power Limit

NX-900/ NX-901

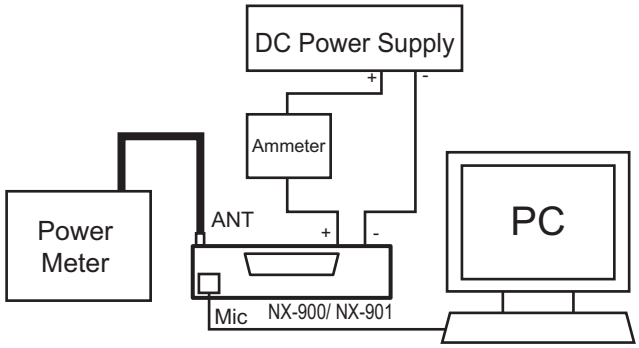
WARNING

DO NOT ATTEMPT TO ADJUST THE TRANSCEIVER'S TRANSMIT OUTPUT BEYOND ITS SPECIFICATIONS. IF THE TRANSCEIVER IS ADJUSTED BEYOND ITS SPECIFICATIONS, PARTS RELIABILITY MAY DETERIORATE AND THE OUTPUT POWER MAY DROP SUDDENLY AND BECOME UNSTABLE. THE TRANSCEIVER MAY ALSO BECOME EXTREMELY HOT.

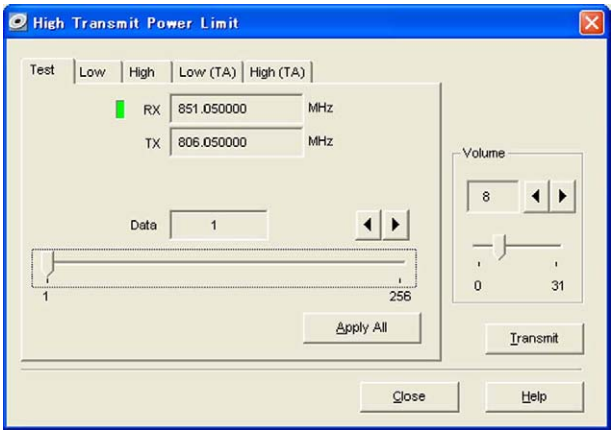
Outline

High Transmit Power Limit allows a service engineer to adjust the limit value of the transmit power (High Transmit Power) of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click "High Transmit Power Limit" in the adjustment item list in the **Test Mode** dialog box.
   A warning message box regarding adjustment of transmit power appears. Confirm the contents of the message, and then click the "OK" button to agree with the message and proceed.
2. Click a tab title, the **Low**, **High**, **Low (TA)**, or **High (TA)** tab, to select an adjustment point.
3. Click the "Transmit" button.
4. Adjust the data until the power meter indicates 7.5 W (±0.5 W) or 16.5 W (±0.5 W).
5. Do the same adjustment for other adjustment points.
6. Click the "Apply All" button after adjusting all adjustment points.

Adjusted Value

Power meter =
NX-900: 17.5 W (±0.5 W)
NX-901: 16.5 W (±0.5 W)

Remarks

4.4.7 Low Transmit Power Limit

NX-900/ NX-901

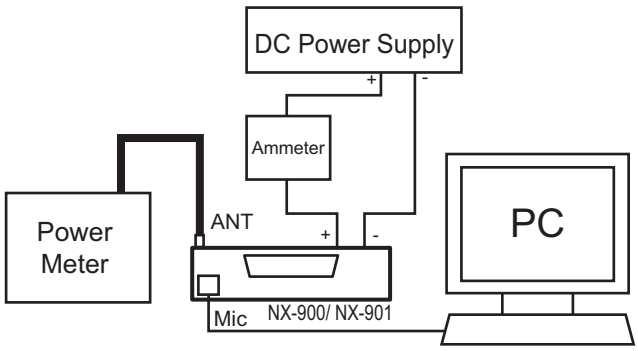
WARNING

DO NOT ATTEMPT TO ADJUST THE TRANSCEIVER'S TRANSMIT OUTPUT BEYOND ITS SPECIFICATIONS. IF THE TRANSCEIVER IS ADJUSTED BEYOND ITS SPECIFICATIONS, PARTS RELIABILITY MAY DETERIORATE AND THE OUTPUT POWER MAY DROP SUDDENLY AND BECOME UNSTABLE. THE TRANSCEIVER MAY ALSO BECOME EXTREMELY HOT.

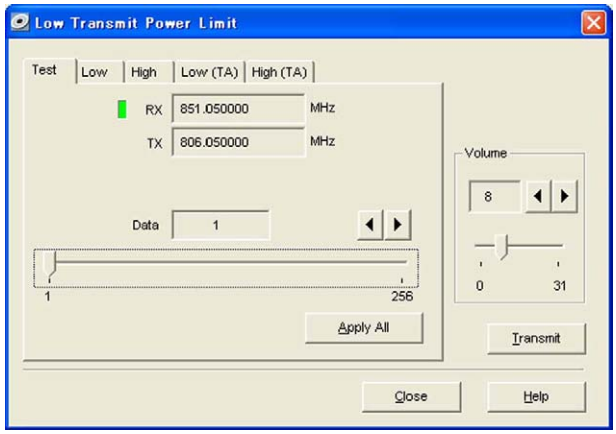
Outline

Low Transmit Power Limit allows a service engineer to adjust the limit value of the transmit power (Low Transmit Power) of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click "Low Transmit Power Limit" in the adjustment item list in the **Test Mode** dialog box.
   A warning message box regarding adjustment of transmit power appears. Confirm the contents of the message, and then click the "OK" button to agree with the message and proceed.
2. Click a tab title, the **Low**, **High**, **Low (TA)**, or **High (TA)** tab, to select an adjustment point.
3. Click the "Transmit" button.
4. Adjust the data until the power meter indicates 7.5 W (±0.5 W).
5. Do the same adjustment for other adjustment points.
6. Click the "Apply All" button after adjusting all adjustment points.

Adjusted Value

Power meter = 7.5 W (±0.5 W)

Remarks

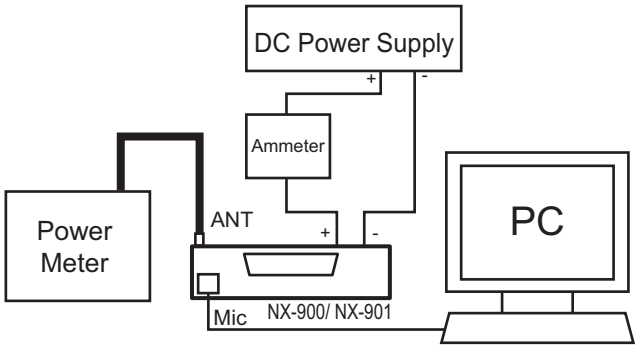
4.4.8 High Transmit Power

NX-900/ NX-901

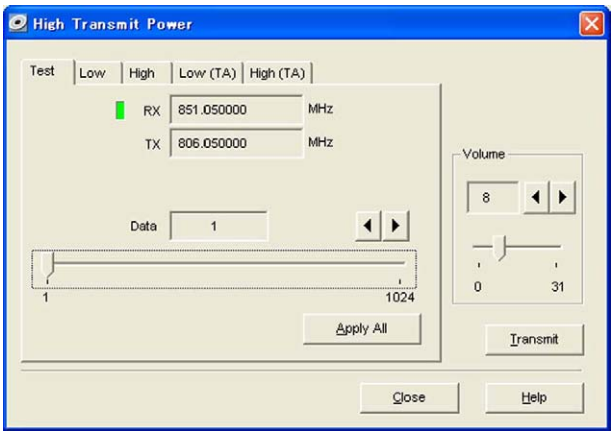
Outline

High Transmit Power allows a service engineer to adjust the High Transmit Power level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “High Transmit Power” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **High**, **Low (TA)**, or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the power meter indicates 15 W (±1 W).
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Power meter = 15 W (±1 W)

Remarks

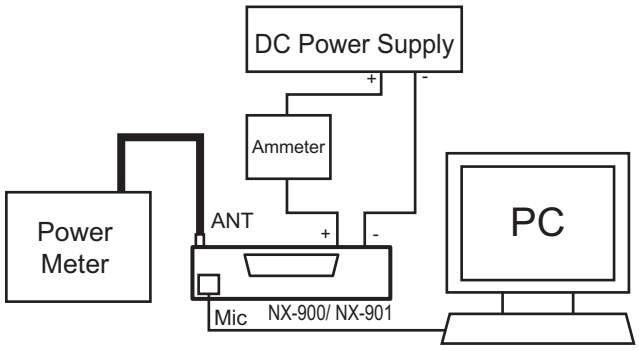
4.4.9 Low Transmit Power

NX-900/ NX-901

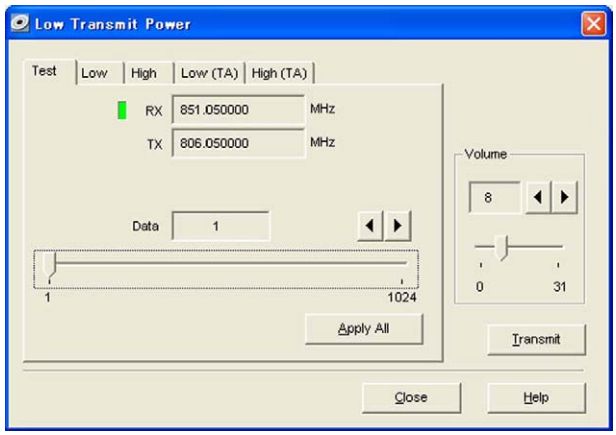
Outline

Low Transmit Power allows a service engineer to adjust the Low Transmit Power level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Low Transmit Power” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **High**, **Low (TA)**, or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the power meter indicates 5 W (±1 W).
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

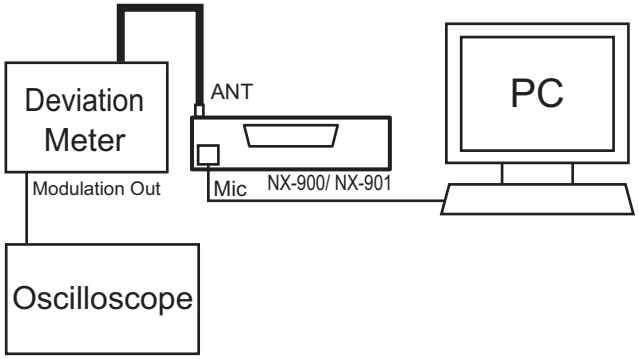
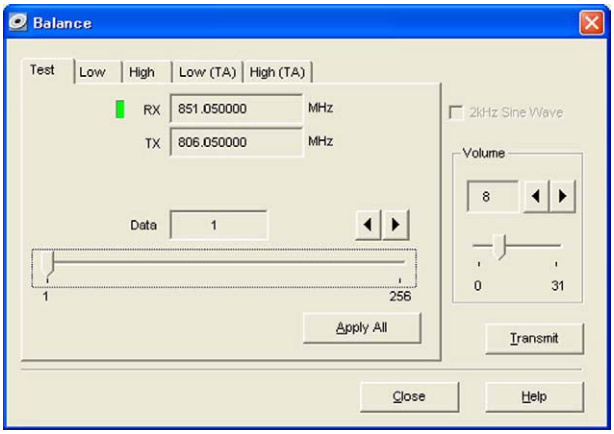
Adjusted Value

Power meter = 5 W (±1 W)

Remarks

4.4.10 Balance

NX-900/ NX-901

Outline	
Balance allows a service engineer to adjust the deviation for audio frequency so that the transceiver can transmit a signal with the same deviation for any audio frequency.	
Connection Diagram	**Display for Operation**
	

Adjustment Procedure

1. Double-click “Balance” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **High**, **Low (TA)**, or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
   A 20 Hz sine wave signal is transmitted.
4. Measure the current deviation using the deviation meter.
5. Click on the **2 kHz Sine Wave** checkbox in order to enable 2 kHz Sine Wave.
   A 2 kHz Sine Wave signal is transmitted.
6. Adjust the data until the value measured by a deviation meter reaches a variation within ±0.2 dB of the value measured in step 4.
7. Do the same adjustment for other adjustment points.
8. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter: A value within ±0.2 dB after comparing a value at 20 Hz and 2 kHz

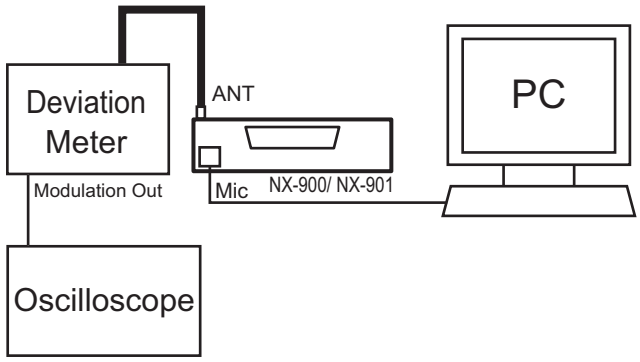
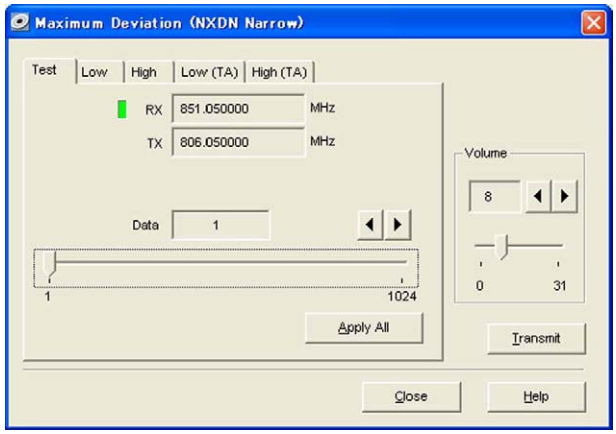
Remarks

This adjustment must be done prior to adjusting items described in 4.4.11 Maximum Deviation (NXDN Narrow) to 4.4.31 CW ID Deviation (NXDN Very Narrow).

4.4.11 Maximum Deviation (NXDN Narrow)

NX-900/ NX-901

Outline
Maximum Deviation (NXDN Narrow) allows a service engineer to adjust the Maximum Deviation (NXDN Narrow) level of the transceiver.

Connection Diagram	Display for Operation
	

Adjustment Procedure

1. Double-click “Maximum Deviation (NXDN Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **High**, **Low (TA)**, or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches 3056 Hz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter = 2995 Hz to 3117 Hz
If a value of 498 (NX-900)/ 503 (NX-901) is configured for the Data value, a deviation which is close to the above adjustment value can be acquired.

Remarks

Balance must be adjusted in advance. (Refer to 4.3.10 Balance on page 57.)

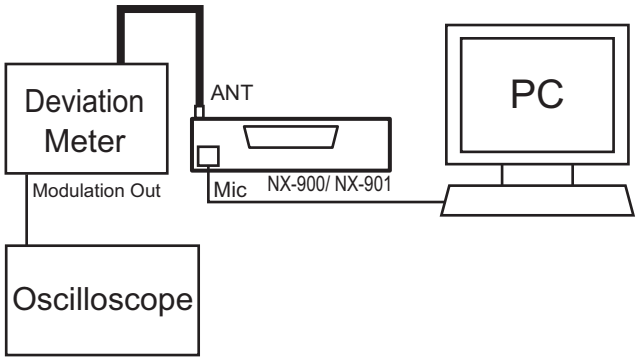
4.4.12 Maximum Deviation (NXDN Very Narrow)

NX-900/ NX-901

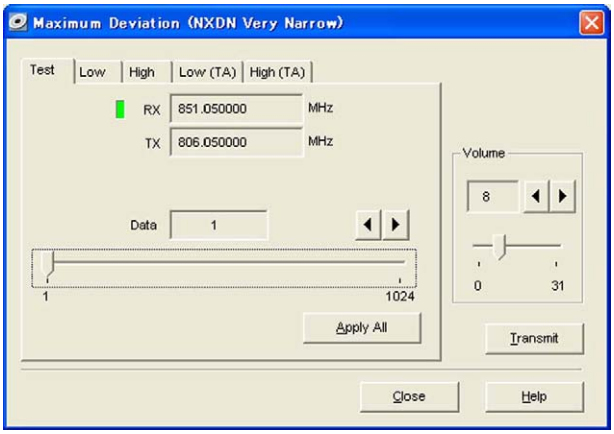
Outline

Maximum Deviation (NXDN Very Narrow) allows a service engineer to adjust the Maximum Deviation (NXDN Very Narrow) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Maximum Deviation (NXDN Very Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **High**, **Low (TA)**, or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches 1337 Hz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter = 1281 Hz to 1387 Hz
If a value of 484 (NX-900)/ 500 (NX-901) is configured for the Data value, a deviation which is close to the above adjustment value can be acquired.

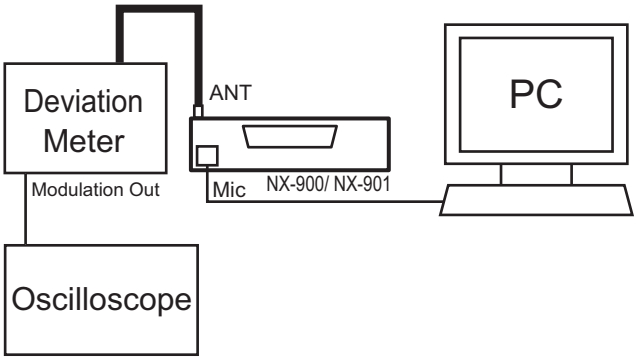
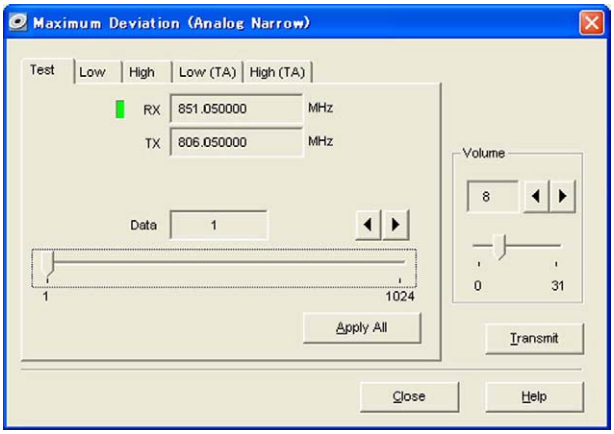
Remarks

Balance must be adjusted in advance. (Refer to 4.3.10 Balance on page 57.)

4.4.13 Maximum Deviation (Analog Narrow)

NX-900/ NX-901

Outline
Maximum Deviation (Analog Narrow) allows a service engineer to adjust the Maximum Deviation (Analog Narrow) level of the transceiver.

Connection Diagram	Display for Operation
	

Adjustment Procedure

1. Double-click “Maximum Deviation (Analog Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **High**, **Low (TA)**, or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches 2100 Hz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 15 kHz
HPF: Off
Deviation Meter = 2050 Hz to 2150 Hz
If a value of 492 (NX-900)/ 480 (NX-901) is configured for the Data value, a deviation which is close to the above adjustment value can be acquired.

Remarks

Balance must be adjusted in advance. (Refer to 4.3.10 Balance on page 57.)

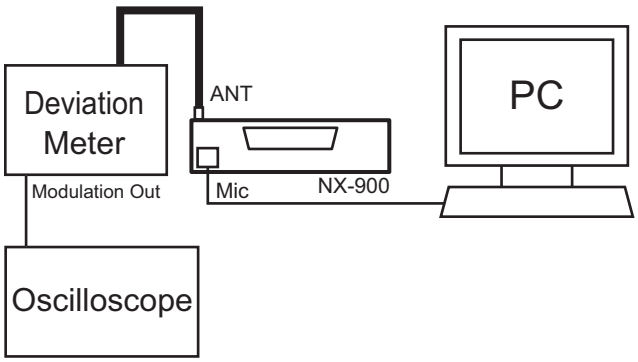
4.4.14 Maximum Deviation (Analog Wide 4k)

NX-900

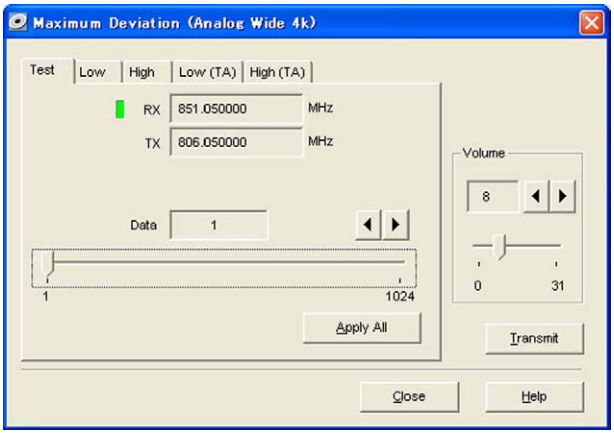
Outline

Maximum Deviation (Analog Wide 4k) allows a service engineer to adjust the Maximum Deviation (Analog Wide 4k) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Maximum Deviation (Analog Wide 4k)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **High**, **Low (TA)**, or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches 3360 Hz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 15 kHz
HPF: Off
Deviation Meter = 3310 Hz to 3410 Hz
If a value of 496 is configured for the Data value, a deviation which is close to the above adjustment value can be acquired.

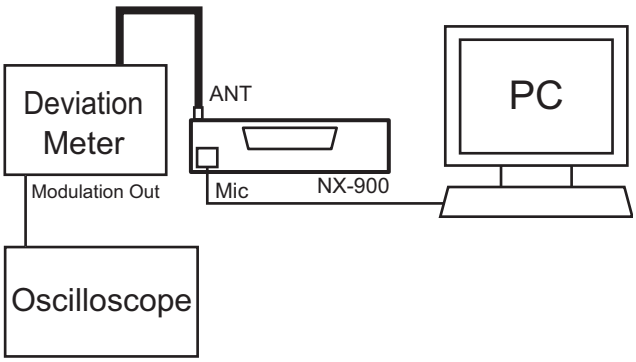
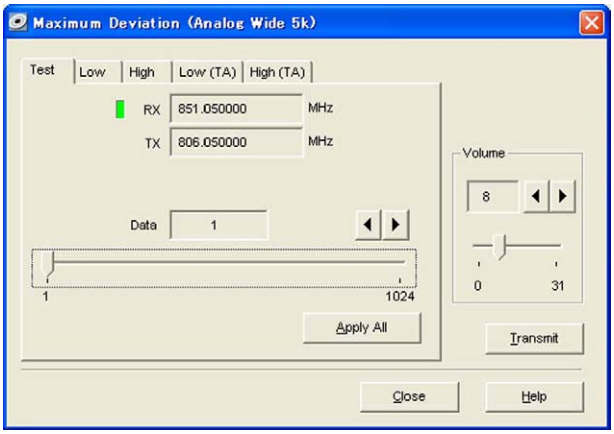
Remarks

Balance must be adjusted in advance. (Refer to 4.3.10 Balance on page 57.)

4.4.15 Maximum Deviation (Analog Wide 5k)

NX-900

Outline
Maximum Deviation (Analog Wide 5k) allows a service engineer to adjust the Maximum Deviation (Analog Wide 5k) level of the transceiver.

Connection Diagram	Display for Operation
	

Adjustment Procedure

1. Double-click “Maximum Deviation (Analog Wide 5k)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **High**, **Low (TA)**, or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches 4200 Hz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

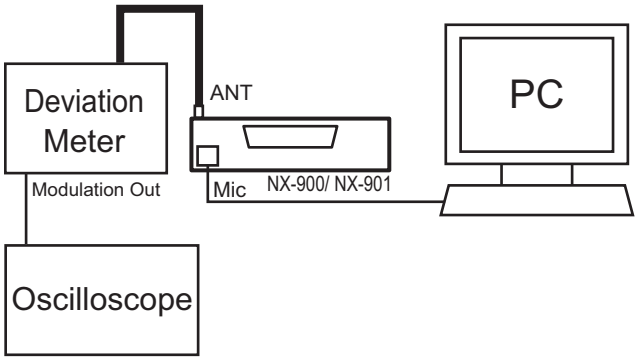
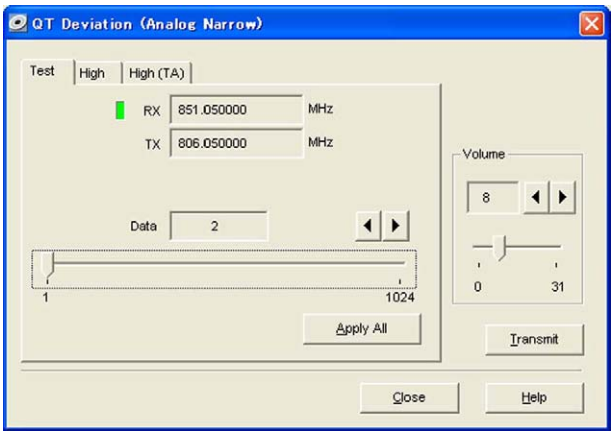
Emphasis: Off
LPF: 15 kHz
HPF: Off
Deviation Meter = 4150 Hz to 4250 Hz
If a value of 498 is configured for the Data value, a deviation which is close to the above adjustment value can be acquired.

Remarks

Balance must be adjusted in advance. (Refer to 4.3.10 Balance on page 57.)

4.4.16 QT Deviation (Analog Narrow)

NX-900/ NX-901

Outline	
QT Deviation (Analog Narrow) allows a service engineer to adjust the QT Deviation (Analog Narrow) level of the transceiver.	
Connection Diagram	**Display for Operation**
	

Adjustment Procedure

1. Double-click “QT Deviation (Analog Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click a tab title, the **High** or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches in the range between 0.30 kHz and 0.40 kHz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter = 0.30 kHz to 0.40 kHz
Reaching the adjusted value to be 513 achieves to the value for deviation as close as the above adjusted value.

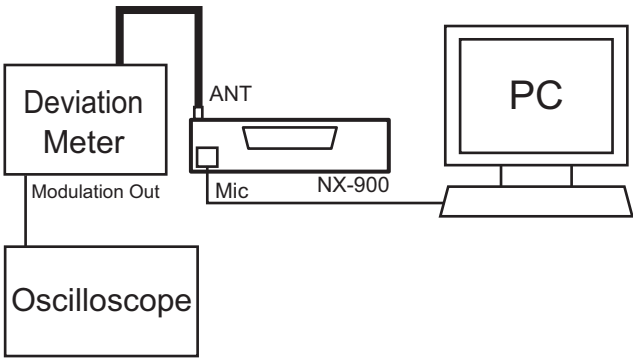
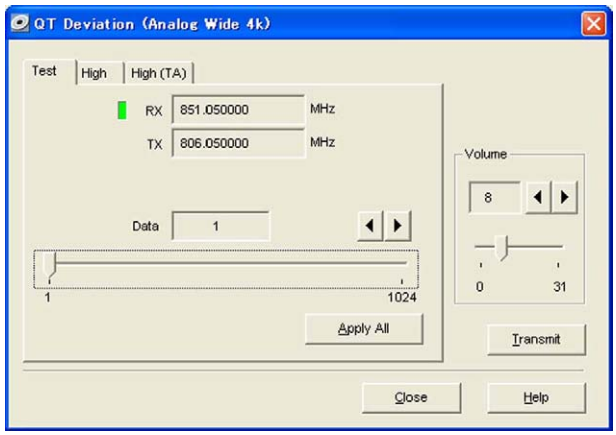
Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Narrow). (Refer to 4.3.10 Balance on page 57, 4.3.13 Maximum Deviation (Analog Narrow) on page 60.)

4.4.17 QT Deviation (Analog Wide 4k)

NX-900

Outline
QT Deviation (Analog Wide 4k) allows a service engineer to adjust the QT Deviation (Analog Wide 4k) level of the transceiver.

Connection Diagram	Display for Operation
	

Adjustment Procedure

1. Double-click “QT Deviation (Analog Wide 4k)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **High** or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches in the range between 0.55 kHz and 0.65 kHz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter = 0.55 kHz to 0.65 kHz
Reaching the adjusted value to be 513 achieves to the value for deviation as close as the above adjusted value.

Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Wide 4k). (Refer to 4.3.10 Balance on page 57, 4.3.14 Maximum Deviation (Analog Wide) on page 61.)

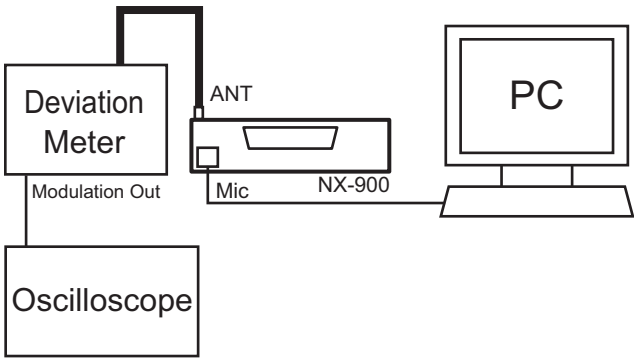
4.4.18 QT Deviation (Analog Wide 5k)

NX-900

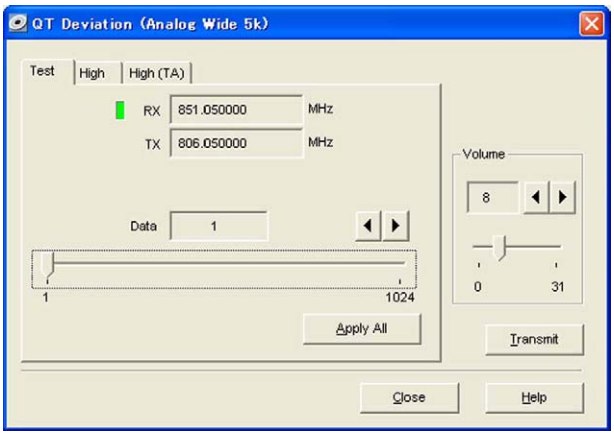
Outline

QT Deviation (Analog Wide 5k) allows a service engineer to adjust the QT Deviation (Analog Wide 5k) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “QT Deviation (Analog Wide 5k)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **High** or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches in the range between 0.70 kHz and 0.80 kHz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter = 0.70 kHz to 0.80 kHz
Reaching the adjusted value to be 513 achieves to the value for deviation as close as the above adjusted value.

Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Wide 5k). (Refer to 4.3.10 Balance on page 57, 4.4.15 Maximum Deviation (Analog Wide 5k) on page 105.)

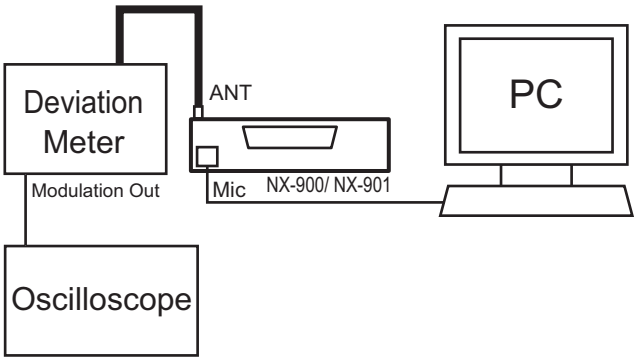
4.4.19 DQT Deviation (Analog Narrow)

NX-900/ NX-901

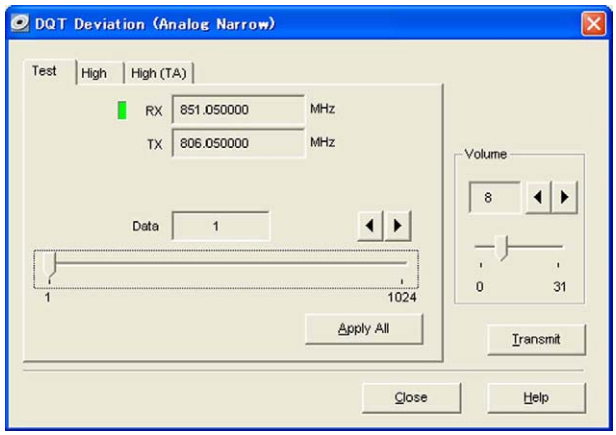
Outline

DQT Deviation (Analog Narrow) allows a service engineer to adjust the DQT Deviation (Analog Narrow) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “DQT Deviation (Analog Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click a tab title, the **High** or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches in the range between 0.30 kHz and 0.40 kHz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter = 0.30 kHz to 0.40 kHz
Reaching the adjusted value to be 430 achieves to the value for deviation as close as the above adjusted value.

Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Narrow). (Refer to 4.3.10 Balance on page 57, 4.3.13 Maximum Deviation (Analog Narrow) on page 60.)

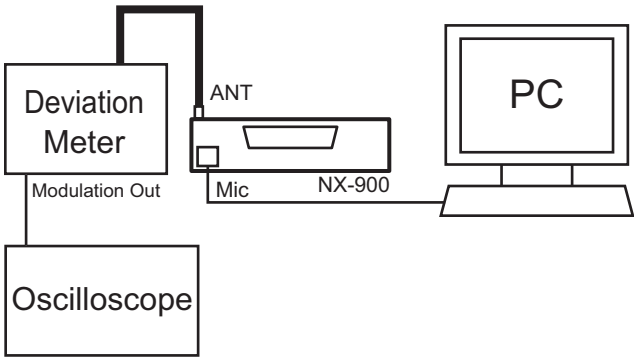
4.4.20 DQT Deviation (Analog Wide 4k)

NX-900

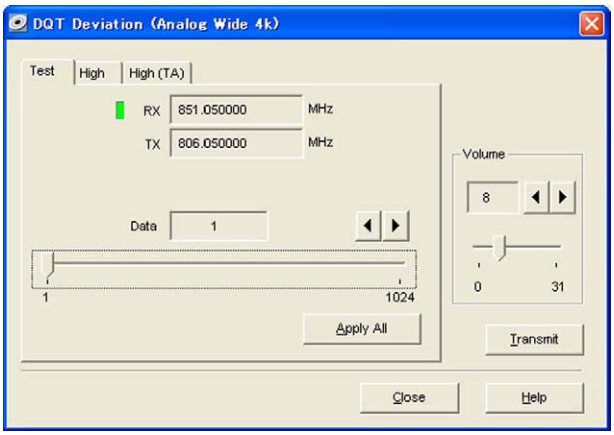
Outline

DQT Deviation (Analog Wide 4k) allows a service engineer to adjust the DQT Deviation (Analog Wide 4k) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “DQT Deviation (Analog Wide 4k)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **High** or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches in the range between 0.55 kHz and 0.65 kHz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter = 0.55 kHz to 0.65 kHz
Reaching the adjusted value to be 430 achieves to the value for deviation as close as the above adjusted value.

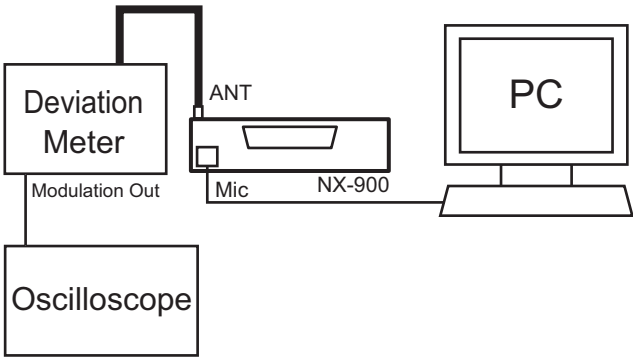
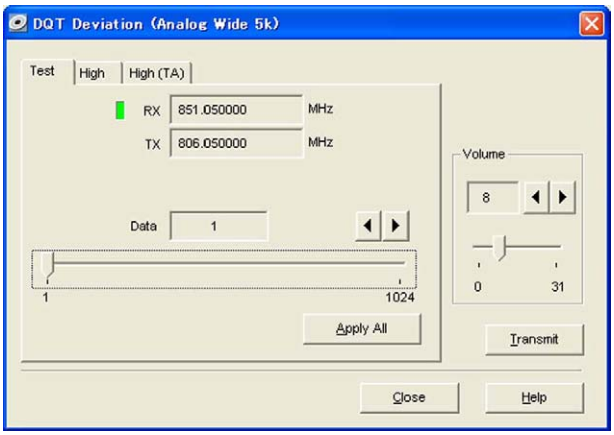
Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Wide 4k). (Refer to 4.3.10 Balance on page 57, 4.3.14 Maximum Deviation (Analog Wide) on page 61.)

4.4.21 DQT Deviation (Analog Wide 5k)

NX-900

Outline
DQT Deviation (Analog Wide 5k) allows a service engineer to adjust the DQT Deviation (Analog Wide 5k) level of the transceiver.

Connection Diagram	Display for Operation
	

Adjustment Procedure

1. Double-click “DQT Deviation (Analog Wide 5k)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **High** or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches in the range between 0.70 kHz and 0.80 kHz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter = 0.70 kHz to 0.80 kHz
Reaching the adjusted value to be 430 achieves to the value for deviation as close as the above adjusted value.

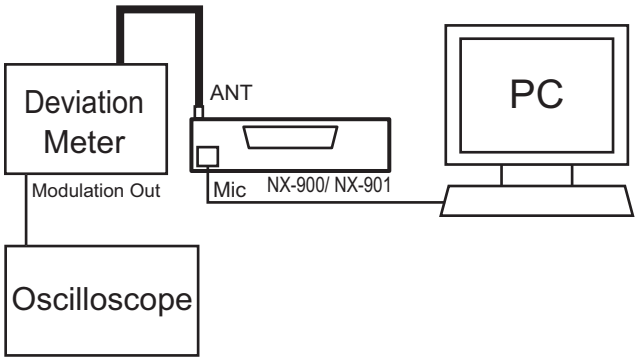
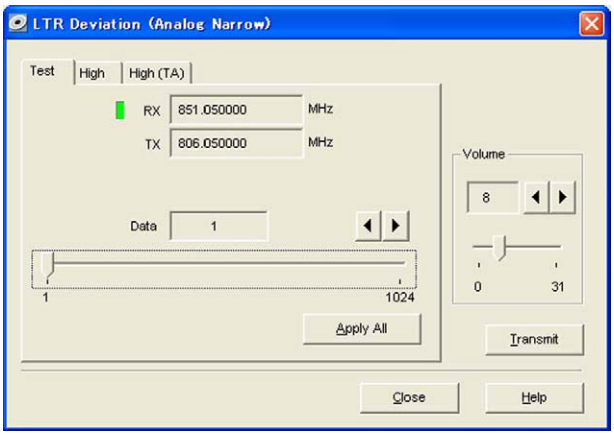
Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Wide 5k). (Refer to 4.3.10 Balance on page 57, 4.4.15 Maximum Deviation (Analog Wide 5k) on page 105.)

4.4.22 LTR Deviation (Analog Narrow)

NX-900/ NX-901

Outline
LTR Deviation (Analog Narrow) allows a service engineer to adjust the LTR Deviation (Analog Narrow) level of the transceiver.

Connection Diagram	Display for Operation
	

Adjustment Procedure

1. Double-click “LTR Deviation (Analog Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click a tab title, the **High** or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches in the range between 0.65 kHz and 0.85 kHz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter = 0.65 kHz to 0.85 kHz
If a value of 465 (NX-900)/ 494 (NX-901) is configured for the Data value, a deviation which is close to the above adjustment value can be acquired.

Remarks

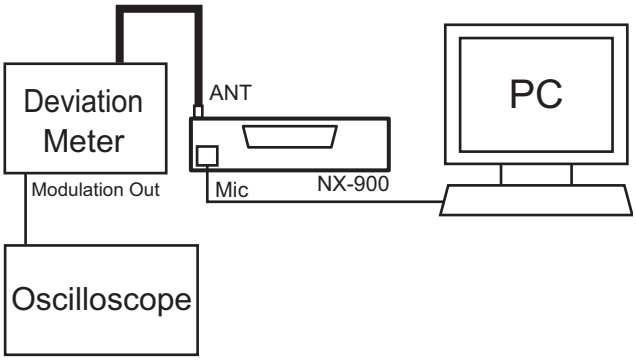
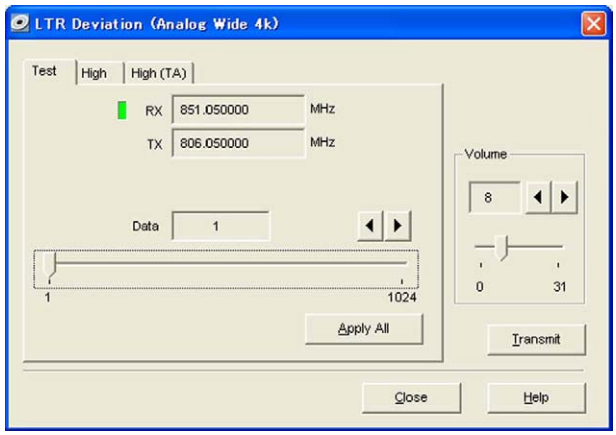
This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Narrow). (Refer to 4.3.10 Balance on page 57, 4.3.13 Maximum Deviation (Analog Narrow) on page 60.)

4.4.23 LTR Deviation (Analog Wide 4k)

NX-900

Outline

LTR Deviation (Analog Wide 4k) allows a service engineer to adjust the LTR Deviation (Analog Wide 4k) level of the transceiver.

Connection Diagram	Display for Operation
	

Adjustment Procedure

1. Double-click “LTR Deviation (Analog Wide 4k)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **High** or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches in the range between 0.80 kHz and 1.00 kHz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter = 0.80 kHz to 1.00 kHz
Reaching the adjusted value to be 523 achieves to the value for deviation as close as the above adjusted value.

Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Wide 4k). (Refer to 4.3.10 Balance on page 57, 4.3.14 Maximum Deviation (Analog Wide) on page 61.)

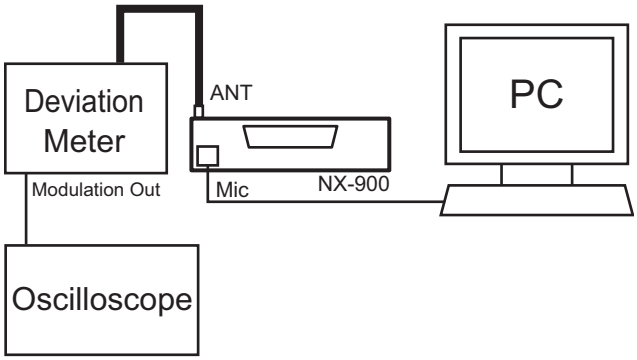
4.4.24 LTR Deviation (Analog Wide 5k)

NX-900

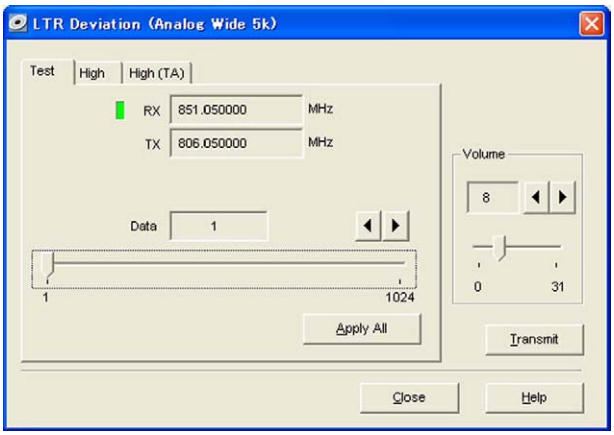
Outline

LTR Deviation (Analog Wide 5k) allows a service engineer to adjust the LTR Deviation (Analog Wide 5k) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “LTR Deviation (Analog Wide 5k)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **High** or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches in the range between 0.90 kHz and 1.10 kHz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter = 0.90 kHz to 1.10 kHz
Reaching the adjusted value to be 465 achieves to the value for deviation as close as the above adjusted value.

Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Wide 5k). (Refer to 4.3.10 Balance on page 57, 4.4.15 Maximum Deviation (Analog Wide 5k) on page 105.)

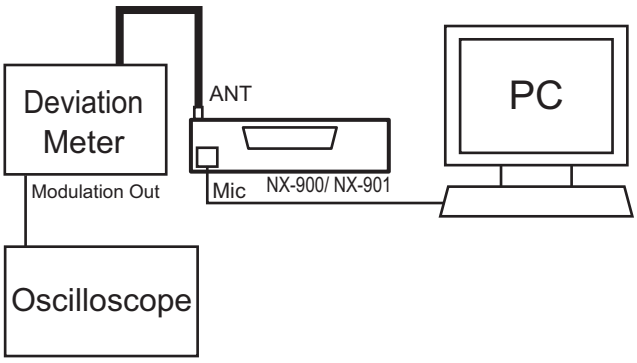
4.4.25 DTMF Deviation (Analog Narrow)

NX-900/ NX-901

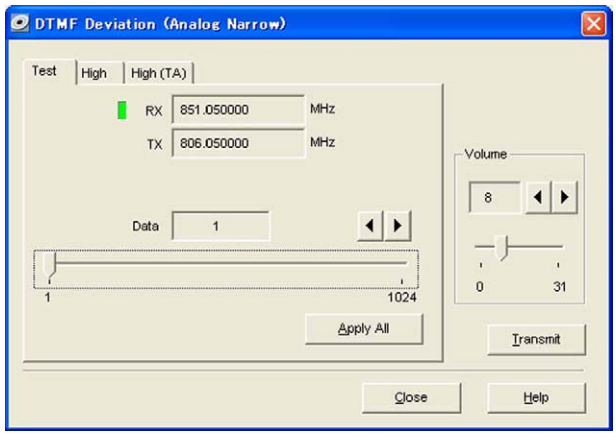
Outline

DTMF Deviation (Analog Narrow) allows a service engineer to adjust the DTMF Deviation (Analog Narrow) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “DTMF Deviation (Analog Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click a tab title, the **High** or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches in the range between 1.40 kHz and 1.60 kHz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 15 kHz
HPF: Off
Deviation Meter = 1.40 kHz to 1.60 kHz
If a value of 650 (NX-900)/ 662 (NX-901) is configured for the Data value, a deviation which is close to the above adjustment value can be acquired.

Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Narrow). (Refer to 4.3.10 Balance on page 57, 4.3.13 Maximum Deviation (Analog Narrow) on page 60.)

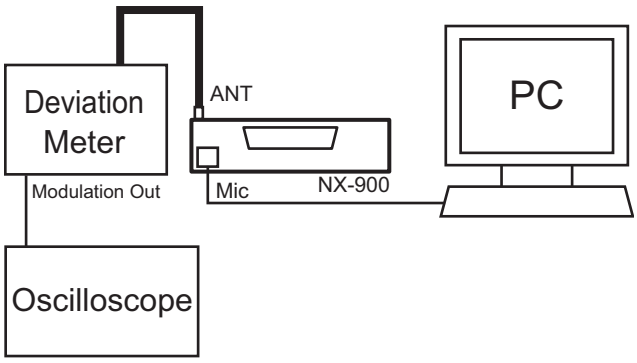
4.4.26 DTMF Deviation (Analog Wide 4k)

NX-900

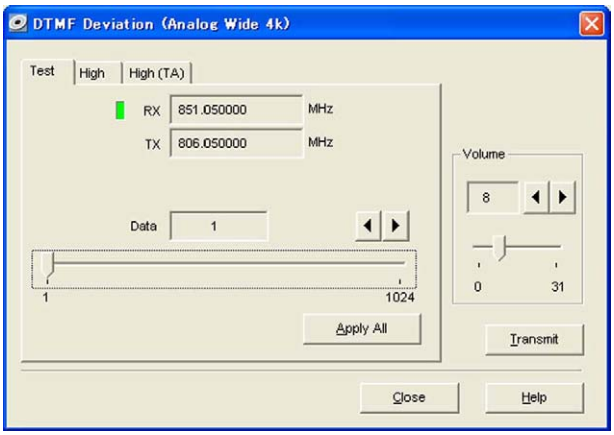
Outline

DTMF Deviation (Analog Wide 4k) allows a service engineer to adjust the DTMF Deviation (Analog Wide 4k) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “DTMF Deviation (Analog Wide 4k)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **High** or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches in the range between 2.30 kHz and 2.50 kHz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 15 kHz
HPF: Off
Deviation Meter = 2.30 kHz to 2.50 kHz
Reaching the adjusted value to be 650 achieves to the value for deviation as close as the above adjusted value.

Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Wide 4k). (Refer to 4.3.10 Balance on page 57, 4.3.14 Maximum Deviation (Analog Wide) on page 61.)

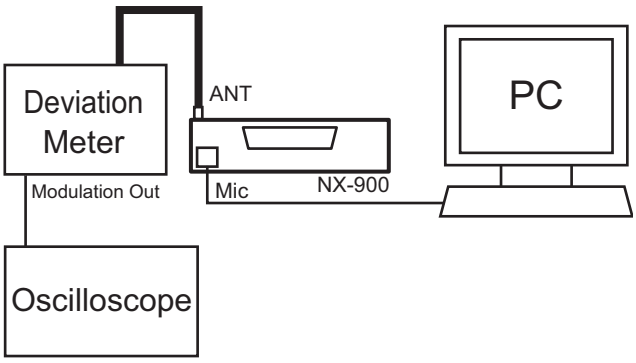
4.4.27 DTMF Deviation (Analog Wide 5k)

NX-900

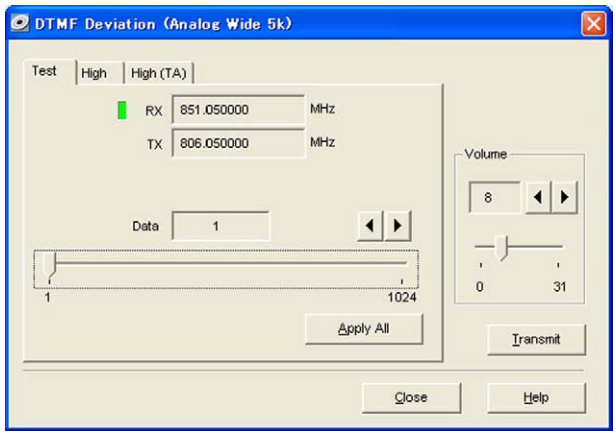
Outline

DTMF Deviation (Analog Wide 5k) allows a service engineer to adjust the DTMF Deviation (Analog Wide 5k) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “DTMF Deviation (Analog Wide 5k)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **High** or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches in the range between 2.90 kHz and 3.10 kHz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 15 kHz
HPF: Off
Deviation Meter = 2.90 kHz to 3.10 kHz
Reaching the adjusted value to be 650 achieves to the value for deviation as close as the above adjusted value.

Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Wide 5k). (Refer to 4.3.10 Balance on page 57, 4.4.15 Maximum Deviation (Analog Wide 5k) on page 105.)

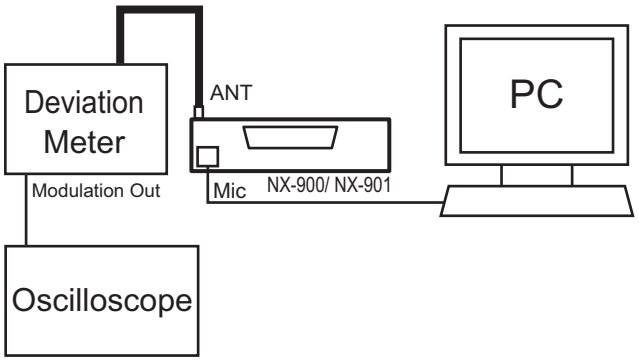
4.4.28 MSK Deviation (Analog Narrow)

NX-900/ NX-901

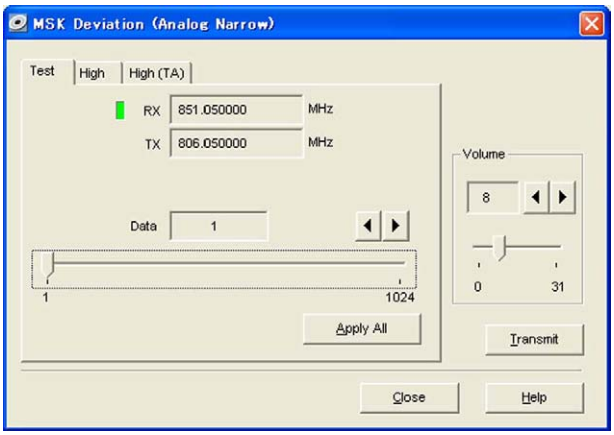
Outline

MSK Deviation (Analog Narrow) allows a service engineer to adjust the MSK Deviation (Analog Narrow) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “MSK Deviation (Analog Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click a tab title, the **High** or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches in the range between 1.40 kHz and 1.60 kHz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 15 kHz
HPF: Off
Deviation Meter = 1.40 kHz to 1.60 kHz
Reaching the adjusted value to be 513 achieves to the value for deviation as close as the above adjusted value.

Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Narrow). (Refer to 4.3.10 Balance on page 57, 4.3.13 Maximum Deviation (Analog Narrow) on page 60.)

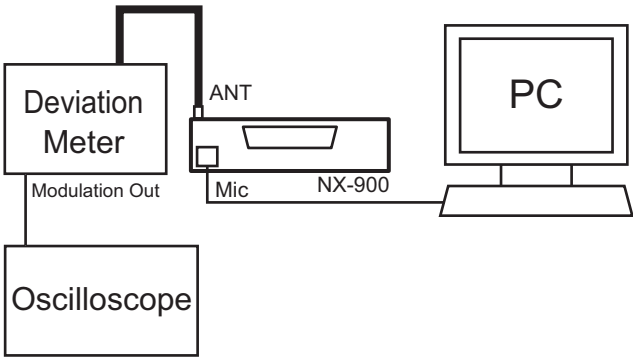
4.4.29 MSK Deviation (Analog Wide 4k)

NX-900

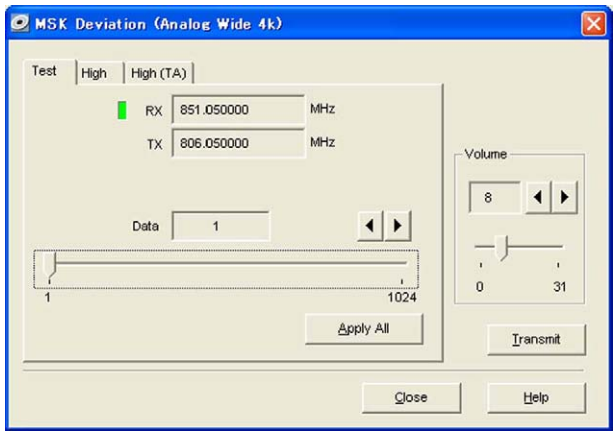
Outline

MSK Deviation (Analog Wide 4k) allows a service engineer to adjust the MSK Deviation (Analog Wide 4k) level used for FleetSync.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “MSK Deviation (Analog Wide 4k)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **High** or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches in the range between 2.30 kHz and 2.50 kHz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 15 kHz
HPF: Off
Deviation Meter = 2.30 kHz to 2.50 kHz
Reaching the adjusted value to be 513 achieves to the value for deviation as close as the above adjusted value.

Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Wide 4k). (Refer to 4.3.10 Balance on page 57, 4.3.14 Maximum Deviation (Analog Wide) on page 61.)

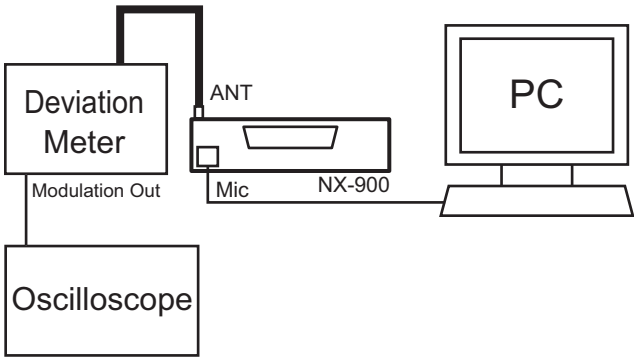
4.4.30 MSK Deviation (Analog Wide 5k)

NX-900

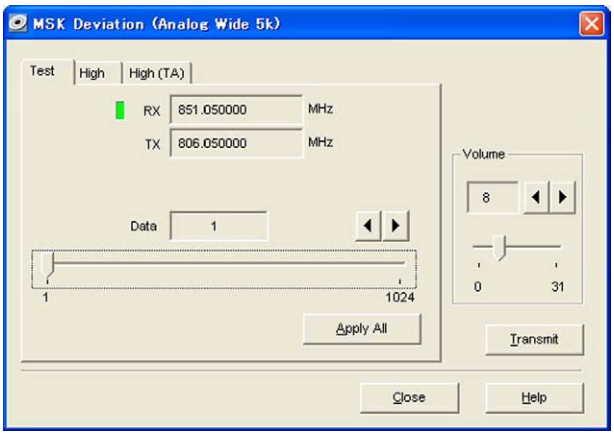
Outline

MSK Deviation (Analog Wide 5k) allows a service engineer to adjust the MSK Deviation (Analog Wide 5k) level used for FleetSync.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “MSK Deviation (Analog Wide 5k)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **High** or **High (TA)** tab, to select an adjustment point.
3. Click the “Transmit” button.
4. Adjust the data until the value measured by a deviation meter reaches in the range between 2.90 kHz and 3.10 kHz.
5. Do the same adjustment for other adjustment points.
6. Click the “Apply All” button after adjusting all adjustment points.

Adjusted Value

Emphasis: Off
LPF: 15 kHz
HPF: Off
Deviation Meter = 2.90 kHz to 3.10 kHz
Reaching the adjusted value to be 513 achieves to the value for deviation as close as the above adjusted value.

Remarks

This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (Analog Wide 5k). (Refer to 4.3.10 Balance on page 57, 4.4.15 Maximum Deviation (Analog Wide 5k) on page 105.)

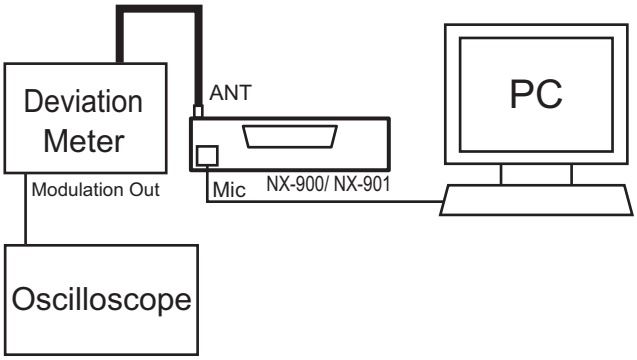
4.4.31 CW ID Deviation (NXDN Very Narrow)

NX-900/ NX-901

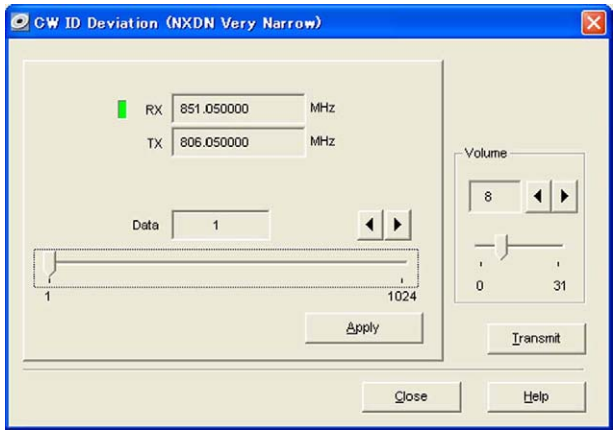
Outline

CW ID Deviation (NXDN Very Narrow) allows a service engineer to adjust the CW ID Deviation (NXDN Very Narrow) level of the transceiver.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “CW ID Deviation (NXDN Very Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click the “Transmit” button.
3. Adjust the data until the value measured by a deviation meter reaches in the range between 1.00 kHz and 1.20 kHz.
4. Click the “Apply” button.

Adjusted Value

Emphasis: Off
LPF: 3 kHz
HPF: Off
Deviation Meter = 1.00 kHz to 1.20 kHz
If a value of 375 (NX-900)/ 390 (NX-901) is configured for the Data value, a deviation which is close to the above adjustment value can be acquired.

Remarks

- This adjustment must be done after adjusting the Balance and then adjusting the Maximum Deviation (NXDN Very Narrow). (Refer to 4.3.10 Balance on page 57, 4.3.12 Maximum Deviation (NXDN Very Narrow) on page 59.)
- CW ID is used to notify other users which user is using the channel with a 6.25 kHz channel bandwidth. (FCC requires that the transceiver has the analog mode capability or the CW ID function for each bandwidth.)

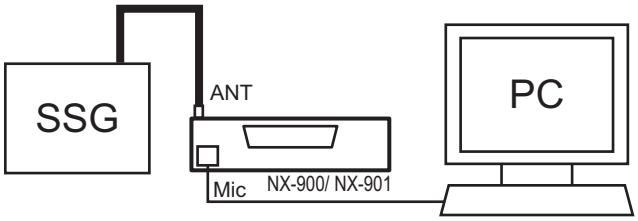
4.4.32 RSSI Reference (Analog Narrow)

NX-900/ NX-901

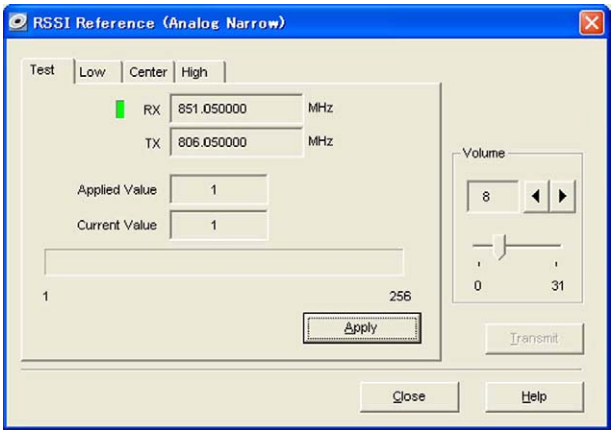
Outline

RSSI Reference (Analog Narrow) allows a service engineer to adjust the minimum RSSI (Analog Narrow and NXDN Narrow) level at which the transceiver recognizes a channel as the channel to be scanned.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “RSSI Reference (Analog Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Set the output level of a signal to be 3 dB lower than the receive sensitivity for Analog Narrow, and start sourcing from an SSG the signal with audio frequency at 1 kHz and deviation at 1.5 kHz.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

Sensitivity of Analog Narrow must be measured for each adjustment point in advance.

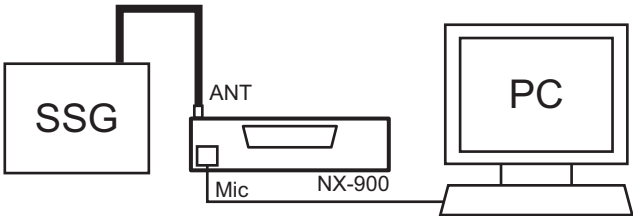
4.4.33 RSSI Reference (Analog Wide 4k)

NX-900

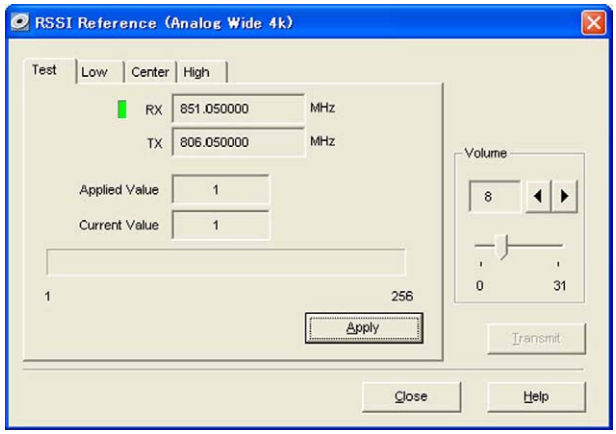
Outline

RSSI Reference (Analog Wide 4k) allows a service engineer to adjust the minimum RSSI (Analog Wide 4k) level at which the transceiver recognizes a channel as the channel to be scanned.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “RSSI Reference (Analog Wide 4k)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Set the output level of a signal to be 3 dB lower than the receive sensitivity for Analog Wide 4k, and start sourcing from an SSG the signal with audio frequency at 1 kHz and deviation at 2.4 kHz.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

Sensitivity of Analog Wide 4k must be measured for each adjustment point in advance.

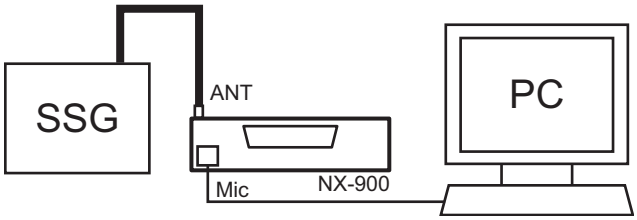
4.4.34 RSSI Reference (Analog Wide 5k)

NX-900

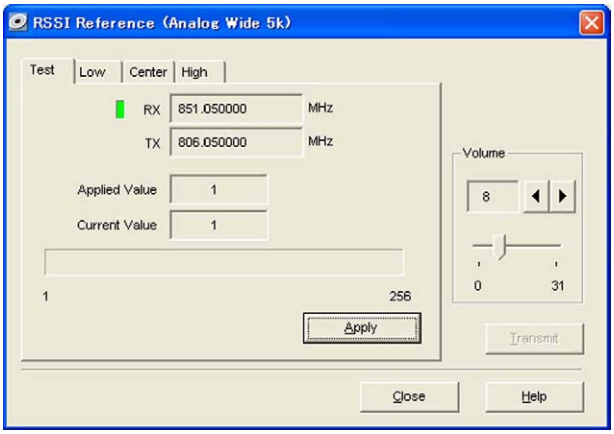
Outline

RSSI Reference (Analog Wide 5k) allows a service engineer to adjust the minimum RSSI (Analog Wide 5k) level at which the transceiver recognizes a channel as the channel to be scanned.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “RSSI Reference (Analog Wide 5k)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Set the output level of a signal to be 3 dB lower than the receive sensitivity for Analog Wide 5k, and start sourcing from an SSG the signal with audio frequency at 1 kHz and deviation at 3 kHz.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

Sensitivity of Analog Wide 5k must be measured for each adjustment point in advance.

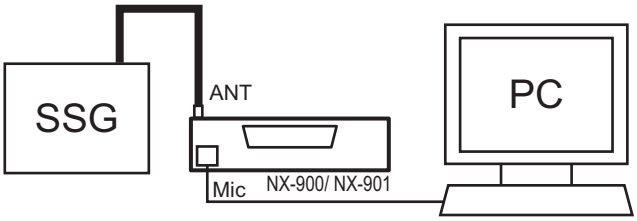
4.4.35 RSSI Reference (NXDN Narrow)

NX-901

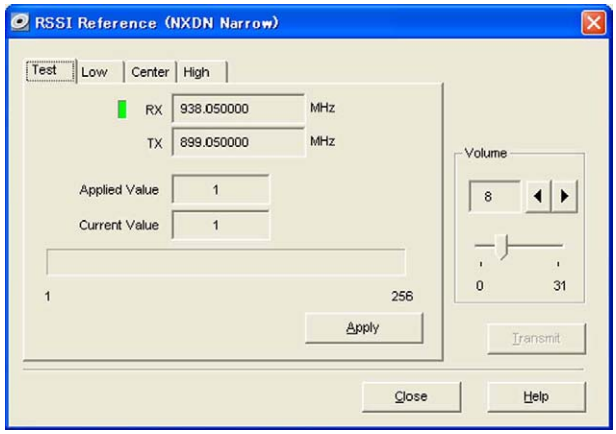
Outline

RSSI Reference (NXDN Narrow) allows a service engineer to adjust the minimum RSSI (NXDN Narrow) level at which the transceiver recognizes a channel as the channel to be scanned.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “RSSI Reference (NXDN Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Set the output level of an analog signal to be 3 dB lower than the receive sensitivity for Analog Wide, and start sourcing from an SSG the signal with audio frequency at 1 kHz and deviation at 3 kHz.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

- Sensitivity of Analog Wide must be measured for each adjustment point in advance.
- RSSI Reference (NXDN Narrow) can be adjusted using analog signals; hence, digital signal equipment is not required.

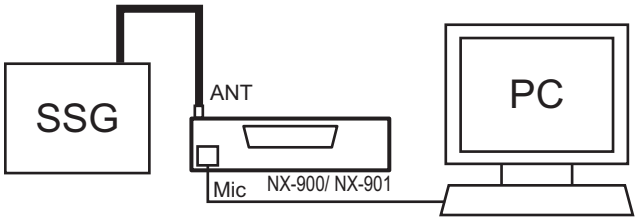
4.4.36 RSSI Reference (NXDN Very Narrow)

NX-900/ NX-901

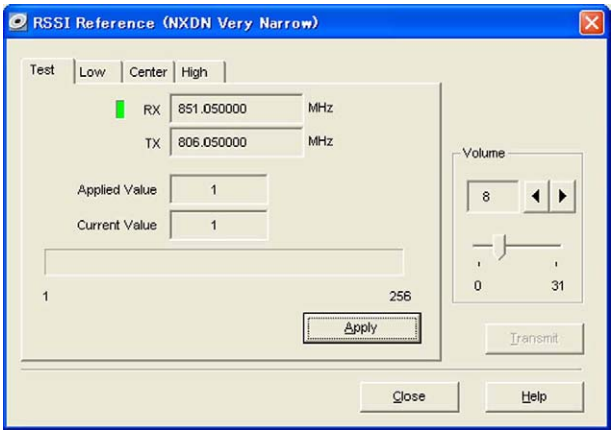
Outline

RSSI Reference (NXDN Very Narrow) allows a service engineer to adjust the minimum RSSI (NXDN Very Narrow) level at which the transceiver recognizes a channel as the channel to be scanned.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “RSSI Reference (NXDN Very Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Set the output level of an analog signal to be 3 dB lower than the receive sensitivity for Analog Narrow, and start sourcing from an SSG the signal with audio frequency at 1 kHz and deviation at 1.5 kHz.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

- Sensitivity of Analog Narrow must be measured for each adjustment point in advance.
- RSSI Reference (NXDN Very Narrow) can be adjusted using analog signals; hence, digital signal equipment is not required.

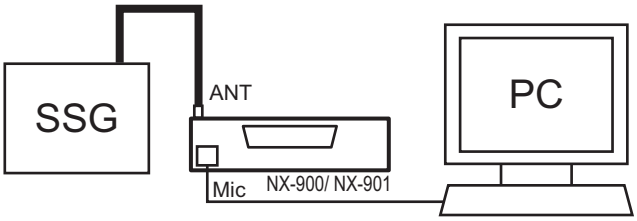
4.4.37 Open Squelch (Analog Narrow)

NX-900/ NX-901

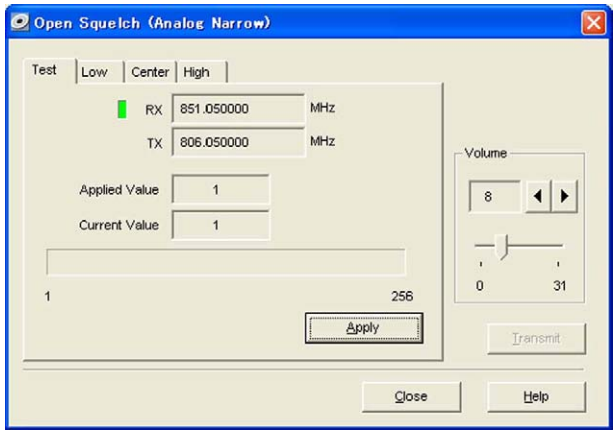
Outline

Open Squelch (Analog Narrow) allows a service engineer to adjust the Squelch (Analog Narrow and NXDN Narrow) level while a value of 5 is configured for Squelch Level.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Open Squelch (Analog Narrow)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Set the output level of a signal to be 1 dB higher than the receive sensitivity for Analog Narrow, and start sourcing from an SSG the signal with audio frequency at 1 kHz and deviation at 1.5 kHz.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

Sensitivity of Analog Narrow must be measured for each adjustment point in advance.

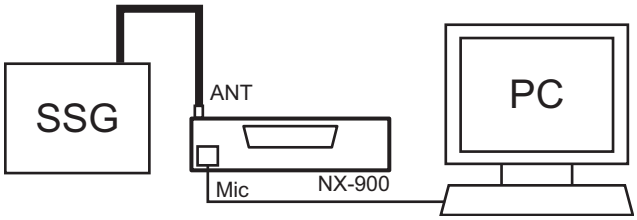
4.4.38 Open Squelch (Analog Wide 4k)

NX-900

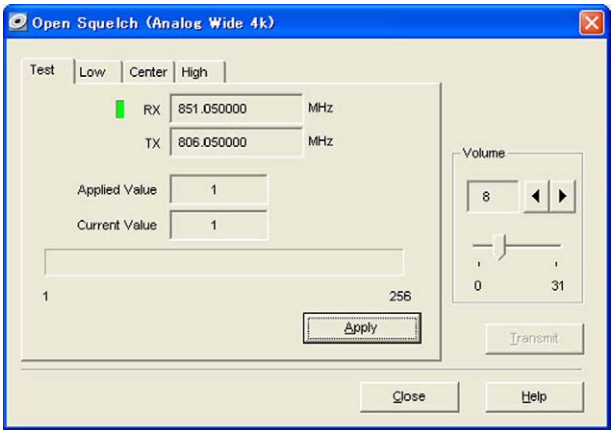
Outline

Open Squelch (Analog Wide 4k) allows a service engineer to adjust the Squelch (Analog Wide 4k) level while a value of 5 is configured for Squelch Level.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Open Squelch (Analog Wide 4k)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Set the output level of a signal to be 1 dB higher than the receive sensitivity for Analog Wide 4k, and start sourcing from an SSG the signal with audio frequency at 1 kHz and deviation at 2.4 kHz.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

Sensitivity of Analog Wide 4k must be measured for each adjustment point in advance.

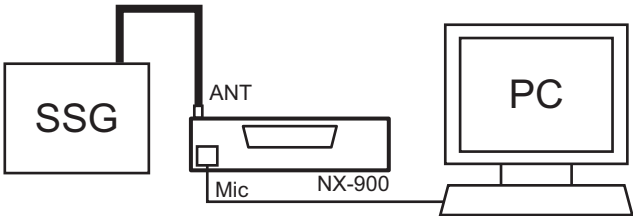
4.4.39 Open Squelch (Analog Wide 5k)

NX-900

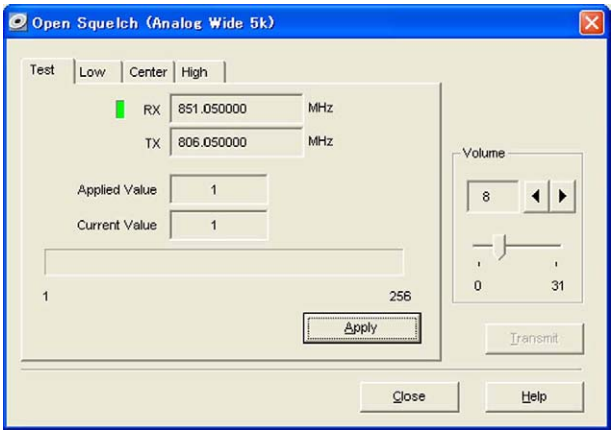
Outline

Open Squelch (Analog Wide 5k) allows a service engineer to adjust the Squelch (Analog Wide 5k) level while a value of 5 is configured for Squelch Level.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Open Squelch (Analog Wide 5k)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Set the output level of a signal to be 1 dB higher than the receive sensitivity for Analog Wide 5k, and start sourcing from an SSG the signal with audio frequency at 1 kHz and deviation at 3 kHz.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

Sensitivity of Analog Wide 5k must be measured for each adjustment point in advance.

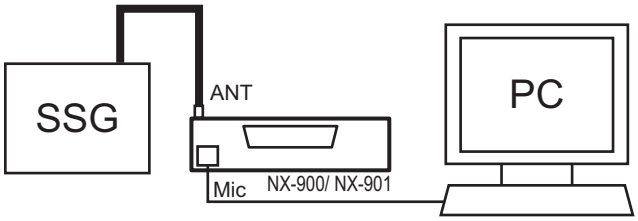
4.4.40 Open Squelch (NXDN Narrow)

NX-901

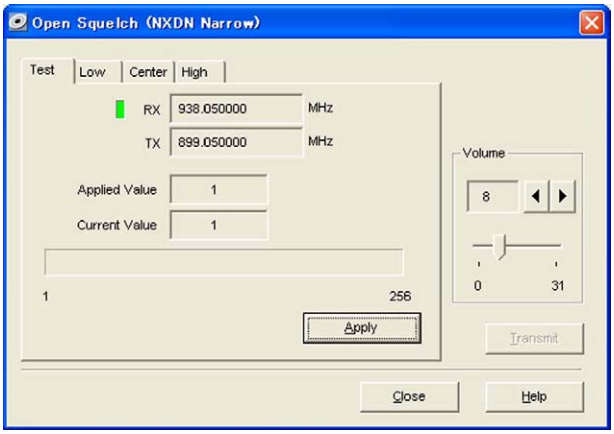
Outline

Open Squelch (NXDN Narrow) allows a service engineer to adjust the Squelch (NXDN Narrow) level while a value of 5 is configured for Squelch Level.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Open Squelch (Analog Narrow)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Set the output level of the signal to be 1 dB higher than the receive sensitivity for Analog Wide, and start sourcing from an SSG the signal with audio frequency at 1 kHz and deviation at 3 kHz.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

- Sensitivity of Analog Wide must be measured for each adjustment point in advance.
- Open Squelch (NXDN Narrow) can be adjusted using analog signals, hence digital signal equipment is not required.

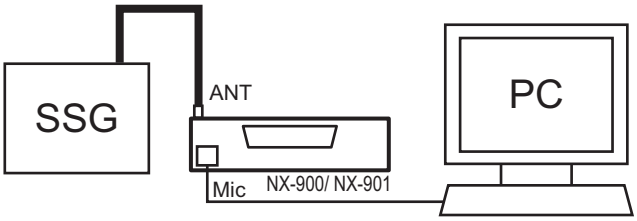
4.4.41 Open Squelch (NXDN Very Narrow)

NX-900/ NX-901

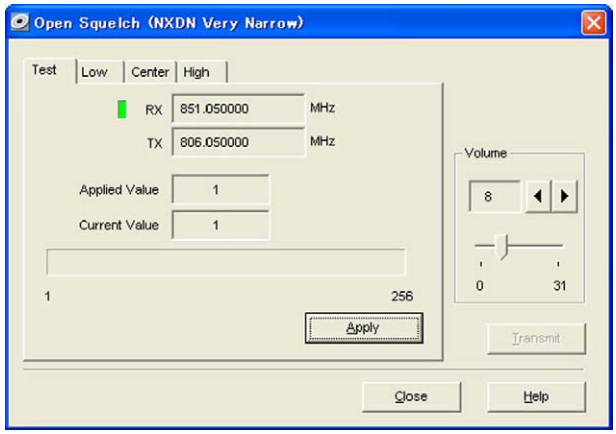
Outline

Open Squelch (NXDN Very Narrow) allows a service engineer to adjust the Squelch (NXDN Very Narrow) level while a value of 5 is configured for Squelch Level.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Open Squelch (NXDN Very Narrow)” in the adjustment item list of the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Set the output level of the signal to be 2 dB lower than the receive sensitivity for Analog Narrow, and start sourcing from an SSG the signal with audio frequency at 1 kHz and deviation at 1.5 kHz.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

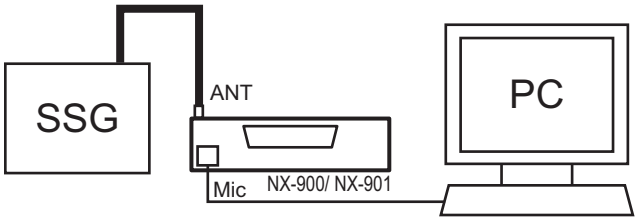
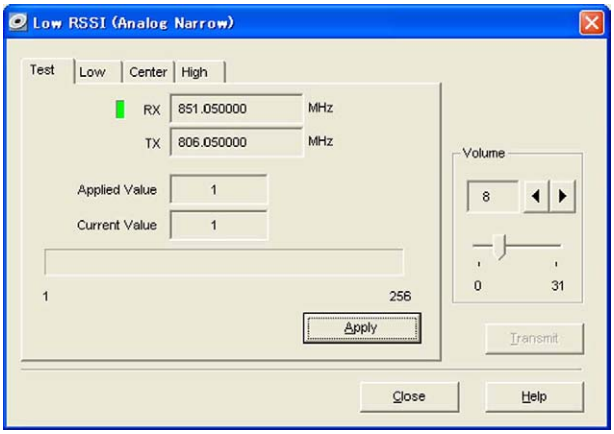
Remarks

- Sensitivity of Analog Narrow must be measured for each adjustment point in advance.
- Open Squelch (NXDN Very Narrow) can be adjusted using analog signals, hence digital signal equipment is not required.

4.4.42 Low RSSI (Analog Narrow)

NX-900/ NX-901

Outline
Low RSSI (Analog Narrow) allows a service engineer to adjust the signal strength of the RSSI indicator while the transceiver is operated in Analog Narrow band and NXDN Narrow band.

Connection Diagram	Display for Operation
	

Adjustment Procedure

1. Double-click “Low RSSI (Analog Narrow)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Start sourcing from an SSG a signal as follows: AF (1 kHz); Deviation (1.5 kHz) at -118 dBm.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

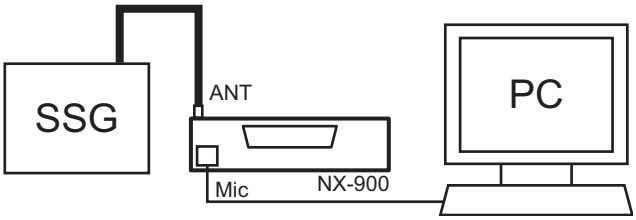
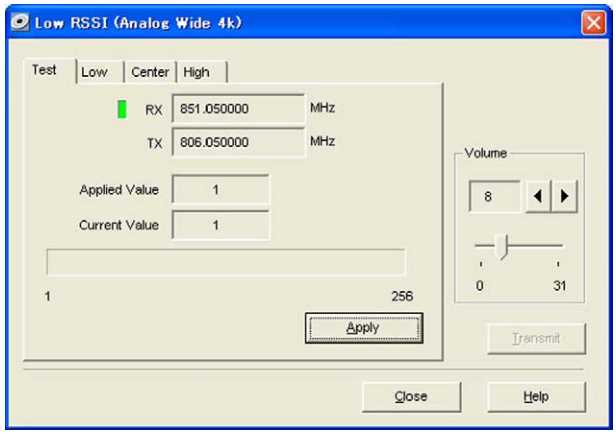
Remarks

Also, adjusting High RSSI (Analog Narrow) enables the RSSI indicator to display the RSSI level properly. (Refer to 4.3.39 High RSSI (Analog Narrow) on page 86.)

4.4.43 Low RSSI (Analog Wide 4k)

NX-900

Outline
Low RSSI (Analog Wide 4k) allows a service engineer to adjust the signal strength of the RSSI indicator while the transceiver is operated in Analog Wide 4k.

Connection Diagram	Display for Operation
	

Adjustment Procedure

1. Double-click “Low RSSI (Analog Wide 4k)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Start sourcing from an SSG a signal as follows: AF (1 kHz); Deviation (2.4 kHz) at -118 dBm.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

Also, adjusting High RSSI (Analog Wide 4k) enables the RSSI indicator to display the RSSI level properly. (Refer to 4.3.40 High RSSI (Analog Wide) on page 87.)

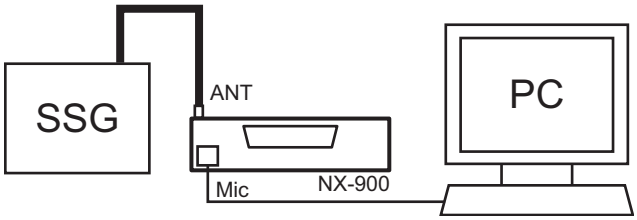
4.4.44 Low RSSI (Analog Wide 5k)

NX-900

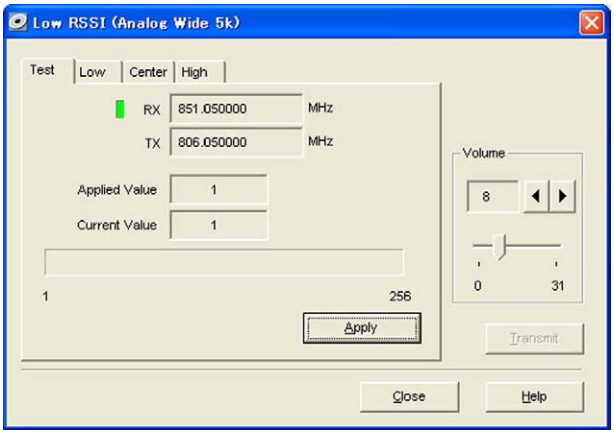
Outline

Low RSSI (Analog Wide 5k) allows a service engineer to adjust the signal strength of the RSSI indicator while the transceiver is operated in Analog Wide 5k.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Low RSSI (Analog Wide 5k)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Start sourcing from an SSG a signal as follows: AF (1 kHz); Deviation (3 kHz) at -118 dBm.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

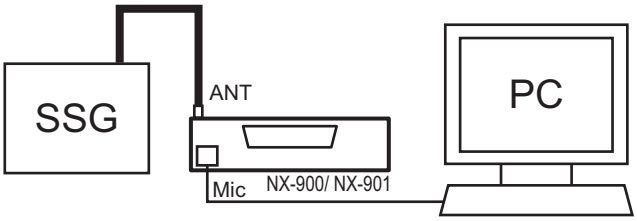
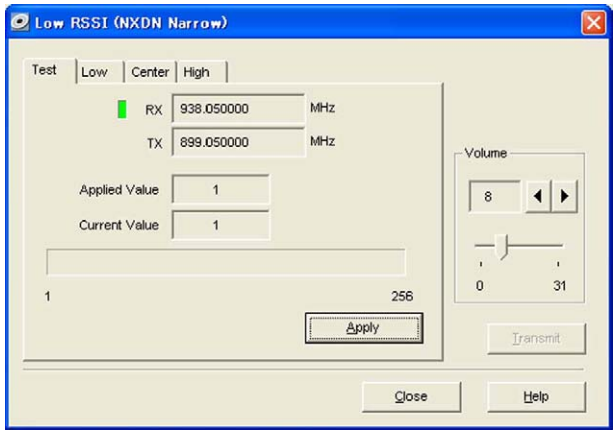
Remarks

Also, adjusting High RSSI (Analog Wide 5k) enables the RSSI indicator to display the RSSI level properly. (Refer to 4.4.49 High RSSI (Analog Wide 5k) on page 139.)

4.4.45 Low RSSI (NXDN Narrow)

NX-901

Outline
Low RSSI (NXDN Narrow) allows a service engineer to adjust the signal strength of the RSSI indicator while the transceiver is operated in NXDN Narrow band.

Connection Diagram	Display for Operation
	

Adjustment Procedure

1. Double-click “Low RSSI (NXDN Narrow)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Start sourcing from an SSG an analog signal as follows: AF (1 kHz); Deviation (3 kHz) at -118 dBm.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

- Low RSSI (NXDN Narrow) can be adjusted using analog signals, hence digital signal equipment is not required.
- Also, adjusting High RSSI (NXDN Narrow) enables the RSSI indicator to display the RSSI level properly. (Refer to 4.4.50 High RSSI (NXDN Narrow) on page 140.)

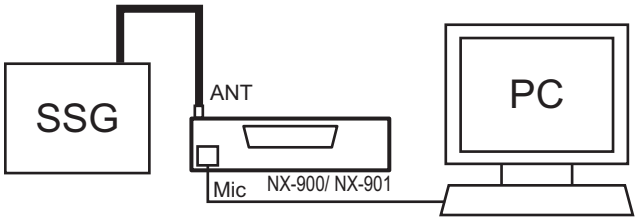
4.4.46 Low RSSI (NXDN Very Narrow)

NX-900/ NX-901

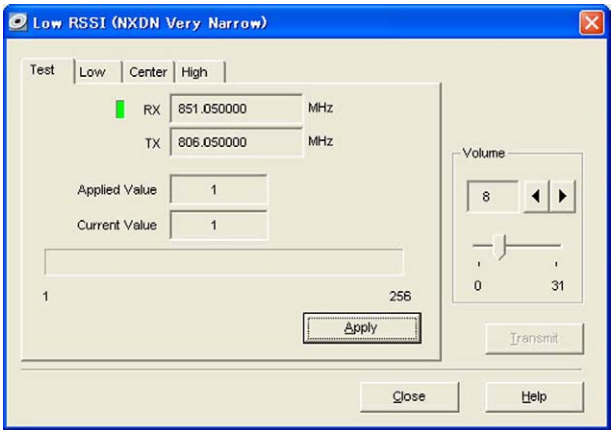
Outline

Low RSSI (NXDN Very Narrow) allows a service engineer to adjust the signal strength of the RSSI indicator while the transceiver is operated in NXDN Very Narrow band.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Low RSSI (NXDN Very Narrow)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Start sourcing from an SSG an analog signal as follows: AF (1 kHz); Deviation (1.5 kHz) at -118 dBm.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

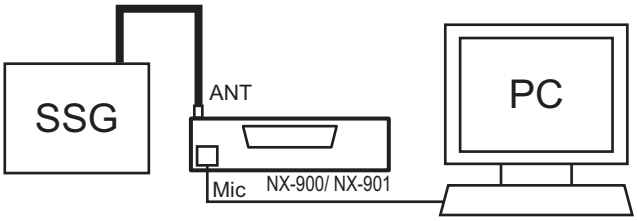
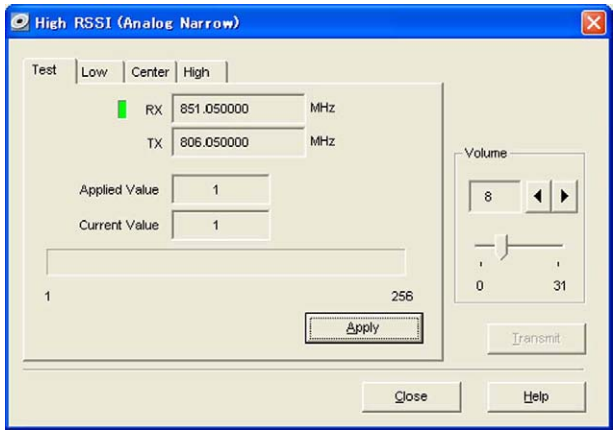
Remarks

- Low RSSI (NXDN Very Narrow) can be adjusted using analog signals, hence digital signal equipment is not required.
- Also, adjusting High RSSI (NXDN Very Narrow) enables the RSSI indicator to display the RSSI level properly. (Refer to 4.3.41 High RSSI (NXDN Very Narrow) on page 88.)

4.4.47 High RSSI (Analog Narrow)

NX-900/ NX-901

Outline
High RSSI (Analog Narrow) allows a service engineer to adjust the signal strength of the RSSI indicator while the transceiver is operated in Analog Narrow band and NXDN Narrow band.

Connection Diagram	Display for Operation
	

Adjustment Procedure

1. Double-click “High RSSI (Analog Narrow)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Start sourcing from an SSG a signal as follows: AF (1 kHz); Deviation (1.5 kHz) at -80 dBm.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

Also, adjusting Low RSSI (Analog Narrow) enables the RSSI indicator to display the RSSI level properly. (Refer to 4.3.36 Low RSSI (Analog Narrow) on page 83.)

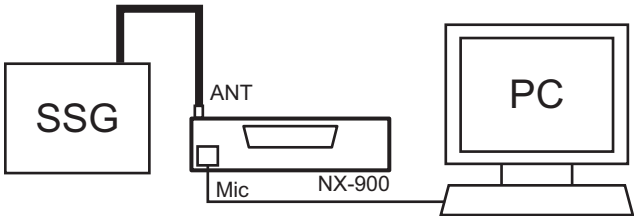
4.4.48 High RSSI (Analog Wide 4k)

NX-900

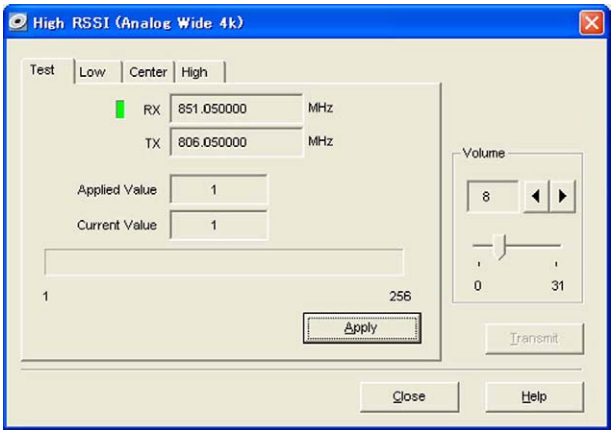
Outline

High RSSI (Analog Wide 4k) allows a service engineer to adjust the signal strength of the RSSI indicator while the transceiver is operated in Analog Wide 4k.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “High RSSI (Analog Wide 4k)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Start sourcing from an SSG a signal as follows: AF (1 kHz); Deviation (2.4 kHz) at -80 dBm.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

Also, adjusting Low RSSI (Analog Wide 4k) enables the RSSI indicator to display the RSSI level properly. (Refer to 4.3.37 Low RSSI (Analog Wide) on page 84.)

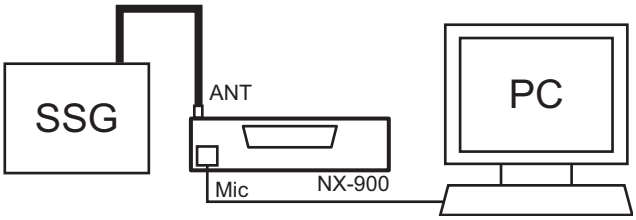
4.4.49 High RSSI (Analog Wide 5k)

NX-900

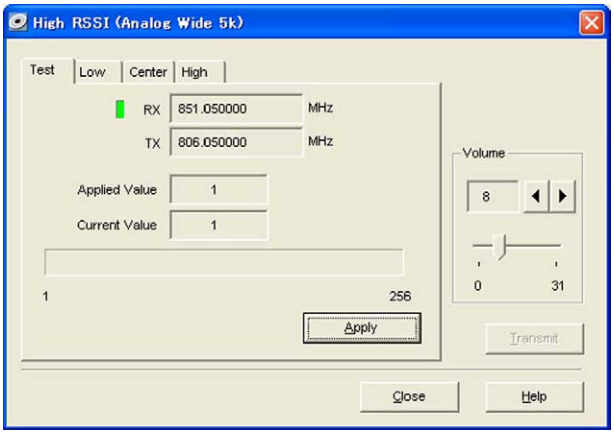
Outline

High RSSI (Analog Wide 5k) allows a service engineer to adjust the signal strength of the RSSI indicator while the transceiver is operated in Analog Wide 5k.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “High RSSI (Analog Wide 5k)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Start sourcing from an SSG a signal as follows: AF (1 kHz); Deviation (3 kHz) at -80 dBm.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

Also, adjusting Low RSSI (Analog Wide 5k) enables the RSSI indicator to display the RSSI level properly. (Refer to 4.4.44 Low RSSI (Analog Wide 5k) on page 134.)

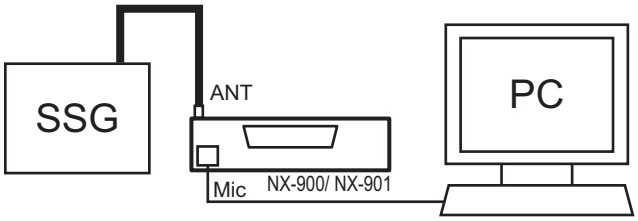
4.4.50 High RSSI (NXDN Narrow)

NX-901

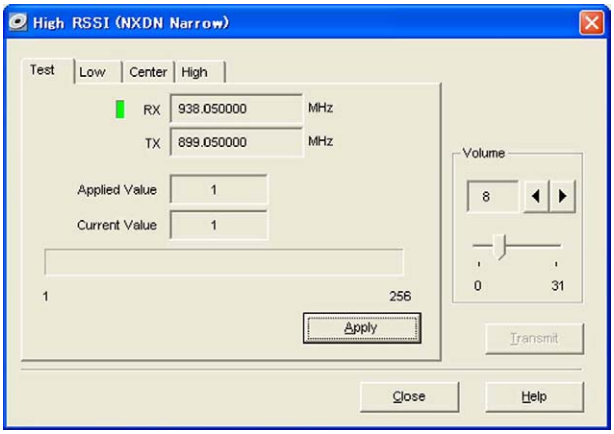
Outline

High RSSI (NXDN Narrow) allows a service engineer to adjust the signal strength of the RSSI indicator while the transceiver is operated in NXDN Narrow band.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “High RSSI (NXDN Narrow)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Start sourcing from an SSG an analog signal as follows: AF (1 kHz); Deviation (3 kHz) at -80 dBm.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

- High RSSI (NXDN Narrow) can be adjusted using analog signals, hence digital signal equipment is not required.
- Also, adjusting Low RSSI (NXDN Narrow) enables the RSSI indicator to display the RSSI level properly. (Refer to 4.4.45 Low RSSI (NXDN Narrow) on page 135.)

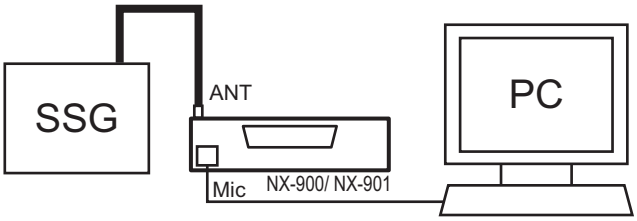
4.4.51 High RSSI (NXDN Very Narrow)

NX-900/ NX-901

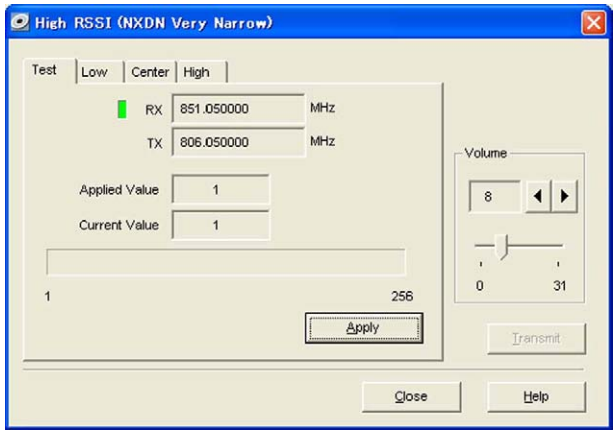
Outline

High RSSI (NXDN Very Narrow) allows a service engineer to adjust the signal strength of the RSSI indicator while the transceiver is operated in NXDN Very Narrow band.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “High RSSI (NXDN Very Narrow)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Start sourcing from an SSG an analog signal as follows: AF (1 kHz); Deviation (1.5 kHz) at -80 dBm.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

- High RSSI (NXDN Very Narrow) can be adjusted using analog signals, hence digital signal equipment is not required.
- Also, adjusting Low RSSI (NXDN Very Narrow) enables the RSSI indicator to display the RSSI level properly. (Refer to 4.3.38 Low RSSI (NXDN Very Narrow) on page 85.)

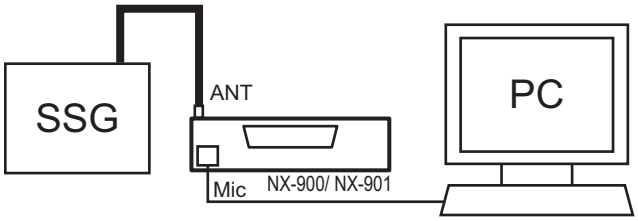
4.4.52 Tight Squelch (Analog Narrow)

NX-900/ NX-901

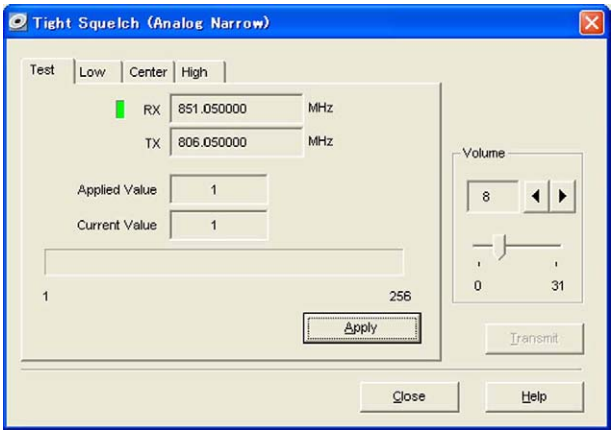
Outline

Tight Squelch (Analog Narrow) allows a service engineer to adjust the Squelch (Analog Narrow) level while a value of 9 is configured for Squelch Level.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Tight Squelch (Analog Narrow)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Set the output level of a signal to be 6 dB higher than the receive sensitivity for Analog Narrow, and start sourcing from an SSG the signal with audio frequency at 1 kHz and deviation at 1.5 kHz.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

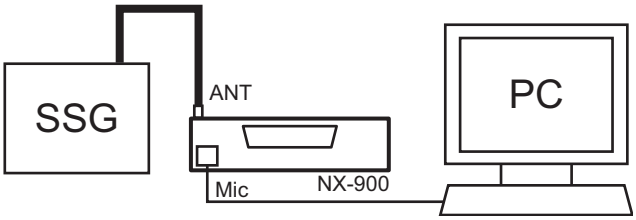
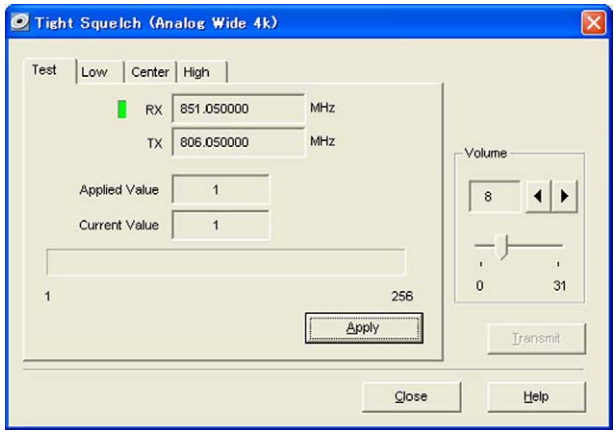
Remarks

Sensitivity of Analog Narrow must be measured for each adjustment point in advance.

4.4.53 Tight Squelch (Analog Wide 4k)

NX-900

Outline
Tight Squelch (Analog Wide 4k) allows a service engineer to adjust the Squelch (Analog Wide 4k) level while a value of 9 is configured for Squelch Level.

Connection Diagram	Display for Operation
	

Adjustment Procedure

1. Double-click “Tight Squelch (Analog Wide 4k)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Set the output level of a signal to be 1 dB higher than the receive sensitivity for Analog Wide 4k, and start sourcing from an SSG the signal with audio frequency at 6 kHz and deviation at 2.4 kHz.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

Sensitivity of Analog Wide 4k must be measured for each adjustment point in advance.

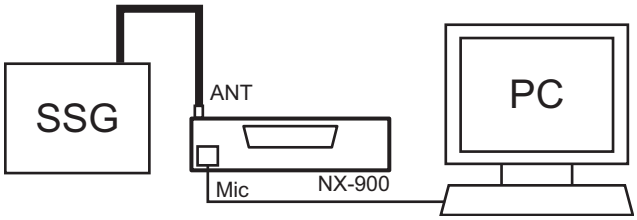
4.4.54 Tight Squelch (Analog Wide 5k)

NX-900

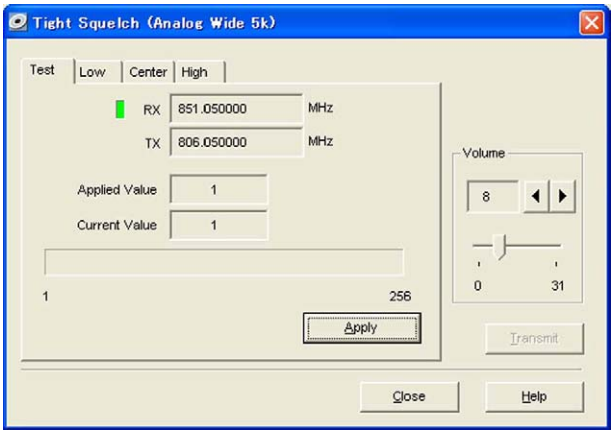
Outline

Tight Squelch (Analog Wide 5k) allows a service engineer to adjust the Squelch (Analog Wide 5k) level while a value of 9 is configured for Squelch Level.

Connection Diagram



Display for Operation



Adjustment Procedure

1. Double-click “Tight Squelch (Analog Wide 5k)” in the adjustment item list in the **Test Mode** dialog box.
2. Click a tab title, the **Low**, **Center**, or **High** tab, to select an adjustment point.
3. Set the output level of a signal to be 6 dB higher than the receive sensitivity for Analog Wide 5k, and start sourcing from an SSG the signal with audio frequency at 1 kHz and deviation at 3 kHz.
4. Click the “Apply” button.
5. Do the same adjustment for other adjustment points.

Adjusted Value

Remarks

Sensitivity of Analog Wide 5k must be measured for each adjustment point in advance.

By updating the firmware of the transceiver, a user can use the latest functions of the transceiver. To update the firmware of the transceiver, firmware data needs to be obtained from Kenwood and written to the transceiver.

Note: Contact Kenwood for details of the firmware data.

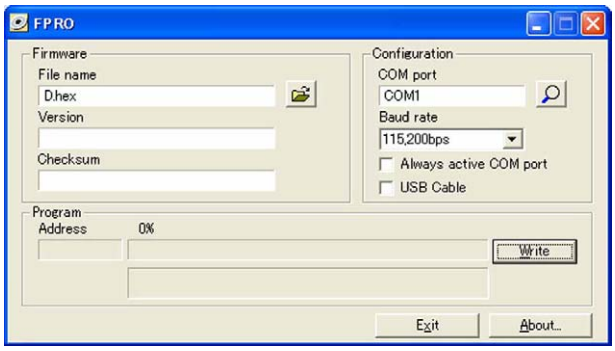
Follow the procedure to write the firmware data to the transceiver.

1. Connect using the KPG-46/ KPG-46A/ KPG-46U programming cable the transceiver to a PC with KPG-111D installed.

   Refer to step 1 in 4 ADJUSTING THE TRANSCEIVER on page 38 for the connection method.

2. Double-click the “Fpro.exe” icon in the folder to which KPG-111D has been installed.

   The firmware programming software (Fpro.exe (ver. 6.00 or later))is activated.



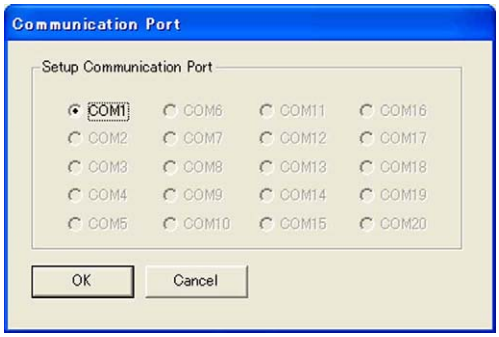
3. Select a data communication speed from the **Baud rate** dropdown list.

   Normally, 115,200 bps needs to be selected.

4. Select a communication port to be used by the PC.

   (4-1) Click the “ ” button.

   The **Communication Port** dialog box opens.



   (4-2) Select a target communication port, and then click the “OK” button.

5. Click the “ ” button in the **Firmware** frame, and then select the file (file extension: .hex or .nxb) where the firmware data has been stored.

6. Turn the transceiver ON while pressing and holding the **Menu** (**[ ]**) key.

   The transceiver enters Firmware Programming Mode.

   Note:

   - Firmware Programming must be enabled to place the transceiver in Firmware Programming Mode. (Refer to FPRG 8.10.2 Common Page 2 Tab > ■ Firmware Programming (Mode))
   - The firmware checksum which has been written in the transceiver is automatically calculated by pressing the **Triangle** key and will be displayed on the main display.
   - The data communication speed can be changed by pressing the **Square** key. The data communication speed is changed by each press of the **Square** key.

     115,200 bps -> 19,200 bps -> 38,400 bps -> 57,600 bps -> 115,200 bps •••

7. Click the “Write” button.

   Writing of the firmware data to the transceiver starts.

   The firmware checksum which has been written in the transceiver is automatically calculated and will be displayed on the main display when writing of the firmware data is completed properly.

Note:

- The LED blinks red if writing of firmware data fails or an error occurs.
- The transceiver needs to be turned OFF to exit Firmware Programming Mode.
- The transceiver enters Firmware Programming Mode after the transceiver is turned ON if no firmware data is written in the transceiver.

6 COPYING THE CONFIGURATION DATA OF THE TRANSCEIVER TO ANOTHER TRANSCEIVER

The data configured for the transceiver can be copied to another transceiver.

Using this function, all data configured for the transceiver from which the configuration data is copied, including an ID of the transceiver, can be copied to the transceiver to which the data is copied.

Transceivers need to be connected each other using the Cloning cable (E30-3382-05) in order to copy the data configured for the transceiver to another transceiver.

Hereinafter, the transceiver from which data is copied is referred to as “source transceiver” and the transceiver to which data is copied is referred to as “target transceiver”.

Note:

- The source transceiver and the target transceiver must have the same firmware version in order to use this function. Copying data to a transceiver having a different firmware version may cause an erroneous and unexpected behavior of the target transceiver.
- No data can be copied to the transceiver for which Overwrite Password is configured.
- If the configuration of model name or frequency varies between the source transceiver and the target transceiver, no data can be copied.
- Following are the data that cannot be copied in Clone Mode:
  - Tuning Data
  - Embedded Message with Password
  - KENWOOD ESN Data
  - ESN (Electronic Serial Number) Data

Follow the procedure below to copy the data configured for the transceiver to another transceiver.

1. Turn the source transceiver ON while pressing and holding the **Left** key.

   - **If no Read Authorization Password is configured:**

     If no Read Authorization Password is configured for the source transceiver, “CLONE MODE” appears on the main display, and Clone Mode is enabled when the transceiver is placed in Clone Mode.

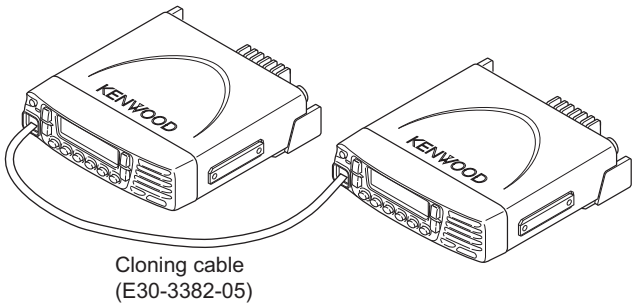
   - **If the Read Authorization Password is configured:**

     If the Read Authorization Password is configured for the source transceiver, “CLONE LOCK” appears on the main display when the transceiver is placed in Clone Mode. In this case, the password needs to be entered. If the entered password matches the password configured for the transceiver, Clone Mode becomes enabled. Refer to Function Reference for instructions on how to enter a password.

Note: Clone must be enabled to place the transceiver in Clone Mode. (Refer to FPRG 8.10.2 Common Page 2 Tab > ■ Clone (Mode))

2. Connect the source transceiver to the target transceiver using the Cloning cable (E30-3382-05).

   The Cloning cable needs to be connected to the universal connectors on the transceivers, respectively.



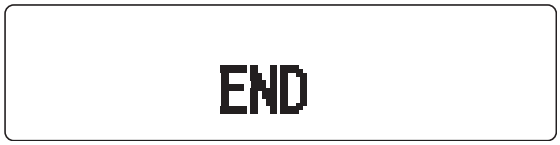
Cloning cable
(E30-3382-05)

3. Turn the target transceiver ON.
4. Press the **Menu** (**[**⧉**]**) key on the source transceiver.

   The data configured for the source transceiver is copied to the target transceiver.

   “PROGRAM” appears on the main display of the target transceiver while the target transceiver is receiving data.

   “END” appears on the main display of the source transceiver upon completion of data copy.



   The target transceiver is placed in User Mode.

   Pressing the **Menu** (**[**⧉**]**) key on the source transceiver displays “CLONE MODE” on the main display and places the transceiver in Clone Mode again, and then data can be copied to another transceiver. Steps from 2 to 4 need to be repeated in order to copy data to another transceiver.

Note: The transceiver needs to be turned OFF when the transceiver exits Clone Mode.