KENWOOD

SERVICE MANUAL

VHF DIGITAL TRANSCEIVER, UHF DIGITAL TRANSCEIVER

NX-3720H(G), NX-3720H, NX-3720(G), NX-3720, NX-3820H(G), NX-3820H, NX-3820(G), NX-3820

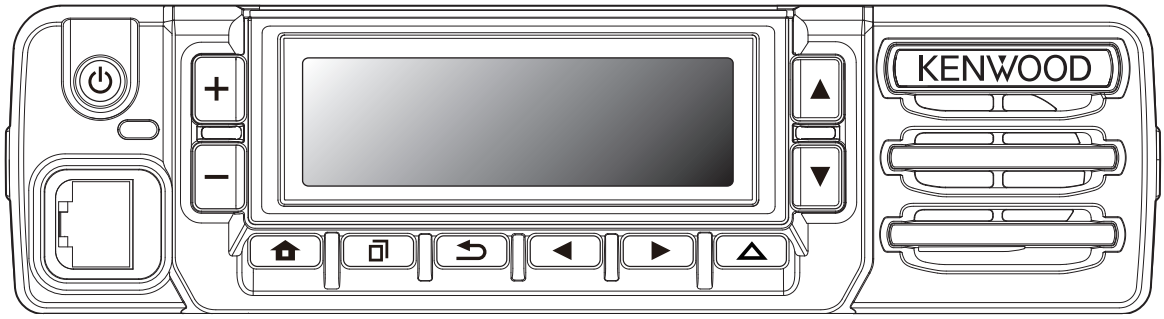


TABLE OF CONTENTS

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

This product uses Lead Free solder.

B5B-7268-00

No.RA054<Rev.001>
2017/6

Document Copyrights

Disclaimer

While every precaution has been taken in the preparation of this manual, JVC KENWOOD Corporation assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained herein.
JVC KENWOOD Corporation reserves the right to make changes to any products herein at any time for improvement purposes.

Firmware Copyrights

The title to and ownership of copyrights for firmware embedded in KENWOOD product memories are reserved for JVC KENWOOD Corporation. Any modifying, reverse engineering, copy, reproducing or disclosing on an Internet website of the firmware is strictly prohibited without prior written consent of JVC KENWOOD Corporation. Furthermore, any reselling, assigning or transferring of the firmware is also strictly prohibited without embedding the firmware in KENWOOD product memories.

Transceivers containing AMBE+2™ Vocoder:
The AMBE+2™ voice coding technology is embedded in the firmware under the license of Digital Voice Systems, Inc.

Copyrights

The Bluetooth word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by JVC KENWOOD Corporation is under license. Other trademarks and trade names are those of their respective owners.

NOTE

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

SPECIFICATION

NX-3720H(G)/3720H
(K TYPE)

GENERAL		
Frequency Range		136~174 MHz
Max. Channels per Radio		Up to 1000 channels with option
Number of Channels		512
Number of Zones		128
Channel Spacing	Analog	12.5/15/25*1/30*1 kHz
	Digital	6.25 /12.5 kHz
Operating Voltage		13.6V DC ±15%
Operating Temperature Range		-22°F to +140°F (-30°C to +60°C)
Frequency Stability		±1.0 ppm
Dimensions (W x H x D) (Projections not included)	Radio with Control Head	6.30 x 1.69 x 6.30 in. (160 x 43 x 160 mm)
Weight (net)	Radio with Control Head	2.65 lbs (1.2 kg)
RECEIVER		
Sensitivity	NXDN 6.25kHz Digital (3%BER)	0.20 μV
	NXDN 12.5kHz Digital (3%BER)	0.25μV
	DMR 12.5 kHz Digital (5% BER)	0.30μV
	DMR 12.5 kHz Digital (1% BER)	0.45μV
	Analog (12dB SINAD)	0.25μV
Selectivity	Analog @ 12.5kHz	70dB
	Analog @ 25kHz	80dB
Intermodulation	Analog	70dB
Spurious Rejection	Analog	80dB
Audio Distortion		2%
Audio Output		4W / 4ohm
TRANSMITTER		
RF Power Output (H / M / L)		50W/30W/5W
Spurious Emission		-73dB
FM Hum & Noise	Analog @ 25 kHz	45dB
	Analog @ 12.5kHz	40dB
Modulation Distortion		2%
Emission Designator		16K0F3E*1, 11K0F3E, 8K30F1E, 8K30F1D, 8K30F7W, 4K00F1E, 4K00F1D, 4K00F7W, 7K60FXE, 7K60FXD, 4K00F2D

*1 25 and 30 kHz are not included in the models sold in the USA or US territories.
Analog measurements made per TIA603. Specifications are measured according to applicable standards.
JVC KENWOOD Corporation reserves the right to change specifications without prior notice or obligation.

SPECIFICATION

NX-3720(G)/3720
(E TYPE)

GENERAL		
Frequency Range		136~174 MHz
Max. Channels per Radio		Up to 1000 channels with option
Number of Channels		512
Number of Zones		128
Channel Spacing	Analog	12.5 / 20 / 25 kHz
	Digital	6.25 /12.5 kHz
Operating Voltage		13.2V DC (10.8~15.6 V DC)
Operating Temperature Range		-30°C to +60°C
Frequency Stability		±1.0 ppm
Dimensions (W x H x D) (Projections not included)	Radio with Control Head	160 x 43 x 160 mm
Weight (net)	Radio with Control Head	1.2 kg
RECEIVER		
Sensitivity	NXDN 3 % BER (6.25 kHz/12.5 kHz)	0.20 µV / 0.28 µV
	NXDN 1 % BER (6.25 kHz/12.5 kHz)	-5.0 dBµV (0.28µV) / -2 dBµV (0.40µV)
	DMR 12.5 kHz Digital (5 % BER)	-4.5 dBµV (0.30µV)
	DMR 12.5 kHz Digital (1 % BER)	-2 dBµV (0.40µV)
	Analog, EIA 12 dB SINAD (12.5/20&25 kHz)	0.25 µV
	Analog, EN 20 dB SINAD (12.5/20&25 kHz)	-1 dBµV (0.45 µV) / -3 dBµV (0.35 µV)
Selectivity	Analog @ 12.5kHz	70dB
	Analog @ 20kHz	78dB
	Analog @ 25kHz	80dB
Intermodulation	Analog	70dB
Spurious Rejection	Analog	80dB
Audio Distortion		2%
Audio Output		4W / 4ohm
TRANSMITTER		
RF Power Output (H / L)		25W/5W
Spurious Emission		-36dBm ≦ 1GHz, -30dBm>1GHz
FM Hum & Noise	Analog @ 25 kHz	50dB
	Analog @ 20kHz	50dB
	Analog @ 12.5kHz	45dB
Modulation Distortion		2%
Emission Designator		16K0F3E, 14K0F2D, 14K0F3E, 12K0F2D, 8K50F3E, 7K50F2D, 8K30F1E, 8K30F1D, 8K30F7W, 4K00F1E, 4K00F1D, 4K00F7W, 7K60FXE, 7K60FXD, 4K00F2D

Analog measurements made per TIA603. Specifications are measured according to applicable standards.
JVC KENWOOD Corporation reserves the right to change specifications without prior notice or obligation.

SPECIFICATION

NX-3820H(G)/3820H
(K,K2 TYPE)

GENERAL		
Frequency Range	K	450~520MHz
	K2	400~470MHz
Max. Channels per Radio		Up to 1000 channels with option
Number of Channels		512
Number of Zones		128
Channel Spacing	Analog	12.5/ 25*1 kHz
	Digital	6.25 /12.5 kHz
Operating Voltage		13.6V DC ±15%
Operating Temperature Range		-22°F to +140°F (-30°C to +60°C)
Frequency Stability		±1.0 ppm
Dimensions (W x H x D) (Projections not included)	Radio with Control Head	6.30 x 1.69 x 6.30 in. (160 x 43 x 160 mm)
Weight (net)	Radio with Control Head	2.65 lbs (1.2 kg)
RECEIVER		
Sensitivity	NXDN 6.25kHz Digital (3%BER)	0.20 μV
	NXDN 12.5kHz Digital (3%BER)	0.25μV
	DMR 12.5 kHz Digital (5% BER)	0.30μV
	DMR 12.5 kHz Digital (1% BER)	0.45μV
	Analog (12dB SINAD)	0.25μV
Selectivity	Analog @ 12.5kHz	70dB
	Analog @ 25kHz	80dB
Intermodulation	Analog	70dB
Spurious Rejection	Analog	80dB
Audio Distortion		2%
Audio Output		4W / 4ohm
TRANSMITTER		
RF Power Output (H / M / L)		45W/30W/5W
Spurious Emission		-75dB
FM Hum & Noise	Analog @ 25 kHz	45dB
	Analog @ 12.5kHz	40dB
Modulation Distortion		2%
Emission Designator		16K0F3E*1, 11K0F3E, 8K30F1E, 8K30F1D, 8K30F7W, 4K00F1E, 4K00F1D, 4K00F7W, 7K60FXE, 7K60FXD, 4K00F2D

*1 25 kHz are not included in the models sold in the USA or US territories.
Analog measurements made per TIA603. Specifications are measured according to applicable standards.
JVC KENWOOD Corporation reserves the right to change specifications without prior notice or obligation.

SPECIFICATION

NX-3820(G)/3820
(E TYPE)

GENERAL		
Frequency Range		400~470MHz
Max. Channels per Radio		Up to 1000 channels with option
Number of Channels		512
Number of Zones		128
Channel Spacing	Analog	12.5 / 20 / 25 kHz
	Digital	6.25 /12.5 kHz
Operating Voltage		13.2V DC (10.8~15.6 V DC)
Operating Temperature Range		-30°C to +60°C
Frequency Stability		±1.0 ppm
Dimensions (W x H x D) (Projections not included)	Radio with Control Head	160 x 43 x 160 mm
Weight (net)	Radio with Control Head	1.2 kg
RECEIVER		
Sensitivity	NXDN 3 % BER (6.25 kHz/12.5 kHz)	0.20 μV / 0.28 μV
	NXDN 1 % BER (6.25 kHz/12.5 kHz)	-5.0 dBμV (0.28μV) / -2 dBμV (0.40μV)
	DMR 12.5 kHz Digital (5 % BER)	-4.5 dBμV (0.30μV)
	DMR 12.5 kHz Digital (1 % BER)	-2 dBμV (0.40μV)
	Analog, EIA 12 dB SINAD (12.5/20&25 kHz)	0.25 μV
	Analog, EN 20 dB SINAD (12.5/20&25 kHz)	-1 dBμV (0.45 μV) / -3 dBμV (0.35 μV)
Selectivity	Analog @ 12.5kHz	68dB
	Analog @ 20kHz	76dB
	Analog @ 25kHz	78dB
Intermodulation	Analog	70dB
Spurious Rejection	Analog	80dB
Audio Distortion		2%
Audio Output		4W / 4ohm
TRANSMITTER		
RF Power Output (H / L)		25W/5W
Spurious Emission		-36dBm ≦ 1GHz, -30dBm>1GHz
FM Hum & Noise	Analog @ 25 kHz	50dB
	Analog @ 20kHz	50dB
	Analog @ 12.5kHz	45dB
Modulation Distortion		2%
Emission Designator		16K0F3E, 14K0F2D, 14K0F3E, 12K0F2D, 8K50F3E, 7K50F2D, 8K30F1E, 8K30F1D, 8K30F7W, 4K00F1E, 4K00F1D, 4K00F7W, 7K60FXE, 7K60FXD, 4K00F2D

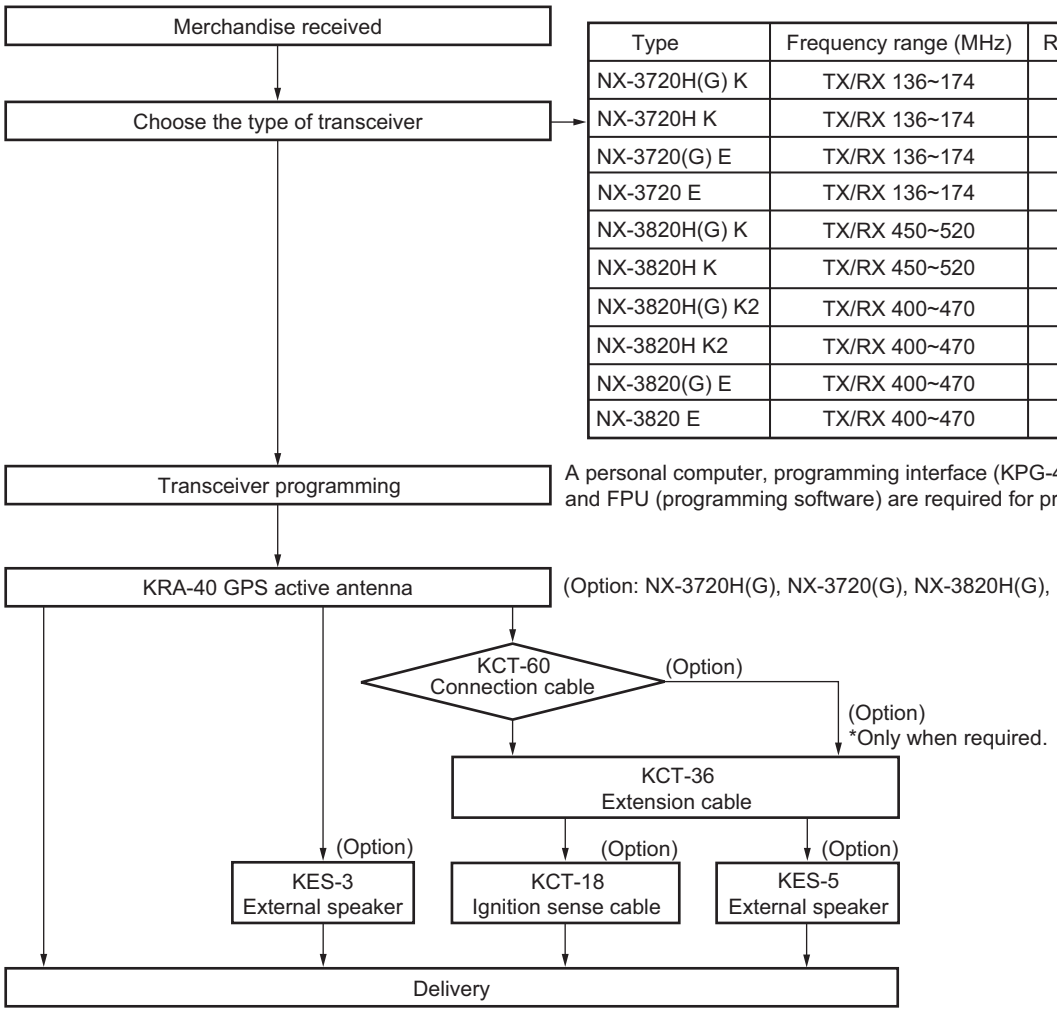
Analog measurements made per TIA603. Specifications are measured according to applicable standards.
JVC KENWOOD Corporation reserves the right to change specifications without prior notice or obligation.

SECTION 1
PRECAUTION

This service manual does not describe PRECAUTION.

SECTION 2
SPECIFIC SERVICE INSTRUCTIONS

2.1 SYSTEM SET-UP



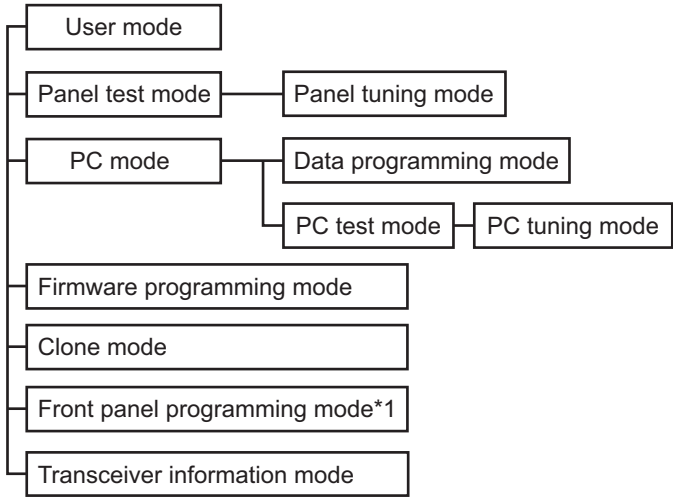
Type	Frequency range (MHz)	RF power	GPS antenna
NX-3720H(G) K	TX/RX 136~174	50W	Yes
NX-3720H K	TX/RX 136~174	50W	No
NX-3720(G) E	TX/RX 136~174	25W	Yes
NX-3720 E	TX/RX 136~174	25W	No
NX-3820H(G) K	TX/RX 450~520	45W	Yes
NX-3820H K	TX/RX 450~520	45W	No
NX-3820H(G) K2	TX/RX 400~470	45W	Yes
NX-3820H K2	TX/RX 400~470	45W	No
NX-3820(G) E	TX/RX 400~470	25W	Yes
NX-3820 E	TX/RX 400~470	25W	No

A personal computer, programming interface (KPG-46U/46X), and FPU (programming software) are required for programming.

(Option: NX-3720H(G), NX-3720(G), NX-3820H(G), NX-3820(G) only)

2.2 REALIGNMENT

2.2.1 Modes



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

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

2.2.2 How to Enter Each Mode

Mode	Operation
User mode	Power ON
Panel test mode*2	• [⮌] + Power ON
	• [▣] + Power ON Select the “Panel Test” using the [▲] / [▼] button. Press the [▣] button.
PC mode	Received commands from PC
Panel tuning mode	[Panel test mode] + [▣]
Firmware programming mode*2	• [△(AUX)] + Power ON
	• [▣] + Power ON Select the “Firmware Prog” using the [▲] / [▼] button. Press the [▣] button.
	• If Write is performed by KFL, Firmware programming mode will start automatically.
Clone mode*2	• [⌂] + Power ON
	• [▣] + Power ON Select the “Clone” using the [▲] / [▼] button. Press the [▣] button.
Front panel programming mode*2	• Press the PF button to which Front panel programming mode is set during the user mode.
	• Press the [▣] button and enter the Menu mode. Select the any icon assigned the Front panel programming mode using the [▲] / [▼] button. Press [▣] button. Select the “Panel Program” using the [▲] / [▼] button. Press the [▣] button.
Transceiver information mode*2	• [+] + Power ON
	• [▣] + Power ON Select the “Transceiver Info” using the [▲] / [▼] button. Press the [▣] button.

*2 There is the two or three as how to enter.

2.2.3 Panel Test Mode

Setting method refer to ADJUSTMENT.

2.2.4 Panel Tuning Mode

Setting method refer to ADJUSTMENT.

2.2.5 PC Mode

2.2.5.1 Preface

The transceiver is programmed by using a personal computer, programming interface (KPG-46U/46X) and FPU (programming software).

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

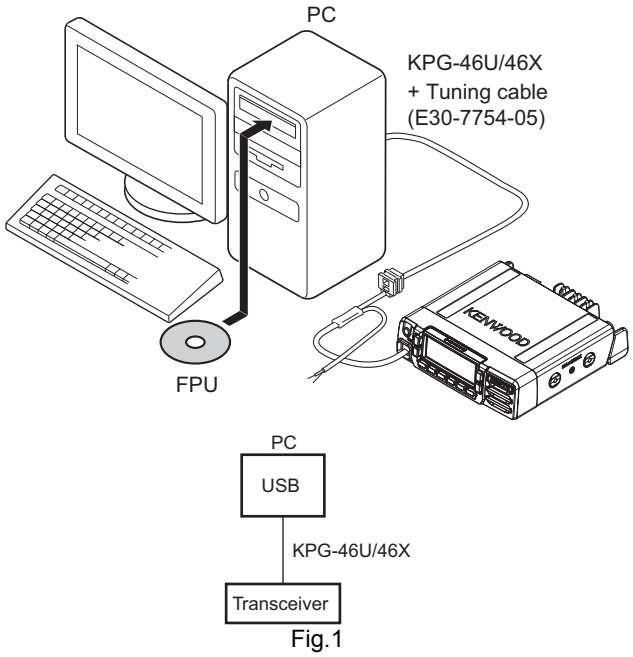


Fig.1

2.2.5.2 Connection procedure

(1) Connects the transceiver to the computer using the interface cable (KPG-46U/46X).

Note:

You must install the KPG-46U/46X driver in the computer to use the USB programming interface cable (KPG-46U/46X).

(2) When the POWER switch on, user mode can be entered immediately. When PC sends command the transceiver enter PC mode, and “PROGRAM” is displayed on the LCD. When data transmitting from the transceiver, the red LED lights.

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

Note:

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

2.2.5.3 KPG-46U/46X description (USB programming interface cable: Option)

The KPG-46U/46X is a cable which connects to a USB port on a computer.

When using the KPG-46U/46X, install the supplied CD (with driver software) in the computer. The KPG-46U driver runs under Windows 7, 8.1, 10.

The KPG-46X driver runs under Windows 7, 8.1, 10.

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

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

(This URL may change without notice.)

2.2.5.4 Programming software KPG-D3/D3N description

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

Note:

KPG-D3N can't be used for E type.

2.2.6 Firmware Programming Mode

2.2.6.1 Preface

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

2.2.6.2 Connection procedure

Connect the transceiver to the personal computer using the programming interface (KPG-46U/46X). (Connection is same as in the PC mode.)

2.2.6.3 Programming

(1) Start up the firmware programming software (KENWOOD Firmware Loader). The KFL.exe exists in the KPG-D3/D3N installed folder.

(2) Set the baud rate to "auto" or 1152000, 576000, 115200, and 57600.

(3) Set the firmware to be upgrade by file name item.

(4) Enter the Firmware programming mode by using section “2.2.2 How to Enter Each Mode”. Then, the yellow LED on the transceiver light and "FIRMWARE PROG" is displayed.

(5) Check the connection between the transceiver and the personal computer, and make sure that the transceiver is in the Program mode.

(6) Press “Write” button in the window. When the transceiver starts to receive data, the “LOADING” display lights.

(7) If writing ends successfully, the checksum is calculated and a result is displayed.

(8) If you want to continue programming other transceivers, repeat step (4) to (7).

Note:

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

2.2.6.4 Function

If you press the [△(AUX)] button while “FIRMWARE PROG” is displayed, the checksum is calculated, and a result is displayed. If you press the [△(AUX)] button again while checksum is displayed, “FIRMWARE PROG” is redisplayed.

2.2.7 Clone Mode

Programming data can be transferred from one transceiver to another by connecting them via their modular microphone jacks. The operation is as follows.

■The following data cannot be cloned.

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

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

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

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

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

(3)

- How to enter the password using the MIC keypad;

If one of the buttons 0 to 9 is pressed while the “Input Password” is displayed, the password number is displayed on the LCD.
Each press of the button shifts the display in order to the left.
When you enter the password and press [ ] or [*] button, “CLONE MODE” displayed if the entered password is correct. If password is incorrect, “Input Password” is redisplayed.

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

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

(4) Power ON the target transceiver.

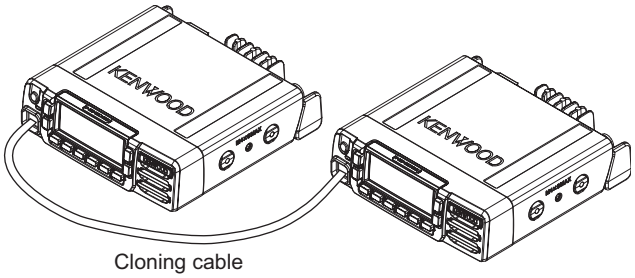
(5) Connecting the cloning cable (part No.E30-3382-05) to the modular microphone jacks on the source and target.

(6) Press [ ] button on the source while the source displays “CLONE MODE”. The data of the source is sent to the target. While the target is receiving the data, “PROGRAM” is displayed. When cloning of the data is completed, the source displays “END”, and the target automatically operates in the User mode. The target can then be operated by the same program as the source.

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

Note:

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



Cloning cable
(E30-3382-05)

Fig.2

2.2.8 Front Panel Programming Mode

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

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

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

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

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

2.2.8.1 Enter to the Front panel programming mode.

Enter to the Menu Mode by pressing [Front Panel Mode] PF button or [Menu] button. When the Front Panel Mode is selected, it can enter to the Front panel programming mode.
If the Clone/Front panel programming Password is not set to the transceiver, "Panel Program" is displayed on the LCD.
If the Clone/Front panel programming Password is set to the transceiver, "Panel Program" is displayed on the LCD when you enter the correct password while “Input Password” is displayed.

2.2.8.2 Data Writing

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

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

No.	Setup item	Display	Remarks
1	RX Frequency	RX Frequency	Receive Frequency
2	TX Frequency	TX Frequency	Transmit Frequency
3	Channel Type	Channel Type	Analog/NXDN/DMR
4	Transmit Mode *3	Transmit Mode	Analog/NXDN/DMR
5	Channel Spacing	Channel Space	Analog: 12.5kHz/20kHz/25kHz Note: 20kHz is applied for E type only.
			NXDN: 6.25kHz/12.5kHz
			DMR: 12.5kHz
6	RX Signaling	RX QT/DQT	Receive QT/DQT
7	TX Signaling	TX QT/DQT	Transmit QT/DQT
8	RX RAN	RX RAN	None, 1~63
9	TX RAN	TX RAN	None, 1~63
10	Color Code	Color Code	0~15
11	Slot Selection	Slot Selection	Slot 1, Slot 2
12	Transmit Power	Transmit Power	Low/Medium/High
13	Channel Name	Channel Name	

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

- **Button operation**

Button \Item	Zone Select	Channel Select	RX Frequency	TX Frequency	Channel Type	Transmit Mode *5	Channel Spacing
[ ]	Decision	Decision	Decision	Decision	Decision	Decision	Decision
[ ]	Unused	Back to the previous item	Back to the previous item	Back to the previous item	Back to the previous item	Back to the previous item	Back to the previous item
[△]	Unused	Unused	Go to the TX Frequency	Go to the RX Frequency	Unused	Unused	Unused
[ ]	Exit panel program mode	Exit panel program mode	Exit panel program mode	Exit panel program mode	Exit panel program mode	Exit panel program mode	Exit panel program mode
[ ]	Zone change	Channel change	Frequency up	Frequency up	Channel type change	Transmit Mode Change	Channel Spacing Change
[ ]	Zone change	Channel change	Frequency down	Frequency down	Channel type change	Transmit Mode Change	Channel Spacing Change
[ ]	Unused	Unused	Frequency step change	Frequency step change	Unused	Unused	Unused
[ ]	Unused	Unused	Frequency step change	Frequency step change	Unused	Unused	Unused
MIC Keypad [0] ~ [9]	Zone number select	Channel number select	Go to the direct enter mode		Channel number select (1,2 or 3)	Transmit Mode number select (1 or 2)	Channel spacing select *4
MIC Keypad [*]	Decision	Decision	Decision	Decision	Decision	Decision	Decision
MIC Keypad [#]	Unused	Back to the previous item	Back to the previous item	Back to the previous item	Back to the previous item	Back to the previous item	Back to the previous item

Button \Item	RX Signaling	TX Signaling	RX RAN	TX RAN	Color Code	Slot Selection	Transmit Power	Channel Name
[▣]	Decision	Decision	Decision	Decision	Decision	Decision	Decision	Decision
[⮌]	Back to the previous item	Back to the previous item	Back to the previous item	Back to the previous item	Back to the previous item	Back to the previous item	Back to the previous item	Back to the previous item/ Delete
[△]	Unused	Unused	Unused	Unused	Unused	Unused	Unused	Character/Digit switching
[⌂]	Exit panel program mode	Exit panel program mode	Exit panel program mode	Exit panel program mode	Exit panel program mode	Exit panel program mode	Exit panel program mode	Exit panel program mode
[▲]	Signaling number change	Signaling number change	RX RAN up	TX RAN up	Color Code up	Slot up	Transmit power change	Go to the direct enter mode
[▼]	Signaling number change	Signaling number change	RX RAN down	TX RAN down	Color Code down	Slot down	Transmit power change	
[▶]	Signaling type change	Signaling type change	RX RAN ON/ OFF	RX RAN ON/ OFF	Unused	Unused	Unused	
[◀]	Signaling type change	Signaling type change	RX RAN ON/ OFF	RX RAN ON/ OFF	Unused	Unused	Unused	
MIC Keypad [0] ~ [9]	Go to the direct enter mode					Slot number select (1 or 2)	Transmit power select (1, 2 or 3)	
MIC Keypad [*]	Decision	Decision	Decision	Decision	Decision	Decision	Decision	Decision/ Character/ Digit switching
MIC Keypad [#]	Back to the previous item	Back to the previous item	Back to the previous item	Back to the previous item	Back to the previous item	Back to the previous item	Back to the previous item	Back to the previous item

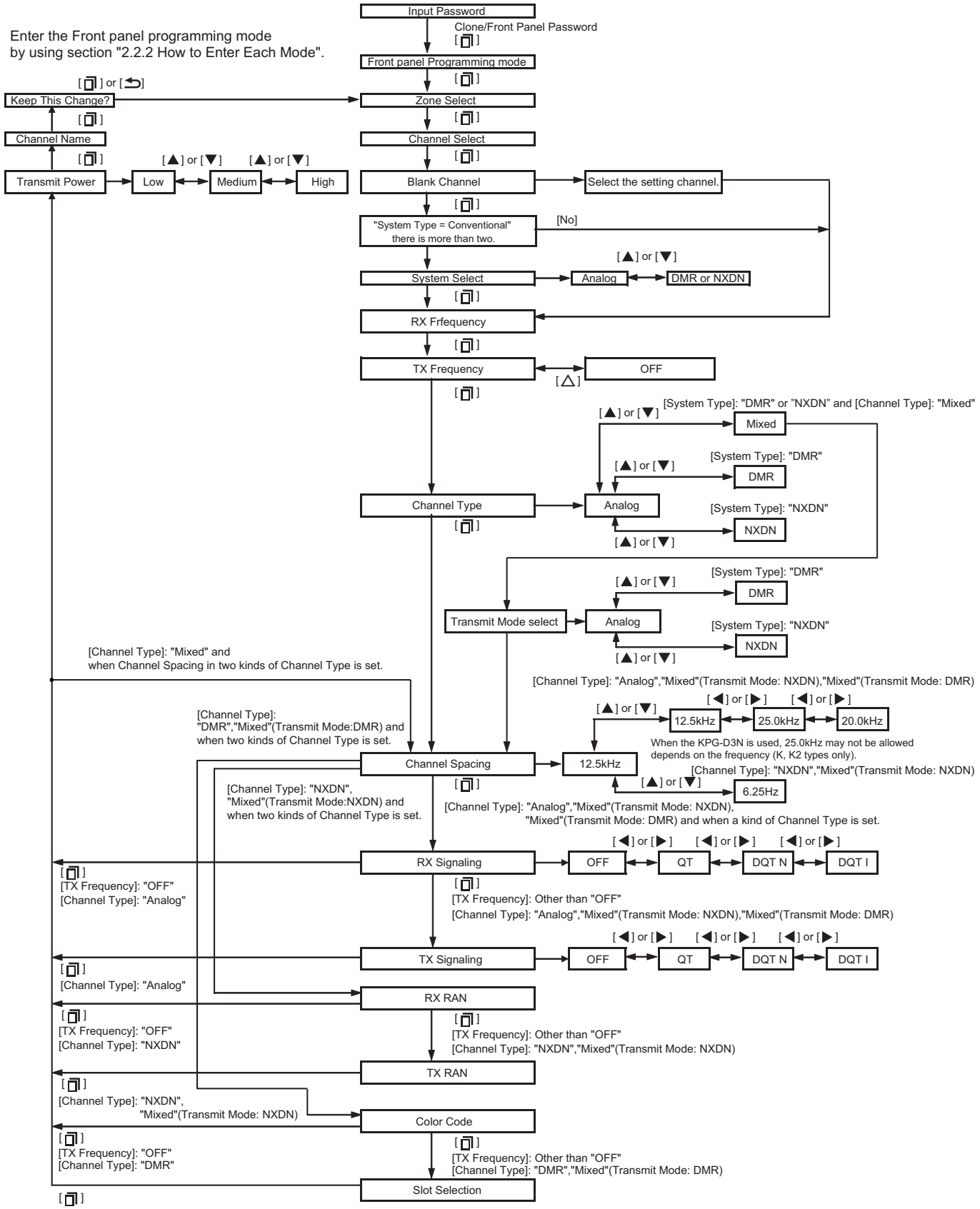
*4: K type
Channel spacing select (1 or 2)
E type
Channel spacing select (1, 2 or 3)

*5: Mixed Mode only

- **Direct enter mode**

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

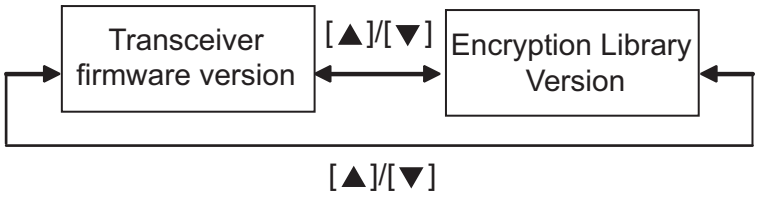
- **Front panel programming mode flow chart**



2.2.9 Transceiver Information Mode

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

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



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

Note:
The Encryption Library Version will also display Radio Feature License (KWD-3004AE) as Inactive.

2.3 INSTALLATION

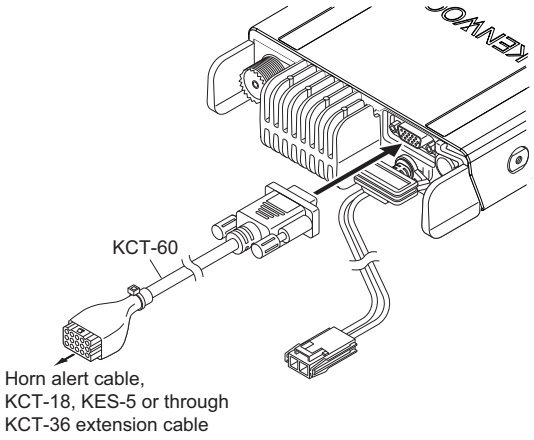
2.3.1 Connection Cable (KCT-60: Option)

The KCT-60 connection cable kit is used to connect the transceiver to a Horn alert cable, KCT-18 (Ignition sense cable), KES-5 (External speaker), or through the KCT-36 extension cable.

2.3.1.1 Installing the KCT-60 (Connection cable) in the transceiver

(1) Remove the ACC. cap on the rear of the transceiver.
(2) Connect the D-sub connector of the KCT-60 to the D-sub 15-pin terminal of the transceiver.
(3) Connect the 15-pin connector of the KCT-60 to a Horn alert cable, KCT-18, KES-5, or through a KCT-36 extension cable.

Note:
You must setup using the KPG-D3/D3N.



2.3.1.2 Terminal function

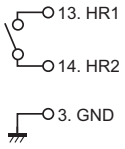
D-sub 15-pin Pin No.	Name	Molex 15-pin Pin No.
1	SB	1
2	IGN	2
3	PA or EXT-SP	12
4	DO	4
5	DI	5
6	FNC1	9
7	FNC2	11
8	FNC3	7
9	FNC4	6
10	FNC5	8
11	FNC6	10
12	5C	-
13	HR1	13
14	HR2	14
15	GND	3

2.3.2 Horn Alert Function

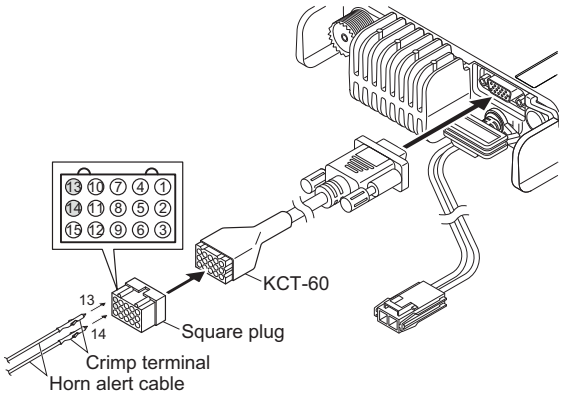
The Horn alert function (max. 2A drive) is enabled by installing the KCT-60 in the transceiver.

2.3.2.1 Installation Procedure

(1) Remove the ACC. cap on the rear of the transceiver.
(2) Connect the D-sub connector of the KCT-60 to the D-sub 15-pin terminal of the transceiver.
(3) Insert the two crimp terminals of the Horn alert cable to pins 13 and 14 of the square plug.
(4) Connect the square plug to the 15-pin connector of the KCT-60.
(5) Connect the remaining two Horn alert cables to your car Horn alert signal control.
The internal FET switch can be controlled by turning the HA function on/off and by using a signaling decode output. The maximum current of HA is 2A. This switch is the FET switch of P-channel type. Therefore, a DC power supply is necessary to use the HR1. The voltage range is from 5V to 16V.



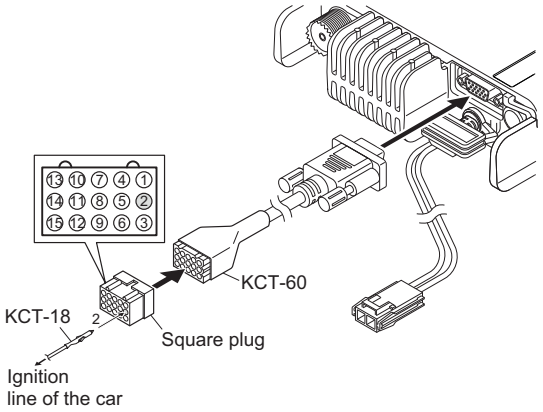
Note:
You must set up using the KPG-D3/D3N.



2.3.3 Ignition Sense Cable (KCT-18: Option)

The KCT-18 is an optional cable for enabling the ignition function. The ignition function lets you turn the transceiver power on and off with the car ignition button.

2.3.3.1 Installing the KCT-18 (Ignition sense cable) in the transceiver



2.3.4 External Speaker (Option)

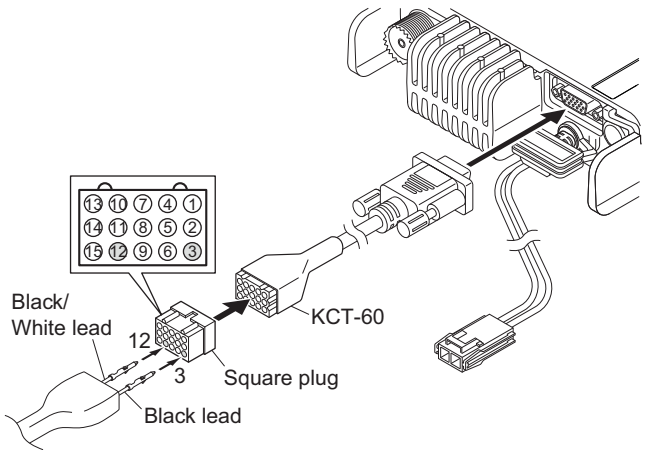
2.3.4.1 KES-5

External speaker KES-5 can be installed for KCT-60.

■Connection procedure

(1) Remove the ACC. cap on the rear of the transceiver.
(2) Connect the D-sub connector of the KCT-60 to the D-sub 15-pin terminal of the transceiver.
(3) Insert the two crimp terminals of the KES-5 to pins 3 and 12 of the square plug.
(4) Connect the square plug to the 15-pin connector of the KCT-60.

Note:
You must set up using the KPG-D3/D3N.
Before the external speaker can be used, you must assign one of the buttons as “External Speaker”, using the KPG-D3/D3N.



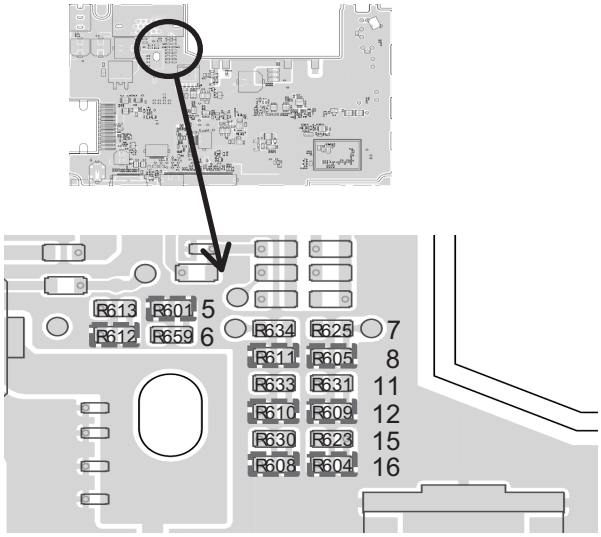
2.3.5 Changing Serial Port Level

2.3.5.1 Change FNC1 (TXD) and FNC2 (RXD) of D-SUB 15-pin connector from TTL level to RS-232C level

FNC1 (TXD /6pin) and FNC2 (RXD /7pin) of D-SUB 15-pin connector are confi gured at the TTL level as the default value. But you can change these serial port level to RS-232C level through the RS-232C level converter IC (IC605) by confi guring the port.
Remove the R625, R633 and R634 chip jumpers and sol-der the chip jumpers to R605, R610 and R611.

2.3.5.2 Change FNC1 (TXD), FNC2 (RXD), FNC3 (RTS) and FNC4 (CTS) of D-SUB 15-pin connector from TTL level to RS-232C level

FNC1 (TXD /6pin), FNC2 (RXD /7pin), FNC3 (RTS /8pin) and FNC4 (CTS /9pin) of D-SUB 15-pin connector are configured at the TTL level as the default value. But you can change these serial port level to RS-232C level through the RS-232C level converter IC (IC605) by confi guring the port.
Remove the R623, R625, R630, R631, R633 and R634 chip jumpers and solder the chip jumpers to R604, R605, R608, R609, R610 and R611.



■In the case of 5-1.
[TTL level]
R625,R633 and R634: 0ohm chip jumper.
R605, R610 and R611: open.
[RS-232C level]
R605, R610 and R611: 0ohm chip jumper.
R625, R633 and R634: open.

■In the case of 5-2.
[TTL level]
R623, R625, R630, R631, R633 and R634: 0ohm chip jumper.
R604, R605, R608, R609, R610 and R611: open.
[RS-232C level]
R604, R605, R608, R609, R610 and R611: 0ohm chip jumper.
R623, R625, R630, R631, R633 and R634: open.

2.3.6 Changing of Signal Type

2.3.6.1 Change signal output of D-SUB connector from DEO to AFO

The output (4pin) of D-SUB 15-pin connector is confi gured at the DEO as the default value.
Remove the R613 chip jumper and solder the clip jumper to R612.

2.3.6.2 Change signal input of D-SUB connector from DI to MI2

The input (5pin) of D-SUB 15-pin connector is confi gured at the DI as the default value.
Remove the R659 chip jumper and solder the chip jumper to R601.

2.4 CIRCUIT DESCRIPTION

2.4.1 Overview

The NX-3720H/3720 is a VHF Analog FM & Digital Mobile transceiver designed to operate in the frequency range of 136 to 174MHz.
The NX-3820H/3820 is a UHF Analog FM & Digital Mobile transceiver designed to operate in the frequency range of 450 to 520MHz (K) or 400 to 470MHz (K2, E).
The unit consists of a transceiver IC, a transmitter, a digital control unit, and a power supply circuit.

2.4.2 Frequency Configuration

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

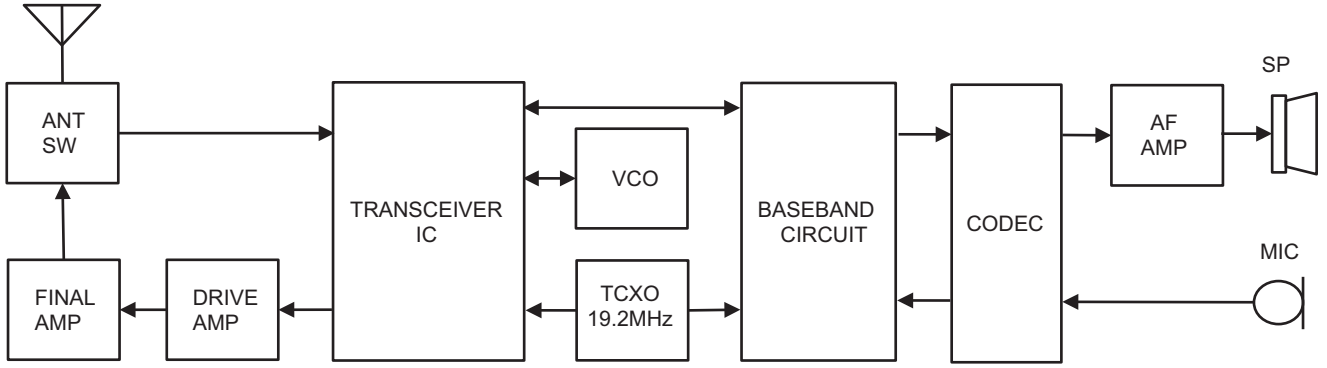


Fig.1 Frequency Configuration

2.4.3 Receiver System

2.4.3.1 RF circuit

The receive signal from ANT SW (D205, D206, D207, D208 and D209) passes through the high-pass filter (L303, L304, L313, L315 and L317 (L315 and L317 are the NX-3720H/3720 only.)) to remove unwanted signals and amplified by a RF amplifier (incorporated in IC302) . The signal is then fed to the mixer (incorporated in IC302) and converted to the baseband signal.

2.4.3.2 Baseband circuit

The baseband signal is then be fed into an ADC (incorporated in IC302), generates the I and Q data. This data is in the form of Serial Interface, and sent to the MPU/DSP (IC404).

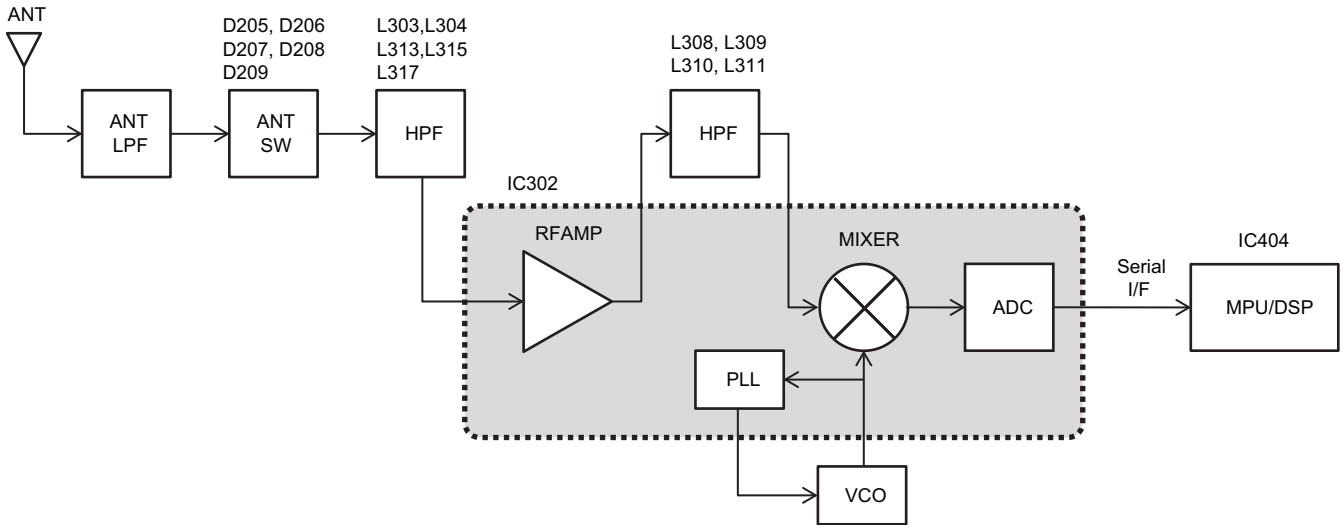


Fig.2 RF and Baseband circuit

2.4.3.3 Audio amplifier circuit

Audio processing (high-pass filter, low-pass filter, de-emphasized and so on) at Analog FM mode and decoding at Digital mode are processed by MPU/DSP. I2S signal from DSP is converted to audio signal at IC607. The signal goes to internal speaker and connector for external speaker (J2) through the electronic volume control (IC412), pre amplifier (IC608) and audio power amplifier (IC601).

2.4.4 Transmitter System

2.4.4.1 Audio Band Circuit

The signal from microphone is amplified and converted to digital signal by IC607. IC607 includes AGC function.
Digital signal is transferred to IC404.

2.4.4.2 Baseband Circuit

The audio signal transferred from IC607 is processed at IC404.Voice signals of 300Hz or lower and frequencies of 3 kHz or higher are cut off and an audio range 300Hz to 3 kHz is extracted. The audio signal is then pre-emphasized in FM mode and synthesized with the signals, such as QT and DQT, as required, and is transferred to PLL Frequency Synthesizer block in IC302. The DTMF and MSK baseband signals are also generated by IC404.
In Digital mode, the audio signal is converted to the 4-Level FSK baseband signal and is transferred to PLL Frequency Synthesizer block in IC302.

2.4.4.3 Drive and Final amplifier

The RF signal from IC302 is amplified by pre-drive amplifier (IC202). The output of the pre-drive amplifier is amplified by the drive amplifier (Q201) and RF Power module (IC201) to 50W [NX-3720H], 45W [NX-3820H], 25W [NX-3720, NX-3820] (5W when the power is low). IC202 is MMIC.Q201 is MOS FET. The output of the final amplifier is then passed through the coupler, antenna switch (D205, D206 and D207), harmonic filter (LPF) and applied to the antenna terminal.

2.4.4.4 APC circuit

The Automatic transmission power control (APC) circuit controls the transmitter output in adjusted value by monitoring it with a coupler. RF detection and comparison functions are included in the power-control IC (IC205).
The power control IC output is given as a drive source of the RF power module's gate (IC201), and completes APC feedback loop.
When a normal antenna load is connected, forward RF Power is detected by the coupler and direct in power-control IC (IC205). Forward RF Power is converted into DC voltage in IC205 and compared with the SPC.
The output voltage goes through DC amp (IC203 2/2) to Drive amp (Q201) and RF Power module (IC201).
The voltage controls the gate bias voltage of Q201 and IC201, and keeps transmission output stable.

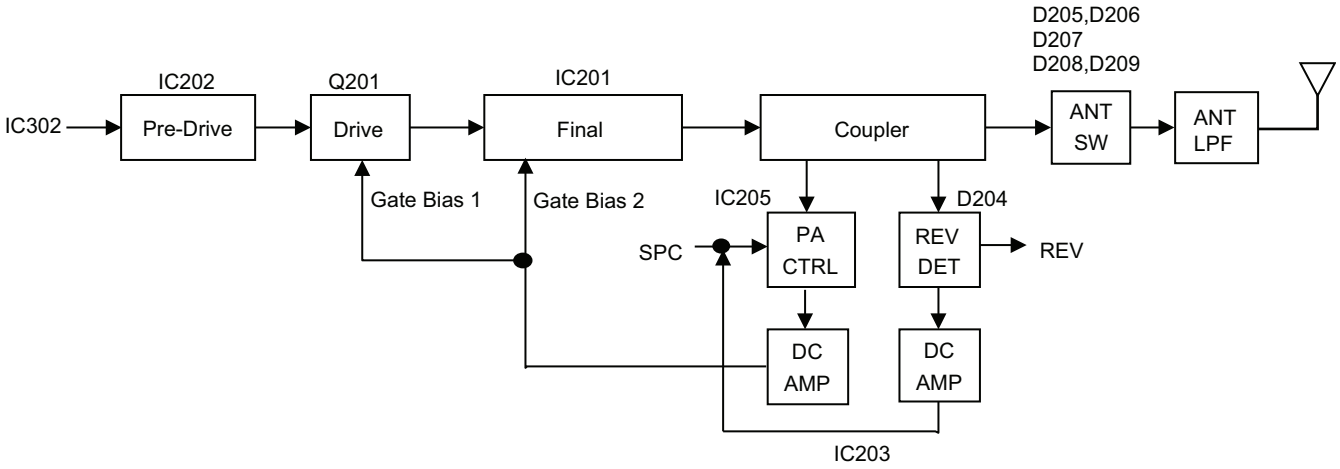


Fig.3 Drive and Final amplifier and APC circuit

2.4.5 PLL Frequency Synthesizer

2.4.5.1 TCXO (X401)

TCXO (X401) generates a reference frequency of 19.2MHz for the PLL frequency synthesizer. This reference signal is buffered by Q401. And it is distributed to PLL (IC302).
The oscillation frequency is adjusted TCXO directly by controlled the D/A converter of FCNT.

2.4.5.2 VCO

- **NX-3720H (K), NX-3720 (E)**

  There is one VCO contain TX VCO and RX VCO.
  The VCO (Q105) generates the carrier for the transmitter and the receiver. VCO oscillation frequency range is 272 to 348MHz. The transmit frequency range is same as receiver frequency range.
  The local signal frequency range is also 272 to 348MHz.
  The oscillation frequency is divided into two by IC 302 and it becomes the use frequency.
  The VCO oscillation frequency is determined by voltage control terminals "CP" and "ASSIST".
  The voltage control terminal "CP" is controlled by PLL (IC302). The voltage control terminal "ASSIST" is controlled by the control voltage from D/A converter (IC411).
  For the modulation input terminal, "VCO_MOD" of PLL (IC302), the output frequency changes according to the applied voltage. This is used to modulate the VCO output.

- **NX-3820H (K)**

  There is one VCO contain TX VCO and RX VCO.
  The VCO (Q105) generates the carrier for the transmitter and the receiver. VCO oscillation frequency range is 300 to 346.7MHz. The transmit frequency range is same as receiver frequency range.
  The local signal frequency range is 900 to 1040MHz. The local signal is three times the number of VCO oscillation frequency range.
  The output frequency is divided into two by IC 302 and it becomes the use frequency.
  The VCO oscillation frequency is determined by voltage control terminals "CP" and "ASSIST".
  The voltage control terminal "CP" is controlled by PLL (IC302). The voltage control terminal "ASSIST" is controlled by the control voltage from D/A converter (IC411).
  For the modulation input terminal, "VCO_MOD" of PLL (IC302), the output frequency changes according to the applied voltage. This is used to modulate the VCO output.

- **NX-3820H (K2), NX-3820 (E)**

  There is one VCO contain TX VCO and RX VCO.
  The VCO (Q105) generates the carrier for the transmitter and the receiver. VCO oscillation frequency range is 266.7 to 313.3MHz. The transmit frequency range is same as receiver frequency range.
  The local signal frequency range is 800 to 940MHz. The local signal is three times the number of VCO oscillation frequency range.
  The output frequency is divided into two by IC 302 and it becomes the use frequency.
  The VCO oscillation frequency is determined by voltage control terminals "CP" and "ASSIST".
  The voltage control terminal "CP" is controlled by PLL (IC302). The voltage control terminal "ASSIST" is controlled by the control voltage from D/A converter (IC411).
  For the modulation input terminal, "VCO_MOD" of PLL (IC302), the output frequency changes according to the applied voltage. This is used to modulate the VCO output.

2.4.5.3 PLL IC

PLL (IC302) compares the difference in phases of the VCO oscillation signal and the TCXO(X401) reference frequency. And it returns the difference voltage to the VCO CP terminal and realizes the "Phase Locked Loop".
This allows the VCO oscillation frequency to accurately match (lock) the desired frequency.
When the frequency is controlled by the PLL, the frequency convergence time increases as the frequency difference increases when the set frequency is changed. To supplement this, The ASSIST Voltage from D/A converter (IC411) is used before control by the PLL (IC302) to bring the VCO oscillation frequency close to the desired frequency. As a result, the VCO CP voltage does not change and is always stable at approx. 2.5V.
The desired frequency is set for the PLL (IC302) by the MPU/DSP (IC404) through the 3-line "/DCR_CS", "DCR_DO", "BCLK" serial bus for PLL. IC404 monitors through the "PLD", whether the PLL (IC302) is locked or not. If the VCO does not lock to desired frequency (unlock), the "PLD" logic is low.

2.4.6 Control Circuit

The control circuit consists of MPU/DSP (IC404) and its peripheral circuits. IC404 mainly performs the following;

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

2.4.6.1 MPU

The MPU/DSP (IC404) is 32bit RISC processor and Fixed/Floating-Point VLIW DSP, equipped with peripheral function.
This MPU operates at 288MHz (MAX) clock and 3.2V /1.8V/1.2V DC. Controls the flash memory, Mobile DDR, the receive circuit, the transmitter circuit, the control circuit, and the display circuit and transfers data to or from an external device.

2.4.6.2 Memory Circuit

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

■**Flash memory**

Note:

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

■**Mobile DDR (static memory)**

Note:

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

2.4.6.3 LCD

LCD interface connector (CN6) of the SUB unit.
The LCD is controlled using parallel interface from MPU/DSP (IC404) through the interface connectors (CN1 of the TX-RX unit and CN7 of SUB unit) and flexible cable.

2.4.6.4 Button Detection Circuit

Buttons are detected using I/O Expander IC (IC6) of the SUB unit. If pressed button is detected by IC6, it is informed to MPU/DSP (IC404) of the TX-RX unit through serial line.

2.4.6.5 DSP

The DSP circuit consists of a MPU/DSP (IC404) and processes the baseband signal. The DSP operates at 288MHz (MAX) clock, the I/O section operates at 3.2V/1.8V and the core section operates at 1.2V.
The DSP carries out the following processes:

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

2.4.7 Power Supply Circuit

+B is connected to RF Power Module, 50BU regulator (Q15, Q16 and D13) through the fuse (F1), DC/DC converter IC (IC25) via fuse (F1), SB1 switch (Q12 and Q13) through the fuse (F4) and SB2 switch (Q17 and Q18) through the fuse (F5).
Q15, Q16 and D13 regulates +B voltage to 5V (50BU). Then IC13 regulates 50BU to 3.1V (31BU). Then IC15 regulates 31BU to 1.2V (12BU). 50BU, 31BU and 12BU operate whenever +B is supplied.
IC25 regulates +B voltage to 5.4V (54M). 54M is controlled by BAT_CNT signal from Power management IC (IC22). When Power switch is turned on, BAT_CNT signal is controlled by /PSW signal. 54M goes to DC/DC converter ICs (IC24, IC12) and AVR ICs (IC20, IC17, IC26, IC609, IC23).
IC24 (12M) is enabled while the 54M is operating. 12M provides the power to the MPU/DSP (IC404) and turns on IC12 (18M). 18M provides the power to the MPU/DSP and DDR (IC402) and turns on IC20 (32M). 32M provides the power to the MPU/DSP, Flash memory (IC401) and many control circuits and turns on IC17 (32A), IC26 (50A). Then 32A turns on IC21 (18M_3).
The Power management IC (IC22) watches +B voltage. If +B voltage is higher than 8.5V, IC22 outputs high voltage to the /BINT terminal. If the /BINT is high, SB1 (Q12 and Q13) and SB2 (Q17 and Q18) are turned on by SBC signal from MPU/DSP (IC404). In the same way, IC609 (50AC) and IC23 (50C) and IC19 (32C) are turned on by SBC. 50C is fed to IC14 (200C). IC14 (200C) is the DC/DC boost converter. The 200C circuit then outputs approximately +20VDC.
SB1 supplies SUB unit and Audio power amplifier (IC601) with +B voltage. SB2 supplies D-sub unit and 9VAVR (IC1) with +B voltage. Then IC1 regulates +B to 9V (90C). Then IC16 regulates 90C to 5V (50CT). If the MPU/DSP (IC404) controls TXC, ANT SW and ASSW signals to High, Q20, Q23 (90T), Q21, Q22 (90ANT) and Q206 are turned on and transmission circuits are enabled to transmit.
When the Power management IC (IC22) and MPU/DSP (IC404) detect /PSW signal (Power switch), /IGN signal (Ignition sense) and /BINT signal, they set the SBC signal to Low, and turn the transceiver power off.
When D20, Q11 detect over-voltage condition, they turn SB1 and SB2 off, and transfer that the MPU/DSP (IC404) through IC22.

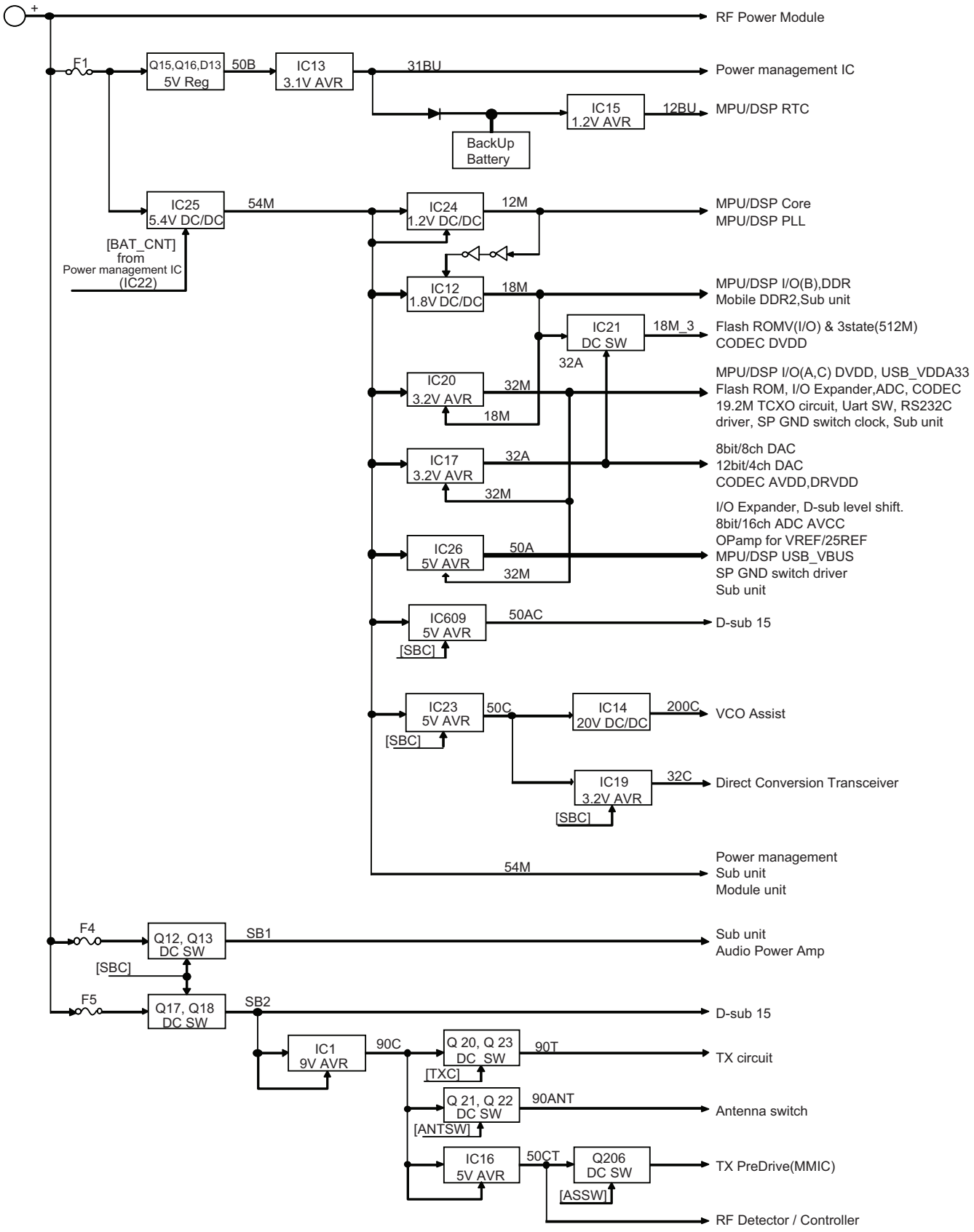


Fig.4 Power Supply Circuit

2.4.8 Signaling Circuit

2.4.8.1 Encode (QT/DQT/DTMF/2-tone /MSK)

Each signaling data signal of QT, DQT, DTMF, 2-tone and MSK is generated by IC404, superposed on a modulation signal and output to VCO and PLL.

2.4.8.2 Decode (QT/DQT/DTMF/2-tone/MSK)

The audio signal and signaling data (QT, DQT, DTMF, 2-tone and MSK) are separated by IC404. Next IC404 decode the signaling data.

2.4.9 Bluetooth/GPS Circuit (GPS model only)

The main component of the Bluetooth/GPS circuit is Bluetooth/GPS IC (IC5) on Module unit.
The clocks of Bluetooth/GPS IC require 19.2MHz for core and 32.768 kHz slow clock (X1 and X2) for UART.
Bluetooth/GPS IC communicates to the MPU/DSP (IC404) on the HCI UART. Interface of UART & Digital audio (PCM) between the MPU/DSP (IC404) and the Bluetooth/GPS IC (IC5), have level conversion at the level conversion IC (IC6 and IC7) on Module unit.
The Bluetooth/GPS IC is powered by 1.8V and 3.3V which are supplied from 2 discrete external regulators (IC2 and IC3) on Module unit.

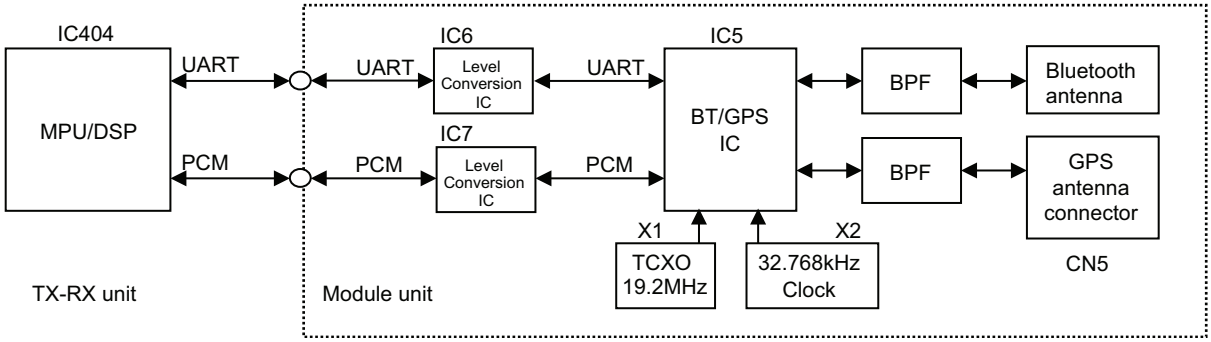


Fig.5 Bluetooth/GPS Circuit

2.4.9.1 Bluetooth Circuit

TX/RX frequency is 2400-2483.5MHz (79ch Hopping, 2402-2480MHz, 1MHz step). Transmitting power is +2dBm at Bluetooth antenna input.

Using the printed antenna with Bluetooth, and connected to the Bluetooth/GPS IC (IC5) through the saw filter (L11).

Frequency configuration for Bluetooth is following:

There are two LO modes: 2X and Offset LO (OSLO). 2X where LO is 2*RF_FREQ (e.g. when transmitting at 2441MHz it is at 4882MHz). OSLO where LO is at (2/3)*RF_FREQ (e.g. when transmitting at 2441MHz it is at 1627.333MHz).

In RX the 2X is always used.

In GFSK TX if power is >10dBm then OSLO is used

In EDR2 TX if power is >-12dBm then OSLO is used

In EDR3 TX if power is >-12dBm then OSLO is used

Otherwise 2X is used for TX as well.

2.4.9.2 GPS Circuit

The GPS RF signal is received with the active antenna, and connected to the Bluetooth/GPS IC (IC5) through the terminal (CN5) and saw filter (L9).

The output is passed to pin L2 of the GPS IC. The input match for pin L2 comprises of C38, C36 and L7. The control and data lines for the GPS IC are GPS_PA_EN, BTFM_nSHUTDOWN, GPS_TX and GPS_RX. GPS_TX and GPS_RX are shared with Bluetooth data line.

Frequency configuration for GPS is following:

Lo is GPS: 1571.324MHz

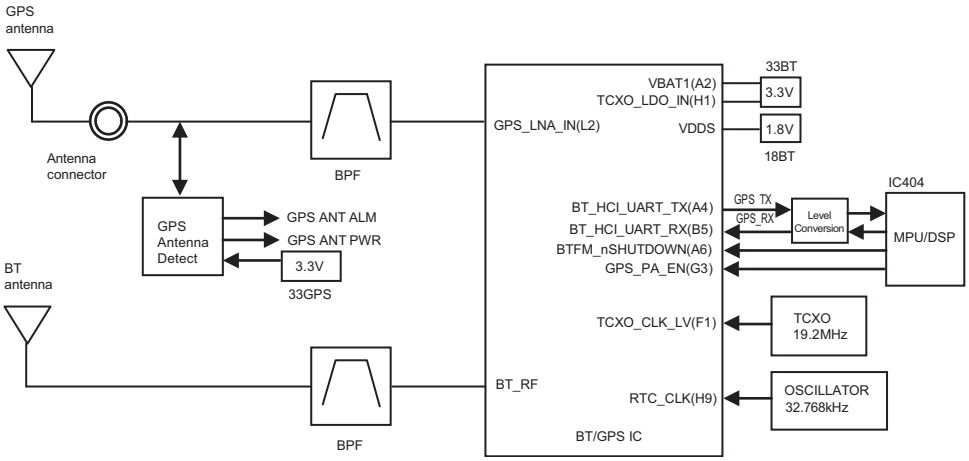


Fig.6 GPS Circuit

2.5 COMPONENTS DESCRIPTION

2.5.1 TX-RX unit (XC1-182K-00,XC1-183K-XX)

Ref. No.	Part Name	Use / Function
IC1	IC	Voltage regulator (90C)
IC12	IC	DC/DC converter (18M)
IC13	IC	Voltage regulator (31BU)
IC14	IC	DC/DC converter (200C)
IC15	IC	Voltage regulator (12BU)
IC16	IC	Voltage regulator (50CT)
IC17	IC	Voltage regulator (32A)
IC18	IC	Ignition
IC19	IC	Voltage regulator (32C)
IC20	IC	Voltage regulator (32M)
IC21	IC	Load Switch (18M_3)
IC22	IC	Power management
IC23	IC	Voltage regulator (50C)
IC24	IC	DC/DC converter (12M)
IC25	IC	DC/DC converter (54M)
IC26	IC	Voltage regulator (50A)
IC101	IC	DC amplifier (CV/Assist)
IC202	IC	MMIC (Pre-drive)
IC203	IC	DC amplifier (APC)
IC205	IC	RF power control
IC301	IC	Attenuation
IC302	IC	Transceiver IC
IC401	IC	Flash memory
IC402	IC	SDRAM
IC403	IC	Logic control
IC404	IC	MPU/DSP
IC405,406	IC	Analog switch
IC407,408	IC	Logic control
IC409	IC	I/O expander
IC410	IC	A/D converter
IC411,412	IC	D/A converter
IC413	IC	Ignition
IC414	IC	DC amplifier (VREF/25VREF)
IC602,603	IC	Logic control
IC604	IC	I/O expander
IC605	IC	RS232C Driver
IC606	IC	Logic control
IC607	IC	Codec
IC608	IC	Audio amplifier
IC609	IC	Voltage regulator (50AC)
Q11	Transistor	DC switch (OVRB)
Q12	FET	DC switch (SB1)
Q13,14	Transistor	DC switch
Q15,16	Transistor	Voltage regulator (50BU)
Q17	FET	DC switch (SB2)
Q18	Transistor	DC switch
Q19	FET	DC switch
Q20	FET	DC switch (90T)
Q21	Transistor	DC switch
Q22	FET	DC switch (90ANT)
Q23	Transistor	DC switch
Q25	Transistor	DC switch (SBC)
Q101	Transistor	Tripler
Q102	Transistor	Tripler
Q103	FET	DC switch
Q104	Transistor	Ripple filter
Q105	FET	VCO oscillation
Q106,107	Transistor	VCO Buffer amplifier
Q201	FET	TX Drive amplifier
Q202	Transistor	DC switch
Q204-206	Transistor	DC switch
Q301	FET	DC switch
Q401	Transistor	TCXO Buffer amplifier
Q402-404	FET	DC switch
Q601	FET	Level conversion
Q602	Transistor	DC switch
Q603	FET	Horn alert switch
Q604	Transistor	Audio mute
Q605	FET	Audio mute
Q606	FET	DC switch
D1	Zener diode	Reverse protection
D13	Zener diode	Voltage regulator (50BU)
D14,15	Diode	Reverse current prevention
D16,17	Diode	DC/DC converter
D18,19	Diode	Reverse current prevention
D20	Zener diode	Over voltage protection
D21	Diode	Reverse current prevention
D22	Zener diode	Over voltage protection
D24	Diode	Backup battery charge
D26,27	Diode	Reverse current prevention
D101	Zener diode	Over voltage protection
D102	Variable capacitance diode	VCO frequency control
D103-106	Variable capacitance diode	VCO assist tune
D107	Zener diode	Speed up
D108	Variable capacitance diode	TX modulation
D201	Zener diode	Over voltage protection
D202	Diode	RF switch
D204	Diode	TX Reverse power detection

Ref. No.	Part Name	Use / Function
D205-209	Diode	Antenna switch
D301-304	Diode	Excessive input protection
D401	Diode	Reverse current prevention
D402-406	Diode	Line protection
D407	Zener diode	Over voltage protection
D408-410	Diode	Reverse current prevention
D601	Zener diode	Over voltage protection
D602	Diode	Reverse current prevention
D603-608	Zener diode	Line protection
D609,610	Diode	Line protection
D611	Zener diode	Over voltage protection
D612,613	Diode	Line protection
D614,615	Diode	Reverse current prevention
D616,617	Diode	Surge protection
D618	Diode	Over voltage protection
D619	Diode	Reverse current prevention

2.5.2 SUB unit (XC3-050M-00)

Ref. No.	Part Name	Use / Function
IC1	IC	Voltage regulator (50M)
IC3,4	IC	Level conversion
IC5	IC	Bus switch
IC6	IC	I/O expander
Q1	FET	DC switch
Q2	FET	DC switch (KEY Illumination)
Q3,4,6	Transistor	DC switch (TX/BUSY)
Q8	FET	DC switch (LCD backlight)
D1,2	Diode	Surge protection
D3-6	LED	KEY Illumination
D9,10	LED	LCD backlight
D11,12	LED	KEY Illumination
D15,16	LED	LCD backlight
D17,18	LED	KEY Illumination
D20	LED	TX/BUSY LED
D21	Zener diode	Over voltage protection
D22	Diode	Reverse current protection
D24	Zener diode	Over voltage protection
D26	Zener diode	Over voltage protection
D27	Diode	Over current protection
D28	Zener diode	Over voltage protection
D30	Zener diode	Over voltage protection
D32	Zener diode	Over voltage protection
D33,34	LED	KEY Illumination

2.5.3 Module(BT/GPS) unit (XC2-0040-10)

Ref. No.	Part Name	Use / Function
IC1	IC	Level conversion
IC2	IC	Voltage regulator (18BT)
IC3	IC	Voltage regulator (33BT)
IC4	IC	Voltage regulator (33GPS)
IC5	IC	GPS/Bluetooth
IC6,7	IC	Level conversion
Q1	FET	DC switch
D17,18	Diode	Over voltage protection

2.6 TERMINAL FUNCTION

2.6.1 TX-RX unit (XC1-182K-00,XC1-183K-XX)

Pin No.	Name	I/O	Function
		CN1	
1	GND	-	Ground
2	GND	-	Ground
3	GND	-	Ground
4	NC	-	No connection
5	SP+	O	Speaker output
6	SP+	O	Speaker output
7	SP+	O	Speaker output
8	NC	-	No connection
9	GND	-	Ground
10	GND	-	Ground
11	GND	-	Ground
12	GND	-	Ground
13	IGN	-	Ignition sense input
14	SB1	O	Switched power supply
15	SB1	O	Switched power supply
16	SB1	O	Switched power supply
17	SB1	O	Switched power supply
18	NC	-	No connection
19	54M	O	5.4V output
20	NC	-	No connection
21	32M	O	3.2V output
22	NC	-	No connection
23	18M	O	1.8V output
24	NC	-	No connection
25	GND	-	Ground
26	USB_D+	I/O	USB0 PHY data plus
27	GND	-	Ground
28	USB_D-	I/O	USB0 PHY data minus
29	GND	-	Ground
30	NC	-	No connection
31	MIC/VBUS	I	MIC signal input / USB VBUS Detection

Pin No.	Name	I/O	Function
32	ME	-	MIC ground
33	/PTT	I	PTT input
34	DM	I/O	MIC data detection
35	/PSW	I	Detection signal input of power switch
36	TXD	O	Serial data output
37	RXD	I	Serial data input
38	GND	-	Ground
39	I2CDT	I/O	I2C serial data
40	I2CCK	O	I2C serial clock
41	/KEYINT	I	Key state change signal
42	P_TEMP	I	Temperature detection signal
43	/CS	O	LCD driver chip-serect signal
44	LCDRST	O	LCD driver reset signal
45	/RD	O	LCD driver RD signal
46	D[7]	O	LCD driver data output
47	D[6]	O	LCD driver data output
48	D[5]	O	LCD driver data output
49	D[4]	O	LCD driver data output
50	D[3]	O	LCD driver data output
51	D[2]	O	LCD driver data output
52	D[1]	O	LCD driver data output
53	D[0]	O	LCD driver data output
54	/WR	O	LCD driver WR signal
55	A23	O	LCD driver data/command switch signal
56	GND	-	Ground
57	R_SET2	I	Radio setting signal 2
58	R_SET1	I	Radio setting signal 1
59	R_SET0	I	Radio setting signal 0
60	GND	-	Ground
CN2			
1	GPS_PWR	I	Antenna power supply detection
2	GPS_ALM	I	Antenna open/short detection
3	GND	-	Ground
4	GND	-	Ground
5	GPS_ANT_SW	O	Enable signal for 33GPS
6	GPS_PA_EN	O	GPS receiver part switching signal output
7	/BT_SHUTDOWN	O	Shutdown signal output
8	WCLK	O	Audio serial data bus word clock output
9	BCLK	O	Audio serial data bus bit clock output
10	BT_AUD_DI	I	Audio signal input
11	BT_AUD_DO	O	Audio signal output
12	RTS2	O	Serial data output
13	CTS2	I	Serial data input
14	G_RXD2	I	Serial data input
15	G_TXD2	O	Serial data output
16	BT_SW	O	Enable signal for 33BT and 18BT
17	GPSBT_DET	I	BT/GPS unit detection
18	GND	-	Ground
19	54M	O	5.4V output
20	54M	O	5.4V output

2.6.2 Module (BT/GPS) unit (XC2-0040-10)

Pin No.	Name	I/O	Function
CN1			
1	54M	I	5.4V input
2	54M	I	5.4V input
3	GND	-	Ground
4	GPSBT_DET	O	BT/GPS unit detection (Ground)
5	BT_SW	I	Enable signal for 33BT and 18BT
6	G_TXD2	I	Serial data intput
7	G_RXD2	O	Serial data output
8	CTS2	O	Serial data output
9	RTS2	I	Serial data input
10	BT_AUD_DO	I	Audio signal input
11	BT_AUD_DI	O	Audio signal output
12	BCLK	I	Audio serial data bus bit clock input
13	WCLK	I	Audio serial data bus word clock input
14	/BT_SHUTDOWN	I	Shutdown signal input
15	GPS_PA_EN	I	GPS receiver part switching signal input
16	GPS_ANT_SW	I	Enable signal for 33GPS
17	GND	-	Ground
18	GND	-	Ground
19	GPS_ALM	O	Antenna open/short detection
20	GPS_PWR	O	Antenna power supply detection

2.6.3 Sub unit (XC3-050M-00)

Pin No.	Name	I/O	Function
J1			
1	DM	I/O	MIC data detection
2	HOOK/RXD/D-	I/O	Hook detection / Serial data input / USB PHY data minus
3	MIC/VBUS	I	MIC signal input
4	ME	-	MIC ground
5	PTT/TXD	I/O	PTT input / Serial data output
6	GND	-	Ground
7	SB	O	Switched power supply

Pin No.	Name	I/O	Function
8	BLC/D+	I/O	Back light control signal / USB PHY data plus
CN3			
1	GND	-	Ground
2	S8	I	Switch 8
3	S9	I	Switch 9
4	S10	I	Switch 10
5	S7	I	Switch 7
6	S6	I	Switch 6
7	S5	I	Switch 5
8	S4	I	Switch 4
9	S1	I	Switch 1
10	S2	I	Switch 2
11	S3	I	Switch 3
12	/PSW	I	Detection signal input of power switch
CN6			
1	ESD	-	Ground
2	A0	O	LCD driver data/command switch signal
3	/WR	O	LCD driver WR signal
4	D0	O	LCD driver data output
5	D1	O	LCD driver data output
6	D2	O	LCD driver data output
7	D3	O	LCD driver data output
8	D4	O	LCD driver data output
9	D5	O	LCD driver data output
10	D6	O	LCD driver data output
11	D7	O	LCD driver data output
12	/RD	O	LCD driver RD signal
13	RSTB	O	LCD driver reset signal
14	CSB	O	LCD driver chip-serect signal
15	VDDI	O	1.8V output
16	VD1	-	LCD Driver Internal power supply
17	VSS	-	Ground
18	VDD	O	3.2V output
19	VM	-	VM is the non-select voltage level of COM-drivers
20	V0	-	V0 is the LCD driving voltage for common circuits at positive frame
21	XV0	-	XV0 is the LCD driving voltage for common circuits at negative frame
22	VG	-	VG is the LCD driving voltage for segment circuits
23	ESD	-	Ground
CN5			
1	SP+	O	Speaker output
2	SPG	-	Speaker ground

Pin No.	Name	I/O	Function
CN7			
1	GND	-	Ground
2	R_SET0	O	Radio setting signal 0
3	R_SET1	O	Radio setting signal 1
4	R_SET2	O	Radio setting signal 2
5	GND	-	Ground
6	A23	I	LCD driver data/command switch signal
7	/WR	I	LCD driver WR signal
8	D[0]	I	LCD driver data input
9	D[1]	I	LCD driver data input
10	D[2]	I	LCD driver data input
11	D[3]	I	LCD driver data input
12	D[4]	I	LCD driver data input
13	D[5]	I	LCD driver data input
14	D[6]	I	LCD driver data input
15	D[7]	I	LCD driver data input
16	/RD	I	LCD driver RD signal
17	LCDRST	I	LCD driver reset signal
18	/CS	I	LCD driver chip-serect signal
19	P_TEMP	O	Temperature detection signal
20	/KEYINT	O	Key state change signal
21	I2CCK	I	I2C serial clock
22	I2CDT	I/O	I2C serial data
23	GND	-	Ground
24	RXD	O	Serial data output
25	TXD	I	Serial data input
26	/PSW	O	Detection signal input of power switch
27	DM	I/O	MIC data detection
28	/PTT	O	PTT input
29	ME	-	MIC ground
30	MIC/VBUS	O	MIC signal input / USB VBUS Detection
31	NC	-	No connection
32	GND	-	Ground
33	USB_D-	I/O	USB0 PHY data minus
34	GND	-	Ground
35	USB_D+	I/O	USB0 PHY data plus
36	GND	-	Ground
37	NC	-	No connection
38	18M	I	1.8V input
39	NC	-	No connection
40	32M	I	3.2V input
41	NC	-	No connection
42	54M	I	5.4V input
43	NC	-	No connection

Pin No.	Name	I/O	Function
44	SB1	O	Switched power supply
45	SB1	O	Switched power supply
46	SB1	O	Switched power supply
47	SB1	O	Switched power supply
48	NC	-	No connection
49	GND	-	Ground
50	GND	-	Ground
51	GND	-	Ground
52	GND	-	Ground
53	NC	-	No connection
54	SP+	I	Speaker input
55	SP+	I	Speaker input
56	SP+	I	Speaker input
57	NC	-	No connection
58	GND	-	Ground
59	GND	-	Ground
60	GND	-	Ground

2.6.4 D-Sub 15-pin Connector Specification

Pin No.	Pin Name	I/O	Modification	Signal Type	Description	Rating and Condition				
						Parameter	Min	Typ	Max	Unit
1	SB	O	No	Power	Switched B Output	Voltage	This parameter depends on Battery Voltage			
						Supply Current	-	-	2.0	A
2	IGN	I	No	Digital	Active High	Input Voltage Range	0	-	30	V
						Threshold High	6.0	-	-	V
						Threshold Low	-	5.0	-	V
3	SP2/PA	O	No	Analog	Speaker output	Audio Output	3	4	-	W
						Coupling Capacitor	-	330	-	uF
						RL	3.0	-	-	ohm
						Allowable Frequency	300.0	-	3000	Hz
4	DETO	O	Yes	Analog	FM detector output	Output Level	-	0.24	-	Vp-p
						Coupling Capacitor	-	10	-	uF
						Allowable Load	-	600	-	ohm
						Output Impedance	-	100	-	ohm
	AFO	O			RX Audio output	Output Level	-	0.6	-	Vp-p
						Coupling Capacitor	-	10	-	uF
						Allowable Load	-	600	-	ohm
						Output Impedance	-	100	-	ohm
						Allowable Frequency	300	-	3000	Hz
5	DATAI	I	Yes	Analog	External Modulation input	Input Voltage Range	-	0.5	-	Vp-p
						Input Impedance	-	45	-	kohm
	MI2	I		Analog	External MIC AF Input	Input Voltage Range	-	5.0	-	mVrms
						Allowable Frequency	300	-	3000	Hz
						Input Impedance	-	600	-	ohm

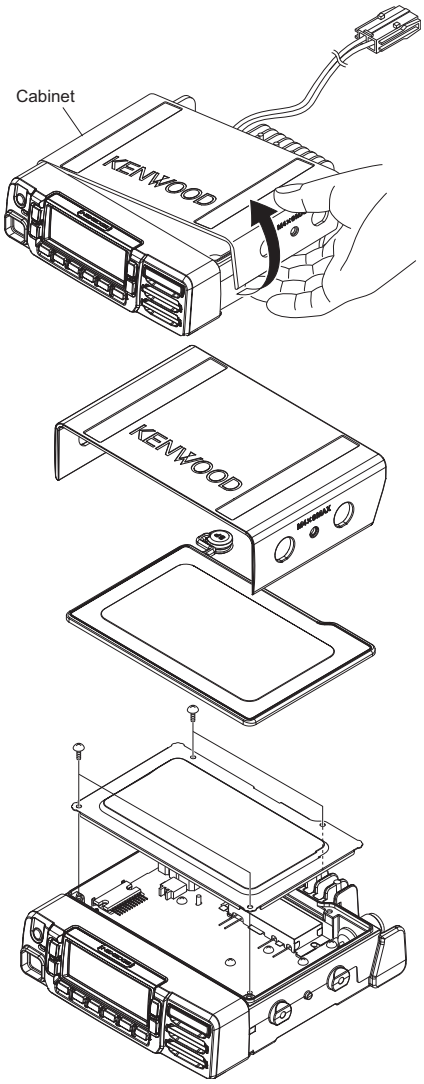
Pin No.	Pin Name	I/O	Modification	Signal Type	Description	Rating and Condition				
						Parameter	Min	Typ	Max	Unit
6	FNC1 COM1_TXD	I/O	Yes	Digital	Programmable I/O	VIH	4.0	-	5.2	V
						VIL	-0.5	-	1.0	V
						VOH(Io=-1.5mA)	4.0	-	5.2	V
						VOL(Io=1.5mA)	-	-	1.1	V
	TXD (RS-232C)	O		Digital	RS-232C Serial port (TXD)	Voltage Swing	±5	±5.2		V
						Baud Rate		-	300k	bps
7	FNC2 COM1_RXD	I/O	Yes	Digital	Programmable I/O	VIH	4.0	-	5.2	V
						VIL	-0.5	-	1.0	V
						VOH(Io=-1.5mA)	4.0	-	5.2	V
						VOL(Io=1.5mA)	-	-	1.1	V
	RXD (RS-232C)	I		Digital	RS-232C Serial port (RXD)	Input Voltage Range	-30.0	-	30.00	V
						Threshold Low	0.51	1.326	-	V
						Threshold High	-	1.632	2.448	V
						Baud Rate	-	-	300k	bps
						CL	-	100	-	pF
8	FNC3	I/O	Yes	Digital	Programmable I/O	VIH	4.0	-	5.2	V
						VIL	-0.5	-	1.0	V
						VOH(Io=-1.5mA)	4.0	-	5.2	V
						VOL(Io=1.5mA)	-	-	1.1	V
	RTS(RS232C)	O		Digital	RS-232C Serial port (RTS)	Voltage Swing	±5	±5.2	-	V
9	FNC4	I/O	Yes	Digital	Programmable I/O	VIH	4.0	-	5.2	V
						VIL	-0.5	-	1.0	V
						VOH(Io=-1.5mA)	4.0	-	5.2	V
						VOL(Io=1.5mA)	-	-	1.1	V
	CTS (RS232C)	I		Digital	RS-232C Serial port (CTS)	Input Voltage Range	-30.0		30.00	V
						Threshold Low	0.5	1.3		V
						Threshold High		1.75	2.6	V
10	FNC5	I/O	No	Digital	Programmable I/O	VIH	4.0	-	5.2	V
						VIL	-0.5	-	1.0	V
						VOH(Io=-1.5mA)	4.0	-	5.2	V
						VOL(Io=1.5mA)	-	-	1.1	V
11	FNC6	I/O	No	Digital	Programmable I/O	VIH	4.0	-	5.2	V
						VIL	-0.5	-	1.0	V
						VOH(Io=-1.5mA)	4.0	-	5.2	V
						VOL(Io=1.5mA)	-	-	1.1	V
12	50AC	O	No	Power	5V DC Power supply	Output Voltage	4.5	5	5.25	V
						Output Current	-	-	100.0	mA
13	HR1	I	Yes	Analog	Horn alert signal input	Input Voltage	5	-	16	V
						Input Current	-	-	2.0	A
	COM2_TXD	O		Digital	TXD	VOH(Io=-1.5mA)	4.0	-	5.2	V
						VOL(Io=1.5mA)	-0.5	-	1.0	V

Pin No.	Pin Name	I/O	Modification	Signal Type	Description	Rating and Condition				
						Parameter	Min	Typ	Max	Unit
14	HR2	O	Yes	Analog	Horn alert signal output	Output Voltage	This parameter depends on HR1 Voltage			
						Output Voltage Loss	-	-	1.0	V
						Output Current	-	-	2.0	A
	COM2_RXD	I		Digital	RXD	VIH	2.8	-	5.2	V
						VIL	-0.5	-	0.5	V
15	GND	-	No	GND	Ground		-	-	-	-

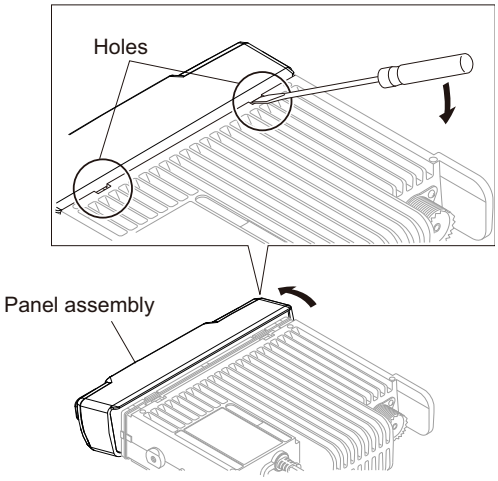
SECTION 3
DISASSEMBLY

3.1 Disassembly Procedure

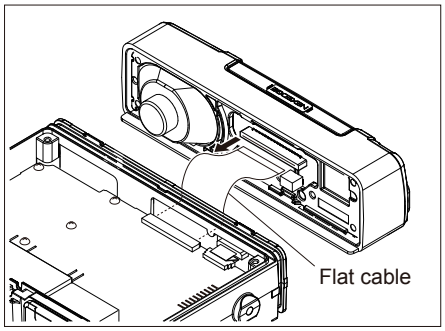
(1) Remove the cabinet, top packing and shielding plate of the transceiver.



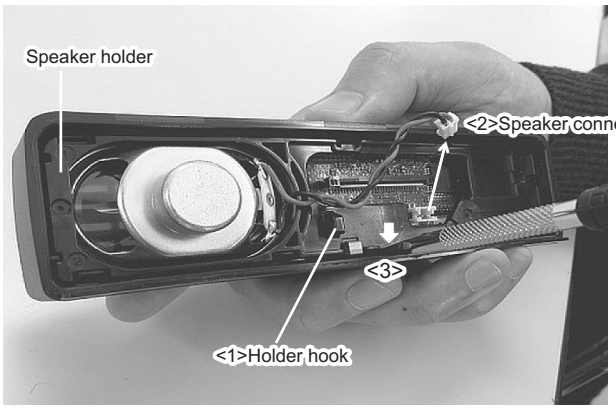
(2) To remove the panel assembly, first turn the transceiver upside down.
Then, insert a flat-head screwdriver into the holes of the chassis and tilt it in the direction as shown by the arrow.



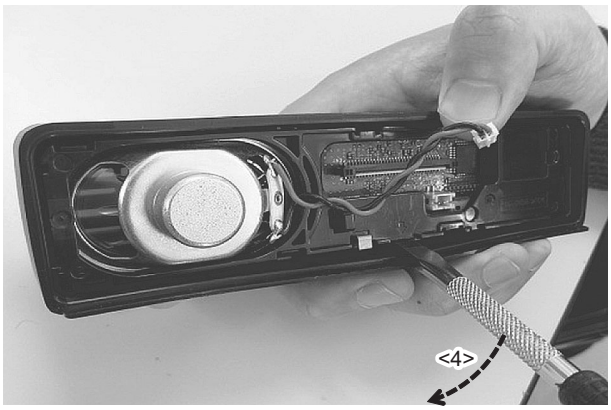
(3) Disconnect the flat cable from connector of the panel assembly.



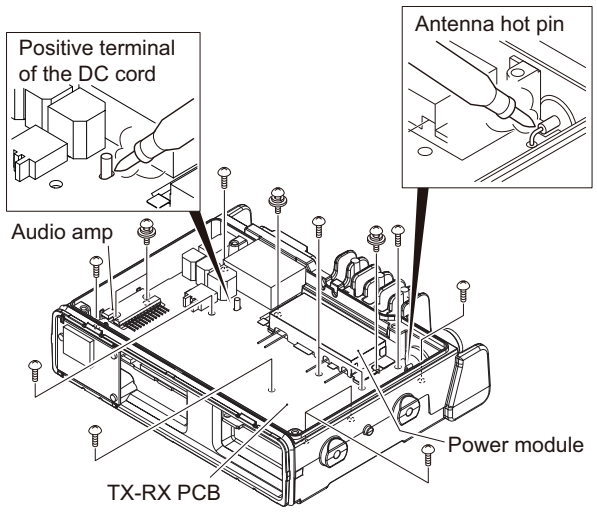
(4) Remove the speaker lead from the holder hook.<1>
Remove the speaker connector from the display unit connector.<2>
Insert a flat-head screwdriver at the stamp position (arrow mark) in the speaker holder.<3>



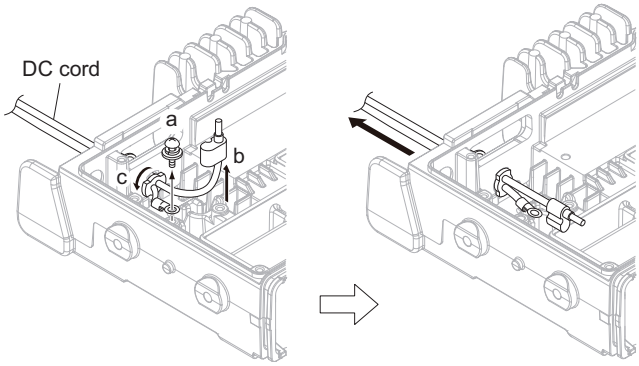
Tilt the screwdriver in the figure direction <4>, then remove the speaker holder from the front panel.



(5) When removing the TX-RX PCB, then remove the solder of the antenna hot pin and positive terminal of the DC cord. Remove the 15 screws from the TX-RX PCB, power module,and audio amp.

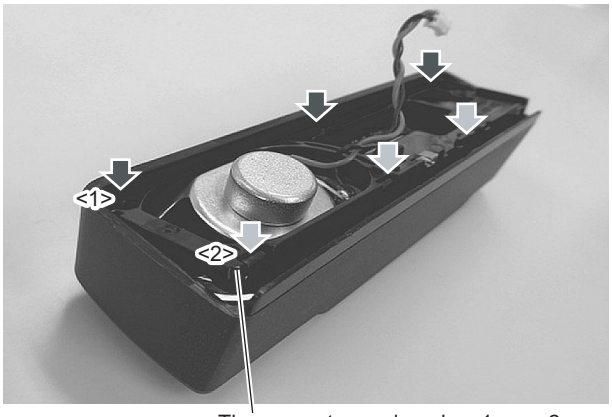


(6) Pull it out behind the chassis by rotating the bush <c> of the DC cord 90 degrees in the direction of the arrow after the screw <a> in the negative terminal is removed, and the positive terminal <b> is removed from the chassis.



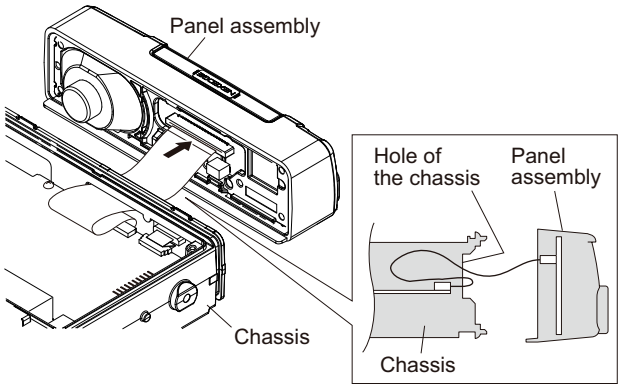
3.2 Precautions for Reassembly

(1) Push the upper tabs of speaker holder (stamped mark <1> side) into the front panel first.
Then push the lower tabs (stamped mark <2> side) into the front panel.

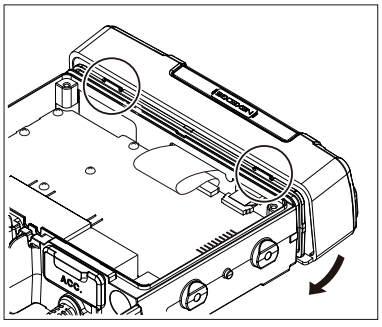


There are stamped marks <1> or <2> on the four corners of the speaker holder.

(2) When mounting the panel assembly, pass the flat cable through the hole of the chassis as shown below then connect the flat cable to connector of the panel assembly.



(3) Fit the panel assembly into the two tabs of the chassis top side first.
Then, fit the panel assembly into the two tabs of the chassis bottom side by turning the panel assembly.



3.3 Precautions for Reassembly

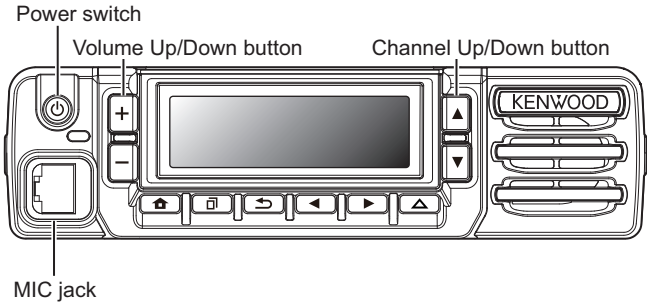
3.3.1 Assembly Information (Sheet/Cushion)

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

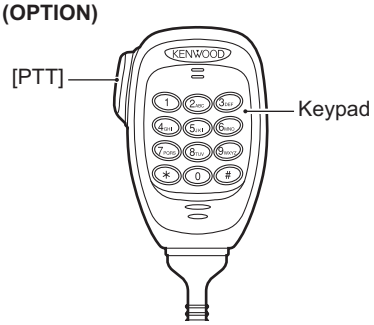
Main Parts		Assembled Sheet/ Cushion	
Part Name	**Part Number**	**Part Name**	**Part Number**
CHASSIS	A1A-0096-00	NAME PLATE	B72-2283-04
		CAUTION STICKER	B41-1837-04
		SHEET	G11-4578-04
TX-RX UNIT (NX-3720H K) TX-RX UNIT (NX-3720 E) TX-RX UNIT (NX-3820H K) TX-RX UNIT (NX-3820H K2) TX-RX UNIT (NX-3820 E)	XCA-033K-00 XCA-033E-01 XCA-034K-00 XCA-034K-01 XCA-034E-01	SHEET	G11-4611-04
		SHIELDING COVER	F1B-0086-00
MODULE UNIT	XC2-0040-10	SHIELDING COVER	F10-3225-05
ILL.GUIDE	B1B-0101-00	OPTI.DIFFUSER	B1B-0102-00
MOUNTING	J2B-0341-00	FLEX P.BOARD	J8C-0018-00
PANEL ASSY	A6C-0067-00	KENWOOD BADGE	B4D-0044-00
		CAUTION STICKER	B4B-0008-00
SHIELDING CASE	F10-3112-13	CONDUCTIVE CUSHION	G13-2101-14
SUB UNIT	XC3-050M-00	REF.SHEET	B1B-0103-00

SECTION 4
ADJUSTMENT

4.1 NX-3720H(G)/3720H K TYPE Controls



KMC-36 (OPTION)



4.1.1 Preparations for checking/tuning the transceiver

Before attempting to check/tune the transceiver, connect the unit to a suitable power supply.
Whenever the transmitter is turned on, the unit must be connected to a suitable dummy load (i.e. power meter).
The speaker output connector must be terminated with an 4ohm dummy load and connected to an AC voltmeter and an audio distortion meter or a SINAD measurement meter at all times during checking/tuning.

4.2 Panel Test Mode

4.2.1 Test mode operation features

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

- When the panel test mode is activated, the last used channel and signaling numbers are displayed. When the panel test mode is activated for the first time, the channel and signaling numbers are 1.

4.2.2 Button operation

Button	"Func" not appears on the sub LCD display	
	Function	Display
[+]	Push: Volume up Hold: Volume up continuously	-
[-]	Push: Volume down Hold: Volume down continuously	-
[▲]	Push: Test channel up Hold: Test channel up continuously	Channel No.
[▼]	Push: Test channel down Hold: Test channel down continuously	Channel No.
[◀]	Push: Squelch level up *1 Hold: Squelch off	Squelch level Squelch off: 🔇 icon appears
[▶]	Wide/Narrow/ Very Narrow	Wide : "w" Narrow: "n" Very Narrow: "v"
[⧉]	Shift to panel tuning mode	-
[⮌]	Function on	"Func" appears on the sub LCD display
[⌂]	Push: Test signaling up Hold: Test signaling up continuously	Signaling No.
[△(AUX)]	MSK 1200bps and 2400bps *1	2400bps: [✉] icon appears
[PTT]	Transmit	-
[0] to [9] and [#], [✳]	-	-

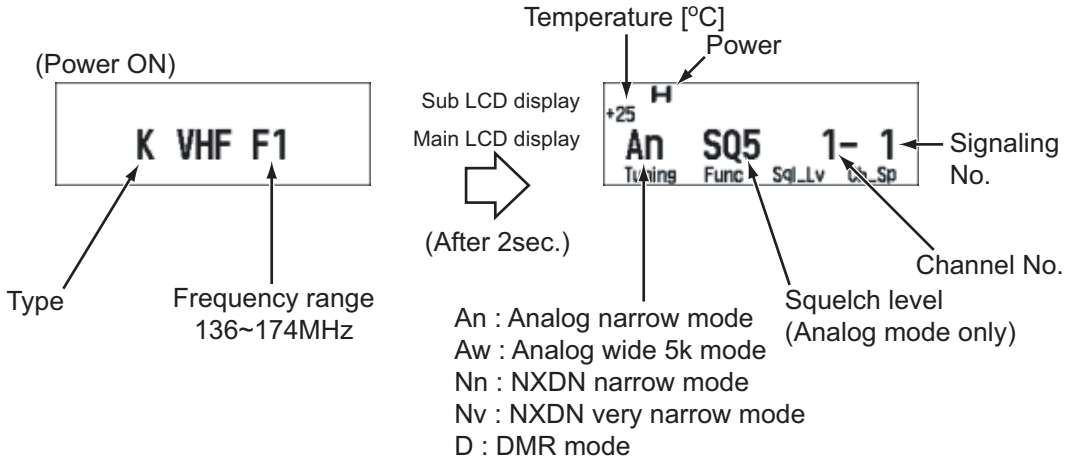
*1: When the mode is selected as Analog, this function is enabled.

Button	"Func" appears on the sub LCD display	
	Function	Display
[+]	Function off	-
[-]	Function off	-
[▲]	-	-
[▼]	Mode selection Analog/NXDN/DMR	Analog: "A" NXDN: "N" DMR: "D"
[◀]	Function off	-
[▶]	Button/LCD check	The contents of the pressed button etc., appear.
[⧉]	High power/Medium power/Low power	High:[H] icon appears Medium:[M] icon appears Low:[L] icon appears
[⮌]	Function off	-

Button	"Func" appears on the sub LCD display	
	Function	Display
[⌂]	External Speaker on/off	On: ▷▮ icon appears
[△(AUX)]	Compander on/off	On: [⩔] icon appears
[PTT]	Transmit	-
[0] to [9] and [#], [✳]	Function off	-

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

- **LCD display in panel test mode**



4.2.3 Frequency and Signaling

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

(1) Test frequency

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

(2) Signaling

■Analog Type Signaling

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

■NXDN Type Signaling

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

RAN: Radio Access Number
PN9: Pseudo-Random Pattern
No.7, 9 Item: PC test mode only

■DMR Type Signaling

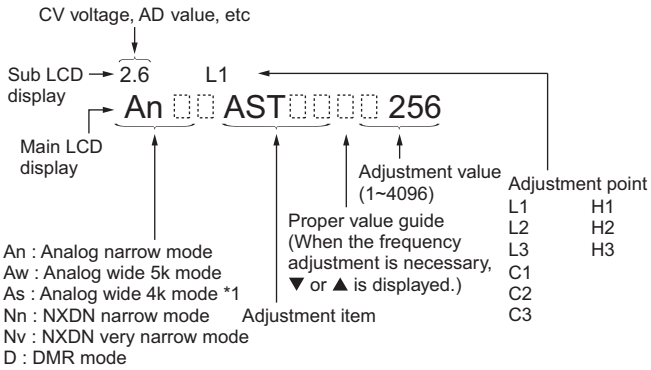
No.	RX	TX
1	CC 00 Burst	CC 00 Burst
2	PN9	PN9
3	CC 00 Burst	Maximum Deviation Pattern
4	CC 00 Burst	1/3 Deviation Pattern
5	CC 00 Burst	0 Continuous Pattern
6	SYNC (Each Slot) + PN9 Burst Pattern	SYNC (Each Slot) + PN9 Burst Pattern
7	SYNC (Super Frame) + PN9 Burst Pattern	SYNC (Super Frame) + PN9 Burst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

4.3 Panel Tuning Mode

4.3.1 Transceiver tuning (To enter tuning mode)

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

- LCD display in panel tuning mode



*1: Wide 4k is displayed only when the PC test mode is used. However, it aims at production for factory, or a operation verification of the transceiver. It is not necessary in operation of the transceiver to adjust.

4.3.2 Button operation

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

4.3.3 5 or 9 reference level adjustments frequency

Maximum Transmit Power, High Transmit Power, Medium Transmit Power, Low Transmit Power, Balance, Maximum Deviation, NXDN High Deviation, DMR High Deviation, QT Deviation, DQT Deviation, LTR Deviation, DTMF Deviation, Single Tone Deviation, MSK Deviation, CW ID Deviation, IQ Phase, RSSI Reference, Squelch Open, Squelch Tight, Low RSSI, High RSSI

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

VCO Assist

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

4.3.4 Adjustment item supplement

Adjustment Item	Description
LCD Contrast	The contrast of LCD display can be changed.
VCO Assist	The lock voltage of VCO is adjusted. This item must be adjusted before receiver and transmitter adjustment items.
Frequency	Frequency is adjusted under receiving condition with SSG. The SSG needs 0.001ppm accuracy so please use a standard oscillator if necessary. This item can be adjusted only in PC Test Mode so that the adjustment value is not changed easily.
RTC Correction	Real Time Clock is adjusted. This item uses the internal clock. (Any measurement equipment is not required.)
Maximum Transmit Power	Maximum Transmit Power is adjusted.
High Transmit Power	High Transmit Power is adjusted.
Mid Transmit Power	Medium Transmit Power is adjusted.
Low Transmit Power	Low Transmit Power is adjusted.
Ramp Offset	Adjust this item to the optimal Ramp voltage.
Balance	The transmit modulation frequency response is adjusted. This item is adjusted so that the deviation of 2kHz becomes the same deviation of 20Hz. This item must be adjusted before all adjustment items for deviations are adjusted.
Maximum Deviation (Analog Wide 5k/ Wide 4k/Narrow)	Maximum Deviation of Analog (Wide 5k/ Wide 4k/Narrow) is adjusted. This item must be adjusted before all adjustment items for tone deviations are adjusted.
High Deviation	NXDN/DMR high deviation is adjusted.
QT Deviation	QT deviation is adjusted.
DQT Deviation	DQT deviation is adjusted.
LTR Deviation	LTR deviation is adjusted.
DTMF Deviation	DTMF deviation is adjusted.
Single Tone Deviation	The deviation of Single Tone used in “2-tone” and “5-tone” is adjusted.
MSK Deviation	MSK deviation is adjusted.
CW ID Deviation	CWID tone deviation is adjusted. CWID is used to inform the others who is transmitting on a 6.25-kHz spacing channel. (In FCC rule, Analog mode or CWID is required for each channel-spacing.)
IQ Phase	Correction of phase difference shift between I and Q.
RSSI Reference	The minimum RSSI level for scan stop is adjusted.
Squelch Open	The squelch level at level “1” is adjusted.
Squelch Tight	The squelch level at level “9” is adjusted.
Low RSSI	RSSI display level “  ” is adjusted. Both “Low RSSI” and “High RSSI” must be adjusted. (The curve data of RSSI level is applied.)
High RSSI	

4.3.5 Adjustment item and Display

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

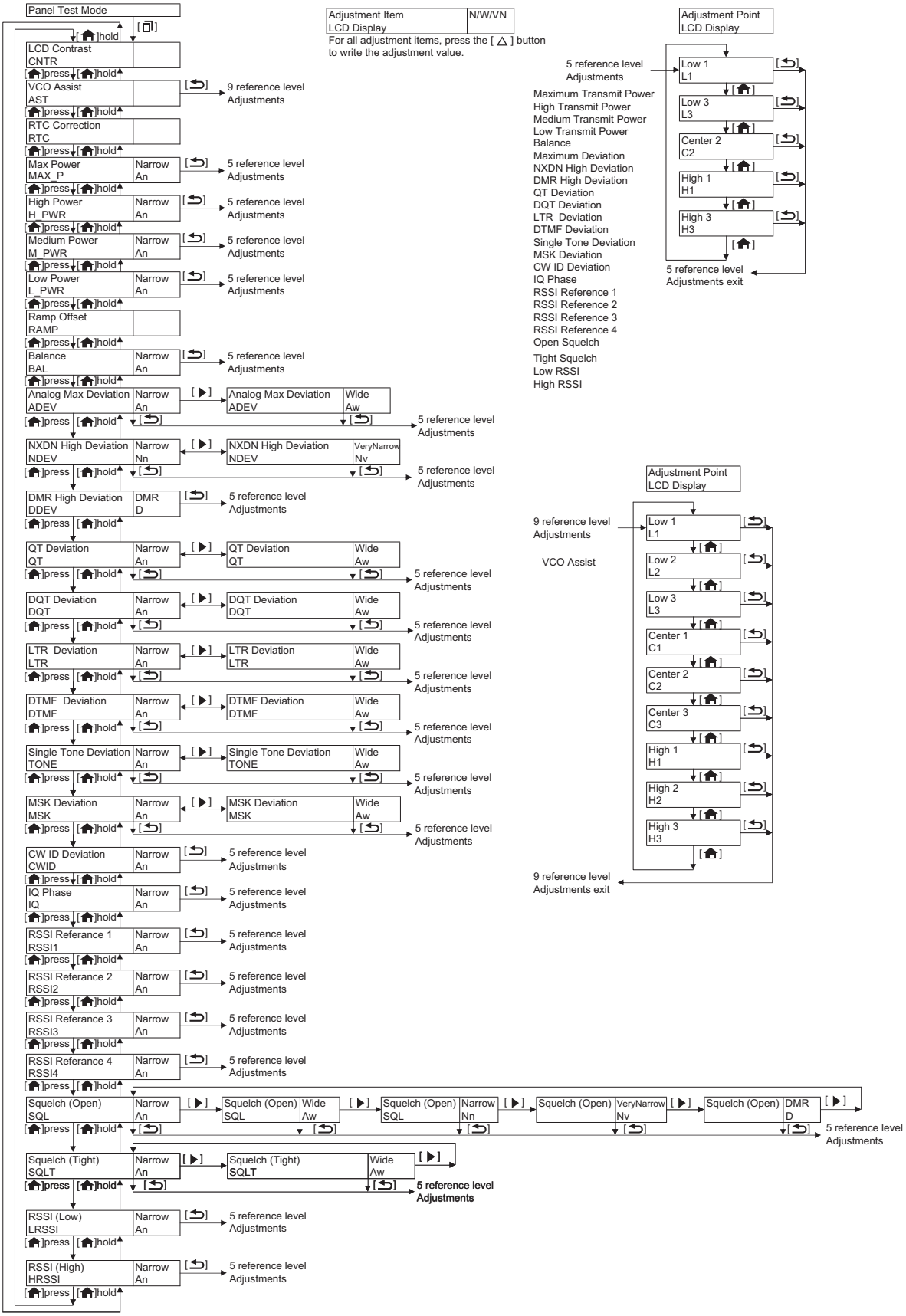
Order	Adjusutment item	Main LCD display	Sub LCD display	AW (Analog Wide)	AS *2 (Analog Wide 4k)	AN (Analog Narrow)	Nn (NXDN Narrow)	Nv (NXDN Very Narrow)	D (DMR)	Adjust item Number
				Adjustment range						
22	RSSI Reference 2 RF IC(Receive)	RSSI2	(RSSI RF IC(Receive) measurement value)	-	-	5	-	-	-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

*2: Wide 4k can be set up only when the PC test mode is used.

4.3.6 Panel tuning mode flow chart

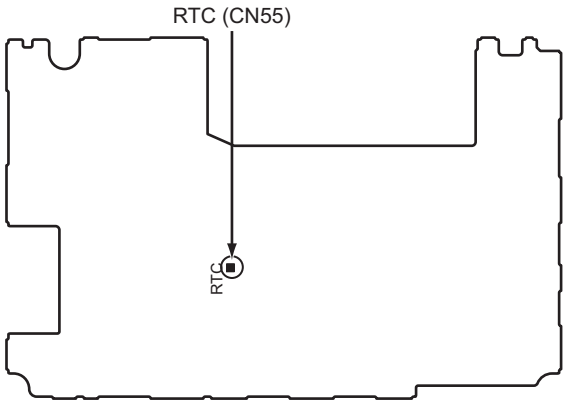
Note:

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



4.4 Adjustment point

TX-RX UNIT (XC1-182)
Component Side

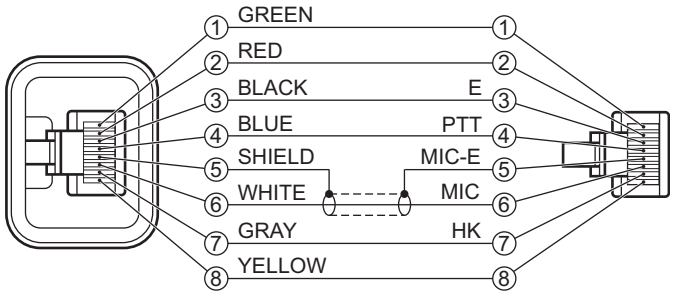


4.5 Test Equipment Required for Alignment

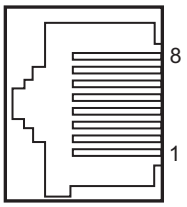
Test Equipment	Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range Modulation Output	100 to 900MHz Frequency modulation and external modulation -127dBm/0.1uV to greater than -20dBm/22.4mV
	When performing the Frequency adjustment, the following accuracy is necessary. • 0.003ppm Use a standard oscillator for adjustments, if necessary.	
2. Power Meter	Input Impedance Operation Frequency Measurement Capability	50ohm 100 to 900MHz Vicinity of 100W
3. Deviation Meter	Frequency Range	100 to 900MHz
4. Digital Volt Meter (DVM)	Measuring Range Input Impedance	10mV to 20V DC High input impedance for minimum circuit loading
5. Oscilloscope		DC through 30MHz
6. Frequency Counter	Frequency Range Frequency Stability	10Hz to 1000MHz 0.2ppm or less
	To measure the oscillating frequency of the internal clock 32766.00Hz~32770.00Hz for RTC Correction Resolution 0.01Hz is better for accuracy adjustment.	
7. Ammeter		20A or more
8. AF Volt Meter (AF VM)	Frequency Range Voltage Range	50Hz to 10kHz 1mV to 10V
9. Audio Generator (AG)	Frequency Range Output	50Hz to 5kHz or more 0 to 1V
10. Distortion Meter	Capability Input Level	3% or less at 1kHz 50mV to 10Vrms
11. Spectrum Analyzer	Measuring Range	DC to 1GHz or more
12. 4ohm Dummy Load		Approx. 4ohm, 10W
13. Regulated Power Supply		13.6V, approx. 20A (adjustable from 9V to 17V) Useful if ammeter equipped

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

■**Test cable for microphone input (E30-3360-28)**



■**MIC connector (Front panel view)**



1 : BLC
2 : +B
3 : GND
4 : PTT/TXD (PC serial data from radio)
5 : MICE
6 : MIC
7 : HOOK/RXD (PC serial data to radio)
8 : DM

■**Tuning cable (E30-7754-05)**

Adapter cable (E30-7754-05) is required for injecting an audio if PC tuning is used.
See “PC Mode” section for the connection.

4.6 Radio check Section

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel test mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Frequency check	1)CH-Sig: 1-1 PTT: ON	1)Test Channel Channel: 1 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.	f. counter	Panel	ANT			Check an internal temperature of radio from 20°C to 33°C.	±0.25ppm ±38.7Hz @155.1MHz
2. High power check	1)CH-Sig: 1-1 PTT: ON TA: OFF	1)Test Channel Channel: 1 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.	Power meter Ammeter	Panel	ANT			Check	45W~55W 13.0A or less
	2)CH-Sig: 2-1 PTT: ON TA: OFF	2)Test Channel Channel: 2 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.							
	3)CH-Sig: 3-1 PTT: ON TA: OFF	3)Test Channel Channel: 3 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.							

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel test mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
3. Medium power check	1)CH-Sig: 1-1 PTT: ON TA: OFF	1)Test Channel Channel: 1 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.	Power meter Ammeter	Panel	ANT			Check	25W~35W 10A or less
	2)CH-Sig: 2-1 PTT: ON TA: OFF	2)Test Channel Channel: 2 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.							
	3)CH-Sig: 3-1 PTT: ON TA: OFF	3)Test Channel Channel: 3 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.							
4. Low power check	1)CH-Sig: 1-1 PTT: ON TA: OFF	1)Test Channel Channel: 1 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.	Power meter Ammeter	Panel	ANT			Check	3.5W~6.5W 7.0A or less
	2)CH-Sig: 2-1 PTT: ON TA: OFF	2)Test Channel Channel: 2 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.							
	3)CH-Sig: 3-1 PTT: ON TA: OFF	3)Test Channel Channel: 3 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.							
5. MIC sensitivity check	1)CH-Sig: 1-1 AG: 1kHz PTT: ON	1)Test Channel Channel: 1 Test Signaling Type: Analog Signaling: 1 AG: 1kHz PTT: Press [Transmit] button.	Deviation meter Oscilloscope AG AF VM	Panel	ANT MIC jack			Adjust AG input to get a standard MOD.	5mV ±1mV

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel test mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
6. Sensitivity check	1)CH-Sig: 1-1 SSG output Wide: -117dBm (0.32μV) (MOD: 1kHz/±3kHz) Narrow: -117dBm (0.32μV) (MOD: 1kHz/±1.5kHz)	1)Test Channel Channel: 1 Test Signaling Type: Analog Signaling: 1 SSG output Wide: -117dBm (0.32μV) (MOD: 1kHz/±3kHz) Narrow: -117dBm (0.32μV) (MOD: 1kHz/±1.5kHz)	SSG AF VM Oscilloscope Distortion meter 4ohm Dummy load	Panel	ANT Ext. SP connector			Check	12dB SINAD or more

4.7 Common Section

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting	1) DC voltage:13.6V 2) SSG standard modulation [Wide] MOD:1kHz,DEV:3kHz [Narrow] MOD:1kHz,DEV:1.5kHz								
2.LCD Contrast	1) Adj item [CNTR] Adjust:[****] Press [△] button to store the adjustment value.	1) Adj item [LCD Contrast] Data: [****] Press [Apply] button to store the adjustment value.				Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 280 (Reference value)	
3. VCO Assist	1) Adj item: [AST] Adjust:[****] 2) Adj item: [L1]→ [L2]→ [L3]→ [C1]→ [C2]→ [C3]→ [H1]→ [H2]→ [H3]→ Adjust:[****] Press [△] button to store the adjustment value.	1) Adj item: [VCO Assist] 2) Adj item: [Low1],[Low2], [Low3], [Center1], [Center2], [Center3], [High1],[High2] [High3] Press [Apply] button to store the adjustment value.				Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	**[PC test mode]** **[Automatic Adjustment]** 1) Press [Autotune] button. 2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished. **[Manual Adjustment]** [V] Indicator on the PC window shows VCO lock voltage. Change the adjustment value to get VCO lock voltage within the limit of the specified voltage. **Note:** Confirm the VCO lock voltage approximately 3 seconds after the adjustment value is changed.	2.5V±0.1V **[Automatic Adjustment]** After the automatic adjustment is performed, verify that the VCO lock voltage is within the voltage range which is specified by the manual adjustment. **[Manual Adjustment]** Press [Apply] button to store the adjustment value after all adjustment points have been adjusted. Adjustment value range: 300 - 3000

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
4. Frequency	*The Frequency adjustment can be performed only in PC test mode.	1) Adj item: [Frequency] SSG output: -20dBm (22.4mV) (CW (without modulation)) **Caution:** Perform the frequency adjustment under the following conditions. • Temperature range of +20°C to +33°C (+68.0°F to +91.4°F). (The temperature is displayed on the Frequency adjustment screen of the KPG-D3/ D3N and the LCD of the transceiver.) • Use an accuracy of 0.003ppm for the SSG. (Use a standard oscillator if necessary.)	SSG	Panel	ANT		[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	**[PC test mode]** Press [Start] button of "Auto Tuning". Press [Apply] button to store the adjustment value after the automatic adjustment has finished.	**[PC test mode]** "IF20" value = Within 0±10 digits. The value of "IF20" will become around "0" after the adjustment has finished. **Remark:** "Frequency" is adjusted under receiving condition with SSG.
5. RTC Correciton	1) Adj item: [RTC] Adjust:[****] Press [△] button to store the adjustment value.	1) Adj item: [RTC Correction] Data: [****] Press [Apply] button to store the adjustment value.	Frequency Counter	TX-RX	TEST POINT (CN55)				**Remark:** The adjustment value should input the display of a Frequency Counter.

4.8 Transmitter Section

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Maximum Transmit Power	1) Adj item: [MAX_P] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Maximum Transmit Power] 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	57.5W	±2.5W 15A or less

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
2. High Transmit power	1) Adj item: [H_PWR] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [High Transmit Power] 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	50W	±1W 13A or less
3. Medium Transmit power	1) Adj item: [M_PWR] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Medium Transmit Power] 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	30W	±1W 10A or less
4. Low Transmit power	1) Adj item: [L_PWR] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Low Transmit Power] 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	5W	±0.5W 7A or less

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
5. Ramp Offset	1)Adj item: [RAMP] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Ramp Offset] Press [Autotune(TX Starts)] button. Press [Apply] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	**[PC test mode] [Automatic Adjustment]** 1) Press [Autotune(TX starts)] button. 2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished. 3) Check Ramp Offset Monitor Value Over 60. **[Manual Adjustment]** 1) Set the adjustment value to "1". 2) Press [Transmit] button and increase the adjustment value slowly while monitoring the offset monitor value. 3) Set the adjustment value when the offset monitor value exceed "75".	
6. Balance	1) Adj item: [An BAL] Adjust:[****] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Balance] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	The Deviation of 20Hz frequency is fixed. Change the 2kHz adjustment value to become the same deviation of 20Hz within the specified range. **[Panel tuning mode]** PTT:ON While PTT:ON, press the [◀] button to change the 20Hz/ 2kHz. **[PC test mode]** PTT: Press [Transmit] button. While PTT:ON, click the check box "2kHz Sine Wave" to change the 20Hz/2kHz.	2kHz Tone deviation is within ± 1.0% of 20Hz tone deviation.

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
7. Maximum Deviation [Analog Wide]	1) Adj item: [Aw ADEV] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Maxmum Deviation (Analog Wide)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the deviation is between 4150Hz and 4250Hz. Deviation meter LPF: 15kHz HPF: OFF 500(Reference value) **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	4150~4250Hz
[Analog Narrow]	1) Adj item: [An ADEV] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Maxmum Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the deviation is between 2050Hz and 2150Hz. Deviation meter LPF: 15kHz HPF: OFF 500(Reference value) **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	2050~2150Hz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
8. NXDN High Deviation [NXDN Narrow]	1) Adj item: [Nn NDEV] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [NXDN High Deviation (NXDN Narrow] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the Analog deviation is between 2995Hz and 3117Hz. Deviation meter LPF: 3kHz HPF: OFF 500(Reference value) **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	2995~3117Hz
[NXDN Very Narrow]	1) Adj item: [Nv NDEV] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [NXDN High Deviation (NXDN Very Narrow] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope					Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the Analog deviation is between 1311Hz and 1363Hz. Deviation meter LPF: 3kHz HPF: OFF 500(Reference value) **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	1311~1363Hz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
9. DMR High Deviation	1) Adj item: [D DDEV] Adjust: [****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DMR High Deviation (DMR Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope					Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the Analog deviation is between 2695Hz and 2803Hz. Deviation meter LPF: 3kHz HPF: OFF 500(Reference value) **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	2695~2803Hz
10. QT Deviation [Analog Wide]	1) Adj item: [Aw QT] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [QT Deviation (Analog Wide)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 512 (Reference value)	0.75kHz±0.05 kHz
[Analog Narrow]	1) Adj item: [An QT] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [QT Deviation (Analog Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 512 (Reference value)	0.35kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
11. DQT Deviation [Analog Wide]	1) Adj item: [Aw DQT] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DQT Deviation (Analog Wide)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 430 (Reference value)	0.75kHz±0.05 kHz
[Analog Narrow]	1) Adj item: [An DQT] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DQT Deviation (Analog Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 430 (Reference value)	0.35kHz±0.05 kHz
12. LTR Deviation [Analog Wide]	1) Adj item: [Aw LTR] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [LTR Deviation (Analog Wide)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 512 (Reference value)	1.00kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Narrow]	1) Adj item: [An LTR] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [LTR Deviation (Analog Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 512 (Reference value)	0.75kHz±0.05 kHz
13. DTMF Deviation [Analog Wide]	1) Adj item: [Aw DTMF] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DTMF Deviation (Analog Wide)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 555 (Reference value)	2.50kHz±0.05 kHz
[Analog Narrow]	1) Adj item: [An DTMF] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DTMF Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 555 (Reference value)	1.25kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
14. Single Tone Deviation [Analog Wide]	1) Adj item: [Aw TONE] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Single Tone Deviation (Analog Wide)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 512 (Reference value)	3.00kHz±0.05 kHz
[Analog Narrow]	1) Adj item: [An TONE] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Single Tone Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 512 (Reference value)	1.50kHz±0.05 kHz
15. MSK Deviation [Analog Wide]	1) Adj item: [Aw MSK] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [MSK Deviation (Analog Wide)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 512 (Reference value)	3.00kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Narrow]	1) Adj item: [An MSK] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [MSK Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 512 (Reference value)	1.50kHz±0.05 kHz
16. CWID Deviation [Analog Narrow]	1) Adj item: [An CWID] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [CWID Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 512 (Reference value)	1.10kHz±0.10 kHz

4.8.1 Necessary Deviation adjustment item for each signaling and mode

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

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

- Balance is common with all the above deviation adjustments. If Balance (Transmitter Section 6) has already adjusted, please skip Step1 and adjust from Step2.
- Maximum Deviation (Analog Wide/Narrow) is common with all the analog signaling deviations and CWID Deviation (NXDN Very Narrow).
  If Balance and Maximum Deviation (Analog Wide /Narrow) (Transmitter Section 7) have already adjusted, please skip Step2 and adjust from Step3.

4.9 Receiver Section

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. AF level setting	[Panel test mode] 1) CH-Sig: 1-1 SSG output: -47dBm (1mV) (MOD: 1kHz/ ±1.5kHz)	1) Test Channel Channel: 1 Test Signaling Type: Analog Signaling: 1 SSG output: -47dBm (1mV) (MOD:1kHz/ ±1.5kHz)	SSG DVM AF VM Dummy load	Panel	ANT Ext. SP connector	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Volume Up/Down knob to obtain 1.41V AF output. (0.5W @ 4ohm load)	1.41V ±0.1V
2. IQ Phase	1) Adj item: [An IQ] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] SSG output: Freq: Tune Freq +8kHz level: -53dBm (500μV) (MOD:OFF)	1) Adj item: [IQ Phase] 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] SSG output: Freq: Tune Freq +8kHz level: -53dBm (500μV) (MOD:OFF)	SSG	Panel	ANT Ext. SP connector	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	**[PC test mode]** **[Automatic Adjustment]** After input signal from SSG, 1) Press [Autotune] button. 2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished. **[Manual Adjustment]** Adjust RSSI Level(DSP Normal Power Mode) Value to the minimum.	
3. RSSI reference [DSP (Receive)]	1) Adj item: [An RSSI 1] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)	1) Adj item: [RSSI Reference (Analog Narrow) 1 DSP (Receive)] 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	
[RF IC (Receive)]	1) Adj item: [An RSSI 2] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)	1) Adj item: [RSSI Reference (Analog Narrow) 2 RF IC (Receive)] 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	

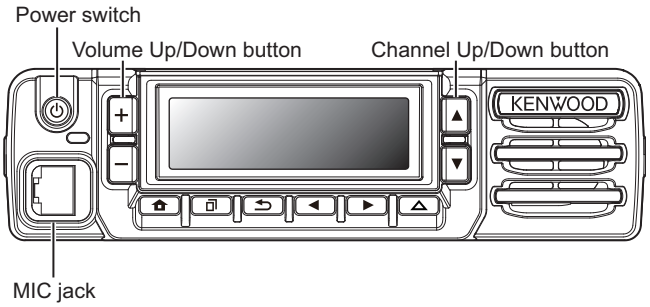
Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[DSP (Standby)]	1) Adj item: [An RSSI 3] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)	1)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

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

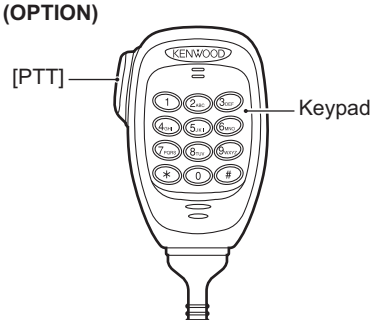
Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[DMR]	1) Adj item: [D SQL] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] SSG output: 12dB SINAD level at Analog Narrow -4dB (MOD: 400Hz/ ±1.8kHz)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

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
6. Low RSSI	1) Adj item: [An LRSSI] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] SSG output: -118dBm (0.28μV) (MOD: 1kHz/ ±1.5kHz)	1) Adj item: [Low RSSI (Analog Narrow)] 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] SSG output: -118dBm (0.28μV) (MOD: 1kHz/ ±1.5kHz)	SSG	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	
7. High RSSI	1) Adj item: [An HRSSI] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] SSG output: -80dBm (22.4μV) (MOD: 1kHz/ ±1.5kHz)	1) Adj item: [High RSSI (Analog Narrow)] 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] SSG output: -80dBm (22.4μV) (MOD: 1kHz/ ±1.5kHz)	SSG	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	

4.10 NX-3720(G)/3720 E TYPE Controls



KMC-36 (OPTION)



4.10.1 Preparations for checking/tuning the transceiver

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

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

The speaker output connector must be terminated with an 4ohm dummy load and connected to an AC voltmeter and an audio distortion meter or a SINAD measurement meter at all times during checking/tuning.

4.11 Panel Test Mode

4.11.1 Test mode operation features

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

- When the panel test mode is activated, the last used channel and signaling numbers are displayed. When the panel test mode is activated for the first time, the channel and signaling numbers are 1.

4.11.2 Button operation

Button	"Func" not appears on the sub LCD display	
	Function	Display
[+]	Push: Volume up Hold: Volume up continuously	-
[-]	Push: Volume down Hold: Volume down continuously	-
[▲]	Push: Test channel up Hold: Test channel up continuously	Channel No.
[▼]	Push: Test channel down Hold: Test channel down continuously	Channel No.
[◀]	Push: Squelch level up *1 Hold: Squelch off	Squelch level Squelch off: 🔇 icon appears
[▶]	Wide 5k/Wide 4k/Narrow/ Very Narrow	Wide 5k: "w" Wide 4k: "s" Narrow: "n" Very Narrow: "v"
[⧉]	Shift to panel tuning mode	-
[⮌]	Function on	"Func" appears on the sub LCD display
[🏠]	Push: Test signaling up Hold: Test signaling up continuously	Signaling No.
[△(AUX)]	MSK 1200bps and 2400bps *1	2400bps: [✉] icon appears
[PTT]	Transmit	-
[0] to [9] and [#], [✳]	-	-

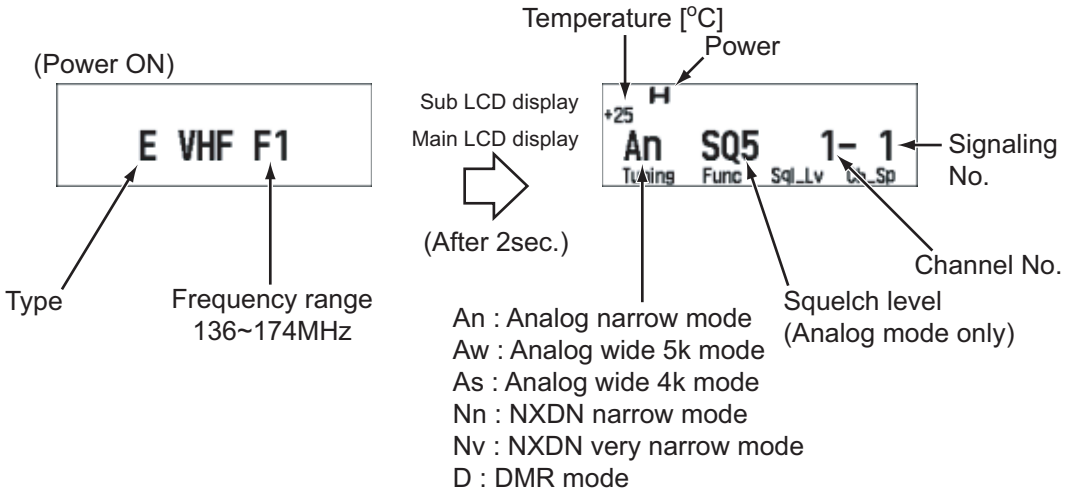
*1: When the mode is selected as Analog, this function is enabled.

Button	"Func" appears on the sub LCD display	
	Function	Display
[+]	Function off	-
[-]	Function off	-
[▲]	-	-
[▼]	Mode selection Analog/NXDN/DMR	Analog: "A" NXDN: "N" DMR: "D"
[◀]	Function off	-
[▶]	Button/LCD check	The contents of the pressed button etc., appear.
[⧉]	High power/Medium power/Low power	High:[H] icon appears Medium:[M] icon appears Low:[L] icon appears
[⮌]	Function off	-
[🏠]	External Speaker on/off	On: ▷ icon appears

Button	"Func" appears on the sub LCD display	
	Function	Display
[△(AUX)]	Compander on/off	On: [⩔] icon appears
[PTT]	Transmit	-
[0] to [9] and [#], [✳]	Function off	-

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

- **LCD display in panel test mode**



4.11.3 Frequency and Signaling

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

(1) Test frequency

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

(2) Signaling

■Analog Type Signaling

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

■**NXDN Type Signaling**

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

RAN: Radio Access Number
PN9: Pseudo-Random Pattern
No.7, 9 Item: PC test mode only

■**DMR Type Signaling**

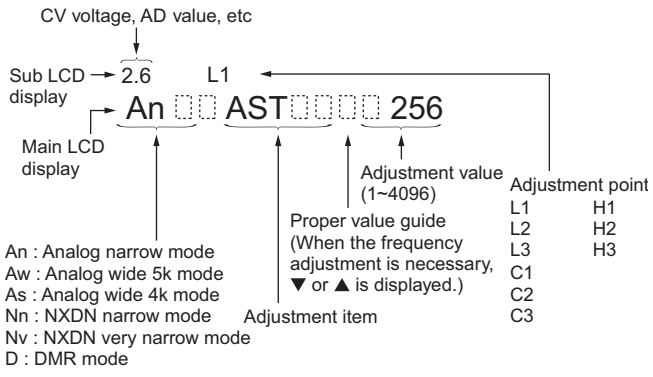
No.	RX	TX
1	CC 00 Burst	CC 00 Burst
2	PN9	PN9
3	CC 00 Burst	Maximum Deviation Pattern
4	CC 00 Burst	1/3 Deviation Pattern
5	CC 00 Burst	0 Continuous Pattern
6	SYNC (Each Slot) + PN9 Burst Pattern	SYNC (Each Slot) + PN9 Burst Pattern
7	SYNC (Super Frame) + PN9 Burst Pattern	SYNC (Super Frame) + PN9 Burst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

4.12 Panel Tuning Mode

4.12.1 Transceiver tuning (To enter tuning mode)

To enter tuning mode, press the [ ] button while the transceiver is in test mode. Use the [△(AUX)] button to write tuning data through tuning modes, and the [▲]/[▼] button to adjust tuning requirements (1 to 4096 appears on the LCD).
Use the [ ] button to select the adjustment item through tuning modes. Use the [ ] button to adjust 5 or 9 reference level adjustments, and use the [▶] button to switch between Wide5k/ Wide4k/Narrow.

- LCD display in panel tuning mode



4.12.2 Button operation

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

4.12.3 5 or 9 reference level adjustments frequency
Maximum Transmit Power, High Transmit Power, Medium Transmit Power, Low Transmit Power, Balance, Maximum Deviation , NXDN High Deviation, DMR High Deviation, QT Deviation, DQT Deviation, LTR Deviation, DTMF Deviation, Single Tone Deviation, MSK Deviation, CW ID Deviation, IQ Phase, RSSI Reference, Squelch Open, Squelch Tight, Low RSSI, High RSSI

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

VCO Assist

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

4.12.4 Adjustment item supplement

Adjustment Item	Description
LCD Contrast	The contrast of LCD display can be changed.
VCO Assist	The lock voltage of VCO is adjusted. This item must be adjusted before receiver and transmitter adjustment items.
Frequency	Frequency is adjusted under receiving condition with SSG. The SSG needs 0.001ppm accuracy so please use a standard oscillator if necessary. This item can be adjusted only in PC Test Mode so that the adjustment value is not changed easily.
RTC Correction	Real Time Clock is adjusted. This item uses the internal clock. (Any measurement equipment is not required.)
Maximum Transmit Power	Maximum Transmit Power is adjusted.
High Transmit Power	High Transmit Power is adjusted.
Mid Transmit Power	Medium Transmit Power is adjusted.
Low Transmit Power	Low Transmit Power is adjusted.
Ramp Offset	Adjust this item to the optimal Ramp voltage.
Balance	The transmit modulation frequency response is adjusted. This item is adjusted so that the deviation of 2kHz becomes the same deviation of 20Hz. This item must be adjusted before all adjustment items for deviations are adjusted.
Maximum Deviation (Analog Wide 5k/ Wide 4k/Narrow)	Maximum Deviation of Analog (Wide 5k/ Wide 4k/Narrow) is adjusted. This item must be adjusted before all adjustment items for tone deviations are adjusted.
High Deviation	NXDN/DMR high deviation is adjusted.
QT Deviation	QT deviation is adjusted.
DQT Deviation	DQT deviation is adjusted.
LTR Deviation	LTR deviation is adjusted.
DTMF Deviation	DTMF deviation is adjusted.
Single Tone Deviation	The deviation of Single Tone used in “2-tone” and “5-tone” is adjusted.
MSK Deviation	MSK deviation is adjusted.
CW ID Deviation	CWID tone deviation is adjusted. CWID is used to inform the others who is transmitting on a 6.25-kHz spacing channel. (In FCC rule, Analog mode or CWID is required for each channel-spacing.)
IQ Phase	Correction of phase difference shift between I and Q.
RSSI Reference	The minimum RSSI level for scan stop is adjusted.
Squelch Open	The squelch level at level “1” is adjusted.
Squelch Tight	The squelch level at level “9” is adjusted.
Low RSSI	RSSI display level “” is adjusted. Both “Low RSSI” and “High RSSI” must be adjusted. (The curve data of RSSI level is applied.)
High RSSI	

4.12.5 Adjustment item and Display

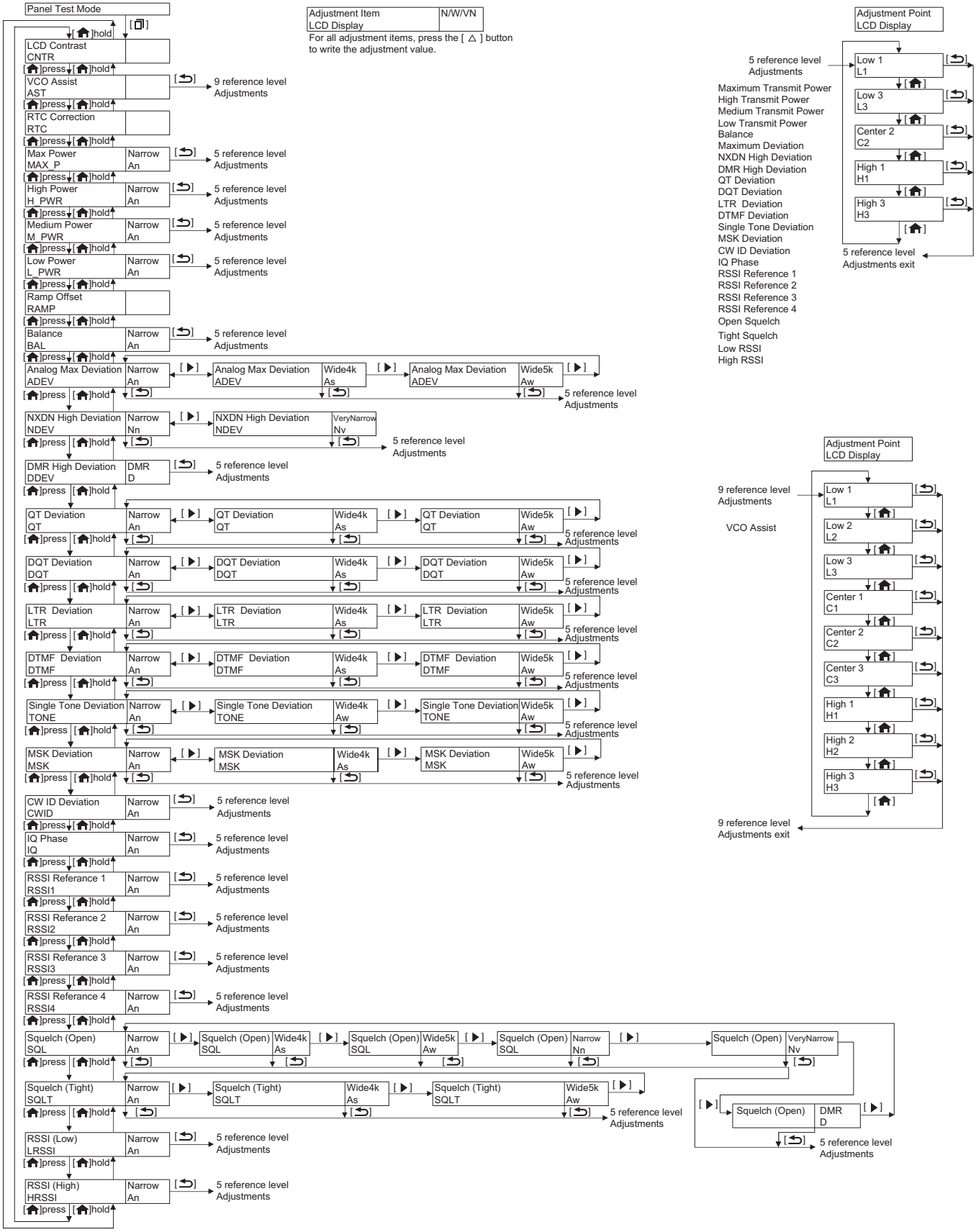
Order	Adjusutment item	Main LCD display	Sub LCD display	AW (Analog Wide 5k)	AS (Analog Wide 4k)	AN (Analog Narrow)	Nn (NXDN Narrow)	Nv (NXDN Very Narrow)	D (DMR)	Adjust item Number
				Adjustment range						
1	LCD Contrast	CNTR	-	1 point ADJ						Common Section 2
				1~256						
2	VCO Assist	AST	(CV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

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

4.12.6 Panel tuning mode flow chart

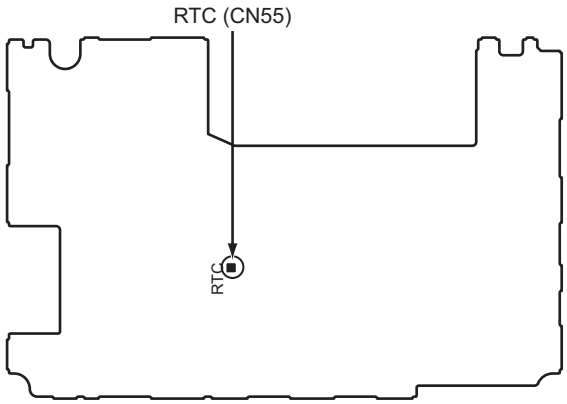
Note:

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



4.13 Adjustment points

TX-RX UNIT (XC1-182)
Component Side

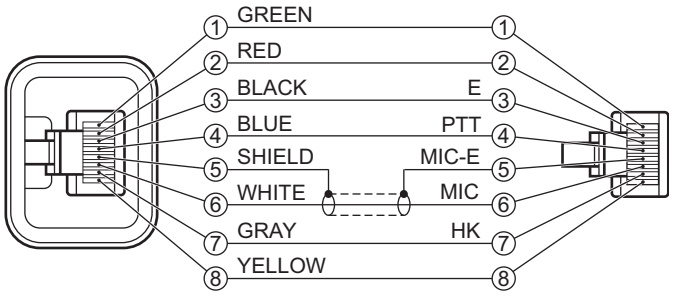


4.14 Test Equipment Required for Alignment

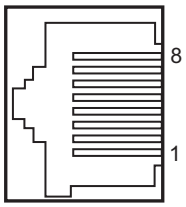
Test Equipment	Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range Modulation Output	100 to 900MHz Frequency modulation and external modulation -127dBm/0.1uV to greater than -20dBm/22.4mV
	When performing the Frequency adjustment, the following accuracy is necessary. • 0.003ppm Use a standard oscillator for adjustments, if necessary.	
2. Power Meter	Input Impedance Operation Frequency Measurement Capability	50ohm 100 to 900MHz Vicinity of 100W
3. Deviation Meter	Frequency Range	100 to 900MHz
4. Digital Volt Meter (DVM)	Measuring Range Input Impedance	10mV to 20V DC High input impedance for minimum circuit loading
5. Oscilloscope		DC through 30MHz
6. Frequency Counter	Frequency Range Frequency Stability	10Hz to 1000MHz 0.2ppm or less
	To measure the oscillating frequency of the internal clock 32766.00Hz~32770.00Hz for RTC Correction Resolution 0.01Hz is better for accuracy adjustment.	
7. Ammeter		20A or more
8. AF Volt Meter (AF VM)	Frequency Range Voltage Range	50Hz to 10kHz 1mV to 10V
9. Audio Generator (AG)	Frequency Range Output	50Hz to 5kHz or more 0 to 1V
10. Distortion Meter	Capability Input Level	3% or less at 1kHz 50mV to 10Vrms
11. Spectrum Analyzer	Measuring Range	DC to 1GHz or more
12. 4ohm Dummy Load		Approx. 4ohm, 10W
13. Regulated Power Supply		13.2V, approx. 20A (adjustable from 9V to 17V) Useful if ammeter equipped

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

■**Test cable for microphone input (E30-3360-28)**



■**MIC connector (Front panel view)**



1 : BLC
2 : +B
3 : GND
4 : PTT/TXD (PC serial data from radio)
5 : MICE
6 : MIC
7 : HOOK/RXD (PC serial data to radio)
8 : DM

■**Tuning cable (E30-7754-05)**

Adapter cable (E30-7754-05) is required for injecting an audio if PC tuning is used.
See “PC Mode” section for the connection.

4.15 Radio check Section

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel test mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Frequency check	1)CH-Sig: 1-1 PTT: ON	1)Test Channel Channel: 1 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.	f. counter	Panel	ANT			Check an internal temperature of radio from 20°C to 33°C.	±0.25ppm ±38.7Hz @155.1MHz
2. High power check	1)CH-Sig: 1-1 PTT: ON TA: OFF	1)Test Channel Channel: 1 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.	Power meter Ammeter	Panel	ANT			Check	21W~29W 10A or less
	2)CH-Sig: 2-1 PTT: ON TA: OFF	2)Test Channel Channel: 2 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.							
	3)CH-Sig: 3-1 PTT: ON TA: OFF	3)Test Channel Channel: 3 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.							

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel test mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
3. Low power check	1)CH-Sig: 1-1 PTT: ON TA: OFF	1)Test Channel Channel: 1 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.	Power meter Ammeter	Panel	ANT			Check	3.5W~6.5W 7.0A or less
	2)CH-Sig: 2-1 PTT: ON TA: OFF	2)Test Channel Channel: 2 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.							
	3)CH-Sig: 3-1 PTT: ON TA: OFF	3)Test Channel Channel: 3 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.							
4. MIC sensitivity check	1)CH-Sig: 1-1 AG: 1kHz PTT: ON	1)Test Channel Channel: 1 Test Signaling Type: Analog Signaling: 1 AG: 1kHz PTT: Press [Transmit] button.	Deviation meter Oscilloscope AG AF VM	Panel	ANT MIC jack			Adjust AG input to get a standard MOD.	5mV ±1mV
5. Sensitivity check	1)CH-Sig: 1-1 SSG output Wide 5k: -117dBm (0.32μV) (MOD: 1kHz/±3kHz) Wide 4k: -117dBm (0.32μV) (MOD: 1kHz/±2.4kHz) Narrow: -117dBm (0.32μV) (MOD: 1kHz/±1.5kHz)	1)Test Channel Channel: 1 Test Signaling Type: Analog Signaling: 1 SSG output Wide 5k: -117dBm (0.32μV) (MOD: 1kHz/±3kHz) Wide 4k: -117dBm (0.32μV) (MOD: 1kHz/±2.4kHz) Narrow: -117dBm (0.32μV) (MOD: 1kHz/±1.5kHz)	SSG AF VM Oscilloscope Distortion meter 4ohm Dummy load	Panel	ANT Ext. SP connector			Check	12dB SINAD or more

4.16 Common Section

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting	1) DC voltage:13.2V 2) SSG standard modulation [Wide 5k] MOD:1kHz,DEV:3kHz [Wide 4k] MOD:1kHz,DEV:2.4kHz [Narrow] MOD:1kHz,DEV:1.5kHz								
2.LCD Contrast	1) Adj item [CNTR] Adjust:[****] Press [△] button to store the adjustment value.	1) Adj item [LCD Contrast] Data: [****] Press [Apply] button to store the adjustment value.				Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 280 (Reference value)	
3. VCO Assist	1) Adj item: [AST] Adjust:[****] 2) Adj item: [L1]→ [L2]→ [L3]→ [C1]→ [C2]→ [C3]→ [H1]→ [H2]→ [H3]→ Adjust:[****] Press [△] button to store the adjustment value.	1) Adj item: [VCO Assist] 2) Adj item: [Low1],[Low2], [Low3], [Center1], [Center2], [Center3], [High1],[High2] [High3] Press [Apply] button to store the adjustment value.				Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	**[PC test mode]** **[Automatic Adjustment]** 1) Press [Autotune] button. 2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished. **[Manual Adjustment]** [V] Indicator on the PC window shows VCO lock voltage. Change the adjustment value to get VCO lock voltage within the limit of the specified voltage. **Note:** Confirm the VCO lock voltage approximately 3 seconds after the adjustment value is changed.	2.5V±0.1V **[Automatic Adjustment]** After the automatic adjustment is performed, verify that the VCO lock voltage is within the voltage range which is specified by the manual adjustment. **[Manual Adjustment]** Press [Apply] button to store the adjustment value after all adjustment points have been adjusted. Adjustment value range: 300 - 3000

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
4. Frequency	*The Frequency adjustment can be performed only in PC test mode.	1) Adj item: [Frequency] SSG output: -20dBm (22.4mV) (CW (without modulation)) **Caution:** Perform the frequency adjustment under the following conditions. • Temperature range of +20°C to +33°C (+68.0°F to +91.4°F). (The temperature is displayed on the Frequency adjustment screen of the KPG-D3/ D3N and the LCD of the transceiver.) • Use an accuracy of 0.003ppm for the SSG. (Use a standard oscillator if necessary.)	SSG	Panel	ANT		[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	**[PC test mode]** Press [Start] button of "Auto Tuning". Press [Apply] button to store the adjustment value after the automatic adjustment has finished.	**[PC test mode]** "IF20" value = Within 0±10 digits. The value of "IF20" will become around "0" after the adjustment has finished. **Remark:** "Frequency" is adjusted under receiving condition with SSG.
5. RTC Correciton	1) Adj item: [RTC] Adjust:[****] Press [△] button to store the adjustment value.	1) Adj item: [RTC Correction] Data: [****] Press [Apply] button to store the adjustment value.	Frequency Counter	TX-RX	TEST POINT (CN55)				**Remark:** The adjustment value should input the display of a Frequency Counter.

4.17 Transmitter Section

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Maximum Transmit Power	1) Adj item: [MAX_P] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Maximum Transmit Power] 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	57.5W	±2.5W 15A or less
2. High Transmit power	1) Adj item: [H_PWR] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust: [****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [High Transmit Power] 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	25W	±1W 10A or less
3. Low Transmit power	1) Adj item: [L_PWR] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust: [****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Low Transmit Power] 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	5W	±0.5W 7A or less

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
4. Ramp Offset	1)Adj item: [RAMP] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Ramp Offset] Press [Autotune(TX starts)] button. Press [Apply] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	**[PC test mode]** **[Automatic Adjustment]** 1) Press [Autotune(TX starts)] button. 2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished. 3) Check Ramp Offset Monitor Value Over 60. **[Manual Adjustment]** 1) Set the adjustment value to "1". 2) Press [Transmit] button and increase the adjustment value slowly while monitoring the offset monitor value. 3) Set the adjustment value when the offset monitor value exceed "75".	
5. Balance	1) Adj item: [An BAL] Adjust:[****] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Balance] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	The Deviation of 20Hz frequency is fixed. Change the 2kHz adjustment value to become the same deviation of 20Hz within the specified range. **[Panel tuning mode]** PTT:ON While PTT:ON, press the [◀] button to change the 20Hz/ 2kHz. **[PC test mode]** PTT: Press [Transmit] button. While PTT:ON, click the check box "2kHz Sine Wave" to change the 20Hz/2kHz.	2kHz Tone deviation is within ± 1.0% of 20Hz tone deviation.

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
6. Maximum Deviation [Analog Wide 5k]	1) Adj item: [Aw ADEV] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Maxmum Deviation (Analog Wide 5k)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the deviation is between 4150Hz and 4250Hz. Deviation meter LPF: 15kHz HPF: OFF 500(Reference value) **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	4150~4250Hz
[Analog Wide 4k]	1) Adj item: [As ADEV] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Maxmum Deviation (Analog Wide 4k)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the deviation is between 3310Hz and 3410Hz. Deviation meter LPF: 15kHz HPF: OFF 500(Reference value) **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	3310~3410Hz
[Analog Narrow]	1) Adj item: [An ADEV] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Maxmum Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the deviation is between 2050Hz and 2150Hz. Deviation meter LPF: 15kHz HPF: OFF 500(Reference value) **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	2050~2150Hz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
7. NXDN High Deviation [NXDN Narrow]	1) Adj item: [Nn NDEV] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [NXDN High Deviation (NXDN Narrow] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the Analog deviation is between 2995Hz and 3117Hz. Deviation meter LPF: 3kHz HPF: OFF 500(Reference value) **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	2995~3117Hz
[NXDN Very Narrow]	1) Adj item: [Nv NDEV] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [NXDN High Deviation (NXDN Very Narrow] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the Analog deviation is between 1311Hz and 1363Hz. Deviation meter LPF: 3kHz HPF: OFF 500(Reference value) **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	1311~1363Hz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
8. DMR High Deviation	1) Adj item: [D DDEV] Adjust: [****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DMR High Deviation (DMR Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope					Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the Analog deviation is between 2695Hz and 2803Hz. Deviation meter LPF: 3kHz HPF: OFF 500(Reference value) **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	2695~2803Hz
9. QT Deviation [Analog Wide 5k]	1) Adj item: [Aw QT] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [QT Deviation (Analog Wide 5k)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 512 (Reference value)	0.75kHz±0.05 kHz
[Analog Wide 4k]	1) Adj item: [As QT] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [QT Deviation (Analog Wide 4k)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 512 (Reference value)	0.60kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Narrow]	1) Adj item: [An QT] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [QT Deviation (Analog Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 512 (Reference value)	0.35kHz±0.05 kHz
10. DQT Deviation [Analog Wide 5k]	1) Adj item: [Aw DQT] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DQT Deviation (Analog Wide 5k)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 430 (Reference value)	0.75kHz±0.05 kHz
[Analog Wide 4k]	1) Adj item: [As DQT] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DQT Deviation (Analog Wide 4k)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 430 (Reference value)	0.60kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Narrow]	1) Adj item: [An DQT] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DQT Deviation (Analog Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 430 (Reference value)	0.35kHz±0.05 kHz
11. LTR Deviation [Analog Wide 5k]	1) Adj item: [Aw LTR] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [LTR Deviation (Analog Wide 5k)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 512 (Reference value)	1.00kHz±0.05 kHz
[Analog Wide 4k]	1) Adj item: [As LTR] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [LTR Deviation (Analog Wide 4k)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 512 (Reference value)	0.90kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Narrow]	1) Adj item: [An LTR] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [LTR Deviation (Analog Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 512 (Reference value)	0.75kHz±0.05 kHz
12. DTMF Deviation [Analog Wide 5k]	1) Adj item: [Aw DTMF] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DTMF Deviation (Analog Wide 5k)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 555 (Reference value)	2.50kHz±0.05 kHz
[Analog Wide 4k]	1) Adj item: [As DTMF] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DTMF Deviation (Analog Wide 4k)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 555 (Reference value)	2.00kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Narrow]	1) Adj item: [An DTMF] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DTMF Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 555 (Reference value)	1.25kHz±0.05 kHz
13. Single Tone Deviation [Analog Wide 5k]	1) Adj item: [Aw TONE] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Single Tone Deviation (Analog Wide 5k)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 512 (Reference value)	3.00kHz±0.05 kHz
[Analog Wide 4k]	1) Adj item: [As TONE] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Single Tone Deviation (Analog Wide 4k)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 512 (Reference value)	2.40kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Narrow]	1) Adj item: [An TONE] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Single Tone Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 512 (Reference value)	1.50kHz±0.05 kHz
14. MSK Deviation [Analog Wide 5k]	1) Adj item: [Aw MSK] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [MSK Deviation (Analog Wide 5k)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 512 (Reference value)	3.00kHz±0.05 kHz
[Analog Wide 4k]	1) Adj item: [As MSK] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [MSK Deviation (Analog Wide 4k)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 512 (Reference value)	2.40kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Narrow]	1) Adj item: [An MSK] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [MSK Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 512 (Reference value)	1.50kHz±0.05 kHz
15. CWID Deviation [Analog Narrow]	1) Adj item: [An CWID] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [CWID Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 512 (Reference value)	1.10kHz±0.10 kHz

4.17.1 Necessary Deviation adjustment item for each signaling and mode

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

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

- Balance is common with all the above deviation adjustments. If Balance (Transmitter Section 6) has already adjusted, please skip Step1 and adjust from Step2.
- Maximum Deviation (Analog Wide 5k/Wide 4k/Narrow) is common with all the analog signaling deviations and CWID Deviation (NXDN Very Narrow).
  If Balance and Maximum Deviation (Analog Wide 5k /Wide 4k/Narrow) (Transmitter Section 7) have already adjusted, please skip Step2 and adjust from Step3.

4.18 Receiver Section

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. AF level setting	[Panel test mode] 1) CH-Sig: 1-1 SSG output: -47dBm (1mV) (MOD: 1kHz/ ±1.5kHz)	1) Test Channel Channel: 1 Test Signaling Type: Analog Signaling: 1 SSG output: -47dBm (1mV) (MOD:1kHz/ ±1.5kHz)	SSG DVM AF VM Dummy load	Panel	ANT Ext. SP connector	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Volume Up/Down knob to obtain 1.41V AF output. (0.5W @ 4ohm load)	1.41V ±0.1V
2. IQ Phase	1) Adj item: [An IQ] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] SSG output: Freq: Tune Freq +8kHz level: -53dBm (500μV) (MOD:OFF)	1) Adj item: [IQ Phase] 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] SSG output: Freq: Tune Freq +8kHz level: -53dBm (500μV) (MOD:OFF)	SSG	Panel	ANT Ext. SP connector	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	**[PC test mode]** **[Automatic Adjustment]** After input signal from SSG, 1) Press [Autotune] button. 2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished. **[Manual Adjustment]** Adjust RSSI Level(DSP Normal Power Mode) Value to the minimum.	
3. RSSI reference [DSP (Receive)]	1) Adj item: [An RSSI 1] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)	1) Adj item: [RSSI Reference (Analog Narrow) 1 DSP (Receive)] 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	
[RF IC (Receive)]	1) Adj item: [An RSSI 2] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)	1) Adj item: [RSSI Reference (Analog Narrow) 2 RF IC (Receive)] 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	

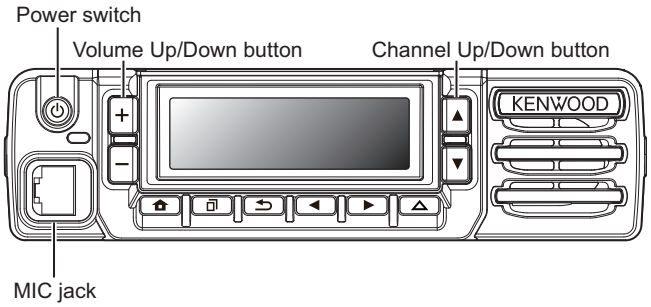
Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[DSP (Standby)]	1) Adj item: [An RSSI 3] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)	1)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

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Wide 4k]	1) Adj item: [As SQL] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/ ±2.4kHz)	1) Adj item: [Squelch Open (Analog Wide 4k)] 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/ ±2.4kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	
[Analog Narrow]	1) Adj item: [An SQL] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/ ±1.5kHz)	1) Adj item: [Squelch Open (Analog Narrow)] 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/ ±1.5kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	
[NXDN Narrow]	1) Adj item: [Nn SQL] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] SSG output: 12dB SINAD level at Analog Narrow -5dB (MOD: 400Hz/ ±1.5kHz)	1) Adj item: [Squelch Open (NXDN Narrow)] 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] SSG output: 12dB SINAD level at Analog Narrow -5dB (MOD: 400Hz/ ±1.5kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	

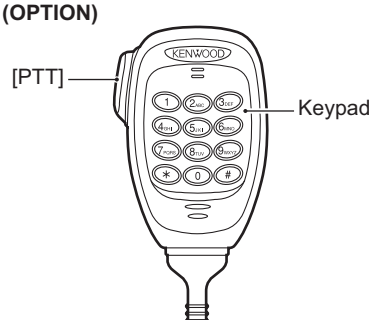
Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[NXDN Very Narrow]	1) Adj item: [Nv SQL] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] SSG output: 12dB SINAD level at Analog Narrow -2dB (MOD: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

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Wide 4k]	1) Adj item: [As SQLT] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] SSG output: 12dB SINAD level +6dB (MOD: 1kHz/ ±2.4kHz)	1) Adj item: [Squelch Tight (Analog Wide 4k)] 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] SSG output: 12dB SINAD level +6dB (MOD: 1kHz/ ±2.4kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	
[Analog Narrow]	1) Adj item: [An SQLT] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] SSG output: 12dB SINAD level +6dB (MOD: 1kHz/ ±1.5kHz)	1) Adj item: [Squelch Tight (Analog Narrow)] 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] SSG output: 12dB SINAD level +6dB (MOD: 1kHz/ ±1.5kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	
6. Low RSSI	1) Adj item: [An LRSSI] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] SSG output: -118dBm (0.28μV) (MOD: 1kHz/ ±1.5kHz)	1) Adj item: [Low RSSI (Analog Narrow)] 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] SSG output: -118dBm (0.28μV) (MOD: 1kHz/ ±1.5kHz)	SSG	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	
7. High RSSI	1) Adj item: [An HRSSI] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [C2]→ [H1]→ [H3] SSG output: -80dBm (22.4μV) (MOD: 1kHz/ ±1.5kHz)	1) Adj item: [High RSSI (Analog Narrow)] 2) Adj item: [Low1]→ [Low3]→ [Center2]→ [High1]→ [High3] SSG output: -80dBm (22.4μV) (MOD: 1kHz/ ±1.5kHz)	SSG	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	

4.19 NX-3820H(G)/3820H K,K2 TYPE Controls



KMC-36 (OPTION)



4.19.1 Preparations for checking/tuning the transceiver

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

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

The speaker output connector must be terminated with an 4ohm dummy load and connected to an AC voltmeter and an audio distortion meter or a SINAD measurement meter at all times during checking/tuning.

4.20 Panel Test Mode

4.20.1 Test mode operation features

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

- When the panel test mode is activated, the last used channel and signaling numbers are displayed. When the panel test mode is activated for the first time, the channel and signaling numbers are 1.

4.20.2 Button operation

Button	"Func" not appears on the sub LCD display	
	Function	Display
[+]	Push: Volume up Hold: Volume up continuously	-
[-]	Push: Volume down Hold: Volume down continuously	-
[▲]	Push: Test channel up Hold: Test channel up continuously	Channel No.
[▼]	Push: Test channel down Hold: Test channel down continuously	Channel No.
[◀]	Push: Squelch level up *1 Hold: Squelch off	Squelch level Squelch off: 🔇 icon appears
[▶]	Wide/Narrow/ Very Narrow	Wide : "w" Narrow: "n" Very Narrow: "v"
[⧉]	Shift to panel tuning mode	-
[⮌]	Function on	"Func" appears on the sub LCD display
[⌂]	Push: Test signaling up Hold: Test signaling up continuously	Signaling No.
[△(AUX)]	MSK 1200bps and 2400bps *1	2400bps: [✉] icon appears
[PTT]	Transmit	-
[0] to [9] and [#], [✳]	-	-

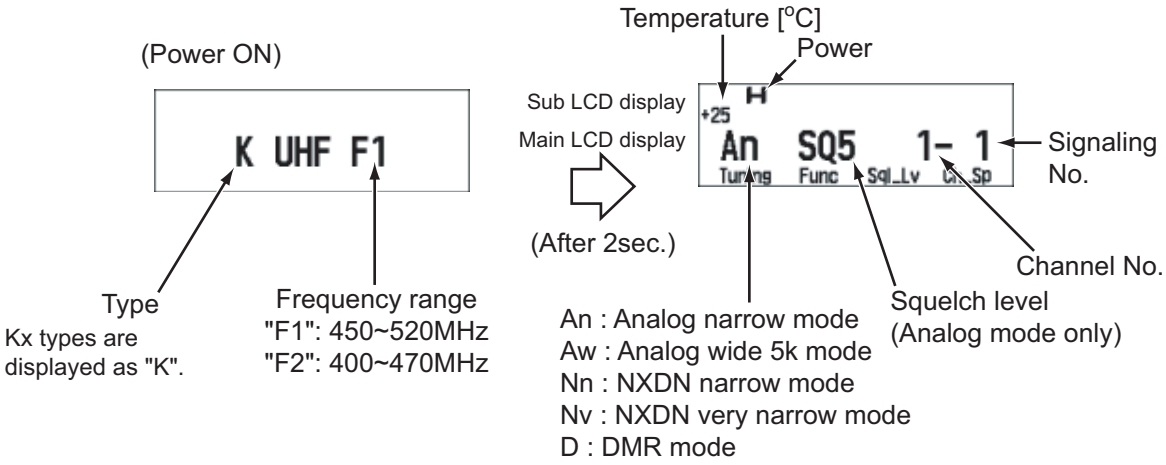
*1: When the mode is selected as Analog, this function is enabled.

Button	"Func" appears on the sub LCD display	
	Function	Display
[+]	Function off	-
[-]	Function off	-
[▲]	-	-
[▼]	Mode selection Analog/NXDN/DMR	Analog: "A" NXDN: "N" DMR: "D"
[◀]	Function off	-
[▶]	Button/LCD check	The contents of the pressed button etc., appear.
[⧉]	High power/Medium power/Low power	High:[H] icon appears Medium:[M] icon appears Low:[L] icon appears
[⮌]	Function off	-
[⌂]	External Speaker on/off	On: ▷▮ icon appears
[△(AUX)]	Compander on/off	On: [⩔] icon appears
[PTT]	Transmit	-

Button	"Func" appears on the sub LCD display	
	Function	Display
[0] to [9] and [#], [✳]	Function off	-

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

- **LCD display in panel test mode**



4.20.3 Frequency and Signaling

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

(1) Test frequency

CH	K		K2	
	RX (MHz)	TX (MHz)	RX (MHz)	TX (MHz)
1	485.05000	485.10000	435.05000	435.10000
2	450.05000	450.10000	400.05000	400.10000
3	519.95000	519.90000	469.95000	469.90000
4	485.00000	485.00000	435.00000	435.00000
5	485.20000	485.20000	435.20000	435.20000
6	485.40000	485.40000	435.40000	435.40000
7~16	-		-	

(2) Signaling

■**Analog Type Signaling**

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

■NXDN Type Signaling

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

RAN: Radio Access Number
PN9: Pseudo-Random Pattern
No.7, 9 Item: PC test mode only

■DMR Type Signaling

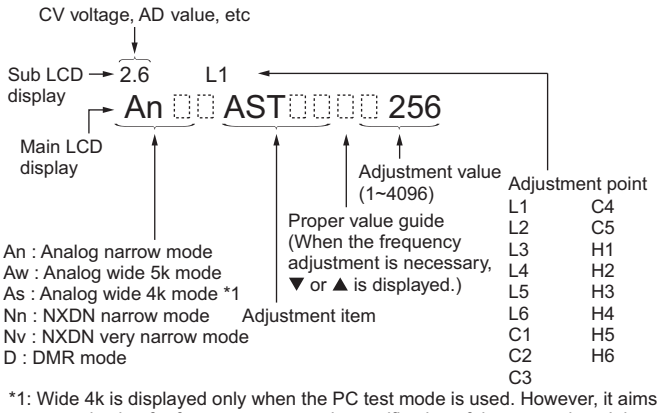
No.	RX	TX
1	CC 00 Burst	CC 00 Burst
2	PN9	PN9
3	CC 00 Burst	Maximum Deviation Pattern
4	CC 00 Burst	1/3 Deviation Pattern
5	CC 00 Burst	0 Continuous Pattern
6	SYNC (Each Slot) + PN9 Burst Pattern	SYNC (Each Slot) + PN9 Burst Pattern
7	SYNC (Super Frame) + PN9 Burst Pattern	SYNC (Super Frame) + PN9 Burst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

4.21 Panel Tuning Mode

4.21.1 Transceiver tuning (To enter tuning mode)

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

• LCD display in panel tuning mode



*1: Wide 4k is displayed only when the PC test mode is used. However, it aims at production for factory, or a operation verification of the transceiver. It is not necessary in operation of the transceiver to adjust.

4.21.2 Button operation

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

4.21.3 5, 9 or 17 reference level adjustments frequency

Maximum Transmit Power, High Transmit Power, Medium Transmit Power, Low Transmit Power, IQ Phase, RSSI Reference, Squelch Open, Squelch Tight, Low RSSI, High RSSI

Tuning point	Display	K		K2	
		RX (MHz)	TX (MHz)	RX (MHz)	TX (MHz)
1	L1	450.050000	450.100000	400.05000	400.10000
2	L5	467.550000	467.600000	417.55000	417.60000
3	C3	485.050000	485.100000	435.05000	435.10000
4	H2	502.550000	502.600000	452.55000	452.60000
5	H6	519.950000	519.900000	469.95000	469.90000

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

Tuning point	Display	K		K2	
		RX (MHz)	TX (MHz)	RX (MHz)	TX (MHz)
1	L1	450.050000	450.100000	400.05000	400.10000
2	L3	458.850000	458.900000	408.85000	408.90000
3	L5	467.550000	467.600000	417.55000	417.60000
4	C1	476.350000	476.400000	426.35000	426.40000
5	C3	485.050000	485.100000	435.05000	435.10000
6	C5	493.850000	493.900000	443.85000	443.90000
7	H2	502.550000	502.600000	452.55000	452.60000
8	H4	511.350000	511.400000	461.35000	461.40000
9	H6	519.950000	519.900000	469.95000	469.90000

VCO Assist

Tuning point	Display	K		K2	
		RX (MHz)	TX (MHz)	RX (MHz)	TX (MHz)
1	L1	450.050000	450.100000	400.05000	400.10000
2	L2	454.450000	454.500000	404.45000	404.50000
3	L3	458.850000	458.900000	408.85000	408.90000
4	L4	463.250000	463.300000	413.25000	413.30000
5	L5	467.550000	467.600000	417.55000	417.60000
6	L6	471.950000	472.000000	421.95000	422.10000
7	C1	476.350000	476.400000	426.35000	426.40000
8	C2	480.750000	480.800000	430.75000	430.80000
9	C3	485.050000	485.100000	435.05000	435.10000
10	C4	489.450000	489.500000	439.45000	439.50000
11	C5	493.850000	493.900000	443.85000	443.90000
12	H1	498.250000	498.300000	448.25000	448.30000
13	H2	502.550000	502.600000	452.55000	452.60000
14	H3	506.950000	507.000000	456.95000	457.10000
15	H4	511.350000	511.400000	461.35000	461.40000
16	H5	515.750000	515.800000	465.75000	465.80000
17	H6	519.950000	519.900000	469.95000	469.90000

4.21.4 Adjustment item supplement

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

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

4.21.5 Adjustment item and Display

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

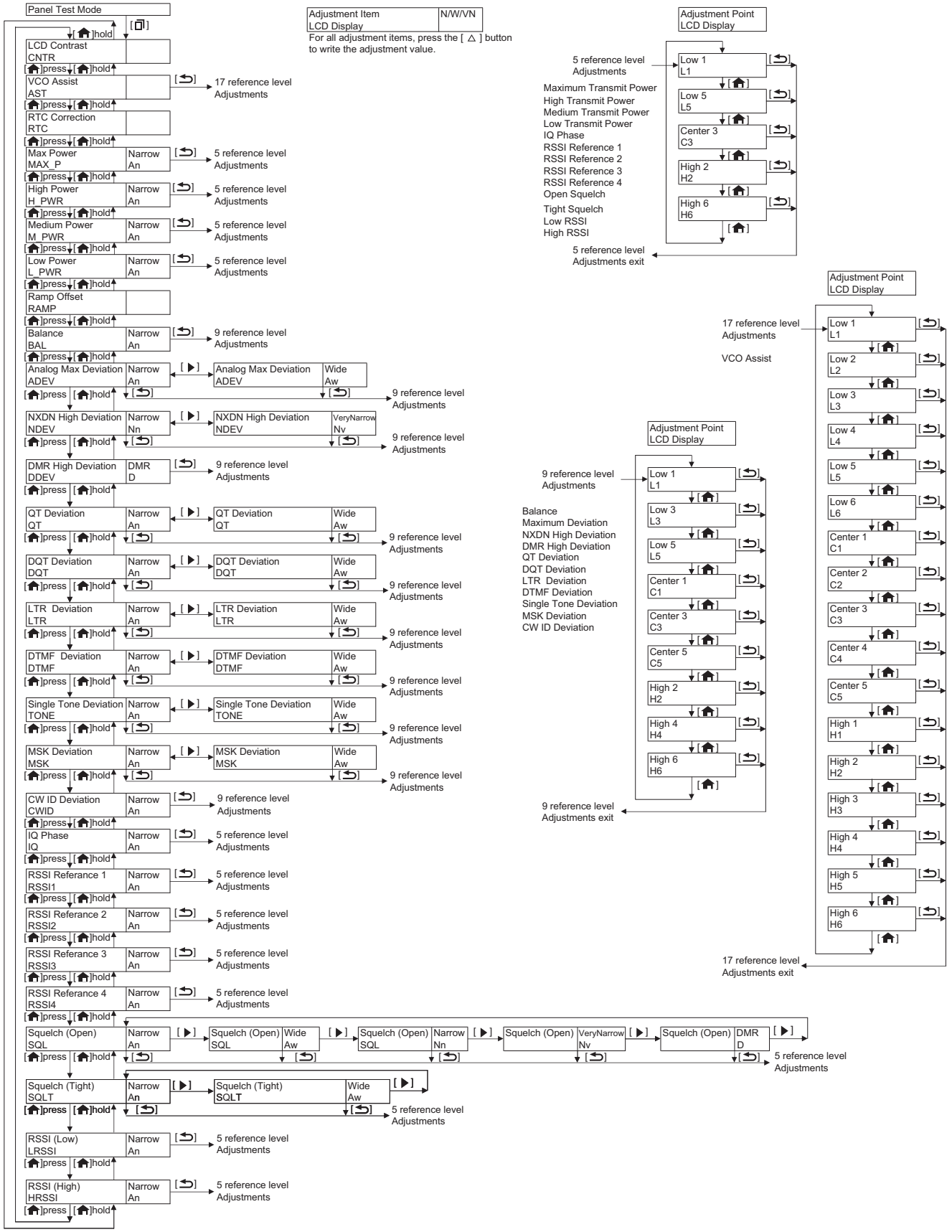
Order	Adjusutment item	Main LCD display	Sub LCD display	AW (Analog Wide)	AS *2 (Analog Wide 4k)	AN (Analog Narrow)	Nn (NXDN Narrow)	Nv (NXDN Very Narrow)	D (DMR)	Adjust item Number
				Adjustment range						
22	RSSI Reference 2 RF IC(Receive)	RSSI2	(RSSI RF IC(Receive) measurement value)	-	-	5	-	-	-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

*2: Wide 4k can be set up only when the PC test mode is used.

4.21.6 Panel tuning mode flow chart

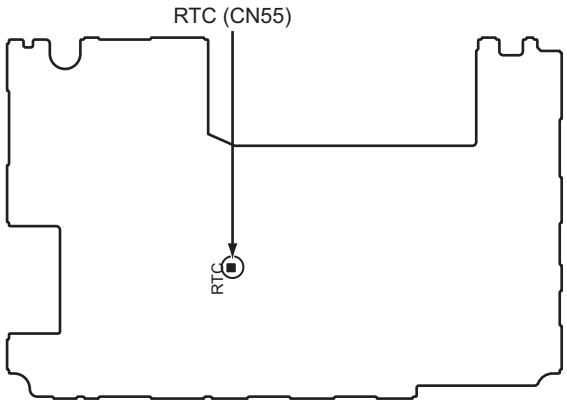
Note:

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



4.22 Adjustment points

TX-RX UNIT (XC1-183)
Component Side

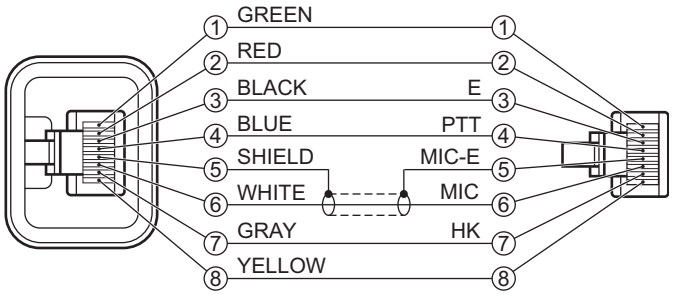


4.23 Test Equipment Required for Alignment

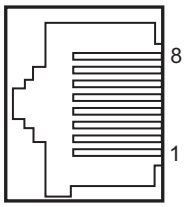
Test Equipment	Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range Modulation Output	100 to 900MHz Frequency modulation and external modulation -127dBm/0.1uV to greater than -20dBm/22.4mV
	When performing the Frequency adjustment, the following accuracy is necessary. • 0.001ppm Use a standard oscillator for adjustments, if necessary.	
2. Power Meter	Input Impedance Operation Frequency Measurement Capability	50ohm 100 to 900MHz Vicinity of 100W
3. Deviation Meter	Frequency Range	100 to 900MHz
4. Digital Volt Meter (DVM)	Measuring Range Input Impedance	10mV to 20V DC High input impedance for minimum circuit loading
5. Oscilloscope		DC through 30MHz
6. Frequency Counter	Frequency Range Frequency Stability	10Hz to 1000MHz 0.2ppm or less
	To measure the oscillating frequency of the internal clock 32766.00Hz~32770.00Hz for RTC Correction Resolution 0.01Hz is better for accuracy adjustment.	
7. Ammeter		20A or more
8. AF Volt Meter (AF VM)	Frequency Range Voltage Range	50Hz to 10kHz 1mV to 10V
9. Audio Generator (AG)	Frequency Range Output	50Hz to 5kHz or more 0 to 1V
10. Distortion Meter	Capability Input Level	3% or less at 1kHz 50mV to 10Vrms
11. Spectrum Analyzer	Measuring Range	DC to 1GHz or more
12. 4ohm Dummy Load		Approx. 4ohm, 10W
13. Regulated Power Supply		13.6V, approx. 20A (adjustable from 9V to 17V) Useful if ammeter equipped

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

■**Test cable for microphone input (E30-3360-28)**



■**MIC connector (Front panel view)**



1 : MBL
2 : +B
3 : GND
4 : PTT/TXD (PC serial data from radio)
5 : MICE
6 : MIC
7 : HOOK/RXD (PC serial data to radio)
8 : DM

■**Tuning cable (E30-7754-05)**

Adapter cable (E30-7754-05) is required for injecting an audio if PC tuning is used.
See “PC Mode” section for the connection.

4.24 Radio check Section

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel test mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Frequency check	1)CH-Sig: 1-1 PTT: ON	1)Test Channel Channel: 1 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.	f. counter	Panel	ANT			Check an internal temperature of radio from 20°C to 33°C.	±0.25ppm ±106.2Hz @435.1MHz (K2) ±121.2Hz @485.1MHz (K)
2. High power check	1)CH-Sig: 1-1 PTT: ON TA: OFF	1)Test Channel Channel: 1 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.	Power meter Ammeter	Panel	ANT			Check	40W~50W 13A or less
	2)CH-Sig: 2-1 PTT: ON TA: OFF	2)Test Channel Channel: 2 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.							
	3)CH-Sig: 3-1 PTT: ON TA: OFF	3)Test Channel Channel: 3 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.							

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel test mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
3. Medium power check	1)CH-Sig: 1-1 PTT: ON TA: OFF	1)Test Channel Channel: 1 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.	Power meter Ammeter	Panel	ANT			Check	25W~35W 10A or less
	2)CH-Sig: 2-1 PTT: ON TA: OFF	2)Test Channel Channel: 2 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.							
	3)CH-Sig: 3-1 PTT: ON TA: OFF	3)Test Channel Channel: 3 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.							
4. Low power check	1)CH-Sig: 1-1 PTT: ON TA: OFF	1)Test Channel Channel: 1 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.	Power meter Ammeter	Panel	ANT			Check	3.5W~6.5W 7.0A or less
	2)CH-Sig: 2-1 PTT: ON TA: OFF	2)Test Channel Channel: 2 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.							
	3)CH-Sig: 3-1 PTT: ON TA: OFF	3)Test Channel Channel: 3 Test Signaling Type: Analog Signaling: 1 PTT: Press [Transmit] button.							
5. MIC sensitivity check	1)CH-Sig: 1-1 AG: 1kHz PTT: ON	1)Test Channel Channel: 1 Test Signaling Type: Analog Signaling: 1 AG: 1kHz PTT: Press [Transmit] button.	Deviation meter Oscilloscope AG AF VM	Panel	ANT MIC jack			Adjust AG input to get a standard MOD.	5mV ±1mV

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel test mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
6. Sensitivity check	1)CH-Sig: 1-1 SSG output Wide: -117dBm (0.32μV) (MOD: 1kHz/±3kHz) Narrow: -117dBm (0.32μV) (MOD: 1kHz/ ±1.5kHz)	1)Test Channel Channel: 1 Test Signaling Type: Analog Signaling: 1 SSG output Wide: -117dBm (0.32μV) (MOD: 1kHz/±3kHz) Narrow: -117dBm (0.32μV) (MOD: 1kHz/±1.5kHz)	SSG AF VM Oscilloscope Distortion meter 4ohm Dummy load	Panel	ANT Ext. SP connector			Check	12dB SINAD or more

4.25 Common Section

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting	1) DC voltage:13.6V 2) SSG standard modulation [Wide] MOD:1kHz,DEV:3kHz [Narrow] MOD:1kHz,DEV:1.5kHz								
2.LCD Contrast	1) Adj item [CNTR] Adjust:[****] Press [△] button to store the adjustment value.	1) Adj item [LCD Contrast] Data: [****] Press [Apply] button to store the adjustment value.				Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 280 (Reference value)	
3. VCO Assist	1) Adj item: [AST] Adjust:[****] 2) Adj item: [L1]→ [L2]→ [L3]→ [L4]→ [L5]→ [L6]→ [C1]→ [C2]→ [C3]→ [C4]→ [C5]→ [H1]→ [H2]→ [H3]→ [H4]→ [H5]→ [H6] Adjust:[****] Press [△] button to store the adjustment value.	1) Adj item: [VCO Assist] 2) Adj item: [Low1],[Low2], [Low3],[Low4], [Low5], [Low6] [Center1], [Center2], [Center3], [Center4], [Center5], [High1],[High2] [High3],[High4], [High5][High6] Press [Apply] button to store the adjustment value.				Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	**[PC test mode]** **[Automatic Adjustment]** 1) Press [Autotune] button. 2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished. **[Manual Adjustment]** [V] Indicator on the PC window shows VCO lock voltage. Change the adjustment value to get VCO lock voltage within the limit of the specified voltage. **Note:** Confirm the VCO lock voltage approximately 3 seconds after the adjustment value is changed.	2.5V±0.1V **[Automatic Adjustment]** After the automatic adjustment is performed, verify that the VCO lock voltage is within the voltage range which is specified by the manual adjustment. **[Manual Adjustment]** Press [Apply] button to store the adjustment value after all adjustment points have been adjusted. Adjustment value range: K: 1200 - 4096 K2: 500 - 1950

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
4. Frequency	*The Frequency adjustment can be performed only in PC test mode.	1) Adj item: [Frequency] SSG output: -20dBm (22.4mV) (CW (without modulation)) **Caution:** Perform the frequency adjustment under the following conditions. • Temperature range of +20°C to +33°C (+68.0°F to +91.4°F). (The temperature is displayed on the Frequency adjustment screen of the KPG-D3/ D3N and the LCD of the transceiver.) • Use an accuracy of 0.001ppm for the SSG. (Use a standard oscillator if necessary.)	SSG	Panel	ANT		[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	**[PC test mode]** Press [Start] button of "Auto Tuning". Press [Apply] button to store the adjustment value after the automatic adjustment has finished.	**[PC test mode]** "IF20" value = Within 0±30 digits. The value of "IF20" will become around "0" after the adjustment has finished. **Remark:** "Frequency" is adjusted under receiving condition with SSG.
5. RTC Correciton	1) Adj item: [RTC] Adjust:[****] Press [△] button to store the adjustment value.	1) Adj item: [RTC Correction] Data: [****] Press [Apply] button to store the adjustment value.	Frequency Counter	TX-RX	TEST POINT (CN55)				**Remark:** The adjustment value should input the display of a Frequency Counter.

4.26 Transmitter Section

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Maximum Transmit Power	1) Adj item: [MAX_P] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Maximum Transmit Power] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	57.5W	±2.5W 15A or less

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
2. High Transmit power	1) Adj item: [H_PWR] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [High Transmit Power] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	45W	±1W 13A or less
3. Medium Transmit power	1) Adj item: [M_PWR] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Medium Transmit Power] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	30W	±1W 10A or less
4. Low Transmit power	1) Adj item: [L_PWR] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Low Transmit Power] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	5W	±0.5W 7A or less

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
5. Ramp Offset	1)Adj item: [RAMP] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Ramp Offset] Press [Autotune(TX starts)] button. Press [Apply] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	**[PC test mode]** **[Automatic Adjustment]** 1) Press [Autotune(TX starts)] button. 2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished. 3) Check Ramp Offset Monitor Value Over 50. **[Manual Adjustment]** 1) Set the adjustment value to "1". 2) Press [Transmit] button and increase the adjustment value slowly while monitoring the offset monitor value. 3) Set the adjustment value when the offset monitor value exceed "60".	
6. Balance	1) Adj item: [An BAL] Adjust:[****] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Balance] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	The Deviation of 20Hz frequency is fixed. Change the 2kHz adjustment value to become the same deviation of 20Hz within the specified range. **[Panel tuning mode]** PTT:ON While PTT:ON, press the [◀] button to change the 20Hz/ 2kHz. **[PC test mode]** PTT: Press [Transmit] button. While PTT:ON, click the check box "2kHz Sine Wave" to change the 20Hz/2kHz.	2kHz Tone deviation is within ± 1.0% of 20Hz tone deviation.

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
7. Maximum Deviation [Analog Wide]	1) Adj item: [Aw ADEV] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2V]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Maxmum Deviation (Analog Wide)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the deviation is between 4150Hz and 4250Hz. Deviation meter LPF: 15kHz HPF: OFF K:500(Reference value) K2:496(Reference value) **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	4150~4250Hz
[Analog Narrow]	1) Adj item: [An ADEV] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Maxmum Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the deviation is between 2050Hz and 2150Hz. Deviation meter LPF: 15kHz HPF: OFF K:500(Reference value) K2:493(Reference value) **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	2050~2150Hz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
8. NXDN High Deviation [NXDN Narrow]	1) Adj item: [Nn NDEV] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [NXDN High Deviation (NXDN Narrow] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the Analog deviation is between 2995Hz and 3117Hz. Deviation meter LPF: 3kHz HPF: OFF K:503(Reference value) K2:498(Reference value) **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	2995~3117Hz
[NXDN Very Narrow]	1) Adj item: [Nv NDEV] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [NXDN High Deviation (NXDN Very Narrow] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the Analog deviation is between 1311Hz and 1363Hz. Deviation meter LPF: 3kHz HPF: OFF K:503(Reference value) K2:498(Reference value) **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	1311~1363Hz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
9. DMR High Deviation	1) Adj item: [D DDEV] Adjust: [****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DMR High Deviation (DMR Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the Analog deviation is between 2695Hz and 2803Hz. Deviation meter LPF: 3kHz HPF: OFF K:503(Reference value) K2:496(Reference value) **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	2695~2803Hz
10. QT Deviation [Analog Wide]	1) Adj item: [Aw QT] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [QT Deviation (Analog Wide)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. K:520(Reference value) K2:529(Reference value)	0.75kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Narrow]	1) Adj item: [An QT] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [QT Deviation (Analog Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. K:520(Reference value) K2:529(Reference value)	0.35kHz±0.05 kHz
11. DQT Deviation [Analog Wide]	1) Adj item: [Aw DQT] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DQT Deviation (Analog Wide)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. K:414(Reference value) K2:426(Reference value)	0.75kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Narrow]	1) Adj item: [An DQT] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DQT Deviation (Analog Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. K:414(Reference value) K2:426(Reference value)	0.35kHz±0.05 kHz
12. LTR Deviation [Analog Wide]	1) Adj item: [Aw LTR] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [LTR Deviation (Analog Wide)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. K:508(Reference value) K2:518(Reference value)	1.00kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Narrow]	1) Adj item: [An LTR] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [LTR Deviation (Analog Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. K:494(Reference value) K2:518(Reference value)	0.75kHz±0.05 kHz
13. DTMF Deviation [Analog Wide]	1) Adj item: [Aw DTMF] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DTMF Deviation (Analog Wide)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. K:545(Reference value) K2:542(Reference value)	2.50kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Narrow]	1) Adj item: [An DTMF] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DTMF Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. K:540(Reference value) K2:542(Reference value)	1.25kHz±0.05 kHz
14. Single Tone Deviation [Analog Wide]	1) Adj item: [Aw TONE] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Single Tone Deviation (Analog Wide)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. K:514(Reference value) K2:511(Reference value)	3.00kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Narrow]	1) Adj item: [An TONE] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Single Tone Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. K:510(Reference value) K2:511(Reference value)	1.50kHz±0.05 kHz
15. MSK Deviation [Analog Wide]	1) Adj item: [Aw MSK] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [MSK Deviation (Analog Wide)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. K:503(Reference value) K2:500(Reference value)	3.00kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Narrow]	1) Adj item: [An MSK] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [MSK Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. K:500(Reference value) K2:500(Reference value)	1.50kHz±0.05 kHz
16. CWID Deviation [Analog Narrow]	1) Adj item: [An CWID] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [CWID Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. K:506(Reference value) K2:508(Reference value)	1.10kHz±0.10 kHz

4.26.1 Necessary Deviation adjustment item for each signaling and mode

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

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

- Balance is common with all the above deviation adjustments. If Balance (Transmitter Section 6) has already adjusted, please skip Step1 and adjust from Step2.
- Maximum Deviation (Analog Wide/Narrow) is common with all the analog signaling deviations and CWID Deviation (NXDN Very Narrow).
  If Balance and Maximum Deviation (Analog Wide /Narrow) (Transmitter Section 7) have already adjusted, please skip Step2 and adjust from Step3.

4.27 Receiver Section

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. AF level setting	[Panel test mode] 1) CH-Sig: 1-1 SSG output: -47dBm (1mV) (MOD: 1kHz/ ±1.5kHz)	1) Test Channel Channel: 1 Test Signaling Type: Analog Signaling: 1 SSG output: -47dBm (1mV) (MOD:1kHz/ ±1.5kHz)	SSG DVM AF VM Dummy load	Panel	ANT Ext. SP connector	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Volume Up/Down knob to obtain 1.41V AF output. (0.5W @ 4ohm load)	1.41V ±0.1V
2. IQ Phase	1) Adj item: [An IQ] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] SSG output: Freq: Tune Freq +8kHz level: -53dBm (500μV) (MOD:OFF)	1) Adj item: [IQ Phase] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: Freq: Tune Freq +8kHz level: -53dBm (500μV) (MOD:OFF)	SSG	Panel	ANT Ext. SP connector	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	**[PC test mode]** **[Automatic Adjustment]** After input signal from SSG, 1) Press [Autotune] button. 2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished. **[Manual Adjustment]** Adjust RSSI Level(DSP Normal Power Mode) Value to the minimum.	
3. RSSI reference [DSP (Receive)]	1) Adj item: [An RSSI 1] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)	1) Adj item: [RSSI Reference (Analog Narrow) 1 DSP (Receive)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	
[RF IC (Receive)]	1) Adj item: [An RSSI 2] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)	1) Adj item: [RSSI Reference (Analog Narrow) 2 RF IC (Receive)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	

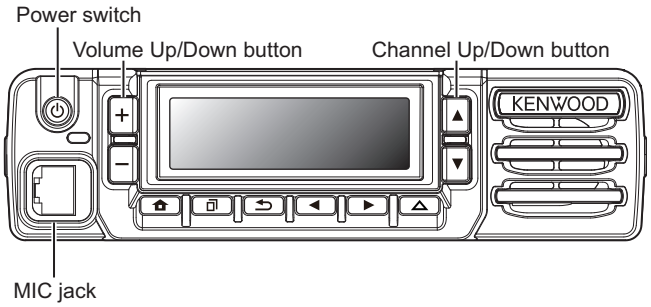
Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[DSP (Standby)]	1) Adj item: [An RSSI 3] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)	1)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

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

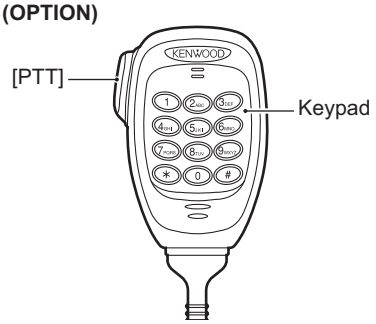
Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[DMR]	1) Adj item: [D SQL] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] SSG output: 12dB SINAD level at Analog Narrow -4dB (MOD: 400Hz/ ±1.8kHz)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

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
6. Low RSSI	1) Adj item: [An LRSSI] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] SSG output: -118dBm (0.28μV) (MOD: 1kHz/ ±1.5kHz)	1) Adj item: [Low RSSI (Analog Narrow)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: -118dBm (0.28μV) (MOD: 1kHz/ ±1.5kHz)	SSG	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	
7. High RSSI	1) Adj item: [An HRSSI] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] SSG output: -80dBm (22.4μV) (MOD: 1kHz/ ±1.5kHz)	1) Adj item: [High RSSI (Analog Narrow)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: -80dBm (22.4μV) (MOD: 1kHz/ ±1.5kHz)	SSG	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	

4.28 NX-3820(G)/3820 E TYPE Controls



KMC-36 (OPTION)



4.28.1 Preparations for checking/tuning the transceiver

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

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

The speaker output connector must be terminated with an 4ohm dummy load and connected to an AC voltmeter and an audio distortion meter or a SINAD measurement meter at all times during checking/tuning.

4.29 Panel Test Mode

4.29.1 Test mode operation features

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

- When the panel test mode is activated, the last used channel and signaling numbers are displayed. When the panel test mode is activated for the first time, the channel and signaling numbers are 1.

4.29.2 Button operation

Button	"Func" not appears on the sub LCD display	
	Function	Display
[+]	Push: Volume up Hold: Volume up continuously	-
[-]	Push: Volume down Hold: Volume down continuously	-
[▲]	Push: Test channel up Hold: Test channel up continuously	Channel No.
[▼]	Push: Test channel down Hold: Test channel down continuously	Channel No.
[◀]	Push: Squelch level up *1 Hold: Squelch off	Squelch level Squelch off: 🔇 icon appears
[▶]	Wide 5k/Wide 4k/Narrow/ Very Narrow	Wide 5k: "w" Wide 4k: "s" Narrow: "n" Very Narrow: "v"
[⧉]	Shift to panel tuning mode	-
[⮌]	Function on	"Func" appears on the sub LCD display
[🏠]	Push: Test signaling up Hold: Test signaling up continuously	Signaling No.
[△(AUX)]	MSK 1200bps and 2400bps *1	2400bps: [✉] icon appears
[PTT]	Transmit	-
[0] to [9] and [#], [✳]	-	-

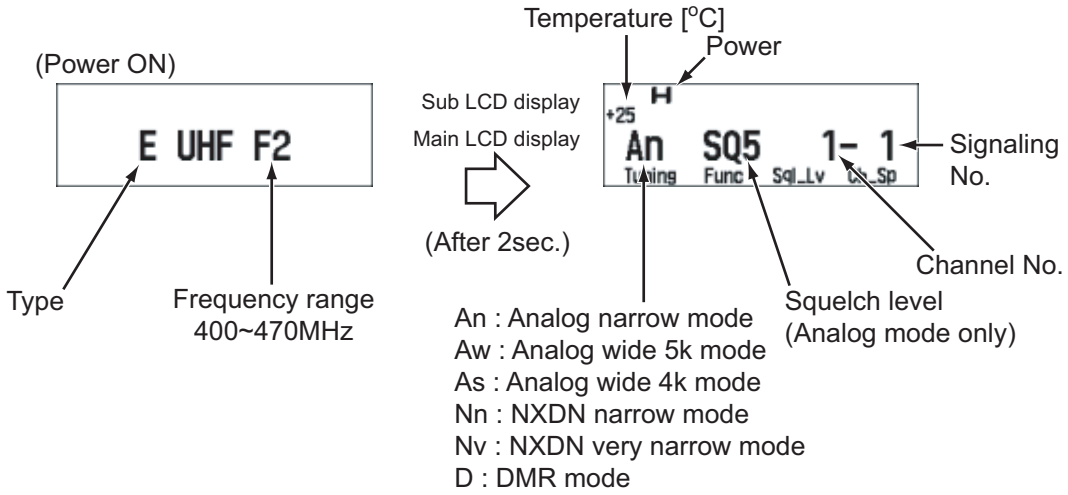
*1: When the mode is selected as Analog, this function is enabled.

Button	"Func" appears on the sub LCD display	
	Function	Display
[+]	Function off	-
[-]	Function off	-
[▲]	-	-
[▼]	Mode selection Analog/NXDN/DMR	Analog: "A" NXDN: "N" DMR: "D"
[◀]	Function off	-
[▶]	Button/LCD check	The contents of the pressed button etc., appear.
[⧉]	High power/Medium power/Low power	High:[H] icon appears Medium:[M] icon appears Low:[L] icon appears
[⮌]	Function off	-
[🏠]	External Speaker on/off	On: 🔊 icon appears

Button	"Func" appears on the sub LCD display	
	Function	Display
[△(AUX)]	Compander on/off	On: [⩔] icon appears
[PTT]	Transmit	-
[0] to [9] and [#], [✳]	Function off	-

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

- **LCD display in panel test mode**



4.29.3 Frequency and Signaling

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

(1) Test frequency

CH	RX (MHz)	TX (MHz)
1	435.05000	435.10000
2	400.05000	400.10000
3	469.95000	469.90000
4	435.00000	435.00000
5	435.20000	435.20000
6	435.40000	435.40000
7~16	-	-

(2) Signaling

■Analog Type Signaling

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

■NXDN Type Signaling

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

RAN: Radio Access Number
PN9: Pseudo-Random Pattern
No.7, 9 Item: PC test mode only

■DMR Type Signaling

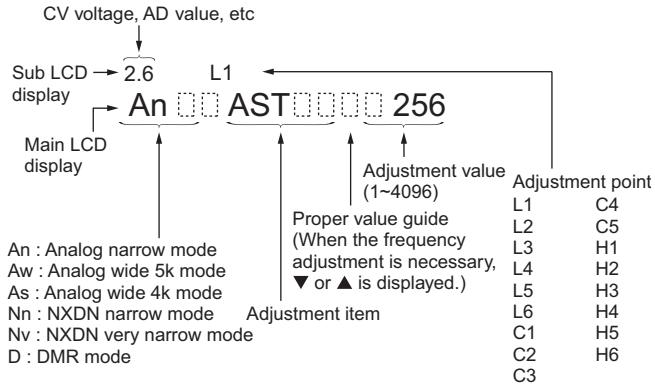
No.	RX	TX
1	CC 00 Burst	CC 00 Burst
2	PN9	PN9
3	CC 00 Burst	Maximum Deviation Pattern
4	CC 00 Burst	1/3 Deviation Pattern
5	CC 00 Burst	0 Continuous Pattern
6	SYNC (Each Slot) + PN9 Burst Pattern	SYNC (Each Slot) + PN9 Burst Pattern
7	SYNC (Super Frame) + PN9 Burst Pattern	SYNC (Super Frame) + PN9 Burst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

4.30 Panel Tuning Mode

4.30.1 Transceiver tuning (To enter tuning mode)

To enter tuning mode, press the [ ] button while the transceiver is in test mode. Use the [△(AUX)] button to write tuning data through tuning modes, and the [▲]/[▼] button to adjust tuning requirements (1 to 4096 appears on the LCD).
Use the [⌂] button to select the adjustment item through tuning modes. Use the [⮌] button to adjust 5, 9 or 17 reference level adjustments, and use the [▶] button to switch between Wide5k/ Wide4k/Narrow.

- LCD display in panel tuning mode



4.30.2 Button operation

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

4.30.3 5, 9 or 17 reference level adjustments frequency

Maximum Transmit Power, High Transmit Power, Medium Transmit Power, Low Transmit Power, IQ Phase, RSSI Reference, Squelch Open, Squelch Tight, Low RSSI, High RSSI

Tuning point	Display	RX (MHz)	TX (MHz)
1	L1	400.05000	400.10000
2	L5	417.55000	417.60000
3	C3	435.05000	435.10000
4	H2	452.55000	452.60000
5	H6	469.95000	469.90000

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

Tuning point	Display	RX (MHz)	TX (MHz)
1	L1	400.05000	400.10000
2	L3	408.85000	408.90000
3	L5	417.55000	417.60000
4	C1	426.35000	426.40000
5	C3	435.05000	435.10000
6	C5	443.85000	443.90000

Tuning point	Display	RX (MHz)	TX (MHz)
7	H2	452.55000	452.60000
8	H4	461.35000	461.40000
9	H6	469.95000	469.90000

VCO Assist

Tuning point	Display	RX (MHz)	TX (MHz)
1	L1	400.05000	400.10000
2	L2	404.45000	404.50000
3	L3	408.85000	408.90000
4	L4	413.25000	413.30000
5	L5	417.55000	417.60000
6	L6	421.95000	422.10000
7	C1	426.35000	426.40000
8	C2	430.75000	430.80000
9	C3	435.05000	435.10000
10	C4	439.45000	439.50000
11	C5	443.85000	443.90000
12	H1	448.25000	448.30000
13	H2	452.55000	452.60000
14	H3	456.95000	457.10000
15	H4	461.35000	461.40000
16	H5	465.75000	465.80000
17	H6	469.95000	469.90000

4.30.4 Adjustment item supplement

Adjustment Item	Description
LCD Contrast	The contrast of LCD display can be changed.
VCO Assist	The lock voltage of VCO is adjusted. This item must be adjusted before receiver and transmitter adjustment items.
Frequency	Frequency is adjusted under receiving condition with SSG. The SSG needs 0.001ppm accuracy so please use a standard oscillator if necessary. This item can be adjusted only in PC Test Mode so that the adjustment value is not changed easily.
RTC Correction	Real Time Clock is adjusted. This item uses the internal clock. (Any measurement equipment is not required.)
Maximum Transmit Power	Maximum Transmit Power is adjusted.
High Transmit Power	High Transmit Power is adjusted.
Mid Transmit Power	Medium Transmit Power is adjusted.
Low Transmit Power	Low Transmit Power is adjusted.
Ramp Offset	Adjust this item to the optimal Ramp voltage.
Balance	The transmit modulation frequency response is adjusted. This item is adjusted so that the deviation of 2kHz becomes the same deviation of 20Hz. This item must be adjusted before all adjustment items for deviations are adjusted.
Maximum Deviation (Analog Wide 5k/ Wide 4k/Narrow)	Maximum Deviation of Analog (Wide 5k/ Wide 4k/Narrow) is adjusted. This item must be adjusted before all adjustment items for tone deviations are adjusted.
High Deviation	NXDN/DMR high deviation is adjusted.
QT Deviation	QT deviation is adjusted.
DQT Deviation	DQT deviation is adjusted.
LTR Deviation	LTR deviation is adjusted.
DTMF Deviation	DTMF deviation is adjusted.
Single Tone Deviation	The deviation of Single Tone used in “2-tone” and “5-tone” is adjusted.
MSK Deviation	MSK deviation is adjusted.
CW ID Deviation	CWID tone deviation is adjusted. CWID is used to inform the others who is transmitting on a 6.25-kHz spacing channel. (In FCC rule, Analog mode or CWID is required for each channel-spacing.)
IQ Phase	Correction of phase difference shift between I and Q.
RSSI Reference	The minimum RSSI level for scan stop is adjusted.
Squelch Open	The squelch level at level “1” is adjusted.
Squelch Tight	The squelch level at level “9” is adjusted.
Low RSSI	RSSI display level “  ” is adjusted. Both “Low RSSI” and “High RSSI” must be adjusted. (The curve data of RSSI level is applied.)
High RSSI	

4.30.5 Adjustment item and Display

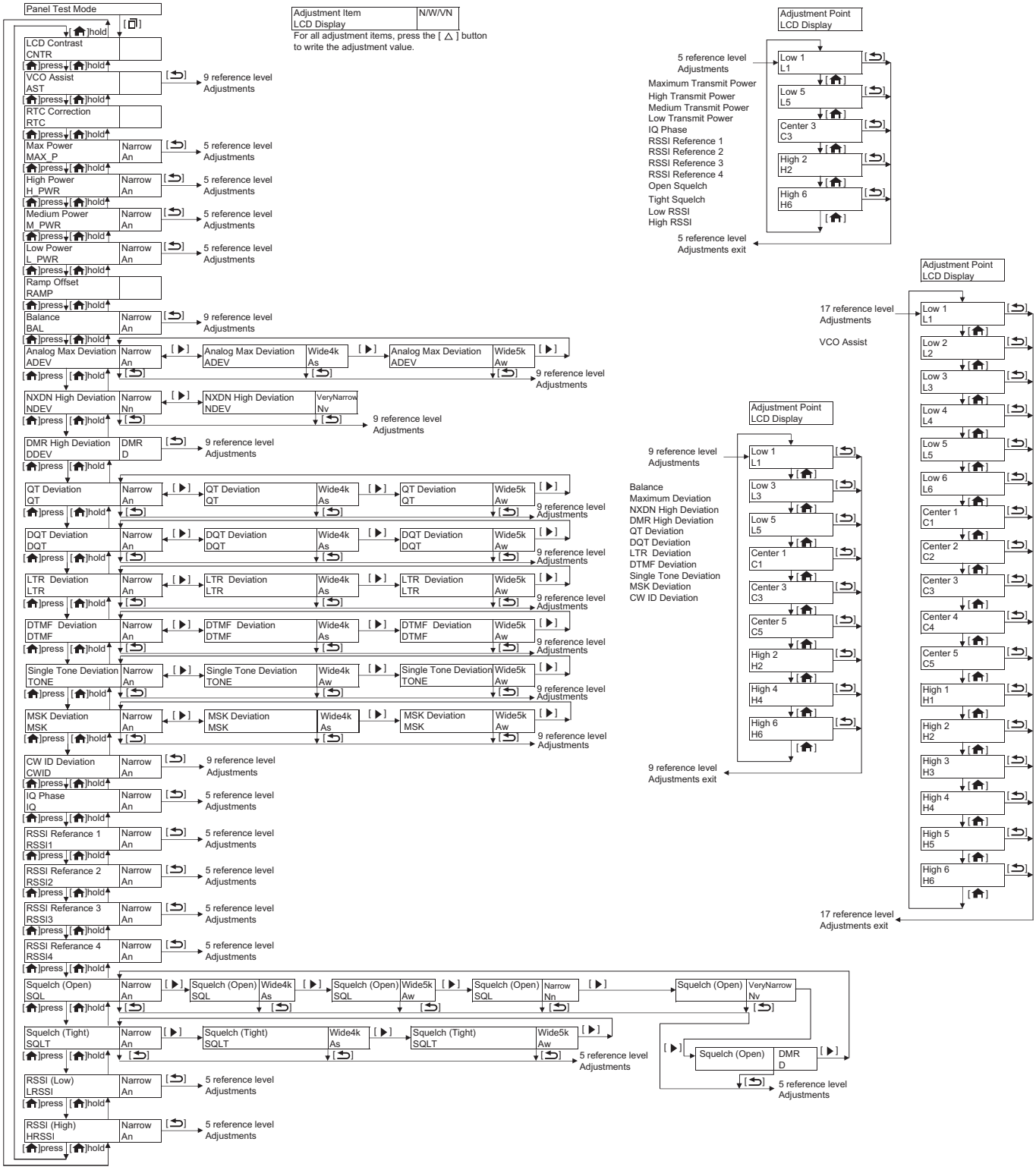
Order	Adjusutment item	Main LCD display	Sub LCD display	AW (Analog Wide 5k)	AS (Analog Wide 4k)	AN (Analog Narrow)	Nn (NXDN Narrow)	Nv (NXDN Very Narrow)	D (DMR)	Adjust item Number
				Adjustment range						
1	LCD Contrast	CNTR	-	1 point ADJ						Common Section 2
				1~256						
2	VCO Assist	AST	(CV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

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

4.30.6 Panel tuning mode flow chart

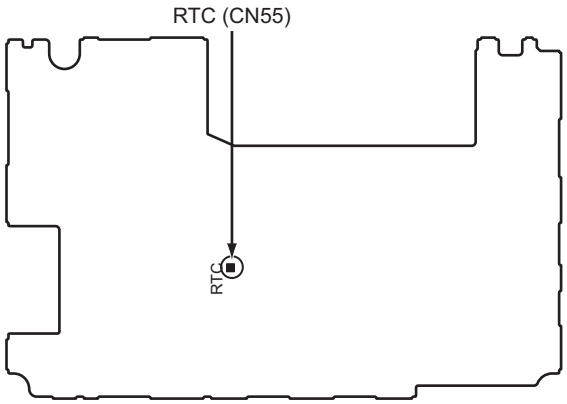
Note:

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



4.31 Adjustment points

TX-RX UNIT (XC1-183)
Component Side

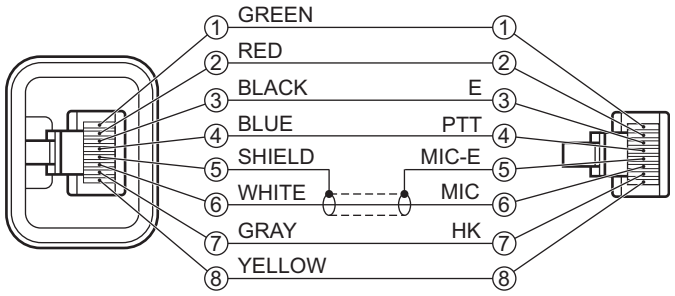


4.32 Test Equipment Required for Alignment

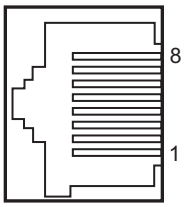
Test Equipment	Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range Modulation Output	100 to 900MHz Frequency modulation and external modulation -127dBm/0.1uV to greater than -20dBm/22.4mV
	When performing the Frequency adjustment, the following accuracy is necessary. • 0.001ppm Use a standard oscillator for adjustments, if necessary.	
2. Power Meter	Input Impedance Operation Frequency Measurement Capability	50ohm 100 to 900MHz Vicinity of 100W
3. Deviation Meter	Frequency Range	100 to 900MHz
4. Digital Volt Meter (DVM)	Measuring Range Input Impedance	10mV to 20V DC High input impedance for minimum circuit loading
5. Oscilloscope		DC through 30MHz
6. Frequency Counter	Frequency Range Frequency Stability	10Hz to 1000MHz 0.2ppm or less
	To measure the oscillating frequency of the internal clock 32766.00Hz~32770.00Hz for RTC Correction Resolution 0.01Hz is better for accuracy adjustment.	
7. Ammeter		20A or more
8. AF Volt Meter (AF VM)	Frequency Range Voltage Range	50Hz to 10kHz 1mV to 10V
9. Audio Generator (AG)	Frequency Range Output	50Hz to 5kHz or more 0 to 1V
10. Distortion Meter	Capability Input Level	3% or less at 1kHz 50mV to 10Vrms
11. Spectrum Analyzer	Measuring Range	DC to 1GHz or more
12. 4ohm Dummy Load		Approx. 4ohm, 10W
13. Regulated Power Supply		13.2V, approx. 20A (adjustable from 9V to 17V) Useful if ammeter equipped

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

■**Test cable for microphone input (E30-3360-28)**



■**MIC connector (Front panel view)**



1 : BLC
2 : +B
3 : GND
4 : PTT/TXD (PC serial data from radio)
5 : MICE
6 : MIC
7 : HOOK/RXD (PC serial data to radio)
8 : DM

■**Tuning cable (E30-7754-05)**

Adapter cable (E30-7754-05) is required for injecting an audio if PC tuning is used.
See “PC Mode” section for the connection.

4.33 Radio check Section

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel test mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Frequency check	1)CH-Sig: 1-1 PTT: ON	1)Test Channel Channel: 1 Test Signaling Mode: Analog Signaling: 1 PTT: Press [Transmit] button.	f. counter	Panel	ANT			Check an internal temperature of radio from 20°C to 33°C.	±0.25ppm ±106.2Hz @435.1MHz
2. High power check	1)CH-Sig: 1-1 PTT: ON TA: OFF	1)Test Channel Channel: 1 Test Signaling Mode: Analog Signaling: 1 PTT: Press [Transmit] button.	Power meter Ammeter	Panel	ANT			Check	21W~29W 10A or less
	2)CH-Sig: 2-1 PTT: ON TA: OFF	2)Test Channel Channel: 2 Test Signaling Mode: Analog Signaling: 1 PTT: Press [Transmit] button.							
	3)CH-Sig: 3-1 PTT: ON TA: OFF	3)Test Channel Channel: 3 Test Signaling Mode: Analog Signaling: 1 PTT: Press [Transmit] button.							

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel test mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
3. Low power check	1)CH-Sig: 1-1 PTT: ON TA: OFF	1)Test Channel Channel: 1 Test Signaling Mode: Analog Signaling: 1 PTT: Press [Transmit] button.	Power meter Ammeter	Panel	ANT			Check	3.5W~6.5W 7.0A or less
	2)CH-Sig: 2-1 PTT: ON TA: OFF	2)Test Channel Channel: 2 Test Signaling Mode: Analog Signaling: 1 PTT: Press [Transmit] button.							
	3)CH-Sig: 3-1 PTT: ON TA: OFF	3)Test Channel Channel: 3 Test Signaling Mode: Analog Signaling: 1 PTT: Press [Transmit] button.							
4. MIC sensitivity check	1)CH-Sig: 1-1 AG: 1kHz PTT: ON	1)Test Channel Channel: 1 Test Signaling Mode: Analog Signaling: 1 AG: 1kHz PTT: Press [Transmit] button.	Deviation meter Oscilloscope AG AF VM	Panel	ANT MIC jack			Adjust AG input to get a standard MOD.	5mV ±1mV
5. Sensitivity check	1)CH-Sig: 1-1 SSG output Wide 5k: -117dBm (0.32μV) (MOD: 1kHz/±3kHz) Wide 4k: -117dBm (0.32μV) (MOD: 1kHz/±2.4kHz) Narrow: -117dBm (0.32μV) (MOD: 1kHz/±1.5kHz)	1)Test Channel Channel: 1 Test Signaling Mode: Analog Signaling: 1 SSG output Wide 5k: -117dBm (0.32μV) (MOD: 1kHz/±3kHz) Wide 4k: -117dBm (0.32μV) (MOD: 1kHz/±2.4kHz) Narrow: -117dBm (0.32μV) (MOD: 1kHz/±1.5kHz)	SSG AF VM Oscilloscope Distortion meter 4ohm Dummy load	Panel	ANT Ext. SP connector			Check	12dB SINAD or more

4.34 Common Section

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting	1) DC voltage:13.2V 2) SSG standard modulation [Wide 5k] MOD:1kHz,DEV:3kHz [Wide 4k] MOD:1kHz,DEV:2.4kHz [Narrow] MOD:1kHz,DEV:1.5kHz								
2.LCD Contrast	1) Adj item [CNTR] Adjust:[****] Press [△] button to store the adjustment value.	1) Adj item [LCD Contrast] Data: [****] Press [Apply] button to store the adjustment value.				Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 280 (Reference value)	
3. VCO Assist	1) Adj item: [AST] Adjust:[****] 2) Adj item: [L1]→ [L2]→ [L3]→ [L4]→ [L5]→ [L6]→ [C1]→ [C2]→ [C3]→ [C4]→ [C5]→ [H1]→ [H2]→ [H3]→ [H4]→ [H5]→ [H6] Adjust:[****] Press [△] button to store the adjustment value.	1) Adj item: [VCO Assist] 2) Adj item: [Low1],[Low2], [Low3],[Low4], [Low5], [Low6] [Center1], [Center2], [Center3], [Center4], [Center5], [High1],[High2] [High3],[High4], [High5][High6] Press [Apply] button to store the adjustment value.				Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	**[PC test mode]** **[Automatic Adjustment]** 1) Press [Autotune] button. 2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished. **[Manual Adjustment]** [V] Indicator on the PC window shows VCO lock voltage. Change the adjustment value to get VCO lock voltage within the limit of the specified voltage. **Note:** Confirm the VCO lock voltage approximately 3 seconds after the adjustment value is changed.	2.5V±0.1V **[Automatic Adjustment]** After the automatic adjustment is performed, verify that the VCO lock voltage is within the voltage range which is specified by the manual adjustment. **[Manual Adjustment]** Press [Apply] button to store the adjustment value after all adjustment points have been adjusted. Adjustment value range: 500 - 1950

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
4. Frequency	*The Frequency adjustment can be performed only in PC test mode.	1) Adj item: [Frequency] SSG output: -20dBm (22.4mV) (CW (without modulation)) **Caution:** Perform the frequency adjustment under the following conditions. • Temperature range of +20°C to +33°C (+68.0°F to +91.4°F). (The temperature is displayed on the Frequency adjustment screen of the KPG-D3/ D3N and the LCD of the transceiver.) • Use an accuracy of 0.001ppm for the SSG. (Use a standard oscillator if necessary.)	SSG	Panel	ANT		[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	**[PC test mode]** Press [Start] button of "Auto Tuning". Press [Apply] button to store the adjustment value after the automatic adjustment has finished.	**[PC test mode]** "IF20" value = Within 0±30 digits. The value of "IF20" will become around "0" after the adjustment has finished. **Remark:** "Frequency" is adjusted under receiving condition with SSG.
5. RTC Correciton	1) Adj item: [RTC] Adjust:[****] Press [△] button to store the adjustment value.	1) Adj item: [RTC Correction] Data: [****] Press [Apply] button to store the adjustment value.	Frequency Counter	TX-RX	TEST POINT (CN55)				**Remark:** The adjustment value should input the display of a Frequency Counter.

4.35 Transmitter Section

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Maximum Transmit Power	1) Adj item: [MAX_P] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Maximum Transmit Power] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	57.5W	±2.5W 15A or less
2. High Transmit power	1) Adj item: [H_PWR] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [High Transmit Power] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	25W	±1W 10A or less
3. Low Transmit power	1) Adj item: [L_PWR] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Low Transmit Power] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	5W	±0.5W 7A or less

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
4. Ramp Offset	1)Adj item: [RAMP] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Ramp Offset] Press [Autotune(TX starts)] button. Press [Apply] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	**[PC test mode] [Automatic Adjustment]** 1) Press [Autotune(TX starts)] button. 2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished. 3) Check Ramp Offset Monitor Value Over 50. **[Manual Adjustment]** 1) Set the adjustment value to "1". 2) Press [Transmit] button and increase the adjustment value slowly while monitoring the offset monitor value. 3) Set the adjustment value when the offset monitor value exceed "60".	
5. Balance	1) Adj item: [An BAL] Adjust:[****] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Balance] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	The Deviation of 20Hz frequency is fixed. Change the 2kHz adjustment value to become the same deviation of 20Hz within the specified range. **[Panel tuning mode]** PTT:ON While PTT:ON, press the [◀] button to change the 20Hz/ 2kHz. **[PC test mode]** PTT: Press [Transmit] button. While PTT:ON, click the check box "2kHz Sine Wave" to change the 20Hz/2kHz.	2kHz Tone deviation is within ± 1.0% of 20Hz tone deviation.

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
6. Maximum Deviation [Analog Wide 5k]	1) Adj item: [Aw ADEV] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2V]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Maxmum Deviation (Analog Wide 5k)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the deviation is between 4150Hz and 4250Hz. Deviation meter LPF: 15kHz HPF: OFF 496(Reference value) **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	4150~4250Hz
[Analog Wide 4k]	1) Adj item: [As ADEV] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2V]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Maxmum Deviation (Analog Wide 4k)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the deviation is between 3310Hz and 3410Hz. Deviation meter LPF: 15kHz HPF: OFF 496(Reference value) **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	3310~3410Hz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Narrow]	1) Adj item: [An ADEV] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Maxmum Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the deviation is between 2050Hz and 2150Hz. Deviation meter LPF: 15kHz HPF: OFF 493(Reference value) **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	2050~2150Hz
7. NXDN High Deviation [NXDN Narrow]	1) Adj item: [Nn NDEV] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [NXDN High Deviation (NXDN Narrow] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the Analog deviation is between 2995Hz and 3117Hz. Deviation meter LPF: 3kHz HPF: OFF 498(Reference value) **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	2995~3117Hz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[NXDN Very Narrow]	1) Adj item: [Nv NDEV] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [NXDN High Deviation (NXDN Very Narrow] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the Analog deviation is between 1331Hz 1311Hz and 1363Hz. Deviation meter LPF: 3kHz HPF: OFF 498(Reference value) **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	1311~1363Hz
8. DMR High Deviation	1) Adj item: [D DDEV] Adjust: [****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DMR High Deviation (DMR Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the Analog deviation is between 2695Hz and 2803Hz. Deviation meter LPF: 3kHz HPF: OFF 496(Reference value) **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	2695~2803Hz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
9. QT Deviation [Analog Wide 5k]	1) Adj item: [Aw QT] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [QT Deviation (Analog Wide 5k)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 529(Reference value)	0.75kHz±0.05 kHz
[Analog Wide 4k]	1) Adj item: [As QT] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [QT Deviation (Analog Wide 4k)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 529(Reference value)	0.60kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Narrow]	1) Adj item: [An QT] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [QT Deviation (Analog Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 529(Reference value)	0.35kHz±0.05 kHz
10. DQT Deviation [Analog Wide 5k]	1) Adj item: [Aw DQT] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DQT Deviation (Analog Wide 5k)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 426(Reference value)	0.75kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Wide 4k]	1) Adj item: [As DQT] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DQT Deviation (Analog Wide 4k)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 426(Reference value)	0.60kHz±0.05 kHz
[Analog Narrow]	1) Adj item: [An DQT] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DQT Deviation (Analog Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 426(Reference value)	0.35kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
11. LTR Deviation [Analog Wide 5k]	1) Adj item: [Aw LTR] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [LTR Deviation (Analog Wide 5k)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 518(Reference value)	1.00kHz±0.05 kHz
[Analog Wide 4k]	1) Adj item: [As LTR] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [LTR Deviation (Analog Wide 4k)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 518(Reference value)	0.90kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Narrow]	1) Adj item: [An LTR] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [LTR Deviation (Analog Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 518(Reference value)	0.75kHz±0.05 kHz
12. DTMF Deviation [Analog Wide 5k]	1) Adj item: [Aw DTMF] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DTMF Deviation (Analog Wide 5k)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 542(Reference value)	2.50kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Wide 4k]	1) Adj item: [As DTMF] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DTMF Deviation (Analog Wide 4k)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 542(Reference value)	2.00kHz±0.05 kHz
[Analog Narrow]	1) Adj item: [An DTMF] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [DTMF Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 542(Reference value)	1.25kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
13. Single Tone Deviation [Analog Wide 5k]	1) Adj item: [Aw TONE] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Single Tone Deviation (Analog Wide 5k)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 511(Reference value)	3.00kHz±0.05 kHz
[Analog Wide 4k]	1) Adj item: [As TONE] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Single Tone Deviation (Analog Wide 4k)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 511(Reference value)	2.40kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Narrow]	1) Adj item: [An TONE] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [Single Tone Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 511(Reference value)	1.50kHz±0.05 kHz
14. MSK Deviation [Analog Wide 5k]	1) Adj item: [Aw MSK] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [MSK Deviation (Analog Wide 5k)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 500(Reference value)	3.00kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Wide 4k]	1) Adj item: [As MSK] Adjust:[****] [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [MSK Deviation (Analog Wide 4k)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 500(Reference value)	2.40kHz±0.05 kHz
[Analog Narrow]	1) Adj item: [An MSK] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [MSK Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 500(Reference value)	1.50kHz±0.05 kHz

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
15. CWID Deviation [Analog Narrow]	1) Adj item: [An CWID] Adjust:[****] 2) Adj item: [L1]→ [L3]→ [L5]→ [C1]→ [C3]→ [C5]→ [H2]→ [H4]→ [H6] Adjust:[****] PTT : ON Press [△] button to store the adjustment value.	1) Adj item: [CWID Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Write the value as followings. 508(Reference value)	1.10kHz±0.10 kHz

4.35.1 Necessary Deviation adjustment item for each signaling and mode

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

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

- Balance is common with all the above deviation adjustments. If Balance (Transmitter Section 6) has already adjusted, please skip Step1 and adjust from Step2.
- Maximum Deviation (Analog Wide 5k/Wide 4k/Narrow) is common with all the analog signaling deviations and CWID Deviation (NXDN Very Narrow).
  If Balance and Maximum Deviation (Analog Wide 5k/Wide 4k /Narrow) (Transmitter Section 7) have already adjusted, please skip Step2 and adjust from Step3.

4.36 Receiver Section

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. AF level setting	[Panel test mode] 1) CH-Sig: 1-1 SSG output: -47dBm (1mV) (MOD: 1kHz/ ±1.5kHz)	1) Test Channel Channel: 1 Test Signaling Type: Analog Signaling: 1 SSG output: -47dBm (1mV) (MOD:1kHz/ ±1.5kHz)	SSG DVM AF VM Dummy load	Panel	ANT Ext. SP connector	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	Volume Up/Down knob to obtain 1.41V AF output. (0.5W @ 4ohm load)	1.41V ±0.1V
2. IQ Phase	1) Adj item: [An IQ] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] SSG output: Freq: Tune Freq +8kHz level: -53dBm (500μV) (MOD:OFF)	1) Adj item: [IQ Phase] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: Freq: Tune Freq +8kHz level: -53dBm (500μV) (MOD:OFF)	SSG	Panel	ANT Ext. SP connector	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	**[PC test mode]** **[Automatic Adjustment]** After input signal from SSG, 1) Press [Autotune] button. 2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished. **[Manual Adjustment]** Adjust RSSI Level(DSP Normal Power Mode) Value to the minimum.	
3. RSSI reference [DSP (Receive)]	1) Adj item: [An RSSI 1] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)	1) Adj item: [RSSI Reference (Analog Narrow) 1 DSP (Receive)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	
[RF IC (Receive)]	1) Adj item: [An RSSI 2] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)	1) Adj item: [RSSI Reference (Analog Narrow) 2 RF IC (Receive)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	

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

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Wide 4k]	1) Adj item: [As SQL] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/ ±2.4kHz)	1) Adj item: [Squelch Open (Analog Wide 4k)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/ ±2.4kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	
[Analog Narrow]	1) Adj item: [An SQL] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/ ±1.5kHz)	1) Adj item: [Squelch Open (Analog Narrow)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/ ±1.5kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	
[NXDN Narrow]	1) Adj item: [Nn SQL] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] SSG output: 12dB SINAD level at Analog Narrow -5dB (MOD: 400Hz/ ±1.5kHz)	1) Adj item: [Squelch Open (NXDN Narrow)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dB SINAD level at Analog Narrow -5dB (MOD: 400Hz/ ±1.5kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	

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

Item	Condition		Measurement			Adjustment			Specifications /Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Wide 4k]	1) Adj item: [As SQLT] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] SSG output: 12dB SINAD level +6dB (MOD: 1kHz/ ±2.4kHz)	1) Adj item: [Squelch Tight (Analog Wide 4k)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dB SINAD level +6dB (MOD: 1kHz/ ±2.4kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	
[Analog Narrow]	1) Adj item: [An SQLT] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] SSG output: 12dB SINAD level +6dB (MOD: 1kHz/ ±1.5kHz)	1) Adj item: [Squelch Tight (Analog Narrow)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dB SINAD level +6dB (MOD: 1kHz/ ±1.5kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	
6. Low RSSI	1) Adj item: [An LRSSI] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] SSG output: -118dBm (0.28μV) (MOD: 1kHz/ ±1.5kHz)	1) Adj item: [Low RSSI (Analog Narrow)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: -118dBm (0.28μV) (MOD: 1kHz/ ±1.5kHz)	SSG	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	
7. High RSSI	1) Adj item: [An HRSSI] Adjust:[****] 2) Adj item: [L1]→ [L5]→ [C3]→ [H2]→ [H6] SSG output: -80dBm (22.4μV) (MOD: 1kHz/ ±1.5kHz)	1) Adj item: [High RSSI (Analog Narrow)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: -80dBm (22.4μV) (MOD: 1kHz/ ±1.5kHz)	SSG	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [△] button to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	

SECTION 5
TROUBLESHOOTING

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

■Overview

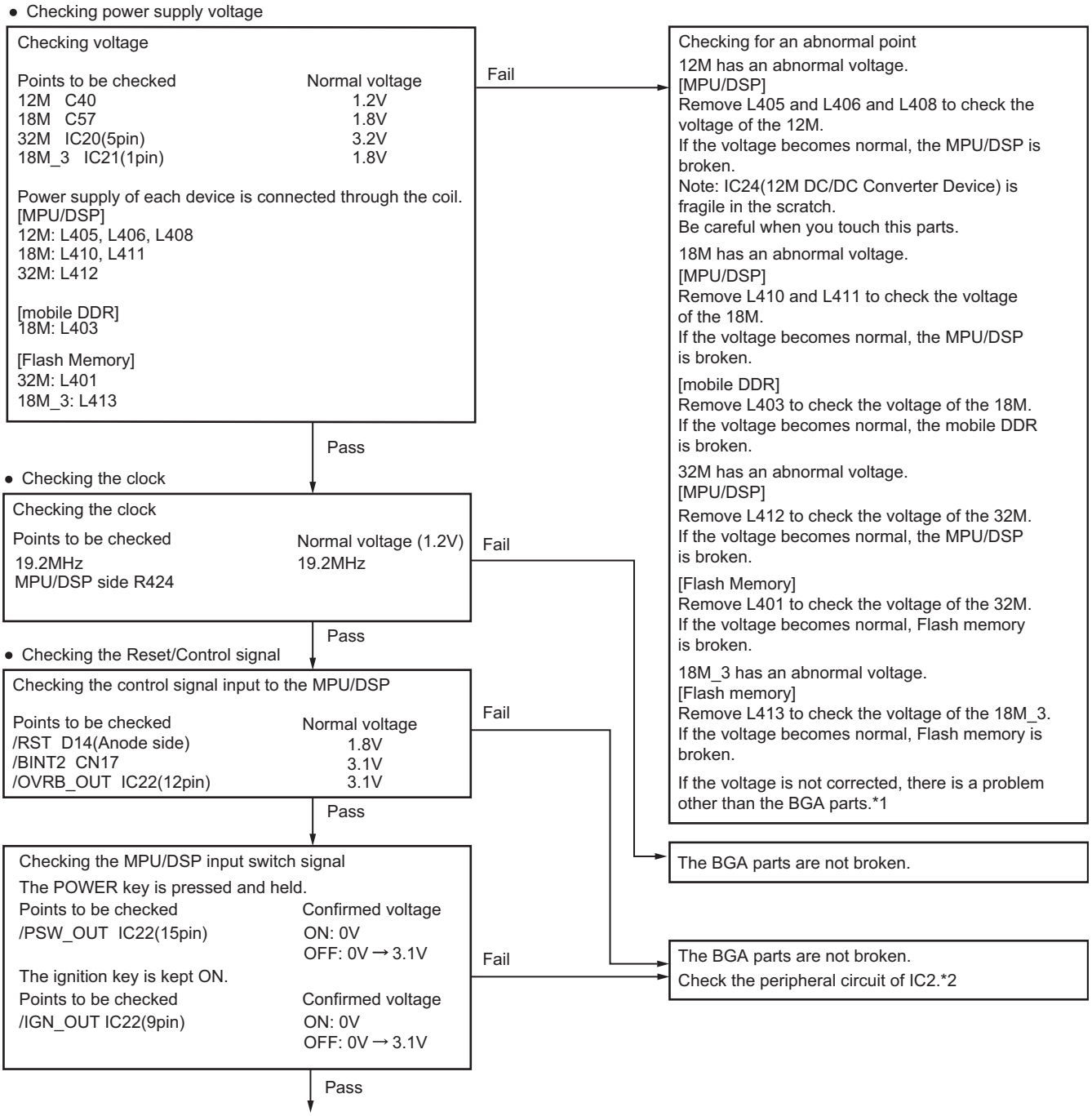
A flowchart for determining whether or not the transceiver can be powered on (the LCD does not function even if the power switch is turned on) due to broken BGA parts.

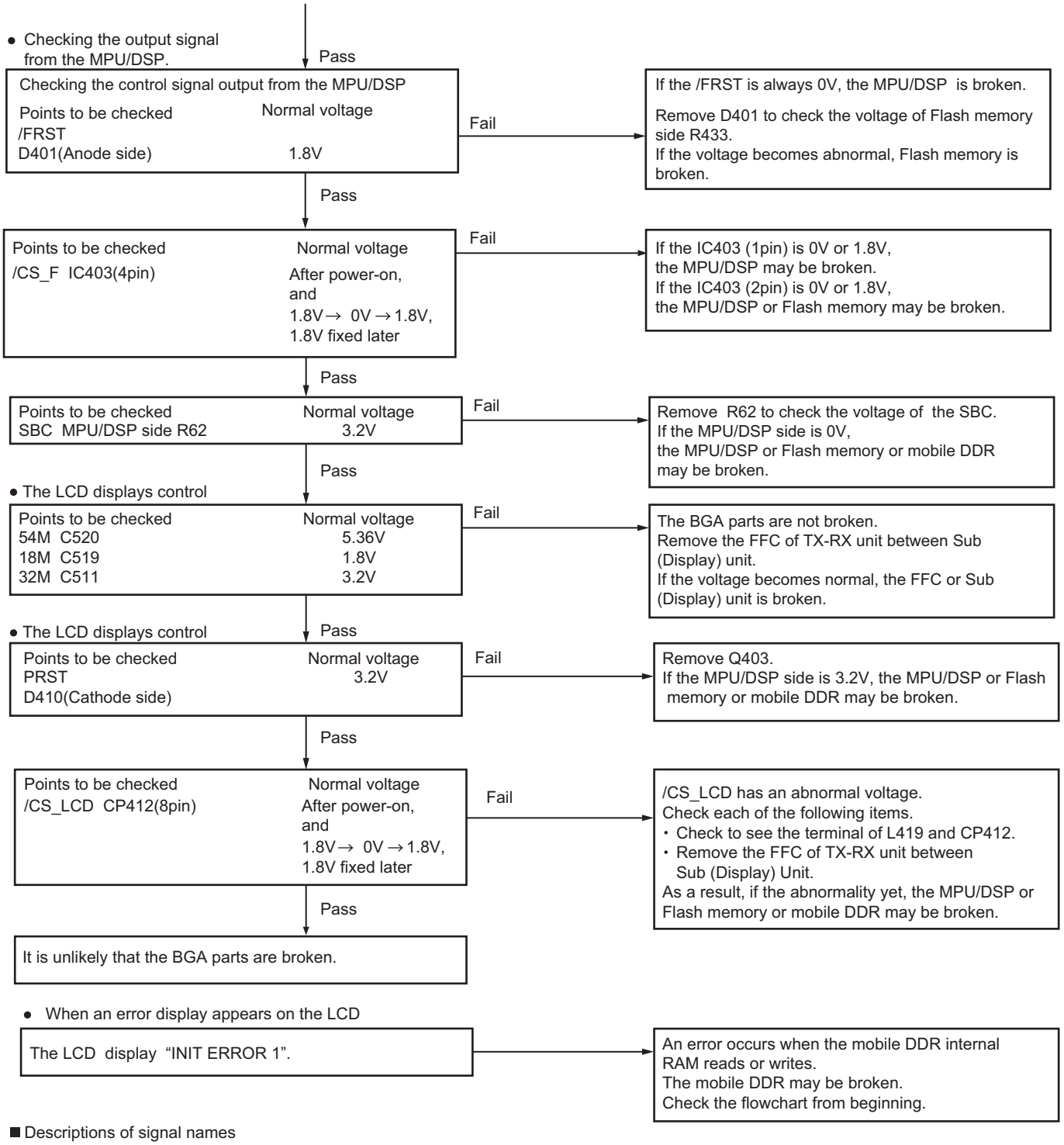
■BGA parts

MPU/DSP(IC404), mobile DDR(IC402), Flash Memory(IC401)

When the BGA IC is problematic, please bring the printed circuit board (XCA-033K-00/XCA-033E-01/XCA-034K-00/XCA-034K-01/XCA-034E-01) in for service. Various ESN/ default adjustment values are written on the printed cicuit board for service. Additionally various ESN stickers are included. (Please refer to "5.4 Replacing TX-RX Unit".)

After the printed circuit board has been readjusted, please attach any ESN stickers to the chassis. When "ESN Validation" is used,you must modify the ESN register.



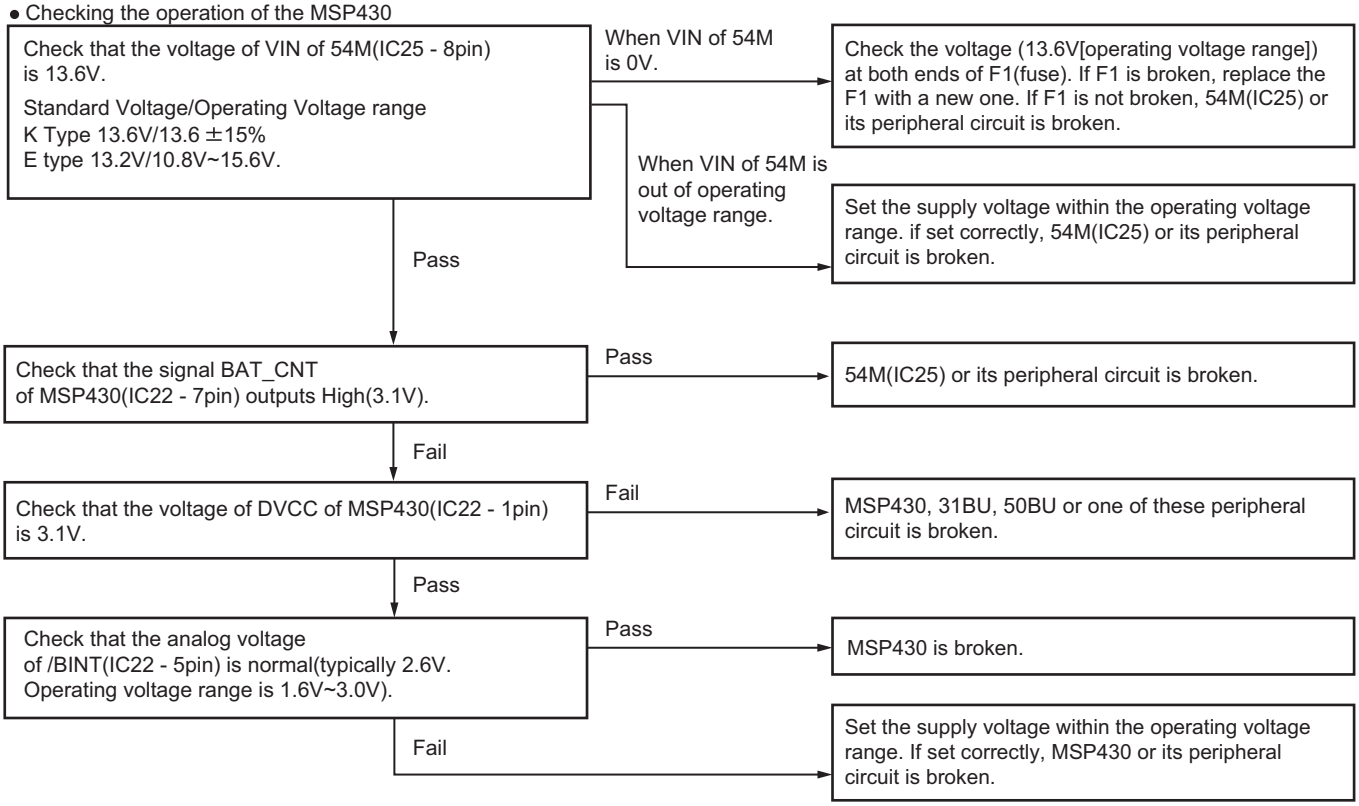


■ Descriptions of signal names

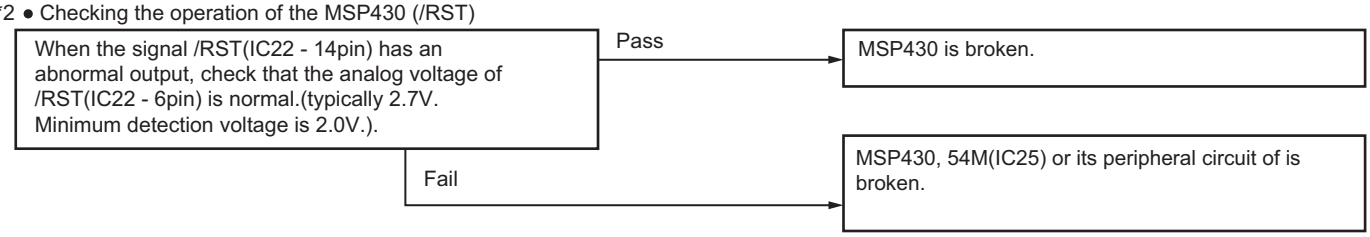
1) /RST	: MPU/DSP reset signal	LOW → Reset
2) /BINT	: Battery final voltage monitoring	LOW → Final voltage
3) /OVRB_OUT	: Battery overvoltage monitoring	LOW → Overvoltage
4) /PSW_OUT	: Power switch signal	LOW → ON
5) /IGN_OUT	: Ignition switch signal	LOW → ON
6) /FRST	: Flash Memory reset signal	HIGH → Reset
7) /CS_F	: Flash Memory chip select signal	LOW → Active
8) SBC	: Switch +B control	HIGH→ ON
9) PRST	: LCD reset signal	HIGH → Reset
10) /CS_LCD	: LCD controller chip select signal	LOW → Active

*1 If 12M, 18M or 32M has still an abnormal voltage after the implementation of each procedure above, 54M(IC25),12M(IC24),18M(IC12),32M(IC20) or one of these peripheral circuit is broken.
54M(normally 5.4V at L13) has an abnormal voltage, check the MSP430(IC22) according to the following procedure.

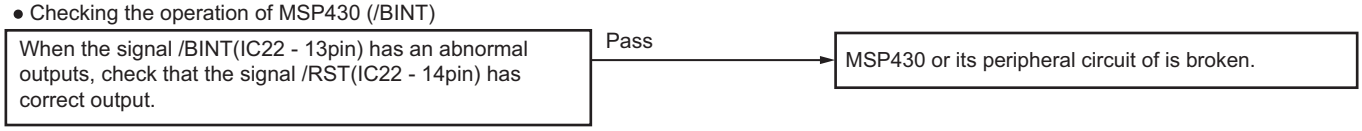
● Checking the operation of the MSP430



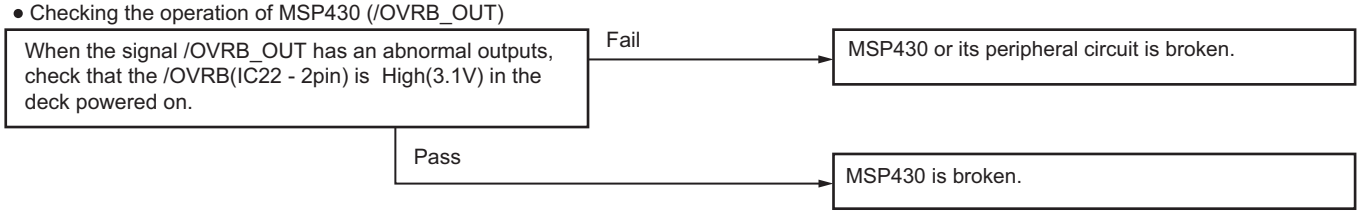
*2 ● Checking the operation of the MSP430 (/RST)



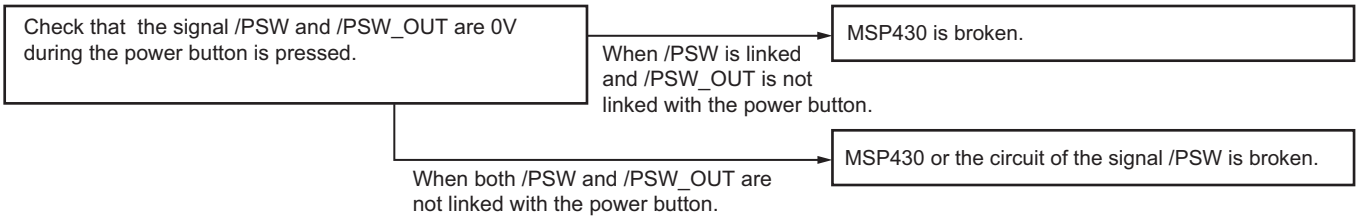
● Checking the operation of MSP430 (/BINT)



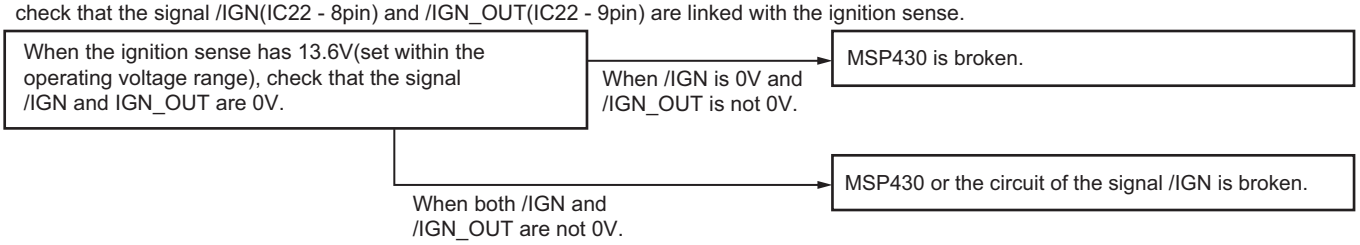
● Checking the operation of MSP430 (/OVRB_OUT)



● Checking the operation of MSP430 (/PSW and /IGN)
Check that the signal /PSW(IC22 - 10pin) and /PSW_OUT(IC22 - 15pin) are linked with the power button on KCH-19 in power on state.



If the ignition function is enabled,
check that the signal /IGN(IC22 - 8pin) and /IGN_OUT(IC22 - 9pin) are linked with the ignition sense.



■ Remarks related to MSP430

A. When MSP430(IC22) is replaced, IC22 must be replaced to "MSP430G25KGCA"(This MSP430 is written the program.).
B. OMAP communicates with MSP430 by serial communication at startup of deck.
Only firmware version of MSP430 is confirmed by OMAP in serial communication.
Even when firmware version of MSP430 can not be acquired, the system of MSP430 is started.
C. If there is the difference of firmware version of MSP430 between MSP430 and OMAP,
the firmware version of MSP430 is updated with the serial communication by OMAP.
"WAIT..." is displayed on the LCD during the firmware update. When the firmware update fails,
the system of MSP430 is started and OMAP is trying to update again at next startup.

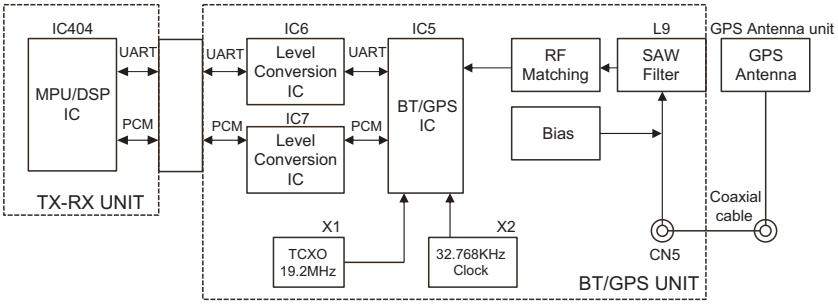
5.2 Failure diagnosis of the GPS section (GPS model only)

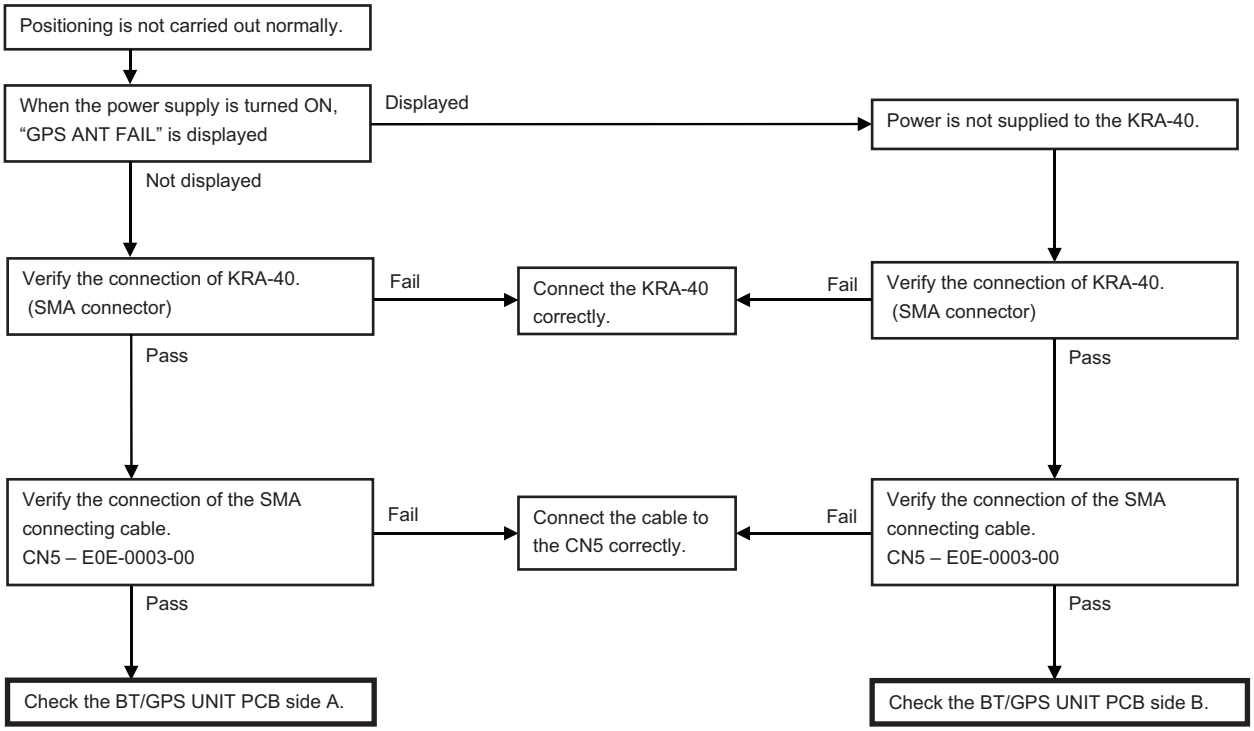
Overview:

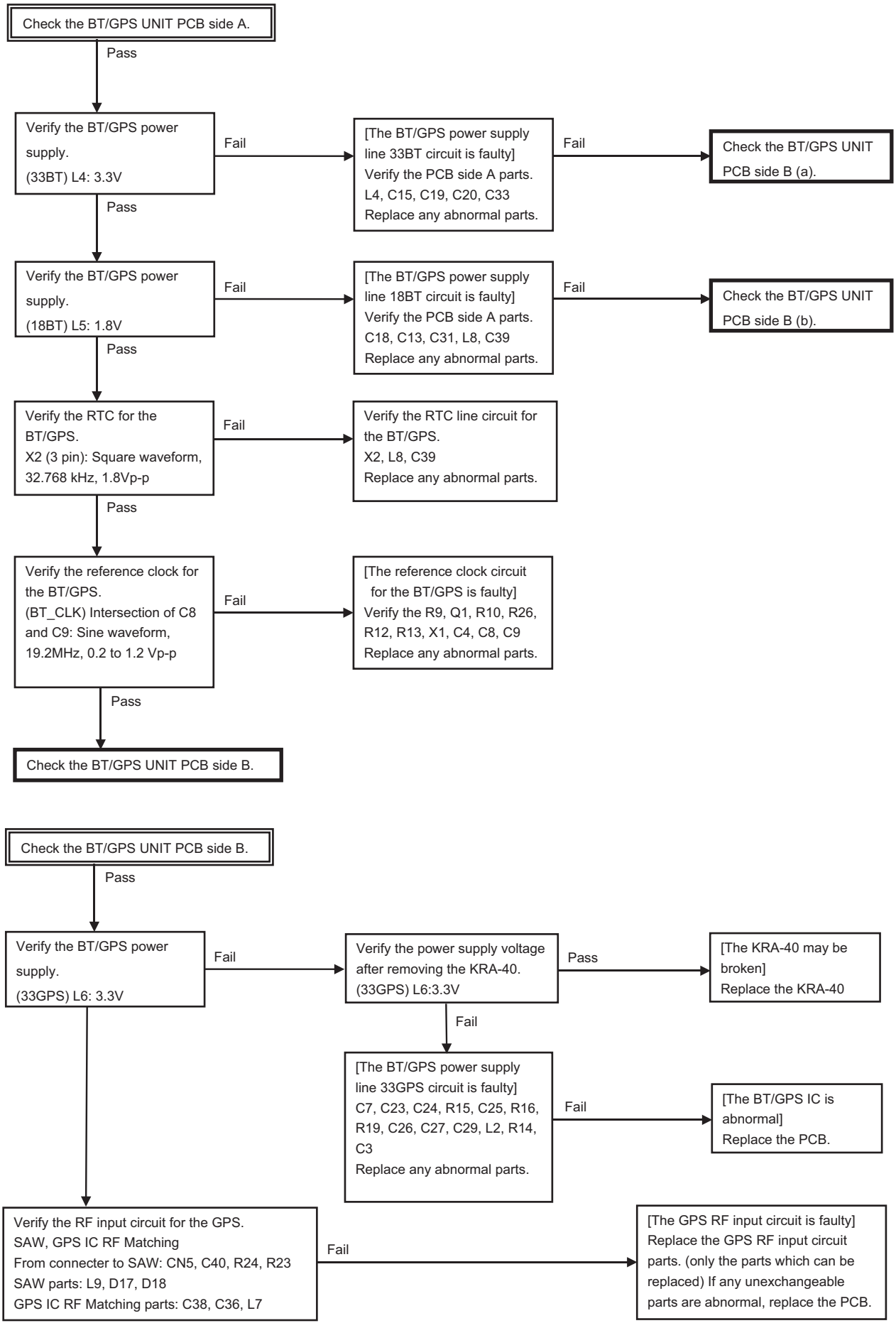
When the GPS function does not operate, use this flowchart to determine the problem.

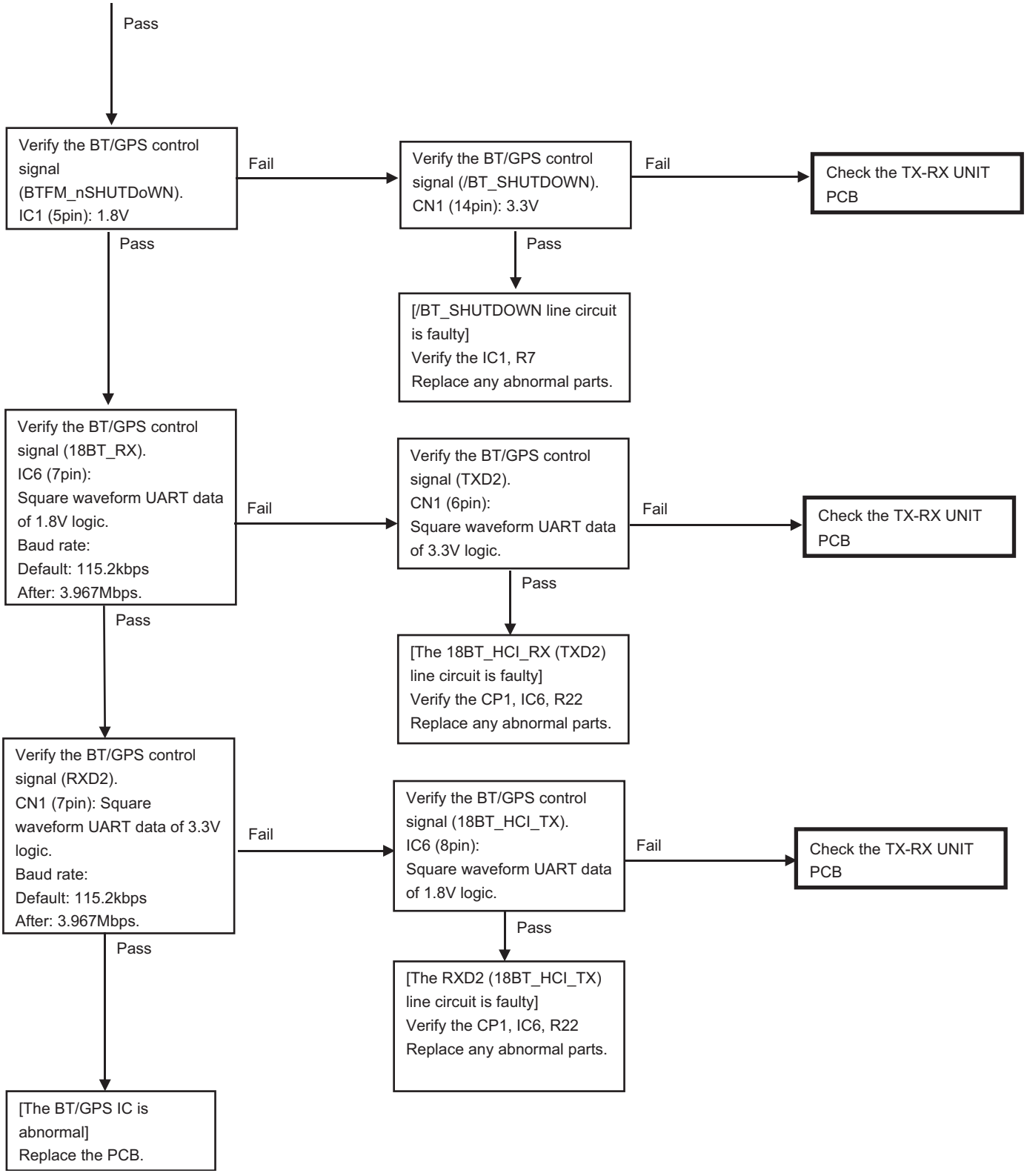
Major parts for a GPS circuit

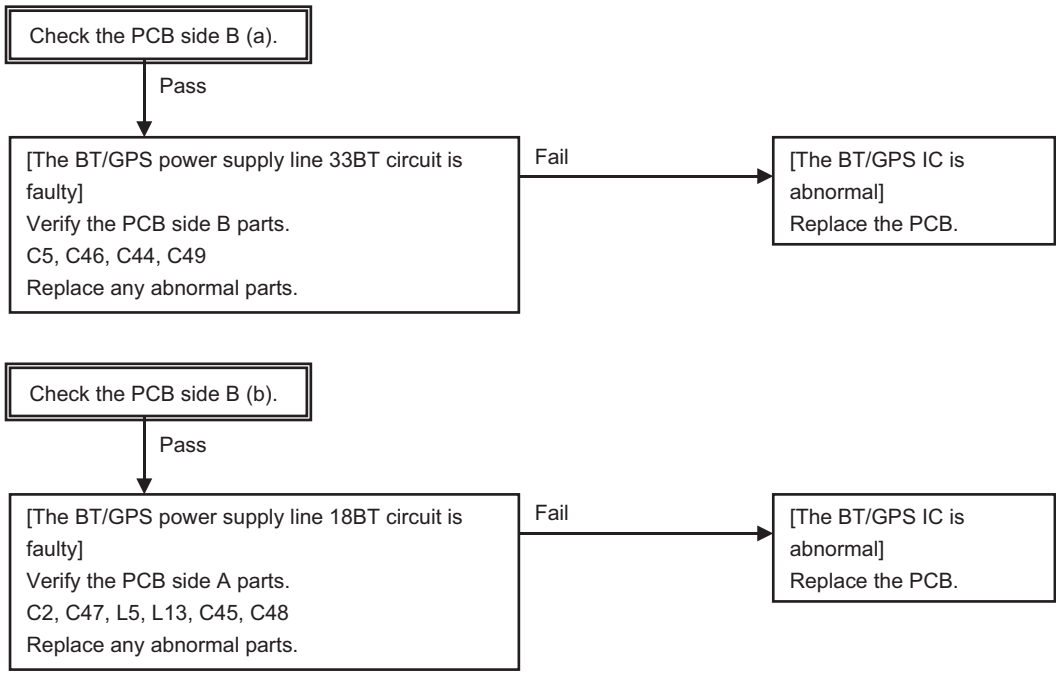
- GPS active antenna: KRA-40 (option)
- Coaxial cable: E0E-0003-00
- SAW Filter (L9)
- Bluetooth/GPS IC (IC5)
- Level conversion IC (IC6, IC7)
- TCXO 19.2MHz (X1)
- 32.768 kHz clock (X2)
- 33BT Regulator (IC3)
- 18BT Regulator (IC2)
- 33GPS Regulator (IC4)
- MPU/DSP IC (IC404)

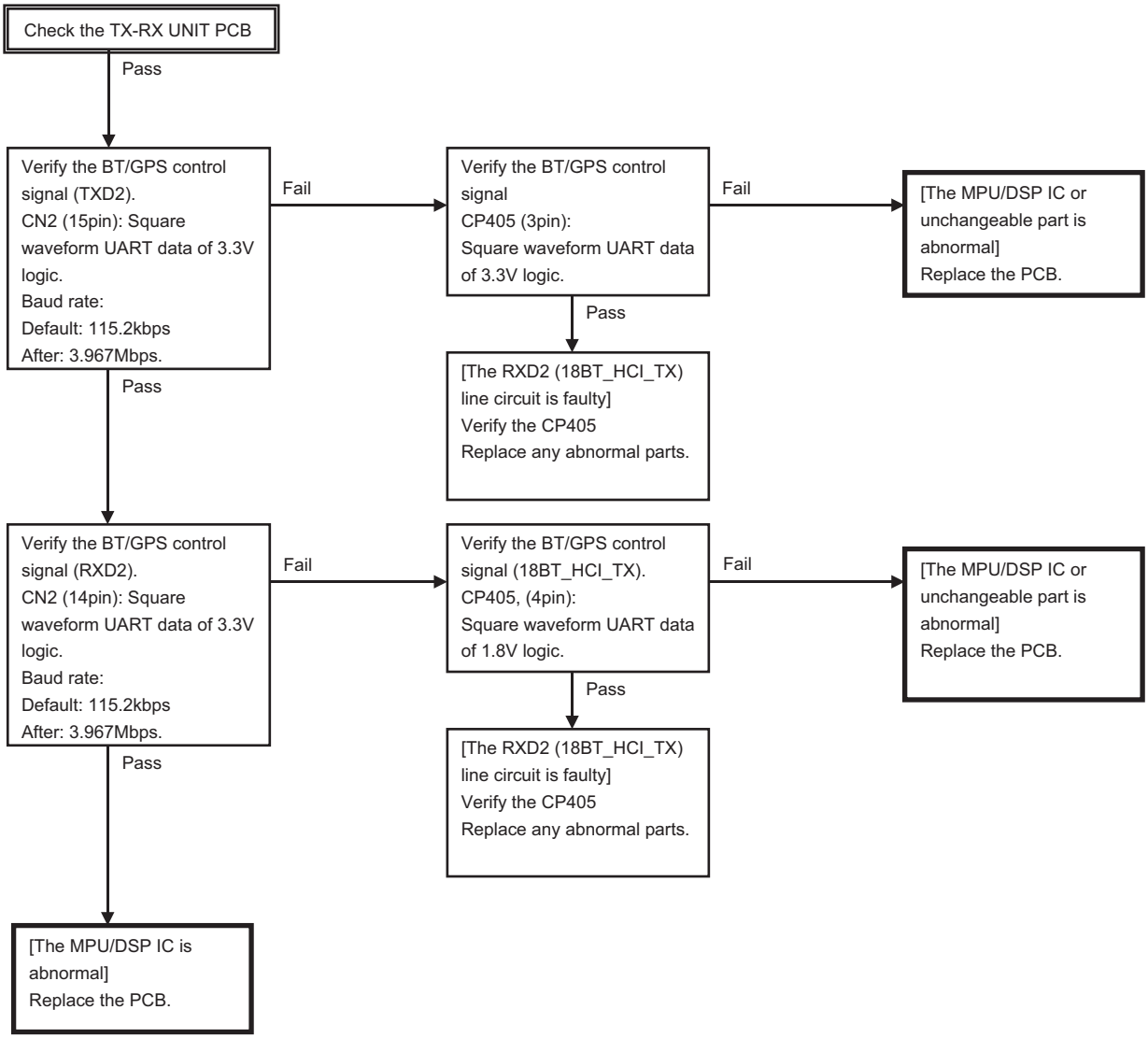





Check the BT/GPS UNIT PCB side A.
Pass
Verify the BT/GPS power supply.
(33BT) L4: 3.3V
Fail
[The BT/GPS power supply line 33BT circuit is faulty]
Verify the PCB side A parts.
L4, C15, C19, C20, C33
Replace any abnormal parts.
Fail
Check the BT/GPS UNIT PCB side B (a).
Pass
Verify the BT/GPS power supply.
(18BT) L5: 1.8V
Fail
[The BT/GPS power supply line 18BT circuit is faulty]
Verify the PCB side A parts.
C18, C13, C31, L8, C39
Replace any abnormal parts.
Fail
Check the BT/GPS UNIT PCB side B (b).
Pass
Verify the RTC for the BT/GPS.
X2 (3 pin): Square waveform, 32.768 kHz, 1.8Vp-p
Fail
Verify the RTC line circuit for the BT/GPS.
X2, L8, C39
Replace any abnormal parts.
Pass
Verify the reference clock for the BT/GPS.
(BT_CLK) Intersection of C8 and C9: Sine waveform, 19.2MHz, 0.2 to 1.2 Vp-p
Fail
[The reference clock circuit for the BT/GPS is faulty]
Verify the R9, Q1, R10, R26, R12, R13, X1, C4, C8, C9
Replace any abnormal parts.
Pass
Check the BT/GPS UNIT PCB side B.
Check the BT/GPS UNIT PCB side B.
Pass
Verify the BT/GPS power supply.
(33GPS) L6: 3.3V
Fail
Verify the power supply voltage after removing the KRA-40.
(33GPS) L6:3.3V
Pass
[The KRA-40 may be broken]
Replace the KRA-40
Fail
[The BT/GPS power supply line 33GPS circuit is faulty]
C7, C23, C24, R15, C25, R16, R19, C26, C27, C29, L2, R14, C3
Replace any abnormal parts.
Fail
[The BT/GPS IC is abnormal]
Replace the PCB.
Verify the RF input circuit for the GPS.
SAW, GPS IC RF Matching
From connecter to SAW: CN5, C40, R24, R23
SAW parts: L9, D17, D18
GPS IC RF Matching parts: C38, C36, L7
Fail
[The GPS RF input circuit is faulty]
Replace the GPS RF input circuit parts. (only the parts which can be replaced) If any unexchangeable parts are abnormal, replace the PCB.


Pass
Verify the BT/GPS control signal (BTFM_nSHUTDoWN). IC1 (5pin): 1.8V
Fail
Verify the BT/GPS control signal (/BT_SHUTDOWN). CN1 (14pin): 3.3V
Fail
Check the TX-RX UNIT PCB
Pass
Pass
[/BT_SHUTDOWN line circuit is faulty] Verify the IC1, R7 Replace any abnormal parts.
Verify the BT/GPS control signal (18BT_RX). IC6 (7pin): Square waveform UART data of 1.8V logic. Baud rate: Default: 115.2kbps After: 3.967Mbps.
Fail
Verify the BT/GPS control signal (TXD2). CN1 (6pin): Square waveform UART data of 3.3V logic.
Fail
Check the TX-RX UNIT PCB
Pass
Pass
[The 18BT_HCI_RX (TXD2) line circuit is faulty] Verify the CP1, IC6, R22 Replace any abnormal parts.
Verify the BT/GPS control signal (RXD2). CN1 (7pin): Square waveform UART data of 3.3V logic. Baud rate: Default: 115.2kbps After: 3.967Mbps.
Fail
Verify the BT/GPS control signal (18BT_HCI_TX). IC6 (8pin): Square waveform UART data of 1.8V logic.
Fail
Check the TX-RX UNIT PCB
Pass
Pass
[The RXD2 (18BT_HCI_TX) line circuit is faulty] Verify the CP1, IC6, R22 Replace any abnormal parts.
[The BT/GPS IC is abnormal] Replace the PCB.


Check the PCB side B (a).
Pass
[The BT/GPS power supply line 33BT circuit is faulty]
Verify the PCB side B parts.
C5, C46, C44, C49
Replace any abnormal parts.
Fail
[The BT/GPS IC is abnormal]
Replace the PCB.
Check the PCB side B (b).
Pass
[The BT/GPS power supply line 18BT circuit is faulty]
Verify the PCB side A parts.
C2, C47, L5, L13, C45, C48
Replace any abnormal parts.
Fail
[The BT/GPS IC is abnormal]
Replace the PCB.



■ Descriptions of signal names

1) 33BT: BT/GPS IC 3.3V power supply
2) 18BT: BT/GPS IC 1.8V power supply
3) 33GPS: BT/GPS IC 3.3V power supply
4) TXD2: BT/GPS serial data line connected to UART TX of MPU/DSP IC (MPU/DSP to BT/GPS IC)
5) RXD2: BT/GPS serial data line connected to UART RX of MPU/DSP IC (MPU/DSP to BT/GPS IC)
6) 18BT_HCI_RX: BT/GPS serial data line connected to UART RX of BT/GPS IC (MPU to BT/GPS IC)
7) 18BT_HCI_TX: BT/GPS serial data line connected to UART TX of GPS IC (BT/GPS IC to MPU)
8) /BT_SHUTDOWN: BT/GPS active control of MPU/DSP IC (MPU/DSP to BT/GPS IC) High→Active, Low→Reset

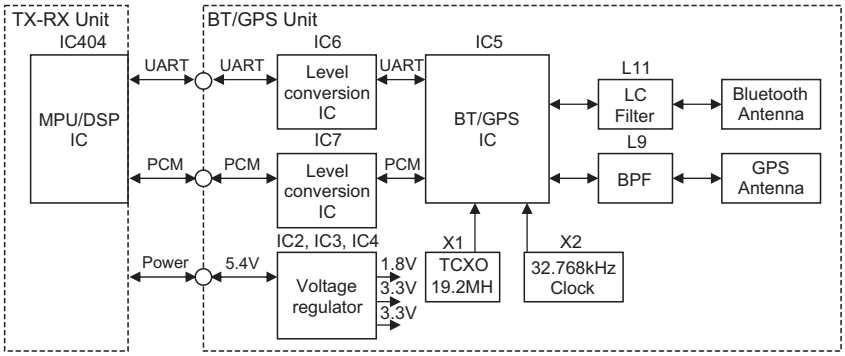
5.3 Failure diagnosis of the Bluetooth section

Overview:

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

Major parts for a Bluetooth circuit

- Bluetooth antenna (Pattern Antenna)
- LC filter (L11)
- Bluetooth/GPS IC (IC5)
- Level conversion IC (IC6, IC7)
- TCXO 19.2MHz (X1)
- 32.768 kHz clock (X2)
- 33BT Regulator (IC3)
- 18BT Regulator (IC2)
- MPU/DSP IC (IC404: TX-RX Unit)



I can not pair with the Bluetooth (BT) headset.

Is the BT headset charged enough?
Is the BT headset turned on?
Is the BT headset in pairing mode?

No → Charge the BT headset. Turn on your BT headset and bring it within one meter.
Try again pair with BT headset.

Pass

Check the BT/GPS UNIT PCB side A.

Check the BT/GPS UNIT PCB side A.

Pass

Verify the antenna matching parts.
Visually check to L15, C68

Fail → Replace any abnormal parts.

Pass

Verify the BT/GPS power supply.
(33BT) L4: 3.3V

Fail → [The BT/GPS power supply line 33BT circuit is faulty]
Verify the PCB side A parts.
L4, C15, C19, C20, C33
Replace any abnormal parts.

Fail → Check the BT/GPS UNIT PCB side B (a).

Pass

Verify the BT/GPS power supply.
(18BT) L5: 1.8V

Fail → [The BT/GPS power supply line 18BT circuit is faulty]
Verify the PCB side A parts.
C18, C13, C31, L8, C39
Replace any abnormal parts.

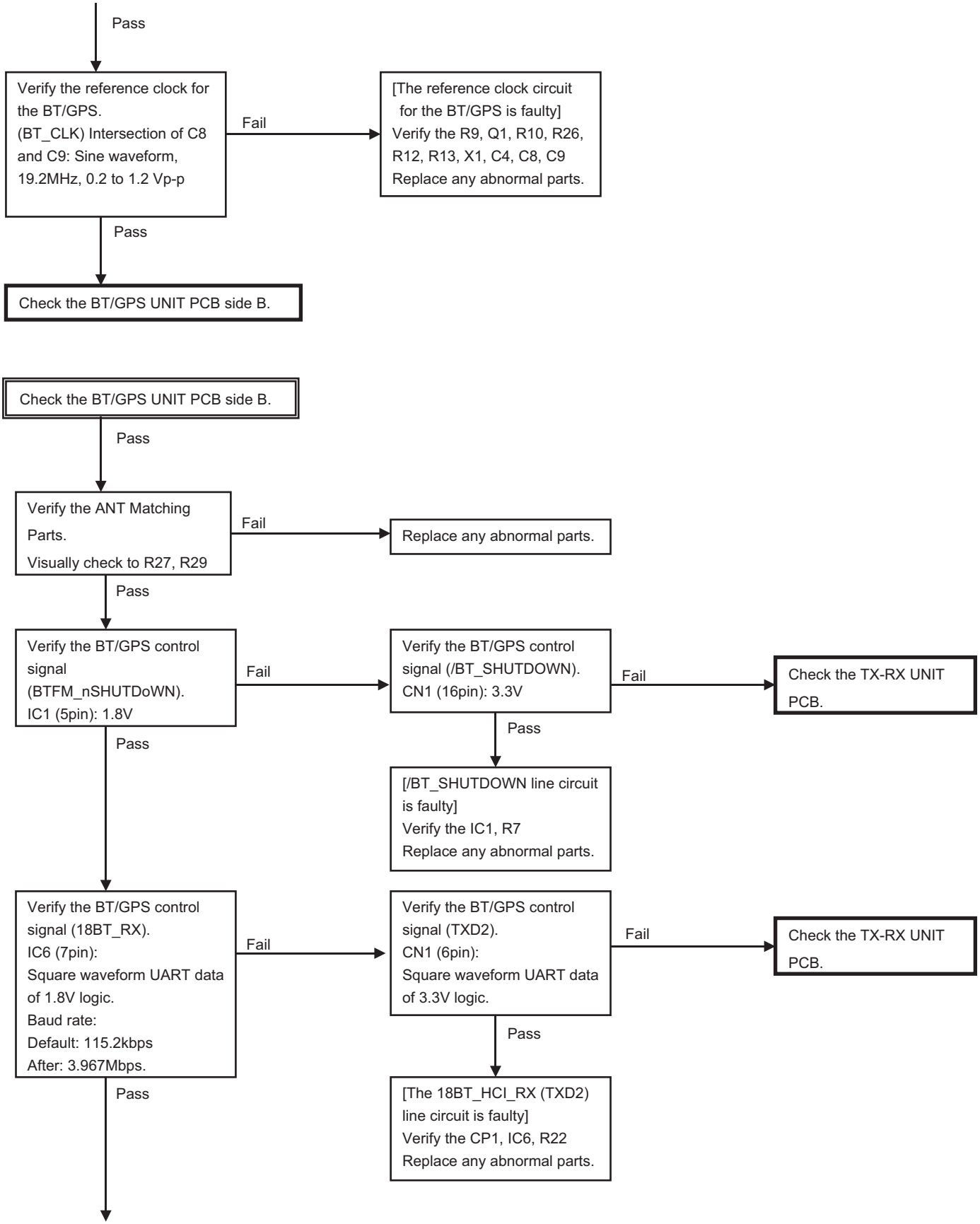
Fail → Check the BT/GPS UNIT PCB side B (b).

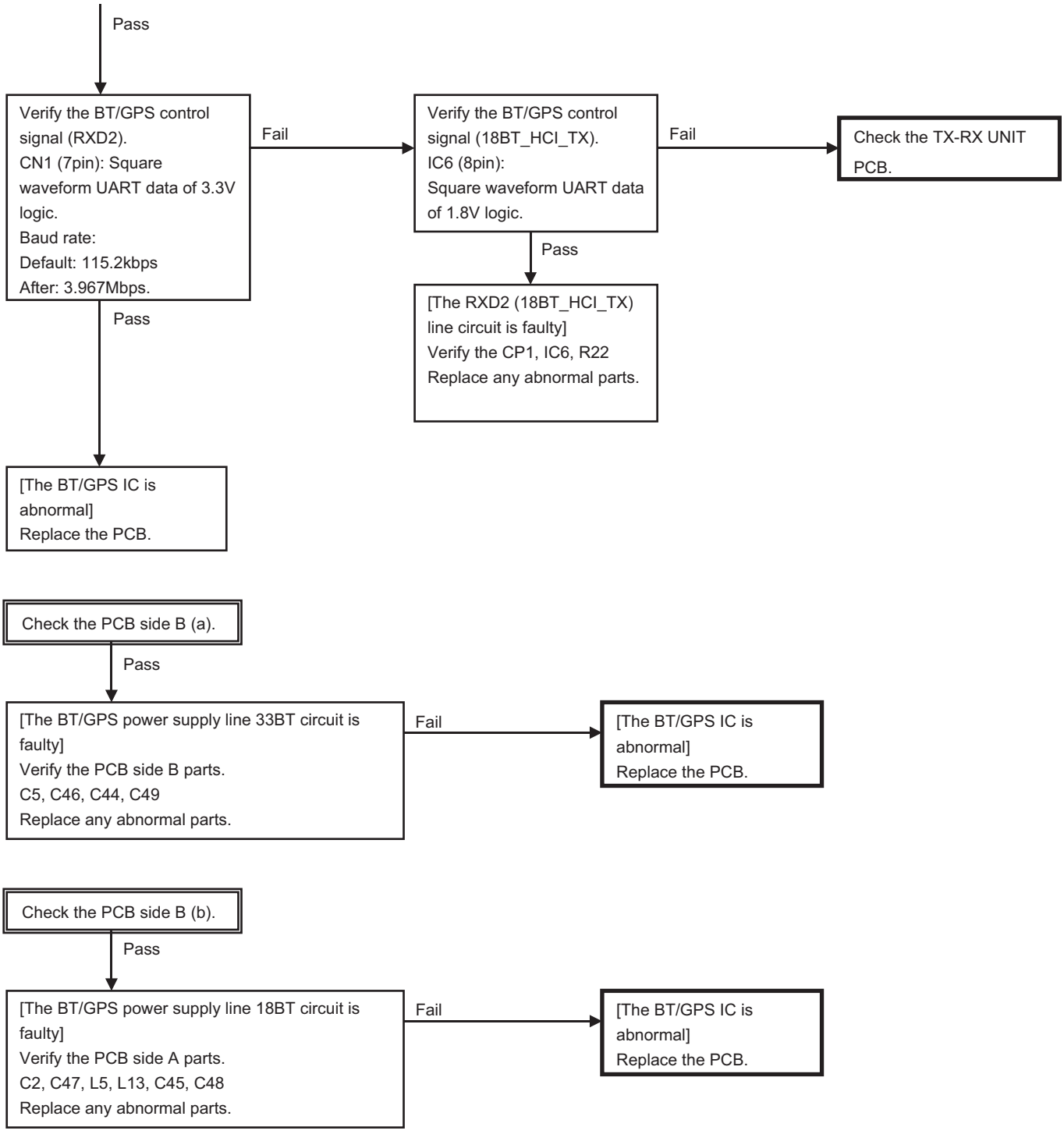
Pass

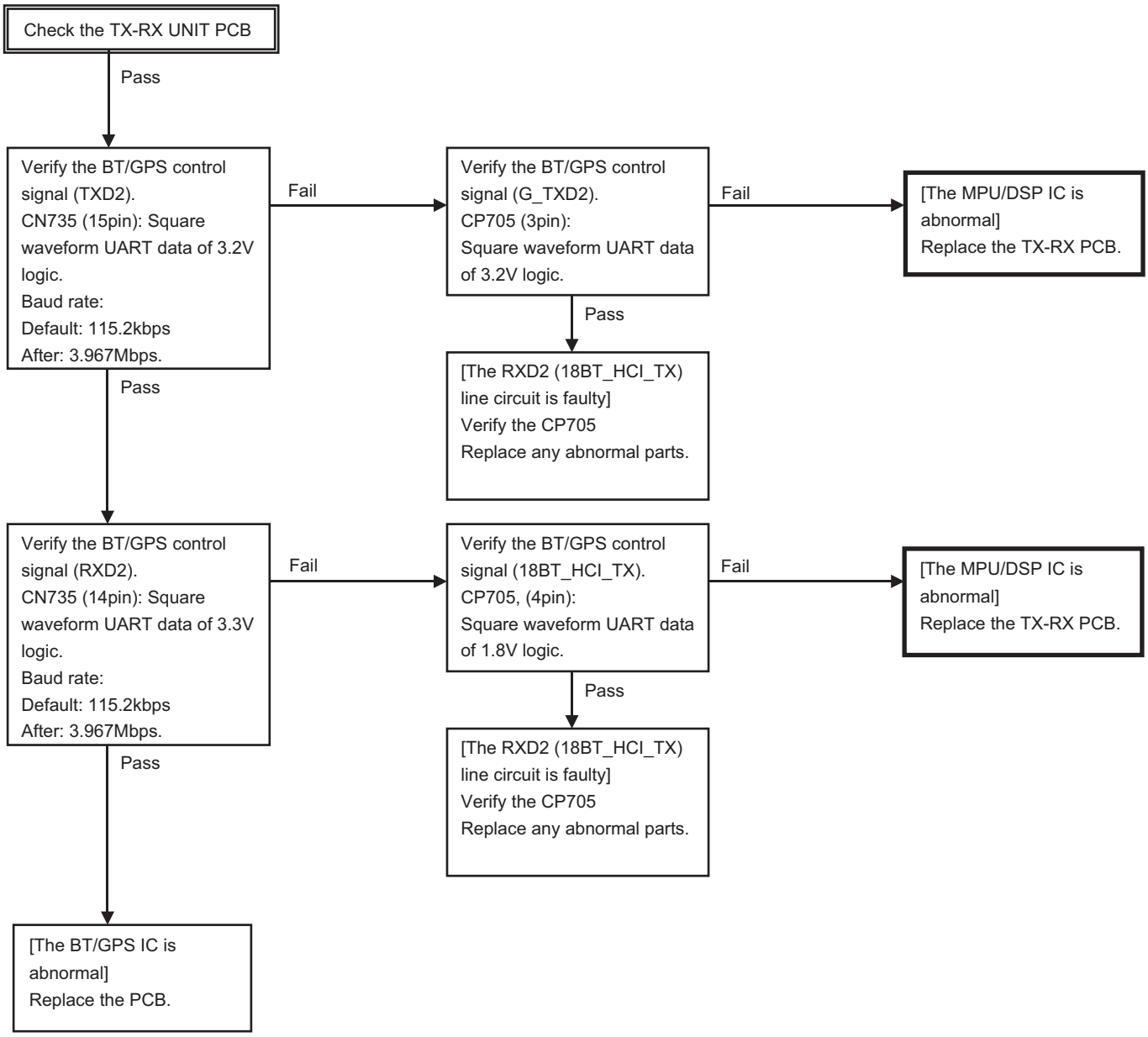
Verify the RTC for the BT/GPS.
X2 (3 pin): Square waveform, 32.768 kHz, 1.8Vp-p

Fail → Verify the RTC line circuit for the BT/GPS.
X2, L8, C39
Replace any abnormal parts.

Pass


Pass
Verify the reference clock for the BT/GPS.
(BT_CLK) Intersection of C8 and C9: Sine waveform, 19.2MHz, 0.2 to 1.2 Vp-p
Fail
[The reference clock circuit for the BT/GPS is faulty]
Verify the R9, Q1, R10, R26, R12, R13, X1, C4, C8, C9
Replace any abnormal parts.
Pass
Check the BT/GPS UNIT PCB side B.
Check the BT/GPS UNIT PCB side B.
Pass
Verify the ANT Matching Parts.
Visually check to R27, R29
Fail
Replace any abnormal parts.
Pass
Verify the BT/GPS control signal (BTFM_nSHUTDoWN).
IC1 (5pin): 1.8V
Fail
Verify the BT/GPS control signal (/BT_SHUTDOWN).
CN1 (16pin): 3.3V
Fail
Check the TX-RX UNIT PCB.
Pass
[/BT_SHUTDOWN line circuit is faulty]
Verify the IC1, R7
Replace any abnormal parts.
Pass
Verify the BT/GPS control signal (18BT_RX).
IC6 (7pin):
Square waveform UART data of 1.8V logic.
Baud rate:
Default: 115.2kbps
After: 3.967Mbps.
Fail
Verify the BT/GPS control signal (TXD2).
CN1 (6pin):
Square waveform UART data of 3.3V logic.
Fail
Check the TX-RX UNIT PCB.
Pass
[The 18BT_HCI_RX (TXD2) line circuit is faulty]
Verify the CP1, IC6, R22
Replace any abnormal parts.
Pass


Pass
Verify the BT/GPS control signal (RXD2).
CN1 (7pin): Square waveform UART data of 3.3V logic.
Baud rate:
Default: 115.2kbps
After: 3.967Mbps.
Fail
Verify the BT/GPS control signal (18BT_HCI_TX).
IC6 (8pin):
Square waveform UART data of 1.8V logic.
Fail
Check the TX-RX UNIT PCB.
Pass
[The RXD2 (18BT_HCI_TX) line circuit is faulty]
Verify the CP1, IC6, R22
Replace any abnormal parts.
Pass
[The BT/GPS IC is abnormal]
Replace the PCB.
Check the PCB side B (a).
Pass
[The BT/GPS power supply line 33BT circuit is faulty]
Verify the PCB side B parts.
C5, C46, C44, C49
Replace any abnormal parts.
Fail
[The BT/GPS IC is abnormal]
Replace the PCB.
Check the PCB side B (b).
Pass
[The BT/GPS power supply line 18BT circuit is faulty]
Verify the PCB side A parts.
C2, C47, L5, L13, C45, C48
Replace any abnormal parts.
Fail
[The BT/GPS IC is abnormal]
Replace the PCB.



■ Descriptions of signal names

1) 33BT: BT/GPS IC 3.3V power supply

2) 18BT: BT/GPS IC 1.8V power supply

3) TXD2: BT/GPS serial data line connected to UART TX of MPU/DSP IC (MPU/DSP to BT/GPS IC)

4) RXD2: BT/GPS serial data line connected to UART RX of MPU/DSP IC (MPU/DSP to BT/GPS IC)

5) 18BT_HCI_RX: BT/GPS serial data line connected to UART RX of BT/GPS IC (MPU to BT/GPS IC)

6) 18BT_HCI_TX: BT/GPS serial data line connected to UART TX of GPS IC (BT/GPS IC to MPU)

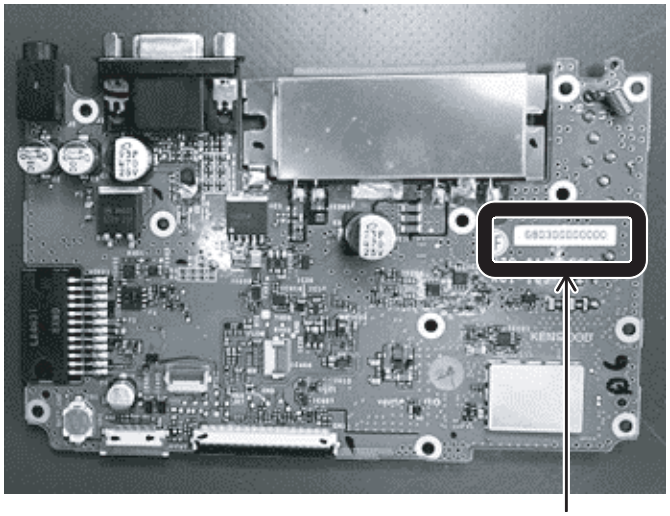
7) /BT_SHUTDOWN: BT/GPS active control of MPU/DSP IC (MPU/DSP to BT/GPS IC) High→ Active, Low→Reset

5.4 Replacing TX-RX Unit

■TX-RX unit Information

Model Name	Original TX-RX unit Number	For Service TX-RX unit Number
NX-3720H(G)/3720H (K)	XC1-182K-00	XCA-033K-00
NX-3720(G)/3720 (E)	XC1-182K-00	XCA-033E-01
NX-3820H(G)/3820H (K)	XC1-183K-00	XCA-034K-00
NX-3820H(G)/3820H (K2)	XC1-183K-01	XCA-034K-01
NX-3820(G)/3820 (E)	XC1-183K-01	XCA-034E-01

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



The following marking seals are affixed on the shield cover of the service TX-RX unit (XCA-033K-00/XCA-033E-01/ XCA-034K-00/XCA-034K-01/XCA-034E-01).

Model Name	Marking seal
NX-3720H(G)/3720H (K)	XCA-033K-00
NX-3720(G)/3720 (E)	XCA-033E-01
NX-3820H(G)/3820H (K)	XCA-034K-00
NX-3820H(G)/3820H (K2)	XCA-034K-01
NX-3820(G)/3820 (E)	XCA-034E-01

■Supplied Accessories of "Service TX-RX unit"

Item (Including Parts Number)	Quantity
TX-RX Unit (XC1-182, XC1-183)	1
KENWOOD ESN/ NXDN ESN/ Product Number/ MPT ESN Label	1

■"Service TX-RX unit" Data

The following data is written on the service unit:

Data Type	Desctiption
KENWOOD ESN	**NX-3720, NX-3720H** Model name: [XCA-033] NX-3720S (K, E) Type:K, E The same number as the KENWOOD ESN label is written.
	NX-3820, NX-3820H Model name: [XCA-034] NX-3820S (K, K2, E) Type:K, K2, E The same number as the KENWOOD ESN label is written.
NXDN ESN/ MPT ESN/ Product number	The same number as the NXDN ESN/ MPT ESN/ Pruduct Number label is written.

■After Changing the PCB

(1) After changing the printed circuit board, write the up-to-date Firmware following the instructions in the "2.2 REALIGNMENT - 2.2.6 Firmware Programming Mode".
- Write the Firmware in accordance to the Market. If you write different Market Firmware, there are times communication with the FPU is not possible.

(2) Using the KPG-D3/D3N, select your desired item (Model Name) from the Radio Configuration> Product Information menu, then use Read/ Write > Write Configuration to the Transceiver to write the FPU data (PC Programming mode). When writing to the transceiver, a Warning Message, corresponding to the item selected, appears. Click [OK] to continue writing the data.

(3) Tools > Test/Tuning, then adjust the various adjustment data (PC Test Mode) as described in the "SECTION 4 ADJUSTMENT".

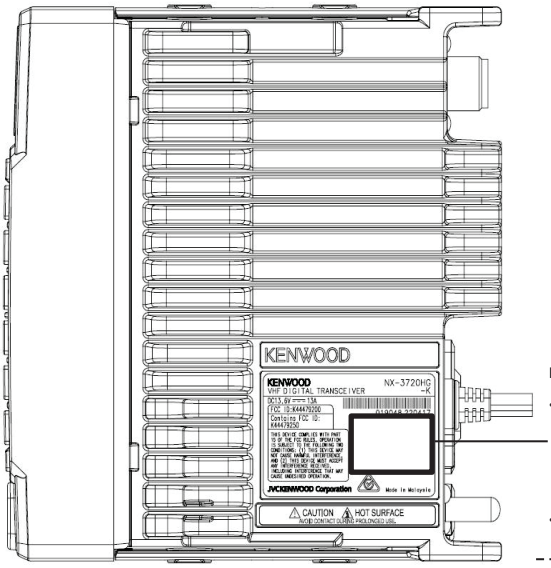
(4) Attach the new labels corresponding to the new printed circuit board. (Refer to the images below for label placement.)

(5) If necessary, write the FPU data used by the customer with the KPG-D3/D3N.

Note:

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

■**ESN Label Layout**



ESN Label

• NX-3720H(G)[K], NX-3720(G)[E], NX-3720[E], NX-3820H(G)[K], NX-3820H[K], NX-3820H(G)[K2], NX-3820(G)[E], NX-3820[E]

• NX-3720H[K], NX-3820H[K2]

Note:
Cut a ESN Label at dotted line.

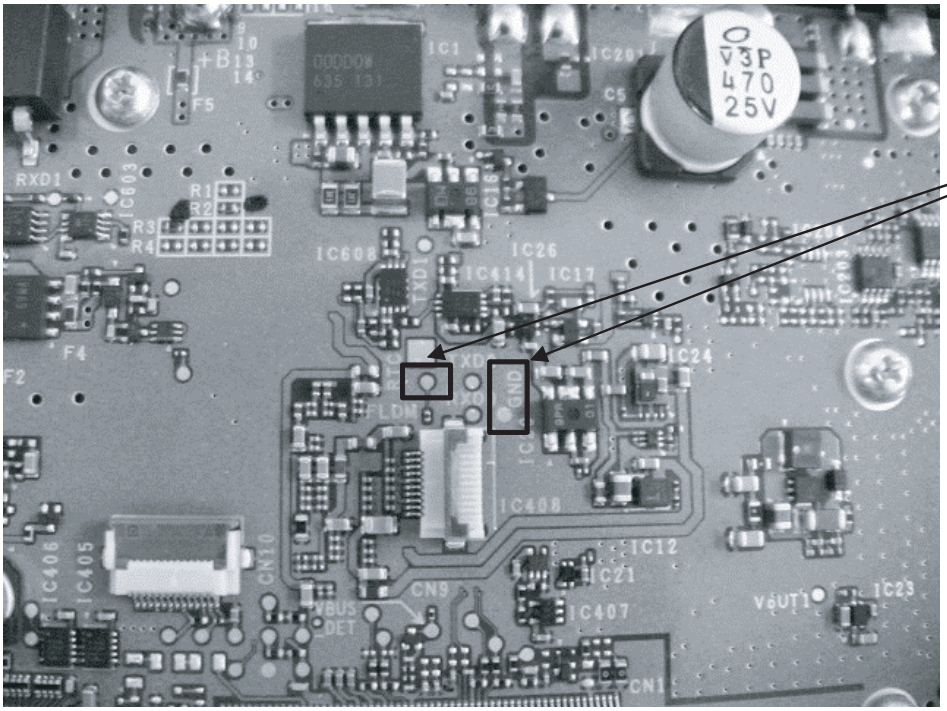
5.5 Operating Method of Enforced Firmware Overwriting Mode

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

(1) Prepare the followings:
- Transceiver (NX-3720, NX-3720H, NX-3820 or NX-3820H)
- Regulated DC power supply
- Programming interface cable (KPG-46U or KPG-46X)
- Power cable

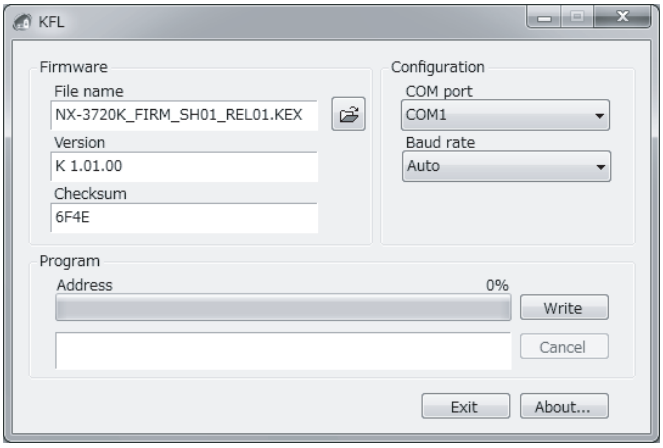
(2) Remove the cabinet, top packing and shielding plate of the transceiver.
Connect a transceiver, regulated DC power supply, programming interface cable (KPG-46U or KPG-46X) and power cable.

(3) While FLDM terminal has a short-circuit with GND terminal on the PCB, turn its power ON.



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

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



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

PRECAUTIONS ON SCHEMATIC DIAGRAMS

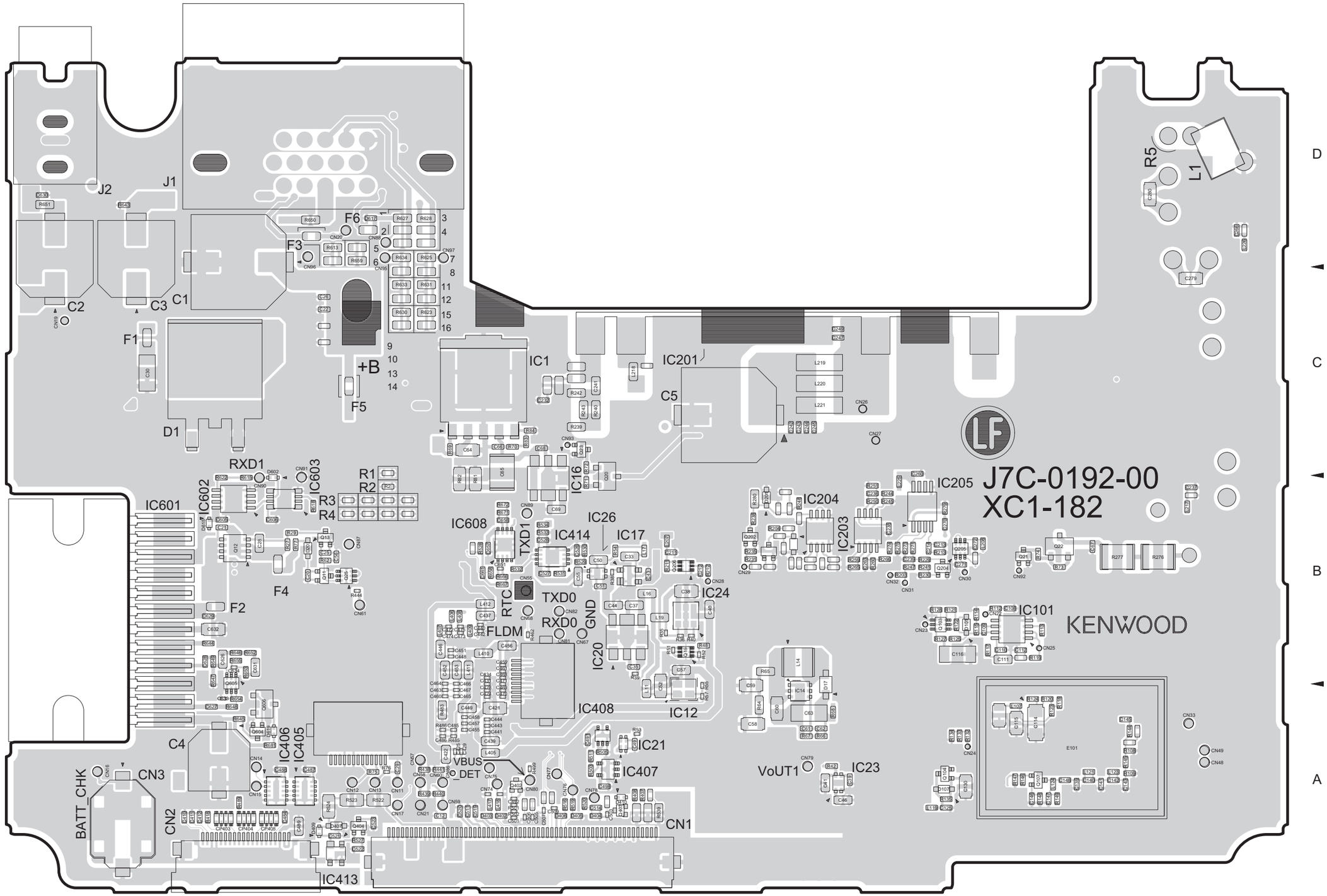
* Due to the improvement in performance, some part numbers shown in the circuit diagrams may not agree with those indicated in the Parts List.
* The parts numbers, values and rated voltage etc. in the Schematic Diagrams are for reference only.
* Since the circuit diagrams are standard ones, the circuits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

2-1 (No.RA054<Rev.001>)

PRINTED CIRCUIT BOARD

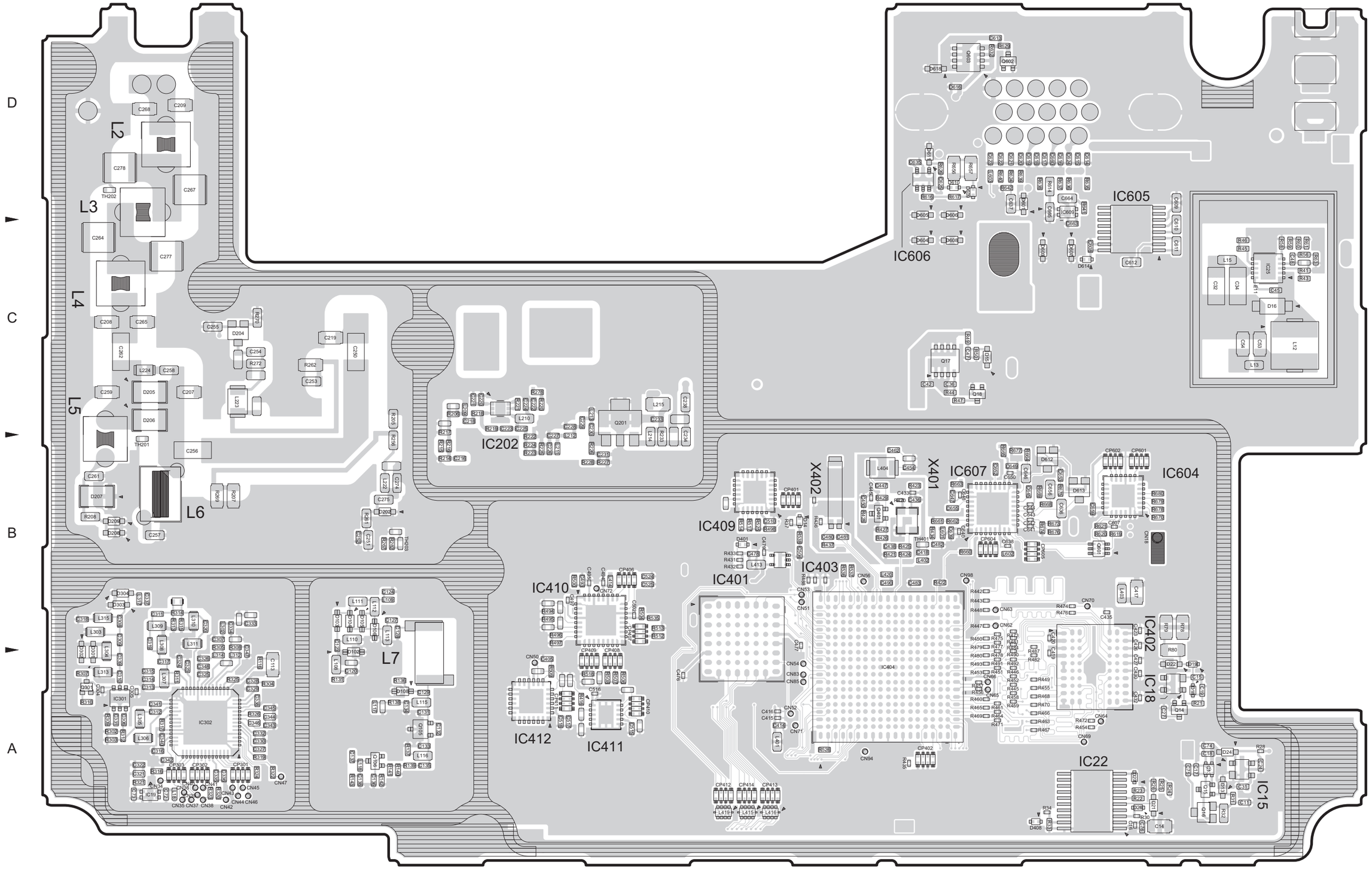
■ TX-RX UNIT (XC1-182K-00 (NX-3720H(G), NX-3720H, NX-3720(G), NX-3720))

--- Component side view (J7C-0192-00) ---



■ TX-RX UNIT (XC1-182K-00 (NX-3720H(G), NX-3720H, NX-3720(G), NX-3720))

--- Foil side view (J7C-0192-00) ---



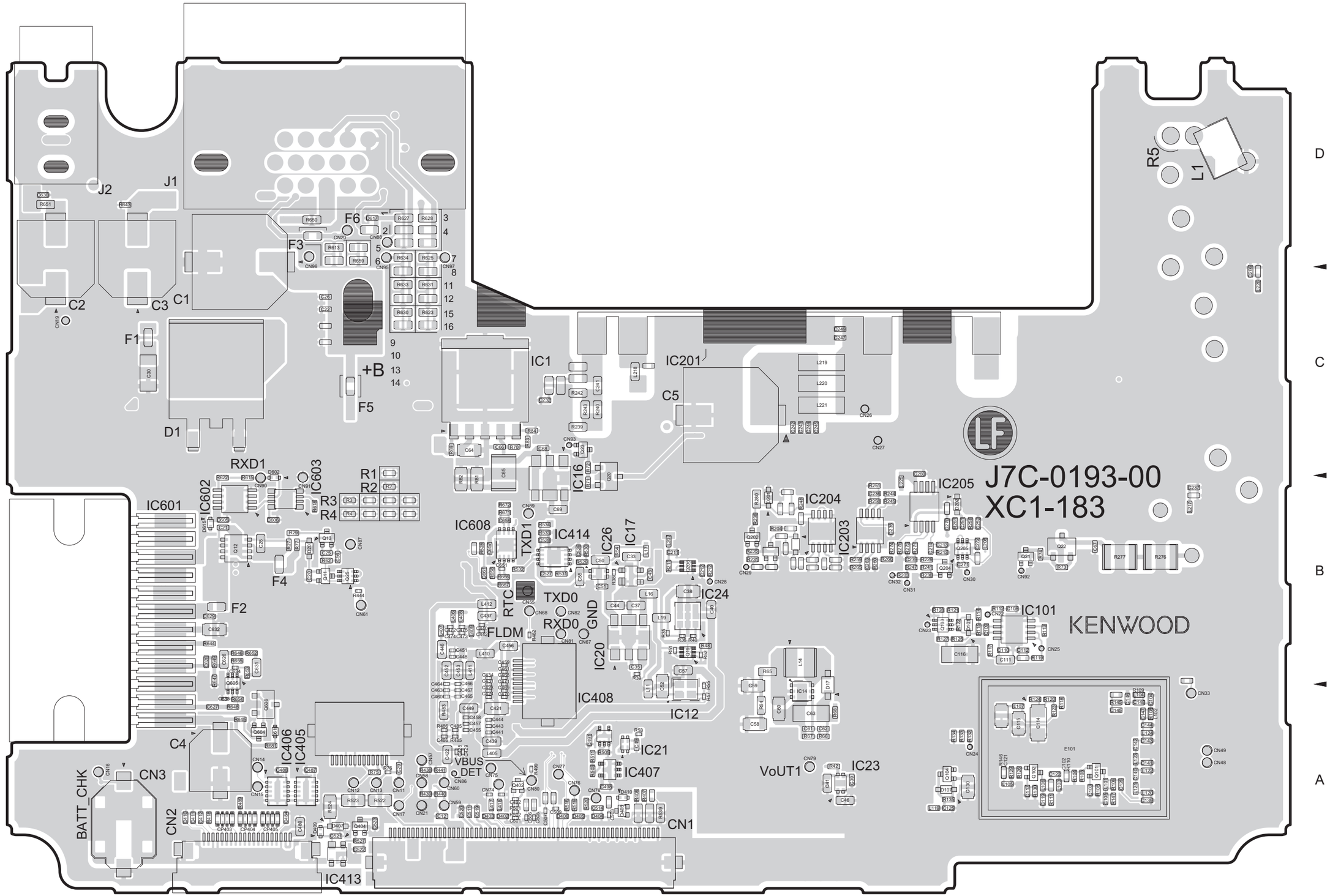
● ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.

REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION
IC		Q204	B- 2B	D609	A- 4D	R74	B- 1B	R225	A- 2B	R418	B- 5A	R488	A- 3B	R632	A- 4D	C24	A- 5A	C131	A- 2A	C264	A- 1C	C419	A- 4A	C487	B- 4A	C637	A- 4D	CN39	A- 1A	CP407	A- 3B	L219	B- 2C
IC1	B- 4C	Q205	B- 2B	D610	A- 4D	R75	B- 4A	R226	A- 3B	R420	A- 4B	R489	B- 5A	R633	B- 4C	C25	B- 4B	C132	A- 2A	C265	A- 1C	C420	A- 4B	C488	B- 4A	C638	A- 4B	CN40	A- 1A	CP408	A- 3A	L220	B- 2C
IC12	B- 3A	Q206	B- 3B	D611	A- 4D	R76	B- 4A	R227	A- 3B	R421	A- 4B	R490	A- 4A	R634	B- 4D	C26	B- 4C	C133	A- 2A	C266	B- 1D	C421	B- 4A	C489	B- 4A	C639	A- 4B	CN41	A- 1A	CP409	A- 3A	L221	B- 2C
IC13	A- 5A	Q301	A- 1A	D612	A- 4B	R77	B- 4B	R228	A- 3B	R422	A- 4B	R491	A- 4A	R635	A- 4D	C27	A- 5A	C134	A- 2A	C267	A- 1D	C422	B- 4A	C490	A- 4B	C640	A- 4B	CN42	A- 1A	CP410	A- 3A	L222	A- 2B
IC14	B- 2A	Q401	A- 4B	D613	A- 4B	R78	A- 5B	R229	B- 2B	R423	A- 4B	R492	A- 4A	R636	A- 4D	C28	B- 5B	C135	A- 2A	C268	A- 1D	C423	A- 5B	C491	B- 3A	C641	A- 4B	CN43	A- 1A	CP411	A- 2A	L223	A- 1C
IC15	A- 5A	Q402	B- 4A	D614	A- 4C	R79	A- 5B	R230	B- 2B	R424	A- 4B	R493	A- 4A	R637	A- 4D	C29	B- 4A	C136	A- 2A	C270	B- 2B	C424	B- 4A	C492	B- 4A	C642	A- 4B	CN44	A- 1A	CP412	A- 3A	L224	A- 1C
IC16	B- 3B	Q403	B- 3A	D615	B- 5B	R80	A- 5A	R231	B- 3B	R425	A- 4B	R494	A- 2B	R638	A- 4D	C30	B- 5C	C137	A- 2A	C271	B- 2B	C425	B- 4A	C493	A- 3B	C643	A- 4B	CN45	A- 1A	CP413	A- 3A	L225	B- 2B
IC17	B- 3B	Q404	B- 4A	D616	A- 4D	R81	B- 4B	R233	A- 3B	R426	A- 4B	R495	A- 2B	R639	A- 4D	C31	A- 5A	C138	A- 2A	C272	B- 2B	C426	A- 5B	C494	A- 3B	C644	A- 4B	CN46	A- 1A	CP414	A- 3A	L226	B- 1D
IC18	A- 5A	Q601	A- 4B	D617	B- 4D	R82	B- 4B	R235	B- 3B	R427	A- 4B	R496	A- 2B	R640	A- 4D	C32	A- 5C	C139	B- 1A	C274	A- 2B	C427	A- 5A	C495	A- 3B	C645	A- 4B	CN47	A- 1A	CP601	A- 5B	L302	A- 1B
IC19	A- 1A	Q602	A- 4D	D618	A- 4D	R83	B- 3C	R238	B- 3B	R428	A- 4B	R497	A- 2B	R641	A- 4D	C33	B- 3B	C140	B- 1A	C275	A- 2B	C428	B- 4A	C497	A- 2B	C646	A- 4B	CN48	B- 1A	CP602	A- 5B	L303	A- 1B
IC20	B- 3B	Q603	A- 4D	D619	B- 4A	R84	B- 3C	R239	B- 3C	R429	A- 4B	R498	A- 3B	R642	A- 4D	C34	A- 5C	C141	B- 1A	C277	A- 1C	C429	B- 4A	C498	B- 3A	C647	A- 4B	CN49	B- 1A	CP604	A- 4B	L304	A- 1A
IC21	B- 3A	Q604	B- 5A			R108	B- 1A	R240	B- 3C	R431	A- 3B	R499	B- 3A	R643	B- 5D	C35	B- 3B	C142	B- 1A	C278	A- 1D	C430	A- 5A	C501	B- 4A	C648	A- 4B	CN50	A- 2A	CP605	A- 4B	L305	A- 1A
IC22	A- 4A	Q605	B- 5B	**RESISTOR**		R109	B- 1A	R241	B- 2B	R432	A- 3B	R500	A- 3B	R644	B- 5B	C36	A- 4C	C143	B- 1A	C279	B- 1C	C431	B- 4A	C502	A- 3B	C649	A- 4B	CN51	A- 3B			L306	A- 1A
IC23	B- 2A	Q606	B- 4A	R2	B- 4B	R112	B- 2B	R242	B- 3C	R433	A- 3B	R501	B- 4A	R645	B- 5A	C37	B- 3B	C145	B- 1A	C280	B- 1D	C432	A- 5A	C503	B- 3A	C650	A- 4B	CN52	A- 3A	E11	A- 5C	L307	A- 1A
IC24	B- 3B			R5	A- 1D	R113	B- 1B	R243	B- 3C	R434	A- 4B	R502	B- 4A	R646	B- 5B	C38	B- 3B	C146	B- 1A	C304	A- 1A	C433	A- 4B	C504	A- 3B	C651	B- 4B	CN53	A- 3B	E101	B- 1A	L308	A- 1B
IC25	A- 5C	**DIODE**		R21	A- 5A	R114	B- 2B	R244	B- 2B	R435	A- 4A	R503	B- 3A	R647	B- 5B	C39	B- 2A	C147	B- 1A	C305	A- 1A	C434	B- 4B	C505	B- 3A	C652	A- 4B	CN54	A- 3A			L309	A- 1B
IC26	B- 3B	D1	B- 5C	R22	A- 5A	R115	B- 2B	R245	B- 2B	R436	A- 3B	R504	A- 3B	R648	B- 5A	C40	B- 3B	C148	B- 1A	C306	A- 1A	C435	A- 5B	C506	B- 3A	C653	A- 4B	CN55	B- 3B	F1	B- 5C	L310	A- 1B
IC101	B- 2B	D13	A- 5A	R23	A- 5A	R116	A- 1A	R247	B- 2B	R437	A- 3B	R505	B- 3A	R649	B- 5B	C41	B- 2A	C207	A- 1C	C307	A- 1B	C436	A- 4B	C507	B- 3A	C655	A- 4B	CN56	A- 4B	F2	B- 5B	L311	A- 1B
IC202	A- 2C	D14	A- 3B	R24	A- 5A	R117	B- 2B	R248	B- 2B	R438	B- 4A	R506	A- 3A	R650	B- 4D	C42	A- 4C	C208	A- 1C	C308	A- 1B	C437	B- 4B	C509	B- 3A	C656	A- 4B	CN57	B- 4A	F3	B- 4D	L312	A- 1A
IC203	B- 2B	D15	A- 4C	R25	A- 5A	R118	B- 1A	R250	B- 2B	R439	B- 4A	R507	A- 3A	R651	B- 5D	C43	B- 3B	C209	A- 1D	C309	A- 1B	C438	A- 4B	C510	A- 3B	C657	B- 4B	CN58	B- 4A	F4	B- 4B	L313	A- 1A
IC205	B- 2B	D16	A- 5C	R26	A- 5A	R119	B- 1B	R251	B- 2B	R440	B- 4A	R508	A- 3A	R652	B- 5B	C44	B- 3B	C211	B- 3B	C310	A- 1A	C439	B- 4A	C511	B- 4A	C658	B- 4B	CN59	B- 4A	F5	B- 4C	L314	A- 1A
IC301	A- 1A	D17	B- 2A	R27	B- 4B	R120	B- 1A	R256	A- 2B	R441	B- 4A	R509	A- 2A	R653	B- 5B	C45	A- 5C	C212	B- 3B	C311	A- 1B	C440	B- 4B	C514	B- 3A	C659	A- 4B	CN60	B- 4A	F6	B- 4D	L315	A- 1B
IC302	A- 1A	D18	A- 5A	R28	A- 5A	R121	B- 2B	R259	B- 2B	R442	A- 4B	R511	B- 3A	R654	B- 5A	C46	B- 2A	C213	B- 2B	C312	A- 1A	C441	B- 4A	C515	A- 3A	C660	A- 4D	CN61	B- 4B			L317	A- 1B
IC401	A- 3B	D19	A- 5A	R29	B- 4B	R122	B- 2B	R260	B- 2B	R443	A- 4B	R512	A- 3B	R655	B- 5B	C47	A- 4C	C214	B- 2B	C313	A- 1A	C442	B- 4B	C516	A- 3A	C661	B- 4B	CN62	A- 4B	J1	A- 4D	L401	A- 3A
IC402	A- 4A	D20	B- 4B	R30	A- 5A	R123	B- 1A	R261	A- 2B	R444	B- 4B	R513	A- 3B	R656	A- 4D	C48	A- 5C	C216	A- 2B	C314	A- 1A	C443	B- 4A	C517	A- 2A	C663	A- 4C	CN63	A- 4B	J2	A- 5D	L402	A- 4B
IC403	A- 3B	D21	A- 5A	R31	A- 5A	R124	B- 1A	R262	A- 2C	R445	A- 4A	R514	A- 3B	R657	A- 4D	C49	B- 3A	C218	A- 2C	C315	A- 1A	C444	B- 4A	C518	A- 2A	C664	A- 4D	CN64	A- 4A			L403	A- 5B
IC404	A- 4A	D22	A- 5A	R32	A- 5A	R125	B- 2B	R265	B- 2B	R446	A- 4A	R516	B- 3A	R658	B- 4B	C50	B- 3B	C219	A- 2C	C316	A- 1A	C445	A- 4B	C519	B- 4A	C665	A- 4D	CN65	A- 4A	L1	A- 1D	L404	A- 4B
IC405	B- 4A	D24	A- 5A	R33	A- 4A	R127	B- 2B	R266	B- 2B	R447	A- 4B	R517	A- 3B	R659	B- 4D	C51	B- 3B	C220	A- 2C	C317	A- 1A	C446	B- 4B	C520	B- 4A			CN66	A- 4A	L2	A- 1D	L405	B- 4A
IC406	B- 4A	D26	A- 5A	R34	A- 4A	R128	B- 2B	R267	A- 2B	R448	A- 4B	R518	A- 3A	R660	A- 4B	C52	B- 3A	C221	A- 2C	C318	A- 1B	C447	A- 4B	C521	B- 4A	**OTHER**		CN67	B- 3B	L3	A- 1D	L406	B- 4B
IC407	B- 3A	D27	A- 5A	R35	B- 3B	R131	A- 2A	R269	A- 1B	R449	A- 4A	R519	B- 3A	R661	A- 4B	C53	A- 5C	C222	A- 2C	C319	A- 1B	C448	B- 4B	C522	B- 4A	X401	A- 4B	CN68	B- 3B	L4	A- 1C	L407	B- 4B
IC408	B- 3A	D101	B- 2B	R36	B- 3B	R132	B- 2A	R270	A- 1C	R450	A- 4B	R520	B- 3A	R662	A- 4B	C54	A- 5C	C223	A- 2C	C320	A- 1B	C449	B- 4A	C523	B- 4A	X402	A- 3B	CN69	A- 4A	L5	A- 1B	L408	B- 4B
IC409	A- 3B	D102	A- 2A	R37	A- 3B	R133	B- 2A	R271	B- 2B	R451	A- 4A	R522	B- 4A	R663	A- 4B	C55	B- 3B	C224	A- 2C	C321	A- 1A	C450	A- 4B	C524	A- 3B			CN70	A- 4B	L6	A- 1B	L409	B- 4B
IC410	A- 3B	D103	A- 2B	R38	B- 3B	R134	B- 2A	R272	A- 1C	R452	A- 4A	R523	B- 4A	R664	A- 4B	C56	B- 4B	C225	A- 2C	C322	A- 1A	C451	B- 4B	C525	A- 3B	TH201	A- 1B	CN71	A- 3A	L7	A- 2A	L410	B- 4B
IC411	A- 3A	D104	A- 2B	R39	B- 3B	R135	B- 2A	R273	B- 2B	R453	A- 4A	R524	B- 4A	R665	A- 4B	C57	B- 3B	C226	A- 2B	C323	A- 1A	C452	B- 4B	C526	B- 3B	TH202	A- 1D	CN72	A- 3B	L11	B- 3A	L411	B- 4B
IC412	A- 2A	D105	A- 2B	R40	B- 3B	R136	A- 2A	R274	B- 2B	R454	A- 4A	R525	A- 3B	R666	B- 4B	C58	B- 3A	C227	A- 2B	C324	A- 1A	C453	B- 4B	C527	B- 3B	TH203	A- 2B	CN74	B- 4A	L12	A- 5C	L412	B- 4B
IC413	B- 4A	D106	A- 2B	R41	A- 5C	R137	A- 2A	R275	B- 2B	R455	A- 4A	R526	A- 3A	R667	B- 4B	C59	B- 3A	C228	A- 2C	C325	A- 1A	C454	A- 4B	C528	B- 3B	TH401	A- 4B	CN75	B- 4A	L13	A- 5C	L413	A- 3B
IC414	B- 3B	D107	B- 2A	R42	B- 2A	R138	A- 2A	R276	B- 1B	R456	A- 4A	R527	B- 4A	R668	A- 4B	C60	B- 2A	C229	A- 3C	C326	A- 1A	C455	B- 4A	C605	B- 5B			CN76	B- 3A	L14	B- 2B	L414	A- 3B
IC602	B- 5B	D108	A- 2A	R43	A- 5C	R139	A- 2A	R277	B- 1B	R457	A- 4A	R528	B- 4B	R669	A- 4B	C61	B- 2A	C230	A- 3C	C327	A- 1A	C456	B- 4B	C606	B- 4B	CN1	B- 3A	CN77	B- 3A	L15	A- 5C	L415	A- 3A
IC603	B- 4B	D201	B- 3B	R44	A- 4C	R140	A- 2A	R278	A- 2C	R458	A- 4A	R529	B- 3B	R670	A- 5B	C62	B- 2A	C231	A- 3B	C328	A- 1A	C457	B- 4A	C607	A- 5B	CN2	B- 5A	CN78	B- 3A	L16	B- 3B	L416	A- 3A
IC604	A- 5B	D202	A- 2B	R45	A- 5C	R141	A- 2A	R279	B- 2B	R459	A- 4A	R530	B- 3B	R671	B- 4B	C63	B- 2A	C232	B- 3C	C329	A- 1A	C458	B- 4A	C608	A- 4C	CN3	B- 5A	CN79	B- 2A	L17	B- 3B	L417	B- 4A
IC605	A- 5C	D204	A- 1C	R46	A- 5C	R142	A- 2A	R280	B- 3B	R460	A- 4A	R531	B- 3B	R672	B- 4B	C64	B- 4C	C233	A- 3C	C330	A- 1A	C459	B- 4B	C609	A- 5D	CN11	B- 4A	CN80	B- 3A	L18	A- 1A	L418	B- 4A
IC606	A- 4D	D205	A- 1C	R47	A- 4C	R143	A- 2A	R282	A- 2B	R461	A- 4A	R532	B- 4B	R673	A- 4B	C65	B- 4C	C234	A- 3B	C331	A- 1A	C460	B- 4A	C610	A- 5C	CN12	B- 4A	CN81	B- 3B	L19	B- 3B	L419	A- 3A
IC607	A- 4B	D206	A- 1C	R48	B- 3B	R144	B- 1A	R302	A- 1A	R462	B- 3B	R533	B- 3B	R674	A- 4B	C66	B- 4C	C235	B- 2B	C332	A- 1A	C461	B- 4B	C611	A- 5C	CN13	B- 4A	CN82	B- 3B	L107	B- 2A	L420	A- 4B
IC608	B- 4B	D207	A- 1B	R49	A- 4C	R145	B- 1A	R303	A- 1A	R463	A- 4A	R534	B- 3B	R675	A- 4B	C67	B- 1B	C236	B- 2B	C333	A- 1B	C462	A- 4B	C612	A- 5C	CN14	B- 5A	CN83	A- 3A	L108	A- 2A	L601	A- 4B
IC609	A- 4D	D208	A- 1B	R50	A- 4C	R146	B- 2A	R304	A- 1A	R464	A- 4A	R535	A- 3B	R676	A- 4B	C68	B- 3C	C237	B- 1B	C334	A- 1B	C463	B- 4A	C613	A- 4D	CN15	B- 5A	CN85	A- 3A	L109	A- 2B	L602	A- 4B
		D209	A- 1B	R51	B- 3B	R147	B- 2A	R305	A- 1B	R465	A- 4A	R536	A- 4B	R677	A- 4B	C69	B- 3B	C238	A- 3C	C335	A- 1A	C464	B- 4B	C614	A- 4D	CN16	B- 5A	CN86	B- 4A	L110	A- 2B	L603	A- 4D
TRANSISTOR		D301	A- 1A	R52	B- 3B	R148	B- 1A	R307	A- 1A	R466	A- 4A	R537	A- 4B	R678	A- 5B	C72	A- 1A	C239	B- 2B	C336	A- 1A	C465	B- 4A	C615	A- 4D	CN17	B- 4A	CN87	B- 4B	L111	A- 2B		
Q11	B- 4B	D302	A- 1A	R53	B- 3A	R149	B- 1A	R308	A- 1B	R467	A- 4A	R538	A- 3B	R679	A- 5B	C73	A- 1A	C241	B- 3C	C337	A- 1B	C466	B- 4B	C616	A- 4D	CN18	A- 5B	CN88	B- 4D	L112	A- 2B		
Q12	B- 5B	D303	A- 1B	R54	B- 3B	R203	B- 2B	R309	A- 1A	R468	A- 4A	R539	B- 3A	R680	A- 5B	C74	A- 5A	C242	B- 2C	C338	A- 1A	C467	B- 4A	C617	A- 4D	CN19	B- 5C	CN89	B- 3B	L113	A- 2B		
Q13	B- 4B	D304	A- 1B	R55	B- 3A	R204	B- 3B	R310	A- 1A	R469	A- 4A	R613	B- 4D	R681	B- 4A	C75	A- 5A	C243	B- 2C	C339	A- 1A	C468	B- 4B	C618	A- 4D	CN20	B- 4D	CN90	B- 5B	L115	A- 2A		
Q14	A- 5A	D401	A- 3B	R56	A- 5C	R205	A- 2C	R311	A- 1A	R470	A- 4A	R614	A- 4D			C76	A- 5A	C244	B- 2C	C340	A- 1A	C469	B- 4A	C619	A- 4D	CN21	B- 4A	CN91	B- 4B	L116	A- 2A		
Q15	A- 5A	D402	B- 4A	R57	B- 3A	R206	A- 2C	R312	A- 1A	R471	A- 4A	R615	B- 5B	**CAPACITOR**		C108	B- 2B	C245	B- 2C	C341	A- 1A	C470	B- 4A	C620	A- 4D	CN22	B- 2B	CN92	B- 2B	L117	A- 2A		
Q16	A- 5A	D403	B- 4A	R58	A- 5C	R207	A- 1B	R313	A- 1B	R472	A- 4A	R616	A- 4D	C1	B- 5D	C109	B- 2B	C247	B- 2C	C342	A- 1A	C471	B- 4A	C621	A- 4D	CN23	B- 2B	CN93	B- 3C	L118	A- 2A		
Q17	A- 4C	D404	B- 3A	R59	A- 5C	R208	A- 1B	R314	A- 1B	R473	A- 4B	R617	A- 4D	C2	B- 5D	C110	B- 2B	C249	B- 2C	C343	A- 1A	C472	B- 4B	C622	A- 4D	CN24	B- 2A	CN94	A- 4A	L119	B- 2A		
Q18	A- 4C	D405	B- 3A	R60	A- 5C	R211	B- 3B	R315	A- 1B	R474	A- 4B	R618	B- 4B	C3	B- 5D	C111	B- 2B	C250	A- 2C	C344	A- 1A	C473	B- 4B	C623	A- 4D	CN25	B- 1B	CN95	B- 4D	L121	B- 1A		
Q19	B- 3B	D406	B- 3A	R61	A- 5C	R212	B- 3B	R316	A- 1A	R475	A- 4B	R619	A- 5B	C4	B- 5A	C112	B- 2B	C251	A- 2B	C345	A- 1A	C474	B- 4B	C624	A- 4D	CN26	B- 2C	CN96	B- 4D	L123	B- 1A		
Q20	B- 3B	D407	B- 4A	R62	B- 4B	R213	B- 2B	R317	A- 1A	R476	A- 4B	R620	A- 4B	C5	B- 3C	C113	A- 1A	C252	A- 2B	C346	A- 1A	C475	B- 4B	C625	A- 4D	CN27	B- 2C	CN97	B- 4D	L124	B- 1A		
Q21	B- 2B	D408	A- 4A	R63	A- 5C	R214	A- 2B	R319	A- 1A	R477	A- 4B	R621	A- 4B	C11	A- 5A	C114	B- 1A	C253	A- 2C	C347	A- 1A	C476	A- 3A	C626	B- 5B	CN28	B- 3B	CN98	A- 4B	L207	B- 3B		
Q22	B- 1B	D409	B- 4A	R64	B- 3A	R215	A- 2B	R320	A- 1A	R478	A- 4A	R622	B- 5B	C12	B- 4A	C115	B- 2A	C254	A- 1C	C348	A- 1A	C477	A- 3B	C627	B- 5A	CN29	B- 3B			L208	B- 2B		
Q23	B- 3C	D410	B- 3A	R65	B- 3B	R216	A- 2B	R321	A- 1A	R479	A- 4B	R623	B- 4C	C14	A- 5A	C116	B- 2B	C255	A- 1C	C405	A- 2A	C478	A- 3B	C628	B- 5B	CN30	B- 2B	CP301	A- 1A	L209	A- 2C		
Q25	B- 4B	D601	A- 4D	R66	B- 2A	R217	A- 2C	R322	A- 1A	R480	A- 4A	R624	A- 4D	C15	A- 5A	C120	A- 2A	C256	A- 1B	C410	B- 5A	C479	A- 3B	C629	B- 5B	CN31	B- 2B	CP302	A- 1A	L210	A- 2C		
Q103	B- 2B	D602	B- 4B	R67	B- 2A	R218	A- 2C	R323	A- 1A	R481	A- 4B	R625	B- 4D	C16	A- 5A	C123	A- 2B	C257	A- 1B	C411	B- 5A	C480	A- 3B	C630	B- 5D	CN32	B- 2B	CP303	A- 1A	L211	A- 2B		
Q104	B- 2A	D603	A- 4C	R68	B- 2A	R219	A- 2C	R324	A- 1A	R482	A- 4A	R626	A- 4D	C17	A- 5A	C124	A- 2B	C258	A- 1C	C412	B- 5A	C481	A- 4B	C631	B- 5B	CN33	B- 1A	CP401	A- 3B	L212	A- 2B		
Q105	A- 2A	D604	A- 4C	R69	B- 4C	R220	A- 2C	R325	A- 1A	R483	B- 4A	R627	B- 4D	C18	A- 5A	C125	B- 2A	C259	A- 1C	C414	A- 3A	C482	A- 4B	C632	B- 5B	CN34	A- 1A	CP402	A- 4A	L213	A- 3C		
Q106	A- 2A	D605	A- 4D	R70	B- 4C	R221	A- 2C	R326	A- 1A	R484	A- 4B	R628	B- 4D	C19	A- 5A	C127	A- 2B	C260	B- 2C	C415	A- 3A	C483	A- 4B	C633	B- 5A	CN35	A- 1A	CP403	B- 5A	L214	A- 3B		
Q107	B- 1A	D606	A- 4D	R71	B- 3B	R222	A- 2B	R407	B- 3A	R485	B- 4A	R629	A- 4D	C20	B- 4B	C128	A- 2B	C261	A- 1B	C416	A- 3A	C484	B- 4A	C634	B- 5B	CN36	A- 1A	CP404	B- 5A	L215	A- 3C		
Q201	A- 3C	D607	A- 4C	R72	B- 3C	R223	A- 2B	R408	B- 3A	R486	B- 4A	R630	B- 4C	C21	B- 5B	C129	A- 2A	C262	A- 1C	C417	A- 5B	C485	B- 4A	C635	A- 4D	CN37	A- 1A	CP405	B- 4A	L217	B- 1B		
Q202	B- 3B	D608	A- 4C	R73	B- 1B	R224	A- 2B	R416	A- 3A	R487	A- 4B	R631	B- 4C	C22	B- 4C	C130	B- 2A	C263	B- 2B	C418	A- 4B	C486	B- 4A	C636	A- 4B	CN38	A- 1A	CP406	A- 3B	L218	B- 3C		

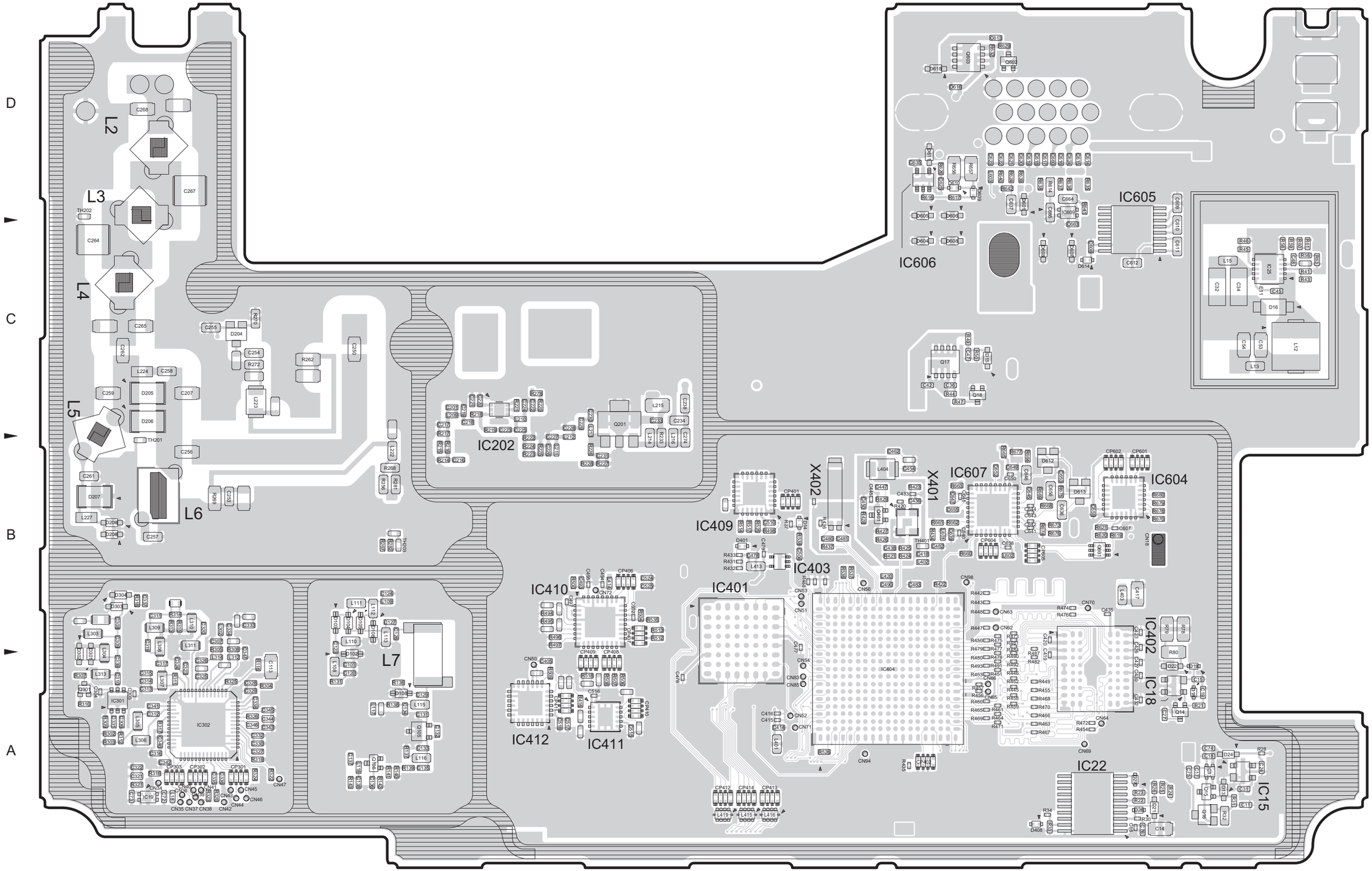
■ TX-RX UNIT (XC1-183K-00 (NX-3820H(G), NX-3820H, NX-3820(G), NX-3820))

--- Component side view (J7C-0193-00) ---



■ TX-RX UNIT (XC1-183K-00 (NX-3820H(G), NX-3820H, NX-3820(G), NX-3820))

--- Foil side view (J7C-0193-00) ---



● ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.

A-1C
Side — | | — Y axis
X axis

REF.NO.	LOCATION
IC	
IC1	B- 4C
IC12	B- 3A
IC13	A- 5A
IC14	B- 2A
IC15	A- 5A
IC16	B- 3B
IC17	B- 3B
IC18	A- 5A
IC19	A- 1A
IC20	B- 3B
IC21	B- 3A
IC22	A- 4A
IC23	B- 2A
IC24	B- 3B
IC25	A- 5C
IC26	B- 3B
IC101	B- 2B
IC202	A- 2C
IC203	B- 2B
IC205	B- 2B
IC301	A- 1A
IC302	A- 1A
IC401	A- 3B
IC402	A- 4A
IC403	A- 3B
IC404	A- 4A
IC405	B- 4A
IC406	B- 4A
IC407	B- 3A
IC408	B- 3A
IC409	A- 3B
IC410	A- 3B
IC411	A- 3A
IC412	A- 2A
IC413	B- 4A
IC414	B- 3B
IC602	B- 5B
IC603	B- 4B
IC604	A- 5B
IC605	A- 5C
IC606	A- 4D
IC607	A- 4B
IC608	B- 4B
IC609	A- 4D
TRANSISTOR	
Q11	B- 4B
Q12	B- 5B
Q13	B- 4B
Q14	A- 5A
Q15	A- 5A
Q16	A- 5A
Q17	A- 4C
Q18	A- 4C
Q19	B- 3B
Q20	B- 3B
Q21	B- 2B
Q22	B- 1B
Q23	B- 3C
Q25	B- 4B
Q101	B- 1A
Q102	B- 2A
Q103	B- 2B
Q104	B- 2A
Q105	A- 2A
Q106	A- 2A
Q201	A- 3C
Q202	B- 3B

REF.NO.	LOCATION
Q204	B- 2B
Q205	B- 2B
Q206	B- 3B
Q301	A- 1A
Q401	A- 4B
Q402	B- 4A
Q403	B- 3A
Q404	B- 4A
Q601	A- 4B
Q602	A- 4D
Q603	A- 4D
Q604	B- 5A
Q605	B- 5B
Q606	B- 4A
DIODE	
D1	B- 5C
D13	A- 5A
D14	A- 3B
D15	A- 4C
D16	A- 5C
D17	B- 2A
D18	A- 5A
D19	A- 5A
D20	B- 4B
D21	A- 5A
D22	A- 5A
D24	A- 5A
D26	A- 5A
D27	A- 5A
D101	B- 2B
D102	A- 2A
D103	A- 2B
D104	A- 2B
D105	A- 2B
D106	A- 2B
D107	B- 2A
D108	A- 2A
D201	B- 3B
D202	B- 2B
D204	A- 1C
D205	A- 1C
D206	A- 1C
D207	A- 1B
D208	A- 1B
D209	A- 1B
D301	A- 1A
D302	A- 1A
D303	A- 1B
D304	A- 1B
D401	A- 3B
D402	B- 4A
D403	B- 4A
D404	B- 3A
D405	B- 3A
D406	B- 3A
D407	B- 4A
D408	A- 4A
D409	B- 4A
D410	B- 3A
D601	A- 4D
D602	B- 4B
D603	A- 4C
D604	A- 4C
D605	A- 4D
D606	A- 4D
D607	A- 4C
D608	A- 4C
D609	A- 4D

REF.NO.	LOCATION
D610	A- 4D
D611	A- 4D
D612	A- 4B
D613	A- 4B
D614	A- 4C
D615	B- 5B
D616	A- 4D
D617	B- 4D
D618	A- 4D
D619	B- 4A
RESISTOR	
R2	B- 4B
R3	B- 4B
R4	B- 4B
R5	A- 1D
R21	A- 5A
R22	A- 5A
R23	A- 5A
R24	A- 5A
R25	A- 5A
R26	A- 5A
R27	B- 4B
R28	A- 5A
R29	B- 4B
R30	A- 5A
R31	A- 5A
R32	A- 5A
R33	A- 4A
R34	A- 4A
R35	B- 3B
R36	B- 3B
R37	A- 3B
R38	B- 3B
R39	B- 3B
R40	B- 3B
R41	A- 5C
R42	B- 2A
R43	A- 5C
R44	A- 4C
R45	A- 5C
R46	A- 5C
R47	A- 4C
R48	B- 3B
R49	A- 4C
R50	A- 4C
R51	B- 3B
R52	B- 3B
R53	B- 3A
R54	B- 3B
R55	B- 3A
R56	A- 5C
R57	B- 3A
R58	A- 5C
R59	A- 5C
R60	A- 5C
R61	A- 5C
R62	B- 4B
R63	A- 5C
R64	B- 3A
R65	B- 3B
R66	B- 2A
R67	B- 2A
R68	B- 2A
R69	B- 4C
R70	B- 4C
R71	B- 3B
R72	B- 3C
R73	B- 1B

REF.NO.	LOCATION
R74	B- 1B
R75	B- 4A
R76	B- 4A
R77	B- 4B
R78	A- 5B
R79	A- 5B
R80	A- 5A
R81	B- 4B
R82	B- 4B
R83	B- 3C
R84	B- 3C
R103	B- 1A
R104	B- 1A
R105	B- 1A
R106	B- 1A
R108	B- 1A
R109	B- 1A
R110	B- 1A
R111	B- 1A
R112	B- 2B
R113	B- 1B
R114	B- 2B
R115	B- 2B
R116	A- 1A
R117	B- 2B
R118	B- 1A
R119	B- 1B
R120	B- 1A
R121	B- 2B
R122	B- 2B
R123	B- 1A
R124	B- 1A
R125	B- 2B
R126	B- 2A
R127	B- 2B
R128	B- 2B
R129	B- 2A
R130	B- 1A
R131	A- 2A
R132	B- 2A
R133	B- 2A
R134	B- 2A
R135	B- 2A
R136	A- 2A
R140	A- 2A
R141	A- 2A
R142	A- 2A
R143	A- 2A
R145	B- 1A
R146	B- 2A
R147	B- 1A
R203	B- 2B
R204	B- 3B
R211	B- 3B
R212	B- 3B
R213	B- 2B
R214	A- 2B
R215	A- 2B
R216	A- 2B
R217	A- 2C
R218	A- 2C
R219	A- 2C
R220	A- 2C
R221	A- 2C
R222	A- 2B
R223	A- 2B

REF.NO.	LOCATION
R224	A- 2B
R225	A- 2B
R226	A- 3B
R227	A- 3B
R228	A- 3B
R229	B- 2B
R230	B- 2B
R231	B- 3B
R232	A- 3B
R233	A- 3B
R235	B- 3B
R238	B- 3B
R239	B- 3C
R240	B- 3C
R241	B- 2B
R242	B- 3C
R243	B- 3C
R244	B- 2B
R245	B- 2B
R247	B- 2B
R248	B- 2B
R250	B- 2B
R251	B- 2B
R256	A- 2B
R258	B- 2B
R259	B- 2B
R260	B- 2B
R262	A- 2C
R265	B- 2B
R266	B- 2B
R267	A- 2B
R268	A- 2B
R269	A- 1B
R270	A- 1C
R271	B- 2B
R272	A- 1C
R273	B- 2B
R274	B- 2B
R275	B- 2B
R276	B- 1B
R277	B- 1B
R278	A- 2C
R280	B- 3B
R281	A- 2B
R282	A- 2B
R302	A- 1A
R303	A- 1A
R304	A- 1A
R305	A- 1B
R307	A- 1A
R308	A- 1B
R309	A- 1A
R310	A- 1A
R311	A- 1A
R312	A- 1A
R313	A- 1B
R314	A- 1B
R315	A- 1B
R316	A- 1A
R317	A- 1A
R318	A- 1B
R319	A- 1A
R320	A- 1A
R321	A- 1A
R322	A- 1A
R323	A- 1A
R324	A- 1A
R325	A- 1A
R326	A- 1A

REF.NO.	LOCATION
R407	B- 3A
R408	B- 3A
R416	A- 3A
R418	B- 5A
R420	A- 4B
R421	A- 4B
R422	A- 4B
R423	A- 4B
R424	A- 4B
R425	A- 4B
R426	A- 4B
R427	A- 4B
R428	A- 4B
R429	A- 4B
R431	A- 3B
R432	A- 3B
R433	A- 3B
R434	A- 4B
R435	A- 4A
R436	A- 3B
R437	A- 3B
R438	B- 4A
R439	B- 4A
R440	B- 4A
R441	B- 4A
R442	A- 4B
R443	A- 4B
R444	B- 4B
R445	A- 4A
R446	A- 4A
R447	A- 4B
R448	A- 4B
R449	A- 4A
R450	A- 4B
R451	A- 4A
R452	A- 4A
R453	A- 4A
R454	A- 4A
R455	A- 4A
R456	A- 4A
R457	A- 4A
R458	A- 4A
R459	A- 4A
R460	A- 4A
R461	A- 4A
R462	B- 3B
R463	A- 4A
R464	A- 4A
R465	A- 4A
R466	A- 4A
R467	A- 4A
R468	A- 4A
R469	A- 4A
R470	A- 4A
R471	A- 4A
R472	A- 4A
R473	A- 4B
R474	A- 4B
R475	A- 4B
R476	A- 4B
R477	A- 4B
R478	A- 4A
R479	A- 4B
R480	A- 4A
R481	A- 4B
R482	A- 4A
R483	B- 4A
R484	A- 4B
R485	B- 4A

REF.NO.	LOCATION
R486	B- 4A
R487	A- 4B
R488	A- 3B
R489	B- 5A
R490	A- 4A
R491	A- 4A
R636	A- 4D
R635	A- 4D
R637	A- 4D
R638	A- 4D
R639	A- 4D
R640	A- 4D
R641	A- 4D
R642	A- 4D
R643	B- 5D
R644	B- 5B
R645	B- 5A
R646	B- 5B
R647	B- 5B
R648	B- 5A
R649	B- 5B
R650	B- 4D
R651	B- 5D
R652	B- 5B
R653	B- 5B
R654	B- 5A
R655	B- 5B
R656	A- 4D
R657	A- 4D
R658	B- 4B
R659	B- 4D
R660	A- 4B
R661	A- 4B
R662	A- 4B
R663	A- 4B
R664	A- 4B
R665	A- 4B
R666	B- 4B
R667	B- 4B
R668	A- 4B
R669	A- 4B
R670	A- 5B
R671	B- 4B
R672	B- 4B
R673	A- 4B
R674	A- 4B
R675	A- 4B
R676	A- 4B
R677	A- 4B
R678	A- 5B
R679	A- 5B
R680	A- 5B
R681	B- 4A
CAPACITOR	
C1	B- 5D
C2	B- 5D
C3	B- 5D
C4	B- 5A
C5	B- 3C
C11	A- 5A
C12	B- 4A
C14	A- 5A
C15	A- 5A
C16	A- 5A
C17	A- 5A
C18	A- 5A
C19	A- 5A
C20	B- 4B
C21	B- 5B
C22	B- 4C

REF.NO.	LOCATION
C24	A- 5A
C25	B- 4B
C26	B- 4C
C27	A- 5A
C28	B- 5B
C29	B- 4A
C30	B- 5C
C31	A- 5A
C32	A- 5C
C33	B- 3B
C34	A- 5C
C35	B- 3B
C36	A- 4C
C37	B- 3B
C38	B- 3B
C39	B- 2A
C40	B- 3B
C41	B- 2A
C42	A- 4C
C43	B- 3B
C44	B- 3B
C45	A- 5C
C46	B- 2A
C47	A- 4C
C48	A- 5C
C49	B- 3A
C50	B- 3B
C52	A- 3B
C53	A- 5C
C54	B- 4B
C55	B- 3B
C56	B- 4B
C57	B- 3B
C58	B- 3A
C59	B- 3A
C60	B- 2A
C61	B- 2A
C62	B- 2A
C63	B- 2A
C64	B- 4C
C65	B- 4C
C66	B- 4C
C68	B- 3C
C69	B- 3B
C72	A- 1A
C73	A- 1A
C74	A- 5A
C75	A- 5A
C76	A- 5A
C101	A- 2A
C102	B- 1A
C103	B- 1A
C104	B- 1A
C105	B- 1A
C108	B- 2B
C109	B- 2B
C110	B- 2B
C111	B- 2B
C112	B- 2B
C113	A- 1A
C114	B- 1A
C115	B- 2A
C116	B- 2B
C117	B- 2A
C119	B- 1A
C120	A- 2A
C121	B- 2A

REF.NO.	LOCATION
C122	B- 1A
C123	A- 2B
C124	A- 2B
C125	B- 2A
C126	B- 1A
C127	A- 2B
C128	A- 2B
C129	A- 2A
C130	B- 2A
C131	A- 2A
C132	A- 2A
C133	A- 2A
C134	A- 2A
C135	A- 2A
C136	A- 2A
C137	A- 2A
C138	A- 2A
C139	B- 1A
C140	B- 1A
C141	B- 1A
C142	B- 1A
C143	B- 1A
C144	B- 1A
C145	B- 1A
C146	B- 1A
C147	B- 1A
C148	B- 1A
C201	A- 2C
C207	A- 1C
C211	B- 3B
C212	B- 3B
C213	B- 2B
C214	B- 2B
C216	A- 2B
C217	A- 2C
C218	A- 2C
C219	A- 2C
C220	A- 2C
C221	A- 2C
C222	A- 2C
C223	A- 2C
C224	A- 2C
C225	A- 2C
C226	A- 2B
C227	A- 2B
C228	A- 2C
C229	A- 3C
C230	A- 3C
C231	A- 3B
C232	B- 3C
C233	A- 3C
C234	A- 3C
C235	B- 2B
C236	B- 2B
C237	B- 1B
C238	A- 3C
C239	B- 2B
C241	B- 3C
C242	B- 2C
C243	B- 2C
C244	B- 2C
C245	B- 2C
C247	B- 2C
C249	B- 2C
C250	A- 2C
C251	B- 2B
C252	B- 2B
C253	A- 1B
C254	A- 1C

REF.NO.	LOCATION
C255	A- 1C
C256	A- 1B
C257	A- 1B
C258	A- 1C
C259	A- 1C
C260	B- 2C
C261	A- 1B
C262	A- 1C
C263	B- 2B
C264	A- 1C
C265	A- 1C
C266	B- 1C
C267	A- 1D
C268	A- 1D
C270	B- 2B
C271	B- 2B
C272	B- 2B
C274	A- 3B
C278	A- 4B
C279	A- 3B
C280	B- 5D
C281	A- 4B
C282	B- 5B
C283	A- 4B
C284	B- 4A
C285	A- 3A
C286	A- 4B
C301	A- 1A
C302	A- 1A
C303	A- 1A
C401	A- 3B
C402	A- 4A
C403	B- 5A
C404	B- 5A
C405	B- 4A
C406	A- 3B
C407	A- 3B
C408	A- 3A
C409	A- 3A
C410	A- 5C
C411	B- 5A
C412	B- 5A
C414	A- 3A
C415	A- 3A
C416	A- 3A
C417	A- 5B

REF.NO.	LOCATION
C418	A- 4B
C419	A- 4A
C420	A- 4B
C421	B- 4A
C422	B- 4A
C423	A- 5B
C424	B- 4A
C425	B- 4A
C426	A- 5B
C427	A- 5A
C428	B- 4A
C429	B- 4A
C430	A- 5A
C431	B- 4A
C432	A- 5A
C433	A- 4B
C434	B- 4B
C435	A- 5B
C436	A- 4B
C437	B- 4B
C438	A- 4B
C439	B- 4A
C440	B- 4B
C441	B- 4A
C442	B- 4B
C443	B- 4A
C444	B- 4A
C445	A- 4B
C446	B- 4B
C447	A- 4B
C448	B- 4B
C449	B- 4A
C450	A- 4B
C451	B- 4B
C452	B- 4B
C453	B- 4B
C454	A- 4B
C455	B- 4A
C456	B- 4B
C457	B- 4A
C458	B- 4A
C459	B- 4B
C460	B- 4A
C461	B- 4B
C462	A- 4B
C463	B- 4A
C464	B- 4B
C465	B- 4A
C466	B- 4B
C467	B- 4A
C468	B- 4B
C469	B- 4A
C470	B- 4A
C471	B- 4A
C472	B- 4B
C473	B- 4B
C474	B- 4B
C475	B- 4B
C476	A- 3A
C477	A- 3B
C478	A- 3B
C479	A- 3B
C480	A- 3B
C481	A- 4B
C482	A- 4B
C483	A- 4B
C484	B- 4A
C485	B- 4A
C486	B- 4A

REF.NO.	LOCATION
C487	B- 4A
C488	B- 4A
C489	B- 4A
C490	A- 4B
C491	B- 3A
C492	B- 4A
C493	A- 3B
C494	A- 3B
C495	A- 3B
C496	A- 2B
C497	A- 2B
C498	B- 3A
C500	B- 3A
C501	B- 4A
C502	A- 3B
C503	B- 3A
C504	A- 3B
C505	B- 3A
C506	B- 3A
C507	B- 3A
C509	B- 3A
C510	A- 3B
C511	B- 4A
C512	B- 4A
C514	B- 3A
C515	A- 3A
C516	A- 3A
C517	A- 2A
C518	A- 2A
C519	B- 4A
C520	B- 4A
X401	A- 4B
X402	A- 3B
TH201	A- 1B
TH202	A- 1D
TH203	A- 2B
TH401	A- 4B
CN1	B- 3A
CN2	B- 5A
CN3	B- 5A
CN11	B- 4A
CN12	B- 4A
CN13	B- 4A
CN14	B- 5A
CN15	B- 5A
CN16	B- 5A
CN17	B- 4A
CN18	A- 5B
CN19	B- 5C
CN20	B- 4D
CN21	B- 4A
CN22	B- 2B
CN23	B- 2B
CN24	B- 2A
CN25	B- 1B
CN26	B- 2C
CN27	B- 2C
CN28	B- 3B
CN29	B- 3B
CN30	B- 2B
CN31	B- 2B
CN32	B- 2B
CN33	B- 1A
CN34	A- 1A
CN35	A- 1A
CN36	A- 1A
CN37	A- 1A
CN38	A- 1A
CN39	A- 1A
CN40	A- 1A

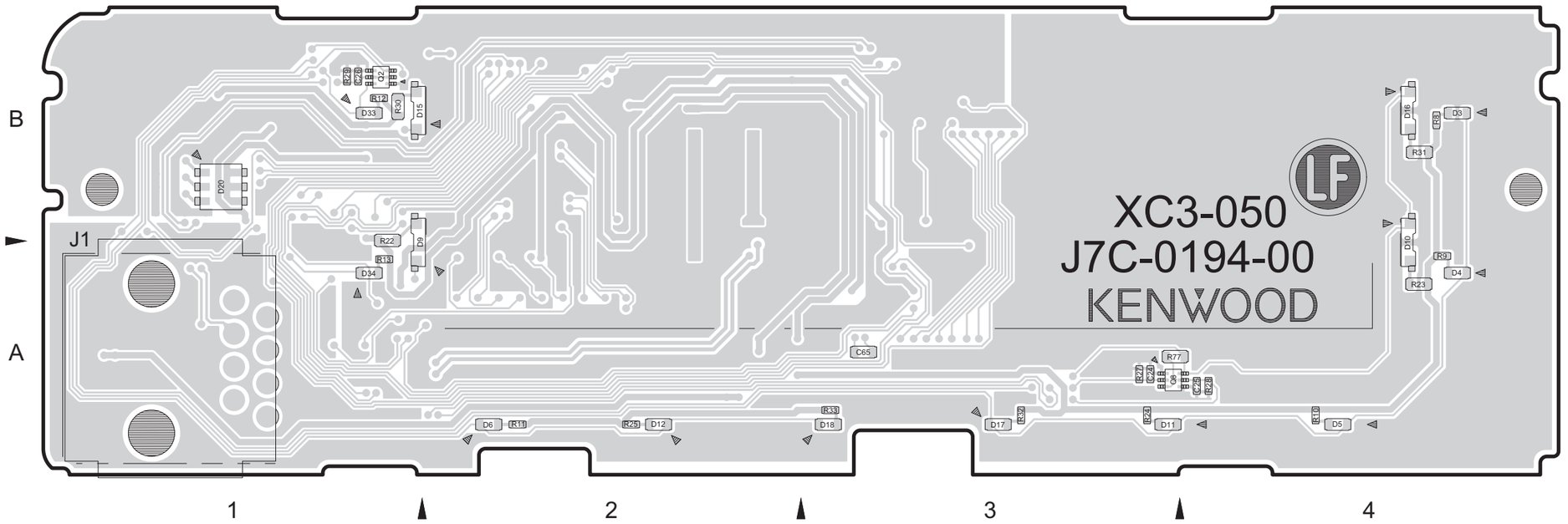
REF.NO.	LOCATION
CN41	A- 1A
CN42	A- 1A
CN43	A- 1A
CN44	A- 1A
CN45	A- 1A
CN46	A- 1A
CN47	A- 1A
CN48	B- 1A
CN49	B- 1A
CN50	A- 2A
CN51	A- 3B
CN52	A- 3A
CN53	A- 3B
CN54	A- 3A
CN55	B- 3B
CN56	A- 4B
CN57	B- 4A
CN58	B- 4A
CN59	B- 4A
CN60	B- 4A
CN61	B- 4B
CN62	A- 4B
CN63	A- 4B
CN64	A- 4A
CN65	A- 4A
CN66	A- 4A
CN67	B- 3B
CN68	B- 3B
CN69	A- 4A
CN70	A- 4B
CN71	A- 3A
CN72	A- 3B
CN74	B- 4A
CN75	B- 4A
CN76	B- 3A
CN77	B- 3A
CN78	B- 3A
CN79	B- 2A
CN80	B- 3A
CN81	B- 3B
CN82	B- 3B
CN83	A- 3A
CN85	A- 3A
CN86	B- 4A
CN87	B- 4B
CN88	B- 4D
CN89	B- 3B
CN90	B- 5B
CN91	B- 4B
CN92	B- 2B
CN93	B- 3C
CN94	A- 4A
CN95	B- 4D
CN96	B- 4D
CN97	B- 4D
CN98	A- 4B
CP301	A- 1A
CP302	A- 1A
CP303	A- 1A
CP401	A- 3B
CP402	A- 4A
CP403	B- 5A
CP404	B- 5A
CP405	B- 4A
CP406	A- 3B
CP407	A- 3B
CP408	A- 3A
CP409	A- 3A

REF.NO.	LOCATION
CP410	A- 3A
CP411	A- 2A
CP412	A- 3A
CP413	A- 3A
CP414	A- 3A
CP601	A- 5B
CP602	A- 5B
CP604	A- 4B
CP605	A- 4B
E11	A- 5C
E101	B- 1A
F1	B- 5C
F2	B- 5B
F3	B- 4D
F4	B- 4B
F5	B- 4C
F6	B- 4D
J1	A- 4D
J2	A- 5D
L1	A- 1D
L2	A- 1D
L3	A- 1D
L4	A- 1C
L5	A- 1C
L6	A- 1B
L7	A- 2A
L11	B- 3A
L12	A- 5C
L13	A- 5C
L14	B- 2B
L15	A- 5C
L16	B- 3B
L17	B- 3B
L18	A- 1A
L19	B- 3B
L101	B- 1A
L102	B- 1A
L103	B- 1A
L104	B- 1A
L105	B- 2A
L106	B- 1A
L107	B- 2A
L108	A- 2A
L109	A- 2B
L110	A- 2B
L111	A- 2B
L112	A- 2B
L113	A- 2B
L115	A- 2A
L116	A- 2A
L117	A- 2A
L118	A- 2A
L119	B- 2A
L120	B- 1A
L121	B- 1A
L122	B- 1A
L123	B- 1A
L124	B- 1A
L207	B- 3B
L208	B- 2B
L209	A- 2C
L210	A- 2C
L211	A- 2B
L212	A- 2B
L213	A- 3C

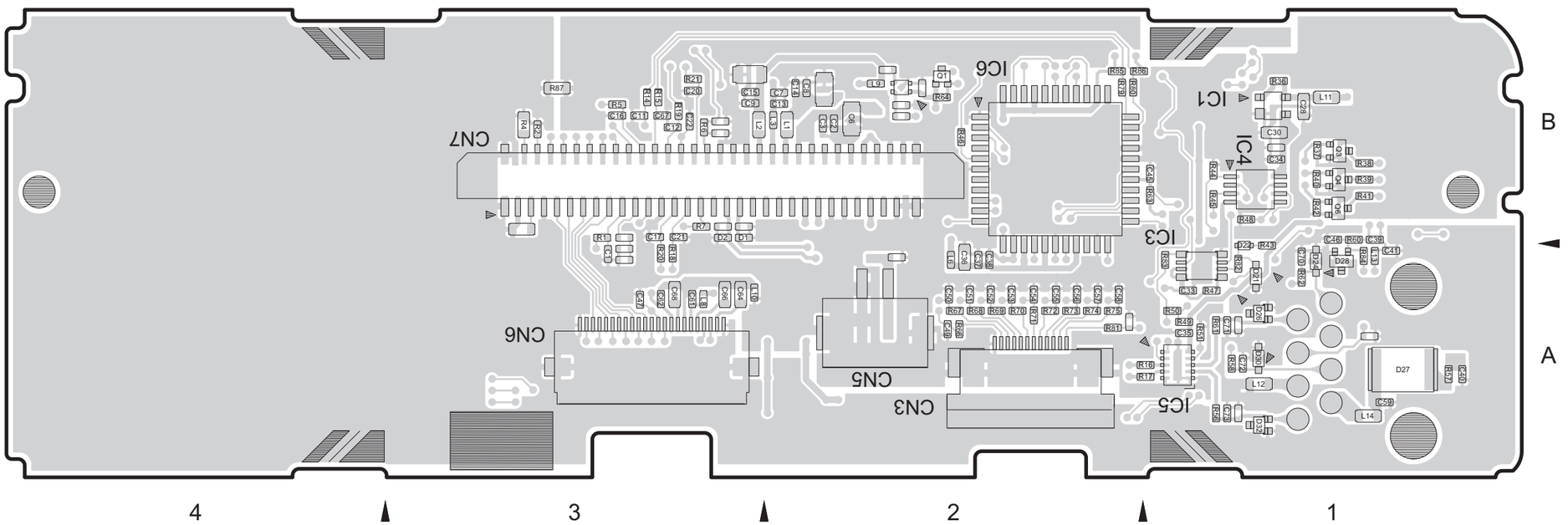
REF.NO.	LOCATION
L214	A- 3B
L215	A- 3C
L216	A- 3B
L217	B- 1B
L218	B- 3C
L219	B- 2C
L220	B- 2C
L221	B- 2C
L222	A- 2B
L223	A- 1C
L224	A- 1C
L225	B- 2B
L226	B- 1C
L227	A- 1B
L302	A- 1B
L303	A- 1B
L304	A- 1A
L305	A- 1A
L306	A- 1A
L307	A- 1A
L308	A- 1B
L309	A- 1B
L310	A- 1B
L311	A- 1B
L312	A- 1A
L313	A- 1A
L314	A- 1A
L401	A- 3A
L402	A- 4B
L403	A- 5B
L404	A- 4B
L405	B- 4A
L406	B- 4B
L407	B- 4B
L408	B- 4B
L409	B- 4B
L410	B- 4B
L411	B- 4B
L412	B- 4B
L413	A- 3B
L414	A- 3B
L415	A- 3A
L416	A- 3A
L417	B- 4A
L418	B- 4A
L419	A- 3A
L420	A- 4B
L601	A- 4B
L602	A- 4B
L603	A- 4D

■ SUB UNIT (XC3-050M-00)

--- Component side view (J7C-0194-00) ---



--- Foil side view (J7C-0194-00) ---



● ADDRESS TABLE OF BOARD PARTS

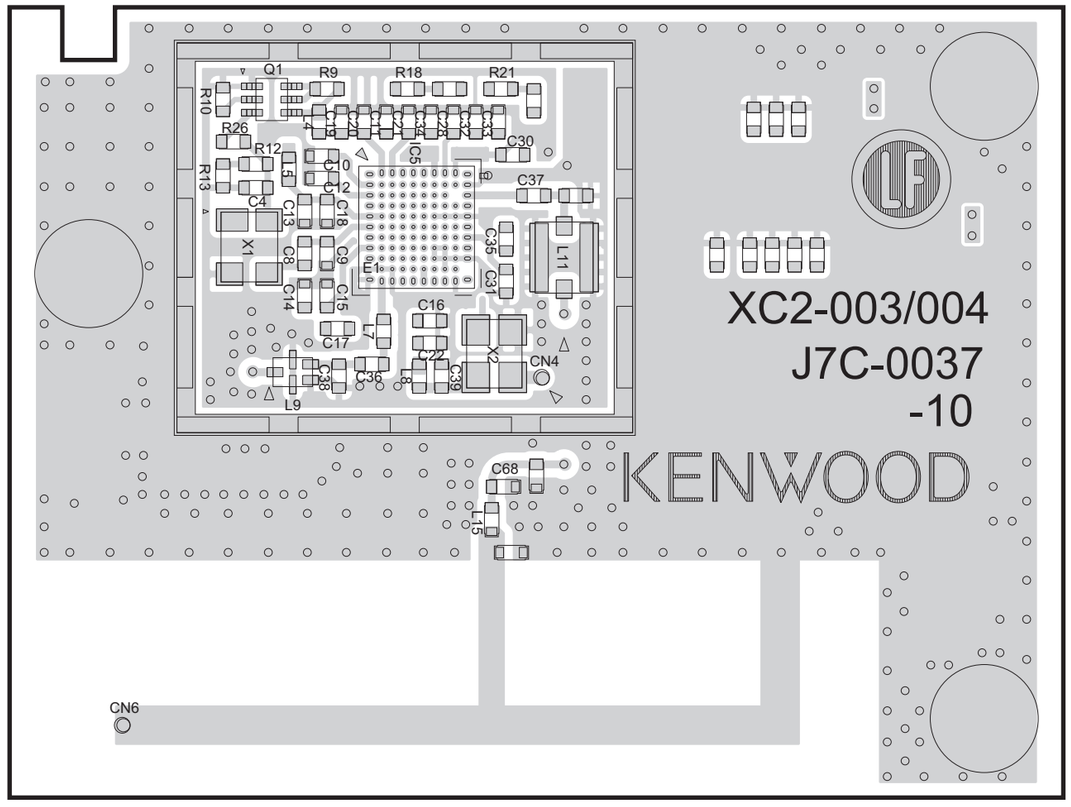
Each address may have an address error by one interval.

A-1C
Side — Y axis
X axis

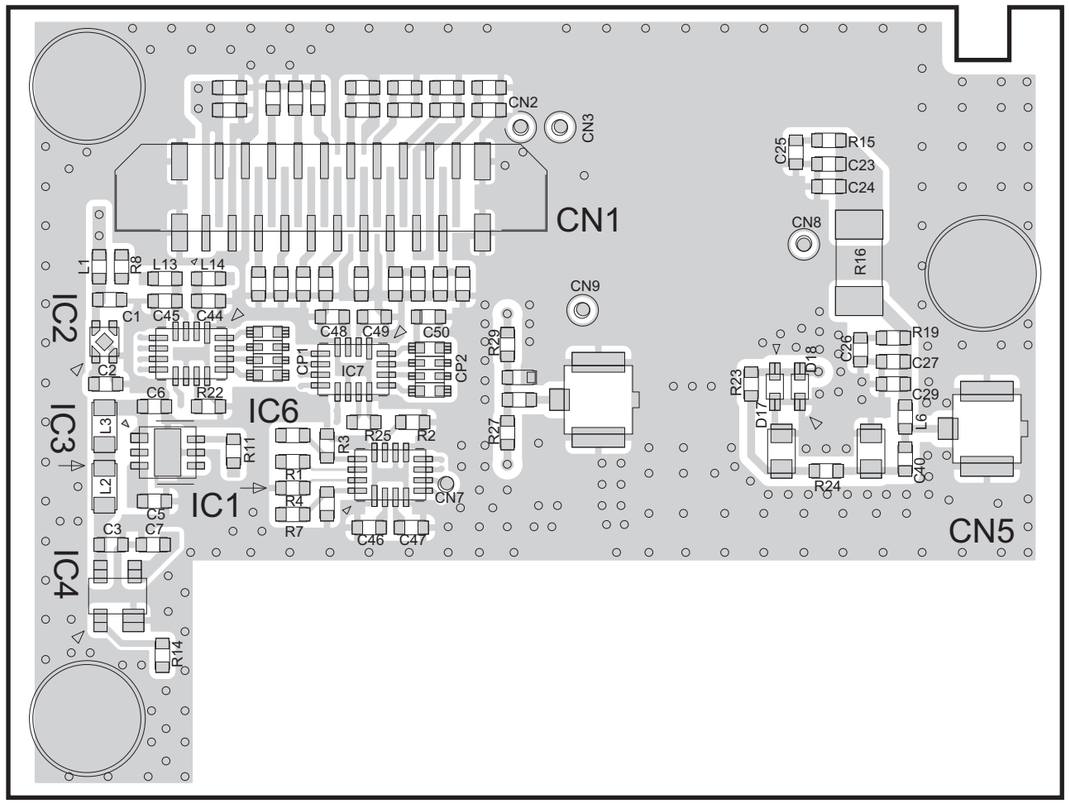
REF.NO.	LOCATION
IC	
IC1	B- 1B
IC3	B- 1A
IC4	B- 1B
IC5	B- 1A
IC6	B- 2B
TRANSISTOR	
Q1	B- 2B
Q2	A- 1B
Q3	B- 1B
Q4	B- 1B
Q6	B- 1B
Q8	A- 3A
DIODE	
D1	B- 3B
D2	B- 3B
D3	A- 4B
D4	A- 4A
D5	A- 4A
D6	A- 2A
D9	A- 1A
D10	A- 4A
D11	A- 3A
D12	A- 2A
D15	A- 1B
D16	A- 4B
D17	A- 3A
D18	A- 3A
D20	A- 1B
D21	B- 1A
D22	B- 1A
D24	B- 1A
D26	B- 1A
D27	B- 1A
D28	B- 1A
D30	B- 1A
D32	B- 1A
D33	A- 1B
D34	A- 1A
RESISTOR	
R1	B- 3B
R2	B- 3B
R4	B- 3B
R5	B- 3B
R6	B- 3B
R7	B- 3B
R8	A- 4B
R9	A- 4A
R10	A- 4A
R11	A- 2A
R12	A- 1B
R13	A- 1A
R14	B- 3B
R15	B- 3B
R16	B- 1A
R17	B- 1A
R18	B- 3A
R19	B- 3B
R20	B- 3A
R21	B- 3B
R22	A- 1B
R23	A- 4A
R24	A- 3A
R25	A- 2A
R27	A- 3A
R28	A- 4A
R29	A- 1B
R30	A- 1B
R31	A- 4B
R32	A- 3A
R33	A- 3A
R36	B- 1B
R37	B- 1B
R38	B- 1B
R39	B- 1B
R40	B- 1B
R41	B- 1B
R42	B- 1B
R43	B- 1A
R44	B- 1B
R45	B- 1B
R46	B- 2B
R47	B- 1A
R48	B- 1B
R49	B- 1A
R50	B- 1A
R51	B- 1A
R56	B- 1A
R57	B- 1A
R58	B- 1A
R60	B- 1B
R61	B- 1A
R62	B- 1A
R63	B- 1B
R64	B- 2B
R66	B- 2A
R67	B- 2A
R68	B- 2A
R69	B- 2A
R70	B- 2A
R71	B- 2A
R72	B- 2A
R73	B- 2A
R74	B- 2A
R75	B- 2A
R77	A- 3A
R79	B- 2B
R80	B- 2B
R81	B- 2A
R82	B- 1A
R83	B- 1A
R84	B- 1A
R85	B- 2B
R86	B- 2B
R87	B- 3B
CAPACITOR	
C1	B- 3A
C2	B- 2B
C3	B- 2B
C6	B- 2B
C7	B- 2B
C8	B- 2B
C9	B- 3B
C11	B- 3B
C12	B- 3B
C13	B- 2B
C14	B- 2B
C15	B- 3B
C16	B- 3B
C17	B- 3B
C20	B- 3B
C21	B- 3B
C22	B- 3B
C24	A- 3A
C25	A- 4A
C26	A- 1B
C28	B- 1B
C30	B- 1B
C33	B- 1A
C34	B- 1B
C35	B- 1A
C36	B- 2A
C37	B- 2A
C38	B- 2A
C39	B- 1B
C40	B- 1A
C41	B- 1A
C45	B- 1B
C46	B- 1B
C47	B- 3A
C49	B- 2A
C50	B- 2A
C51	B- 2A
C52	B- 2A
C53	B- 2A
C54	B- 2A
C55	B- 2A
C56	B- 2A
C57	B- 2A
C58	B- 2A
C59	B- 1A
C61	B- 3A
C62	B- 3A
C64	B- 3A
C65	A- 3A
C66	B- 3A
C67	B- 3B
C68	B- 3A
C70	B- 1A
C71	B- 1A
C72	B- 1A
C73	B- 1A
OTHER	
CN3	B- 2A
CN5	B- 2A
CN6	B- 3A
CN7	B- 3B
J1	A- 1A
L1	B- 2B
L2	B- 3B
L3	B- 2B
L6	B- 2A
L8	B- 3A
L9	B- 2B
L10	B- 3A
L11	B- 1B
L12	B- 1A
L13	B- 1A
L14	B- 1A

■ MODULE (BT/GPS) UNIT (XC2-0040-10 (NX-3720H(G), NX-3720(G), NX-3820H(G), NX-3820(G)))

--- Component side view (J7C-0037-10) ---



--- Foil side view (J7C-0037-10) ---



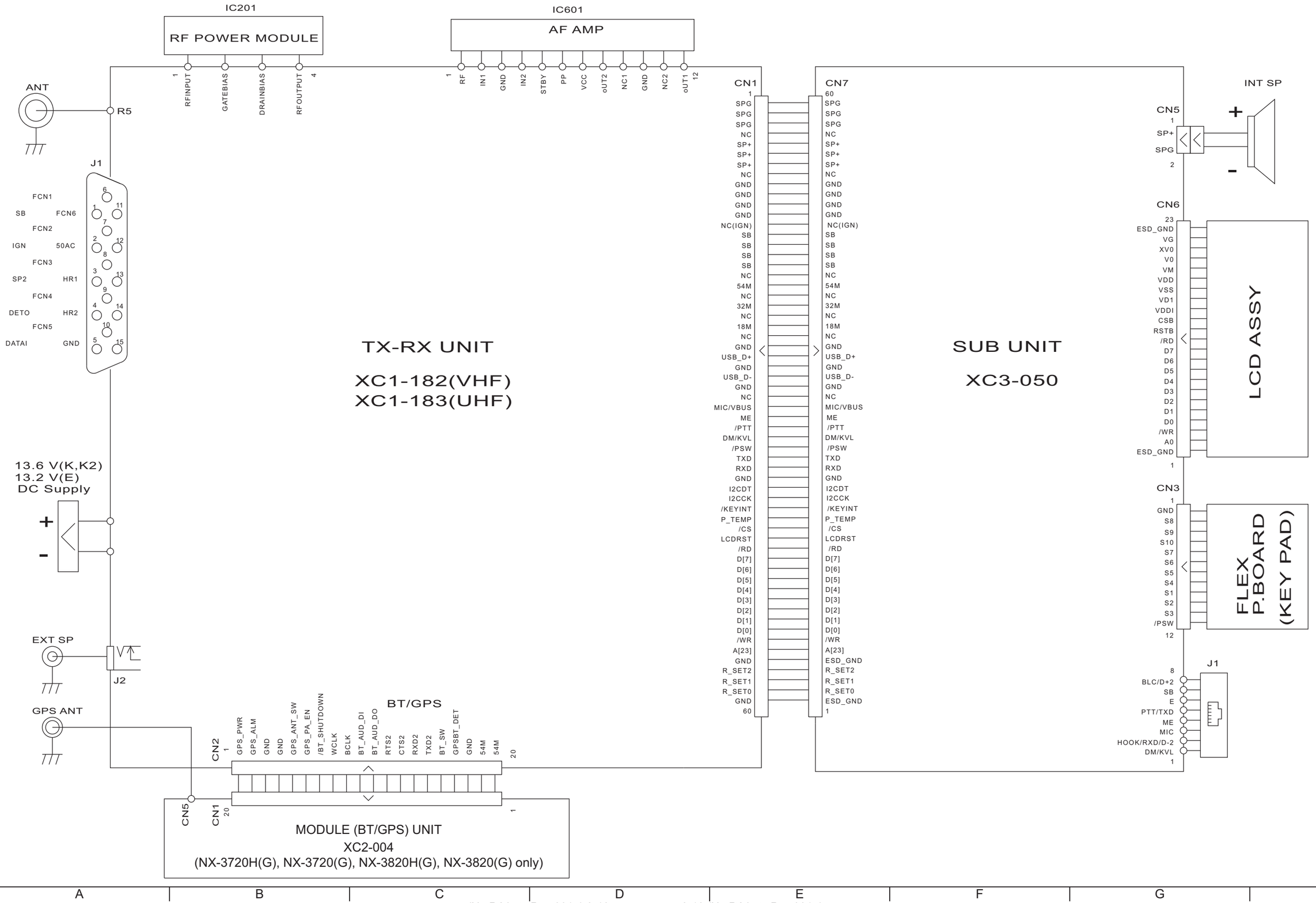
● **ADDRESS TABLE OF BOARD PARTS**

Each address may have an address error by one interval.

A-1C: Side — Y axis — X axis

REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION
IC		R7	B- 3A	**CAPACITOR**		C21	A- 2B	C45	B- 3B		
IC1	B- 2A	R8	B- 3B	C1	B- 3B	C22	A- 2B	C46	B- 2A	CP1	B- 3B
IC2	B- 3B	R9	A- 1B	C2	B- 3B	C23	B- 1B	C47	B- 2A	CP2	B- 2B
IC3	B- 3A	R10	A- 1B	C3	B- 3A	C24	B- 1B	C48	B- 3B		
IC4	B- 3A	R11	B- 3A	C4	A- 1B	C25	B- 1B	C49	B- 2B	E1	A- 2B
IC5	A- 2B	R12	A- 1B	C5	B- 3A	C26	B- 1B	C50	B- 2B		
IC6	B- 3B	R13	A- 1B	C6	B- 3A	C27	B- 1B	C68	A- 2A	L1	B- 3B
IC7	B- 3B	R14	B- 3A	C7	B- 3A	C28	A- 2B			L2	B- 3A
		R15	B- 1B	C8	A- 1B	C29	B- 1B	**OTHER**		L3	B- 3A
TRANSISTOR		R16	B- 1B	C9	A- 1B	C30	A- 2B	X1	A- 1B	L4	A- 1B
Q1	A- 1B	R18	A- 2B	C10	A- 1B	C31	A- 2B	X2	A- 2B	L5	A- 1B
		R19	B- 1B	C11	A- 2B	C32	A- 2B			L6	B- 1A
DIODE		R21	A- 2B	C12	A- 1B	C33	A- 2B	CN1	B- 3B	L7	A- 2B
D17	B- 1B	R22	B- 3A	C13	A- 1B	C34	A- 2B	CN2	B- 2B	L8	A- 2B
D18	B- 1B	R23	B- 1B	C14	A- 1B	C35	A- 2B	CN3	B- 2B	L9	A- 1B
		R24	B- 1A	C15	A- 1B	C36	A- 2B	CN4	A- 2B	L11	A- 2B
RESISTOR		R25	B- 2A	C16	A- 2B	C37	A- 2B	CN5	B- 1A	L13	B- 3B
R1	B- 3A	R26	A- 1B	C17	A- 1B	C38	A- 1B	CN6	A- 1A	L14	B- 3B
R2	B- 2A	R27	B- 2A	C18	A- 1B	C39	A- 2B	CN7	B- 2A	L15	A- 2A
R3	B- 3A	R29	B- 2B	C19	A- 1B	C40	B- 1A	CN8	B- 1B		
R4	B- 3A			C20	A- 2B	C44	B- 3B	CN9	B- 2B		

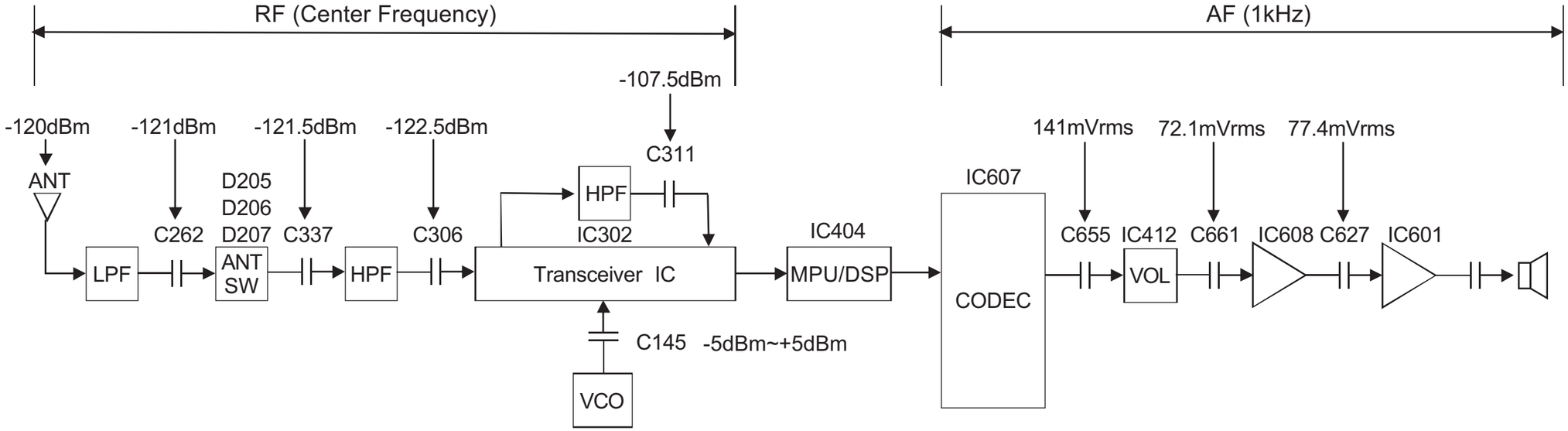
INTERCONNECTION DIAGRAM



LEVEL DIAGRAM

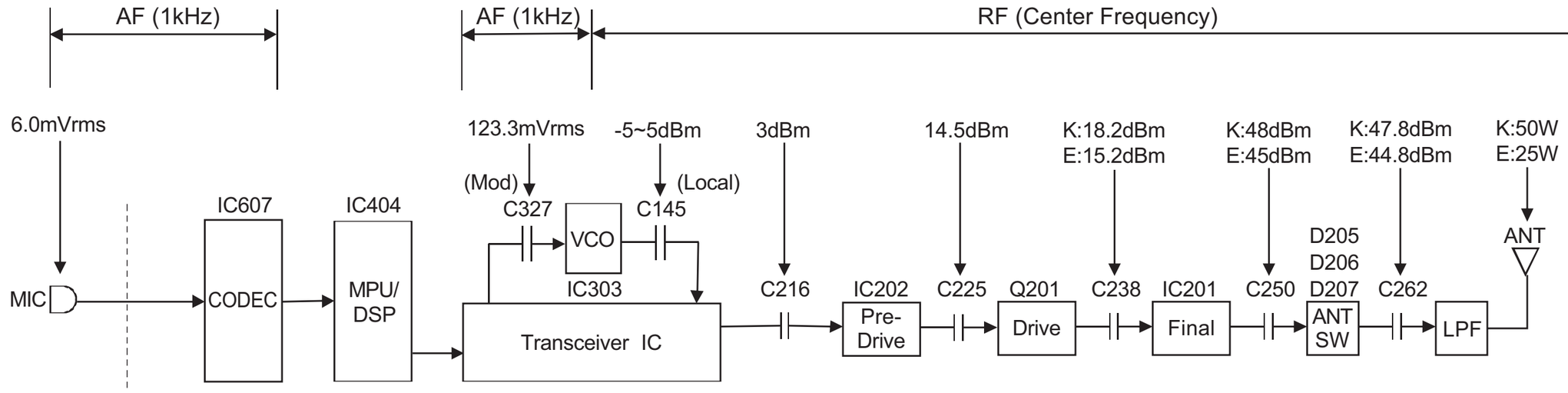
■ **NX-3720/3720H**

Receiver Section



To make measurements in the AF section, connect the AC level meter.
(ANT input: –53dBm, 1kHz FM, 3kHz DEV (Wide). SP output: 4W@4ohm Load)
In the RF section, use 1000pF coupling capacitor.
(The display shows the SSG input value required to obtain 12dB SINAD.)

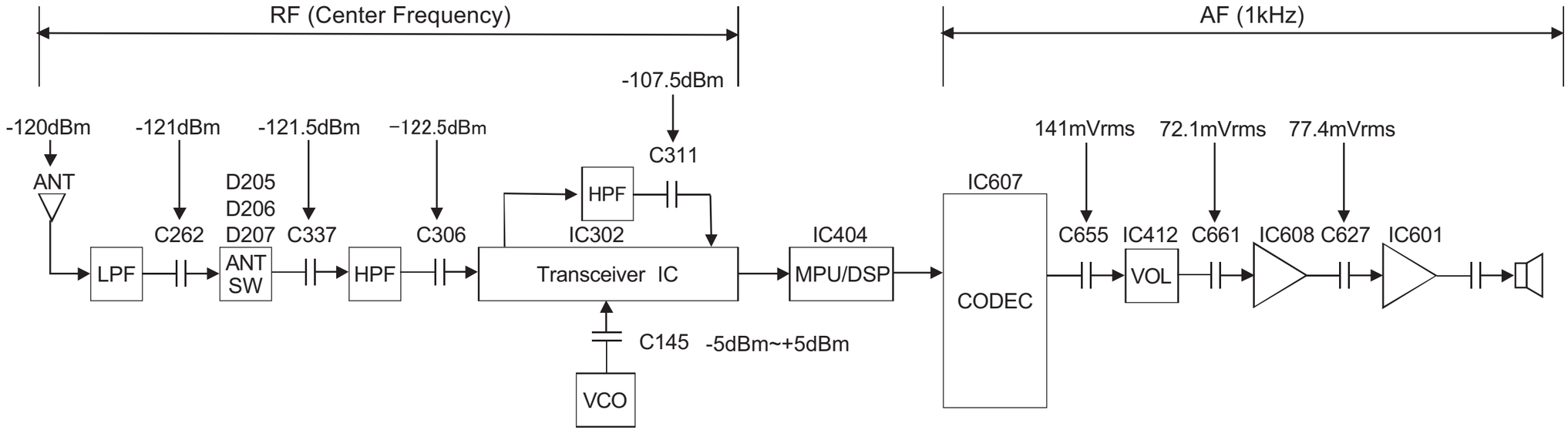
Transmitter Section



* Transmit frequency : 155MHz

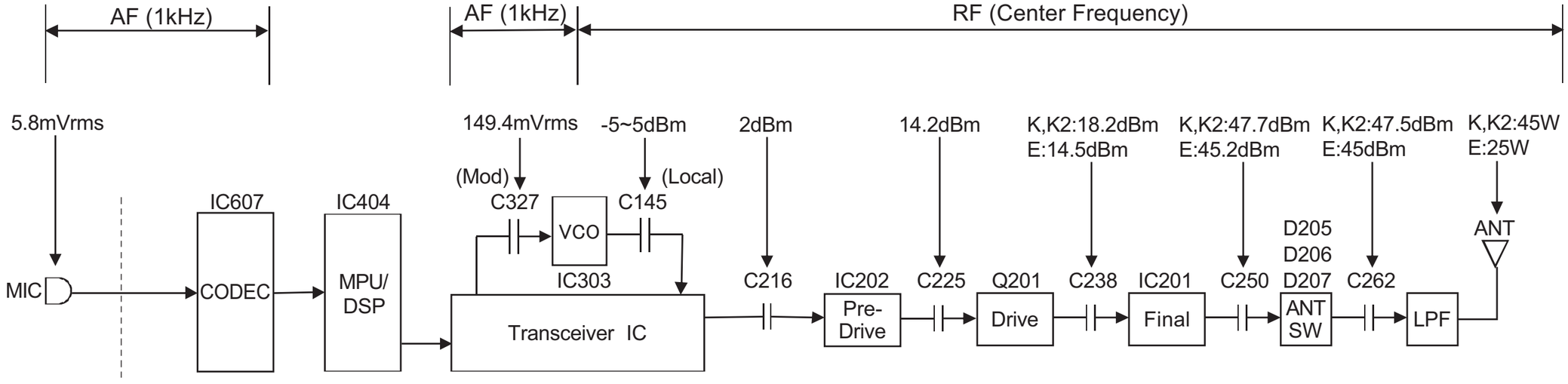
■ NX-3820/3820H

Receiver Section



To make measurements in the AF section, connect the AC level meter.
(ANT input: –53dBm, 1kHz FM, 3kHz DEV (Wide). SP output: 4W@4ohm Load)
In the RF section, use 470pF coupling capacitor.
(The display shows the SSG input value required to obtain 12dB SINAD.)

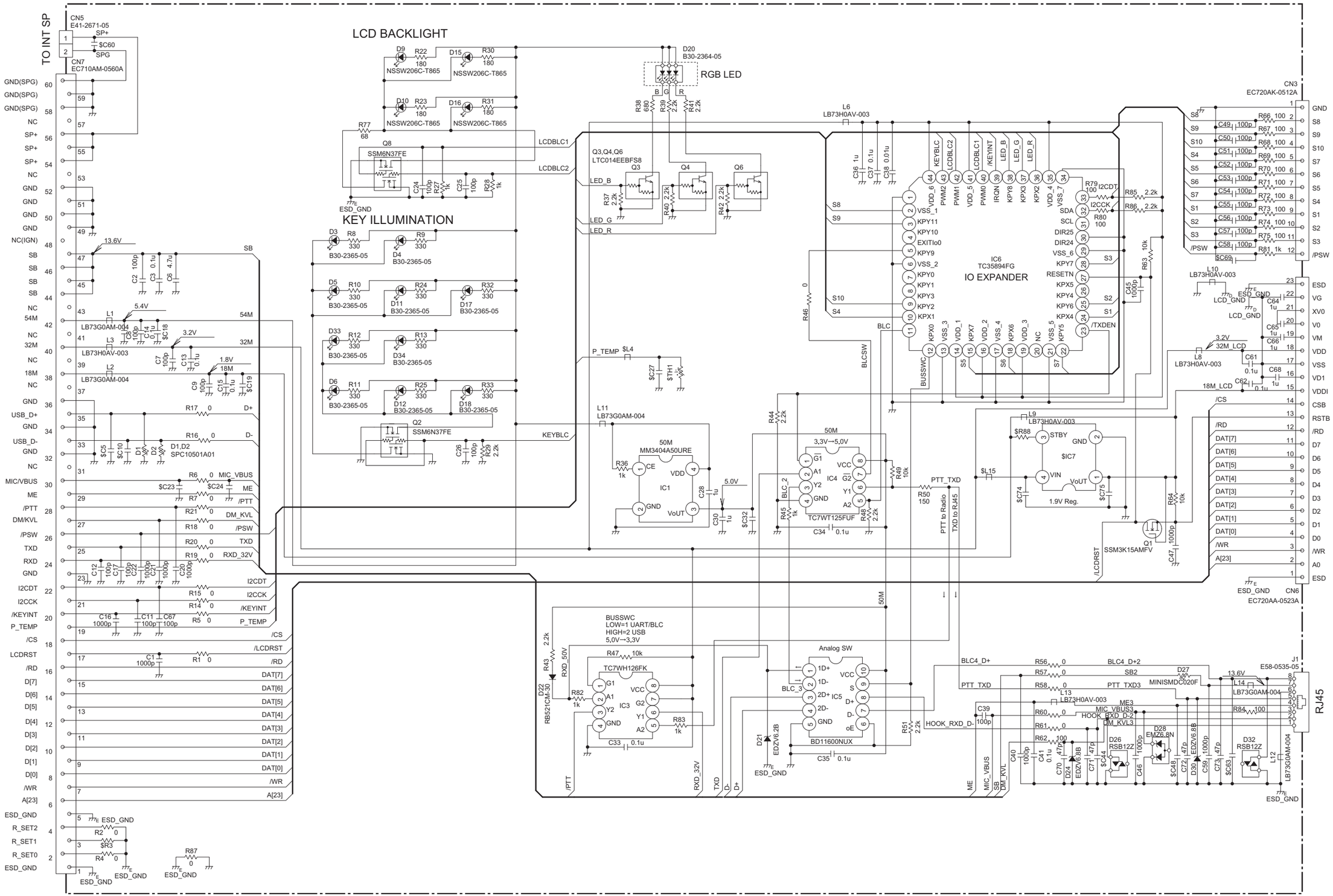
Transmitter Section



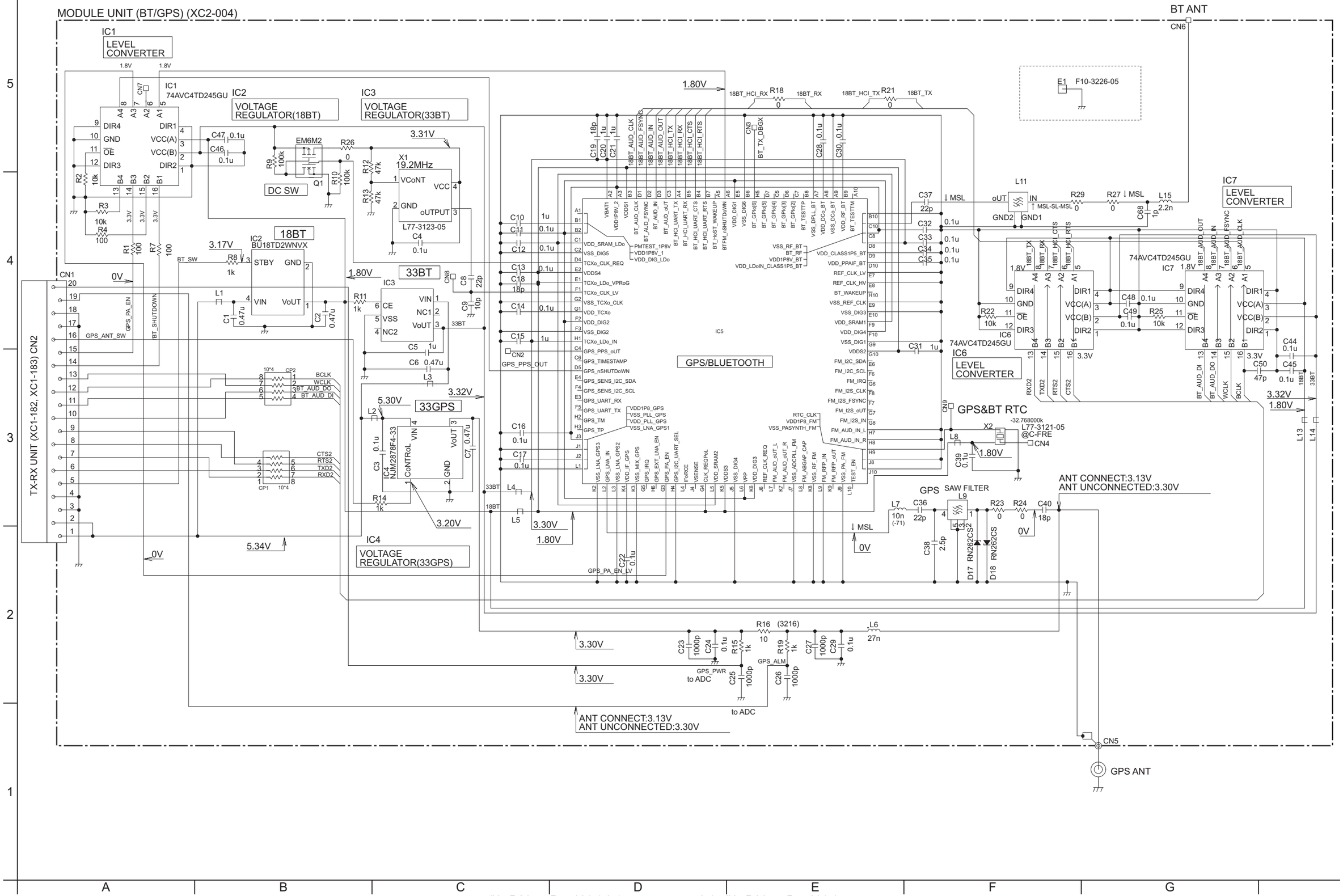
* Transmit frequency : 435MHz (K2,E), 485MHz (K)

SCHEMATIC DIAGRAM

■ SUB UNIT (XC3-050M-00)

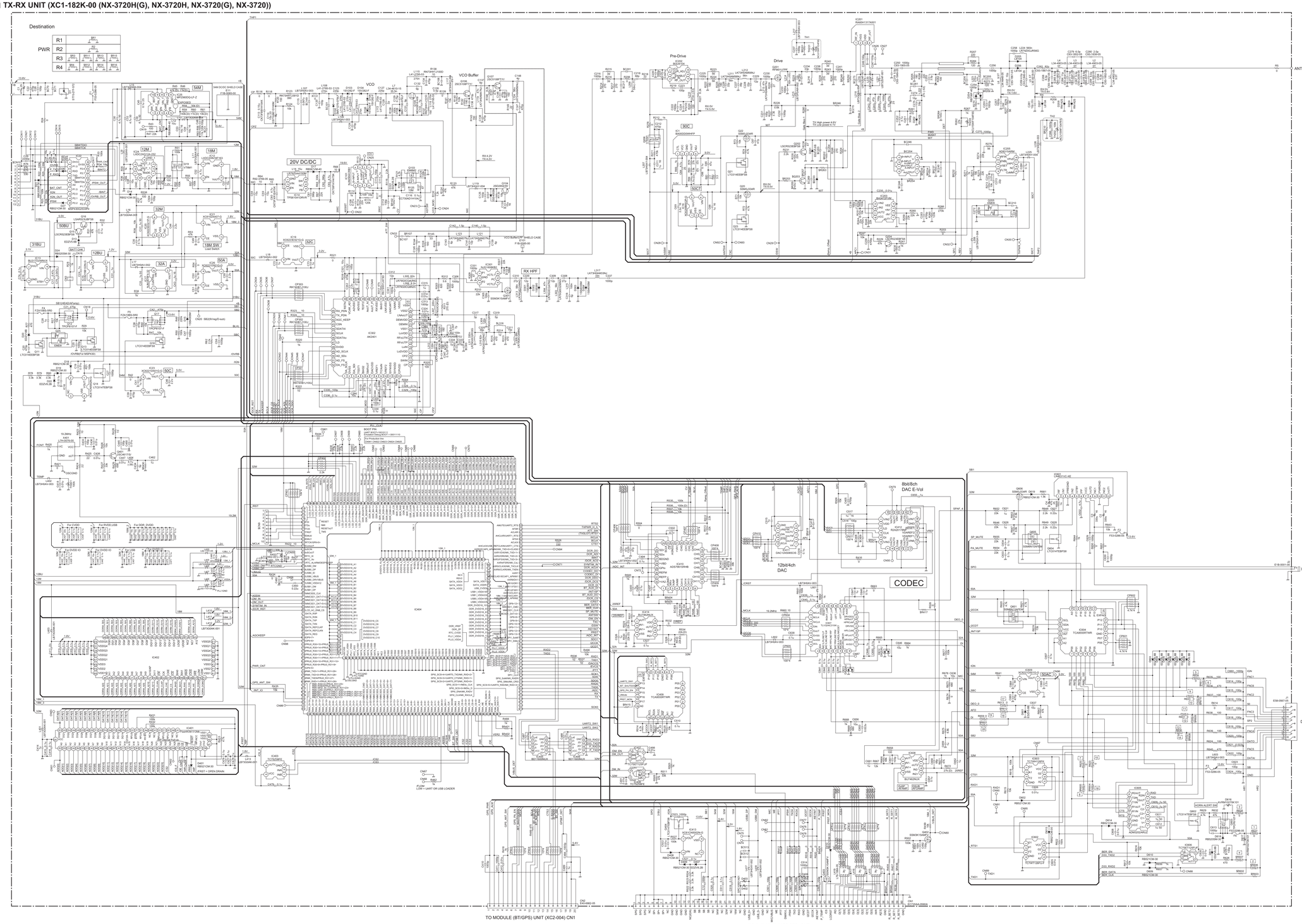


■ MODULE (BT/GPS) UNIT (XC2-0040-10 (NX-3720H(G), NX-3720(G), NX-3820H(G), NX-3820(G)))



SCHEMATIC DIAGRAM

■ TX-RX UNIT (XC1-182K-00 (NX-3720H(G), NX-3720H, NX-3720(G), NX-3720))



■ TX-RX UNIT (XC1-183K-00 (NX-3820H(G), NX-3820H, NX-3820(G), NX-3820))

Destination

		001	
	R1		
PWR	R2	02	
F1	R3	*R3	R11	R13	R15	R16
F2	R4	*R4	R12	R14	R17	R18

	R3	R4
K:00 (F1:430-520)	4	-
K:01 (F2:400-470)	-	0

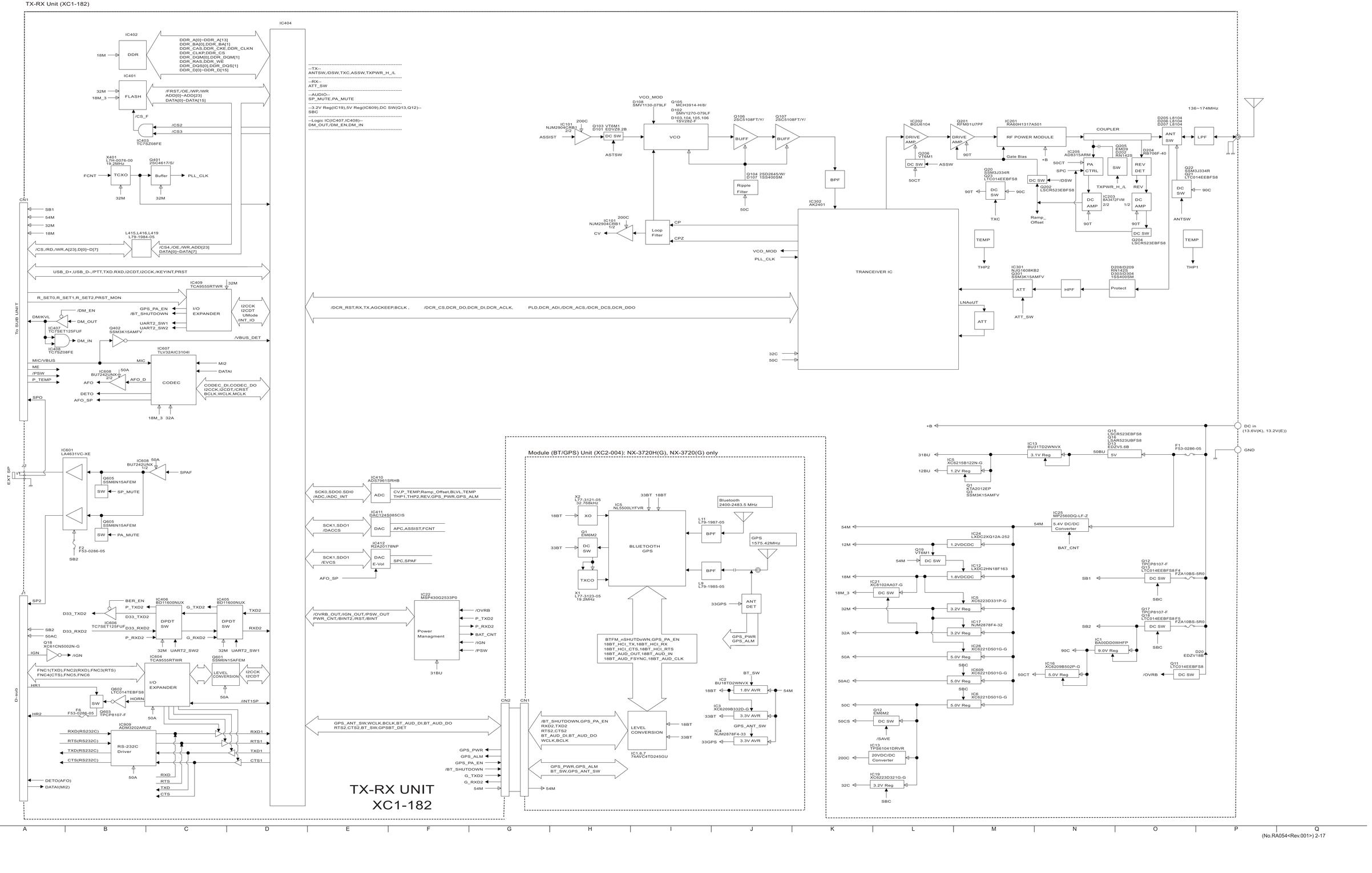
TO MODULE (BT/GPS) UNIT (XC2-004) CN1

TO SUB UNIT (XC3-050) CN7

BLOCK DIAGRAM

■ TX-RX UNIT (NX-3720H(G), NX-3720H, NX-3720(G), NX-3720)

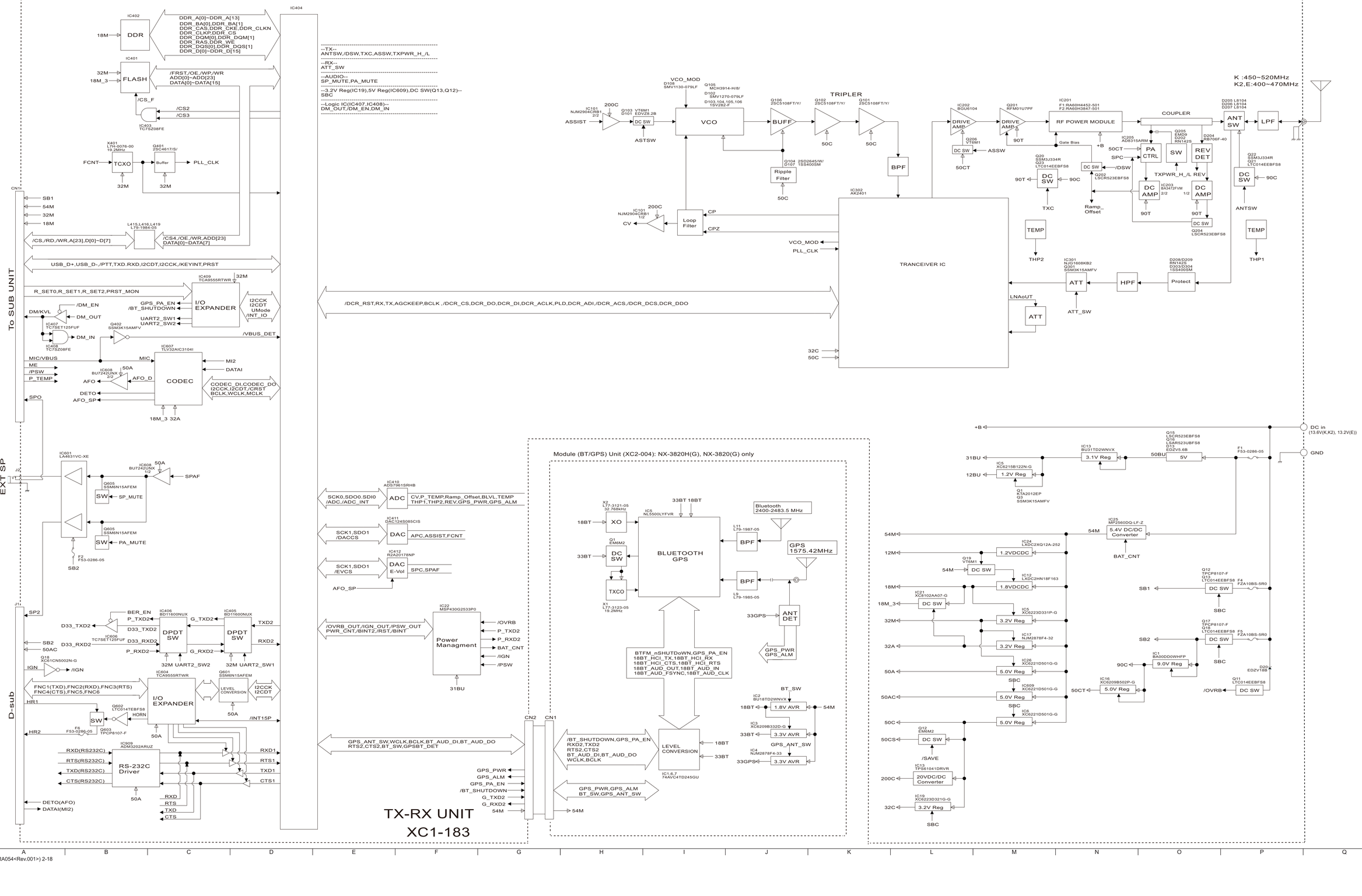
TX-RX Unit (XC1-182)



TX-RX UNIT
XC1-182

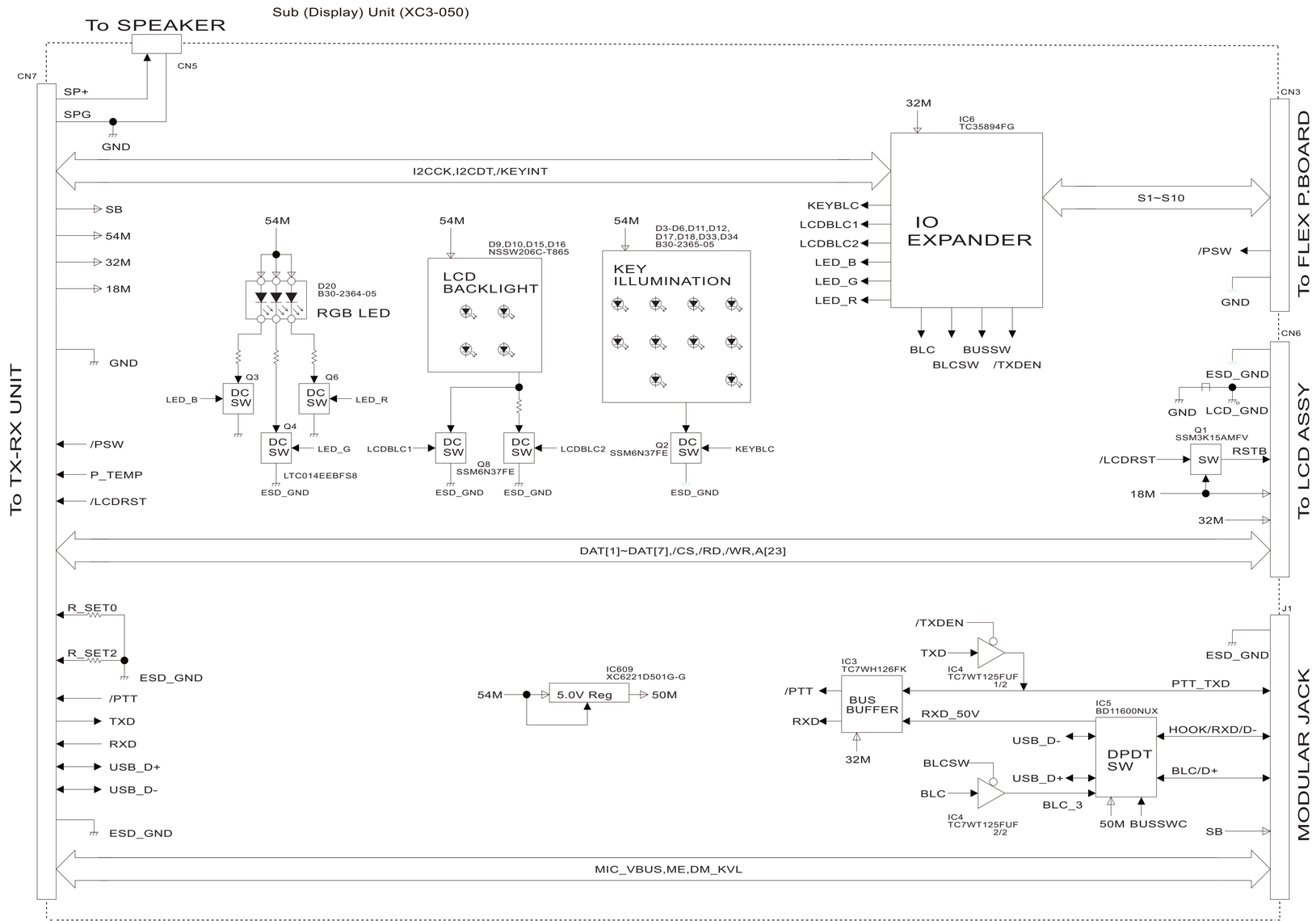
■ TX-RX UNIT (NX-3820H(G), NX-3820H, NX-3820(G), NX-3820)

TX-RX Unit (XC1-183)



■ SUB UNIT

Sub (Display) Unit (XC3-050)



MEMO

PARTS LIST

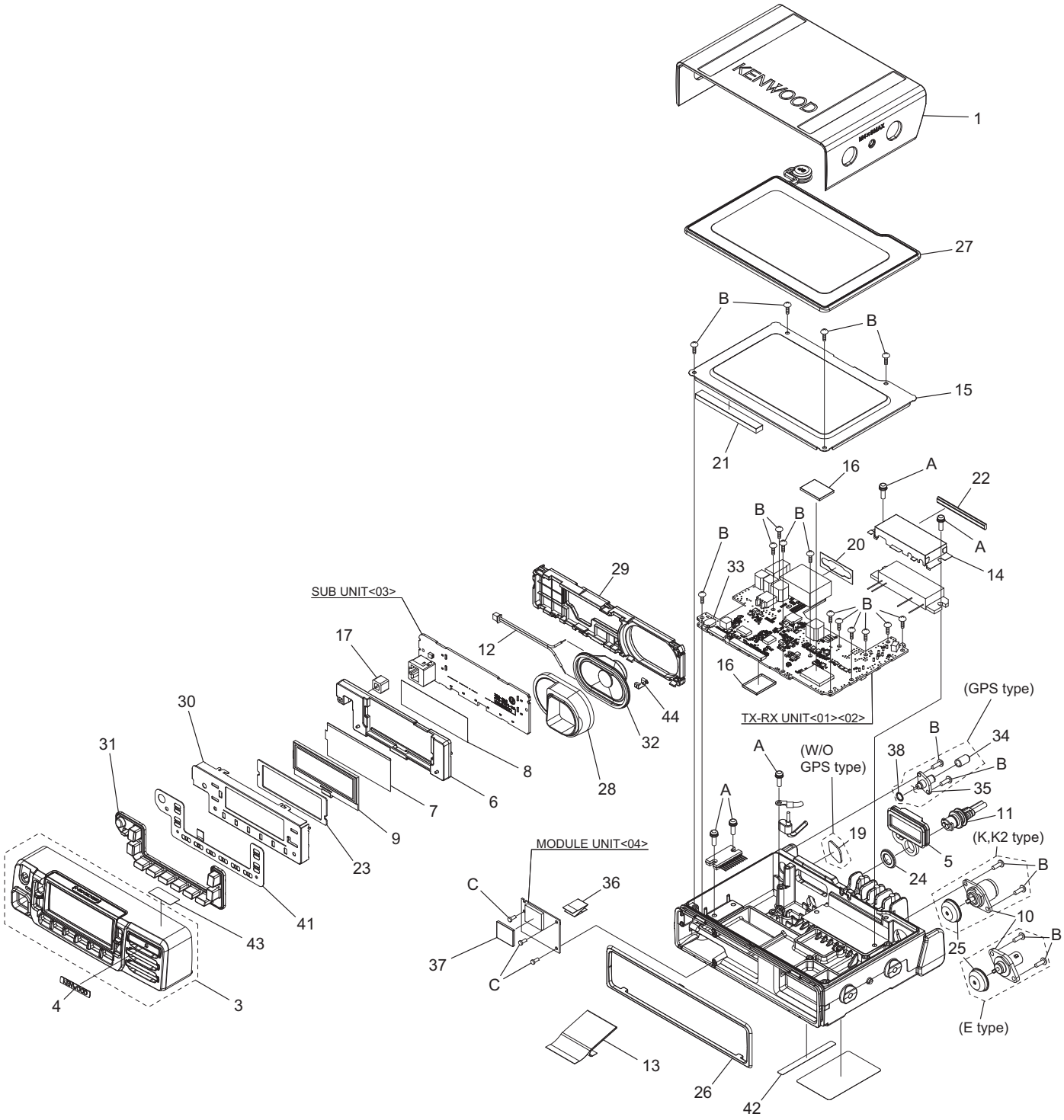
[NX-3720H(G), NX-3720H, NX-3720(G), NX-3720, NX-3820H(G), NX-3820H, NX-3820(G), NX-3820]

* SAFETY PRECAUTION
  Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.
* BEWARE OF BOGUS PARTS
  Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine parts be used.
* (x_) in a description column shows the number of the used part.

- Contents -

Exploded view of general assembly and parts list

Block No.M1MM



General assembly

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

⚠ Symbol No.	Part No.	Part Name	Description	Local
1	A0C-0166-00	PLASTIC CABINET		
3	A6C-0067-10	PANEL ASSY		
4	B4D-0044-00	KENWOOD BADGE	PANEL	
5	B09-0732-03	CAP	DSUB	
6	B1B-0101-00	ILL.GUIDE	LCD	
7	B1B-0102-00	OPTI.DIFFUSER	UPPER ILL-GUIDE	
8	B1B-0103-00	REF.SHEET	LOWER ILL-GUIDE	
9	B3H-0058-00	LCD ASSY	304X100 DOT	
10	E04-0454-15	C.RECEPTACLE-BN	ANT BNC	3720E,3720GE,3820E,3820GE
10	E04-0167-15	C.RECEPTACLE-M	ANT M	3720HGK,3720HK,3820HGK,3820HGK2,3820HK,3820HK2
11	E30-7684-35	DC CORD	RADIO	
12	E3A-0390-00	CORD W.CON.	SP	
13	E3G-0042-00	FFC WIRE	60P	
14	F10-3112-13	SHIELDING CASE	PM	
15	F1A-0027-00	SHIELDING PLATE	TOP	
16	F1B-0086-00	SHIELDING COVER	BLS(DCDC,VCO)(x2)	
17	F1E-0040-00	SHADE	TX-BUSY	
19	G11-4578-04	SHEET	W/O GPS	3720E,3720HK,3820E,3820HK,3820HK2
20	G11-4611-04	SHEET	DSUB	
21	G13-1837-04	CUSHION	TOP SHIELD	
22	G13-2101-14	CONDUCT CUSHION	PM	
23	G1D-0191-00	CUSHION	LCD	
24	G53-1643-04	PACKING	DC CORD	
25	G53-1675-04	PACKING	ANT BNC	3720E,3720GE,3820E,3820GE
25	G53-1662-04	PACKING	ANT M	3720HGK,3720HK,3820HGK,3820HGK2,3820HK,3820HK2
26	G53-1820-03	PACKING	FRONT	
27	G5D-0117-00	PACKING	TOP	
28	G5D-0127-00	PACKING	SP	
29	J1K-0456-00	HOLDER	DISP PCB	
30	J2B-0341-00	MOUNTING	LCD	
31	K2K-0242-00	KEY TOP		
32	T07-0757-35	SPEAKER	6OHM/5.5W/7W	
33	W09-0971-05	LITHIUM CELL		
34	B09-0754-05	CAP	SMA	3720GE,3720HGK,3820GE,3820HGK,3820HGK2
35	E0E-0003-00	C.RECEPTACLE-SM	SMA	3720GE,3720HGK,3820GE,3820HGK,3820HGK2
36	E3F-0017-10	FLAT CABLE	20P BT/GPS	3720GE,3720HGK,3820GE,3820HGK,3820HGK2
37	F10-3225-05	SHIELDING COVER	BLS(BT/GPS)	3720GE,3720HGK,3820GE,3820HGK,3820HGK2
38	G53-1768-04	PACKING	SMA	3720GE,3720HGK,3820GE,3820HGK,3820HGK2
41	J8C-0018-00	FLEX P.BOARD	KEY	
42	B41-1837-04	CAUTION STICKER	HOT SURFACE	
43	B4B-0008-00	CAUTION STICKER	FCC(PANEL)	3720HGK,3720HK,3820HGK,3820HGK2,3820HK,3820HK2
44	G0B-0104-00	EARTH SPRING	PANEL HOLDER	
A	N67-3010-48	P.H.SEMS SCREW	PM,AMP,DC(GND)(x5)	
B	N87-2608-48	BR.HEAD T.SCREW	PCB,ANT,SMA(x17)	3720E,3720HK,3820E,3820HK,3820HK2
B	N87-2608-48	BR.HEAD T.SCREW	PCB,ANT,SMA(x19)	3720GE,3720HGK,3820GE,3820HGK,3820HGK2
C	N83-2005-48	P.HEAD T.SCREW	BT/GPS(x3)	3720GE,3720HGK,3820GE,3820HGK,3820HGK2
-	XC3-050M-00	SUB UNIT	DISPLAY	
-	XC2-0040-10	MODULE UNIT	BT/GPS	3720GE,3720HGK,3820GE,3820HGK,3820HGK2
-	XCA-033K-00	TX-RX UNIT	SERVICE UNIT	3720HGK,3720HK
-	XCA-033E-01	TX-RX UNIT	SERVICE UNIT	3720E,3720GE
-	XCA-034E-01	TX-RX UNIT	SERVICE UNIT	3820E,3820GE
-	XCA-034K-00	TX-RX UNIT	SERVICE UNIT	3820HGK,3820HK
-	XCA-034K-01	TX-RX UNIT	SERVICE UNIT	3820HGK2,3820HK2

Electrical parts list

TX-RX UNIT

XC1-182K-00 (NX-3720E,NX-3720GE, NX-3720HGK,NX-3720HK)

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

Block No. [0][1]

⚠ Symbol No.	Part No.	Part Name	Description	Local
IC1	BA00DD0WHFP	IC		
IC12	LXDC2HN18F163	IC		
IC13	BU31TD2WNVX	IC		
IC14	TPS61041DRVR	IC		
IC15	XC6215B122N-G	IC		
IC16	XC6209B502P-G	IC		
IC17	NJM2878F4-32	IC		
IC18	XC61CN5002N-G	IC		
IC19	XC6223D321G-G	IC		
IC20	XC6223D321P-G	IC		
IC21	XC8102AA07-G	IC		
IC22	MSP430G2533P0	IC		
IC23	XC6221D501G-G	IC		
IC24	LXDC2XQ12A-252	IC		
IC25	MP2560DQ-LF-Z	IC		
IC26	XC6221D501G-G	IC		
IC101	NJM2904CRB1	IC		
IC202	BGU6104	IC		
IC203	BA3472FVM	IC		
IC205	AD8315ARM	IC		
IC301	NJG1608KB2	IC		
IC302	AK2401	IC		
IC401	----------	IC	*Note	
IC402	----------	IC	*Note	
IC403	TC7SZ08FE	IC		
IC404	----------	IC	*Note	
IC405	BD11600NUX	IC		
IC406	BD11600NUX	IC		
IC407	TC7SET125FUF	IC		
IC408	TC7SZ08FE	IC		
IC409	TCA9555RTWR	IC		
IC410	ADS7961SRHB	IC		
IC411	DAC124S085CIS	IC		
IC412	R2A20178NP	IC		
IC413	XC61CN5002N-G	IC		
IC414	BU7462NUX	IC		
IC602	TC7WT126FU-F	IC		
IC603	TC7WH126FK	IC		
IC604	TCA9555RTWR	IC		
IC605	ADM3202ARUZ	IC		
IC606	TC7SET125FUF	IC		
IC607	TLV32AIC3104I	IC		
IC608	BU7462NUX	IC		
IC609	XC6221D501G-G	IC		
Q11	LTC014EEBFS8	DIGI TRANSISTOR		
Q12	TPCP8107-F	FET		
Q13	LTC014EEBFS8	DIGI TRANSISTOR		
Q14	LTC014TEBFS8	DIGI TRANSISTOR		
Q15	LSCR523EBFS8	TRANSISTOR		
Q16	LSAR523UBFS8	TRANSISTOR		
Q17	TPCP8107-F	FET		
Q18	LTC014EEBFS8	DIGI TRANSISTOR		
Q19	VT6M1	FET		
Q20	SSM3J334R	FET		
Q21	LTC014EEBFS8	DIGI TRANSISTOR		
Q22	SSM3J334R	FET		
Q23	LTC014EEBFS8	DIGI TRANSISTOR		
Q25	EMD9	DIGI TRANSISTOR		
Q103	EM6M2	FET		
Q104	2SD2654/W/	TRANSISTOR		
Q105	MCH3914-H/8/	FET		
Q106	2SC5108FT/Y/	TRANSISTOR		
Q107	2SC5108FT/Y/	TRANSISTOR		
Q201	RFM01U7PF	FET		
Q202	LSCR523EBFS8	TRANSISTOR		
Q204	LSCR523EBFS8	TRANSISTOR		
Q205	EMD9	DIGI TRANSISTOR		
Q206	VT6M1	FET		
Q301	SSM3K15AMFV	FET		
Q401	2SC4617/S/	TRANSISTOR		
Q402	SSM3K15AMFV	FET		
Q403	SSM3K15AMFV	FET		
Q404	LTC014TEBFS8	DIGI TRANSISTOR		
Q601	SSM6N15AFEM	DUAL FET		
Q602	LTC014TEBFS8	DIGI TRANSISTOR		
Q603	TPCP8107-F	FET		
Q604	LTC014TEBFS8	DIGI TRANSISTOR		
Q605	SSM6N15AFEM	DUAL FET		
Q606	SSM3J334R	FET		
D1	ST70-27F-572	ZENER DIODE		
D13	EDZV5.6B	ZENER DIODE		
D14	RB521CM-30	DIODE		
D15	1SS400SM	DIODE		
D16	RB060M-40	DIODE		
D17	RB561VM-40	SCHOTTKY DIODE		
D18	RB521CM-30	DIODE		
D19	RB521CM-30	DIODE		
D20	EDZV18B	ZENER DIODE		
D21	RB520SM-30	DIODE		
D22	EDZV8.2B	ZENER DIODE		
D24	RB520SM-30	DIODE		
D26	RB521CM-30	DIODE		
D27	RB521CM-30	DIODE		
D101	EDZV8.2B	ZENER DIODE		
D102	SMV1270-079LF	VARI CAP DIODE		
D103	1SV282-F	VARI CAP DIODE		
D104	1SV282-F	VARI CAP DIODE		
D105	1SV282-F	VARI CAP DIODE		
D106	1SV282-F	VARI CAP DIODE		
D107	1SS400SM	DIODE		
D108	SMV1130-079LF	VARI CAP DIODE		
D201	EDZV5.6B	ZENER DIODE		
D202	RN142S	DIODE		
D204	RB706F-40	DIODE		
D205	L8104	DIODE		
D206	L8104	DIODE		
D207	L8104	DIODE		
D208	RN142S	DIODE		
D209	RN142S	DIODE		
D301	1SS390	DIODE		
D302	1SS390	DIODE		
D303	1SS400SM	DIODE		
D304	1SS400SM	DIODE		
D401	RB521CM-30	DIODE		
D402	SPC10501A01	VARISTOR		
D403	SPC10501A01	VARISTOR		
D404	SPC10501A01	VARISTOR		
D405	SPC10501A01	VARISTOR		
D406	SPC10501A01	VARISTOR		
D407	EDZV8.2B	ZENER DIODE		
D408	RB521CM-30	DIODE		
D409	RB521CM-30	DIODE		
D410	RB521CM-30	DIODE		
D601	EDZV5.6B	ZENER DIODE		
D602	RB521CM-30	DIODE		
D603	EDZV6.8B	ZENER DIODE		
D604	EDZV6.8B	ZENER DIODE		
D605	EDZV6.8B	ZENER DIODE		
D606	EDZV6.8B	ZENER DIODE		
D607	EDZV6.8B	ZENER DIODE		
D608	EDZV6.8B	ZENER DIODE		
D609	RB521CM-30	DIODE		
D610	RB521CM-30	DIODE		
D611	EDZV6.8B	ZENER DIODE		
D612	DA204U	MULTIPLE DIODE		
D613	DA204U	MULTIPLE DIODE		
D614	RB521CM-30	DIODE		
D615	RB521CM-30	DIODE		
D616	AVRM10270K101	VARISTOR		
D617	AVRM10270K101	VARISTOR		

⚠ Symbol No.	Part No.	Part Name	Description	Local
D618	RB520SM-30	DIODE		
D619	RB521CM-30	DIODE		
C1	C92-0968-05	E CAPACITOR	470uF 25V	
C2	C92-0906-05	E CAPACITOR	330uF 10V	
C3	C92-0906-05	E CAPACITOR	330uF 10V	
C4	CE32BY1E470M	E CAPACITOR	47uF 25V M	
C5	C92-0968-05	E CAPACITOR	470uF 25V	
C11	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C12	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C14	CK73FB1C106K	C CAPACITOR	10uF 16V K	
C15	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C16	C93-1959-05	C CAPACITOR	0.1uF 16V	
C17	CK73HB1A474K	C CAPACITOR	0.47uF 10V K	
C18	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C19	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C20	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C21	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C22	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C24	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C25	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C26	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C27	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C28	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C29	CK73HBB1H222K	C CAPACITOR	2200pF 50V K	
C30	CK73EB1H475KM	C CAPACITOR	4.7uF 50V M	
C31	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C32	CK73EB1H475KM	C CAPACITOR	4.7uF 50V M	
C33	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C34	CK73EB1H475KM	C CAPACITOR	4.7uF 50V M	
C35	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C36	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C37	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C38	CK73FB1C106K	C CAPACITOR	10uF 16V K	
C39	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C40	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C41	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C42	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C43	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C44	CK73GXR1C225K	C CAPACITOR	2.2uF 16V K	
C45	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C46	CK73GXR1C225K	C CAPACITOR	2.2uF 16V K	
C47	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C48	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C49	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C50	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C51	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C52	CK73FXR1E475K	C CAPACITOR	4.7uF 25V K	
C53	CK73FB1C106K	C CAPACITOR	10uF 16V K	
C54	CK73FB1C106K	C CAPACITOR	10uF 16V K	
C55	CK73GXR1C225K	C CAPACITOR	2.2uF 16V K	
C56	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C57	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C58	CK73FB1C106K	C CAPACITOR	10uF 16V K	
C59	CK73FB1C106K	C CAPACITOR	10uF 16V K	
C60	CK73FXR1E475K	C CAPACITOR	4.7uF 25V K	
C61	CK73HB1H391K	C CAPACITOR	390pF 50V K	
C62	CK73HB1H391K	C CAPACITOR	390pF 50V K	
C63	CK730FA1H475K	C CAPACITOR	4.7uF 50V K	
C64	CK73FXR1E475K	C CAPACITOR	4.7uF 25V K	
C65	CK730DT1C476K	C CAPACITOR	47uF 16V K	
C66	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C67	CC73HCH1H470G	C CAPACITOR	47pF 50V G	
C68	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C69	CK73GXR1C225K	C CAPACITOR	2.2uF 16V K	
C72	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C73	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C74	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C75	CK73HB1E473K	C CAPACITOR	0.047uF 25V K	
C76	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C108	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C109	CC73HCH1H330G	C CAPACITOR	33pF 50V G	
C110	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C111	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C112	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C113	CK73FBB1H154K	C CAPACITOR	0.15uF 50V K	
C114	CS77ABE1D100M	TA E CAPACITOR	10uF 20V M	
C115	CK73FB1H473K	C CAPACITOR	0.047uF 50V K	

⚠ Symbol No.	Part No.	Part Name	Description	Local
C116	CC730AD1H104J	C CAPACITOR	0.1uF 50V J	
C120	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C123	CC73HCH1H221J	C CAPACITOR	220pF 50V J	
C124	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C125	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C127	CC73HCH1H221J	C CAPACITOR	220pF 50V J	
C128	CC73HCH1H020B	C CAPACITOR	2pF 50V B	
C129	CC73HCH1HR75B	C CAPACITOR	0.75pF 50V B	
C130	CK73FB1C106K	C CAPACITOR	10uF 16V K	
C131	CC73HCH1H090B	C CAPACITOR	9pF 50V B	
C132	CC73HCH1H090B	C CAPACITOR	9pF 50V B	
C133	CC73HCH1H070B	C CAPACITOR	7pF 50V B	
C134	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C135	CC73HCH1H0R5B	C CAPACITOR	0.5pF 50V B	
C136	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C137	CC73HCH1H060B	C CAPACITOR	6pF 50V B	
C138	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C139	CC73HCH1H060B	C CAPACITOR	6pF 50V B	
C140	CC73HCH1H1R5B	C CAPACITOR	1.5pF 50V B	
C141	CC73HCH1H120G	C CAPACITOR	12pF 50V G	
C142	CC73HCH1H1R5B	C CAPACITOR	1.5pF 50V B	
C143	CC73HCH1H060B	C CAPACITOR	6pF 50V B	
C145	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C146	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C147	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C148	CC73HCH1H040B	C CAPACITOR	4pF 50V B	
C207	C93-1861-05	C CAPACITOR	10pF 250V	
C208	C93-1852-05	C CAPACITOR	6pF 250V	
C209	C93-1852-05	C CAPACITOR	6pF 250V	
C211	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C212	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C213	CC73HCH1H220G	C CAPACITOR	22pF 50V G	
C214	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C216	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C218	CC73HCH1H680J	C CAPACITOR	68pF 50V J	
C219	C93-1849-05	C CAPACITOR	5pF 250V	
C220	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C221	CK73HB1E473K	C CAPACITOR	0.047uF 25V K	
C222	CK73HBB1H152K	C CAPACITOR	1500pF 50V K	
C223	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C224	CC73HCH1H470G	C CAPACITOR	47pF 50V G	
C225	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C226	CC73HCH1H220G	C CAPACITOR	22pF 50V G	
C227	CC73HCH1H390G	C CAPACITOR	39pF 50V G	
C228	CC73HCH1H220G	C CAPACITOR	22pF 50V G	
C229	CC73HCH1H120G	C CAPACITOR	12pF 50V G	
C230	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C231	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C232	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C233	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C234	CC73GCH1H330J	C CAPACITOR	33pF 50V J	
C235	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C236	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C237	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C238	CK73GBB1H102K	C CAPACITOR	1000pF 50V K	
C239	CK73HBB1H472K	C CAPACITOR	4700pF 50V K	
C241	CK73GBB1H102K	C CAPACITOR	1000pF 50V K	
C242	CC73HCH1H220G	C CAPACITOR	22pF 50V G	
C243	CC73HCH1H470G	C CAPACITOR	47pF 50V G	
C244	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C245	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C247	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C249	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C250	C93-1900-05	C CAPACITOR	1000pF 630V	
C251	CK73GBB1H332K	C CAPACITOR	3300pF 50V K	
C252	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C253	CC73GCH1H3R5B	C CAPACITOR	3.5pF 50V B	
C254	CK73GBB1H102K	C CAPACITOR	1000pF 50V K	
C255	CK73GBB1H102K	C CAPACITOR	1000pF 50V K	
C256	C93-1900-05	C CAPACITOR	1000pF 630V	
C257	CK73GBB1H102K	C CAPACITOR	1000pF 50V K	
C258	CK73GBB1H102K	C CAPACITOR	1000pF 50V K	
C259	C93-1846-05	C CAPACITOR	4pF 250V	
C260	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C261	CC73GCH1H120G	C CAPACITOR	12pF 50V G	
C262	C93-1887-05	C CAPACITOR	82pF 630V	
C263	CK73HBB1H472K	C CAPACITOR	4700pF 50V K	
C264	C93-2041-05	C CAPACITOR	11pF 500V	

⚠ Symbol No.	Part No.	Part Name	Description	Local
C265	C93-1852-05	C CAPACITOR	6pF 250V	
C266	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C267	C93-2035-05	C CAPACITOR	9pF 500V	
C268	C93-1852-05	C CAPACITOR	6pF 250V	
C270	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C271	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C272	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C274	CC73GCH1H150G	C CAPACITOR	15pF 50V G	
C275	CC73GCH1H390J	C CAPACITOR	39pF 50V J	
C277	C93-2041-05	C CAPACITOR	11pF 500V	
C278	C93-2031-05	C CAPACITOR	8pF 500V	
C279	C93-1852-05	C CAPACITOR	6pF 250V	
C280	C93-1838-05	C CAPACITOR	2pF 250V	
C304	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C305	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C306	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C307	CC73HCH1H070B	C CAPACITOR	7pF 50V B	
C308	CC73HCH1H270J	C CAPACITOR	27pF 50V J	
C309	CC73HCH1H120G	C CAPACITOR	12pF 50V G	
C310	CC73HCH1H270J	C CAPACITOR	27pF 50V J	
C311	CC73HCH1H150G	C CAPACITOR	15pF 50V G	
C312	CC73HCH1H120G	C CAPACITOR	12pF 50V G	
C313	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C314	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C315	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C316	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C317	CC73HCH1H030B	C CAPACITOR	3pF 50V B	
C318	CC73HCH1H050B	C CAPACITOR	5pF 50V B	
C319	CC73HCH1H050B	C CAPACITOR	5pF 50V B	
C320	CC73HCH1H390G	C CAPACITOR	39pF 50V G	
C321	CK730BS0J106M	C CAPACITOR	10uF 6.3V M	
C322	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C323	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C324	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C325	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C326	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C327	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C328	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C329	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C330	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C331	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C332	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C333	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C334	CC73HCH1H070B	C CAPACITOR	7pF 50V B	
C335	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C336	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C337	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C338	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C339	CC73HCH1H120G	C CAPACITOR	12pF 50V G	
C340	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C341	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C342	CK73HB0J225K	C CAPACITOR	2.2uF 6.3V K	
C343	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C344	CK730BS0J106M	C CAPACITOR	10uF 6.3V M	
C345	CK73HB1A474K	C CAPACITOR	0.47uF 10V K	
C346	CK730BS0J106M	C CAPACITOR	10uF 6.3V M	
C347	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C348	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C405	CK73HBB1H472K	C CAPACITOR	4700pF 50V K	
C410	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C411	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C412	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C414	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C415	C93-1959-05	C CAPACITOR	0.1uF 16V	
C416	C93-1959-05	C CAPACITOR	0.1uF 16V	
C417	CK73FXR0J226M	C CAPACITOR	22uF 6.3V M	
C418	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C419	C93-1959-05	C CAPACITOR	0.1uF 16V	
C420	C93-1959-05	C CAPACITOR	0.1uF 16V	
C421	CK73FXR0J226M	C CAPACITOR	22uF 6.3V M	
C422	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C423	C93-1959-05	C CAPACITOR	0.1uF 16V	
C424	C93-1959-05	C CAPACITOR	0.1uF 16V	
C425	C93-1959-05	C CAPACITOR	0.1uF 16V	
C426	C93-1959-05	C CAPACITOR	0.1uF 16V	
C427	C93-1959-05	C CAPACITOR	0.1uF 16V	
C428	C93-1959-05	C CAPACITOR	0.1uF 16V	
C429	C93-1959-05	C CAPACITOR	0.1uF 16V	

⚠ Symbol No.	Part No.	Part Name	Description	Local
C430	C93-1959-05	C CAPACITOR	0.1uF 16V	
C431	C93-1959-05	C CAPACITOR	0.1uF 16V	
C432	C93-1959-05	C CAPACITOR	0.1uF 16V	
C433	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C434	C93-1959-05	C CAPACITOR	0.1uF 16V	
C435	C93-1959-05	C CAPACITOR	0.1uF 16V	
C436	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C437	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C438	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C439	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C440	C93-1959-05	C CAPACITOR	0.1uF 16V	
C441	C93-1959-05	C CAPACITOR	0.1uF 16V	
C442	C93-1959-05	C CAPACITOR	0.1uF 16V	
C443	C93-1959-05	C CAPACITOR	0.1uF 16V	
C444	C93-1959-05	C CAPACITOR	0.1uF 16V	
C445	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C446	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C447	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C448	C93-1959-05	C CAPACITOR	0.1uF 16V	
C449	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C450	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C451	C93-1959-05	C CAPACITOR	0.1uF 16V	
C452	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C453	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C454	CC73HCH1H050B	C CAPACITOR	5pF 50V B	
C455	C93-1959-05	C CAPACITOR	0.1uF 16V	
C456	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C457	C93-1959-05	C CAPACITOR	0.1uF 16V	
C458	C93-1959-05	C CAPACITOR	0.1uF 16V	
C459	C93-1959-05	C CAPACITOR	0.1uF 16V	
C460	C93-1959-05	C CAPACITOR	0.1uF 16V	
C461	C93-1959-05	C CAPACITOR	0.1uF 16V	
C462	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C463	C93-1959-05	C CAPACITOR	0.1uF 16V	
C464	C93-1959-05	C CAPACITOR	0.1uF 16V	
C465	C93-1959-05	C CAPACITOR	0.1uF 16V	
C466	C93-1959-05	C CAPACITOR	0.1uF 16V	
C467	C93-1959-05	C CAPACITOR	0.1uF 16V	
C468	C93-1959-05	C CAPACITOR	0.1uF 16V	
C469	C93-1959-05	C CAPACITOR	0.1uF 16V	
C470	C93-1959-05	C CAPACITOR	0.1uF 16V	
C471	C93-1959-05	C CAPACITOR	0.1uF 16V	
C472	C93-1959-05	C CAPACITOR	0.1uF 16V	
C473	C93-1959-05	C CAPACITOR	0.1uF 16V	
C474	C93-1959-05	C CAPACITOR	0.1uF 16V	
C475	C93-1959-05	C CAPACITOR	0.1uF 16V	
C476	C93-1959-05	C CAPACITOR	0.1uF 16V	
C477	C93-1959-05	C CAPACITOR	0.1uF 16V	
C478	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C479	C93-1959-05	C CAPACITOR	0.1uF 16V	
C480	CC73HCH1H180G	C CAPACITOR	18pF 50V G	
C481	CC73HCH1H150G	C CAPACITOR	15pF 50V G	
C482	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C483	CK73HB1A224K	C CAPACITOR	0.22uF 10V K	
C484	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C485	C93-1959-05	C CAPACITOR	0.1uF 16V	
C486	C93-1959-05	C CAPACITOR	0.1uF 16V	
C487	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C488	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C489	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C490	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C491	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C492	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C493	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C494	C93-1959-05	C CAPACITOR	0.1uF 16V	
C495	C93-1959-05	C CAPACITOR	0.1uF 16V	
C497	C93-1959-05	C CAPACITOR	0.1uF 16V	
C498	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C501	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C502	C93-1959-05	C CAPACITOR	0.1uF 16V	
C503	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C504	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C505	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C506	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C507	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C509	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C510	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C511	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	

⚠ Symbol No.	Part No.	Part Name	Description	Local
C514	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C515	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C516	C93-1959-05	C CAPACITOR	0.1uF 16V	
C517	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C518	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C519	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C520	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C521	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C522	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C523	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C524	CC73HCH1H470G	C CAPACITOR	47pF 50V G	
C525	CC73HCH1H470G	C CAPACITOR	47pF 50V G	
C526	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C527	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C528	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C605	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C606	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C607	C93-1959-05	C CAPACITOR	0.1uF 16V	
C608	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C609	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C610	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C611	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C612	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C613	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C614	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C615	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C616	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C617	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C618	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C619	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C620	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C621	CK73HBB1E223K	C CAPACITOR	0.022uF 25V K	
C622	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C623	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C624	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C625	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C626	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C627	CK73HB1A224K	C CAPACITOR	0.22uF 10V K	
C628	CK73HB1A224K	C CAPACITOR	0.22uF 10V K	
C629	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C630	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C631	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C632	CK73FXR1E475K	C CAPACITOR	4.7uF 25V K	
C633	C93-1959-05	C CAPACITOR	0.1uF 16V	
C634	C93-1959-05	C CAPACITOR	0.1uF 16V	
C635	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C636	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C637	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C638	C93-1959-05	C CAPACITOR	0.1uF 16V	
C639	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C640	C93-1959-05	C CAPACITOR	0.1uF 16V	
C641	C93-1959-05	C CAPACITOR	0.1uF 16V	
C642	C93-1959-05	C CAPACITOR	0.1uF 16V	
C643	C93-1959-05	C CAPACITOR	0.1uF 16V	
C644	C93-1959-05	C CAPACITOR	0.1uF 16V	
C645	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C646	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C647	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C648	C93-1959-05	C CAPACITOR	0.1uF 16V	
C649	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C650	C93-1959-05	C CAPACITOR	0.1uF 16V	
C651	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C652	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C653	CK73HBB1E223K	C CAPACITOR	0.022uF 25V K	
C655	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C656	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C657	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C658	CC73HCH1H680J	C CAPACITOR	68pF 50V J	
C659	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C660	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C661	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C663	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C664	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C665	CK73GXR1C225K	C CAPACITOR	2.2uF 16V K	
R2	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R5	R92-1061-05	C RESISTOR	0.008Ω	
R21	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R22	RK73HH1J104D	MG RESISTOR	100kΩ 1/16W D	
R23	RK73HH1J104D	MG RESISTOR	100kΩ 1/16W D	
R24	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R25	RK73HH1J104D	MG RESISTOR	100kΩ 1/16W D	
R26	RK73HH1J223D	MG RESISTOR	22kΩ 1/16W D	
R27	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R28	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
R29	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R30	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R31	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R32	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R33	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R34	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R35	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
R36	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R37	RK73JB1H472J	MG RESISTOR	4.7kΩ 1/20W J	
R38	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
R39	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R40	RK73JB1H473J	MG RESISTOR	47kΩ 1/20W J	
R41	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R42	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R43	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R44	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R45	RK73HH1J473D	MG RESISTOR	47kΩ 1/16W D	
R46	RK73HH1J113D	MG RESISTOR	11kΩ 1/16W D	
R47	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R48	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R49	RK73HB1J224J	MG RESISTOR	220kΩ 1/16W J	
R50	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R51	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R52	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R53	RK73JB1H473J	MG RESISTOR	47kΩ 1/20W J	
R54	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R55	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
R56	RK73HB1J124J	MG RESISTOR	120kΩ 1/16W J	
R57	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R58	RK73HH1J303D	MG RESISTOR	30kΩ 1/16W D	
R59	RK73HH1J154D	MG RESISTOR	150kΩ 1/16W D	
R60	RK73HH1J113D	MG RESISTOR	11kΩ 1/16W D	
R61	RK73HH1J103D	MG RESISTOR	10kΩ 1/16W D	
R62	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R63	RK73HH1J113D	MG RESISTOR	11kΩ 1/16W D	
R64	R92-3769-05	MG RESISTOR	10Ω 0.25W	
R65	R92-3769-05	MG RESISTOR	10Ω 0.25W	
R66	RK73HB1J334J	MG RESISTOR	330kΩ 1/16W J	
R67	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R68	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R69	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R70	RK73HH1J273D	MG RESISTOR	27kΩ 1/16W D	
R71	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R72	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
R73	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R74	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
R75	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R76	RK73JB1H473J	MG RESISTOR	47kΩ 1/20W J	
R77	RK73HB1J471J	MG RESISTOR	470Ω 1/16W J	
R78	RK73FB2B332J	MG RESISTOR	3.3kΩ 1/8W J	
R79	RK73FB2B332J	MG RESISTOR	3.3kΩ 1/8W J	
R80	RK73FB2B332J	MG RESISTOR	3.3kΩ 1/8W J	
R81	RK73FB2B2R7J	MG RESISTOR	2.7Ω 1/8W J	
R82	RK73FB2B3R3J	MG RESISTOR	3.3Ω 1/8W J	
R83	RK73HH1J152D	MG RESISTOR	1.5kΩ 1/16W D	
R84	RK73HH1J472D	MG RESISTOR	4.7kΩ 1/16W D	
R108	RK73HB1J181J	MG RESISTOR	180Ω 1/16W J	
R109	RK73HB1J181J	MG RESISTOR	180Ω 1/16W J	
R112	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R113	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R114	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R115	RK73HB1J124J	MG RESISTOR	120kΩ 1/16W J	
R116	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R117	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R118	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R119	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R120	RK73HB1J151J	MG RESISTOR	150Ω 1/16W J	
R121	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
R122	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R123	RK73HH1J391D	MG RESISTOR	390Ω 1/16W D	
R124	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	

⚠ Symbol No.	Part No.	Part Name	Description	Local
R125	RK73HB1J106J	MG RESISTOR	10MΩ 1/16W J	
R127	RK73HB1J470J	MG RESISTOR	47Ω 1/16W J	
R128	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R131	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R132	RK73HB1J122J	MG RESISTOR	1.2kΩ 1/16W J	
R133	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R134	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R135	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R136	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R137	RN73HH1J151D	MG RESISTOR	150Ω 0.063W D	
R138	RN73HH1J100D	MF RESISTOR	10Ω 0.063W D	
R139	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R140	RK73HB1J562J	MG RESISTOR	5.6kΩ 1/16W J	
R141	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R142	RK73HB1J181J	MG RESISTOR	180Ω 1/16W J	
R143	RK73HB1J151J	MG RESISTOR	150Ω 1/16W J	
R144	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R145	RK73HB1J330J	MG RESISTOR	33Ω 1/16W J	
R146	RK73HB1J822J	MG RESISTOR	8.2kΩ 1/16W J	
R147	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
R148	RK73HB1J151J	MG RESISTOR	150Ω 1/16W J	
R149	RK73HB1J220J	MG RESISTOR	22Ω 1/16W J	
R203	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R204	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R205	RK73GB2A181J	MG RESISTOR	180Ω 1/10W J	
R206	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R207	RK73FB2B221J	MG RESISTOR	220Ω 1/8W J	
R208	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R211	RK73HB1J474J	MG RESISTOR	470kΩ 1/16W J	
R212	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R213	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R214	RK73HB1J271J	MG RESISTOR	270Ω 1/16W J	
R215	RK73HB1J390J	MG RESISTOR	39Ω 1/16W J	
R216	RK73HB1J390J	MG RESISTOR	39Ω 1/16W J	
R217	RK73HB1J271J	MG RESISTOR	270Ω 1/16W J	
R218	RK73HB1J220J	MG RESISTOR	22Ω 1/16W J	
R219	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R220	RK73HB1J121J	MG RESISTOR	120Ω 1/16W J	
R221	RK73HB1J822J	MG RESISTOR	8.2kΩ 1/16W J	
R222	RK73HB1J181J	MG RESISTOR	180Ω 1/16W J	
R223	RK73HB1J560J	MG RESISTOR	56Ω 1/16W J	
R224	RK73HB1J560J	MG RESISTOR	56Ω 1/16W J	
R225	RK73HB1J181J	MG RESISTOR	180Ω 1/16W J	
R226	RK73HB1J270J	MG RESISTOR	27Ω 1/16W J	
R227	RK73HB1J332J	MG RESISTOR	3.3kΩ 1/16W J	
R228	RK73HB1J562J	MG RESISTOR	5.6kΩ 1/16W J	
R229	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R230	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R231	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R233	RK73GB2A121J	MG RESISTOR	120Ω 1/10W J	
R235	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R238	RK73HB1J470J	MG RESISTOR	47Ω 1/16W J	
R239	RK73GB2A271J	MG RESISTOR	270Ω 1/10W J	
R240	RK73GB2A390J	MG RESISTOR	39Ω 1/10W J	
R241	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R242	RK73GB2A271J	MG RESISTOR	270Ω 1/10W J	
R243	RK73GB2A390J	MG RESISTOR	39Ω 1/10W J	
R244	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R245	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R247	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R248	RK73HB1J271J	MG RESISTOR	270Ω 1/16W J	
R250	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R251	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R256	RK73GB2A221J	MG RESISTOR	220Ω 1/10W J	
R259	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R260	RK73HB1J124J	MG RESISTOR	120kΩ 1/16W J	
R261	RK73GB2A471J	MG RESISTOR	470Ω 1/10W J	
R262	RK73FB2B101J	MG RESISTOR	100Ω 1/8W J	
R265	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R266	RK73HB1J274J	MG RESISTOR	270kΩ 1/16W J	
R267	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R269	RK73FB2B121J	MG RESISTOR	120Ω 1/8W J	
R270	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R271	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R272	RK73GB2A121J	MG RESISTOR	120Ω 1/10W J	
R273	RK73HB1J183J	MG RESISTOR	18kΩ 1/16W J	
R274	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R275	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R276	RK73PB2H560J	MG RESISTOR	56Ω 1/2W J	
R277	RK73PB2H560J	MG RESISTOR	56Ω 1/2W J	
R278	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R279	RK73HB1J560J	MG RESISTOR	56Ω 1/16W J	
R280	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R282	RK73HB1J273J	MG RESISTOR	27kΩ 1/16W J	
R302	RK73HB1J821J	MG RESISTOR	820Ω 1/16W J	
R303	RK73HB1J821J	MG RESISTOR	820Ω 1/16W J	
R304	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R305	RK73HB1J181J	MG RESISTOR	180Ω 1/16W J	
R307	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R308	RK73HB1J181J	MG RESISTOR	180Ω 1/16W J	
R309	RK73HB1J470J	MG RESISTOR	47Ω 1/16W J	
R310	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R311	RK73HH1J271D	MG RESISTOR	270Ω 1/16W D	
R312	RK73HB1J5R6J	MG RESISTOR	5.6Ω 1/16W J	
R313	RK73HB1J471J	MG RESISTOR	470Ω 1/16W J	
R314	RK73HB1J120J	MG RESISTOR	12Ω 1/16W J	
R315	RK73HB1J471J	MG RESISTOR	470Ω 1/16W J	
R316	RK73HB1J474J	MG RESISTOR	470kΩ 1/16W J	
R317	RK73HH1J473D	MG RESISTOR	47kΩ 1/16W D	
R319	RK73HH1J273D	MG RESISTOR	27kΩ 1/16W D	
R320	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R321	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R322	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R323	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R324	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R325	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R326	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R407	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R408	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R416	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R418	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R420	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
R421	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R422	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R423	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R424	RK73HB1J220J	MG RESISTOR	22Ω 1/16W J	
R425	RK73HB1J220J	MG RESISTOR	22Ω 1/16W J	
R426	RK73HB1J153J	MG RESISTOR	15kΩ 1/16W J	
R427	RK73HB1J333J	MG RESISTOR	33kΩ 1/16W J	
R428	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R429	RK73HB1J681J	MG RESISTOR	680Ω 1/16W J	
R431	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R432	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R433	RK73JB1H472J	MG RESISTOR	4.7kΩ 1/20W J	
R434	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R435	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R436	RK73JB1H105J	MG RESISTOR	1MΩ 1/20W J	
R437	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R438	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R439	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R440	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R441	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R442	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R443	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R444	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R445	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R446	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R447	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R448	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R449	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R450	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R451	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R452	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R453	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R454	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R455	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R456	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R457	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R458	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R459	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R460	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R461	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R462	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
R463	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R464	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R465	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	

⚠ Symbol No.	Part No.	Part Name	Description	Local
R466	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R467	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R468	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R469	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R470	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R471	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R472	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R473	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R474	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R475	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R476	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R477	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R478	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R479	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R480	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R481	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R482	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R483	RK73GH2A49R9D	MG RESISTOR	49.9Ω 1/10W D	
R484	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R485	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
R486	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
R487	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R488	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
R489	RK73HB1J471J	MG RESISTOR	470Ω 1/16W J	
R490	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R491	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R492	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R493	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R494	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R495	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R496	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R497	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R498	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R499	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R500	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R501	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R502	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R503	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R504	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R505	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R506	RK73HH1J104D	MG RESISTOR	100kΩ 1/16W D	
R507	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R508	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R509	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R511	RK73HB1J333J	MG RESISTOR	33kΩ 1/16W J	
R512	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R513	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R514	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
R516	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R517	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
R518	RK73HB1J393J	MG RESISTOR	39kΩ 1/16W J	
R519	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R520	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R522	RK73FB2B332J	MG RESISTOR	3.3kΩ 1/8W J	
R523	RK73FB2B332J	MG RESISTOR	3.3kΩ 1/8W J	
R524	RK73FB2B332J	MG RESISTOR	3.3kΩ 1/8W J	
R525	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R526	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R527	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R528	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R529	RK73HH1J223D	MG RESISTOR	22kΩ 1/16W D	
R530	RK73HH1J223D	MG RESISTOR	22kΩ 1/16W D	
R531	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R532	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R533	RK73HH1J223D	MG RESISTOR	22kΩ 1/16W D	
R534	RK73HH1J223D	MG RESISTOR	22kΩ 1/16W D	
R535	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R536	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R537	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R538	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R539	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R613	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R614	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R615	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R616	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R617	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R618	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R619	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R620	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
R621	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
R622	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R623	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R624	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R625	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R626	RK73HB1J471J	MG RESISTOR	470Ω 1/16W J	
R627	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R628	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R629	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
R630	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R631	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R632	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R633	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R634	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R635	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R636	RK73HB1J471J	MG RESISTOR	470Ω 1/16W J	
R637	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R638	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R639	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R640	RK73HB1J471J	MG RESISTOR	470Ω 1/16W J	
R641	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R642	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R643	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R644	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R645	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R646	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R647	RK73HB1J682J	MG RESISTOR	6.8kΩ 1/16W J	
R648	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R649	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R650	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R651	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R652	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R653	RK73HB1J682J	MG RESISTOR	6.8kΩ 1/16W J	
R654	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R655	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R656	RK73FB2B102J	MG RESISTOR	1kΩ 1/8W J	
R657	RK73FB2B102J	MG RESISTOR	1kΩ 1/8W J	
R658	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R659	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R660	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R661	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R662	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R663	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R664	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R665	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R666	RK73HB1J683J	MG RESISTOR	68kΩ 1/16W J	
R667	RK73HB1J123J	MG RESISTOR	12kΩ 1/16W J	
R668	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R669	RK73HB1J681J	MG RESISTOR	680Ω 1/16W J	
R670	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R671	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R672	RK73HH1J273D	MG RESISTOR	27kΩ 1/16W D	
R673	RK73HB1J681J	MG RESISTOR	680Ω 1/16W J	
R674	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R675	RK73HB1J682J	MG RESISTOR	6.8kΩ 1/16W J	
R676	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R677	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R678	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R679	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R680	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R681	RK73HH1J152D	MG RESISTOR	1.5kΩ 1/16W D	
L1	L34-4902-05	AIR CORE COIL		
L2	L34-4903-05	AIR CORE COIL		
L3	L34-4903-05	AIR CORE COIL		
L4	L34-4903-05	AIR CORE COIL		
L5	L3E-0018-00	AIR CORE COIL		
L6	L34-4848-05	AIR CORE COIL		
L7	L34-4610-15	AIR CORE COIL		
L11	LB73G0AK-001	CHIP FERRITE		
L12	LR79Z0FQ100M	CHIP INDUCTOR		
L13	LB73G0AM-004	CHIP FERRITE		
L14	LR79Z0AA150M	CHIP INDUCTOR		
L15	LB73G0AM-004	CHIP FERRITE		
L16	LB73G0AK-001	CHIP FERRITE		
L17	LB73H0AV-002	CHIP FERRITE		
L18	LB73H0AV-002	CHIP FERRITE		

⚠ Symbol No.	Part No.	Part Name	Description	Local
L19	LB73G0AK-001	CHIP FERRITE		
L107	LB73H0AV-003	CHIP FERRITE		
L108	L41-2785-53	CHIP INDUCTOR		
L109	LB73H0AV-003	CHIP FERRITE		
L110	L41-2785-53	CHIP INDUCTOR		
L111	L41-2785-53	CHIP INDUCTOR		
L112	L41-2785-53	CHIP INDUCTOR		
L113	L41-2785-53	CHIP INDUCTOR		
L115	L41-2785-53	CHIP INDUCTOR		
L116	L41-2785-53	CHIP INDUCTOR		
L117	LB73H0AY-004	CHIP FERRITE		
L118	LK73H0AM47NJ	M.CHIP INDUCTOR	47nH	
L119	LB73H0AY-004	CHIP FERRITE		
L121	LK73H0AM27NJ	M.CHIP INDUCTOR	27nH	
L123	LK73H0AM27NJ	M.CHIP INDUCTOR	27nH	
L124	LK73H0AM56NJ	M.CHIP INDUCTOR	56nH	
L207	LB73H0AY-004	CHIP FERRITE		
L208	LB73H0AY-004	CHIP FERRITE		
L209	LK73H0AM56NJ	M.CHIP INDUCTOR	56nH	
L210	L41-2785-53	CHIP INDUCTOR		
L211	LK73H0AM56NJ	M.CHIP INDUCTOR	56nH	
L212	LK73H0AM56NJ	M.CHIP INDUCTOR	56nH	
L213	LK73H0AM47NJ	M.CHIP INDUCTOR	47nH	
L214	L41-8275-53	CHIP INDUCTOR		
L215	LB73F0AW-002	CHIP FERRITE		
L217	LB73H0AV-003	CHIP FERRITE		
L218	LB73G0BA-004	CHIP FERRITE		
L219	LB73Z0DF-001	CHIP FERRITE		
L220	LB73Z0DF-001	CHIP FERRITE		
L221	LB73Z0DF-001	CHIP FERRITE		
L222	L41-2775-53	CHIP INDUCTOR		
L223	LR77Z0AAR27J	CHIP INDUCTOR	0.27uH	
L224	LR79Z0GJR56G	CHIP INDUCTOR		
L225	LB73H0AY-004	CHIP FERRITE		
L226	LB73H0AV-003	CHIP FERRITE		
L302	LK73H0AMR10J	M.CHIP INDUCTOR	0.1uH	
L303	LR79G0CQ56NG	CHIP INDUCTOR		
L304	LR79G0CQ47NG	CHIP INDUCTOR		
L305	LR79G0CQ82NG	CHIP INDUCTOR		
L306	LR79G0CQ8N2C	CHIP INDUCTOR		
L307	LR79G0CQR22G	CHIP INDUCTOR		
L308	LR79G0CQR12G	CHIP INDUCTOR		
L309	LR79G0CQ68NG	CHIP INDUCTOR	68nH	
L310	LR79G0CQ82NG	CHIP INDUCTOR		
L311	LR79G0CQR33G	CHIP INDUCTOR		
L312	LK73H0AMR10J	M.CHIP INDUCTOR	0.1uH	
L313	LR79G0CQ56NG	CHIP INDUCTOR		
L314	LK73H0AMR27J	M.CHIP INDUCTOR		
L315	LR79G0CQR10G	CHIP INDUCTOR		
L317	LK73H0AM33NJ	M.CHIP INDUCTOR	33nH	
L401	LB73G0AK-001	CHIP FERRITE		
L402	LB73H0AV-003	CHIP FERRITE		
L403	LB73G0AK-001	CHIP FERRITE		
L404	LR77Z0AE4R7J	CHIP INDUCTOR	4.7uH	
L405	LB73G0AM-004	CHIP FERRITE		
L406	L92-1101-05	CHIP FERRITE		
L407	L92-1101-05	CHIP FERRITE		
L408	L92-1101-05	CHIP FERRITE		
L409	L92-1101-05	CHIP FERRITE		
L410	LB73G0AK-001	CHIP FERRITE		
L411	LB73G0AK-001	CHIP FERRITE		
L412	LB73G0AK-001	CHIP FERRITE		
L413	LB73G0AK-001	CHIP FERRITE		
L414	LB73H0AV-002	CHIP FERRITE		
L415	L79-1984-05	FILTER		
L416	L79-1984-05	FILTER		
L417	LB73H0AY-002	CHIP FERRITE		
L418	LB73H0AY-002	CHIP FERRITE		
L419	L79-1984-05	FILTER		
L420	L92-1101-05	CHIP FERRITE		
L601	LB73H0AV-003	CHIP FERRITE		
L602	LB73H0AV-003	CHIP FERRITE		
L603	LB73H0AV-003	CHIP FERRITE		
CN1	EC720AA-0560A	FFC FPC CONNE		
CN2	E40-6862-05	F.C.CONNECTOR		
CN3	J19-5386-05	HOLDER		
CP301	RK74HB1J100J	NET RESISTOR	10Ω 1/16W J	
CP302	RK74HB1J100J	NET RESISTOR	10Ω 1/16W J	
CP303	RK74HB1J100J	NET RESISTOR	10Ω 1/16W J	
CP401	RK74HB1J103J	NET RESISTOR	10kΩ 1/16W J	
CP402	RK74HB1J222J	NET RESISTOR	2.2kΩ 1/16W J	
CP403	RK74HB1J100J	NET RESISTOR	10Ω 1/16W J	
CP404	RK74HB1J100J	NET RESISTOR	10Ω 1/16W J	
CP405	RK74HB1J100J	NET RESISTOR	10Ω 1/16W J	
CP406	RK74HB1J101J	NET RESISTOR	100Ω 1/16W J	
CP407	RK74HB1J101J	NET RESISTOR	100Ω 1/16W J	
CP408	RK74HB1J101J	NET RESISTOR	100Ω 1/16W J	
CP409	RK74HB1J101J	NET RESISTOR	100Ω 1/16W J	
CP410	RK74HB1J101J	NET RESISTOR	100Ω 1/16W J	
CP411	RK74HB1J101J	NET RESISTOR	100Ω 1/16W J	
CP412	RK74HB1J470J	NET RESISTOR	47Ω 1/16W J	
CP413	RK74HB1J470J	NET RESISTOR	47Ω 1/16W J	
CP414	RK74HB1J470J	NET RESISTOR	47Ω 1/16W J	
CP601	RK74HB1J472J	NET RESISTOR	4.7kΩ 1/16W J	
CP602	RK74HB1J472J	NET RESISTOR	4.7kΩ 1/16W J	
CP604	RK74HB1J100J	NET RESISTOR	10Ω 1/16W J	
CP605	RK74HB1J101J	NET RESISTOR	100Ω 1/16W J	
E11	F1B-0085-00	SHIELDING CASE		
E101	F1B-0085-00	SHIELDING CASE		
F1	F53-0286-05	FUSE		
F2	F53-0286-05	FUSE		
F3	F53-0286-05	FUSE		
F4	FZA10BS-5R0	FUSE (CC)		
F5	FZA10BS-5R0	FUSE (CC)		
F6	F53-0286-05	FUSE		
IC201	RA60H1317A501	MOS IC		
IC601	LA4631VC-XE	ANALOG IC		
J1	E58-0567-05	SUB SOCKET D		
J2	E1B-0001-00	3.5D PHONE JACK		
TH201	NCU15WF104F6S	N THERMISTOR		
TH202	NCU15WF104F6S	N THERMISTOR		
TH203	NCU15WF104F6S	N THERMISTOR		
TH401	NCU15WF104F6S	N THERMISTOR		
X401	L7H-0076-00	TCXO		
X402	L77-1802-05	QUARTZ CRYSTAL		

TX-RX UNIT

XC1-183K-01 (NX-3820E,NX-3820GE, NX-3820HGK2,NX-3820HK2)
XC1-183K-00 (NX-3820HGK,NX-3820HK)
*Note : This part cannot be replaced.Therefore, this part is not supplied as a service part.

Block No. [0][2]

⚠ Symbol No.	Part No.	Part Name	Description	Local
IC1	BA00DD0WHFP	IC		
IC12	LXDC2HN18F163	IC		
IC13	BU31TD2WNVX	IC		
IC14	TPS61041DRVR	IC		
IC15	XC6215B122N-G	IC		
IC16	XC6209B502P-G	IC		
IC17	NJM2878F4-32	IC		
IC18	XC61CN5002N-G	IC		
IC19	XC6223D321G-G	IC		
IC20	XC6223D321P-G	IC		
IC21	XC8102AA07-G	IC		
IC22	MSP430G2533P0	IC		
IC23	XC6221D501G-G	IC		
IC24	LXDC2XQ12A-252	IC		
IC25	MP2560DQ-LF-Z	IC		
IC26	XC6221D501G-G	IC		
IC101	NJM2904CRB1	IC		
IC202	BGU6104	IC		
IC203	BA3472FVM	IC		
IC205	AD8315ARM	IC		
IC301	NJG1608KB2	IC		
IC302	AK2401	IC		

⚠ Symbol No.	Part No.	Part Name	Description	Local
IC401	----------	IC	*Note	
IC402	----------	IC	*Note	
IC403	TC7SZ08FE	IC		
IC404	----------	IC	*Note	
IC405	BD11600NUX	IC		
IC406	BD11600NUX	IC		
IC407	TC7SET125FUF	IC		
IC408	TC7SZ08FE	IC		
IC409	TCA9555RTWR	IC		
IC410	ADS7961SRHB	IC		
IC411	DAC124S085CIS	IC		
IC412	R2A20178NP	IC		
IC413	XC61CN5002N-G	IC		
IC414	BU7462NUX	IC		
IC602	TC7WT126FU-F	IC		
IC603	TC7WH126FK	IC		
IC604	TCA9555RTWR	IC		
IC605	ADM3202ARUZ	IC		
IC606	TC7SET125FUF	IC		
IC607	TLV32AIC3104I	IC		
IC608	BU7462NUX	IC		
IC609	XC6221D501G-G	IC		
Q11	LTC014EEBFS8	DIGI TRANSISTOR		
Q12	TPCP8107-F	FET		
Q13	LTC014EEBFS8	DIGI TRANSISTOR		
Q14	LTC014TEBFS8	DIGI TRANSISTOR		
Q15	LSCR523EBFS8	TRANSISTOR		
Q16	LSAR523UBFS8	TRANSISTOR		
Q17	TPCP8107-F	FET		
Q18	LTC014EEBFS8	DIGI TRANSISTOR		
Q19	VT6M1	FET		
Q20	SSM3J334R	FET		
Q21	LTC014EEBFS8	DIGI TRANSISTOR		
Q22	SSM3J334R	FET		
Q23	LTC014EEBFS8	DIGI TRANSISTOR		
Q25	EMD9	DIGI TRANSISTOR		
Q101	2SC5108FT/Y/	TRANSISTOR		
Q102	2SC5108FT/Y/	TRANSISTOR		
Q103	EM6M2	FET		
Q104	2SD2654/W/	TRANSISTOR		
Q105	MCH3914-H/8/	FET		
Q106	2SC5108FT/Y/	TRANSISTOR		
Q201	RFM01U7PF	FET		
Q202	LSCR523EBFS8	TRANSISTOR		
Q204	LSCR523EBFS8	TRANSISTOR		
Q205	EMD9	DIGI TRANSISTOR		
Q206	VT6M1	FET		
Q301	SSM3K15AMFV	FET		
Q401	2SC4617/S/	TRANSISTOR		
Q402	SSM3K15AMFV	FET		
Q403	SSM3K15AMFV	FET		
Q404	LTC014TEBFS8	DIGI TRANSISTOR		
Q601	SSM6N15AFEM	DUAL FET		
Q602	LTC014TEBFS8	DIGI TRANSISTOR		
Q603	TPCP8107-F	FET		
Q604	LTC014TEBFS8	DIGI TRANSISTOR		
Q605	SSM6N15AFEM	DUAL FET		
Q606	SSM3J334R	FET		
D1	ST70-27F-572	ZENER DIODE		
D13	EDZV5.6B	ZENER DIODE		
D14	RB521CM-30	DIODE		
D15	1SS400SM	DIODE		
D16	RB060M-40	DIODE		
D17	RB561VM-40	SCHOTTKY DIODE		
D18	RB521CM-30	DIODE		
D19	RB521CM-30	DIODE		
D20	EDZV18B	ZENER DIODE		
D21	RB520SM-30	DIODE		
D22	EDZV8.2B	ZENER DIODE		
D24	RB520SM-30	DIODE		
D26	RB521CM-30	DIODE		
D27	RB521CM-30	DIODE		
D101	EDZV8.2B	ZENER DIODE		
D102	SMV1270-079LF	VARI CAP DIODE		
D103	1SV282-F	VARI CAP DIODE		
D104	1SV282-F	VARI CAP DIODE		

⚠ Symbol No.	Part No.	Part Name	Description	Local
D105	1SV282-F	VARI CAP DIODE		
D106	1SV282-F	VARI CAP DIODE		
D107	1SS400SM	DIODE		
D108	SMV1130-079LF	VARI CAP DIODE		
D201	EDZV5.6B	ZENER DIODE		
D202	RN142S	DIODE		
D204	RB706F-40	DIODE		
D205	L8104	DIODE		
D206	L8104	DIODE		
D207	L8104	DIODE		
D208	RN142S	DIODE		
D209	RN142S	DIODE		
D301	1SS390	DIODE		
D302	1SS390	DIODE		
D303	1SS400SM	DIODE		
D304	1SS400SM	DIODE		
D401	RB521CM-30	DIODE		
D402	SPC10501A01	VARISTOR		
D403	SPC10501A01	VARISTOR		
D404	SPC10501A01	VARISTOR		
D405	SPC10501A01	VARISTOR		
D406	SPC10501A01	VARISTOR		
D407	EDZV8.2B	ZENER DIODE		
D408	RB521CM-30	DIODE		
D409	RB521CM-30	DIODE		
D410	RB521CM-30	DIODE		
D601	EDZV5.6B	ZENER DIODE		
D602	RB521CM-30	DIODE		
D603	EDZV6.8B	ZENER DIODE		
D604	EDZV6.8B	ZENER DIODE		
D605	EDZV6.8B	ZENER DIODE		
D606	EDZV6.8B	ZENER DIODE		
D607	EDZV6.8B	ZENER DIODE		
D608	EDZV6.8B	ZENER DIODE		
D609	RB521CM-30	DIODE		
D610	RB521CM-30	DIODE		
D611	EDZV6.8B	ZENER DIODE		
D612	DA204U	MULTIPLE DIODE		
D613	DA204U	MULTIPLE DIODE		
D614	RB521CM-30	DIODE		
D615	RB521CM-30	DIODE		
D616	AVRM10270K101	VARISTOR		
D617	AVRM10270K101	VARISTOR		
D618	RB520SM-30	DIODE		
D619	RB521CM-30	DIODE		
C1	CE32EJ1E102M	E CAPACITOR	1000uF 25V M	
C2	C92-0906-05	E CAPACITOR	330uF 10V	
C3	C92-0906-05	E CAPACITOR	330uF 10V	
C4	CE32BY1E470M	E CAPACITOR	47uF 25V M	
C5	C92-0968-05	E CAPACITOR	470uF 25V	
C11	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C12	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C14	CK73FB1C106K	C CAPACITOR	10uF 16V K	
C15	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C16	C93-1959-05	C CAPACITOR	0.1uF 16V	
C17	CK73HB1A474K	C CAPACITOR	0.47uF 10V K	
C18	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C19	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C20	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C21	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C22	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C24	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C25	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C26	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C27	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C28	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C29	CK73HBB1H222K	C CAPACITOR	2200pF 50V K	
C30	CK73EB1H475KM	C CAPACITOR	4.7uF 50V M	
C31	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C32	CK73EB1H475KM	C CAPACITOR	4.7uF 50V M	
C33	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C34	CK73EB1H475KM	C CAPACITOR	4.7uF 50V M	
C35	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C36	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C37	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C38	CK73FB1C106K	C CAPACITOR	10uF 16V K	
C39	CK73HBB1H471K	C CAPACITOR	470pF 50V K	

⚠ Symbol No.	Part No.	Part Name	Description	Local
C40	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C41	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C42	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C43	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C44	CK73GXR1C225K	C CAPACITOR	2.2uF 16V K	
C45	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C46	CK73GXR1C225K	C CAPACITOR	2.2uF 16V K	
C47	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C48	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C49	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C50	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C51	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C52	CK73FXR1E475K	C CAPACITOR	4.7uF 25V K	
C53	CK73FB1C106K	C CAPACITOR	10uF 16V K	
C54	CK73FB1C106K	C CAPACITOR	10uF 16V K	
C55	CK73GXR1C225K	C CAPACITOR	2.2uF 16V K	
C56	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C57	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C58	CK73FB1C106K	C CAPACITOR	10uF 16V K	
C59	CK73FB1C106K	C CAPACITOR	10uF 16V K	
C60	CK73FXR1E475K	C CAPACITOR	4.7uF 25V K	
C61	CK73HB1H391K	C CAPACITOR	390pF 50V K	
C62	CK73HB1H391K	C CAPACITOR	390pF 50V K	
C63	CK730FA1H475K	C CAPACITOR	4.7uF 50V K	
C64	CK73FXR1E475K	C CAPACITOR	4.7uF 25V K	
C65	CK730DT1C476K	C CAPACITOR	47uF 16V K	
C66	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C67	CC73HCH1H470G	C CAPACITOR	47pF 50V G	
C68	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C69	CK73GXR1C225K	C CAPACITOR	2.2uF 16V K	
C72	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C73	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C74	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C75	CK73HB1E473K	C CAPACITOR	0.047uF 25V K	
C76	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C101	CC73HCH1H040B	C CAPACITOR	4pF 50V B	
C102	CC73HCH1H3R5B	C CAPACITOR	3.5pF 50V B	3820E,3820GE,3820HGK2,3820HK2
C103	CC73HCH1H100B	C CAPACITOR	10pF 50V B	3820E,3820GE,3820HGK2,3820HK2
C103	CC73HCH1H101J	C CAPACITOR	100pF 50V J	3820HGK,3820HK
C104	CC73HCH1H070B	C CAPACITOR	7pF 50V B	3820E,3820GE,3820HGK2,3820HK2
C105	CC73HCH1H470G	C CAPACITOR	47pF 50V G	
C108	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C109	CC73HCH1H330G	C CAPACITOR	33pF 50V G	
C110	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C111	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C112	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C113	CK73FBB1H154K	C CAPACITOR	0.15uF 50V K	
C114	CS77ABE1D100M	TA E CAPACITOR	10uF 20V M	
C115	CK73FB1H473K	C CAPACITOR	0.047uF 50V K	
C116	CC730AD1H104J	C CAPACITOR	0.1uF 50V J	
C117	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C119	CC73HCH1H470G	C CAPACITOR	47pF 50V G	
C120	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C121	CC73HCH1H3R5B	C CAPACITOR	3.5pF 50V B	3820E,3820GE,3820HGK2,3820HK2
C122	CC73HCH1H1R5B	C CAPACITOR	1.5pF 50V B	3820E,3820GE,3820HGK2,3820HK2
C122	CC73HCH1H020B	C CAPACITOR	2pF 50V B	3820HGK,3820HK
C123	CC73HCH1H221J	C CAPACITOR	220pF 50V J	
C124	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C125	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C126	CC73HCH1H010B	C CAPACITOR	1pF 50V B	3820E,3820GE,3820HGK2,3820HK2
C126	CC73HCH1H020B	C CAPACITOR	2pF 50V B	3820HGK,3820HK
C127	CC73HCH1H221J	C CAPACITOR	220pF 50V J	
C128	CC73HCH1H020B	C CAPACITOR	2pF 50V B	
C129	CC73HCH1H0R5B	C CAPACITOR	0.5pF 50V B	
C130	CK73FB1C106K	C CAPACITOR	10uF 16V K	
C131	CC73HCH1H090B	C CAPACITOR	9pF 50V B	
C132	CC73HCH1H090B	C CAPACITOR	9pF 50V B	
C133	CC73HCH1H070B	C CAPACITOR	7pF 50V B	
C134	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C135	CC73HCH1H0R5B	C CAPACITOR	0.5pF 50V B	
C136	CC73HCH1H101J	C CAPACITOR	100pF 50V J	

⚠ Symbol No.	Part No.	Part Name	Description	Local
C137	CC73HCH1H1R5B	C CAPACITOR	1.5pF 50V B	3820E,3820GE,3820HGK2,3820HK2
C137	CC73HCH1H020B	C CAPACITOR	2pF 50V B	3820HGK,3820HK
C138	CC73HCH1H470G	C CAPACITOR	47pF 50V G	
C139	CC73HCH1H090B	C CAPACITOR	9pF 50V B	
C140	CC73HCH1H0R5B	C CAPACITOR	0.5pF 50V B	
C141	CC73HCH1H120G	C CAPACITOR	12pF 50V G	3820E,3820GE,3820HGK2,3820HK2
C141	CC73HCH1H100B	C CAPACITOR	10pF 50V B	3820HGK,3820HK
C142	CC73HCH1H0R5B	C CAPACITOR	0.5pF 50V B	
C143	CC73HCH1H090B	C CAPACITOR	9pF 50V B	
C144	CC73HCH1H040B	C CAPACITOR	4pF 50V B	3820E,3820GE,3820HGK2,3820HK2
C145	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C146	CC73HCH1H040B	C CAPACITOR	4pF 50V B	3820E,3820GE,3820HGK2,3820HK2
C147	CC73HCH1H030B	C CAPACITOR	3pF 50V B	3820E,3820GE,3820HGK2,3820HK2
C148	CC73HCH1H030B	C CAPACITOR	3pF 50V B	3820E,3820GE,3820HGK2,3820HK2
C201	CC73HCH1H020B	C CAPACITOR	2pF 50V B	
C207	C93-1838-05	C CAPACITOR	2pF 250V	3820E,3820GE,3820HGK2,3820HK2
C211	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C212	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C213	CC73HCH1H121J	C CAPACITOR	120pF 50V J	
C214	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C216	CC73HCH1H150G	C CAPACITOR	15pF 50V G	
C217	CC73HCH1H050B	C CAPACITOR	5pF 50V B	
C218	CC73HCH1H150G	C CAPACITOR	15pF 50V G	
C219	CC73HCH1H050B	C CAPACITOR	5pF 50V B	
C220	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C221	CK73HB1E473K	C CAPACITOR	0.047uF 25V K	
C222	CK73HBB1H472K	C CAPACITOR	4700pF 50V K	
C223	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C224	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C225	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C226	CC73HCH1H050B	C CAPACITOR	5pF 50V B	
C227	CC73HCH1H100B	C CAPACITOR	10pF 50V B	
C228	CC73HCH1H050B	C CAPACITOR	5pF 50V B	
C229	CC73HCH1H220G	C CAPACITOR	22pF 50V G	
C230	CC73HCH1H080B	C CAPACITOR	8pF 50V B	
C231	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C232	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C233	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C234	CC73GCH1H040B	C CAPACITOR	4pF 50V B	
C235	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C236	CC73HCH1H470G	C CAPACITOR	47pF 50V G	
C237	CC73HCH1H470G	C CAPACITOR	47pF 50V G	
C238	CK73GB1H471K	C CAPACITOR	470pF 50V K	
C239	CK73HBB1H472K	C CAPACITOR	4700pF 50V K	
C241	CK73GB1H471K	C CAPACITOR	470pF 50V K	
C242	CC73HCH1H220G	C CAPACITOR	22pF 50V G	
C243	CC73HCH1H470G	C CAPACITOR	47pF 50V G	
C244	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C245	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C247	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C249	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C250	C93-1866-05	C CAPACITOR	27pF 250V	
C251	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C252	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C253	CC73GCH1H1R5B	C CAPACITOR	1.5pF 50V B	3820E,3820GE,3820HGK2,3820HK2
C253	CC73GCH1H020B	C CAPACITOR	2pF 50V B	3820HGK,3820HK
C254	CK73GB1H471K	C CAPACITOR	470pF 50V K	
C255	CK73GB1H471K	C CAPACITOR	470pF 50V K	
C256	C93-1866-05	C CAPACITOR	27pF 250V	
C257	CK73GB1H471K	C CAPACITOR	470pF 50V K	
C258	CK73GB1H471K	C CAPACITOR	470pF 50V K	
C259	C93-1846-05	C CAPACITOR	4pF 250V	3820E,3820GE,3820HGK2,3820HK2
C259	C93-1852-05	C CAPACITOR	6pF 250V	3820HGK,3820HK
C260	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C261	CC73GCH1H040B	C CAPACITOR	4pF 50V B	
C262	C93-1932-05	C CAPACITOR	100pF 250V	
C263	CK73HBB1H472K	C CAPACITOR	4700pF 50V K	
C264	CC730DF2H130G	C CAPACITOR	13pF 500V G	3820E,3820GE,3820HGK2,3820HK2

⚠ Symbol No.	Part No.	Part Name	Description	Local
C264	C93-2035-05	C CAPACITOR	9pF 500V	3820HGK,3820HK
C265	C93-1846-05	C CAPACITOR	4pF 250V	3820E,3820GE,3820HGK2,3820HK2
C266	CC73HCH1H470G	C CAPACITOR	47pF 50V G	
C267	CC730DF2H130G	C CAPACITOR	13pF 500V G	3820E,3820GE,3820HGK2,3820HK2
C267	C93-2039-05	C CAPACITOR	10pF 500V	3820HGK,3820HK
C268	C93-1852-05	C CAPACITOR	6pF 250V	
C270	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C271	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C272	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C274	CC73GCH1H020B	C CAPACITOR	2pF 50V B	
C304	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C305	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C306	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C307	CC73HCH1H020B	C CAPACITOR	2pF 50V B	
C308	CC73HCH1H080B	C CAPACITOR	8pF 50V B	
C309	CC73HCH1H040B	C CAPACITOR	4pF 50V B	
C310	CC73HCH1H070B	C CAPACITOR	7pF 50V B	
C311	CC73HCH1H050B	C CAPACITOR	5pF 50V B	
C312	CC73HCH1H040B	C CAPACITOR	4pF 50V B	
C313	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C314	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C315	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C316	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C317	CC73HCH1H1R5B	C CAPACITOR	1.5pF 50V B	
C319	CC73HCH1H060B	C CAPACITOR	6pF 50V B	
C320	CC73HCH1H150G	C CAPACITOR	15pF 50V G	
C321	CK730BS0J106M	C CAPACITOR	10uF 6.3V M	
C322	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C323	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C324	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C325	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C326	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C327	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C328	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C329	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C330	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C331	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C332	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C333	CC73HCH1H150G	C CAPACITOR	15pF 50V G	
C334	CC73HCH1H030B	C CAPACITOR	3pF 50V B	
C335	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C336	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C337	CK73HBB1H471K	C CAPACITOR	470pF 50V K	3820E,3820GE,3820HGK2,3820HK2
C337	CC73HCH1H470G	C CAPACITOR	47pF 50V G	3820HGK,3820HK
C338	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C339	CC73HCH1H040B	C CAPACITOR	4pF 50V B	
C340	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C341	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C342	CK73HB0J225K	C CAPACITOR	2.2uF 6.3V K	
C343	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C344	CK730BS0J106M	C CAPACITOR	10uF 6.3V M	
C345	CK73HB1A474K	C CAPACITOR	0.47uF 10V K	
C346	CK730BS0J106M	C CAPACITOR	10uF 6.3V M	
C347	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C405	CK73HBB1H472K	C CAPACITOR	4700pF 50V K	
C410	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C411	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C412	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C414	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C415	C93-1959-05	C CAPACITOR	0.1uF 16V	
C416	C93-1959-05	C CAPACITOR	0.1uF 16V	
C417	CK73FXR0J226M	C CAPACITOR	22uF 6.3V M	
C418	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C419	C93-1959-05	C CAPACITOR	0.1uF 16V	
C420	C93-1959-05	C CAPACITOR	0.1uF 16V	
C421	CK73FXR0J226M	C CAPACITOR	22uF 6.3V M	
C422	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C423	C93-1959-05	C CAPACITOR	0.1uF 16V	
C424	C93-1959-05	C CAPACITOR	0.1uF 16V	
C425	C93-1959-05	C CAPACITOR	0.1uF 16V	
C426	C93-1959-05	C CAPACITOR	0.1uF 16V	
C427	C93-1959-05	C CAPACITOR	0.1uF 16V	
C428	C93-1959-05	C CAPACITOR	0.1uF 16V	
C429	C93-1959-05	C CAPACITOR	0.1uF 16V	
C430	C93-1959-05	C CAPACITOR	0.1uF 16V	

⚠ Symbol No.	Part No.	Part Name	Description	Local
C431	C93-1959-05	C CAPACITOR	0.1uF 16V	
C432	C93-1959-05	C CAPACITOR	0.1uF 16V	
C433	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C434	C93-1959-05	C CAPACITOR	0.1uF 16V	
C435	C93-1959-05	C CAPACITOR	0.1uF 16V	
C436	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C437	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C438	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C439	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C440	C93-1959-05	C CAPACITOR	0.1uF 16V	
C441	C93-1959-05	C CAPACITOR	0.1uF 16V	
C442	C93-1959-05	C CAPACITOR	0.1uF 16V	
C443	C93-1959-05	C CAPACITOR	0.1uF 16V	
C444	C93-1959-05	C CAPACITOR	0.1uF 16V	
C445	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C446	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C447	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C448	C93-1959-05	C CAPACITOR	0.1uF 16V	
C449	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C450	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C451	C93-1959-05	C CAPACITOR	0.1uF 16V	
C452	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C453	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C454	CC73HCH1H050B	C CAPACITOR	5pF 50V B	
C455	C93-1959-05	C CAPACITOR	0.1uF 16V	
C456	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C457	C93-1959-05	C CAPACITOR	0.1uF 16V	
C458	C93-1959-05	C CAPACITOR	0.1uF 16V	
C459	C93-1959-05	C CAPACITOR	0.1uF 16V	
C460	C93-1959-05	C CAPACITOR	0.1uF 16V	
C461	C93-1959-05	C CAPACITOR	0.1uF 16V	
C462	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C463	C93-1959-05	C CAPACITOR	0.1uF 16V	
C464	C93-1959-05	C CAPACITOR	0.1uF 16V	
C465	C93-1959-05	C CAPACITOR	0.1uF 16V	
C466	C93-1959-05	C CAPACITOR	0.1uF 16V	
C467	C93-1959-05	C CAPACITOR	0.1uF 16V	
C468	C93-1959-05	C CAPACITOR	0.1uF 16V	
C469	C93-1959-05	C CAPACITOR	0.1uF 16V	
C470	C93-1959-05	C CAPACITOR	0.1uF 16V	
C471	C93-1959-05	C CAPACITOR	0.1uF 16V	
C472	C93-1959-05	C CAPACITOR	0.1uF 16V	
C473	C93-1959-05	C CAPACITOR	0.1uF 16V	
C474	C93-1959-05	C CAPACITOR	0.1uF 16V	
C475	C93-1959-05	C CAPACITOR	0.1uF 16V	
C476	C93-1959-05	C CAPACITOR	0.1uF 16V	
C477	C93-1959-05	C CAPACITOR	0.1uF 16V	
C478	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C479	C93-1959-05	C CAPACITOR	0.1uF 16V	
C480	CC73HCH1H180G	C CAPACITOR	18pF 50V G	
C481	CC73HCH1H150G	C CAPACITOR	15pF 50V G	
C482	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C483	CK73HB1A224K	C CAPACITOR	0.22uF 10V K	
C484	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C485	C93-1959-05	C CAPACITOR	0.1uF 16V	
C486	C93-1959-05	C CAPACITOR	0.1uF 16V	
C487	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C488	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C489	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C490	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C491	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C492	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C493	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C494	C93-1959-05	C CAPACITOR	0.1uF 16V	
C495	C93-1959-05	C CAPACITOR	0.1uF 16V	
C497	C93-1959-05	C CAPACITOR	0.1uF 16V	
C498	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C501	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C502	C93-1959-05	C CAPACITOR	0.1uF 16V	
C503	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C504	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C505	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C506	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C507	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C509	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C510	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C511	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C514	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	

⚠ Symbol No.	Part No.	Part Name	Description	Local
C515	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C516	C93-1959-05	C CAPACITOR	0.1uF 16V	
C517	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C518	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C519	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C520	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C521	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C522	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C523	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C524	CC73HCH1H470G	C CAPACITOR	47pF 50V G	
C525	CC73HCH1H470G	C CAPACITOR	47pF 50V G	
C526	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C527	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C528	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C605	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C606	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C607	C93-1959-05	C CAPACITOR	0.1uF 16V	
C608	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C609	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C610	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C611	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C612	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C613	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C614	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C615	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C616	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C617	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C618	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C619	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C620	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C621	CK73HBB1E223K	C CAPACITOR	0.022uF 25V K	
C622	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C623	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C624	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C625	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C626	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C627	CK73HB1A224K	C CAPACITOR	0.22uF 10V K	
C628	CK73HB1A224K	C CAPACITOR	0.22uF 10V K	
C629	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C630	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C631	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C632	CK73FXR1E475K	C CAPACITOR	4.7uF 25V K	
C633	C93-1959-05	C CAPACITOR	0.1uF 16V	
C634	C93-1959-05	C CAPACITOR	0.1uF 16V	
C635	CK73HB1H103K	C CAPACITOR	10000pF 50V K	
C636	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C637	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C638	C93-1959-05	C CAPACITOR	0.1uF 16V	
C639	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C640	C93-1959-05	C CAPACITOR	0.1uF 16V	
C641	C93-1959-05	C CAPACITOR	0.1uF 16V	
C642	C93-1959-05	C CAPACITOR	0.1uF 16V	
C643	C93-1959-05	C CAPACITOR	0.1uF 16V	
C644	C93-1959-05	C CAPACITOR	0.1uF 16V	
C645	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C646	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C647	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C648	C93-1959-05	C CAPACITOR	0.1uF 16V	
C649	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C650	C93-1959-05	C CAPACITOR	0.1uF 16V	
C651	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C652	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C653	CK73HBB1E223K	C CAPACITOR	0.022uF 25V K	
C655	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C656	CK73GB0J106K	C CAPACITOR	10uF 6.3V K	
C657	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C658	CC73HCH1H680J	C CAPACITOR	68pF 50V J	
C659	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C660	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C661	CK73HB1C105K	C CAPACITOR	1.0uF 16V K	
C663	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C664	CK73GB1H105K	C CAPACITOR	1uF 50V K	
C665	CK73GXR1C225K	C CAPACITOR	2.2uF 16V K	
R2	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R3	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	3820HGK,3820HK
R4	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	3820E,3820GE,3820HGK2,3820HK2

⚠ Symbol No.	Part No.	Part Name	Description	Local
R5	R92-1061-05	C RESISTOR	0.008Ω	
R21	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R22	RK73HH1J104D	MG RESISTOR	100kΩ 1/16W D	
R23	RK73HH1J104D	MG RESISTOR	100kΩ 1/16W D	
R24	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R25	RK73HH1J104D	MG RESISTOR	100kΩ 1/16W D	
R26	RK73HH1J223D	MG RESISTOR	22kΩ 1/16W D	
R27	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R28	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
R29	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R30	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R31	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R32	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R33	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R34	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R35	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
R36	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R37	RK73JB1H472J	MG RESISTOR	4.7kΩ 1/20W J	
R38	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
R39	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R40	RK73JB1H473J	MG RESISTOR	47kΩ 1/20W J	
R41	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R42	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R43	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R44	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R45	RK73HH1J473D	MG RESISTOR	47kΩ 1/16W D	
R46	RK73HH1J113D	MG RESISTOR	11kΩ 1/16W D	
R47	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R48	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R49	RK73HB1J224J	MG RESISTOR	220kΩ 1/16W J	
R50	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R51	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R52	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R53	RK73JB1H473J	MG RESISTOR	47kΩ 1/20W J	
R54	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R55	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
R56	RK73HB1J124J	MG RESISTOR	120kΩ 1/16W J	
R57	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R58	RK73HH1J303D	MG RESISTOR	30kΩ 1/16W D	
R59	RK73HH1J154D	MG RESISTOR	150kΩ 1/16W D	
R60	RK73HH1J113D	MG RESISTOR	11kΩ 1/16W D	
R61	RK73HH1J103D	MG RESISTOR	10kΩ 1/16W D	
R62	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R63	RK73HH1J113D	MG RESISTOR	11kΩ 1/16W D	
R64	R92-3769-05	MG RESISTOR	10Ω 0.25W	
R65	R92-3769-05	MG RESISTOR	10Ω 0.25W	
R66	RK73HB1J334J	MG RESISTOR	330kΩ 1/16W J	
R67	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R68	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R69	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R70	RK73HH1J273D	MG RESISTOR	27kΩ 1/16W D	
R71	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R72	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
R73	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R74	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
R75	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R76	RK73JB1H473J	MG RESISTOR	47kΩ 1/20W J	
R77	RK73HB1J471J	MG RESISTOR	470Ω 1/16W J	
R78	RK73FB2B332J	MG RESISTOR	3.3kΩ 1/8W J	
R79	RK73FB2B332J	MG RESISTOR	3.3kΩ 1/8W J	
R80	RK73FB2B332J	MG RESISTOR	3.3kΩ 1/8W J	
R81	RK73FB2B2R7J	MG RESISTOR	2.7Ω 1/8W J	
R82	RK73FB2B3R3J	MG RESISTOR	3.3Ω 1/8W J	
R83	RK73HH1J152D	MG RESISTOR	1.5kΩ 1/16W D	
R84	RK73HH1J472D	MG RESISTOR	4.7kΩ 1/16W D	
R103	RK73HB1J392J	MG RESISTOR	3.9kΩ 1/16W J	
R104	RK73HB1J182J	MG RESISTOR	1.8kΩ 1/16W J	
R105	RK73HB1J680J	MG RESISTOR	68Ω 1/16W J	3820E,3820GE,3820HGK2,3820HK2
R105	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	3820HGK,3820HK
R106	RK73HB1J821J	MG RESISTOR	820Ω 1/16W J	3820HGK,3820HK
R108	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	3820HGK,3820HK
R109	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	3820HGK,3820HK
R110	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	3820HGK,3820HK
R111	RK73HB1J220J	MG RESISTOR	22Ω 1/16W J	
R112	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R113	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R114	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	

⚠ Symbol No.	Part No.	Part Name	Description	Local
R115	RK73HB1J124J	MG RESISTOR	120kΩ 1/16W J	
R116	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R117	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R118	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R119	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R120	RK73HB1J221J	MG RESISTOR	220Ω 1/16W J	
R121	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
R122	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R123	RK73HH1J391D	MG RESISTOR	390Ω 1/16W D	
R124	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R125	RK73HB1J106J	MG RESISTOR	10MΩ 1/16W J	
R126	RK73HB1J392J	MG RESISTOR	3.9kΩ 1/16W J	
R127	RK73HB1J470J	MG RESISTOR	47Ω 1/16W J	
R128	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R129	RK73HB1J182J	MG RESISTOR	1.8kΩ 1/16W J	
R130	RK73HB1J680J	MG RESISTOR	68Ω 1/16W J	3820E,3820GE,3820HGK2,3820HK2
R130	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	3820HGK,3820HK
R131	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R132	RK73HB1J123J	MG RESISTOR	12kΩ 1/16W J	
R133	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R134	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R135	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R136	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R137	RN73HH1J151D	MG RESISTOR	150Ω 0.063W D	
R138	RN73HH1J100D	MF RESISTOR	10Ω 0.063W D	
R139	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R140	RK73HB1J182J	MG RESISTOR	1.8kΩ 1/16W J	
R141	RK73HB1J272J	MG RESISTOR	2.7kΩ 1/16W J	
R142	RK73HB1J560J	MG RESISTOR	56Ω 1/16W J	
R143	RK73HB1J151J	MG RESISTOR	150Ω 1/16W J	
R145	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R146	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	3820HGK,3820HK
R147	RK73HB1J220J	MG RESISTOR	22Ω 1/16W J	
R203	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R204	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R211	RK73HB1J474J	MG RESISTOR	470kΩ 1/16W J	
R212	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R213	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R214	RK73HB1J271J	MG RESISTOR	270Ω 1/16W J	
R215	RK73HB1J390J	MG RESISTOR	39Ω 1/16W J	
R216	RK73HB1J390J	MG RESISTOR	39Ω 1/16W J	
R217	RK73HB1J271J	MG RESISTOR	270Ω 1/16W J	
R218	RK73HB1J220J	MG RESISTOR	22Ω 1/16W J	
R219	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R220	RK73HB1J121J	MG RESISTOR	120Ω 1/16W J	
R221	RK73HB1J822J	MG RESISTOR	8.2kΩ 1/16W J	
R222	RK73HB1J271J	MG RESISTOR	270Ω 1/16W J	
R223	RK73HB1J390J	MG RESISTOR	39Ω 1/16W J	
R224	RK73HB1J390J	MG RESISTOR	39Ω 1/16W J	
R225	RK73HB1J271J	MG RESISTOR	270Ω 1/16W J	
R226	RK73HB1J470J	MG RESISTOR	47Ω 1/16W J	
R227	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R228	RK73HB1J392J	MG RESISTOR	3.9kΩ 1/16W J	
R229	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R230	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R231	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R233	RK73GB2A151J	MG RESISTOR	150Ω 1/10W J	
R235	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R238	RK73HB1J470J	MG RESISTOR	47Ω 1/16W J	
R239	RK73GB2A271J	MG RESISTOR	270Ω 1/10W J	
R240	RK73GB2A390J	MG RESISTOR	39Ω 1/10W J	
R241	RK73HB1J272J	MG RESISTOR	2.7kΩ 1/16W J	
R242	RK73GB2A271J	MG RESISTOR	270Ω 1/10W J	
R243	RK73GB2A390J	MG RESISTOR	39Ω 1/10W J	
R244	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R245	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R247	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R248	RK73HB1J271J	MG RESISTOR	270Ω 1/16W J	
R250	RK73HB1J124J	MG RESISTOR	120kΩ 1/16W J	
R251	RK73HB1J153J	MG RESISTOR	15kΩ 1/16W J	
R256	RK73GB2A391J	MG RESISTOR	390Ω 1/10W J	
R258	RK73HB1J471J	MG RESISTOR	470Ω 1/16W J	
R259	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R260	RK73HB1J124J	MG RESISTOR	120kΩ 1/16W J	
R261	RK73HB1J470J	MG RESISTOR	47Ω 1/16W J	
R262	RK73FB2B101J	MG RESISTOR	100Ω 1/8W J	3820E,3820GE,3820HGK2,3820HK2

⚠ Symbol No.	Part No.	Part Name	Description	Local
R262	RK73FB2B910J	MG RESISTOR	91Ω 1/8W J	3820HGK,3820HK
R265	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R266	RK73HB1J274J	MG RESISTOR	270kΩ 1/16W J	
R267	RK73HB1J392J	MG RESISTOR	3.9kΩ 1/16W J	
R268	RK73GB2A560J	MG RESISTOR	56Ω 1/10W J	
R269	RK73FB2B820J	MG RESISTOR	82Ω 1/8W J	3820E,3820GE,3820HGK2,3820HK2
R269	RK73FB2B101J	MG RESISTOR	100Ω 1/8W J	3820HGK,3820HK
R270	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R271	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R272	RK73GB2A560J	MG RESISTOR	56Ω 1/10W J	3820E,3820GE,3820HGK2,3820HK2
R273	RK73HB1J183J	MG RESISTOR	18kΩ 1/16W J	
R274	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R275	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R276	RK73PB2H560J	MG RESISTOR	56Ω 1/2W J	
R277	RK73PB2H560J	MG RESISTOR	56Ω 1/2W J	
R278	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R280	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R281	RK73GB2A560J	MG RESISTOR	56Ω 1/10W J	
R282	RK73HB1J333J	MG RESISTOR	33kΩ 1/16W J	
R302	RK73HB1J821J	MG RESISTOR	820Ω 1/16W J	
R303	RK73HB1J821J	MG RESISTOR	820Ω 1/16W J	
R304	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R305	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R307	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R308	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R309	RK73HB1J470J	MG RESISTOR	47Ω 1/16W J	
R310	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R311	RK73HH1J391D	MG RESISTOR	390Ω 1/16W D	
R312	RK73HB1J5R6J	MG RESISTOR	5.6Ω 1/16W J	
R313	RK73HB1J471J	MG RESISTOR	470Ω 1/16W J	
R314	RK73HB1J120J	MG RESISTOR	12Ω 1/16W J	
R315	RK73HB1J471J	MG RESISTOR	470Ω 1/16W J	
R316	RK73HB1J474J	MG RESISTOR	470kΩ 1/16W J	
R317	RK73HH1J473D	MG RESISTOR	47kΩ 1/16W D	
R318	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R319	RK73HH1J273D	MG RESISTOR	27kΩ 1/16W D	
R320	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R321	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R322	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R323	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R324	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R325	RK73HB1J151J	MG RESISTOR	150Ω 1/16W J	
R326	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R407	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R408	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R416	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R418	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R420	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
R421	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R422	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R423	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R424	RK73HB1J220J	MG RESISTOR	22Ω 1/16W J	
R425	RK73HB1J220J	MG RESISTOR	22Ω 1/16W J	
R426	RK73HB1J153J	MG RESISTOR	15kΩ 1/16W J	
R427	RK73HB1J333J	MG RESISTOR	33kΩ 1/16W J	
R428	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R429	RK73HB1J681J	MG RESISTOR	680Ω 1/16W J	
R431	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R432	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R433	RK73JB1H472J	MG RESISTOR	4.7kΩ 1/20W J	
R434	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R435	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R436	RK73JB1H105J	MG RESISTOR	1MΩ 1/20W J	
R437	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R438	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R439	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R440	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R441	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R442	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R443	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R444	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R445	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R446	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R447	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R448	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R449	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	

⚠ Symbol No.	Part No.	Part Name	Description	Local
R450	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R451	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R452	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R453	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R454	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R455	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R456	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R457	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R458	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R459	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R460	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R461	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R462	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
R463	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R464	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R465	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R466	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R467	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R468	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R469	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R470	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R471	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R472	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R473	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R474	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R475	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R476	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R477	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R478	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R479	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R480	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R481	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R482	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R483	RK73GH2A49R9D	MG RESISTOR	49.9Ω 1/10W D	
R484	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R485	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
R486	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
R487	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R488	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
R489	RK73HB1J471J	MG RESISTOR	470Ω 1/16W J	
R490	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R491	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R492	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R493	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R494	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R495	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R496	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R497	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R498	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R499	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R500	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R501	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R502	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R503	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R504	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R505	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R506	RK73HH1J104D	MG RESISTOR	100kΩ 1/16W D	
R507	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R508	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R509	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R511	RK73HB1J333J	MG RESISTOR	33kΩ 1/16W J	
R512	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R513	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R514	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
R516	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R517	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
R518	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R519	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R520	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R522	RK73FB2B332J	MG RESISTOR	3.3kΩ 1/8W J	
R523	RK73FB2B332J	MG RESISTOR	3.3kΩ 1/8W J	
R524	RK73FB2B332J	MG RESISTOR	3.3kΩ 1/8W J	
R525	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R526	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R527	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R528	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R529	RK73HH1J223D	MG RESISTOR	22kΩ 1/16W D	
R530	RK73HH1J223D	MG RESISTOR	22kΩ 1/16W D	

⚠ Symbol No.	Part No.	Part Name	Description	Local
R531	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R532	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R533	RK73HH1J223D	MG RESISTOR	22kΩ 1/16W D	
R534	RK73HH1J223D	MG RESISTOR	22kΩ 1/16W D	
R535	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R536	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R537	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R538	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R539	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R613	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R614	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R615	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R616	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R617	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R618	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R619	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R620	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
R621	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
R622	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R623	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R624	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R625	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R626	RK73HB1J471J	MG RESISTOR	470Ω 1/16W J	
R627	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R628	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R629	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
R630	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R631	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R632	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R633	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R634	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R635	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R636	RK73HB1J471J	MG RESISTOR	470Ω 1/16W J	
R637	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R638	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R639	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R640	RK73HB1J471J	MG RESISTOR	470Ω 1/16W J	
R641	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R642	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R643	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R644	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R645	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R646	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R647	RK73HB1J682J	MG RESISTOR	6.8kΩ 1/16W J	
R648	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R649	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R650	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R651	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R652	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R653	RK73HB1J682J	MG RESISTOR	6.8kΩ 1/16W J	
R654	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R655	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R656	RK73FB2B102J	MG RESISTOR	1kΩ 1/8W J	
R657	RK73FB2B102J	MG RESISTOR	1kΩ 1/8W J	
R658	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R659	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R660	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R661	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R662	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R663	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R664	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R665	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R666	RK73HB1J683J	MG RESISTOR	68kΩ 1/16W J	
R667	RK73HB1J123J	MG RESISTOR	12kΩ 1/16W J	
R668	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R669	RK73HB1J681J	MG RESISTOR	680Ω 1/16W J	
R670	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R671	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R672	RK73HH1J273D	MG RESISTOR	27kΩ 1/16W D	
R673	RK73HB1J681J	MG RESISTOR	680Ω 1/16W J	
R674	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R675	RK73HB1J682J	MG RESISTOR	6.8kΩ 1/16W J	
R676	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R677	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R678	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R679	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R680	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R681	RK73HH1J152D	MG RESISTOR	1.5kΩ 1/16W D	

⚠ Symbol No.	Part No.	Part Name	Description	Local
L1	L34-4902-05	AIR CORE COIL		
L2	L34-4758-05	AIR CORE COIL		3820E,3820GE,38 20HGK2,3820HK2
L2	L34-4743-05	AIR CORE COIL		3820HGK,3820HK
L3	L34-4758-05	AIR CORE COIL		
L4	L34-4758-05	AIR CORE COIL		
L5	L34-4743-05	AIR CORE COIL		
L6	L34-4848-05	AIR CORE COIL		
L7	L34-4610-15	AIR CORE COIL		
L11	LB73G0AK-001	CHIP FERRITE		
L12	LR79Z0FQ100M	CHIP INDUCTOR		
L13	LB73G0AM-004	CHIP FERRITE		
L14	LR79Z0AA150M	CHIP INDUCTOR		
L15	LB73G0AM-004	CHIP FERRITE		
L16	LB73G0AK-001	CHIP FERRITE		
L17	LB73H0AV-002	CHIP FERRITE		
L18	LB73H0AV-002	CHIP FERRITE		
L19	LB73G0AK-001	CHIP FERRITE		
L101	LK73H0AM12NJ	M.CHIP INDUCTOR 12nH		3820E,3820GE,38 20HGK2,3820HK2
L101	LK73H0AM8N2J	M.CHIP INDUCTOR 8.2nH		3820HGK,3820HK
L102	LK73H0BX5N1B	M.CHIP INDUCTOR		3820E,3820GE,38 20HGK2,3820HK2
L103	LK73H0AM8N2J	M.CHIP INDUCTOR 8.2nH		3820E,3820GE,38 20HGK2,3820HK2
L104	LK73H0BX5N1B	M.CHIP INDUCTOR		3820E,3820GE,38 20HGK2,3820HK2
L105	LK73H0AM8N2J	M.CHIP INDUCTOR 8.2nH		3820E,3820GE,38 20HGK2,3820HK2
L106	LK73H0AM15NJ	M.CHIP INDUCTOR 15nH		3820E,3820GE,38 20HGK2,3820HK2
L106	LK73H0AM8N2J	M.CHIP INDUCTOR 8.2nH		3820HGK,3820HK
L107	LB73H0AV-003	CHIP FERRITE		
L108	L41-2785-53	CHIP INDUCTOR		
L109	LB73H0AV-003	CHIP FERRITE		
L110	L41-2785-53	CHIP INDUCTOR		
L111	L41-2785-53	CHIP INDUCTOR		
L112	L41-2785-53	CHIP INDUCTOR		
L113	L41-2785-53	CHIP INDUCTOR		
L115	L41-2785-53	CHIP INDUCTOR		
L116	L41-2785-53	CHIP INDUCTOR		
L117	LB73H0AY-004	CHIP FERRITE		
L118	LK73H0AM15NJ	M.CHIP INDUCTOR 15nH		3820E,3820GE,38 20HGK2,3820HK2
L118	LK73H0AM10NJ	M.CHIP INDUCTOR 10nH		3820HGK,3820HK
L119	LB73H0AY-004	CHIP FERRITE		
L120	LK73H0BX3N0B	M.CHIP INDUCTOR		3820E,3820GE,38 20HGK2,3820HK2
L120	LK73H0AM2N7S	M.CHIP INDUCTOR 2.7nH		3820HGK,3820HK
L121	LK73H0BX39NG	M.CHIP INDUCTOR		3820E,3820GE,38 20HGK2,3820HK2
L121	LK73H0AM33NJ	M.CHIP INDUCTOR 33nH		3820HGK,3820HK
L122	LK73H0BX1N8B	M.CHIP INDUCTOR		3820E,3820GE,38 20HGK2,3820HK2
L122	LK73H0AM1N8S	M.CHIP INDUCTOR 1.8nH		3820HGK,3820HK
L123	LK73H0BX39NG	M.CHIP INDUCTOR		3820E,3820GE,38 20HGK2,3820HK2
L123	LK73H0AM33NJ	M.CHIP INDUCTOR 33nH		3820HGK,3820HK
L124	LK73H0BX3N0B	M.CHIP INDUCTOR		3820E,3820GE,38 20HGK2,3820HK2
L124	LK73H0AM2N7S	M.CHIP INDUCTOR 2.7nH		3820HGK,3820HK
L207	LB73H0AY-004	CHIP FERRITE		
L208	LB73H0AY-004	CHIP FERRITE		
L209	LK73H0AM15NJ	M.CHIP INDUCTOR 15nH		
L210	LK73H0AMR12J	M.CHIP INDUCTOR 0.12uH		
L211	LK73H0AM15NJ	M.CHIP INDUCTOR 15nH		
L212	LK73H0AM15NJ	M.CHIP INDUCTOR 15nH		
L213	LK73H0AM8N2J	M.CHIP INDUCTOR 8.2nH		
L214	L41-1575-53	CHIP INDUCTOR		3820E,3820GE,38 20HGK2,3820HK2
L214	L41-1275-53	CHIP INDUCTOR		3820HGK,3820HK
L215	LB73F0AW-002	CHIP FERRITE		
L216	L41-1575-53	CHIP INDUCTOR		3820E,3820GE,38 20HGK2,3820HK2
L216	L41-1275-53	CHIP INDUCTOR		3820HGK,3820HK
L217	LB73H0AV-003	CHIP FERRITE		
L218	LB73G0BA-004	CHIP FERRITE		
L219	LB73Z0DF-001	CHIP FERRITE		
L220	LB73Z0DF-001	CHIP FERRITE		
L221	LB73Z0DF-001	CHIP FERRITE		
L222	L41-4775-53	CHIP INDUCTOR		
L223	LR77Z0AA68NJ	CHIP INDUCTOR	68nH	3820E,3820GE,38 20HGK2,3820HK2
L223	LR77Z0AAR12J	CHIP INDUCTOR		3820HGK,3820HK
L224	LR79G0GK82NG	CHIP INDUCTOR		
L225	LB73H0AY-004	CHIP FERRITE		
L226	LB73H0AV-003	CHIP FERRITE		
L227	LR79G0GK3N9B	CHIP INDUCTOR		
L302	LK73H0AM33NJ	M.CHIP INDUCTOR	33nH	
L303	LR79G0CQ18NG	CHIP INDUCTOR		
L304	LR79G0CQ12NG	CHIP INDUCTOR		
L305	LR79G0CQ22NG	CHIP INDUCTOR	22nH	
L306	LR79G0CQ3N9C	CHIP INDUCTOR		
L307	LR79G0CQ39NG	CHIP INDUCTOR		
L308	LR79G0CQ39NG	CHIP INDUCTOR		
L309	LR79G0CQ39NG	CHIP INDUCTOR		
L310	LR79G0CQ22NG	CHIP INDUCTOR	22nH	
L311	LR79G0CQR22G	CHIP INDUCTOR		
L312	LK73H0AM33NJ	M.CHIP INDUCTOR	33nH	
L313	LR79G0CQ18NG	CHIP INDUCTOR		
L314	LK73H0AMR27J	M.CHIP INDUCTOR		
L401	LB73G0AK-001	CHIP FERRITE		
L402	LB73H0AV-003	CHIP FERRITE		
L403	LB73G0AK-001	CHIP FERRITE		
L404	LR77Z0AE4R7J	CHIP INDUCTOR	4.7uH	
L405	LB73G0AM-004	CHIP FERRITE		
L406	L92-1101-05	CHIP FERRITE		
L407	L92-1101-05	CHIP FERRITE		
L408	L92-1101-05	CHIP FERRITE		
L409	L92-1101-05	CHIP FERRITE		
L410	LB73G0AK-001	CHIP FERRITE		
L411	LB73G0AK-001	CHIP FERRITE		
L412	LB73G0AK-001	CHIP FERRITE		
L413	LB73G0AK-001	CHIP FERRITE		
L414	LB73H0AV-002	CHIP FERRITE		
L415	L79-1984-05	FILTER		
L416	L79-1984-05	FILTER		
L417	LB73H0AY-002	CHIP FERRITE		
L418	LB73H0AY-002	CHIP FERRITE		
L419	L79-1984-05	FILTER		
L420	L92-1101-05	CHIP FERRITE		
L601	LB73H0AV-003	CHIP FERRITE		
L602	LB73H0AV-003	CHIP FERRITE		
L603	LB73H0AV-003	CHIP FERRITE		
CN1	EC720AA-0560A	FFC FPC CONNE		
CN2	E40-6862-05	F.C.CONNECTOR		
CN3	J19-5386-05	HOLDER		
CP301	RK74HB1J100J	NET RESISTOR	10Ω 1/16W J	
CP302	RK74HB1J100J	NET RESISTOR	10Ω 1/16W J	
CP303	RK74HB1J100J	NET RESISTOR	10Ω 1/16W J	
CP401	RK74HB1J103J	NET RESISTOR	10kΩ 1/16W J	
CP402	RK74HB1J222J	NET RESISTOR	2.2kΩ 1/16W J	
CP403	RK74HB1J100J	NET RESISTOR	10Ω 1/16W J	
CP404	RK74HB1J100J	NET RESISTOR	10Ω 1/16W J	
CP405	RK74HB1J100J	NET RESISTOR	10Ω 1/16W J	
CP406	RK74HB1J101J	NET RESISTOR	100Ω 1/16W J	
CP407	RK74HB1J101J	NET RESISTOR	100Ω 1/16W J	
CP408	RK74HB1J101J	NET RESISTOR	100Ω 1/16W J	
CP409	RK74HB1J101J	NET RESISTOR	100Ω 1/16W J	
CP410	RK74HB1J101J	NET RESISTOR	100Ω 1/16W J	
CP411	RK74HB1J101J	NET RESISTOR	100Ω 1/16W J	
CP412	RK74HB1J470J	NET RESISTOR	47Ω 1/16W J	
CP413	RK74HB1J470J	NET RESISTOR	47Ω 1/16W J	
CP414	RK74HB1J470J	NET RESISTOR	47Ω 1/16W J	
CP601	RK74HB1J472J	NET RESISTOR	4.7kΩ 1/16W J	
CP602	RK74HB1J472J	NET RESISTOR	4.7kΩ 1/16W J	
CP604	RK74HB1J100J	NET RESISTOR	10Ω 1/16W J	
CP605	RK74HB1J101J	NET RESISTOR	100Ω 1/16W J	
E11	F1B-0085-00	SHIELDING CASE		
E101	F1B-0085-00	SHIELDING CASE		
F1	F53-0286-05	FUSE		
F2	F53-0286-05	FUSE		
F3	F53-0286-05	FUSE		
F4	FZA10BS-5R0	FUSE (CC)		

⚠ Symbol No.	Part No.	Part Name	Description	Local
F5	FZA10BS-5R0	FUSE (CC)		
F6	F53-0286-05	FUSE		
IC201	RA60H3847-501	MOS IC		3820E,3820GE,3820HGK2,3820HK2
IC201	RA60H4452-501	MOS IC		3820HGK,3820HK
IC601	LA4631VC-XE	ANALOG IC		
J1	E58-0567-05	SUB SOCKET D		
J2	E1B-0001-00	3.5D PHONE JACK		
TH201	NCU15WF104F6S	N THERMISTOR		
TH202	NCU15WF104F6S	N THERMISTOR		
TH203	NCU15WF104F6S	N THERMISTOR		
TH401	NCU15WF104F6S	N THERMISTOR		
X401	L7H-0076-00	TCXO		
X402	L77-1802-05	QUARTZ CRYSTAL		

SUB UNIT

XC3-050M-00

Block No. [0][3]

⚠ Symbol No.	Part No.	Part Name	Description	Local
IC1	MM3404A50URE	IC		
IC3	TC7WH126FK	IC		
IC4	TC7WT125FUF	IC		
IC5	BD11600NUX	IC		
IC6	TC35894FG	IC		
Q1	SSM3K15AMFV	FET		
Q2	SSM6N37FE	FET		
Q3	LTC014EEBFS8	DIGI TRANSISTOR		
Q4	LTC014EEBFS8	DIGI TRANSISTOR		
Q6	LTC014EEBFS8	DIGI TRANSISTOR		
Q8	SSM6N37FE	FET		
D1	SPC10501A01	VARISTOR		
D2	SPC10501A01	VARISTOR		
D3	B30-2365-05	LED		
D4	B30-2365-05	LED		
D5	B30-2365-05	LED		
D6	B30-2365-05	LED		
D9	NSSW206C-T865	LED		
D10	NSSW206C-T865	LED		
D11	B30-2365-05	LED		
D12	B30-2365-05	LED		
D15	NSSW206C-T865	LED		
D16	NSSW206C-T865	LED		
D17	B30-2365-05	LED		
D18	B30-2365-05	LED		
D20	B30-2364-05	LED		
D21	EDZV6.2B	ZENER DIODE		
D22	RB521CM-30	DIODE		
D24	EDZV6.8B	ZENER DIODE		
D26	RSB12Z	ZENER DIODE		
D27	MINISMDC020F	VARISTOR		
D28	EMZ6.8N	ZENER DIODE		
D30	EDZV6.8B	ZENER DIODE		
D32	RSB12Z	ZENER DIODE		
D33	B30-2365-05	LED		
D34	B30-2365-05	LED		
C1	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C2	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C3	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C6	CK73FXR1E475K	C CAPACITOR	4.7uF 25V K	
C7	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C8	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C9	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C11	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C12	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C13	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C14	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C15	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C16	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C17	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C20	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C21	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C22	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C24	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C25	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C26	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C28	CK73GB1E105K	C CAPACITOR	1uF 25V K	
C30	CK73GB1E105K	C CAPACITOR	1uF 25V K	
C33	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C34	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C35	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C36	CK73GB1E105K	C CAPACITOR	1uF 25V K	
C37	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C38	CK73HBB1E103K	C CAPACITOR	0.01uF 25V K	
C39	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C40	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C41	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C45	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C46	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C47	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C49	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C50	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C51	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C52	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C53	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C54	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C55	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C56	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C57	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C58	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C59	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C61	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C62	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C64	CK73GB1E105K	C CAPACITOR	1uF 25V K	
C65	CK73GB1E105K	C CAPACITOR	1uF 25V K	
C66	CK73GB1E105K	C CAPACITOR	1uF 25V K	
C67	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C68	CK73GB1E105K	C CAPACITOR	1uF 25V K	
C70	CC73HCH1H470J	C CAPACITOR	47pF 50V J	
C71	CC73HCH1H470J	C CAPACITOR	47pF 50V J	
C72	CC73HCH1H470J	C CAPACITOR	47pF 50V J	
C73	CC73HCH1H470J	C CAPACITOR	47pF 50V J	
R1	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R2	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R4	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R5	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R6	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R7	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R8	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R9	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R10	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R11	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R12	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R13	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R14	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R15	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R16	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R17	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R18	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R19	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R20	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R21	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R22	RK73GB2A181J	MG RESISTOR	180Ω 1/10W J	
R23	RK73GB2A181J	MG RESISTOR	180Ω 1/10W J	
R24	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R25	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R27	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R28	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R29	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R30	RK73GB2A181J	MG RESISTOR	180Ω 1/10W J	
R31	RK73GB2A181J	MG RESISTOR	180Ω 1/10W J	
R32	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R33	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R36	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R37	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R38	RK73HB1J681J	MG RESISTOR	680Ω 1/16W J	

⚠ Symbol No.	Part No.	Part Name	Description	Local
R39	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R40	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R41	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R42	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R43	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R44	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R45	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R46	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R47	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R48	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R49	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R50	RK73HB1J151J	MG RESISTOR	150Ω 1/16W J	
R51	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R56	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R57	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R58	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R60	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R61	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R62	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R63	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R64	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R66	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R67	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R68	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R69	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R70	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R71	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R72	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R73	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R74	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R75	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R77	RK73GB2A680J	MG RESISTOR	68Ω 1/10W J	
R79	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R80	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R81	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R82	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R83	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R84	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R85	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R86	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R87	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
L1	LB73G0AM-004	CHIP FERRITE		
L2	LB73G0AM-004	CHIP FERRITE		
L3	LB73H0AV-003	CHIP FERRITE		
L6	LB73H0AV-003	CHIP FERRITE		
L8	LB73H0AV-003	CHIP FERRITE		
L9	LB73H0AV-003	CHIP FERRITE		
L10	LB73H0AV-003	CHIP FERRITE		
L11	LB73G0AM-004	CHIP FERRITE		
L12	LB73G0AM-004	CHIP FERRITE		
L13	LB73H0AV-003	CHIP FERRITE		
L14	LB73G0AM-004	CHIP FERRITE		
CN3	EC720AK-0512A	FFC FPC CONNE		
CN5	E41-2671-05	PIN ASSY		
CN6	EC720AA-0523A	FFC FPC CONNE		
CN7	EC710AM-0560A	FFC FPC CONNE		
J1	E58-0535-05	MODULAR JACK		

MODULE UNIT

XC2-0040-10 (NX-3720GE,NX-3720HGK, NX-3820GE,NX-3820HGK,NX-3820HGK2)

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

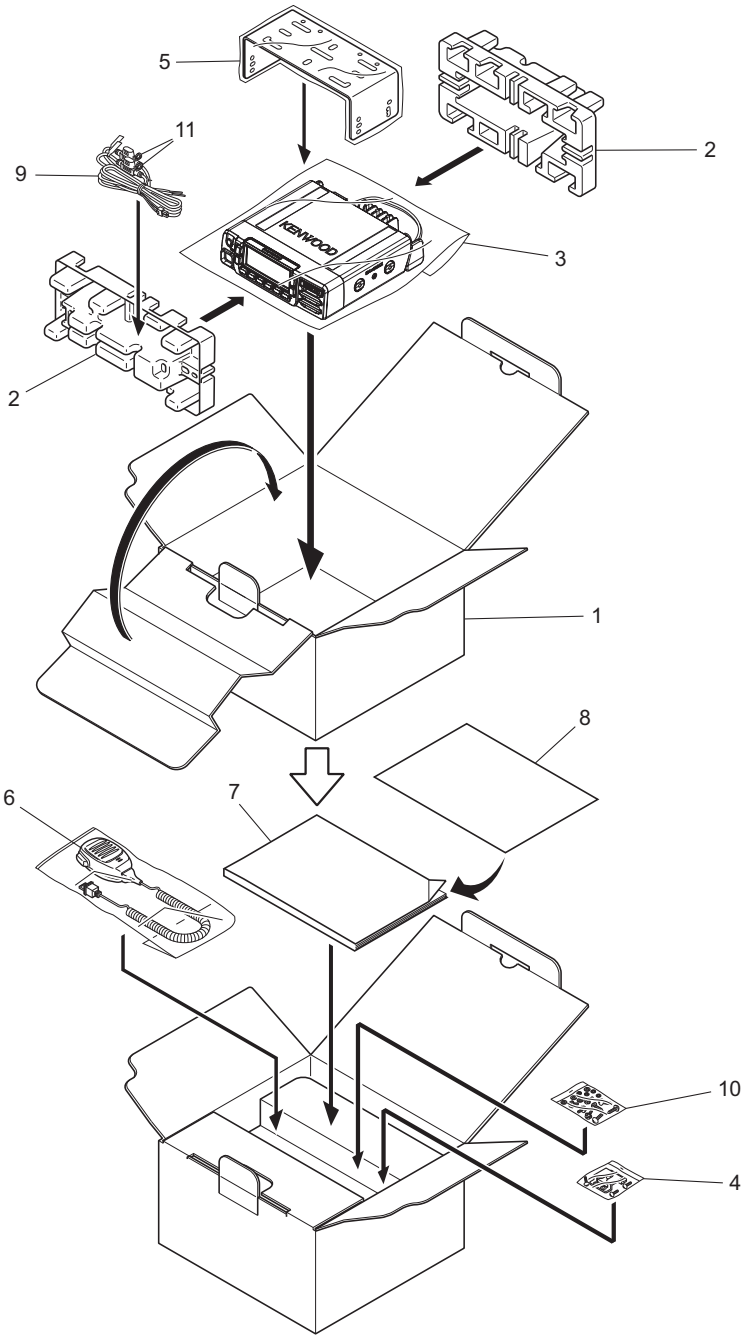
Block No. [0][4]

⚠ Symbol No.	Part No.	Part Name	Description	Local
IC1	74AVC4TD245GU	IC		
IC2	BU18TD2WNVX	IC		
IC3	XC6209B332D-G	IC		
IC4	NJM2878F4-33	IC		
IC5	----------	IC	*Note	
IC6	74AVC4TD245GU	IC		
IC7	74AVC4TD245GU	IC		
Q1	EM6M2	FET		
D17	RN262CS	DIODE		
D18	RN262CS	DIODE		
C1	CK73HB1A474K	C CAPACITOR	0.47uF 10V K	
C2	CK73HB1A474K	C CAPACITOR	0.47uF 10V K	
C3	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C4	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C5	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C6	CK73HB1A474K	C CAPACITOR	0.47uF 10V K	
C7	CK73HB1A474K	C CAPACITOR	0.47uF 10V K	
C8	CC73HCH1H220J	C CAPACITOR	22pF 50V J	
C9	CC73HCH1H100B	C CAPACITOR	10pF 50V B	
C10	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C11	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C12	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C13	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C14	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C15	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C16	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C17	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C18	CC73HCH1H180J	C CAPACITOR	18pF 50V J	
C19	CC73HCH1H180J	C CAPACITOR	18pF 50V J	
C20	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C21	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C22	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C23	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C24	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C25	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C26	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C27	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C28	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C29	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C30	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C31	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C32	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C33	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C34	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C35	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C36	CC73HCH1H220J	C CAPACITOR	22pF 50V J	
C37	CC73HCH1H220J	C CAPACITOR	22pF 50V J	
C38	CC73HCH1H2R5B	C CAPACITOR	2.5pF 50V B	
C39	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C40	CC73HCH1H180J	C CAPACITOR	18pF 50V J	
C44	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C45	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C46	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C47	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C48	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C49	CK73HB1E104K	C CAPACITOR	0.10uF 25V K	
C50	CC73HCH1H470J	C CAPACITOR	47pF 50V J	
C68	CC73HCH1H010B	C CAPACITOR	1pF 50V B	
R1	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R2	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R3	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R4	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R7	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R8	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R9	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R10	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
R11	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R12	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R13	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R14	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R15	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R16	RK73EB2E100J	MG RESISTOR	10Ω 1/4W J	
R18	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R19	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R21	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R22	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R23	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	

⚠ Symbol No.	Part No.	Part Name	Description	Local
R24	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R25	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R26	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R27	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R29	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
L1	LB73H0AV-002	CHIP FERRITE		
L2	LB73G0AK-001	CHIP FERRITE		
L3	LB73G0BJ-002	CHIP FERRITE		
L4	L92-0487-05	CHIP FERRITE		
L5	L92-0487-05	CHIP FERRITE		
L6	LK73H0AG27NJ	M.CHIP INDUCTOR	27nH	
L7	LK73H0AM10NJ	M.CHIP INDUCTOR	10nH	
L8	L92-0487-05	CHIP FERRITE		
L9	L7K-0059-00	FILTER		
L11	L79-1987-05	FILTER		
L13	L92-0487-05	CHIP FERRITE		
L14	L92-0487-05	CHIP FERRITE		
L15	L40-2263-71	CHIP INDUCTOR		
CN1	E40-6879-05	F.C.CONNECTOR		
CN5	E0E-0012-00	RF C.RECEPTACLE		
CP1	RK74HB1J100J	NET RESISTOR	10Ω 1/16W J	
CP2	RK74HB1J100J	NET RESISTOR	10Ω 1/16W J	
E1	F10-3226-05	SHIELDING CASE		
X1	L77-3123-05	TCXO		
X2	L77-3121-05	QUARTZ CRYSTAL		

Packing materials and accessories parts list

Block No.M2MM



Packing and accessories

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

⚠ Symbol No.	Part No.	Part Name	Description	Local
1	H5A-0946-00	ITEM CARTON		
2	H1C-0152-00	PACKING FIXTURE	(x2)	
3	----------	PROTECTION BAG		
4	J19-1584-15	HOLDER	ACC	3720HGK,3720HK,3820HGK,3820HGK2,3820HK,3820HK2
5	J29-0726-03	BRACKET	ACC	
6	T91-0639-85	MICROPHONE	KMC-35	3720HGK,3720HK,3820HGK,3820HGK2,3820HK,3820HK2
7	B5A-1680-00	INST.MANUAL	9 LANGUAGES	3720E,3720GE,3820E,3820GE
7	B5A-1562-00	INST.MANUAL	3 LANGUAGES	3720HGK,3720HK,3820HGK,3820HGK2,3820HK,3820HK2
8	----------	PAMPHLET	DOC	3720E,3720GE,3820E,3820GE
9	E30-7523-65	DC CORD ASSY	ACC BLADE	
10	N99-2039-05	SCREW SET	ACC	
11	FZB10AU-150	BLADE FUSE	15A BLADE(ACC)(x2)	

KENWOOD

JVC KENWOOD Corporation
Communications Systems Division

(No.RA054<Rev.001>)

Printed in Japan
JKS