

KENWOOD

SERVICE MANUAL

800/900MHz DIGITAL TRANSCEIVER

NX-3400

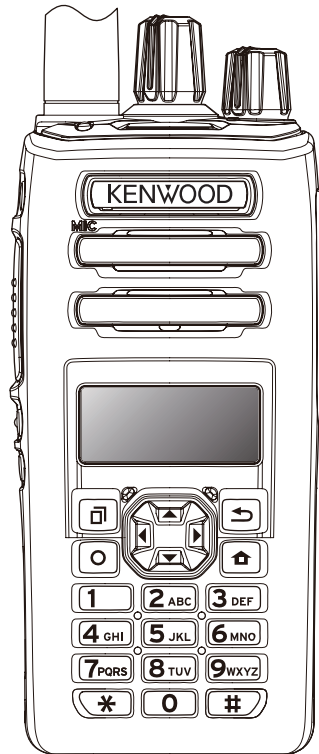


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This product complies with the RoHS directive for the European market.



This product uses Lead Free solder.

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Transceivers containing AMBE+2™ Vocoder:

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

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SPECIFICATION

GENERAL		
Frequency Range		RX: 851~870 MHz, 935~941 MHz TX: 806~825 MHz, 851~870 MHz, 896~902 MHz, 935~941 MHz
Max. Channels per Radio		Up to 1000 channels with option
Number of Channels		512
Number of Zones		128
Channel Spacing	Analog	12.5 / 25 kHz (25 kHz in 900MHz band is not included.)
	Digital	6.25 / 12.5 kHz
Power Supply		7.5V DC \pm 20%
Battery Life (FDMA Conventional / Trunking, TDMA Conventional / Trunking) 5-5-90 duty cycle	With KNB-55L (1,480 mAh)	Approx. 9 / 7 hours, Approx. 12 / 9 hours
	With KNB-56N (1,400 mAh)	Approx. 8 / 6 hours, Approx. 10.5 / 8 hours
	With KNB-57L (2,000 mAh)	Approx. 13 / 10 hours, Approx. 17 / 13 hours
	With KNB-78L (2,860 mAh)	Approx. 18.5 / 14 hours, Approx. 24 / 18.5 hours
Operating Temperature		-22°F to +140°F (-30°C to +60°C)
Frequency Stability		\pm 0.5 ppm (-30°C to +60°C; +25°C Ref.)
Antenna Impedance		50ohm
Dimensions (W x H x D) (Projections not included)	Radio only	2.20 x 4.71 x 1.43 in (56 x 119.6 x 36.4 mm)
	With KNB-55L	2.20 x 4.71 x 1.43 in (56 x 119.6 x 36.4 mm)
	With KNB-56N	2.20 x 4.71 x 1.68 in (56 x 119.6 x 42.7 mm)
	With KNB-57L	2.20 x 4.71 x 1.53 in (56 x 119.6 x 39 mm)
	With KNB-78L	2.20 x 4.71 x 1.77 in (56 x 119.6 x 44.9 mm)
Weight (net)	Radio only	7.8 oz (220 g)
	With KNB-55L	11.1 oz (315 g)
	With KNB-56N	14.5 oz (410 g)
	With KNB-57L	12.0 oz (340 g)
	With KNB-78L	13.6 oz (385 g)
RECEIVER		
Sensitivity	NXDN 6.25 kHz Digital (3% BER)	0.20 μ V
	NXDN 12.5 kHz Digital (3% BER)	0.25 μ V
	DMR 12.5 kHz Digital (5% BER)	0.30 μ V
	DMR 12.5 kHz Digital (1% BER)	0.45 μ V
	Analog (12dB SINAD)	0.25 μ V
Selectivity	Analog@12.5 kHz	60dB
	Analog@25 kHz	70dB
Intermodulation		70dB
Spurious Rejection		70dB
Audio Distortion		3%
Audio Output (Internal Speaker)	3% Distortion	500mW / 8ohm
	5% Distortion	1000mW / 8ohm
TRANSMITTER		
RF Power Output		3 W / 1 W
Spurious Emission		-70dB
FM Hum & Noise	Analog @ 25 kHz	45dB
	Analog @ 12.5 kHz	40dB
Audio Distortion		3%
Emission Designator		16K0F3E*1, 14K0F3E*1, 11K0F3E, 8K30F1E, 8K30F1D, 8K30F7W, 4K00F1E, 4K00F1D, 4K00F7W, 7K60FXE, 7K60FXD, 4K00F2D

All specifications shown are typical.

*1 800MHz band only

Analog measurements made per TIA603. Specifications are measured according to applicable standards.

Battery Life is measured by Battery Save ON, GPS/Bluetooth OFF, 3 W for 800/900MHz Bands.

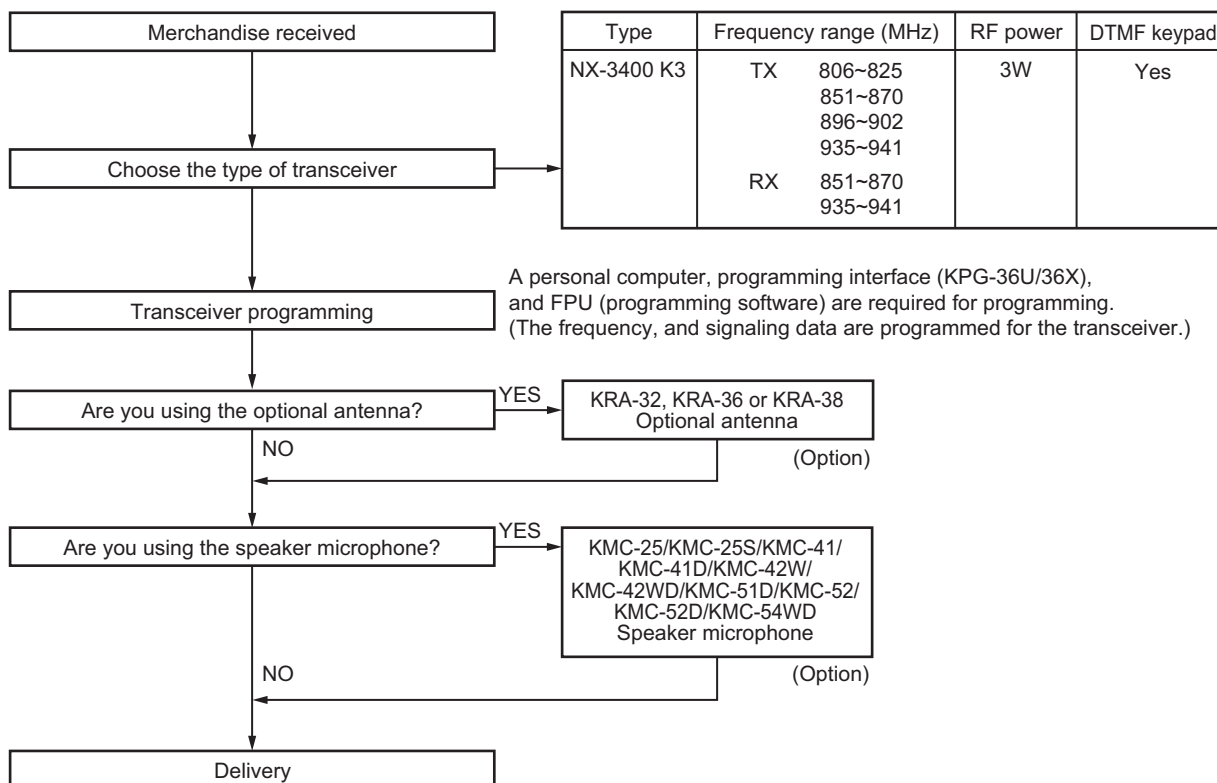
JVC KENWOOD Corporation reserves the right to change specifications without prior notice or obligation.

SECTION 1 PRECAUTION

This service manual does not describe PRECAUTION.

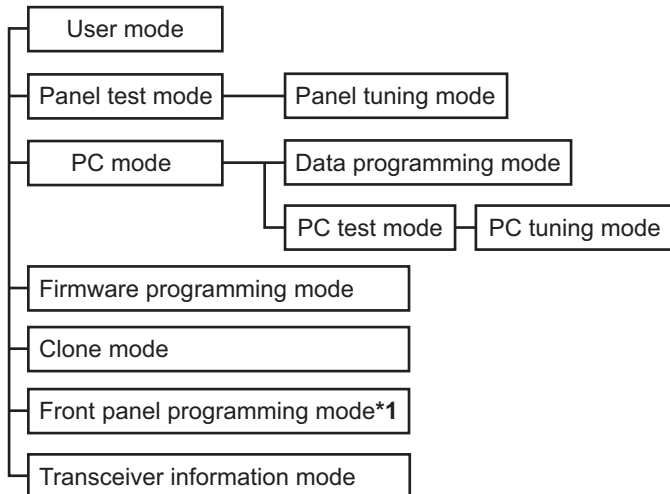
SECTION 2 SPECIFIC SERVICE INSTRUCTIONS

2.1 SYSTEM SET-UP



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	<ul style="list-style-type: none"> • [↩] + 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	<ul style="list-style-type: none"> • [AUX (Orange)] + Power ON • [⏏] + Power ON Select the "Firmware Prog" using the [▲] / [▼] button. Press the [⏏] button.
	<ul style="list-style-type: none"> • If Write is performed by KFL, Firmware programming mode will start automatically.
Clone mode*2	<ul style="list-style-type: none"> • [🏠] + Power ON • [⏏] + Power ON Select the "Clone" using the [▲] / [▼] button. Press the [⏏] button.
Front panel programming mode*2	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • [Side 1] + 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 (PC), a USB programming cable (KPG-36U/36X) and a Programming software (FPU).

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

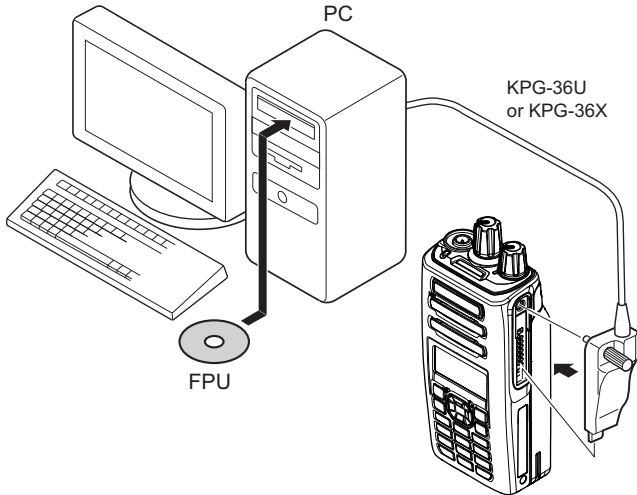


Fig.1

2.2.5.2 Connection procedure

- (1) Connects the transceiver to the PC using the KPG-36U/36X.

Note:

You must install the KPG-36U/36X USB driver in the PC to use the KPG-36U/36X.

- (2) When the POWER switch on, user mode can be entered immediately. When PC sends command the transceiver enter Data programming mode (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 light.

Note:

The data stored in the PC must match the "Model Name" when it is written into the flash memory.

2.2.5.3 KPG-36U/KPG-36X description (USB programming interface cable: Option)

The KPG-36U/36X is a cable which connects to a USB port on a PC.

When using the KPG-36U/36X, install the supplied CD (with driver software) in the PC. The KPG-36U/36X driver runs under Windows 7, 8.1, 10.

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

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

(This URL may change without notice.)

2.2.5.4 Programming software KPG-D3/D3N (Ver. 2.00 or later) description

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

2.2.6 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 PC using the programming interface (KPG-36U/36X). (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) Check the connection between the transceiver and the PC.
- (5) Press "Write" button in the window. When the transceiver starts to receive data, the "LOADING" is displayed on LCD, and the Green LED lights.
- (6) If writing ends successfully, the checksum is calculated and a result is displayed on the LCD. Also the Red LED lights.
- (7) If you want to continue programming other transceivers, repeat step (5) to (6).

Note:

If write is performed 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 [] button while "FIRMWARE PROG" is displayed, the checksum is calculated, and a result is displayed. If you press the [] button again while checksum of the Encryption Library is displayed. If you press the [] button again while checksum of the Encryption Library 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 external universal connectors. 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) There are two methods to enter the password as follows.

- How to enter the password using the 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.E30-3325-05) to the universal connectors 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.

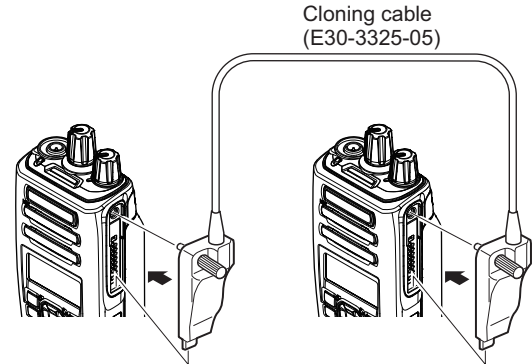


Fig.2

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 How to enter the Front panel programming mode

Press the PF button which is assigned as "Panel Program" by the FPU, or select the "Panel Program" which is assigned into the Menu button by the FPU.

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*4
			NXDN: 6.25kHz/12.5kHz
			DMR: 12.5kHz
6	RX Signaling	RX QT/DQT	Receive QT/DQT

No.	Setup item	Display	Remarks
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, Auto
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.

*4: When the transmission/reception frequency is set more than 900 MHz or more, the Channel Spacing is fixed to 12.5 kHz.

■Button operation (1/3)

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	Unused	TX Frequency OFF	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
Keypad [0] ~ [9]	Zone number select	Channel number select	Entry a Frequency directly		Channel Type select ([1], [2] or [3]) *6	Transmit Mode select ([1] or [2]) *7	Channel spacing select ([1], [2] or [3]) *8
Keypad [*]	Decision	Decision	Decision	Decision	Decision	Decision	Decision
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









*5: Mixed Mode only

*6: [1] = "Analog", [2] = "NXDN" for System type or "DMR" for System type DMR, [3] = "Mixed"

*7: [1] = "Analog", [2] = "NXDN" for System type NXDN or "DMR" for System type DMR

*8: [1] = "12.5kHz", [2] = "25kHz" for System type Analog or "6.25kHz" for System type NXDN, [3] = "20kHz" for System type Analog









■Button operation (2/3)

Button\Item	RX Signaling	TX Signaling	RX RAN	TX RAN	Color Code	Slot Selection	Transmit Power
[]	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
[]	Unused	Unused	Unused	Unused	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
[]	Signaling number change	Signaling number change	RX RAN up	TX RAN up	Color Code up	Slot up	Transmit power change
[]	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	TX RAN ON/OFF	Unused	Unused	Unused
[]	Signaling type change	Signaling type change	RX RAN ON/OFF	TX RAN ON/OFF	Unused	Unused	Unused
Keypad [0] ~ [9]	Entry a frequency or a code directly					Slot Selection select ([1], [2] or [3]) *9	Transmit power select ([1] or [2]) *10
Keypad [*]	Decision	Decision	Decision	Decision	Decision	Decision	Decision
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

*9: [1] = "Slot 1", [2] = "Slot 2", [3] = "Auto"

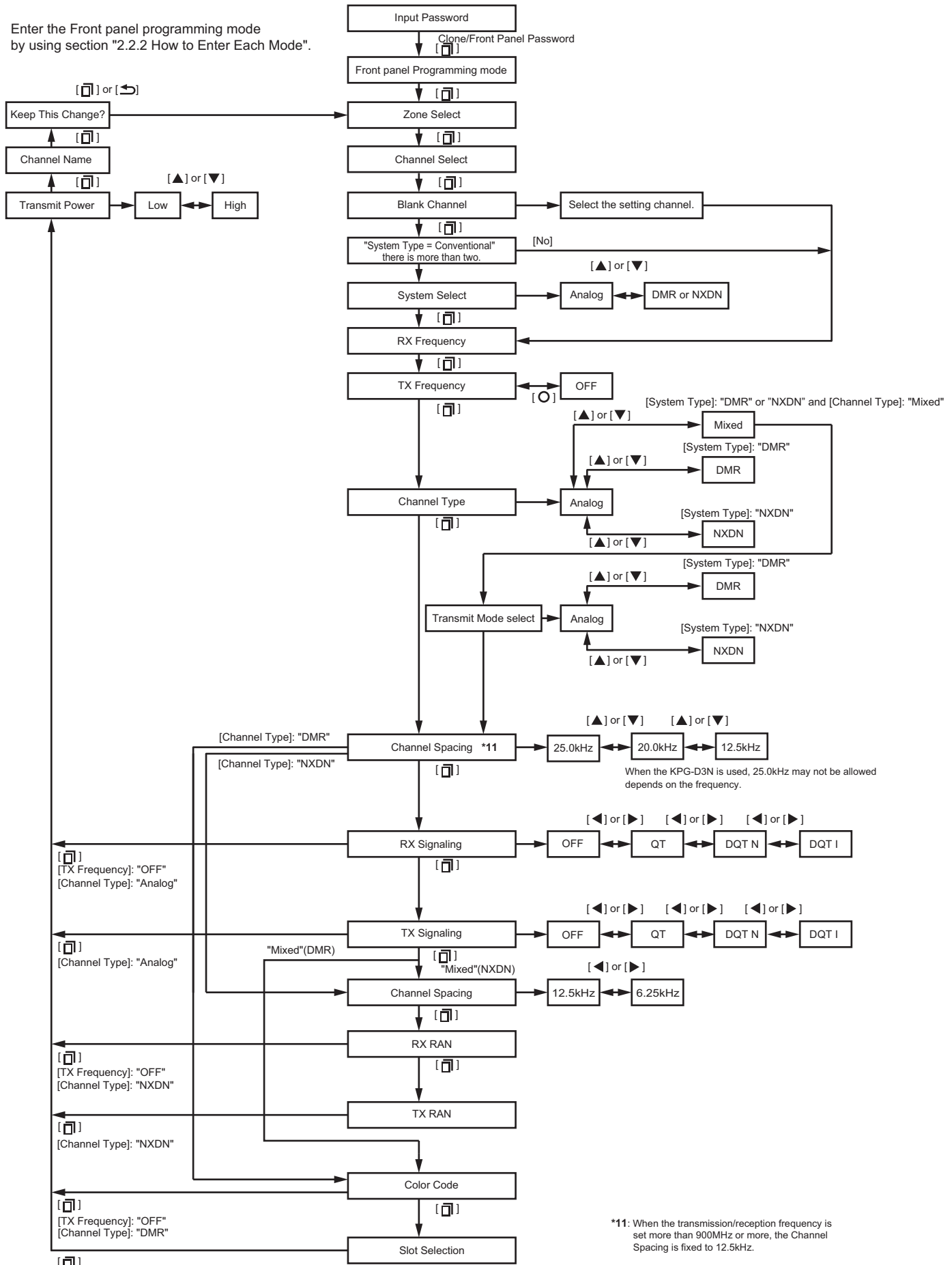
*10: [1] = "Low", [2] = "High"

■Button operation (3/3)

Button\Item	Channel Name
[]	Decision and exit the "Manual Entry mode"
[]	Back to the previous item
[]	Change the character type (Capital font → Small font → Numerical value)
[]	Delete
[]	Character selection ("A", "a" or "0" to "Z", "z" or "9")
[]	Character selection ("Z", "z" or "9" to "A", "a" or "0")
[]	Move a cursor to the right
[]	Move a cursor to the left
Keypad [0] ~ [9]	Character selection (Follow to the "Keypad Charactor Entry" in the FPU setting)
Keypad [*]	Change the character type (Capital font → Small font → Numerical value)
Keypad [#]	Delete

■Front panel programming mode flow chart

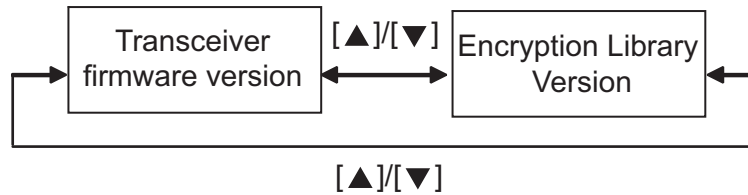
Enter the Front panel programming mode by using section "2.2.2 How to Enter Each Mode".



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 be displayed even if the Radio Feature License (KWD-3004AE) is inactive.

2.3 CIRCUIT DESCRIPTION

2.3.1 Overview

The NX-3400 is 800/900MHz Dual Band Analog FM & Digital Portable transceiver designed to operate in the frequency range of 806 to 870MHz and 896 to 941MHz. The unit consists of a transceiver IC, a transmitter, a digital control unit, and a power supply circuit.

2.3.2 Frequency Configuration

The receiver uses the direct conversion system. Incoming signals from the antenna are mixed with the local signal from the PLL circuit and converted to the baseband signal. The transmit signal frequency is generated by the VCO/PLL, and modulated by the signal from the MPU/DSP (IC401). It is then amplified and fed to the antenna.

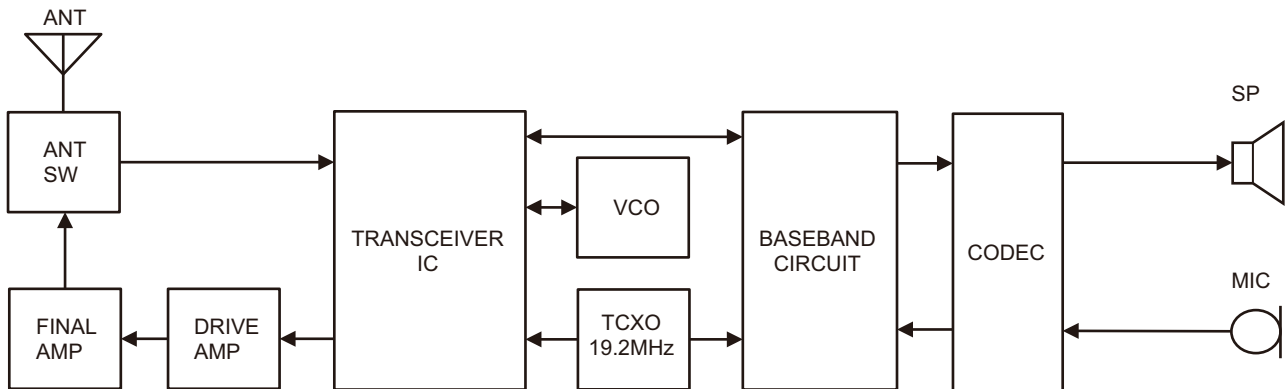


Fig.1 Frequency configuration

2.3.3 Receiver System

2.3.3.1 RF Circuit

The receive signal from ANT SW (D201, D202, D203 and D207) passes through the high-pass filter (L302, L307, L308, L312, L314 and L315) to remove unwanted signals and amplified by a RF amplifier (incorporated in Transceiver IC (IC303)). The signal is then fed to the mixer (incorporated in Transceiver IC (IC303)) and converted to the baseband signal.

2.3.3.2 Baseband Circuit

The baseband signal is then fed into an ADC (incorporated in Transceiver IC (IC303)), generates the I and Q data. This data is in the form of Serial Interface, and sent to the MPU/DSP (IC401).

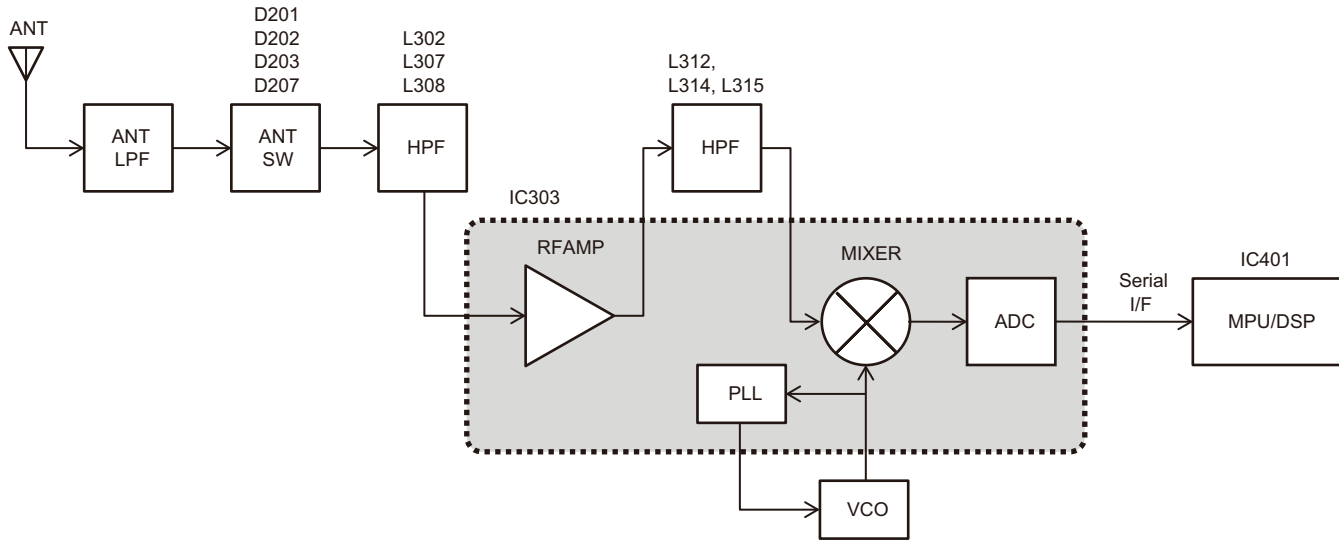


Fig.2 RF and Baseband circuit

2.3.3.3 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 DSP. I2S signal from DSP is converted to audio signal at CODEC (IC601). The signal goes to internal speaker or universal connector for external speaker through the internal Class D amplifier.

Audio path inside the Codec is controlled by I2C.

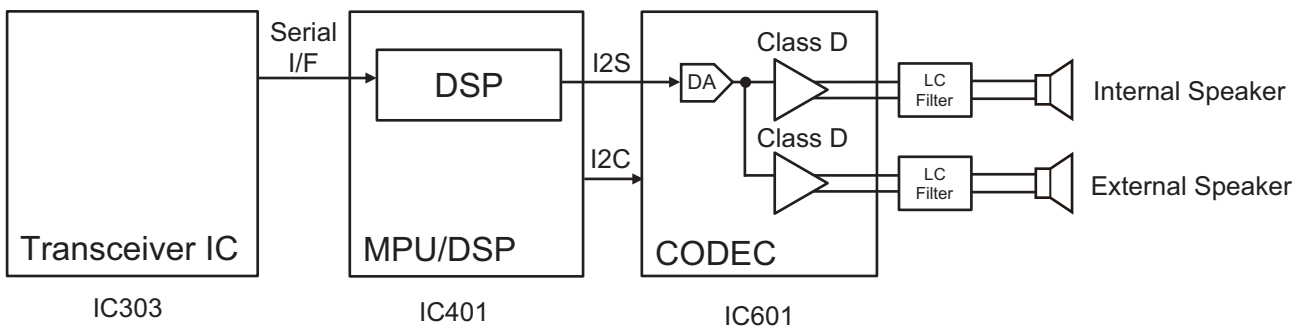


Fig.3 Audio amplifier circuit

2.3.4 Transmitter System

2.3.4.1 Audio Band Circuit

The signal from microphone is amplified and converted to digital signal by IC601, IC601 includes AGC function. Digital signal is transferred to MPU/DSP (IC401).

2.3.4.2 Baseband Circuit

The audio signal transferred from CODEC (IC601) is processed at MPU/DSP (IC401). Voice signals of 300Hz or lower and frequencies of 3kHz or higher are cut off and an audio range 300Hz to 3kHz is extracted. The audio signal is then pre-emphasized in FM mode and synthesized with the signals, such as QT and DQT, as required, and is transferred to PLL Frequency Synthesizer block in Transceiver IC (IC303). The DTMF and MSK baseband signals are also generated by MPU/DSP (IC401).

In Digital mode, the audio signal is converted to the 4-Level FSK baseband signal and is transferred to PLL Frequency Synthesizer block in Transceiver IC (IC303).

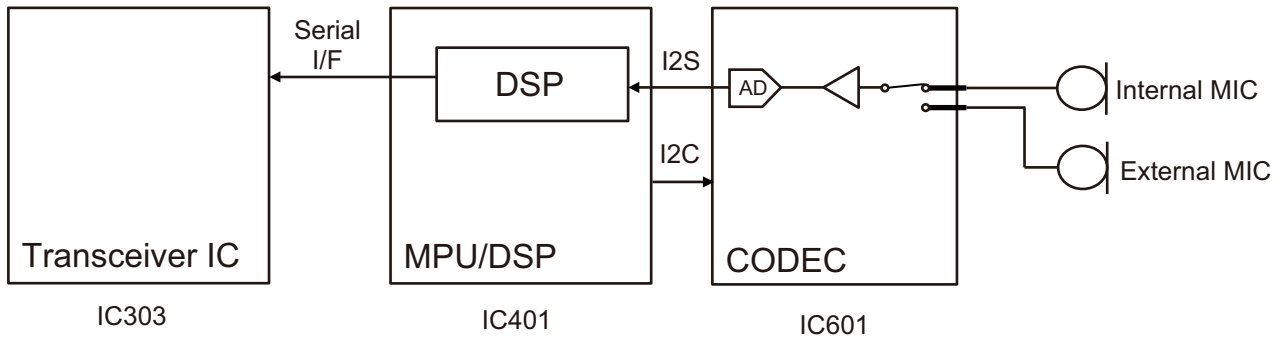


Fig.4 Audio and Baseband circuit

2.3.4.3 Drive and Final Amplifier

The signal from the Transceiver IC (IC303) is amplified by pre-drive amplifier (IC202). The output of the pre-drive amplifier is amplified by the drive amplifier (Q201) and final amplifier (Q202) to 3W (1W when the power is low). IC202 is MMIC. Q201 and Q202 are MOS FET. The output of the final amplifier is then passed through the harmonic filter (LPF) and antenna switch (D201 and D207, D202 and D203) and applied to the antenna terminal.

2.3.4.4 APC Circuit

The APC circuit always monitors the current flowing through the drive amplifier (Q201) and final amplifier (Q202). And APC keeps current constant.

The voltage drop at R248 and R250 is caused by the current flowing through the RF power amplifier and this voltage is applied to APC circuit. Output voltage from APC controls the VGG of Q201 and Q202 to keep the current constant. The change of power high/low is carried out by the change of the reference voltage.

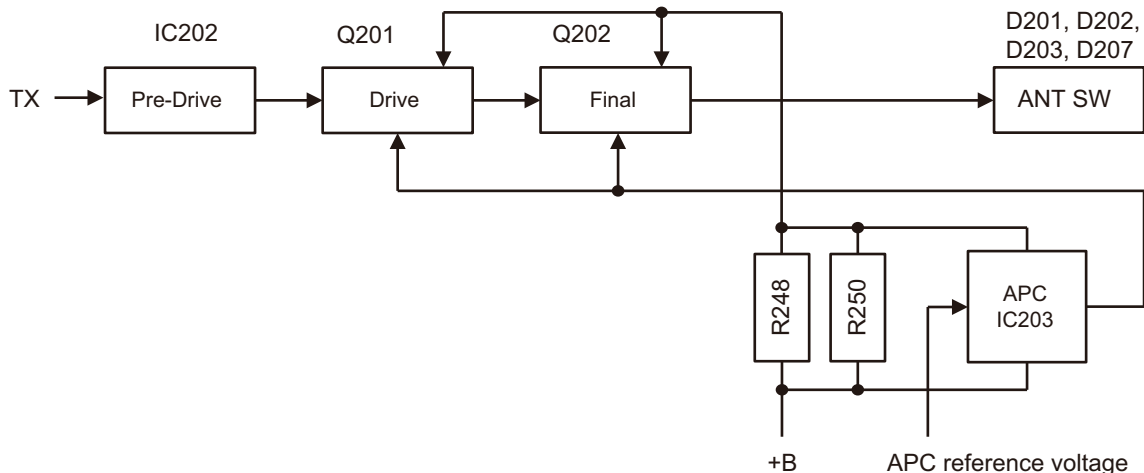


Fig.5 Drive and Final amplifier and APC circuit

2.3.5 PLL Frequency Synthesizer

2.3.5.1 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 (incorporated in Transceiver IC (IC303)), MPU/DSP (IC401) and IC351.

The oscillation frequency is adjusted TCXO directly by controlled the D/A converter of FCNT.

2.3.5.2 VCO

There are two VCO contain VCO_L for 800MHz and VCO_H for 900MHz.

The VCO_H (Q131) generates the carrier for the transmitter (Frequency range: 896 to 941MHz) and the receiver (Frequency range: 935 to 941MHz). VCO oscillation frequency range is 1792 to 1882MHz.

The VCO_L (Q151) generates the carrier for the transmitter (Frequency range: 806 to 870MHz) and the receiver (Frequency range: 851 to 870MHz). VCO oscillation frequency range is 1612 to 1740MHz.

The both VCO (VCO_H and VCO_L) oscillation frequency is divided as 1/2 by Transceiver IC (IC303) and it becomes the carrier for the Transmitter and the Receiver (Direct conversion).

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

The voltage control terminal "CP" is controlled by PLL (incorporated in Transceiver IC (IC303)). The voltage control terminal "ASSIST" is controlled by the control voltage from D/A converter (IC410).

For the modulation input terminal, "VCO_MOD3" of PLL (incorporated in Transceiver IC (IC303)), the output frequency changes according to the applied voltage. This is used to modulate the VCO output.

2.3.5.3 PLL

PLL (incorporated in Transceiver IC (IC303)) 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 (IC410) is used before control by the PLL (incorporated in Transceiver IC (IC303)) 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 (incorporated in Transceiver IC (IC303)) by the MPU/DSP (IC401) through the 3-line "/ DCR_CS", "DCR_DO", "BCLK" serial bus for PLL. MPU/DSP (IC401) monitors through the "PLD", whether the PLL (incorporated in Transceiver IC (IC303)) is locked or not. If the VCO does not lock to desired frequency (unlock), the "PLD" logic is low.

2.3.6 Control Circuit

The control circuit consists of MPU/DSP (IC401) and its peripheral circuits. MPU/DSP (IC401) mainly performs the following;

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

2.3.6.1 MPU

The MPU/DSP (IC401) is 32bit RISC processor and Fixed/Floating-Point VLIW DSP, equipped with peripheral function.

This MPU/DSP (IC401) 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.

2.3.6.2 Memory Circuit

Memory circuit consists of the MPU/DSP (IC401) and the Mobile DDR (IC402), the flash memory (IC404).

The flash memory has capacity of 512Mbit that contains the transceiver control program for the MPU/DSP (IC401) 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/DSP (IC401) copies the program to the Mobile DDR from Flash memory.

■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.).

■Mobile DDR

Note:

Mobile DDR is used as a work area of the MPU/DSP (IC401).

2.3.6.3 LCD

The LCD is controlled using parallel interface from the MPU/DSP (IC401).

2.3.6.4 Button Detection Circuit

Buttons are detected using the MPU/DSP (IC401).

2.3.6.5 Low Battery Warning

The battery voltage is divided using R65 and R66, it is detected by A/D converter (IC409). When the battery voltage falls below the voltage set by the Low battery warning adjustment, the red LED blinks to notify the operator that it is time to replace the battery. If the battery voltage falls even more (approx. 5.8V), a beep sounds and transmission stops.

Low battery warning	Battery condition
The red LED blinks during transmission.	The battery voltage is low but the transceiver is still usable.
The red LED blinks and the warning tone beeps while the PTT switch is pressed.	The battery voltage is low and the transceiver is not usable to make calls.

2.3.6.6 DSP

The DSP circuit consists of a MPU/DSP (IC401) 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
- LTR encoding/decoding
- DTMF encoding/decoding
- MSK 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

2.3.7 Power Supply Circuit

The battery voltage (+B) is provided from battery terminal. The battery voltage passes through the 3.15A fuse (F1), and goes to RF final amplifier, AVR ICs (IC9, IC17, IC602, IC6, IC15), DC/DC converter (IC3), transistor (Q7 through the 0.5A fuse (F2)), and voltage detector IC (IC1). Voltage detector (IC1) watches battery voltage. If the battery voltage is enough higher than 5.6V, detector outputs High. Then, IC9 (31BU) outputs 3.1V, and IC10 (12BU) outputs 1.2V.

When the VOL SW is turned on, SB1 becomes high (battery voltage). DC/DC (IC3) operates if both SB1 and output of detector are high. IC3 (38M) outputs 3.8V, and IC2 (12M) outputs 1.2V. Then, IC4 (18M) outputs 1.8V. Then, IC5 (32M) outputs 3.2V. Then, IC8 (18BT) outputs 1.8V. Then, IC7 (32BT) outputs 3.2V. Then, IC11 (32A) outputs 3.2V, and IC17 (50A) outputs 5.0V. Then, IC12 (18M_3) outputs 1.8V, and Q7 (53AF) is turned on. Voltage detector (IC403) watches IC3 (38M) output voltage. If the 38M output voltage is enough higher than 3.5V, detector outputs High.

As a result, the MPU/DSP (IC401) operated.

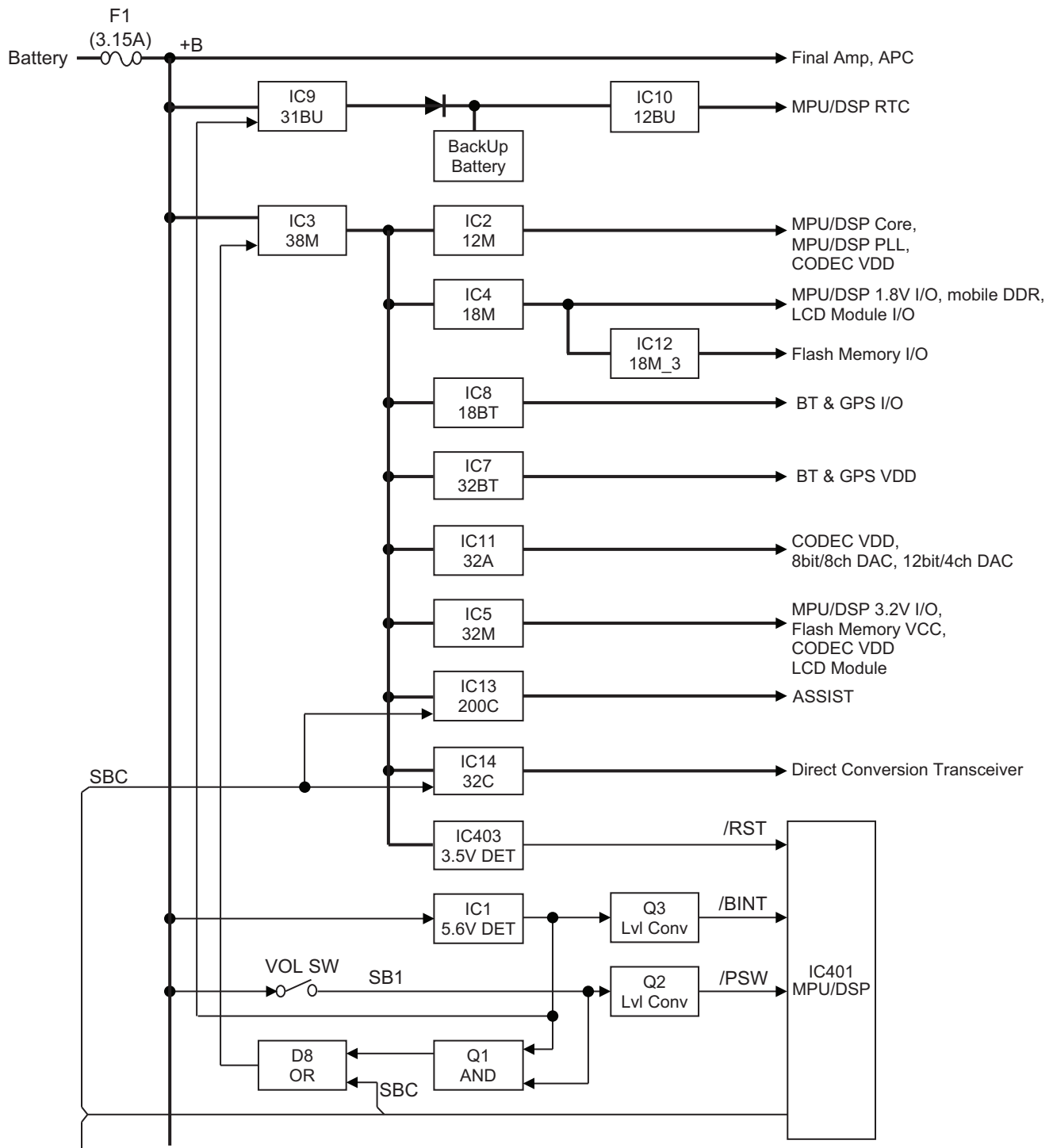
SBC signal becomes High after the MPU/DSP (IC401) operates, and IC13 (200C), and IC14 (32C), and IC6 (50C), and Q4 (SB2) are turned on.

When 5UC signal becomes High, IC602 (50U) operates. When TXC signal becomes High, IC15 (50T) operates. IC15 (50T) is turned on in transmit mode. Switches are controlled by the MPU/DSP (IC401).

When the VOL SW is turned off /PSW signal becomes Low. After detecting /PSW signal, the MPU/DSP (IC401) changes SBC signal to Low.

38M is fed to IC13 (200C). IC13 (200C) is the DC/DC boost converter. IC13, D10, C50 consist of a voltage quadrupler.

The 200C circuit then outputs approximately +20VDC.



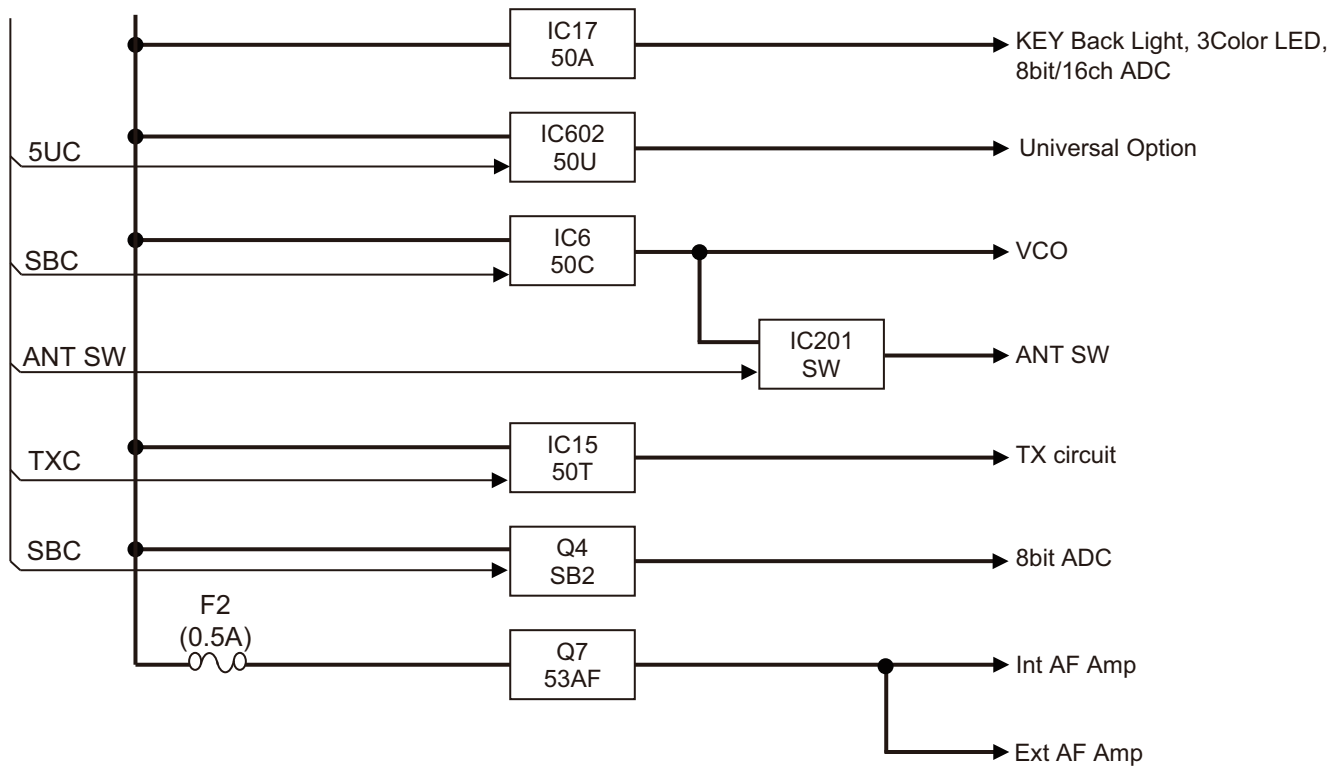


Fig.6 Power supply circuit

2.3.8 Signaling Circuit

2.3.8.1 Encode (QT/DQT/LTR/DTMF/MSK)

Each signaling data signal of QT, DQT, LTR, DTMF and MSK is generated by MPU/DSP (IC401), superposed on a modulation signal and output to VCO and PLL.

2.3.8.2 Decode (QT/DQT/LTR/DTMF/MSK)

The audio signal and signaling data (QT, DQT, LTR, DTMF and MSK) are separated by MPU/DSP (IC401). Next MPU/DSP (IC401) decode the signaling data.

2.3.9 Bluetooth/GPS Circuit

The main component of the Bluetooth/GPS circuit is Bluetooth/GPS IC (IC351).

The clocks of Bluetooth/GPS IC require 19.2MHz for core and 32.768kHz slow clock (X351) for UART. 19.2MHz clock (X401) is shared with the MPU/DSP (IC401), and is supplied through the Clock buffer amplifier (Q401).

Bluetooth/GPS IC communicates to the MPU/DSP (IC401) on the HCI UART. Interface of UART & Digital audio (PCM) between the MPU/DSP (IC401) and the Bluetooth/GPS IC (IC351), have level conversion at the level conversion IC (IC352, IC353).

The Bluetooth/GPS IC is powered by 1.8V and 3.2V which are supplied from 2 discrete external regulators (IC8 and IC7). The input of these regulators is sourced from a switching regulator (IC3) which regulates the battery voltage to 3.8V.

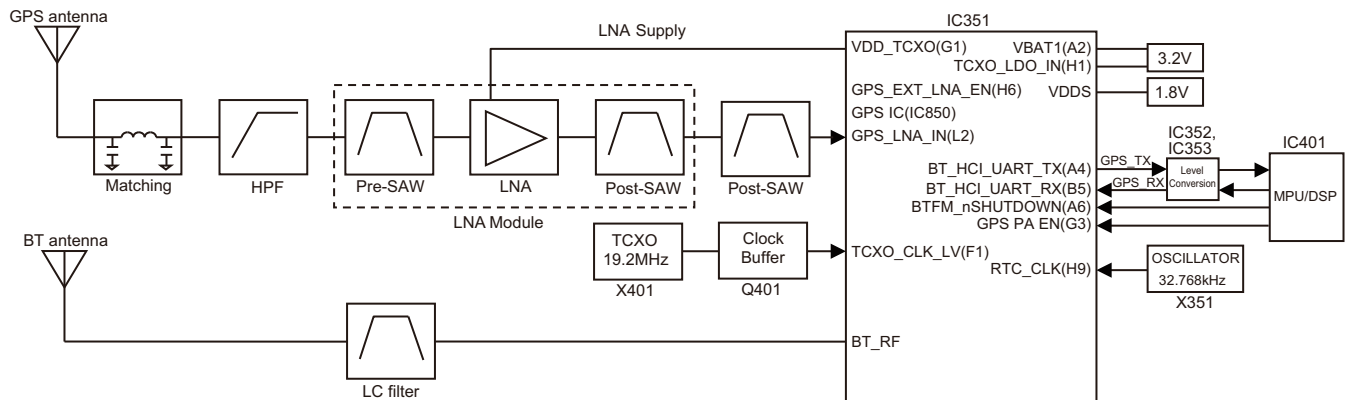


Fig.7 Bluetooth/GPS circuit

2.3.9.1 Bluetooth Circuit

The Bluetooth/GPS IC (IC351) support Bluetooth 4.0 up to HCI level.

■Basic Rate

TX/RX frequency is 2400-2483.5MHz (79ch Hopping, 2402-2480MHz, 1MHz step). Transmitting power is +0dBm (Max.: +4dBm) at Bluetooth antenna input.

■Low Energy

TX/RX frequency is 2400-2483.5MHz (40ch (3 advertising channels: Single carrier, 37data channels: Hopping), 2402-2480MHz, 2MHz step). Transmitting power is +0dBm (Max.: +4dBm) at Bluetooth antenna input.

■Common

Bluetooth antenna is made of sheet metal, and connected to the Bluetooth/GPS IC (IC351) through the LC filter (L361).

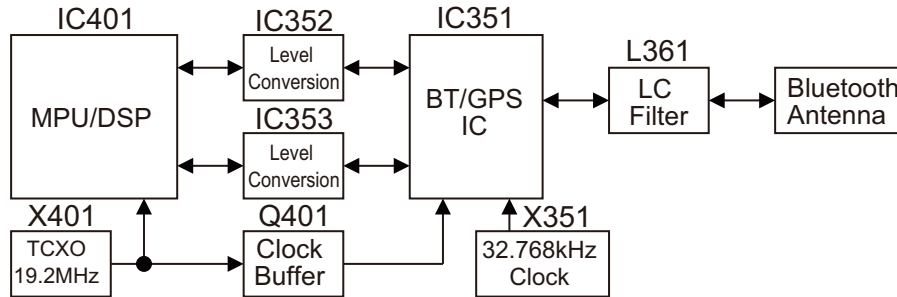


Fig.8 Bluetooth circuit

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.

2.3.9.2 GPS Circuit

The RF signal is received by the antenna matched by the matching circuit. The matching circuit consists of L173, C172 on DISPLAY Unit. And this signal applied to a high-pass filter. The filter consists of C175, C177, C179, L176 and L178 on DISPLAY Unit. The filtered RF signal is then applied to a LNA Module (A151).

The output of the LNA Module is fed into the SAW Filter (L359) after through the Attenuator comprised of R354, R355 and R356.

The output of the second SAW filter is passed to pin L2 of the GPS IC. The input match for pin L2 comprises of C369, C395 and L353.

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

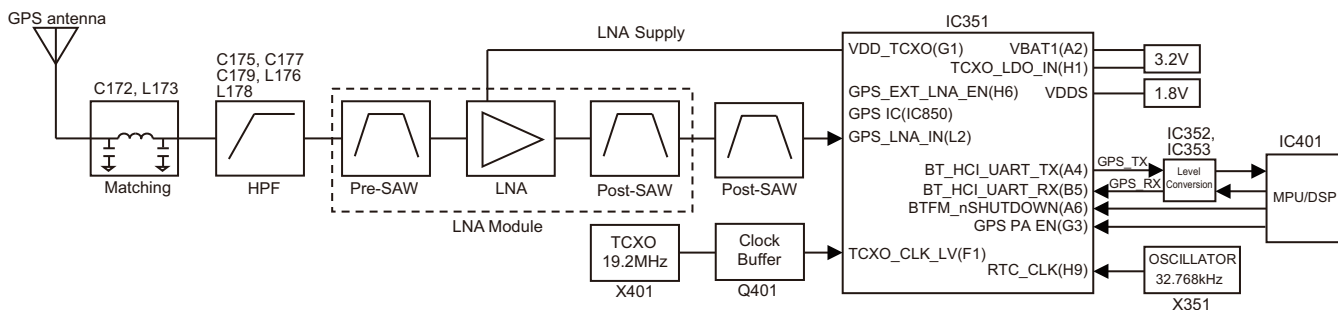


Fig.9 GPS circuit

2.4 COMPONENTS DESCRIPTION

2.4.1 MAIN unit (XC1-276K-00)

Ref. No.	Part Name	Use / Function
IC1	IC	Voltage detector
IC2	IC	DC/DC converter (12M)
IC3	IC	DC/DC converter (38M)
IC4	IC	DC/DC converter (18M)
IC5	IC	Voltage regulator (32M)
IC6	IC	Voltage regulator (50C)
IC7	IC	Voltage regulator (32BT)
IC8	IC	Voltage regulator (18BT)
IC9	IC	Voltage regulator (31BU)
IC10	IC	Voltage regulator (12BU)
IC11	IC	Voltage regulator (32A)
IC12	IC	Switch IC (18M_3)
IC13	IC	DC/DC converter (200C)
IC14	IC	Voltage regulator (32C)
IC15	IC	Voltage regulator (50T)
IC17	IC	Voltage regulator (50A)
IC18	IC	DC amplifier
IC101	IC	DC amplifier (Assist)
IC102	IC	DC amplifier (CV)
IC201	IC	DC amplifier (Antenna SW)
IC202	IC	MMIC (Pre-drive)
IC203	IC	DC amplifier (APC)
IC303	IC	Transceiver IC
IC351	IC	GPS/Bluetooth
IC352,353	IC	Level converter
IC401	IC	MPU/DSP
IC402	IC	Mobile DDR
IC403	IC	Voltage detector
IC404	IC	Flash memory
IC405	IC	AND gate (2 input)
IC406	IC	Motion sensor
IC409	IC	A/D converter
IC410	IC	D/A converter
IC601	IC	Codec
IC602	IC	Voltage regulator (50BU)
IC603	IC	Multiplexer
IC604	IC	Bus switch
IC605	IC	DPDT switch
IC606	IC	Bus Buffer
IC607	IC	AND gate (2 input)
Q1	Transistor	DC switch
Q2,3	FET	Detector
Q4,5	FET	DC switch
Q6	Transistor	DC switch

Ref. No.	Part Name	Use / Function
Q7	Transistor	DC switch (Codec IC)
Q102	FET	DC switch (Assist)
Q103	FET	DC switch
Q111	FET	DC switch (VCO)
Q112	FET	DC switch
Q113	Transistor	Ripple filter
Q114	FET	DC switch
Q117	FET	DC switch (VCO)
Q118	FET	DC switch
Q131	Transistor	VCO
Q151	Transistor	VCO
Q181,182	Transistor	VCO
Q201	FET	Drive amplifier
Q202	FET	RF final amplifier
Q203	Transistor	APC switch
Q204	Transistor	DC switch
Q205,206	FET	DC switch
Q207	Transistor	DC switch
Q351	FET	DC switch
Q401	Transistor	Clock buffer
Q402	Transistor	DC switch
D1	Diode	Reverse protection
D8	Diode	38M control
D9	Diode	Back up battery charge
D10	Diode	DC/DC converter
D102	Zener diode	Over voltage protection
D103,104	Diode	Reverse current protection
D111	Diode	Reverse current protection
D131	Variable capacitance diode	VCO frequency control
D132-134	Variable capacitance diode	VCO frequency control
D136	Variable capacitance diode	VCO frequency control
D151	Variable capacitance diode	VCO frequency control
D152-154	Variable capacitance diode	VCO frequency control
D156	Variable capacitance diode	VCO frequency control
D201-203	Diode	Antenna switch
D204	Zener diode	Over voltage protection
D206	Varistor	Surge protection
D207	Diode	Antenna switch
D301,302	Diode	Reverse current protection
D303,304	Diode	Excessive input protection
D401,402	Diode	Reverse current protection
D403-407	Diode	Reverse current protection

Ref. No.	Part Name	Use / Function
D601	Diode	Reverse current protection
D609	Diode	Reverse current protection
D620,621	Zener diode	Over voltage protection
D622,623	Diode	Over voltage protection
D624-628	Diode	Reverse current protection
D629,630	Zener diode	Over voltage protection
D632-634	Zener diode	Over voltage protection

2.4.2 DISPLAY unit (XC1-209K-02)

Ref. No.	Part Name	Use / Function
A151	IC	GPS front-end module
IC201	IC	AND gate (2 input)
Q141	Transistor	DC switch
Q201	Transistor	DC switch
Q221-223	Transistor	DC switch
Q227-229	Transistor	DC switch
D111-120	LED	Key backlight
D141-144	Diode	Reverse current protection
D180,181	Diode	Excessive input protection
D201,202	LED	LCD backlight
D221	LED	TX/busy
D227	LED	Light bar

2.5 TERMINAL FUNCTION

2.5.1 MAIN unit (XC1-276K-00)

Pin No.	Name	I/O	Function
CN1			
1	NC	-	No connection
2	ENC0	I	Rotary switch input
3	ENC0	I	Rotary switch input
4	ENC1	I	Rotary switch input
5	GND	-	GND
6	ENC3	I	Rotary switch input
7	ENC2	I	Rotary switch input
8	+B	O	Power output after passing through the fuse
9	50A	O	DC 5.0V output
10	VOL	I	Volume level input
11	GND	-	GND
12	SB	I	Switched B input
13	NC	-	No connection
CN7			
1	EMG	I	Emergency input
2	GND	-	GND
3	SIDE2	I	Side 2 input
4	SIDE1	I	Side 1 input
5	PTT	I	PTT input

Pin No.	Name	I/O	Function
6	NC	-	No connection
CN402			
1	32LCD	O	DC 3.2V output
2	32LCD	O	DC 3.2V output
3	18M	O	DC 1.8V output
4	LCD_VSS	-	GND
5	LCD_/CS	O	LCD CS signal
6	LCD_A0	O	Data/Command control signal
7	LCD_E(WR1)	O	LCD read signal
8	LCD_R/W(WR0)	O	LCD write signal
9	LCD_RST	O	LCD reset signal
10	LCD_DB0	I/O	LCD Data Bus 0
11	LCD_DB1	I/O	LCD Data Bus 1
12	LCD_DB2	I/O	LCD Data Bus 2
13	LCD_DB3	I/O	LCD Data Bus 3
14	LCD_DB4	I/O	LCD Data Bus 4
15	LCD_DB5	I/O	LCD Data Bus 5
16	LCD_DB6	I/O	LCD Data Bus 6
17	LCD_DB7	I/O	LCD Data Bus 7
18	LCD_BLC	O	LCD backlight control
19	GND	-	GND
20	GND	-	GND
21	ME	-	MIC GND
22	MIC	I	Main MIC input
23	50A	O	DC 5.0V output
24	50A	O	DC 5.0V output
25	KEY14	I	Key matrix input
26	KEY13	I	Key matrix input
27	KEY12	I	Key matrix input
28	KEY11	I	Key matrix input
29	KEY10	I	Key matrix input
30	KEYo3	O	Key matrix output
31	KEYo2	O	Key matrix output
32	KEYo1	O	Key matrix output
33	KEYo0	O	Key matrix output
34	LED_G	O	LED Green control
35	LED_B	O	LED Red control
36	LED_R	O	LED Blue control
37	LBC_G	O	Light Bar Green Control
38	LBC_R	O	Light Bar Red Control
39	LBC_B	O	Light Bar Blue Control
40	GND	-	GND
41	GND	-	GND
CN602			
1	SP-	O	BTL output for internal speaker -
2	SP+	O	BTL output for internal speaker +

Pin No.	Name	I/O	Function
CN625			
1	SMIC	I	External MIC input
2	RXD/USB_DM	I/O	Serial data input / USB DM
3	TXD/USB_DP	I/O	Serial data output / USB DP
4	5U	O	5V power supply output
5	GND	-	GND
6	OPT	I	MIC identification
7	PF	I	Programmable function key input
8	PTT	I	PTT input
9	ME	-	MIC GND
10	EMC/VBUS	I	External MIC input / USB VBUS
11	MSW	I	Ext/Int MIC switch Input
12	SP-	O	BTL output for external speaker -
13	SP+	O	BTL output for external speaker +
14	SSW	I	Ext/Int speaker switch input

2.5.2 DISPLAY unit (XC1-209K-02 A/2)

Pin No.	Name	I/O	Function
CN201			
1	NC	-	No connection
2	K-	-	Cathode for backlight(GND)
3	A+	O	Anode for backlight
4	VSS	-	GND
5	DB7	I/O	LCD Data Bus 7
6	DB6	I/O	LCD Data Bus 6
7	DB5	I/O	LCD Data Bus 5
8	DB4	I/O	LCD Data Bus 4
9	DB3	I/O	LCD Data Bus 3
10	DB2	I/O	LCD Data Bus 2
11	DB1	I/O	LCD Data Bus 1
12	DB0	I/O	LCD Data Bus 0
13	/RST	O	LCD reset signal
14	R/W	O	LCD write signal
15	E	O	LCD read signal
16	A0	O	Data/Command control signal
17	/CS0	O	LCD CS signal
18	VSS	-	GND
19	VDDI	O	LCD I/O Power Supply(DC 1.8V output)
20	VDDA	O	LCD Analog Power Supply (DC 3.2V output)
21	VB0+	-	LCD bias voltage. Connect to VB0- via a capacitor.
22	VB1+	-	LCD bias voltage. Connect to VB1- via a capacitor.
23	VB1-	-	LCD bias voltage. Connect to VB1+ via a capacitor.

Pin No.	Name	I/O	Function
24	VB0-	-	LCD bias voltage. Connect to VB0+ via a capacitor.
25	VLCD	O	Main LCD power supply
CN202			
1	GND	-	GND
2	GND	-	GND
3	LBC_B	O	Light Bar Blue Control
4	LBC_R	O	Light Bar Red Control
5	LBC_G	O	Light Bar Green Control
6	LED_R	O	LED Blue control
7	LED_B	O	LED Red control
8	LED_G	O	LED Green control
9	KEYo0	O	Key matrix output
10	KEYo1	O	Key matrix output
11	KEYo2	O	Key matrix output
12	KEYo3	O	Key matrix output
13	KEYI0	I	Key matrix input
14	KEYI1	I	Key matrix input
15	KEYI2	I	Key matrix input
16	KEYI3	I	Key matrix input
17	KEYI4	I	Key matrix input
18	50A	O	DC 5.0V output
19	50A	O	DC 5.0V output
20	MIC	I	Main MIC input
21	ME	-	MIC GND
22	GND	-	GND
23	GND	-	GND
24	LCD_BLC	O	LCD backlight control
25	LCD_DB7	I/O	LCD Data Bus 7
26	LCD_DB6	I/O	LCD Data Bus 6
27	LCD_DB5	I/O	LCD Data Bus 5
28	LCD_DB4	I/O	LCD Data Bus 4
29	LCD_DB3	I/O	LCD Data Bus 3
30	LCD_DB2	I/O	LCD Data Bus 2
31	LCD_DB1	I/O	LCD Data Bus 1
32	LCD_DB0	I/O	LCD Data Bus 0
33	LCD_RST	O	LCD reset signal
34	LCD_R/W(WR0)	O	LCD write signal
35	LCD_E (WR1)	O	LCD read signal
36	LCD_A0	O	Data/Command control signal
37	LCD_/CS	O	LCD CS signal
38	LCD_VSS	-	GND
39	18M	O	DC 1.8V output
40	32LCD	O	DC 3.2V output
41	32LCD	O	DC 3.2V output

2.5.3 DISPLAY unit (XC1-209K-02 B/2)

Pin No.	Name	I/O	Function
CN301			
1	EMG	I	Emergency input
2	GND	-	GND
3	SIDE2	I	Side 2 input
4	SIDE1	I	Side 1 input
5	PTT	I	PTT input
6	NC	-	No connection

2.5.4 14Pin Universal Connector Specification

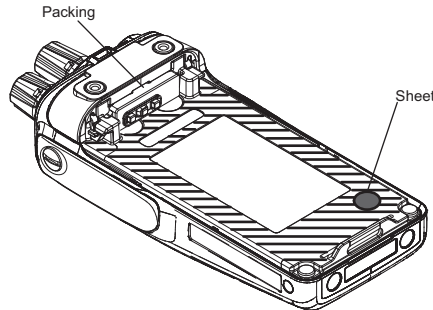
Pin No.	Pin Name	I/O	Signal Type	Description	Rating and Condition				
					Parameter	Min	Typ	Max	Unit
1	SSW	I	Digital	Ext/Int speaker switch input Internal Pull Up@3.2V MaxCurrent 310uA	VIH	2.5	-	5.3	V
					VIL	0.0	-	0.15	V
2	SP+	O	Analog	BTL output for external speaker	[8 ohm load]				
					Max output power	-	1.2	1.5	W
					(1kHz , Batt=7.5V)	-	-	-	
					DC Bias	-	2.6	-	V
3	SP-	O	Analog		[16 ohm load]				
					Max output power	-	0.8	1.0	W
					(1kHz , Batt=7.5V)	-	-	-	
					DC Bias	-	2.6	-	V
4	MSW	I	Digital	Ext/Int MIC switch Input External Pull Up @3.2V 47kohm & External Pull Up@5.0V 100kohm	VIH	3.5	-	5.3	V
					VIL	0.0	-	0.15	V
5	EMC	I	Analog	External MIC input	Audio Level	7.7	12.5	17.3	mV
					(STD deviation)	-	-	-	-
					Input impedance	-	2.2	-	kohm
					DC Bias	-	1.5	-	V
	Allowable Frequency	300	-	3000	Hz				
VBUS	I	Analog	USB VBUS(5V) input	VIH	4.8	-	5.3	V	
				VIL	0.0	-	0.50	V	
6	ME	-	-	MIC Ground	-	-	-	-	
7	PTT	I	Digital	Ext PTT switch input Internal Pull Up@3.2V 10.6kohm~47.1kohm	VIH	2.5	-	5.3	V
					VIL	0.0	-	0.40	V
8	PF	I	Analog	Programmable function key input (Pull Up:3.2V/8.2k)	V(PF2)	3.5	-	3.9	V
					V(PF1)	2.5	-	3.5	V
					V(BOTH)	1.5	-	2.5	V
					V(FIPS)	0.0	-	1.5	V
9	OPT	I	Digital	MIC identification External Pull Up@5.0V 2.2kohm	VIH	4.0	-	5.3	V
					VIL	0.0	-	0.4	V
10	GND	-	-	Ground	-	-	-	-	

Pin No.	Pin Name	I/O	Signal Type	Description	Rating and Condition					
					Parameter	Min	Typ	Max	Unit	
11	5U	-	Power	5V power supply output	Output Voltage (Iout = 100mA)	4.9	5.0	5.1	V	
					Maximum Current	-	-	0.2	A	
12	TXD	O	Digital	Serial data output CMOS	VOH(Io=-5mA)	4.1	-	5.1	V	
					VOL(Io=5mA)	0.0	-	0.8	V	
					Baud Rate	-	-	1.1875	Mbps	
	USB_DP	I/O	Analog	USB DP	VIH	2.7	-	3.6	V	
					VIL	-	-	0.8	V	
					VOH	2.8	-	3.5	V	
					VOL	0.0	-	0.3	V	
					Baud Rate (Full-Speed)	-	-	12	Mbps	
	13	RXD	I	Digital	Serial data input CMOS External Pull Up@3.2V 10kohm	VIH	2.0	-	5.3	V
						VIL	0.0	-	0.8	V
Baud Rate						-	-	1.1875	Mbps	
USB_DM		I/O	Analog	USB DM	VIH	2.7	-	3.6	V	
					VIL	-	-	0.8	V	
					VOH	2.8	-	3.5	V	
					VOL	0.0	-	0.3	V	
					Baud Rate (Full-Speed)	-	-	12	Mbps	
14		SMIC	I	Analog	External MIC input	Audio Level (STD deviation)	7.7	12.5	17.3	mV
						Input impedance	-	2.2	-	kohm
	DC Bias					-	1.5	-	V	
	Allowable Frequency					300	-	3000	Hz	

SECTION 3 DISASSEMBLY

3.1 Precautions for Waterproof

- Do not remove the black sheet from the reverse side of the transceiver (refer to the illustration below). Removal of this sheet decreases the waterproof efficiency of the transceiver and may cause malfunctions if water seeps into the transceiver.
- The black packing material on the reverse side of the transceiver is important with respect to the waterproof efficiency of the transceiver.
- Do not place stickers or other materials on the shaded area that the battery contacts shown in the figure. Doing so will impair the waterproof efficiency of the transceiver and may cause it to break down. Additionally, in order to prevent damage to the packing material, do not allow it to come in contact with foreign materials.



3.2 Precautions for Disassembly

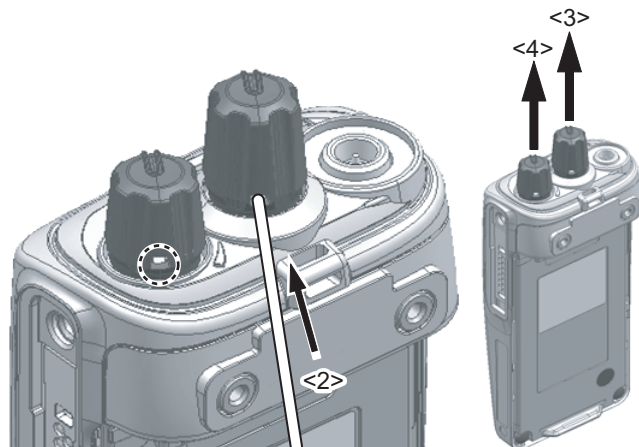
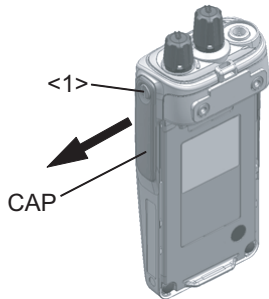
3.2.1 Removing the selector knob and volume knob

- (1) Loosen the screw <1> then remove the CAP.
- (2) Using a thin tool, insert it in the hole on the selector knob side and push the knob spring. <2>

Note:

When you push the knob spring, take care not to damage the resin of the knob.

- (3) Lift and remove the selector knob <3> while pushing the knob spring.
- (4) Repeat steps 2 and 3 for the volume knob, to remove the volume knob <4>.



Note:

Perform the following procedures when installing the selector knob and volume knob.

- a) Match the direction for the hole of the knob and the knob spring.
- b) Push the knob onto the knob spring until a click sounds.

3.2.2 Removing the selector knob spring and volume knob spring

- (1) Lightly grasp the left and right sides of the selector knob spring together, and lift up as shown in the figure. <1>

Note:

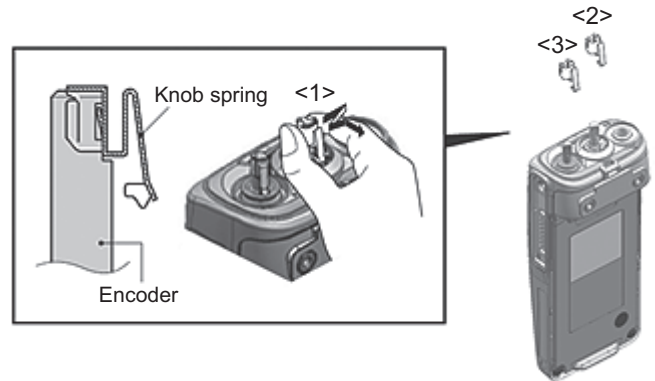
Do not grasp the knob spring tightly.

- (2) Remove the selector knob spring <2>.

Note:

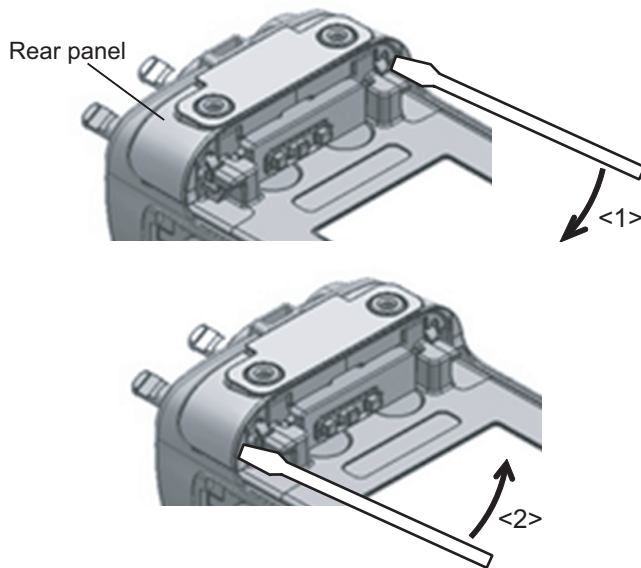
Use minimal contact with your fingers on the knob spring.

- (3) Repeat steps 1 and 2 for the volume knob spring, to remove the volume knob spring <3>.



3.2.3 Removing the front case from the chassis

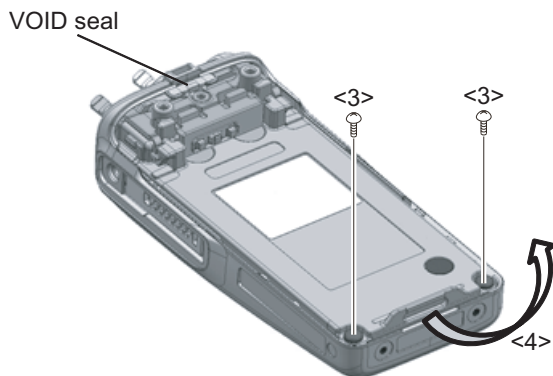
- (1) Remove the rear panel with a flat-head screwdriver. Insert the screwdriver between the rear panel (right side) and the chassis, push it in the direction of the arrow <1>, and remove the right side of the rear panel. Repeat the above action for the left side of the rear panel <2>.



- (2) Remove the two screws <3>.
- (3) Peel off the void seal.
- (4) Lift the base of the chassis and remove the chassis from the front case. <4>

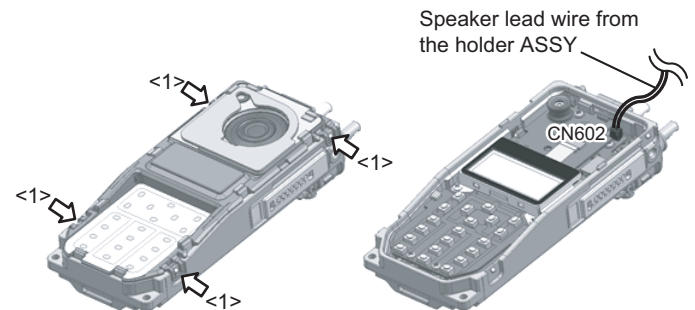
Note:

- Once the void seal is peeled off, it cannot be used again.
- When the chassis cannot be removed from the front case, remove by pushing in the button top with the finger.
- Regarding VOID, confirm the service policy of the NX-3400 to KENWOOD (or authorized distributor).



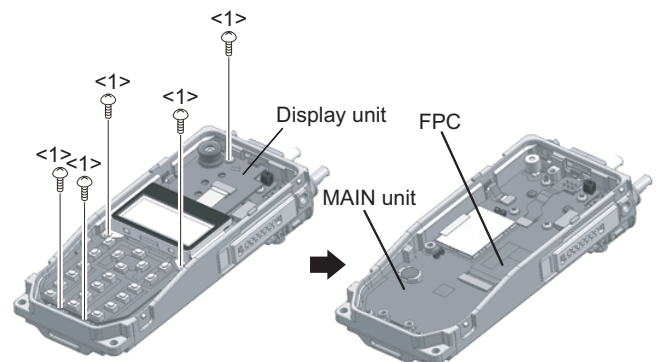
3.2.4 Remove the holder ASSY from the chassis

- (1) Remove the four tabs on the holder ASSY from the chassis. <1>
- (2) Lift up the holder ASSY, then remove the speaker lead wire from the connector (CN602).



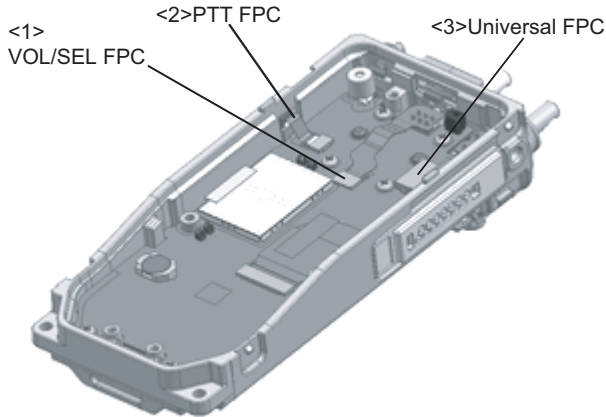
3.2.5 Removing the Display unit from the chassis

- (1) Remove the five screws <1>.
- (2) While lifting the Display unit, remove the FPC from the connector (CN202) of the Display unit.



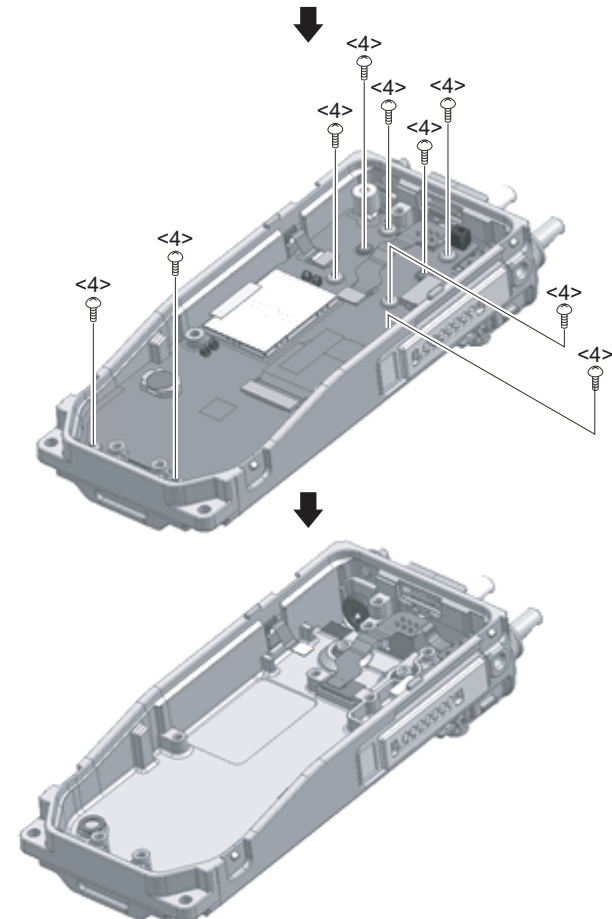
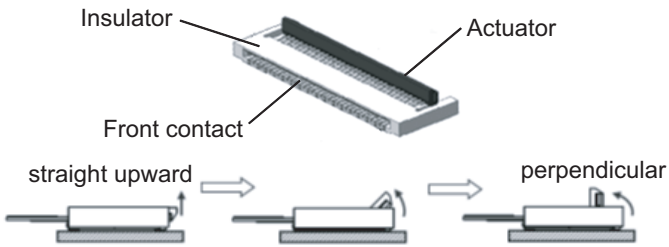
3.2.6 Removing the MAIN unit from the chassis

- (1) Remove the following parts in numerical order.
 <1>VOL/SEL FPC <2>PTT FPC <3>Universal FPC
 <4> nine screws



Note:

The FPC is locked with an actuator.
 Raise the actuator straight upward, then make sure the actuator is perpendicular to the insulator.



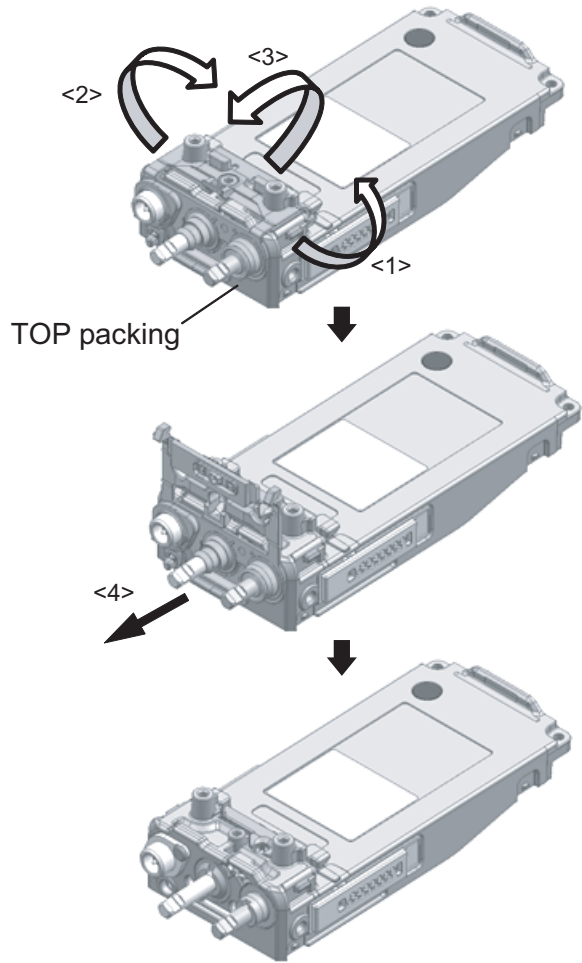
3.2.7 Removing the TOP packing

- (1) Pull the TOP packing to the left to remove the packing that is fit into the left groove of the chassis. <1>
 (2) Pull the TOP packing to the right to remove the packing that is fit into the right groove of the chassis. <2>
 (3) Pull the TOP packing to the center to remove the packing that is fit into the center groove of the chassis. <3>
 (4) Remove the TOP packing. <4>

Note:

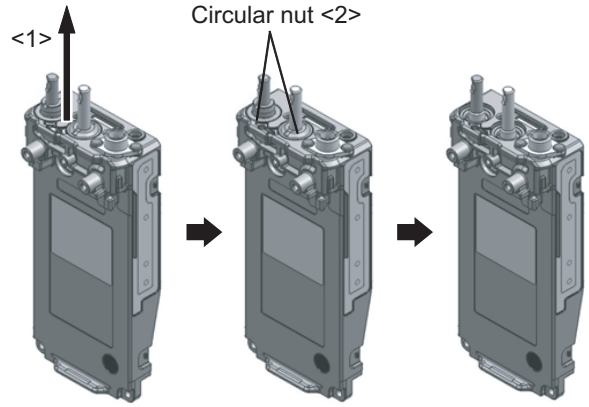
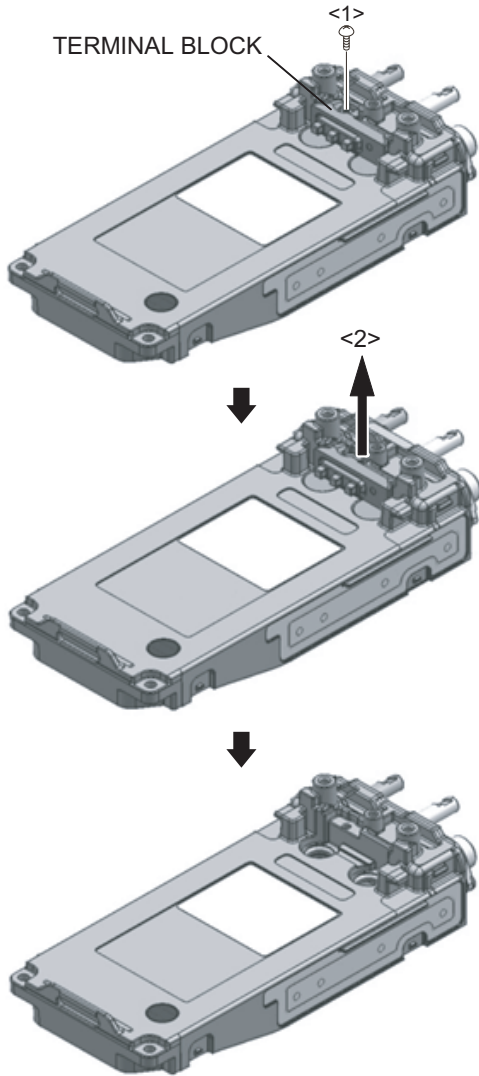
Remove the packing slowly, as the packing of the selector part might be overset when the TOP packing is removed.

If the packing is turned over, return it to the original position using a soft tipped item (e.g., your finger).



3.2.8 Removing the TERMINAL BLOCK (with PACKING)

- (1) Remove the screw. <1>
- (2) Remove the TERMINAL BLOCK (with PACKING). <2>

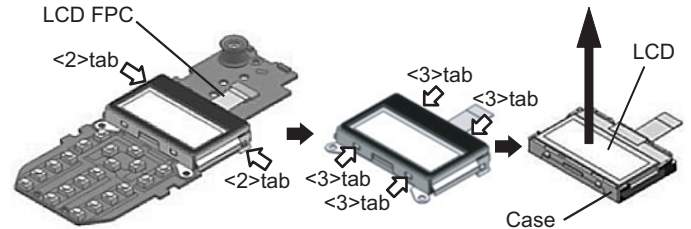


Note:

When reassembling, make sure the stopper and the circular nut are engaged.

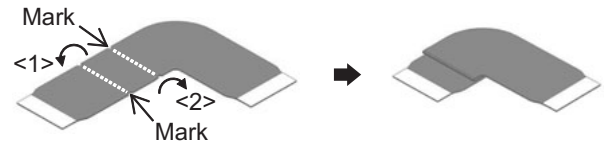
3.2.10 Removing the LCD from the Display unit

- (1) Remove the LCD FPC from the connector. <1>
- (2) Remove the Display ASSY fixed with two tabs. <2>
- (3) Remove the shielding case fixed with four tabs. <3>
- (4) Take the LCD out of the case.



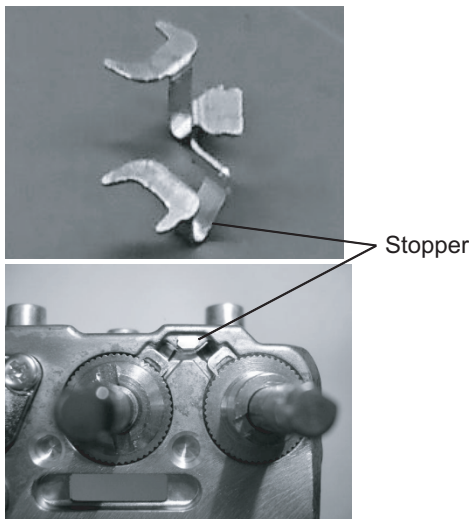
3.2.11 Forming the FPC (for connection of DISPLAY UNIT and MAIN UNIT)

Bend the FPC twice along the mark. <1> <2>



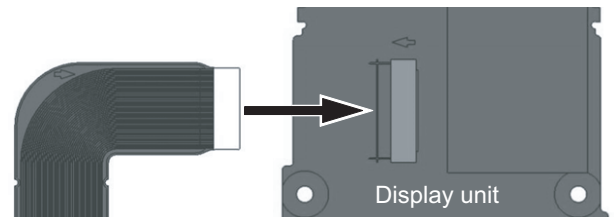
3.2.9 Removing the stopper of the selector circle nut and volume circle nut

- (1) Remove the stopper using a pair of tweezers. <1>
- (2) Remove the circular nut <2> using the nut wrench (W05-1123-00).



3.2.12 Insert direction for the FPC (for connection of DISPLAY UNIT and MAIN UNIT)

Insert the FPC with the electrode surface downward.



3.3 Precautions for Reassembly

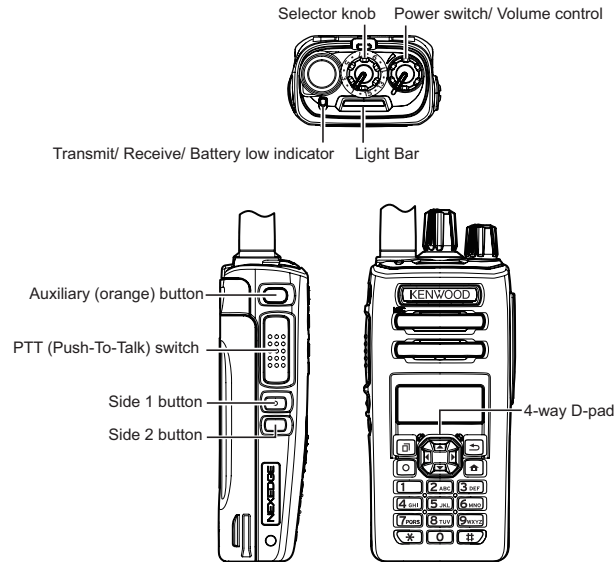
3.3.1 Assembly Information (Sheet/Cushion)

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-0106-10	FIBROUS SHEET (AIR LEAK)	G1A-0063-00
		CUSHION (AIR LEAK)	G1D-0204-00
		SHEET (AIR LEAK)	G11-4440-04
		SHEET (PTT)	G1G-0075-00
		ADHESIVE SHEET (UNIV CN)	J99-0715-08
CABINET ASSY (FULL)	A0C-0176-30	STICKER (NEXEDGE)	B42-7417-04
		KENWOOD BADGE	B4D-0044-10
		FIBROUS SHEET	G1A-0053-00
HOLDER	J1K-0493-10	FIBROUS SHEET (MIC)	G1A-0057-00
		CUSHION (SP)	G1D-0203-10
		SHEET (BUTTON)	G1G-0076-00
		SHEET (SP)	G1G-0077-00
		ANTENNA ELEMENT (GPS)	T9A-0058-00
		ANTENNA ELEMENT (BT)	T9A-0059-00
MOUNTING HARDWARE	J2B-0350-20	CUSHION (2 pieces)	G1D-0205-00
		SHEET (LCD)	G1B-0300-00
CAP	B0K-0076-00	PACKING	G5D-0027-00
ILLUMINATION GUIDE	B1B-0105-00	REFLECTION SHEET	B1B-0110-00
R.RECEPTACLE (UNIV CN)	E58-0532-15	FLEX P.BOARD	J8C-0021-00
When open the BLS (The situation that need to repair or inspection the chip part in the BLS)		SHIELDING COVER	F10-3227-05
		SHIELDING COVER	F1B-0084-00
		SHIELDING COVER	F1B-0086-00
		SHIELDING COVER	F1B-0088-00

SECTION 4 ADJUSTMENT

4.1 Controls



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 8ohm 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 channel selected with the 4-way D-pad and the last used signaling number are displayed. When it is activated for the first time, the signaling number is 1.






4.2.2 Button operation

■Function OFF: "Func" not appears on the sub LCD display

Button	Function	Display
[Selector]	-	-
[▲]	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"
[Side1]	-	-
[Side2]	-	-
[□]	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 (Orange)]	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.

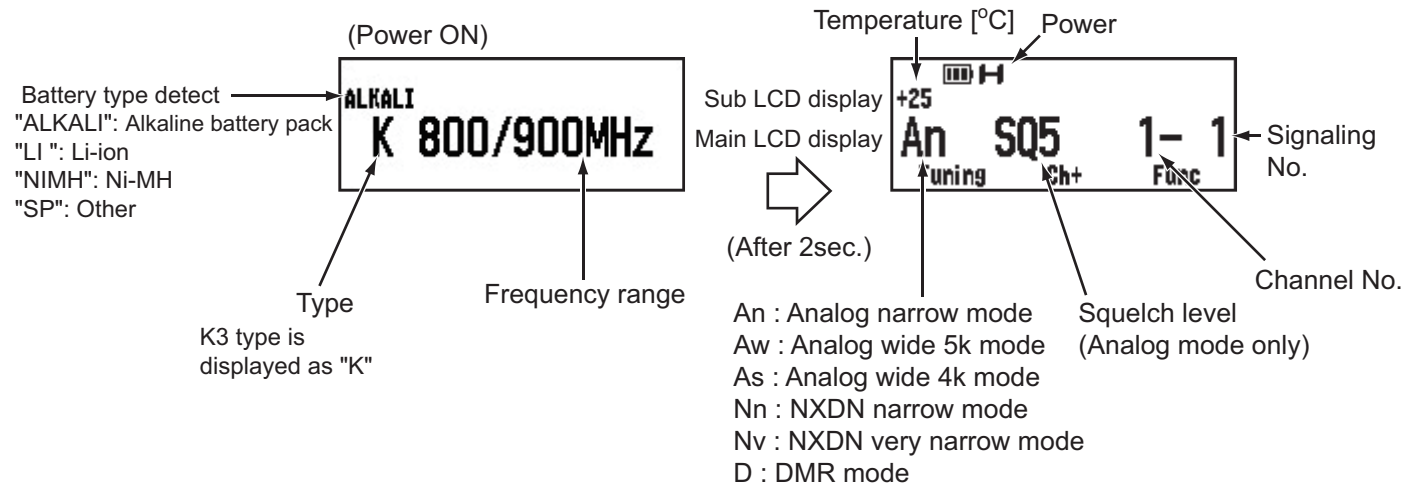
■Function ON: "Func" appears on the sub LCD display

Button	Function	Display
[Selector]	-	-
[▲]	Talk Around On/Off	On: [] icon appears
[▼]	Analog/NXDN/DMR	Analog: "A" NXDN: "N" DMR: "D"
[◀]	Function off	-
[▶]	Button/LCD check	The position of the selector knob, etc., appear.
[Side1]	Function off	-
[Side2]	Function off	-
[]	High power/Low power	High:[] icon appears Low:[] icon appears
[↶]	Function off	-
[○]	Function off	-
[🏠]	Function off	-
[AUX (Orange)]	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.

■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

Channel	RX (MHz)	TX (MHz)
1	851.050000	806.050000
2	859.950000	815.550000
3	868.950000	823.950000
4	851.550000	806.550000
5	860.450000	816.050000
6	868.450000	823.450000
7	935.050000	896.050000
8	938.050000	899.050000
9	939.950000	900.950000
10	935.550000	896.550000
11	938.550000	899.550000
12	939.450000	900.450000

(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 *2	FSW + PN9	FSW + PN9
9 *2	Tone Pattern (1031Hz)	Tone Pattern (1031Hz)





RAN: Radio Access Number
 PN9: Pseudo-Random Pattern
 *2: 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

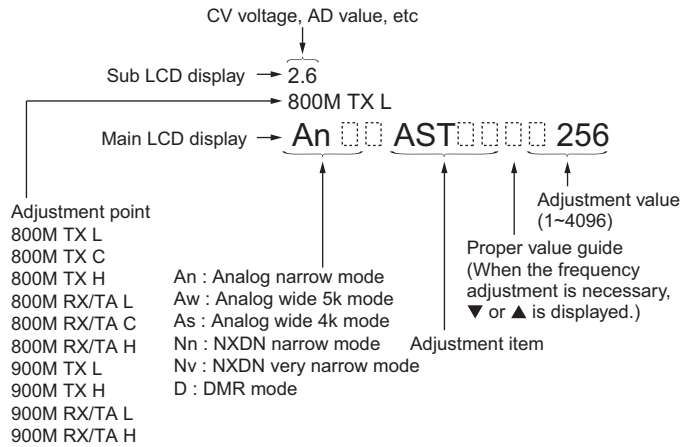
4.3 Panel Tuning Mode

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 [] 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, 6 or 10 reference level adjustments, and use the [] button to switch between Wide 5k/ Wide 4k/Narrow.

- LCD display in panel tuning mode



4.3.2 Button operation

Button	Function	
	Push	Hold (1 second)
[Selector]	-	
[▲]	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	-
[Side1]	-	
[Side2]	-	
[]	Shift to panel test mode	-
[]	To enter 5, 6 or 10 reference level adjustments	-
[]	Writes the adjustment value	-
[]	Go to next adjustment item	Back to last adjustment item (At the time of 5, 6 or 10 point adjustment: Adjustment point change)
[AUX (Orange)]	-	
[PTT]	Transmit	
[0] to [9] and [#],[*]	-	

4.3.3 5, 6 or 10 reference level adjustments frequency

■5 reference level adjustment

IQ Phase / RSSI Reference 1 DSP (Receive) / RSSI Reference 2 RF IC (Receive) / RSSI Reference 3 DSP(Standby) / RSSI Reference 4 RF IC (Standby) / Squelch Open / Squelch Tight / Low RSSI / High RSSI

<5 points>

Tuning No.	Name	Display	RX (MHz)	TX (MHz)
1	800MHz TX Low	800M TX L	806.050000	806.100000
2	800MHz TX Center	800M TX C	815.550000	815.600000
3	800MHz TX High	800M TX H	823.950000	823.900000
4	900MHz RX/TA Low	900M RX/TA L	935.050000	935.100000
5	900MHz RX/TA High	900M RX/TA H	939.950000	939.900000

■6 reference level adjustment (Analog Wide 5k, Analog Wide 4k)

Maximum Deviation / QT Deviation / DQT Deviation / LTR Deviation / DTMF Deviation / MSK Deviation

<6 points>

Tuning No.	Name	Display	RX (MHz)	TX (MHz)
1	800MHz TX Low	800M TX L	806.050000	806.100000
2	800MHz TX Center	800M TX C	815.550000	815.600000
3	800MHz TX High	800M TX H	823.950000	823.900000
4	800MHz RX/TA Low	800M RX/TA L	851.050000	851.100000
5	800MHz RX/TA Center	800M RX/TA C	859.950000	859.900000
6	800MHz RX/TA High	800M RX/TA H	868.950000	868.900000

■10 reference level adjustment (Analog Narrow, NXDN Narrow, NXDN Very Narrow, DMR)


VCO Assist / High Transmit Power / Low Transmit Power / Balance / Maximum Deviation / NXDN High Deviation / DMR High Deviation / QT Deviation / DQT Deviation / LTR Deviation / DTMF Deviation / MSK Deviation / CW ID Deviation

<10 points>

Tuning No.	Name	Display	RX (MHz)	TX (MHz)
1	800MHz TX Low	800M TX L	806.050000	806.100000
2	800MHz TX Center	800M TX C	815.550000	815.600000
3	800MHz TX High	800M TX H	823.950000	823.900000
4	800MHz RX/TA Low	800M RX/TA L	851.050000	851.100000
5	800MHz RX/TA Center	800M RX/TA C	859.950000	859.900000
6	800MHz RX/TA High	800M RX/TA H	868.950000	868.900000
7	900MHz TX Low	900M TX L	896.050000	896.100000
8	900MHz TX High	900M TX H	900.950000	900.900000
9	900MHz RX/TA Low	900M RX/TA L	935.050000	935.100000
10	900MHz RX/TA High	900M RX/TA H	939.950000	939.900000

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.)
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.

Adjustment Item	Description
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	No adjustment is required.
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 6.25kHz spacing channel. (In FCC rule, Analog mode or CWID is required.)
Battery Warning Level	Battery Warning Level (LED blinking level) is adjusted. Battery Warning Level minus 0.4V is the transmission inhibited level.
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.
High RSSI	Both "Low RSSI" and "High RSSI" must be adjusted. (The curve data of RSSI level is applied.)

4.3.5 Adjustment item and Display

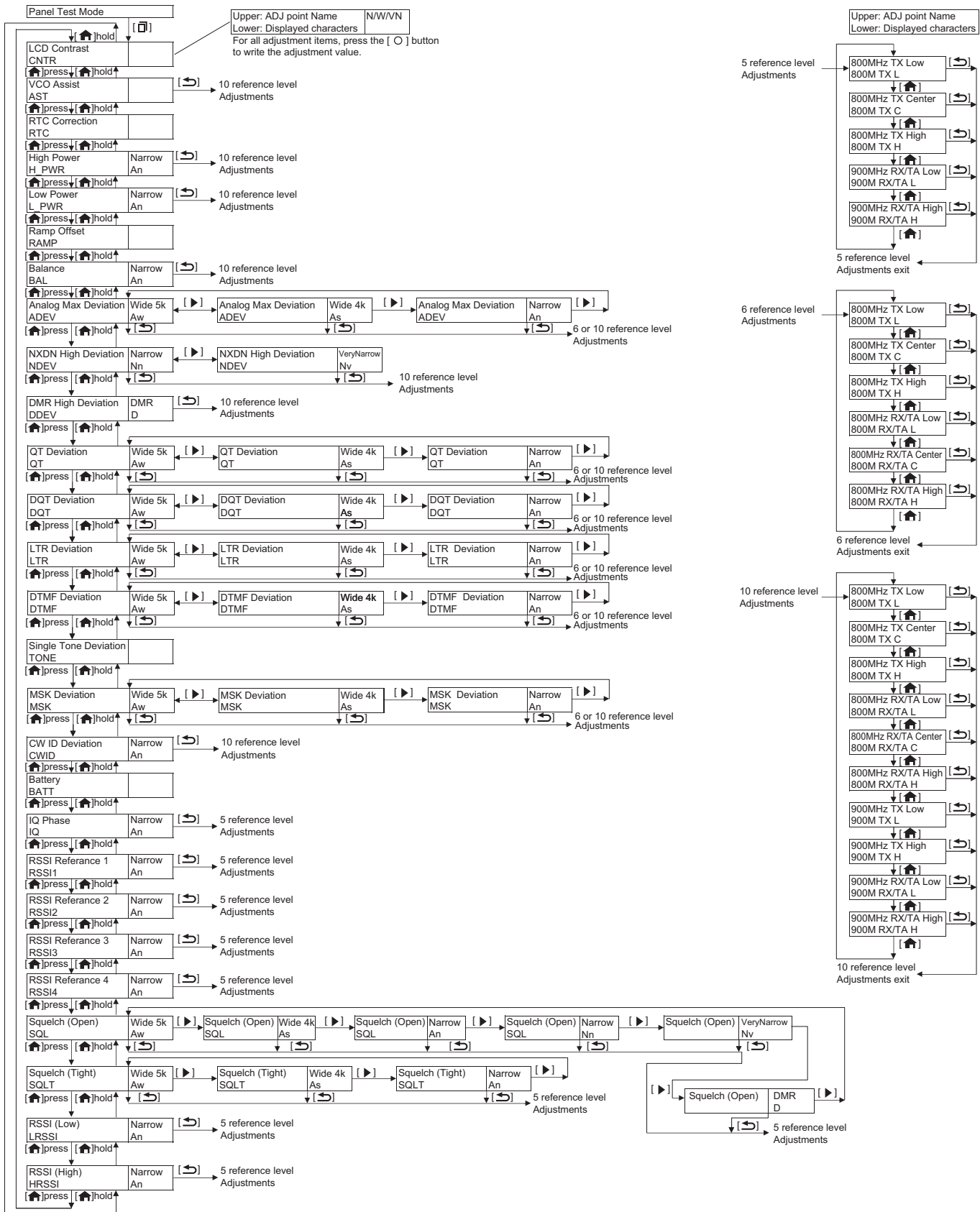
Order	Adjustment item	Main LCD display	Sub LCD display	AW	AS	AN	Nn	Nv	D	Adjust item Number
				(Analog Wide 5k)	(Analog Wide 4k)	(Analog Narrow)	(NXDN Narrow)	(NXDN Very Narrow)	(DMR)	
				Adjustment range						
1	LCD Contrast	CNTR	-	1 point ADJ						Common Section 2
				1~256						
2	VCO Assist	AST	(CV voltage)	-	-	10	-	-	-	Common Section 3
				1~4096						
3	Frequency	-	-	1 point ADJ						Common Section 4
				1~4096						
4	RTC Correction	RTC	-	-						Common Section 5
				-2.00 ~ -0.01 ,0.00 ,+0.01 ~ +2.00						
5	High Transmit Power	H_PWR	-	-	-	10	-	-	-	Transmitter Section 1
				1~1024						
6	Low Transmit Power	L_PWR	-	-	-	10	-	-	-	Transmitter Section 2
				1~1024						
7	Ramp Offset	RAMP	(ADC measurement value)	1 point ADJ						Transmitter Section 3
				1~1024						
8	Balance	BAL	(Encode frequency)	-	-	10	-	-	-	Transmitter Section 4
				1~1024						
9	Maximum Deviation	ADEV	-	6	6	10	-	-	-	Transmitter Section 5
				1~1024						
10	NXDN High Deviation	NDEV	-	-	-	-	10	10	-	Transmitter Section 6
				1~1024						
11	DMR High Deviation	DDEV	-	-	-	-	-	-	10	Transmitter Section 7
				1~1024						
12	QT Deviation	QT	-	6	6	10	-	-	-	Transmitter Section 8
				1~1024						
13	DQT Deviation	DQT	-	6	6	10	-	-	-	Transmitter Section 9
				1~1024						
14	LTR Deviation	LTR	-	6	6	10	-	-	-	Transmitter Section 10
				1~1024						
15	DTMF Deviation	DTMF	-	6	6	10	-	-	-	Transmitter Section 11
				1~1024						
16	MSK Deviation	MSK	-	6	6	10	-	-	-	Transmitter Section 12
				1~1024						
17	CW ID Deviation	CWID	-	-	-	10	-	-	-	Transmitter Section 13
				1~1024						
18	Battery Warning	BATT	(BATT measurement value)	1 point ADJ						Transmitter Section 14
				1~256						
19	IQ Phase	IQ	(RSSI DSP(Receive) measurement value)	-	-	5	-	-	-	Receiver Section 2
				1~63						
20	RSSI Reference 1 DSP (Receive)	RSSI1	(RSSI DSP(Receive) measurement value)	-	-	5	-	-	-	Receiver Section 3
				1~256						
21	RSSI Reference 2 RF IC(Receive)	RSSI2	(RSSI RF IC(Receive) measurement value)	-	-	5	-	-	-	Receiver Section 3
				1~256						

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

4.3.6 Panel tuning mode flow chart

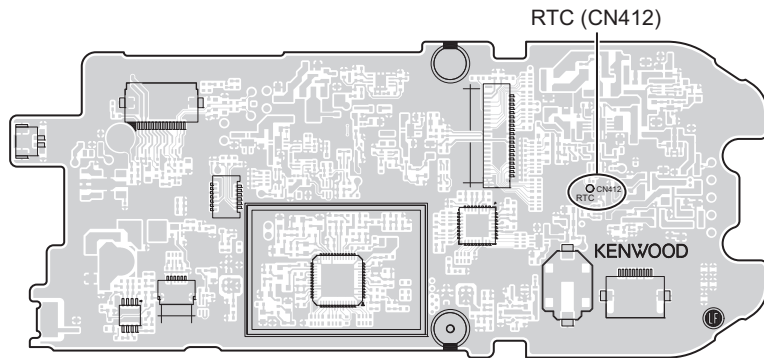
Note:

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



4.4 Adjustment points

MAIN UNIT (XC1-276)
Component Side



4.5 Test Equipment Required for Alignment

Test Equipment	Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range	100 to 950MHz
	Modulation	Frequency modulation and external modulation
	Output	-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	50ohm
	Operation Frequency	100 to 950MHz
	Measurement Capability	Vicinity of 10W
3. Deviation Meter	Frequency Range	100 to 950MHz
4. Digital Volt Meter (DVM)	Measuring Range	10mV to 10V DC
	Input Impedance	High input impedance for minimum circuit loading
5. Oscilloscope		DC through 30MHz
6. Frequency Counter	Frequency Range	10Hz to 1000MHz
	Frequency Stability	0.2ppm or less
	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		5A
8. AF Volt Meter (AF VM)	Frequency Range	50Hz to 10kHz
	Voltage Range	1mV to 10V
9. Audio Generator (AG)	Frequency Range	50Hz to 5kHz or more
	Output	0 to 1V
10. Distortion Meter	Capability	3% or less at 1kHz
	Input Level	50mV to 10Vrms
11. Spectrum Analyzer	Measuring Range	DC to 1GHz or more
12. 8ohm Dummy Load		Approx. 8ohm, 3W
13. Regulated Power Supply		5V to 10V, approx. 3A, Useful if ammeter equipped

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

■Antenna connector adapter

The antenna connector of this transceiver uses an SMA terminal.

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

■Nut wrench

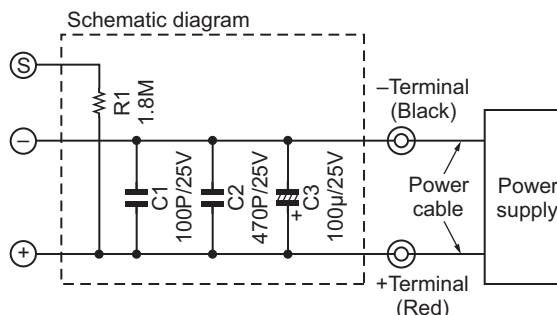
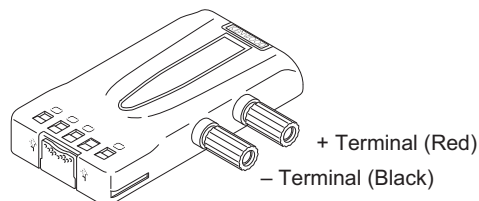
In order to turn the volume nut and the channel selector nut, use a recommendation tool.

Part No.: W05-1123-00

■Battery Jig (W05-0909-00)

Connect the power cable properly between the battery jig installed in the transceiver and the power supply, and be sure output voltage and the power supply polarity prior to switching the power supply ON, otherwise over voltage and reverse connection may damage the transceiver, or the power supply or both.

When using the battery jig in user mode, the transceiver assumes that a lithium-ion battery pack is attached to the transceiver. In adjustment mode, battery type detection is not performed.



■Universal connector

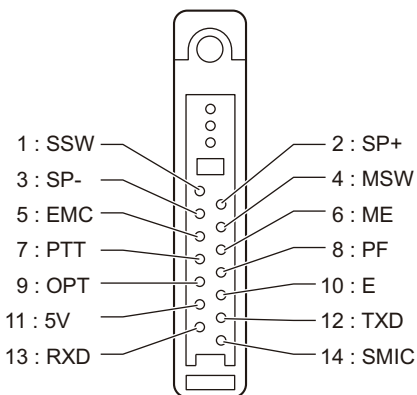
Use the interface cable (KPG-36U/36X) for PC tuning for panel tuning. Connect the plug to the universal connector of the transceiver and tighten the screw.

Numbers are universal connector terminal numbers.

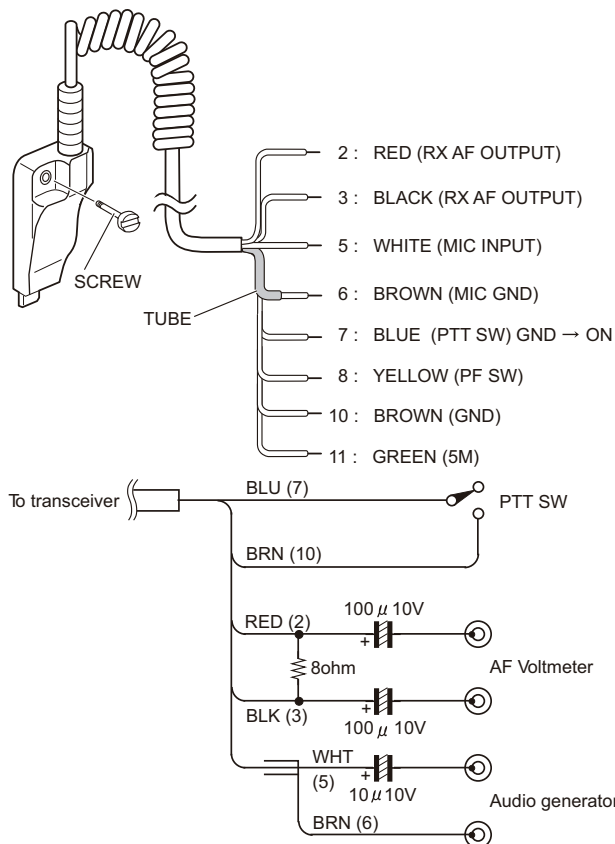
Caution

- (1) When connecting the plug to the universal connector of the transceiver, a short circuit may occur. To prevent this, be sure to turn the transceiver POWER switch off.
- (2) Since the RX AF output is a BTL output, there is a DC component. Isolate this with a capacitor or transformer as shown in the figure.
- (3) Do not connect an instrument between red or black and GND.

• *Universal connector

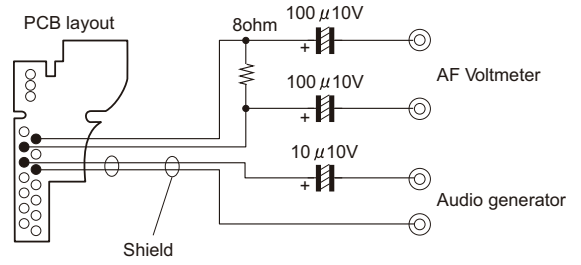
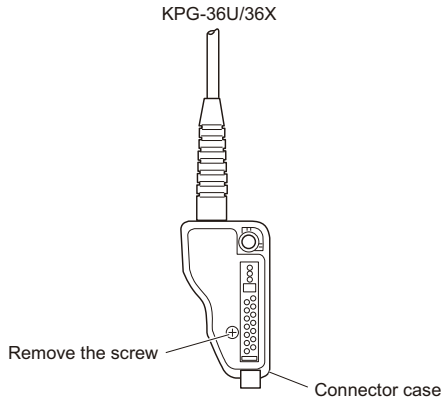


• *Panel tuning



Note: Pin 1 (SSW) and Pin 4 (MSW) are connected to Pin 10 (GND) to active External SP and External MIC.

- *PC tuning
Connect the wires to the PCB in the connector case of interface cable.
For output the wires out of the connector case, need to process the connector case.



4.6 Radio check Section

Item	Condition <PC>: PC test mode <Panel>: Panel tuning mode	Measurement	Adjustment		Specifications /Remarks
			Unit Parts	Method	
1. Frequency check	<PC> 1) Test Channel: 1 Test Signaling Mode: Analog Signaling: 1 2) Press [Transmit] button.	f. counter		Check an internal temperature of radio from 20°C to 33°C.	±0.25ppm ±201.5Hz @806.05MHz
	<Panel> 1) CH-Sig: 1-1 2) PTT: ON				
2. High power check (Battery voltage:7.5V)	<PC> 1) Test Channel: 1 Test Signaling Mode: Analog Signaling: 1 2) Press [Transmit] button.	Power meter Ammeter		Check	2.5~3.5W 2.3A or less
	1) Test Channel: 2 Test Signaling Mode: Analog Signaling: 1 2) Press [Transmit] button.				
	1) Test Channel: 3 Test Signaling Mode: Analog Signaling: 1 2) Press [Transmit] button.				
	<Panel> 1) CH-Sig: 1-1 2) PTT: ON	Power meter Ammeter			
	1) CH-Sig: 2-1 2) PTT: ON				
	1) CH-Sig: 3-1 2) PTT: ON				

Item	Condition	Measurement	Adjustment		Specifications /Remarks
	<PC>: PC test mode <Panel>: Panel tuning mode		Unit Parts	Method	
3. Low power check (Battery voltage:7.5V)	<PC> 1) Test Channel: 1 Test Signaling Mode: Analog Signaling: 1 2) Press [Transmit] button.	Power meter Ammeter		Check	0.5~1.5W 1.1A or less
	1) Test Channel: 2 Test Signaling Mode: Analog Signaling: 1 2) Press [Transmit] button.				
	1) Test Channel: 3 Test Signaling Mode: Analog Signaling: 1 2) Press [Transmit] button.				
	<Panel> 1) CH-Sig: 1-1 2) PTT: ON	Power meter Ammeter			
	1) CH-Sig: 2-1 2) PTT: ON				
	1) CH-Sig: 3-1 2) PTT: ON				
4. MIC sensitivity check	<PC> 1) Test Channel: 1 Test Signaling Mode: Analog Signaling: 1 2) AG: 1kHz 3) Press [Transmit] button.	Deviation meter Oscilloscope AG AF VM		Adjust AG input to get a standard MOD. Standard MOD Wide 5k: ±3.0kHz Wide 4k: ±2.4kHz Narrow: ±1.5kHz	12.5mV ±5.8mV
	<Panel> 1) CH-Sig: 1-1 2) AG: *Same as above 3) PTT: ON				
5. Sensitivity check	<PC> 1) Test Channel: 1 Test Signaling Mode: Analog Signaling: 1 2) SSG output: -117dBm (0.32μV) Wide 5k: (MOD: 1kHz/±3.0kHz) Wide 4k: (MOD: 1kHz/±2.4kHz) Narrow: (MOD: 1kHz/±1.5kHz)	SSG AF VM Oscilloscope Distortion meter 8ohm Dummy load		Check	12dB SINAD or more
	<Panel> 1) CH-Sig: 1-1 2) SSG output: *Same as above				

4.7 Common Section

Note: "Adj points" are described by abbreviation as "8" for 800M and "9" for 900M.

Item	Condition	Measurement	Adjustment		Specifications /Remarks
	<PC>: PC tuning mode <Panel>: Panel tuning mode		Unit Parts	Method	
1. Setting	1) DC voltage:7.5V 2) SSG standard modulation [Wide 5k] MOD:1kHzDEV:3kHz [Wide 4k] MOD:1kHzDEV:2.4kHz [Narrow] MOD:1kHzDEV:1.5kHz				
2. LCD Contrast	<PC> 1) Adj item: [LCD Contrast]		[+], [-]	Write fixed value "115".	
	<Panel> 1) Adj item: [CNTR]		[▲], [▼]	Press [Apply] button for <PC>, or [○] button for <Panel> to store the adjustment value.	
3. VCO Assist	<PC> 1) Adj item: [VCO Assist] 2) Adj points: 10 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H], [9TX L], [9TX H], [9RX/TA L], [9RX/TA H]		[+], [-]	<PC> [Automatic Adjustment] 1) Press [Autotune] button. 2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished. 3) Verify that the VCO lock voltage is within the specification.	2.5V±0.1V
	<Panel> 1) Adj item: [AST] 2) Adj points: *Same as above		[▲], [▼]	<PC> <Panel> [Manual Adjustment] 1) Change the adjustment value to get VCO lock voltage within the specified voltage. 2) Press [Apply] button for <PC>, or [○] button for <Panel> to store the adjustment value. after all adjustment points have been adjusted.	
Note: Confirm the VCO lock voltage approximately 3 seconds after the adjustment value is changed.					
4. Frequency	<PC> 1) Adj item: [Frequency] 2) SSG output : -20dBm (22.4mV) (CW (without modulation))	SSG	[+], [-]	Press [Start] button of "Auto Tuning". Press [Apply] button to store the adjustment value after the automatic adjustment has finished.	
	<Panel> *The Frequency adjustment can be performed only in PC tuning mode.			"IF20" value = Within 0±10 digits. The value of "IF20" will become around "0" after the adjustment has finished.	
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.) Remark: "Frequency" is adjusted under receiving condition with SSG.					
5. RTC Correction	<PC> 1) Adj item: [RTC Correction]	Frequency Counter	[+], [-]	The adjustment value should input the display of the Frequency Counter.	
	<Panel> 1) Adj item: [RTC]	Test Point (CN412/MAIN UNIT)	[▲], [▼]	Press [Apply] button for <PC>, or [○] button for <Panel> to store the adjustment value.	

4.8 Transmitter Section

Note: "Adj points" are described by abbreviation as "8" for 800M and "9" for 900M.

Item	Condition	Measurement	Adjustment		Specifications /Remarks
	<PC>: PC tuning mode <Panel>: Panel tuning mode		Unit Parts	Method	
1. High Transmit Power (Battery voltage :7.5V)	<PC> 1) Adj item: [High Transmit Power] 2) Adj points: 10 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H], [9TX L], [9TX H], [9RX/TA L], [9RX/TA H] 3) Press [Transmit] button.	Power meter Ammeter	[+], [-]	3.0W Press [Apply] button for <PC>, or [O] button for <Panel> to store the adjustment value.	±0.1W 2.3A or less
	<Panel> 1) Adj item: [H_PWR] 2) Adj points: *Same as above 3) PTT : ON		[▲], [▼]		
2. Low Transmit Power (Battery voltage :7.5V)	<PC> 1) Adj item: [Low Transmit Power] 2) Adj points: 10 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H], [9TX L], [9TX H], [9RX/TA L], [9RX/TA H] 3) Press [Transmit] button.		[+], [-]	1.0W Press [Apply] button for <PC>, or [O] button for <Panel> to store the adjustment value.	±0.1W 1.1A or less
	<Panel> 1) Adj item: [L_PWR] 2) Adj points: *Same as above 3) PTT : ON		[▲], [▼]		
3. Ramp Offset	<PC> 1) Adj item: [Ramp Offset] 2) Press [Transmit] button.	Power meter Ammeter	[+], [-]	<PC> [Automatic Adjustment] 1) Press [Autotune(TX starts)] button. 2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished.	
	<Panel> 1) Adj item: [RAMP] 2) PTT : ON		[▲], [▼]		

Item	Condition	Measurement	Adjustment		Specifications /Remarks
	<PC>: PC tuning mode <Panel>: Panel tuning mode		Unit Parts	Method	
4. Balance	<PC> 1) Adj item: [Balance] 2) Deviation meter LPF: 3kHz/ HPF: OFF 3) Adj points: 10 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H], [9TX L], [9TX H], [9RX/TA L], [9RX/TA H] 4) Press [Transmit] button.	Deviation meter Oscilloscope	[+], [-]	The Deviation of 20Hz frequency is fixed. Change the 2kHz adjustment value to become the same deviation of 20Hz within the specified range. <PC> While PTT is ON click the check box "2kHz Sine Wave" to change the 20Hz/2kHz. Press [Apply] button to store the adjustment value.	2kHz Tone deviation is within $\pm 1.0\%$ of 20Hz tone deviation.
	<Panel> 1) Adj item: [An BAL] 2) Deviation meter *Same as above 3) Adj points: *Same as above 4) PTT : ON		[▲], [▼]	<Panel> While PTT is ON, press the [▲] button to change the 20Hz/2kHz. Press [○] button to store the adjustment value.	
5. Maximum Deviation adjust [Analog Wide 5k]	<PC> 1) Adj item: [Maximum Deviation (Analog Wide 5k)] 2) Deviation meter LPF: 15kHz/ HPF: OFF 3) Adj points: 6 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H] 4) Press [Transmit] button.	Deviation meter Oscilloscope	[+], [-]	Write fixed value "489" for each adjustment point. Transmit at each adjustment point and check that the deviation is within the Specifications. Press [Apply] button for <PC>, or [○] button for <Panel> to store the adjustment value.	4150~4250Hz
	<Panel> 1) Adj item: [Aw ADEV] 2) Deviation meter *Same as above 3) Adj points: *Same as above 4) PTT : ON		[▲], [▼]		
[Analog Wide 4k]	<PC> 1) Adj item: [Maximum Deviation (Analog Wide 4k)] 2) Deviation meter LPF: 15kHz/ HPF: OFF 3) Adj points: 6 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H] 4) Press [Transmit] button.	Deviation meter Oscilloscope	[+], [-]	Write fixed value "487" for each adjustment point. Transmit at each adjustment point and check that the deviation is within the Specifications. Press [Apply] button for <PC>, or [○] button for <Panel> to store the adjustment value.	3310~3410Hz
	<Panel> 1) Adj item: [As ADEV] 2) Deviation meter *Same as above 3) Adj points: *Same as above 4) PTT : ON		[▲], [▼]		

Item	Condition	Measurement	Adjustment		Specifications /Remarks
	<PC>: PC tuning mode <Panel>: Panel tuning mode		Unit Parts	Method	
[Analog Narrow]	<PC> 1) Adj item: [Maximum Deviation (Analog Narrow)] 2) Deviation meter LPF: 15kHz/ HPF: OFF 3) Adj points: 10 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H], [9TX L], [9TX H], [9RX/TA L], [9RX/TA H] 4) Press [Transmit] button.		[+], [-]	Write fixed value "481" for each adjustment point. Transmit at each adjustment point and check that the deviation is within the Specifications. Press [Apply] button for <PC>, or [O] button for <Panel> to store the adjustment value.	2050~2150Hz
	<Panel> 1) Adj item: [An ADEV] 2) Deviation meter *Same as above 3) Adj points: *Same as above 4) PTT : ON		[▲], [▼]		
6. NXDN High Deviation [NXDN Narrow]	<PC> 1) Adj item: [NXDN High Deviation (NXDN Narrow)] 2) Deviation meter LPF: 3kHz/ HPF: OFF 3) Adj points: 10 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H], [9TX L], [9TX H], [9RX/TA L], [9RX/TA H] 4) Press [Transmit] button.	Deviation meter Oscilloscope	[+], [-]	Write fixed value "497" for each adjustment point. Transmit at each adjustment point and check that the deviation is within the Specifications. Press [Apply] button for <PC>, or [O] button for <Panel> to store the adjustment value.	2995~3117Hz
	<Panel> 1) Adj item: [Nn NDEV] 2) Deviation meter *Same as above 3) Adj points: *Same as above 4) PTT : ON		[▲], [▼]		
[NXDN Very Narrow]	<PC> 1) Adj item: [NXDN High Deviation (NXDN Very Narrow)] 2) Deviation meter LPF: 3kHz/ HPF: OFF 3) Adj points: 10 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H], [9TX L], [9TX H], [9RX/TA L], [9RX/TA H] 4) Press [Transmit] button.	Deviation meter Oscilloscope	[+], [-]	Write fixed value "491" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is within the Specifications. Press [Apply] button for <PC>, or [O] button for <Panel> to store the adjustment value.	1311~1363Hz
	<Panel> 1) Adj item: [Nv NDEV] 2) Deviation meter *Same as above 3) Adj points: *Same as above 4) PTT : ON		[▲], [▼]		

Item	Condition	Measurement	Adjustment		Specifications /Remarks
	<PC>: PC tuning mode <Panel>: Panel tuning mode		Unit Parts	Method	
7. DMR High Deviation	<p><PC></p> <p>1) Adj item: [DMR High Deviation (DMR Narrow)]</p> <p>2) Deviation meter LPF: 3kHz/ HPF: OFF</p> <p>3) Adj points: 10 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H], [9TX L], [9TX H], [9RX/TA L], [9RX/TA H]</p> <p>4) Press [Transmit] button.</p>		[+], [-]	<p>Write fixed value "496" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is within the Specifications.</p> <p>Press [Apply] button for <PC>, or [O] button for <Panel> to store the adjustment value.</p>	2695~2803Hz
	<p><Panel></p> <p>1) Adj item: [D DDEV]</p> <p>2) Deviation meter *Same as above</p> <p>3) Adj points: *Same as above</p> <p>4) PTT : ON</p>		[▲], [▼]		
8. QT Deviation [Analog Wide 5k]	<p><PC></p> <p>1) Adj item: [QT Deviation (Analog Wide 5k)]</p> <p>2) Deviation meter LPF: 3kHz/ HPF: OFF</p> <p>3) Adj points: 6 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H]</p> <p>4) Press [Transmit] button.</p>	Deviation meter Oscilloscope	[+], [-]	<p>Write fixed value "518" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is within the Specifications.</p> <p>Press [Apply] button for <PC>, or [O] button for <Panel> to store the adjustment value.</p>	0.75kHz ±0.05kHz
	<p><Panel></p> <p>1) Adj item: [Aw QT]</p> <p>2) Deviation meter *Same as above</p> <p>3) Adj points: *Same as above</p> <p>4) PTT : ON</p>		[▲], [▼]		
[Analog Wide 4k]	<p><PC></p> <p>1) Adj item: [QT Deviation (Analog Wide 4k)]</p> <p>2) Deviation meter LPF: 3kHz/ HPF: OFF</p> <p>3) Adj points: 6 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H]</p> <p>4) Press [Transmit] button.</p>	Deviation meter Oscilloscope	[+], [-]	<p>Write fixed value "519" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is within the Specifications.</p> <p>Press [Apply] button for <PC>, or [O] button for <Panel> to store the adjustment value.</p>	0.60kHz ±0.05kHz
	<p><Panel></p> <p>1) Adj item: [As QT]</p> <p>2) Deviation meter *Same as above</p> <p>3) Adj points: *Same as above</p> <p>4) PTT : ON</p>		[▲], [▼]		

Item	Condition	Measurement	Adjustment		Specifications /Remarks
	<PC>: PC tuning mode <Panel>: Panel tuning mode		Unit Parts	Method	
[Analog Narrow]	<PC> 1) Adj item: [QT Deviation (Analog Narrow)] 2) Deviation meter LPF: 3kHz/ HPF: OFF 3) Adj points: 10 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H], [9TX L], [9TX H], [9RX/TA L], [9RX/TA H] 4) Press [Transmit] button.	Deviation meter Oscilloscope	[+], [-]	Write fixed value "519" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is within the Specifications. Press [Apply] button for <PC>, or [O] button for <Panel> to store the adjustment value.	0.35kHz ±0.05kHz
	<Panel> 1) Adj item: [An QT] 2) Deviation meter *Same as above 3) Adj points: *Same as above 4) PTT : ON		[▲], [▼]		
9. DQT Deviation [Analog Wide 5k]	<PC> 1) Adj item: [DQT Deviation (Analog Wide 5k)] 2) Deviation meter LPF: 3kHz/ HPF: OFF 3) Adj points: 6 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H] 4) Press [Transmit] button.	Deviation meter Oscilloscope	[+], [-]	Write fixed value "426" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is within the Specifications. Press [Apply] button for <PC>, or [O] button for <Panel> to store the adjustment value.	0.75kHz ±0.05kHz
	<Panel> 1) Adj item: [Aw DQT] 2) Deviation meter *Same as above 3) Adj points: *Same as above 4) PTT : ON		[▲], [▼]		
[Analog Wide 4k]	<PC> 1) Adj item: [DQT Deviation (Analog Wide 4k)] 2) Deviation meter LPF: 3kHz/ HPF: OFF 3) Adj points: 6 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H] 4) Press [Transmit] button.	Deviation meter Oscilloscope	[+], [-]	Write fixed value "433" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is within the Specifications. Press [Apply] button for <PC>, or [O] button for <Panel> to store the adjustment value.	0.60kHz ±0.05kHz
	<Panel> 1) Adj item: [As DQT] 2) Deviation meter *Same as above 3) Adj points: *Same as above 4) PTT : ON		[▲], [▼]		

Item	Condition	Measurement	Adjustment		Specifications /Remarks
	<PC>: PC tuning mode <Panel>: Panel tuning mode		Unit Parts	Method	
[Analog Narrow]	<PC> 1) Adj item: [DQT Deviation (Analog Narrow)] 2) Deviation meter LPF: 3kHz/ HPF: OFF 3) Adj points: 10 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H], [9TX L], [9TX H], [9RX/TA L], [9RX/TA H] 4) Press [Transmit] button.	Deviation meter Oscilloscope	[+], [-]	Write fixed value "433" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is within the Specifications. Press [Apply] button for <PC>, or [O] button for <Panel> to store the adjustment value.	0.35kHz ±0.05kHz
	<Panel> 1) Adj item: [An DQT] 2) Deviation meter *Same as above 3) Adj points: *Same as above 4) PTT : ON		[▲], [▼]		
10. LTR Deviation [Analog Wide 5k]	<PC> 1) Adj item: [LTR Deviation (Analog Wide 5k)] 2) Deviation meter LPF: 3kHz/ HPF: OFF 3) Adj points: 6 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H] 4) Press [Transmit] button.	Deviation meter Oscilloscope	[+], [-]	Write fixed value "518" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is within the Specifications. Press [Apply] button for <PC>, or [O] button for <Panel> to store the adjustment value.	1.00kHz ±0.05kHz
	<Panel> 1) Adj item: [Aw LTR] 2) Deviation meter *Same as above 3) Adj points: *Same as above 4) PTT : ON		[▲], [▼]		
[Analog Wide 4k]	<PC> 1) Adj item: LTR Deviation (Analog Wide 4k)] 2) Deviation meter LPF: 3kHz/ HPF: OFF 3) Adj points: 6 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H] 4) Press [Transmit] button.	Deviation meter Oscilloscope	[+], [-]	Write fixed value "502" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is within the Specifications. Press [Apply] button for <PC>, or [O] button for <Panel> to store the adjustment value.	0.90kHz ±0.05kHz
	<Panel> 1) Adj item: [As LTR] 2) Deviation meter *Same as above 3) Adj points: *Same as above 4) PTT : ON		[▲], [▼]		

Item	Condition	Measurement	Adjustment		Specifications /Remarks
	<PC>: PC tuning mode <Panel>: Panel tuning mode		Unit Parts	Method	
[Analog Narrow]	<p><PC></p> <p>1) Adj item: [LTR Deviation (Analog Narrow)]</p> <p>2) Deviation meter LPF: 3kHz/ HPF: OFF</p> <p>3) Adj points: 10 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H], [9TX L], [9TX H], [9RX/TA L], [9RX/TA H]</p> <p>4) Press [Transmit] button.</p>	Deviation meter Oscilloscope	[+], [-]	<p>Write fixed value "513" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is within the Specifications.</p> <p>Press [Apply] button for <PC>, or [O] button for <Panel> to store the adjustment value.</p>	0.75kHz ±0.05kHz
	<p><Panel></p> <p>1) Adj item: [An LTR]</p> <p>2) Deviation meter *Same as above</p> <p>3) Adj points: *Same as above</p> <p>4) PTT : ON</p>		[▲], [▼]		
11. DTMF Deviation [Analog Wide 5k]	<p><PC></p> <p>1) Adj item: [DTMF Deviation (Analog Wide 5k)]</p> <p>2) Deviation meter LPF: 15kHz/ HPF: OFF</p> <p>3) Adj points: 6 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H]</p> <p>4) Press [Transmit] button.</p>	Deviation meter Oscilloscope	[+], [-]	<p>Write fixed value "545" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is within the Specifications.</p> <p>Press [Apply] button for <PC>, or [O] button for <Panel> to store the adjustment value.</p>	2.50kHz ±0.05kHz
	<p><Panel></p> <p>1) Adj item: [Aw DTMF]</p> <p>2) Deviation meter *Same as above</p> <p>3) Adj points: *Same as above</p> <p>4) PTT : ON</p>		[▲], [▼]		
[Analog Wide 4k]	<p><PC></p> <p>1) Adj item: [DTMF Deviation (Analog Wide 4k)]</p> <p>2) Deviation meter LPF: 15kHz/ HPF: OFF</p> <p>3) Adj points: 6 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H]</p> <p>4) Press [Transmit] button.</p>	Deviation meter Oscilloscope	[+], [-]	<p>Write fixed value "544" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is within the Specifications.</p> <p>Press [Apply] button for <PC>, or [O] button for <Panel> to store the adjustment value.</p>	2.00kHz ±0.05kHz
	<p><Panel></p> <p>1) Adj item: [As DTMF]</p> <p>2) Deviation meter *Same as above</p> <p>3) Adj points: *Same as above</p> <p>4) PTT : ON</p>		[▲], [▼]		

Item	Condition	Measurement	Adjustment		Specifications /Remarks
	<PC>: PC tuning mode <Panel>: Panel tuning mode		Unit Parts	Method	
[Analog Narrow]	<PC> 1) Adj item: [DTMF Deviation (Analog Narrow)] 2) Deviation meter LPF: 15kHz/ HPF: OFF 3) Adj points: 10 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H], [9TX L], [9TX H], [9RX/TA L], [9RX/TA H] 4) Press [Transmit] button.	Deviation meter Oscilloscope	[+], [-]	Write fixed value "542" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is within the Specifications. Press [Apply] button for <PC>, or [O] button for <Panel> to store the adjustment value.	1.25kHz ±0.05kHz
	<Panel> 1) Adj item: [An DTMF] 2) Deviation meter *Same as above 3) Adj points: *Same as above 4) PTT : ON		[▲], [▼]		
12. MSK Deviation [Analog Wide 5k]	<PC> 1) Adj item: [MSK Deviation (Analog Wide)] 2) Deviation meter LPF: 15kHz/ HPF: OFF 3) Adj points: 6 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H] 4) Press [Transmit] button.	Deviation meter Oscilloscope	[+], [-]	Write fixed value "500" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is within the Specifications. Press [Apply] button for <PC>, or [O] button for <Panel> to store the adjustment value.	3.00kHz ±0.05kHz
	<Panel> 1) Adj item: [Aw MSK] 2) Deviation meter *Same as above 3) Adj points: *Same as above 4) PTT : ON		[▲], [▼]		
[Analog Wide 4k]	<PC> 1) Adj item: [MSK Deviation (Analog Wide 4k)] 2) Deviation meter LPF: 15kHz/ HPF: OFF 3) Adj points: 6 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H] 4) Press [Transmit] button.	Deviation meter Oscilloscope	[+], [-]	Write fixed value "499" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is within the Specifications. Press [Apply] button for <PC>, or [O] button for <Panel> to store the adjustment value.	2.40kHz ±0.05kHz
	<Panel> 1) Adj item: [As MSK] 2) Deviation meter *Same as above 3) Adj points: *Same as above 4) PTT : ON		[▲], [▼]		

Item	Condition	Measurement	Adjustment		Specifications /Remarks
	<PC>: PC tuning mode <Panel>: Panel tuning mode		Unit Parts	Method	
[Analog Narrow]	<PC> 1) Adj item: [MSK Deviation (Analog Narrow)] 2) Deviation meter LPF: 15kHz/ HPF: OFF 3) Adj points: 10 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H], [9TX L], [9TX H], [9RX/TA L], [9RX/TA H] 4) Press [Transmit] button.	Deviation meter Oscilloscope	[+], [-]	Write fixed value "499" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is within the Specifications. Press [Apply] button for <PC>, or [O] button for <Panel> to store the adjustment value.	1.50kHz ±0.05kHz
	<Panel> 1) Adj item: [An MSK] 2) Deviation meter *Same as above 3) Adj points: *Same as above 4) PTT : ON		[▲], [▼]		
13. CWID Deviation [Analog Narrow]	<PC> 1) Adj item: [CWID Deviation (Analog Narrow)] 2) Deviation meter LPF: 15kHz/ HPF: OFF 3) Adj points: 10 points [8TX L], [8TX C], [8TX H], [8RX/TA L], [8RX/TA C], [8RX/TA H], [9TX L], [9TX H], [9RX/TA L], [9RX/TA H] 4) Press [Transmit] button.	Deviation meter Oscilloscope	[+], [-]	Write fixed value "492" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is within the Specifications. Press [Apply] button for <PC>, or [O] button for <Panel> to store the adjustment value.	1.10kHz ±0.10kHz
	<Panel> 1) Adj item: [An CWID] 2) Deviation meter *Same as above 3) Adj points: *Same as above 4) PTT : ON		[▲], [▼]		
14. Battery Warning [Reference voltage Writing]	<PC> 1) Adj item: [Battery Warning] 2) BATT terminal voltage: 6.2V *While transmitting	Power meter DVM	[+], [-]	1) Press [Transmit] button. 2) Press [Acquire Monitored Value] button. 3) Press [Apply] button to store the adjustment value. Confirm that one predetermined numeric in the range 1 to 256 appears.	
	<Panel> 1) Adj item: [BATT] 2) BATT terminal voltage: 6.2V *While transmitting		[▲], [▼]		
15. Battery Warning [Check]	<PC test mode> 1) Test Channel: 1 Test Signaling Mode: Analog Signaling 1 2) BATT terminal voltage: 6.0V *While transmitting 3) Press [Transmit] button.	Power meter DVM	[+], [-]	Check	The transceiver can transmit with causing the LED to blink.
	<Panel test mode> 1) CH-Sig: 1-1 2) BATT terminal voltage: * Same as above 3) PTT : ON		[▲], [▼]		

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 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]	-
	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 [NXDN Very Narrow] 3. CWID Deviation [NXDN Very Narrow]
DMR	Audio	-	-	1. Balance adjust 2. DMR High Deviation	-

- Balance is common with all the above deviation adjustments. If Balance (Transmitter Section 4) has already adjusted, please skip Step 1 and adjust from Step 2.
- 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 5) have already adjusted, please skip Step 2 and adjust from Step 3.

4.9 Receiver Section

Note: "Adj points" are described by abbreviation as "8" for 800M and "9" for 900M.

Item	Condition	Measurement	Adjustment		Specifications /Remarks
	<PC>: PC tuning mode <Panel>: Panel tuning mode		Unit Parts	Method	
1. AF level setting	<PC> 1) Test Channel: 1 Test Signaling Mode: Analog Signaling 1 2) SSG output: -47dBm (1mV) (MOD: 1kHz/±1.5kHz)	SSG AF VM Dummy load	Volume knob	Turn the Volume knob to obtain 0.63V AF output.	0.63V±0.1V
	<Panel> 1) CH-Sig: 1-1 2) SSG output: *Same as above				
2. IQ Phase	<PC> 1) Adj item: [IQ Phase] 2) SSG output: -53dBm (500µV) (MOD:OFF) Freq: Tune Freq +8kHz 3) Adj points: 5 points [8RX/TA L], [8RX/TA C], [8RX/TA H], [9RX/TA L], [9RX/TA H]	SSG	[+], [-]	[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.	
	<Panel> 1) Adj item: [An IQ] 2) SSG output: *Same as above 3) Adj points: *Same as above		[▲], [▼]	After input signal from SSG, increase or decrease the adjustment value so that the RSSI indicator level becomes minimum.	
3. RSSI Reference [DSP (Receive)]	<PC> 1) Adj item: [RSSI Reference (Analog Narrow) 1 DSP (Receive)] 2) SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz) 3) Adj points: 5 points [8RX/TA L], [8RX/TA C], [8RX/TA H], [9RX/TA L], [9RX/TA H]	SSG Distortion meter Oscilloscope	[+], [-]	After input signal from SSG; Press [Acquire Monitored Value] button and then press [Apply] button for <PC>, or press [O] button for <Panel>, to store the adjustment value.	
	<Panel> 1) Adj item: [An RSSI 1] 2) SSG output: *Same as above 3) Adj points: *Same as above		[▲], [▼]		
[RF IC (Receive)]	<PC> 1) Adj item: [RSSI Reference (Analog Narrow) 2 RF IC (Receive)] 2) SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz) 3) Adj points: 5 points [8RX/TA L], [8RX/TA C], [8RX/TA H], [9RX/TA L], [9RX/TA H]	SSG Distortion meter Oscilloscope	[+], [-]	After input signal from SSG; Press [Acquire Monitored Value] button and then press [Apply] button for <PC>, or press [O] button for <Panel>, to store the adjustment value.	
	<Panel> 1) Adj item: [An RSSI 2] 2) SSG output: *Same as above 3) Adj points: *Same as above		[▲], [▼]		

Item	Condition	Measurement	Adjustment		Specifications /Remarks
	<PC>: PC tuning mode <Panel>: Panel tuning mode		Unit Parts	Method	
[DSP (Standby)]	<PC> 1) Adj item: [RSSI Reference (Analog Narrow) 3 DSP (Standby)] 2) SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz) 3) Adj points: 5 points [8RX/TA L], [8RX/TA C], [8RX/TA H], [9RX/TA L], [9RX/TA H]	SSG Distortion meter Oscilloscope	[+], [-]	After input signal from SSG; Press [Acquire Monitored Value] button and then press [Apply] button for <PC>, or press [O] button for < Panel>, to store the adjustment value.	
	<Panel> 1) Adj item: [An RSSI 3] 2) SSG output: *Same as above 3) Adj points: *Same as above		[▲], [▼]		
[RF IC (Standby)]	<PC> 1) Adj item: [RSSI Reference (Analog Narrow) 4 RF IC (Standby)] 2) SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz) 3) Adj points: 5 points [8RX/TA L], [8RX/TA C], [8RX/TA H], [9RX/TA L], [9RX/TA H]	SSG Distortion meter Oscilloscope	[+], [-]	After input signal from SSG; Press [Acquire Monitored Value] button and then press [Apply] button for <PC>, or press [O] button for < Panel>, to store the adjustment value.	
	<Panel> 1) Adj item: [An RSSI 4] 2) SSG output: *Same as above 3) Adj points: *Same as above		[▲], [▼]		
4. Squelch Open [Analog Wide 5k]	<PC> 1) Adj item: [Squelch Open (Analog Wide 5k)] 2) SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±3kHz) 3) Adj points: 5 points [8RX/TA L], [8RX/TA C], [8RX/TA H], [9RX/TA L], [9RX/TA H]	SSG Distortion meter Oscilloscope	[+], [-]	After input signal from SSG; Press [Acquire Monitored Value] button and then press [Apply] button for <PC>, or press [O] button for < Panel>, to store the adjustment value.	
	<Panel> 1) Adj item: [Aw SQL] 2) SSG output: *Same as above 3) Adj points: *Same as above		[▲], [▼]		
[Analog Wide 4k]	<PC> 1) Adj item: [Squelch Open (Analog Wide 4k)] 2) SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±2.4kHz) 3) Adj points: 5 points [8RX/TA L], [8RX/TA C], [8RX/TA H], [9RX/TA L], [9RX/TA H]	SSG Distortion meter Oscilloscope	[+], [-]	After input signal from SSG; Press [Acquire Monitored Value] button and then press [Apply] button for <PC>, or press [O] button for < Panel>, to store the adjustment value.	
	<Panel> 1) Adj item: [As SQL] 2) SSG output: *Same as above 3) Adj points: *Same as above		[▲], [▼]		

Item	Condition	Measurement	Adjustment		Specifications /Remarks
	<PC>: PC tuning mode <Panel>: Panel tuning mode		Unit Parts	Method	
[Analog Narrow]	<p><PC></p> <p>1) Adj item: [Squelch Open (Analog Narrow)]</p> <p>2) SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)</p> <p>3) Adj points: 5 points [8RX/TA L], [8RX/TA C], [8RX/TA H], [9RX/TA L], [9RX/TA H]</p>		[+], [-]	After input signal from SSG; Press [Acquire Monitored Value] button and then press [Apply] button for <PC> , or press [O] button for < Panel> , to store the adjustment value.	
	<p><Panel></p> <p>1) Adj item: [An SQL]</p> <p>2) SSG output: *Same as above</p> <p>3) Adj points: *Same as above</p>		[▲], [▼]		
[NXDN Narrow]	<p><PC></p> <p>1) Adj item: [Squelch Open (NXDN Narrow)]</p> <p>2) SSG Output: 12dB SINAD level at Analog Narrow -5dB (MOD: 400Hz/±1.5kHz)</p> <p>3) Adj points: 5 points [8RX/TA L], [8RX/TA C], [8RX/TA H], [9RX/TA L], [9RX/TA H]</p>	SSG Distortion meter Oscilloscope	[+], [-]	After input signal from SSG; Press [Acquire Monitored Value] button and then press [Apply] button for <PC> , or press [O] button for < Panel> , to store the adjustment value.	
	<p><Panel></p> <p>1) Adj item: [Nn SQL]</p> <p>2) SSG output: *Same as above</p> <p>3) Adj points: *Same as above</p>		[▲], [▼]		
[NXDN Very Narrow]	<p><PC></p> <p>1) Adj item: [Squelch Open (NXDN Very Narrow)]</p> <p>2) SSG Output: 12dB SINAD level at Analog Narrow -2dB (MOD: 400Hz/±1.5kHz)</p> <p>3) Adj points: 5 points [8RX/TA L], [8RX/TA C], [8RX/TA H], [9RX/TA L], [9RX/TA H]</p>	SSG Distortion meter Oscilloscope	[+], [-]	After input signal from SSG; Press [Acquire Monitored Value] button and then press [Apply] button for <PC> , or press [O] button for < Panel> , to store the adjustment value.	
	<p><Panel></p> <p>1) Adj item: [Nv SQL]</p> <p>2) SSG output: *Same as above</p> <p>3) Adj points: *Same as above</p>		[▲], [▼]		
[DMR]	<p><PC></p> <p>1) Adj item: [Squelch Open (DMR)]</p> <p>2) SSG Output: 12dB SINAD level at Analog Narrow -4dB (MOD: 400Hz/±1.8kHz)</p> <p>3) Adj points: 5 points [8RX/TA L], [8RX/TA C], [8RX/TA H], [9RX/TA L], [9RX/TA H]</p>	SSG Distortion meter Oscilloscope	[+], [-]	After input signal from SSG; Press [Acquire Monitored Value] button and then press [Apply] button for <PC> , or press [O] button for < Panel> , to store the adjustment value.	
	<p><Panel></p> <p>1) Adj item: [D SQL]</p> <p>2) SSG output: *Same as above</p> <p>3) Adj points: *Same as above</p>		[▲], [▼]		

Item	Condition	Measurement	Adjustment		Specifications /Remarks
	<PC>: PC tuning mode <Panel>: Panel tuning mode		Unit Parts	Method	
5. Squelch Tight [Analog Wide 5k]	<PC> 1) Adj item: [Squelch Tight (Analog Wide 5k)] 2) SSG output: 12dB SINAD level +6dB (MOD: 1kHz/±3.0kHz) 3) Adj points: 5 points [8RX/TA L], [8RX/TA C], [8RX/TA H], [9RX/TA L], [9RX/TA H]	SSG Distortion meter Oscilloscope	[+], [-]	After input signal from SSG; Press [Acquire Monitored Value] button and then press [Apply] button for <PC>, or press [O] button for < Panel>, to store the adjustment value.	
	<Panel> 1) Adj item: [Aw SQLT] 2) SSG output: *Same as above 3) Adj points: *Same as above		[▲], [▼]		
[Analog Wide 4k]	<PC> 1) Adj item: [Squelch Tight (Analog Wide 4k)] 2) SSG output: 12dB SINAD level +6dB (MOD: 1kHz/±2.4kHz) 3) Adj points: 5 points [8RX/TA L], [8RX/TA C], [8RX/TA H], [9RX/TA L], [9RX/TA H]	SSG Distortion meter Oscilloscope	[+], [-]	After input signal from SSG; Press [Acquire Monitored Value] button and then press [Apply] button for <PC>, or press [O] button for < Panel>, to store the adjustment value.	
	<Panel> 1) Adj item: [As SQLT] 2) SSG output: *Same as above 3) Adj points: *Same as above		[▲], [▼]		
[Analog Narrow]	<PC> 1) Adj item: [Squelch Tight (Analog Narrow)] 2) SSG output: 12dB SINAD level +6dB (MOD: 1kHz/±1.5kHz) 3) Adj points: 5 points [8RX/TA L], [8RX/TA C], [8RX/TA H], [9RX/TA L], [9RX/TA H]	SSG Distortion meter Oscilloscope	[+], [-]	After input signal from SSG; Press [Acquire Monitored Value] button and then press [Apply] button for <PC>, or press [O] button for < Panel>, to store the adjustment value.	
	<Panel> 1) Adj item: [An SQLT] 2) SSG output: *Same as above 3) Adj points: *Same as above		[▲], [▼]		
6. Low RSSI	<PC> 1) Adj item: [Low RSSI (Analog Narrow)] 2) SSG output: -118dBm (0.28μV) (MOD: 1kHz/±1.5kHz) 3) Adj points: 5 points [8RX/TA L], [8RX/TA C], [8RX/TA H], [9RX/TA L], [9RX/TA H]	SSG Distortion meter Oscilloscope	[+], [-]	After input signal from SSG; Press [Acquire Monitored Value] button and then press [Apply] button for <PC>, or press [O] button for < Panel>, to store the adjustment value.	
	<Panel> 1) Adj item: [An LRSSI] 2) SSG output: *Same as above 3) Adj points: *Same as above		[▲], [▼]		

Item	Condition	Measurement	Adjustment		Specifications /Remarks
	<PC>: PC tuning mode <Panel>: Panel tuning mode		Unit Parts	Method	
7. High RSSI	<PC> 1) Adj item: [High RSSI (Analog Narrow)] 2) SSG Output: -80dBm (22.4μV) (MOD: 1kHz/±1.5kHz) 3) Adj points: 5 points [8RX/TA L], [8RX/TA C], [8RX/TA H], [9RX/TA L], [9RX/TA H]		[+], [-]	After input signal from SSG; Press [Acquire Monitored Value] button and then press [Apply] button for <PC>, or press [O] button for < Panel>, to store the adjustment value.	
	<Panel> 1) Adj item: [An HRSSI] 2) SSG output: *Same as above 3) Adj points: *Same as above		[▲], [▼]		

SECTION 5 TROUBLESHOOTING

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

■ Overview

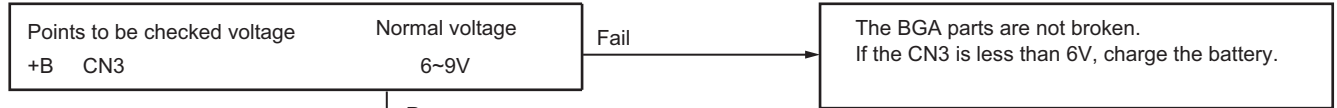
A flowchart for determining whether or not the transceiver can be powered on (the Transceiver does not function (No LCD display, No power on beep or other) even if the power switch is turned on) due to broken BGA parts.

■ BGA parts

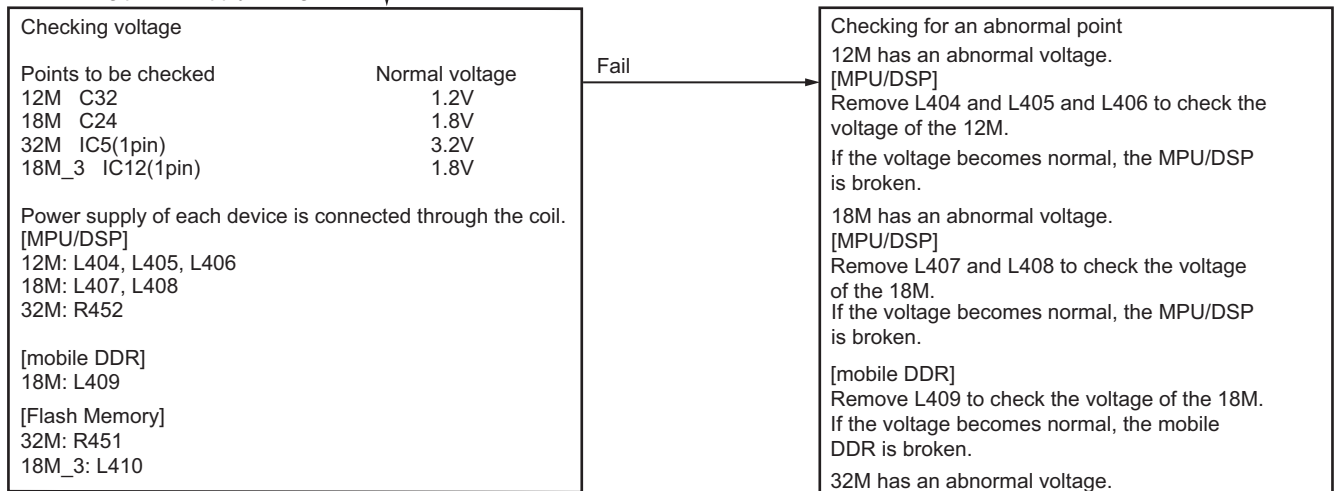
MPU/DSP(IC401), mobile DDR(IC402), Flash Memory(IC404)

When the BGA IC is problematic, it is necessary to replace the printed circuit board by the Service Main unit in service. Various ESN/default adjustment values are written on the service unit. Please refer to "5.6 Replacing Main Unit".

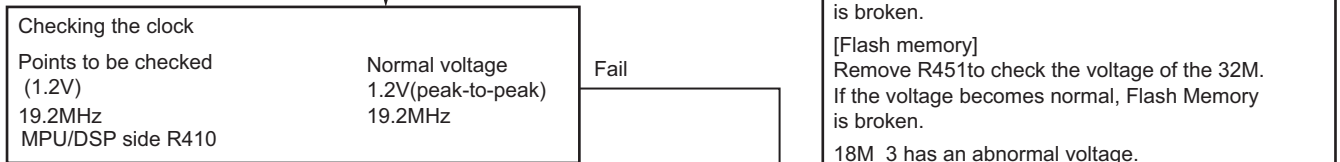
- Checking battery voltage



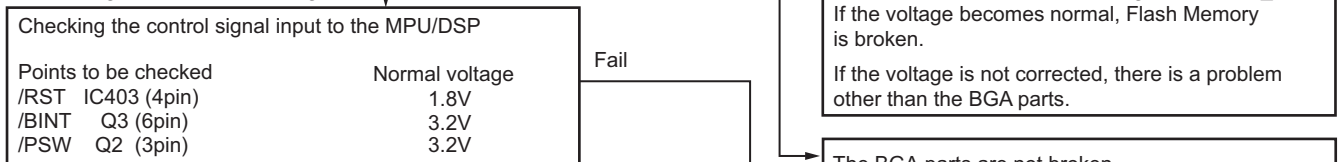
- Checking power supply voltage



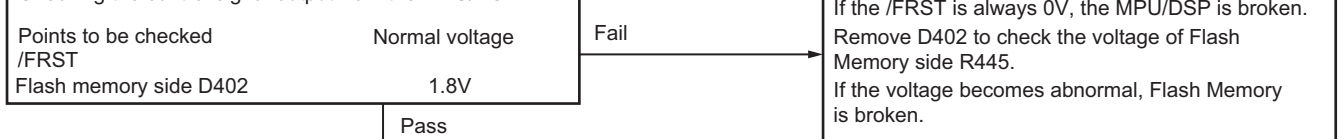
- Checking the clock



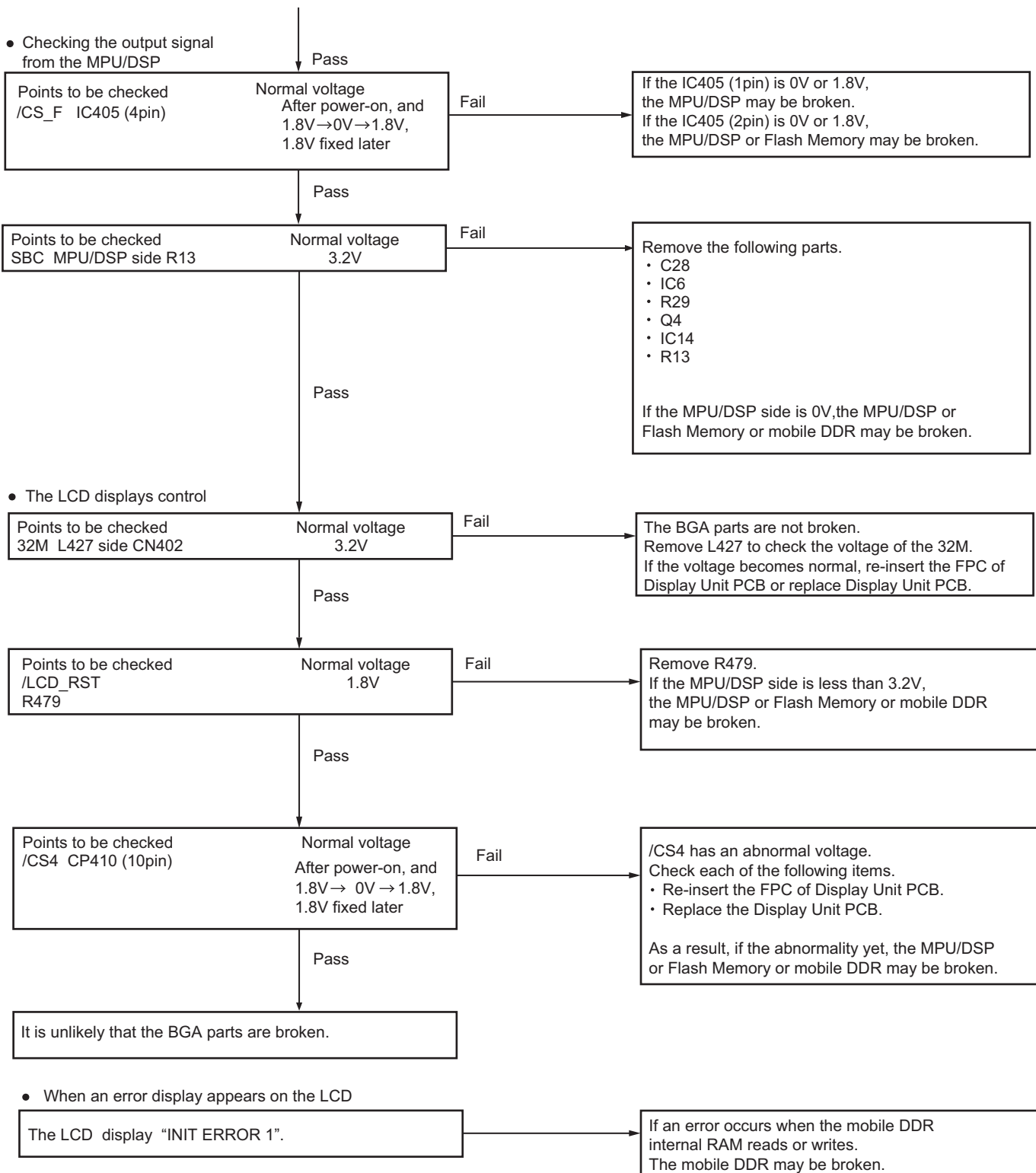
- Checking the Reset/Control signal



- Checking the control signal output from the MPU/DSP



The BGA parts are not broken.



■ Descriptions of signal names

1) /RST	: MPU/DSP reset signal	LOW→ Reset
2) /BINT	: Battery final voltage monitoring	LOW → Final voltage
3) /PSW	: Power switch signal	LOW → ON
4) /FRST	: Flash memory reset signal	LOW → Reset
5) /CS_F	: Flash memory chip select signal	LOW → Active
6) SBC	: Switch +B control	HIGH → ON
7) LCD_RST	: LCD reset signal	LOW → Reset
8) /CS4	: LCD controller chip select signal	LOW → Active

5.2 Failure diagnosis of the GPS section

■Overview:

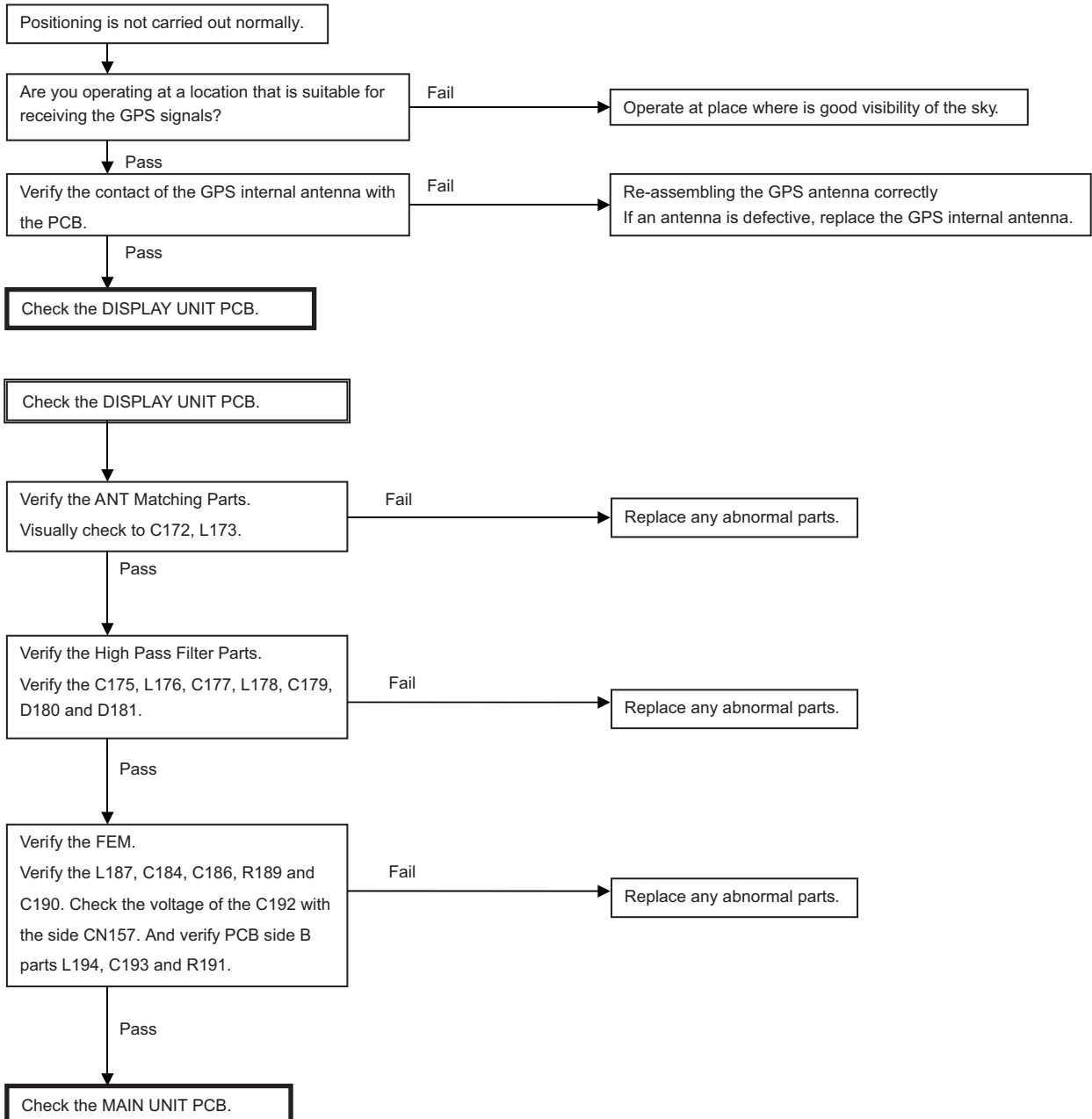
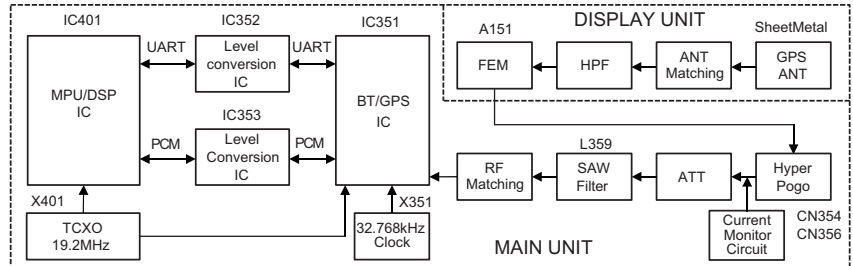
When the GPS function does not operate, use this flowchart to determine the problem.

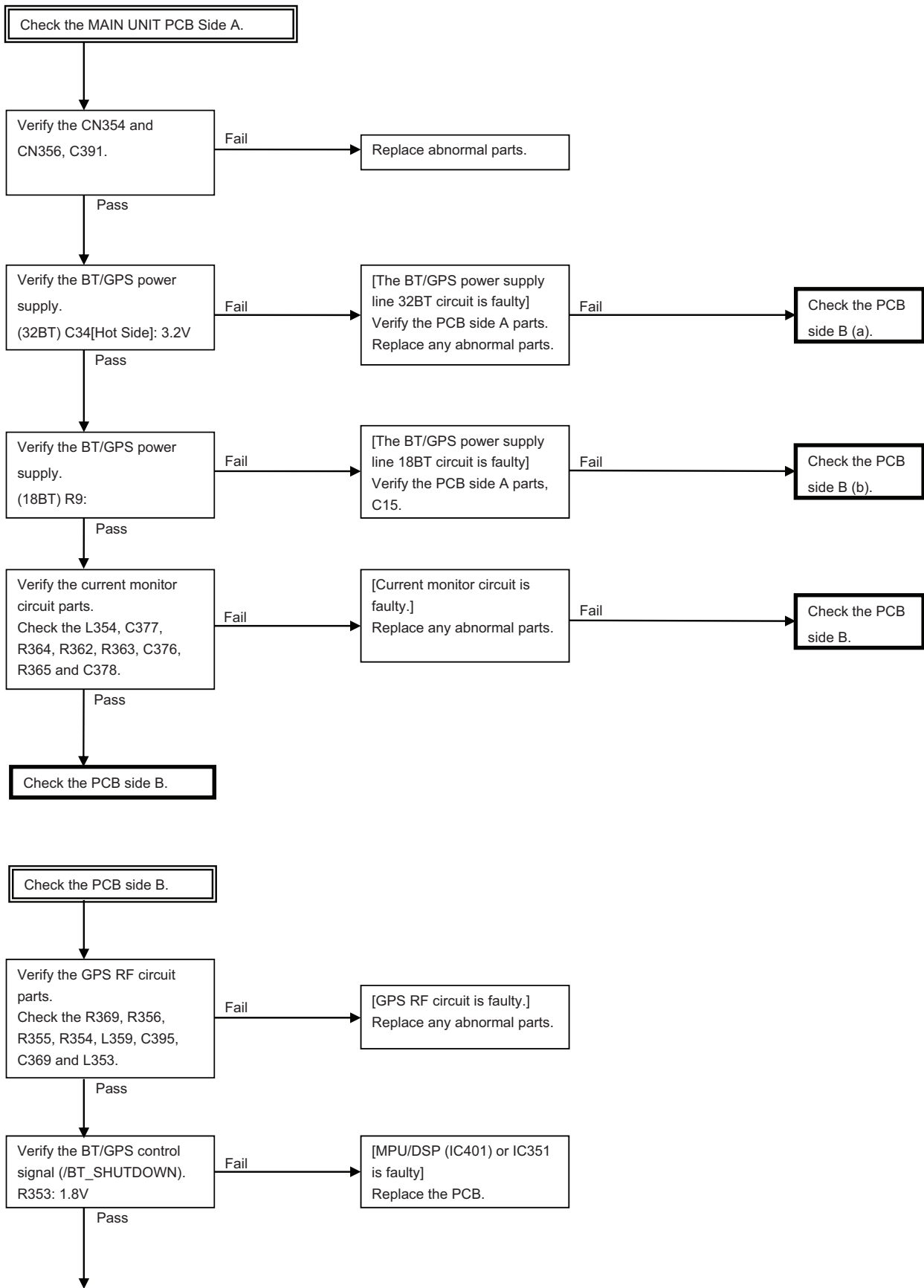
■BT/GPS IC (IC351)

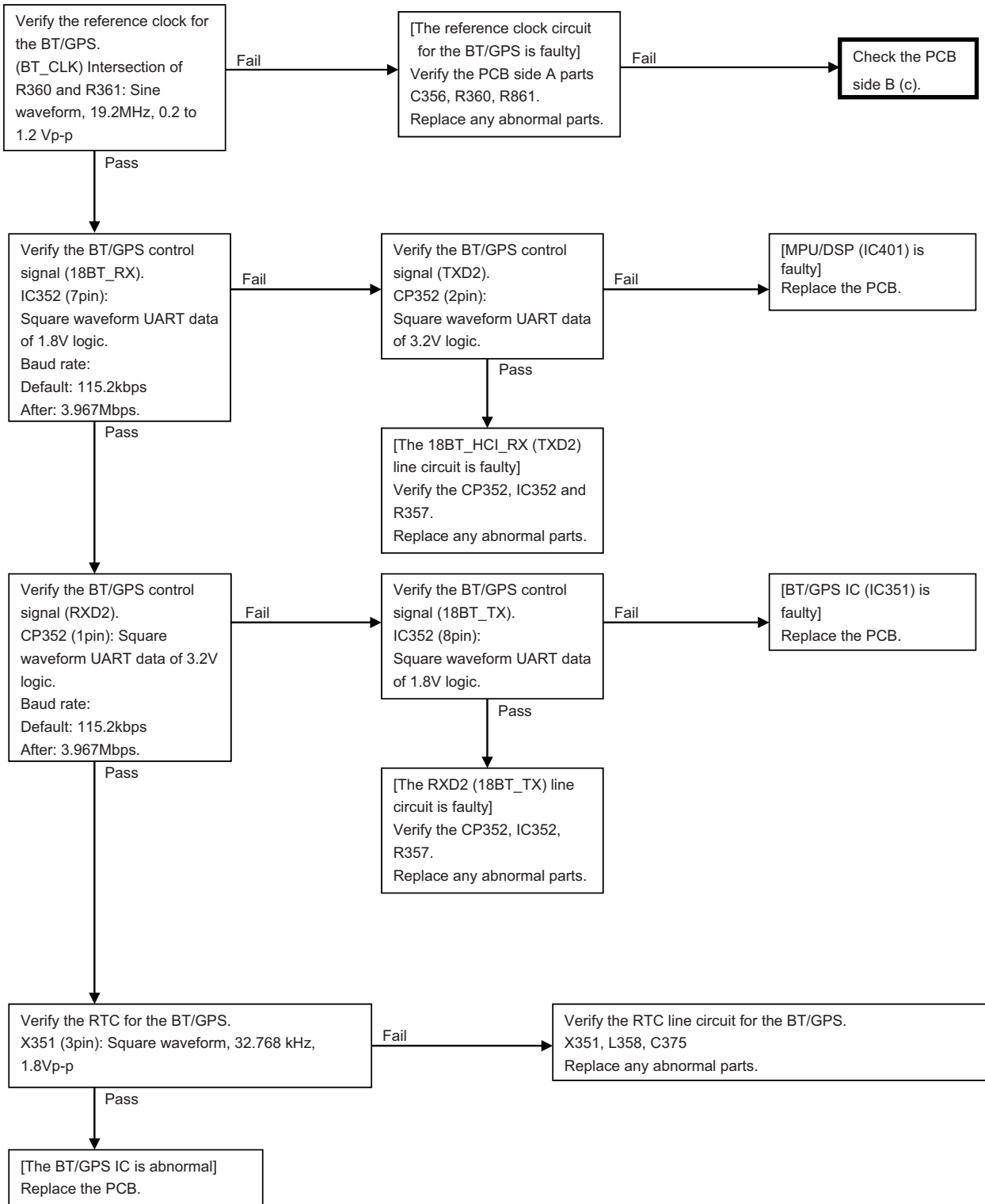
When the BT/GPS IC is problematic, it is necessary to replace the printed circuit board by the Service Main unit in service. Various ESN/default adjustment values are written on the service unit. Please refer to "5.6 Replacing Main Unit".

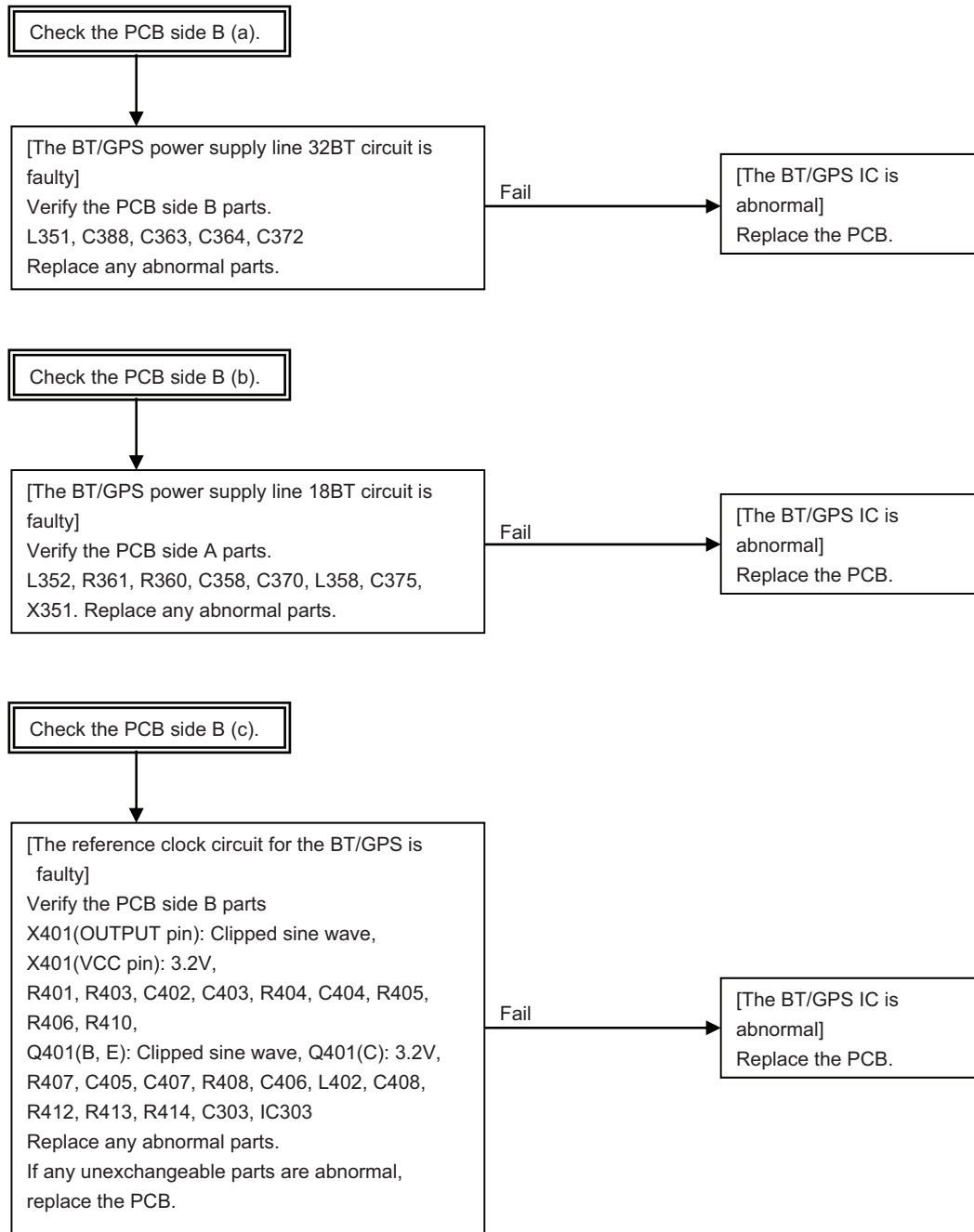
Major parts for a GPS circuit

- GPS antenna (Connect on CN152, CN153)
- Front End Module (A151)
- SAW Filter (L359)
- BT/GPS IC (IC351)
- Level conversion IC (IC352, IC353)
- TCXO 19.2MHz (X401)
- 32.768 kHz clock (X351)
- 32BT Regulator (IC8)
- 18BT Regulator (IC7)
- MPU/DSP IC (IC401)









■ **Descriptions of signal names**

- (1) 32BT: BT/GPS IC 3.2V 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

5.3 Failure diagnosis of the Bluetooth section

■Overview

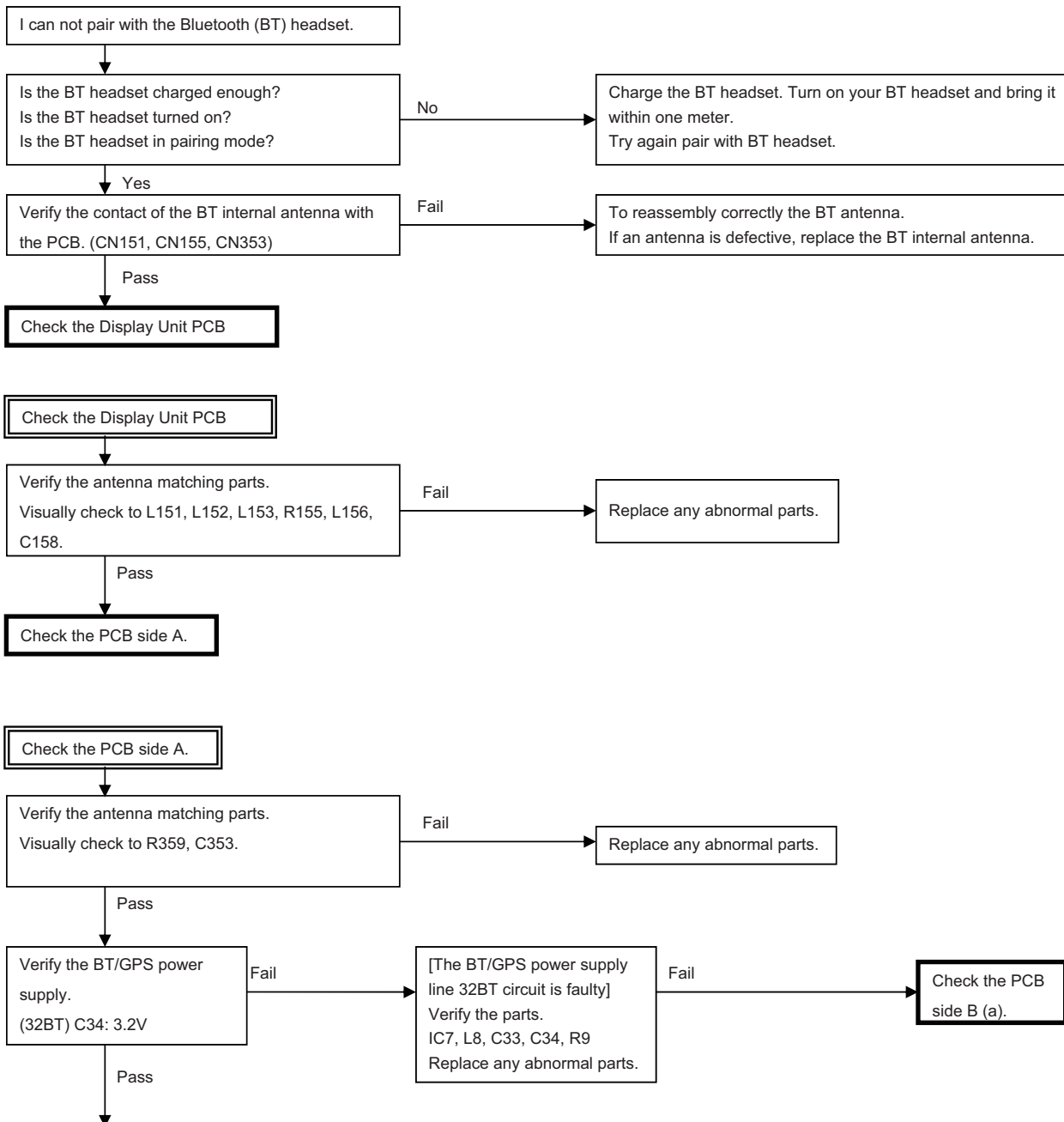
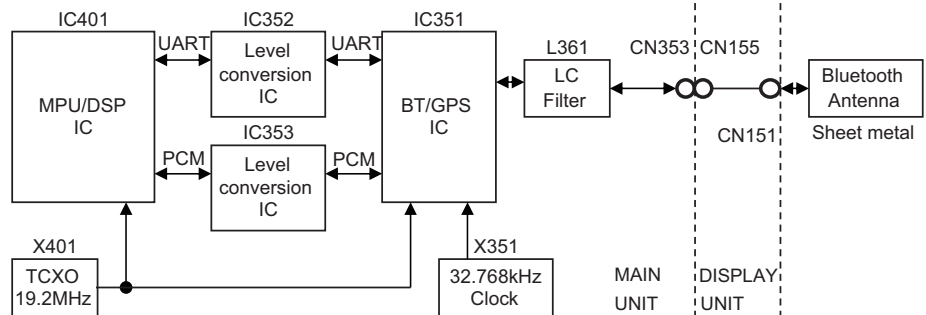
When the Bluetooth function does not operate, use this flowchart to determine the problem.

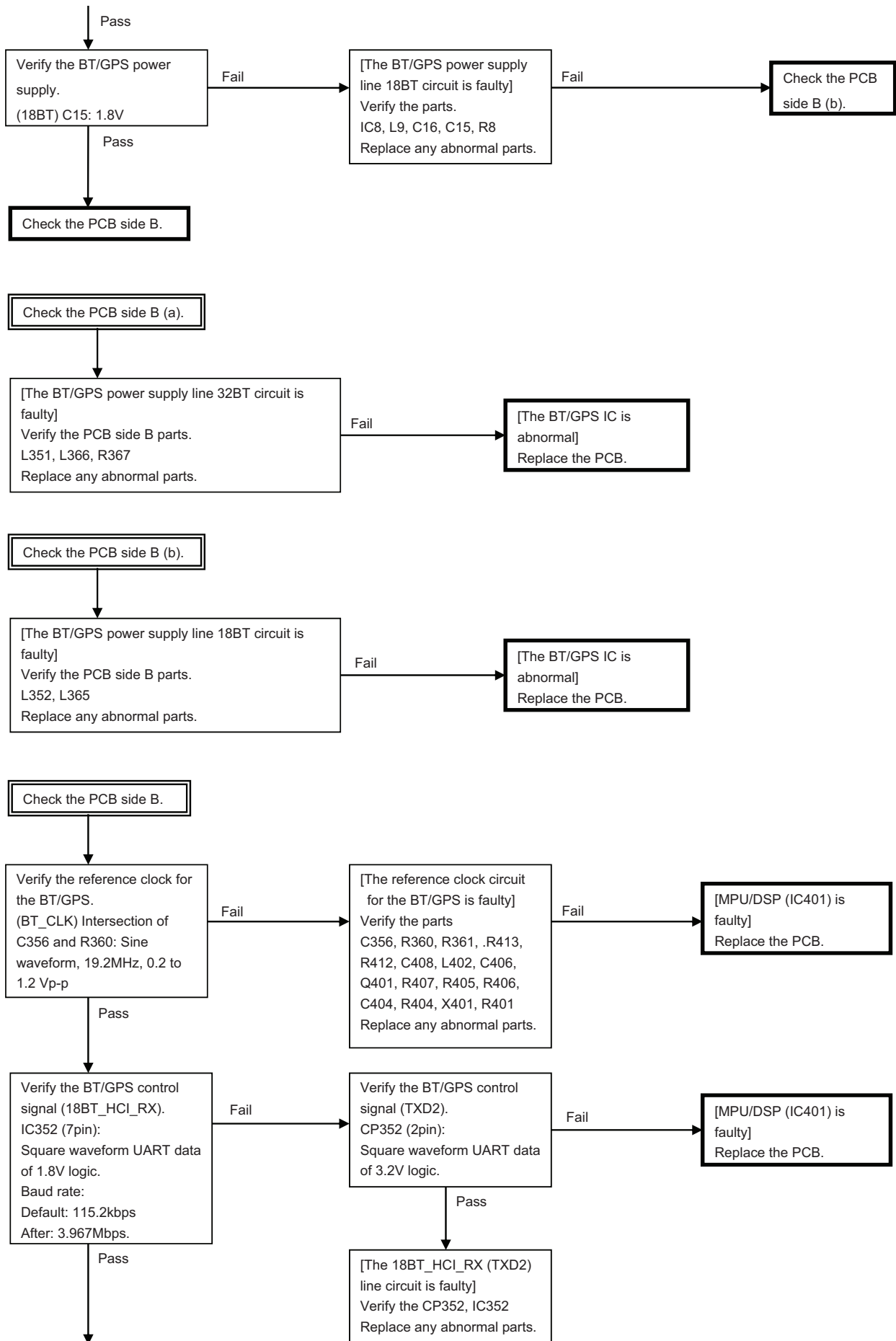
■BT/GPS IC (IC351)

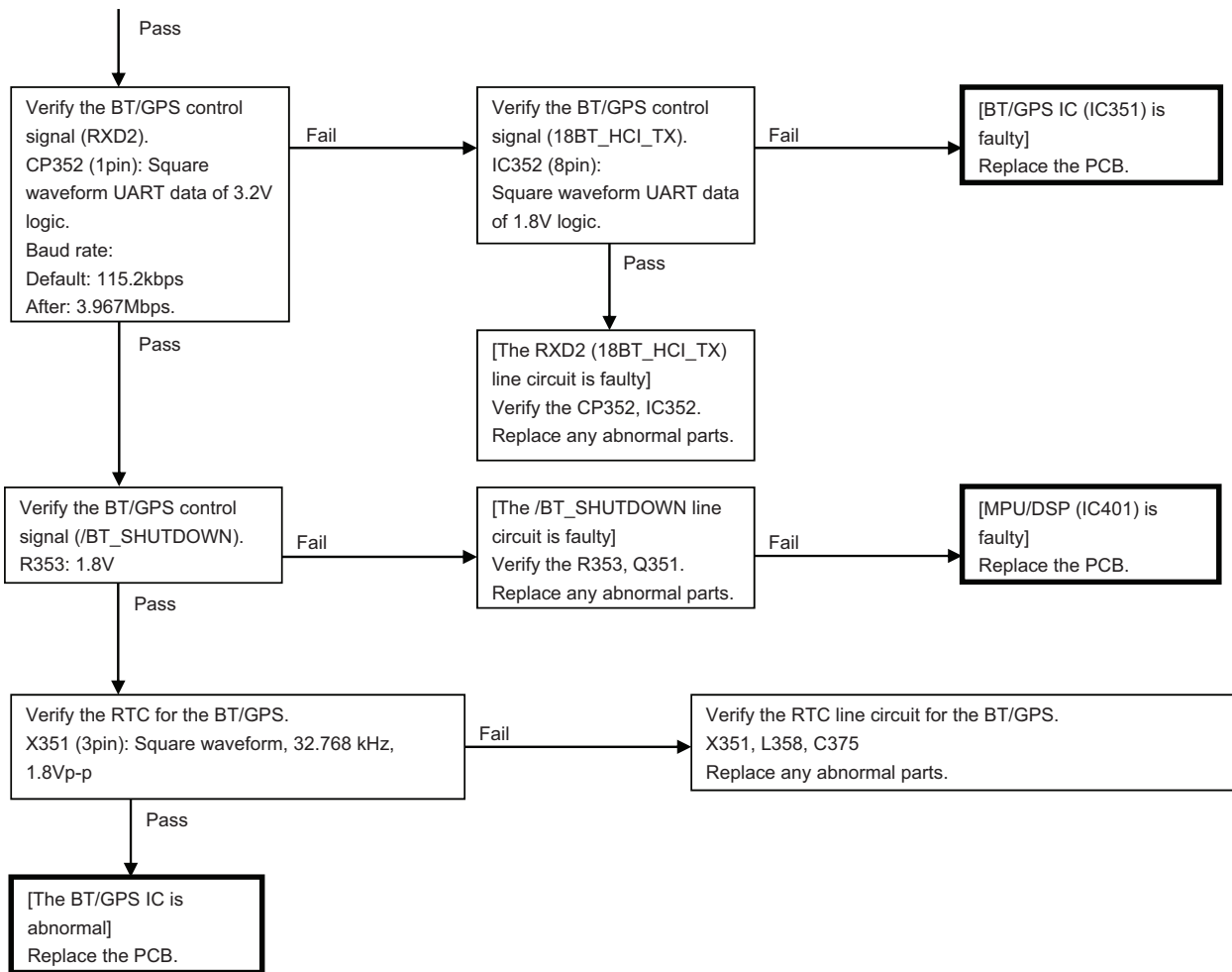
When the BT/GPS IC is problematic, it is necessary to replace the printed circuit board by the Service Main unit in service. Various ESN/default adjustment values are written on the service unit. Please refer to "5.6 Replacing Main Unit".

Major parts for a Bluetooth circuit

- Bluetooth antenna (Sheet metal)
- LC filter (L361)
- BT/GPS IC (IC351)
- Level conversion IC (IC352, IC353)
- TCXO 19.2MHz (X401)
- 32.768 kHz clock (X351)
- 32BT Regulator (IC7)
- 18BT Regulator (IC8)
- MPU/DSP IC (IC401)







■ Descriptions of signal names

- (1) 32BT: BT/GPS IC 3.2V 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 Failure diagnosis of the VCO section

■Overview

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

This BLS has no lid and provides high shielding performance. Because BLS is difficult to solder, components inside the BLS can't be soldered.

When there is a problem with the VCO circuit, the VCO can't be repaired.

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

The following is explained about failure diagnosis of VCO circuit inside a BLS<E101>.

■BLS

BLS is shielding case

BLS for VCO area is integrated type and can not be removed

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

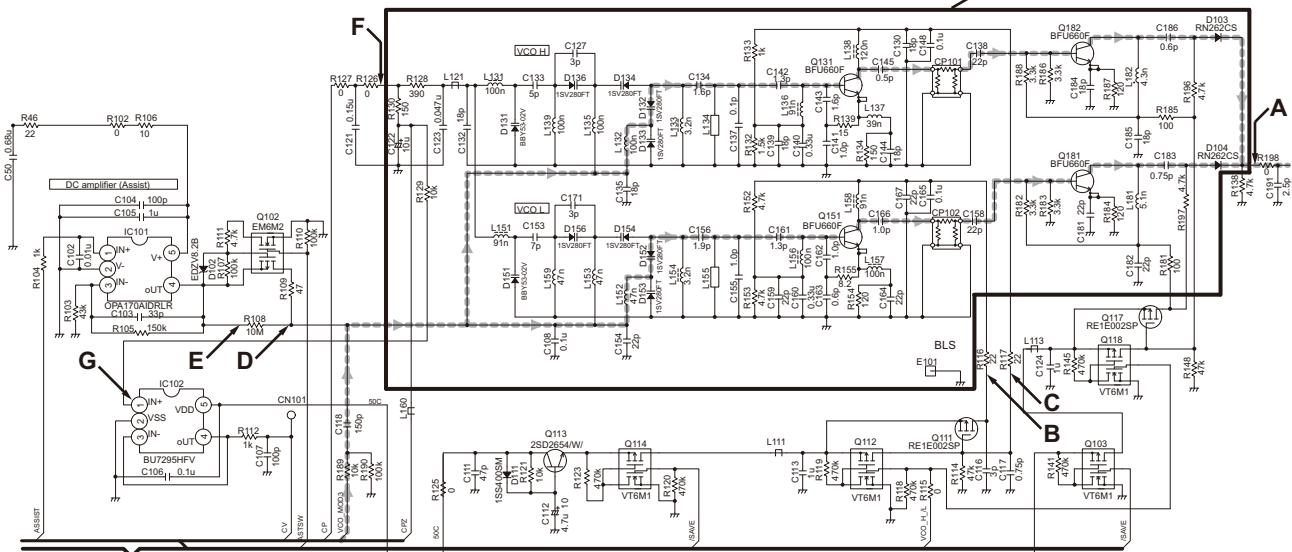
Various ESN/default adjustment values are written on the service unit. Please refer to "5.6 Replacing Main Unit".

■Prediction problem related to the VCO circuit

- PLL Unlock
 - <Radio state>
 - Unlock beep
 - VCO Assist voltage tuning is impossible
 - <The cause>
 - VCO control voltage is abnormal
 - VCO Assist voltage is abnormal
 - VCO power supply is abnormal
 - VCO signal output circuit is abnormal

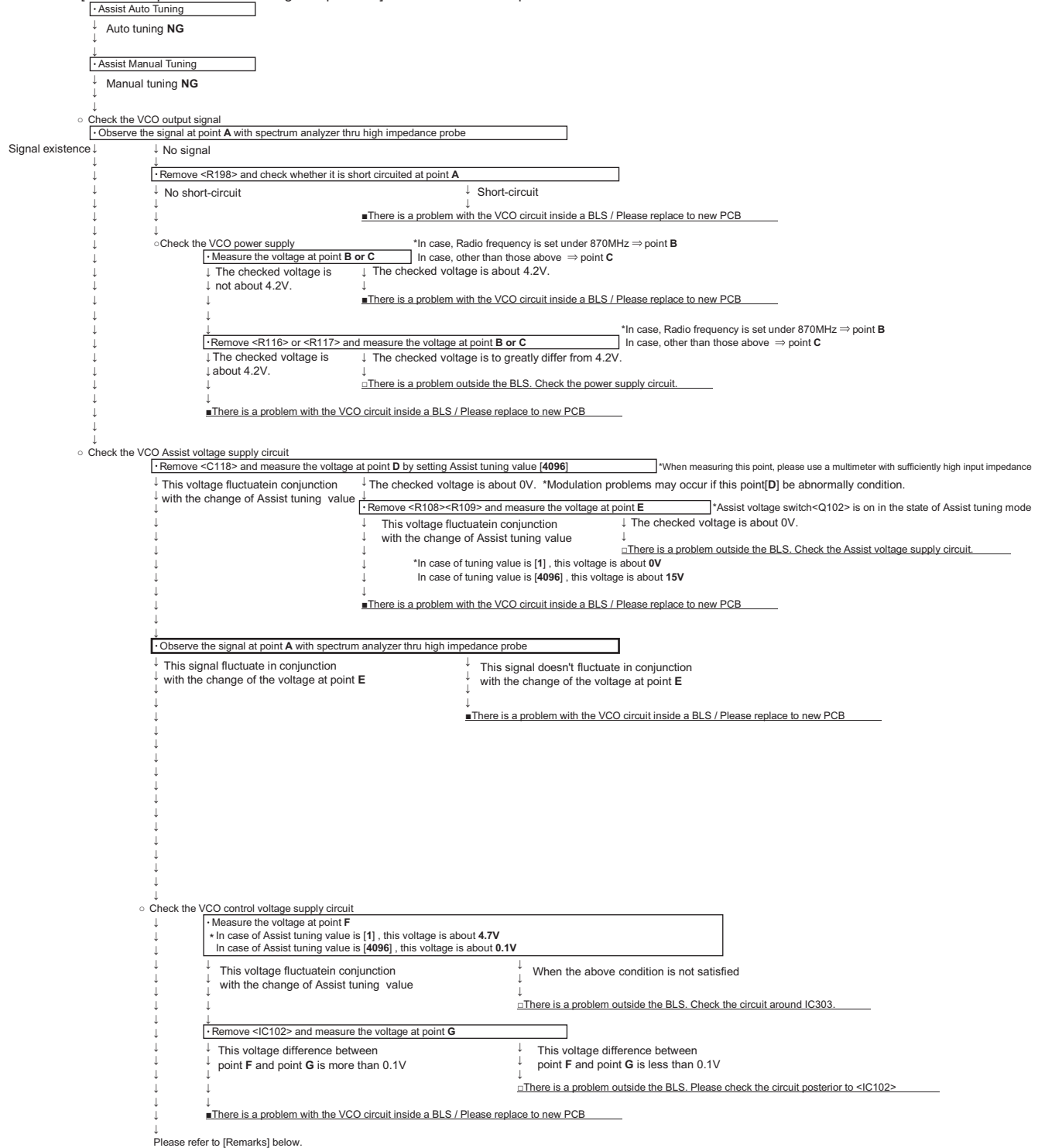
■VCO circuit inside a BLS<E101>

VCO circuit inside a BLS
[in a bold line square]



[Inspection procedure]

- Unlock [Unlock beep / VCO assist tuning is impossible] *Include modulation problems



[Remarks]

The following things are assumed as causes of trouble besides the above

- PLL data is abnormal
- VCO/PLL lock judgment is abnormal[<IC401>MPU/DSP IC]

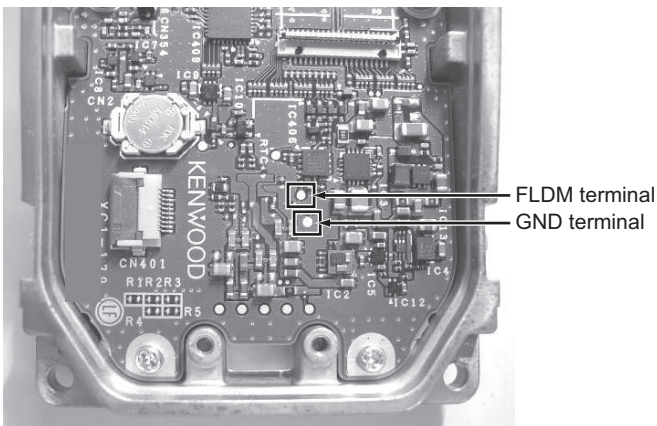
5.5 Operating Method of Enforced Firmware Overwriting Mode

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-3400)
 - Battery jig
 - Programming interface cable (KPG-36U or KPG-36X)
 - DC Power supply
- (2) Disassemble the transceiver to the condition shown in the figure.



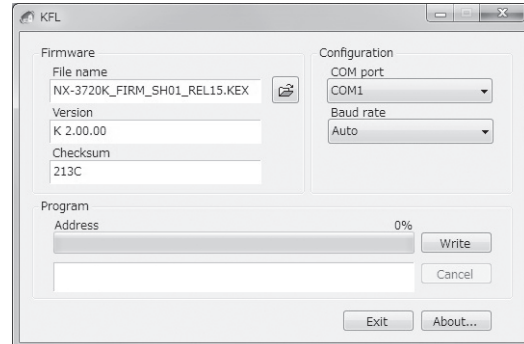
- (3) Connect a transceiver, battery jig and programming interface cable (KPG-36U or KPG-36X).
- (4) While FLDM terminal has a short-circuit with GND terminal on the PCB, turn the DC Power supply output ON.



- (5) Upon startup of KFL, "FIRMWARE PROG" appears on an LCD, and the Yellow LED on the transceiver lights.
- (6) 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, and the Green LED on the transceiver lights.



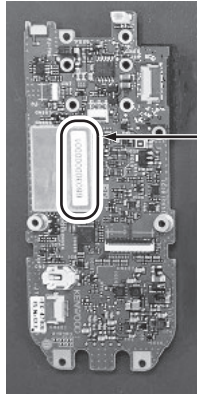
- (7) Upon completion of the firmware overwriting, "CHECKSUM xxxx" appears on an LCD, and the Red LED on the transceiver lights.

5.6 Replacing MAIN Unit

■MAIN unit information

Model Name	Original MAIN unit Number	For Service MAIN unit Number
NX-3400 (K3)	XC1-276K-00	XCA-066K-00

■Method of confirming “Original MAIN unit” and “Service MAIN unit”



The following marking seals are affixed on the shield cover of the service MAIN unit (XCA-066K-00).

Model Name	Marking seal
NX-3400 (K3)	XCA-066K-00

■Supplied Accessories of “Service MAIN unit”

Item (Including Parts Number)	Quantity
MAIN Unit (XC1-276)	1
KENWOOD ESN/ NXDN ESN/ Product Number/ MPT ESN Label	1

■“Service MAIN unit” Data

The following data is written on the service unit:

Data Type	Description
KENWOOD ESN	Model name: [XCA-066] NX-3400S Type:K3 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/ Product Number label is written.

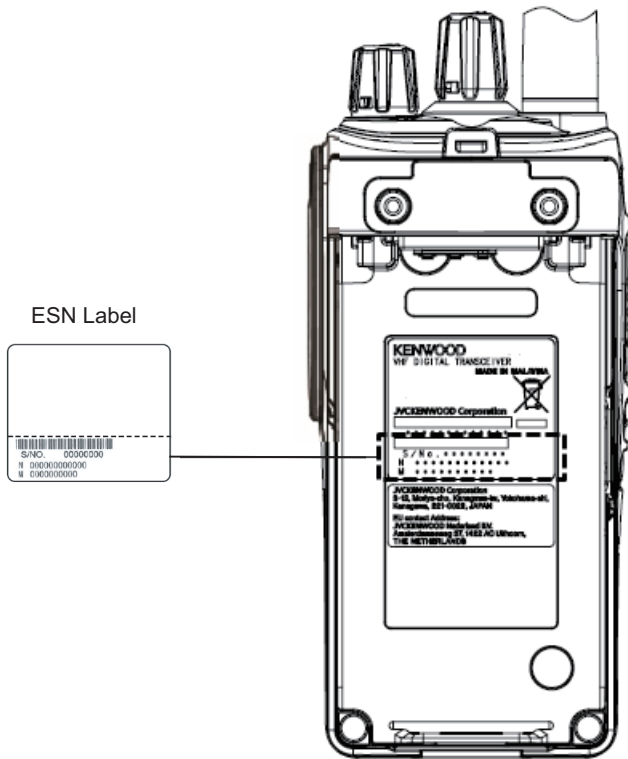
■After Changing the PCB

- (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 NEXEDGE 1st and NEXEDGE 2nd Generation Trunking System 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.

■ ESN Label Layout



Note:
Cut a ESN Label at dotted line.

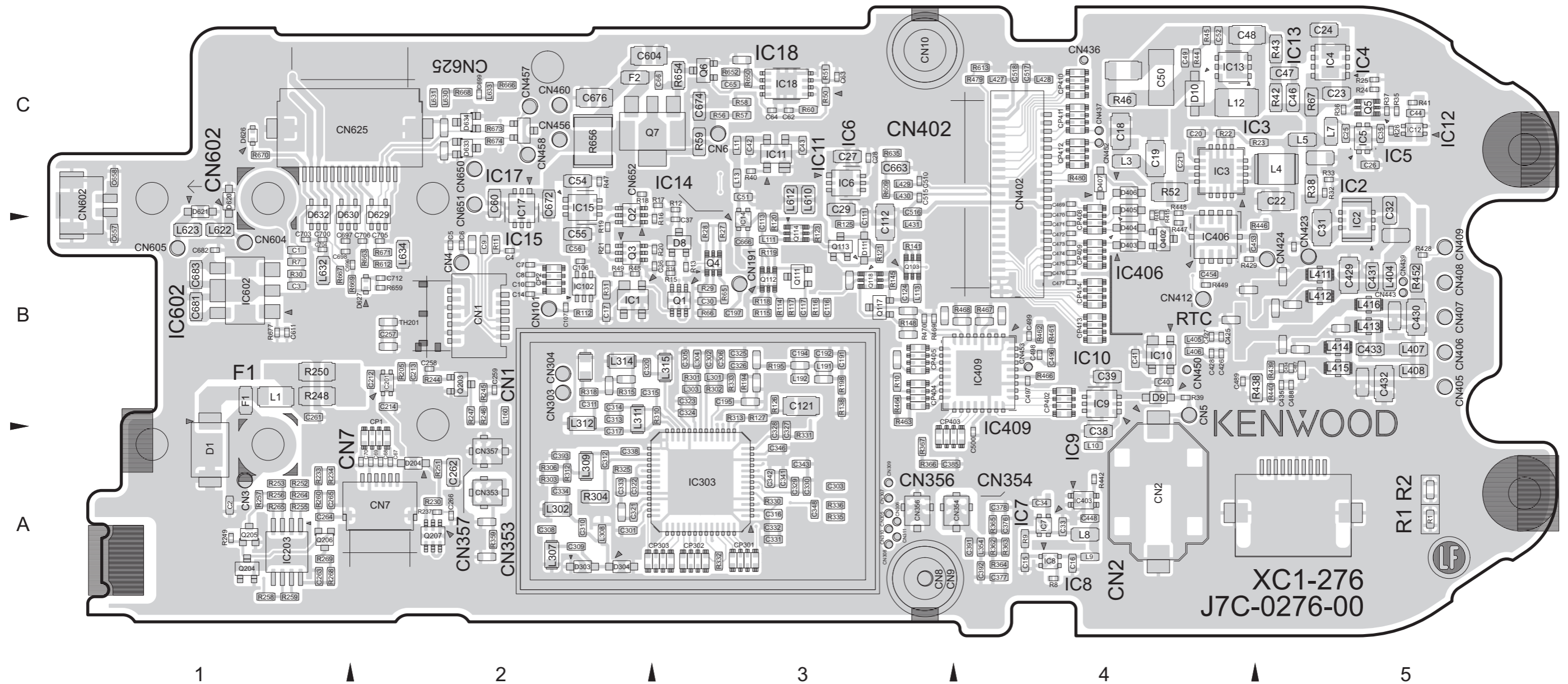
PRECAUTIONS ON SCHEMATIC DIAGRAMS

- * 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.

PRINTED CIRCUIT BOARD

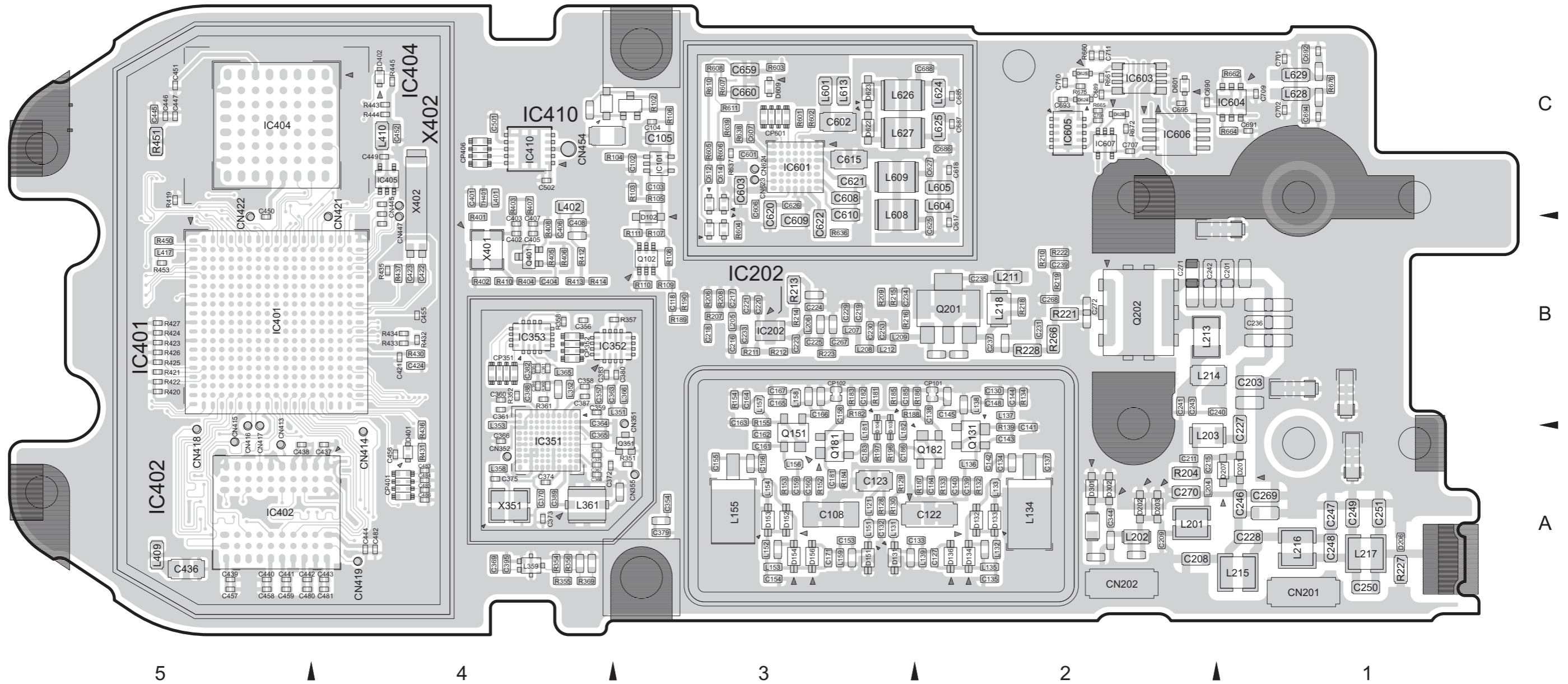
■ MAIN UNIT (XC1-276K-00)

--- Component side view/Side A (J7C-0276-00) ---



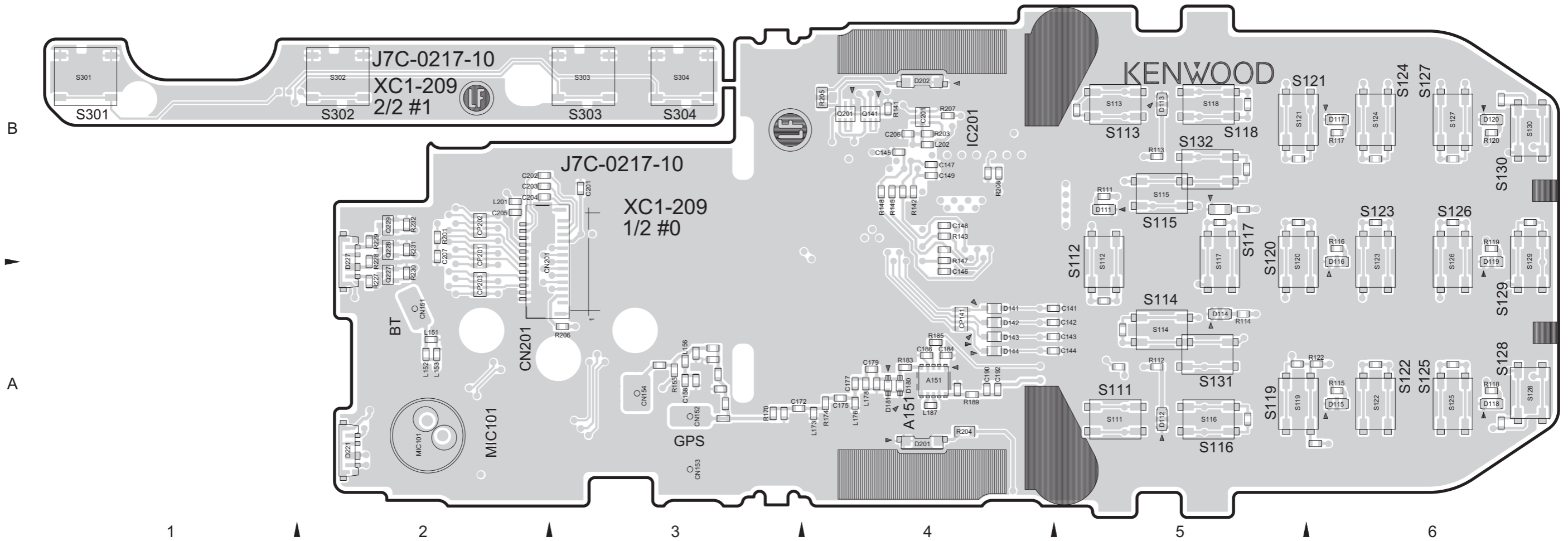
■ MAIN UNIT (XC1-276K-00)

--- Foil side view/Side B (J7C-0276-00) ---



■ DISPLAY UNIT (XC1-209K-02)

--- Component side view/Side A (J7C-0217-10) ---



● ADDRESS TABLE OF BOARD PARTS

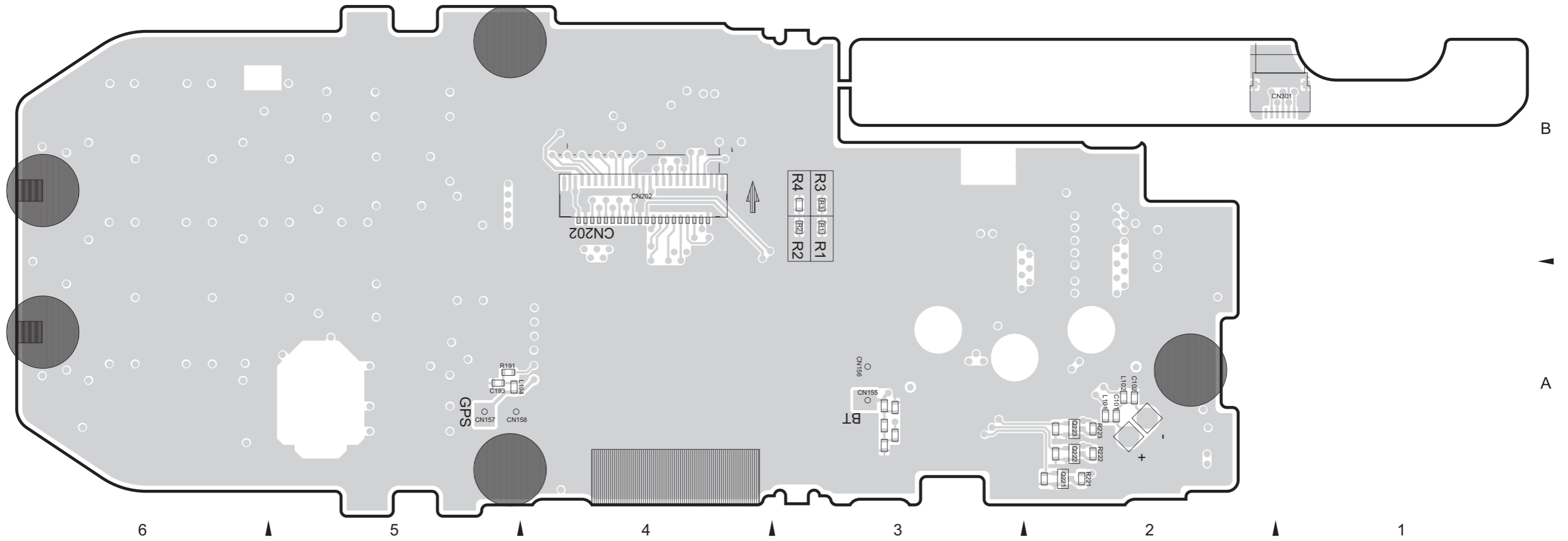
Each address may have an address error by one interval.



REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION
IC		D142	A-4A	R141	A-4B	R230	A-2A	C192	A-4A	S118	A-5B	L151	A-2A
IC201	A-4B	D143	A-4A	R142	A-4B	R231	A-2B	C201	A-3B	S119	A-5A	L152	A-2A
		D144	A-4A	R143	A-4B	R232	A-2B	C202	A-2B	S120	A-5B	L153	A-2A
TRANSISTOR		D180	A-4A	R145	A-4B			C203	A-2B	S121	A-5B	L156	A-3A
Q141	A-4B	D181	A-4A	R147	A-4B	CAPACITOR		C204	A-2B	S122	A-6A	L173	A-4A
Q201	A-4B	D201	A-4A	R148	A-4B	C141	A-4A	C205	A-2B	S123	A-6B	L176	A-4A
Q227	A-2A	D202	A-4B	R155	A-3A	C142	A-4A	C206	A-4B	S124	A-6B	L178	A-4A
Q228	A-2B	D221	A-2A	R170	A-3A	C143	A-4A	C207	A-2B	S125	A-6A	L187	A-4A
Q229	A-2B	D227	A-2B	R174	A-4A	C144	A-4A			S126	A-6B	L201	A-2B
				R183	A-4A	C145	A-4B	OTHER		S127	A-6B	L202	A-4B
DIODE		RESISTOR		R185	A-4A	C146	A-4A	CN151	A-2A	S128	A-6A	MIC101	A-2A
D111	A-5B	R111	A-5B	R189	A-4A	C147	A-4B	CN152	A-3A	S129	A-6B		
D112	A-5A	R112	A-5A	R201	A-2B	C148	A-4B	CN153	A-3A	S130	A-6B		
D113	A-5B	R113	A-5B	R203	A-4B	C149	A-4B	CN154	A-3A	S301	A-1B		
D114	A-5A	R114	A-5A	R204	A-4A	C158	A-3A	CN201	A-2B	S302	A-2B		
D115	A-6A	R115	A-6A	R205	A-4B	C172	A-3A	S111	A-5A	S303	A-3B		
D116	A-6B	R116	A-6B	R206	A-3A	C175	A-4A	S112	A-5B	S304	A-3B		
D117	A-6B	R117	A-6B	R207	A-4B	C177	A-4A	S113	A-5B	CP141	A-4A		
D118	A-6A	R118	A-6A	R208	A-4B	C179	A-4A	S114	A-5A	CP201	A-2B		
D119	A-6B	R119	A-6B	R227	A-2A	C184	A-4A	S115	A-5B	CP202	A-2B		
D120	A-6B	R120	A-6B	R228	A-2B	C186	A-4A	S116	A-5A	CP203	A-2A		
D141	A-4A	R122	A-6A	R229	A-2B	C190	A-4A	S117	A-5B	A151	A-4A		

■ DISPLAY UNIT (XC1-209K-02)

--- Foil side view/Side B (J7C-0217-10) ---



● ADDRESS TABLE OF BOARD PARTS

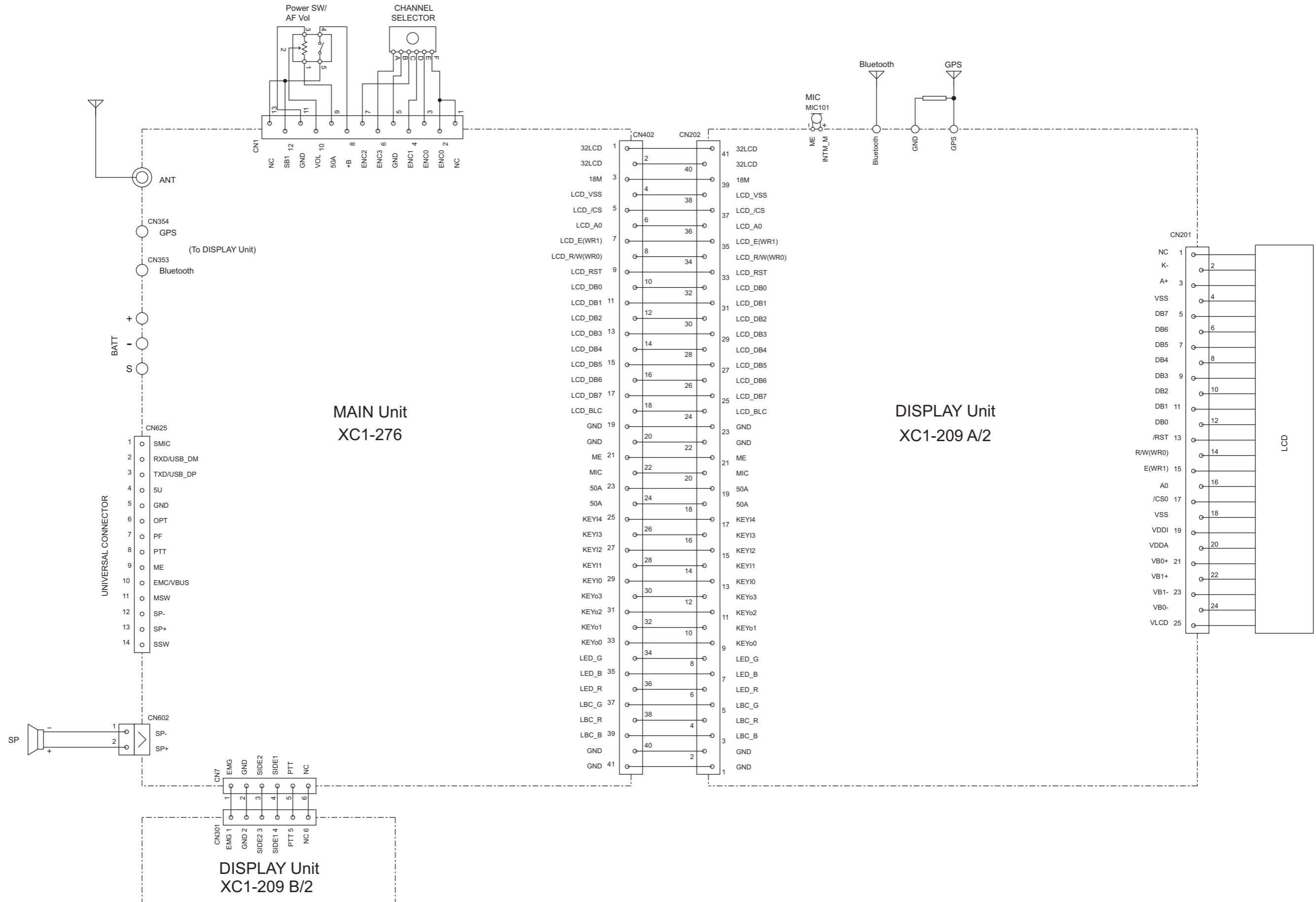
Each address may have an address error by one interval.



REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION
TRANSISTOR					
Q221	B- 2A	R222	B- 2A	CN157	B- 5A
Q222	B- 2A	R223	B- 2A	CN158	B- 5A
Q223	B- 2A	CAPACITOR			
RESISTOR					
R1	B- 3B	C101	B- 2A	L101	B- 2A
R2	B- 3B	C102	B- 2A	L102	B- 2A
R3	B- 3B	C193	B- 5A	L194	B- 5A
R191	B- 5A	OTHER			
R221	B- 2A	CN155	B- 3A		
		CN156	B- 3A		

INTERCONNECTION DIAGRAM

5
4
3
2
1



BLOCK DIAGRAM

MAIN UNIT

5

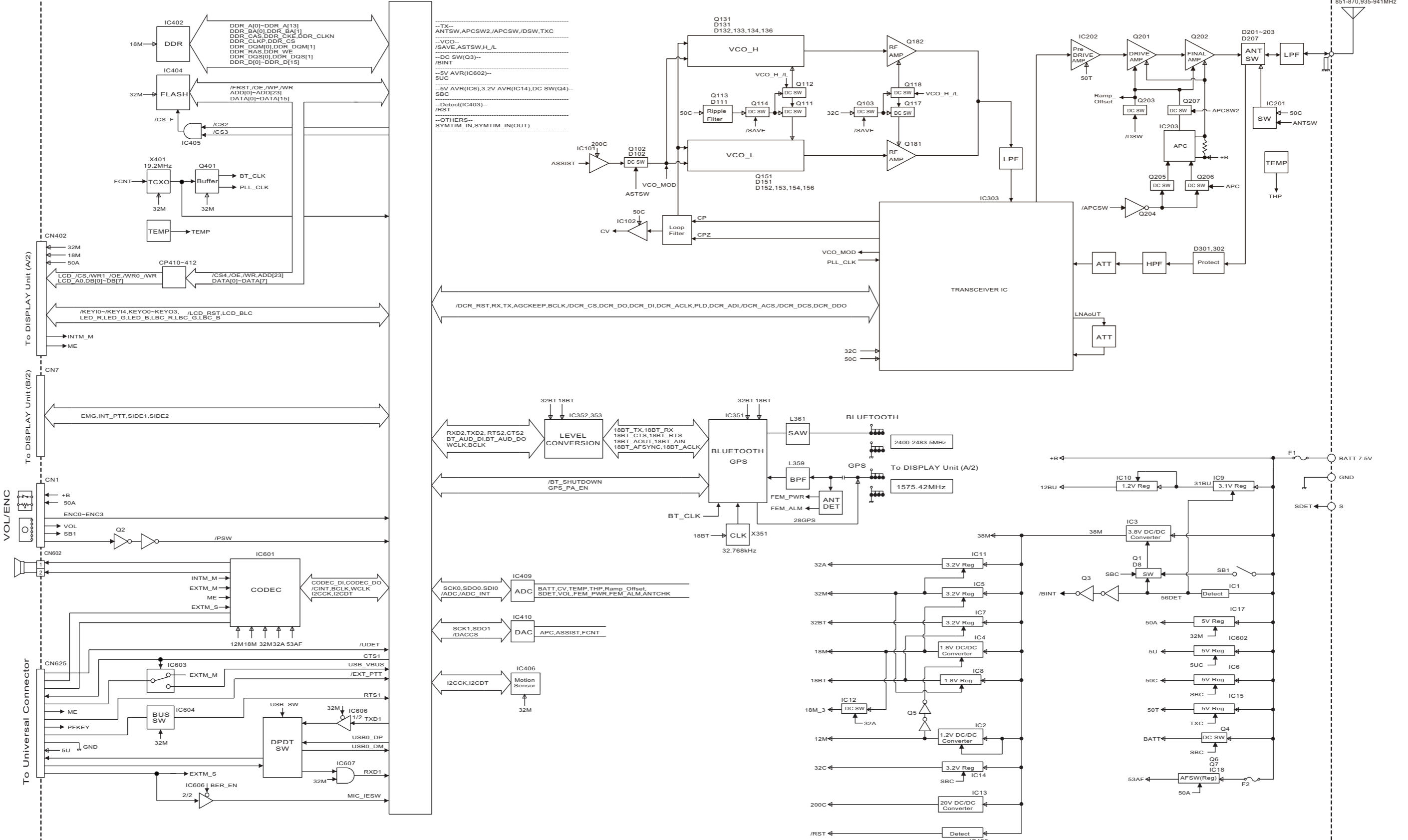
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3

2

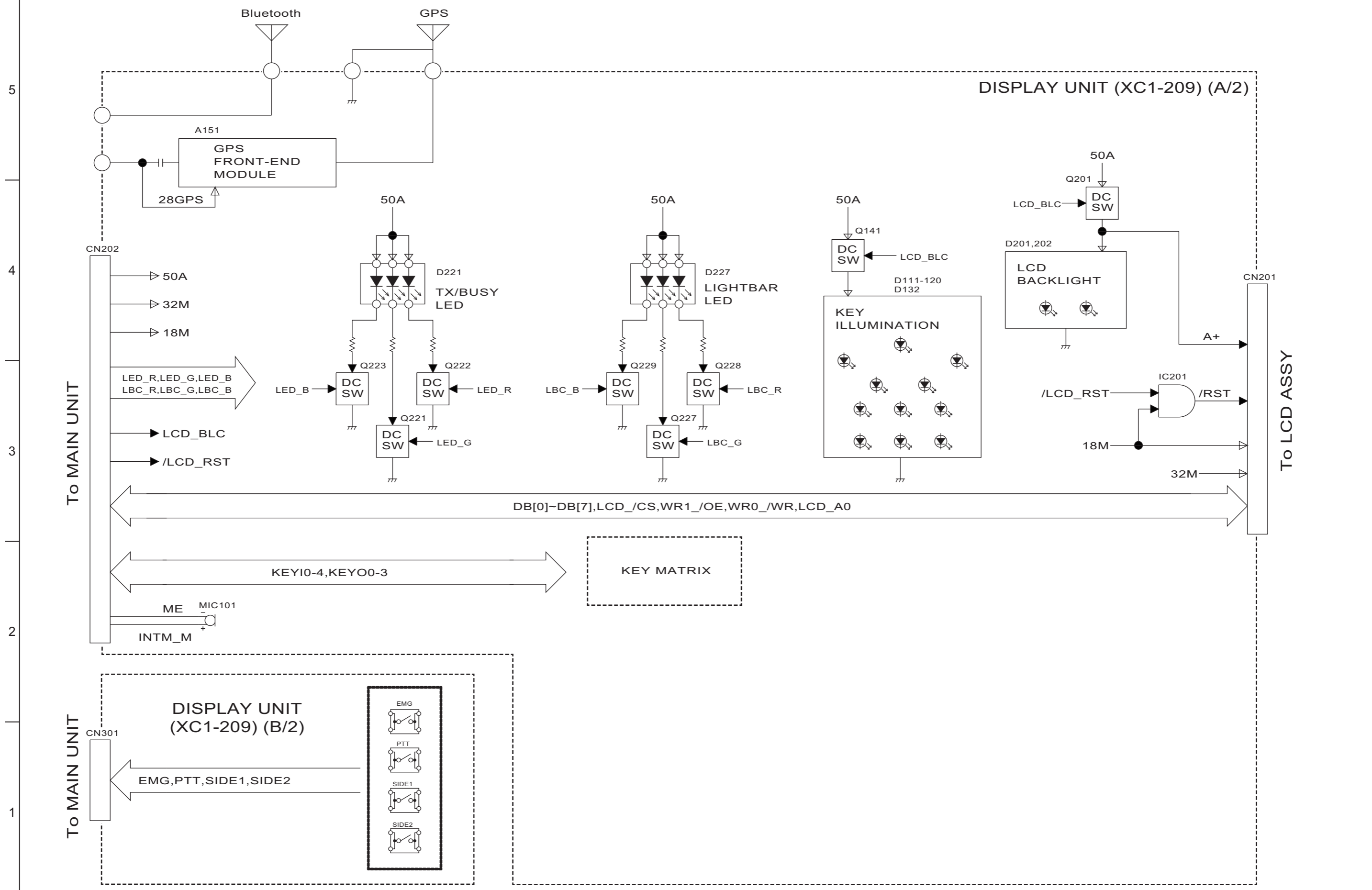
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MAIN UNIT (XC1-276)



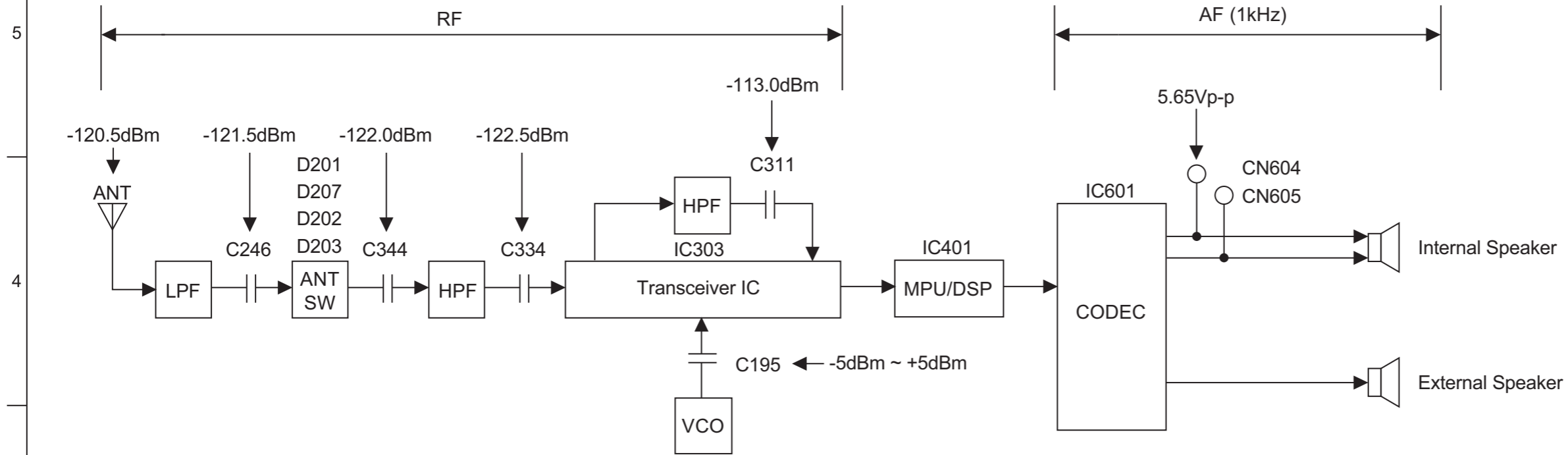
TX: 806-825MHz, 851-870MHz, 896-902MHz, 935-941MHz
RX: 851-870,935-941MHz

■ DISPLAY UNIT



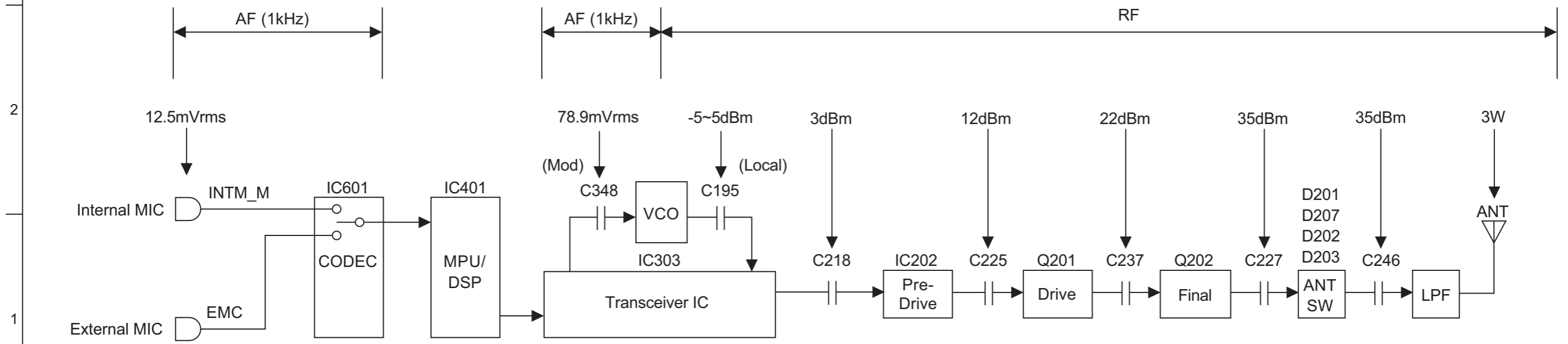
LEVEL DIAGRAM

Receiver Section



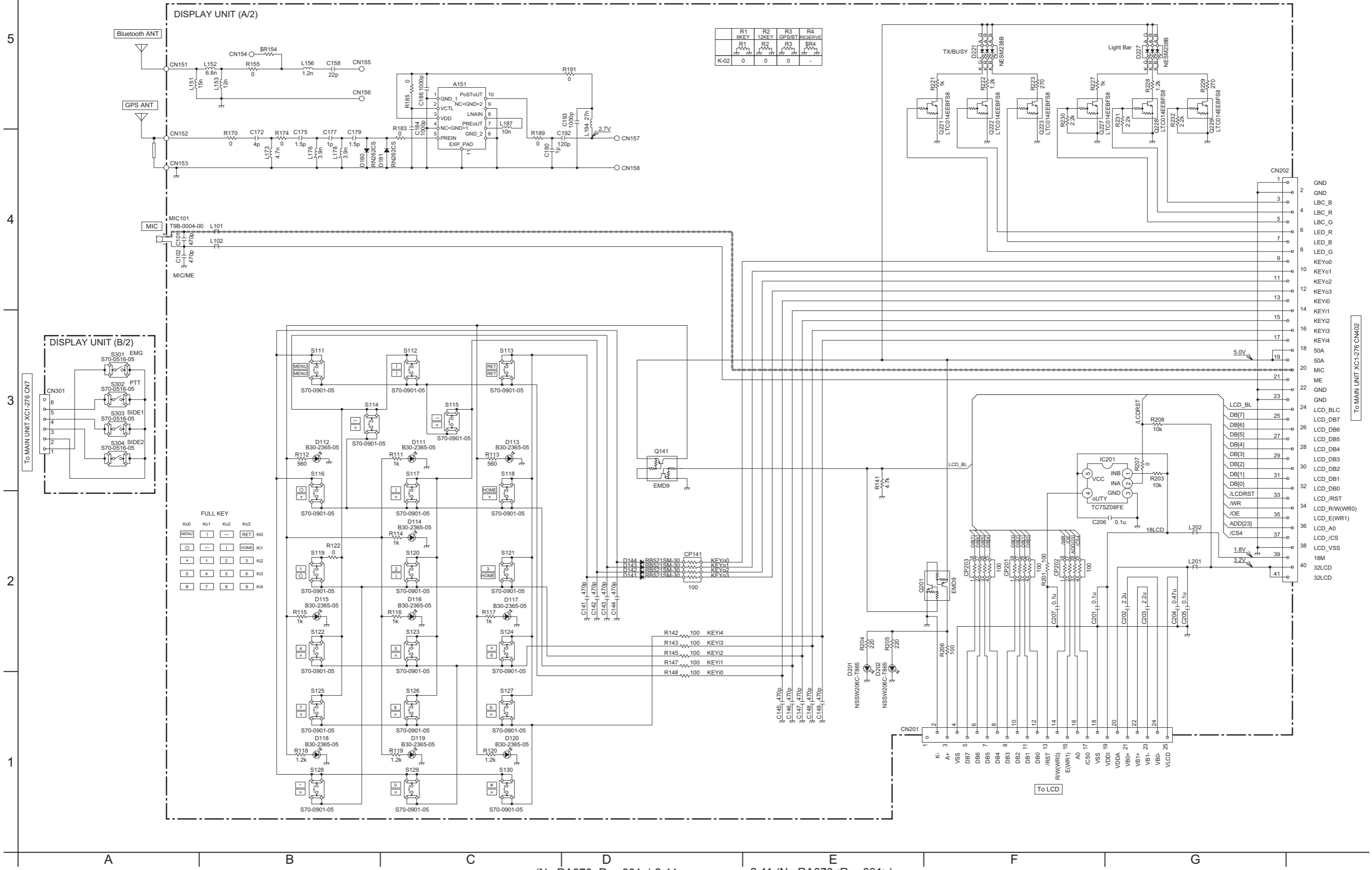
To make measurements in the AF section, connect the AC level meter.
 (ANT input: -53dBm, 1kHz FM, 1.5kHz DEV (Narrow). SP output: 500mW@8ohm Load)
 In the RF section, use 100pF coupling capacitor.
 (The display shows the SSG input value required to obtain 12dB SINAD.)

Transmitter Section



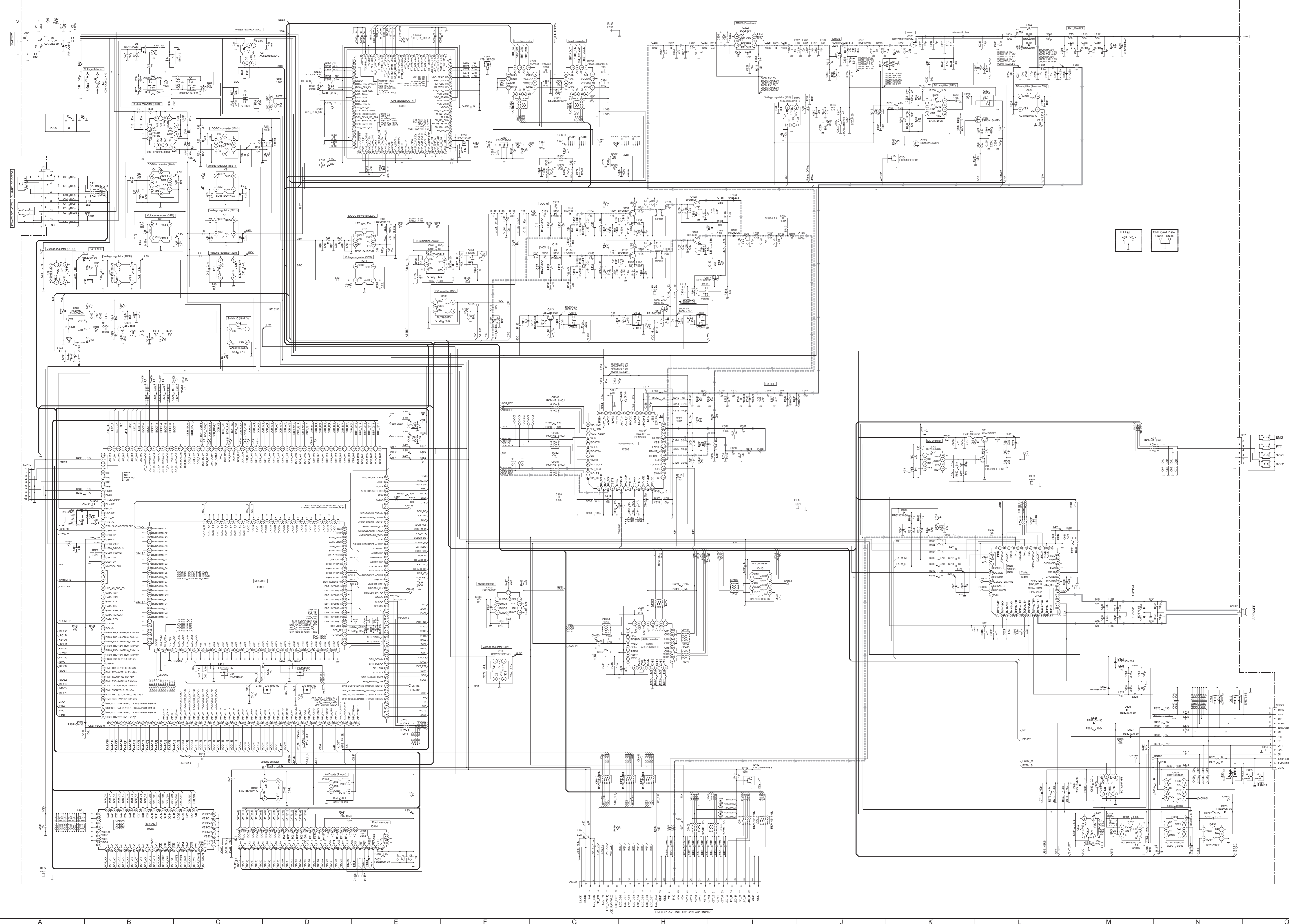
SCHEMATIC DIAGRAM

■ DISPLAY UNIT (XC1-209K-02)



< MEMO >

MAIN UNIT (XC1-276K-00)



< MEMO >

PARTS LIST

[NX-3400]

*** SAFETY PRECAUTION**

Parts identified by the \triangle 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.

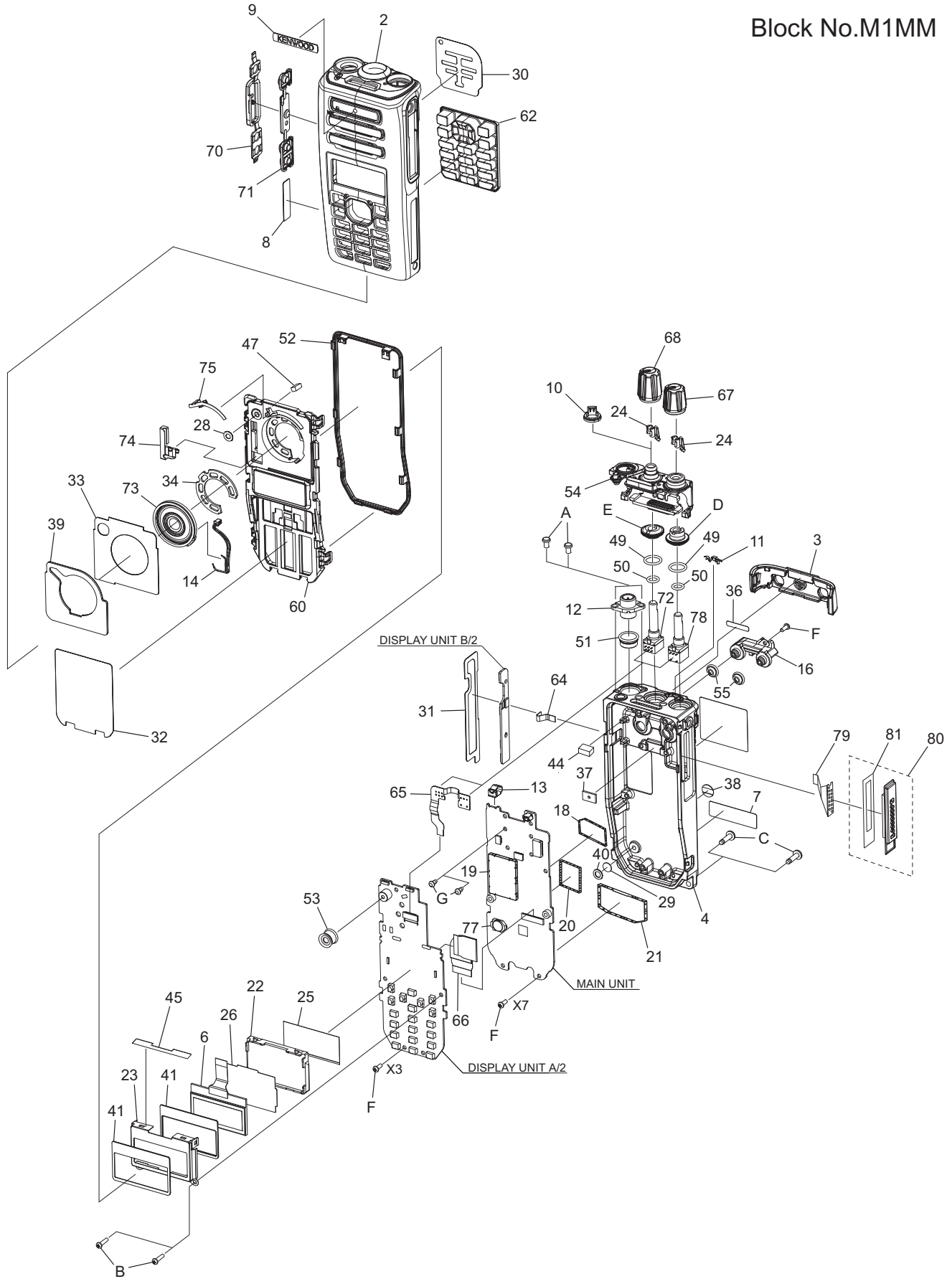
* (x_) in a description column shows the number of the used part.

- Contents -

Exploded view of general assembly and parts list	3-2
Electrical parts list	3-4
Packing materials and accessories parts list	3-12

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
2	A0C-0176-30	P.CABINET ASSY	FULL UNIV	
3	A8A-0050-00	REAR PANEL		
4	A1A-0106-10	CHASSIS	UNIV	
6	B3H-0062-00	LCD ASSY		
7	B4B-0006-00	CAUTION STICKER	FCC	
8	B42-7417-04	STICKER	NEXEDGE	
9	B4D-0044-10	KENWOOD BADGE		
10	D32-0454-04	STOPPER	CH KNOB	
11	D3C-0003-00	STOPPER	NUT	
12	E04-0467-15	C.RECEPTACLE-SM	SMA	
13	E2D-0083-00	TERMINAL	ANT	
14	E3K-0275-00	LEAD.WIRE W.C.	SP	
16	E7C-0018-00	TERMINAL BLOCK	BATT	
18	F10-3227-05	SHIELDING COVER	BLS/GPS	
19	F1B-0084-00	SHIELDING COVER	BLS/IC303	
20	F1B-0086-00	SHIELDING COVER	BLS/CODEC	
21	F1B-0088-00	SHIELDING COVER	BLS/OMAP	
22	B1B-0105-00	ILL.GUIDE	LCD	
23	J2B-0350-20	MOUNTING	LCD	
24	G0K-0012-00	KNOB SPRING	(x2)	
25	B1B-0110-00	REF.SHEET	LCD	
26	B1B-0138-00	FILTER	LCD	
28	G1A-0057-00	FIBROUS SHEET	ECM	
29	G1A-0063-00	FIBROUS SHEET	LCD	
30	G1A-0053-00	FIBROUS SHEET	SP	
31	G1G-0075-00	SHEET	PTT	
32	G1G-0076-00	SHEET	KEY	
33	G1G-0077-00	SHEET	SP/BT/GPS	
34	G1B-0266-00	RUBBER SHEET	SP	
36	-----	SEAL	VOID	
37	G11-4090-14	SHEET	FINAL	
38	G11-4440-04	SHEET	LEAK COVER	
39	G1D-0203-10	CUSHION	SP/ECM	
40	G1D-0204-00	CUSHION	AIR LEAK	
41	G1D-0205-00	CUSHION	LCD(x2)	
44	G1D-0303-00	CUSHION	ANT	
45	G1B-0300-00	SHEET	LIGHT LEAKAGE	
47	G1D-0350-00	CUSHION	BT ANT HOLD	
49	G53-1792-04	PACKING	O RING-NUT(x2)	
50	G53-2211-04	O RING	VOL/CH(x2)	
51	G5D-0133-00	PACKING	ANT	
52	G5D-0121-10	PACKING	HOLDER	
53	G5D-0122-00	PACKING	ECM	
54	G5D-0120-00	PACKING	TOP	
55	G5D-0128-00	PACKING	TER.BLOCK/RING(x2)	
60	J1K-0493-10	HOLDER	SP/LCD/KEY	
62	K2K-0248-00	KEY TOP	FULL	
64	J87-0027-15	FPC(LEAD FREE)	PTT	
65	J8C-0020-00	FLEX P.BOARD	VOL/ROSW	
66	J8C-0022-00	FLEX P.BOARD	KEY-MAIN	
67	K2K-0249-00	KNOB	VOL	
68	K2K-0250-00	KNOB	ROSW	
70	K2K-0251-00	KNOB	PTT	
71	K2K-0252-00	BUTTON KNOB	PTT	
72	S6A-0004-00	ROTARY SWITCH	CH	
73	T0H-0025-10	SPEAKER	D28	
74	T9A-0058-00	ANTENNA ELEMENT	GPS	
75	T9A-0059-00	ANTENNA ELEMENT	BT	
77	W09-0971-05	LITHIUM CELL	TO UNIT	
78	R31-0692-15	V RESISTOR	VOL	
79	J8C-0021-00	FLEX P.BOARD	UNIV	
80	E58-0532-15	R.RECEPTACLE	UNIV	
81	J99-0715-08	ADHESIVE SHEET	SA*UNIV	
A	N09-6554-05	PAN HEAD SCREW	SMA(x2)	
B	N79-2080-43	P.HEAD T.SCREW	LCD(x2)	
C	N0Z-0287-00	SPECIAL SCREW	CASE M2.6x8 3M2353(x2)	
D	N14-1011-00	CIRCULAR NUT	VOL	
E	N14-1012-00	CIRCULAR NUT	ROSW	
F	N83-2005-48	P.HEAD T.SCREW	UNIT(x11)	
G	N84-2004-43	P.HEAD T.SCREW	TER.BLOCK (+,-)(x2)	
-	XC1-209K-02	DISPLAY UNIT	FULL	
-	XCA-066K-00	MAIN UNIT	SERVICE UNIT	

Electrical parts list

MAIN UNIT

XC1-276K-00

***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	XC61CC5602N-G	IC		
IC2	-----	IC	*Note	
IC3	TPS62140RGT	IC		
IC4	-----	IC	*Note	
IC5	XC6223D321G-G	IC		
IC6	XC6209B502D-G	IC		
IC7	BU32TD2WNVX	IC		
IC8	BU18TD2WNVX	IC		
IC9	XC6209B312D-G	IC		
IC10	XC6215B122N-G	IC		
IC11	NJM2878F4-32	IC		
IC12	XC8102AA07-G	IC		
IC13	TPS61041DRVR	IC		
IC14	BU32TD2WNVX	IC		
IC15	XC6209B502D-G	IC		
IC17	XC6209B502D-G	IC		
IC18	BU7442NXX	IC		
IC101	OPA170AIDRLR	IC		
IC102	BU7295HFV	IC		
IC201	XC8102AA07-G	IC		
IC202	BGU6104	IC		
IC203	BA3472FVM	IC		
IC303	-----	IC	*Note	
IC351	-----	IC	*Note	
IC352	74AVC4TD245GU	IC		
IC353	74AVC4TD245GU	IC		
IC401	-----	IC	*Note	
IC402	-----	IC	*Note	
IC403	S-80135ANPF-G	IC		
IC404	-----	IC	*Note	
IC405	TC7SZ08FE	IC		
IC406	KXCJ9-1008	IC		
IC409	ADS7961SRHB	IC		
IC410	DAC124S085CIS	IC		
IC601	-----	IC	*Note	
IC602	NJW4107U2-05A	IC		
IC603	TC7W53FKFT	IC		
IC604	TC7SPB9306TUF	IC		
IC605	BD11600NXX	IC		
IC606	TC7WT126FU-F	IC		
IC607	TC7SZ08FE	IC		
Q1	EMD12	TRANSISTOR		
Q2	SSM6N15AFEM	DUAL FET		
Q3	SSM6N15AFEM	DUAL FET		
Q4	VT6M1	FET		
Q5	VT6M1	FET		
Q6	LTC014EEBFS8	DIGI TRANSISTOR		
Q7	2SAR293P5	TRANSISTOR		
Q102	EM6M2	FET		
Q103	VT6M1	FET		
Q111	RE1E002SP	FET		
Q112	VT6M1	FET		
Q113	2SD2654/W/	TRANSISTOR		
Q114	VT6M1	FET		
Q117	RE1E002SP	FET		
Q118	VT6M1	FET		
Q131	BFU660F	TRANSISTOR		
Q151	BFU660F	TRANSISTOR		
Q181	BFU660F	TRANSISTOR		
Q182	BFU660F	TRANSISTOR		
Q201	RD01MUS2BT513	FET		
Q202	RD07MUS2BT514	FET		
Q203	LSCR523EBFS8	TRANSISTOR		
Q204	LTC044EEBFS8	DIGI TRANSISTOR		
Q205	SSM3K15AMFV	FET		
Q206	SSM3K15AMFV	FET		

Symbol No.	Part No.	Part Name	Description	Local
Q207	EMD9	TRANSISTOR		
Q351	SSM3K15AMFV	FET		
Q401	2SC5585	TRANSISTOR		
Q402	LTC044EEBFS8	DIGI TRANSISTOR		
D1	RR1LAM4S	DIODE		
D8	DAN222WM	DIODE ARRAY		
D9	RB520SM-30	DIODE		
D10	RB561VM-40	SCHOTTKY DIODE		
D102	EDZV8.2B	ZENER DIODE		
D103	RN262CS	DIODE		
D104	RN262CS	DIODE		
D111	1SS400SM	DIODE		
D131	BBY53-02V	VARI CAP DIODE		
D132	1SV280FT	VARI CAP DIODE		
D133	1SV280FT	VARI CAP DIODE		
D134	1SV280FT	VARI CAP DIODE		
D136	1SV280FT	VARI CAP DIODE		
D151	BBY53-02V	VARI CAP DIODE		
D152	1SV280FT	VARI CAP DIODE		
D153	1SV280FT	VARI CAP DIODE		
D154	1SV280FT	VARI CAP DIODE		
D156	1SV280FT	VARI CAP DIODE		
D201	RN142SM	DIODE		
D202	RN142SM	DIODE		
D203	RN142SM	DIODE		
D204	EDZV5.6B	ZENER DIODE		
D206	SPC10501A01	VARIATOR		
D207	RN142SM	DIODE		
D301	1SS400SM	DIODE		
D302	1SS400SM	DIODE		
D303	1SS390	DIODE		
D304	1SS390	DIODE		
D401	RB521CM-30	DIODE		
D402	RB521CM-30	DIODE		
D403	1SS400SM	DIODE		
D404	1SS400SM	DIODE		
D405	1SS400SM	DIODE		
D406	1SS400SM	DIODE		
D407	1SS400SM	DIODE		
D601	RB521CM-30	DIODE		
D609	RB521CM-30	DIODE		
D620	EDZV6.8B	ZENER DIODE		
D621	EDZV6.8B	ZENER DIODE		
D622	RBE05SM20A	DIODE		
D623	RBE05SM20A	DIODE		
D624	RB521CM-30	DIODE		
D625	RB521CM-30	DIODE		
D626	RB521CM-30	DIODE		
D627	RB521CM-30	DIODE		
D628	RB521CM-30	DIODE		
D629	EMZT6.8E	ZENER DIODE		
D630	EMZT6.8E	ZENER DIODE		
D632	EMZT6.8E	ZENER DIODE		
D633	RSB12Z	ZENER DIODE		
D634	RSB12Z	ZENER DIODE		
C1	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C2	CC73HCH1H220G	C CAPACITOR	22pF 50V G	
C3	CK73HBB1H682K	C CAPACITOR	6800pF 50V K	
C4	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C5	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C6	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C7	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C8	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C9	CK73HBB1H682K	C CAPACITOR	6800pF 50V K	
C10	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C14	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C15	CK73HB1A224K	C CAPACITOR	0.22uF 10V K	
C16	CK73HB1A224K	C CAPACITOR	0.22uF 10V K	
C17	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C18	CK73FB1C106K	C CAPACITOR	10uF 16V K	
C19	CK73FB1C106K	C CAPACITOR	10uF 16V K	
C20	CK73HBB1H332K	C CAPACITOR	3300pF 50V K	
C21	CK73HB1E104K	C CAPACITOR	0.1uF 25V K	
C22	CK73FXRJ226M	C CAPACITOR	22uF 6.3V M	

△ Symbol No.	Part No.	Part Name	Description	Local	△ Symbol No.	Part No.	Part Name	Description	Local
C23	CK73GXR1E475K	C CAPACITOR	4.7uF 25V K		C156	CC730AZ1H1R9A	C CAPACITOR	1.9pF 50V A	
C24	CK73GB0J106K	C CAPACITOR	10uF 6.3V K		C158	CC73HCH1H220G	C CAPACITOR	22pF 50V G	
C25	CK73HB1A474K	C CAPACITOR	0.47uF 10V K		C159	CC73HCH1H220G	C CAPACITOR	22pF 50V G	
C26	CK73HB1A474K	C CAPACITOR	0.47uF 10V K		C160	CK73HB1A334K	C CAPACITOR	0.33uF 10V K	
C27	CK73GB1E104K	C CAPACITOR	0.1uF 25V K		C161	CC730AZ1H1R3A	C CAPACITOR	1.3pF 50V A	
C28	CC73JCH1H101J	C CAPACITOR	100pF 50V J		C162	CC730AZ1H010A	C CAPACITOR	1pF 50V A	
C29	CK73GXR1C225K	C CAPACITOR	2.2uF 16V K		C163	CC730AZ1H0R6A	C CAPACITOR	0.6pF 50V A	
C30	CC73HCH1H101J	C CAPACITOR	100pF 50V J		C164	CC73HCH1H220G	C CAPACITOR	22pF 50V G	
C31	CK73FB1C106K	C CAPACITOR	10uF 16V K		C165	CK73HB1E104K	C CAPACITOR	0.1uF 25V K	
C32	CK73GB0J106K	C CAPACITOR	10uF 6.3V K		C166	CC730AZ1H010A	C CAPACITOR	1pF 50V A	
C33	CK73HB1A224K	C CAPACITOR	0.22uF 10V K		C167	CC73HCH1H220G	C CAPACITOR	22pF 50V G	
C34	CK73HB1A224K	C CAPACITOR	0.22uF 10V K		C171	CC73HCH1H030B	C CAPACITOR	3pF 50V B	
C35	CK73HB1E104K	C CAPACITOR	0.1uF 25V K		C181	CC73HCH1H220G	C CAPACITOR	22pF 50V G	
C36	CC73JCH1H101J	C CAPACITOR	100pF 50V J		C182	CC73HCH1H220G	C CAPACITOR	22pF 50V G	
C37	CC73JCH1H101J	C CAPACITOR	100pF 50V J		C183	CC73HCH1HR75B	C CAPACITOR	0.75pF 50V B	
C38	CK73GB1E104K	C CAPACITOR	0.1uF 25V K		C184	CC73HCH1H180G	C CAPACITOR	18pF 50V G	
C39	CK73GB1E105K	C CAPACITOR	1uF 25V K		C185	CC73HCH1H180G	C CAPACITOR	18pF 50V G	
C40	CK73HB1E104K	C CAPACITOR	0.1uF 25V K		C186	CC730AZ1H0R6A	C CAPACITOR	0.6pF 50V A	
C41	CK73HB1E104K	C CAPACITOR	0.1uF 25V K		C191	CC73HCH1H2R5B	C CAPACITOR	2.5pF 50V B	
C42	CK73HB1E104K	C CAPACITOR	0.1uF 25V K		C192	CC73HCH1H040B	C CAPACITOR	4pF 50V B	
C43	CK73HB1A474K	C CAPACITOR	0.47uF 10V K		C194	CC73HCH1H2R5B	C CAPACITOR	2.5pF 50V B	
C44	CK73HB1E104K	C CAPACITOR	0.1uF 25V K		C195	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C46	CK73GXR1E475K	C CAPACITOR	4.7uF 25V K		C197	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C47	CK73GB1A335K	C CAPACITOR	3.3uF 10V K		C201	CC730AY2E5R1B	C CAPACITOR	5.1pF 250V B	
C48	CK73FXR1E475K	C CAPACITOR	4.7uF 25V K		C203	CC730AY2E5R1B	C CAPACITOR	5.1pF 250V B	
C49	CK73HBB1H681K	C CAPACITOR	680pF 50V K		C208	CC73GCH1H1R5B	C CAPACITOR	1.5pF 50V B	
C50	CK730JM1H684K	C CAPACITOR	0.68uF 50V K		C209	CC73HCH1H020B	C CAPACITOR	2pF 50V B	
C51	CK73HB1A224K	C CAPACITOR	0.22uF 10V K		C211	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C52	CK73HBB1H681K	C CAPACITOR	680pF 50V K		C212	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C54	CK73GB1E104K	C CAPACITOR	0.1uF 25V K		C213	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C55	CK73GXR1C225K	C CAPACITOR	2.2uF 16V K		C214	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C56	CC73HCH1H101J	C CAPACITOR	100pF 50V J		C215	CC73HCH1H150G	C CAPACITOR	15pF 50V G	
C60	CK73GXR1C225K	C CAPACITOR	2.2uF 16V K		C216	CC73HCH1H040B	C CAPACITOR	4pF 50V B	
C62	C93-1959-05	C CAPACITOR	0.1uF 16V		C217	CC73HCH1H010B	C CAPACITOR	1pF 50V B	
C63	C93-1959-05	C CAPACITOR	0.1uF 16V		C218	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C64	C93-1959-05	C CAPACITOR	0.1uF 16V		C219	CC73HCH1H100B	C CAPACITOR	10pF 50V B	
C65	CK73HBB1H102K	C CAPACITOR	1000pF 50V K		C220	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C66	CC73HCH1H101J	C CAPACITOR	100pF 50V J		C221	CK73HB1E473K	C CAPACITOR	0.047uF 25V K	
C67	CC73JCH1H101J	C CAPACITOR	100pF 50V J		C223	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C68	CC73JCH1H101J	C CAPACITOR	100pF 50V J		C224	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C69	CC73JCH1H101J	C CAPACITOR	100pF 50V J		C225	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C70	CC73JCH1H101J	C CAPACITOR	100pF 50V J		C227	CC73GCH1H101J	C CAPACITOR	100pF 50V J	
C102	CK73HB1H103K	C CAPACITOR	0.01uF 50V K		C228	CC73GCH1H010B	C CAPACITOR	1pF 50V B	
C103	CC73HCH1H330G	C CAPACITOR	33pF 50V G		C229	CC73HCH1H050B	C CAPACITOR	5pF 50V B	
C104	CC73JCH1H101J	C CAPACITOR	100pF 50V J		C230	CC73HCH1H120G	C CAPACITOR	12pF 50V G	
C105	CK73GXR1H105K	C CAPACITOR	1uF 50V K		C231	CC73HCH1H030B	C CAPACITOR	3pF 50V B	
C106	C93-1959-05	C CAPACITOR	0.1uF 16V		C233	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C107	CC73JCH1H101J	C CAPACITOR	100pF 50V J		C234	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C108	CC730AD1H104J	C CAPACITOR	0.1uF 50V J		C235	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C111	CC73HCH1H470G	C CAPACITOR	47pF 50V G		C236	CC730AY2E6R2B	C CAPACITOR	6.2pF 250V B	
C112	CS77BP1A4R7M	TA E CAPACITOR	4.7uF 10V M		C237	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C113	CK73HB1A105K	C CAPACITOR	1uF 10V K		C239	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C116	CC73HCH1H030B	C CAPACITOR	3pF 50V B		C240	CC73HCH1H151J	C CAPACITOR	150pF 50V J	
C117	CC73HCH1HR75B	C CAPACITOR	0.75pF 50V B		C241	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C118	CC73HCH1H151J	C CAPACITOR	150pF 50V J		C242	CC730AY2E150G	C CAPACITOR	15pF 250V G	
C121	CK73FBB1H154K	C CAPACITOR	0.15uF 50V K		C243	CK73HB1E104K	C CAPACITOR	0.1uF 25V K	
C122	CS77ABE1D100M	TA E CAPACITOR	10uF 20V M		C246	CC73GCH1H101J	C CAPACITOR	100pF 50V J	
C123	CK73FB1H473K	C CAPACITOR	0.047uF 50V K		C247	CC73GCH1H040B	C CAPACITOR	4pF 50V B	
C124	CK73HB1A105K	C CAPACITOR	1uF 10V K		C248	CC73GCH1HR75B	C CAPACITOR	0.75pF 50V B	
C127	CC73HCH1H030B	C CAPACITOR	3pF 50V B		C249	CC73GCH1H2R5B	C CAPACITOR	2.5pF 50V B	
C130	CC73HCH1H180G	C CAPACITOR	18pF 50V G		C250	CC73GCH1HR75B	C CAPACITOR	0.75pF 50V B	
C132	CC73HCH1H180G	C CAPACITOR	18pF 50V G		C251	CC73GCH1H010B	C CAPACITOR	1pF 50V B	
C133	CC73HCH1H050B	C CAPACITOR	5pF 50V B		C253	CC73HCH1H180G	C CAPACITOR	18pF 50V G	
C134	CC730AZ1H1R6A	C CAPACITOR	1.6pF 50V A		C257	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C135	CC73HCH1H180G	C CAPACITOR	18pF 50V G		C258	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C137	CC730AZ1H0R1A	C CAPACITOR	0.1pF 50V A		C259	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C138	CC73HCH1H220G	C CAPACITOR	22pF 50V G		C261	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C139	CC73HCH1H180G	C CAPACITOR	18pF 50V G		C262	CK73GB1C563K	C CAPACITOR	0.056uF 16V K	
C140	CK73HB1A334K	C CAPACITOR	0.33uF 10V K		C263	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C141	CC730AZ1H010A	C CAPACITOR	1pF 50V A		C264	CK73HB1H822K	C CAPACITOR	8200pF 50V K	
C142	CC730AZ1H1R3A	C CAPACITOR	1.3pF 50V A		C265	CK73HB1H822K	C CAPACITOR	8200pF 50V K	
C143	CC730AZ1H1R6A	C CAPACITOR	1.6pF 50V A		C266	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C144	CC73HCH1H180G	C CAPACITOR	18pF 50V G		C267	CC73HCH1H101J	C CAPACITOR	100pF 50V J	
C145	CC730AZ1H0R5A	C CAPACITOR	0.5pF 50V A		C268	CC73HCH1H120G	C CAPACITOR	12pF 50V G	
C148	CK73HB1E104K	C CAPACITOR	0.1uF 25V K		C269	CC73GCH1H1R5B	C CAPACITOR	1.5pF 50V B	
C153	CC73HCH1H070B	C CAPACITOR	7pF 50V B		C270	CC73GCH1H1R5B	C CAPACITOR	1.5pF 50V B	
C154	CC73HCH1H220G	C CAPACITOR	22pF 50V G		C271	CC730AY2E220G	C CAPACITOR	22pF 250V G	
C155	CC730AZ1H010A	C CAPACITOR	1pF 50V A		C272	CC73HCH1H330G	C CAPACITOR	33pF 50V G	

△ Symbol No.	Part No.	Part Name	Description	Local	△ Symbol No.	Part No.	Part Name	Description	Local
C301	CK73HB0J225K	C CAPACITOR	2.2uF 6.3V K		C404	CK73HB1H103K	C CAPACITOR	0.01uF 50V K	
C302	CC73HCH1H020B	C CAPACITOR	2pF 50V B		C405	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C303	CK73HB1H103K	C CAPACITOR	0.01uF 50V K		C406	CK73HB1H103K	C CAPACITOR	0.01uF 50V K	
C305	CC73HCH1H1R5B	C CAPACITOR	1.5pF 50V B		C407	C93-1953-05	C CAPACITOR	0.01uF 25V	
C306	CC73HCH1H101J	C CAPACITOR	100pF 50V J		C408	CC73HCH1H050B	C CAPACITOR	5pF 50V B	
C308	CC73HCH1H180G	C CAPACITOR	18pF 50V G		C421	C93-1959-05	C CAPACITOR	0.1uF 16V	
C309	CC73HCH1H030B	C CAPACITOR	3pF 50V B		C422	CC73HCH1H180G	C CAPACITOR	18pF 50V G	
C310	CC73HCH1H030B	C CAPACITOR	3pF 50V B		C423	CC73HCH1H150G	C CAPACITOR	15pF 50V G	
C311	CC73HCH1H020B	C CAPACITOR	2pF 50V B		C424	CK73HB1A224K	C CAPACITOR	0.22uF 10V K	
C312	CC73HCH1H020B	C CAPACITOR	2pF 50V B		C425	C93-1959-05	C CAPACITOR	0.1uF 16V	
C313	CC73HCH1H101J	C CAPACITOR	100pF 50V J		C426	C93-1959-05	C CAPACITOR	0.1uF 16V	
C314	CK73HB1H103K	C CAPACITOR	0.01uF 50V K		C427	C93-1959-05	C CAPACITOR	0.1uF 16V	
C315	CK73HB1A105K	C CAPACITOR	1uF 10V K		C428	C93-1959-05	C CAPACITOR	0.1uF 16V	
C316	CK730BS0J106M	C CAPACITOR	10uF 6.3V M		C429	CK73FB1C106K	C CAPACITOR	10uF 16V K	
C317	CC73HCH1HR75B	C CAPACITOR	0.75pF 50V B		C430	CK73FB1C106K	C CAPACITOR	10uF 16V K	
C320	CC73HCH1H050B	C CAPACITOR	5pF 50V B		C431	CK73GXR0J475K	C CAPACITOR	4.7uF 6.3V K	
C321	CK73HB1E104K	C CAPACITOR	0.1uF 25V K		C432	CK73FB1C106K	C CAPACITOR	10uF 16V K	
C322	CC73HCH1H101J	C CAPACITOR	100pF 50V J		C433	CK73GXR0J475K	C CAPACITOR	4.7uF 6.3V K	
C323	CC73HCH1H101J	C CAPACITOR	100pF 50V J		C434	C93-1959-05	C CAPACITOR	0.1uF 16V	
C324	CK73HB1H103K	C CAPACITOR	0.01uF 50V K		C435	C93-1959-05	C CAPACITOR	0.1uF 16V	
C325	CC73HCH1H101J	C CAPACITOR	100pF 50V J		C436	CK73FB1C106K	C CAPACITOR	10uF 16V K	
C326	CK73HB1H103K	C CAPACITOR	0.01uF 50V K		C437	C93-1959-05	C CAPACITOR	0.1uF 16V	
C327	CK73HB1E104K	C CAPACITOR	0.1uF 25V K		C438	C93-1959-05	C CAPACITOR	0.1uF 16V	
C328	CC73HCH1H101J	C CAPACITOR	100pF 50V J		C439	C93-1959-05	C CAPACITOR	0.1uF 16V	
C329	CK73HB1E104K	C CAPACITOR	0.1uF 25V K		C440	C93-1959-05	C CAPACITOR	0.1uF 16V	
C330	CC73HCH1H101J	C CAPACITOR	100pF 50V J		C441	C93-1959-05	C CAPACITOR	0.1uF 16V	
C331	CC73HCH1H101J	C CAPACITOR	100pF 50V J		C442	C93-1959-05	C CAPACITOR	0.1uF 16V	
C332	CK73HB1E104K	C CAPACITOR	0.1uF 25V K		C443	C93-1959-05	C CAPACITOR	0.1uF 16V	
C333	CK730BS0J106M	C CAPACITOR	10uF 6.3V M		C444	C93-1959-05	C CAPACITOR	0.1uF 16V	
C334	CC73HCH1H040B	C CAPACITOR	4pF 50V B		C445	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C338	CC73HCH1H101J	C CAPACITOR	100pF 50V J		C446	C93-1959-05	C CAPACITOR	0.1uF 16V	
C341	CC73HCH1H101J	C CAPACITOR	100pF 50V J		C447	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C342	CK730BS0J106M	C CAPACITOR	10uF 6.3V M		C448	CK73HB1H103K	C CAPACITOR	0.01uF 50V K	
C343	CK73HB1A474K	C CAPACITOR	0.47uF 10V K		C449	C93-1953-05	C CAPACITOR	0.01uF 25V	
C344	CC73HCH1H101J	C CAPACITOR	100pF 50V J		C450	C93-1959-05	C CAPACITOR	0.1uF 16V	
C346	CC73HCH1H220G	C CAPACITOR	22pF 50V G		C451	C93-1959-05	C CAPACITOR	0.1uF 16V	
C348	CK73HB1A105K	C CAPACITOR	1uF 10V K		C452	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C354	CC73HCH1H040B	C CAPACITOR	4pF 50V B		C453	CK73HB1H103K	C CAPACITOR	0.01uF 50V K	
C356	C93-1953-05	C CAPACITOR	0.01uF 25V		C454	CK73HB1E104K	C CAPACITOR	0.1uF 25V K	
C357	CK73HB1A105K	C CAPACITOR	1uF 10V K		C455	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C358	C93-1959-05	C CAPACITOR	0.1uF 16V		C456	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C359	C93-1959-05	C CAPACITOR	0.1uF 16V		C457	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C360	C93-1959-05	C CAPACITOR	0.1uF 16V		C458	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C361	C93-1959-05	C CAPACITOR	0.1uF 16V		C459	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C363	CC73HCH1H180G	C CAPACITOR	18pF 50V G		C469	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C364	CK73HB1A105K	C CAPACITOR	1uF 10V K		C470	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C365	CK73HB1A105K	C CAPACITOR	1uF 10V K		C471	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C366	C93-1959-05	C CAPACITOR	0.1uF 16V		C472	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C367	C93-1959-05	C CAPACITOR	0.1uF 16V		C473	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C368	C93-1959-05	C CAPACITOR	0.1uF 16V		C474	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C369	CC73HCH1H220G	C CAPACITOR	22pF 50V G		C475	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C370	CK73HB1A105K	C CAPACITOR	1uF 10V K		C476	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C371	C93-1959-05	C CAPACITOR	0.1uF 16V		C477	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C372	C93-1959-05	C CAPACITOR	0.1uF 16V		C480	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C373	C93-1959-05	C CAPACITOR	0.1uF 16V		C481	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C374	C93-1959-05	C CAPACITOR	0.1uF 16V		C482	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C375	C93-1959-05	C CAPACITOR	0.1uF 16V		C483	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C376	CK73HBB1H102K	C CAPACITOR	1000pF 50V K		C484	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C377	CK73HBB1H102K	C CAPACITOR	1000pF 50V K		C485	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C378	CK73HBB1H102K	C CAPACITOR	1000pF 50V K		C486	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C379	CK73HBB1H102K	C CAPACITOR	1000pF 50V K		C487	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C380	C93-1959-05	C CAPACITOR	0.1uF 16V		C488	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C381	C93-1959-05	C CAPACITOR	0.1uF 16V		C489	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C382	CC73HCH1H470G	C CAPACITOR	47pF 50V G		C496	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C383	C93-1959-05	C CAPACITOR	0.1uF 16V		C497	C93-1959-05	C CAPACITOR	0.1uF 16V	
C384	C93-1959-05	C CAPACITOR	0.1uF 16V		C498	C93-1959-05	C CAPACITOR	0.1uF 16V	
C385	CK73HBB1H102K	C CAPACITOR	1000pF 50V K		C499	C93-1959-05	C CAPACITOR	0.1uF 16V	
C386	C93-1959-05	C CAPACITOR	0.1uF 16V		C500	C93-1959-05	C CAPACITOR	0.1uF 16V	
C387	C93-1959-05	C CAPACITOR	0.1uF 16V		C501	CK73HB1A105K	C CAPACITOR	1uF 10V K	
C388	CK73HB1A105K	C CAPACITOR	1uF 10V K		C502	C93-1959-05	C CAPACITOR	0.1uF 16V	
C389	CC73HCH1H100B	C CAPACITOR	10pF 50V B		C510	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C391	CC73HCH1H121J	C CAPACITOR	120pF 50V J		C515	CC73JCH1H101J	C CAPACITOR	100pF 50V J	
C392	CK73HBB1H102K	C CAPACITOR	1000pF 50V K		C516	CK73HB1E104K	C CAPACITOR	0.1uF 25V K	
C393	CC73HCH1H050B	C CAPACITOR	5pF 50V B		C517	CK73HB1E104K	C CAPACITOR	0.1uF 25V K	
C395	CC73HCH1H2R5B	C CAPACITOR	2.5pF 50V B		C518	CK73HB1E104K	C CAPACITOR	0.1uF 25V K	
C401	CK73HB1H103K	C CAPACITOR	0.01uF 50V K		C601	CK73HB1E104K	C CAPACITOR	0.1uF 25V K	
C402	CC73JCH1H101J	C CAPACITOR	100pF 50V J		C602	CK73FXR1E475K	C CAPACITOR	4.7uF 25V K	
C403	C93-1953-05	C CAPACITOR	0.01uF 25V		C603	CK73GXR0J475K	C CAPACITOR	4.7uF 6.3V K	

△ Symbol No.	Part No.	Part Name	Description	Local	△ Symbol No.	Part No.	Part Name	Description	Local
C604	CK73FXR1E475K	C CAPACITOR	4.7uF 25V K		R25	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
C606	CK73HB1A105K	C CAPACITOR	1uF 10V K		R26	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
C607	CK73HB1A105K	C CAPACITOR	1uF 10V K		R27	RK73HB1J274J	MG RESISTOR	270kΩ 1/16W J	
C608	CK73GXR1C225K	C CAPACITOR	2.2uF 16V K		R28	RK73HB1J224J	MG RESISTOR	220kΩ 1/16W J	
C609	CK73GXR0J475K	C CAPACITOR	4.7uF 6.3V K		R29	RK73HB1J474J	MG RESISTOR	470kΩ 1/16W J	
C610	CK73GXR1C225K	C CAPACITOR	2.2uF 16V K		R30	RK73HH1J274D	MG RESISTOR	270kΩ 1/16W D	
C611	CC73JCH1H101J	C CAPACITOR	100pF 50V J		R31	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
C612	CK73HB1A105K	C CAPACITOR	1uF 10V K		R32	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
C614	CK73HB1A105K	C CAPACITOR	1uF 10V K		R33	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
C615	CK73FXR1E475K	C CAPACITOR	4.7uF 25V K		R35	RK73JB1H101J	MG RESISTOR	100Ω 1/20W J	
C617	CC73JCH1H101J	C CAPACITOR	100pF 50V J		R36	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
C618	CC73JCH1H101J	C CAPACITOR	100pF 50V J		R37	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
C620	CK73GXR0J475K	C CAPACITOR	4.7uF 6.3V K		R38	RZ73G0BK2R7J	RESISTOR	2.7Ω J	
C621	CK73GXR0J475K	C CAPACITOR	4.7uF 6.3V K		R39	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
C622	CK73GXR1C225K	C CAPACITOR	2.2uF 16V K		R40	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
C625	CK73HB1A334K	C CAPACITOR	0.33uF 10V K		R41	RK73JB1H473J	MG RESISTOR	47kΩ 1/20W J	
C626	CK73HB1H103K	C CAPACITOR	0.01uF 50V K		R42	R92-3774-05	MG RESISTOR	27Ω 0.25W	
C627	CK73HB1A334K	C CAPACITOR	0.33uF 10V K		R43	R92-3774-05	MG RESISTOR	27Ω 0.25W	
C657	CC73HCH1H101J	C CAPACITOR	100pF 50V J		R44	RK73HB1J474J	MG RESISTOR	470kΩ 1/16W J	
C658	CC73HCH1H101J	C CAPACITOR	100pF 50V J		R45	RK73HB1J333J	MG RESISTOR	33kΩ 1/16W J	
C659	CK73GXR0J475K	C CAPACITOR	4.7uF 6.3V K		R46	RK73GB2A220J	MG RESISTOR	22Ω 1/10W J	
C660	CK73GXR0J475K	C CAPACITOR	4.7uF 6.3V K		R47	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
C663	CK73GXR0J475K	C CAPACITOR	4.7uF 6.3V K		R48	RK73JB1H474J	MG RESISTOR	470kΩ 1/20W J	
C666	CK73HB1A224K	C CAPACITOR	0.22uF 10V K		R49	RK73JB1H474J	MG RESISTOR	470kΩ 1/20W J	
C672	CK73GB1E104K	C CAPACITOR	0.1uF 25V K		R50	RK73HH1J473D	MG RESISTOR	47kΩ 1/16W D	
C674	CK73GB1E105K	C CAPACITOR	1uF 25V K		R51	RK73HH1J473D	MG RESISTOR	47kΩ 1/16W D	
C676	CK73FXR1E475K	C CAPACITOR	4.7uF 25V K		R52	RK73FB2B1R0J	MG RESISTOR	1.0Ω 1/8W J	
C681	CK73GB1E474K	C CAPACITOR	0.47uF 25V K		R56	RK73HB1J332J	MG RESISTOR	3.3kΩ 1/16W J	
C682	C93-1953-05	C CAPACITOR	0.01uF 25V		R57	RK73HH1J183D	MG RESISTOR	18kΩ 1/16W D	
C683	CK73GXR1C225K	C CAPACITOR	2.2uF 16V K		R58	RK73HH1J223D	MG RESISTOR	22kΩ 1/16W D	
C685	CC73JCH1H101J	C CAPACITOR	100pF 50V J		R59	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
C686	CK73HB1A334K	C CAPACITOR	0.33uF 10V K		R60	RK73HB1J471J	MG RESISTOR	470Ω 1/16W J	
C687	CC73JCH1H101J	C CAPACITOR	100pF 50V J		R65	RK73HH1J474D	MG RESISTOR	470kΩ 1/16W D	
C688	CK73HB1A334K	C CAPACITOR	0.33uF 10V K		R66	RK73HH1J474D	MG RESISTOR	470kΩ 1/16W D	
C689	C93-1953-05	C CAPACITOR	0.01uF 25V		R67	RK73GB2A2R2J	MG RESISTOR	2.2Ω 1/10W J	
C690	C93-1953-05	C CAPACITOR	0.01uF 25V		R102	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
C691	C93-1953-05	C CAPACITOR	0.01uF 25V		R103	RK73HB1J433J	MG RESISTOR	43kΩ 1/16W J	
C692	CK73HBB1H102K	C CAPACITOR	1000pF 50V K		R104	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
C693	C93-1953-05	C CAPACITOR	0.01uF 25V		R105	RK73HH1J154D	MG RESISTOR	150kΩ 1/16W D	
C694	CK73HBB1H102K	C CAPACITOR	1000pF 50V K		R106	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
C695	C93-1953-05	C CAPACITOR	0.01uF 25V		R107	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
C696	CC73JCH1H101J	C CAPACITOR	100pF 50V J		R108	RK73HB1J106J	MG RESISTOR	10MΩ 1/16W J	
C697	CC73JCH1H101J	C CAPACITOR	100pF 50V J		R109	RK73HB1J470J	MG RESISTOR	47Ω 1/16W J	
C698	CC73JCH1H101J	C CAPACITOR	100pF 50V J		R110	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J	
C699	CC73JCH1H101J	C CAPACITOR	100pF 50V J		R111	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
C700	CC73JCH1H101J	C CAPACITOR	100pF 50V J		R112	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
C701	CC73JCH1H101J	C CAPACITOR	100pF 50V J		R114	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
C702	CC73JCH1H101J	C CAPACITOR	100pF 50V J		R115	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
C703	CC73JCH1H101J	C CAPACITOR	100pF 50V J		R116	RK73HB1J220J	MG RESISTOR	22Ω 1/16W J	
C704	CC73JCH1H101J	C CAPACITOR	100pF 50V J		R117	RK73HB1J220J	MG RESISTOR	22Ω 1/16W J	
C705	CC73JCH1H101J	C CAPACITOR	100pF 50V J		R118	RK73HB1J474J	MG RESISTOR	470kΩ 1/16W J	
C706	CC73JCH1H101J	C CAPACITOR	100pF 50V J		R119	RK73HB1J474J	MG RESISTOR	470kΩ 1/16W J	
C707	C93-1953-05	C CAPACITOR	0.01uF 25V		R120	RK73HB1J474J	MG RESISTOR	470kΩ 1/16W J	
C708	CC73JCH1H101J	C CAPACITOR	100pF 50V J		R121	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
C709	C93-1953-05	C CAPACITOR	0.01uF 25V		R123	RK73HB1J474J	MG RESISTOR	470kΩ 1/16W J	
C710	CC73JCH1H101J	C CAPACITOR	100pF 50V J		R125	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
C711	CC73JCH1H101J	C CAPACITOR	100pF 50V J		R126	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
C712	CC73JCH1H101J	C CAPACITOR	100pF 50V J		R127	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
					R128	RN73H0AV391D	MF RESISTOR	390Ω D	
R1	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R129	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R7	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R130	RN73H0AV151D	MF RESISTOR	150Ω D	
R8	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J		R132	RN73H0AV152D	MF RESISTOR	1.5kΩ D	
R9	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J		R133	RN73H0AV102D	MF RESISTOR	1kΩ D	
R10	RK73HH1J184D	MG RESISTOR	180kΩ 1/16W D		R134	RN73H0AV151D	MF RESISTOR	150Ω D	
R11	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J		R138	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
R12	RK73JB1H474J	MG RESISTOR	470kΩ 1/20W J		R139	RN73H0AU150D	MF RESISTOR	15Ω D	
R13	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J		R141	RK73HB1J474J	MG RESISTOR	470kΩ 1/16W J	
R14	RK73JB1H474J	MG RESISTOR	470kΩ 1/20W J		R145	RK73HB1J474J	MG RESISTOR	470kΩ 1/16W J	
R15	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J		R148	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R16	RK73JB1H474J	MG RESISTOR	470kΩ 1/20W J		R152	RN73H0AV472D	MF RESISTOR	4.7kΩ D	
R17	RK73JB1H474J	MG RESISTOR	470kΩ 1/20W J		R153	RN73H0AV472D	MF RESISTOR	4.7kΩ D	
R18	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J		R154	RN73H0AJ121D	MF RESISTOR	120Ω D	
R19	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J		R155	RK73HB1J8R2J	MG RESISTOR	8.2Ω 1/16W J	
R20	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J		R181	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R21	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J		R182	RK73HB1J332J	MG RESISTOR	3.3kΩ 1/16W J	
R22	RK73HH1J183D	MG RESISTOR	18kΩ 1/16W D		R183	RK73HB1J332J	MG RESISTOR	3.3kΩ 1/16W J	
R23	RK73HH1J683D	MG RESISTOR	68kΩ 1/16W D		R184	RK73HB1J121J	MG RESISTOR	120Ω 1/16W J	
R24	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J		R185	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	

△ Symbol No.	Part No.	Part Name	Description	Local	△ Symbol No.	Part No.	Part Name	Description	Local
R186	RK73HB1J332J	MG RESISTOR	3.3kΩ 1/16W J		R357	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R187	RK73HB1J121J	MG RESISTOR	120Ω 1/16W J		R358	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R188	RK73HB1J332J	MG RESISTOR	3.3kΩ 1/16W J		R359	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R189	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J		R360	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R190	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J		R361	RK73JB1H473J	MG RESISTOR	47kΩ 1/20W J	
R194	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R362	RK73HB1J221J	MG RESISTOR	220Ω 1/16W J	
R195	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R363	RK73HB1J221J	MG RESISTOR	220Ω 1/16W J	
R196	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J		R364	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R197	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J		R365	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R198	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R366	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R204	R92-3785-05	MG RESISTOR	120Ω 0.25W		R367	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J	
R205	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J		R369	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R206	RK73HB1J271J	MG RESISTOR	270Ω 1/16W J		R401	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R207	RK73HB1J180J	MG RESISTOR	18Ω 1/16W J		R402	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R208	RK73HB1J271J	MG RESISTOR	270Ω 1/16W J		R403	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R209	RK73HB1J272J	MG RESISTOR	2.7kΩ 1/16W J		R404	RK73HB1J220J	MG RESISTOR	22Ω 1/16W J	
R210	RK73HB1J272J	MG RESISTOR	2.7kΩ 1/16W J		R405	RK73HB1J153J	MG RESISTOR	15kΩ 1/16W J	
R211	RK73HB1J3R3J	MG RESISTOR	3.3Ω 1/16W J		R406	RK73HB1J333J	MG RESISTOR	33kΩ 1/16W J	
R212	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J		R407	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R213	RK73GB2A820J	MG RESISTOR	82Ω 1/10W J		R408	RK73HB1J681J	MG RESISTOR	680Ω 1/16W J	
R214	RK73HB1J822J	MG RESISTOR	8.2kΩ 1/16W J		R410	RK73HB1J220J	MG RESISTOR	22Ω 1/16W J	
R215	RK73HB1J332J	MG RESISTOR	3.3kΩ 1/16W J		R411	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R216	RK73HB1J470J	MG RESISTOR	47Ω 1/16W J		R412	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R218	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J		R413	RK73HB1J220J	MG RESISTOR	22Ω 1/16W J	
R219	RK73HB1J680J	MG RESISTOR	68Ω 1/16W J		R414	RK73HB1J220J	MG RESISTOR	22Ω 1/16W J	
R221	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J		R415	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R222	RK73HB1J332J	MG RESISTOR	3.3kΩ 1/16W J		R419	RK73JB1H222J	MG RESISTOR	2.2kΩ 1/20W J	
R223	RK73HB1J180J	MG RESISTOR	18Ω 1/16W J		R420	RK73JB1H222J	MG RESISTOR	2.2kΩ 1/20W J	
R227	RK73GB2A823J	MG RESISTOR	82kΩ 1/10W J		R421	RK73JB1H222J	MG RESISTOR	2.2kΩ 1/20W J	
R228	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J		R422	RK73JB1H222J	MG RESISTOR	2.2kΩ 1/20W J	
R230	RK73HB1J221J	MG RESISTOR	220Ω 1/16W J		R423	RK73JB1H222J	MG RESISTOR	2.2kΩ 1/20W J	
R233	RK73HB1J392J	MG RESISTOR	3.9kΩ 1/16W J		R424	RK73JB1H222J	MG RESISTOR	2.2kΩ 1/20W J	
R234	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J		R425	RK73JB1H222J	MG RESISTOR	2.2kΩ 1/20W J	
R237	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J		R426	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
R244	RK73HB1J273J	MG RESISTOR	27kΩ 1/16W J		R427	RK73JB1H222J	MG RESISTOR	2.2kΩ 1/20W J	
R245	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J		R428	RK73JB1H220J	MG RESISTOR	22Ω 1/20W J	
R246	RK73HB1J473J	MG RESISTOR	47kΩ 1/16W J		R429	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J	
R247	RK73HB1J470J	MG RESISTOR	47Ω 1/16W J		R430	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R248	R92-3756-05	MG RESISTOR	0.22Ω 1/3W		R431	RK73HB1J223J	MG RESISTOR	22kΩ 1/16W J	
R249	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J		R432	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R250	R92-3756-05	MG RESISTOR	0.22Ω 1/3W		R433	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R251	RK73HB1J270J	MG RESISTOR	27Ω 1/16W J		R434	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J	
R252	RK73HH1J472D	MG RESISTOR	4.7kΩ 1/16W D		R435	RK73JB1H105J	MG RESISTOR	1MΩ 1/20W J	
R253	RK73HH1J472D	MG RESISTOR	4.7kΩ 1/16W D		R436	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R255	RK73HH1J393D	MG RESISTOR	39kΩ 1/16W D		R437	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R256	RK73HH1J682D	MG RESISTOR	6.8kΩ 1/16W D		R438	RK73GH2A49R9D	MG RESISTOR	49.9Ω 1/10W D	
R257	RK73HB1J221J	MG RESISTOR	220Ω 1/16W J		R439	RK73HH1J102D	MG RESISTOR	1kΩ 1/16W D	
R258	RK73HB1J332J	MG RESISTOR	3.3kΩ 1/16W J		R440	RK73HH1J102D	MG RESISTOR	1kΩ 1/16W D	
R259	RK73HB1J153J	MG RESISTOR	15kΩ 1/16W J		R442	RK73JB1H472J	MG RESISTOR	4.7kΩ 1/20W J	
R260	RK73HB1J392J	MG RESISTOR	3.9kΩ 1/16W J		R443	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R264	RK73HH1J682D	MG RESISTOR	6.8kΩ 1/16W D		R444	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J	
R265	RK73HH1J393D	MG RESISTOR	39kΩ 1/16W D		R445	RK73JB1H472J	MG RESISTOR	4.7kΩ 1/20W J	
R266	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J		R446	RK73HB1J100J	MG RESISTOR	10Ω 1/16W J	
R268	RK73HB1J104J	MG RESISTOR	100kΩ 1/16W J		R447	RK73JB1H222J	MG RESISTOR	2.2kΩ 1/20W J	
R269	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J		R448	RK73JB1H222J	MG RESISTOR	2.2kΩ 1/20W J	
R301	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J		R449	RK73JB1H472J	MG RESISTOR	4.7kΩ 1/20W J	
R302	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J		R450	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J	
R303	RK73HB1J821J	MG RESISTOR	820Ω 1/16W J		R451	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R304	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J		R452	RK73GB2A000J	MG RESISTOR	0Ω 1/10W J	
R306	RK73HB1J821J	MG RESISTOR	820Ω 1/16W J		R453	RK73JB1H101J	MG RESISTOR	100Ω 1/20W J	
R310	RK73HB1J471J	MG RESISTOR	470Ω 1/16W J		R461	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R312	RK73HB1J5R6J	MG RESISTOR	5.6Ω 1/16W J		R462	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R313	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J		R463	RK73HH1J104D	MG RESISTOR	100kΩ 1/16W D	
R315	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R464	RK73HH1J103D	MG RESISTOR	10kΩ 1/16W D	
R318	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R466	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R325	RK73HH1J473D	MG RESISTOR	47kΩ 1/16W D		R467	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R330	RK73HH1J273D	MG RESISTOR	27kΩ 1/16W D		R468	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R331	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R469	RK73JB1H101J	MG RESISTOR	100Ω 1/20W J	
R332	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J		R470	RK73JB1H101J	MG RESISTOR	100Ω 1/20W J	
R333	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		R479	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R335	RK73HB1J681J	MG RESISTOR	680Ω 1/16W J		R480	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R336	RK73HB1J681J	MG RESISTOR	680Ω 1/16W J		R601	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R351	RK73JB1H101J	MG RESISTOR	100Ω 1/20W J		R602	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R352	RK73JB1H101J	MG RESISTOR	100Ω 1/20W J		R603	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R353	RK73JB1H101J	MG RESISTOR	100Ω 1/20W J		R604	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R354	RK73HB1J151J	MG RESISTOR	150Ω 1/16W J		R605	RK73HB1J471J	MG RESISTOR	470Ω 1/16W J	
R355	RK73HB1J390J	MG RESISTOR	39Ω 1/16W J		R606	RK73HB1J471J	MG RESISTOR	470Ω 1/16W J	
R356	RK73HB1J151J	MG RESISTOR	150Ω 1/16W J		R607	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	

△ Symbol No.	Part No.	Part Name	Description	Local	△ Symbol No.	Part No.	Part Name	Description	Local
R608	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J		L207	LK73H0AM6N8J	M.CHIP INDUCTOR 6.8nH		
R609	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J		L208	LK73H0AM6N8J	M.CHIP INDUCTOR 6.8nH		
R610	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J		L209	LK73H0AM1N0S	M.CHIP INDUCTOR 1nH		
R611	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J		L211	LB73G0AM-004	CHIP FERRITE		
R612	RK73HB1J822J	MG RESISTOR	8.2kΩ 1/16W J		L212	LK73H0AM5N6S	M.CHIP INDUCTOR 5.6nH		
R613	RK73HB1J474J	MG RESISTOR	470kΩ 1/16W J		L213	LR79Z0DC39N9J	CHIP INDUCTOR 39.9nH		
R635	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J		L214	LB73F0AW-002	CHIP FERRITE		
R636	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		L215	L34-4650-05	AIR CORE COIL		
R637	RK73JB1H103J	MG RESISTOR	10kΩ 1/20W J		L216	L34-4650-05	AIR CORE COIL		
R638	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		L217	L34-4650-05	AIR CORE COIL		
R639	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		L218	LR79Z0CA39NG	CHIP INDUCTOR 39nH		
R650	RK73HB1J683J	MG RESISTOR	68kΩ 1/16W J		L301	LK73H0AM18NJ	M.CHIP INDUCTOR 18nH		
R652	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J		L302	LR79G0CQ6N8C	CHIP INDUCTOR		
R654	RK73GB2A471J	MG RESISTOR	470Ω 1/10W J		L303	LK73H0AMR27J	M.CHIP INDUCTOR		
R656	RK73PB2H1R2J	MG RESISTOR	1.2Ω 1/2W J		L304	LK73H0AM18NJ	M.CHIP INDUCTOR 18nH		
R659	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J		L307	LR79G0CQ5N6C	CHIP INDUCTOR		
R660	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J		L308	LK73H0AM3N6S	M.CHIP INDUCTOR		
R661	RK73JB1H104J	MG RESISTOR	100kΩ 1/20W J		L309	LR79G0CQ12NG	CHIP INDUCTOR		
R662	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J		L311	LR79G0CQ13NG	CHIP INDUCTOR		
R663	RK73HB1J471J	MG RESISTOR	470Ω 1/16W J		L312	LR79G0CQ12NG	CHIP INDUCTOR		
R664	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J		L314	LR79G0CQ10NG	CHIP INDUCTOR		
R665	RK73JB1H102J	MG RESISTOR	1kΩ 1/20W J		L315	LR79G0CQR22G	CHIP INDUCTOR		
R666	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J		L351	L92-0487-05	CHIP FERRITE		
R667	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J		L352	L92-0487-05	CHIP FERRITE		
R668	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J		L353	LK73H0AM10NJ	M.CHIP INDUCTOR 10nH		
R669	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J		L354	LK73H0AM27NJ	M.CHIP INDUCTOR 27nH		
R670	RK73HB1J331J	MG RESISTOR	330Ω 1/16W J		L358	L92-0487-05	CHIP FERRITE		
R671	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J		L359	L7K-0059-00	FILTER		
R672	RK73JB1H472J	MG RESISTOR	4.7kΩ 1/20W J		L361	L79-1987-05	FILTER		
R673	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		L365	L92-0487-05	CHIP FERRITE		
R674	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J		L366	L92-0487-05	CHIP FERRITE		
R675	RK73JB1H473J	MG RESISTOR	47kΩ 1/20W J		L401	LB73H0AV-002	CHIP FERRITE		
R676	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J		L402	LK73G0AQ4R7K	M.CHIP INDUCTOR 4.7uH		
R677	RK73JB1H222J	MG RESISTOR	2.2kΩ 1/20W J		L404	LB73G0AM-004	CHIP FERRITE		
L1	LB73F0AW-002	CHIP FERRITE			L405	L92-1101-05	CHIP FERRITE		
L3	LB73G0AM-004	CHIP FERRITE			L406	L92-1101-05	CHIP FERRITE		
L4	LR73Z0AY2R2M	CHIP INDUCTOR			L407	LB73G0AM-004	CHIP FERRITE		
L5	LB73G0AM-004	CHIP FERRITE			L408	LB73G0AM-004	CHIP FERRITE		
L7	LB73G0AM-004	CHIP FERRITE			L409	LB73G0AM-004	CHIP FERRITE		
L8	LB73G0AM-004	CHIP FERRITE			L410	LB73G0AM-004	CHIP FERRITE		
L9	LB73H0AV-002	CHIP FERRITE			L411	L79-1946-05	FILTER		
L10	LB73H0AV-002	CHIP FERRITE			L412	L79-1946-05	FILTER		
L11	LB73H0AV-002	CHIP FERRITE			L413	L79-1946-05	FILTER		
L12	L41-1502-70	CHIP INDUCTOR			L414	L79-1946-05	FILTER		
L13	LB73H0AV-002	CHIP FERRITE			L415	L79-1946-05	FILTER		
L111	LB73H0AY-004	CHIP FERRITE			L416	L79-1946-05	FILTER		
L113	LB73H0AY-004	CHIP FERRITE			L417	LB73H0AV-002	CHIP FERRITE		
L121	LB73H0AY-004	CHIP FERRITE			L427	LB73H0AV-002	CHIP FERRITE		
L131	LR79H0AZR10J	CHIP INDUCTOR			L428	LB73H0AV-002	CHIP FERRITE		
L132	LK73H0AMR10J	M.CHIP INDUCTOR 0.1uH			L429	LB73H0AV-002	CHIP FERRITE		
L133	LR79H0AZ3N2B	CHIP INDUCTOR			L430	LB73H0AV-002	CHIP FERRITE		
L134	L3C-0018-00	OSC-COIL			L431	LB73H0AV-002	CHIP FERRITE		
L135	LK73H0AMR10J	M.CHIP INDUCTOR 0.1uH			L601	LB73G0AM-004	CHIP FERRITE		
L136	LR79H0AZ91NG	CHIP INDUCTOR			L604	LB73G0AM-004	CHIP FERRITE		
L137	LK73H0AM39NJ	M.CHIP INDUCTOR 39nH			L605	LB73G0AM-004	CHIP FERRITE		
L138	LR79H0AZR12J	CHIP INDUCTOR			L608	LR73Z0AY100M	CHIP INDUCTOR		
L139	LK73H0AMR10J	M.CHIP INDUCTOR 0.1uH			L609	LR73Z0AY100M	CHIP INDUCTOR		
L151	LR79H0AZ91NG	CHIP INDUCTOR			L610	LB73G0AM-004	CHIP FERRITE		
L152	LK73H0AM47NJ	M.CHIP INDUCTOR 47nH			L612	LB73G0AM-004	CHIP FERRITE		
L153	LK73H0AM47NJ	M.CHIP INDUCTOR 47nH			L613	LB73G0AM-004	CHIP FERRITE		
L154	LR79H0AZ3N2B	CHIP INDUCTOR			L622	LB73G0AM-004	CHIP FERRITE		
L155	L3C-0014-00	OSC-COIL			L623	LB73G0AM-004	CHIP FERRITE		
L156	LR79H0AZR10J	CHIP INDUCTOR			L624	LB73G0AM-004	CHIP FERRITE		
L157	LR79H0AZR10J	CHIP INDUCTOR			L625	LB73G0AM-004	CHIP FERRITE		
L158	LR79H0AZ91NG	CHIP INDUCTOR			L626	LR73Z0AY100M	CHIP INDUCTOR		
L159	LK73H0AM47NJ	M.CHIP INDUCTOR 47nH			L627	LR73Z0AY100M	CHIP INDUCTOR		
L160	LB73H0AQ-002	CHIP FERRITE			L628	LB73G0AM-004	CHIP FERRITE		
L181	LK73H0AM5N1S	M.CHIP INDUCTOR 5.1nH			L629	LB73G0AM-004	CHIP FERRITE		
L182	LK73H0BX4N3B	M.CHIP INDUCTOR			L630	LB73H0AV-002	CHIP FERRITE		
L191	LR79H0AZ4N1B	CHIP INDUCTOR			L631	LB73H0AV-002	CHIP FERRITE		
L192	LR79H0AZ4N1B	CHIP INDUCTOR			L632	LB73G0AM-004	CHIP FERRITE		
L201	LR79Z0MX12N1G	CHIP INDUCTOR			L633	LB73H0AV-002	CHIP FERRITE		
L202	LR79G0CQ10NG	CHIP INDUCTOR			L634	LB73G0AM-004	CHIP FERRITE		
L203	L41-6878-43	CHIP INDUCTOR			CN1	EC720CQ-0313A	FFC FPC CONNE		
L204	LK73H0AM47NJ	M.CHIP INDUCTOR 47nH			CN2	J19-5386-05	HOLDER		
L205	LK73H0AM5N6S	M.CHIP INDUCTOR 5.6nH			CN7	-----	F.C.CONNECTOR	*Note	
L206	LK73H0AM68NJ	M.CHIP INDUCTOR 68nH			CN8	-----	TERMINAL	*Note	

△ Symbol No.	Part No.	Part Name	Description	Local
CN10	E2D-0082-00	TERMINAL		
CN201	E2D-0058-00	TERMINAL		
CN202	E2D-0058-00	TERMINAL		
CN353	G0B-0005-00	EARTH SPRING		
CN354	G0B-0005-00	EARTH SPRING		
CN356	G0B-0005-00	EARTH SPRING		
CN357	G0B-0005-00	EARTH SPRING		
CN402	EC720BP-0341A	FFC FPC CONNE		
CN602	E41-1476-05	PIN ASSY		
CN625	EC720AA-0514A	FFC FPC CONNE		
CP1	RK74HB1J101J	MG RESISTOR	100Ω 1/16W J	
CP2	RK74HB1J101J	MG RESISTOR	100Ω 1/16W J	
CP101	R9B-0010-00	ATTENUATOR		
CP102	R9B-0010-00	ATTENUATOR		
CP301	RK74HB1J100J	MG RESISTOR	10Ω 1/16W J	
CP302	RK74HB1J100J	MG RESISTOR	10Ω 1/16W J	
CP303	RK74HB1J100J	MG RESISTOR	10Ω 1/16W J	
CP351	RK74HB1J100J	MG RESISTOR	10Ω 1/16W J	
CP352	RK74HB1J100J	MG RESISTOR	10Ω 1/16W J	
CP401	RK74HB1J101J	MG RESISTOR	100Ω 1/16W J	
CP402	RK74HB1J100J	MG RESISTOR	10Ω 1/16W J	
CP403	RK74HB1J101J	MG RESISTOR	100Ω 1/16W J	
CP404	RK74HB1J101J	MG RESISTOR	100Ω 1/16W J	
CP405	RK74HB1J101J	MG RESISTOR	100Ω 1/16W J	
CP406	RK74HB1J100J	MG RESISTOR	10Ω 1/16W J	
CP408	RK74HB1J101J	MG RESISTOR	100Ω 1/16W J	
CP409	RK74HB1J101J	MG RESISTOR	100Ω 1/16W J	
CP410	RK74HB1J101J	MG RESISTOR	100Ω 1/16W J	
CP411	RK74HB1J101J	MG RESISTOR	100Ω 1/16W J	
CP412	RK74HB1J101J	MG RESISTOR	100Ω 1/16W J	
CP413	RK74HB1J101J	MG RESISTOR	100Ω 1/16W J	
CP414	RK74HB1J101J	MG RESISTOR	100Ω 1/16W J	
CP601	RK74HB1J100J	MG RESISTOR	10Ω 1/16W J	
E101	-----	SHIELDING CASE	*Note	
E301	-----	SHIELDING CASE	*Note	
E351	-----	SHIELDING CASE	*Note	
E401	-----	SHIELDING CASE	*Note	
E601	-----	SHIELDING CASE	*Note	
F1	FZA10BQ-3R15	FUSE (CC)	3.15A	
F2	FZA10BH-R50	FUSE (CC)	0.5A	
TH201	NCU15WF104F6S	N THERMISTOR		
TH401	NCU15WF104F6S	N THERMISTOR		
X351	L77-3121-05	QUARTZ CRYSTAL		
X401	L7H-0076-00	TCXO		
X402	L77-1802-05	QUARTZ CRYSTAL		

△ Symbol No.	Part No.	Part Name	Description	Local
D118	B30-2365-05	LED		
D119	B30-2365-05	LED		
D120	B30-2365-05	LED		
D141	RB521SM-30	DIODE		
D142	RB521SM-30	DIODE		
D143	RB521SM-30	DIODE		
D144	RB521SM-30	DIODE		
D180	RN262CS	DIODE		
D181	RN262CS	DIODE		
D201	NSSW206C-T865	LED		
D202	NSSW206C-T865	LED		
D221	NESM238B	LED		
D227	NESM238B	LED		
C101	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C102	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C141	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C142	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C143	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C144	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C145	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C146	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C147	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C148	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C149	CK73HBB1H471K	C CAPACITOR	470pF 50V K	
C158	CC73HCH1H220J	C CAPACITOR	22pF 50V J	
C172	CC73HCH1H040B	C CAPACITOR	4pF 50V B	
C175	CC73HCH1H1R5B	C CAPACITOR	1.5pF 50V B	
C177	CC73HCH1H010B	C CAPACITOR	1pF 50V B	
C179	CC73HCH1H1R5B	C CAPACITOR	1.5pF 50V B	
C184	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C186	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C190	CC73HCH1H010B	C CAPACITOR	1pF 50V B	
C192	CC73HCH1H121J	C CAPACITOR	120pF 50V J	
C193	CK73HBB1H102K	C CAPACITOR	1000pF 50V K	
C201	CK73HB1E104K	C CAPACITOR	0.1uF 25V K	
C202	CK73HB0J225K	C CAPACITOR	2.2uF 6.3V K	
C203	CK73HB0J225K	C CAPACITOR	2.2uF 6.3V K	
C204	CK73HXR1E474K	C CAPACITOR	0.47uF 25V K	
C205	CK73HB1E104K	C CAPACITOR	0.1uF 25V K	
C206	CK73HB1E104K	C CAPACITOR	0.1uF 25V K	
C207	CK73HB1E104K	C CAPACITOR	0.1uF 25V K	
R1	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R2	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R3	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R111	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R112	RK73HB1J561J	MG RESISTOR	560Ω 1/16W J	
R113	RK73HB1J561J	MG RESISTOR	560Ω 1/16W J	
R114	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R115	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R116	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R117	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R118	RK73HB1J122J	MG RESISTOR	1.2kΩ 1/16W J	
R119	RK73HB1J122J	MG RESISTOR	1.2kΩ 1/16W J	
R120	RK73HB1J122J	MG RESISTOR	1.2kΩ 1/16W J	
R122	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R141	RK73HB1J472J	MG RESISTOR	4.7kΩ 1/16W J	
R142	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R143	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R145	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R147	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R148	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R155	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R170	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R174	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R183	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R185	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R189	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R191	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R201	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R203	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R204	RK73GB2A221J	MG RESISTOR	220Ω 1/10W J	
R205	RK73GB2A221J	MG RESISTOR	220Ω 1/10W J	
R206	RK73HB1J101J	MG RESISTOR	100Ω 1/16W J	
R207	RK73HB1J000J	MG RESISTOR	0Ω 1/16W J	
R208	RK73HB1J103J	MG RESISTOR	10kΩ 1/16W J	
R221	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	

DISPLAY UNIT

XC1-209K-02

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

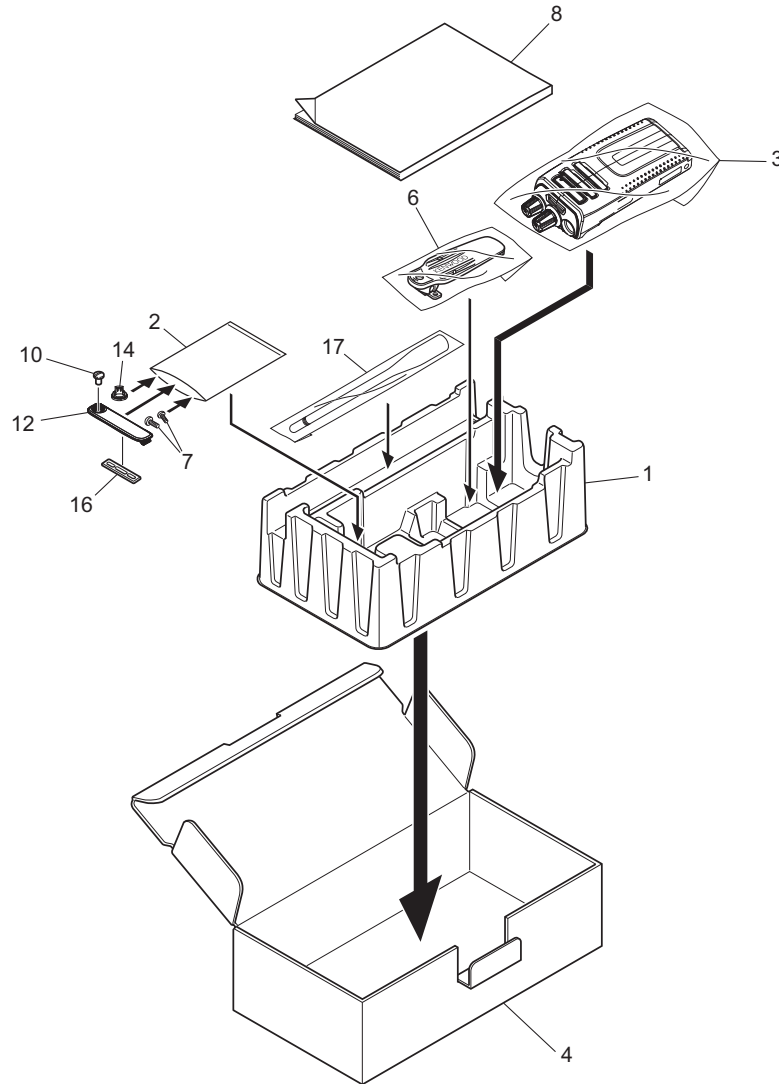
Block No. [0][2]

△ Symbol No.	Part No.	Part Name	Description	Local
IC201	TC7SZ08FE	IC		
Q141	EMD9	TRANSISTOR		
Q201	EMD9	TRANSISTOR		
Q221	LTC014EEBFS8	DIGI TRANSISTOR		
Q222	LTC014EEBFS8	DIGI TRANSISTOR		
Q223	LTC014EEBFS8	DIGI TRANSISTOR		
Q227	LTC014EEBFS8	DIGI TRANSISTOR		
Q228	LTC014EEBFS8	DIGI TRANSISTOR		
Q229	LTC014EEBFS8	DIGI TRANSISTOR		
D111	B30-2365-05	LED		
D112	B30-2365-05	LED		
D113	B30-2365-05	LED		
D114	B30-2365-05	LED		
D115	B30-2365-05	LED		
D116	B30-2365-05	LED		
D117	B30-2365-05	LED		

△ Symbol No.	Part No.	Part Name	Description	Local
R222	RK73HB1J122J	MG RESISTOR	1.2kΩ 1/16W J	
R223	RK73HB1J271J	MG RESISTOR	270Ω 1/16W J	
R227	RK73HB1J102J	MG RESISTOR	1kΩ 1/16W J	
R228	RK73HB1J122J	MG RESISTOR	1.2kΩ 1/16W J	
R229	RK73HB1J271J	MG RESISTOR	270Ω 1/16W J	
R230	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R231	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
R232	RK73HB1J222J	MG RESISTOR	2.2kΩ 1/16W J	
L101	LB73H0AV-002	CHIP FERRITE		
L102	LB73H0AV-002	CHIP FERRITE		
L151	LK73H0AM15NJ	M.CHIP INDUCTOR	15nH	
L152	LK73H0AM6N8J	M.CHIP INDUCTOR	6.8nH	
L153	LK73H0AM12NJ	M.CHIP INDUCTOR	12nH	
L156	LK73H0AM1N2S	M.CHIP INDUCTOR		
L173	LK73H0AM4N7S	M.CHIP INDUCTOR	4.7nH	
L176	LK73H0BJ3N9S	M.CHIP INDUCTOR		
L178	LK73H0BJ3N9S	M.CHIP INDUCTOR		
L187	LK73H0AM10NJ	M.CHIP INDUCTOR	10nH	
L194	LK73H0AM27NJ	M.CHIP INDUCTOR	27nH	
L201	LB73H0AV-002	CHIP FERRITE		
L202	LB73H0AV-002	CHIP FERRITE		
A151	-----	CIRCUIT MODULE	*Note	
CN201	EC720BP-0325A	FFC FPC CONNE		
CN202	EC720BP-0341A	FFC FPC CONNE		
CN301	E40-6883-05	F.C.CONNECTOR		
CP141	RK74HB1J101J	MG RESISTOR	100Ω 1/16W J	
CP201	RK74HB1J101J	MG RESISTOR	100Ω 1/16W J	
CP202	RK74HB1J101J	MG RESISTOR	100Ω 1/16W J	
CP203	RK74HB1J101J	MG RESISTOR	100Ω 1/16W J	
MIC101	T9B-0004-00	MIC ELEMENT		
S111	S70-0901-05	TACTILE PUSH SW		
S112	S70-0901-05	TACTILE PUSH SW		
S113	S70-0901-05	TACTILE PUSH SW		
S114	S70-0901-05	TACTILE PUSH SW		
S115	S70-0901-05	TACTILE PUSH SW		
S116	S70-0901-05	TACTILE PUSH SW		
S117	S70-0901-05	TACTILE PUSH SW		
S118	S70-0901-05	TACTILE PUSH SW		
S119	S70-0901-05	TACTILE PUSH SW		
S120	S70-0901-05	TACTILE PUSH SW		
S121	S70-0901-05	TACTILE PUSH SW		
S122	S70-0901-05	TACTILE PUSH SW		
S123	S70-0901-05	TACTILE PUSH SW		
S124	S70-0901-05	TACTILE PUSH SW		
S125	S70-0901-05	TACTILE PUSH SW		
S126	S70-0901-05	TACTILE PUSH SW		
S127	S70-0901-05	TACTILE PUSH SW		
S128	S70-0901-05	TACTILE PUSH SW		
S129	S70-0901-05	TACTILE PUSH SW		
S130	S70-0901-05	TACTILE PUSH SW		
S301	S70-0516-05	TACTILE PUSH SW		
S302	S70-0516-05	TACTILE PUSH SW		
S303	S70-0516-05	TACTILE PUSH SW		
S304	S70-0516-05	TACTILE PUSH SW		

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	H1C-0175-00	PACKING FIXTURE		
2	-----	PROTECTION BAG	ACC/CAP	
3	-----	PROTECTION BAG	RADIO	
4	H5A-1304-00	ITEM CARTON		
6	J29-0730-05	HOOK	ACC-KBH-11	
7	N09-6585-15	SPECIAL SCREW	ACC-HOOK(x2)	
8	B5A-2530-10	INST.MANUAL	ACC INST Manual	
10	N08-0571-04	DRESSED SCREW	ACC-UNIV CAP	
12	B0K-0076-00	CAP	ACC-UNIV	
14	D32-0454-04	STOPPER	ACC-CH KNOB	
16	G5D-0027-00	PACKING	ACC-UNIV CAP	
17	T90-1114-05	WHIP ANTENNA	ACC KRA-38	

MEMO



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JVC KENWOOD Corporation
Communications Systems Division

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