VHF DIGITAL TRANSCEIVER

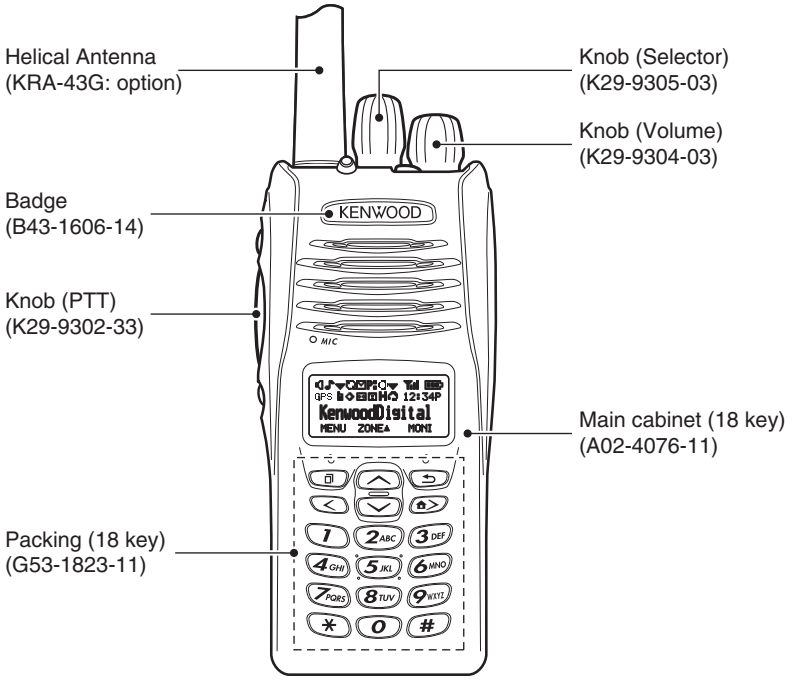
NX-210(G)

SERVICE MANUAL

KENWOOD

JVCKENWOOD Corporation

RQ020 (K) B5B-7114-00



CONTENTS

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

LF

This product uses Lead Fr ee solder.

Document Copyrights

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Firmware Copyrights

GENERAL

INTRODUCTION

SCOPE OF THIS MANUAL

This manual is intended for use by experienced technicians familiar with similar types of commercial grade communications equipment. It contains all required service information for the equipment and is current as of the publication date. Changes which may occur after publication are covered by either Service Bulletins or Manual Revisions. These are issued as required.

ORDERING REPLACEMENT PARTS

When ordering replacement parts or equipment information, the full part identification number should be included. This applies to all parts : components, kits, or chassis. If the part number is not known, include the chassis or kit number of which it is a part, and a sufficient description of the required component for proper identification.

PERSONAL SAFETY

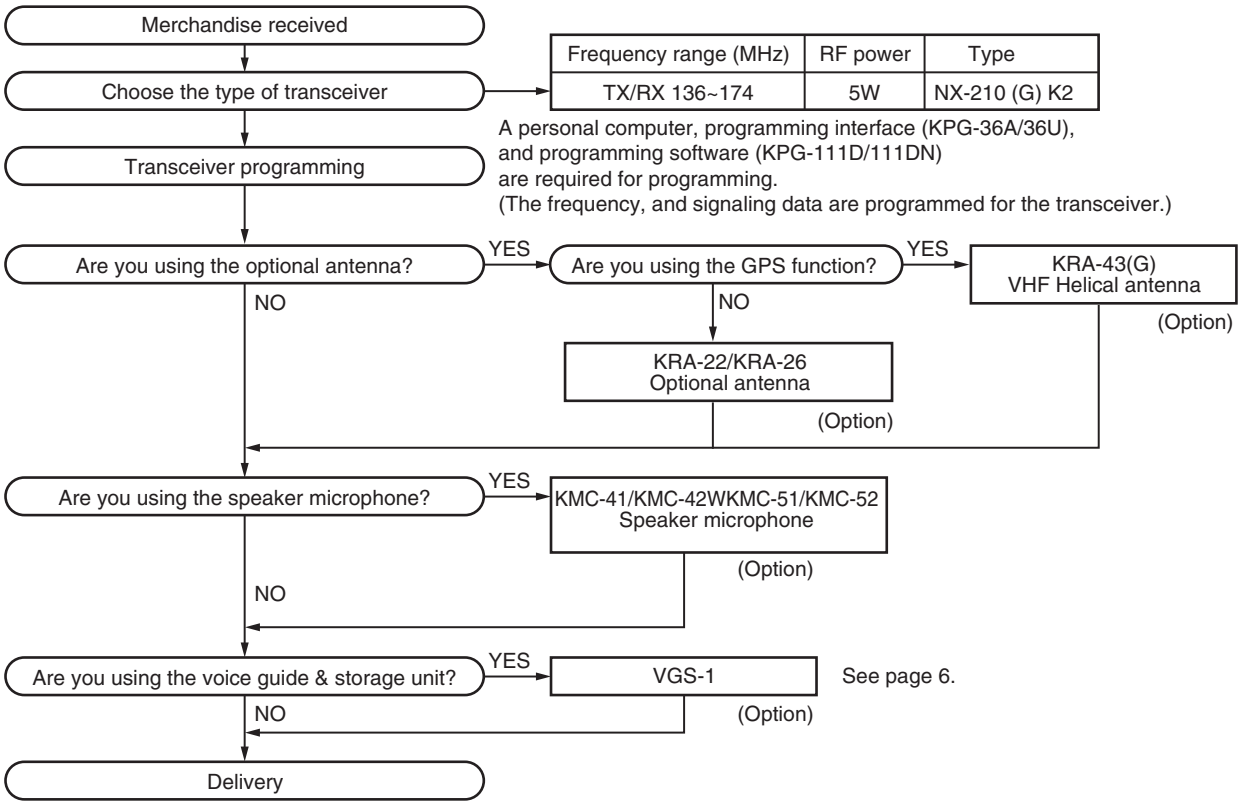
The following precautions are recommended for personal safety:

- DO NOT transmit until all RF connectors are verified secure and any open connectors are properly terminated.
- SHUT OFF and DO NOT operate this equipment near electrical blasting caps or in an explosive atmosphere.
- This equipment should be serviced by a qualified technician only.

SERVICE

This transceiver is designed for easy servicing. Refer to the schematic diagrams, printed circuit board views, and alignment procedures contained within.

SYSTEM SET-UP

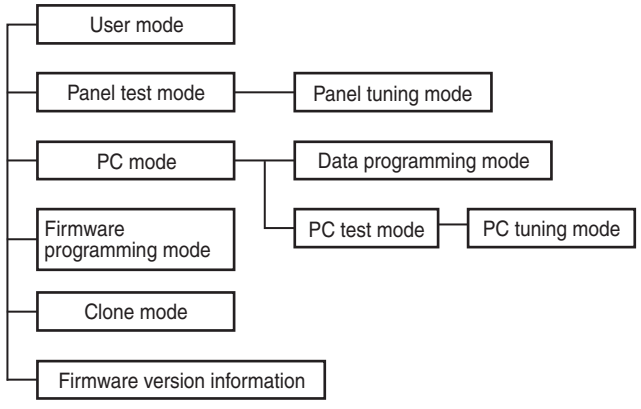


Frequency range (MHz)	RF power	Type
TX/RX 136~174	5W	NX-210 (G) K2

A personal computer, programming interface (KPG-36A/36U), and programming software (KPG-111D/111DN) are required for programming.
(The frequency, and signaling data are programmed for the transceiver.)

REALIGNMENT

1. Modes



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. See pages 45 to 57.
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.
Firmware version information	Used to confirm the internal firmware version.

REALIGNMENT

2. How to Enter Each Mode

Mode	Operation
User mode	Power ON
Panel test mode	[⮌] + Power ON
PC mode	Received commands from PC
Panel tuning mode	[Panel test mode] + [🗍]
Firmware programming mode	[🗍] + Power ON
Clone mode	[<] + Power ON
Firmware version information	[Side1] + Power ON

3. Panel Test Mode

Setting method refer to ADJUSTMENT.

4. Panel Tuning Mode

Setting method refer to ADJUSTMENT.

5. PC Mode

5-1. Preface

The transceiver is programmed by using a personal computer, programming interface (KPG-36A/36U), and FPU (programming software).

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

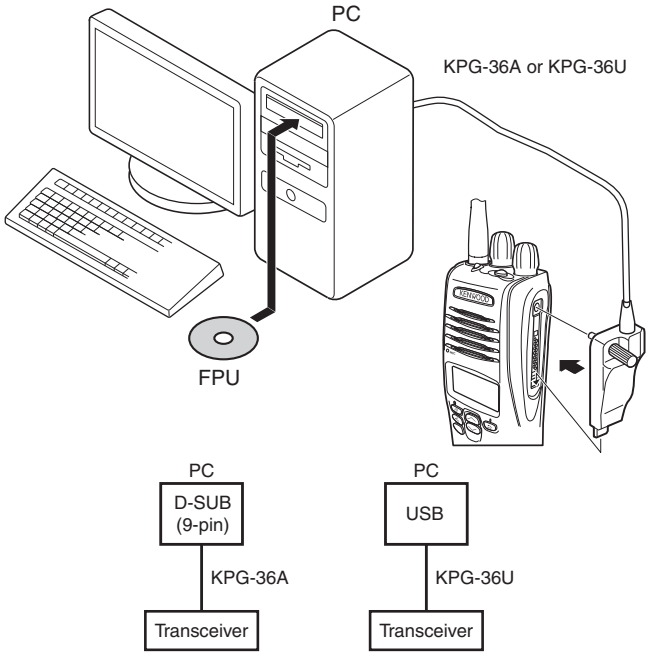


Fig. 1

5-2. Connection procedure

1. Connect the transceiver to the computer using the interface cable (KPG-36A/36U), and FPU (programming software).

Note:

- You must install the KPG-36U driver in the computer to use the USB programming interface cable (KPG-36U).

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

Note:

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

5-3. KPG-36A description (PC programming interface cable: Option)

The KPG-36A is required to interface the transceiver to the computer. It has a circuit in its D-sub connector (KPG-36A: 9-pin) case that converts the RS-232C logic level to the TTL level.

The KPG-36A connects the universal connector of the transceiver to the RS-232C serial port of the computer.

5-4. KPG-36U description (USB programming interface cable: Option)

The KPG-36U is a cable which connects to a USB port on a computer.

When using the KPG-36U, install the supplied CD (with driver software) in the computer. The KPG-36U driver runs under Windows XP, Vista ,7 or 8.

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

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

(This URL may change without notice.)

5-5. Programming software : KPG-111D/111DN (ver.4.40 or later) description

The FPU is the programming software for the transceiver supplied on a CD. This software runs under Windows XP , Vista ,7 and 8 on a PC.

The data can be input to or read from the transceiver and edited on the screen. The programmed or edited data can be printed out. It is also possible to tune the transceiver.

6. Firmware Programming Mode

6-1. Preface

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

REALIGNMENT

6-2. Connection procedure

Connect the transceiver is using a personal computer , programming interface (KPG-36A/36U), and FPU(programming software).

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

6-3. Programming

1. Start up the firmware programming software (Fpro.exe (ver. 6.2 or later)). The Fpro.exe exists in the KPG-111D/111DN installed holder.
2. Set the communications speed (normally, 115200 bps) and communications port in the configuration item.
3. Set the firmware to be updated by File name item.
4. Press and hold the [▯] key while turning the transceiver power ON. Then, the orange LED on the transceiver lights and "PROGRAM 115200" is displayed.
5. Check the connection between the transceiver and the personal computer, and make sure that the transceiver is in the Program mode.
6. Press "write" button in the window. When the transceiver starts to receive data, the [LOADING] display lights.
7. If writing ends successfully, the checksum is calculated and a result is displayed.
8. If you want to continue programming other transceivers, repeat steps 4 to 7.

Note:

This mode cannot be entered if the Firmware Programming mode is set to Disable in the Programming software.

6-4. Function

1. If you press the [Side2] key while "PROGRAM 115200" is displayed, the display changes to "PROGRAM 19200" (The LED blinks green) to indicate that the write speed is low speed (19200 bps). If you press the [Side2] key again while "PROGRAM 19200" is displayed, the display changes to "PROGRAM 38400" (The LED lights red and orange alternatively). If you press the [Side2] key again while "PROGRAM 38400" is displayed, the display changes to "PROGRAM 57600" (The LED blinks orange). If you press the [Side2] key again while "PROGRAM 57600" is displayed, the display returns to "PROGRAM 115200" (The LED lights orange).
2. If you press the [Side1] key while "PROGRAM 115200" is displayed, the checksum is calculated, and a result is displayed. If you press the [Side1] key again while the checksum is displayed, "PROGRAM 115200" is redisplayed.

Note:

Normally, write in the high-speed mode.

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 transmit transceiver is the source and the receive transceiver is a target).

The following data cannot be cloned.

- Tuning data
- Embedded message with password
- Model name data
- ESN (Electronic Serial Number) data

Note:

The following data can be cloned.

- Fleet (own)/ID (own) for FleetSync
- Unit ID (own) for NXDN

Key guide on the Read authorization password input screen.

- CONFRM ([▯] key): The password confirmation
- DELETE ([⮌] key): Delete the least digit from the current password number (Press and hold to delete all password numbers)
- SELECT ([▯] key): Determine the least digit of the password number

1. Press and hold the [<] key while turning the transceiver power ON. If the Read authorization password is set to the transceiver, the transceiver displays "CLONE LOCK". If the password is not set, the transceiver displays "CLONE MODE".
2. When you enter the correct password, and "CLONE MODE" is displayed, the transceiver can be used as the cloning source. The following describes how to enter the password.
3.

- How to enter the password using the keypad;
  If one of keys 0 to 9 is pressed while the "CLONE LOCK" is displayed, the pressed number is displayed on the LCD.
  Each press of the key shifts the display in order to the left.
  When you enter the password and press the [▯] or [*] key, "CLONE MODE" is displayed if the entered password is correct. If the password is incorrect, "CLONE LOCK" is redisplayed.
- How to enter the password using the [∧] and [∨] keys;
  If the [∧] / [∨] key is pressed while "CLONE LOCK" is displayed, the Read authorization password input screen is displayed.
  If the [∧] key or [∨] key is pressed while the Read authorization password input screen is displayed, the number (0 to 9) blinks on the LCD. When you press the [▯] key, the currently selected number is determined. If you press the [▯] key after entering the password in this procedure, "CLONE MODE" is displayed if the entered password is correct. If the password is incorrect, "CLONE LOCK" is redisplayed.

4. Power ON the target transceiver.

REALIGNMENT

5. Connect the cloning cable (part No. E30-3325-05) to the universal connectors on the source and target.
6. Press the [▣] key 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 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 [▣] key 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 (overwrite password) is programmed to the target.
- "Model Name" must be same to clone the transceiver.

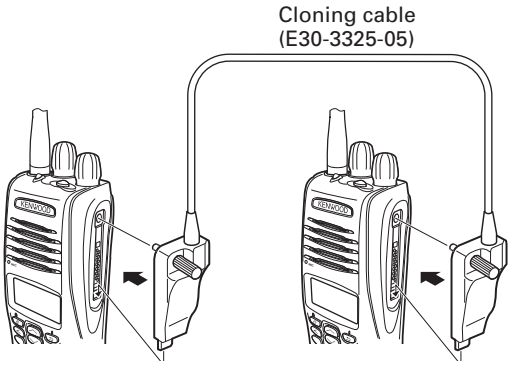


Fig. 2

8. Firmware Version Information

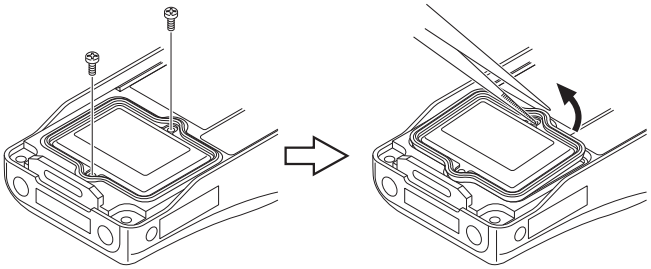
Press and hold the [Side1] key while turning the transceiver power ON and then keep pressing and holding the [Side1] key, the firmware version information appears on the LCD.

INSTALLATION

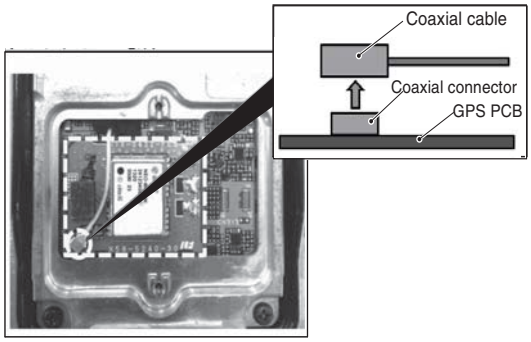
Preparation before Installing Option board

■ Removing the GPS PCB

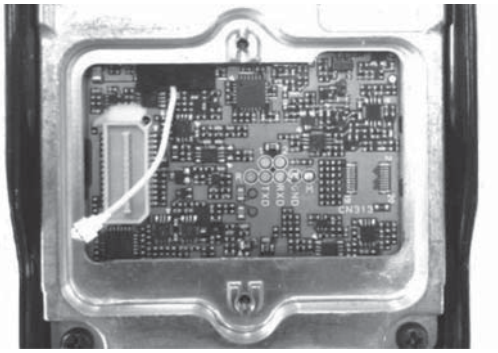
1. Remove the two screws from the cover.
2. Remove the cover by inserting the tip of a pair of tweezers into the screw hole of the cover and prying it open.



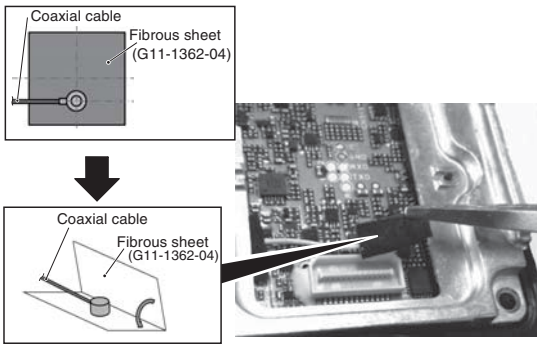
3. Remove the coaxial cable from the GPS PCB.
   Note: When you remove the coaxial cable from the GPS PCB, remove perpendicularly to the GPS PCB.



4. Remove the GPS PCB from the connector (CN321) of the TX-RX PCB.

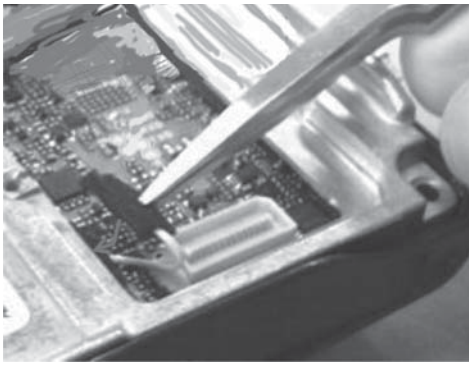


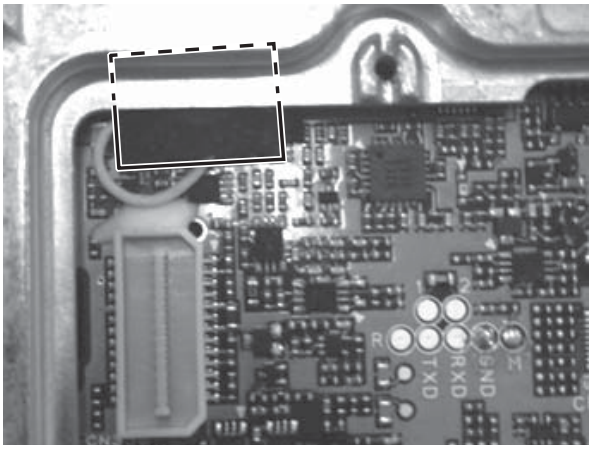
5. Affix the terminal of the coaxial connector to the fibrous sheet (G11-1362-04) as shown in the figure.
   Fold the fibrous sheet (G11-1362-04) in half, and cover the terminal of the coaxial cable as shown in the figure.



INSTALLATION

6. Insert the fibrous sheet into the slit of the holder as shown in the figure.



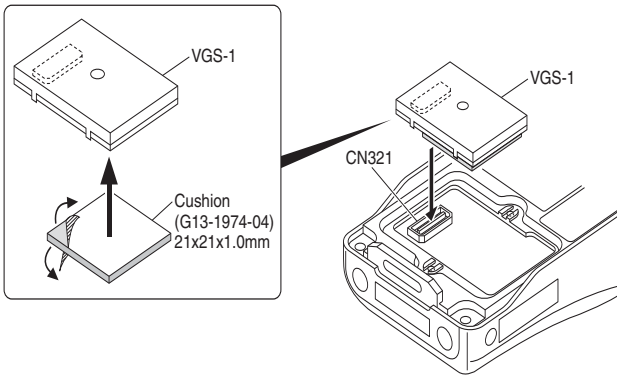


Voice Guide & Storage Unit (VGS-1: Option)

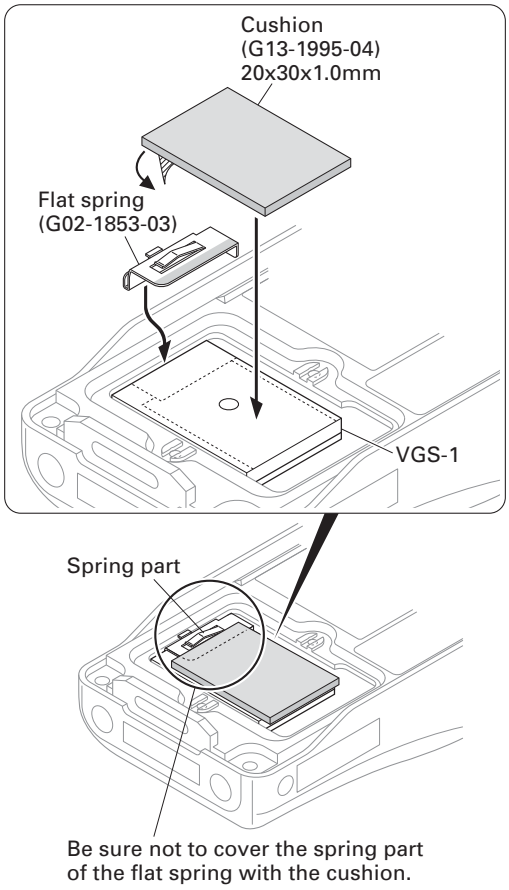
■ Installing the VGS-1

1. Attach the cushion (G13-1974-04) to the VGS-1 as shown in the figure.
   Note:
   Be sure to not cover the VGS-1 connector with the cushion.

2. Insert the VGS-1 connector into the connector (CN321) of the TX-RX PCB.



3. Insert the flat spring (G02-1853-03) between the VGS-1 and the chassis as shown in the figure.
4. Attach the cushion (G13-1995-04) on the VGS-1 so that it is attached to a part (shaded region) of the flat spring.
   Note:
   Be sure not to cover the spring part of the flat spring with the cushion.

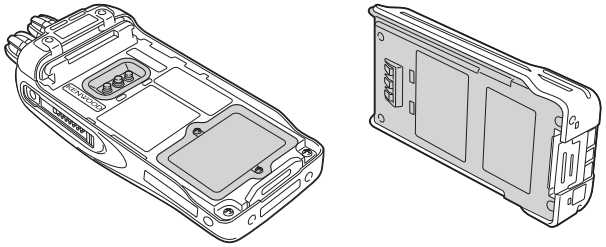


5. Reinstall the cover using the two screws removed in step 1.

DISASSEMBLY FOR REPAIR

1. Precautions for Waterproof

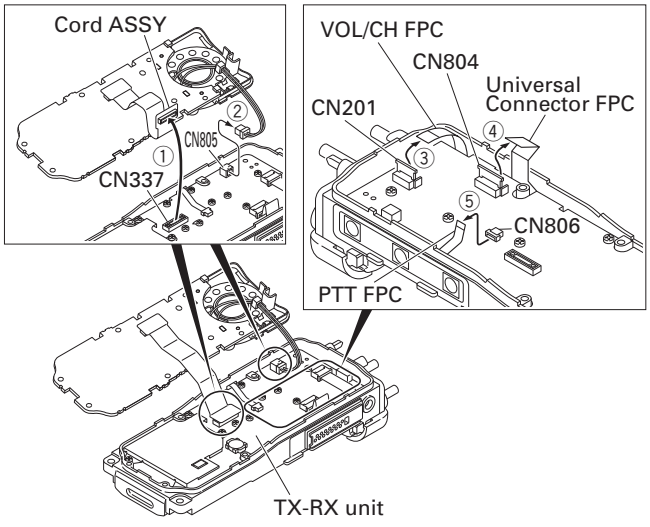
- The orange packing material on the reverse side of the transceiver is important with respect to the waterproof efficiency of the transceiver. Do not place stickers or other materials on or around the packing material shown in the figure, or on the reverse side of the battery pack. Doing so will impair 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.

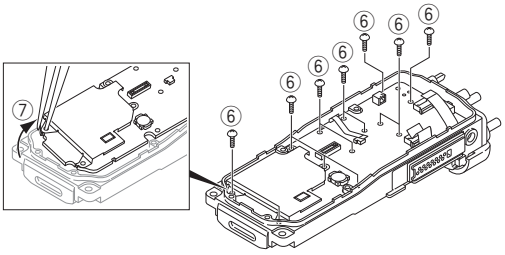


2. Precautions for Disassembly

■ Removing the TX-RX unit from the chassis

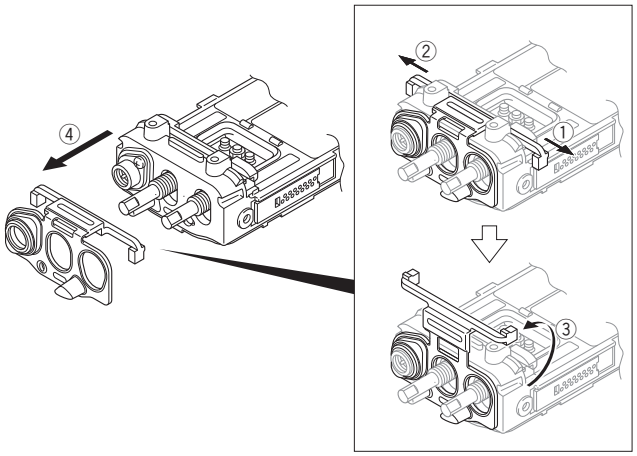
1. Remove the Cord ASSY from the connector (CN337) of the TX-RX unit ①.
2. Remove the Speaker lead wire from the connector (CN805) of the TX-RX unit ②.
3. Remove the VOL/CH FPC from the connector (CN201) of the TX-RX unit ③.
4. Remove the Universal connector FPC from the connector (CN804) of the TX-RX unit ④.
5. Remove the PTT FPC from the connector (CN806) of the TX-RX unit ⑤.
6. Remove the 14 screws ⑥.
7. Anchor the screw hole of the TX-RX unit using the tip of a pair of tweezers as shown in the figure. Then, lift the TX-RX unit to remove it from the chassis ⑦.





■ Removing the TOP packing (G53-1600-12)

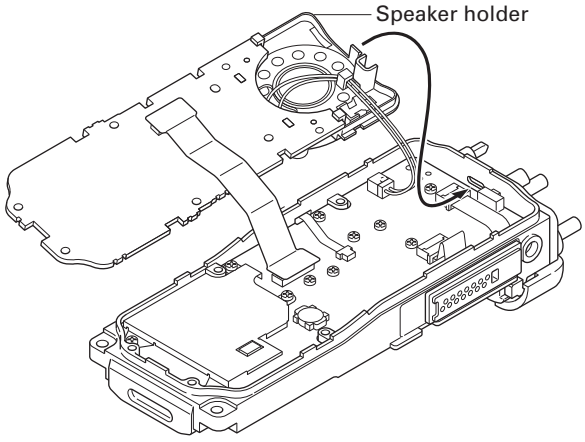
1. Pull the TOP packing to the left to remove the packing that is fit into the left groove of the chassis q.
2. Pull the TOP packing to the right to remove the packing that is fit into the right groove of the chassis w.
3. Turn back the TOP packing as shown in the figure e.
4. Remove the TOP packing r.



3. Precautions for Reassembly

■ Mounting the Display unit onto the chassis

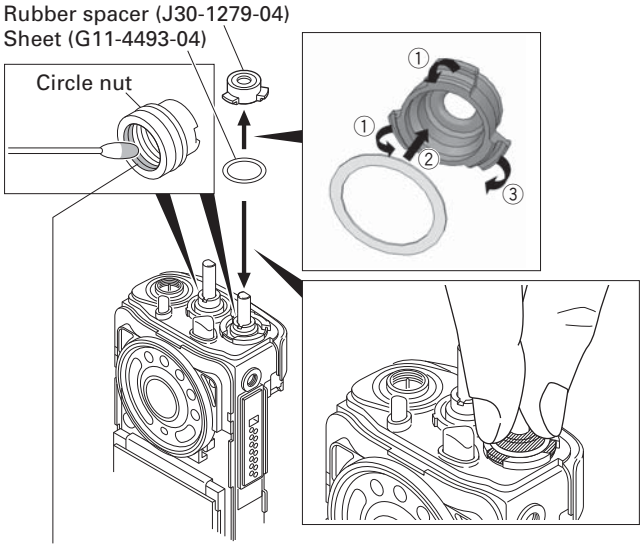
Insert the tab of the speaker holder into the hole in the upper part of the chassis.



DISASSEMBLY FOR REPAIR

■ Inserting the rubber spacer (J30-1279-04) onto the rear panel

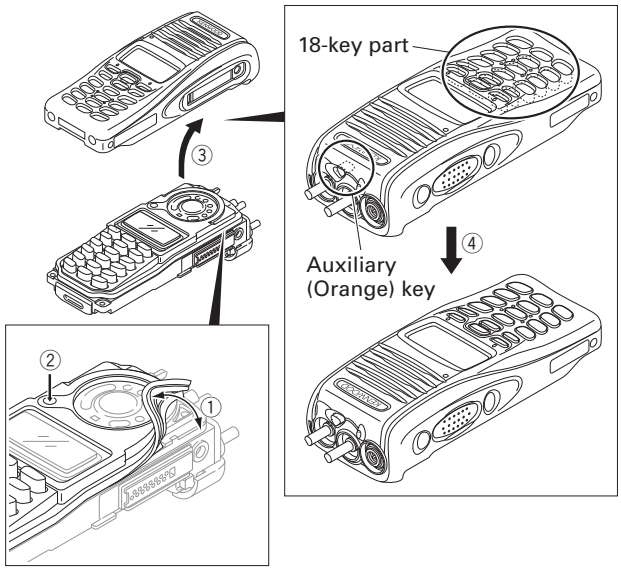
1. Bend the two convex parts of the rubber spacer inward ①, then fit the sheet into the space ②.
   Next, bend the one convex part of the rubber spacer inward ③, and insert the sheet into the rubber spacer.
2. Press the rubber spacer, using your fingers, to insert it between the rubber spacer and the rear panel without crevice.



Apply the bond (W05-0019-00) or "THREE BOND 1401B" around the inside of the circle nut before tightening the circle nut.

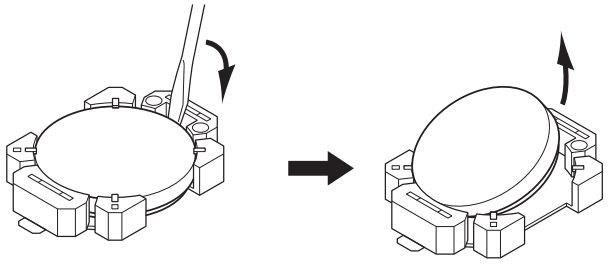
■ Mounting the chassis onto the case

1. Place the key top on the chassis. Then, fit the chassis tightly into the groove of the key top ①.
   Note:
   Confirm that the entire groove of the key top fits to the chassis tightly.
2. Press the microphone part of the key top using your finger ②.
   Note:
   Confirm that the microphone part of the key top fits tightly with the element microphone.
3. Mount the chassis onto the case ③.
   Note:
   After mounting the chassis onto the case, if the 18-key part on the key top or the Auxiliary (Orange) key part of the VOL/CH packing gets stuck inside the case as shown in the figure, return it to the normal position using a soft tipped item (e.g., your finger) ④.
   Prying it with a pointed metal tool such as forceps, may damage the key top or packing.



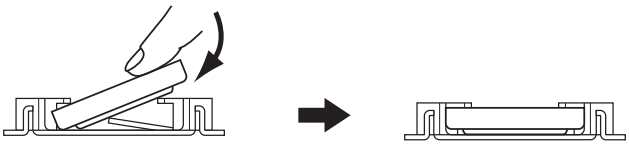
■ Removing the lithium cell (W09-0971-05)

Insert a non-conductive screwdriver to groove of one side of the socket (CN203:TX-RX unit,CN11:Sub(GPS) unit) and pry the lithium cell up from the socket.



■ Installing the lithium cell (W09-0971-05)

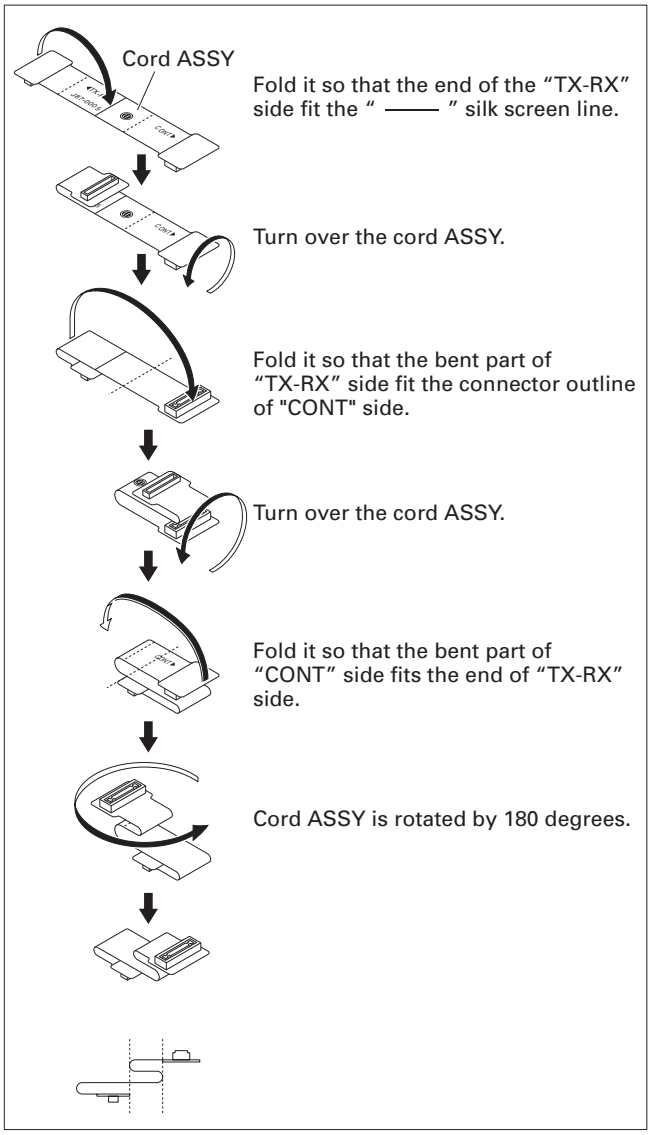
Insert a lithium cell into one side of the socket (CN203:TX-RX unit,CN11:Sub(GPS) unit).
Push the lithium cell to insert the lithium cell into the socket.

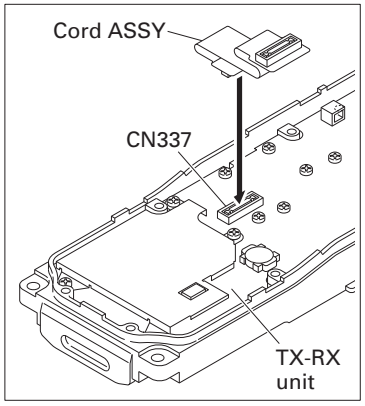


DISASSEMBLY FOR REPAIR

■ Forming the Cord ASSY

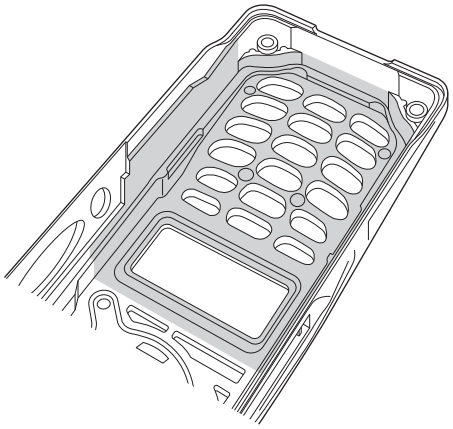
Form the Cord ASSY according to the procedure shown in the figure.





■ Correspondence when replacing the case (A02-4076-01)

Apply the dry-surf (410-0019-05) around the LCD and 18-key part of the case when replacing the case.

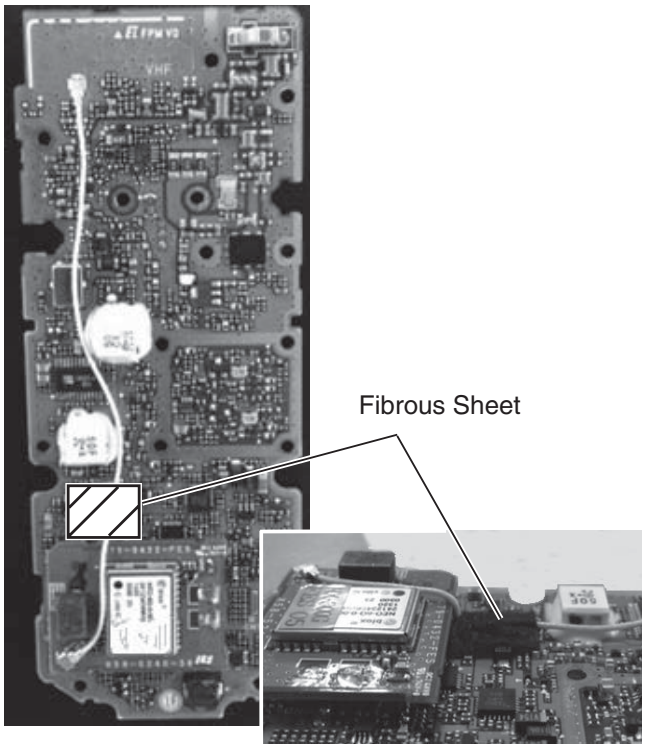


■ Forming the GPS coaxial cable (E3H-0001-00)

Form the GPS coaxial cable and stick the Fibrous Sheet (G10-1362-04)as shown in the figure.

Note:

Sub(GPS) unit (X58-5240-**10**) cannot be used.



DISASSEMBLY FOR REPAIR

■ 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.
For example, when “Main Cabinet (A02-4076-11)” is changed, “Sticker (B42-7417-04)”, “Badge (B43-1606-14)” and “Fibrous Sheet (G10-1400-04)” should be ordered and changed together because Sticker (B42-7417-04), Badge (B43-1606-14) and Fibrous Sheet (G10-1400-04) are non-reusable.

Main Parts		Assembled Sheet/ Cushion		
Part Name	**Part Number**	**Part Name**	**Part Number**	**Remark**
Main Cabinet	A02-4076-11	Sticker	B42-7417-04	“NEXEDGE” is printed.
		Badge	B43-1606-14	“KENWOOD” is printed.
		Fibrous Sheet (SP)	G10-1400-04	
LCD ASSY	B38-0923-05	Adhesive Sheet (LCD)	J99-0714-04	Used for fixing the LCD ASSY on the Illumination Guide (LCD). Also used for fixing the Illumination Guide (LCD) on the Control Unit.
Speaker	T07-0749-25	Rubber Cushion (SP)	G11-4272-14	
Chassis	A10-4132-03	Rubber Sheet (FET)	G11-4308-24	Used for stabilizing the radiation performance of the FET.
Illumination Guide (LCD)	B11-1854-02	Sheet (LCD-Holder)	G11-4495-14	
Packing (18-key)	G53-1823-11	Sheet (18-key Packing)	G11-4494-04	

CIRCUIT DESCRIPTION

1. Overview

The NX-210(G) is a VHF portable transceiver designed to operate in the frequency range of 136 to 174MHz. The unit consists of receiver, transmitter, phase-locked loop (PLL) frequency synthesizer, base band parts, power supply, and control circuits.

2. Frequency Configuration

The receiver is a double-conversion superheterodyne using the first intermediate frequency (IF) of 58.05MHz and the second IF of 450kHz. Incoming signals from the antenna are mixed with the local signal from the PLL circuit to produce the first IF of 58.05MHz. This is then mixed with the 57.6MHz second local oscillator output to produce the 450kHz second IF. The transmit signal frequency is generated by the PLL VCO, and modulated by the signal from the DSP. It is then amplified and fed to the antenna.

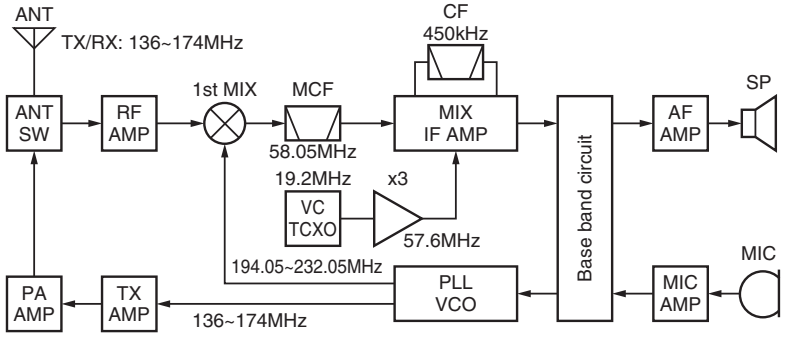


Fig. 1 Frequency configuration

3. Receiver System

3-1. RF Circuit

An incoming RF signal from the antenna terminal is passed through the antenna switch (D529, D530, D531 and D532) and then the bandpass filter (L559, L564). The bandpass filter is adjusted by a variable capacitor. The input voltage to the variable capacitor is regulated by the voltage output from the D/A converter (IC801). The signal is amplified by an RF amplifier (Q522), and passed through the bandpass filter (L546, L553). The resulting signal is applied to the first mixer (Q517), where it is mixed with the first local oscillator signal output from the frequency synthesizer to produce the first IF (58.05MHz).

3-2. IF Circuit

The first IF signal is passed through a four-pole monolithic crystal filter (XF501) to reject adjacent channel signals. The filtered first IF signal is amplified by the first IF amplifier (Q515) and then applied to the IF system IC (IC507). The IF system IC provides a second mixer, AGC amplifier, and RSSI (Received Signal Strength Indicator).

The second mixer mixes the first IF signal with the 57.6MHz of second local oscillator output and produces the second IF signal of 450kHz.

The second IF signal is passed through the ceramic filter (CF501) to reject the adjacent channel signal. The filtered second IF signal is amplified by the AGC amplifier.

The signal from the AGC amplifier is input to the ASIC (IC309) through the ceramic filter (CF502) and operational amplifier (IC506).

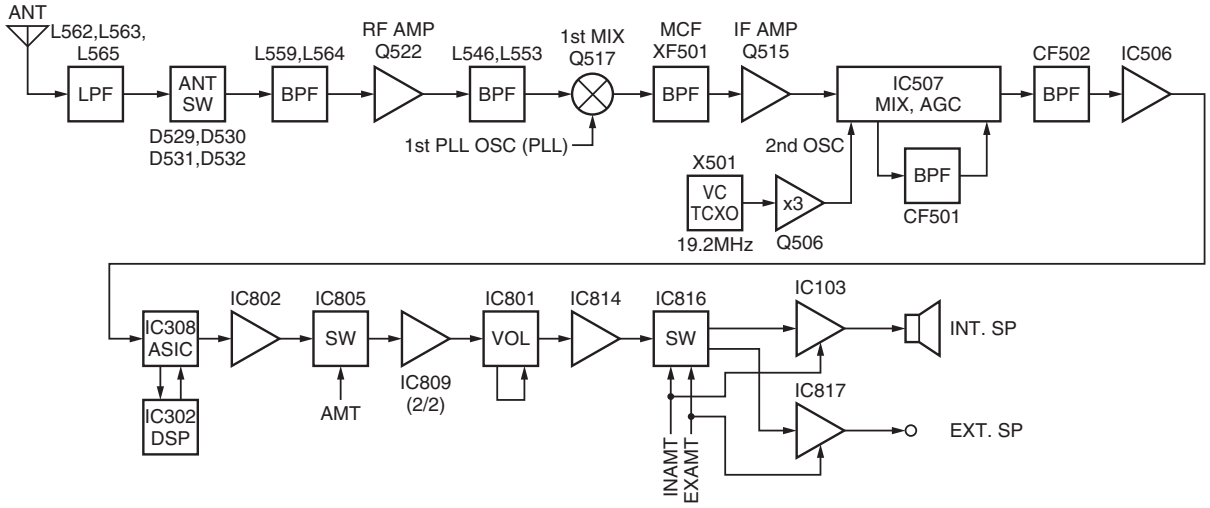


Fig. 2 RF and IF circuit

CIRCUIT DESCRIPTION

3-3. Audio Amplifier Circuit

Audio processing (high-pass filter, low-pass filter, de-emphasized and so on) at FM mode and decoding at NXDN mode are processed by DSP. The audio signal from IC309 and IC304 goes through the amplifier (IC802). The signal then goes through a mute switch (IC805), amplifier (IC809), electronic volume control (IC801), and AF amplifier (IC814).

While busy, AMT becomes Low to turn IC805 on, and the signal is fed to the AF switch. While INAMT is High, the AF switch (IC816) selects the internal speaker, and the audio signal is fed to the internal audio power amplifier (IC103), and output to the internal speaker. While EXAMT is High, the AF switch (IC816) selects the external speaker, and the audio signal is fed to the external audio power amplifier (IC817), and output to the external speaker. The power supply for IC103 and IC817 is turned on while INAMT or EXAMT is High.

The speaker is switched by the logic of the speaker switching terminal SSW on the universal connector. When the SP-MIC is not attached, SSW becomes High. IC309 detects the logic of SSW and activates either INAMT or EXAMT.

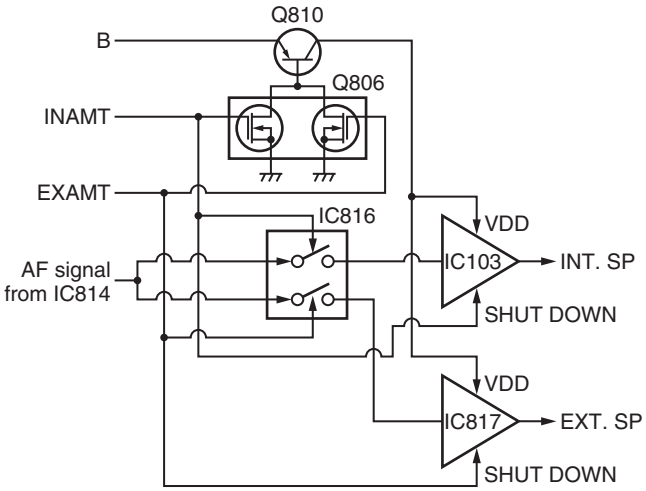


Fig. 3 Audio amplifier circuit

3-4. Squelch Circuit

It amplifies the demodulated noise signal from IC309 after filtering through the BPF circuit. Then, the amplified signal is converted to a DC signal by the detection circuit. The converted signal is fed back to IC309.

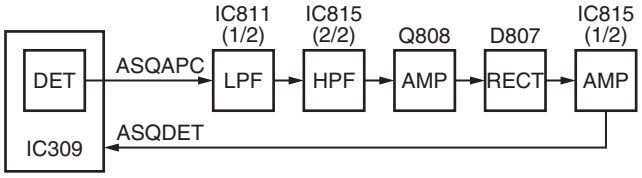


Fig. 4 Squelch circuit

4. Transmitter System

4-1. Audio Band Circuit

The signal from the internal microphone goes through the mute switch (Q812). When the SP-MIC is not attached, the microphone switching terminal (MSW) on the universal connector becomes High, and the mute switch (Q812) is turned on. When the SP-MIC is attached, MSW is connected to GND inside the SP-MIC. For this reason, Q812 is turned off, the internal microphone is muted, and only the input of the external microphone is supplied to the microphone amplifier. The signal from the microphone goes through the mute switch (Q807), and is amplified by IC813 (1/2) and limited by the AGC circuit which is composed of D801, D802, Q803 and Q804.

4-2. Base Band Circuit

The audio signal output from the base band circuit is converted to digital data with a sampling frequency of 48kHz. This digital data is sent to the DSP (IC304), and voice signals of 300Hz or lower and frequencies of 3kHz or higher are cut off and an audio range of 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 then output from IC309. In Digital mode, the audio signal is converted to the 4-Level FSK base band signal and output from IC309. The DTMF and MSK base band signals are also generated by the DSP and output by IC309.

The processed baseband signal is output from IC304 and IC309. The signal from IC304 deviates the frequency of the PLL IC (IC503). The signal from IC309 is fi ltered with the LPF (IC803), and adjusts the level with DAC (IC801), and deviates the frequency of the VCO..

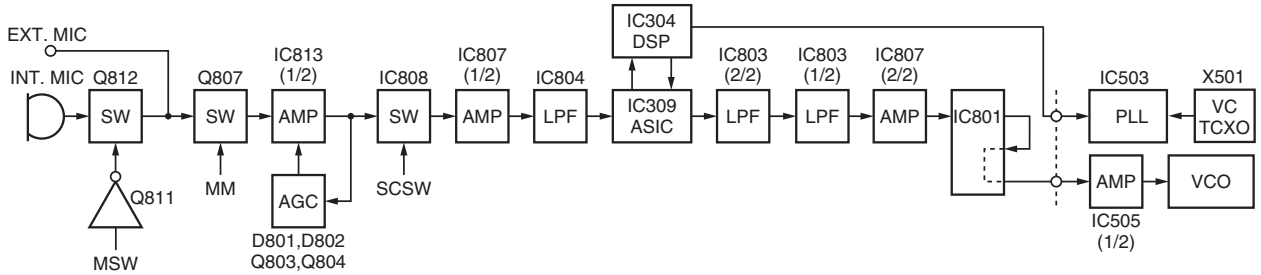


Fig. 5 Audio band and Base band circuit

CIRCUIT DESCRIPTION

4-3. VOX

IC813 (2/2) amplifies the audio signal captured in the microphone. The signal is then converted into the DC voltage, rectified by D803. The DC voltage activates the ASIC (IC309), and the VOX starts.

4-4. Drive and Final Amplifier

The signal from the T/R switch (D520 is on) is amplified by the drive amplifier (Q516 and Q518) to 23~26dBm. The output of the drive amplifier is amplified by the TX power amplifier (Q520) to 5.0W (1W when the power is low). The TX power amplifier is MOS FET. The output of the TX power amplifier is then passed through the harmonic filter (LPF) and antenna switch (D529, D530 are on) and applied to the antenna terminal.

4-5. APC Circuit

The APC circuit always monitors the current flowing through the TX power amplifier (Q520) and keeps a constant current. The voltage drop at R685, R689 and R690 is caused by the current flowing through the TX power amplifier and this voltage is applied to the differential amplifier (IC511 1/2). IC511 (2/2) compares the output voltage of IC511 (1/2) with the reference voltage from IC309, and the output of IC511 (2/2) controls the VGG of Q516, Q518 and Q520 to make the both voltages the same. The change of power high/low is carried out by the change of the reference voltage. Q523, Q525 and Q526 are turned on and Q519 and Q521 are turned off in transmit and the APC circuit is active.

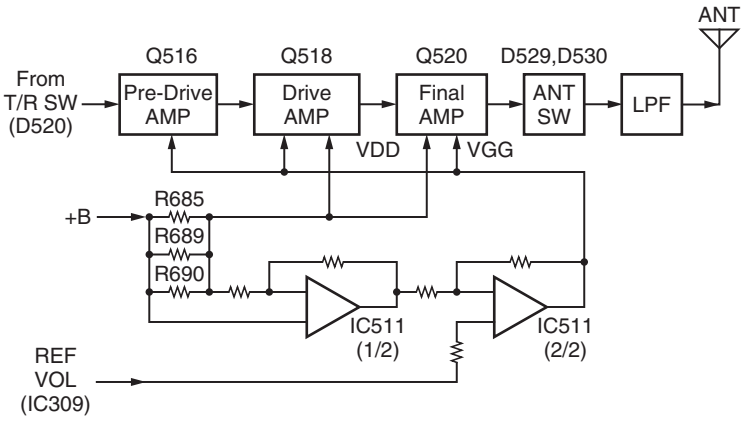


Fig. 6 Drive and final amplifier and APC circuit

5. PLL Frequency Synthesizer

5-1. VCTCXO (X501)

VCTCXO (X501) generates a reference frequency of 19.2MHz for the PLL frequency synthesizer. This reference frequency is applied to pin 9 of the PLL IC (IC503) and is connected to the IF circuit as a 2nd local signal through the Tripler (Q506). The VCTCXO oscillation frequency is determined by the DC voltage of the VC terminal. The VC voltage is fixed to 1.65V by R501 and R502.

The frequency adjustment is achieved by switching the ratio of dividing frequency that is not adjusted by the DC voltage impressed to VC. The resolution of the adjusting frequency is approximately 8Hz. Because twice the VCO output are input for the input frequency of PLL IC, the sending and receiving frequency can be adjusted by approximately 4Hz resolution.

5-2. VCO

There is a RX VCO and a TX VCO.

The TX VCO (Q509) generates a transmit carrier and the RX VCO (Q508) generates a 1st local signal. For the VCO oscillation frequency, the transmit carrier is 136 to 174 MHz and the 1st local receive signal is 194.05 to 232.05MHz.

The VCO oscillation frequency is determined by one system of operation switching terminal “/T_R” and two systems of voltage control terminals “CV” and “ASSIST”.

The operation switching terminal, “/T_R”, is controlled by the control line (/T_R) output from the ASIC (IC309). When the /T_R logic is low, the VCO outputs the transmit carrier and when it is high, it outputs a 1st local receive signal.

The voltage control terminals, “CV” and “ASSIST”, are controlled by the PLL IC (IC503) and ASIC (IC309) and the output frequency changes continuously according to the applied voltage. For the modulation input terminal, “VCO_MOD”, the output frequency changes according to the applied voltage. This is used to modulate the VCO output. “VCO_MOD” works only when “/T_R” is low.

CIRCUIT DESCRIPTION

5-3. PLL IC (IC503)

The PLL IC compares the differences in phases of the VCO oscillation frequency and the VCTCXO reference frequency, returns the difference to the VCO CV terminal and realizes the “Phase Locked Loop” for the return control. 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 ASIC is used before control by the PLL IC to bring the VCO oscillation frequency close to the desired frequency. As a result, the VCO CV voltage does not change and is always stable at approximately 2.5V.

The desired frequency is set for the PLL IC by the ASIC (IC309) through the 3-line “SDO1”, “SCK1”, “/PCS_RF” serial bus. Whether the PLL IC is locked or not is monitored by the ASIC through the “PLD” signal line. If the VCO is not the desired frequency (unlock), the “PLD” logic is low.

5-4. Doubler (Q513)

The doubler (Q513) extracts the twice harmonic component from the signal from the VCO. This twice harmonic components is then fed into PLL (IC503) through band pass filter.

Band pass filter is consists of two filter. One is for TX (L513,L517,L523) and pass band is 272.0 to 348.0MHz. The other is for RX 1st local (L522,L527,L528) and pass band is 388.1 to 464.1MHz.

5-5. Local Switch (D519, D520)

The connection destination of the signal output from the buffer amplifier (Q514) is changed with the diode switch (D520) that is controlled by the transmission power supply, 50T, and the diode switch (D519) that is controlled by the receive power supply, 50R. If the 50T logic is high, it is connected to a send-side pre-drive (Q516). If the 50T logic is low, it is connected to a receive-side mixer (Q517).

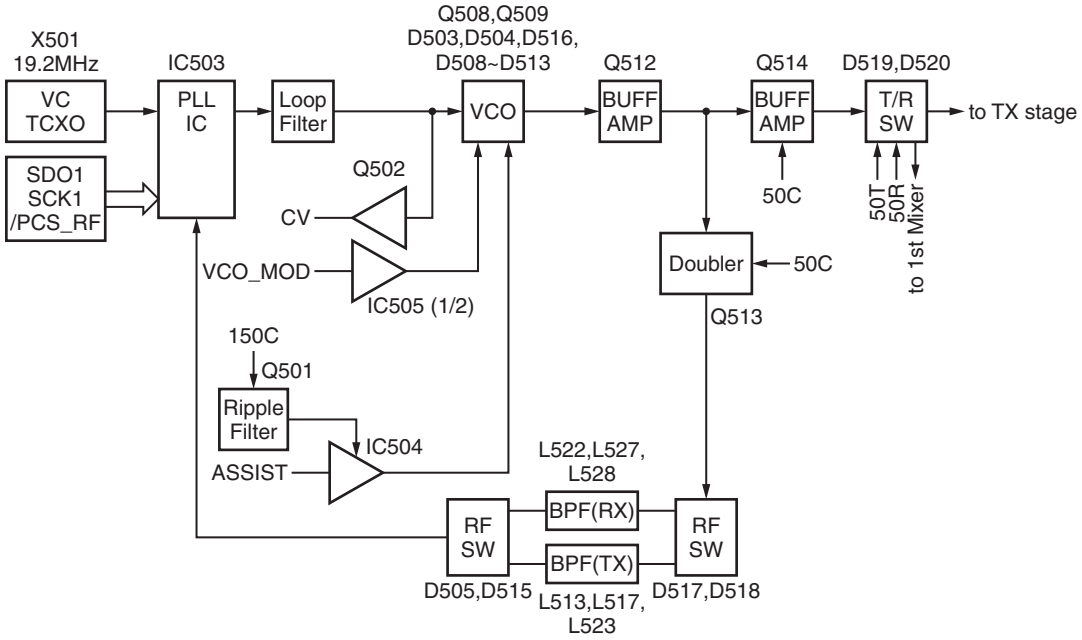


Fig. 7 PLL block diagram

6. Control Circuit

The control circuit consists of the ASIC (IC309) and its peripheral circuits. IC309 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 squelch on/off by the DC voltage from the squelch circuit.
5) Controlling the audio mute circuit by decode data input.

6-1. ASIC

The ASIC (IC309) is a 32-bit RISC processor, equipped with peripheral function and ADC/DAC.

This ASIC operates at 18.432MHz clock and 3.3V /1.5V DC. It controls the flash memory, SRAM, DSP, the receive circuit, the transmitter circuit, the control circuit, and the display circuit and transfers data to or from an external device.

CIRCUIT DESCRIPTION

6-2. Memory Circuit

The memory circuit consists of the ASIC (IC309) and the SRAM (IC305) and flash memory (IC303). The flash memory has capacity of 32M-bit that contains the transceiver control program for the ASIC 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 SRAM has capacity of 1M-bit that contains work area and data area.

■ Flash memory

Note: The flash memory stores the data that is written by the FPU (KPG-111D/111DN), tuning data (Deviation, Squelch, etc.) ,and firmware program (User mode, Test mode, Tuning mode, etc.). This data must be rewritten when replacing the flash memory.

■ SRAM (Static memory)

Note: The SRAM has temporary data area and work area. When the power supply is off, it is backed up by an internal secondary lithium battery. Therefore, the saved data is not lost.

■ Real-time clock

The clock function is based on real-time clock IC (IC309). When the power supply is off, it is backed up by an internal secondary lithium battery.

6-3. LCD

The LCD is controlled using the bus lines on the connector (CN3) of the Display unit (X54-420). It corrects the LCD contrast voltage using IC102.

6-4. Key Detection Circuit

Keys are detected using the key scan circuit in IC309. The /KEYI signals that are normally pulled down go high when any key is pressed.

6-5. Low Battery Warning

The battery voltage is divided using R231 and R232 and is detected by the ASIC (IC309). 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.

6-6. DSP

The DSP circuit consists of a DSP (IC304) and processes the base band signal. The DSP operates on an external clock of 18.432MHz (the same as the IC308), the I/O section operates at 3.3V and the core section operates at 1.5V. The DSP carries out the following processes:

- 4 Level 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
- 2-tone encoding/decoding
- Compressor/expander processing
- Voice scrambler processing
- Transmit/receive audio filtering processing
- Microphone amplifier AGC processing
- Audio mute processing
- Modulation level processing

7. Power Supply Circuit

The battery voltage (+B) is provided from the battery terminal on the TX/RX unit (X57). The battery voltage passes through the 2.5A fuse (F201), and goes to the RF final amplifier, AVR ICs (IC204, IC205, IC210, IC818), DC/DC (IC206) and voltage detector IC (IC209).

The voltage detector watches the battery voltage. If the battery voltage is 5.6V or higher, the detector outputs High. While the output of IC209 is High, IC210 and Q208 provide 3.1V (31BU) to the backup-section.

When the VOL SW is turned on, SB1 becomes high (battery voltage). The DC/DC (IC206) operates if both SB1 and the output of the detector are high. IC206 outputs 3.8V and it activates IC203 (33M), IC202 (15M), and IC201 (33A). As a result, the ASIC and DSP operate.

The SBC signal becomes High after the ASIC operates, IC205 (5A), Q201 are turned on. IC211 and IC207 operate by turning on these AVR ICs and FET switches.

The 5UC signal becomes High when an option is installed on the universal connector. Then IC818 (50U) operates.

When the /SAVE signal becomes High, IC204 (50C) operates. The output of IC204 is connected to two FET switches (Q205, Q206). When the SBC signal becomes High, IC207 (33C) operates. The FET switches are controlled by the ASIC. Q206 (50T) is turned on in transmit mode. Q205 (50R) are turned on in receive mode.

When the VOL SW is turned off, the /PSW signal becomes Low. After detecting the /PSW signal, the ASIC changes the SBC signal to Low. Then the power supplies except IC210 (31BU) stop.

CIRCUIT DESCRIPTION

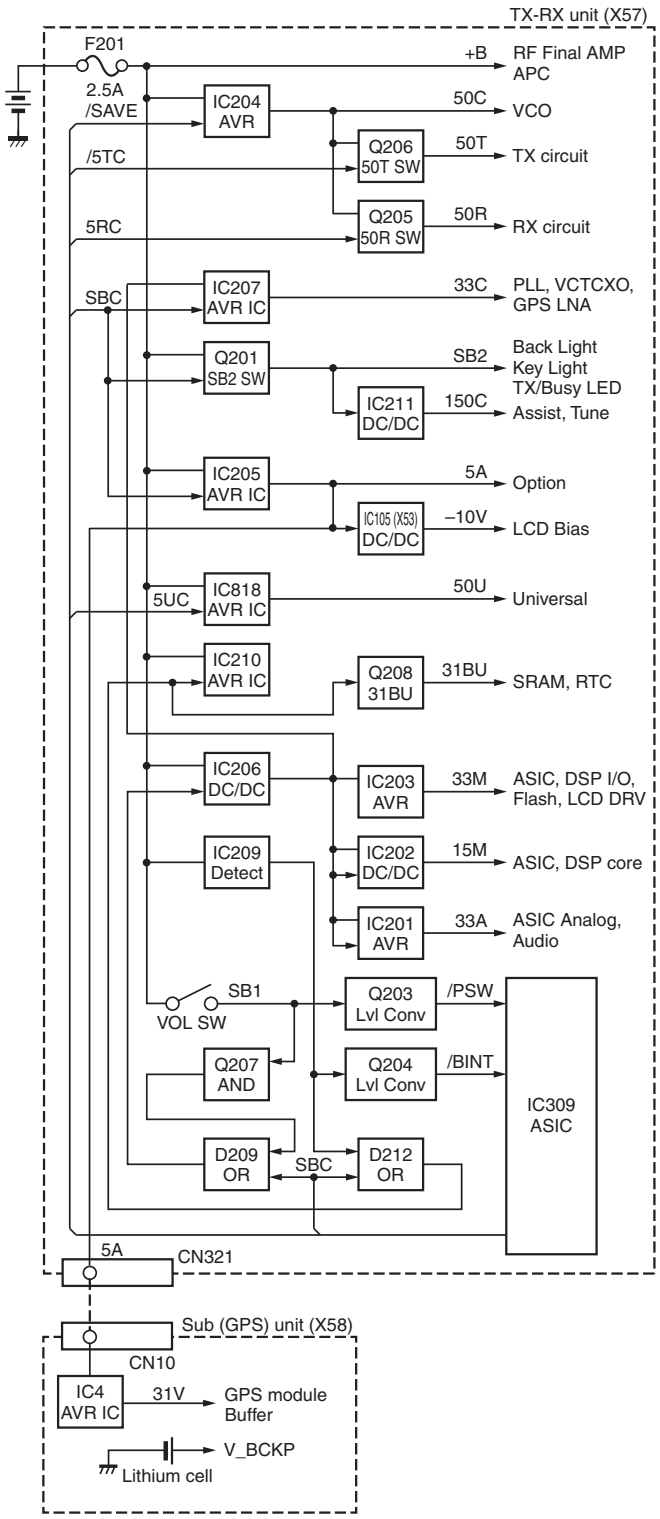


Fig. 8 Power supply circuit

8. Signaling Circuit

8-1. Encode (QT/DQT/LTR/DTMF/2-tone/MSK)

Each signaling data signal of QT, DQT, LTR, DTMF, 2-tone and MSK is generated by the DSP circuit, superposed on a modulation signal and output from IC309. The modulation balance of the QT/DQT/LTR signal is adjusted by the D/A converter (IC801) and the resulting signal is routed to the modulation input of the VCO and PLL (IC503). Each deviation of the TX QT, DQT, LTR, DTMF, 2-tone and MSK tone is adjusted by changing the output level of IC309 and the resulting signal is routed to the VCO and IC503. The RX DTMF tone is routed to the receive audio signal system, and is output from the speaker.

8-2. Decode (QT/DQT/LTR/DTMF/2-tone/MSK)

The audio signal is removed from the FM detection signal sent to the DSP circuit and the resulting signal is decoded.

9. Compander Circuit

The term “compander” means compressor and expander. The compander reduces noise by utilizing a compressor and an expander. The transceiver contains a DSP (IC304) to perform this operation. The transceiver compander can be turned on or off using the FPU.

10. GPS Circuit

The GPS information function can be used by setting it through the FPU. When the GPS information function is enabled, the AVR (IC4/GPS) is enabled by the OPT5, and is supplied to the GPS circuit.

The GPS circuit block consists of a TX-RX unit and a GPS unit (X58). The circuit from an antenna to LNA is on a TX-RX unit. This output is connected to the GPS unit by the coaxial cable.

The GPS signal of 1575.42MHz received with the antenna (with GPS band) is passed by the HPF and BPF (L17/TX-RX) and is amplified by the LNA (IC11/TX-RX).

The GPS signal is processed by the GPS IC (IC1/GPS) and input to the ASIC (IC309/TX-RX) through the UART port. The ASIC (IC309/TX-RX) processes the GPS data (NMEA) and sends the resulting information to the LCD.

The GPS IC operates in stand-alone. Operating voltage is 3.1V. When the transceiver power is off, the GPS IC will be backed up with the internal coin battery. When the battery pack is removed, the GPS IC will be backed up for about one day in a coin battery. But if the GPS IC has never had the position fixed, it will not be backed up.

COMPONENTS DESCRIPTION

Display unit (X54-4200-10)

Ref. No.	Part Name	Description
IC102	IC	LCD contrast
IC105	IC	Voltage doubling inverter
D1~4	LED	6key backlight
D5~10	LED	12key backlight
D11~14	Diode	12key control
D15~18	LED	LCD backlight

TX-RX unit (X57-9270-12)

Ref. No.	Part Name	Description
IC11	IC	LNA (GPS)
IC103	IC	Audio AMP
IC201	IC	Voltage regulator (33A)
IC202	IC	DC/DC Converter (15M)
IC203	IC	Voltage regulator (33M)
IC204	IC	Voltage regulator (50C)
IC205	IC	Voltage regulator (5A)
IC206	IC	DC/DC converter (38M)
IC207	IC	Voltage regulator (33C)
IC208	IC	50T control
IC209	IC	Reset
IC210	IC	Voltage regulator
IC211	IC	DC/DC converter
IC301	IC	Bus switch
IC302	IC	Bus switch
IC303	IC	FLASH ROM
IC304	IC	DSP
IC305	IC	SRAM
IC306	IC	Reset
IC307	IC	Buffer
IC308	IC	RTC
IC309	IC	ASIC
IC310	IC	Buffer
IC311	IC	I/O Expander
IC312	IC	IF System
IC501	IC	Temperature sensor
IC503	IC	PLL IC
IC504	IC	DC AMP for VCO tune
IC505	IC	OP AMP (VCO MOD/APC)
IC506	IC	IF AMP
IC507	IC	IF System
IC508	IC	OP AMP (RSSI/VAGC)
IC509,510	IC	DC AMP for BPF
IC511	IC	Auto power control
IC801	IC	D/A converter
IC802	IC	RX AF LPF
IC803	IC	Modulation LPF
IC804	IC	MIC AMP
IC805	IC	RX AF switch
IC806	IC	Sidetone mute
IC807	IC	MOD/MIC summing AMP
IC808	IC	MIC switch
IC809	IC	1.65V REF/RX summing AMP
IC810	IC	OPT switch
IC811	IC	APC LPF
IC812,813	IC	VOX AMP
IC814	IC	AF AMP
IC815	IC	SQL BPF/SQL DC AMP
IC816	IC	AF switch
IC817	IC	Audio AMP
IC818	IC	Voltage regulator (50U)
IC819	IC	2 input AND gate
IC820,821	IC	Dual bus buffer
Q201	Transistor	SB2 switch
Q202	FET	SB2 switch control
Q203,204	FET	Level converter
Q205	FET	50R switch
Q206	Transistor	50T switch
Q207,208	Transistor	DC switch
Q209,210	FET	DC switch
Q211	Transistor	DC switch
Q212	FET	DC/DC converter switch
Q213	Transistor	DC switch
Q214	Transistor	TX/RX LED switch
Q215	Transistor	DC switch
Q301	Transistor	LCD backlight switch
Q302	Transistor	LCD backlight switch
Q303	Transistor	12key backlight switch
Q304	FET	12key backlight switch
Q305	Transistor	12key backlight switch
Q306	FET	DC SW
Q501	Transistor	Ripple filter
Q502	FET	Buffer AMP
Q503	Transistor	Buffer AMP switch
Q504	FET	Buffer AMP switch
Q505	Transistor	Buffer AMP switch
Q506	Transistor	2nd Local tripler

COMPONENTS DESCRIPTION

Ref. No.	Part Name	Description
Q507	Transistor	Ripple filter
Q508,509	FET	VCO oscillation
Q510,511	FET	T/R switch
Q512~514	Transistor	Buffer AMP
Q515	Transistor	1'st IF AMP
Q516	FET	TX Pri-drive AMP
Q517	FET	1'st Mixer
Q518	FET	TX drive AMP
Q519	Transistor	APC switch
Q520	FET	TX final AMP
Q521	FET	APC switch
Q522	FET	RF AMP
Q523	Transistor	APC switch
Q525	FET	APC switch
Q526	Transistor	APC switch
Q801	FET	Tone switch
Q802	Transistor	OPT switch
Q803,804	Transistor	MIC AGC
Q805	FET	W/N noise switch
Q806	FET	Voltage regulator switch
Q807	FET	MIC mute
Q808	Transistor	SQL noise AMP
Q809,810	Transistor	Voltage regulator (AF AMP)
Q811	FET	MIC switch control
Q812	FET	MIC switch
Q813	FET	Level converter
D12,13	Diode	Limiter
D101,102	Zener diode	Surge absorption
D113	Diode	SP control
D201	Diode	Reverse current prevention
D202,203	Diode	Surge absorption
D204	Diode	DC/DC converter
D205	Diode	5A switch
D206	Diode	DC/DC converter
D207	Diode	Over voltage protection
D208	Diode	Speed up diode
D209	Diode	DC/DC converter control
D210	Diode	Reverse current prevention
D211	Diode	RTC BATT control
D212	Diode	DC switch control
D213	Diode	RTC BATT control
D214	LED	TX/RX LED
D301	Diode	LCD backlight switch
D302	Diode	12key backlight switch
D501,502	Diode	Speed up

Ref. No.	Part Name	Description
D503,504	Variable capacitance diode	Frequency control
D505	Diode	Buffer AMP switch
D508~513	Variable capacitance diode	Frequency control
D514	Diode	Speed up
D515	Diode	Buffer AMP switch
D516	Variable capacitance diode	TX modulation
D517,518	Diode	Buffer AMP switch
D519,520	Diode	Local switch
D523	Zener diode	Constant current circuit
D524,525	Variable capacitance diode	Vari-cap tune
D526	Zener diode	APC protect
D527	Diode	Reverse current prevention
D528	Variable capacitance diode	Vari-cap tune
D529~532	Diode	Antenna switch
D533	Variable capacitance diode	Vari-cap tune
D801~803	Diode	Detector
D804	Diode	VOX AMP
D805	Diode	PLD control
D806	Diode	SP control
D807	Diode	Noise detector
D808~814	Diode	Reverse current prevention
D815,816	Zener diode	Surge absorption
D817	Diode	Surge absorption
D818	Zener diode	Surge absorption
D819	Diode	Surge absorption
D820	Zener diode	Surge absorption

Sub (GPS) unit (X58-5240-11)

Ref. No.	Part Name	Description
IC1	Electric circuit module	GPS receiver module
IC2	IC	Buffer
IC4	IC	Voltage regulator
D2	Diode	Backflow prevention

NX-210(G)

PARTS LIST

⚠indicates safety critical components.
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

L : Scandinavia **K** : USA **P** : Canada
Y : PX (Far East, Hawaii) **T** : England **E** : Europe
C : China **X** : Australia **M** : Other Areas

NX-210 (G)
DISPLAY UNIT (X54-4200-10)

Ref. No.	Address	Parts No.	Description	Destination
			NX-210(G)	
1	1B	A02-4076-11	MAIN CABINET (18KEY)	
2	3A	A10-4132-03	CHASSIS	
3	3B	A62-1093-12	PANEL (TOP)	
5	2D	B09-0625-03	CAP ACCESSORY	
6	1A	B10-2795-02	FRONT GLASS	
7	3B	B11-1820-04	ILLUMINATION GUIDE (TX/BUSY)	
8	2A	B11-1853-34	FILTER (LCD)	
9	2A	B11-1854-02	ILLUMINATION GUIDE (LCD)	
11	1A	B38-0923-05	LCD ASSY	
12	1A	B42-7417-04	STICKER (NEXEDGE)	
13	1B	B43-1606-04	BADGE (KENWOOD)	
14	2D	B5A-0001-00	INSTRUCTION MANUAL ACCESSORY	
16	2B	E04-0416-25	RF COAXIAL RECEPTACLE (SMA)	
17	2B	E23-1104-04	TERMINAL (ANT)	
18	2A	E37-1462-05	LEAD WIRE WITH CONNECTOR (SP)	
19	3B	E58-0511-15	RECTANGULAR RECEPTACLE (SP/MIC)	
20	3B	E72-0419-23	TERMINAL BLOCK	
21	3A	E3H-0001-00	LEAD WIRE WITH CONNECTOR (GPS)	
22	3A	F07-1880-04	COVER (OP BOARD)	
23	3B	F20-3350-04	INSULATING SHEET (TX-RX PCB)	
24	3A	G10-1362-04	FIBROUS SHEET (GPS)	
25	1B	G10-1400-04	FIBROUS SHEET (SP)	
26	1A	G11-4272-14	RUBBER CUSHION (SP)	
27	3A	G11-4273-24	SHEET (PTT)	
28	3A	G11-4308-24	RUBBER SHEET (FET)	
29	1A	G11-4458-14	SHEET (SP)	
31	3B	G11-4493-04	SHEET (VOL-RING)	
32	1B	G11-4494-04	SHEET (18KEY PACKING)	
33	2A	G11-4495-14	SHEET (LCD-HOLDER)	
34	3A	G13-2020-04	CUSHION (SUB PCB)	
35	2A	G13-2068-04	CUSHION (DISPLAY PCB)	
36	3A	G13-1856-04	CUSHION (GPS)	
37	2A	G13-2293-04	CUSHION (50PIN FPC)	
38	3A	G13-2288-04	CUSHION (DC-DC)	
39	3B	G53-1600-12	PACKING (TOP)	
40	3B	G53-1601-04	PACKING (TERMINAL BLOCK)	
41	3A	G53-1602-14	PACKING (OP BOARD COVER)	
43	2B,3B	G53-1603-04	PACKING (SMA/SELECTOR O-RING)	
44	1B	G53-1823-11	PACKING (18KEY)	
46	3C	H5A-0001-00	ITEM CARTON CASE	
48	2B	J19-5478-03	HOLDER (VOL/SELECTOR)	
49	1A	J19-5529-02	HOLDER (SP)	
50	2C	J29-0730-05	BELT CLIP ACCESSORY	
51	3B	J30-1279-04	SPACER (VOL)	
52	2B	J82-0089-05	FPC (VOL/SELECTOR)	
54	3B	J82-0090-45	FPC (UNIVERSAL)	
55	3A	J82-0091-45	FPC (PTT)	
56	2A	J99-0714-04	ADHESIVE SHEET (LCD)	
58	1A	K29-9302-33	KNOB (PTT)	
59	1B	K29-9303-03	BUTTON KNOB (SIDE)	
60	1B	K29-9304-03	KNOB (VOLUME)	
61	1B	K29-9305-03	KNOB (SELECTOR)	

Ref. No.	Address	Parts No.	Description	Destination
A	2D	N08-0548-24	DRESSED SCREW ACCESSORY	
B	3B	N09-2426-14	HEXAGON HEAD SCREW (BATT-)	
C	3A	N09-6565-05	PAN HEAD SCREW (CASE/CHASSIS)	
D	3B	N14-0806-04	CIRCULAR NUT (VOL)	
E	3B	N14-0810-04	CIRCULAR NUT (SELECTOR)	
F	2A,3A	N30-2004-43	PAN HEAD MACHINE SCREW (OPB/FET)	
G	2B	N30-2604-48	PAN HEAD MACHINE SCREW (ANT)	
H	2C	N09-6585-15	PAN HEAD MACHINE SCREW (CLIP)	
J	2A,2B	N83-2005-48	PAN HEAD TAPTITE SCREW (PCB)	
K	2B	N83-2006-43	PAN HEAD TAPTITE SCREW (HOLDER)	
63	2B	R31-0652-15	VARIABLE RESISTOR (VOL)	
65	2B	S60-0430-05	ROTARY SWITCH (SELECTOR)	
67	1A	T07-0749-25	SPEAKER	
68	2A	T91-0579-05	MIC ELEMENT	
70	3A	W09-0971-05	LITHIUM CELL	
72	2A	X42-3340-10	CORD ASSY (50PIN FPC)	
		X57-9270-13	TX-RX UNIT (FOR SERVICE)	
			DISPLAY UNIT (X54-4200-10)	
D1-10		B30-2337-05	LED	
D15-18		B30-2337-05	LED	
C1		CK73HB1A104K	CHIP C 0.10UF K	
C6-10		CK73GB1E105K	CHIP C 1.0UF K	
C11,12		CK73HB1A104K	CHIP C 0.10UF K	
C14		CC73HCH1H221J	CHIP C 220PF J	
C15		CK73HB1A104K	CHIP C 0.10UF K	
C16,17		CK73HB1H471K	CHIP C 470PF K	
C20-29		CC73HCH1H470J	CHIP C 47PF J	
C33-44		CC73HCH1H470J	CHIP C 47PF J	
C119		CK73HB1A104K	CHIP C 0.10UF K	
C122		CC73HCH1H101J	CHIP C 100PF J	
C123		CS77BP1C2R2M	CHIP TNTL 2.2UF 16WV	
C125		CS77BP1C2R2M	CHIP TNTL 2.2UF 16WV	
C133		CS77BP1C2R2M	CHIP TNTL 2.2UF 16WV	
C135		CK73HB0J105K	CHIP C 1.0UF K	
C136,137		CK73HB1H102K	CHIP C 1000PF K	
C138		CC73HCH1H470J	CHIP C 47PF J	
CN3		E40-6755-05	FLAT CABLE CONNECTOR	
CN8		E40-6421-15	PIN ASSY	
R1,2		RK73HB1J122J	CHIP R 1.2K J 1/16W	
R3-5		RK73HB1J152J	CHIP R 1.5K J 1/16W	
R6-14		RK73HB1J471J	CHIP R 470 J 1/16W	
R15		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R16-23		RK73HB1J103J	CHIP R 10K J 1/16W	
R24		RK73HB1J104J	CHIP R 100K J 1/16W	
R25		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R26,27		RK73HB1J151J	CHIP R 150 J 1/16W	
R112		RK73HB1J123J	CHIP R 12K J 1/16W	
R113		RK73HB1J105J	CHIP R 1.0M J 1/16W	

PARTS LIST

DISPLAY UNIT (X54-4200-10)
TX-RX UNIT (X57-9270-12)

Ref. No.	Address	Parts No.	Description	Destination
R115		RK73HB1J104J	CHIP R 100K J 1/16W	
R133		RK73HB1J470J	CHIP R 47 J 1/16W	
R134		RK73HB1J000J	CHIP R 0.0 J 1/16W	
S1-18		S70-0509-05	TACT SWITCH	
D11-14		1SS388F	DIODE	
IC102		NJM2130F3-ZB	BI-POLAR IC	
IC105		LM2682MMX	MOS-IC	
TH101		ERTJ0EV104H	THERMISTOR (100K)	
TX-RX UNIT (X57-9270-12)				
D214		B30-2278-05	LED (RED/YELLOW)	
C2-5		CC73HCH1H470J	CHIP C 47PF J	
C18		CC73HCH1H1R5B	CHIP C 1.5PF B	
C19		CK73HB1H102K	CHIP C 1000PF K	
C20		CC73HCH1H180J	CHIP C 18PF J	
C21		CC73HCH1H010B	CHIP C 1.0PF B	
C22		CC73HCH1H121J	CHIP C 120PF J	
C23		CC73HCH1H020B	CHIP C 2.0PF B	
C24		CC73HCH1H2R5B	CHIP C 2.5PF B	
C25		CC73HCH1H120G	CHIP C 12PF G	
C106,107		CC73HCH1H101J	CHIP C 100PF J	
C118		CK73HB1H102K	CHIP C 1000PF K	
C121		CK73HB0J105K	CHIP C 1.0UF K	
C129		CK73HB1A104K	CHIP C 0.10UF K	
C131,132		CK73HB1A563K	CHIP C 0.056UF K	
C134		CK73HB1A104K	CHIP C 0.10UF K	
C201		CC73GCH1H220J	CHIP C 22PF J	
C202		CK73HB1H471K	CHIP C 470PF K	
C204,205		CK73HB1H471K	CHIP C 470PF K	
C206		CK73HB1E682K	CHIP C 6800PF K	
C207		CK73HB1H471K	CHIP C 470PF K	
C209,210		CK73HB1H471K	CHIP C 470PF K	
C212		CK73HB1H471K	CHIP C 470PF K	
C213		CK73HB0J105K	CHIP C 1.0UF K	
C214-216		CK73HB1H471K	CHIP C 470PF K	
C218		CK73GB0J475K	CHIP C 4.7UF K	
C219,220		CK73HB1A104K	CHIP C 0.10UF K	
C221,222		CK73HB0J105K	CHIP C 1.0UF K	
C223		CK73GB1C224K	CHIP C 0.22UF K	
C224		CK73HB0J105K	CHIP C 1.0UF K	
C225		CK73GB0J106K	CHIP C 10UF K	
C226		CK73HB1H471K	CHIP C 470PF K	
C227		CK73HB1A105K	CHIP C 1.0UF K	
C228		CK73HB1H102K	CHIP C 1000PF K	
C229		CS77MP1A100M	CHIP TNTL 10UF 10WV	
C230		CK73FB0J106K	CHIP C 10UF K	
C231		CK73HB1A105K	CHIP C 1.0UF K	
C232		CK73GB1E105K	CHIP C 1.0UF K	
C233		CC73HCH1H221J	CHIP C 220PF J	
C234		CK73GB1E105K	CHIP C 1.0UF K	
C235,236		CK73HB1H102K	CHIP C 1000PF K	
C237		CK73HB1E103K	CHIP C 0.010UF K	
C238,239		CK73GB1E105K	CHIP C 1.0UF K	
C240		CK73HB1H102K	CHIP C 1000PF K	
C241		CK73GB1C224K	CHIP C 0.22UF K	
C242		CK73HB1H102K	CHIP C 1000PF K	

Ref. No.	Address	Parts No.	Description	Destination
C243		CK73FB1E475K	CHIP C 4.7UF K	
C244,245		CK73GB1C224K	CHIP C 0.22UF K	
C246		CK73HB1H102K	CHIP C 1000PF K	
C247		CK73HB1E682K	CHIP C 6800PF K	
C248		CK73GB1C224K	CHIP C 0.22UF K	
C249		CK73HB0J105K	CHIP C 1.0UF K	
C250		CK73HB1H471K	CHIP C 470PF K	
C252,253		CK73GB1E105K	CHIP C 1.0UF K	
C254		CK73HB1H102K	CHIP C 1000PF K	
C255,256		CK73FB0J106K	CHIP C 10UF K	
C257		CK73GB1E105K	CHIP C 1.0UF K	
C258		CK73HB1H471K	CHIP C 470PF K	
C259		CK73GB1E105K	CHIP C 1.0UF K	
C260		CK73HB0J105K	CHIP C 1.0UF K	
C261		C92-0765-05	CHIP TNTL 4.7UF 16WV	
C262		CK73HB1A104K	CHIP C 0.10UF K	
C263		CK73GB1E105K	CHIP C 1.0UF K	
C264		CC73HCH1E181J	CHIP C 180PF J	
C265		CK73HB1H471K	CHIP C 470PF K	
C266		CC73HCH1H220J	CHIP C 22PF J	
C267,268		CK73HB1H471K	CHIP C 470PF K	
C269,270		CK73GB1E105K	CHIP C 1.0UF K	
C271		CC73HCH1H470J	CHIP C 47PF J	
C272		CK73GB1E105K	CHIP C 1.0UF K	
C301-310		CC73HCH1H470J	CHIP C 47PF J	
C315-318		CC73HCH1H470J	CHIP C 47PF J	
C321		CC73HCH1H470J	CHIP C 47PF J	
C326		CC73HCH1H470J	CHIP C 47PF J	
C327,328		CK73HB1E104K	CHIP C 0.10UF K	
C329		CK73HB1A105K	CHIP C 1.0UF K	
C330		CK73HB1E103K	CHIP C 0.010UF K	
C332		CK73HB1H102K	CHIP C 1000PF K	
C333-339		CK73HB1E104K	CHIP C 0.10UF K	
C340		CC73HCH1H101J	CHIP C 100PF J	
C341		CK73HB1A104K	CHIP C 0.10UF K	
C343		CK73HB1H102K	CHIP C 1000PF K	
C344		CK73HB1A105K	CHIP C 1.0UF K	
C345,346		CK73HB1E103K	CHIP C 0.010UF K	
C347		CK73HB1A105K	CHIP C 1.0UF	
C348		CK73HB1E104K	CHIP C 0.10UF K	
C349		CK73HB1A105K	CHIP C 1.0UF K	
C350-353		CK73HB1E104K	CHIP C 0.10UF K	
C354		CK73HB1A105K	CHIP C 1.0UF K	
C355		CC73HCH1H470J	CHIP C 47PF J	
C356		CK73HB1E103K	CHIP C 0.010UF K	
C357		CK73HB1E104K	CHIP C 0.10UF K	
C361,362		CK73HB1E104K	CHIP C 0.10UF K	
C362		CK73HB1E103K	CHIP C 0.010UF K	
C363		CS77MP1A100M	CHIP TNTL 10UF 10WV	
C364		CK73HB1E682K	CHIP C 6800PF K	
C365		CK73HB1E103K	CHIP C 0.010UF K	
C367		CK73HB1A105K	CHIP C 1.0UF K	
C368,369		CK73HB1H102K	CHIP C 1000PF K	
C371		CK73HB1E103K	CHIP C 0.010UF K	
C372		CK73HB1A105K	CHIP C 1.0UF K	
C373-375		CK73HB1E104K	CHIP C 0.10UF K	
C376		CK73HB1E682K	CHIP C 6800PF K	
C377		CK73HB1E104K	CHIP C 0.10UF K	
C378		CS77MP1A100M	CHIP TNTL 10UF 10WV	
C379		CC73HCH1H101J	CHIP C 100PF J	

PARTS LIST

TX-RX UNIT (X57-9270-12)

Ref. No.	Address	Parts No.	Description	Destination
C380		CC73HCH1H030B	CHIP C 3.0PF B	
C381,382		CK73HB1E103K	CHIP C 0.010UF K	
C383		CK73GB1E105K	CHIP C 1.0UF K	
C384-388		CK73HB1E104K	CHIP C 0.10UF K	
C389		CK73HB1E103K	CHIP C 0.010UF K	
C390		CK73GB1E105K	CHIP C 1.0UF K	
C391-394		CK73HB1E104K	CHIP C 0.10UF K	
C396		CK73GB0J475K	CHIP C 4.7UF K	
C397		CK73HB1E103K	CHIP C 0.010UF K	
C398,399		CK73HB1H102K	CHIP C 1000PF K	
C402-405		CK73GB0J106K	CHIP C 10UF K	
C501		CK73HB1E104K	CHIP C 0.10UF K	
C502		CK73HB1H471K	CHIP C 470PF K	
C503,504		CC73HCH1H101J	CHIP C 100PF J	
C506		CK73HB1C103K	CHIP C 0.010UF K	
C507		CC73HCH1H100B	CHIP C 10PF B	
C508		CK73HB1C103K	CHIP C 0.010UF K	
C509		CC73HCH1H100B	CHIP C 10PF B	
C511		CK73HB1C103K	CHIP C 0.010UF K	
C512		CC73HCH1H101J	CHIP C 100PF J	
C514		CK73HB1C103K	CHIP C 0.010UF K	
C515		CC73HCH1H101J	CHIP C 100PF J	
C516		CK73GB1E105K	CHIP C 1.0UF K	
C517-522		CC73HCH1H101J	CHIP C 100PF J	
C523		CK73HB1A104K	CHIP C 0.10UF K	
C524		CC73HCH1H101J	CHIP C 100PF J	
C525		CK73HB1A104K	CHIP C 0.10UF K	
C526		CC73HCH1H101J	CHIP C 100PF J	
C527		CK73HB1E682K	CHIP C 6800PF K	
C528,529		CC73HCH1H101J	CHIP C 100PF J	
C530		CK73HB1H471K	CHIP C 470PF K	
C531		CC73HCH1H101J	CHIP C 100PF J	
C532		CS77MA1VR15M	CHIP TNTL 0.15UF 35WV	
C533		C93-0787-05	CERAMIC 0.1UF 50WV	
C535		CS77BA1D100M	CHIP TNTL 10UF 20WV	
C538		C93-1906-05	CERAMIC 0.047UF 35WV	
C539		CK73HB1H472K	CHIP C 4700PF K	
C540		CC73HCH1H470J	CHIP C 47PF J	
C541		CK73HB0J105K	CHIP C 1.0UF K	
C542		CK73HB1H102K	CHIP C 1000PF K	
C543,544		CC73HCH1H101J	CHIP C 100PF J	
C545		CK73HB0J105K	CHIP C 1.0UF K	
C546		CK73HB1A104K	CHIP C 0.10UF K	
C547,548		CK73HB1H471K	CHIP C 470PF K	
C549		CC73HCH1H101J	CHIP C 100PF J	
C550,551		CK73HB1H471K	CHIP C 470PF K	
C552		CC73HCH1H070B	CHIP C 7.0PF B	
C553		CK73HB1A104K	CHIP C 0.10UF K	
C554		CC73HCH1H220G	CHIP C 22PF G	
C555		CK73HB1C103K	CHIP C 0.010UF K	
C556		CC73HCH1H030B	CHIP C 3.0PF B	
C557		CC73HCH1H270J	CHIP C 27PF J	
C558		CC73HCH1H470J	CHIP C 47PF J	
C559		CK73HB1A104K	CHIP C 0.10UF K	
C560,561		CC73HCH1H030B	CHIP C 3.0PF B	
C562		CK73FB0J106K	CHIP C 10UF K	
C563		CC73HCH1H100B	CHIP C 10PF B	
C564		CK73HB1A104K	CHIP C 0.10UF K	
C566		CC73HCH1H680J	CHIP C 68PF J	
C567		CK73HB1H471K	CHIP C 470PF K	

Ref. No.	Address	Parts No.	Description	Destination
C568-570		CK73HB1A104K	CHIP C 0.10UF K	
C572		CC73HCH1H180G	CHIP C 18PF G	
C573		CK73HB1H471K	CHIP C 470PF K	
C574		CC73HCH1HR75B	CHIP C 0.75PF B	
C575		CK73FB0J106K	CHIP C 10UF K	
C576		CC73HCH1H101J	CHIP C 100PF J	
C577		CC73HCH1H180G	CHIP C 18PF G	
C578		CC73HCH1H080B	CHIP C 8.0PF B	
C579		CC73HCH1H100B	CHIP C 10PF B	
C580		CC73HCH1H680J	CHIP C 68PF J	
C581,582		CC73HCH1H100B	CHIP C 10PF B	
C583		CK73GB0J475K	CHIP C 4.7UF K	
C584		CC73HCH1H1R5B	CHIP C 1.5PF B	
C585		CC73HCH1H100B	CHIP C 10PF B	
C586		CK73HB1H471K	CHIP C 470PF K	
C587		CK73GB1H103K	CHIP C 0.010UF K	
C588		CK73GB1H102K	CHIP C 1000PF K	
C589		CC73HCH1H820J	CHIP C 82PF J	
C590		CC73HCH1H020B	CHIP C 2.0PF B	
C591		CC73HCH1H180G	CHIP C 18PF G	
C592		CK73HB1H471K	CHIP C 470PF K	
C593,594		CC73HCH1H0R5B	CHIP C 0.5PF B	
C595-597		CK73HB1A104K	CHIP C 0.10UF K	
C598		CC73HCH1H100B	CHIP C 10PF B	
C599		CK73HB1H471K	CHIP C 470PF K	
C600		CK73FB0J106K	CHIP C 10UF K	
C601-603		CK73HB1H471K	CHIP C 470PF K	
C604		CK73HB1A104K	CHIP C 0.10UF K	
C605		CK73HB1C103K	CHIP C 0.010UF K	
C606		CK73HB1H102K	CHIP C 1000PF K	
C607		CK73HB1C103K	CHIP C 0.010UF K	
C608		CK73HB1A104K	CHIP C 0.10UF K	
C609		CK73HB1H471K	CHIP C 470PF K	
C611		CK73HB1H102K	CHIP C 1000PF K	
C612		CC73HCH1H100B	CHIP C 10PF B	
C613		CK73HB1H102K	CHIP C 1000PF K	
C614-616		CK73HB1A104K	CHIP C 0.10UF K	
C617		CC73HCH1H050B	CHIP C 5.0PF B	
C618		CC73HCH1H100B	CHIP C 10PF B	
C619		CK73HB1A104K	CHIP C 0.10UF K	
C620		CK73HB1H471K	CHIP C 470PF K	
C621		CK73FB1E474K	CHIP C 0.47UF K	
C622		CK73HB1C103K	CHIP C 0.010UF K	
C623		CK73HB1H102K	CHIP C 1000PF K	
C625		CK73HB1H102K	CHIP C 1000PF K	
C626		CK73HB1H471K	CHIP C 470PF K	
C627		CK73HB1C103K	CHIP C 0.010UF K	
C628		CC73HCH1H470G	CHIP C 47PF G	
C629		CK73HB1A104K	CHIP C 0.10UF K	
C630,631		CK73HB1C103K	CHIP C 0.010UF K	
C633		CC73HCH1H100B	CHIP C 10PF B	
C635		CC73HCH1H050B	CHIP C 5.0PF B	
C636		CC73HCH1H220G	CHIP C 22PF G	
C637		CC73HCH1H060B	CHIP C 6.0PF B	
C638		CK73HB1C103K	CHIP C 0.010UF K	
C639		CK73HB1H102K	CHIP C 1000PF K	
C640		CC73HCH1H470G	CHIP C 47PF G	
C641		CK73HB1H102K	CHIP C 1000PF K	
C642		CC73HCH1H270J	CHIP C 27PF J	
C643		CK73HB1C103K	CHIP C 0.010UF K	

PARTS LIST

TX-RX UNIT (X57-9270-12)

Ref. No.	Address	Parts No.	Description	Destination
C644		CC73HCH1H270J	CHIP C 27PF J	
C645		CK73FB1A475K	CHIP C 4.7UF K	
C646		CK73HB1C103K	CHIP C 0.010UF K	
C647,648		CK73HB1H102K	CHIP C 1000PF K	
C649		CC73HCH1H560J	CHIP C 56PF J	
C650		CK73HB1H471K	CHIP C 470PF K	
C651		CC73HCH1H120G	CHIP C 12PF G	
C652		CC73HCH1H100B	CHIP C 10PF B	
C653		CC73HCH1H050B	CHIP C 5.0PF B	
C655		CK73HB1A104K	CHIP C 0.10UF K	
C656		CK73HB1H471K	CHIP C 470PF K	
C657		CC73HCH1H220G	CHIP C 22PF G	
C658		CK73HB1H102K	CHIP C 1000PF K	
C659		CC73HCH1H030B	CHIP C 3.0PF B	
C660		CK73HB1C103K	CHIP C 0.010UF K	
C661-663		CK73HB1H102K	CHIP C 1000PF K	
C664		CC73HCH1H100B	CHIP C 10PF B	
C665		CK73HB1A104K	CHIP C 0.10UF K	
C666		CC73HCH1H040B	CHIP C 4.0PF B	
C667		CK73HB1H102K	CHIP C 1000PF K	
C668		CC73HCH1H270J	CHIP C 27PF J	
C669		CK73HB1H102K	CHIP C 1000PF K	
C670		CC73HCH1H070B	CHIP C 7.0PF B	
C671		CC73HCH1H220J	CHIP C 22PF J	
C678		CK73HB1H102K	CHIP C 1000PF K	
C679		CK73HB1H471K	CHIP C 470PF K	
C681		CC73HCH1H220J	CHIP C 22PF J	
C682		CC73HCH1H100B	CHIP C 10PF B	
C684		CC73HCH1H040B	CHIP C 4.0PF B	
C685		CC73HCH1H390J	CHIP C 39PF J	
C686		CK73GB1E105K	CHIP C 1.0UF K	
C687		CK73HB1H102K	CHIP C 1000PF K	
C688		CC73HCH1H470J	CHIP C 47PF J	
C690		CK73HB1H471K	CHIP C 470PF K	
C691		CK73HB1A104K	CHIP C 0.10UF K	
C692		CK73HB1H102K	CHIP C 1000PF K	
C693		CK73GB1H104K	CHIP C 0.10UF K	
C695		CC73HCH1H1R5B	CHIP C 1.5PF B	
C696		CC73HCH1H470J	CHIP C 47PF J	
C698		CC73HCH1H270J	CHIP C 27PF J	
C700		CK73HB1H471K	CHIP C 470PF K	
C701		CS77MA1A6R8M	CHIP TNTL 6.8UF 10WV	
C702		CK73HB1H102K	CHIP C 1000PF K	
C703		CC73HCH1H020B	CHIP C 2.0PF B	
C704		CK73HB1H102K	CHIP C 1000PF K	
C706		CK73HB1C103K	CHIP C 0.010UF K	
C707		CC73HCH1H220J	CHIP C 22PF J	
C710		CC73GCH1H151J	CHIP C 150PF J	
C712,713		CK73HB1H471K	CHIP C 470PF K	
C714		CK73HB1H102K	CHIP C 1000PF K	
C716		CK73HB1H102K	CHIP C 1000PF K	
C717		CK73HB1C103K	CHIP C 0.010UF K	
C718		CK73GB1E105K	CHIP C 1.0UF K	
C719,720		CK73HB1H102K	CHIP C 1000PF K	
C721		CK73GB1C104K	CHIP C 0.10UF K	
C722		CK73GB1E105K	CHIP C 1.0UF K	
C725		CK73HB1C103K	CHIP C 0.010UF K	
C727		CK73HB1H471K	CHIP C 470PF K	
C731		CK73GB1H104K	CHIP C 0.10UF K	
C734		CC73HCH1H101J	CHIP C 100PF J	

Ref. No.	Address	Parts No.	Description	Destination
C735		CK73HB1H102K	CHIP C 1000PF K	
C736		CC73GCH1H220G	CHIP C 22PF G	
C741		CC73GCH1H070B	CHIP C 7.0PF B	
C742		CC73HCH1H330J	CHIP C 33PF J	
C743		CC73HCH1H100B	CHIP C 10PF B	
C744		CC73GCH1H680G	CHIP C 68PF G	
C745		CC73HCH1H030B	CHIP C 3.0PF B	
C748		CK73HB1H471K	CHIP C 470PF K	
C749,750		CC73HCH1H180J	CHIP C 18PF J	
C751		CC73HCH1H101J	CHIP C 100PF J	
C753		CC73HCH1H020B	CHIP C 2.0PF B	
C754		CC73HCH1H180G	CHIP C 18PF G	
C755		CK73HB1H471K	CHIP C 470PF K	
C756		CK73HB1H102K	CHIP C 1000PF K	
C758		CC73GCH1H680G	CHIP C 68PF G	
C759		CC73GCH1H090B	CHIP C 9.0PF B	
C763		CC73GCH1H120G	CHIP C 12PF G	
C764		CC73HCH1H180J	CHIP C 18PF J	
C766		CC73GCH1H270G	CHIP C 27PF G	
C767		CC73GCH1H150G	CHIP C 15PF G	
C768		CC73GCH1H220G	CHIP C 22PF G	
C769		CC73HCH1H120J	CHIP C 12PF J	
C772		CC73HCH1H080B	CHIP C 8.0PF B	
C773		CC73GCH1H120G	CHIP C 12PF G	
C774		CC73GCH1H220G	CHIP C 22PF G	
C775		CC73HCH1H180J	CHIP C 18PF J	
C776		CC73HCH1H390J	CHIP C 39PF J	
C778		CC73HCH1H120J	CHIP C 12PF J	
C779		CC73GCH1H270G	CHIP C 27PF G	
C781		CC73GCH1H470G	CHIP C 47PF G	
C782		CC73GCH1H330G	CHIP C 33PF G	
C783		CC73HCH1H101J	CHIP C 100PF J	
C801		CK73HB1A104K	CHIP C 0.10UF K	
C802		CK73HB0J105K	CHIP C 1.0UF K	
C803-806		CK73HB1A104K	CHIP C 0.10UF K	
C807,808		CK73HB1E103K	CHIP C 0.010UF K	
C809		CK73HB1H122K	CHIP C 1200PF K	
C810		CK73HB1H152K	CHIP C 1500PF K	
C811		CK73HB1A104K	CHIP C 0.10UF K	
C812-814		CK73HB1E103K	CHIP C 0.010UF K	
C815		CK73HB1H152K	CHIP C 1500PF K	
C816		CK73HB1A474K	CHIP C 0.47UF K	
C817		CK73HB1A104K	CHIP C 0.10UF K	
C818		CC73HCH1E181J	CHIP C 180PF J	
C819		CK73HB1E103K	CHIP C 0.010UF K	
C820		CK73HB1H331K	CHIP C 330PF K	
C821		CK73HB1A104K	CHIP C 0.10UF K	
C823		CK73HB1H331K	CHIP C 330PF K	
C824		CK73HB1H122K	CHIP C 1200PF K	
C825,826		CK73HB1E473K	CHIP C 0.047UF K	
C827		CK73HB1A104K	CHIP C 0.10UF K	
C829		CK73HB1A104K	CHIP C 0.10UF K	
C830		CK73HB1H102K	CHIP C 1000PF K	
C832		CK73HB1E682K	CHIP C 6800PF K	
C833		CK73HB0J105K	CHIP C 1.0UF K	
C834-836		CK73HB1E103K	CHIP C 0.010UF K	
C837,838		CK73HB1A104K	CHIP C 0.10UF K	
C839,840		CC73HCH1H470J	CHIP C 47PF J	
C842		CK73HB1A474K	CHIP C 0.47UF K	
C843,844		CK73GB0J475K	CHIP C 4.7UF K	

PARTS LIST

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Ref. No.	Address	Parts No.	Description	Destination
C845		CK73HB1E103K	CHIP C 0.010UF K	
C846		CC73HCH1H470J	CHIP C 47PF J	
C847		CK73HB1A104K	CHIP C 0.10UF K	
C848		CC73HCH1H680J	CHIP C 68PF J	
C849		CC73HCH1H270J	CHIP C 27PF J	
C850		CK73HB1H332K	CHIP C 3300PF K	
C851		CK73HB1H681K	CHIP C 680PF K	
C852		CK73HB1E103K	CHIP C 0.010UF K	
C853,854		CK73HB1A104K	CHIP C 0.10UF K	
C856		CK73HB1C223K	CHIP C 0.022UF K	
C859		CK73HB1A104K	CHIP C 0.10UF K	
C860		CK73HB1E103K	CHIP C 0.010UF K	
C863		CC73HCH1H470J	CHIP C 47PF J	
C866		CK73HB0J105K	CHIP C 1.0UF K	
C867		CK73HB1E103K	CHIP C 0.010UF K	
C868,869		CK73HB0J105K	CHIP C 1.0UF K	
C870		CK73HB1H102K	CHIP C 1000PF K	
C872		CK73HB1A224K	CHIP C 0.22UF K	
C873		CC73HCH1H470J	CHIP C 47PF J	
C874		CK73HB1E103K	CHIP C 0.010UF K	
C875		CK73HB1H102K	CHIP C 1000PF K	
C876		CK73HB1E103K	CHIP C 0.010UF K	
C877		CK73HB0J105K	CHIP C 1.0UF K	
C878		CC73HCH1H150J	CHIP C 15PF J	
C879		CC73HCH1H680J	CHIP C 68PF J	
C880		CC73HCH1H100B	CHIP C 10PF B	
C881,882		CC73HCH1H101J	CHIP C 100PF J	
C883		CK73HB1A104K	CHIP C 0.10UF K	
C884		CC73HCH1H470J	CHIP C 47PF J	
C886		CK73HB1A104K	CHIP C 0.10UF K	
C887		CK73HB1A393K	CHIP C 0.039UF K	
C888		CK73HB0J105K	CHIP C 1.0UF K	
C889,890		CK73HB1A104K	CHIP C 0.10UF K	
C891,892		CK73HB1E103K	CHIP C 0.010UF K	
C893		CK73HB1H102K	CHIP C 1000PF K	
C894		CK73HB1E103K	CHIP C 0.010UF K	
C896,897		CK73HB1A104K	CHIP C 0.10UF K	
C898		CK73HB1H102K	CHIP C 1000PF K	
C899		CK73HB1E103K	CHIP C 0.010UF K	
C900		CK73HB1A224K	CHIP C 0.22UF K	
C901		CK73HB0J105K	CHIP C 1.0UF K	
C902		CS77MP1A100M	CHIP TNTL 10UF 10WV	
C903		CK73HB1A104K	CHIP C 0.10UF K	
C904		CK73HB1H471K	CHIP C 470PF K	
C905		CK73HB1A104K	CHIP C 0.10UF K	
C906		CK73HB1A563K	CHIP C 0.056UF K	
C907		CK73HB1A224K	CHIP C 0.22UF K	
C908		CK73HB1A104K	CHIP C 0.10UF K	
C909		CK73HB1A563K	CHIP C 0.056UF K	
C910		CK73HB1H102K	CHIP C 1000PF K	
C911		CK73HB0J105K	CHIP C 1.0UF K	
C912		CK73GB1E105K	CHIP C 1.0UF K	
C913		CK73HB1E103K	CHIP C 0.010UF K	
C914		CK73GB1E105K	CHIP C 1.0UF K	
C915,916		CK73HB1E103K	CHIP C 0.010UF K	
C917		CK73HB1H102K	CHIP C 1000PF K	
C918		CC73HCH1H470J	CHIP C 47PF J	
C919		CK73HB1H102K	CHIP C 1000PF K	
C920		CC73HCH1H101J	CHIP C 100PF J	
C921		CK73HB1H102K	CHIP C 1000PF K	
C922		CC73HCH1H101J	CHIP C 100PF J	
C923		CK73HB1H102K	CHIP C 1000PF K	
C924-927		CC73HCH1H101J	CHIP C 100PF J	
C928		CK73HB1E682K	CHIP C 6800PF K	
C929,930		CC73HCH1H101J	CHIP C 100PF J	
C931,932		CK73HB1H102K	CHIP C 1000PF K	
C933		CK73HB1E103K	CHIP C 0.010UF K	
CN10		E04-0496-05	PIN SOCKET(GPS)	
CN201		E41-3185-05	FLAT CABLE CONNECTOR(10P)	
CN202		E23-1263-15	TERMINAL	
CN301		E40-6422-15	SOCKET FOR PIN ASSY(50P)	
CN307		E40-6586-05	PIN ASSY(20P)	
CN321		E40-6389-05	SOCKET FOR PIN ASSY(26P)	
CN505		E23-1262-05	TERMINAL	
CN804		E41-3167-05	FLAT CABLE CONNECTOR(14P)	
CN805		E41-1486-05	PIN ASSY(2P)	
CN806		E40-6853-05	FLAT CABLE CONNECTOR(5P)	
F201		F53-0324-05	FUSE (2.5A)	
F301		F53-0360-05	FUSE (0.25A)	
CN203		J19-5386-05	HOLDER (LITHIUM CELL)	
CF501		L72-1017-05	CERAMIC FILTER(450KHZ)	
CF502		L72-1040-05	CERAMIC FILTER(450KHZ)	
L15		L92-0487-05	CHIP FERRITE	
L16		L40-1075-92	SMALL FIXED INDUCTOR (10NH)	
L17		L79-1955-05	FILTER (GPS)	
L18		L40-1263-92	SMALL FIXED INDUCTOR (1.2NH)	
L19		L41-1561-55	SMALL FIXED INDUCTOR (1.5NH)	
L20		L40-1563-92	SMALL FIXED INDUCTOR (1.5NH)	
L101,102		L92-0408-05	CHIP FERRITE	
L203		L92-0408-05	CHIP FERRITE	
L204		L92-0149-05	CHIP FERRITE	
L205		L33-1494-05	SMALL FIXED INDUCTOR	
L206		L92-0466-05	CHIP FERRITE	
L207,208		L92-0162-05	BEADS CORE	
L209		L92-0467-05	CHIP FERRITE	
L212		L92-0467-05	CHIP FERRITE	
L213		L33-1530-05	SMALL FIXED INDUCTOR	
L214,215		L92-0467-05	CHIP FERRITE	
L216		L33-1462-05	SMALL FIXED INDUCTOR	
L301-303		L92-0444-05	CHIP FERRITE	
L304,305		L92-0162-05	BEADS CORE	
L306		L92-0444-05	CHIP FERRITE	
L307		L92-0162-05	BEADS CORE	
L308		L92-0444-05	CHIP FERRITE	
L309		L92-0162-05	CHIP FERRITE	
L310		L92-0444-05	BEADS CORE	
L311,312		L92-0162-05	CHIP FERRITE	
L313		L92-0444-05	BEADS CORE	
L314		L92-0162-05	CHIP FERRITE	
L315		L92-0444-05	BEADS CORE	
L316		L92-0140-05	BEADS CORE	
L317,318		L92-0444-05	BEADS CORE	
L319,320		L92-0162-05	CHIP FERRITE	
L501		L41-4795-39	SMALL FIXED INDUCTOR (4.7UH)	
L502-504		L92-0163-05	BEADS CORE	
L505		L40-1891-86	SMALL FIXED INDUCTOR (1.8UH)	
L506		L40-3391-86	SMALL FIXED INDUCTOR (3.3UH)	

PARTS LIST

TX-RX UNIT (X57-9270-12)

Ref. No.	Address	Parts No.	Description	Destination
L509-512		L40-2285-92	SMALL FIXED INDUCTOR (220NH)	
L513		L40-1575-92	SMALL FIXED INDUCTOR (15NH)	
L514		L40-5681-86	SMALL FIXED INDUCTOR (0.56UH)	
L515		L40-2285-92	SMALL FIXED INDUCTOR (220NH)	
L516		L40-1285-92	SMALL FIXED INDUCTOR (120NH)	
L517		L40-8275-92	SMALL FIXED INDUCTOR (82NH)	
L518		L40-5678-67	SMALL FIXED INDUCTOR (56NH)	
L519		L40-2778-67	SMALL FIXED INDUCTOR (27NH)	
L520		L92-0446-05	BEADS CORE	
L521		L41-4778-45	SMALL FIXED INDUCTOR (47NH)	
L522		L40-6865-92	SMALL FIXED INDUCTOR (6.8NH)	
L523		L40-1878-92	SMALL FIXED INDUCTOR (18NH)	
L524,525		L40-3391-86	SMALL FIXED INDUCTOR (3.3UH)	
L526		L40-1085-57	SMALL FIXED INDUCTOR (100NH)	
L527		L40-8275-92	SMALL FIXED INDUCTOR (82NH)	
L528		L40-6865-92	SMALL FIXED INDUCTOR (6.8NH)	
L529		L40-1285-71	SMALL FIXED INDUCTOR (120NH)	
L530		L40-3975-92	SMALL FIXED INDUCTOR (39NH)	
L531		L40-1891-86	SMALL FIXED INDUCTOR (1.8UH)	
L532		L92-0138-05	CHIP FERRITE	
L533		L40-1285-92	SMALL FIXED INDUCTOR (120NH)	
L534		L40-2702-86	SMALL FIXED INDUCTOR (27UH)	
L535		L92-0138-05	CHIP FERRITE	
L536		L40-6875-92	SMALL FIXED INDUCTOR (68NH)	
L537		L41-2785-39	SMALL FIXED INDUCTOR (0.27UH)	
L538		L41-5685-39	SMALL FIXED INDUCTOR (0.56UH)	
L539,540		L40-3375-92	SMALL FIXED INDUCTOR (33NH)	
L541		L40-1085-92	SMALL FIXED INDUCTOR (100NH)	
L542		L92-0138-05	CHIP FERRITE	
L543		L40-1085-92	SMALL FIXED INDUCTOR (100NH)	
L544		L41-2285-14	SMALL FIXED INDUCTOR (220NH)	
L545		L40-3975-92	SMALL FIXED INDUCTOR (39NH)	
L546		L41-6878-14	SMALL FIXED INDUCTOR (68NH)	
L548		L41-1085-43	SMALL FIXED INDUCTOR (100NH)	
L549		L92-0149-05	CHIP FERRITE	
L550		L40-3375-92	SMALL FIXED INDUCTOR (33NH)	
L551		L92-0138-05	CHIP FERRITE	
L553		L41-6878-14	SMALL FIXED INDUCTOR (68NH)	
L554		L34-4576-05	AIR-CORE COIL	
L555		L92-0149-05	CHIP FERRITE	
L556		L34-4563-05	AIR-CORE COIL	
L557		L34-4564-05	AIR-CORE COIL	
L558		L34-4565-05	AIR-CORE COIL	
L559		L41-6878-14	SMALL FIXED INDUCTOR (68NH)	
L560		L41-2295-39	SMALL FIXED INDUCTOR (2.2UH)	
L561		L34-4577-05	AIR-CORE COIL	
L562,563		L34-4566-05	AIR-CORE COIL	
L564		L41-6878-14	SMALL FIXED INDUCTOR (68NH)	
L565		L34-4566-05	AIR-CORE COIL	
L566		L40-5675-92	SMALL FIXED INDUCTOR (56NH)	
L802		L92-0140-05	CHIP FERRITE	
L803-806		L92-0408-05	CHIP FERRITE	
L807		L92-0140-05	CHIP FERRITE	
X301		L77-1802-05	CRYSTAL RESONATOR (32.768KHZ)	
X302		L77-3015-05	TCXO (18.432MHZ)	
X501		L77-3014-05	TCXO (19.2MHZ)	
XF501		L71-0679-05	MCF (58.05MHZ)	
CP801		RK743HB1J101J	CHIP-CM 100 J 1/16W	

Ref. No.	Address	Parts No.	Description	Destination
R14		RK73HB1J471J	CHIP R 470 J 1/16W	
R15		RK73HB1J120J	CHIP R 12 J 1/16W	
R16		RK73HB1J391J	CHIP R 3970 J 1/16W	
R17		RK73HB1J471J	CHIP R 470 J 1/16W	
R18		RK73HB1J0001J	CHIP R 0.0 J 1/16W	
R121,122		RK73HH1J104D	CHIP R 100K D 1/16W	
R125,126		RK73HH1J223D	CHIP R 22K D 1/16W	
R129		RK73HB1J333J	CHIP R 33K J 1/16W	
R132		RK73HB1J223J	CHIP R 22K J 1/16W	
R134		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R201		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R202		RK73HB1J222J	CHIP R 2.2K J 1/16W	
R203		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R204		RK73HB1J222J	CHIP R 2.2K J 1/16W	
R205-208		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R210,211		RK73HB1J683J	CHIP R 68K J 1/16W	
R212		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R213		RK73HB1J100J	CHIP R 10 J 1/16W	
R214		RK73HB1J2R2J	CHIP R 2.2 J 1/16W	
R216		RK73HH1J683D	CHIP R 68K D 1/16W	
R217		RK73HH1J333D	CHIP R 33K D 1/16W	
R218		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R219		RK73HB1J474J	CHIP R 470K J 1/16W	
R220		RK73GB2A000J	CHIP R 0.0 J 1/10W	
R221		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R222		RK73HB1J474J	CHIP R 470K J 1/16W	
R224		RK73HB1J474J	CHIP R 470K J 1/16W	
R226		RK73HB1J471J	CHIP R 470 J 1/16W	
R227-230		RK73HB1J104J	CHIP R 100K J 1/16W	
R231		RK73HB1J564J	CHIP R 560K J 1/16W	
R232		RK73HB1J154J	CHIP R 150K J 1/16W	
R233		RK73HB1J473J	CHIP R 47K J 1/16W	
R234		RK73HB1J474J	CHIP R 470K J 1/16W	
R235		RK73HB1J103J	CHIP R 10K J 1/16W	
R236-242		RK73HB1J474J	CHIP R 470K J 1/16W	
R243		RK73HB1J332J	CHIP R 3.3K J 1/16W	
R244,245		RK73HB1J473J	CHIP R 47K J 1/16W	
R246		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R247		RK73HB1J103J	CHIP R 10K J 1/16W	
R248		RK73HB1J474J	CHIP R 470K J 1/16W	
R249		RK73HB1J103J	CHIP R 10K J 1/16W	
R250		RK73HB1J474J	CHIP R 470K J 1/16W	
R251		RK73HB1J103J	CHIP R 10K J 1/16W	
R253		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R254		RK73HB1J474J	CHIP R 470K J 1/16W	
R255		RK73HB1J330J	CHIP R 33 J 1/16W	
R256		RK73HB1J103J	CHIP R 10K J 1/16W	
R257		RK73HB1J474J	CHIP R 470K J 1/16W	
R258		RK73GB2A100J	CHIP R 10 J 1/10W	
R259		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R260		RK73GB2A000J	CHIP R 0.0 J 1/10W	
R261		RK73HB1J154J	CHIP R 150K J 1/16W	
R263		RK73HB1J391J	CHIP R 390 J 1/16W	
R264		RK73HB1J123J	CHIP R 12K J 1/16W	
R265		RK73HB1J100J	CHIP R 10 J 1/16W	
R266		RK73HB1J821J	CHIP R 820 J 1/16W	
R267		RK73HB1J273J	CHIP R 27K J 1/16W	
R268		RK73HH1J334D	CHIP R 330K D 1/16W	
R269		RK73HH1J223D	CHIP R 22K D 1/16W	
R271		RK73HB1J000J	CHIP R 0.0 J 1/16W	

PARTS LIST

TX-RX UNIT (X57-9270-12)

Ref. No.	Address	Parts No.	Description	Destination
R272,273		RK73HB1J472J	CHIP R 4.7K J 1/16W	
R275		RK73HB1J473J	CHIP R 47K J 1/16W	
R301,302		RK73HB1J103J	CHIP R 10K J 1/16W	
R303		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R304,305		RK73HB1J101J	CHIP R 100 J 1/16W	
R306		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R307		RK73HB1J101J	CHIP R 100 J 1/16W	
R308		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R310,311		RK73HB1J104J	CHIP R 100K J 1/16W	
R313-317		RK73HB1J104J	CHIP R 100K J 1/16W	
R319		RK73HB1J104J	CHIP R 100K J 1/16W	
R320		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R321		RK73HB1J474J	CHIP R 470K J 1/16W	
R322		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R323		RK73HB1J473J	CHIP R 47K J 1/16W	
R324		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R325		RK73HB1J104J	CHIP R 100K J 1/16W	
R326		RK73HB1J473J	CHIP R 47K J 1/16W	
R327		RK73HB1J472J	CHIP R 4.7K J 1/16W	
R328		RK73HB1J331J	CHIP R 330 J 1/16W	
R329		RK73HB1J472J	CHIP R 4.7K J 1/16W	
R330		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R331		RK73HB1J473J	CHIP R 47K J 1/16W	
R333		RK73HB1J104J	CHIP R 100K J 1/16W	
R336		RK73HB1J104J	CHIP R 100K J 1/16W	
R338-340		RK73HB1J104J	CHIP R 100K J 1/16W	
R342-344		RK73HB1J104J	CHIP R 100K J 1/16W	
R345		RK73HB1J103J	CHIP R 10K J 1/16W	
R346		RK73HB1J104J	CHIP R 100K J 1/16W	
R347		RK73HB1J474J	CHIP R 470K J 1/16W	
R348		RK73HB1J331J	CHIP R 330 J 1/16W	
R349,350		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R352-359		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R361-363		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R364,365		RK73HB1J104J	CHIP R 100K J 1/16W	
R366		RK73HB1J473J	CHIP R 47K J 1/16W	
R367,368		RK73HB1J472J	CHIP R 4.7K J 1/16W	
R369,370		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R372,373		RK73HB1J220J	CHIP R 22 J 1/16W	
R374		RK73GB2A000J	CHIP R 0.0 J 1/10W	
R375-378		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R379		RK73HH1J104D	CHIP R 100K D 1/16W	
R380		RK73HB1J104J	CHIP R 100K J 1/16W	
R381		RK73HB1J1214J	CHIP R 120 J 1/16W	
R382		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R383		RK73HB1J104J	CHIP R 100K J 1/16W	
R384		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R386		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R387		RK73HB1J223J	CHIP R 22K J 1/16W	
R389		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R390-392		RK73HB1J104J	CHIP R 100K J 1/16W	
R393		RK73HH1J103D	CHIP R 10K D 1/16W	
R394,395		RK73HB1J104J	CHIP R 100K J 1/16W	
R396		RK73HB1J183J	CHIP R 18K J 1/16W	
R397		RK73HB1J104J	CHIP R 100K J 1/16W	
R398		RK73HB1J105J	CHIP R 1.0M J 1/16W	
R399-401		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R403-408		RK73HB1J104J	CHIP R 100K J 1/16W	
R409		RK73HB1J473J	CHIP R 47K J 1/16W	
R411		RK73HB1J473J	CHIP R 47K J 1/16W	

Ref. No.	Address	Parts No.	Description	Destination
R412,413		RK73HB1J104J	CHIP R 100K J 1/16W	
R414-419		RK73HB1J105J	CHIP R 1.0M J 1/16W	
R420-423		RK73HB1J104J	CHIP R 100K J 1/16W	
R424		RK73HB1J471J	CHIP R 470 J 1/16W	
R426,427		RK73HB1J474J	CHIP R 470K J 1/16W	
R428		RK73HB1J101J	CHIP R 100 J 1/16W	
R429		RK73HB1J474J	CHIP R 470K J 1/16W	
R431,432		RK73HB1J104J	CHIP R 100K J 1/16W	
R433-435		RK73HB1J101J	CHIP R 100 J 1/16W	
R437,438		RK73HB1J104J	CHIP R 100K J 1/16W	
R440		RK73HB1J103J	CHIP R 10K J 1/16	
R442		RK73HB1J104J	CHIP R 100K J 1/16W	
R443		RK73HB1J100J	CHIP R 10 J 1/16W	
R445		RK73HB1J100J	CHIP R 10 J 1/16W	
R446		RK73HB1J473J	CHIP R 47K J 1/16W	
R447		RK73GB2A000J	CHIP R 0.0 J 1/10W	
R448		RK73HB1J474J	CHIP R 470K J 1/16W	
R449		RK73GB2A000J	CHIP R 0.0 J 1/10W	
R450		RK73HB1J473J	CHIP R 47K J 1/16W	
R501,502		RN73HH1J104D	CHIP R 100K D 1/16W	
R503		RK73HB1J101J	CHIP R 100 J 1/16W	
R506		RK73HB1J101J	CHIP R 100 J 1/16W	
R509-511		RK73HB1J100J	CHIP R 10 J 1/16W	
R512,513		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R515		RK73HB1J472J	CHIP R 4.7K J 1/16W	
R516		RK73HB1J473J	CHIP R 47K J 1/16W	
R517-520		RK73HB1J100J	CHIP R 10 J 1/16W	
R521		RK73HB1J472J	CHIP R 4.7K J 1/16W	
R524		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R525		RK73HB1J100J	CHIP R 10 J 1/16W	
R526		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R528		RK73HB1J100J	CHIP R 10 J 1/16W	
R530		RK73HH1J184D	CHIP R 180K D 1/16W	
R531		RK73HH1J473D	CHIP R 47K D 1/16W	
R532		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R533		RK73HB1J106J	CHIP R 10M J 1/16W	
R534		RK73HH1J474D	CHIP R 470K D 1/16W	
R535		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R536		RK73HB1J473J	CHIP R 47K J 1/16W	
R537		RK73HB1J683J	CHIP R 68K J 1/16W	
R538,539		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R540		RK73HB1J121J	CHIP R 120 J 1/16W	
R542		RK73HH1J391D	CHIP R 390 D 1/16W	
R543		RK73HB1J104J	CHIP R 100K J 1/16W	
R544		RK73HB1J103J	CHIP R 10K J 1/16W	
R545,546		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R547		RK73HB1J104J	CHIP R 100K J 1/16W	
R549,550		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R551		RK73HB1J472J	CHIP R 4.7K J 1/16W	
R552		RK73HB1J103J	CHIP R 10K J 1/16W	
R553		RK73HB1J223J	CHIP R 22K J 1/16W	
R554		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R555,556		RK73HB1J473J	CHIP R 47K J 1/16W	
R557,558		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R559		RK73HB1J183J	CHIP R 18K J 1/16W	
R560		RK73HB1J124J	CHIP R 120K J 1/16W	
R561		RK73HB1J222J	CHIP R 2.2K J 1/16W	
R562		RK73HB1J561J	CHIP R 560 J 1/16W	
R563		RK73HB1J224J	CHIP R 220K J 1/16W	
R564		RK73HB1J000J	CHIP R 0.0 J 1/16W	

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Ref. No.	Address	Parts No.	Description	Destination
R565		RK73HB1J470J	CHIP R 47 J 1/16W	
R566		RK73HB1J334J	CHIP R 330K J 1/16W	
R567		RK73HB1J152J	CHIP R 1.5K J 1/16W	
R568,569		RK73HB1J100J	CHIP R 10 J 1/16W	
R570		RK73HB1J223J	CHIP R 22K J 1/16W	
R572		RK73HB1J104J	CHIP R 100K J 1/16W	
R573		RK73HB1J474J	CHIP R 470K J 1/16W	
R575		RK73HB1J123J	CHIP R 12K J 1/16W	
R576		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R579		RK73HH1J331D	CHIP R 330 D 1/16W	
R580		RK73HH1J271D	CHIP R 270 D 1/16W	
R581		RK73HB1J103J	CHIP R 10K J 1/16W	
R582		RK73HB1J472J	CHIP R 4.7K J 1/16W	
R583		RK73HB1J223J	CHIP R 22K J 1/16W	
R584,585		RK73HB1J220J	CHIP R 22 J 1/16W	
R586		RK73HB1J103J	CHIP R 10K J 1/16W	
R587		RK73HB1J474J	CHIP R 470K J 1/16W	
R588		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R590		RK73HB1J103J	CHIP R 10K J 1/16W	
R591		RK73HB1J223J	CHIP R 22K J 1/16W	
R592,593		RK73HB1J473J	CHIP R 47K J 1/16W	
R594		RK73HB1J183J	CHIP R 18K J 1/16W	
R595		RK73HB1J154J	CHIP R 150K J 1/16W	
R596		RK73HB1J472J	CHIP R 4.7K J 1/16W	
R597		RK73HB1J274J	CHIP R 270K J 1/16W	
R598		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R599		RK73HB1J101J	CHIP R 100 J 1/16W	
R600		RK73HB1J560J	CHIP R 56 J 1/16W	
R601		RK73HB1J331J	CHIP R 330 J 1/16W	
R603		RK73HB1J104J	CHIP R 100K J 1/16W	
R604		RK73HB1J103J	CHIP R 10K J 1/16W	
R605		RK73HB1J472J	CHIP R 4.7K J 1/16W	
R606		RK73HB1J223J	CHIP R 22K J 1/16W	
R607		RK73HB1J563J	CHIP R 56K J 1/16W	
R608		RK73HB1J332J	CHIP R 3.3K J 1/16W	
R609		RK73HB1J103J	CHIP R 10K J 1/16W	
R610		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R611		RK73HB1J103J	CHIP R 10K J 1/16W	
R613		RK73HB1J183J	CHIP R 18K J 1/16W	
R614		RK73HB1J271J	CHIP R 270 J 1/16W	
R615		RK73HB1J221J	CHIP R 220 J 1/16W	
R617		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R618		RK73HB1J473J	CHIP R 47K J 1/16W	
R619		RK73HB1J123J	CHIP R 12K J 1/16W	
R620		RK73HB1J103J	CHIP R 10K J 1/16W	
R621		RK73HB1J222J	CHIP R 2.2K J 1/16W	
R622		RK73HB1J564J	CHIP R 560K J 1/16W	
R623		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R624		RK73HB1J103J	CHIP R 10K J 1/16W	
R625		RK73HB1J104J	CHIP R 100K J 1/16W	
R626		RK73HB1J470J	CHIP R 47 J 1/16W	
R628		RK73HB1J221J	CHIP R 220 J 1/16W	
R630		RK73HB1J472J	CHIP R 4.7K J 1/16W	
R631		RK73GB2A000J	CHIP R 0.0 J 1/10W	
R632		RK73HB1J104J	CHIP R 100K J 1/16W	
R633		RK73HB1J272J	CHIP R 2.7K J 1/16W	
R634		RK73HB1J472J	CHIP R 4.7K J 1/16W	
R635		RK73HB1J221J	CHIP R 220 J 1/16W	
R637		RK73HB1J182J	CHIP R 1.8K J 1/16W	
R638		RK73HB1J470J	CHIP R 47 J 1/16W	

Ref. No.	Address	Parts No.	Description	Destination
R640		RK73HB1J101J	CHIP R 100 J 1/16W	
R641		RK73HB1J103J	CHIP R 10K J 1/16W	
R642		RK73HB1J472J	CHIP R 4.7K J 1/16W	
R643		RK73HB1J681J	CHIP R 680 J 1/16W	
R644		RK73HB1J151J	CHIP R 150 J 1/16W	
R645		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R646		RK73HB1J331J	CHIP R 330 J 1/16W	
R647		RK73HB1J223J	CHIP R 22K J 1/16W	
R648,649		RK73HB1J823J	CHIP R 82K J 1/16W	
R650		RK73HB1J331J	CHIP R 330 J 1/16W	
R651,652		RK73HB1J823J	CHIP R 82K J 1/16W	
R653		RK73HB1J180J	CHIP R 18 J 1/16W	
R654		RK73HB1J331J	CHIP R 330 J 1/16W	
R655		RK73HB1J223J	CHIP R 22K J 1/16W	
R656		RK73HB1J473J	CHIP R 47K J 1/16W	
R657		RK73HB1J470J	CHIP R 47 J 1/16W	
R658		RK73HB1J103J	CHIP R 10K J 1/16W	
R660		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R661		RK73HB1J273J	CHIP R 27K J 1/16W	
R662		RK73HB1J331J	CHIP R 330 J 1/16W	
R663		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R664		RK73GB2A000J	CHIP R 0.0 J 1/10W	
R665		RK73HB1J105J	CHIP R 1.0M J 1/16W	
R666		RK73HB1J561J	CHIP R 560 J 1/16W	
R667		RK73HB1J105J	CHIP R 1.0M J 1/16W	
R669		RK73HB1J104J	CHIP R 100K J 1/16W	
R670		RK73HB1J224J	CHIP R 220K J 1/16W	
R671		RK73HB1J104J	CHIP R 100K J 1/16W	
R672		RK73HB1J561J	CHIP R 560 J 1/16W	
R674		RK73HB1J470J	CHIP R 47 J 1/16W	
R675		RK73HB1J223J	CHIP R 22K J 1/16W	
R677		RK73HB1J473J	CHIP R 47K J 1/16W	
R678		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R682		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R683		RK73HB1J103J	CHIP R 10K J 1/16W	
R685		RK73EB2ER39K	CHIP R 0.39 K 1/4W	
R686		RK73HB1J680J	CHIP R 68 J 1/16W	
R687		RK73HB1J221J	CHIP R 220 J 1/16W	
R688		RK73HB1J103J	CHIP R 10K J 1/16W	
R689,690		RK73EB2ER39K	CHIP R 0.39 K 1/4W	
R691,692		RK73HH1J154D	CHIP R 150K D 1/16W	
R695		RK73HH1J184D	CHIP R 180K D 1/16W	
R696		RK73HB1J104J	CHIP R 100K J 1/16W	
R697		RK73HB1J823J	CHIP R 82K J 1/16W	
R698		RK73HB1J154J	CHIP R 150K J 1/16W	
R699		RK73HB1J224J	CHIP R 220K J 1/16W	
R700		RK73HB1J104J	CHIP R 100K J 1/16W	
R701		RK73HH1J184D	CHIP R 180K D 1/16W	
R705		RK73HB1J104J	CHIP R 100K J 1/16W	
R706,707		RK73HH1J184D	CHIP R 180K D 1/16W	
R713		RK73HB1J103J	CHIP R 10K J 1/16W	
R714		RK73HB1J271J	CHIP R 270 J 1/16W	
R715		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R716		RK73HB1J271J	CHIP R 270 J 1/16W	
R717		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R718		RK73HB1J473J	CHIP R 47K J 1/16W	
R719		RK73HB1J104J	CHIP R 100K J 1/16W	
R720		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R721		RK73HB1J474J	CHIP R 470K J 1/16W	
R722		RK73HB1J104J	CHIP R 100K J 1/16W	

PARTS LIST

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Ref. No.	Address	Parts No.	Description	Destination
R724		RK73HB1J182J	CHIP R 1.8K J 1/16W	
R725		RK73GB2A000J	CHIP R 0.0 J 1/10W	
R726,727		RK73HB1J104J	CHIP R 100K J 1/16W	
R729		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R732		RK73EB2E823J	CHIP R 82K J 1/4W	
R733,734		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R801-804		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R805		RK73HB1J473J	CHIP R 47K J 1/16W	
R807		RK73HB1J473J	CHIP R 47K J 1/16W	
R808		RK73HB1J563J	CHIP R 56K J 1/16W	
R809		RK73HB1J223J	CHIP R 22K J 1/16W	
R810		RK73HB1J153J	CHIP R 15K J 1/16W	
R811		RK73HB1J682J	CHIP R 6.8K J 1/16W	
R812		RK73HB1J563J	CHIP R 56K J 1/16W	
R813		RK73HB1J103J	CHIP R 10K J 1/16W	
R814		RK73HB1J683J	CHIP R 68K J 1/16W	
R815		RK73HB1J103J	CHIP R 10K J 1/16W	
R816		RK73HB1J472J	CHIP R 4.7K J 1/16W	
R819		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R820		RK73HB1J223J	CHIP R 22K J 1/16W	
R821		RK73HB1J104J	CHIP R 100K J 1/16W	
R823		RK73HB1J223J	CHIP R 22K J 1/16W	
R824		RK73HB1J334J	CHIP R 330K J 1/16W	
R825		RK73HB1J223J	CHIP R 22K J 1/16W	
R826		RK73HB1J103J	CHIP R 10K J 1/16W	
R827,828		RK73HB1J223J	CHIP R 22K J 1/16W	
R829		RK73HB1J564J	CHIP R 560K J 1/16W	
R830		RK73HB1J103J	CHIP R 10K J 1/16W	
R831		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R832,833		RK73HB1J473J	CHIP R 47K J 1/16W	
R834,835		RK73HB1J683J	CHIP R 68K J 1/16W	
R836		RK73HB1J183J	CHIP R 18K J 1/16W	
R837		RK73HB1J473J	CHIP R 47K J 1/16W	
R838-840		RK73HB1J104J	CHIP R 100K J 1/16W	
R841		RK73HB1J183J	CHIP R 18K J 1/16W	
R842		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R843		RK73HB1J124J	CHIP R 120K J 1/16W	
R844		RK73HB1J104J	CHIP R 100K J 1/16W	
R845		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R846		RK73HB1J473J	CHIP R 47K J 1/16W	
R847		RK73HB1J154J	CHIP R 150K J 1/16W	
R848		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R849		RK73HB1J333J	CHIP R 33K J 1/16W	
R850		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R851,852		RK73HB1J104J	CHIP R 100K J 1/16W	
R853		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R854		RK73HB1J473J	CHIP R 47K J 1/16W	
R855		RK73HB1J823J	CHIP R 82K J 1/16W	
R856		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R857		RK73HB1J564J	CHIP R 560K J 1/16W	
R858		RK73HB1J473J	CHIP R 47K J 1/16W	
R859		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R860		RK73HB1J473J	CHIP R 47K J 1/16W	
R861,862		RK73HB1J823J	CHIP R 82K J 1/16W	
R863		RK73HB1J474J	CHIP R 470K J 1/16W	
R864		RK73HB1J103J	CHIP R 10K J 1/16W	
R865		RK73HB1J562J	CHIP R 5.6K J 1/16W	
R867		RK73HB1J103J	CHIP R 10K J 1/16W	
R868		RK73HB1J273J	CHIP R 27K J 1/16W	
R869		RK73HB1J104J	CHIP R 100K J 1/16W	

Ref. No.	Address	Parts No.	Description	Destination
R870		RK73HB1J471J	CHIP R 470 J 1/16W	
R871		RK73HB1J683J	CHIP R 68K J 1/16W	
R872		RK73HB1J104J	CHIP R 100K J 1/16W	
R873		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R874-876		RK73HB1J103J	CHIP R 10K J 1/16W	
R877		RK73HB1J104J	CHIP R 100K J 1/16W	
R878,879		RK73HB1J683J	CHIP R 68K J 1/16W	
R880		RK73HB1J153J	CHIP R 15K J 1/16W	
R883		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R885		RK73HB1J393J	CHIP R 39K J 1/16W	
R886		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R887		RK73HB1J333J	CHIP R 33K J 1/16W	
R888		RK73HB1J682J	CHIP R 6.8K J 1/16W	
R889		RK73HB1J105J	CHIP R 1.0M J 1/16W	
R890		RK73HB1J474J	CHIP R 470K J 1/16W	
R891		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R892		RK73HB1J684J	CHIP R 680K J 1/16W	
R893		RK73HB1J473J	CHIP R 47K J 1/16W	
R894		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R896		RK73HB1J274J	CHIP R 270K J 1/16W	
R897		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R898		RK73HB1J153J	CHIP R 15K J 1/16W	
R899		RK73HB1J104J	CHIP R 100K J 1/16W	
R900		RK73HB1J153J	CHIP R 15K J 1/16W	
R901		RK73HB1J104J	CHIP R 100K J 1/16W	
R902		RK73HB1J474J	CHIP R 470K J 1/16W	
R903		RK73HB1J473J	CHIP R 47K J 1/16W	
R904		RK73HB1J683J	CHIP R 68K J 1/16W	
R905		RK73HB1J564J	CHIP R 560K J 1/16W	
R906		RK73HB1J123J	CHIP R 12K J 1/16W	
R907		RK73HB1J333J	CHIP R 33K J 1/16W	
R908		RK73HB1J334J	CHIP R 330K J 1/16W	
R909,910		RK73HB1J104J	CHIP R 100K J 1/16W	
R911		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R912		RK73HB1J564J	CHIP R 560K J 1/16W	
R913		RK73HB1J103J	CHIP R 10K J 1/16W	
R914		RK73HB1J104J	CHIP R 100K J 1/16W	
R915		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R916		RK73HB1J104J	CHIP R 100K J 1/16W	
R917		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R918		RK73HB1J472J	CHIP R 4.7K J 1/16W	
R919		RK73HB1J471J	CHIP R 470 J 1/16W	
R920		RK73HB1J334J	CHIP R 330K J 1/16W	
R921		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R922		RK73HB1J332J	CHIP R 3.3K J 1/16W	
R923		RK73HB1J104J	CHIP R 100K J 1/16W	
R924		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R925		RK73HB1J104J	CHIP R 100K J 1/16W	
R926		RK73HB1J471J	CHIP R 470 J 1/16W	
R927		RK73HB1J182J	CHIP R 1.8K J 1/16W	
R928		RK73HB1J103J	CHIP R 10K J 1/16W	
R929		RK73HB1J333J	CHIP R 33K J 1/16W	
R930,931		RK73HB1J104J	CHIP R 100K J 1/16W	
R932		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R933		RK73HH1J223D	CHIP R 22K D 1/16W	
R934		RK73HB1J393J	CHIP R 39K J 1/16W	
R935		RK73HH1J223D	CHIP R 22K D 1/16W	
R936		RK73HB1J334J	CHIP R 330K J 1/16W	
R937		RK73HB1J184J	CHIP R 180K J 1/16W	
R938,939		RK73HH1J104D	CHIP R 100K D 1/16W	

PARTS LIST

TX-RX UNIT (X57-9270-12)

Ref. No.	Address	Parts No.	Description	Destination
R940		RK73HB1J223J	CHIP R 22K J 1/16W	
R941		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R942		RK73HB1J822J	CHIP R 8.2K J 1/16W	
R943		RK73HB1J471J	CHIP R 470 J 1/16W	
R944,945		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R946		RK73HB1J473J	CHIP R 47K J 1/16W	
R947		RK73GB2A000J	CHIP R 0.0 J 1/10W	
R948		RK73HB1J104J	CHIP R 100K J 1/16W	
R949,950		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R951		RK73HB1J473J	CHIP R 47K J 1/16W	
R952,953		RK73HB1J103J	CHIP R 10K J 1/16W	
R954,955		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R956		RK73HB1J101J	CHIP R 100 J 1/16W	
R957		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R958-961		RK73HB1J101J	CHIP R 100 J 1/16W	
R963,964		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R965		RK73GB2A000J	CHIP R 0.0 J 1/10W	
R966		RK73HB1J000J	CHIP R 0.0 J 1/16W	
S201		S70-0483-05	TACT SWITCH	
D12,13		RN262CN	DIODE	
D101,102		HZC6.8-E	ZENER DIODE	
D113		DA2S101	DIODE	
D201		1SR154-400	DIODE	
D202-204		1SS388F	DIODE	
D205		KDS121-P	DIODE	
D206		HRB0502A	DIODE	
D207		DA2S101	DIODE	
D208		1SS400	DIODE	
D209		KDS121-P	DIODE	
D210		1SS388F	DIODE	
D211		KDR720F-P	DIODE	
D212		KDS121-P	DIODE	
D213		1SS388F	DIODE	
D301,302		1SS400	DIODE	
D501		1SS400	DIODE	
D502		KDS123E-P	DIODE	
D503		HVC376B	VARIABLE CAPACITANCE DIODE	
D504		1SV325F	VARIABLE CAPACITANCE DIODE	
D505		RN142S	DIODE	
D508-513		1SV282-F	VARIABLE CAPACITANCE DIODE	
D514		1SS400	DIODE	
D515		RN142S	DIODE	
D516		1SV278F	VARIABLE CAPACITANCE DIODE	
D517,518		RN142S	DIODE	
D519,520		HSC277	DIODE	
D523		HZU2ALL	ZENER DIODE	
D524,525		1SV305F	VARIABLE CAPACITANCE DIODE	
D526		HZU5CLL	ZENER DIODE	
D527		RN142S	DIODE	
D528		1SV305F	VARIABLE CAPACITANCE DIODE	
D529-532		RN142S	DIODE	
D533		1SV305F	VARIABLE CAPACITANCE DIODE	
D801-803		KDR731	DIODE	
D804		KDS123E-P	DIODE	
D805,806		DA2S101	DIODE	
D807		KDR731	DIODE	
D808-814		KDR720F-P	DIODE	
D815		EMZ6.8N	ZENER DIODE	
D816		NNCD6.8G-A	ZENER DIODE	

Ref. No.	Address	Parts No.	Description	Destination
D817		KDS123E-P	DIODE	
D818		NNCD6.8G-A	ZENER DIODE	
D819		KDS123E-P	DIODE	
D820		EMZ6.8N	ZENER DIODE	
IC11		NJG1143UA2	MOS-IC	
IC103		TPA6201A1DRBR	ANALOGUE IC	
IC201		XC6204B332D	MOS-IC	
IC202		XC9235A15CM1	MOS-IC	
IC203		XC6204B332D	MOS-IC	
IC204		TK11250CUCB	MOS-IC	
IC205		XC6204B502PR	MOS-IC	
IC206		LT1616ES6-PBF	ANALOGUE IC	
IC207		TK71733S	BI-POLAR IC	
IC208		BU7465HFV	MOS-IC	
IC209		XC61CC5602N-G	MOS-IC	
IC210		S-812C31BPI-G	ANALOGUE IC	
IC211		XC9101D09AK-G	ANALOGUE IC	
IC301		TC74LCX245FK	MOS-IC	
IC302		TC7WZ245FK-F	MOS-IC	
IC303		**Note 1**	ROM	
IC304		**Note 1**	DSP	
IC305		**Note 1**	SRAM	
IC306		XC6109C29AN-G	ANALOGUE IC	
IC307		TC7SH08FU-F	MOS-IC	
IC308		R2023T	MOS-IC	
IC309		**Note 1**	ASIC	
IC310		SM5023CNDH-G	MOS-IC	
IC311		PCA9535BS	MOS-IC	
IC312		TC7SH08FU-F	MOS-IC	
IC501		LM73CIMKX-0	MOS-IC	
IC503		SKY72300-362	MOS-IC	
IC504		LMC7101BIM5	MOS-IC	
IC505		BU7242NUX	MOS-IC	
IC506		MCP6021-E/OT	MOS-IC	
IC507		TK10931VTL-G	ANALOGUE IC	
IC508		BU7242NUX	MOS-IC	
IC509,510		TLV2381IDBV	MOS-IC	
IC511		TA75W01FUF	MOS-IC	
IC801		R2A20178NP	MOS-IC	
IC802		BU7465HFV	MOS-IC	
IC803		BU7242NUX	MOS-IC	
IC804		BU7465HFV	MOS-IC	
IC805,806		TC7W53FK (F)	MOS-IC	
IC807		BU7242NUX	MOS-IC	
IC808		74Hc1G66GW	MOS-IC	
IC809		BU7242NUX	MOS-IC	
IC810		TC7W53FK (F)	MOS-IC	
IC811		BU7242NUX	MOS-IC	
IC812		BU7465HFV	MOS-IC	
IC813		BU7242NUX	MOS-IC	
IC814		BU7465HFV	MOS-IC	
IC815		BU7242NUX	MOS-IC	
IC816		TC7W66FK-F	MOS-IC	
IC817		TPA6201A1DRBR	ANALOGUE IC	
IC818		NJM2880U105ZB	ANALOGUE IC	
IC819		TC7SET08FU-F	MOS-IC	
IC820		TC7WH126FK	MOS-IC	
IC821		TC7WT125FUF	MOS-IC	

Note 1: This part cannot be replaced. Therefore, this part is not supplied as a service part.

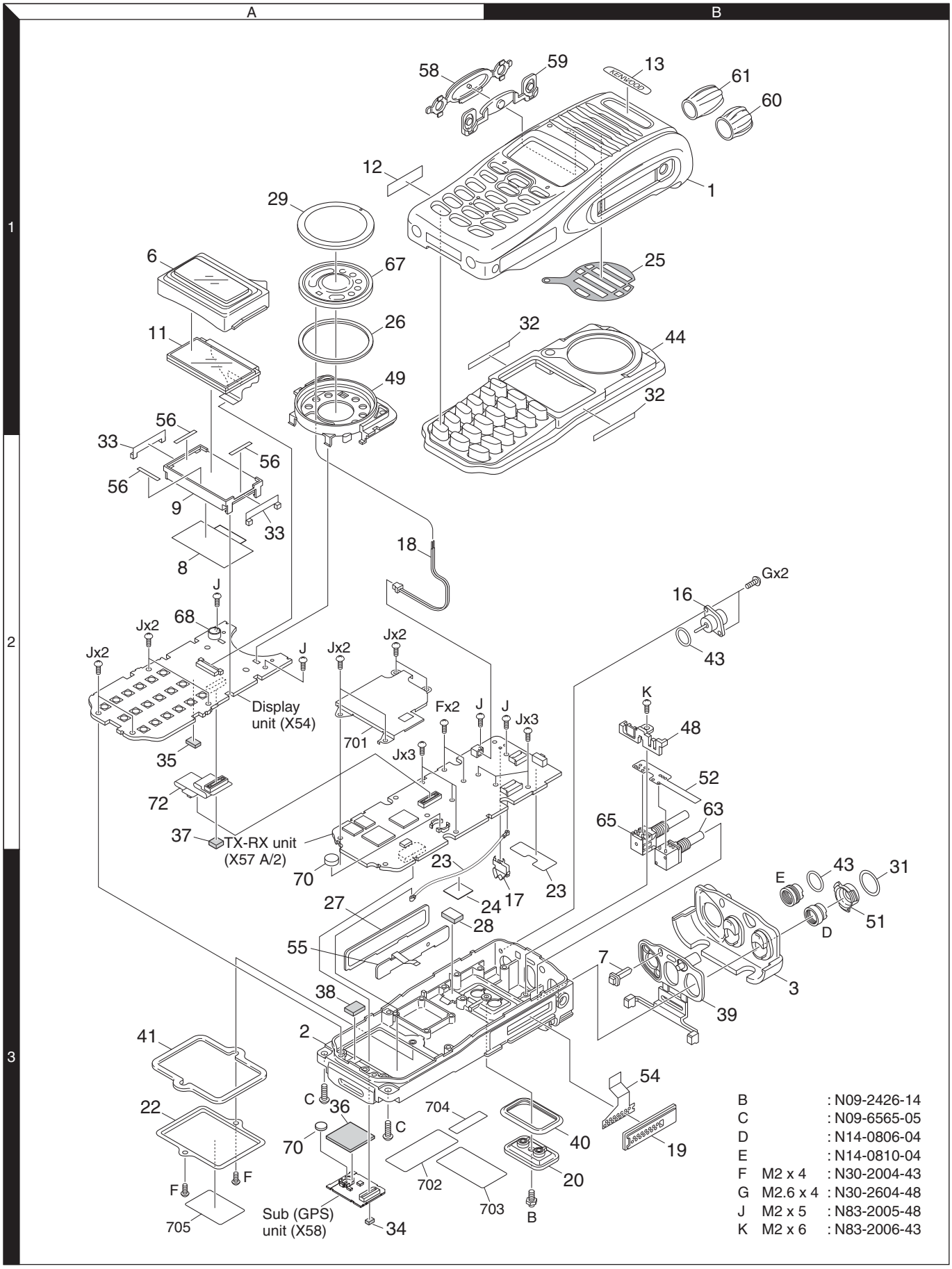
PARTS LIST

TX-RX UNIT (X57-9270-12)
SUB(GPS) UNIT (X58-5240-11)

Ref. No.	Address	Parts No.	Description	Destination
Q201		2SJ648-A	FET	
Q202		SSM3K15TE (F)	FET	
Q203,204		SSM6N16FE-F	FET	
Q205		EM6M2	FET	
Q206		2SA1955A-F	TRANSISTOR	
Q207		EMD12	TRANSISTOR	
Q208		2SA1955A-F	TRANSISTOR	
Q209,210		SSM3K15TE (F)	FET	
Q211		2SA1955A-F	TRANSISTOR	
Q212		SSM5H01TU-F	FET	
Q213		EMD12	TRANSISTOR	
Q214		UMG9N	TRANSISTOR	
Q215		EMD12	TRANSISTOR	
Q301		2SA1362-F (GR)	TRANSISTOR	
Q302		2SC4617 (S)	TRANSISTOR	
Q303		2SA1832 (GR)F	TRANSISTOR	
Q304		SSM3K15TE (F)	FET	
Q305		2SC4617 (S)	TRANSISTOR	
Q306		SSM3K15TE (F)	FET	
Q501		2SC5383-T111	TRANSISTOR	
Q502		2SK879-F (Y)	FET	
Q503		LTA014YEBFS8	TRANSISTOR	
Q504		SSM3K15TE (F)	FET	
Q505		EMD9	TRANSISTOR	
Q506		2SC5108 (Y)F	TRANSISTOR	
Q507		2SC5383-T111	TRANSISTOR	
Q508,509		2SK508NV (K52)	FET	
Q510		EM6M2	FET	
Q511		2SJ347F	FET	
Q512-514		2SC5636	TRANSISTOR	
Q515		2SC4215-F (Y)	TRANSISTOR	
Q516		2SK3077F	FET	
Q517		3SK318	FET	
Q518		RD01MUS1-T113	FET	
Q519		2SC5383-T111	TRANSISTOR	
Q520		RD07MVS1BT122	FET	
Q521		SSM3K15TE (F)	FET	
Q522		3SK294-FP	FET	
Q523		LTC044EEBFS8	TRANSISTOR	
Q525		2SK1824-A	FET	
Q526		EMD5	TRANSISTOR	
Q801		SSM3K15TE (F)	FET	
Q803		2SC4738 (GR)F	TRANSISTOR	
Q804		2SA1832 (GR)F	TRANSISTOR	
Q805		SSM3K15TE (F)	FET	
Q806		SSM6N16FE-F	FET	
Q807		2SJ243-A	FET	
Q808		2SC4617 (S)	TRANSISTOR	
Q809		KRC660U-P	TRANSISTOR	
Q810		2SB798AZCDLDK	TRANSISTOR	
Q811		SSM3K15TE (F)	FET	
Q812		2SJ347F	FET	
Q813		SSM6N16FE-F	FET	
TH504		ERTJ0EV104H	THERMISTOR (100K)	
TH801		ERTJ0EV104H	THERMISTOR (100K)	

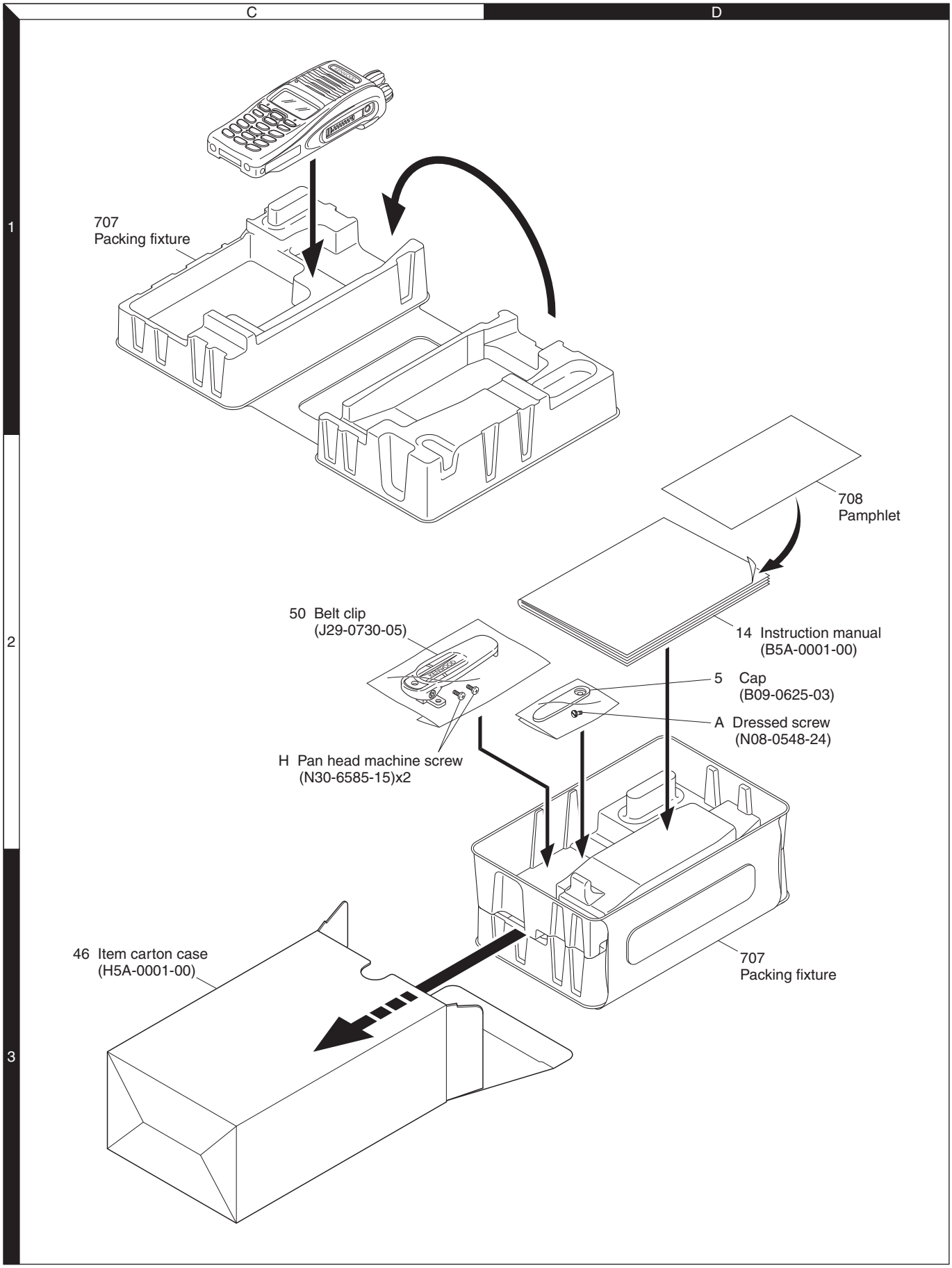
Ref. No.	Address	Parts No.	Description	Destination
SUB (GPS) UNIT (X58-5240-11)				
C1		CC73HCH1H180J	CHIP C 18PF J	
C2		CK73HB1A104K	CHIP C 0.10UF K	
C3		CK73HB1H102K	CHIP C 1000PF K	
C4		CK73GB0J106K	CHIP C 0.10UF K	
C5		CK73HB1A104K	CHIP C 0.10UF K	
C8		CC73HCH1H180J	CHIP C 18PF J	
C9		CK73HB1A104K	CHIP C 0.10UF	
C10,11		CK73HB1H102K	CHIP C 1000PF K	
C16		CC73HCH1H101J	CHIP C 100PF J	
C17		CK73HB1H102K	CHIP C 1000PF K	
C18		CC73HCH1H101J	CHIP C 100PF J	
C19		CK73HB1H102K	CHIP C 1000PF K	
C20		CK73HB1A474K	CHIP C 0.47UF K	
C21		CK73HB1H102K	CHIP C 1000PF K	
C22		CK73HB1A474K	CHIP C 0.47UF K	
C23		CK73GB0J106K	CHIP C 0.10UF K	
CN5		E04-0496-05	PIN SOCKET (4P)	
CN10		E40-6358-05	PIN ASSY SOCKET (26P)	
CN11		J19-5386-05	HOLDER (LITHIUM CELL)	
L1,2		L92-0138-05	CHIP FERRITE	
L3		L92-0163-05	BEADS CORE	
R4		RK73HB1J102J	CHIP R 1K J 1/16W	
R6		RK73HB1J471J	CHIP R 470 J 1/16W	
R7		RK73HB1J120J	CHIP R 12 J 1/16W	
R9,10		RK73HB1J101J	CHIP R 100 J 1/16W	
R11		RK73GB2A100J	CHIP R 10 J 1/10W	
R13		RK73HB1J471J	CHIP R 470 J 1/16W	
R17		RK73HB1J102J	CHIP R 1K J 1/16W	
R18		RK73GB2A000J	CHIP R 0.0 J 1/10W	
D2		1SS388F	DIODE	
IC1		W02-3768-05	CIRCUIT MODULE (GPS)	
IC2		TC7WH126FU-F	MOS IC	
IC4		BU31TD3WG	MOS IC	

EXPLODED VIEW



Parts with the exploded numbers larger than 700 are not supplied.

PACKING



Parts with the exploded numbers larger than 700 are not supplied.

TROUBLE SHOOTING

Fault Diagnosis of the BGA (Ball Grid Array) IC

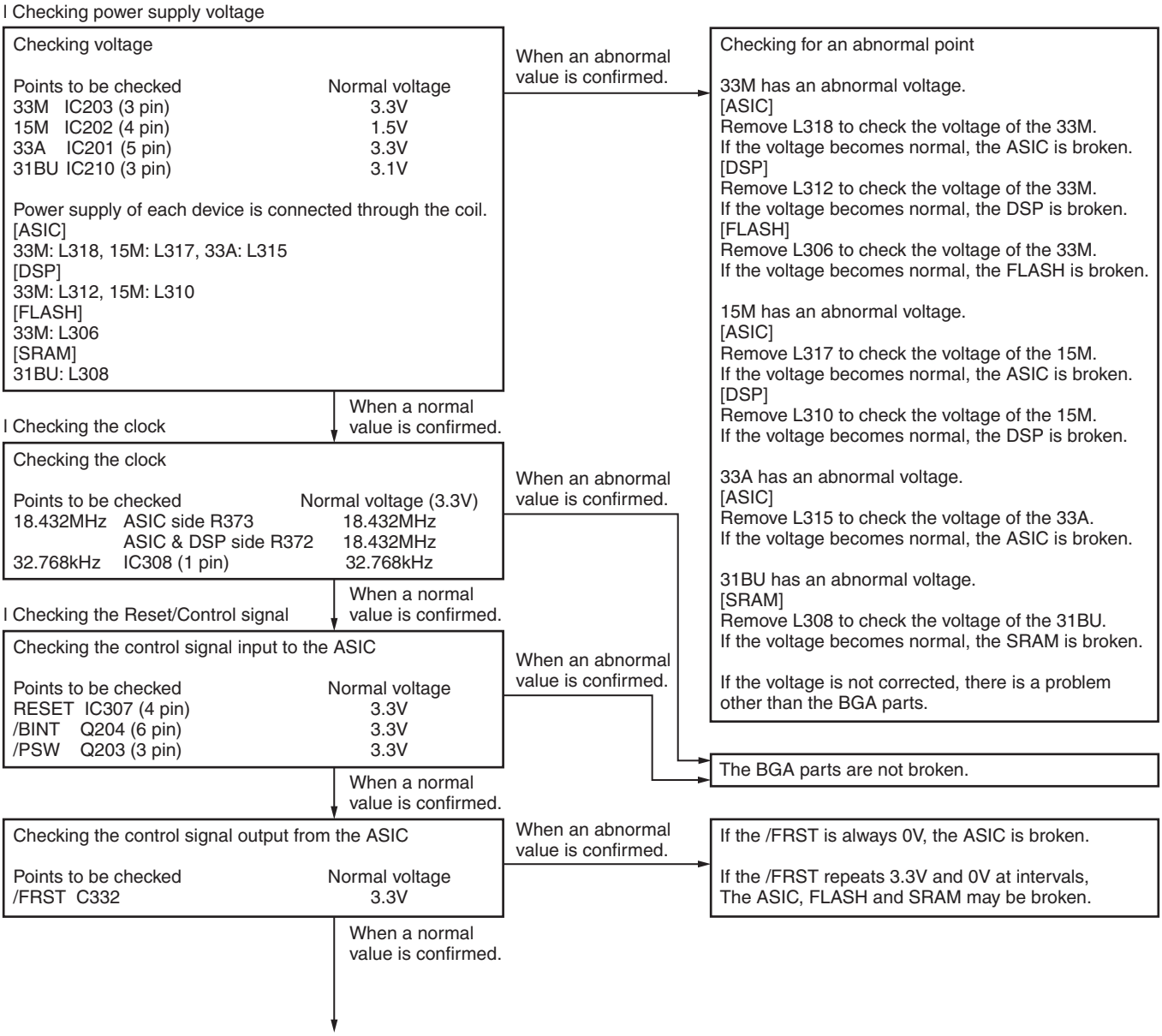
■ Overview

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

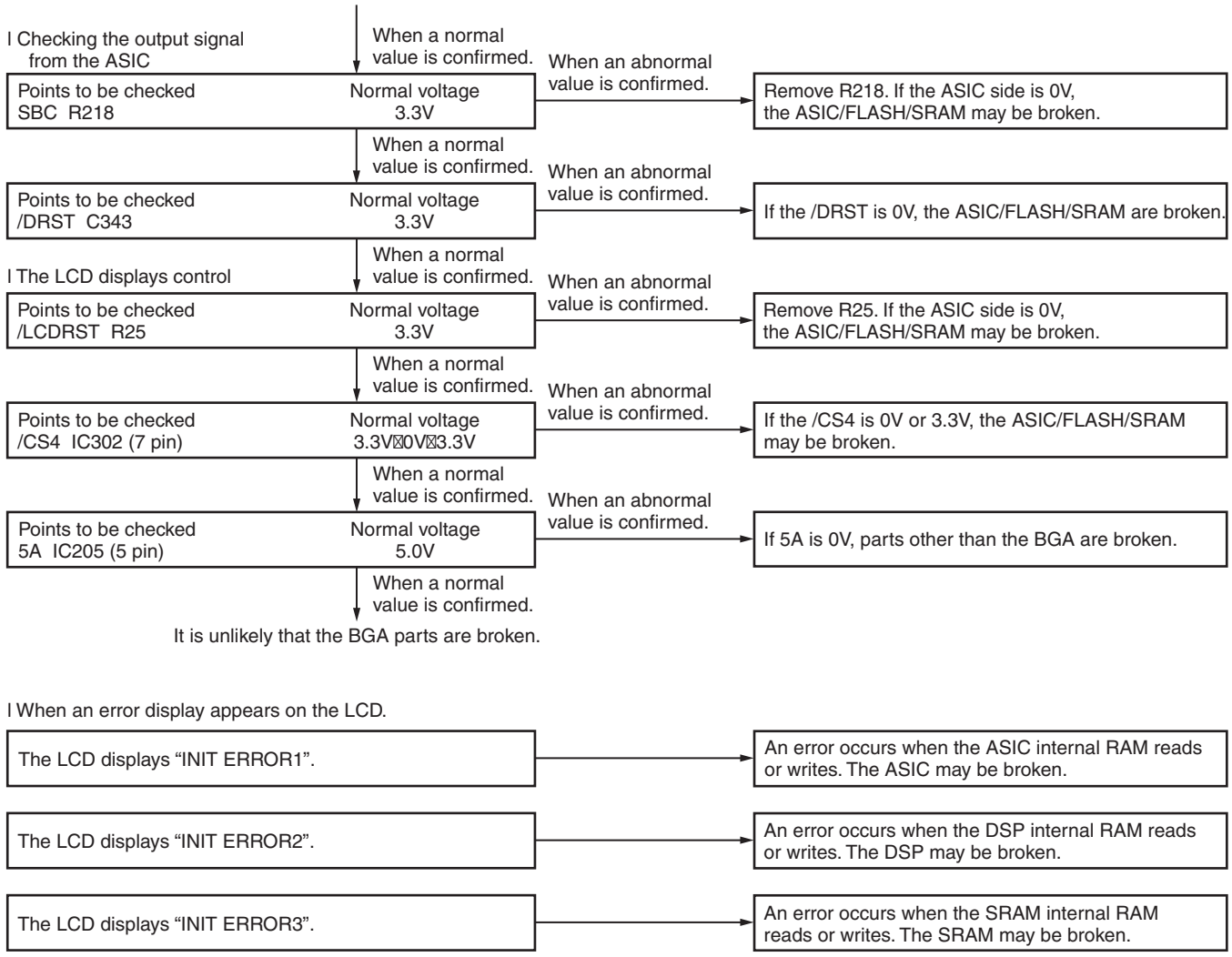
■ BGA parts

ASIC (IC309), DSP (IC304), FLASH ROM (IC303), SRAM (IC305)

When the BGA IC is problematic, please bring the printed circuit board (X57-9270-12) in for service. Various ESN/default adjustment values are written on the printed circuit board for service.
Additionally various ESN stickers are included. (Please refer to pages 37 and 38.)
Button type lithium battery (W09-0971-05) does not belong to the printed circuit board for service. Please use the part which has been attached to the printed circuit board. After the printed circuit board has been readjusted, please attach any ESN stickers to the chassis. When “ESN Validation” is used with NXDN Trunking, you must modify the ESN register.



TROUBLE SHOOTING



I When an error display appears on the LCD.

The LCD displays “INIT ERROR1”.	An error occurs when the ASIC internal RAM reads or writes. The ASIC may be broken.
The LCD displays “INIT ERROR2”.	An error occurs when the DSP internal RAM reads or writes. The DSP may be broken.
The LCD displays “INIT ERROR3”.	An error occurs when the SRAM internal RAM reads or writes. The SRAM may be broken.

■ Descriptions of signal names

1) RST(RESET) : ASIC reset signal LOW → Reset
2) /BINT : Battery final voltage monitoring LOW → Final voltage
3) /PSW : Power switch signal LOW → ON
4) /FRST : FLASH reset signal LOW → Reset
5) SBC : Switch B control HIGH → ON
6) /DRST : DSP reset signal LOW → Reset
7) /LCDRST : LCD reset signal LOW → Reset
8) /CS4 : LCD controller chip select signal LOW → Active
9) 5A : Analog peripheral control 5.0V power supply

TROUBLE SHOOTING

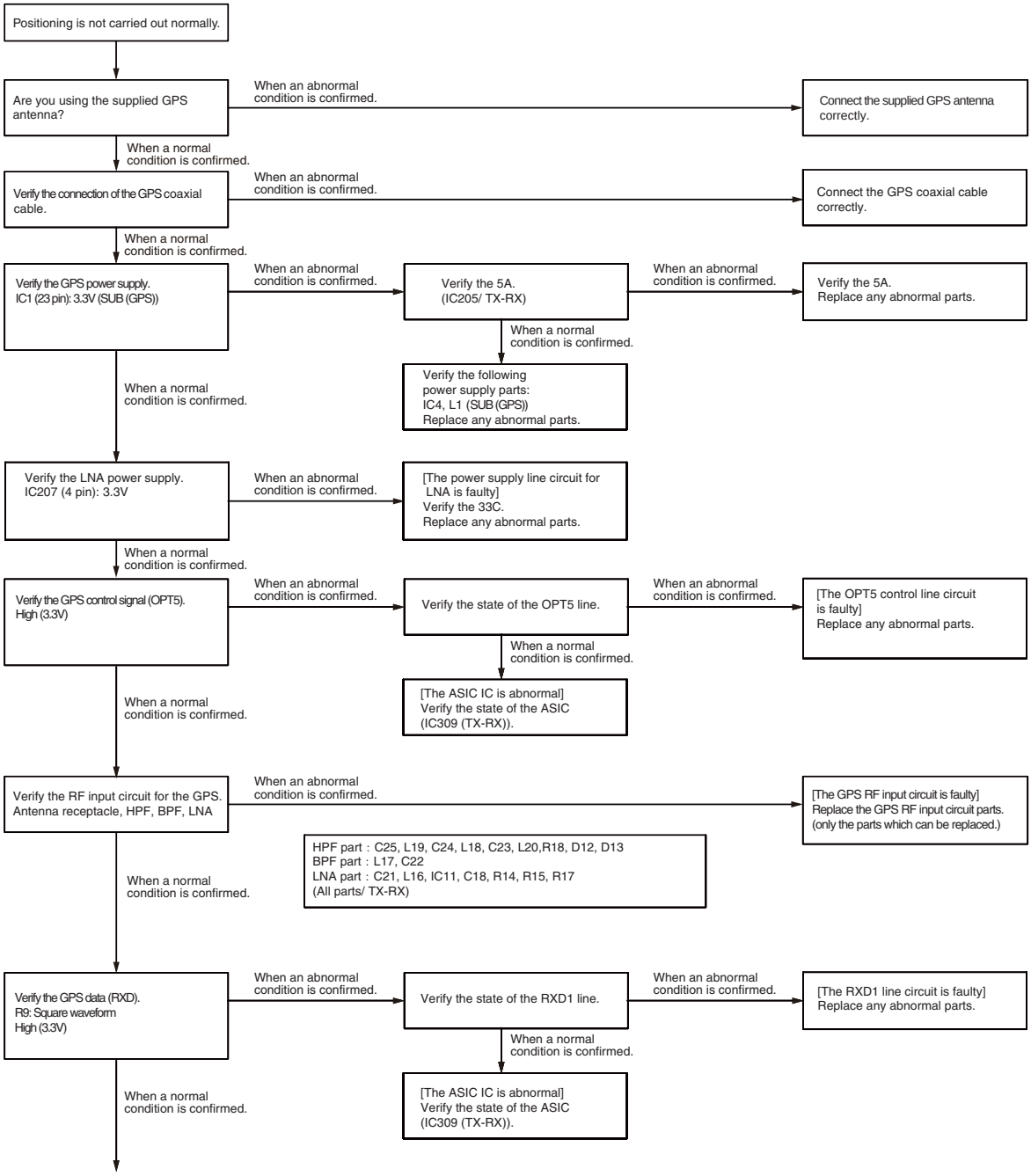
Failure Diagnosis of the GPS section

■ Overview

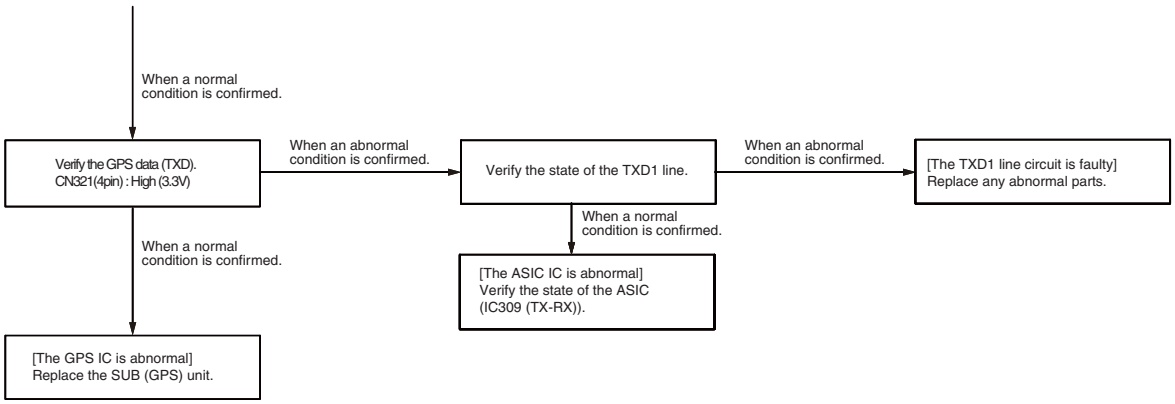
When the GPS function does not operate, use this flow chart to determine the problem.

■ Major parts for a GPS circuit (TX-RX unit and Sub (GPS) unit)

- GPS IC (IC1/ SUB (GPS))
- LNA IC (IC11/ TX-RX)
- BPF (L17/ TX-RX)
- 33C AVR (IC207/ TX-RX)
- 5A AVR (IC205/ TX-RX)
- 3.1V AVR (IC4/ SUB (GPS))



TROUBLE SHOOTING



■ Descriptions of signal names

1) 5A : GPS block power supply (from TX-RX unit)
2) 33C : GPS block host I/F 3.3V power supply
3) OPT5 : GPS power supply control (ASIC to GPS AVR) HIGH → ON
4) TXD, TXD1 : GPS control serial data (ASIC to GPS IC)
5) RXD, RXD1 : GPS NMEA serial data (GPS IC to ASIC)

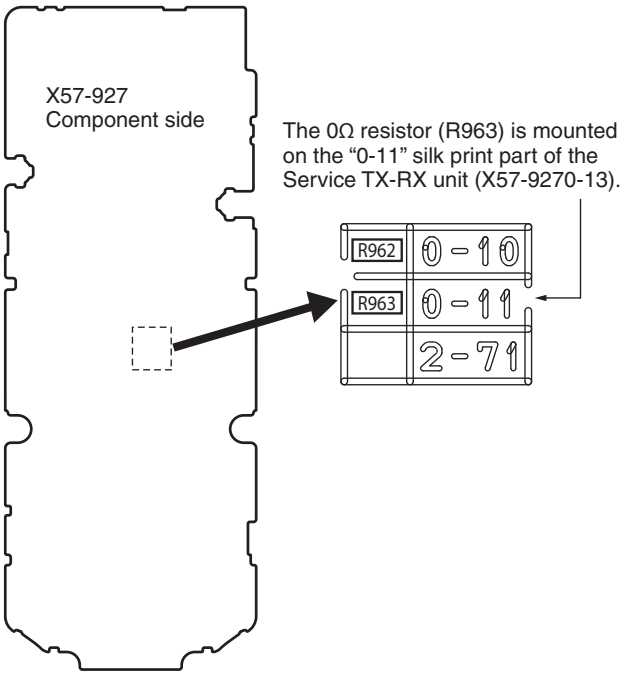
TROUBLE SHOOTING

Replacing TX-RX Unit

■ TX-RX unit Information

Model Name	Original TX-RX unit Number	For Service TX-RX unit Number
NX-210(G) (K2: 18-key)	X57-9270-12	X57-9270-13

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



X57-927	R962	R963
0-12	0Ω	(None)
0-13	(None)	0Ω

Note:

- The 0Ω resistor (R962 and R963) is used to differentiate the destination with a visual check. These are not connected with any PCB pattern; they are specifically for production control. There is no need to change the mount of two resistors.
- There is no difference between the schematic diagram of the Service TX-RX unit (X57-9270-13) and the schematic diagram of the original TX-RX unit (X57-9270-12). (R962 and R963 are connected with GND (ground) only.)

■ Supplied Accessories of "Service TX-RX unit"

Item (Including Parts Number)	Quantity
NX-210(G) TX-RX Unit (X57-927)	1
Kenwood ESN Label	1
NXDN ESN Label	1

■ "Service TX-RX unit" Data

The following data is written on the service TX-RX unit:

Data Type	Description
Firmware	NX-200(G)/210(G)/300(G) Firmware.
FPU Data (PC programming mode)	X57-927 (NX-210(G)) K2 type data.
Various Adjustment Data (PC Test mode)	General adjustment values for the X57-927 (NX-210(G)).
Kenwood ESN	Model name: NX-210GS Type: K2 The same number as the Kenwood ESN label is written.
NXDN ESN	The same number as the NXDN ESN label is written.

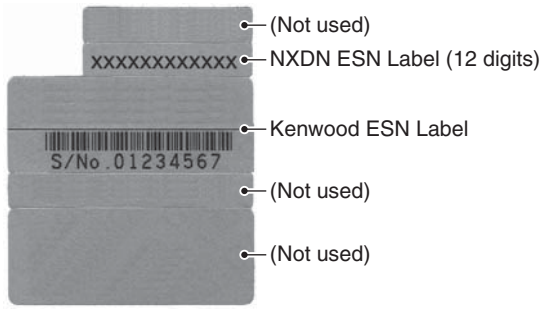
■ After Changing the PCB

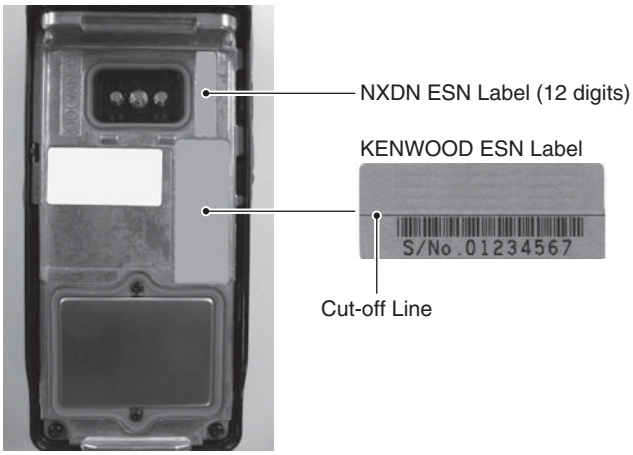
1. After changing the printed circuit board, write the up-to-date Firmware following the instructions in the "RE-ALIGNMENT - 6.Firmware Programming Mode".
2. Using the KPG-111D, select your desired item (Model Name and Frequency) from the Model> Product Information menu, then use Program> Write Data 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. Enter Program> Test Mode, then adjust the various adjustment data (PC Test Mode) as described in the "ADJUSTMENT".
4. Attach the new labels corresponding to the new printed circuit board. (Refer to the images on page 38 for label placement.)
5. If necessary, write the FPU data used by the customer with the KPG-111D/111DN.

Note:

- When using the ESN Validation function of NXDN Trunking, the NXDN ESN number changes when the circuit board is changed (the number is written on the circuit board); the NXDN Trunking System cannot be accessed. Use the KPG-110SM on the NXDN Trunking System side to reprogram the NXDN ESN number.
- When a new printed circuit board is used, the Kenwood ESN changes, as does the Transceiver Information display of the KPG-111D/111DN, but this does not have any effect on the operation of the transceiver.
- If changing to the original Kenwood ESN and NXDN ESN, please contact our service center.

TROUBLE SHOOTING



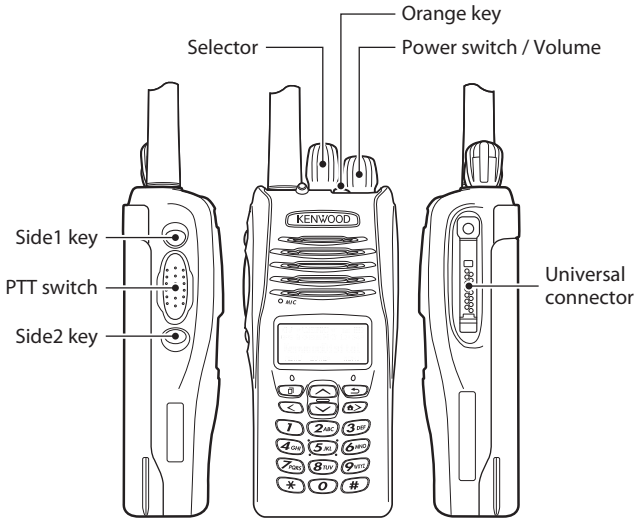


Note:

A UPC code and UPC barcode is not printed on the Kenwood ESN Label. If necessary, cut the label at the cut-off line and attach only the serial number.

ADJUSTMENT

Controls



Panel Test Mode

■ Test mode operation features

This transceiver has a test mode. **To enter test mode, press and hold the [⮌] key while turning the transceiver power ON. 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.

ADJUSTMENT

■ Key operation

Key	"FNC" not appears on the sub LCD display	
	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.
[Side1]	Push: Squelch level up Hold: Squelch off	Squelch level Squelch off: icon appears
[Side2]	Wide/Narrow/Very narrow	Wide: "w" Narrow: "n" Very narrow: "v"
[▯]	Shift to panel tuning mode	-
[⮌]	Function on	"FNC" appears on the sub LCD display
[<]	MSK 1200bps and 2400bps	2400bps: icon appears
[▫>]	Push: Test signaling up Hold: Test signaling up continuously	Signaling No.
[Orange]	-	-
[PTT]	Transmit	-
[0] to [9] and [#], [*]	Use as the DTMF keypad. If a key is pressed during transmission, the DTMF corresponding to the key that was presses is sent.	-

Key	"FNC" appears on the sub LCD display	
	Function	Display
[Selector]	-	-
[∧]	Function off	-
[∨]	Analog/NXDN	Analog: "A" NXDN: "N"
[Side1]	Function off	-
[Side2]	LCD all lights	LCD all point appears
[▯]	High power/Low power	High: "H" Low: "L"
[⮌]	Function off	-
[<]	Compander on/off	On: icon appears
[▫>]	Beat shift on/off	On: icon appears
[Orange]	Function off	-
[PTT]	Transmit	-
[0] to [9] and [#], [*]	Function off	-

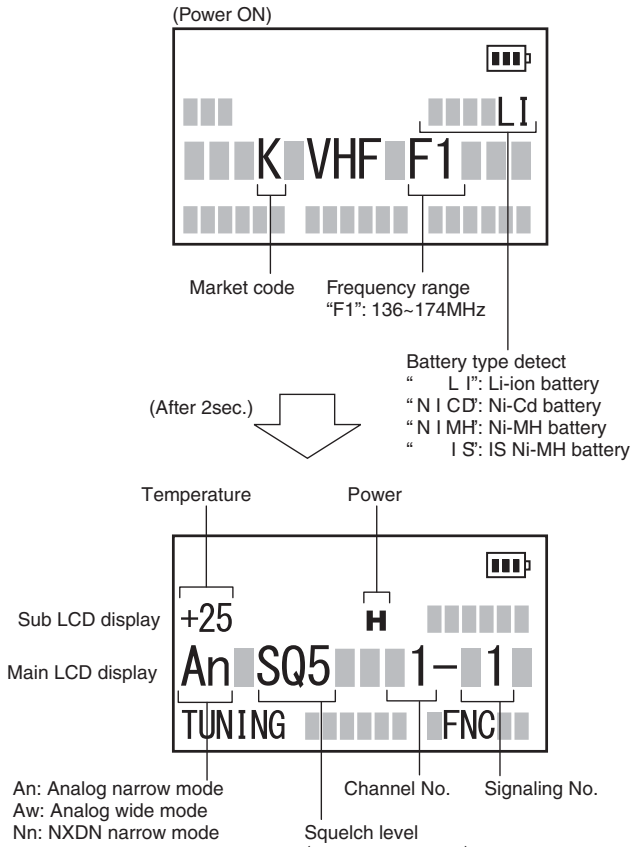
• LED indicator

Red LED Lights during transmission.
Green LED Lights when there is carrier.

• Sub LCD indicator

"FNC" Appears at function on.

• LCD display in panel test mode



■ 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.

• Test frequency

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

ADJUSTMENT

• Analog mode signaling

No.	RX	TX
1	None	None
2	None	100Hz Square Wave
3	LTR Data: AREA=0, GOTO=12 HOME=12 ID=47, FREE=25	LTR Data: AREA=0, GOTO=12 HOME=12 ID=47, FREE=25
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: 159D	DTMF: 159D
11	None	DTMF Code 9
12	2-tone: A: 304.7Hz B: 3106.0Hz	2-tone: A: 304.7Hz B: 3106.0Hz
13	Single Tone: 979.9Hz	Single Tone: 979.9Hz
14	None	Single Tone: 1000Hz
15	None	MSK
16	MSK	MSK

• NXDN mode signaling

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

RAN: Radio Access Number
PN9: Pseudo-Random Pattern (for production only)
No.7,9 item: PC test mode only

Panel Tuning Mode

■ Preparations for tuning the transceiver

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

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

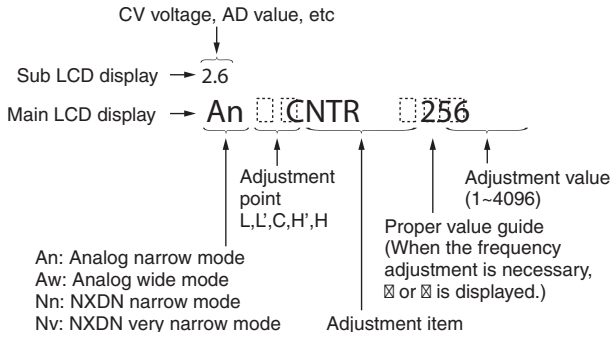
The speaker output connector must be terminated with a 8Ω dummy load and connected to an AC voltmeter and an audio distortion meter or a SINAD measurement meter at all times during tuning.

■ Transceiver tuning (To enter tuning mode)

To enter tuning mode, press the [▯] key while the transceiver is in test mode. Use the [<] key to write tuning data through tuning modes, and the [∧]/[∨] key to adjust tuning requirements (1 to 4096 appears on the LCD).

Use the [☎>] key to select the adjustment item through tuning modes. Use the [⮌] key to adjust 5 reference level adjustments, and use the [Side2] key to switch between Wide/Narrow/Very narrow.

• LCD display in panel tuning mode



■ Key operation

Key	Function	
	Push	Hold (1 second)
[Selector]	-	
[∧]	Adjustment value up	Continuation up
[∨]	Adjustment value down	Continuation down
[Side1]	Auto adjustment start	-
[Side2]	Wide/Narrow/Very narrow	-
[▯]	Shift to panel test mode	-
[⮌]	To enter 5 reference level adjustments	-
[<]	Writes the adjustment value	-
[☎>]	Go to next adjustment item	Back to last adjustment item
[Orange]	-	
[PTT]	Transmit	
[0] to [9] and [#], [*]	-	

■ 5 reference level adjustments frequency

Tuning point	RX (MHz)	TX (MHz)
Low	136.05000	136.10000
Low'	145.55000	145.60000
Center	155.05000	155.10000
High'	164.55000	164.60000
High	173.95000	173.90000

ADJUSTMENT

■ Adjustment item supplement

Adjustment Item	Description
LCD contrast	The contrast of LCD display can be changed.
Counterclockwise Volume	“Counterclockwise Volume” is adjusted at the minimum volume position. “Clockwise Volume” is adjusted at the maximum volume position. These adjustments can correct the volume variation. Both “Counterclockwise Volume” and “Clockwise Volume” must be adjusted. (The curve data of volume is applied.)
Clockwise Volume	
Receive Assist	The lock voltage of VCO (Receive) is adjusted. This item must be adjusted before all adjustment items for receiver section are adjusted.
Transmit Assist	The lock voltage of VCO (Transmit) is adjusted. This item must be adjusted before all adjustment items for transmitter section are adjusted.
Frequency	Frequency stability 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	Real-Time Clock (RTC) is adjusted. This item uses the internal clock. (Any measurement equipment is not required.)
High Transmit Power	High Transmit Power is adjusted.
Low Transmit Power	Low Transmit Power is adjusted.
Balance	The transmit audio 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 (NXDN Narrow/Very Narrow)	Maximum Deviation of NXDN (Narrow/Very Narrow) is adjusted.
Maximum Deviation (Analog Wide/Narrow)	Maximum Deviation of Analog (Wide/Narrow) is adjusted. This item must be adjusted before all adjustment items for tone deviations are adjusted. Note: “Maximum Deviation (Analog Narrow)” must be adjusted before “CWID Deviation (NXDN Very Narrow)” is adjusted.
QT Deviation	QT tone deviation is adjusted.
DQT Deviation	DQT tone deviation is adjusted.
LTR Deviation	LTR tone deviation is adjusted.
DTMF Deviation	DTMF tone deviation is adjusted.
Single Tone Deviation	The deviation of Single Tone used in “2-tone” is adjusted.
MSK Deviation	MSK tone deviation is adjusted.
CWID Deviation	CWID tone deviation is adjusted. CWID is used to inform the others who is transmitting on a 6.25-kHz spacing channel. (In FCC rule, Analog mode or CWID is required for each channel-spacing.)
VOX 1	VOX sensitivity at “VOX 1” is adjusted.
VOX 10	VOX sensitivity at “VOX 10” is adjusted.
Sensitivity 1	Band-Pass Filter is adjusted. The performance of Receive Sensitivity is improved.
Sensitivity 2	The gain of RF amplifier is adjusted. The performance of the interfering wave is improved.
RSSI Reference	The minimum RSSI level for scan stop is adjusted.
Open Squelch	The squelch level at level “5” is adjusted.
Low RSSI	RSSI display level “ ” is adjusted. Both “Low RSSI” and “High RSSI” must be adjusted. (The curve data of RSSI level is applied.)
High RSSI	
Tight Squelch	The squelch level at level “9” is adjusted.
Battery Warning Level	Battery Warning Level (LED blinking level) is adjusted. Battery Warning Level minus 0.4V is the transmission inhibited level.

ADJUSTMENT

■ Adjustment item and Display

Order	Adjusutment item	Main LCD display	Sub LCD display	Aw (Analog Wide)	An (Analog Narrow)	Nn (NXDN Narrow)	Nv (NXDN Very Narrow)	Adjust item Number
				Adjustment range				
1	LCD contrast	CNTR	-	1 point ADJ				Common Section 2
				1~256				
2	Counterclockwise Volume	VOL1	VOL measurement value	1 point ADJ				Common Section 3
				1~256				
3	Clockwise Volume	VOL2	VOL measurement value	1 point ADJ				Common Section 4
				1~256				
4	Receive Assist	RAST	(CV voltage)	5 point ADJ				Common Section 5
				1~4096				
5	Transmit Assist	TAST	(CV voltage)	5 point ADJ				Common Section 5
				1~4096				
6	RTC (Real-time clock)	RTC	-	1 point ADJ				Common Section 6
				–62~–1/0/+1~+62				
7	High Transmit Power	HIPWR	-	-	5	-	-	Transmitter Section 1
				1~1024				
8	Low Transmit Power	LOPWR	-	-	5	-	-	Transmitter Section 2
				1~1024				
9	Balance	BAL	(Encode frequency)	-	5	-	-	Transmitter Section 3
				1~256				
10	Maximum Deviation (NXDN)	NDEV	-	-	-	5	5	Transmitter Section 4
				1~1024				
11	Maximum Deviation (Analog)	ADEV	-	5	5	-	-	Transmitter Section 5
				1~1024				
12	QT Deviation	QT	-	1	1	-	-	Transmitter Section 6
				1~1024				
13	DQT Deviation	DQT	-	1	1	-	-	Transmitter Section 7
				1~1024				
14	LTR Deviation	LTR	-	1	1	-	-	Transmitter Section 8
				1~1024				
15	DTMF Deviation	DTMF	-	1	1	-	-	Transmitter Section 9
				1~1024				
16	Single Tone Deviation	TONE	-	1	1	-	-	Transmitter Section 10
				1~1024				
17	MSK Deviation	MSK	-	1	1	-	-	Transmitter Section 11
				1~1024				
18	CWID Deviation	CWID	-	-	-	-	1	Transmitter Section 12
				1~1024				
19	VOX1	VOX1	VOX measurement value	1 point ADJ				Transmitter Section 13
				1~256				
20	VOX10	VOX10	VOX measurement value	1 point ADJ				Transmitter Section 14
				1~256				
21	Sensitivity 1	SENS1	(RSSI measurement value)	-	5	-	-	Receive Section 2
				1~256				

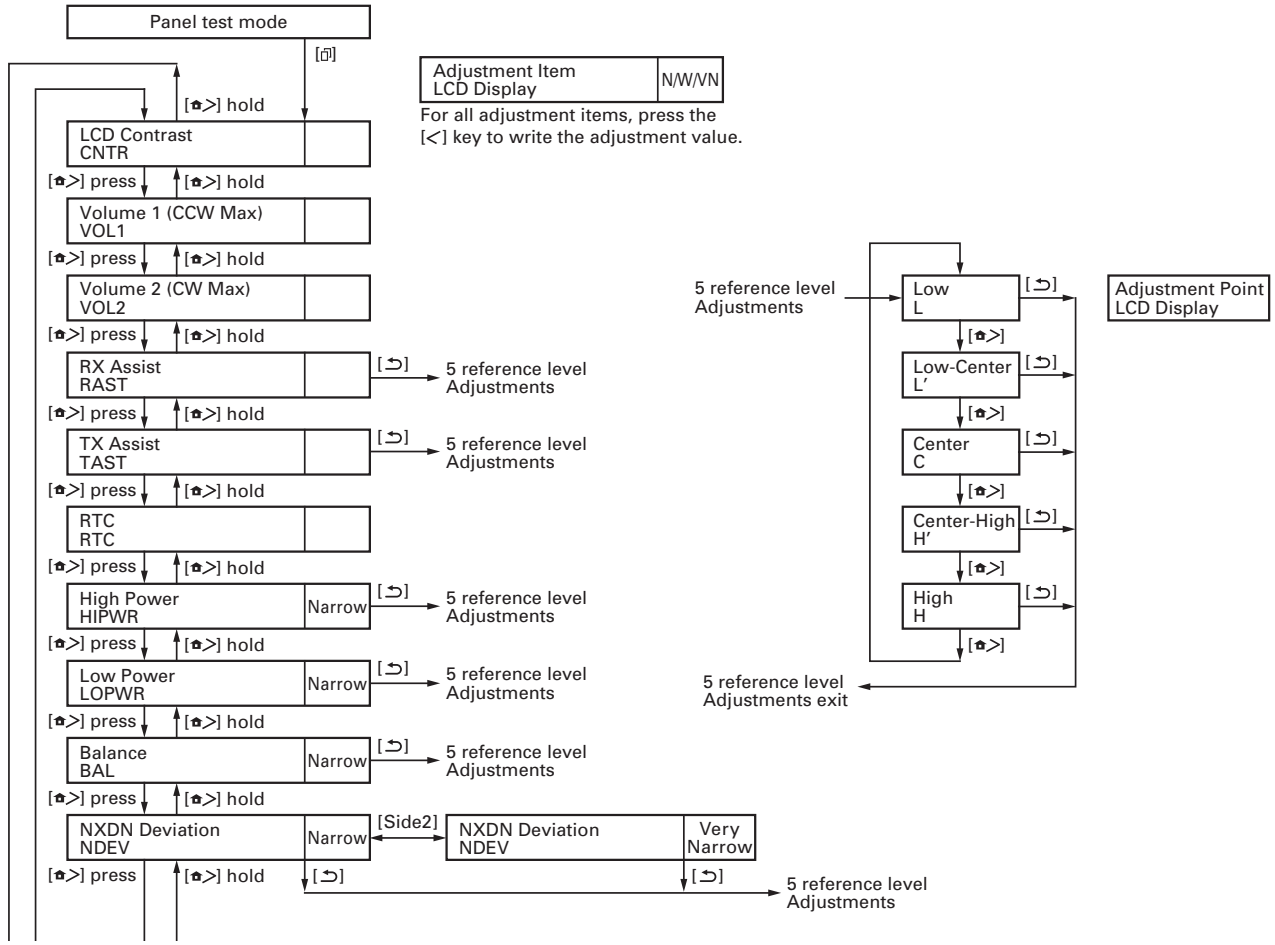
ADJUSTMENT

Order	Adjusutment item	Main LCD display	Sub LCD display	Aw (Analog Wide)	An (Analog Narrow)	Nn (NXDN Nar-row)	Nv (NXDN Very Narrow)	Adjust item Number
				Adjustment range				
22	Sensitivity 2	SENS2	(RSSI measurement value)	-	5	-	-	Receive Section 3
				1~256				
23	RSSI Reference	RRSSI	(RSSI measurement value)	5	5	- *1	5	Receive Section 4
				1~256				
24	Open Squelch	SQL	(ASQDET measurement value)	5	5	- *1	5	Receive Section 5
				1~256				
25	Low RSSI	LRSSI	(RSSI measurement value)	5	5	- *1	5	Receive Section 6
				1~256				
26	High RSSI	HRSSI	(RSSI measurement value)	5	5	- *1	5	Receive Section 7
				1~256				
27	Tight Squelch	SQLT	(ASQDET measurement value)	5	5	-	-	Receive Section 8
				1~256				
28	Battery Warning Level	BATT	(BATT measurement value)	1 point ADJ				Transmitter Section 15
				1~256				

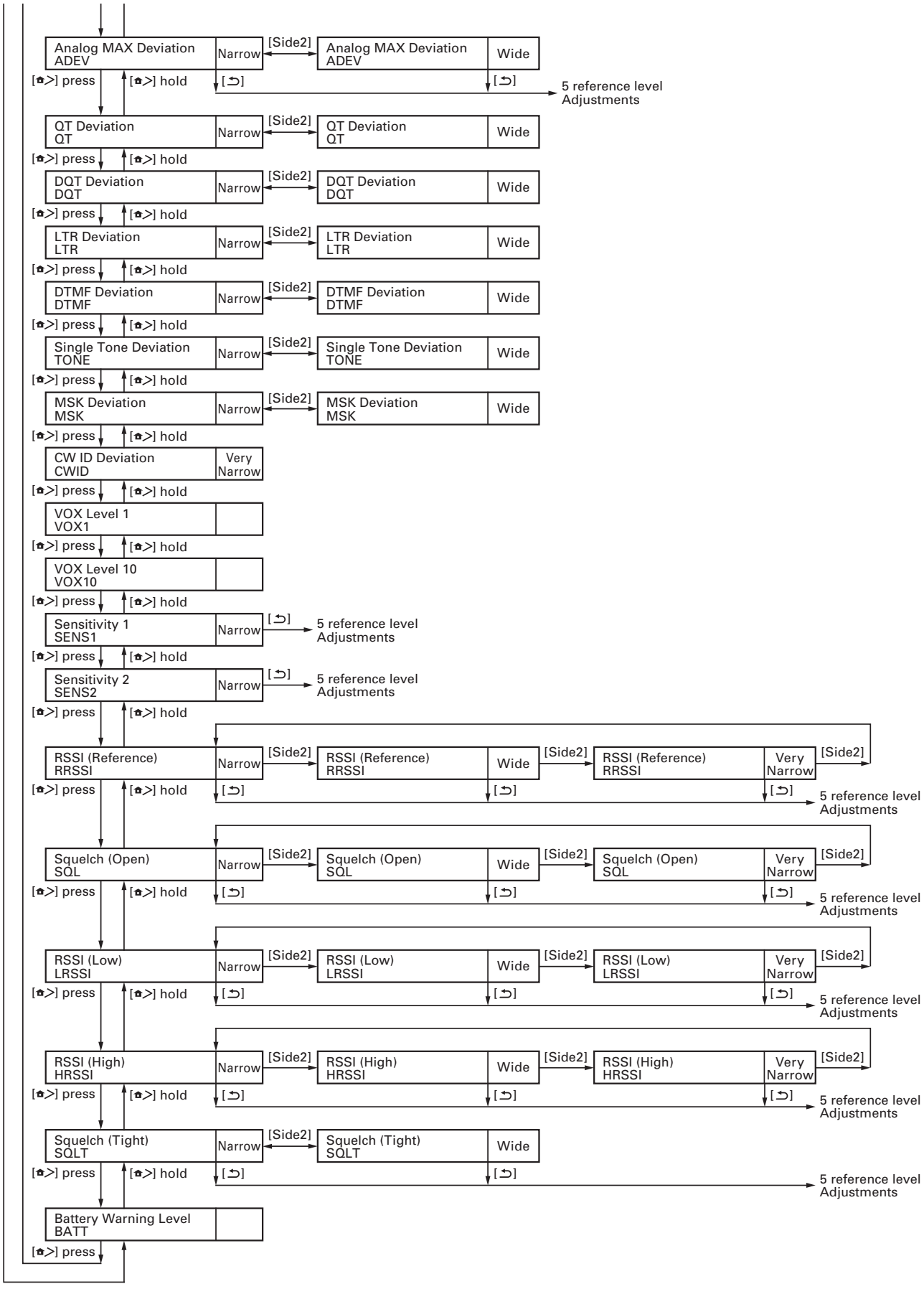
*1: Because NXDN Narrow is adjusted by adjusting Analog Narrow, it is not necessary to adjust NXDN Narrow.

■ Panel tuning mode flow chart

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



ADJUSTMENT


Analog MAX Deviation ADEV
Narrow
[Side2]
Analog MAX Deviation ADEV
Wide
[▲>] press
[▲>] hold
[⮌]
[⮌]
5 reference level Adjustments
QT Deviation QT
DQT Deviation DQT
LTR Deviation LTR
DTMF Deviation DTMF
Single Tone Deviation TONE
MSK Deviation MSK
CW ID Deviation CWID
Very Narrow
VOX Level 1 VOX1
VOX Level 10 VOX10
Sensitivity 1 SENS1
Sensitivity 2 SENS2
RSSI (Reference) RRSSI
Very Narrow
Squelch (Open) SQL
RSSI (Low) LRSSI
RSSI (High) HRSSI
Squelch (Tight) SQLT
Battery Warning Level BATT

ADJUSTMENT

Test Equipment Required for Alignment

Test Equipment	Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range Modulation Output When performing the Frequency adjustment, the following accuracy is necessary. • 0.003ppm Use a standard oscillator for adjustments, if necessary.	136 to 174MHz Frequency modulation and external modulation –127dBm/0.1µV to greater than –20dBm/22.4mV
2. Power Meter	Input Impedance Operation Frequency Measurement Capability	50Ω 136 to 174MHz Vicinity of 10W
3. Deviation Meter	Frequency Range	136 to 174MHz
4. Digital Volt Meter (DVM)	Measuring Range Input Impedance	10mV to 10V DC High input impedance for minimum circuit loading
5. Oscilloscope		DC through 30MHz
6. High Sensitivity Frequency Counter	Frequency Range Frequency Stability	10Hz to 1000MHz 0.2ppm or less
7. Ammeter		5A
8. AF Volt Meter (AF VM)	Frequency Range Voltage Range	50Hz to 10kHz 1mV to 10V
9. Audio Generator (AG)	Frequency Range Output	50Hz to 5kHz or more 0 to 1V
10. Distortion Meter	Capability Input Level	3% or less at 1kHz 50mV to 10Vrms
11. 8Ω Dummy Load		Approx. 8Ω, 3W
12. Regulated Power Supply		5V to 10V, approx. 3A Useful if ammeter equipped

■ The following parts are required for adjustment

1. **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.)

2. **Nut wrench**

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

KENWOOD part No.: W05-1123-00

3. **Universal connector**

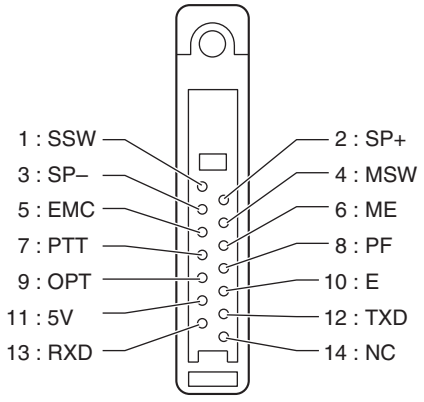
Use the interface cable (KPG-36A/36U) for PC tuning or the lead wire with plug (E30-3287-28) and screw (N08-0535-08) for panel tuning. Connect the plug to the universal connector of the transceiver and tighten the screw.

The lead wire with plug (E30-3287-28) and screw (N08-0535-08) terminals are as follows. Numbers are universal connector terminal numbers.

Caution

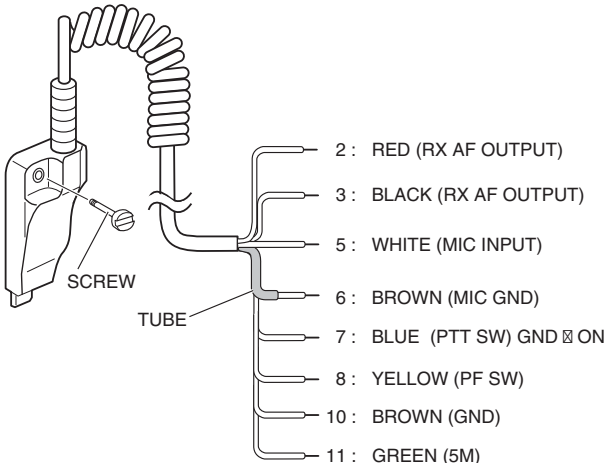
1. When connecting the plug to the universal connector of the transceiver, a short circuit may occur. To prevent this, be sure to turn the transceiver POWER switch off.
2. Since the RX AF output is a BTL output, there is a DC component. Isolate this with a capacitor or transformer as shown in the figure.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

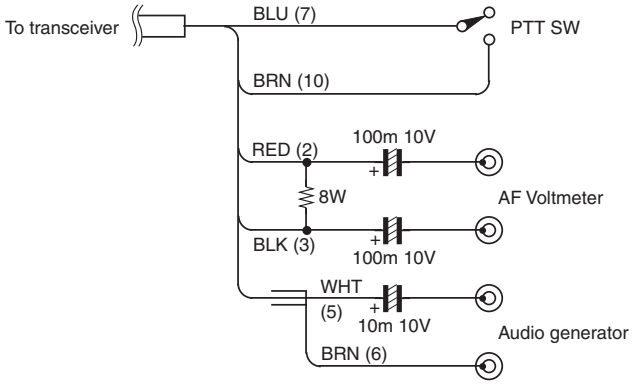
• Universal connector



ADJUSTMENT

• Panel tuning



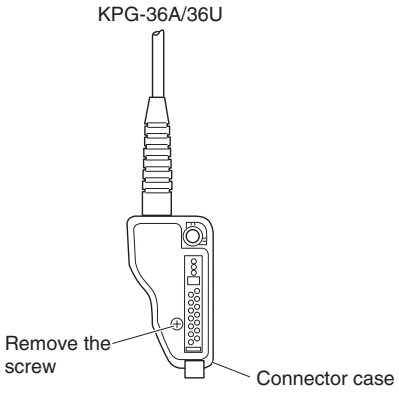


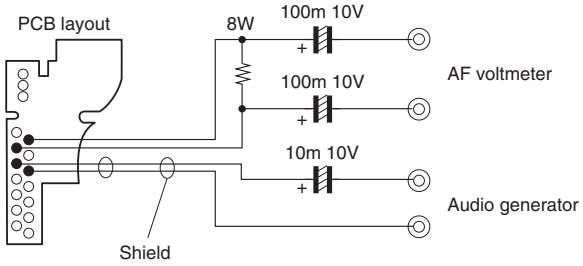
Note: Pin 1 (SSW) and Pin 4 (MSW) are connected to Pin 10 (GND) to active External SP and External MIC.

• 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.





ADJUSTMENT

Radio Check Section

Note: When the GPS function is activated, the consumption current increases by about 70 mA.

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel test mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Frequency check	1) CH-Sig: 1-1 PTT: ON	1) Test Channel Channel: 1 Test Signaling Mode: Analog Signaling: 1 PTT: Press [Transmit] button.	f. counter	Panel	ANT			Check an internal temperature of radio within 25˚C ± 2˚C.	±0.5ppm –75.55Hz~ +77.55Hz @155.1MHz
2. High power check (Batt: 7.5V)	1) CH-Sig: 1-1 PTT: ON	1) Test Channel Channel: 1 Test Signaling Mode: Analog Signaling: 1 PTT: Press [Transmit] button.	Power meter Ammeter					Check	4.5W~5.5W 2.0A or less
	2) CH-Sig: 2-1 PTT: ON	2) Test Channel Channel: 2 Test Signaling Mode: Analog Signaling: 1 PTT: Press [Transmit] button.							
	3) CH-Sig: 3-1 PTT: ON	3) Test Channel Channel: 3 Test Signaling Mode: Analog Signaling: 1 PTT: Press [Transmit] button.							
3. Low power check (Batt: 7.5V)	1) CH-Sig: 1-1 PTT: ON	1) Test Channel Channel: 1 Test Signaling Mode: Analog Signaling: 1 PTT: Press [Transmit] button.							0.7W~1.2W 1.0A or less
	2) CH-Sig: 2-1 PTT: ON	2) Test Channel Channel: 2 Test Signaling Mode: Analog Signaling: 1 PTT: Press [Transmit] button.							
	3) CH-Sig: 3-1 PTT: ON	3) Test Channel Channel: 3 Test Signaling Mode: Analog Signaling: 1 PTT: Press [Transmit] button.							
4. MIC sensitivity check	1) CH-Sig: 1-1 AG: 1kHz PTT: ON	1) Test Channel Channel: 1 Test Signaling Mode: Analog Signaling: 1 AG: 1kHz PTT: Press [Transmit] button.	Deviation meter Oscilloscope AG AF VTVM		ANT Universal connector			Adjust AG input to get a standard MOD.	12.5mV±5.8mV

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel test mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
5. Sensitivity check	1) CH-Sig: 1-1 SSG output Wide: –117dBm (0.32µV) (MOD: 1kHz/±3kHz) Narrow: –117dBm (0.32µV) (MOD: 1kH/±1.5kHz)	1) Test Channel Channel: 1 Test Signaling Mode: Analog Signaling: 1 SSG output Wide: –117dBm (0.32µV) (MOD: 1kHz/±3kHz) Narrow: –117dBm (0.32µV) (MOD: 1kH/±1.5kHz)	SSG AF VM Oscilloscope Distortion meter 8Ω Dummy load		ANT Universal connector			Check	12dB SINAD or more

Common Section

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting	1) BATT terminal voltage: 7.5V 2) SSG standard modulation [Wide] MOD: 1kHz, DEV: 3kH [Narrow] MOD: 1kHz, DEV: 1.5kHz								
2. LCD contrast	1) Adj item: [CNTR] Adjust: [***] Press [<] key to store the adjustment value.	1) Adj item: [LCD Contrast] Press [Apply] button to store the adjustment value.				Panel	[Panel tuning mode] [∧], [∨] [PC test mode] [◀],[▶]	Adjust the LCD contrast by looking.	This item is needed when the LCD ASSY (B38-0923-05) is replaced.
3. Counter-clockwise Volume	1) Adj item: [VOL1] Adjust: [***]	1) Adj item: [Counter-clockwise Volume]						[Panel tuning mode] Turn the volume knob counterclockwise fully. Press [<] key to store the adjustment value. [PC test mode] Turn the volume knob counterclockwise fully. Press [Apply] button to store the adjustment value.	This item is needed when the variable resistor (R31-0652-15) is replaced.
4. Clockwise Volume	1) Adj item: [VOL2] Adjust: [***]	1) Adj item: [Clockwise Volume]						[Panel tuning mode] Turn the volume knob clockwise fully. Press [<] key to store the adjustment value. [PC test mode] Turn the volume knob clockwise fully. Press [Apply] button to store the adjustment value.	

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
5. Receive Assist	1) Adj item: [RAST] Adjust: [****] 2) Adj item: [L RAST]→[L' RAST]→[C RAST]→[H' RAST]→[H RAST] Adjust: [****] Press [<] key to store the adjustment value.	1) Adj item: [Receive Assist] 2) Adj item: [Low], [Low'], [Center], [High'], [High] Press [Apply All] button to store the adjustment value.				Panel	[Panel tuning mode] [◜◝], [◟◞] [PC test mode] [◀],[▶]	The sub LCD display and [V] indicator on the PC window shows VCO lock voltage. Change the adjustment value to get VCO lock voltage within the limit of the specified voltage. **Note:** Confirm the VCO lock voltage approximately 3 seconds after the adjustment value is changed.	2.5V±0.1V [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.
Transmit Assist	1) Adj item: [TAST] Adjust: [****] 2) Adj item: [L TAST]→[L' TAST]→[C TAST]→[H' TAST]→[H TAST] Adjust: [****] PTT : ON (RF power is not output.) Press [<] key to store the adjustment value.	1) Adj item: [Transmit Assist] 2) Adj item: [Low], [Low'], [Center], [High'], [High] PTT: Press [Transmit] button. Press [Apply All] button to store the adjustment value.							
6. RTC oscillation frequency adjust	1) Adj item: [RTC] Adjust: [***]	1) Adj item: [RTC (Real-time clock)]						[Panel tuning mode] Press [Side1] key. After automatic adjustment adjusted value is displayed on the LCD. Press [<] key to store the adjustment value. [PC test mode] Press [Start] button of "Auto Tuning". Press [Apply] button to store the adjustment value after the automatic adjustment was finished.	
7. Frequency adjust	* The Frequency adjustment can be performed only in PC test mode.	1) Adj item: [Frequency] SSG output : –20dBm (22.4mV) (CW (without modulation)) **Caution:** Perform the frequency adjustment under the following conditions. • Temperature range of +23˚C to +27˚C (+73.4˚F to +80.6˚F). (The temperature is displayed on the Frequency adjustment screen of the KPG-111D and the LCD of the transceiver.) • Use an accuracy of 0.003ppm for the SSG. (Use a standard oscillator if necessary.)	SSG	Panel	ANT			[PC test mode] Press [Start] button of "Auto Tuning". Press [Apply] button to store the adjustment value after the automatic adjustment was finished.	[PC test mode] The value of "IF20" will become around "0" after the adjustment was finished. Remark: "Frequency" is adjusted under receiving condition with SSG.

ADJUSTMENT

Transmitter Section

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. High Transmit Power adjust (Batt: 7.5V)	1) Adj item: [HIPWR] Adjust: [****] 2) Adj item: [L HIPWR]→ [L' HIPWR]→ [C HIPWR]→ [H' HIPWR]→ [H HIPWR] Adjust: [****] PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [High Transmit Power] 2) Adj item: [Low], [Low'], [Center], [High'], [High] PTT: Press [Transmit] button. Press [Apply All] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	[Panel tuning mode] [∧], [∨] [PC test mode] [◀],[▶]	5.0W	±0.2W 2.0A or less [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.
2. Low Transmit Power adjust (Batt: 7.5V)	1) Adj item: [LOPWR] Adjust: [****] 2) Adj item: [L LOPWR]→ [L' LOPWR]→ [C LOPWR]→ [H' LOPWR]→ [H LOPWR] Adjust: [****] PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [Low Transmit Power] 2) Adj item: [Low], [Low'], [Center], [High'], [High] PTT: Press [Transmit] button. Press [Apply All] button to store the adjustment value.						0.8W	±0.1W 1.0A or less [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.
3. Balance adjust *2	1) Adj item: [BAL] Adjust: [***] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [L BAL]→ [L' BAL]→[C BAL]→ [H' BAL]→[H BAL] Adjust: [***] PTT: ON Press [<] key to store the adjustment value. Sub LCD: Tone frequency [Side1] key: Press while transmitting to change 20Hz and 2kHz.	1) Adj item: [Balance] Deviation meter LPF : 3kHz HPF : OFF 2) Adj item: [Low], [Low'], [Center], [High'], [High] PTT: Press [Transmit] button. Press [Apply All] button to store the adjustment value. [2kHz Sine Wave Check box]: Check while transmitting change to 2kHz.	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.	2kHz Tone deviation is within ±1.0% of 20Hz tone deviation. [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.
*2: Refer to the "Necessary Deviation adjustment item for each signaling and mode" table on pages 54 and 55. Balance adjustment is common with the adjustment of all signaling deviations.									
4. Maximum Deviation (NXDN) adjust *3 [Narrow]	1) Adj item: [Nn NDEV] Adjust: [****] Deviation meter LPF: 3kHz HPF: OFF PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [Maximum Deviation (NXDN Narrow)] Deviation meter LPF: 3kHz HPF: OFF PTT: Press [Transmit] button. Press [Apply All] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [∧], [∨] [PC test mode] [◀],[▶]	Write Reference value "497" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is between 2995Hz and 3117Hz.	2995~3117Hz [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
Maximum Deviation (NXDN) adjust *3 [Very Narrow]	1) Adj item: [Nv NDEV] Adjust: [****] PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [Maximum Deviation (NXDN Very Narrow)] PTT: Press [Transmit] button. Press [Apply All] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [∧], [∨] [PC test mode] [◀],[▶]	Write Reference value “497" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is between 1311Hz and 1363Hz.	1311~1363Hz [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.
5. Maximum Deviation (Analog) adjust *3 [Narrow]	1) Adj item: [An ADEV] Adjust: [****] PTT:ON Press [<] key to store the adjustment value.	1) Adj item: [Maximum Deviation (Analog Narrow)] Press [Apply All] button to store the adjustment value.						Write Reference value “495" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is between 2050Hz and 2150Hz. Deviation meter LPF: 15kHz HPF: OFF [Panel tuning mode] PTT: ON [PC test mode] PTT: Press [Transmit] button	2050~2150Hz [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.
[Wide]	1) Adj item: [Aw ADEV] Adjust: [****] 2) Adj item: [AwL ADEV]→ [AwL' ADEV]→ [AwC ADEV]→ [AwH' ADEV]→ [AwH ADEV] Adjust: [****] Press [<] key to store the adjustment value.	1) Adj item: [Maximum Deviation (Analog Wide)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] Press [Apply All] button to store the adjustment value.						Write Reference value “495" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is between 4150Hz and 4250Hz. Deviation meter LPF: 15kHz HPF: OFF [Panel tuning mode] PTT: ON [PC test mode] PTT: Press [Transmit] button	4150~4250Hz [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.
*3: Refer to the “Necessary Deviation adjustment item for each signaling and mode” table on pages 54 and 55. Regarding Maximum Deviation (Analog), it is common with the adjustment of all analog signalings.									
6. QT Deviation adjust *4 [Narrow]	1) Adj item: [An QT] Adjust: [****] Deviation meter LPF: 3kHz HPF: OFF PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [QT Deviation (Analog Narrow)] Deviation meter LPF: 3kHz HPF: OFF PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [∧], [∨] [PC test mode] [◀],[▶]	Write the value as followings. 513 (Reference value)	0.35kHz±0.05kHz

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
QT Deviation adjust *4 [Wide]	1) Adj item: [Aw QT] Adjust: [****] PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [QT Deviation (Analog Wide)] PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [∧], [∨] [PC test mode] [◀],[▶]	Write the value as followings. 513 (Reference value)	0.75kHz±0.05kHz
7. DQT Deviation adjust *4 [Narrow]	1) Adj item: [An DQT] Adjust: [****] Deviation meter LPF: 3kHz HPF: OFF PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [DQT Deviation (Analog Narrow)] Deviation meter LPF: 3kHz HPF: OFF PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.						Write the value as followings. 415 (Reference value)	0.35kHz±0.05kHz
[Wide]	1) Adj item: [Aw DQT] Adjust: [****] PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [DQT Deviation (Analog Wide)] PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.							0.75kHz±0.05kHz
8. LTR Deviation adjust *4 [Narrow]	1) Adj item: [An LTR] Adjust: [****] Deviation meter LPF: 3kHz HPF: OFF PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [LTR Deviation (Analog Narrow)] Deviation meter LPF: 3kHz HPF: OFF PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.						Write the value as followings. 465 (Reference value)	0.75kHz±0.05kHz
[Wide]	1) Adj item: [Aw LTR] Adjust: [****] PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [LTR Deviation (Analog Wide)] PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.							1.00kHz±0.05kHz
9. DTMF Deviation adjust *4 [Narrow]	1) Adj item: [An DTMF] Adjust: [****] Deviation meter LPF: 15kHz HPF: OFF PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [DTMF Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.						Write the value as followings. 540 (Reference value)	1.25kHz±0.05kHz
[Wide]	1) Adj item: [Aw DTMF] Adjust: [****] PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [DTMF Deviation (Analog Wide)] PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.							2.50kHz±0.05kHz

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
10. Single Tone Deviation adjust *4 [Narrow]	1) Adj item: [An TONE] Adjust: [****] Deviation meter LPF: 15kHz HPF: OFF PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [Single Tone Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [◠], [◡] [PC test mode] [◀],[▶]	Write the value as followings. 513 (Reference value)	1.50kHz±0.05kHz
[Wide]	1) Adj item: [Aw TONE] Adjust: [****] PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [Single Tone Deviation (Analog Wide)] PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.							3.00kHz±0.05kHz
11. MSK Deviation adjust *4 [Narrow]	1) Adj item: [An MSK] Adjust: [****] Deviation meter LPF: 15kHz HPF: OFF PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [MSK Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.						Write the value as followings. 505 (Reference value)	1.50kHz±0.05kHz
[Wide]	1) Adj item: [Aw MSK] Adjust: [****] PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [MSK Deviation (Analog Wide)] PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.							3.00kHz±0.05kHz
12. CWID Deviation adjust *4 [Very Narrow]	1) Adj item: [Nv CWID] Adjust: [****] Deviation meter LPF: 15kHz HPF: OFF PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [CW ID Deviation (NXDN Very Narrow)] Deviation meter LPF: 15kHz HPF: OFF PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.						Write the value as followings. 376 (Reference value)	1.10kHz±0.10kHz
*4: Refer to the “Necessary Deviation adjustment item for each signaling and mode” table on pages 54 and 55.									
13. VOX1 adjust	1) Adj item: [VOX1] Adjust: [***] AG: 1kHz/45mV at MIC terminal	1) Adj item: [VOX1] AG: 1kHz/45mV at MIC terminal	AG	Panel	Universal connector			[Panel tuning mode] After apply signal from AG, press [<] key to store the adjustment value. [PC test mode] After apply signal from AG, press [Apply] button to store the adjustment value.	
14. VOX10 adjust	1) Adj item: [VOX10] Adjust: [***] AG: 1kHz/3mV at MIC terminal	1) Adj item: [VOX10] AG: 1kHz/3mV at MIC terminal							

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
15. BATT detection writing	1) Adj item: [BATT] Adjust: [***] PTT: ON	1) Adj item:[Battery Warning Level] PTT: Press [Transmit] button.	Power meter DVM	Panel	ANT BATT terminal			Press the PTT switch or [Transmit] button on the PC window. Apply 6.20V to battery terminal. Confirm that one pre-determined numeric in the range 1 to 256 appears. [Panel tuning mode] Press [<] key to store the adjustment value. [PC test mode] Press [Apply] button to store the adjustment value.	
16. BATT detection check	[Panel test mode] 1) CH-Sig: 1-1 BATT terminal voltage: 6.0V while transmitting	1) Test Channel Channel: 1 Test Signaling Mode: Analog Signaling: 1 BATT terminal voltage: 6.0V while transmitting						Check	The transceiver can transmit with causing the LED to blink.

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 (Wide)”, this signaling is composed of three elements [Balance, Maximum Deviation (Analog Wide) and QT Deviation (Wide)]. Please adjust Balance and Maximum Deviation (Analog Wide) before adjusting QT Deviation (Wide).

Mode	Signaling	Necessary adjustment and order		
		Wide	Narrow	Very Narrow
Analog	Audio	Step1. Balance adjust Step2. Maximum Deviation (Analog Wide)	Step1. Balance adjust Step2. Maximum Deviation (Analog Narrow)	-
	QT	Step1. Balance adjust Step2. Maximum Deviation (Analog Wide) Step3. QT Deviation (Wide)	Step1. Balance adjust Step2. Maximum Deviation (Analog Narrow) Step3. QT Deviation (Narrow)	-
	DQT	Step1. Balance adjust Step2. Maximum Deviation (Analog Wide) Step3. DQT Deviation (Wide)	Step1. Balance adjust Step2. Maximum Deviation (Analog Narrow) Step3. DQT Deviation (Narrow)	-
	LTR	Step1. Balance adjust Step2. Maximum Deviation (Analog Wide) Step3. LTR Deviation (Wide)	Step1. Balance adjust Step2. Maximum Deviation (Analog Narrow) Step3. LTR Deviation (Narrow)	-
	DTMF	Step1. Balance adjust Step2. Maximum Deviation (Analog Wide) Step3. DTMF Deviation (Wide)	Step1. Balance adjust Step2. Maximum Deviation (Analog Narrow) Step3. DTMF Deviation (Narrow)	-
	2TONE	Step1. Balance adjust Step2. Maximum Deviation (Analog Wide) Step3. Single Tone Deviation (Analog Wide)	Step1. Balance adjust Step2. Maximum Deviation (Analog Narrow) Step3. Single Tone Deviation (Analog Narrow)	-
	MSK (FleetSync)	Step1. Balance adjust Step2. Maximum Deviation (Analog Wide) Step3. MSK Deviation (Analog Wide)	Step1. Balance adjust Step2. Maximum Deviation (Analog Narrow) Step3. MSK Deviation (Analog Narrow)	-

ADJUSTMENT

Mode	Signaling	Necessary adjustment and order		
		Wide	Narrow	Very Narrow
NXDN	Audio	-	Step1. Balance adjust Step2. Maximum Deviation (NXDN Narrow)	Step1. Balance adjust Step2. Maximum Deviation (NXDN Very Narrow)
	CWID	-	-	Step1. Balance adjust Step2. Maximum Deviation (Analog Narrow) Step3. CWID Deviation (NXDN Very Narrow)

• Balance is common with all the above deviation adjustments. If Balance (Transmitter Section 3) has already adjusted, please skip Step1 and adjust from Step2.
• Maximum Deviation (Analog Wide/Narrow) is common with all the analog signaling deviations and CWID Deviation (NXDN Very Narrow). If Balance and Maximum Deviation (Analog Wide/Narrow) (Transmitter Section 5) have already adjusted, please skip Step2 and adjust from Step3.

Receiver Section

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. AF level setting	[Panel test mode] 1) CH-Sig: 1-1 SSG output: –47dBm (1mV) (MOD: 1kHz/±1.5kHz) Wide/Narrow: Narrow Beat Shift: Uncheck Compander: Uncheck	1) Test Channel Channel: 1 Test Signaling Mode: Analog Signaling: 1 Wide/Narrow: Narrow Beat Shift: Uncheck Compander: Uncheck SSG output: –47dBm (1mV) (MOD: 1kHz/±1.5kHz)	SSG DVM AF VM Dummy load	Panel	ANT Universal connector	Panel	Volume knob	Turn the Volume knob to obtain 0.63V AF output.	0.63V±0.1V
2. Sensitivity 1 adjust	1) Adj item: [SENS1] Adjust: [***] 2) Adj item: [L SENS1]→ [L' SENS1]→ [C SENS1]→ [H' SENS1]→ [H SENS1] Adjust: [***] Press [<] key to store the adjustment value.	1) Adj item: [Sensitivity 1] 2) Adj item: [Low], [Low'], [Center], [High'], [High] Press [Apply All] button to store the adjustment value.					[Panel tuning mode] [⌒], [⌣] [PC test mode] [◀],[▶]	Write the value as followings. [L SENS1] / [Low] : 8 (Preset) [L' SENS1] / [Low'] : 45 (Fixed) [C SENS1] / [Center] : 95 (Fixed) [H' SENS1] / [High'] : 135 (Fixed) [H SENS1] / [High] : 180 (Fixed)	
	3) Adj item: [L SENS1] Adjust: [***]	3) Adj item: [Low]	SSG AF VM Oscilloscope	Panel	ANT Universal connector			Increase the adjustment value from step 2 adjustment value (preset value) of "2. Sensitivity 1 adjust".	
	Caution: Perform the step 3 adjustments of "3. Sensitivity 2 adjust" before performing the [L SENS1] adjustment.								
	SSG output: –90dBm (7.08µV) (MOD: 1kHz/±1.5kHz) Press [<] key to store the adjustment value.	SSG output: –90dBm (7.08µV) (MOD: 1kHz/±1.5kHz) Press [Apply All] button to store the adjustment value.							

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
3. Sensitivity 2 adjust	1) Adj item: [SENS2] Adjust: [***] 2) Adj item: [L SENS2]→ [L' SENS2]→ [C SENS2]→ [H' SENS2]→ [H SENS2] Adjust: [***] Press [<] key to store the adjustment value.	1) Adj item: [Sensitivity 2] 2) Adj item: [Low], [Low'], [Center], [High'], [High] Press [Apply All] button to store the adjustment value.	SSG AF VM Oscilloscope	Panel	ANT Universal connector	Panel	[Panel tuning mode] [∧], [∨] [PC test mode] [◀],[▶]	Write the value as followings. [L SENS2] / [Low] : 180 (Fixed) [L' SENS2] / [Low'] : 180 (Fixed) [C SENS2] / [Center] : 180 (Fixed) [H' SENS2] / [High'] : 180 (Fixed) [H SENS2] / [High] : 180 (Fixed)	
	3) Adj item: [L SENS2] Adjust: [***] Press [<] key to store the adjustment value.	3) Adj item: [Low] Press [Apply All] button to store the adjustment value.						Write the value as followings. [L SENS2]/[Low] : 256	**Caution:** This is the preadjustment for the adjustment of "2. Sensitivity 1 adjust". Perform adjustment steps 1 and 2 of "3. Sensitivity 2 adjust" after performing the adjustment of "2. Sensitivity 1 adjust".
4. RSSI reference adjust *5 [Analog Narrow]	1) Adj item: [An RRSSI] Adjust: [***] 2) Adj item: [AnL RRSSI]→ [AnL' RRSSI]→ [AnC RRSSI]→ [AnH' RRSSI]→ [AnH RRSSI] Adjust: [***] SSG output: 12dB SINAD level –3dB (MOD: 1kHz/±1.5kHz)	1) Adj item: [RSSI Reference (Analog Narrow)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: 12dB SINAD level –3dB (MOD: 1kHz/±1.5kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Universal connector			[Panel tuning mode] After input signal from SSG, press [<] key to store the adjustment value. [PC test mode] After input signal from SSG, press [Apply] button to store the adjustment value.	
[Analog Wide]	1) Adj item: [Aw RRSSI] Adjust: [***] 2) Adj item: [AwL RRSSI]→ [AwL' RRSSI]→ [AwC RRSSI]→ [AwH' RRSSI]→ [AwH RRSSI] Adjust: [***] SSG output: 12dB SINAD level –3dB (MOD: 1kHz/±3kHz)	1) Adj item: [RSSI Reference (Analog Wide)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: 12dB SINAD level –3dB (MOD: 1kHz/±3kHz)							
[NXDN Very Narrow]	1) Adj item: [Nv RRSSI] Adjust: [***] 2) Adj item: [NvL RRSSI]→ [NvL' RRSSI]→ [NvC RRSSI]→ [NvH' RRSSI]→ [NvH RRSSI] Adjust: [***] SSG output: 12dB SINAD level for Analog Narrow –3dB (MOD: 1kHz/±1.5kHz)	1) Adj item: [RSSI Reference (NXDN Very Narrow)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: 12dB SINAD level for Analog Narrow –3dB (MOD: 1kHz/±1.5kHz)							Adjust with the analog signal.

*5: Because RSSI reference (NXDN Narrow) is adjusted by adjusting RSSI reference (Analog Narrow), it is not necessary to adjust RSSI reference (NXDN Narrow).

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
5. Open Squelch adjust *6 (Squelch level 5 adjust) [Analog Narrow]	1) Adj item: [An SQL] Adjust: [***] 2) Adj item: [AnL SQL]→ [AnL' SQL]→ [AnC SQL]→ [AnH' SQL]→ [AnH SQL] Adjust: [***] SSG output: 12dB SINAD level (MOD: 1kHz/±1.5kHz)	1) Adj item: [Open Squelch (Analog Narrow)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: 12dB SINAD level (MOD: 1kHz/±1.5kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Universal connector			[Panel tuning mode] After input signal from SSG, press [<] key to store the adjustment value. [PC test mode] After input signal from SSG, press [Apply] button to store the adjustment value.	"Open Squelch" will not be adjusted correctly if MOD and Deviation are wrong.
[Analog Wide]	1) Adj item: [Aw SQL] Adjust: [***] 2) Adj item: [AwL SQL]→ [AwL' SQL]→ [AwC SQL]→ [AwH' SQL]→ [AwH SQL] Adjust: [***] SSG output: 12dB SINAD level (MOD: 1kHz/±3kHz)	1) Adj item: [Open Squelch (Analog Wide)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: 12dB SINAD level (MOD: 1kHz/±3kHz)							
[NXDN Very Narrow]	1) Adj item: [Nv SQL] Adjust: [***] 2) Adj item: [NvL SQL]→ [NvL' SQL]→ [NvC SQL]→ [NvH' SQL]→ [NvH SQL] Adjust: [***] SSG output: 12dB SINAD level for Analog Narrow –4dB (MOD: 400Hz/±1.1kHz)	1) Adj item: [Open Squelch (NXDN Very Narrow)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: 12dB SINAD level for Analog Narrow –4dB (MOD: 400Hz/±1.1kHz)							Adjust with the analog signal. This item is adjusted under the condition that MOD is "400Hz" and Deviation is "±1.1kHz" due to the circuit configuration.
*6: Because Open Squelch (NXDN Narrow) is adjusted by adjusting Open Squelch (Analog Narrow), it is not necessary to adjust Open Squelch (NXDN Narrow).									
6. Low RSSI at –118dBm adjust *7 [Analog Narrow]	1) Adj item: [An LRSSI] Adjust: [***] 2) Adj item: [AnL LRSSI]→ [AnL' LRSSI]→ [AnC LRSSI]→ [AnH' LRSSI]→ [AnH LRSSI] Adjust: [***] SSG output: –118dBm (0.28μV) (MOD: 1kHz/±1.5kHz)	1) Adj item: [Low RSSI (Analog Narrow)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: –118dBm (0.28μV) (MOD: 1kHz/±1.5kHz)	SSG	Panel	ANT Universal connector			[Panel tuning mode] After input signal from SSG, press [<] key to store the adjustment value. [PC test mode] After input signal from SSG, press [Apply] button to store the adjustment value.	

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
Low RSSI at 118dBm adjust *7 [Analog Wide]	1) Adj item: [Aw LRSSI] Adjust: [***] 2) Adj item: [AwL LRSSI]→ [AwL' LRSSI]→ [AwC LRSSI]→ [AwH' LRSSI]→ [AwH LRSSI] Adjust: [***] SSG output: –118dBm (0.28µV) (MOD: 1kHz/±3kHz)	1) Adj item: [Low RSSI (Analog Wide)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: –118dBm (0.28µV) (MOD: 1kHz/±3kHz)	SSG	Panel	ANT Universal connector			[Panel tuning mode] After input signal from SSG, press [<] key to store the adjustment value. [PC test mode] After input signal from SSG, press [Apply] button to store the adjustment value.	
[NXDN Very Narrow]	1) Adj item: [Nv LRSSI] Adjust: [***] 2) Adj item: [NvL LRSSI]→ [NvL' LRSSI]→ [NvC LRSSI→ [NvH' LRSSI]→ [NvH LRSSI] Adjust: [***] SSG output: –118dBm (0.28µV) (MOD: 1kHz/±1.5kHz)	1) Adj item: [Low RSSI (NXDN Very Narrow)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: –118dBm (0.28µV) (MOD: 1kHz/±1.5kHz)							Adjust with the analog signal.
*7: Because Low RSSI at –118dBm (NXDN Narrow) is adjusted by adjusting Low RSSI at –118dBm (Analog Narrow), it is not necessary to adjust Low RSSI at –118dBm (NXDN Narrow).									
7. High RSSI at –80dBm adjust *8 [Analog Narrow]	1) Adj item: [An HRSSI] Adjust: [***] 2) Adj item: [AnL HRSSI]→ [AnL' HRSSI]→ [AnC HRSSI]→ [AnH' HRSSI]→ [AnH HRSSI] Adjust: [***] SSG output: –80dBm (22.4µV) (MOD: 1kHz/±1.5kHz)	1) Adj item: [High RSSI (Analog Narrow)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: –80dBm (22.4µV) (MOD: 1kHz/±1.5kHz)	SSG	Panel	ANT Universal connector			[Panel tuning mode] After input signal from SSG, press [<] key to store the adjustment value. [PC test mode] After input signal from SSG, press [Apply] button to store the adjustment value.	
[Analog Wide]	1) Adj item: [Aw HRSSI] Adjust: [***] 2) Adj item: [AwL HRSSI]→ [AwL' HRSSI]→ [AwC HRSSI]→ [AwH' HRSSI]→ [AwH HRSSI] Adjust: [***] SSG output: –80dBm (22.4µV) (MOD: 1kHz/±3kHz)	1) Adj item: [High RSSI (Analog Wide)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: –80dBm (22.4µV) (MOD: 1kHz/±3kHz)							

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
High RSSI at –80dBm adjust *8 [NXDN Very Narrow]	1) Adj item: [Nv HRSSI] Adjust: [***] 2) Adj item: [NvL HRSSI]→ [NvL' HRSSI]→ [NvC HRSSI]→ [NvH' HRSSI]→ [NvH HRSSI] Adjust: [***] SSG output: –80dBm (22.4µV) (MOD: 1kHz/±1.5kHz)	1) Adj item: [High RSSI (NXDN Very Narrow)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: –80dBm (22.4µV) (MOD: 1kHz/±1.5kHz)	SSG	Panel	ANT Universal connector			[Panel tuning mode] After input signal from SSG, press [<] key to store the adjustment value. [PC test mode] After input signal from SSG, press [Apply] button to store the adjustment value.	Adjust with the analog signal.
*8: Because High RSSI at –80dBm (NXDN Narrow) is adjusted by adjusting High RSSI at –80dBm (Analog Narrow), it is not necessary to adjust High RSSI at –80dBm (NXDN Narrow).									
8. Tight Squelch adjust (Squelch level 9 adjust) [Analog Narrow]	1) Adj item: [An SQLT] Adjust: [***] 2) Adj item: [AnL SQLT]→ [AnL' SQLT]→ [AnC SQLT]→ [AnH' SQLT]→ [AnH SQLT] Adjust: [***] SSG output: 12dB SINAD level +5dB (MOD: 1kHz/±1.5kHz)	1) Adj item: [Tight Squelch (Analog Narrow)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: 12dB SINAD level +5dB (MOD: 1kHz/±1.5kHz)	SSG	Panel	ANT Universal connector			[Panel tuning mode] After input signal from SSG, press [<] key to store the adjustment value. [PC test mode] After input signal from SSG, press [Apply] button to store the adjustment value.	
[Analog Wide]	1) Adj item: [Aw SQLT] Adjust: [***] 2) Adj item: [AwL SQLT]→ [AwL' SQLT]→ [AwC SQLT]→ [AwH' SQLT]→ [AwH SQLT] Adjust: [***] SSG output: 12dB SINAD level +5dB (MOD: 1kHz/±3kHz)	1) Adj item: [Tight Squelch (Analog Wide)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: 12dB SINAD level +5dB (MOD: 1kHz/±3kHz)							

TERMINAL FUNCTION

Display unit (X54-4200-10)

Pin No.	Name	I/O	Function
		CN3	
1	/CS	O	Chip select output
2	/RES	O	LCD reset output
3	A0	O	Address bus 0 output
4	/WR	O	WR bus output
5	D0	I/O	Data bus 0
6	D1	I/O	Data bus 1
7	D2	I/O	Data bus 2
8	D3	I/O	Data bus 3
9	D4	I/O	Data bus 4
10	D5	I/O	Data bus 5
11	D6	I/O	Data bus 6
12	D7	I/O	Data bus 7
13	VDD	O	3.3V LCD power supply output
14	VSS	-	GND
15	VDD	O	3.3V LCD power supply output
16	V1	-	LCD drive power supply
17	V2	-	LCD drive power supply
18	V3	-	LCD drive power supply
19	V4	-	LCD drive power supply
20	V5	O	LCD drive power supply
		CN8	
1	GND	-	GND
2	GND	-	GND
3	NC	-	No connection
4	/LCDRST	I	LCD reset input
5	VLCDLED	I	6key backlight voltage (SB2)
6	/WR	I	WR bus input
7	VLCDLED	I	6key backlight voltage (SB2)
8	A0	I	Address bus 0 input
9	33M	I	3.3V input
10	33M	I	3.3V input
11	NC	-	No connection
12	D0	I/O	Data bus 0
13	NC	-	No connection
14	D1	I/O	Data bus 1
15	NC	-	No connection
16	D2	I/O	Data bus 2
17	NC	-	No connection
18	D3	I/O	Data bus 3
19	NC	-	No connection
20	D4	I/O	Data bus 4
21	NC	-	No connection
22	D5	I/O	Data bus 5
23	NC	-	No connection
24	D6	I/O	Data bus 6
25	NC	-	No connection
26	D7	I/O	Data bus 7
27	NC	-	No connection
28	LCDCNT	I	LCD contrast input
29	KEYO1	I	Key matrix input (Ko1)
30	KEYO0	I	Key matrix input (Ko0)
31	KEYO3	I	Key matrix input (Ko3)
32	KEYO2	I	Key matrix input (Ko2)
33	/KEYI1	O	Key matrix output (Ki1)
34	/KEYI0	O	Key matrix output (Ki0)
35	/KEYI3	O	Key matrix output (Ki3)
36	/KEYI2	O	Key matrix output (Ki2)
37	NC	-	No connection
38	KEYI4	O	Key matrix output (Ki4)
39	VKEY	I	12key backlight voltage (SB2)
40	VKEY	I	12key backlight voltage (SB2)
41	NC	-	No connection
42	NC	-	No connection
43	5A	I	5V input
44	5A	I	5V input
45	NC	-	No connection
46	INTMIC	O	Internal MIC output
47	NC	-	No connection
48	ME	-	Internal MIC GND
49	GND	-	GND
50	GND	-	GND

TX-RX unit (X57-9270-12)

Pin No.	Name	I/O	Function
		CN201	
1	SB1	I	Power input afuter power switch
2	+B	O	Power output after passing through the fuse
3	EN3	I	Encoder pulse input
4	EN4	I	Encoder pulse input
5	GND	-	GND
6	EN2	I	Encoder pulse input
7	EN1	I	Encoder pulse input
8	VOL-	-	GND
9	VOL	I	Volume level input for audio control
10	VOL+	O	3.3V

TERMINAL FUNCTION

Pin No.	Name	I/O	Function
CN307 (for production)			
1~20			
CN321			
1	OPT1	I/O	Refer to “CN321 26-pin connector specification” described on pages 65 to 67.
2	OPT3	I/O	
3	26P_RD	I	
4	26P_TD	O	
5	CK	-	
6	OPT4	O	
7	OPT10	O	
8	OPT5	O	
9	DGND	-	
10	AGND	-	
11	AI	I	
12	AO	O	
13	AGND	-	
14	5V	O	
15	OPT9	I	
16	DTI	I	
17	OPT8	I/O	
18	OPT11	O	
19	OPT7	I/O	
20	OPT2	I/O	
21	TXO	O	
22	RXEO	O	
23	RXEI	I	
24	TXI	I	
25	OPT6	O	
26	POW	O	
CN301			
1	GND	-	GND
2	GND	-	GND
3	NC	-	No connection
4	/LCDRST	O	LCD reset output
5	VLCDLED	O	6key backlight voltage (SB2)
6	/WR	O	WR bus output
7	VLCDLED	O	6key backlight voltage (SB2)
8	A0	O	Address bus 0 output
9	33M	O	3.3V output
10	33M	O	3.3V output
11	NC	-	No connection
12	D0	I/O	Data bus 0
13	NC	-	No connection
14	D1	I/O	Data bus 1
15	NC	-	No connection
16	D2	I/O	Data bus 2
17	NC	-	No connection
18	D3	I/O	Data bus 3
19	NC	-	No connection
20	D4	I/O	Data bus 4
21	NC	-	No connection
22	D5	I/O	Data bus 5
23	NC	-	No connection
24	D6	I/O	Data bus 6
25	NC	-	No connection
26	D7	I/O	Data bus 7
27	NC	-	No connection
28	LCDCNT	O	LCD contrast output
29	KEYO1	O	Key matrix output (Ko1)
30	KEYO0	O	Key matrix output (Ko0)
31	KEYO3	O	Key matrix output (Ko3)
32	KEYO2	O	Key matrix output (Ko2)
33	/KEYI1	I	Key matrix input (Ki1)
34	/KEYI0	I	Key matrix input (Ki0)
35	/KEYI3	I	Key matrix input (Ki3)
36	/KEYI2	I	Key matrix input (Ki2)
37	/PTT	O	PTT output
38	KEYI4	I	Key matrix input (Ki4)
39	VKEY	O	12key backlight voltage (SB2)
40	VKEY	O	12key backlight voltage (SB2)
41	NC	-	No connection
42	NC	-	No connection
43	5A	O	5V output
44	5A	O	5V output
45	NC	-	No connection
46	INTMIC	I	Internal MIC input
47	NC	-	No connection
48	ME	-	Internal MIC GND
49	GND	-	GND
50	GND	-	GND
CN804			
1	NC	-	No connection
2	RXD	I	Serial data input
3	TXD	O	Serial data output
4	5V	O	5V output
5	E	-	GND
6	OPT	I/O	Option interface I/O
7	PF	I	Programmable function key input
8	PTT	I	External PTT input
9	ME	-	External MIC GND
10	EMC	I	External MIC input
11	MSW	I	EXT/INT MIC switch input

TERMINAL FUNCTION

Pin No.	Name	I/O	Function
12	SP-	O	BTL output – for external speaker
13	SP+	O	BTL output + for external speaker
14	SSW	I	EXT/INT speaker switch input
CN805			
1	SP-	O	BTL output – for internal speaker
2	SP+	O	BTL output + for internal speaker
CN806			
1	SW1	I	Key matrix input (SIDE1 key)
2	PTT	I	Internal PTT input
3	GND	-	GND
4	Side_G	O	Key matrix output (SIDE1,2 key)
5	SW2	I	Key matrix input (SIDE2 key)

SUB (GPS) unit (X58-5240-11)

Pin No.	Name	I/O	Function
CN10			
1,2	NC	-	No connection
3	TXD	O	UART data output
4	RXD	I	UART data input
5-7	NC	-	No connection
8	OPT5	I	GPS module control
9	DG	-	Digital GND
10	AG	-	Analog GND
11,12	NC	-	No connection
13	AG	-	Analog GND
14	5C	-	5V power supply
15-26	NC	-	No connection

Solder Pad

Name	I/O	Signal Type	Function	Rating and Condition				
				Parameter	Min	Typ	Max	Unit
PTT2	O	Digital	PTT output	[Output] Output Impedance			10k	Ω
PTT1	I	Digital	PTT input	[Input] VIH	2.8		3.3	V
				[Input] VIL	0		0.5	V
MDSW	I	Digital	Man-down switch input	[Input] VIH	2.8		3.3	V
				[Input] VIL	0		0.5	V
GND	-	GND	GND	Allowable current value				mA
TXD	O	Digital	Serial data output	VOH (Io=-5mA)	4.0	-	5.3	V
				VOL (Io=5mA)	0	-	0.8	V
				Baud Rate			19200	bps
RXD	I	Digital	Serial data input	VIH	2.8	-	5.3	V
				VIL	0	-	0.8	V
				Baud Rate			19200	bps
RSSI	O	Analog	RSSI output	Output Impedance			10k	Ω

TERMINAL FUNCTION

Universal connector

Pin No.	Name	I/O	Signal Type	Function	Rating and Condition				
					Parameter	Min	Typ	Max	Unit
1	SSW	I	Digital	EXT/INT speaker switch input L: External speaker ON H: Internal speaker ON	VIH	2.8	-	5.3	V
					VIL	0	-	0.7	V
2	SP+	O	Analog	BTL output + for external speaker	[8Ω load] Max output power (1kHz, Batt=7.5V)		1.3	1.8	W
					[8Ω load] DC Bias		2.5		V
					[8Ω load] Allowable Frequency	300		3000	Hz
3	SP–	O	Analog	BTL output – for external speaker	[16Ω load] Max output power (1kHz, Batt=7.5V)		0.9	1.4	W
					[16Ω load] DC Bias		2.5		V
					[16Ω load] Allowable Frequency	300		3000	Hz
4	MSW	I	Digital	EXT/INT MIC switch input L: External MIC ON H: Internal MIC ON	VIH	2.8	-	5.3	V
					VIL	0	-	0.5	V
5	EMC	I	Analog	External MIC input	Audio Level (STD deviation)	7.7	12.5	17.3	mV
					DC Bias		3.3		V
					Allowable Frequency	300		3000	Hz
					Input Impedance	-	1.8	-	kΩ
6	ME	-	-	External MIC GND					
7	PTT	I	Digital	External PTT input L: PTT ON	VIH	2.8	-	5.3	V
					VIL	0	-	0.7	V
8	PF	I	Analog	Programmable function key input	V (PF2 key ON)	2.2	-	2.8	V
					V (PF1 key ON)	1.7	-	2.2	V
					V (PF1, PF2 key ON)	1.3	-	1.7	V
9	OPT	I	Digital	Man-down input Programmable active H/L	VIH	2.8	-	5.3	V
					VIL	0	-	0.7	V
10	E	-	-	GND					
11	5V	-	Power	5V power supply output (Output control is FPU programmable)	Output Voltage (Iout=100mA)	4.9	5.0	5.1	V
					Maximum Current	-	-	0.2	A
12	TXD	O	Digital	Serial data output	VOH (Io=–5mA)	4.0	-	5.3	V
					VOL (Io=5mA)	0	-	0.8	V
					Baud Rate			19200	bps
13	RXD	I	Digital	Serial data input	VIH	2.8	-	5.3	V
					VIL	0	-	0.8	V
					Baud Rate			115200	bps
14	NC	-	-	Not used (reserved for future option)					

TERMINAL FUNCTION

CN321 26-pin connector specification

Pin No.	Name	I/O	Signal Type	Rating and Condition				
				Parameter	Min	Typ	Max	Unit
1	OPT1	I/O	Digital	[Input] VIH	2.8		3.3	V
6	OPT4			[Input] VIL	0		0.5	V
8	OPT5			[Output] VOH	2.8		3.5	V
17	OPT8			[Output] VOL	0		0.5	V
18	OPT11							
2	OPT3	I/O	Digital	[Input] VIH	2.8		3.3	V
19	OPT7			[Input] VIL	0		0.5	V
20	OPT2			[Output] VOH	2.8		3.5	V
25	OPT6			[Output] VOL	0		0.5	V
3	26P_RD	I	Digital	[Input] VIH	2.8		3.3	V
				[Input] VIL	0		0.5	V
				Baud Rate			19200	bps
4	26P_TD	O	Digital	[Output] VOH	2.8		3.5	V
				[Output] VOL	0		0.5	V
				Baud Rate			19200	bps
15	OPT9	I	Analog	Input Amplitude (Square wave)	-	3.3	-	Vp-p
				Coupling Capacitor	-	0.01	-	µF
				Input Impedance	22k	-	-	Ω
				Allowable Frequency	300	-	3000	Hz
7	OPT10	O	Analog/Digital	Output Amplitude (1kHz, 60% deviation)	0.9	1.3	1.7	Vp-p
				Coupling Capacitor		0.1		µF
				Output Impedance			22k	Ω
				Allowable Frequency	300		3000	Hz
11	AI	I	Analog	Input Amplitude (1kHz, 60% deviation)	0.3	0.5	0.7	Vp-p
				Coupling Capacitor	-	0.1	-	µF
				Input Impedance	-	12k	-	Ω
				Allowable Frequency	300		3000	Hz
12	AO	O	Analog	Output Amplitude (1kHz, 60% deviation)	30	50	70	mVp-p
				Coupling Capacitor	-	0.1	-	µF
				Output Impedance	-	35k	-	Ω
				Allowable Frequency	300		3000	Hz
16	DTI	I	Analog	Input Amplitude (1kHz, 60% deviation)	0.8	1.1	1.4	Vp-p
				Coupling Capacitor	-	0.1	-	µF
				Input Impedance	22k	-	-	Ω
				Allowable Frequency	300	-	3000	Hz
21	TXO	O	Analog	Output Amplitude (1kHz, 60% deviation) while external MIC	160	260	360	mVp-p
				Output Amplitude (1kHz, 60% deviation) while internal MIC	-	130	-	mVp-p
				Coupling Capacitor	-	0.1	-	µF
				Output Impedance	-	-	2.2k	Ω
				Allowable Frequency	300		3000	Hz

TERMINAL FUNCTION

Pin No.	Name	I/O	Signal Type	Rating and Condition				
				Parameter	Min	Typ	Max	Unit
22	RXEO	O	Analog	Output Amplitude (1kHz, 60% deviation)	450	640	830	mVp-p
				Coupling Capacitor	-	0.1	-	µF
				Output Impedance	-	-	2.2k	Ω
				Allowable Frequency	300	-	3000	Hz
23	RXEI	I	Analog	Input Amplitude (1kHz, 60% deviation)	450	640	830	mVp-p
				Coupling Capacitor		0.1		µF
				Input Impedance	22k			Ω
				Allowable Frequency	300		3000	Hz
24	TXI	I	Analog	Input Amplitude (1kHz, 60% deviation) while external MIC	160	260	360	mVp-p
				Input Amplitude (1kHz, 60% deviation) while internal MIC	-	130	-	mVp-p
				Coupling Capacitor	-	0.1	-	µF
				Input Impedance	22k	-	-	Ω
				Allowable Frequency	300	-	3000	Hz
14	5V	O	Power	Output Voltage		5		V
				Output Current			78	mA
26	POW	O	Power	Output Voltage		7.5		V
				Output Current			100	mA
9	DGND	-	GND	Allowable current value (Total current of 3 pins)			100	mA
10	AGND							
13								
5	NC	-	-	-				

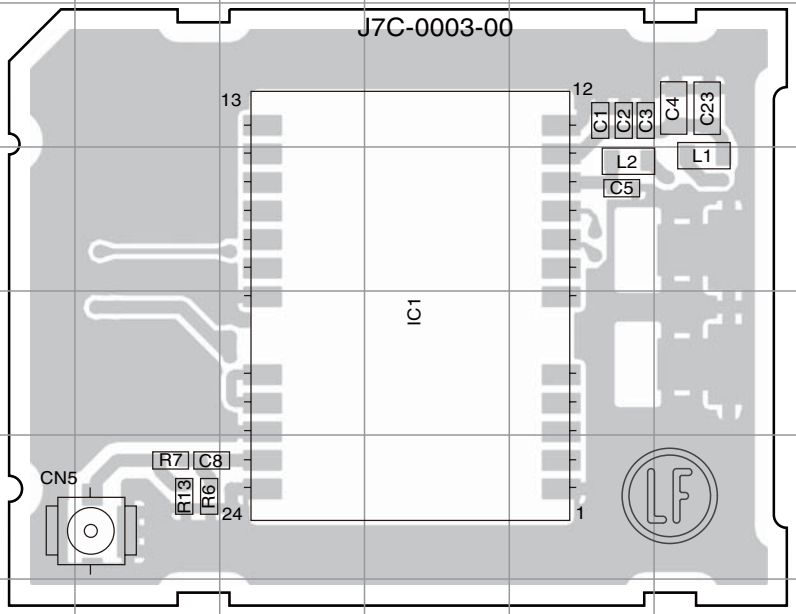
CN321 26-pin connector specification

Pin No.	Name	Device	I/O	Connection	Function
1	OPT1	ANI board	O	Aux Input	[COR] Conv/LTR L: Activity receiving H: Not activity receiving [TOR] Conv/LTR L: Activity receiving (Sub Tone or LTR ID is OK) H: Not activity receiving [LOK] Conv L: TX Complete H: Not TX Complete LTR L: TX Link Complete (until TX finishes) H: Not TX Link Complete
		VGS-1	I	BUSY	BUSY indication
2	OPT3	ANI board	I	KEY	TX requirement input
		VGS-1	I	PLAY	PLAY indication
3	26P_RD	ANI board	-	-	-
		VGS-1	I	SO	Serial data input

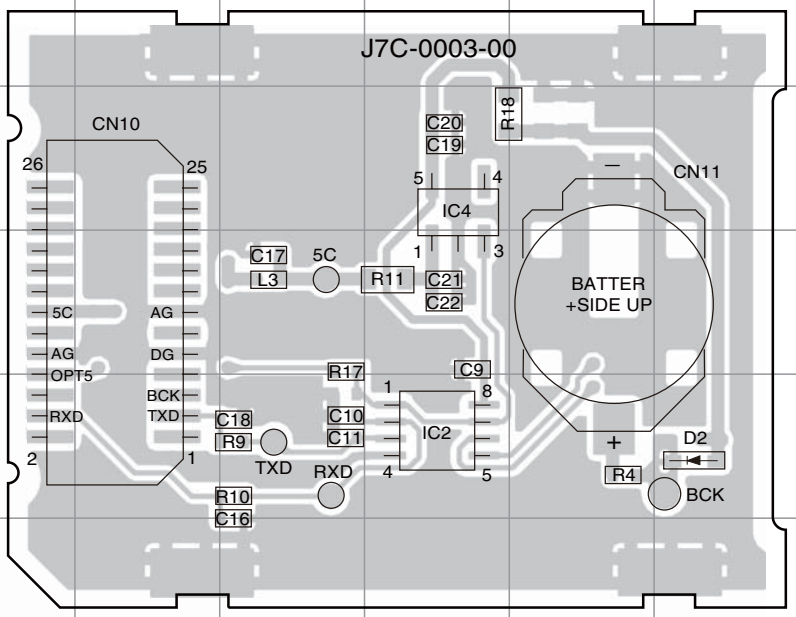
TERMINAL FUNCTION

Pin No.	Name	Device	I/O	Connection	Function
4	26P_TD	ANI board	-	-	-
		VGS-1	O	SI	Serial data output
5	CK	-	-	-	-
6	OPT4	ANI board	O	PTT	PTT signal output
		VGS-1	O	EN	Enable
7	OPT10	ANI board	-	-	-
		VGS-1	O	USEL	UART speed select output
8	OPT5	ANI board	O	Emergency	Emergency signal output
		VGS-1	O	RST	Reset output
9	DGND	ANI board	-	A–	GND
		VGS-1	-	DGND	DGND
10	AGND	ANI board	-	A–	GND
		VGS-1	-	AGND	AGND
11	AI	ANI board	-	-	-
		VGS-1	I	AO	VGS Audio input
12	AO	ANI board	-	-	-
		VGS-1	O	AI	VGS Audio output
13	AGND	ANI board	-	A–	GND
		VGS-1	-	AGND	AGND
14	5V	ANI board	-	-	Note: POW and 5V can not be used simultaneously.
		VGS-1	O	5C	5V power supply
15	OPT9	ANI board	I	Sidetone	Sidetone input
		VGS-1	-	-	-
16	DTI	ANI board	I	Data Out	Data signal input
		VGS-1	-	-	-
17	OPT8	ANI board	I	Tone Control	Speaker mute signal input
		VGS-1	-	-	-
18	OPT11	ANI board	O	Man-Down	Man-Down output
		VGS-1	-	-	-
19	OPT7	ANI board	I	MIC Mute	MIC mute signal input
		VGS-1	-	-	-
20	OPT2	ANI board	I	Aux Output	Emergency signal input
		VGS-1	-	-	-
21	TXO	ANI board	-	-	-
		VGS-1	-	-	-
22	RXEO	ANI board	-	-	-
		VGS-1	-	-	-
23	RXEI	ANI board	-	-	-
		VGS-1	-	-	-
24	TXI	ANI board	-	-	-
		VGS-1	-	-	-
25	OPT6	ANI board	-	-	-
		VGS-1	-	-	-
26	POW	ANI board	O	A+	Switched B output
		VGS-1	-	-	Note: POW and 5V can not be used simultaneously.

SUB UNIT (GPS) (X58-5240-11) Component side view (J7C-0003-00)



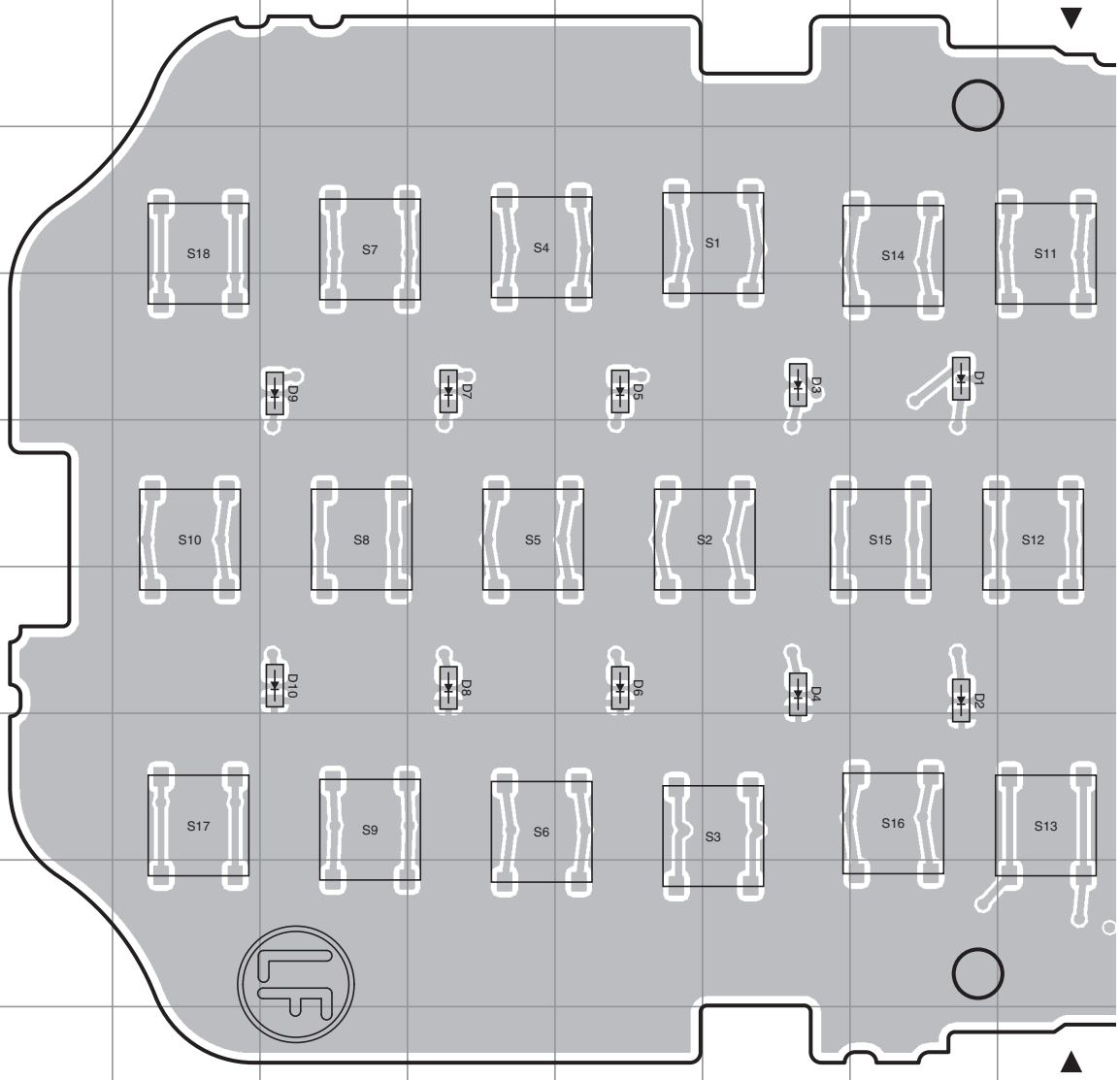
SUB UNIT (GPS) (X58-5240-11) Foil side view (J7C-0003-00)



Ref. No.	Address	Ref. No.	Address
IC1	5F	IC4	9F
IC2	11F	D2	11H

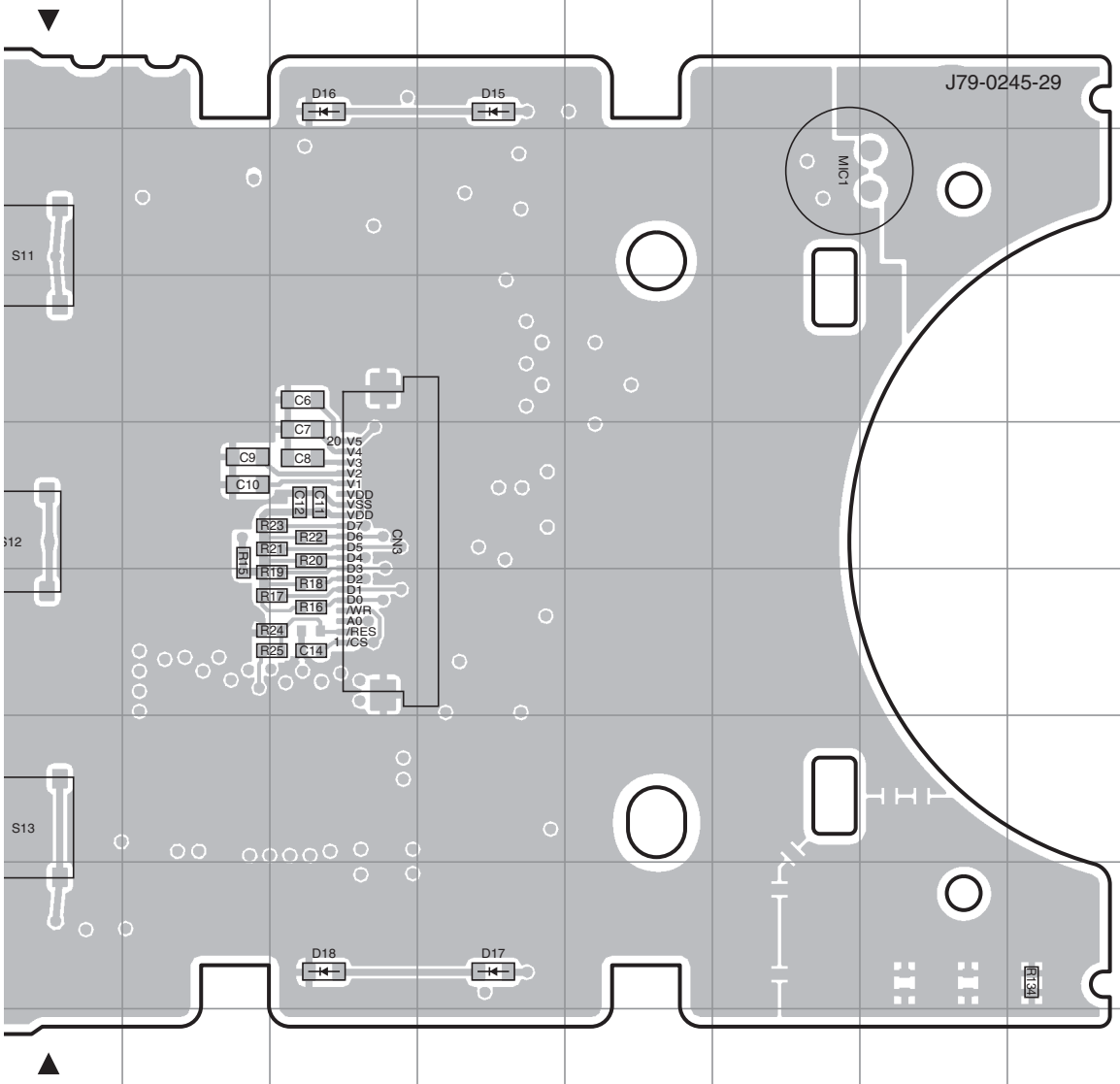
NX-210(G) PC BOARD

DISPLAY UNIT (X54-4200-10)
Component side view (J79-0245-29)



Ref. No.	Address	Ref. No.	Address
D1	5I	D8	7F
D2	7I	D9	5E
D3	5H	D10	7E
D4	7H	D15	3M
D5	5G	D16	3L
D6	7G	D17	9M
D7	5F	D18	9L

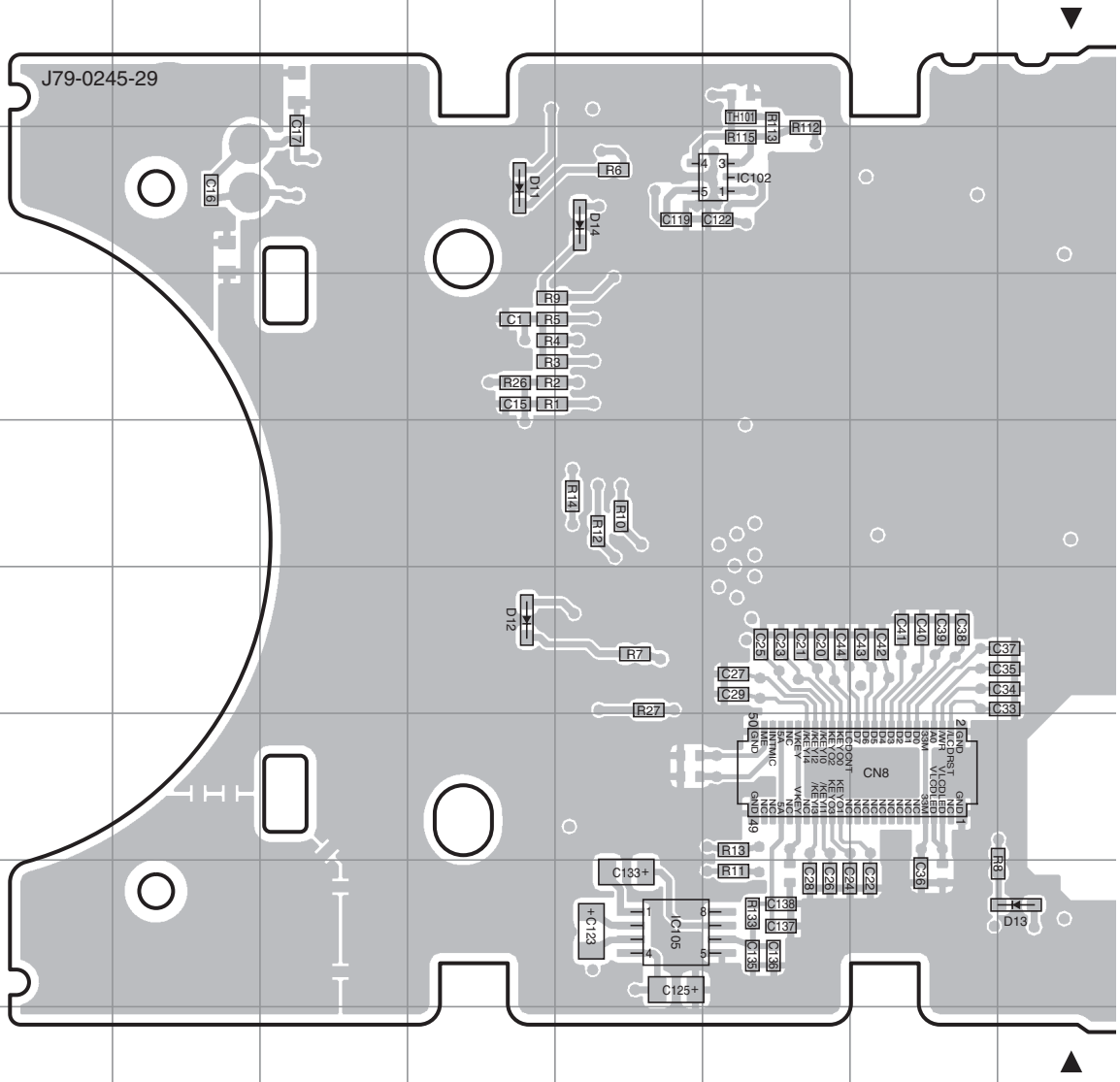
DISPLAY UNIT (X54-4200-10)
Component side view (J79-0245-29)



Component side
Layer 1
Layer 2
Layer 3
Layer 4
Foil side

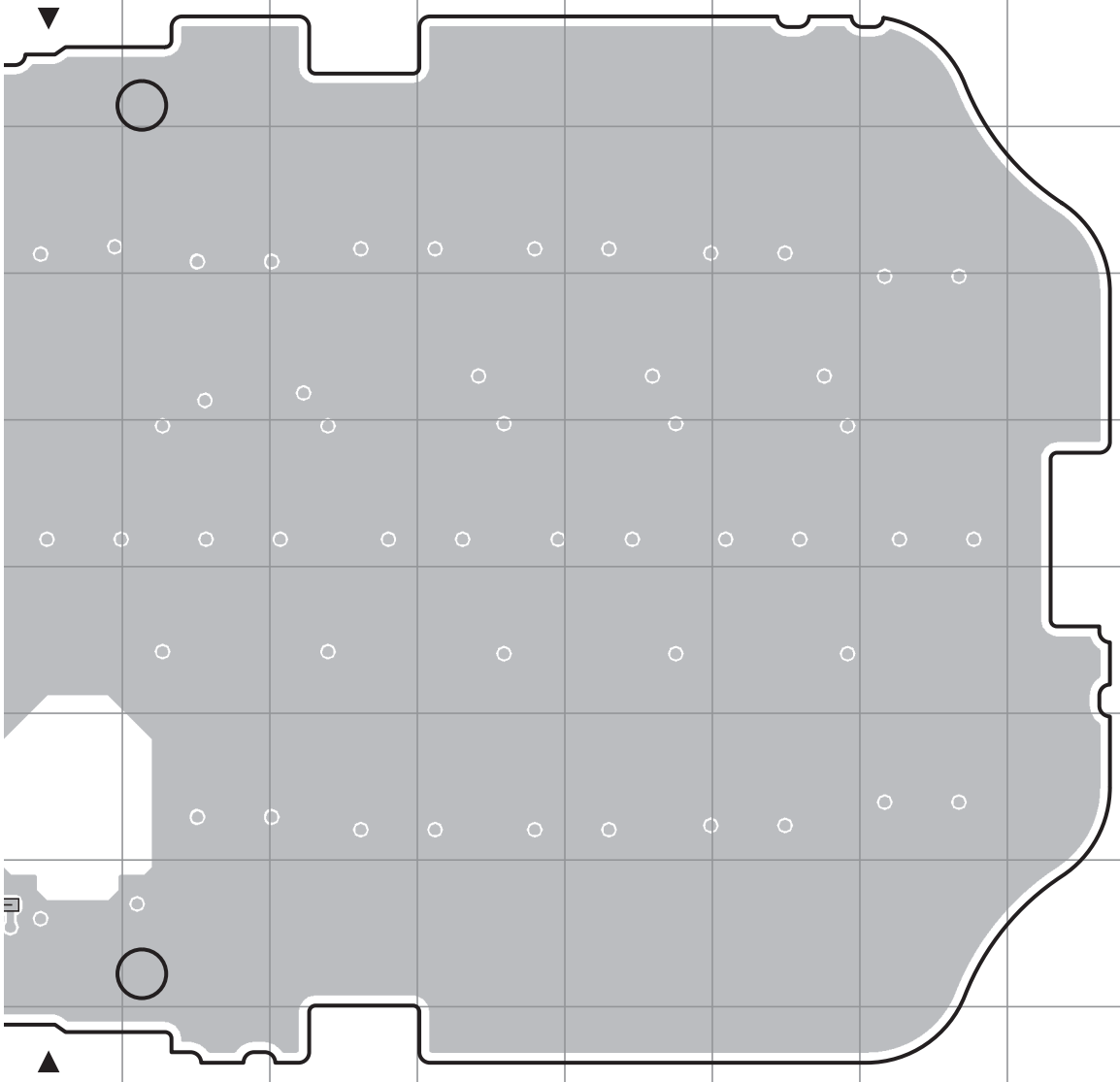
NX-210(G) PC BOARD

DISPLAY UNIT (X54-4200-10)
Foil side view (J79-0245-29)



Ref. No.	Address	Ref. No.	Address
IC102	4H	D12	7F
IC105	9G	D13	9J
D11	4F	D14	4G

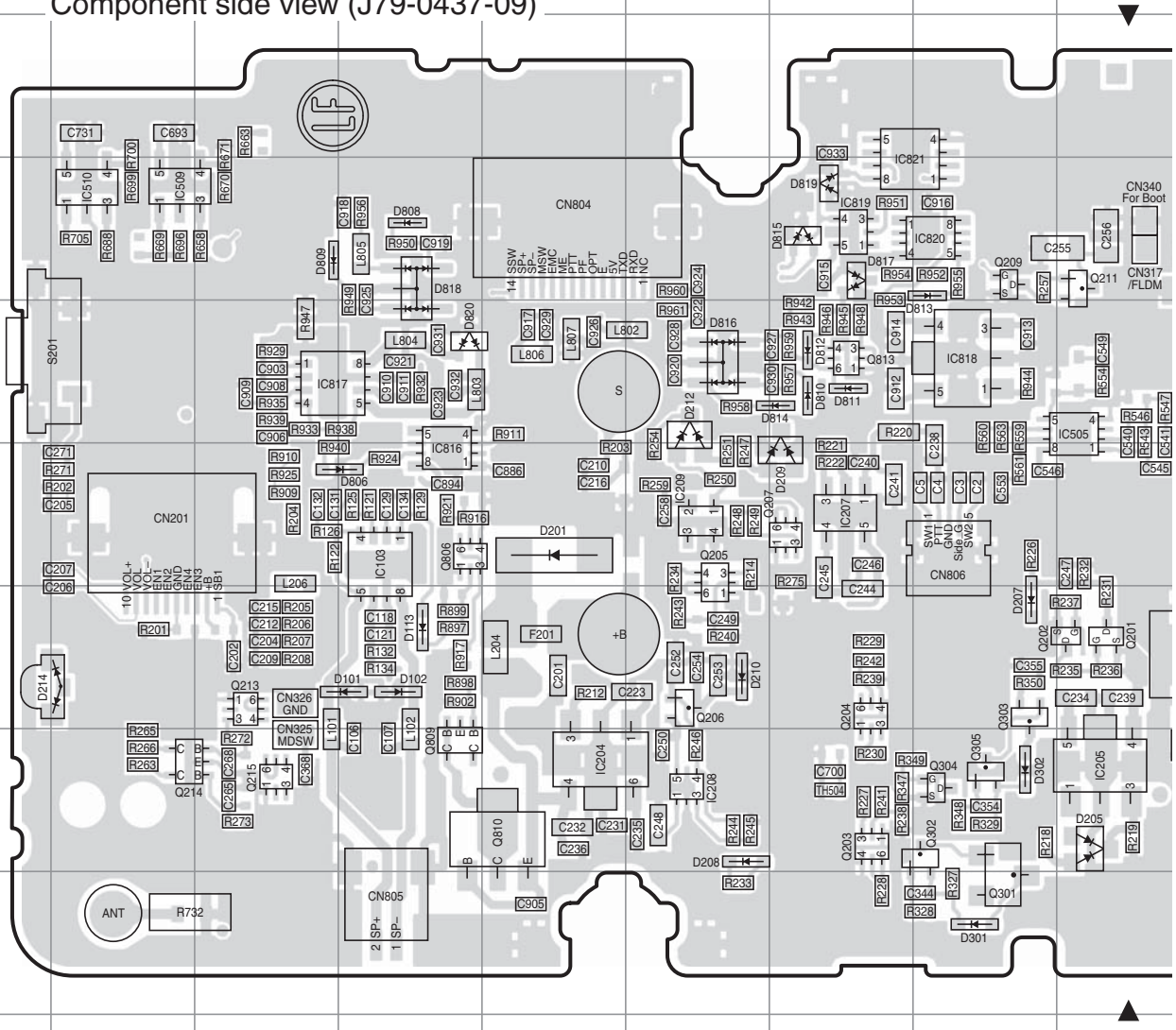
DISPLAY UNIT (X54-4200-10)
Foil side view (J79-0245-29)



Component side
Layer 1
Layer 2
Layer 3
Layer 4
Foil side

NX-210(G) PC BOARD

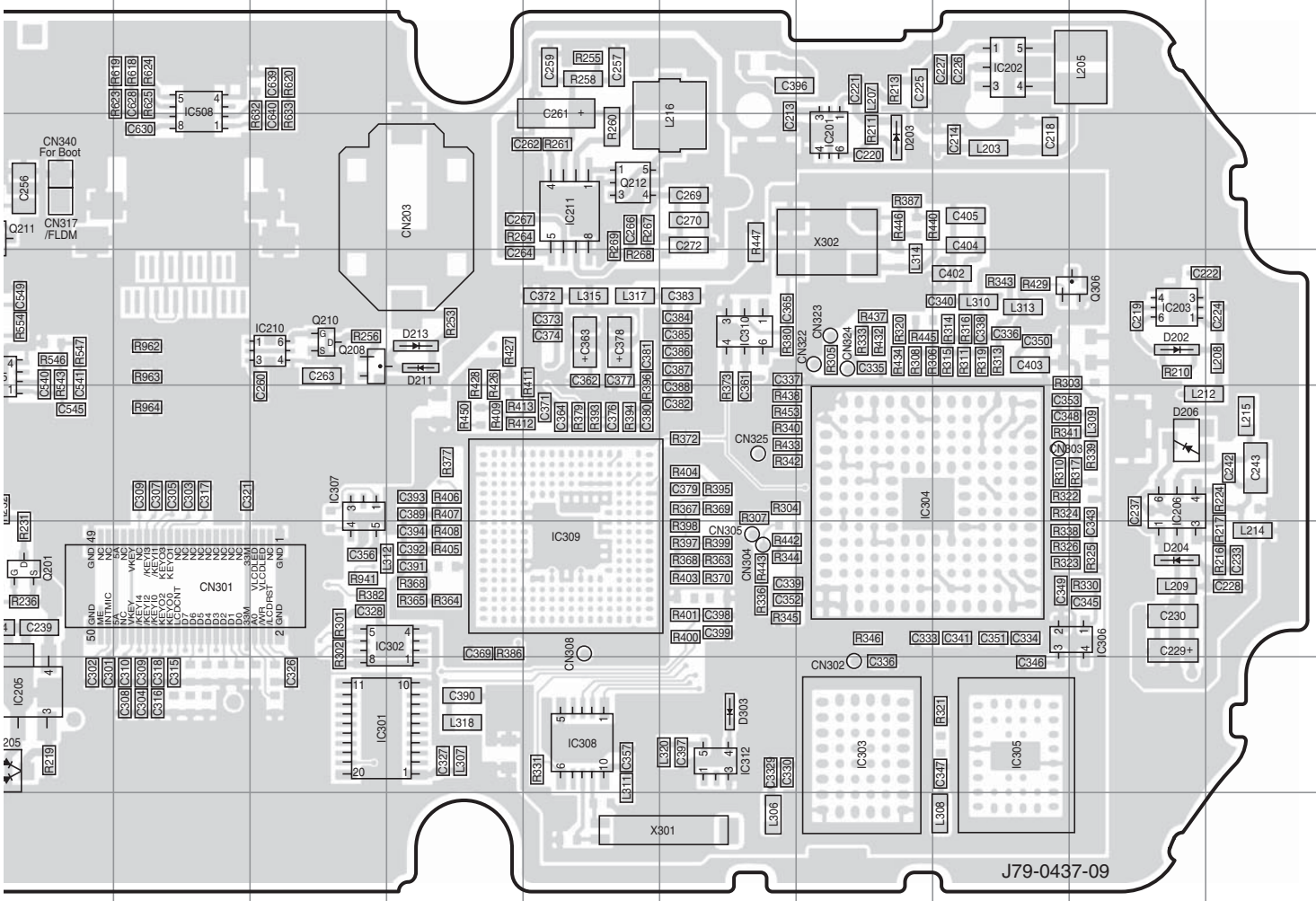
TX-RX UNIT (X57-9270-12)
Component side view (J79-0437-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC103	6E	IC303	8P	IC817	5D	Q210	5L	Q810	8F	D210	7G	D813	4I
IC201	4P	IC304	6P	IC818	5I	Q211	4J	Q813	5H	D211	5M	D814	5H
IC202	3Q	IC305	8I	IC819	4H	Q212	4N	D101	7E	D212	5G	D815	4H
IC203	5R	IC306	7R	IC820	4I	Q213	7D	D102	7E	D213	5M	D816	5G
IC204	8F	IC307	6L	IC821	4H	Q214	8C	D113	7E	D214	7B	D817	4H
IC205	8J	IC308	8N	Q201	7I	Q215	8D	D201	6F	D301	9I	D818	4E
IC206	6R	IC309	7N	Q202	7J	Q301	9I	D202	5R	D302	8I	D819	4H
IC207	6H	IC310	5O	Q203	8H	Q302	8I	D203	4P	D303	8I	D820	5E
IC208	8G	IC312	8N	Q204	7H	Q303	7I	D204	7R	D806	6E		
IC209	6G	IC505	5J	Q205	6G	Q304	8I	D205	8J	D808	4E		
IC210	5L	IC508	3K	Q206	7G	Q305	8I	D206	6R	D809	4D		
IC211	4N	IC509	4C	Q207	6H	Q306	5R	D207	7I	D810	5H		
IC301	8L	IC510	4C	Q208	5L	Q806	6E	D208	8G	D811	5H		
IC302	7M	IC816	6E	Q209	4I	Q809	8E	D209	6H	D812	5H		

PC BOARD NX-210(G)

TX-RX UNIT (X57-9270-12)
Component side view (J79-0437-09)



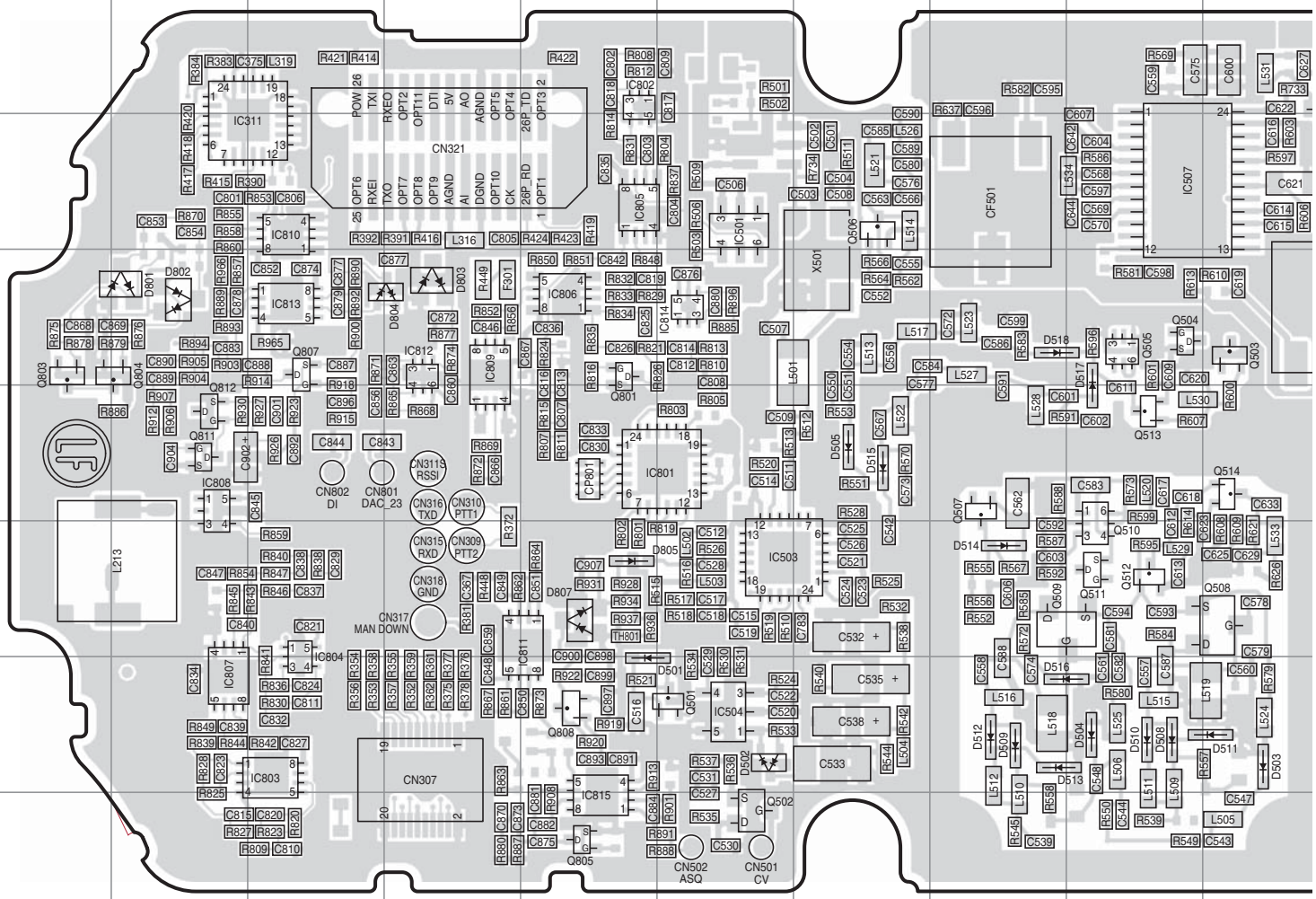
Component side

Layer 1	
Layer 2	
Layer 3	
Layer 4	
Layer 5	
Layer 6	
Layer 7	
Layer 8	

Foil side

NX-210(G) PC BOARD

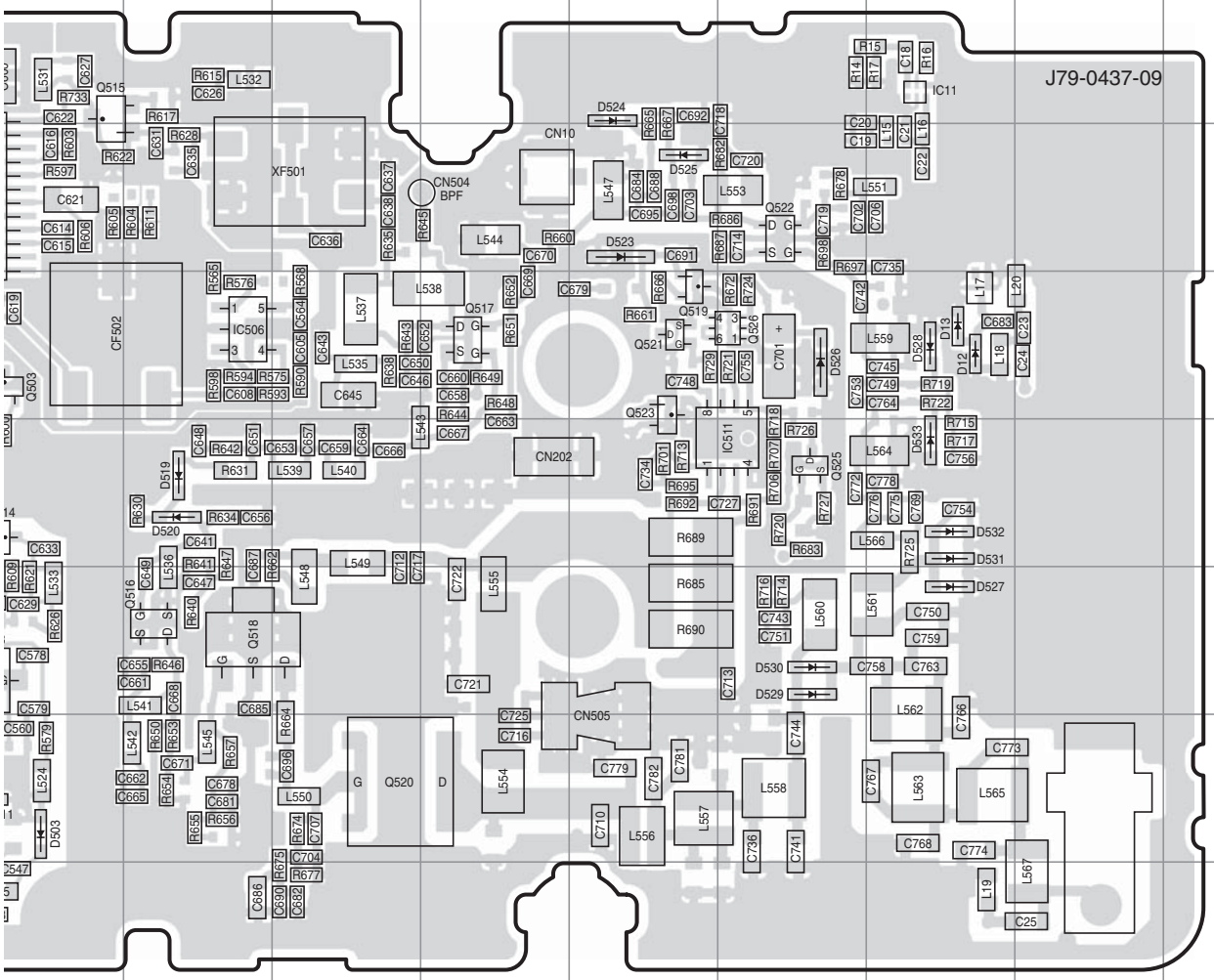
TX-RX UNIT (X57-9270-12)
Foil side view (J79-0437-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC11	3P	IC806	5E	Q505	5I	Q519	5N	Q811	6B	D513	8H	D529	7O
IC311	4B	IC807	8B	Q506	4G	Q520	8L	Q812	6B	D514	7H	D530	7O
IC309	4C	IC808	6B	Q507	6H	Q521	5N	D12	5P	D515	6G	D531	7P
IC501	4F	IC809	5D	Q508	7J	Q522	4O	D13	5P	D516	8H	D532	7P
IC503	7F	IC810	4C	Q509	7H	Q523	5N	D501	8E	D517	5I	D533	6P
IC504	8F	IC811	7E	Q510	7I	Q525	6O	D502	8F	D518	5H	D801	5B
IC506	5K	IC812	5D	Q511	7I	Q526	5O	D503	8J	D519	6K	D802	5B
IC507	4I	IC813	5C	Q512	7I	Q801	5E	D504	8I	D520	6K	D803	5D
IC511	6O	IC814	5F	Q513	6I	Q802	8D	D505	6G	D523	4N	D804	5D
IC801	6E	IC815	9E	Q514	6J	Q803	5A	D508	8I	D524	3N	D805	7E
IC802	3E	Q501	8F	Q515	3J	Q804	5B	D509	8H	D525	4N	D807	7E
IC803	8C	Q502	9F	Q516	7K	Q805	9E	D510	8I	D526	5O		
IC804	8C	Q503	5J	Q517	5M	Q807	5C	D511	8J	D527	7O		
IC805	4E	Q504	5I	Q518	7K	Q808	8E	D512	8H	D528	5P		

PC BOARD NX-210(G)

TX-RX UNIT (X57-9270-12)
Foil side view (J79-0437-09)

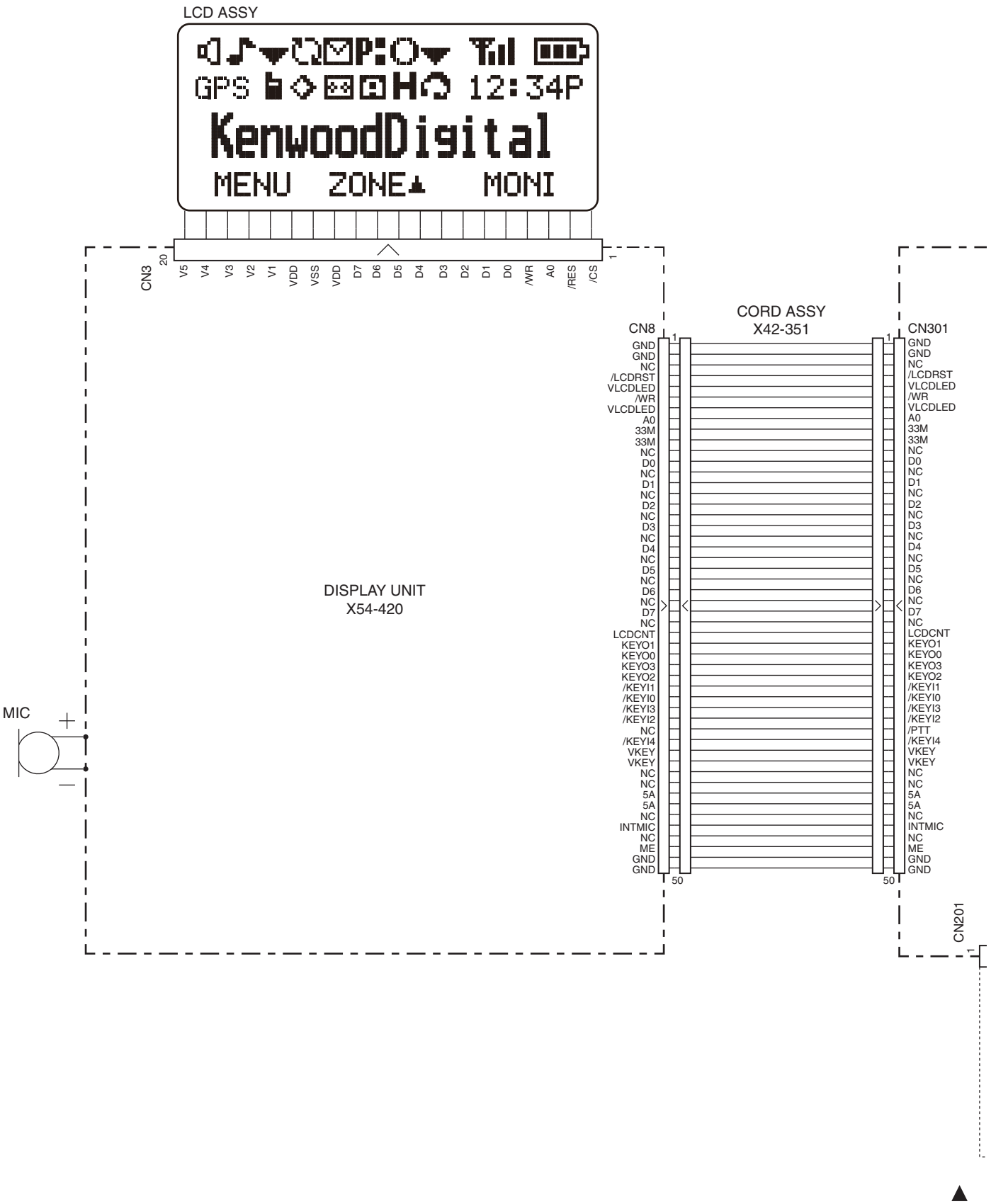


Component side

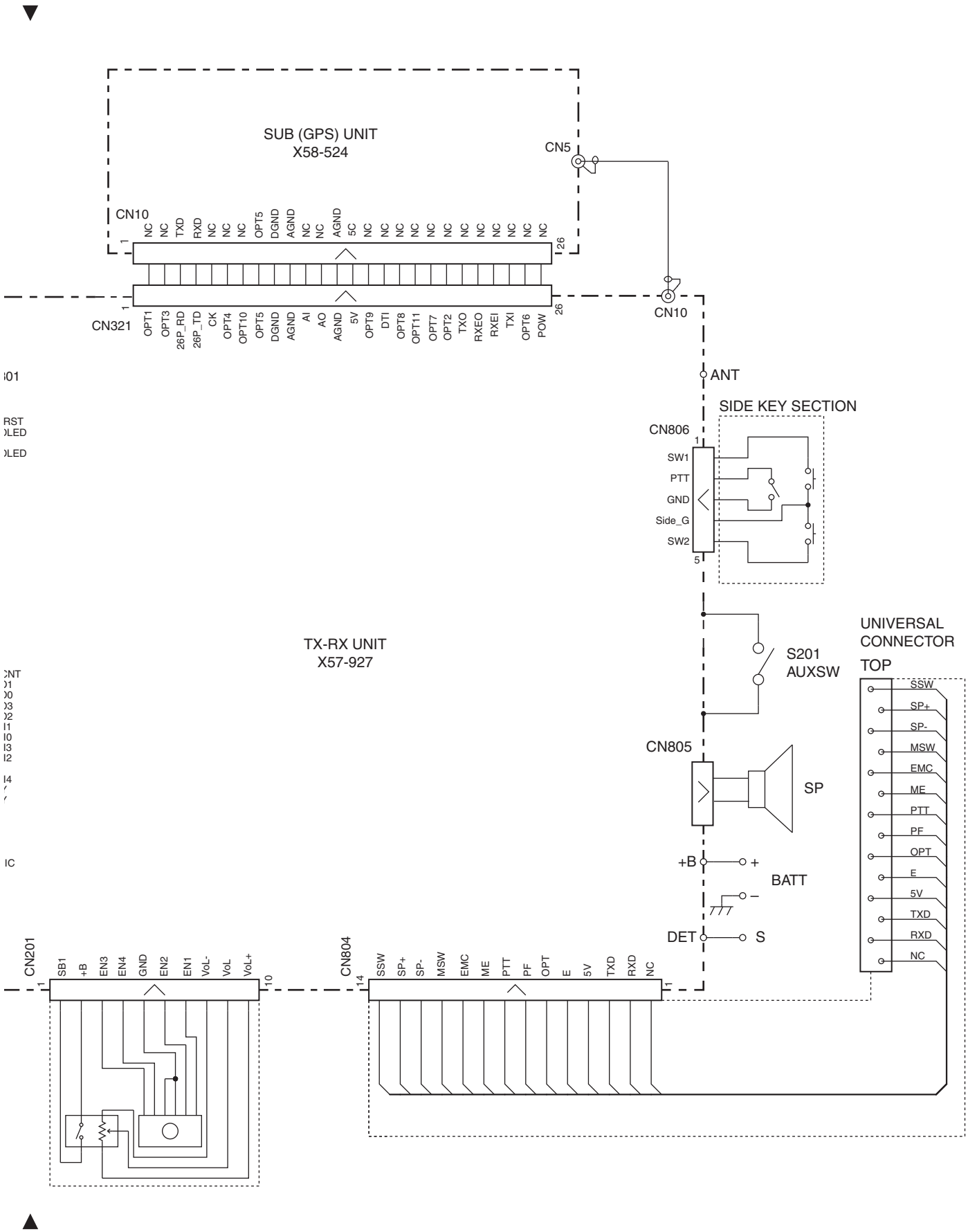
Layer 1	
Layer 2	
Layer 3	
Layer 4	
Layer 5	
Layer 6	
Layer 7	
Layer 8	

Foil side

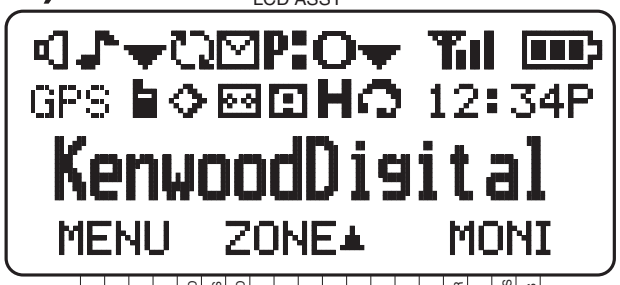
INTERCONNECTION DIAGRAM



INTERCONNECTION DIAGRAM



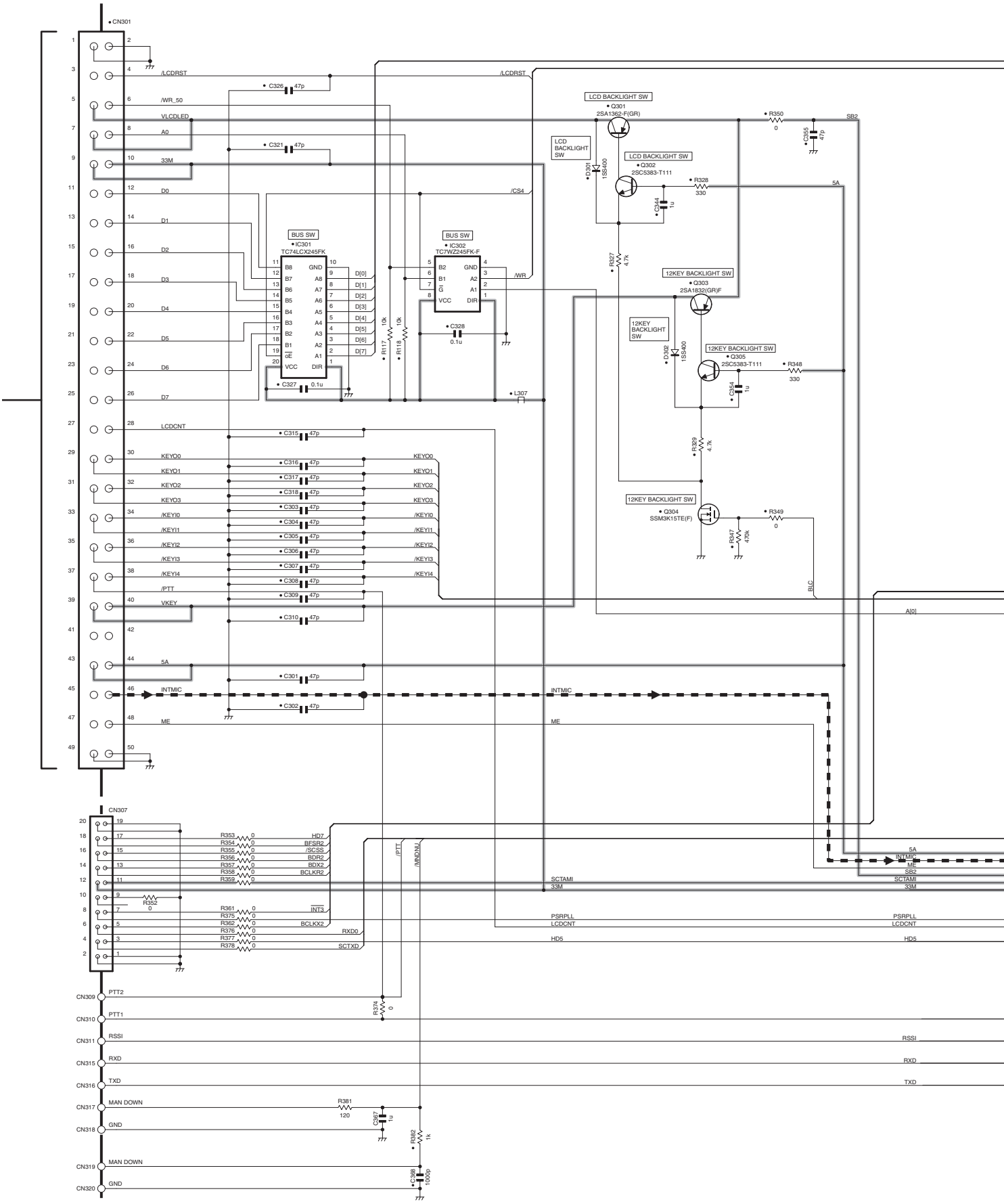
NX-210(G) SCHEMATIC DIAGRAM



DISPLAY UNIT(X54-4200-10)

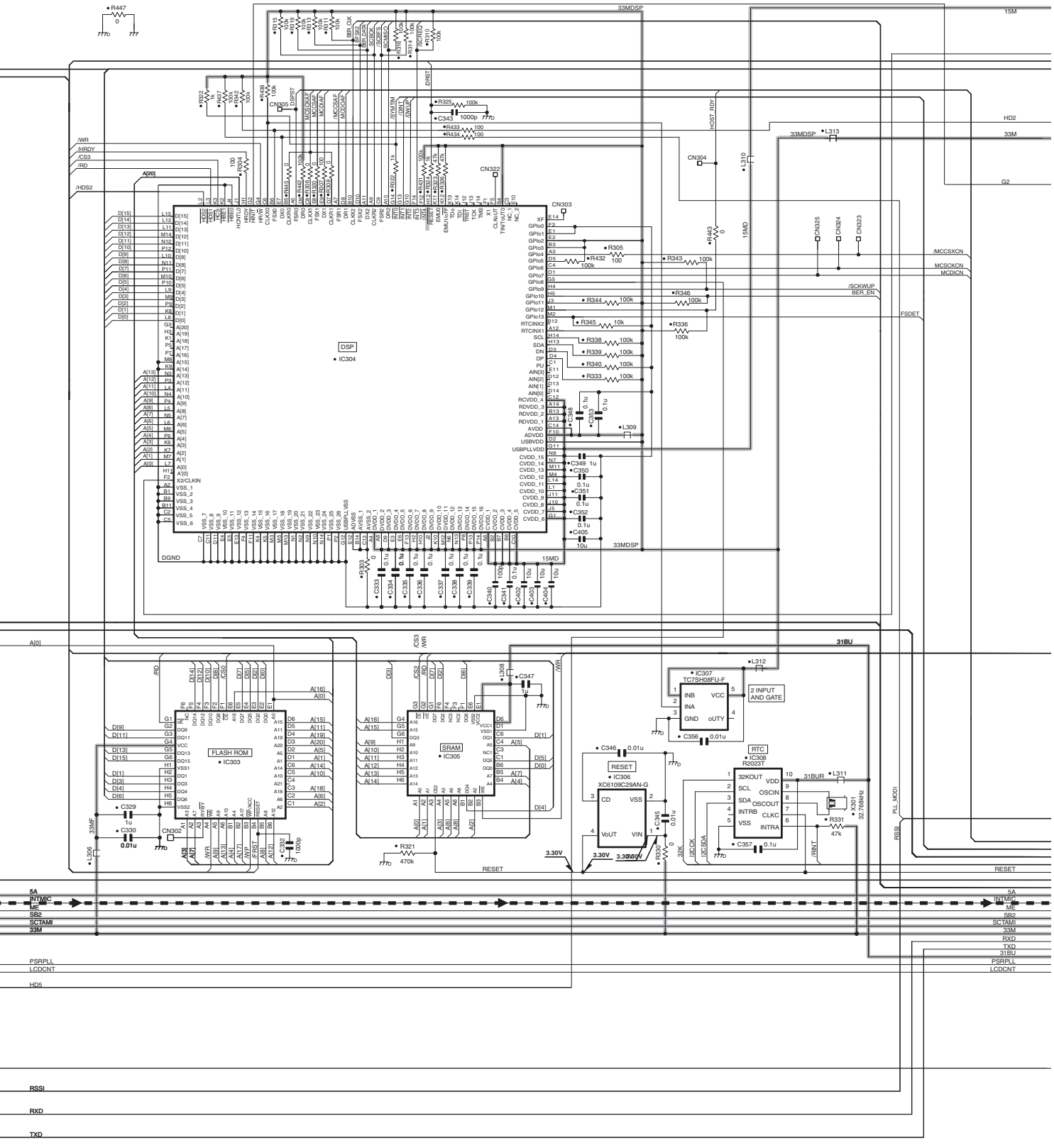
SCHEMATIC DIAGRAM NX-210(G)

TX-RX UNIT(X57-9270-12)



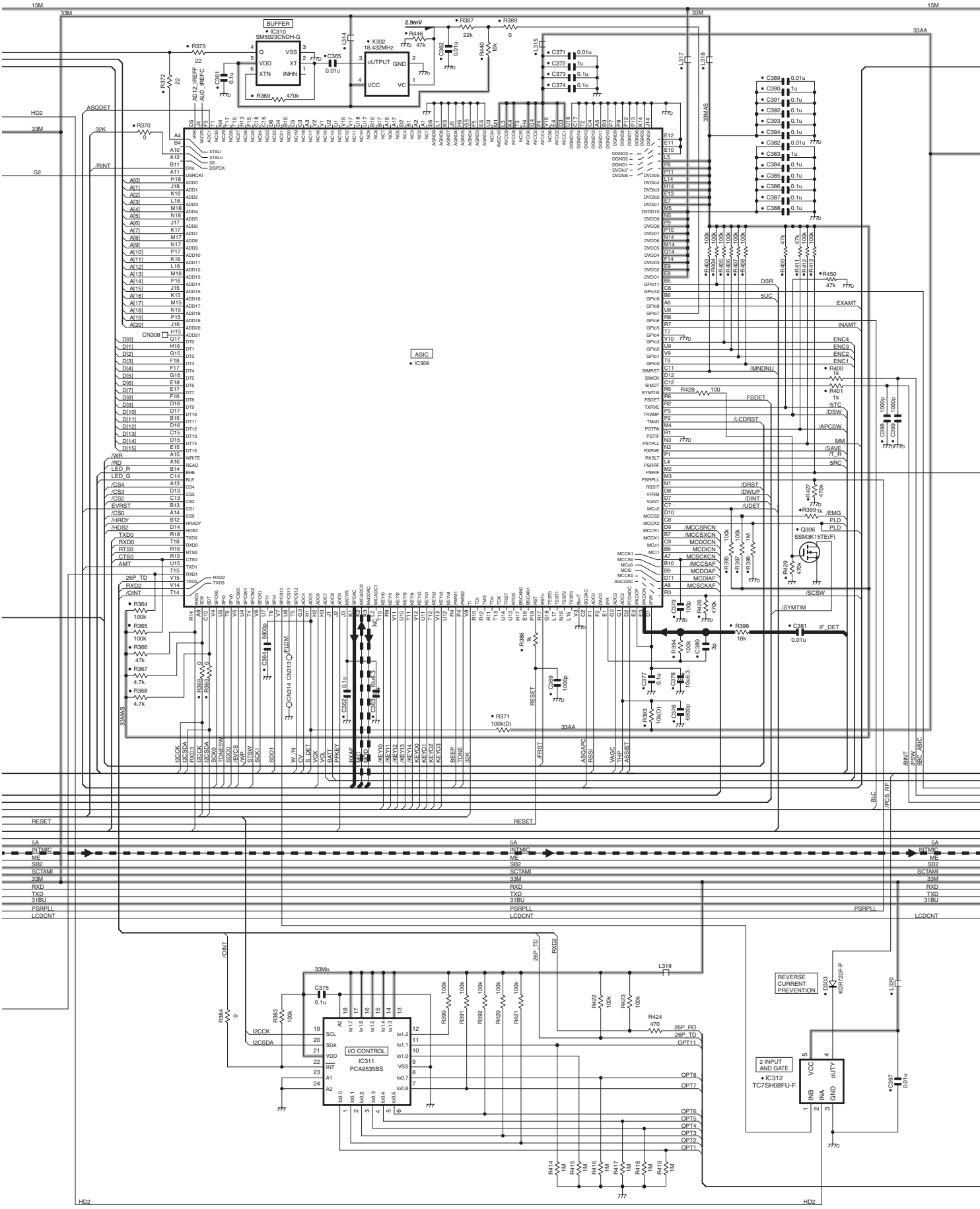
NX-210(G) SCHEMATIC DIAGRAM

TX-RX UNIT (X57-9270-12)



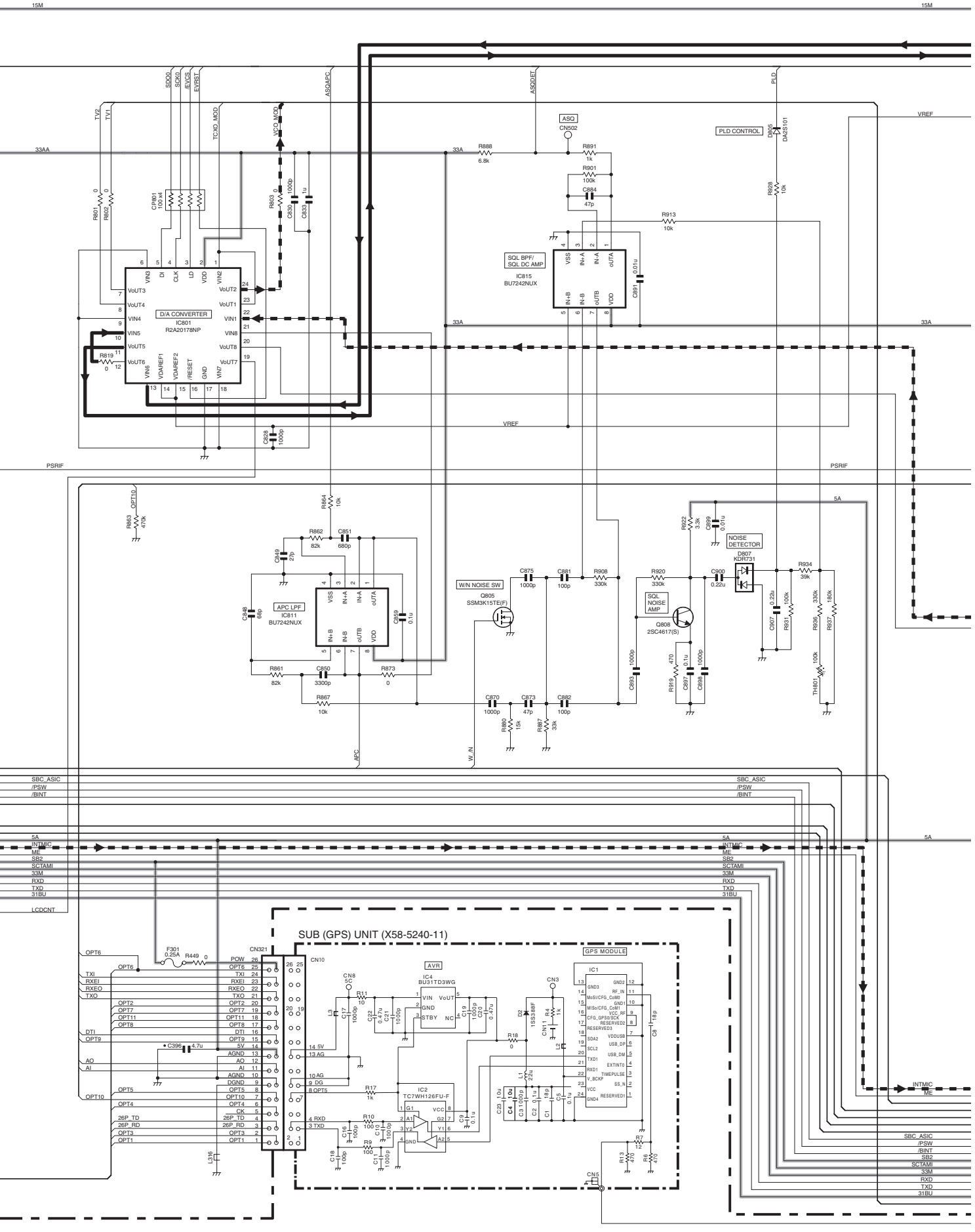
SCHEMATIC DIAGRAM NX-210(G)

TX-RX UNIT (X57-9270-12)



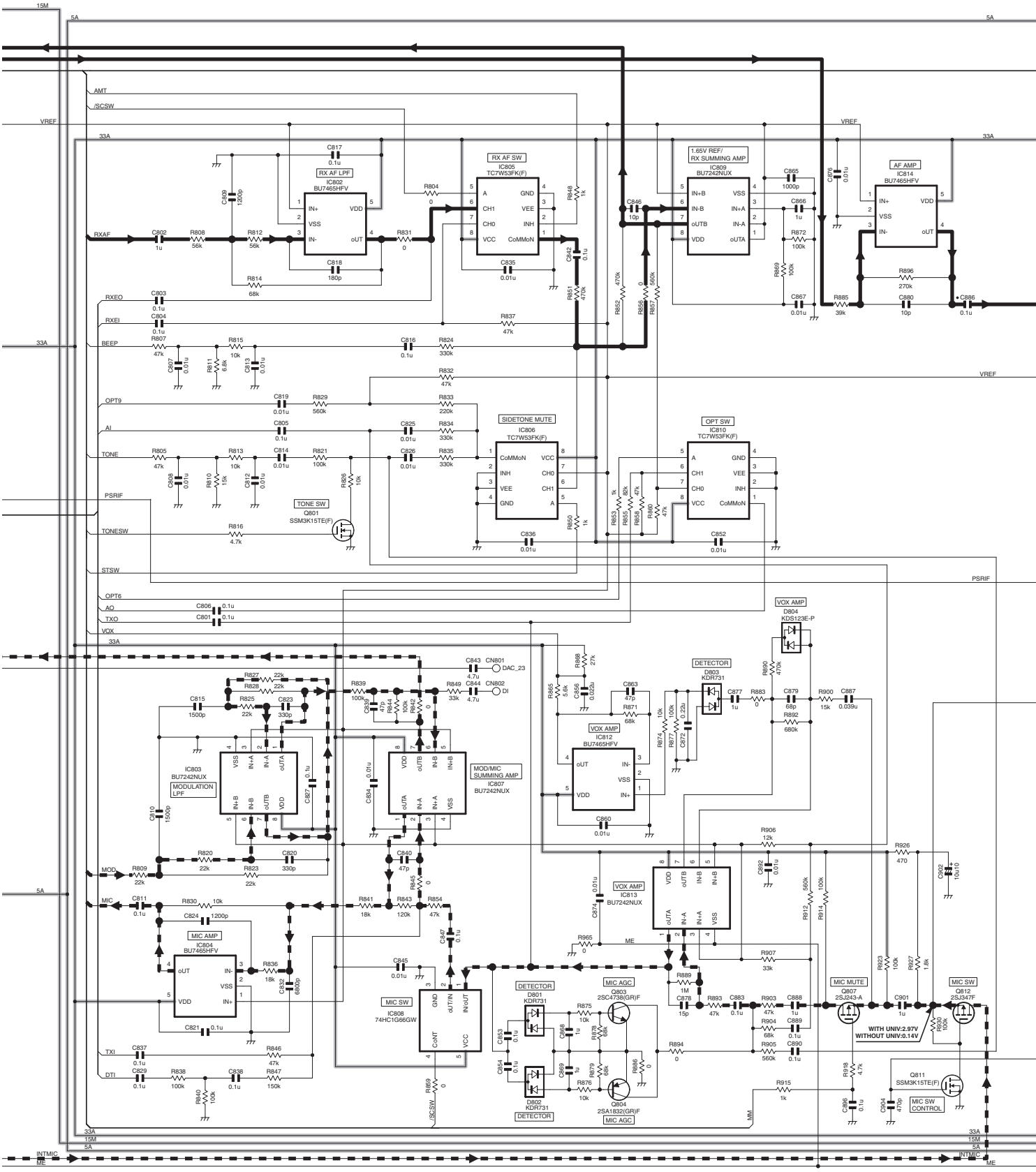
NX-210(G) SCHEMATIC DIAGRAM

TX-RX UNIT (X57-9270-12)



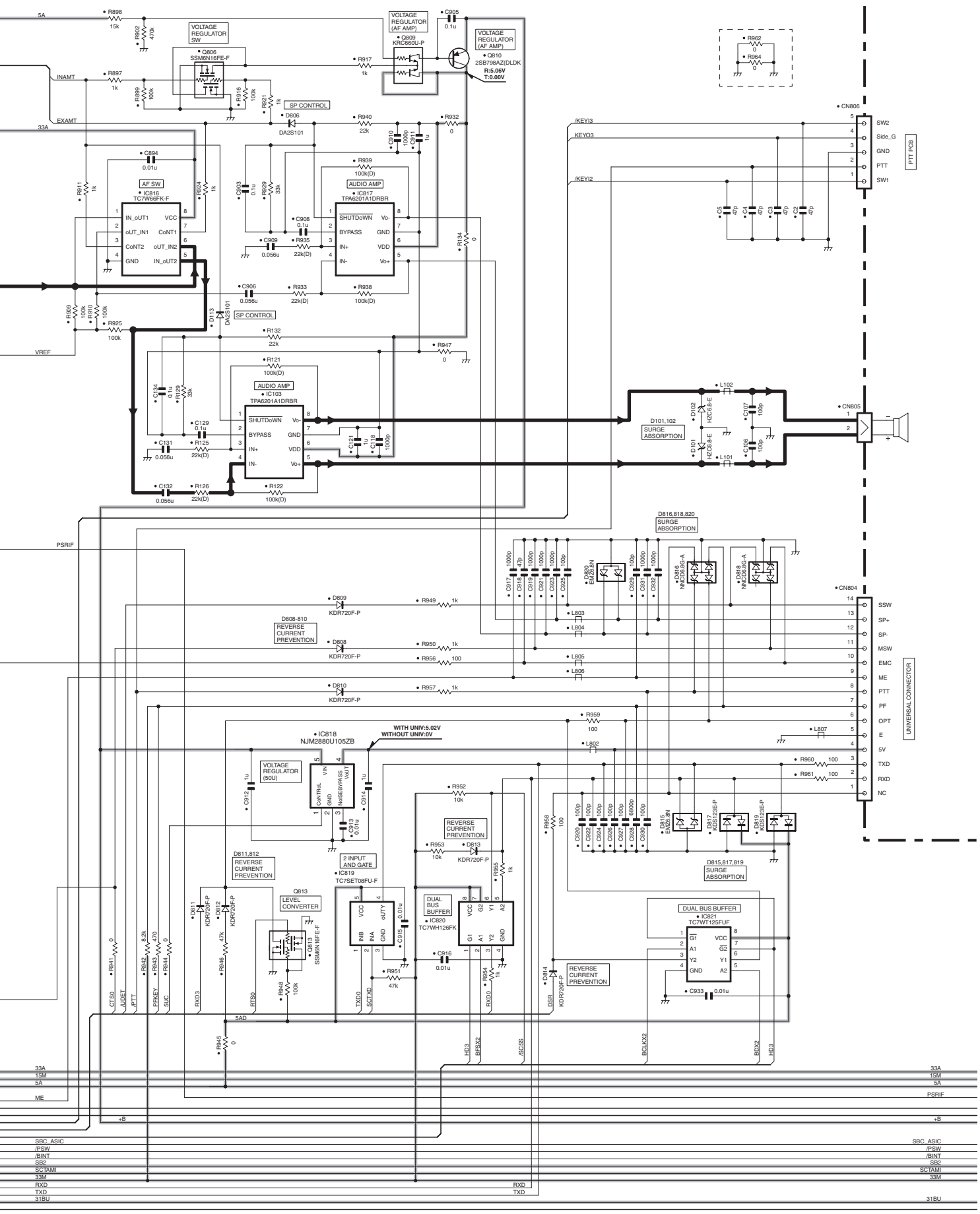
SCHEMATIC DIAGRAM NX-210(G)

TX-RX UNIT (X57-9270-12)



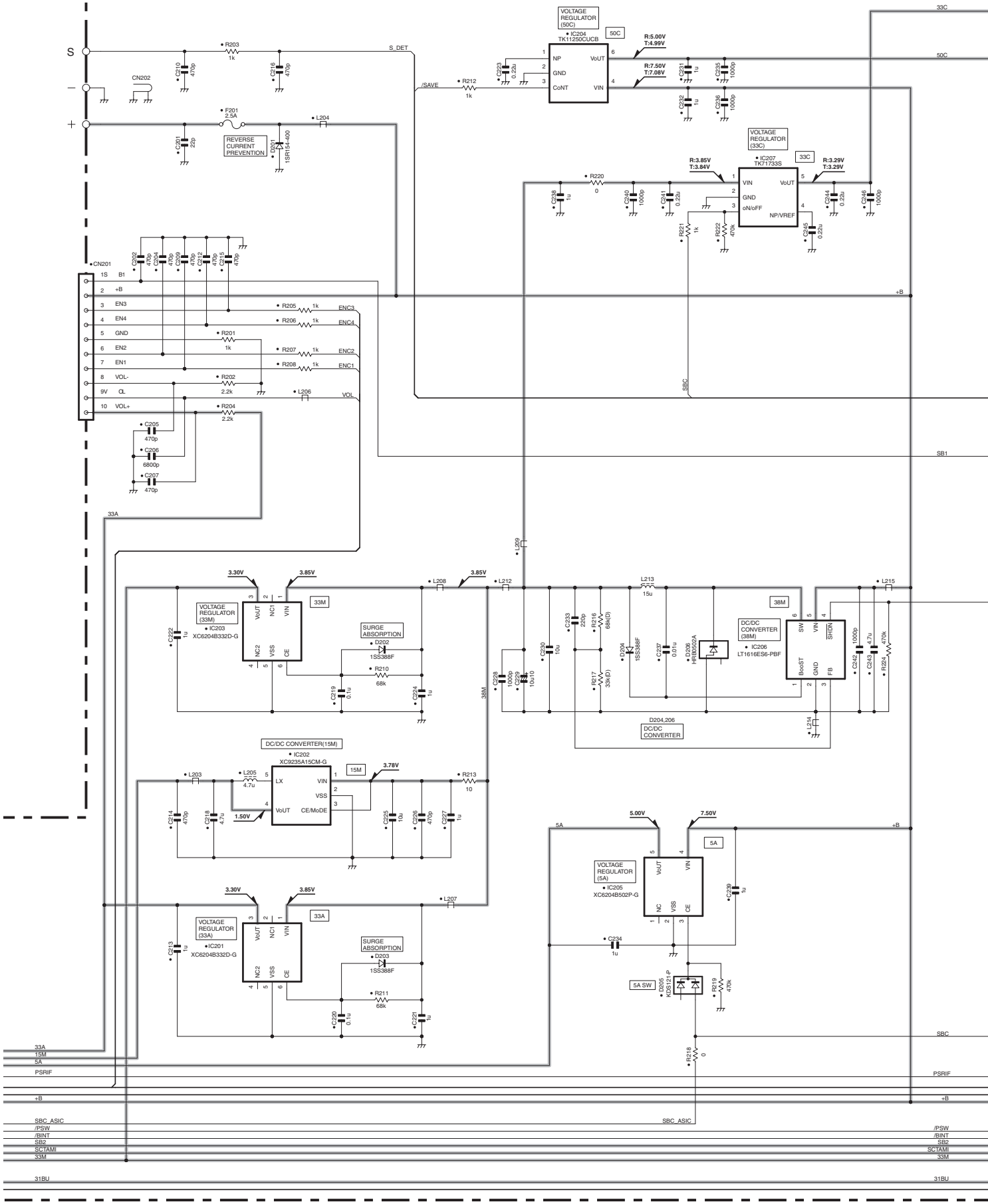
NX-210(G) SCHEMATIC DIAGRAM

TX-RX UNIT (X57-9270-12)



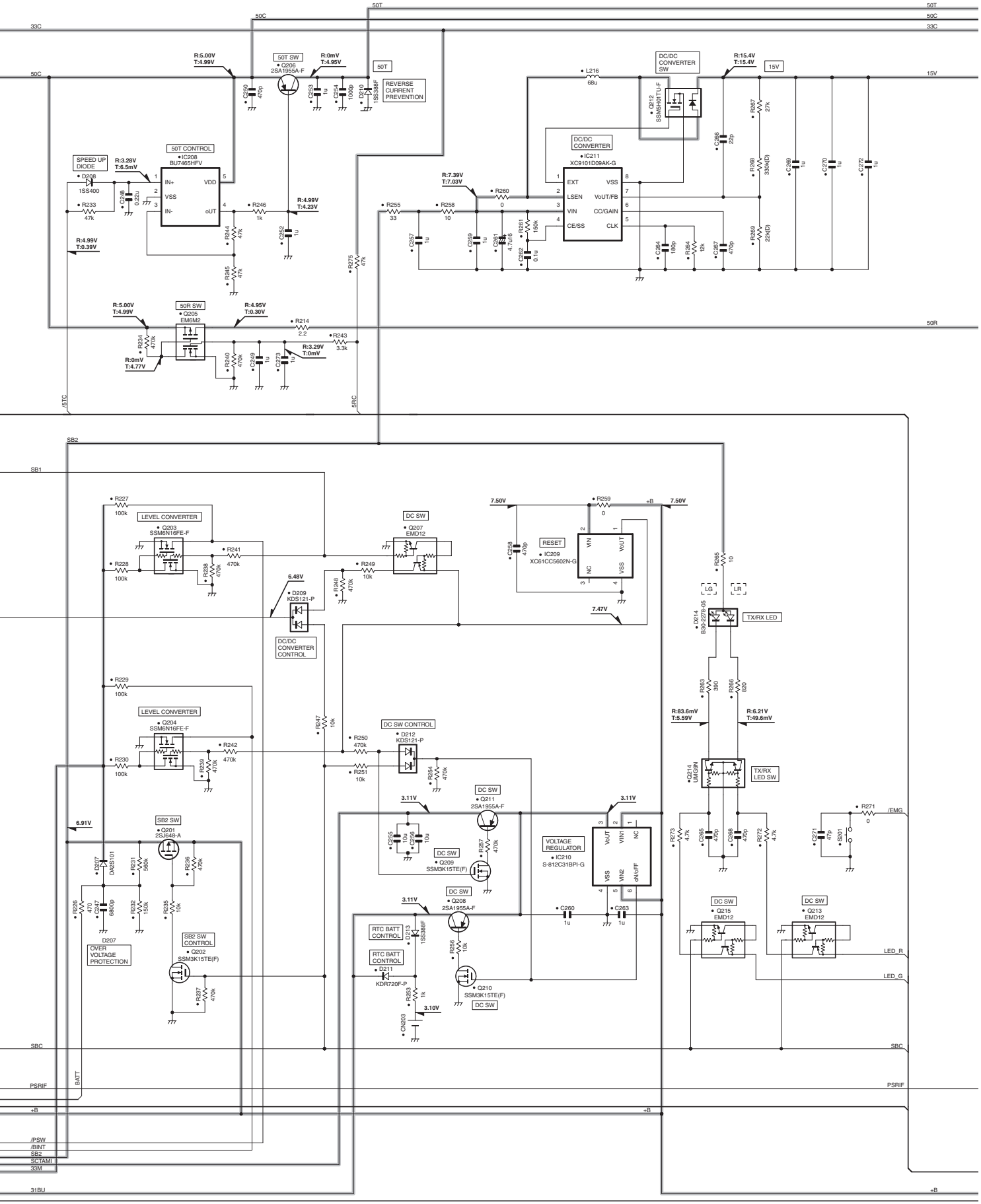
SCHEMATIC DIAGRAM NX-210(G)

TX-RX UNIT (X57-9270-12)



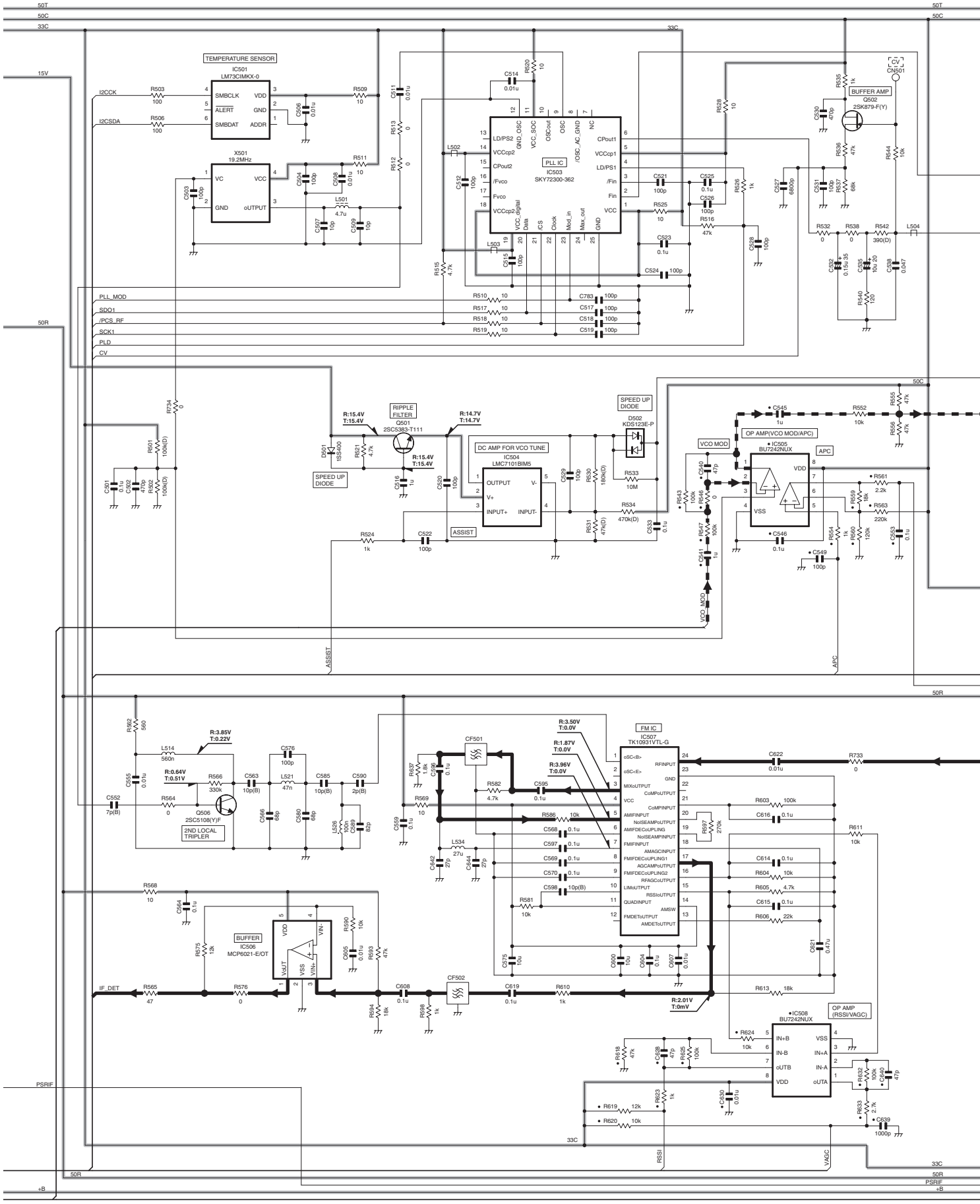
NX-210(G) SCHEMATIC DIAGRAM

TX-RX UNIT (X57-9270-12)



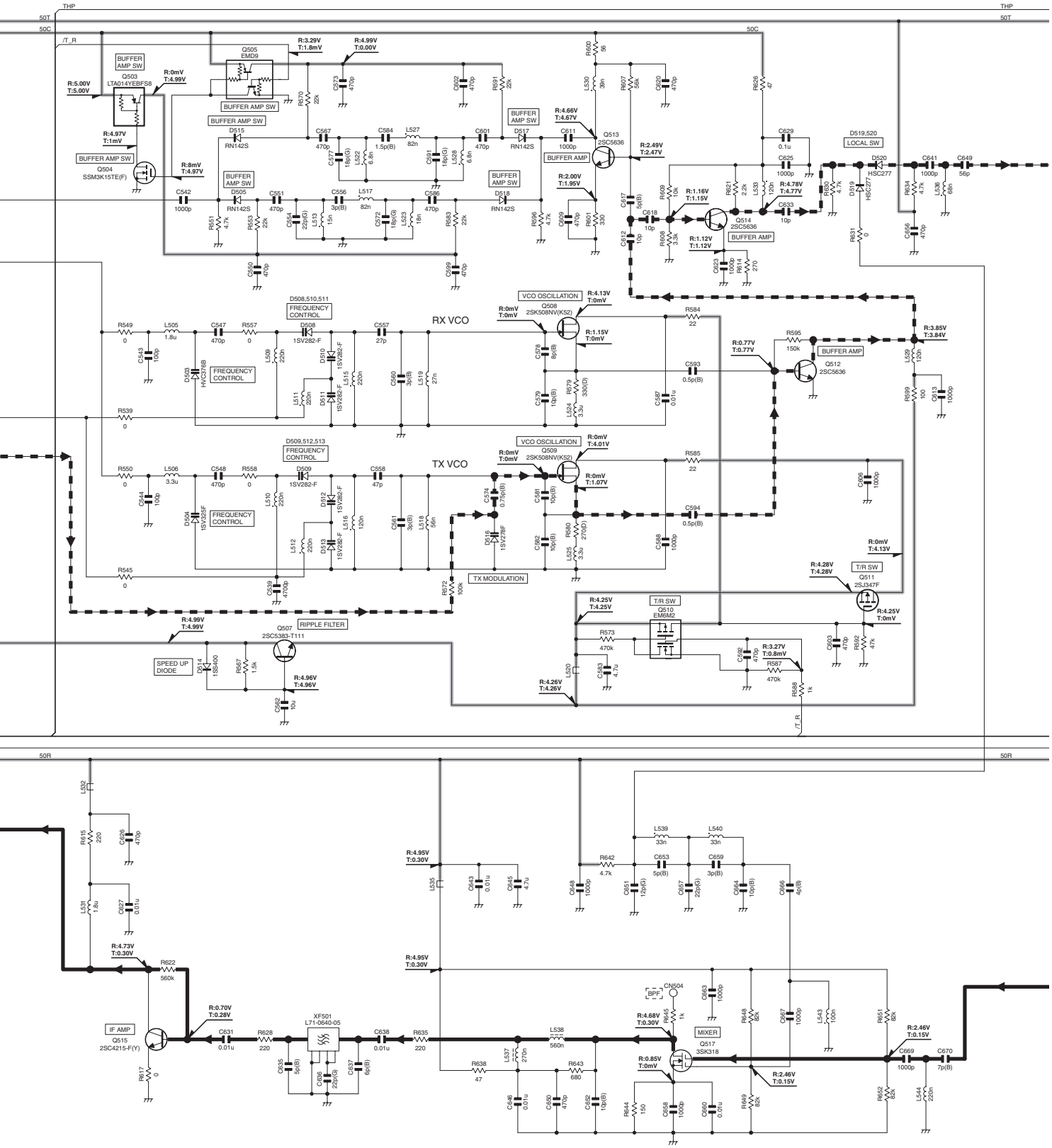
SCHEMATIC DIAGRAM NX-210(G)

TX-RX UNIT (X57-9270-12)



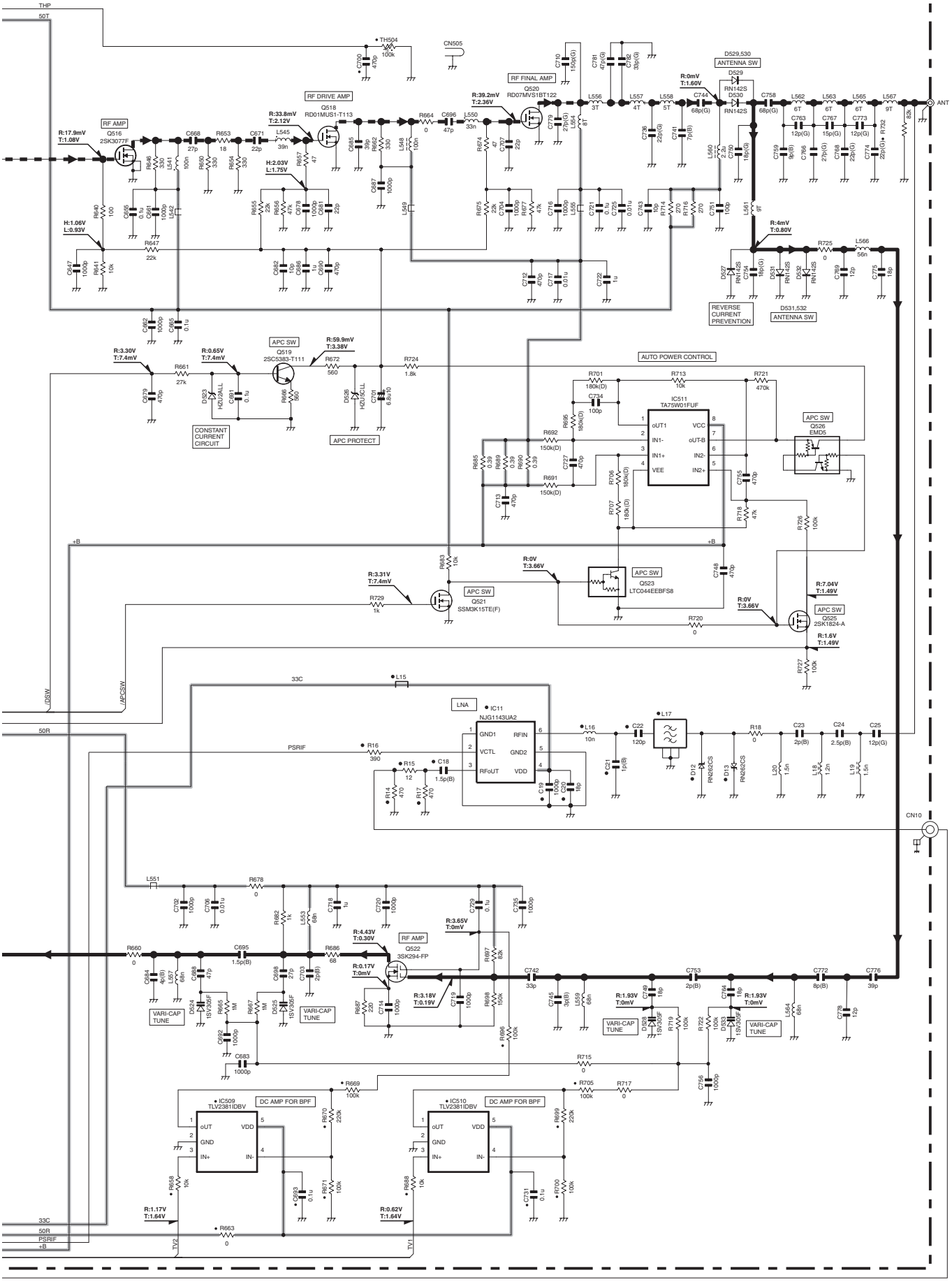
NX-210(G) SCHEMATIC DIAGRAM

TX-RX UNIT (X57-9270-12)



SCHEMATIC DIAGRAM NX-210(G)

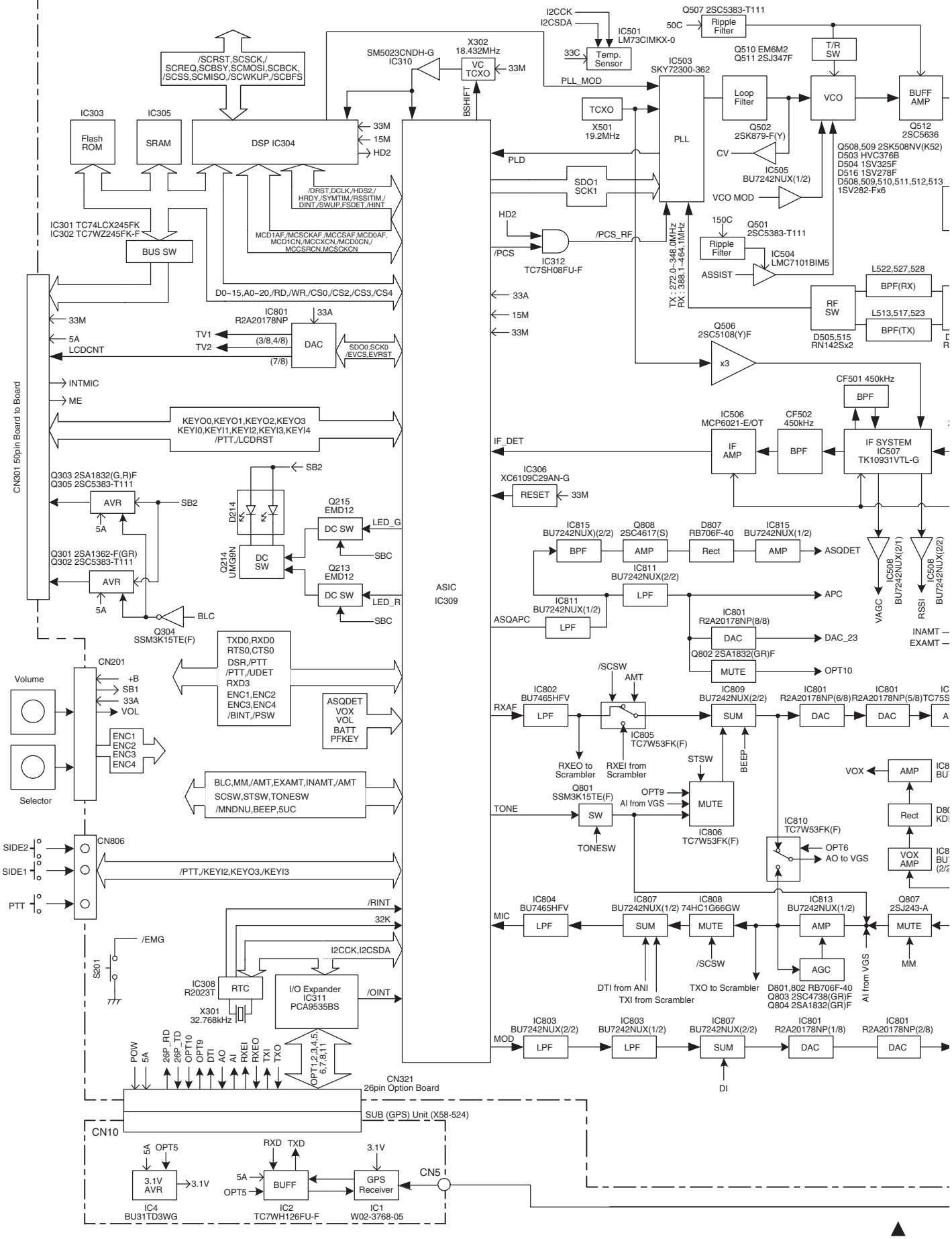
TX-RX UNIT (X57-9270-12)

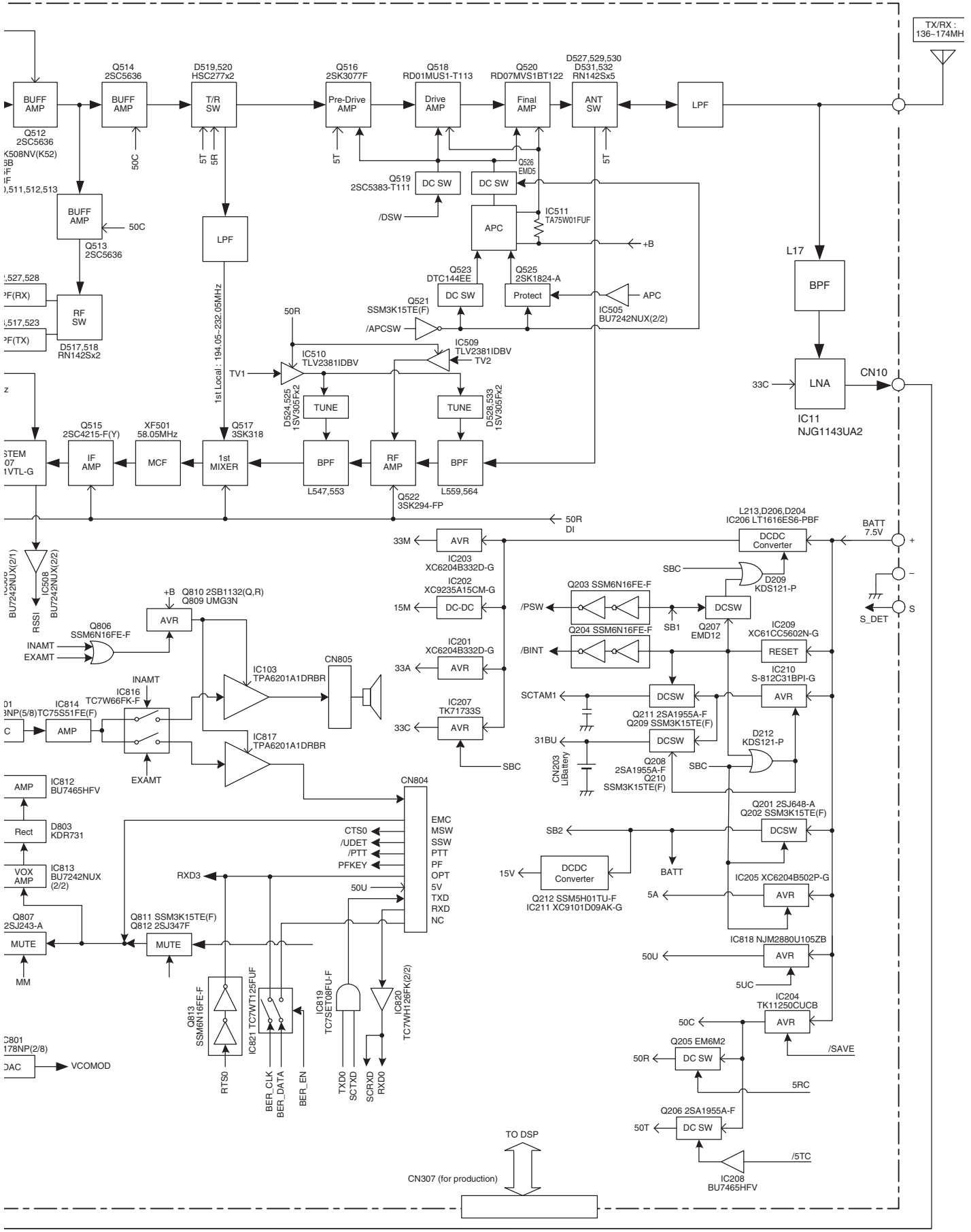


Note : The components marked with a dot (•) are parts of layer 1.

NX-210(G) BLOCK DIAGRAM

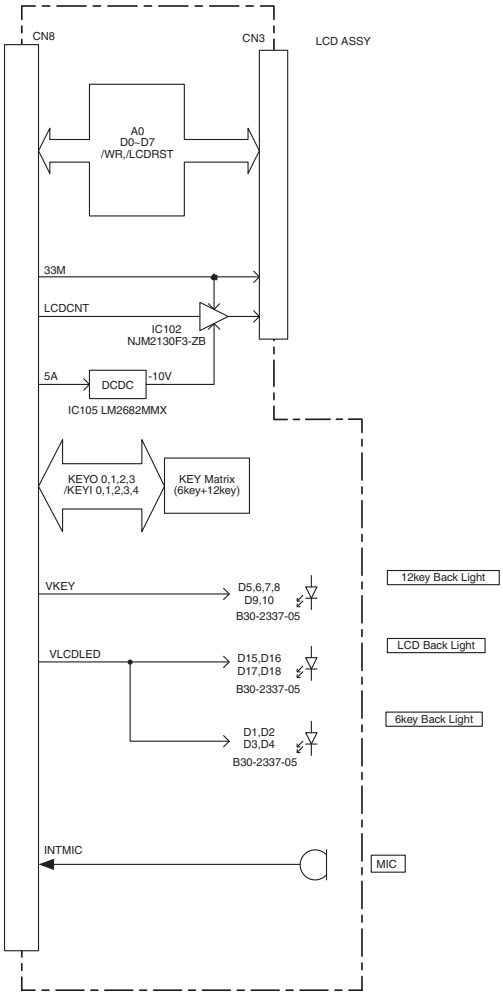
TX-RX unit (X57-9270-12)



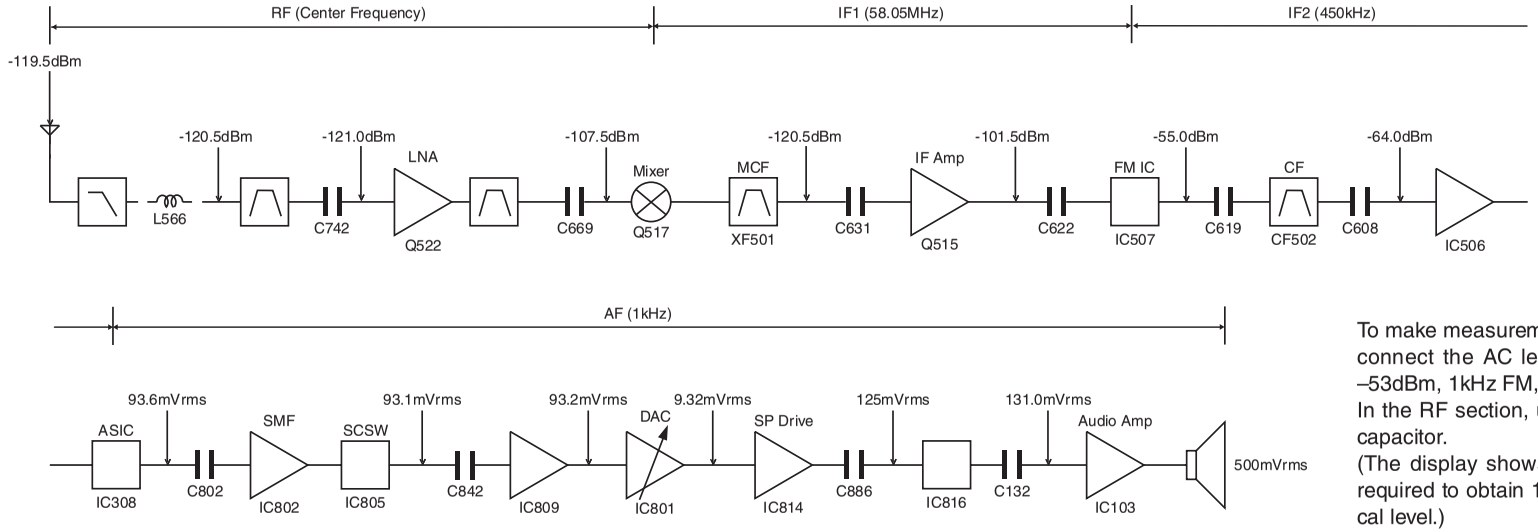

TX/RX : 136~174MH
BUFF AMP
Q512 2SC5636
Q514 2SC5636
BUFF AMP
50C
D519,520 HSC277x2
T/R SW
5T
5R
Q516 2SK3077F
Pre-Drive AMP
Q518 RD01MUS1-T113
Drive AMP
Q520 RD07MVS1BT122
Final AMP
D527,529,530 D531,532 RN142Sx5
ANT SW
LPF
Q519 2SC5383-T111
DC SW
Q526 EMD5
/DSW
APC
IC511 TA75W01FUF
+B
BUFF AMP
Q513 2SC5636
LPF
1st Local : 194.05-232.05MHz
RF SW
D517,518 RN142Sx2
Q523 DTC144EE
Q525 2SK1824-A
Protect
Q521 SSM3K15TE(F)
/APCSW
IC505 BU7242NUX(2/2)
50R
IC509 TLV2381IDBV
TV2
IC510 TLV2381IDBV
TV1
D524,525 1SV305Fx2
D528,533 1SV305Fx2
TUNE
L17
BPF
33C
LNA
CN10
IC11 NJG1143UA2
Q515 2SC4215-F(Y)
IF AMP
XF501 58.05MHz
MCF
Q517 3SK318
1st MIXER
BPF
L547,553
RF AMP
Q522 3SK294-FP
L559,564
50R DI
L213,D206,D204 IC206 LT1616ES6-PBF
DCDC Converter
BATT 7.5V
IC203 XC6204B332D-G
AVR
33M
IC202 XC9235A15CM-G
DC-DC
15M
IC201 XC6204B332D-G
33A
IC207 TK71733S
33C
SBC
D209 KDS121-P
Q203 SSM6N16FE-F
/PSW
DCSW
SB1
Q207 EMD12
Q204 SSM6N16FE-F
/BINT
IC209 XC61CC5602N-G
RESET
IC210 S-812C31BPI-G
SCTAM1
Q211 2SA1955A-F
Q209 SSM3K15TE(F)
31BU
CN203 LiBattery
Q208 2SA1955A-F
Q210 SSM3K15TE(F)
D212 KDS121-P
Q201 2SJ648-A
Q202 SSM3K15TE(F)
SB2
15V
DCDC Converter
Q212 SSM5H01TU-F
IC211 XC9101D09AK-G
BATT
5A
IC205 XC6204B502P-G
IC818 NJM2880U105ZB
50U
5UC
IC204 TK11250CUCB
50C
/SAVE
Q205 EM6M2
50R
5RC
Q206 2SA1955A-F
50T
/5TC
IC208 BU7465HFV
BU7242NUX(2/1)
IC508 BU7242NUX(2/2)
RSSI
+B
Q810 2SB1132(Q,R)
Q809 UMG3N
Q806 SSM6N16FE-F
INAMT
EXAMT
IC103 TPA6201A1DRBR
IC817 TPA6201A1DRBR
CN805
IC816 TC7W66FK-F
IC814 TC75S51FE(F)
AMP
IC812 BU7465HFV
Rect
D803 KDR731
VOX AMP
IC813 BU7242NUX (2/2)
Q807 2SJ243-A
MUTE
MM
Q811 SSM3K15TE(F)
Q812 2SJ347F
CN804
EMC
MSW
SSW
PTT
PF
OPT
5V
TXD
RXD
NC
CTS0
/UDET
/PTT
PFKEY
RXD3
50U
Q813 SSM6N16FE-F
IC821 TC7WT125FUF
IC819 TC7SET08FU-F
IC820 TC7WH126FK(2/2)
RTS0
BER_CLK
BER_DATA
BER_EN
TXD0
SCTXD
SCRXD
RXD0
VCOMOD
TO DSP
CN307 (for production)

BLOCK DIAGRAM

Display unit (X54-4200-10)

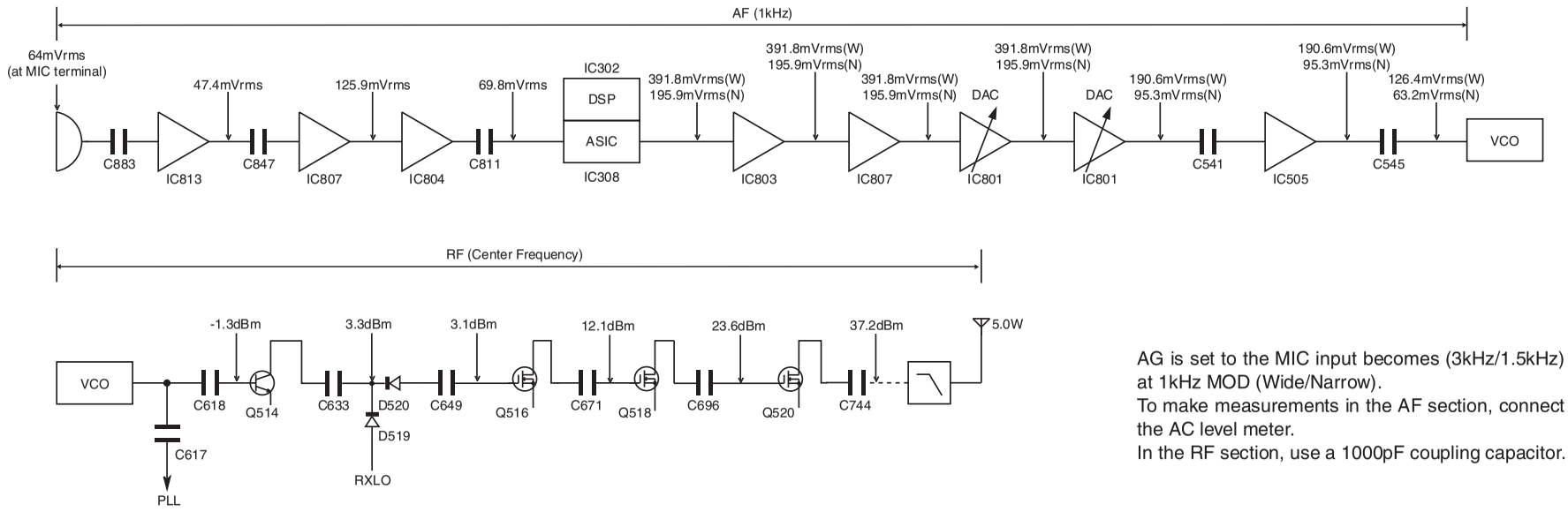


Receiver Section



To make measurements in the AF section, connect the AC level meter. (ANT input: –53dBm, 1kHz FM, 3kHz DEV (Wide))
In the RF section, use a 1000pF coupling capacitor.
(The display shows the SSG input value required to obtain 12dB SINAD without local level.)

Transmitter Section



AG is set to the MIC input becomes (3kHz/1.5kHz) at 1kHz MOD (Wide/Narrow).
To make measurements in the AF section, connect the AC level meter.
In the RF section, use a 1000pF coupling capacitor.

OPTIONAL ACCESSORIES

KNB-54N (Ni-MH Battery Pack) : 7.2V 2500mAh

■ External View

KNB-33L (Li-ion Battery Pack) : 7.4V 2000mAh

■ External View

KRA-43G (VHF Helical Antenna)

■ External View

KRA-43G M : 146-162 MHz
KRA-43G M2 : 162-174 MHz
KRA-43G M3 : 136-150 MHz

SPECIFICATIONS

GENERAL

Frequency Range	136~174 MHz
Number of Channels	512
Zones	128
Max. Channels per Zone	250
Channel Spacing	Analog: 12.5/15/25/30 kHz Digital: 6.25/12.5 kHz
Operating Voltage	7.5V DC ± 20%
Battery Life (5-5-90,GPS:OFF)	
with KNB-54N	More than 14 hours
with KNB-33L	More than 11 hours
Operating Temperature Range	–22°F to +140°F (–30°C to +60°C)
Frequency Stability	±2.0ppm
Antenna Impedance	50Ω
Dimensions (W x H x D) (Projections not included)	
Radio only	2.28 x 5.46 x 0.88 in (58 x 138.8 x 22.4 mm)
with KNB-54N	2.28 x 5.46 x 1.60 in (58 x 138.8 x 40.7 mm)
with KNB-33L	2.28 x 5.46 x 1.35 in (58 x 138.8 x 34.2 mm)
Weight (net)	
Radio only	9.52 oz (270 g)
with KNB-54N	19.58 oz (555 g)
with KNB-33L	13.93 oz (395 g)

RECEIVER

Sensitivity	Digital @6.25kHz (3% BER): 0.20µV Digital @12.5kHz (3% BER): 0.25µV Analog (12dB SINAD): 0.25µV
Selectivity	Analog @25kHz: 72dB Analog @12.5kHz: 65dB
Intermodulation Distortion	Analog: 70dB (±50, 100kHz)
Spurious Response	Analog: 70dB
Audio Distortion	Less than 3%
Audio Output	500mW/8Ω

TRANSMITTER

RF Power Output	5W/1W
Spurious Response	70dB
FM Hum and Noise	Analog @25kHz: 45dB Analog @12.5kHz: 40dB
Audio Distortion	Less than 3%
Modulation	16K0F3E, 11K0F3E, 8K30F1E, 8K30F1D, 8K30F7W, 4K00F1E, 4K00F1D, 4K00F7W, 4K00F2D

Analog measurements made per TIA/EIA 603 and specifications shown are typical.
JVC KENWOOD reserves the right to change specifications without prior notice or obligation.

NX-210(G)

KENWOOD

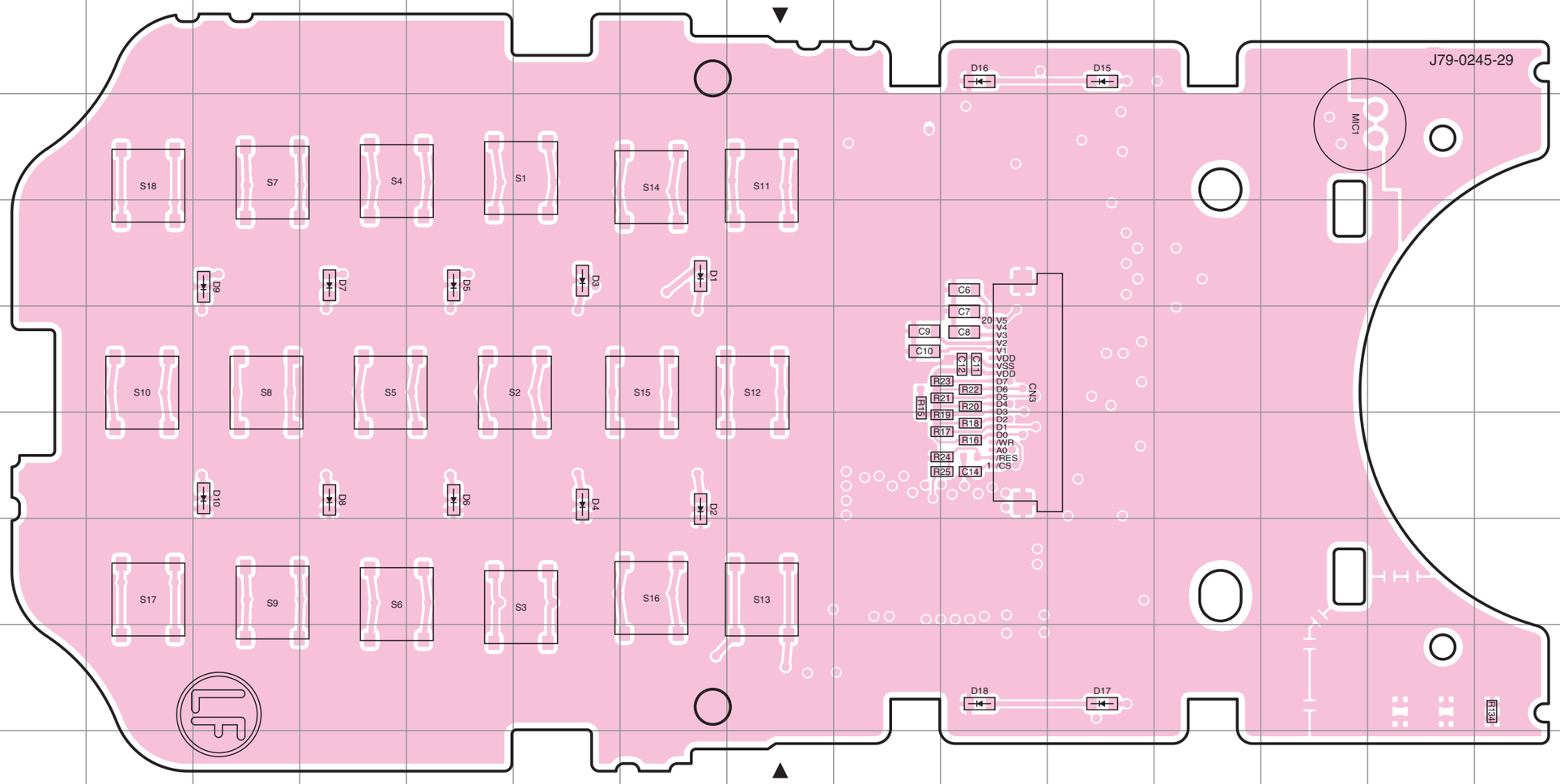
JVC KENWOOD Corporation
Communications Equipment Div

NX-210(G) PC BOARD

PC BOARD NX-210(G)

DISPLAY UNIT (X54-4200-10)
Component side view (J79-0245-29)

DISPLAY UNIT (X54-4200-10)
Component side view (J79-0245-29)



Ref. No.	Address	Ref. No.	Address
D1	5I	D8	7F
D2	7I	D9	5E
D3	5H	D10	7E
D4	7H	D15	3M
D5	5G	D16	3L
D6	7G	D17	9M
D7	5F	D18	9L

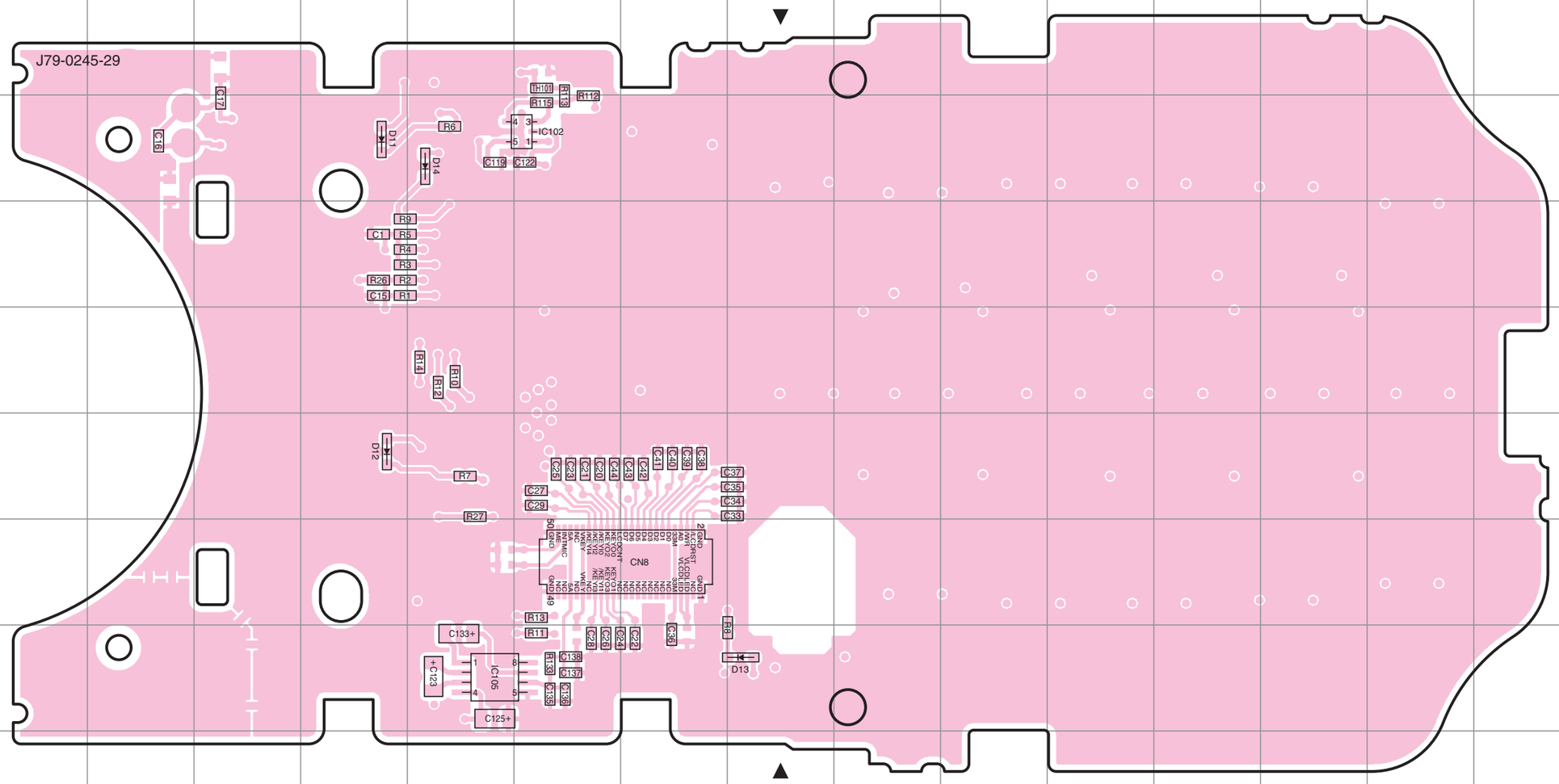
Component side
Layer 1
Layer 2
Layer 3
Layer 4
Foil side

NX-210(G) PC BOARD

PC BOARD NX-210(G)

DISPLAY UNIT (X54-4200-10)
Foil side view (J79-0245-29)

DISPLAY UNIT (X54-4200-10)
Foil side view (J79-0245-29)



Ref. No.	Address	Ref. No.	Address
IC102	4H	D12	7F
IC105	9G	D13	9J
D11	4F	D14	4G

Component side

Layer 1	
Layer 2	
Layer 3	
Layer 4	

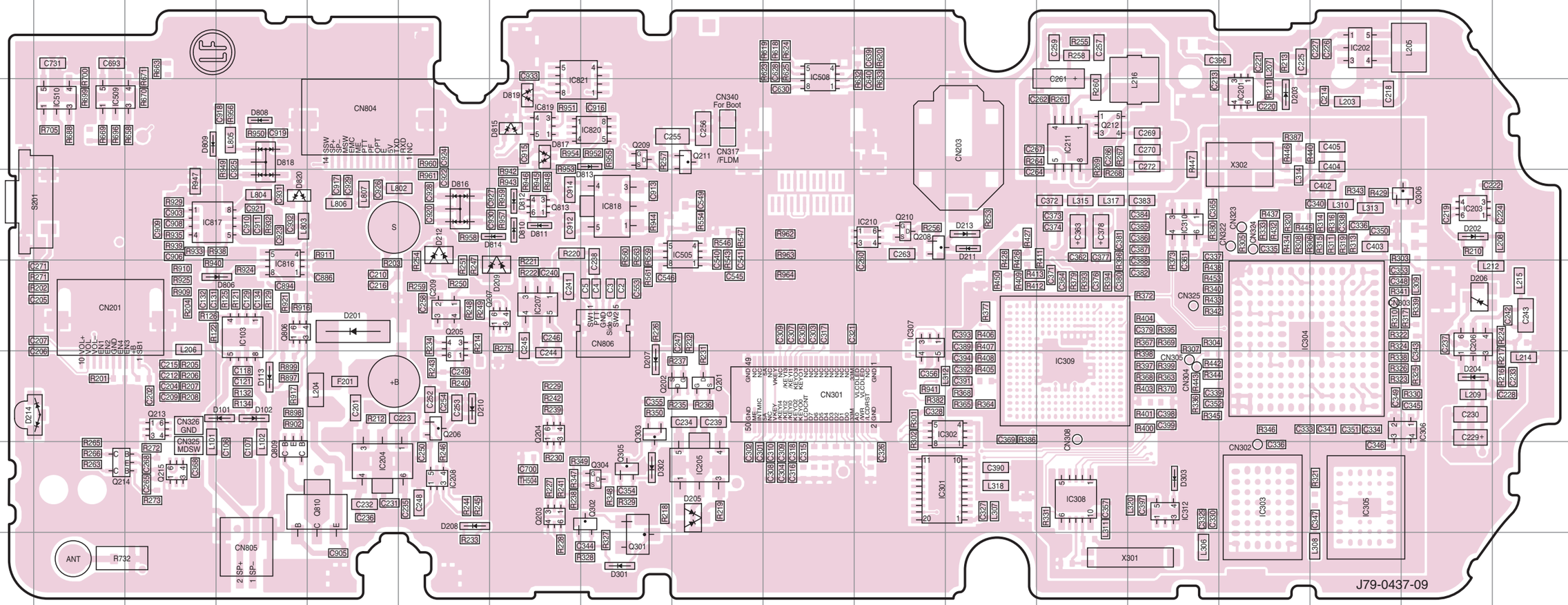
Foil side

NX-210(G) PC BOARD

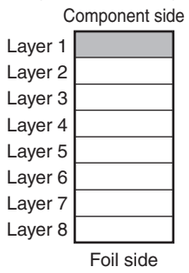
PC BOARD NX-210(G)

TX-RX UNIT (X57-9270-12)
Component side view (J79-0437-09)

TX-RX UNIT (X57-9270-12)
Component side view (J79-0437-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC103	6E	IC303	8P	IC817	5D	Q210	5L	Q810	8F	D210	7G	D813	4I
IC201	4P	IC304	6P	IC818	5I	Q211	4J	Q813	5H	D211	5M	D814	5H
IC202	3Q	IC305	8I	IC819	4H	Q212	4N	D101	7E	D212	5G	D815	4H
IC203	5R	IC306	7R	IC820	4I	Q213	7D	D102	7E	D213	5M	D816	5G
IC204	8F	IC307	6L	IC821	4H	Q214	8C	D113	7E	D214	7B	D817	4H
IC205	8J	IC308	8N	Q201	7I	Q215	8D	D201	6F	D301	9I	D818	4E
IC206	6R	IC309	7N	Q202	7J	Q301	9I	D202	5R	D302	8I	D819	4H
IC207	6H	IC310	5O	Q203	8H	Q302	8I	D203	4P	D303	8I	D820	5E
IC208	8G	IC312	8N	Q204	7H	Q303	7I	D204	7R	D806	6E		
IC209	6G	IC505	5J	Q205	6G	Q304	8I	D205	8J	D808	4E		
IC210	5L	IC508	3K	Q206	7G	Q305	8I	D206	6R	D809	4D		
IC211	4N	IC509	4C	Q207	6H	Q306	5R	D207	7I	D810	5H		
IC301	8L	IC510	4C	Q208	5L	Q806	6E	D208	8G	D811	5H		
IC302	7M	IC816	6E	Q209	4I	Q809	8E	D209	6H	D812	5H		

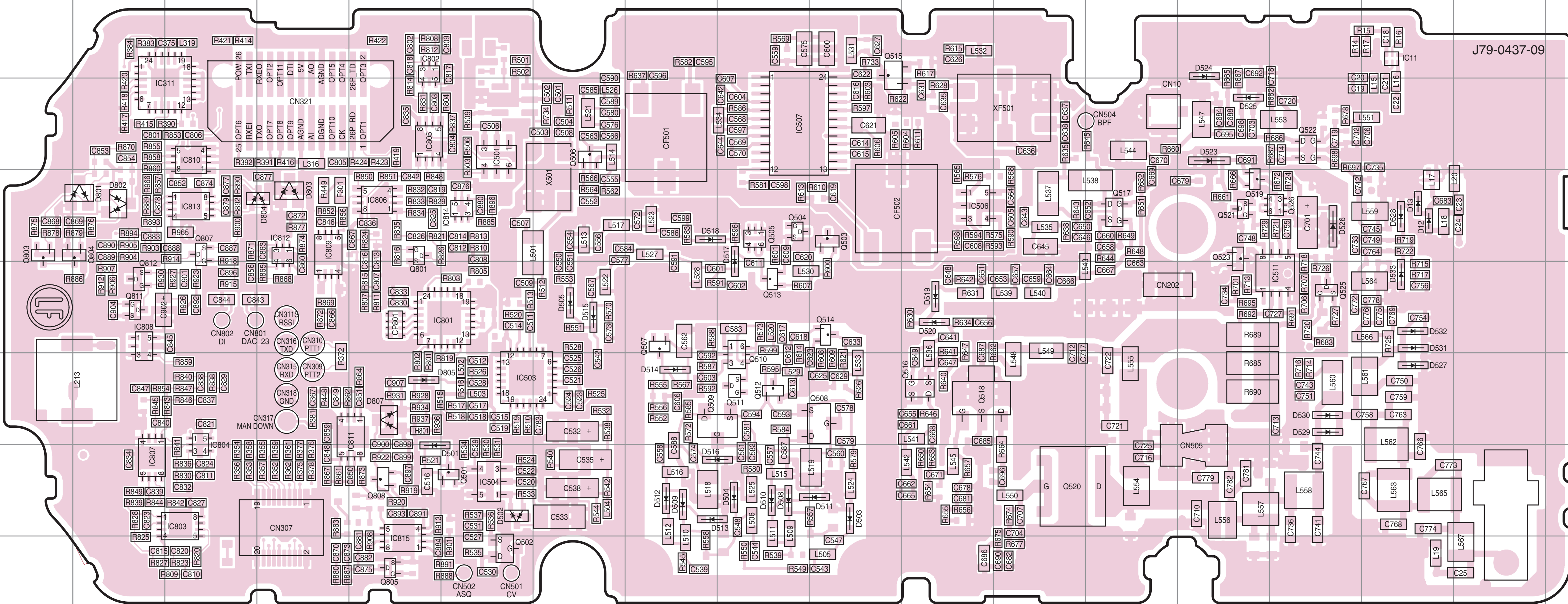


NX-210(G) PC BOARD

PC BOARD NX-210(G)

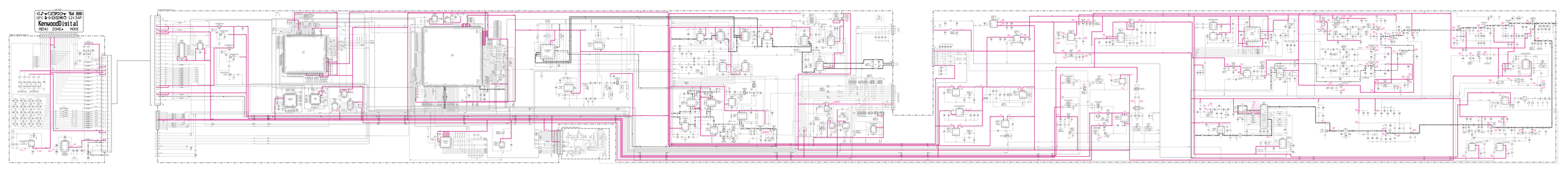
TX-RX UNIT (X57-9270-12)
Foil side view (J79-0437-09)

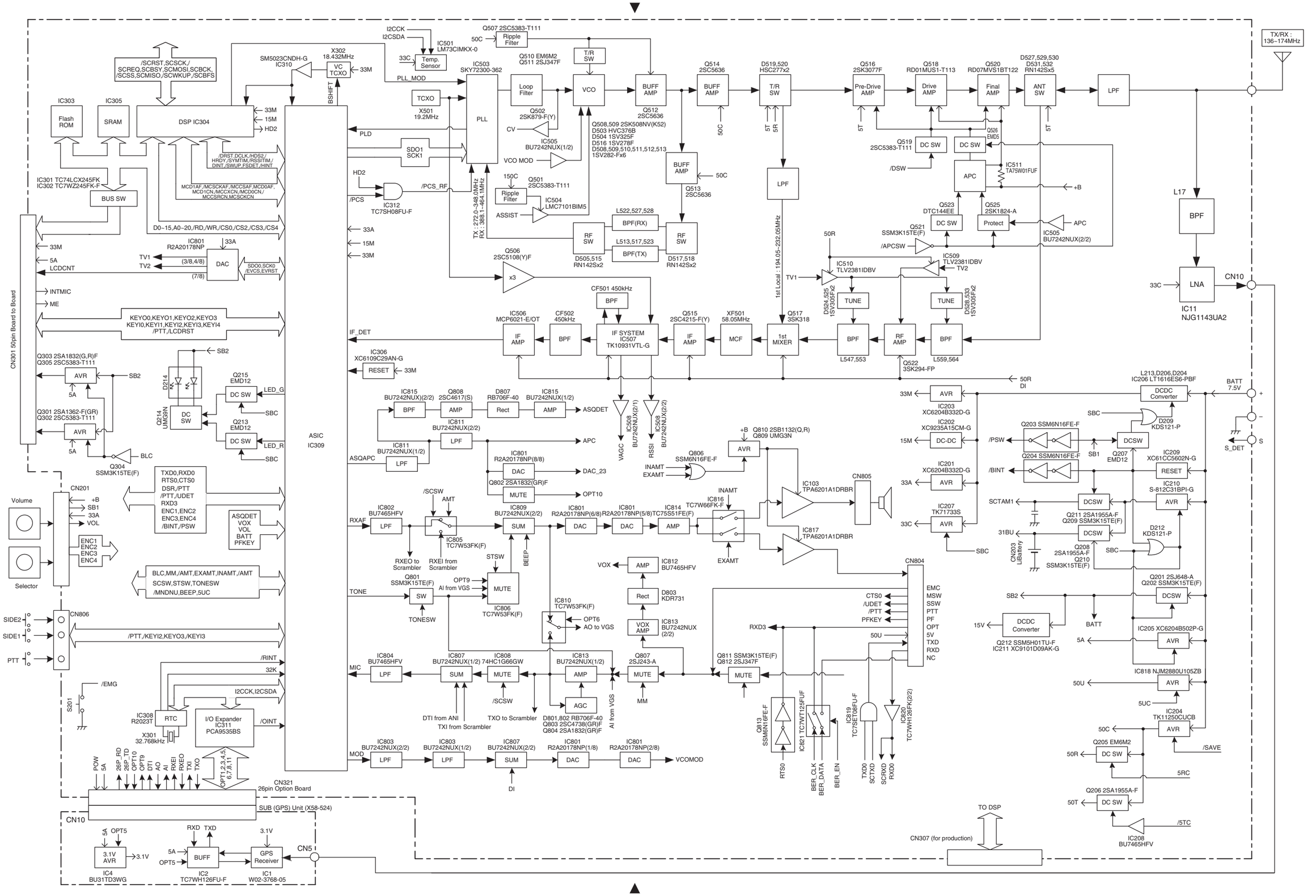
TX-RX UNIT (X57-9270-12)
Foil side view (J79-0437-09)

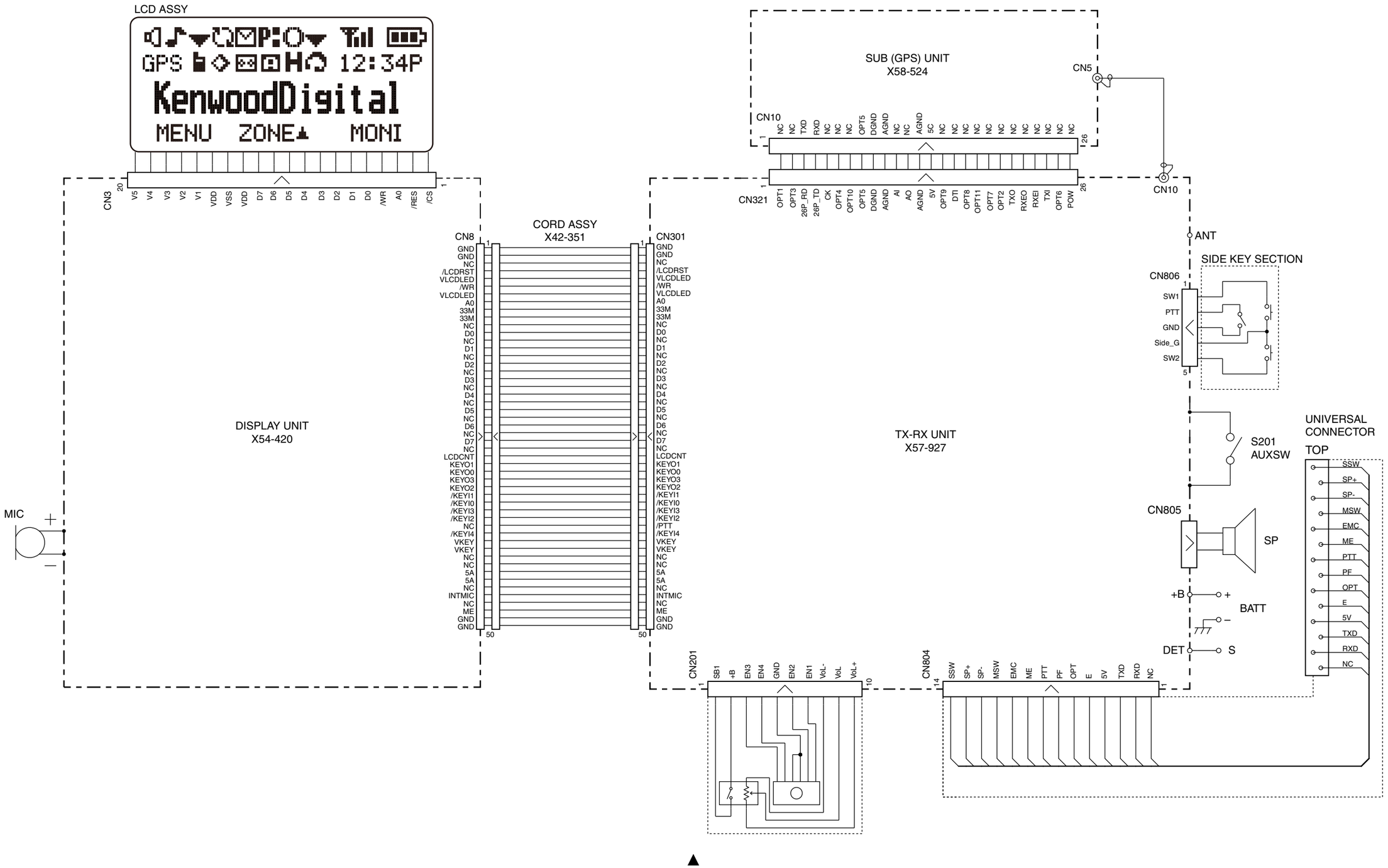


Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC11	3P	IC806	5E	Q505	5I	Q519	5N	Q811	6B	D513	8H	D529	7O
IC311	4B	IC807	8B	Q506	4G	Q520	8L	Q812	6B	D514	7H	D530	7O
IC309	4C	IC808	6B	Q507	6H	Q521	5N	D12	5P	D515	6G	D531	7P
IC501	4F	IC809	5D	Q508	7J	Q522	4O	D13	5P	D516	8H	D532	7P
IC503	7F	IC810	4C	Q509	7H	Q523	5N	D501	8E	D517	5I	D533	6P
IC504	8F	IC811	7E	Q510	7I	Q525	6O	D502	8F	D518	5H	D801	5B
IC506	5K	IC812	5D	Q511	7I	Q526	5O	D503	8J	D519	6K	D802	5B
IC507	4I	IC813	5C	Q512	7I	Q801	5E	D504	8I	D520	6K	D803	5D
IC511	6O	IC814	5F	Q513	6I	Q802	8D	D505	6G	D523	4N	D804	5D
IC801	6E	IC815	9E	Q514	6J	Q803	5A	D508	8I	D524	3N	D805	7E
IC802	3E	Q501	8F	Q515	3J	Q804	5B	D509	8H	D525	4N	D807	7E
IC803	8C	Q502	9F	Q516	7K	Q805	9E	D510	8I	D526	5O		
IC804	8C	Q503	5J	Q517	5M	Q807	5C	D511	8J	D527	7O		
IC805	4E	Q504	5I	Q518	7K	Q808	8E	D512	8H	D528	5P		

Component side
Layer 1
Layer 2
Layer 3
Layer 4
Layer 5
Layer 6
Layer 7
Layer 8
Foil side


Kenwood Digital
MENU ZONE▲ MONI


TX/RX : 136~174MHz
CN301 50pin Board to Board
/SCRST,SCSCK,/SCREQ,SCBSY,SCMOSI,SCBCK,/SCSS,SCMISO,/SCWKUP,/SCBFS
IC303 Flash ROM
IC305 SRAM
DSP IC304
33M
15M
HD2
BSHIFT
SM5023CNDH-G IC310
X302 18.432MHz
VC TCXO
33M
I2CCK
I2CSDA
IC501 LM73CIMKX-0
Temp. Sensor
33C
Q507 2SC5383-T111
50C
Ripple Filter
T/R SW
IC503 SKY72300-362
PLL_MOD
TCXO
X501 19.2MHz
PLL
Loop Filter
VCO
Q510 EM6M2
Q511 2SJ347F
Q502 2SK879-F(Y)
CV
IC505 BU7242NUX(1/2)
VCO MOD
Q508,509 2SK508NV(K52)
D503 HVC376B
D504 1SV325F
D516 1SV278F
D508,509,510,511,512,513 1SV282-Fx6
BUFF AMP
Q512 2SC5636
Q514 2SC5636
D519,520 HSC277x2
Q516 2SK3077F
Pre-Drive AMP
Q518 RD01MUS1-T113
Drive AMP
Q520 RD07MVS1BT122
Final AMP
D527,529,530 D531,532 RN142Sx5
ANT SW
LPF
5T
5R
50C
PLD
SDO1
SCK1
HD2
/PCS
/PCS_RF
IC312 TC7SH08FU-F
33A
15M
33M
TX : 272.0~348.0MHz
RX : 388.1~464.1MHz
150C
Q501 2SC5383-T111
Ripple Filter
IC504 LMC7101BIM5
ASSIST
Q506 2SC5108(Y)F
x3
RF SW
L522,527,528
BPF(RX)
L513,517,523
BPF(TX)
D505,515 RN142Sx2
D517,518 RN142Sx2
Q513 2SC5636
Q519 2SC5383-T111
DC SW
/DSW
Q526 EMD5
APC
IC511 TA75W01FUF
+B
Q523 DTC144EE
Q525 2SK1824-A
Protect
Q521 SSM3K15TE(F)
/APCSW
IC505 BU7242NUX(2/2)
IC301 TC74LCX245FK
IC302 TC7WZ245FK-F
BUS SW
/DRST,DCLK,/HDS2,/HRDY,/SYMTIM,/RSSITIM,/DINT,/SWUP,FSDET,/HINT
MCD1AF,/MCSCKAF,/MCCSAF,MCD0AF,MCD1CN,/MCCXCN,/MCD0CN,/MCCSRCN,MCSCKCN
D0~15,A0~20,/RD,/WR,/CS0,/CS2,/CS3,/CS4
IC801 R2A20178NP
33A
TV1
TV2
(3/8,4/8)
(7/8)
DAC
SDO0,SCK0 /EVCS,EVRST
5A
LCDCNT
INTMIC
ME
KEYO0,KEYO1,KEYO2,KEYO3 KEYI0,KEYI1,KEYI2,KEYI3,KEYI4 /PTT,/LCDRST
IF_DET
IC506 MCP6021-E/OT
IF AMP
CF502 450kHz
BPF
IF SYSTEM IC507 TK10931VTL-G
CF501 450kHz
BPF
Q515 2SC4215-F(Y)
IF AMP
XF501 58.05MHz
MCF
Q517 3SK318
1st MIXER
1st Local : 194.05~232.05MHz
50R
IC510 TLV2381IDBV
IC509 TLV2381IDBV
TV1
TV2
D524,525 1SV305F2
D528,533 1SV305F2
TUNE
TUNE
BPF
L547,553
RF AMP
BPF
L559,564
Q522 3SK294-FP
50R DI
IC306 XC6109C29AN-G
RESET
33M
Q303 2SA1832(G,R)F
Q305 2SC5383-T111
AVR
5A
SB2
Q301 2SA1362-F(GR)
Q302 2SC5383-T111
AVR
5A
BLC
Q304 SSM3K15TE(F)
D214
D214 UMG9N
DC SW
Q215 EMD12
DC SW
LED_G
SBC
Q213 EMD12
DC SW
LED_R
SBC
ASIC IC309
IC815 BU7242NUX(2/2)
BPF
Q808 2SC4617(S)
AMP
D807 RB706F-40
Rect
IC815 BU7242NUX(1/2)
AMP
ASQDET
IC811 BU7242NUX(2/2)
LPF
APC
IC811 BU7242NUX(1/2)
LPF
ASQAPC
IC801 R2A20178NP(8/8)
DAC
DAC_23
Q802 2SA1832(GR)F
MUTE
OPT10
IC508 BU7242NUX(2/1)
VAGC
IC508 BU7242NUX(2/2)
RSSI
+B
Q810 2SB1132(Q,R)
Q809 UMG3N
AVR
Q806 SSM6N16FE-F
INAMT
EXAMT
IC103 TPA6201A1DRBR
IC817 TPA6201A1DRBR
CN805
IC816 TC7W66FK-F
INAMT
EXAMT
/SCSW
AMT
IC802 BU7465HFV
LPF
RXAF
IC805 TC7W53FK(F)
RXEO to Scrambler
RXEI from Scrambler
IC809 BU7242NUX(2/2)
SUM
STSW
BEEP
IC801 R2A20178NP(6/8)
DAC
IC801 R2A20178NP(5/8)
DAC
IC814 TC75S51FE(F)
AMP
VOX
AMP
IC812 BU7465HFV
Rect
D803 KDR731
VOX AMP
IC813 BU7242NUX (2/2)
Q801 SSM3K15TE(F)
SW
TONE
TONESW
OPT9
AI from VGS
MUTE
IC806 TC7W53FK(F)
IC810 TC7W53FK(F)
OPT6
AO to VGS
CN804
EMC
MSW
SSW
PTT
PF
OPT
5V
TXD
RXD
NC
CTS0
/UDET
/PTT
PFKEY
50U
RXD3
Q811 SSM3K15TE(F)
Q812 2SJ347F
MUTE
Q813 SSM6N16FE-F
IC821 TC7WT125FUF
BER_CLK
BER_DATA
BER_EN
IC819 TC7SET08FU-F
IC820 TC7WH126FK(2/2)
RTS0
TXD0
SCTXD
SCRXD
RXD0
CN806
SIDE2
SIDE1
PTT
/PTT,/KEYI2,KEYO3,/KEYI3
/RINT
32K
I2CCK,I2CSDA
/EMG
S201
IC308 R2023T
RTC
X301 32.768kHz
I/O Expander IC311 PCA9535BS
/OINT
POW 5A
26P_RD
26P_TD
OPT10
OPT9
DTI
AO
AI
RXEI
RXEO
TXI
TXO
OPT1,2,3,4,5,6,7,8,11
CN321 26pin Option Board
SUB (GPS) Unit (X58-524)
CN10
5A
OPT5
3.1V AVR
3.1V
IC4 BU31TD3WG
RXD
TXD
5A
OPT5
BUFF
IC2 TC7WH126FU-F
3.1V
GPS Receiver
IC1 W02-3768-05
CN5
Volume
+B
SB1
33A
VOL
ENC1
ENC2
ENC3
ENC4
Selector
CN201
TXD0,RXD0
RTS0,CTS0
DSR,/PTT
/PTT,/UDET
RXD3
ENC1,ENC2
ENC3,ENC4
/BINT,/PSW
ASQDET
VOX
VOL
BATT
PFKEY
BLC,MM,/AMT,EXAMT,INAMT,/AMT
SCSW,STSW,TONESW
/MNDNU,BEEP,5UC
DTI from ANI
TXI from Scrambler
TXO to Scrambler
AI from VGS
MM
/SCSW
IC804 BU7465HFV
LPF
MIC
IC807 BU7242NUX(1/2)
74HC1G66GW
SUM
MUTE
IC808
IC813 BU7242NUX(1/2)
AMP
AGC
Q807 2SJ243-A
MUTE
D801,802 RB706F-40
Q803 2SC4738(GR)F
Q804 2SA1832(GR)F
IC803 BU7242NUX(2/2)
LPF
MOD
IC803 BU7242NUX(1/2)
LPF
IC807 BU7242NUX(2/2)
SUM
DI
IC801 R2A20178NP(1/8)
DAC
IC801 R2A20178NP(2/8)
DAC
VCOMOD
L17
BPF
33C
LNA
CN10
IC11 NJG1143UA2
L213,D206,D204
IC206 LT1616ES6-PBF
DCDC Converter
BATT 7.5V
+
–
S
S_DET
33M
AVR
IC203 XC6204B332D-G
IC202 XC9235A15CM-G
15M
DC-DC
IC201 XC6204B332D-G
33A
AVR
IC207 TK71733S
33C
AVR
SBC
SBC
D209 KDS121-P
/PSW
Q203 SSM6N16FE-F
Q204 SSM6N16FE-F
SB1
DCSW
Q207 EMD12
/BINT
IC209 XC61CC5602N-G
RESET
SCTAM1
DCSW
Q211 2SA1955A-F
Q209 SSM3K15TE(F)
IC210 S-812C31BPI-G
AVR
31BU
DCSW
Q208 2SA1955A-F
Q210 SSM3K15TE(F)
CN203 LiBattery
SBC
D212 KDS121-P
Q201 2SJ648-A
Q202 SSM3K15TE(F)
DCSW
SB2
15V
DCDC Converter
Q212 SSM5H01TU-F
IC211 XC9101D09AK-G
BATT
5A
IC205 XC6204B502P-G
AVR
IC818 NJM2880U105ZB
50U
AVR
5UC
IC204 TK112250CUCB
AVR
50C
Q205 EM6M2
50R
DC SW
/SAVE
5RC
Q206 2SA1955A-F
50T
DC SW
/5TC
IC208 BU7465HFV
TO DSP
CN307 (for production)


LCD ASSY
GPS 12:34P
KenwoodDigital
MENU ZONE MONI
CN3
V5 V4 V3 V2 V1 VDD VSS VDD D7 D6 D5 D4 D3 D2 D1 D0 /WR A0 /RES /CS
DISPLAY UNIT
X54-420
CORD ASSY
X42-351
CN8
GND GND NC /LCDRST VLCDLED /WR VLCDLED A0 33M 33M NC D0 NC D1 NC D2 NC D3 NC D4 NC D5 NC D6 NC D7 NC LCDCNT KEYO1 KEYO0 KEYO3 KEYO2 /KEYI1 /KEYI0 /KEYI3 /KEYI2 NC /KEYI4 VKEY VKEY NC NC 5A 5A NC INTMIC NC ME GND GND
CN301
GND GND NC /LCDRST VLCDLED /WR VLCDLED A0 33M 33M NC D0 NC D1 NC D2 NC D3 NC D4 NC D5 NC D6 NC D7 NC LCDCNT KEYO1 KEYO0 KEYO3 KEYO2 /KEYI1 /KEYI0 /KEYI3 /KEYI2 /PTT /KEYI4 VKEY VKEY NC NC 5A 5A NC INTMIC NC ME GND GND
MIC
SUB (GPS) UNIT
X58-524
CN10
NC NC TXD RXD NC NC NC OPT5 DGND AGND NC NC AGND 5C NC NC NC NC NC NC NC NC NC NC
CN321
OPT1 OPT3 26P_RD 26P_TD CK OPT4 OPT10 OPT5 DGND AGND AI AO AGND 5V OPT9 DTI OPT8 OPT11 OPT7 OPT2 TXO RXEO RXEI TXI OPT6 POW
CN5
CN10
ANT
SIDE KEY SECTION
CN806
SW1 PTT GND Side_G SW2
TX-RX UNIT
X57-927
S201
AUXSW
CN805
SP
+B
BATT
DET
S
UNIVERSAL
CONNECTOR
TOP
SSW SP+ SP- MSW EMC ME PTT PF OPT E 5V TXD RXD NC
CN201
SB1 +B EN3 EN4 GND EN2 EN1 VoL- VoL VoL+
CN804
SSW SP+ SP- MSW EMC ME PTT PF OPT E 5V TXD RXD NC