

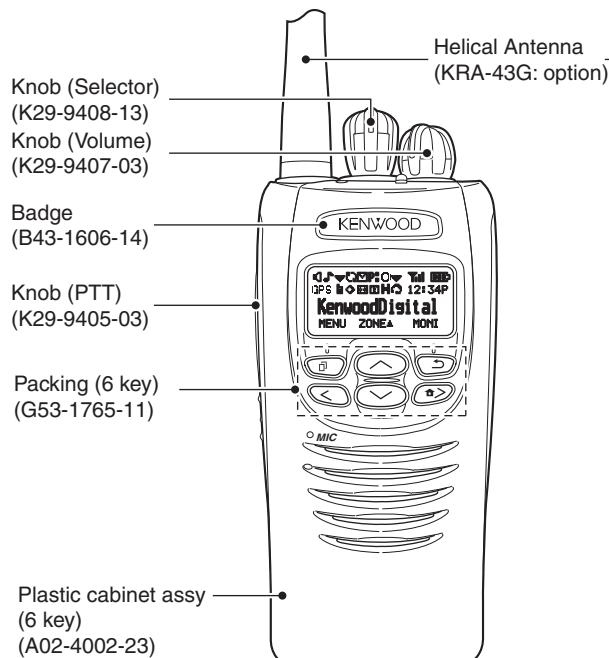
VHF DIGITAL TRANSCEIVER  
**NX-200(G)**  
 SERVICE MANUAL

**KENWOOD**

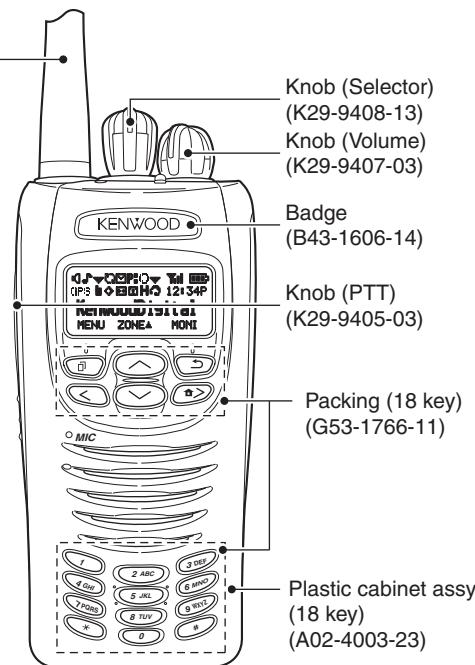
JVCKENWOOD Corporation

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**NX-200(G) K**



**NX-200(G) K2**



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# NX-200(G)

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### NXDN Transceivers:

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

# 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

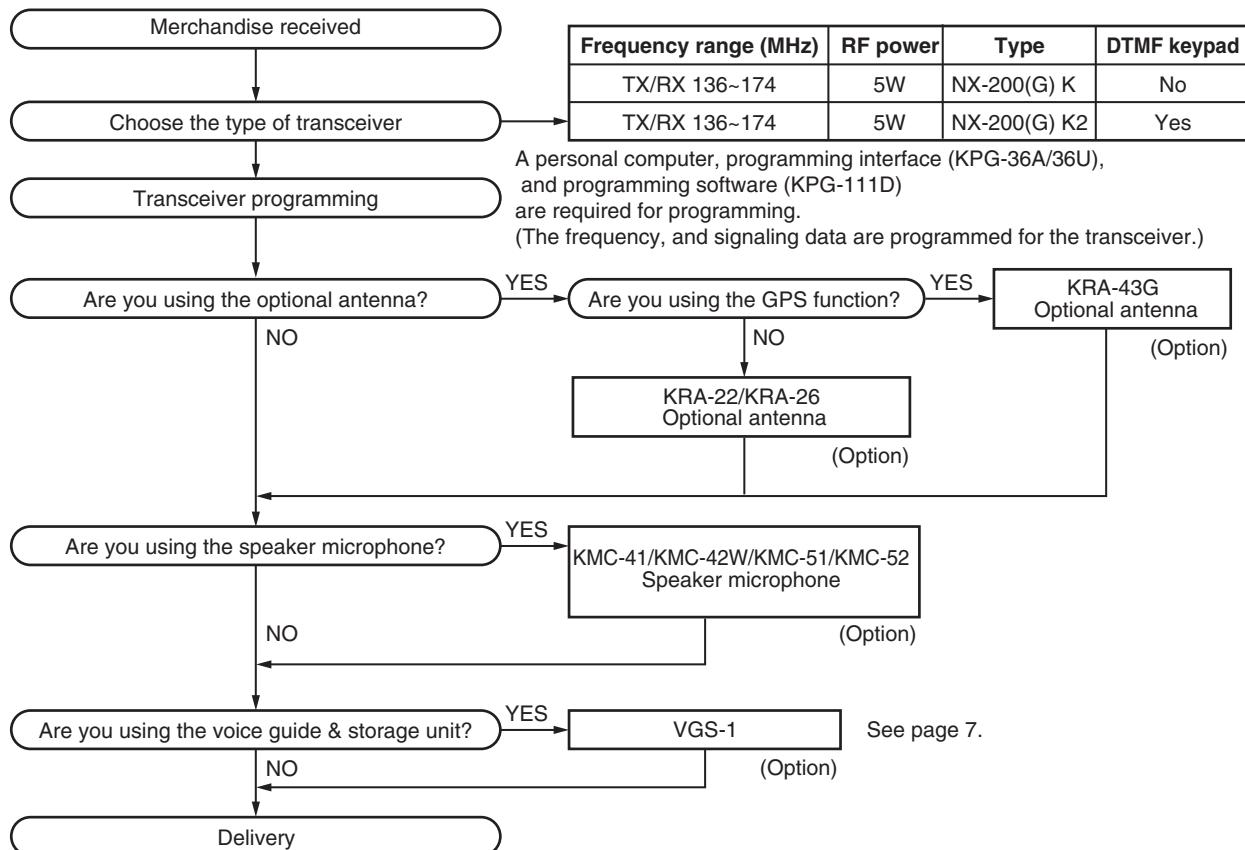
The following precautions are recommended for personal safety:

- 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

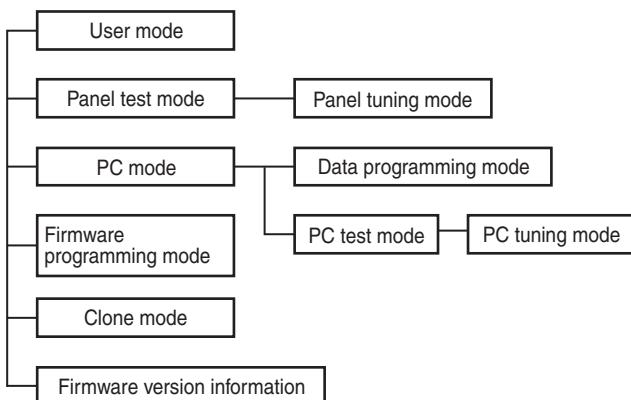
This transceiver is designed for easy servicing. Refer to the schematic diagrams, printed circuit board views, and alignment procedures contained within.

# SYSTEM SET-UP



# 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.

# NX-200(G)

## 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.

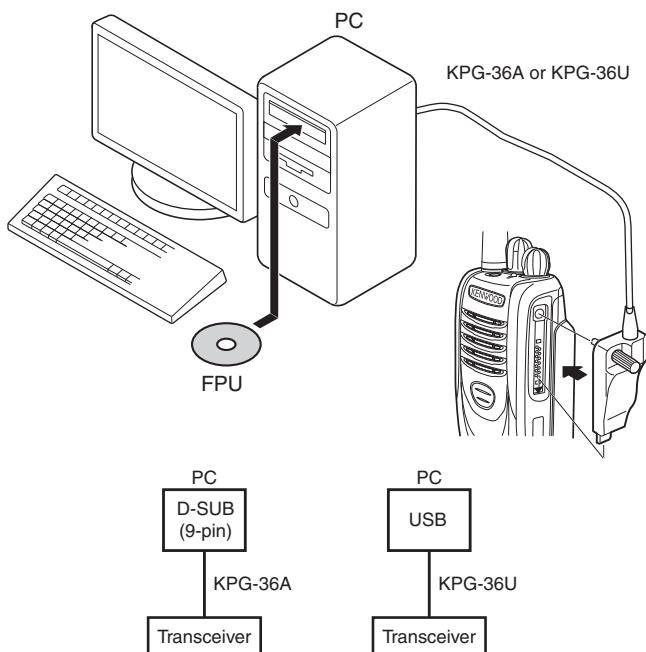


Fig. 1

#### 5-2. Connection procedure

1. Connect the transceiver to the computer using the interface cable (KPG-36A/36U). (Connection is the same as in the PC Mode.)

#### Note:

- You must install the KCT-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

(PC programming interface cable: Option)

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

When using the KPG-36U, install the supplied CD-ROM (with driver software) in the computer. The KPG-36U driver runs under Windows XP , Vista ,7 and 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-ROM. 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 to the personal computer using the interface cable (KPG-36A/36U). (Connection is the same as in the PC Mode.)

## 6-3. Programming

1. Start up the firmware programming software (Fpro.exe (Ver. 6.20 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 [ $\square$ ] 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 ([ $\square$ ] key): The password confirmation
- DELETE ([ $\triangleright$ ] key): Delete the least digit from the current password number (Press and hold to delete all password numbers)
- SELECT ([ $\square$ ] 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 (K2 model only):**  
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 [ $\square$ ] 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 [ $\wedge$ ] and [ $\vee$ ] keys :**  
If the [ $\wedge$ ] / [ $\vee$ ] key is pressed while “CLONE LOCK” is displayed, the Read authorization password input screen is displayed.  
If the [ $\wedge$ ] key or [ $\vee$ ] 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 [ $\square$ ] key, the currently selected number is determined. If you press the [ $\square$ ] 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.

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## REALIGNMENT

4. Power ON the target transceiver.
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.

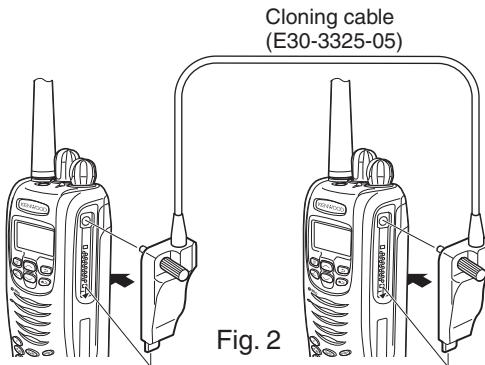


Fig. 2

## 8. Firmware Version Information

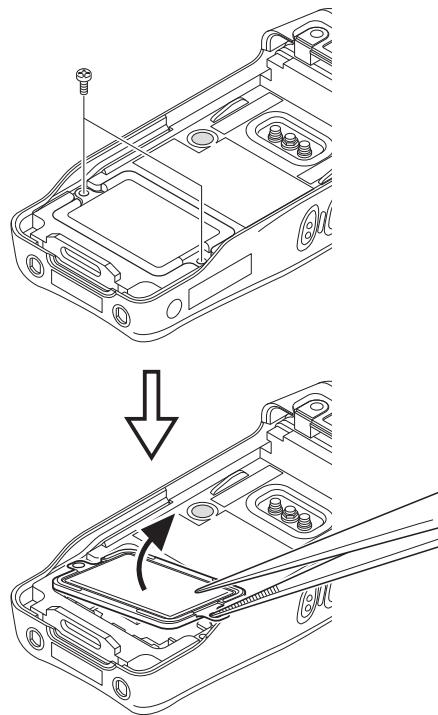
Press and hold the [Side1] key while turning the transceiver power ON and then keep pressing and holding the [Side1] key, the firmware version information appears on the LCD.

## INSTALLATION

### Preparation before Installing Option board

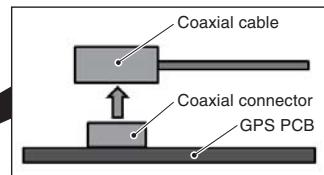
#### ■ Removing the GPS PCB

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.

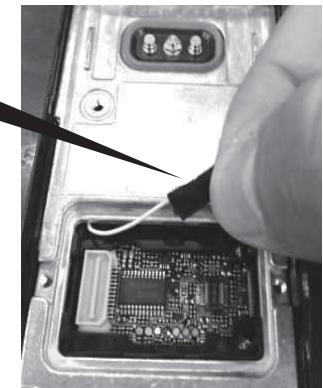
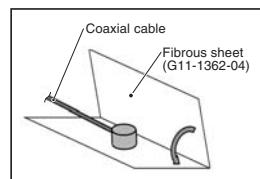


## INSTALLATION

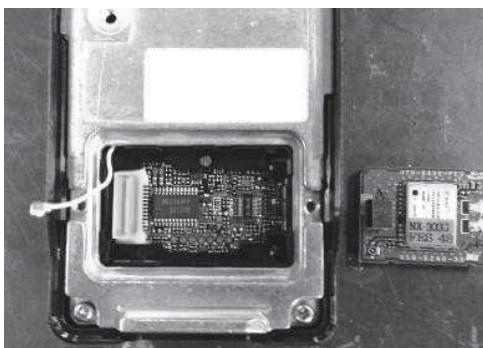
3. Remove the coaxial cable from the GPS PCB.  
**Note:** When you remove the coaxial cable from the GPS PCB, remove perpendicularly to the GPS PCB.



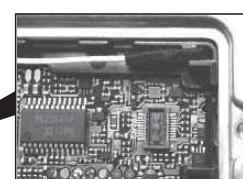
6. Fold the fibrous sheet (G11-1362-04) in half, and cover the terminal of the coaxial cable as shown in the figure.



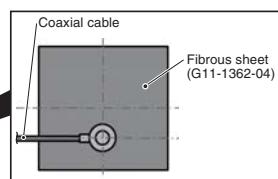
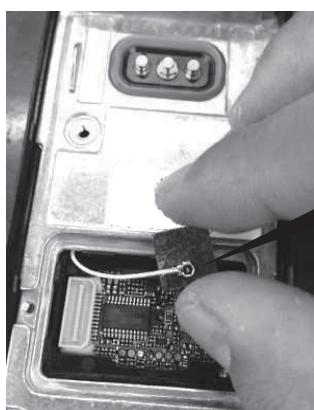
4. Remove the GPS PCB from the connector (CN710) of the Control PCB.



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



5. Affix the terminal of the coaxial connector to the fibrous sheet (G11-1362-04) as shown in the figure.



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## INSTALLATION

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

#### ■ Installing the VGS-1

1. Attach the flat spring (G02-1846-03) to the VGS-1 as shown in the figure.

Note:

Attach the flat spring so that its convex fits the PCB hollow of the VGS-1.

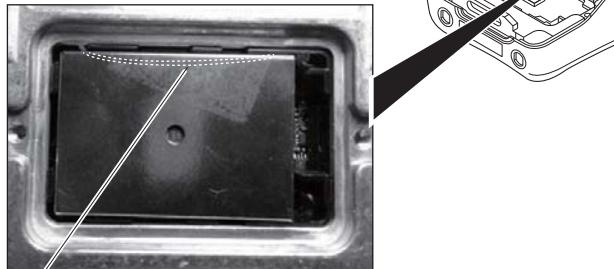
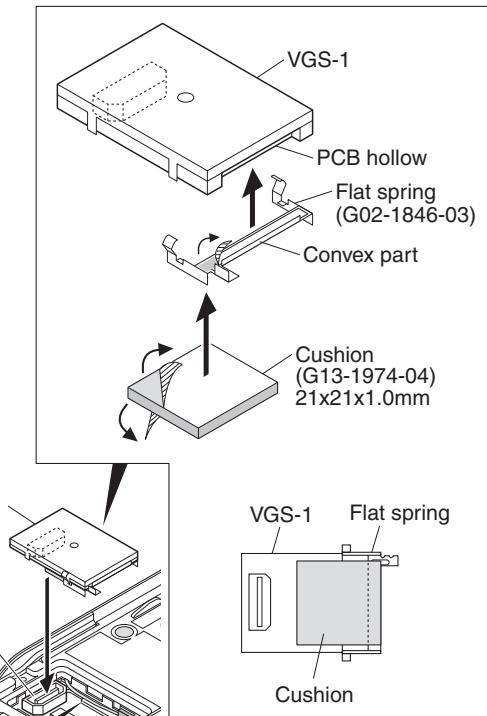
2. Attach the cushion (G13-1974-04) to the VGS-1 as shown in the figure.

Note:

Be sure to not cover the VGS-1 connector with the cushion.

3. Insert the VGS-1 connector into the connector (CN710) of the Control PCB.

4. Reinstall the cover using the two screws removed in step 1 of "Removing the GPS PCB" described on page 6.

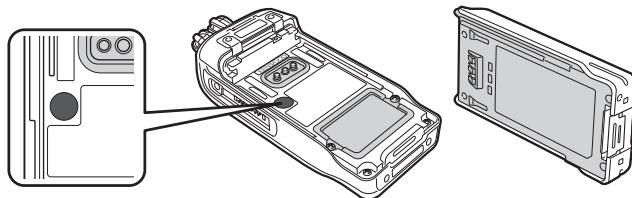


The coaxial cable is located under the GPS PCB.

## DISASSEMBLY FOR REPAIR

### 1. Precautions for Waterproof

- Do not remove the black sheet from the reverse side of the transceiver (refer to the illustration right). Removal of this sheet decreases the waterproof efficiency of the transceiver and may cause malfunctions if water seeps into the transceiver.
- 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.

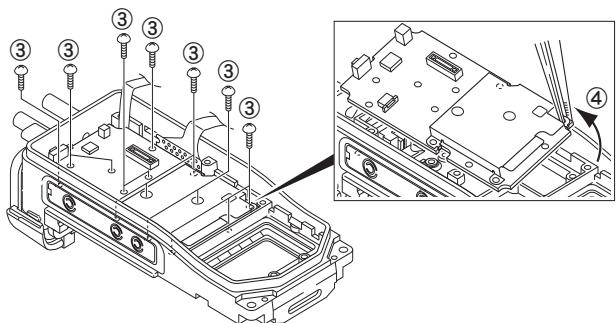
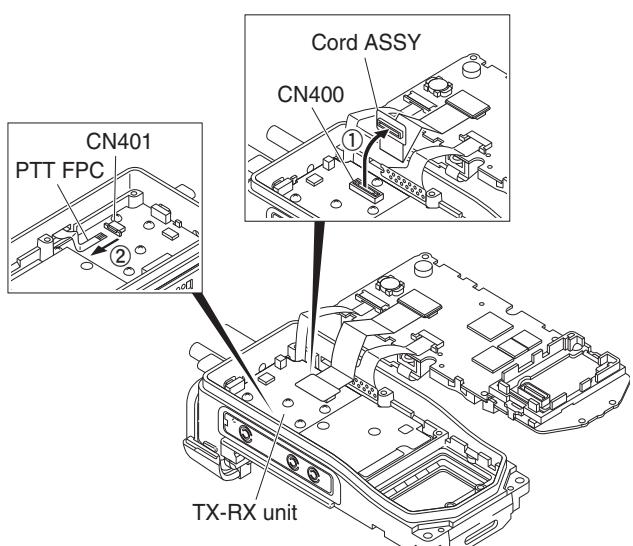


# DISASSEMBLY FOR REPAIR

## 2. Precautions for Disassembly

### ■ Removing the TX-RX unit from the chassis

1. Remove the cord ASSY from the connector of the TX-RX unit (CN400) ①.
2. Remove the PTT FPC from the connector of the TX-RX unit (CN401) ②.
3. Remove the 14 screws ③.
4. 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 ④.

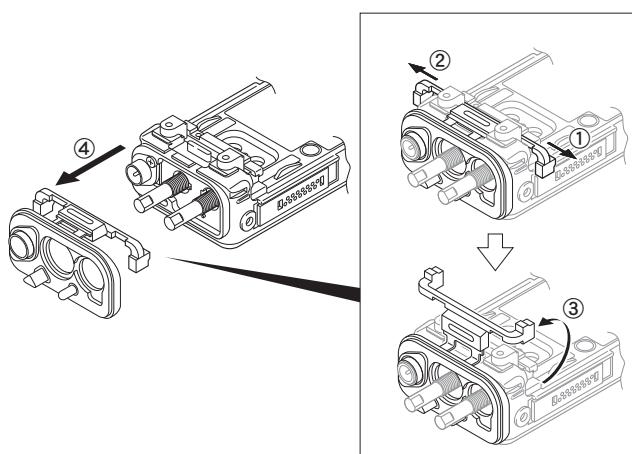


**Note:**

The illustration of the Sub (GPS) unit and GPS coaxial cable is omitted.

### ■ Removing the TOP packing (G53-1762-02)

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



## 3. Precautions for Reassembly

### ■ 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:**

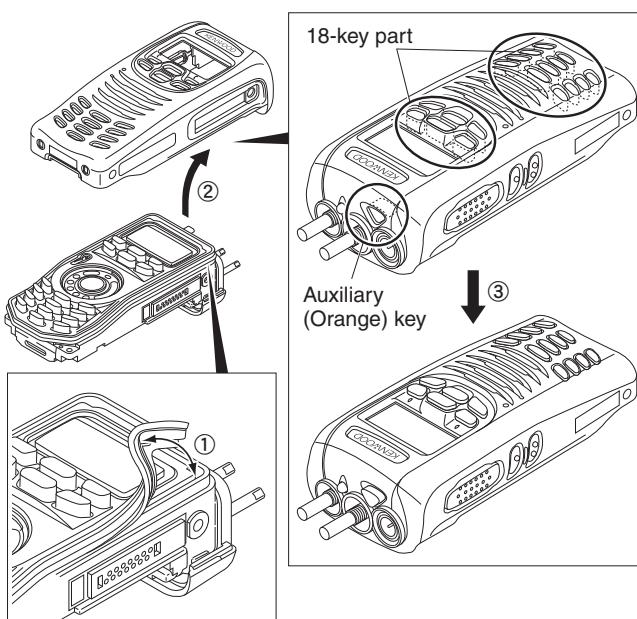
Confirm that the entire groove of the key top fits to the chassis tightly.

2. Mount the chassis onto the case ②.

**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., finger) ③.

Prying it with a pointed metal tool such as forceps, may damage the key top or packing.

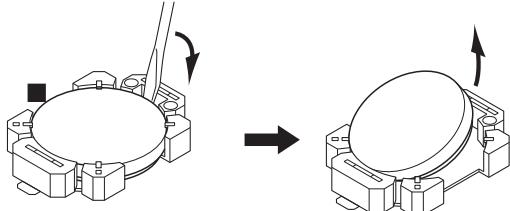


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## DISASSEMBLY FOR REPAIR

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

Insert a non-conductive screwdriver to groove of one side of the socket (CN401,CN11) 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 (CN401,CN11). Push the lithium cell to insert the lithium cell into the socket.



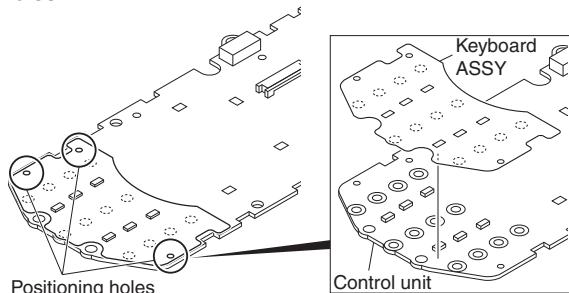
### ■ Affixing the keyboard ASSY (S79-0472-05)

Affix the keyboard ASSY to the Control unit as shown in the figure.

After affixing the keyboard ASSY to the Control unit, confirm that the three positioning holes of the keyboard ASSY and the Control unit are not misaligned.

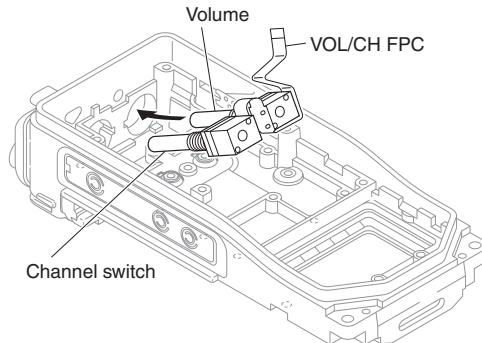
Note:

If the holder (Option board) is removed from the Control unit, it becomes easy to confirm the three positioning holes.



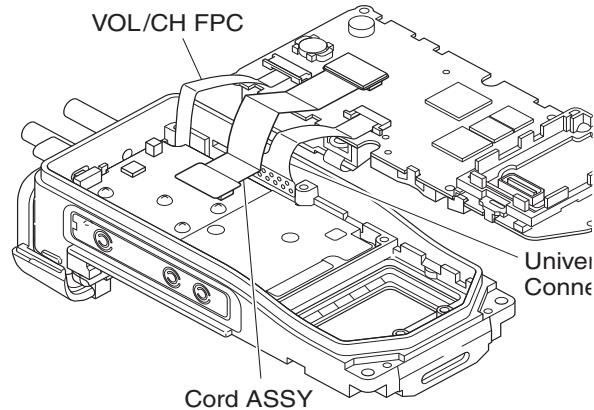
### ■ Inserting the Volume and Channel switch into the chassis

Insert the volume and channel switch into the chassis with the VOL/CH FPC formed as shown in the figure.



### ■ Forming the VOL/CH FPC, Cord ASSY and Universal connector FPC

Form the VOL/CH FPC, Cord ASSY and Universal connector FPC as shown in the figure.



#### Note:

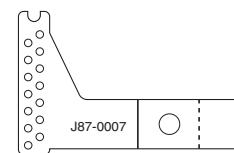
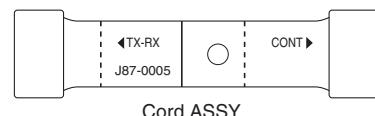
The illustration of the Sub (GPS) unit and GPS coaxial cable is omitted.

#### Note:

Fold indications are printed on the Cord ASSY and Universal Connector FPC.

“—” line shows creased line on the top.

“- - -” line shows creased line on the bottom.

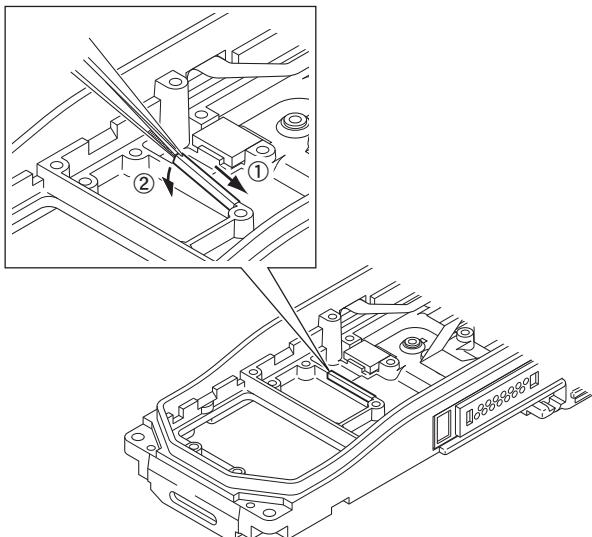


Universal Connector FPC

# DISASSEMBLY FOR REPAIR

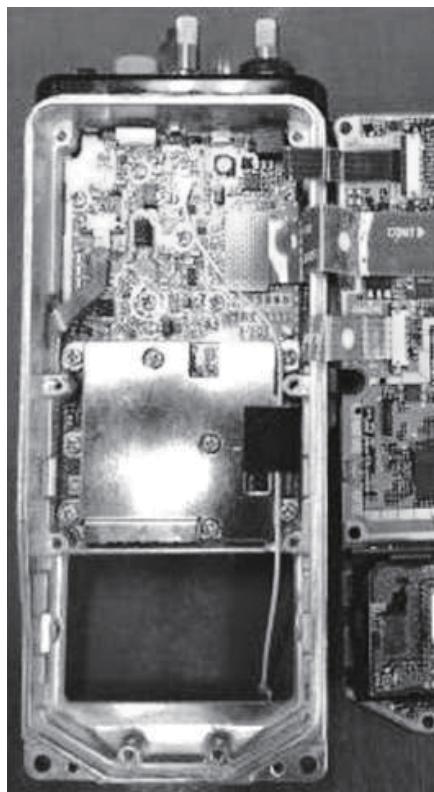
## ■ Relay hardware (E29-1242-04) installation procedure

1. Fit one side of the relay hardware to a right corner of the chassis using a pair of tweezers ①.
2. Fit the other side of the relay hardware to the rib of the chassis ②.



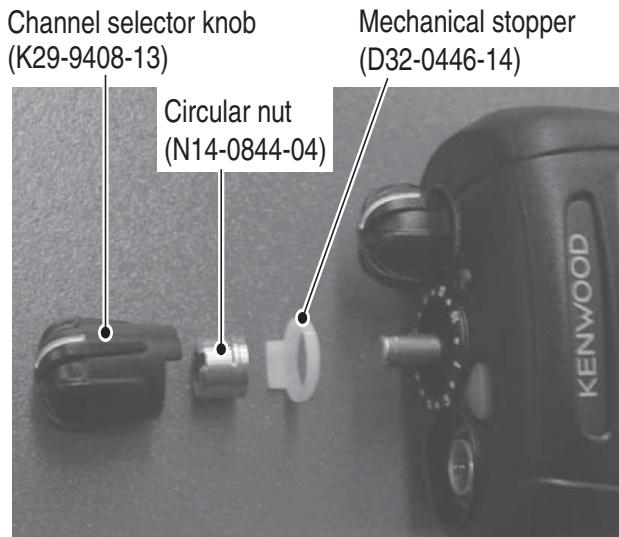
## ■ Forming the GPS coaxial cable(E37-1716-05)

Form the GPS coaxial cable as shown in the figure.



## ■ Changing the channel selector from 16-channel operation to free

1. Remove the channel selector knob.
2. Remove the circular nut.
3. Remove the mechanical stopper.
4. Reassemble the circular nut and channel selector knob that were removed in steps 1 and 2, in their original positions.



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## 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 "Plastic Cabinet (A02-4002-23 (6-key)/A02-4003-23 (18-key))" is changed, "Sticker (B42-7417-04)", "Badge (B43-1606-04)" and "Fibrous Sheet (G10-1373-04)" should be ordered and changed together because Sticker (B42-7417-04), Badge (B43-1606-04) and Fibrous Sheet (G10-1373-04) are non-reusable.

Main Parts		Assembled Sheet/ Cushion		
Part Name	Part Number	Part Name	Part Number	Remark
Plastic Cabinet (6-key)	A02-4002-23	Sticker	B42-7417-04	"NEXEDGE" is printed.
		Badge	B43-1606-04	"KENWOOD" is printed.
Plastic Cabinet (18-key)	A02-4003-23	Fibrous Sheet (SP)	G10-1373-04	
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.
Cord ASSY (50-pin FPC)	X42-3510-10	Cushion (50-pin FPC)	G13-2293-04	
Speaker	T07-0755-25	Rubber Cushion (SP)	G11-4272-14	
		Sheet (SP)	G11-4458-14	Used for stabilizing the waterproof performance. “•” (a hole) on the Sheet (SP) shows the upper side (6-key FPC side).
Switch Unit (6-key FPC)	X41-3840-10	Adhesive Sheet (6-key FPC)	J99-0745-04	Used for fixing the Switch Unit (6-key FPC) from the back side of the Holder (FG-SP) before soldering.
		Adhesive Sheet (6-key FPC)	J99-0712-14	Used for fixing the Switch Unit (6-key FPC) on the Holder (FG-SP).
Switch Unit (PTT FPC)	X41-3830-10	Sheet (PTT)	G11-4428-04	Used for fixing the Push Knob (PTT) on the Switch Unit (PTT FPC) and stabilizing the waterproof performance.
		Adhesive Sheet (PTT FPC)	J99-0711-04	Used for fixing the Switch Unit (PTT FPC) on the Chassis.
Chassis	A10-4186-04	Relay Hardware (VCO-Chassis)	E29-1221-14	Used for stabilizing the shield performance of the VCO.
		Sheet (Air)	G11-4500-04	This sheet is put on the leak check hole. This sheet lets air through, but does not let water through.
		Rubber Sheet (FET)	G11-4429-04	Used for stabilizing the radiation performance of the FET.
		Sheet (Air)	G11-4440-04	This sheet is a protect cover of the sheet (G11-4331-04).
		Cushion (ANT)	G13-2220-04	Used for fixing the Terminal ASSY.
Terminal Block	E72-0425-03	Adhesive Sheet (Terminal Block)	J99-0747-04	Used for fixing the Terminal Block and the Packing (Terminal Block).

## CIRCUIT DESCRIPTION

### 1. Overview

The NX-200(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.

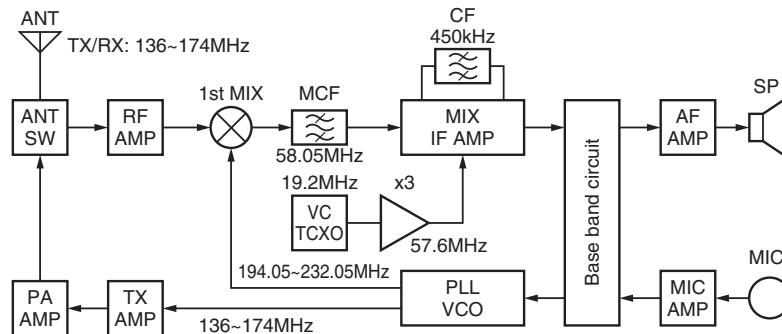


Fig. 1 Frequency configuration

### 3. Receiver System

#### 3-1. RF Circuit

An incoming RF signal from the antenna terminal is passed through the antenna switch (D104, D105, D209 and D211) and then the bandpass filter (L220, L224). 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 (IC703). The signal is amplified by an RF amplifier (Q204), and passed through the bandpass filter (L212, L215). The resulting signal is applied to the first mixer (Q203), 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 (XF200) to reject adjacent channel signals. The filtered first IF signal is amplified by the first IF system IC (IC202). 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 (CF200) 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 (IC108) through the ceramic filter (CF201) and operational amplifier (IC203).

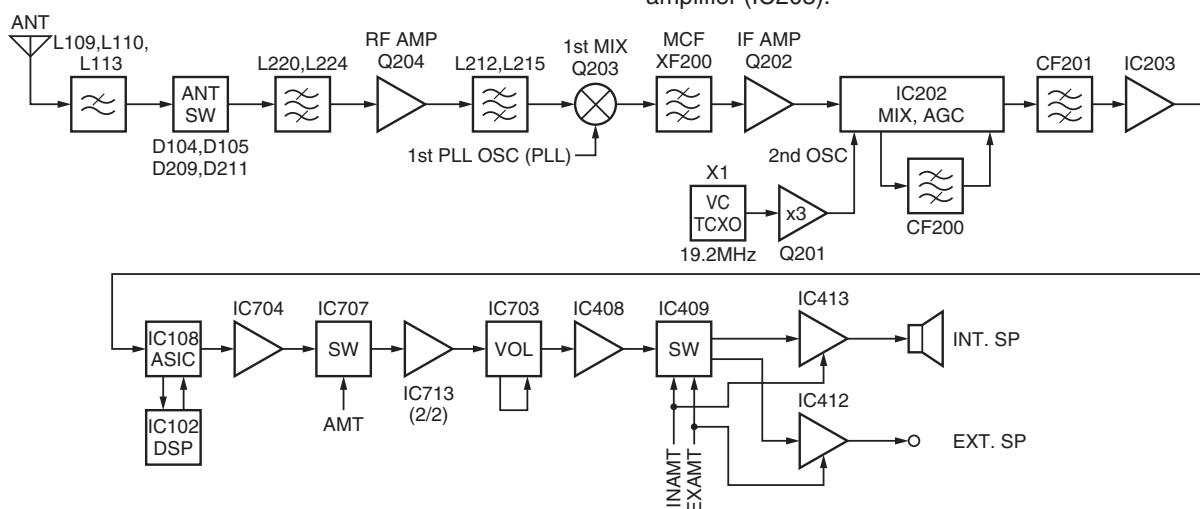


Fig. 2 RF and IF circuit

# NX-200(G)

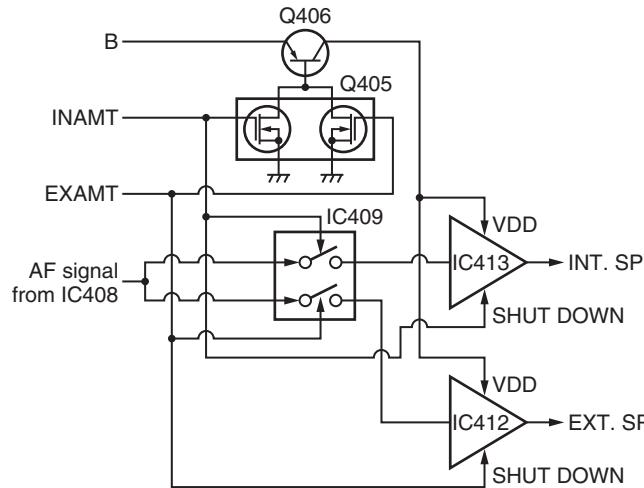
## CIRCUIT DESCRIPTION

### 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 IC108 and IC102 goes through the amplifier (IC704). The signal then goes through a mute switch (IC707), amplifier (IC713), electronic volume control (IC703), and AF amplifier (IC408).

While busy, AMT becomes Low to turn IC707 on, and the signal is fed to the AF switch. While INAMT is High, the AF switch (IC409) selects the internal speaker, and the audio signal is fed to the internal audio power amplifier (IC413), and output to the internal speaker. While EXAMT is High, the AF switch (IC409) selects the external speaker, and the audio signal is fed to the external audio power amplifier (IC412), and output to the external speaker. The power supply for IC413 and IC412 is turned on while INAMT or EXAMT is High.

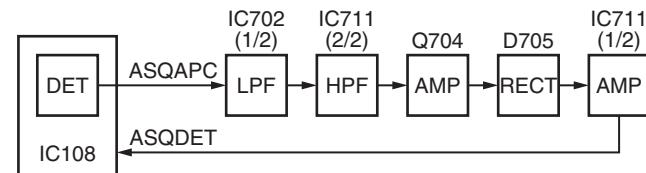
The speaker is switched by the logic of the speaker switching terminal SSW on the universal connector. When the SP-MIC is not attached, SSW becomes High. IC108 detects the logic of SSW and activates either INAMT or EX-AMT.



**Fig. 3** Audio amplifier circuit

### 3-4. Squelch Circuit

It amplifies the demodulated noise signal from IC108 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 IC108.



**Fig. 4** Squelch circuit

## 4. Transmitter System

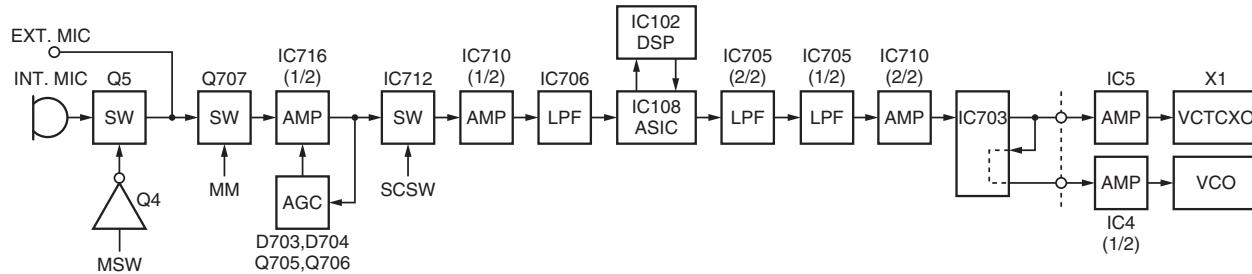
## 4-1. Audio Band Circuit

The signal from the internal microphone goes through the mute switch (Q5). When the SP-MIC is not attached, the microphone switching terminal (MSW) on the universal connector becomes High, and the mute switch (Q5) is turned on. When the SP-MIC is attached, MSW is connected to GND inside the SP-MIC. For this reason, Q5 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 (Q707), and is amplified by IC716 (1/2) and limited by the AGC circuit which is composed of D703, D704, Q705 and Q706.

## 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 (IC102), 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 IC108. In Digital mode, the audio signal is converted to the 4-Level FSK base band signal and output from IC108. The DTMF and MSK base band signals are also generated by the DSP and output by IC108.

LPF (IC705) works as a smoothing filter. The DAC (IC703) assigns the base band signal to the VCO and VCTCXO (X1). At this time, the level output according to the transmit carrier is fine-adjusted according to each modulation method.



**Fig. 5** Audio band and Base band circuit

# CIRCUIT DESCRIPTION

## 4-3. VOX

IC716 (2/2) amplifies the audio signal captured in the microphone. The signal is then converted into the DC voltage, rectified by D706. The DC voltage activates the ASIC (IC108), and the VOX starts.

## 4-4. Drive and Final Amplifier

The signal from the T/R switch (D100 is on) is amplified by the drive amplifier (Q102 and Q103) to 25~27dBm. The output of the drive amplifier is amplified by the Final power amplifier (Q106) to 5.0W (1W when the power is low). The Final power amplifier is MOS FET. The output of the Final power amplifier is then passed through the harmonic filter (LPF) and antenna switch (D104, D105 are on) and applied to the antenna terminal.

## 4-5. APC Circuit

The APC circuit always monitors the current flowing through the Final power amplifier (Q106) and keeps a constant current. The voltage drop at R136, R138 and R141 is caused by the current flowing through the RF power amplifier and this voltage is applied to the differential amplifier (IC100 1/2). IC100 (2/2) compares the output voltage of IC100 (1/2) with the reference voltage from IC108, and the output of IC100 (2/2) controls the VGG of Q102, Q103 and Q106 to make the both voltages the same. The change of power high/low is carried out by the change of the reference voltage. Q105, Q107 and Q110 are turned on and Q104 and Q109 are turned off in transmit and the APC circuit is active.

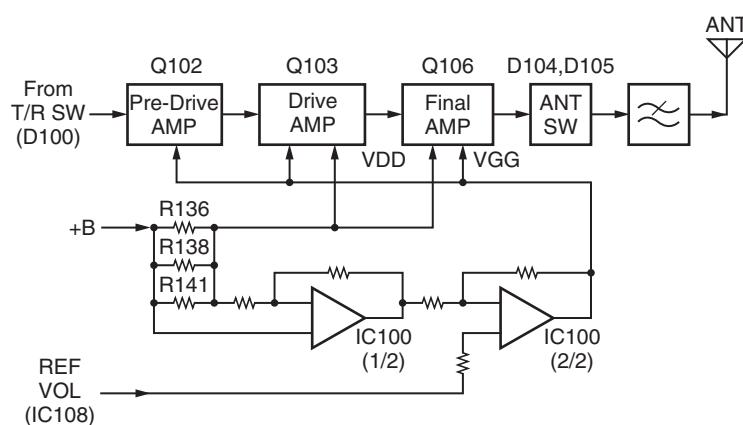


Fig. 6 Drive and final amplifier and APC circuit

## 5. PLL Frequency Synthesizer

### 5-1. VCTCXO (X1)

VCTCXO (X1) generates a reference frequency of 19.2MHz for the PLL frequency synthesizer. This reference frequency is applied to pin 9 of the PLL IC (IC3) and is connected to the IF circuit as a 2nd local signal through the Tripler (Q201). The VCTCXO oscillation frequency is determined by the DC voltage of the VC terminal. The VC voltage is fixed to 1.65V by R59 and R60, and supplied to the VC terminal through IC5. The modulation signal is also fed to VC terminal through IC5.

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 (Q10) generates a transmit carrier and the RX VCO (Q8) 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 (IC108). 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 (IC3) and ASIC (IC108) 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.

# NX-200(G)

## CIRCUIT DESCRIPTION

### 5-3. PLL IC (IC3)

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 (IC108) 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 (Q4)

The doubler (Q4) extracts the twice harmonic component from the signal from the VCO. This twice harmonic components is then fed into PLL (IC3) through band pass filter.

Band pass filter is consists of two filter. One is for TX (L3,L5,L7) and pass band is 272.0 to 348.0MHz. The other is for RX 1st local (L2,L6,L30) and pass band is 388.1 to 464.1MHz.

### 5-5. Local Switch (D100, D201)

The connection destination of the signal output from the buffer amplifier (Q100) is changed with the diode switch (D100) that is controlled by the transmission power supply, 50T, and the diode switch (D201) that is controlled by the receive power supply, 50R. If the 50T logic is high, it is connected to a send-side pre-drive (Q102). If the 50T logic is low, it is connected to a receive-side mixer (Q203).

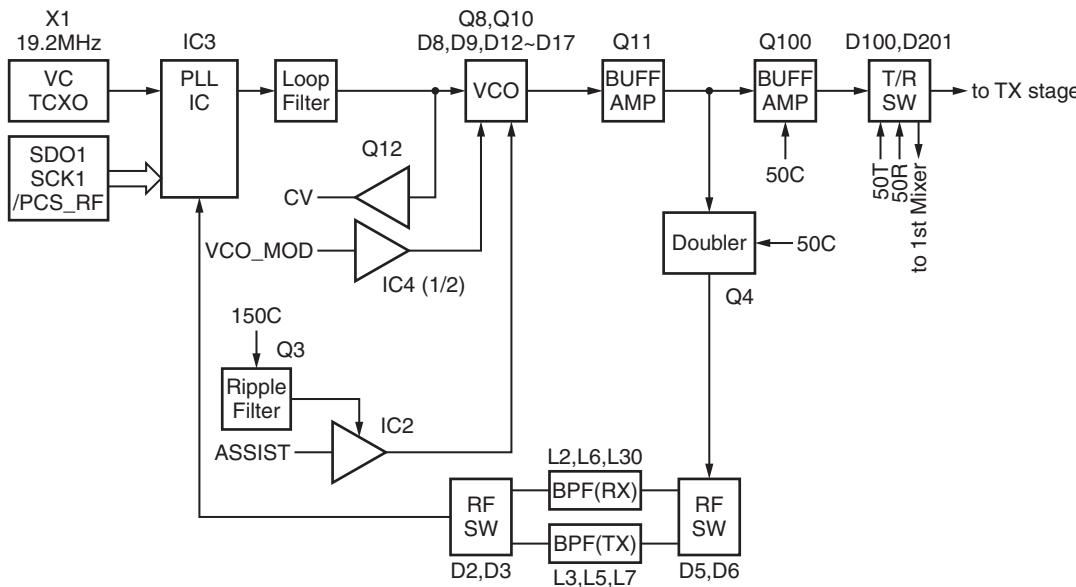


Fig. 7 PLL block diagram

## 6. Control Circuit

The control circuit consists of the ASIC (IC108) and its peripheral circuits. IC108 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 (IC108) 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 (IC108) and the SRAM (IC103) and flash memory (IC101). 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), 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 (IC106). 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 (CN1) of the Control unit (X53-426). It corrects the LCD contrast voltage using IC1.

## 6-4. Key Detection Circuit

Keys are detected using the key scan circuit in IC108. The /KEY1 signals that are normally pulled down go high when any key is pressed.

## 6-5. Low Battery Warning

The battery voltage is divided using R444 and R445 and is detected by the ASIC (IC108). 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 (IC102) and processes the base band signal. The DSP operates on an external clock of 18.432MHz (the same as the IC108), 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 (F400), and goes to the RF final amplifier, AVR ICs (IC400, IC403), and Control unit (X53-426).

In the control unit, +B is connected to the DC/DC (IC407), AVR ICs (IC411, IC708, IC416), and voltage detector IC (IC414). The voltage detector watches the battery voltage. If the battery voltage is 5.6V or higher, the detector outputs High. While the output of IC414 is High, IC416 and Q409 provide 3.1V (31BU) to the backup-section.

When the VOL SW is turned on, SB1 becomes high (battery voltage). The DC/DC (IC407) operates if both SB1 and the output of the detector are high. IC407 outputs 3.8V and it activates IC404 (33M), IC717 (15M), and IC406 (33A). As a result, the ASIC and DSP operate.

The SBC signal becomes High after the ASIC operates, IC708 (5A), Q403 on the Control unit (SB2) and Q403 on the TX-RX unit (SB3) are turned on. IC402 and IC403 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 IC411 (50U) operates.

When the /SAVE signal becomes High, IC400 (50C) operates. The output of IC400 is connected to three FET switches (Q401, Q402, Q405). When the SBC signal becomes High, IC403 (33C) operates. The FET switches are controlled by the ASIC. Q405 (50T) is turned on in transmit mode. Q401 (50R) and Q402 (50IF) 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 IC416 (31BU) stop.

# NX-200(G)

## CIRCUIT DESCRIPTION

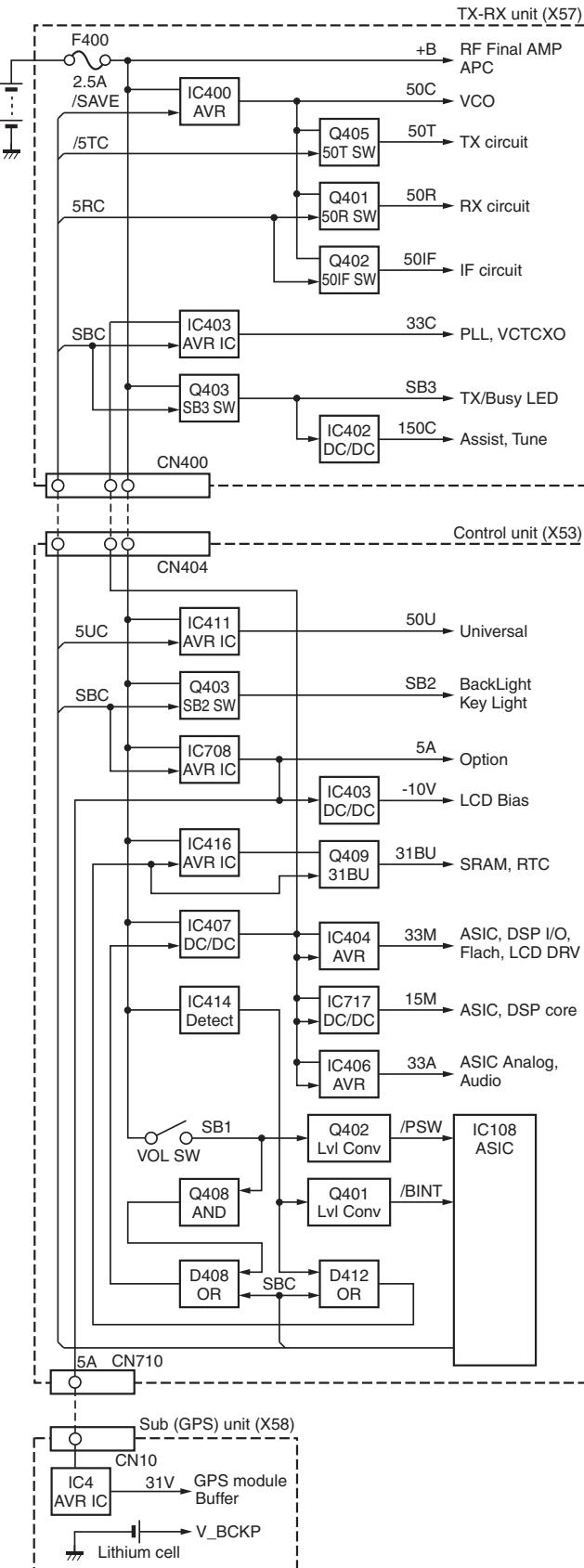


Fig. 8 Power supply circuit

## 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 IC108. The modulation balance of the QT/DQT/LTR signal is adjusted by the D/A converter(IC703) and the resulting signal is routed to the modulation input of the VCO and VCXO (X1). Each deviation of the TX QT, DQT, LTR, DTMF, 2-tone and MSK tone is adjusted by changing the output level of IC108 and the resulting signal is routed to the VCO and VCXO. 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. Comander Circuit

The term “comander” means compressor and expander. The comander reduces noise by utilizing a compressor and an expander. The transceiver contains a DSP (IC102) to perform this operation. The transceiver comander 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 (L605/TX-RX) and is amplified by the LNA (IC881/TX-RX).

The GPS signal is processed by the GPS IC (IC1/GPS) and input to the ASIC (IC108/CONT) through the UART port. The ASIC (IC108/CONT) 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.

When the GPS function is enabled, the consumption current increases by about 70 mA.

# COMPONENTS DESCRIPTION

## Control unit (X53-4590-XX)

Ref. No.	Part Name	Description
IC1	IC	LCD contrast
IC101	IC	FLASH ROM
IC102	IC	DSP
IC103	IC	SRAM
IC104	IC	2 input AND gate
IC105	IC	Reset
IC106	IC	RTC
IC107	IC	Buffer
IC108	IC	ASIC
IC109	IC	2 input AND gate
IC401,402	IC	Bus switch
IC403	IC	Voltage doubling inverter
IC404	IC	Voltage regulator (33M)
IC406	IC	Voltage regulator (33A)
IC407	IC	DC/DC converter
IC408	IC	AF AMP
IC409	IC	AF switch
IC411	IC	Voltage regulator (50U)
IC412,413	IC	Audio AMP
IC414	IC	Reset
IC415	IC	2 input AND gate
IC416	IC	Voltage regulator
IC417,418	IC	Dual bus buffer
IC701	IC	I/O control
IC702	IC	APC LPF
IC703	IC	D/A converter
IC704	IC	RX AF LPF
IC705	IC	Modulation LPF
IC706	IC	MIC AMP
IC707	IC	RX AF switch
IC708	IC	Voltage regulator (5A)
IC709	IC	Sidetone mute
IC710	IC	MOD/MIC summing AMP
IC711	IC	SQL BPF/SQL DC AMP
IC712	IC	MIC switch
IC713	IC	1.65V REF/RX summing AMP
IC714	IC	OPT switch
IC715,716	IC	VOX AMP
IC717	IC	DC/DC converter (15M)
Q1,2	Transistor	LCD backlight switch
Q3	FET	LCD backlight switch
Q4	FET	MIC mute control
Q5	FET	MIC mute switch
Q101,102	Transistor	12key backlight switch

Ref. No.	Part Name	Description
Q103	FET	12key backlight switch
Q401,402	FET	Level converter
Q403	Transistor	SB2 switch
Q404	FET	SB2 switch control
Q405	FET	AF AMP switch
Q406,407	Transistor	Voltage regulator (AF AMP)
Q408,409	Transistor	DC switch
Q410	FET	DC switch
Q411	FET	Level converter
Q412	FET	DC switch control
Q413~415	Transistor	DC switch
Q701	Transistor	OPT switch
Q702	FET	Tone switch
Q703	FET	W/N noise switch
Q704	Transistor	SQL noise AMP
Q705,706	Transistor	MIC AGC
Q707	FET	MIC mute
D1,2	LED	12key backlight
D3,4	LED	LCD backlight
D5,6	LED	12key backlight
D7,8	LED	LCD backlight
D9,10	LED	12key backlight
D11	Diode	LCD backlight switch
D12~16	Diode	Reverse current prevention
D17~21	Zener diode	Surge absorption
D22,23	Diode	Surge absorption
D101	Diode	12key backlight switch
D102	Diode	Reverse current prevention
D401~404	Diode	12key control
D405,406	Diode	DC/DC converter
D407	Diode	Over voltage prevention
D408	Diode	DC/DC converter control
D409,410	Diode	SP control
D411	Diode	RTC BATT control
D412	Diode	DC switch control
D413	Diode	RTC BATT control
D414,415	Diode	Reverse current prevention
D416	Diode	33M control
D417	Diode	33A control
D701	Diode	5A switch
D702	Diode	PLD control
D703,704	Diode	Detector
D705	Diode	Noise detector
D706	Diode	VOX detector
D707	Diode	VOX

# NX-200(G)

## COMPONENTS DESCRIPTION

### TX-RX unit (X57-8950-12)

Ref. No.	Part Name	Description
IC1	IC	Temperature sensor
IC2	IC	AF AMP for VCO tune
IC3	IC	PLL IC
IC4	IC	OP AMP (VCO MOD/APC)
IC5	IC	DC AMP for TCXO MOD
IC100	IC	Auto power control
IC200,201	IC	DC AMP for BPF
IC202	IC	FM IC
IC203	IC	Buffer
IC400	IC	Voltage regulator (50C)
IC401	IC	50T control
IC402	IC	DC/DC converter
IC403	IC	Voltage regulator (33C)
IC404	IC	OP AMP (RSSI/VAGC)
IC501	IC	LNA (for GPS)
Q1,2	Transistor	Buffer AMP switch
Q3	Transistor	Ripple filter
Q4	Transistor	Buffer AMP
Q6	Transistor	Ripple filter
Q7	FET	T/R switch
Q8,10	FET	VCO oscillation
Q9	FET	T/R switch
Q11	Transistor	Buffer AMP
Q12	FET	Buffer AMP
Q13	FET	Buffer AMP switch
Q100	Transistor	Buffer AMP
Q102	FET	Drive AMP
Q103	FET	Pre-final AMP
Q104,105	Transistor	APC switch
Q106	FET	RF final AMP
Q107,109	FET	APC switch
Q110	Transistor	APC switch
Q201	Transistor	2nd Local tripler
Q202	Transistor	IF AMP
Q203	FET	Mixer
Q204	FET	RF AMP
Q401	FET	50R switch
Q402	FET	50IF switch
Q403	FET	SB3 switch
Q404	FET	DC/DC converter switch
Q405	Transistor	50T switch
Q406	Transistor	TX/RX LED switch

Ref. No.	Part Name	Description
D1	Diode	Ripple filter
D2,3	Diode	f-in RF switch
D4	Diode	Bypass diode
D5,6	Diode	f-in RF switch
D7	Diode	Ripple filter
D8,9 D12~17	Variable capacitance diode	Frequency control
D18	Variable capacitance diode	TX modulation
D100	Diode	Local switch
D103	Zener diode	APC switch
D104,105	Diode	Antenna switch
D106	Zener diode	APC protect
D201	Diode	Local switch
D204,205, D207,208	Variable capacitance diode	Vari-cap tune
D209	Diode	Antenna switch
D211	Diode	Antenna switch
D213	Diode	Reverse protection
D400	Diode	Reverse protection
D401	Diode	50T control
D402	LED	TX/RX LED
D403	Diode	Reverse protection
D501	Diode	Clipper
D502	Diode	Clipper

### Sub (GPS) unit (X58-5240-10)

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

## PARTS LIST

△indicates safety critical components.

Parts without **Parts No.** are not supplied.Les articles non mentionnés 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-200 (G)  
CONTROL UNIT (X53-4590-XX)

Ref. No.	Address	Parts No.	Description	Desti-nation	Ref. No.	Address	Parts No.	Description	Desti-nation
<b>NX-200(G)</b>									
1	1B	A02-4002-23	PLASTIC CABINET (6KEY)	K	60	1C	J29-0730-05	BELT CLIP ACCESSORY	
2	1A	A02-4003-23	PLASTIC CABINET (18KEY)	K2	62	2B	J30-1296-04	SPACER (VOL)	
3	3A	A10-4186-04	CHASSIS (GPS)		63	2B	J87-0006-05	FPC (VOL,CH)	
4	2B	A62-1156-02	PANEL (TOP)		64	3B	J87-0007-05	FPC (UNIVERSAL)	
6	1B,1D	B09-0712-03	CAP ACCESSORY		66	2B	J99-0745-04	ADHESIVE SHEET (6KEY FPC)	
7	1A	B11-1853-34	FILTER (LCD)		67	3A	J99-0711-04	ADHESIVE SHEET (PTT FPC)	
8	1A	B11-1854-02	ILLUMINATION GUIDE (LCD)		68	2B	J99-0712-14	ADHESIVE SHEET (6KEY FPC)	
9	3B	B11-1855-04	ILLUMINATION GUIDE (TX/BUSY)		69	1A,2A	J99-0714-04	ADHESIVE SHEET (LCD)	
10	1A	B38-0923-05	LCD ASSY		70	3B	J99-0715-08	ADHESIVE SHEET (UNIVERSAL)	
					72	3B	J99-0747-04	ADHESIVE SHEET (TERMINAL BLOCK)	
12	1A	B42-7417-04	STICKER (NEXEDGE)		77	3A	K25-2001-03	PUSH KNOB (PTT)	
13	1B	B43-1606-04	BADGE (KENWOOD)		78	1A	K29-9405-03	KNOB (PTT)	
14	2D	B62-2608-00	INSTRUCTION MANUAL ACCESSORY		79	1A	K29-9406-03	BUTTON KNOB (SIDE KEY)	
17	2B	D32-0446-14	STOPPER (16CH)		80	1B	K29-9407-03	KNOB (VOL)	
					81	1B	K29-9408-13	KNOB (CH)	
19	2A	E29-1241-04	RELAY HARDWARE (VCO-PCB)		A	1B,1D	N08-0564-04	DRESSED SCREW ACCESSORY	
20	3A	E29-1242-04	RELAY HARDWARE (VCO-CHASSIS)		B	3B	N09-2426-14	HEXAGON HEAD SCREW (BATT-)	
23	2A	E37-1718-05	LEAD WIRE WITH CONNECTOR (X57-X58)		C	3A	N09-2440-15	SPECIAL SCREW (CASE)	
21	3B	E58-0532-05	RECTANGULAR RECEPTACLE (SP/MIC)		D	2A,2B	N09-6549-04	STEPPED SCREW (FG-SP HOLDER)	
22	3B	E72-0425-03	TERMINAL BLOCK		E	2B,3A	N09-6554-05	PAN HEAD SCREW (ANT/OP BOARD)	
24	3A	F07-1931-04	COVER (OP BOARD)		F	2B	N14-0844-04	CIRCULAR NUT (VOL,CH)	
27	2A	G02-1865-03	EARTH SPRING (SP)		G	1C	N09-6585-19	PAN HEAD MACHINE SCREW (BELT CLIP)	
25	2A	G10-1362-04	FIBROUS SHEET (GPS)		H	1A,2A,2B	N83-2005-48	PAN HEAD TAPTITE SCREW (PCB)	
28	1A	G10-1373-04	FIBROUS SHEET (SP)		83	1A	S79-0472-05	KEYBOARD ASSY (12KEY)	K2
29	2B	G10-1807-04	FIBROUS SHEET (TOP PANEL)		85	2A	T07-0755-25	SPEAKER	
30	2A	G11-4272-14	RUBBER CUSHION (SP)		86	2A	T91-0575-05	MIC ELEMENT	
31	3A	G11-4331-04	SHEET (AIR)		88	2A	W09-0971-05	LITHIUM CELL	
33	2A	G11-4428-04	SHEET (PTT)		90	3A	X41-3830-10	SWITCH UNIT (PTT FPC)	
34	3A	G11-4429-04	RUBBER SHEET (FET)		91	2B	X41-3840-10	SWITCH UNIT (6KEY FPC)	
35	3A	G11-4440-04	SHEET (AIR)		92	2A	X42-3510-10	CORD ASSY (50PIN FPC)	
36	2A	G11-4458-14	SHEET (SP)		93	2B	X60-4080-10	TERMINAL ASSY (SMA)	
38	1A	G11-4497-04	SHEET (ILLUMINATION GUIDE)		-		X53-4590-12	CONTROL UNIT FOR SERVICE	K
39	2A	G11-4501-04	SHEET (MIC ELEMENT)		-		X53-4590-13	CONTROL UNIT FOR SERVICE	K2
44	1B	G11-4540-04	SHEET (CABINET)		<b>CONTROL UNIT (X53-4590-XX) -10: K -11: K2</b>				
40	2A	G13-2129-14	CUSHION (TX-RX PCB)		D1-10		B30-2337-05	LED	
41	2A,3B	G13-2220-04	CUSHION (ANT/OP BOARD)		D3,4		B30-2337-05	LED	K
42	2A	G13-2249-04	CUSHION (TX-RX PCB)		D7,8		B30-2337-05	LED	K
43	2A	G13-2258-04	CUSHION (50PIN FPC)		K	C1	CK73HB1A104K	CHIP C 0.10UF K	
45	2A	G13-2265-04	CUSHION (BATT-)			C2-6	CK73GB1E105K	CHIP C 1.0UF K	
46	2B	G53-1762-02	PACKING (TOP)			C7,8	CK73HB1A104K	CHIP C 0.10UF K	
47	3B	G53-1763-03	PACKING (TERMINAL BLOCK)			C10	CK73HB1A104K	CHIP C 0.10UF K	
48	3A	G53-1764-03	PACKING (OP BOARD COVER)			C11	CK73HB0J105K	CHIP C 1.0UF K	
49	1B	G53-1765-11	PACKING (6KEY)		K2	C12-15	CK73HB1H471K	CHIP C 470PF K	
51	1A	G53-1766-11	PACKING (18KEY)			C16,17	CC73HCH1H101J	CHIP C 100PF J	
52	2B	G53-1768-04	PACKING (VOL,CH O-RING)			C23	CK73HB1H102K	CHIP C 1000PF K	
53	1B,1D	G53-1769-04	PACKING (CAP)			C24	CC73HCH1H470J	CHIP C 47PFJ	
54	2B	G53-1792-04	PACKING (SMA O-RING)			C25-27	CK73HB1H102K	CHIP C 1000PF K	
94	1D,2D	H12-4293-02	PACKING FIXTURE		K	C28-34	CC73HCH1H101J	CHIP C 100PF J	
95	2D	H13-2135-04	CARTON BOARD			C35	CK73HB1H102K	CHIP C 1000PF K	
96	3C	H52-2839-02	ITEM CARTON CASE			C36	CK73HB1E682K	CHIP C 6800PF K	
56	2A	J19-5505-11	HOLDER (FG-SP)			C37	CK73HB1H102K	CHIP C 1000PF K	
57	2B	J19-5506-03	HOLDER (VOL,CH)			C38	CC73HCH1H101J	CHIP C 100PF J	
58	2A	J19-5507-02	HOLDER (OP BOARD)						
59	2B	J21-8638-04	Mounting hardware (FG-SP HOLDER)						

# NX-200(G)

## PARTS LIST

CONTROL UNIT (X53-4590-XX)

Ref No.	Address	Parts No.	Description	Desti-nation	Ref No.	Address	Parts No.	Description	Desti-nation
C40		CC73HCH1H221J	CHIP C 220PF J		C443		CK73HB1E103K	CHIP C 0.010UF K	
C41		CC73HCH1H101J	CHIP C 100PF J		C445		CK73HB1H102K	CHIP C 1000PF K	
C101-104		CK73HB1A104K	CHIP C 0.10UF K		C446		CK73GB1E105K	CHIP C 1.0UF K	
C105		CK73HB0J105K	CHIP C 1.0UF K		C447		CK73HB1H102K	CHIP C 1000PF K	
C106		CK73HB1E103K	CHIP C 0.010UF K		C448-450		CK73HB0J105K	CHIP C 1.0UF K	
C107		CK73HB1A104K	CHIP C 0.10UF K	K	C452,453		CK73HB1E103K	CHIP C 0.010UF K	
C107,108		CK73HB1A104K	CHIP C 0.10UF K	K2	C454		CK73GB1E105K	CHIP C 1.0UF K	
C109,110		CK73HB1H102K	CHIP C 1000PF K		C455-457		CK73HB1H471K	CHIP C 470PF K	
C111-113		CK73HB1A104K	CHIP C 0.10UF K	K2	C459		CK73HB1H471K	CHIP C 470PF K	
C114		CK73HB0J105K	CHIP C 1.0UF K	K2	C460		CK73HB1E682K	CHIP C 6800PF K	
C115		CK73HB1H471K	CHIP C 470PF K	K2	C461-463		CK73HB1H471K	CHIP C 470PF K	
C116,117		CK73HB1A104K	CHIP C 0.10UF K		C464		CK73HB1E103K	CHIP C 0.010UF K	
C118,119		CK73HB0J105K	CHIP C 1.0UF K		C465		CK73HB1H102K	CHIP C 1000PF K	
C120,121		CK73HB1A104K	CHIP C 0.10UF K		C466		CK73HB1E682K	CHIP C 6800PF K	
C122-124		CK73HB1E103K	CHIP C 0.010UF K		C467,468		CK73HB1A104K	CHIP C 0.10UF K	
C130		CK73HB1E103K	CHIP C 0.010UF K		C469,470		CK73HB1H102K	CHIP C 1000PF K	
C131		CK73HB1A104K	CHIP C 0.10UF K		C471		CK73HB1C473K	CHIP C 0.047UF K	
C133		CS77MP0J100M	CHIP TNTL 10UF 6.3WV		C480		CK73HB1E103K	CHIP C 0.010UF K	
C134		CK73HB1E103K	CHIP C 0.010UF K		C701		CK73HB1A104K	CHIP C 0.10UF K	
C135		CK73HB1H102K	CHIP C 1000PF K		C703		CK73HB0J475K	CHIP C 4.7UF K	
C136		CK73HB1E103K	CHIP C 0.010UF K		C704,705		CK73HB1A104K	CHIP C 0.10UF K	
C137		CK73GB1E105K	CHIP C 1.0UF K		C706		CC73HCH1H680J	CHIP C 68PF J	
C138-140		CK73HB1A104K	CHIP C 0.10UF K		C707		CC73HCH1H270J	CHIP C 27PF J	
C141		CC73HCH1H101J	CHIP C 100PF J		C708		CK73HB1A104K	CHIP C 0.10UF K	
C142		CS77MP0J100M	CHIP TNTL 10UF 6.3WV		C709		CK73HB0J105K	CHIP C 1.0UF K	
C143		CK73HB1E103K	CHIP C 0.010UF K		C710		CK73HB1E103K	CHIP C 0.010UF K	
C144		CK73GB1E105K	CHIP C 1.0UF K		C711		CK73HB1A104K	CHIP C 0.10UF K	
C145-148		CK73HB1A104K	CHIP C 0.10UF K		C712		CK73HB1E103K	CHIP C 0.010UF K	
C149		CK73HB1E103K	CHIP C 0.010UF K		C713		CK73HB1H332K	CHIP C 3300PF K	
C150		CK73GB1E105K	CHIP C 1.0UF K		C714		CK73HB1H122K	CHIP C 1200PF K	
C151-155		CK73HB1A104K	CHIP C 0.10UF K		C715		CK73HB1A104K	CHIP C 0.10UF K	
C156,157		CK73HB1H102K	CHIP C 1000PF K		C716		CK73HB1H681K	CHIP C 680PF K	
C158		CK73HB1E103K	CHIP C 0.010UF K		C717		CK73HB1E103K	CHIP C 0.010UF K	
C159		CK73HB1A104K	CHIP C 0.10UF K		C718		CK73HB1H152K	CHIP C 1500PF K	
C160,161		CK73HB1E682K	CHIP C 6800PF K		C720		CK73HB1E103K	CHIP C 0.010UF K	
C401,402		CK73HB1A104K	CHIP C 0.10UF K		C721		CK73HB1A104K	CHIP C 0.10UF K	
C403-405		CS77MP1C2R2M	CHIP TNTL 2.2UF 16WV		C722		CK73HB1E103K	CHIP C 0.010UF K	
C406		CK73HB0J105K	CHIP C 1.0UF K		C723		CK73HB1A104K	CHIP C 0.10UF K	
C407,408		CK73HB1H102K	CHIP C 1000PF K		C724		CK73HB1E103K	CHIP C 0.010UF K	
C409		CK73HB0J105K	CHIP C 1.0UF K		C725		CC73HCH1E181J	CHIP C 180PF J	
C411,412		CK73HB0J105K	CHIP C 1.0UF K		C726,727		CK73HB1A104K	CHIP C 0.10UF K	
C414		CK73HB0J105K	CHIP C 1.0UF K		C728		CK73HB1E331K	CHIP C 330PF K	
C415		CS77BP1A100M	CHIP TNTL 10UF 10WV		C730		CK73HB1H331K	CHIP C 330PF K	
C416		CK73FB1A106K	CHIP C 10UF K		C731,732		CK73HB1E103K	CHIP C 0.010UF K	
C417		CC73HCH1H221J	CHIP C 220PF J		C734		CK73HB1H102K	CHIP C 1000PF K	
C418		CK73HB1E103K	CHIP C 0.010UF K		C735		CK73HB1H122K	CHIP C 1200PF K	
C419		CK73FB1E475K	CHIP C 4.7UF K		C736,737		CK73HB1A104K	CHIP C 0.10UF K	
C420		CK73HB1E103K	CHIP C 0.010UF K		C738		CK73HB1H102K	CHIP C 1000PF K	
C421		CK73HB1E682K	CHIP C 6800PF K		C739		CK73HB1E682K	CHIP C 6800PF K	
C422		CC73HCH1H100C	CHIP C 10PF C		C740		CK73HB1H102K	CHIP C 1000PF K	
C424,425		CK73HB1A104K	CHIP C 0.10UF K		C742		CK73GB1E105K	CHIP C 1.0UF K	
C427		CK73HB1E103K	CHIP C 0.010UF K		C743		CK73HB0J105K	CHIP C 1.0UF K	
C428		CC73HCH1H030C	CHIP C 3.0PF C		C744-746		CK73HB1E103K	CHIP C 0.010UF K	
C429,430		CK73HB1A104K	CHIP C 0.10UF K		C747,748		CK73HB1A104K	CHIP C 0.10UF K	
C431		CK73FB1A106K	CHIP C 10UF K		C749,750		CC73HCH1H470J	CHIP C 47PF J	
C433		CK73FB1A106K	CHIP C 10UF K		C751		CK73GB1E105K	CHIP C 1.0UF K	
C435-438		CK73HB1A563K	CHIP C 0.056UF K		C752,753		CC73HCH1H101J	CHIP C 100PF J	
C439,440		CK73HB1A104K	CHIP C 0.10UF K		C755		CC73HCH1H470J	CHIP C 47PF J	
C441		CK73GB1E105K	CHIP C 1.0UF K		C756		CK73HB1A104K	CHIP C 0.10UF K	
C442		CK73HB1H471K	CHIP C 470PF K		C757,758		CK73HB0J475K	CHIP C 4.7UF K	

## PARTS LIST

CONTROL UNIT (X53-4590-XX)

Ref No.	Address	Parts No.	Description	Desti-nation	Ref No.	Address	Parts No.	Description	Desti-nation
C759,760		CK73HB1E103K	CHIP C 0.010UF K		L702		L92-0162-05	BEADS CORE	
C761		CC73HCH1H100D	CHIP C 10PF D		L704-709		L92-0162-05	BEADS CORE	
C762		CK73HB1A104K	CHIP C 0.10UF K		L710-712		L92-0444-05	CHIP FERRITE	
C763		CK73HB1E103K	CHIP C 0.010UF K		L713		L92-0163-05	BEADS CORE	
C764		CK73HB1H102K	CHIP C 1000PF K		L714-717		L92-0444-05	CHIP FERRITE	
C765-767		CK73HB1A104K	CHIP C 0.10UF K		L718		L92-0408-05	CHIP FERRITE	
C768		CK73HB1H102K	CHIP C 1000PF K		L719		L33-1494-05	SMALL FIXED INDUCTOR	
C771		CK73HB1A224K	CHIP C 0.22UF K		X101		L77-1802-05	CRYSTAL RESONATOR (32.768KHZ)	
C772		CK73HB1E103K	CHIP C 0.010UF K		X102		L77-3015-05	TCXO (18.432MHZ)	
C775		CC73HCH1H470J	CHIP C 47PF J		R1		RK73HB1J105J	CHIP R 1.0M J	1/16W
C777		CK73HB1H102K	CHIP C 1000PF K		R2		RK73HB1J104J	CHIP R 100K J	1/16W
C778		CK73HB0J105K	CHIP C 1.0UF K		R3		RK73HB1J123J	CHIP R 12K J	1/16W
C779		CK73HB1E103K	CHIP C 0.010UF K		R4-10		RK73HB1J103J	CHIP R 10K J	1/16W
C780		CK73HB1A224K	CHIP C 0.22UF K		R11		RK73HB1J104J	CHIP R 100K J	1/16W
C781,782		CK73HB0J105K	CHIP C 1.0UF K		R12		RK73HB1J103J	CHIP R 10K J	1/16W
C785		CK73HB1A224K	CHIP C 0.22UF K		R14		RK73HB1J472J	CHIP R 4.7K J	1/16W
C786		CK73HB1E103K	CHIP C 0.010UF K		R15		RK73HB1J000J	CHIP R 0.0 J	1/16W
C787		CK73HB0J105K	CHIP C 1.0UF K		R16		RK73HB1J331J	CHIP R 330 J	1/16W
C788		CC73HCH1H150J	CHIP C 15PF J		R17		RK73HB1J000J	CHIP R 0.0 J	1/16W
C789		CC73HCH1H680J	CHIP C 68PF J		R18		RK73HB1J822J	CHIP R 8.2K J	1/16W
C790		CK73HB1A104K	CHIP C 0.10UF K		R19		RK73HB1J471J	CHIP R 470 J	1/16W
C791		CK73HB1A393K	CHIP C 0.039UF K		R20		RK73HB1J102J	CHIP R 1.0K J	1/16W
C792		CK73HB0J105K	CHIP C 1.0UF K		R21		RK73HB1J122J	CHIP R 1.2K J	1/16W
C793,794		CK73HB1A104K	CHIP C 0.10UF K		R22-24		RK73HB1J102J	CHIP R 1.0K J	1/16W
C795		CK73HB1E103K	CHIP C 0.010UF K		R25		RK73HB1J122J	CHIP R 1.2K J	1/16W
C796		CK73HB1A104K	CHIP C 0.10UF K		R26		RK73HB1J102J	CHIP R 1.0K J	1/16W
C797		CK73HB0J105K	CHIP C 1.0UF K		R27		RK73HB1J104J	CHIP R 100K J	1/16W
C798		CS77BP1A100M	CHIP TNTL 10UF 10WV		R28,29		RK73HB1J102J	CHIP R 1.0K J	1/16W
C799		CK73HB1A104K	CHIP C 0.10UF K		R30		RK73HB1J101J	CHIP R 100 J	1/16W
C800		CK73HB1H152K	CHIP C 1500PF K		R31		RK73HB1J102J	CHIP R 1.0K J	1/16W
C801		CK73HB1C223K	CHIP C 0.022UF K		R32-35		RK73HB1J101J	CHIP R 100 J	1/16W
C802		CK73HB1E103K	CHIP C 0.010UF K		R40		RK73HB1J000J	CHIP R 0.0 J	1/16W
C803		CK73HB1H102K	CHIP C 1000PF K		R101,102		RK73HB1J474J	CHIP R 470K J	1/16W
C804		CC73HCH1H470J	CHIP C 47PFJ		R103		RK73HB1J102J	CHIP R 1.0K J	1/16W
C805,806		CK73HB1H471K	CHIP C 470PF K		R105		RK73HB1J104J	CHIP R 100K J	1/16W
C808		CK73GB0J475K	CHIP C 4.7UF K		R106		RK73HB1J472J	CHIP R 4.7K J	1/16W
C809		CK73FB1A106K	CHIP C 10UF K		R107		RK73HB1J104J	CHIP R 100K J	1/16W
C812		CK73HB0J105K	CHIP C 1.0UF K		R108		RK73HB1J474J	CHIP R 470K J	1/16W
CN1		E40-6755-05	FLAT CABLE CONNECTOR		R110,111		RK73HB1J104J	CHIP R 100K J	1/16W
CN22		E23-1325-05	TERMINAL		R112		RK73HB1J000J	CHIP R 0.0 J	1/16W
CN23		E40-6758-05	PIN ASSY		R113		RK73HB1J104J	CHIP R 100K J	1/16W
CN24		E23-1325-05	TERMINAL		R114		RK73HB1J331J	CHIP R 330 J	1/16W
CN401		J19-5386-05	HOLDER (LITHIUM CELL)		R115		RK73HB1J104J	CHIP R 100K J	1/16W
CN403		E40-6813-05	PIN ASSY		R116		RK73HB1J473J	CHIP R 47K J	1/16W
CN404		E40-6421-15	PIN ASSY		R117		RK73HB1J000J	CHIP R 0.0 J	1/16W
CN405		E40-6754-05	FLAT CABLE CONNECTOR		R118		RK73HB1J473J	CHIP R 47K J	1/16W
CN701		E40-6586-05	SOCKET FOR PIN ASSY		R119		RK73HB1J104J	CHIP R 100K J	1/16W
CN710		E40-6757-05	PIN ASSY		R120		RK73HB1J474J	CHIP R 470K J	1/16W
F701		F53-0360-05	FUSE (0.25A)		R121-123		RK73HB1J104J	CHIP R 100K J	1/16W
L1,2		L92-0408-05	CHIP FERRITE		R126		RK73HB1J101J	CHIP R 100 J	1/16W
L3		L92-0140-05	CHIP FERRITE		R127,128		RK73HB1J000J	CHIP R 0.0 J	1/16W
L4-7		L92-0408-05	CHIP FERRITE		R129-131		RK73HB1J101J	CHIP R 100 J	1/16W
L8		L92-0140-05	CHIP FERRITE		R132,133		RK73HB1J104J	CHIP R 100K J	1/16W
L101,102		L92-0408-05	CHIP FERRITE		R135-137		RK73HB1J104J	CHIP R 100K J	1/16W
L401		L33-1496-05	SMALL FIXED INDUCTOR		R138		RK73HB1J473J	CHIP R 47K J	1/16W
L402		L92-0467-05	CHIP FERRITE		R139		RK73HB1J104J	CHIP R 100K J	1/16W
L403		L92-0466-05	CHIP FERRITE		R140		RK73HB1J000J	CHIP R 0.0 J	1/16W
L409-411		L92-0467-05	CHIP FERRITE		R141-143		RK73HB1J104J	CHIP R 100K J	1/16W
L701		L92-0140-05	CHIP FERRITE		R144		RK73HB1J471J	CHIP R 470 J	1/16W

# NX-200(G)

## PARTS LIST

CONTROL UNIT (X53-4590-XX)

Ref No.	Address	Parts No.	Description	Desti-nation	Ref No.	Address	Parts No.	Description	Desti-nation
R145-147		RK73HB1J104J	CHIP R 100K J 1/16W		R448		RK73HB1J103J	CHIP R 10K J 1/16W	
R148		RK73HB1J151J	CHIP R 150 J 1/16W		R449-452		RK73HB1J474J	CHIP R 470K J 1/16W	
R149		RK73HB1J000J	CHIP R 0.0 J 1/16W		R453		RK73HB1J104J	CHIP R 100K J 1/16W	
R150		RK73HB1J102J	CHIP R 1.0K J 1/16W		R454		RK73HB1J474J	CHIP R 470K J 1/16W	
R153,154		RK73HB1J104J	CHIP R 100K J 1/16W		R455		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R155		RK73HB1J473J	CHIP R 47K J 1/16W		R456		RK73HB1J474J	CHIP R 470K J 1/16W	
R156,157		RK73HB1J472J	CHIP R 4.7K J 1/16W		R457,458		RK73HB1J104J	CHIP R 100K J 1/16W	
R158,159		RK73HB1J220J	CHIP R 22 J 1/16W		R459,460		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R160,161		RK73HB1J000J	CHIP R 0.0 J 1/16W		R461		RK73HB1J103J	CHIP R 10K J 1/16W	
R162		RK73HB1J474J	CHIP R 470K J 1/16W		R462		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R163		RK73HH1J104D	CHIP R 100K D 1/16W		R463		RK73HB1J104J	CHIP R 100K J 1/16W	
R165		RK73HB1J102J	CHIP R 1.0K J 1/16W		R465		RK73HB1J103J	CHIP R 10K J 1/16W	
R166		RK73HB1J104J	CHIP R 100K J 1/16W		R466,467		RK73HB1J104J	CHIP R 100K J 1/16W	
R167		RK73HB1J102J	CHIP R 1.0K J 1/16W		R468		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R168		RK73HB1J000J	CHIP R 0.0 J 1/16W		R469		RK73HB1J474J	CHIP R 470K J 1/16W	
R170		RK73HH1J103D	CHIP R 10K D 1/16W		R470		RK73HB1J183J	CHIP R 18K J 1/16W	
R171-173		RK73HB1J000J	CHIP R 0.0 J 1/16W		R471		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R174-178		RK73HB1J104J	CHIP R 100K J 1/16W		R472		RK73HB1J223J	CHIP R 22K J 1/16W	
R180,181		RK73HB1J104J	CHIP R 100K J 1/16W		R473		RK73HB1J332J	CHIP R 3.3K J 1/16W	
R182		RK73HB1J474J	CHIP R 470K J 1/16W		R474,475		RK73HB1J333J	CHIP R 33K J 1/16W	
R183		RK73HB1J104J	CHIP R 100K J 1/16W		R477,478		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R184		RK73HB1J473J	CHIP R 47K J 1/16W		R479		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R185		RK73HB1J105J	CHIP R 1.0M J 1/16W		R481		RK73HB1J474J	CHIP R 470K J 1/16W	
R186		RK73HB1J473J	CHIP R 47K J 1/16W		R483		RK73HB1J473J	CHIP R 47K J 1/16W	
R187		RK73HB1J102J	CHIP R 1.0K J 1/16W		R484		RK73HB1J223J	CHIP R 22K J 1/16W	
R188		RK73HB1J473J	CHIP R 47K J 1/16W		R485		RK73HB1J103J	CHIP R 10K J 1/16W	
R189		RK73HB1J104J	CHIP R 100K J 1/16W		R487-490		RK73HH1J223D	CHIP R 22K D 1/16W	
R190		RK73HB1J102J	CHIP R 1.0K J 1/16W		R491		RK73HB1J104J	CHIP R 100K J 1/16W	
R191		RK73HB1J474J	CHIP R 470K J 1/16W		R492		RK73HB1J474J	CHIP R 470K J 1/16W	
R192		RK73HB1J102J	CHIP R 1.0K J 1/16W		R493		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R193,194		RK73HB1J104J	CHIP R 100K J 1/16W	K2	R494-497		RK73HH1J104D	CHIP R 100K D 1/16W	
R401		RK73HB1J152J	CHIP R 1.5K J 1/16W		R500		RK73HB1J473J	CHIP R 47K J 1/16W	
R402		RK73HB1J151J	CHIP R 150 J 1/16W		R501		RK73HB1J222J	CHIP R 2.2K J 1/16W	
R403		RK73HB1J152J	CHIP R 1.5K J 1/16W		R502,503		RK73HB1J103J	CHIP R 10K J 1/16W	
R404		RK73HB1J151J	CHIP R 150 J 1/16W		R504		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R405		RK73HB1J152J	CHIP R 1.5K J 1/16W	K2	R506		RK73HB1J222J	CHIP R 2.2K J 1/16W	
R406		RK73HB1J000J	CHIP R 0.0 J 1/16W		R507-511		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R407,408		RK73HB1J103J	CHIP R 10K J 1/16W		R512		RK73HB1J101J	CHIP R 100 J 1/16W	
R409		RK73HB1J470J	CHIP R 47 J 1/16W		R513-515		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R410-416		RK73HB1J471J	CHIP R 470 J 1/16W		R516		RK73HB1J101J	CHIP R 100 J 1/16W	
R417		RK73HB1J000J	CHIP R 0.0 J 1/16W		R517		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R418		RK73HB1J471J	CHIP R 470 J 1/16W		R518		RK73HB1J101J	CHIP R 100 J 1/16W	
R419,420		RK73HB1J000J	CHIP R 0.0 J 1/16W		R519-528		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R424		RK73HH1J683D	CHIP R 68K D 1/16W		R529-531		RK73HB1J101J	CHIP R 100 J 1/16W	
R425		RK73HH1J333D	CHIP R 33K D 1/16W		R532		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R426-429		RK73HB1J000J	CHIP R 0.0 J 1/16W		R533-535		RK73HB1J101J	CHIP R 100 J 1/16W	
R431		RK73HB1J474J	CHIP R 470K J 1/16W		R536-540		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R432,433		RK73HB1J000J	CHIP R 0.0 J 1/16W		R541		RK73HB1J101J	CHIP R 100 J 1/16W	
R434		RK73HB1J393J	CHIP R 39K J 1/16W		R543		RK73HB1J101J	CHIP R 100 J 1/16W	
R435,436		RK73HB1J104J	CHIP R 100K J 1/16W		R544		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R437		RK73HB1J471J	CHIP R 470 J 1/16W		R545		RK73HB1J101J	CHIP R 100 J 1/16W	
R438,439		RK73HB1J104J	CHIP R 100K J 1/16W		R546,547		RK73HB1J102J	CHIP R 1.0K J 1/16W	
R440		RK73HB1J000J	CHIP R 0.0 J 1/16W		R548,549		RK73HB1J473J	CHIP R 47K J 1/16W	
R441		RK73HB1J153J	CHIP R 15K J 1/16W		R550		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R442		RK73HB1J102J	CHIP R 1.0K J 1/16W		R701-707		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R443		RK73HB1J474J	CHIP R 470K J 1/16W		R709-715		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R444		RK73HB1J564J	CHIP R 560K J 1/16W		R716		RK73GB2A000J	CHIP R 0.0 J 1/10W	
R445		RK73HB1J154J	CHIP R 150K J 1/16W		R717-722		RK73HB1J104J	CHIP R 100K J 1/16W	
R446		RK73HB1J274J	CHIP R 270K J 1/16W		R723		RK73HB1J105J	CHIP R 1.0M J 1/16W	
R447		RK73HB1J104J	CHIP R 100K J 1/16W		R724		RK73HB1J104J	CHIP R 100K J 1/16W	

## PARTS LIST

CONTROL UNIT (X53-4590-XX)

Ref No.	Address	Parts No.	Description			Desti-nation	Ref No.	Address	Parts No.	Description			Desti-nation	
R725		RK73HB1J100J	CHIP R	10	J	1/16W	R803		RK73HB1J103J	CHIP R	10K	J	1/16W	
R726		RK73HB1J104J	CHIP R	100K	J	1/16W	R804		RK73HB1J000J	CHIP R	0.0	J	1/16W	
R727-729		RK73HB1J105J	CHIP R	1.0M	J	1/16W	R805,806		RK73HB1J473J	CHIP R	47K	J	1/16W	
R730		RK73HB1J471J	CHIP R	470	J	1/16W	R807		RK73HB1J102J	CHIP R	1.0K	J	1/16W	
R731,732		RK73HB1J105J	CHIP R	1.0M	J	1/16W	R808		RK73HB1J471J	CHIP R	470	J	1/16W	
R733		RK73HB1J473J	CHIP R	47K	J	1/16W	R809		RK73HB1J334J	CHIP R	330K	J	1/16W	
R735		RK73HB1J473J	CHIP R	47K	J	1/16W	R810		RK73HB1J332J	CHIP R	3.3K	J	1/16W	
R736		RK73HB1J823J	CHIP R	82K	J	1/16W	R811		RK73HB1J823J	CHIP R	82K	J	1/16W	
R737		RK73HB1J153J	CHIP R	15K	J	1/16W	R812		RK73HB1J562J	CHIP R	5.6K	J	1/16W	
R738		RK73HB1J563J	CHIP R	56K	J	1/16W	R813		RK73HB1J273J	CHIP R	27K	J	1/16W	
R739		RK73HB1J823J	CHIP R	82K	J	1/16W	R814		RK73HB1J564J	CHIP R	560K	J	1/16W	
R740		RK73HB1J000J	CHIP R	0.0	J	1/16W	R815		RK73HB1J104J	CHIP R	100K	J	1/16W	
R741		RK73HB1J474J	CHIP R	470K	J	1/16W	R816		RK73HB1J683J	CHIP R	68K	J	1/16W	
R742,743		RK73HB1J103J	CHIP R	10K	J	1/16W	R818		RK73HB1J104J	CHIP R	100K	J	1/16W	
R744		RK73HB1J223J	CHIP R	22K	J	1/16W	R819,820		RK73HB1J103J	CHIP R	10K	J	1/16W	
R745		RK73HB1J682J	CHIP R	6.8K	J	1/16W	R821		RK73HB1J104J	CHIP R	100K	J	1/16W	
R746		RK73HB1J563J	CHIP R	56K	J	1/16W	R822,823		RK73HB1J103J	CHIP R	10K	J	1/16W	
R748		RK73HB1J103J	CHIP R	10K	J	1/16W	R824		RK73HB1J393J	CHIP R	39K	J	1/16W	
R749		RK73HB1J472J	CHIP R	4.7K	J	1/16W	R825		RK73HB1J104J	CHIP R	100K	J	1/16W	
R750		RK73HB1J103J	CHIP R	10K	J	1/16W	R826		RK73HB1J334J	CHIP R	330K	J	1/16W	
R752		RK73HB1J101J	CHIP R	100	J	1/16W	R827		RK73HB1J184J	CHIP R	180K	J	1/16W	
R753		RK73HB1J683J	CHIP R	68K	J	1/16W	R828,829		RK73HB1J000J	CHIP R	0.0	J	1/16W	
R754		RK73HB1J564J	CHIP R	560K	J	1/16W	R830		RK73HB1J105J	CHIP R	1.0M	J	1/16W	
R755		RK73HB1J104J	CHIP R	100K	J	1/16W	R831		RK73HB1J474J	CHIP R	470K	J	1/16W	
R756		RK73HB1J101J	CHIP R	100	J	1/16W	R832		RK73HB1J473J	CHIP R	47K	J	1/16W	
R757		RK73HB1J223J	CHIP R	22K	J	1/16W	R833		RK73HB1J684J	CHIP R	680K	J	1/16W	
R758		RK73HB1J103J	CHIP R	10K	J	1/16W	R834		RK73HB1J000J	CHIP R	0.0	J	1/16W	
R759		RK73HB1J101J	CHIP R	100	J	1/16W	R835		RK73HB1J153J	CHIP R	15K	J	1/16W	
R761-764		RK73HB1J223J	CHIP R	22K	J	1/16W	R836		RK73HB1J473J	CHIP R	47K	J	1/16W	
R765		RK73HB1J334J	CHIP R	330K	J	1/16W	R837		RK73HB1J683J	CHIP R	68K	J	1/16W	
R766		RK73HB1J000J	CHIP R	0.0	J	1/16W	R838		RK73HB1J564J	CHIP R	560K	J	1/16W	
R767		RK73HB1J103J	CHIP R	10K	J	1/16W	R839		RK73HB1J333J	CHIP R	33K	J	1/16W	
R768		RK73HB1J224J	CHIP R	220K	J	1/16W	R840		RK73HB1J123J	CHIP R	12K	J	1/16W	
R769,770		RK73HB1J334J	CHIP R	330K	J	1/16W	R841		RK73HB1J564J	CHIP R	560K	J	1/16W	
R771		RK73HB1J153J	CHIP R	15K	J	1/16W	R842		RK73HB1J104J	CHIP R	100K	J	1/16W	
R775		RK73HB1J183J	CHIP R	18K	J	1/16W	R843		RK73HB1J102J	CHIP R	1.0K	J	1/16W	
R777		RK73HB1J473J	CHIP R	47K	J	1/16W	R844		RK73HB1J472J	CHIP R	4.7K	J	1/16W	
R778		RK73HB1J333J	CHIP R	33K	J	1/16W	R845		RK73HB1J104J	CHIP R	100K	J	1/16W	
R779		RK73HB1J473J	CHIP R	47K	J	1/16W	R846		RK73HB1J471J	CHIP R	470	J	1/16W	
R780		RK73HB1J104J	CHIP R	100K	J	1/16W	R847		RK73HB1J182J	CHIP R	1.8K	J	1/16W	
R782		RK73HB1J104J	CHIP R	100K	J	1/16W	R848		RK73HB1J000J	CHIP R	0.0	J	1/16W	K
R783		RK73HB1J183J	CHIP R	18K	J	1/16W	R849,850		RK73HB1J000J	CHIP R	0.0	J	1/16W	K2
R784		RK73HB1J104J	CHIP R	100K	J	1/16W	R850		RK73HB1J000J	CHIP R	0.0	J	1/16W	K
R785		RK73HB1J682J	CHIP R	6.8K	J	1/16W	R851,852		RK73HB1J683J	CHIP R	68K	J	1/16W	
R786		RK73HB1J000J	CHIP R	0.0	J	1/16W	VR1	2B	R31-0666-05	VARIABLE RESISTOR				
R787		RK73HB1J124J	CHIP R	120K	J	1/16W	S1	2B	S60-0437-05	ROTARY SWITCH				
R788		RK73HB1J473J	CHIP R	47K	J	1/16W	D11		DA2S101	DIODE				
R789		RK73HB1J154J	CHIP R	150K	J	1/16W	D12-16		KDR720F-P	DIODE				
R790		RK73HB1J102J	CHIP R	1.0K	J	1/16W	D17		EMZ6.8N	ZENER DIODE				
R791		RK73HB1J474J	CHIP R	470K	J	1/16W	D18,19		HZC6.8-E	ZENER DIODE				
R793		RK73HB1J102J	CHIP R	1.0K	J	1/16W	D20,21		NNCD6.8G-A	ZENER DIODE				
R794		RK73HB1J104J	CHIP R	100K	J	1/16W	D22,23		KDS123E-P	DIODE				
R795		RK73HB1J000J	CHIP R	0.0	J	1/16W	D101		DA2S101	DIODE				
R796		RK73HB1J333J	CHIP R	33K	J	1/16W	D102		KDR720F-P	DIODE				
R797		RK73HB1J102J	CHIP R	1.0K	J	1/16W	D401-405		1SS388F	DIODE				
R798		RK73HB1J104J	CHIP R	100K	J	1/16W	D406		HRB0502A	DIODE				
R799		RK73HB1J334J	CHIP R	330K	J	1/16W	D407		DA2S101	DIODE				
R800		RK73HB1J474J	CHIP R	470K	J	1/16W	D408		KDS121-P	DIODE				
R801		RK73HB1J473J	CHIP R	47K	J	1/16W								
R802		RK73HB1J474J	CHIP R	470K	J	1/16W								

If a part reference number is listed in a shaded box, that part does not come with the PCB.

# NX-200(G)

## PARTS LIST

CONTROL UNIT (X53-4590-XX)  
TX-RX UNIT (X57-8950-12)

Ref No.	Address	Parts No.	Description	Desti-nation
D409,410		DA2S101	DIODE	
D411		KDR720F-P	DIODE	
D412		KDS121-P	DIODE	
D413		1SS388F	DIODE	
D414,415		KDR720F-P	DIODE	
D416,417		1SS388F	DIODE	
D701		KDS121-P	DIODE	
D702		DA2S101	DIODE	
D703-706		KDR731	DIODE	
D707		KDS123E-P	DIODE	
IC1		NJM2130F3-ZB	BI-POLAR IC	
IC101		Note 1	ROM IC	
IC102		Note 1	MPU	
IC103		Note 1	SRAM IC	
IC104		TC7SH08FU-F	MOS-IC	
IC105		XC6109C29AN-G	ANALOGUE IC	
IC106		RV5C386A	MOS-IC	
IC107		SM5023CNDH-G	MOS-IC	
IC108		Note 1	MOS-IC	
IC109		TC7SH08FU-F	MOS-IC	
IC401		TC74LCX245FK	MOS-IC	
IC402		TC7WZ245FK-F	MOS-IC	
IC403		LM2682MMX	MOS-IC	
IC404		XC6204B332D-G	MOS-IC	
IC406		XC6204B332M-G	MOS-IC	
IC407		LT1616ES6-PBF	ANALOGUE IC	
IC408		TC75S51FE(F)	MOS-IC	
IC409		TC7W66FK-F	MOS-IC	
IC411		NJM2880U105ZB	ANALOGUE IC	
IC412,413		TPA6201A1DRBR	ANALOGUE IC	
IC414		XC61CC5602N-G	MOS-IC	
IC415		TC7SET08FU-F	MOS-IC	
IC416		S-812C31BPI-G	ANALOGUE IC	
IC417		TC7WH126FK	MOS-IC	
IC418		TC7WT125FUF	MOS-IC	
IC701		Note 1	MOS-IC	
IC702		TC75W51FK(F)	MOS-IC	
IC703		M62364FP-F	MOS-IC	
IC704		TC75S51FE(F)	MOS-IC	
IC705		TC75W51FK(F)	MOS-IC	
IC706		TC75S51FE(F)	MOS-IC	
IC707		TC7W53FK(F)	MOS-IC	
IC708		XC6204B502P-G	MOS-IC	
IC709		TC7W53FK(F)	MOS-IC	
IC710,711		TC75W51FK(F)	MOS-IC	
IC712		TC7S66FUF	MOS-IC	
IC713		TC75W51FK(F)	MOS-IC	
IC714		TC7W53FK(F)	MOS-IC	
IC715		TC75S51FE(F)	MOS-IC	
IC716		TC75W51FK(F)	MOS-IC	
IC717		XC9235A15CM-G	MOS-IC	
Q1		2SA1362-F(GR)	TRANSISTOR	
Q2		KTC4075E(Y,GR)	TRANSISTOR	
Q3,4		SSM3K15TE(F)	FET	
Q5		2SJ347F	FET	
Q101		2SA1832(GR)F	TRANSISTOR	K2
Q102		KTC4075E(Y,GR)	TRANSISTOR	K2
Q103		SSM3K15TE(F)	FET	K2
Q401,402		SSM6N16FE-F	FET	

Ref No.	Address	Parts No.	Description	Desti-nation
Q403		2SJ648-A	FET	
Q404		SSM3K15TE(F)	FET	
Q405		SSM6N16FE-F	FET	
Q406		2SB798AZ(DLDK	TRANSISTOR	
Q407		KRC660U-P	TRANSISTOR	
Q408		EMD12	TRANSISTOR	
Q409		2SA1955A-F	TRANSISTOR	
Q410		SSM3K15TE(F)	FET	
Q411		SSM6N16FE-F	FET	
Q412		SSM3K15TE(F)	FET	
Q413		2SA1955A-F	TRANSISTOR	
Q414,415		EMD12	TRANSISTOR	
Q702,703		SSM3K15TE(F)	FET	
Q704		KTC4075E(Y,GR)	TRANSISTOR	
Q705		2SC4738(GR)F	TRANSISTOR	
Q706		2SA1832(GR)F	TRANSISTOR	
Q707		2SJ243-A	FET	
TH1		ERTJ0EV104H	THERMISTOR(100K)	
TH701		ERTJ0EV104H	THERMISTOR(100K)	

### TX-RX UNIT (X57-8950-12)

D402		B30-2278-05	LED (RED/YELLOW)	
C1		CC73HCH1H101J	CHIP C 100PF J	
C3		CK73HB1C103K	CHIP C 0.010UF K	
C4		CC73HCH1H101J	CHIP C 100PF J	
C5		CC73HCH1H100C	CHIP C 10PF C	
C6		CK73HB1C103K	CHIP C 0.010UF K	
C7		CK73GB1E105K	CHIP C 1.0UF K	
C8		CK73HB1H102K	CHIP C 1000PF K	
C9		CC73HCH1H100C	CHIP C 10PF C	
C10,11		CC73HCH1H101J	CHIP C 100PF J	
C12		CK73HB1H471K	CHIP C 470PF K	
C13		CC73HCH1H101J	CHIP C 100PF J	
C15		CK73HB1H471K	CHIP C 470PF K	
C16,17		CC73HCH1H101J	CHIP C 100PF J	
C18		CK73HB1C103K	CHIP C 0.010UF K	
C19		CK73HB1H471K	CHIP C 470PF K	
C20		CC73HCH1H220G	CHIP C 22PF G	
C21		CK73HB1H471K	CHIP C 470PF K	
C22		CC73HCH1H390G	CHIP C 39PFG	
C24,25		CC73HCH1H101J	CHIP C 100PF J	
C26		CC73HCH1H030B	CHIP C 3.0PF B	
C27		CK73HB1A104K	CHIP C 0.10UF K	
C28		CC73HCH1H101J	CHIP C 100PF J	
C29		CK73HB1A104K	CHIP C 0.10UF K	
C30		C93-0787-05	CERAMIC 0.1UF 50WV	
C31		CC73HCH1H220G	CHIP C 22PF G	
C32		CC73HCH1H101J	CHIP C 100PF J	
C34		CC73HCH1H470G	CHIP C 47PF G	
C35		CC73HCH1H101J	CHIP C 100PF J	
C36,37		CK73HB1H471K	CHIP C 470PF K	
C38		CK73HB1H102K	CHIP C 1000PF K	
C41		CK73HB1H472K	CHIP C 4700PF K	
C42		CK73HB1H471K	CHIP C 470PF K	
C43		CS77MA1VR15M	CHIP TNTL 0.15UF 35WV	
C44		CS77BA1D100M	CHIP TNTL 10UF 20WV	

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

## PARTS LIST

TX-RX UNIT (X57-8950-12)

Ref No.	Address	Parts No.	Description		Desti-nation	Ref No.	Address	Parts No.	Description		Desti-nation
C45-47		CK73HB1H471K	CHIP C	470PF K		C139		CK73HB1H471K	CHIP C	470PF K	
C48		C93-1906-05	CHIP TNTL	0.047UF 35WV		C140		CC73GCH1H110G	CHIP C	11PF G	
C50,51		CC73HCH1H101J	CHIP C	100PF J		C141		CK73HB1H471K	CHIP C	470PF K	
C52		CK73HB1H471K	CHIP C	470PF K		C142		CC73GCH1H080B	CHIP C	8.0PF B	
C53		CK73FB0J106K	CHIP C	10UF K		C143		CC73HCH1H101J	CHIP C	100PF J	
C54		CK73HB1H471K	CHIP C	470PF K		C144		CC73GCH1H270G	CHIP C	27PF G	
C55		CK73GB0J475K	CHIP C	4.7UF K		C145		CK73HB1C103K	CHIP C	0.010UF K	
C56		CK73HB0J105K	CHIP C	1.0UF K		C146		CC73GCH1H150G	CHIP C	15PF G	
C57		CC73HCH1H270J	CHIP C	27PF J		C148		CK73HB1H102K	CHIP C	1000PF K	
C58		CC73HCH1H470J	CHIP C	47PF J		C149		CC73GCH1H220G	CHIP C	22PF G	
C60		CK73HB1H471K	CHIP C	470PF K		C150		CK73HB1A104K	CHIP C	0.10UF K	
C62		CC73HCH1H030B	CHIP C	3.0PF B		C151		CK73GB1C104K	CHIP C	0.10UF K	
C63		CK73HB1H471K	CHIP C	470PF K		C152		CK73GB1E105K	CHIP C	1.0UF K	
C64		CC73HCH1H030B	CHIP C	3.0PF B		C154		CC73GCH1H220G	CHIP C	22PF G	
C65		CC73HCH1HR75B	CHIP C	0.75PF B		C155		CK73HB1H471K	CHIP C	470PF K	
C66		CC73HCH1H080B	CHIP C	8.0PF B		C156		CK73HB1C103K	CHIP C	0.010UF K	
C67-69		CC73HCH1H100B	CHIP C	10PF B		C158		CC73GCH1H330G	CHIP C	33PF G	
C70		CK73HB1H102K	CHIP C	1000PF K		C159		CK73HB1H471K	CHIP C	470PF K	
C71		CK73GB1H103K	CHIP C	0.010UF K		C160		CK73HB1A104K	CHIP C	0.10UF K	
C72		CK73GB1H102K	CHIP C	1000PF K		C163		CC73GCH1H120G	CHIP C	12PF G	
C74,75		CC73HCH1H0R5B	CHIP C	0.5PF B		C165		CC73GCH1H070B	CHIP C	7.0PF B	
C76		CK73HB1H102K	CHIP C	1000PF K		C166		CC73GCH1H560J	CHIP C	56PF J	
C77		CC73HCH1H220J	CHIP C	22PF J		C167,168		CC73HCH1H101J	CHIP C	100PF J	
C78		CK73HB1H471K	CHIP C	470PF K		C169		CK73HB1A104K	CHIP C	0.10UF K	
C79		CC73HCH1H101J	CHIP C	100PF J		C173		CK73HB1H471K	CHIP C	470PF K	
C81		CC73HCH1H470J	CHIP C	47PF J		C177		CC73HCH1H220J	CHIP C	22PF J	
C82		CK73FB0J106K	CHIP C	10UF K		C178		CC73HCH1H120J	CHIP C	12PF J	
C83		CK73HB1H471K	CHIP C	470PF K		C179		CC73HCH1H100B	CHIP C	10PF B	
C84		CC73HCH1H050B	CHIP C	5.0PF B		C180		CC73GCH1H120G	CHIP C	12PF G	
C85		CK73HB0J105K	CHIP C	1.0UF K		C190		CC73GCH1H270G	CHIP C	27PF G	
C87		CK73HB1C103K	CHIP C	0.010UF K		C191		CC73GCH1H181J	CHIP C	180PF J	
C88		CC73HCH1H101J	CHIP C	100PF J		C193		CC73GCH1H330G	CHIP C	33PF G	
C90,91		CK73HB1A104K	CHIP C	0.10UF K		C201,202		CK73GB1H104K	CHIP C	0.10UF K	
C92		CC73HCH1H020B	CHIP C	2.0PF B		C203		CC73HCH1H070B	CHIP C	7.0PF B	
C93		CC73HCH1H330J	CHIP C	33PF J		C204		CK73HB1C103K	CHIP C	0.010UF K	
C100		CC73HCH1H150J	CHIP C	15PF J		C206		CK73HB1C103K	CHIP C	0.010UF K	
C101,102		CK73HB1H102K	CHIP C	1000PF K		C207		CC73HCH1H100B	CHIP C	10PF B	
C104		CC73HCH1H100C	CHIP C	10PF C		C208		CC73HCH1H680J	CHIP C	68PF J	
C106		CK73HB1H102K	CHIP C	1000PF K		C209		CC73HCH1H101J	CHIP C	100PF J	
C109		CK73HB1H471K	CHIP C	470PF K		C210		CK73HB1H471K	CHIP C	470PF K	
C111		CK73HB1H102K	CHIP C	1000PF K		C211		CK73HB1C103K	CHIP C	0.010UF K	
C112		CC73HCH1H560J	CHIP C	56PF J		C212		CC73HCH1H680J	CHIP C	68PF J	
C114,115		CK73HB1H102K	CHIP C	1000PF K		C213		CK73HB1C103K	CHIP C	0.010UF K	
C116		CK73HB1A104K	CHIP C	0.10UF K		C215		CC73HCH1H050B	CHIP C	5.0PF B	
C117		CK73HB1H102K	CHIP C	1000PF K		C216		CC73HCH1H220G	CHIP C	22PF G	
C119		CC73HCH1H180J	CHIP C	18PF J		C217		CC73HCH1H470J	CHIP C	47PF J	
C120		CK73HB1H471K	CHIP C	470PF K		C219		CC73HCH1H060B	CHIP C	6.0PF B	
C122		CK73HB1H102K	CHIP C	1000PF K		C220		CK73HB1C103K	CHIP C	0.010UF K	
C123		CK73HB1A104K	CHIP C	0.10UF K		C221		CK73HB1A104K	CHIP C	0.10UF K	
C124		CC73HCH1H470J	CHIP C	47PF J		C222,223		CK73HB1C103K	CHIP C	0.010UF K	
C125		CK73HB1H102K	CHIP C	1000PF K		C224,225		CK73HB1A104K	CHIP C	0.10UF K	
C127		CC73HCH1H100C	CHIP C	10PF C		C226		CK73HB1H471K	CHIP C	470PF K	
C128		CS77CA1A6R8M	CHIP TNTL	6.8UF 10WV		C227,228		CK73HB1A104K	CHIP C	0.10UF K	
C129		CK73HB1A104K	CHIP C	0.10UF K		C229		CC73HCH1H100B	CHIP C	10PF B	
C130		CK73HB1H102K	CHIP C	1000PF K		C230		CK73HB1A104K	CHIP C	0.10UF K	
C131		CK73GB1E105K	CHIP C	1.0UF K		C231		CC73HCH1H100B	CHIP C	10PFB	
C132		CK73HB1H102K	CHIP C	1000PF K		C232		CK73HB1H102K	CHIP C	1000PF K	
C133,134		CK73HB1H471K	CHIP C	470PF K		C233		CK73HB1C103K	CHIP C	0.010UF K	
C135		CC73GCH1H150G	CHIP C	15PF G		C234		CK73FB1E474K	CHIP C	0.47UF K	
C136		CC73GCH1H820J	CHIP C	82PF J		C235		CK73HB1H102K	CHIP C	1000PF K	

# NX-200(G)

## PARTS LIST

TX-RX UNIT (X57-8950-12)

Ref No.	Address	Parts No.	Description		Desti-nation	Ref No.	Address	Parts No.	Description		Desti-nation
C236,237		CK73FB1A106K	CHIP C	10UF K		C416		CK73GB1E105K	CHIP C	1.0UF K	
C238		CK73HB1C103K	CHIP C	0.010UF K		C417		CC73HCH1E181J	CHIP C	180PF J	
C239		CK73HB1A104K	CHIP C	0.10UF K		C418		CK73GB1E105K	CHIP C	1.0UF K	
C240		CC73HCH1H040B	CHIP C	4.0PF B		C419		CC73HCH1H220J	CHIP C	22PF J	
C241,242		CK73HB1H102K	CHIP C	1000PF K		C420		CK73HB1H471K	CHIP C	470PF K	
C244		CC73HCH1H120G	CHIP C	12PF G		C421		CK73GB1C224K	CHIP C	0.22UF K	
C245		CK73FB1A475K	CHIP C	4.7UF K		C422		CK73GB1E105K	CHIP C	1.0UF K	
C246		CK73HB1A104K	CHIP C	0.10UF K		C423		CK73GB1C224K	CHIP C	0.22UF K	
C247		CC73HCH1H050B	CHIP C	5.0PF B		C424,425		CK73GB1E105K	CHIP C	1.0UF K	
C248		CC73HCH1H220G	CHIP C	22PF G		C426		CC73HCH1H470J	CHIP C	47PF J	
C249		CK73HB1A104K	CHIP C	0.10UF K		C428-445		CC73HCH1H470J	CHIP C	47PF J	
C250		CC73HCH1H030B	CHIP C	3.0PF B		C447		CC73HCH1H470J	CHIP C	47PF J	
C251		CC73HCH1H060B	CHIP C	6.0PF B		C449-458		CC73HCH1H470J	CHIP C	47PF J	
C252		CC73HCH1H470G	CHIP C	47PF G		C460		CC73HCH1H470J	CHIP C	47PF J	
C254		CC73HCH1H100B	CHIP C	10PF B		C462,463		CK73HB1H471K	CHIP C	470PF K	
C259		CC73HCH1H820J	CHIP C	82PF J		C464-468		CK73HB1H102K	CHIP C	1000PF K	
C261		CC73HCH1H270J	CHIP C	27PF J		C470		CC73HCH1H470J	CHIP C	47PF J	
C262		CK73HB1C103K	CHIP C	0.010UF K		C472-474		CC73HCH1H470J	CHIP C	47PF J	
C264		CC73HCH1H270J	CHIP C	27PF J		C475		CK73HB0J105K	CHIP C	1.0UF K	
C267		CK73HB1H102K	CHIP C	1000PF K		C476		CC73HCH1H470J	CHIP C	47PF J	
C268		CC73HCH1H390J	CHIP C	39PF J		C478,479		CC73HCH1H470J	CHIP C	47PF J	
C270		CC73HCH1H1R5B	CHIP C	1.5PF B		C480		CK73GB1E105K	CHIP C	1.0UF K	
C273		CC73HCH1H390J	CHIP C	33PF J		C481		CK73HB1A394K	CHIP C	0.39UF K	
C274		CK73HB1H102K	CHIP C	1000PF K		C499		CC73HCH1H470J	CHIP C	47PF J	
C275,276		CK73HB1A104K	CHIP C	0.10UF K		C501		CC73HCH1H020B	CHIP C	2.0PF B	
C278		CK73HB1H102K	CHIP C	1000PF K		C502		CK73HB1H102K	CHIP C	1000PF K	
C281		CK73HB1C103K	CHIP C	0.010UF K		C503		CC73HCH1H180J	CHIP C	18PF J	
C282		CK73GB1E105K	CHIP C	1.0UF K		C504		CC73HCH1H1R5B	CHIP C	1.5PF B	
C283-286		CK73HB1H102K	CHIP C	1000PF K		C505		CC73HCH1H121J	CHIP C	120PF J	
C290		CC73HCH1H150J	CHIP C	15PF J		C506,507		CC73HCH1H010B	CHIP C	1.0PF B	
C291		CK73HB1H102K	CHIP C	1000PF K		C508		CC73GCH1H100C	CHIP C	10PF C	
C295		CC73HCH1H100B	CHIP C	10PF B		CN102	E23-1326-05	TERMINAL			
C296		CC73HCH1H020B	CHIP C	2.0PF B		CN400	E40-6422-15	SOCKET FOR PIN ASSY(50P)			
C297		CC73HCH1H010B	CHIP C	1.0PF B		CN401	E40-6752-05	FLAT CABLE CONNECTOR(5P)			
C298		CC73HCH1H020B	CHIP C	2.0PF B		CN881	E04-0496-05	SOCKET FOR PIN (GPS)			
C299		CC73HCH1H180J	CHIP C	18PF J		F400	F53-0324-05	FUSE (2.5A)			
C301		CC73HCH1H180J	CHIP C	18PF J		CF200	L72-1017-05	CERAMIC FILTER(450KHZ)			
C304		CC73HCH1H120J	CHIP C	12PF J		CF201	L72-1020-05	CERAMIC FILTER(450KHZ)			
C306		CC73HCH1H390J	CHIP C	39PF J		L1	L41-4795-39	SMALL FIXED INDUCTOR (4.7UH)			
C307		CC73HCH1H180J	CHIP C	18PF J		L2,3	L40-5667-92	SMALL FIXED INDUCTOR (5.6NH)			
C310		CC73HCH1H470G	CHIP C	47PF G		L5	L40-8275-92	SMALL FIXED INDUCTOR (82NH)			
C311		CK73HB1C103K	CHIP C	0.010UF K		L6,7	L40-5667-92	SMALL FIXED INDUCTOR (5.6NH)			
C312		CK73GB1H104K	CHIP C	0.10UF K		L8	L40-3975-92	SMALL FIXED INDUCTOR (39NH)			
C314		CK73HB1A104K	CHIP C	0.10UF K		L10	L92-0163-05	BEADS CORE			
C316		CK73HB1H102K	CHIP C	1000PF K		L11	L40-1891-86	SMALL FIXED INDUCTOR (1.8UH)			
C317		CC73HCH1H100B	CHIP C	10PF B		L12	L40-3391-86	SMALL FIXED INDUCTOR (3.3UH)			
C320		CC73HCH1H010B	CHIP C	1.0PF B		L15	L92-0446-05	BEADS CORE			
C355,356		CK73HB1A104K	CHIP C	0.10UF K		L16-20	L40-2285-92	SMALL FIXED INDUCTOR (220NH)			
C362		CC73HCH1H330J	CHIP C	33PF J		L23	L40-5678-67	SMALL FIXED INDUCTOR (56NH)			
C386		CC73HCH1H070B	CHIP C	7.0PF B		L24	L40-2778-67	SMALL FIXED INDUCTOR (27NH)			
C400		CC73GCH1H220J	CHIP C	22PF J		L25	L40-1285-92	SMALL FIXED INDUCTOR (120NH)			
C402,403		CK73HB1H471K	CHIP C	470PF K		L26,27	L40-3391-86	SMALL FIXED INDUCTOR (3.3UH)			
C404-406		CK73GB1E105K	CHIP C	1.0UF K		L29	L40-1085-71	SMALL FIXED INDUCTOR (100NH)			
C407		CK73GB1C224K	CHIP C	0.22UF K		L30	L40-6875-92	SMALL FIXED INDUCTOR (68NH)			
C408		CK73GB1E105K	CHIP C	1.0UF K		L98,99	L92-0163-05	BEADS CORE			
C409		C92-0765-05	CHIP TNTL	4.7UF 16WV		L100	L40-1085-92	SMALL FIXED INDUCTOR (100NH)			
C410		CK73GB1C224K	CHIP C	0.22UF K		L102	L40-6875-92	SMALL FIXED INDUCTOR (68NH)			
C411		CK73HB1A104K	CHIP C	0.10UF K		L103	L40-1085-92	SMALL FIXED INDUCTOR (100NH)			
C414		CK73GB1C224K	CHIP C	0.22UF K							
C415		CK73HB1H471K	CHIP C	470PF K							

## PARTS LIST

TX-RX UNIT (X57-8950-12)

Ref No.	Address	Parts No.	Description	Desti-nation	Ref No.	Address	Parts No.	Description	Desti-nation
L104		L92-0138-05	CHIP FERRITE		R28		RK73HB1J223J	CHIP R 22K J 1/16W	
L105		L40-4775-92	SMALL FIXED INDUCTOR (47NH)		R29		RK73HB1J000J	CHIP R 0.0 J 1/16W	
L106		L41-1085-43	SMALL FIXED INDUCTOR (100NH)		R30		RK73HB1J563J	CHIP R 56K J 1/16W	
L107		L92-0149-05	CHIP FERRITE		R31		RK73HB1J121J	CHIP R 120 J 1/16W	
L108		L40-1575-92	SMALL FIXED INDUCTOR (15NH)		R32		RK73HB1J000J	CHIP R 0.0 J 1/16W	
L109		L34-4574-05	AIR-CORE COIL		R33		RK73HB1J223J	CHIP R 22K J 1/16W	
L110		L34-4566-05	AIR-CORE COIL		R34		RK73HH1J391D	CHIP R 390 D 1/16W	
L111		L34-4576-05	AIR-CORE COIL		R35		RK73HB1J103J	CHIP R 10K J 1/16W	
L112		L92-0149-05	CHIP FERRITE		R36		RK73HB1J472J	CHIP R 4.7K J 1/16W	
L113		L34-4566-05	AIR-CORE COIL		R37,38		RK73HB1J000J	CHIP R 0.0 J 1/16W	
L114		L34-4565-05	AIR-CORE COIL		R39		RK73HB1J152J	CHIP R 1.5K J 1/16W	
L115		L41-2295-39	SMALL FIXED INDUCTOR (2.2UH)		R40		RK73HB1J103J	CHIP R 10K J 1/16W	
L116		L34-4569-05	AIR-CORE COIL		R41		RK73HB1J474J	CHIP R 470K J 1/16W	
L117		L34-4577-05	AIR-CORE COIL		R42		RK73HB1J473J	CHIP R 47K J 1/16W	
L118		L34-4564-05	AIR-CORE COIL		R43		RK73HB1J102J	CHIP R 1.0K J 1/16W	
L119		L34-4563-05	AIR-CORE COIL		R44,45		RK73HB1J473J	CHIP R 47K J 1/16W	
L201		L40-5681-86	SMALL FIXED INDUCTOR (0.56UH)		R46		RK73HH1J331D	CHIP R 330 D 1/16W	
L202		L40-1891-86	SMALL FIXED INDUCTOR (1.8UH)		R47		RK73HB1J220J	CHIP R 22 J 1/16W	
L203		L41-4778-45	SMALL FIXED INDUCTOR (47NH)		R48		RK73HH1J271D	CHIP R 270 D 1/16W	
L204		L92-0138-05	CHIP FERRITE		R49		RK73HB1J154J	CHIP R 150K J 1/16W	
L205		L41-2785-39	SMALL FIXED INDUCTOR (0.27UH)		R50		RK73HB1J101J	CHIP R 100 J 1/16W	
L206		L41-5685-39	SMALL FIXED INDUCTOR (0.56UH)		R51		RK73HB1J102J	CHIP R 1.0K J 1/16W	
L207		L40-1085-92	SMALL FIXED INDUCTOR (100NH)		R52		RK73HB1J473J	CHIP R 47K J 1/16W	
L208,209		L40-3375-92	SMALL FIXED INDUCTOR (33NH)		R53		RK73HB1J683J	CHIP R 68K J 1/16W	
L210		L41-6878-14	SMALL FIXED INDUCTOR (68NH)		R54		RK73HB1J102J	CHIP R 1.0K J 1/16W	
L214		L92-0138-05	CHIP FERRITE		R55		RK73HB1J104J	CHIP R 100K J 1/16W	
L223		L40-5675-92	SMALL FIXED INDUCTOR (56NH)		R56		RK73HB1J000J	CHIP R 0.0 J 1/16W	
L224		L41-5678-14	SMALL FIXED INDUCTOR (56NH)		R57		RK73HB1J124J	CHIP R 120K J 1/16W	
L226		L92-0138-05	CHIP FERRITE		R58		RK73HB1J823J	CHIP R 82K J 1/16W	
L230		L40-2702-86	SMALL FIXED INDUCTOR (27UH)		R59,60		RN73HH1J104D	CHIP R 100K D 1/16W	
L250		L40-1085-57	SMALL FIXED INDUCTOR (100NH)		R62		RK73HB1J104J	CHIP R 100K J 1/16W	
L400		L92-0149-05	CHIP FERRITE		R63		RK73HB1J220J	CHIP R 22 J 1/16W	
L401		L33-1462-05	SMALL FIXED INDUCTOR		R64		RK73HB1J473J	CHIP R 47K J 1/16W	
L402		L41-2285-14	SMALL FIXED INDUCTOR (220NH)		R67		RK73HB1J472J	CHIP R 4.7K J 1/16W	
L501		L92-0487-05	CHIP FERRITE		R68		RK73HB1J474J	CHIP R 470K J 1/16W	
L502		L40-8265-71	SMALL FIXED INDUCTOR (27UH)		R69		RK73HB1J560J	CHIP R 56 J 1/16W	
L503		L79-1955-05	FILTER (GPS)		R70,71		RK73HB1J000J	CHIP R 0.0 J 1/16W	
L504		L41-3965-55	SMALL FIXED INDUCTOR (0.56UH)		R72		RK73HB1J104J	CHIP R 100K J 1/16W	
L505		L41-1561-55	SMALL FIXED INDUCTOR (0.56UH)		R74		RK73HB1J153J	CHIP R 15K J 1/16W	
X1		L77-3014-05	TCXO (19.2MHZ)		R75		RK73HB1J100J	CHIP R 10 J 1/16W	
XF200		L71-0679-05	MCF (58.05MHZ)		R76,77		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R1		RK73HH1J474D	CHIP R 470K D 1/16W		R80		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R2		RK73HB1J472J	CHIP R 4.7K J 1/16W		R100		RK73HB1J332J	CHIP R 3.3K J 1/16W	
R3		RK73HB1J100J	CHIP R 10 J 1/16W		R101		RK73HB1J103J	CHIP R 10K J 1/16W	
R5,6		RK73HB1J100J	CHIP R 10 J 1/16W		R102		RK73HB1J271J	CHIP R 270 J 1/16W	
R7		RK73HB1J472J	CHIP R 4.7K J 1/16W		R103		RK73HB1J222J	CHIP R 2.2K J 1/16W	
R8		RK73HB1J100J	CHIP R 10 J 1/16W		R104		RK73HB1J470J	CHIP R 47 J 1/16W	
R9		RK73HB1J102J	CHIP R 1.0K J 1/16W		R105		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R10		RK73HB1J000J	CHIP R 0.0 J 1/16W		R106,107		RK73HB1J472J	CHIP R 4.7K J 1/16W	
R11,12		RK73HB1J223J	CHIP R 22K J 1/16W		R111		RK73HB1J000J	CHIP R 0.0 J 1/16W	
R15		RK73HB1J100J	CHIP R 10 J 1/16W		R118		RK73HB1J101J	CHIP R 100 J 1/16W	
R17		RK73HH1J184D	CHIP R 180K D 1/16W		R119		RK73HB1J103J	CHIP R 10K J 1/16W	
R18		RK73HH1J473D	CHIP R 47K D 1/16W		R120		RK73HB1J223J	CHIP R 22K J 1/16W	
R19		RK73HB1J102J	CHIP R 1.0K J 1/16W		R123		RK73HB1J331J	CHIP R 330 J 1/16W	
R21		RK73HB1J106J	CHIP R 10M J 1/16W		R124		RK73HB1J180J	CHIP R 18 J 1/16W	
R22,23		RK73HB1J100J	CHIP R 10 J 1/16W		R126		RK73HB1J273J	CHIP R 27K J 1/16W	
R24,25		RK73HB1J000J	CHIP R 0.0 J 1/16W		R127		RK73HB1J473J	CHIP R 47K J 1/16W	
R26		RK73HB1J331J	CHIP R 330 J 1/16W		R129		RK73HB1J470J	CHIP R 47 J 1/16W	
R27		RK73HB1J000J	CHIP R 0.0 J 1/16W		R130		RK73HB1J333J	CHIP R 33K J 1/16W	
					R131		RK73HB1J561J	CHIP R 560 J 1/16W	

# NX-200(G)

## PARTS LIST

TX-RX UNIT (X57-8950-12)

Ref No.	Address	Parts No.	Description				Desti-nation	Ref No.	Address	Parts No.	Description				Desti-nation
R133		RK73HB1J331J	CHIP R	330	J	1/16W		R245		RK73HB1J104J	CHIP R	100K	J	1/16W	
R134		RK73HB1J561J	CHIP R	560	J	1/16W		R246		RK73HB1J101J	CHIP R	100	J	1/16W	
R135		RK73HB1J222J	CHIP R	2.2K	J	1/16W		R248		RK73HB1J100J	CHIP R	10	J	1/16W	
R136		RK73EB2ER39K	CHIP R	0.39	K	1/4W		R251		RK73HB1J000J	CHIP R	0.0	J	1/16W	
R137		RK73HB1J100J	CHIP R	10	J	1/16W		R253		RK73HB1J102J	CHIP R	1.0K	J	1/16W	
R138		RK73EB2ER39K	CHIP R	0.39	K	1/4W		R254		RK73HB1J103J	CHIP R	10K	J	1/16W	
R139		RK73HB1J473J	CHIP R	47K	J	1/16W		R255		RK73HB1J272J	CHIP R	2.7K	J	1/16W	
R141		RK73EB2ER39K	CHIP R	0.39	K	1/4W		R256		RK73HB1J103J	CHIP R	10K	J	1/16W	
R142		RK73HB1J223J	CHIP R	22K	J	1/16W		R257		RK73HB1J000J	CHIP R	0.0	J	1/16W	
R144,145		RK73HH1J154D	CHIP R	150K	D	1/16W		R260		RK73HB1J105J	CHIP R	1.0M	J	1/16W	
R146		RK73GB2A000J	CHIP R	0.0	J	1/10W		R262		RK73HB1J105J	CHIP R	1.0M	J	1/16W	
R147-150		RK73HH1J184D	CHIP R	180K	D	1/16W		R263		RK73HB1J000J	CHIP R	0.0	J	1/16W	
R151		RK73HB1J103J	CHIP R	10K	J	1/16W		R265		RK73HB1J000J	CHIP R	0.0	J	1/16W	
R152		RK73GB2A823J	CHIP R	82K	J	1/10W		R268		RK73HB1J680J	CHIP R	68	J	1/16W	
R153		RK73HB1J473J	CHIP R	47K	J	1/16W		R269		RK73HB1J221J	CHIP R	220	J	1/16W	
R154		RK73HB1J000J	CHIP R	0.0	J	1/16W		R272		RK73HB1J154J	CHIP R	150K	J	1/16W	
R155		RK73HB1J474J	CHIP R	470K	J	1/16W		R273		RK73HB1J823J	CHIP R	82K	J	1/16W	
R156		RK73HB1J182J	CHIP R	1.8K	J	1/16W		R274		RK73GB2A000J	CHIP R	0.0	J	1/10W	
R157,158		RK73HB1J104J	CHIP R	100K	J	1/16W		R276,277		RK73HB1J104J	CHIP R	100K	J	1/16W	
R161		RK73HB1J000J	CHIP R	0.0	J	1/16W		R279		RK73HB1J000J	CHIP R	0.0	J	1/16W	
R162,163		RK73HB1J271J	CHIP R	270	J	1/16W		R280		RK73GB2A000J	CHIP R	0.0	J	1/10W	
R164		RK73HB1J103J	CHIP R	10K	J	1/16W		R281		RK73HB1J000J	CHIP R	0.0	J	1/16W	
R165		RK73HB1J474J	CHIP R	470K	J	1/16W		R282		RK73HB1J103J	CHIP R	10K	J	1/16W	
R166		RK73HB1J102J	CHIP R	1.0K	J	1/16W		R283		RK73HB1J104J	CHIP R	100K	J	1/16W	
R167		RK73HB1J183J	CHIP R	18K	J	1/16W		R285		RK73HB1J103J	CHIP R	10K	J	1/16W	
R168		RK73HB1J124J	CHIP R	120K	J	1/16W		R289		RK73HB1J000J	CHIP R	0.0	J	1/16W	
R170		RK73HB1J224J	CHIP R	220K	J	1/16W		R293		RK73HB1J473J	CHIP R	47K	J	1/16W	
R171		RK73GB2A000J	CHIP R	0.0	J	1/10W		R295		RK73GB2A000J	CHIP R	0.0	J	1/10W	
R176,177		RK73HB1J331J	CHIP R	330	J	1/16W		R296		RK73HB1J102J	CHIP R	1.0K	J	1/16W	
R202,203		RK73HB1J103J	CHIP R	10K	J	1/16W		R299		RK73HB1J470J	CHIP R	47	J	1/16W	
R204		RK73HB1J561J	CHIP R	560	J	1/16W		R300-305		RK73HB1J000J	CHIP R	0.0	J	1/16W	
R205		RK73HB1J224J	CHIP R	220K	J	1/16W		R307		RK73HB1J000J	CHIP R	0.0	J	1/16W	
R206		RK73HB1J104J	CHIP R	100K	J	1/16W		R311		RK73HB1J000J	CHIP R	0.0	J	1/16W	
R207		RK73HB1J224J	CHIP R	220K	J	1/16W		R313,314		RK73HB1J000J	CHIP R	0.0	J	1/16W	
R208-210		RK73HB1J104J	CHIP R	100K	J	1/16W		R319-322		RK73HB1J000J	CHIP R	0.0	J	1/16W	
R211		RK73HB1J334J	CHIP R	330K	J	1/16W		R326		RK73HB1J104J	CHIP R	100K	J	1/16W	
R212		RK73HB1J221J	CHIP R	220	J	1/16W		R400		RK73HB1J000J	CHIP R	0.0	J	1/16W	
R214		RK73HB1J564J	CHIP R	560K	J	1/16W		R402		RK73HB1J330J	CHIP R	33	J	1/16W	
R216		RK73HB1J221J	CHIP R	220	J	1/16W		R404-406		RK73HB1J474J	CHIP R	470K	J	1/16W	
R218		RK73HB1J221J	CHIP R	220	J	1/16W		R407		RK73HB1J473J	CHIP R	47K	J	1/16W	
R220		RK73HB1J470J	CHIP R	47	J	1/16W		R408		RK73GB2A100J	CHIP R	10	J	1/10W	
R221		RK73HB1J104J	CHIP R	100K	J	1/16W		R409		RK73GB2A000J	CHIP R	0.0	J	1/10W	
R222		RK73HB1J100J	CHIP R	10	J	1/16W		R410-412		RK73HB1J474J	CHIP R	470K	J	1/16W	
R223		RK73HB1J274J	CHIP R	270K	J	1/16W		R413		RK73HB1J332J	CHIP R	3.3K	J	1/16W	
R225		RK73HB1J681J	CHIP R	680	J	1/16W		R415		RK73HB1J102J	CHIP R	1.0K	J	1/16W	
R226		RK73HB1J103J	CHIP R	10K	J	1/16W		R417		RK73HB1J154J	CHIP R	150K	J	1/16W	
R227		RK73HB1J472J	CHIP R	4.7K	J	1/16W		R418		RK73HB1J102J	CHIP R	1.0K	J	1/16W	
R228		RK73HB1J221J	CHIP R	220	J	1/16W		R419,420		RK73HB1J473J	CHIP R	47K	J	1/16W	
R229		RK73HB1J103J	CHIP R	10K	J	1/16W		R421		RK73HB1J102J	CHIP R	1.0K	J	1/16W	
R230		RK73HB1J102J	CHIP R	1.0K	J	1/16W		R422		RK73HB1J474J	CHIP R	470K	J	1/16W	
R231		RK73HB1J223J	CHIP R	22K	J	1/16W		R423		RK73HB1J123J	CHIP R	12K	J	1/16W	
R233		RK73HB1J183J	CHIP R	18K	J	1/16W		R424		RK73HH1J334D	CHIP R	330K	D	1/16W	
R234,235		RK73HB1J823J	CHIP R	82K	J	1/16W		R425		RK73HH1J223D	CHIP R	22K	D	1/16W	
R236		RK73HB1J222J	CHIP R	2.2K	J	1/16W		R426		RK73HB1J100J	CHIP R	10	J	1/16W	
R237		RK73HB1J472J	CHIP R	4.7K	J	1/16W		R427		RK73HB1J391J	CHIP R	390	J	1/16W	
R238		RK73HB1J222J	CHIP R	2.2K	J	1/16W		R428		RK73HB1J821J	CHIP R	820	J	1/16W	
R239,240		RK73HB1J823J	CHIP R	82K	J	1/16W		R429,430		RK73GB2A000J	CHIP R	0.0	J	1/10W	
R241		RK73GB2A000J	CHIP R	0.0	J	1/10W		R436		RK73HB1J392J	CHIP R	3.9K	J	1/16W	
R242		RK73HB1J473J	CHIP R	47K	J	1/16W		R438		RK73GB2A000J	CHIP R	0.0	J	1/10W	
R243		RK73HB1J183J	CHIP R	18K	J	1/16W		R439		RK73HB1J273J	CHIP R	27K	J	1/16W	

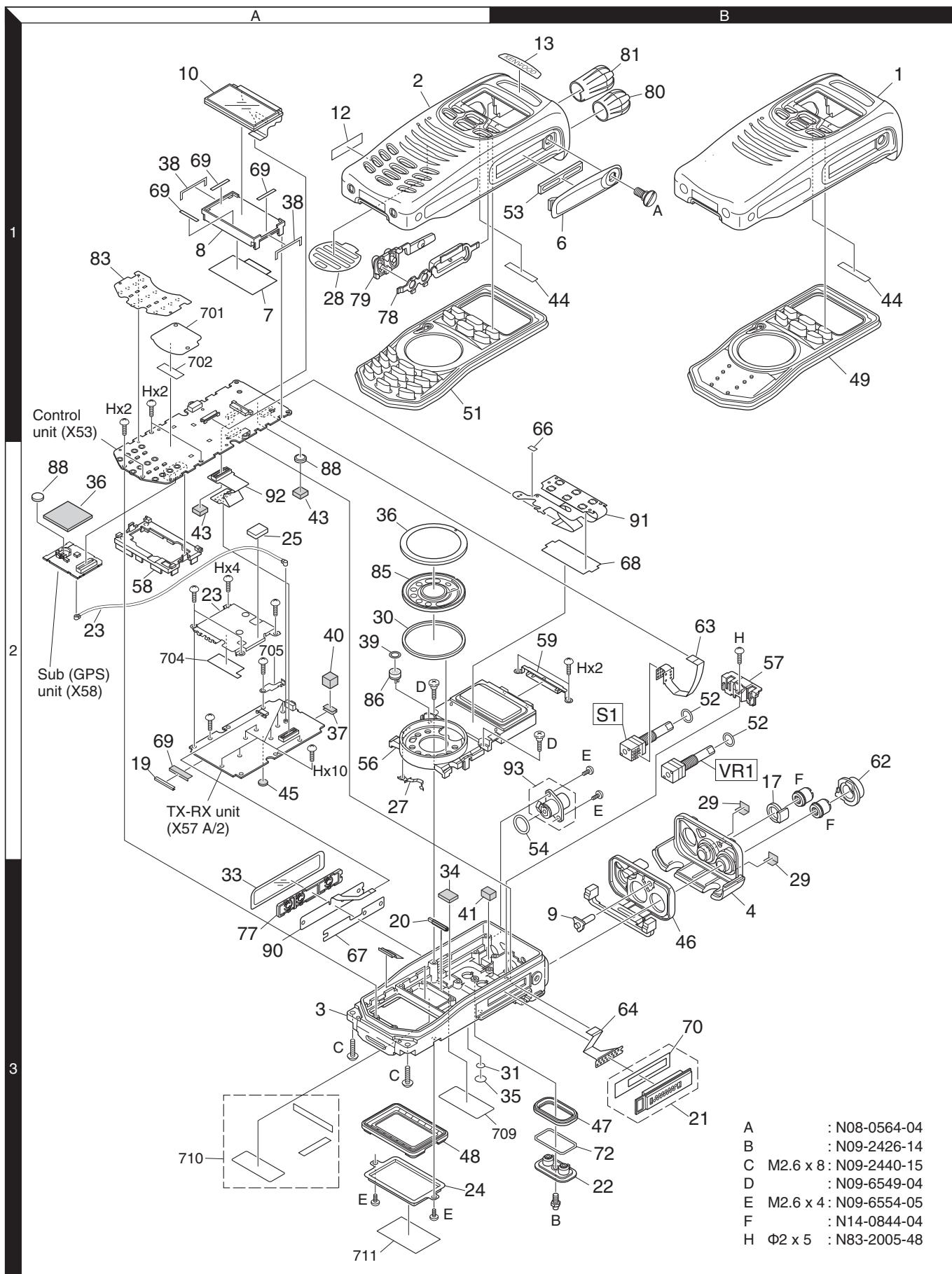
## PARTS LIST

TX-RX UNIT (X57-7360-10)

Ref No.	Address	Parts No.	Description	Desti-nation	Ref No.	Address	Parts No.	Description	Desti-nation
R440		RK73HB1J473J	CHIP R 47K J 1/16W		Q7		EM6M2	FET	
R452		RK73HB1J102J	CHIP R 1.0K J 1/16W		Q8		2SK508NV (K52)	FET	
R453		RK73HB1J000J	CHIP R 0.0 J 1/16W		Q9		2SJ347F	FET	
R456		RK73HB1J474J	CHIP R 470K J 1/16W		Q10		2SK508NV (K52)	FET	
R460		RK73HB1J000J	CHIP R 0.0 J 1/16W		Q11		2SC5636	TRANSISTOR	
R490		RK73HB1J000J	CHIP R 0.0 J 1/16W		Q12		2SK879-F (Y)	FET	
R498,499		RK73HB1J000J	CHIP R 0.0 J 1/16W		Q13		SSM3K15TE (F)	FET	
R500,501		RK73HB1J103J	CHIP R 10K J 1/16W		Q100		2SC5636	TRANSISTOR	
R502		RK73HB1J271J	CHIP R 270 J 1/16W		Q102		2SK3077F	FET	
R503		RK73HB1J180J	CHIP R 18 J 1/16W		Q103		RD01MUS1-T113	FET	
R504		RK73HB1J391J	CHIP R 390 J 1/16W		Q104		2SC5383-T111	TRANSISTOR	
R505		RK73HB1J271J	CHIP R 270 J 1/16W		Q105		LTC044EEBFS8	DIGITAL TRANSISTOR	
R506		RK73HB1J000J	CHIP R 0.0 J 1/16W		Q106		RD07MVS1BT122	FET	
S1		S70-0483-05	TACT SWITCH		Q107		2SK1824-A	FET	
D1		1SS400	DIODE		Q109		SSM3K15TE (F)	FET	
D2,3		RN142S	DIODE		Q110		EMD5	TRANSISTOR	
D4		KDS123E-P	DIODE		Q201		2SC5108 (Y)F	TRANSISTOR	
D5,6		RN142S	DIODE		Q202		2SC4215-F (Y)	TRANSISTOR	
D7		1SS400	DIODE		Q203		3SK318	FET	
D8		1SV325F	VARIABLE CAPACITANCE DIODE		Q204		3SK294-FP	FET	
D9		1SV282-F	VARIABLE CAPACITANCE DIODE		Q401-403		EM6M2	FET	
D12		1SV282-F	VARIABLE CAPACITANCE DIODE		Q404		SSM5H01TU-F	FET	
D13		HVC376B	VARIABLE CAPACITANCE DIODE		Q405		2SA1955A-F	TRANSISTOR	
D14-17		1SV282-F	VARIABLE CAPACITANCE DIODE		Q406		UMG9N	TRANSISTOR	
D14-17		TH100			TH100		ERTJ0EV104H	THERMISTOR(100K)	
D18		1SV278F	VARIABLE CAPACITANCE DIODE		<b>SUB (GPS) UNIT (X58-5240-10)</b>				
D100		HSC277	DIODE		C1		CC73HCH1H180J	CHIP C 18PF J	
D103		HZU2ALL	ZENER DIODE		C2		CK73HB1A104K	CHIP C 0.10UF K	
D104,105		RN142S	DIODE		C3		CK73HB1H102K	CHIP C 1000PF K	
D106		HZU5CLL	ZENER DIODE		C4		CK73GB0J106K	CHIP C 10UF K	
D201		HSC277	DIODE		C5		CK73HB1A104K	CHIP C 0.10UF K	
D204,205		1SV305F	VARIABLE CAPACITANCE DIODE		C8		CC73HCH1H180J	CHIP C 18PF J	
D207,208		1SV305F	VARIABLE CAPACITANCE DIODE		C9		CK73HB1A104K	CHIP C 0.10UF K	
D209		RN142S	DIODE		C10,11		CK73HB1H102K	CHIP C 1000PF K	
D211		RN142S	DIODE		C16		CC73HCH1H101J	CHIP C 100PF J	
D213		RN142S	DIODE		C17		CK73HB1H102K	CHIP C 1000PF K	
D400		1SR154-400	DIODE		C18		CC73HCH1H101J	CHIP C 100PF J	
D401		1SS400	DIODE		C19		CK73HB1H102K	CHIP C 1000PF J	
D403		1SS388F	DIODE		C20		CK73HB1A474K	CHIP C 0.47UF K	
D501,502		RN262CS	DIODE		C21		CK73HB1H102K	CHIP C 1000PF K	
IC1		LM73CIMKX-0	MOS-IC		C22		CK73HB1A474K	CHIP C 0.47UF K	
IC2		LMC7101BIM5	MOS-IC		CN5		E04-0496-05	SOCKET FOR PIN	
IC3		SKY72300-362	MOS-IC		CN10		E40-6358-05	SOCKET FOR PIN ASSY(26P)	
IC4		BU7242FVM	MOS-IC		CN11		J19-5386-05	HOLDER(FOR LITHIUM CELL)	
IC5		TLV2381IDBV	MOS-IC		L1		LR73G0AT220K	SMALL FIXED INDUCTOR (22UH)	
IC100		TA75W01FUF	MOS-IC		L2		L92-0138-05	CHIP FERRITE	
IC200,201		TLV2381IDBV	MOS-IC		L3		L92-0163-05	CHIP FERRITE	
IC202		TK10931VTL-G	ANALOGUE IC		R4		RK73HB1J102J	CHIP R 1.0K J 1/16W	
IC203		MCP6021-E/OT	MOS-IC		R6		RK73HB1J471J	CHIP R 470 J 1/16W	
IC400		TK11250CUCB	MOS-IC		R7		RK73HB1J120J	CHIP R 12 J 1/16W	
IC401		BU7465HFV	MOS-IC		R9,10		RK73HB1J101J	CHIP R 100 J 1/16W	
IC402		XC9101D09AK-G	ANALOGUE IC		R11		RK73GB2A000J	CHIP R 0.0 J 1/10W	
IC403		TK71733S	BI-POLAR IC		R13		RK73HB1J471J	CHIP R 470 J 1/16W	
IC404		BU7442FVM	MOS-IC		R17		RK73HB1J102J	CHIP R 1.0K J 1/16W	
IC501		NJG1143UA2	MOS-IC		D2		1SS388F	DIODE	
Q1		KRX206E-P	TRANSISTOR		IC1		W02-3768-05	CIRCUIT MODULE(GPS RECEIVER)	
Q2		DTA014YEBFS8	DIGITAL TRANSISTOR		IC2		TC7WH126FU-F	MOS-IC	
Q3		2SC5383-T111	TRANSISTOR		IC4		BU31TD3WG	MOS-IC	
Q4		2SC5636	TRANSISTOR						
Q5		2SC5383-T111	TRANSISTOR						

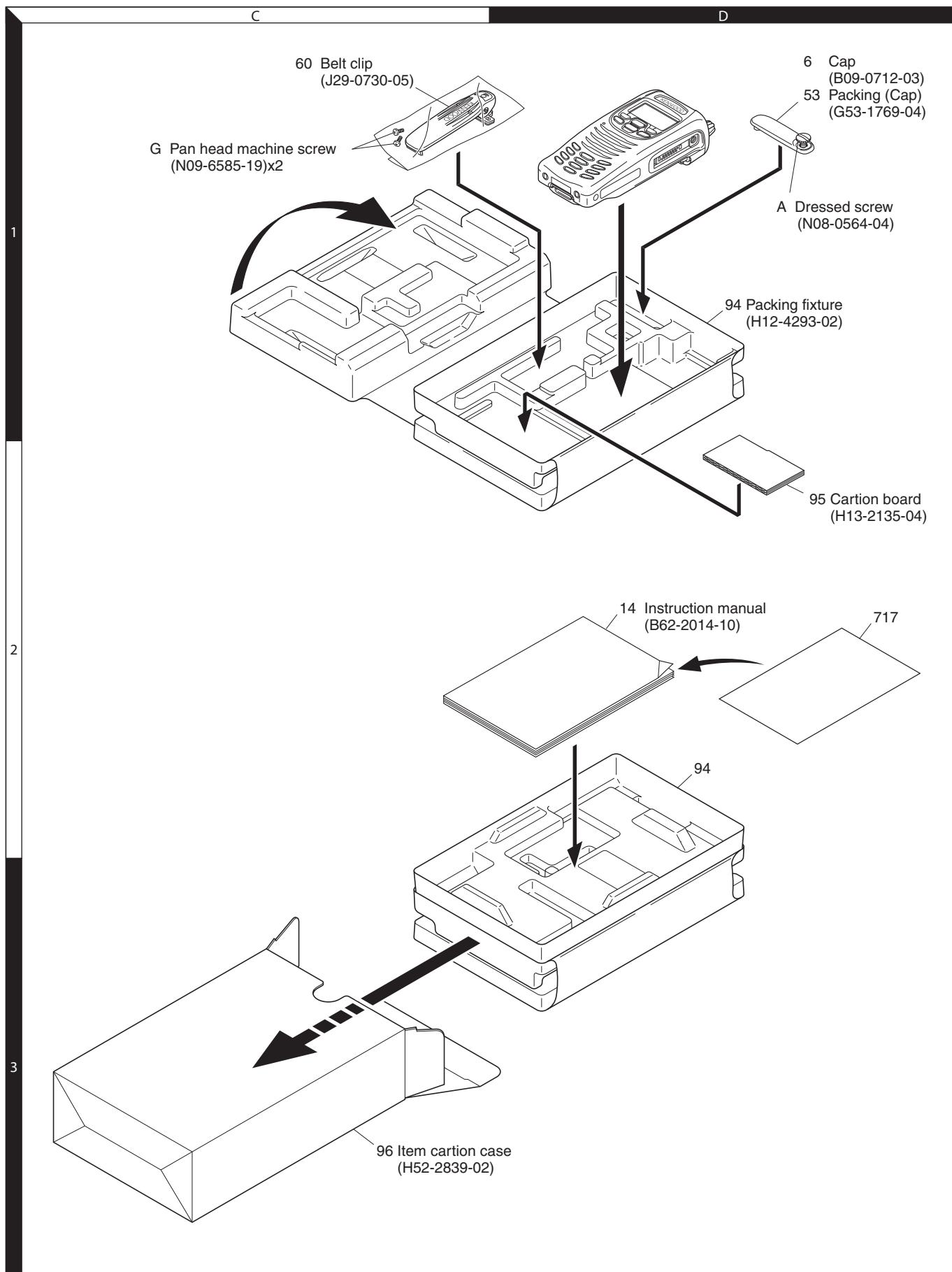
# NX-200(G)

## EXPLODED VIEW



32 Parts with the exploded numbers larger than 700 are not supplied.  
If a part reference number is listed in a box on the exploded view of the PCB, that part does not come with the PCB.  
These parts must be ordered separately.

## PACKING



Parts with the exploded numbers larger than 700 are not supplied. 33

# NX-200(G)

## **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

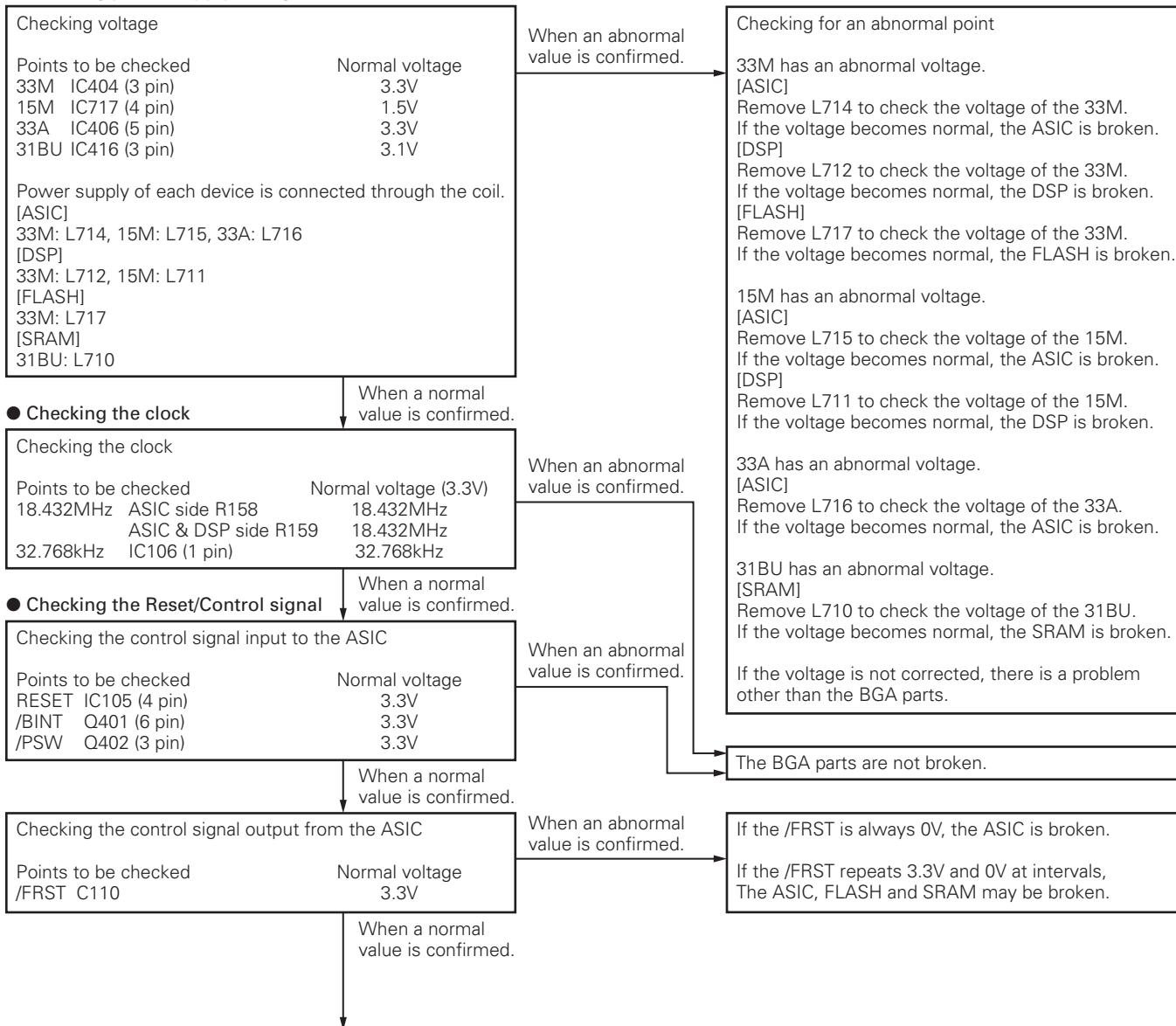
ASIC (IC108), DSP (IC102), FLASH (IC101), SRAM (IC103)

When the BGA IC is problematic, please bring the printed circuit board (X53-4590-12 for 6-key, X53-4590-13 for 18-key) in for service. Various ESN/default adjustment values are written on the printed circuit board for service.

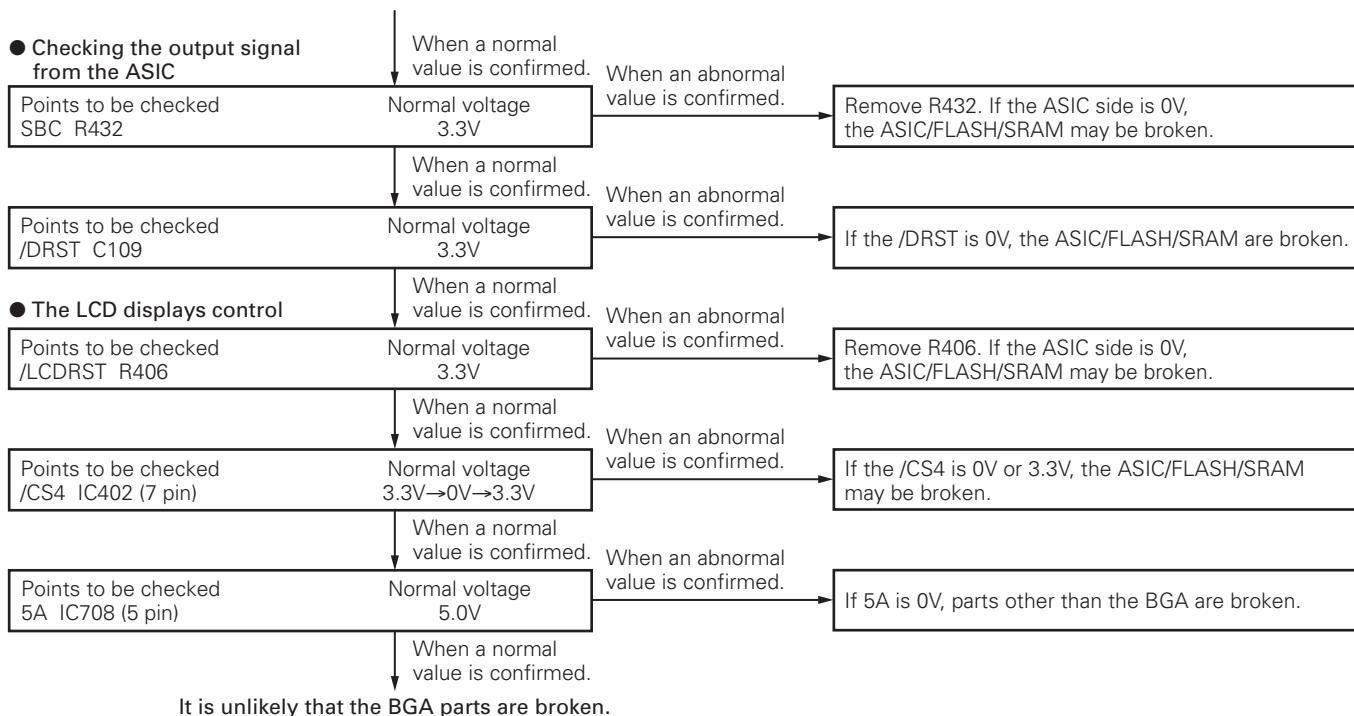
Additionally various ESN stickers are included. (Please refer to pages 36 and 37.)

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.

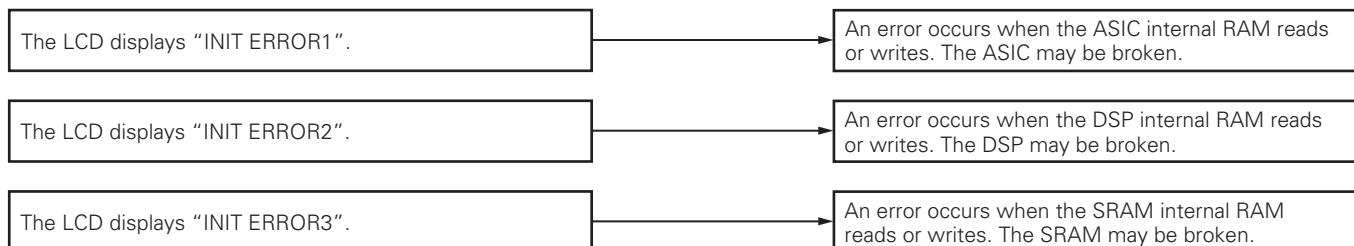
- Checking power supply voltage



# TROUBLE SHOOTING



● When an error display appears on the LCD.



## ■ 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

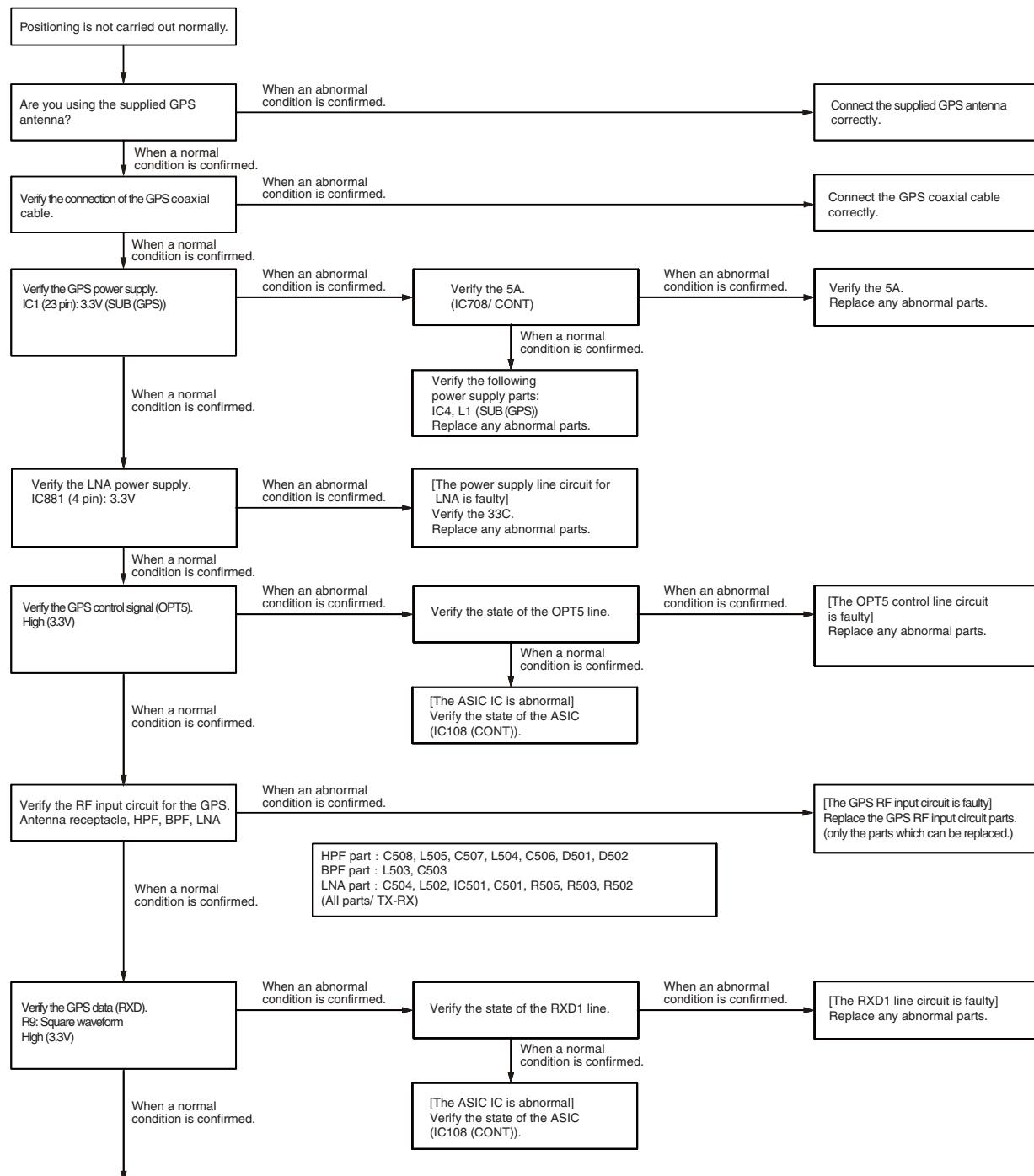
### Failure Diagnosis of the GPS section

#### ■ Overview

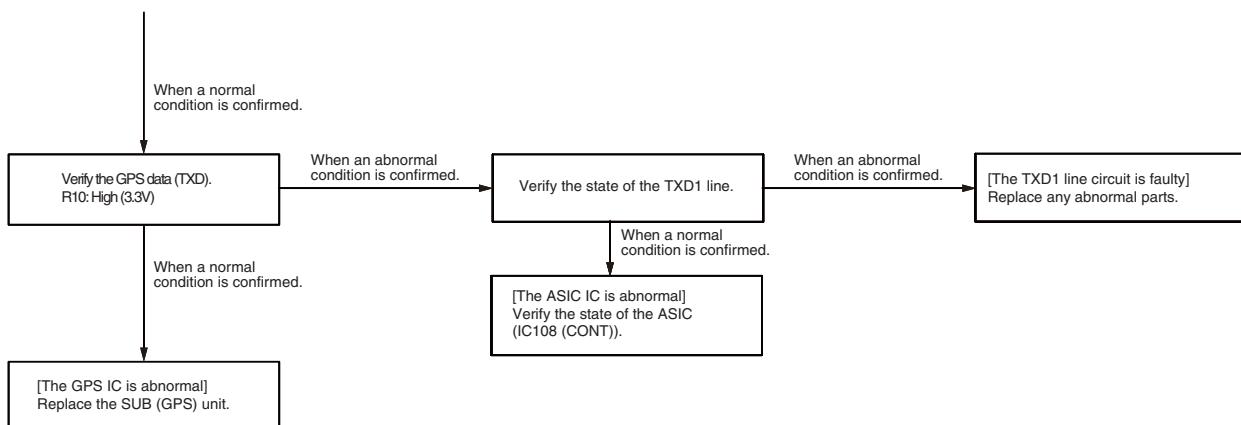
When the GPS function does not operate, use this flow chart to determine the problem.

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

- GPS IC (IC1/ SUB (GPS))
- LNA IC (IC881/ TX-RX)
- BPF (L883/ TX-RX)
- 33C AVR (IC903/ TX-RX)
- 5A AVR (IC708/ CONT)
- 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)

# NX-200(G)

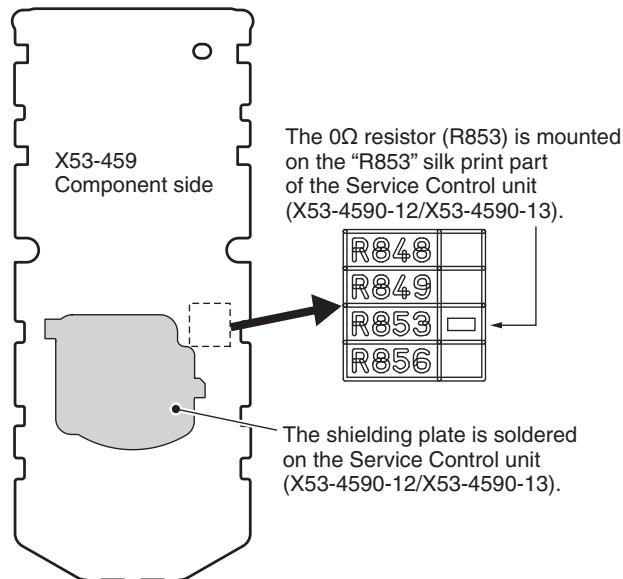
## TROUBLE SHOOTING

### Replacing Control Unit

#### ■ Control unit Information

Model Name	Original Control unit Number	For Service Control unit Number
NX-200(G) (K: 6-key)	X53-4590-10	X53-4590-12
NX-200(G) (K2: 18-key)	X53-4590-11	X53-4590-13

#### ■ Method of confirming "Original Control unit" and "Service Control unit"



X53-459	R848	R849	R853	R856
0-10	0Ω	(None)	(None)	(None)
0-11	(None)	0Ω	(None)	(None)
0-12	0Ω	(None)	0Ω	(None)
0-13	(None)	0Ω	0Ω	(None)

#### Note:

- The 0Ω resistor (R848, R849 and R853) 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 these resistors.
- There is no difference between the schematic diagram of the Service Control unit (X53-4590-12/X53-4590-13) and the schematic diagram of the original Control unit (X53-4590-10/X53-4590-11). (R848, R849 and R853 are connected with GND (ground) only.)

#### ■ Supplied Accessories of "Service Control unit"

Item (Including Parts Number)	Quantity
Control Unit (X53-459)	1
Kenwood ESN Label	1
NXDN ESN Label	1
Product Number Label	1
MPT ESN Label (for E type)	1

#### ■ "Service Control unit" Data

The following data is written on the service control unit:

Data Type	Description
Firmware	NX-200G/300G Firmware.
FPU Data (PC programming mode)	X53-459 (NX-200G) K type data.
Various Adjustment Data (PC Test mode)	General adjustment values for the X53-459 (NX-200G).
Kenwood ESN	Model name: [X53-459] NX-200/300S1 (No DTMF keypad) or NX-200/300S2 (with DTMF keypad) Type: K The same number as the Kenwood ESN label is written.
NXDN ESN/ MPT ESN/ Product number	The same number as the NXDN ESN/MPT ESN/Product Number label is written.

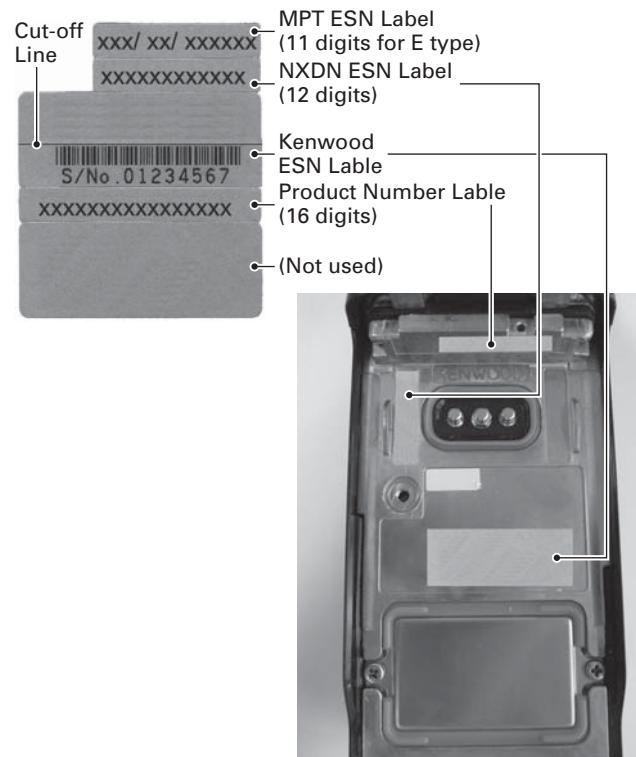
#### ■ After Changing the PCB

- After changing the printed circuit board, write the up-to-date Firmware following the instructions in the "REALIGNMENT - 6.Firmware Programming Mode".
- Using the KPG-111D/111DN, 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.
- Enter Program> Test Mode, then adjust the various adjustment data (PC Test Mode) as described in the "ADJUSTMENT".
- Attach the new labels corresponding to the new printed circuit board. (Refer to the images on page 37 for label placement.)
- If necessary, write the FPU data used by the customer with the KPG-111D/111DN.

# TROUBLE SHOOTING

**Note:**

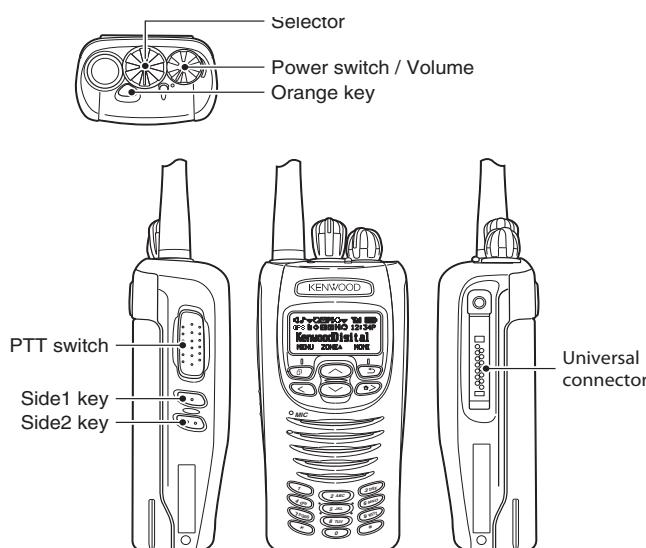
- When using the ESN Validation function of NXDN Trunking, the NXDN ESN number changes when the circuit board is changed (the number is written on the circuit board); the NXDN Trunking System cannot be accessed. Use the KPG-110SM on the NXDN Trunking System side to reprogram the NXDN ESN number.
- When 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.



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

### ■ 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.

### ■ 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.

# NX-200(G)

## 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 pressed 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	-
[<]	Comander on/off	On:  icon appears
[♂>]	Beat shift on/off	On:  icon appears
[Orange]	Function off	-
[PTT]	Transmit	-
[0] to [9] and [#], [*]	Function off	-

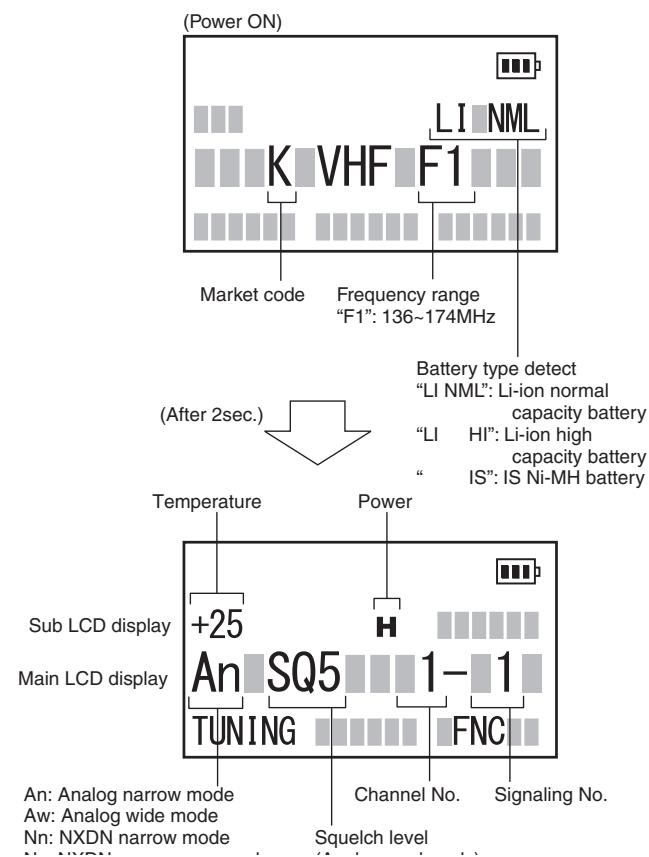
### • LED indicator

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.

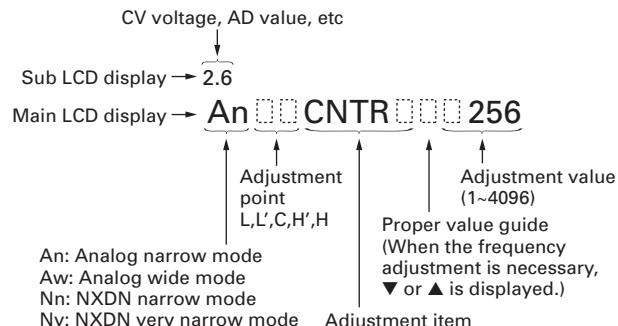
## Panel Tuning Mode

### ■ Transceiver tuning (To enter tuning mode)

To enter tuning mode, press the [PTT] 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	-
[PTT]	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.
Clockwise Volume	Both "Counterclockwise Volume" and "Clockwise Volume" must be adjusted. (The curve data of volume is applied.)
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				

# NX-200(G)

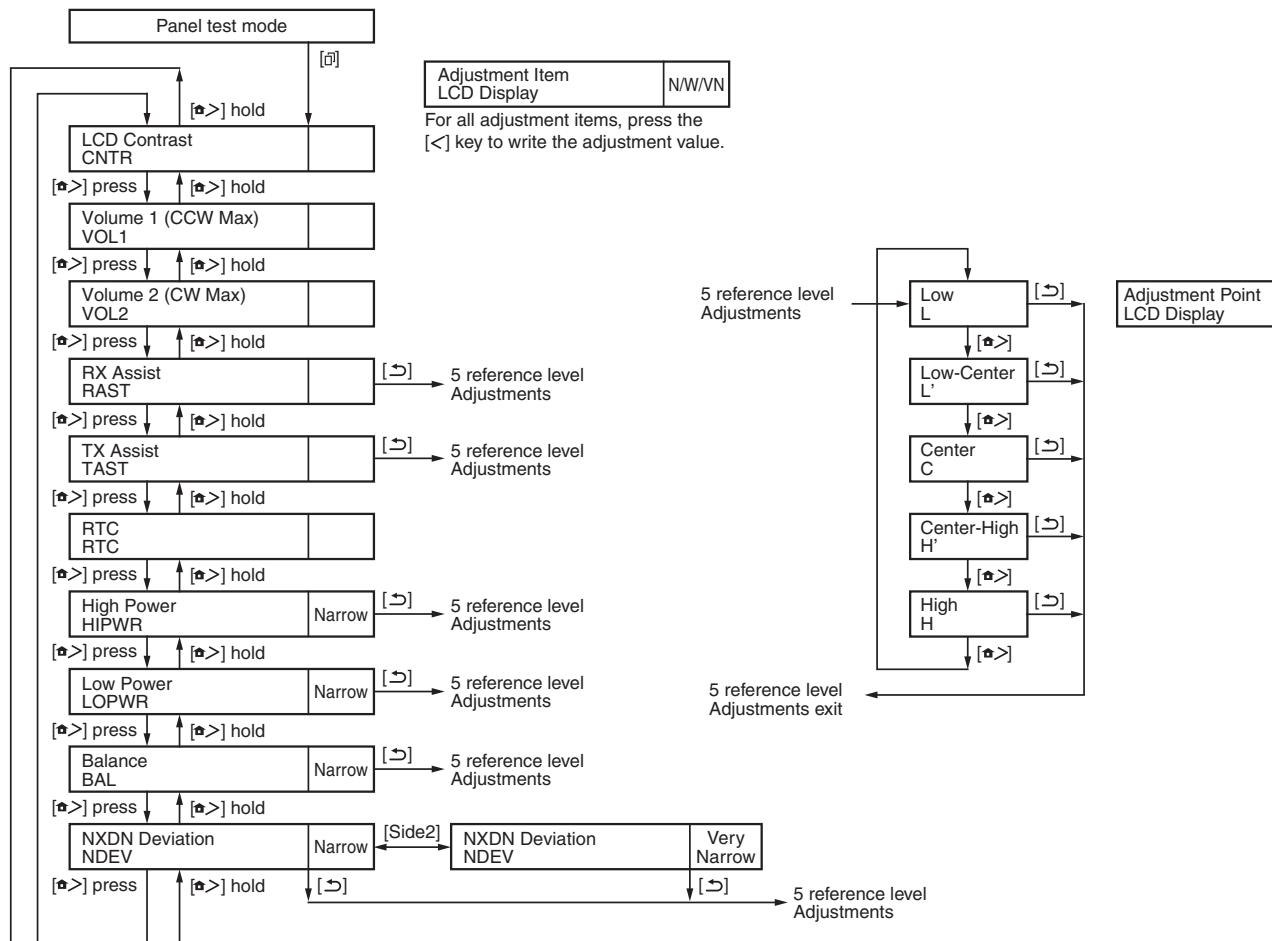
## ADJUSTMENT

Order	Adjustment item	Main LCD display	Sub LCD display	Aw (Analog Wide)	An (Analog Narrow)	Nn (NXDN Nar-Nv)	Nn (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				

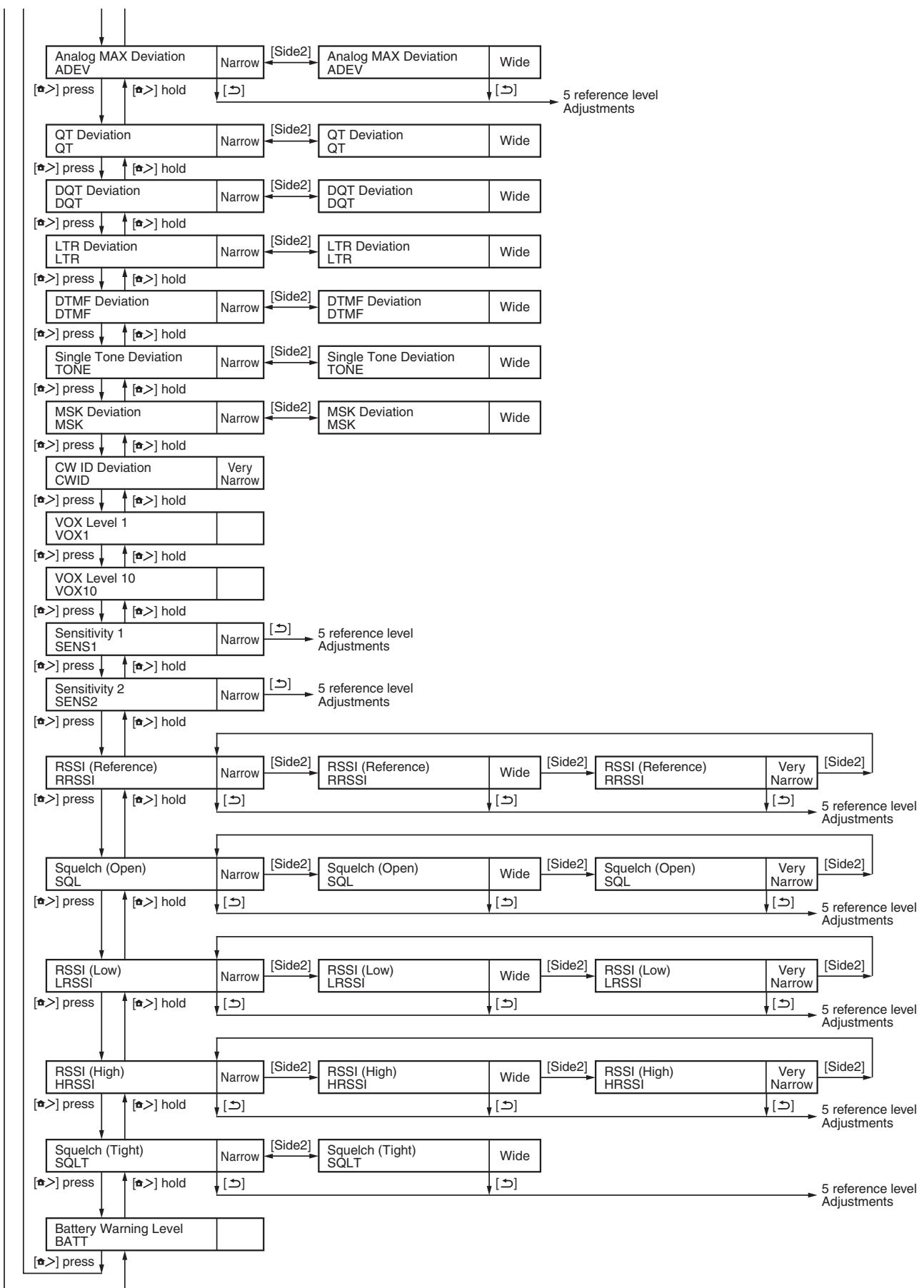
\*1: Because NXDN Narrow is adjusted by adjusting Analog Narrow, it is not necessary to adjust NXDN Narrow.

### ■ Panel tuning mode flow chart

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



## ADJUSTMENT



# NX-200(G)

## 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

### ■ Antenna connector adapter

The antenna connector of this transceiver uses an SMA terminal.

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

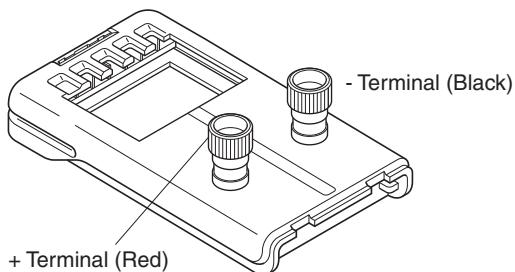
### ■ Nut wrench

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

KENWOOD part No.: W05-1123-00

### ■ Battery jig (W05-1370-00)

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

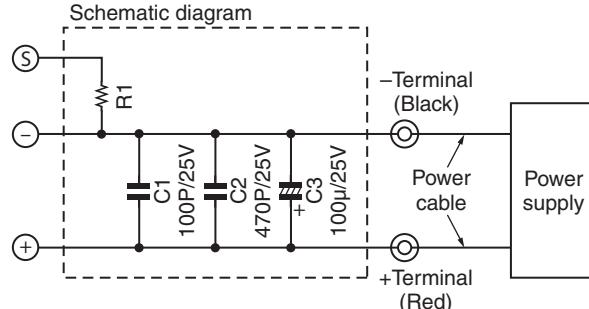


### Note:

- When using the battery jig, you must measure the voltage at the terminals of the battery jig. Otherwise, a slight voltage drop may occur within the power cable, between the power supply and the battery jig, especially while the transceiver transmits.
- The battery jig is detected as "Li-ion High Capacity Battery".

Li-ion High Capacity Battery: R1=Open

Li-ion Normal Capacity Battery: R1=560kΩ



## ADJUSTMENT

### ■ Universal connector

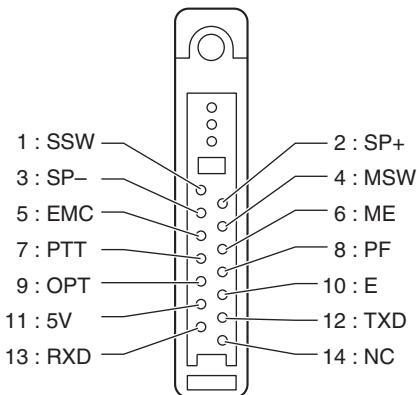
Use the interface cable (KPG-36A/36U) for PC tuning or the lead wire with plug (E30-3287-28) and screw (N08-0535-08) for panel tuning. Connect the plug to the universal connector of the transceiver and tighten the screw.

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

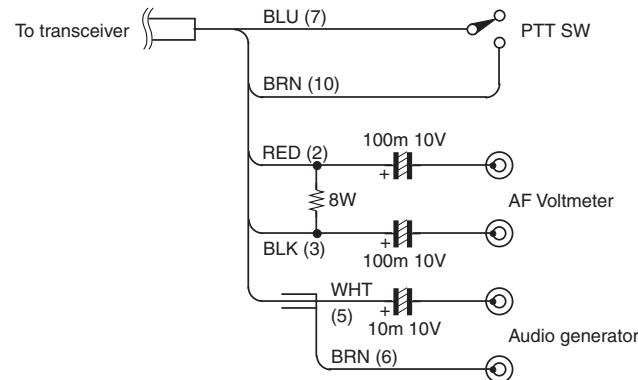
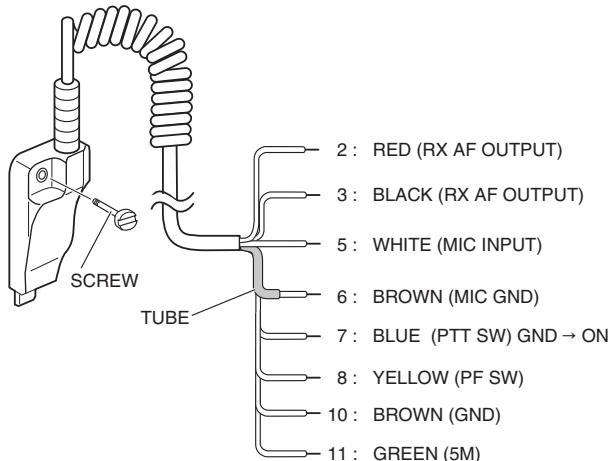
### Caution

- 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.
- 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.
- Do not connect an instrument between red or black and GND.

### • Universal connector



### • Panel tuning

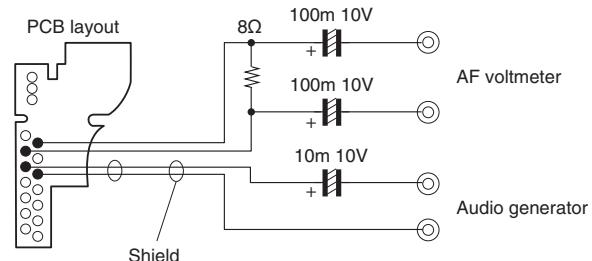
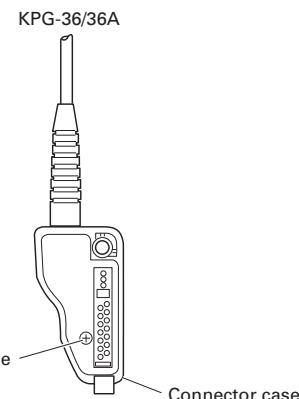


Note: Pin 1 (SSW) and Pin 4 (MSW) are connected to Pin 10 (GND) to active External SP and External MIC.

### • PC tuning

Connect the wires to the PCB in the connector case of interface cable.

For output the wires out of the connector case, need to process the connector case.



# NX-200(G)

## ADJUSTMENT

### Radio Check Section

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel test mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Frequency check	1) CH-Sig: 1-1 PTT: ON	1) Test Channel Channel: 1 Test Signaling Mode: Analog Signaling: 1 PTT: Press [Transmit] button.	f. counter	Panel	ANT			Check an internal temperature of radio within 25°C ± 2°C.	±0.5ppm -77.55Hz~ +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 VM	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: 1kHz/±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: 1kHz/±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: 3kHz [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] [ $\wedge$ , / $\vee$ ]  [PC test mode] [ $\blacktriangleleft$ , $\blacktriangleright$ ]	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 (R31-0666-05) 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.		

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## 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] [ $\wedge$ ], [ $\vee$ ] [PC test mode] [ $\blacktriangleleft$ ], [ $\blacktriangleright$ ]	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 points have been 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] [ $\wedge$ ], [ $\vee$ ] [PC test mode] [ $\blacktriangleleft$ ], [ $\blacktriangleright$ ]	5.0W	$\pm 0.2W$ 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	$\pm 0.1W$ 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.  [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.
4. Maximum Deviation (NxDN) adjust *3 [Narrow]	1) Adj item: [Nn NDEV] Adjust: [**] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [NnL NDEV]→ [NnL' NDEV]→ [NnC NDEV]→ [NnH' NDEV]→ [NnH NDEV] Adjust: [****] PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [Maximum Deviation (NxDN Narrow)] 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.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [ $\wedge$ ], [ $\vee$ ] [PC test mode] [ $\blacktriangleleft$ ], [ $\blacktriangleright$ ]	3056Hz	2995~3117Hz  [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 55 and 56.

Balance adjustment is common with the adjustment of all signaling deviations.

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## 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: [****] 2) Adj item: [NvL NDEV]→ [NvL' NDEV]→ [NvC NDEV]→ [NvH' NDEV]→ [NvH NDEV] Adjust: [****] PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [Maximum Deviation (NXDN Very Narrow)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] PTT: Press [Transmit] button. Press [Apply All] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [ $\wedge$ ], [ $\vee$ ]  [PC test mode] [ $\blacktriangleleft$ ], [ $\blacktriangleright$ ]	1337Hz	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: [****] 2) Adj item: [AnL ADEV]→ [AnL' ADEV]→ [AnC ADEV]→ [AnH' ADEV]→ [AnH ADEV] Adjust: [****] Press [<] key to store the adjustment value.	1) Adj item: [Maximum Deviation (Analog Narrow)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] Press [Apply All] button to store the adjustment value.							Write the same adjustment value of "NXDN Deviation [Narrow]" 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
[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 the same adjustment value of "NXDN Deviation [Narrow]" 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
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] [ $\wedge$ ], [ $\vee$ ]  [PC test mode] [ $\blacktriangleleft$ ], [ $\blacktriangleright$ ]	Write the value as followings. 513 (Reference value)	0.35kHz±0.05kHz

\*3: Refer to the "Necessary Deviation adjustment item for each signaling and mode" table on pages 55 and 56.

Regarding Maximum Deviation (Analog), it is common with the adjustment of all analog signalings.

## 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] [ $\wedge$ ], [ $\vee$ ] [PC test mode] [ $\blacktriangleleft$ ], [ $\blacktriangleright$ ]	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

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## 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. 513 (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 55 and 56.

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)	-

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## 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 Comander: Uncheck	1) Test Channel Channel: 1 Test Signaling Mode: Analog Signaling: 1 Wide/Narrow: Narrow Beat Shift: Uncheck Comander: 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] : 10 (Preset) [L' SENS1] / [Low'] : 50 (Preset) [C SENS1] / [Center] : 95 (Fixed) [H' SENS1] / [High'] : 135 (Fixed) [H SENS1] / [High] : 180 (Fixed)	
	3) Adj item: [L SENS1]→ [L' SENS1]→ Adjust: [★★★]  Caution: Perform the step 3 adjustments of “3. Sensitivity 2 adjust” before performing the [L SENS1] and [L' SENS1] adjustment.	3) Adj item: [Low], [Low']	SSG AF VTVM Oscilloscope	Panel	ANT Universal connector			Increase the adjust- ment value from step 2 adjustment value (preset value) of “2. Sensitivity 1 adjust”.	
	SSG output: -90dBm (7.08μV) (MOD: 1kHz±1.5kHz) Press [<] key to store the adjust- ment 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 VTVM 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] : 175 (Fixed) [H' SENS2] / [High'] : 175 (Fixed) [H SENS2] / [High] : 185 (Fixed)	
	3) Adj item: [L SENS2]→ [L' SENS2] Adjust: [***] Press [<] key to store the adjustment value.	3) Adj item: [Low], [Low'] Press [Apply All] button to store the adjustment value.						Write the value as followings. [L SENS2]/[Low] : 256 [L' SENS2]/[Low'] : 256	
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.	
	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)							
[Analog Wide]	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).									

# NX-200(G)

## 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 ([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. 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.	

\*6: Because Open Squelch (NXDN Narrow) is adjusted by adjusting Open Squelch (Analog Narrow), it is not necessary to adjust Open Squelch (NXDN Narrow).

## 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. 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)							[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)							

\*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).

# NX-200(G)

## 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

## Control unit (X53-4590-XX)

Pin No.	Name	I/O	Function
<b>CN1</b>			
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
<b>CN23</b>			
1	ME	-	Internal MIC GND
2	EMC	I	Internal MIC input
3	SP+	O	BTL output + for internal speaker
4	SP+	O	BTL output + for internal speaker
5	SP-	O	BTL output – for internal speaker
6	SP-	O	BTL output – for internal speaker
7	6_/_KEYI1	I	Key matrix input (KEYI1 for 6-key)
8	6_/_KEYO2	O	Key matrix output (KEYO2 for 6-key)
9	BL_SB	O	LCD backlight voltage output
10	6_/_KEYO0	O	Key matrix output (KEYO0 for 6-key)
11	6_/_KEYO1	O	Key matrix output (KEYO1 for 6-key)
12	BL_SB	O	LCD backlight voltage output
13	6_/_KEYI0	I	Key matrix input (KEYI0 for 6-key)
14	AGND	-	GND
<b>CN403</b>			
1	33A	O	3.3V for volume level
2	VOL_GND	-	GND for volume level
3	VOL	I	Volume level input for audio control
4	EN3	I	Rotary switch input
5	AGND	-	GND
6	EN4	I	Rotary switch input
7	EN1	I	Rotary switch input
8	EN2	I	Rotary switch input

Pin No.	Name	I/O	Function
9	+B	O	Power output after passing through the fuse
10	SB1	I	Power input after power switch
<b>CN404</b>			
1	LED_G	O	Green LED control output
2	/EMG	I	Emergency (Orange) key input
3	LED_R	O	Red LED control output
4	IFC	I	TX-RX PCB version recognition input
5	/SAVE	O	50C Reg. control output
6	I2CCK	O	TCXO thermometer clock output
7	/5TC	O	50T Reg. switch control output
8	I2CSDA	I/O	TCXO thermometer data input/output
9	SBC	O	SB3 switch control output
10	/T_R	O	TX/RX control output
11	TV2	O	RX tuning voltage 2 output
12	ASSIST	O	VCO tuning voltage output
13	TV1	O	RX tuning voltage 1 output
14	VAGC	I	AGC voltage input
15	5RC	O	50R switch control output
16	TCXO_MOD	O	TCXO modulation output
17	PGND	-	GND
18	RSSI	I	RSSI voltage input
19	PGND	-	GND
20	CV	I	CV voltage input
21	AGND	-	GND
22	NC	-	No connection
23	NC	-	No connection
24	+B	I	Power input after passing through the fuse
25	+B	I	Power input after passing through the fuse
26	+B	I	Power input after passing through the fuse
27	+B	I	Power input after passing through the fuse
28	NC	-	No connection
29	NC	-	No connection
30	AGND	-	GND
31	/PTT	I	PTT input
32	Side_G	O	Key matrix output (SIDE1,2 key)
33	Side_1	I	Key matrix input (SIDE1 key)
34	W_N	O	W/N control output
35	SDO1	O	PLL serial data output
36	Side_2	I	Key matrix input (SIDE2 key)
37	/PCS_RF	O	PLL enable output
38	/DSW	O	APC voltage discharge switch control output
39	APC	O	APC control voltage output
40	/APCSW	O	APC switch control output
41	VCO_MOD	O	VCO modulation output

# NX-200(G)

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
42	THP	I	Thermistor voltage input
43	PLD	I	PLL lock detect input
44	38M	O	38M output
45	SCK1	O	PLL clock output
46	GND	-	GND
47	S_DET	I	Battery select input
48	GND	-	GND
49	NC	-	No connection
50	IF_DET	I	IF input

CN405

1	SSW	I	EXT/INT speaker switch input
2	SP+	O	BTL output + for external speaker
3	SP-	O	BTL output - for external speaker
4	MSW	I	EXT/INT MIC switch input
5	EMC	I	External MIC input
6	ME	-	External MIC GND
7	PTT	I	External PTT input
8	PF	I	Programmable function key input
9	OPT	I/O	Option interface I/O
10	E	-	GND
11	5V	O	5V output
12	TXD	O	Serial data output
13	RXD	I	Serial data input
14	NC	-	No connection

CN701 (for production)

1~20

CN710

1	OPT1	I/O	Refer to "CN710 26-pin connector specification" described on pages 62 to 64.
2	OPT3	I/O	
3	26P_RD	I	
4	26P_TD	O	
5	NC	-	
6	OPT4	O	
7	OPT10	O	
8	OPT5	O	
9	DGND	-	
10	AGND	-	
11	AI	I	
12	AO	O	
13	AGND	-	
14	5V	-	
15	OPT9	I	
16	DTI	I	
17	OPT8	I/O	
18	OPT11	O	
19	OPT7	I/O	

Pin No.	Name	I/O	Function
20	OPT2	I/O	
21	TXO	O	
22	RXEO	O	
23	RXEI	I	
24	TXI	I	
25	OPT6	O	
26	POW	O	

Refer to "CN710 26-pin connector specification" described on pages 62 to 64.

TX-RX unit (X57-8950-12)

Pin No.	Name	I/O	Function
<b>CN900</b>			
1	LED_G	I	Green LED control input
2	/EMG	O	Emergency (Orange) key output
3	LED_R	I	Red LED control input
4	IFC	O	TX-RX PCB version recognition output
5	/SAVE	I	50C Reg. control input
6	I2CCK	I	TCXO thermometer clock input
7	/5TC	I	50T Reg. switch control input
8	I2CSDA	I/O	TCXO thermometer data input/output
9	SBC	I	SB3 switch control input
10	/T_R	I	TX/RX control input
11	TV2	I	RX tuning voltage 2 input
12	ASSIST	I	VCO tuning voltage input
13	TV1	I	RX tuning voltage 1 input
14	VAGC	O	AGC voltage output
15	5RC	I	50R switch control input
16	TCXO_MOD	I	TCXO modulation input
17	GND	-	GND
18	RSSI	O	RSSI voltage output
19	GND	-	GND
20	CV	O	CV voltage output
21	GND	-	GND
22	NC	-	No connection
23	NC	-	No connection
24	+B	O	Power output after passing through the fuse
25	+B	O	Power output after passing through the fuse
26	+B	O	Power output after passing through the fuse
27	+B	O	Power output after passing through the fuse
28	NC	-	No connection
29	NC	-	No connection
30	GND	-	GND
31	/PTT	O	PTT output

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
32	Side_G	I	Key matrix input (SIDE1,2 key)
33	Side_1	O	Key matrix output (SIDE1 key)
34	W_N	I	No connection
35	SDO1	I	PLL serial data input
36	Side_2	O	Key matrix output (SIDE2 key)
37	/PCS_RF	I	PLL enable input
38	/DSW	I	APC voltage discharge switch control input
39	APC	I	APC control voltage input
40	/APCSW	I	APC switch control input
41	VCO_MOD	I	VCO modulation input
42	THP	O	Thermistor voltage output
43	PLD	O	PLL lock detect output
44	38M	I	38M input
45	SCK1	I	PLL clock input
46	GND	-	GND
47	S_DET	O	Battery select output
48	GND	-	GND
49	NC	-	No connection
50	IF_DET	O	IF output
<b>CN401</b>			
1	PTT	I	Internal PTT input
2	GND	-	GND
3	Side_G	O	Key matrix output (SIDE1,2 key)
4	Side_1	I	Key matrix input (SIDE1 key)
5	Side_2	I	Key matrix input (SIDE2 key)

**SUB (GPS) unit (X58-5240-10)**

Pin No.	Name	I/O	Function
<b>CN10</b>			
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

# NX-200(G)

## 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

## CN710 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

# NX-200(G)

## 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	-	-	-											

### CN710 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
					BUSY indication
					Scrambler code signal output 1
2	OPT3	ANI board	I	KEY	TX requirement input
		VGS-1	I	PLAY	PLAY indication
		Scrambler board	O	Binary Code Select 2	Scrambler code signal output 2

# TERMINAL FUNCTION

Pin No.	Name	Device	I/O	Connection	Function
3	26P_RD	ANI board	-	-	-
		VGS-1	I	SO	Serial data input
		Scrambler board	I	SDI	Serial data input
4	26P_TD	ANI board	-	-	-
		VGS-1	O	SI	Serial data output
		Scrambler board	O	SDO	Serial data output
5	NC	-	-	-	-
6	OPT4	ANI board	O	PTT	PTT signal output
		VGS-1	O	EN	Enable
		Scrambler board	O	PTT Out	PTT signal output When Echo PTT is allowed.
7	OPT10	ANI board	-	-	-
		VGS-1	O	USEL	UART speed select output
		Scrambler board	-	-	-
8	OPT5	ANI board	O	Emergency	Emergency signal output
		VGS-1	O	RST	Reset output
		Scrambler board	-	-	-
9	DGND	ANI board	-	A-	GND
		VGS-1	-	DGND	DGND
		Scrambler board	-	-	-
10	AGND	ANI board	-	A-	GND
		VGS-1	-	AGND	AGND
		Scrambler board	-	GND	GND
11	AI	ANI board	-	-	-
		VGS-1	I	AO	VGS Audio input
		Scrambler board	-	-	-
12	AO	ANI board	-	-	-
		VGS-1	O	AI	VGS Audio output
		Scrambler board	-	-	-
13	AGND	ANI board	-	A-	GND
		VGS-1	-	AGND	AGND
		Scrambler board	-	GND	GND
14	5V	ANI board	-	-	Note: POW and 5V can not be used simultaneously.
		VGS-1	O	5C	5V power supply
		Scrambler board	-	5V	Power supply output
15	OPT9	ANI board	I	Sidetone	Sidetone input
		VGS-1	-	-	-
		Scrambler board	I	Sidetone	Sidetone input
16	DTI	ANI board	I	Data Out	Data signal input
		VGS-1	-	-	-
		Scrambler board	-	-	-
17	OPT8	ANI board	I	Tone Control	Speaker mute signal input
		VGS-1	-	-	-
		Scrambler board	O	LOK	Link completed L: Link When Echo PTT is allowed.

# NX-200(G)

## TERMINAL FUNCTION

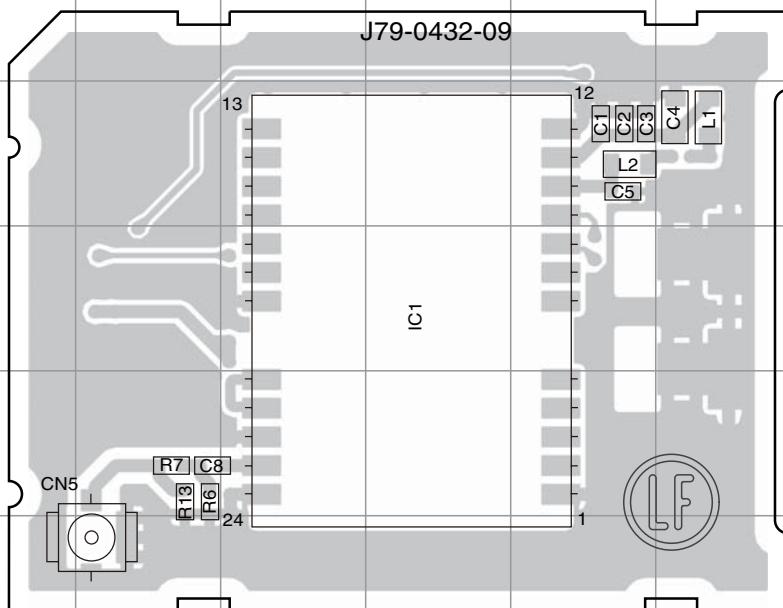
Pin No.	Name	Device	I/O	Connection	Function
18	OPT11	ANI board	O	Man-Down	Man-Down output
		VGS-1	-	-	-
		Scrambler board	O	-	User programmable port None: Hi-Z with Pull up [COR] L: Detect carrier [TOR] L: Detect signaling [LOK](Conventional) L: Transmitting [LOK](LTR) L: Link
19	OPT7	ANI board	I	MIC Mute	MIC mute signal input
		VGS-1	-	-	-
		Scrambler board	O I	PTT Out PTT In	Echo PTT no used: PTT signal output Echo PTT used : PTT signal input
20	OPT2	ANI board	I	Aux Output	Emergency signal input
		VGS-1	-	-	-
		Scrambler board	O	CLEAR / CODE	Scrambler control signal output H: Clear / L: Code
21	TXO	ANI board	-	-	-
		VGS-1	-	-	-
		Scrambler board	O	TX IN	MIC signal output Before Pre-emphasis
22	RXEO	ANI board	-	-	-
		VGS-1	-	-	-
		Scrambler board	O	RX IN	Audio signal output After De-emphasis
23	RXEI	ANI board	-	-	-
		VGS-1	-	-	-
		Scrambler board	I	RX OUT	Audio signal input After De-emphasis
24	TXI	ANI board	-	-	-
		VGS-1	-	-	-
		Scrambler board	I	TX OUT	MIC signal input Before Pre-emphasis
25	OPT6	ANI board	-	-	-
		VGS-1	-	-	-
		Scrambler board	-	-	-
26	POW	ANI board	O	A+	Switched B output
		VGS-1	-	-	Note: POW and 5V can not be used simultaneously.
		Scrambler board	O	POWER (+B)	Power supply output

A      B      C      D      E      F      G      H      I      J

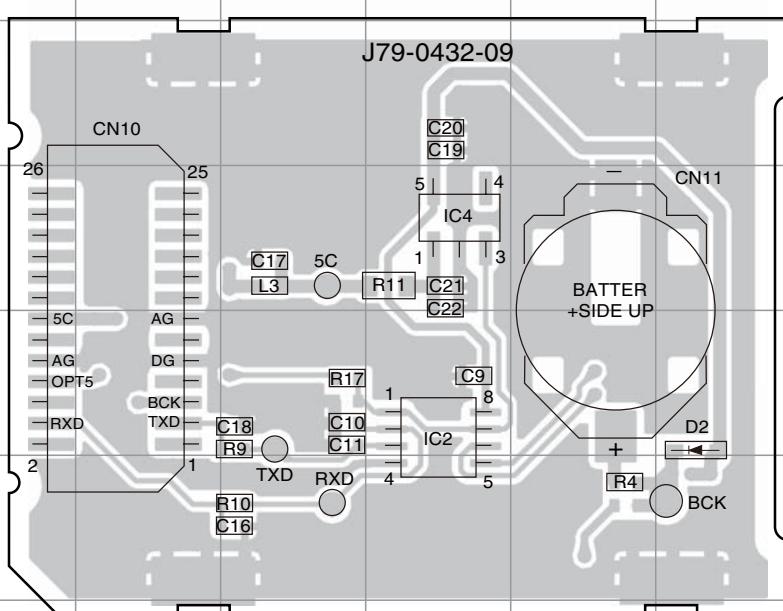
# PC BOARD

# NX-200(G)

SUB (GPS) UNIT (X58-5240-10) Component side view (J79-0432-09)



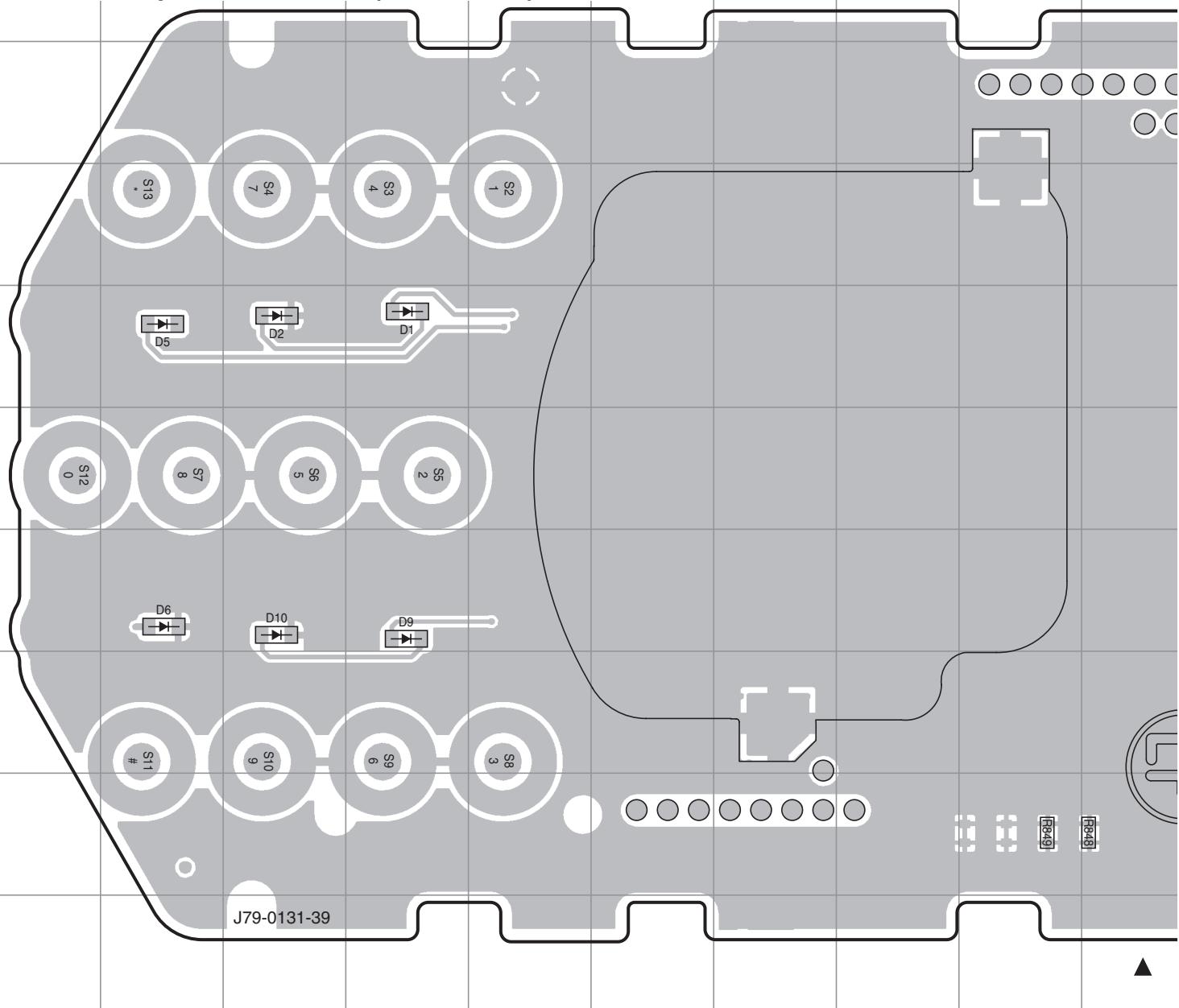
SUB (GPS) UNIT (X58-5240-10) Foil side view (J79-0432-09)



Ref. No.	Address	Ref. No.	Address
IC1	4F	IC4	8F
IC2	10F	D2	10H

# NX-200(G) PC BOARD

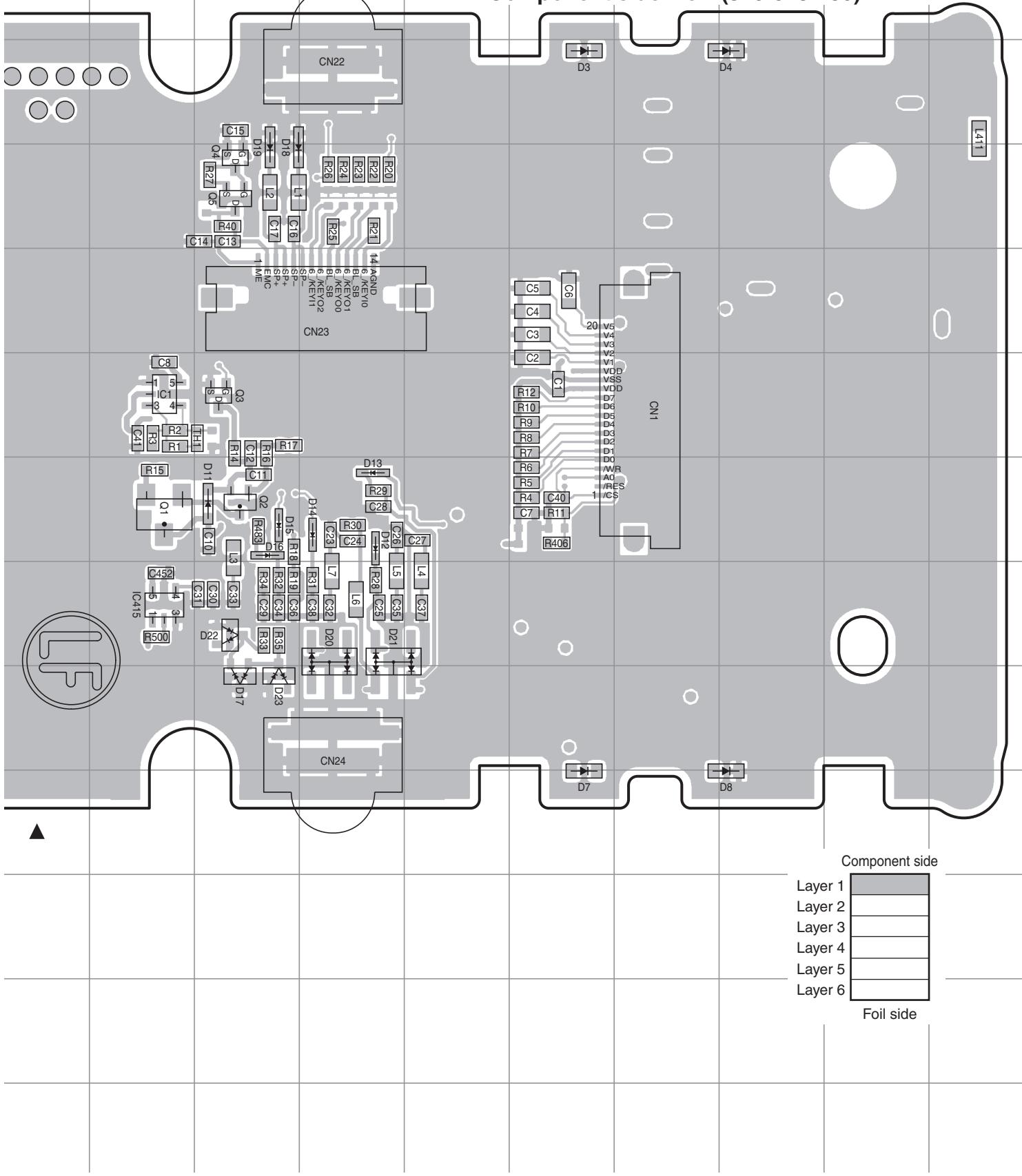
**CONTROL UNIT (X53-4590-XX) -10: K -11: K2**  
**Component side view (J79-0131-39)**



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	6K	D4	3Q	D14	7M
IC415	8K	D5	5B	D15	7L
Q1	7K	D6	7B	D16	7L
Q2	7L	D7	10O	D17	9L
Q3	6L	D8	10Q	D18	4L
Q4	4L	D9	7D	D19	4L
Q5	4L	D10	7C	D20	8M
D1	5D	D11	7L	D21	8M
D2	5C	D12	7M	D22	8L
D3	3O	D13	7M	D23	9L

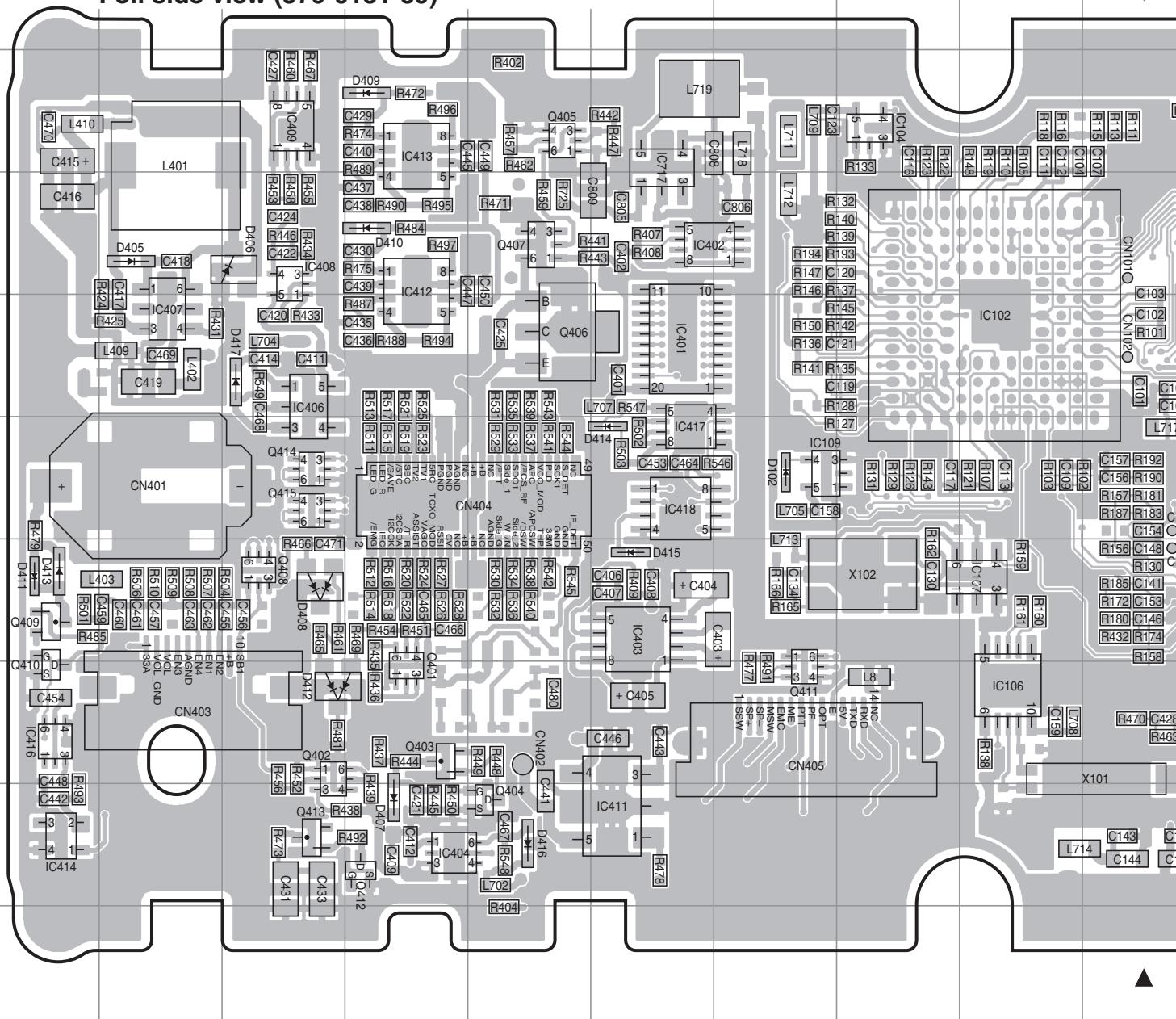
# PC BOARD NX-200(G)

**CONTROL UNIT (X53-4590-XX) -10: K -11: K2**  
**Component side view (J79-0131-39)**



# NX-200(G) PC BOARD

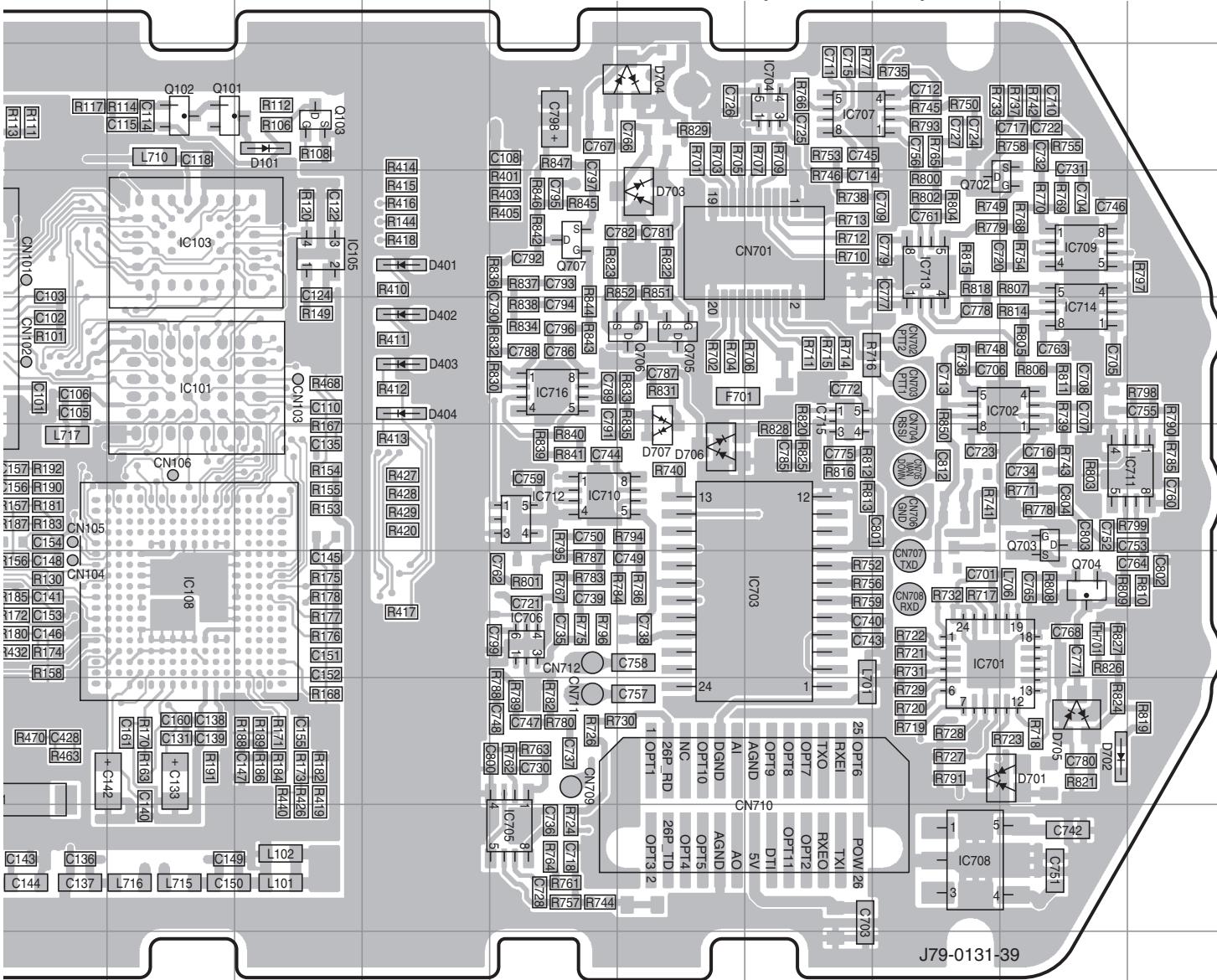
CONTROL UNIT (X53-4590-XX) -10: K -11: K2  
Foil side view (J79-0131-39)



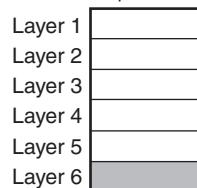
	Ref. No.	Address	Ref. N																				
11	IC101	5K	IC404	9D	IC701	7Q	IC713	4Q	Q405	3E	Q703	6R	D406	4C	D701								
12	IC102	5I	IC406	5C	IC702	5R	IC714	5R	Q406	5E	Q704	7R	D407	9D	D702								
13	IC103	4K	IC407	5B	IC703	7P	IC715	5P	Q407	4E	Q705	5O	D408	7C	D703								
	IC104	3H	IC408	4C	IC704	3P	IC716	5N	Q408	7C	Q706	5O	D409	3D	D704								
	IC105	4L	IC409	3C	IC705	9N	IC717	3F	Q409	7A	Q707	4N	D410	4D	D705								
	IC106	8I	IC411	9F	IC706	7N	Q101	3K	Q410	8A	D101	3L	D411	7A	D706								
	IC107	7I	IC412	4D	IC707	3P	Q102	3K	Q411	8G	D102	6G	D412	8C	D707								
	IC108	7K	IC413	3D	IC708	9Q	Q103	3L	Q412	9D	D401	4M	D413	7A									
	IC109	6G	IC414	9A	IC709	4R	Q401	8D	Q413	9C	D402	5M	D414	6F									
	IC401	5F	IC416	8A	IC710	6N	Q402	8C	Q414	6C	D403	5M	D415	7F									
	IC402	4F	IC417	6F	IC711	6S	Q403	8D	Q415	6C	D404	5M	D416	9E									
	IC403	7F	IC418	6F	IC712	6N	Q404	9E	Q702	4R	D405	4B	D417	5C									

# PC BOARD NX-200(G)

**CONTROL UNIT (X53-4590-XX) -10: K -11: K2**  
**Foil side view (J79-0131-39)**



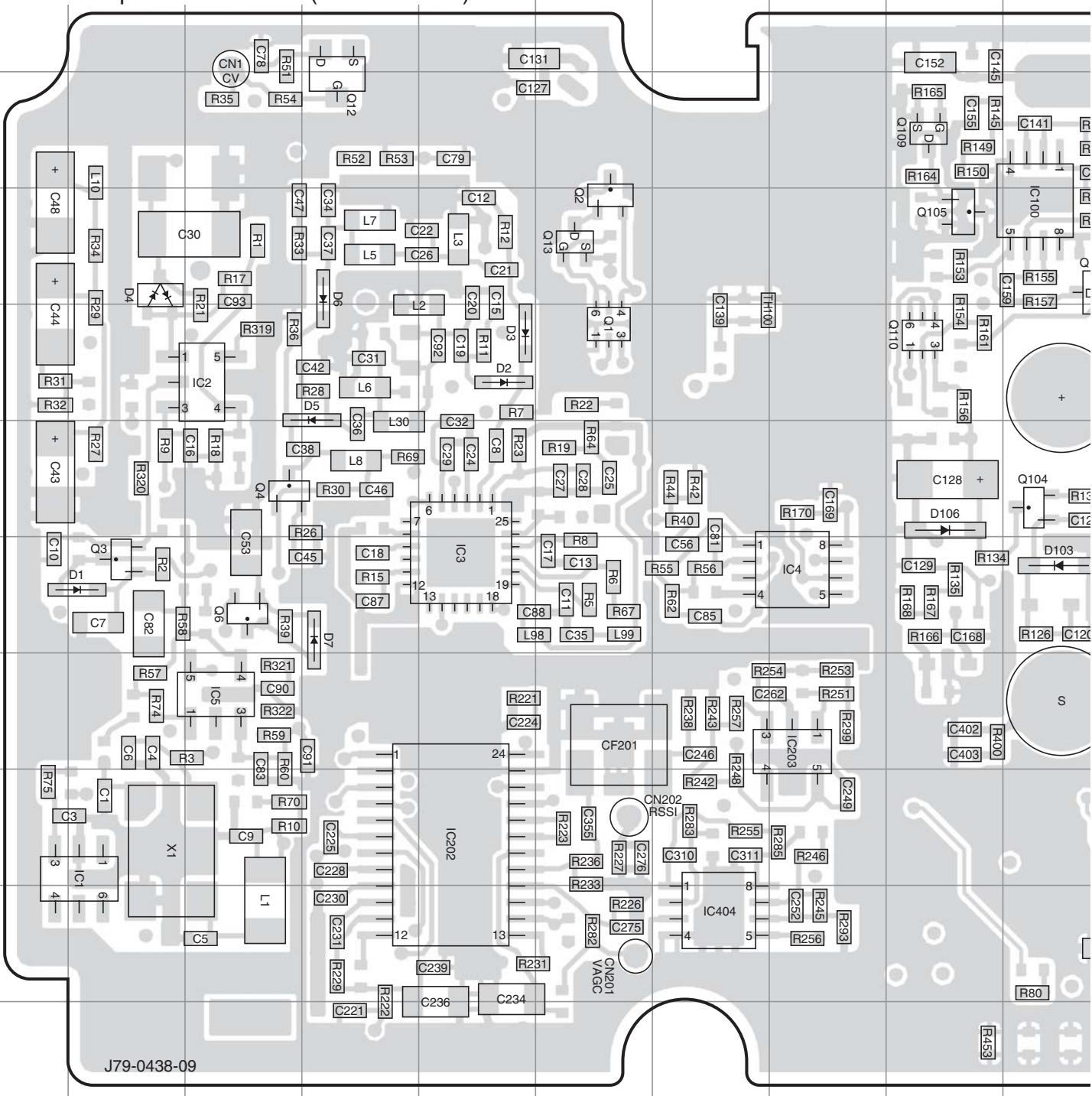
## Component side



Foil side

# NX-200(G) PC BOARD

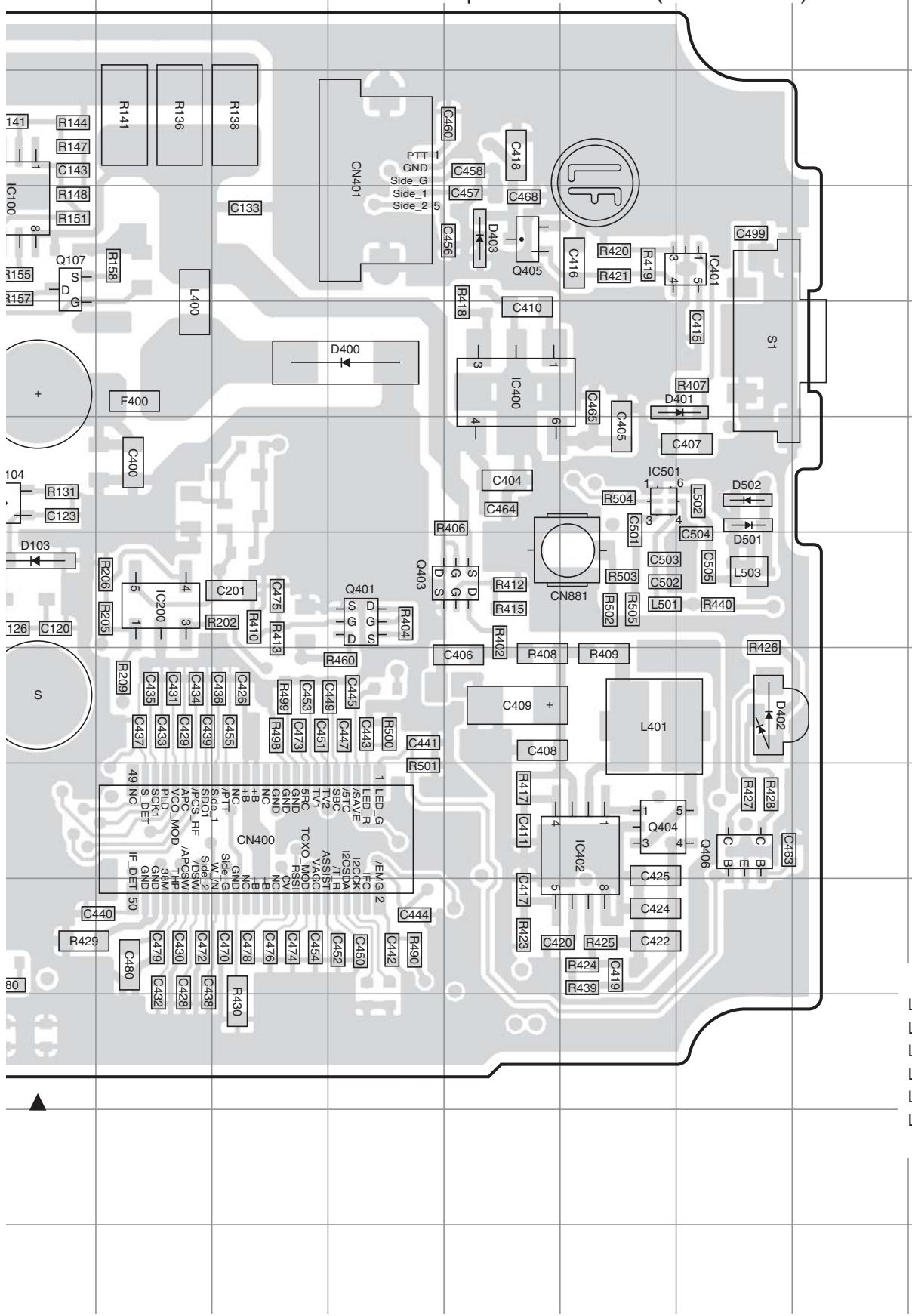
**TX-RX UNIT (X57-8950-12)**  
**Component side view (J79-0438-09 )**



Ref. No.	Address										
IC1	9B	IC203	8H	Q4	6C	Q110	5I	D3	5E	D401	5P
IC2	5C	IC400	5N	Q6	7C	Q401	7M	D4	4B	D402	8P
IC3	7E	IC401	4P	Q12	3D	Q403	7N	D5	5D	D403	4N
IC4	7H	IC402	9O	Q13	4F	Q404	9O	D6	4D		
IC5	8C	IC404	10G	Q104	6J	Q405	4N	D7	7D		
IC100	4J	Q1	5F	Q105	4I	Q406	9P	D103	7J		
IC200	7K	Q2	4F	Q107	4J	D1	7B	D106	6I		
IC202	9E	Q3	7B	Q109	3I	D2	5E	D400	5M		

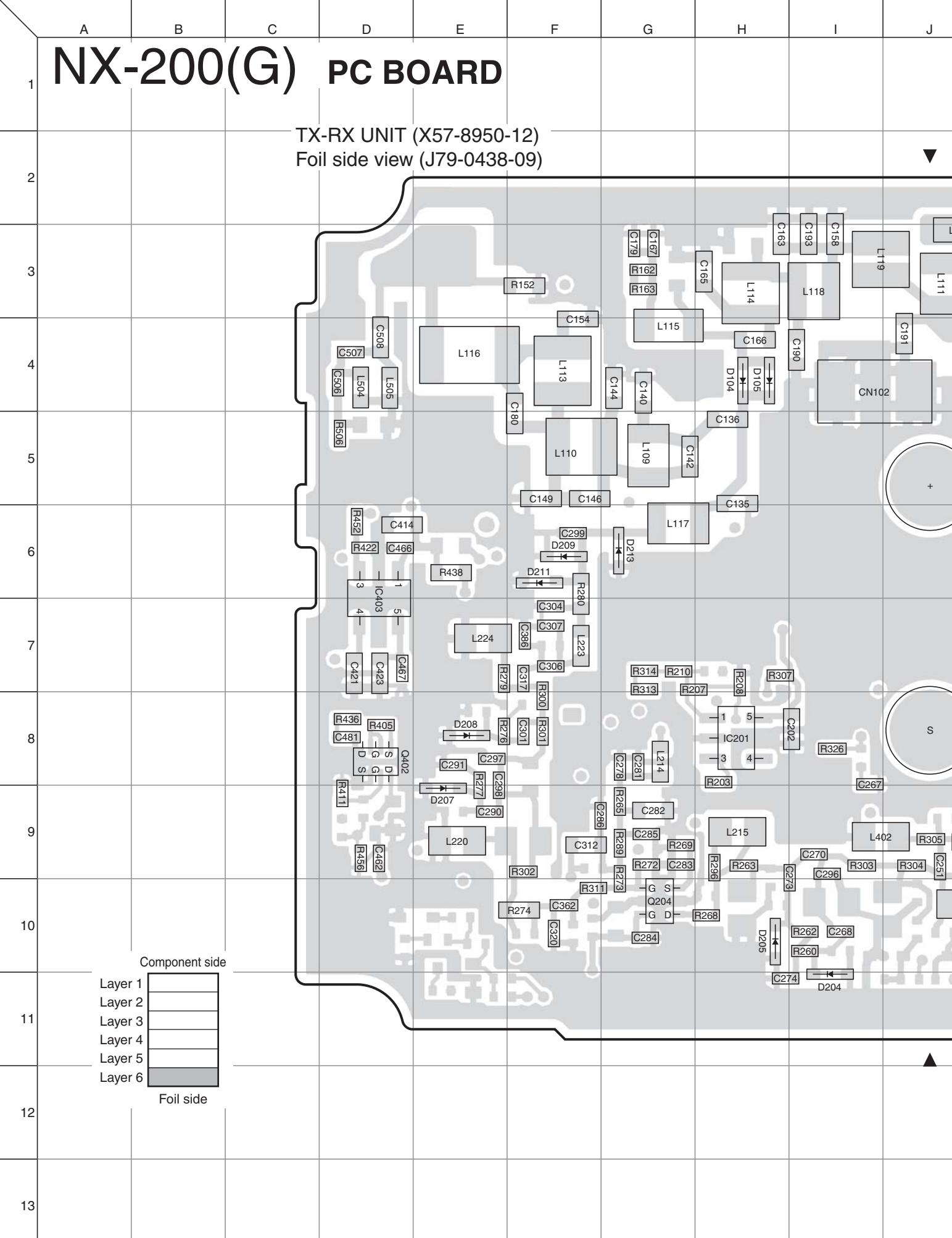
# PC BOARD NX-200(G)

TX-RX UNIT (X57-8950-12)  
Component side view (J79-0438-09)



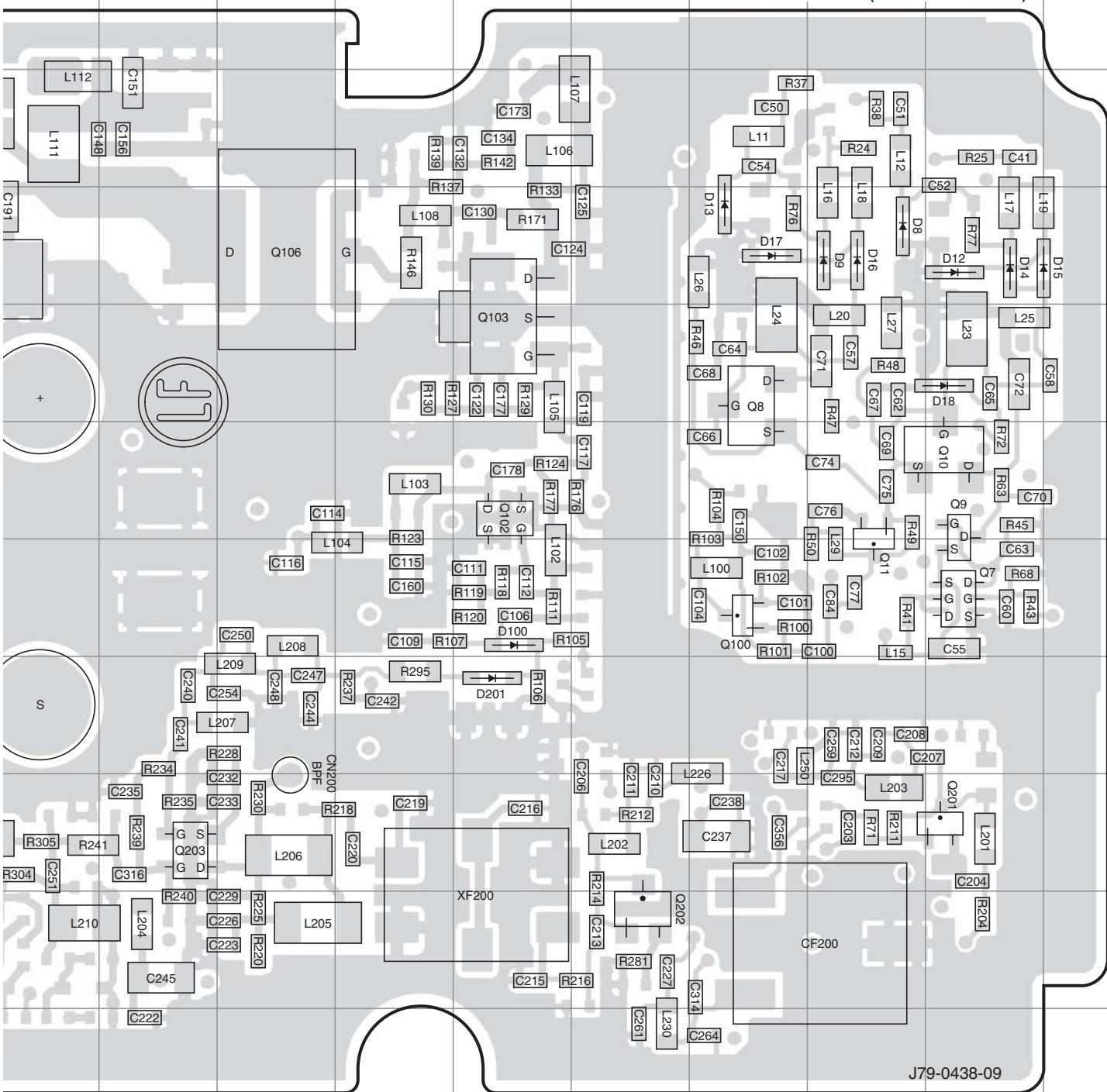
# NX-200(G) PC BOARD

TX-RX UNIT (X57-8950-12)  
Foil side view (J79-0438-09)



**PC BOARD NX-200(G)**

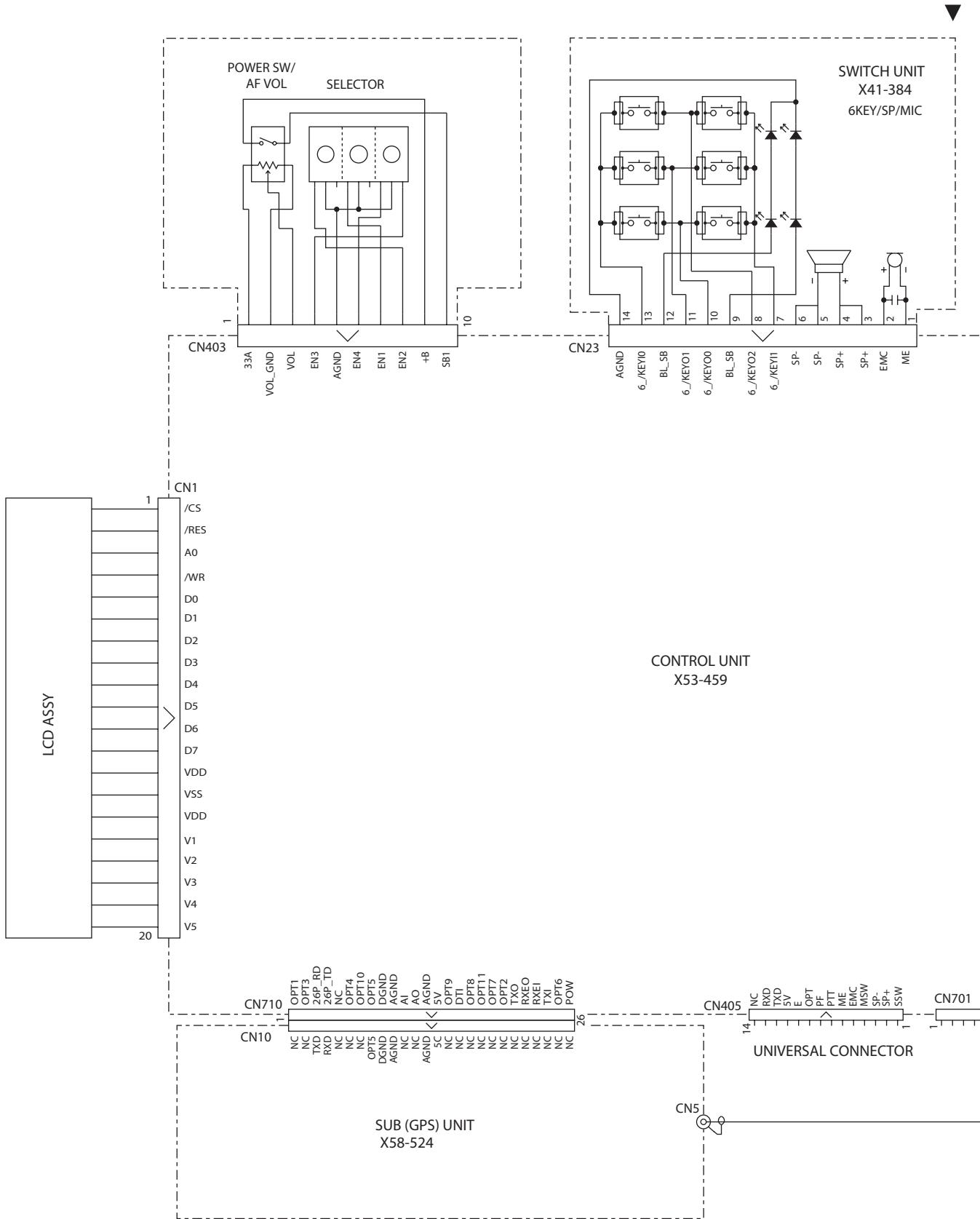
**TX-RX UNIT (X57-8950-12)  
Foil side view (J79-0438-09 )**



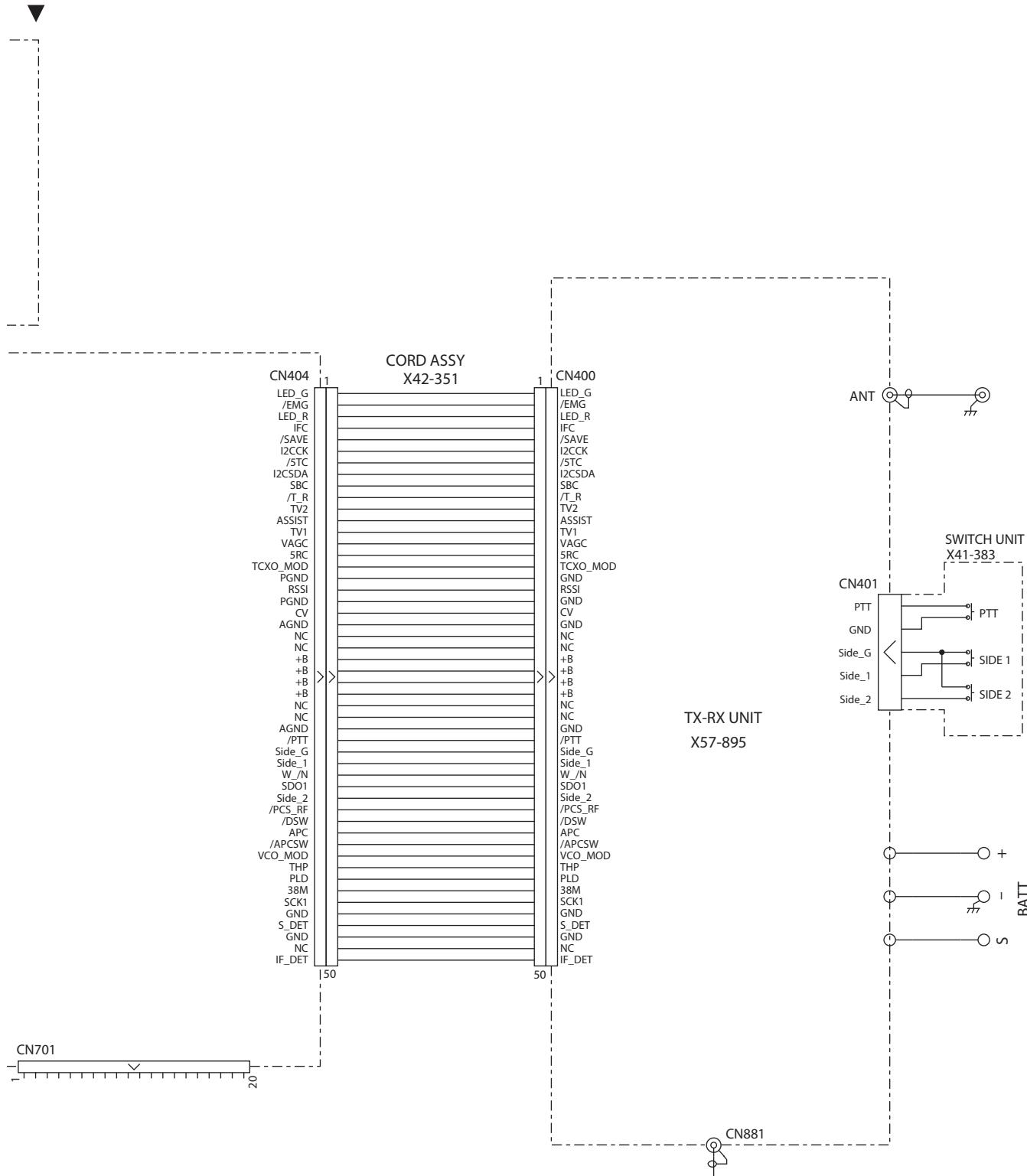
Ref. No.	Address										
IC201	8H	Q100	7P	Q204	10G	D15	4S	D201	8N	D213	6G
IC403	7D	Q102	6N	Q402	8D	D16	4Q	D204	11I		
Q7	7R	Q103	5N	D8	4Q	D17	4P	D205	10H		
Q8	5P	Q106	4L	D9	4Q	D18	5R	D207	9E		
Q9	6R	Q201	9R	D12	4R	D100	7N	D208	8E		
Q10	6R	Q202	10O	D13	4P	D104	4H	D209	6F		
Q11	7Q	Q203	9K	D14	4R	D105	4H	D211	6F		

# NX-200(G)

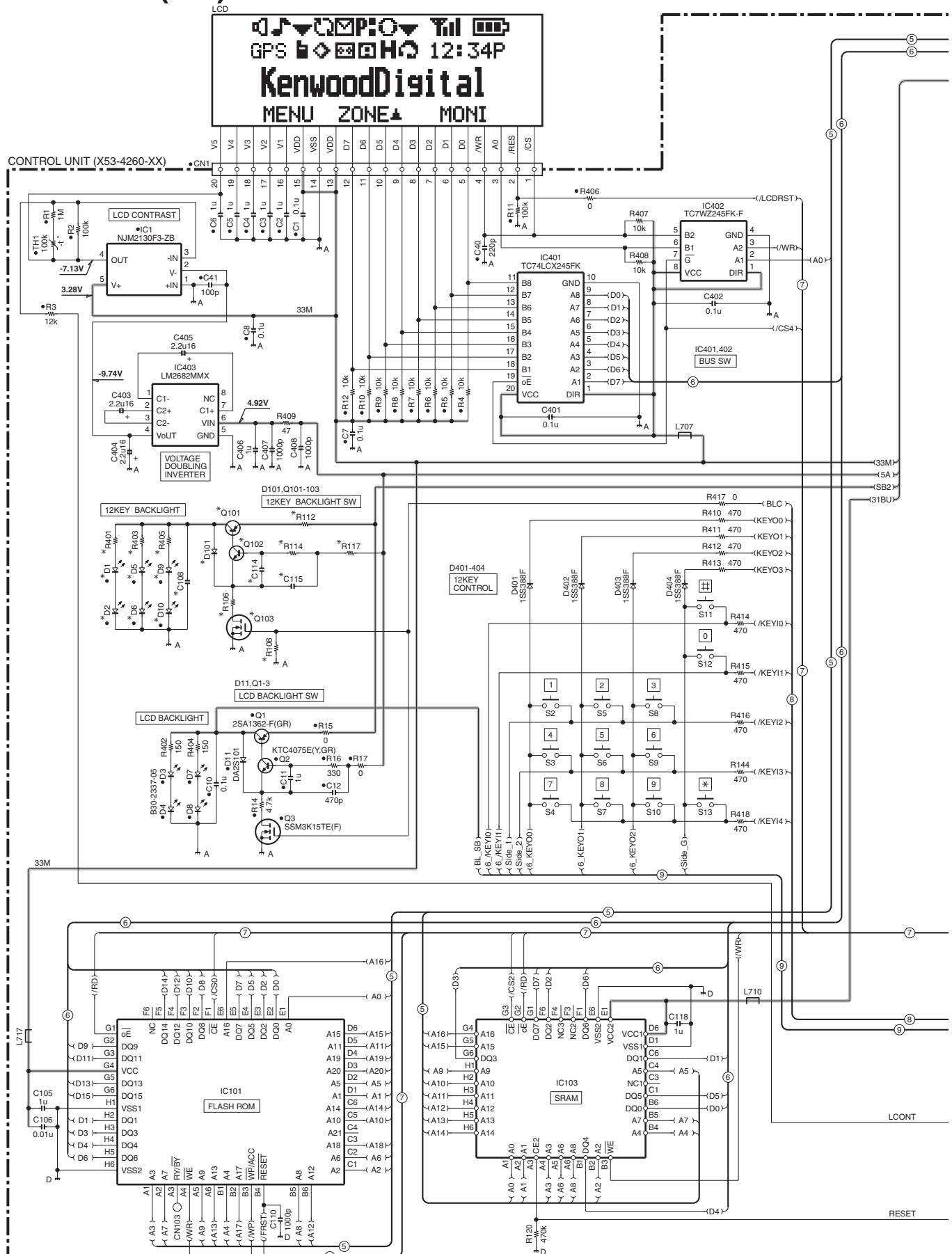
## INTERCONNECTION DIAGRAM



## INTERCONNECTION DIAGRAM

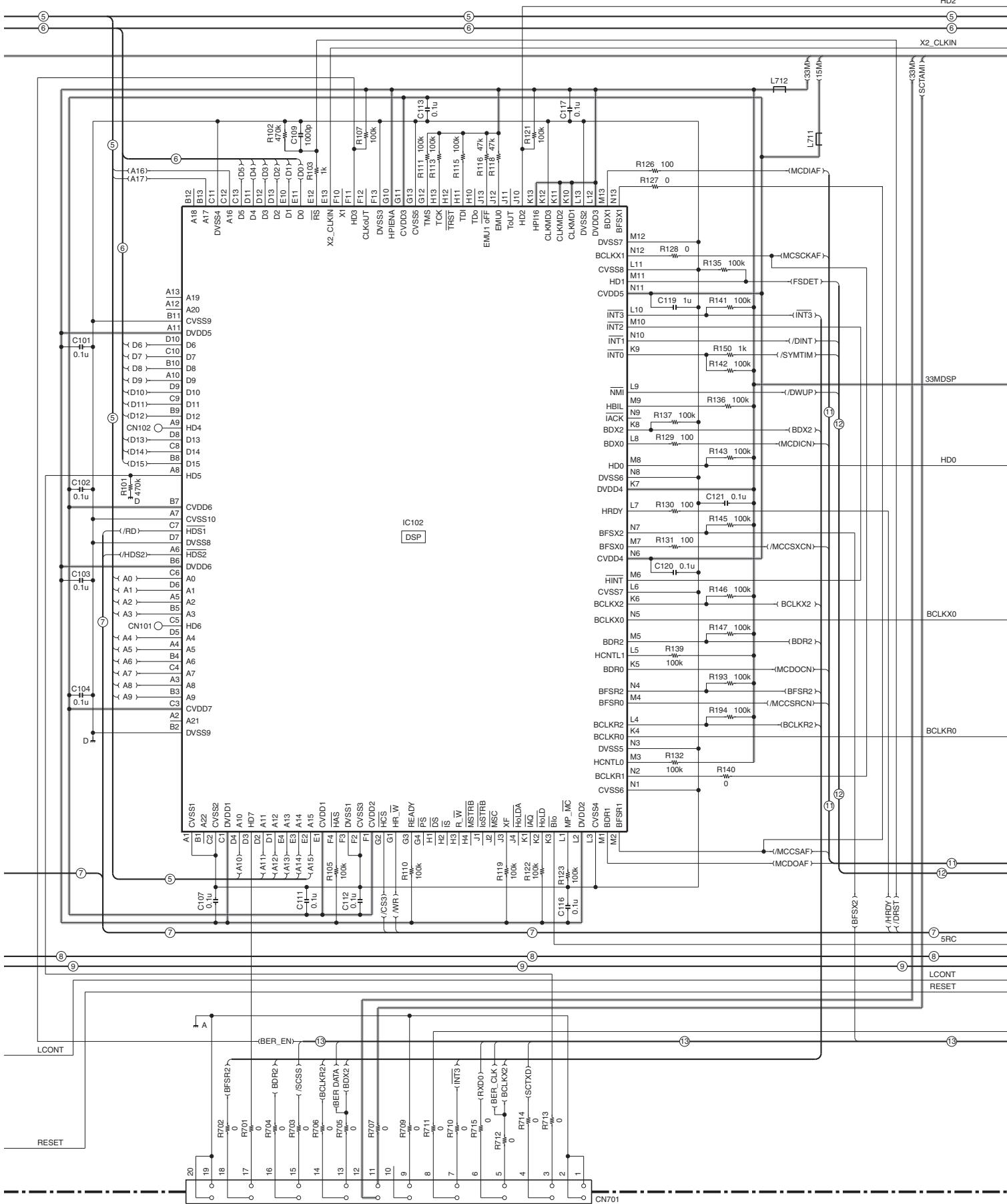


# NX-200(G) SCHEMATIC DIAGRAM

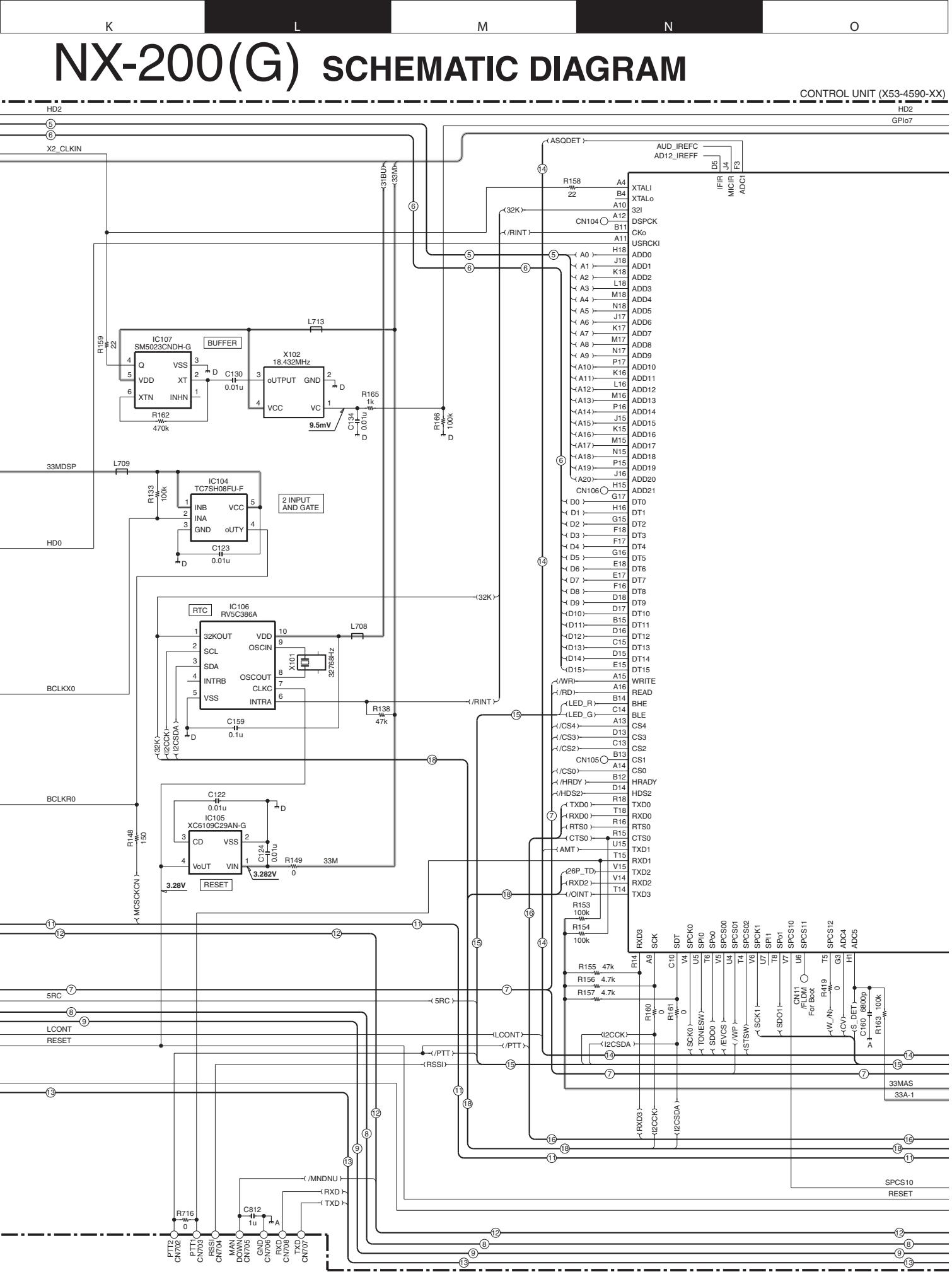


X53-4590-XX	D1	D2	D5	D6	D9	D10	D10I	Q10I	Q102	Q103	R106	R108	R112	R114	R117	R401	R403	R405	C108	C114	C115
-10	K	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO									
-11	K2	B30-2337-05	B2A1832(GRF)	KTC4075E(Y,GR)	SSM3K15TE(F)	4.7k	470k	0	330	0	1.5k	1.5k	1.5k	1.0470p							
-11	K2	B30-2337-05	2SA1832(GRF)	KTC4075E(Y,GR)	SSM3K15TE(F)	4.7k	470k	0	330	0	1.5k	1.5k	1.5k	1.0470p							

CONTROL UNIT (X53-4590-XX)



# NX-200(G) SCHEMATIC DIAGRAM



# SCHEMATIC DIAGRAM NX-200(G)

**CONTROL UNIT (X53-4590-XX)**

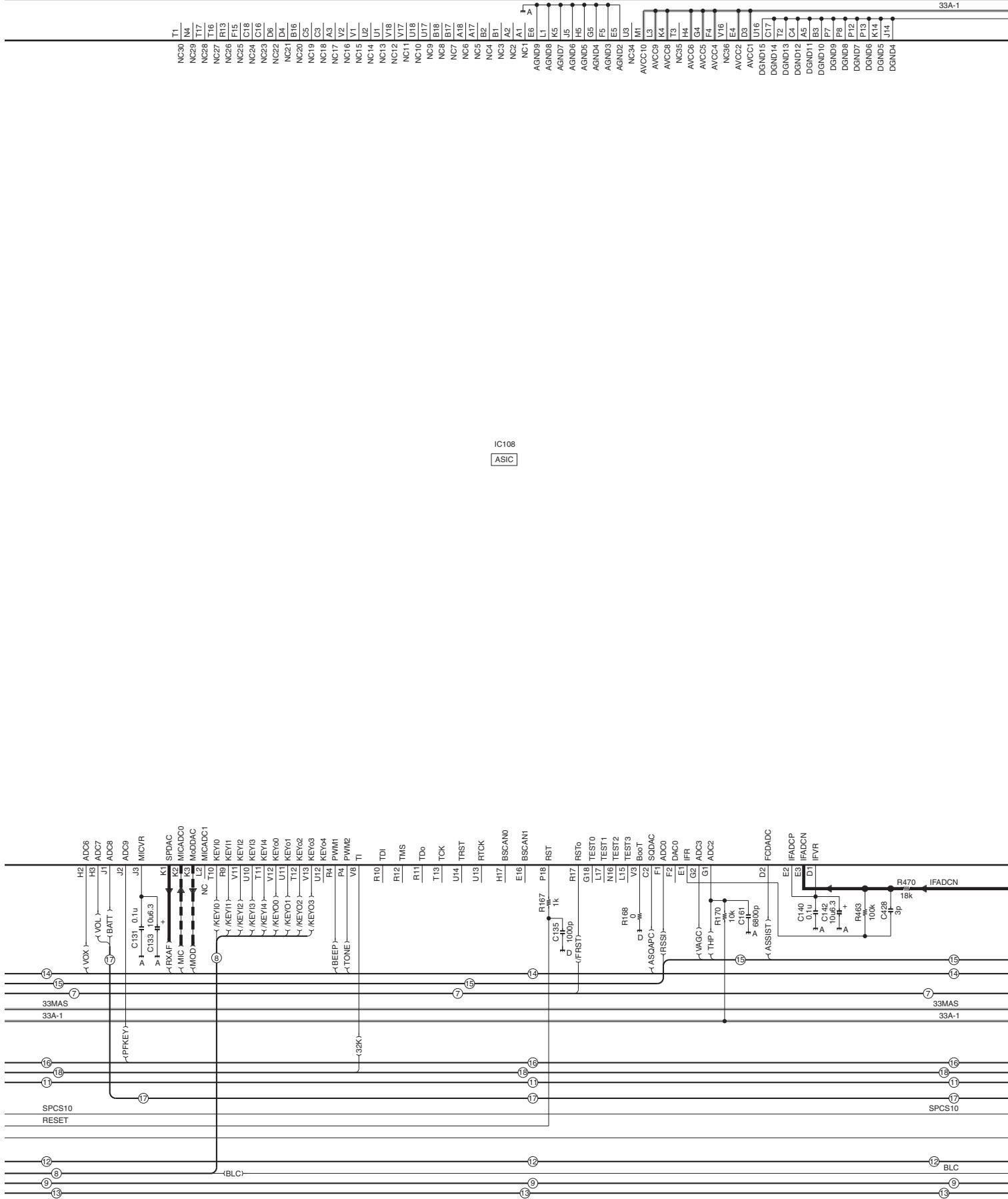
HD2

GPIO7

HD2

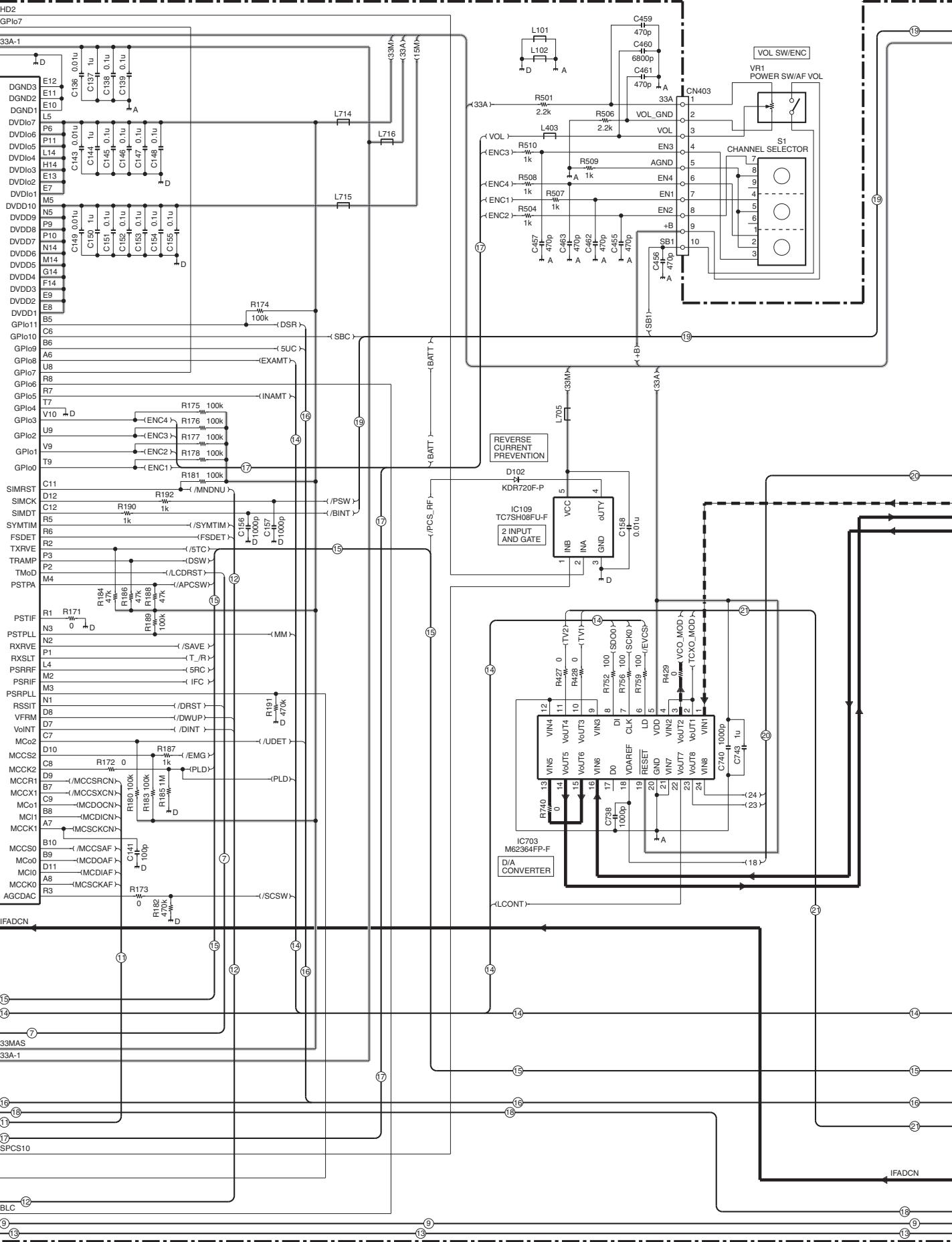
GPlot

33A-1



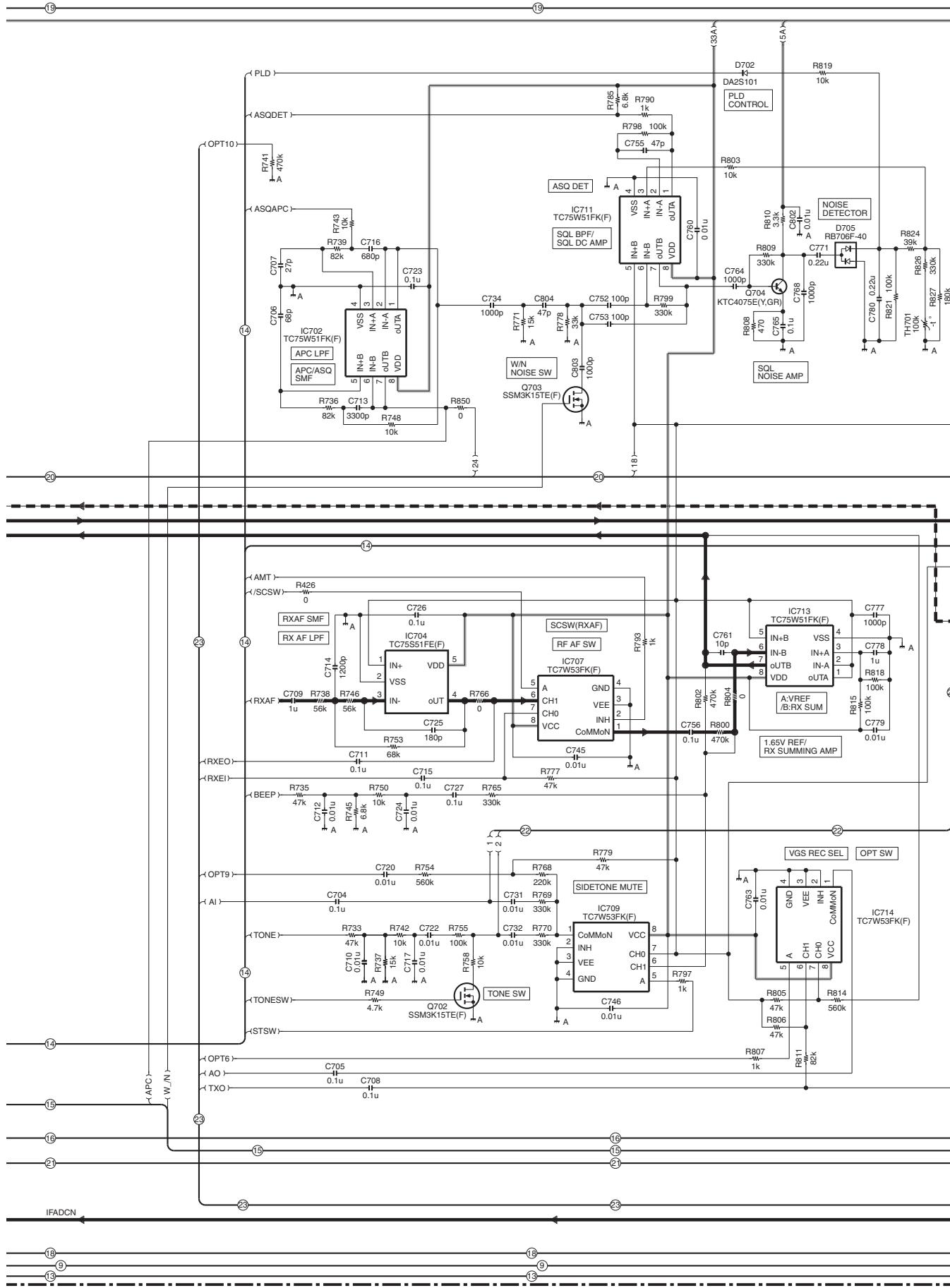
# NX-200(G) SCHEMATIC DIAGRAM

CONTROL UNIT (X53-4590-XX)



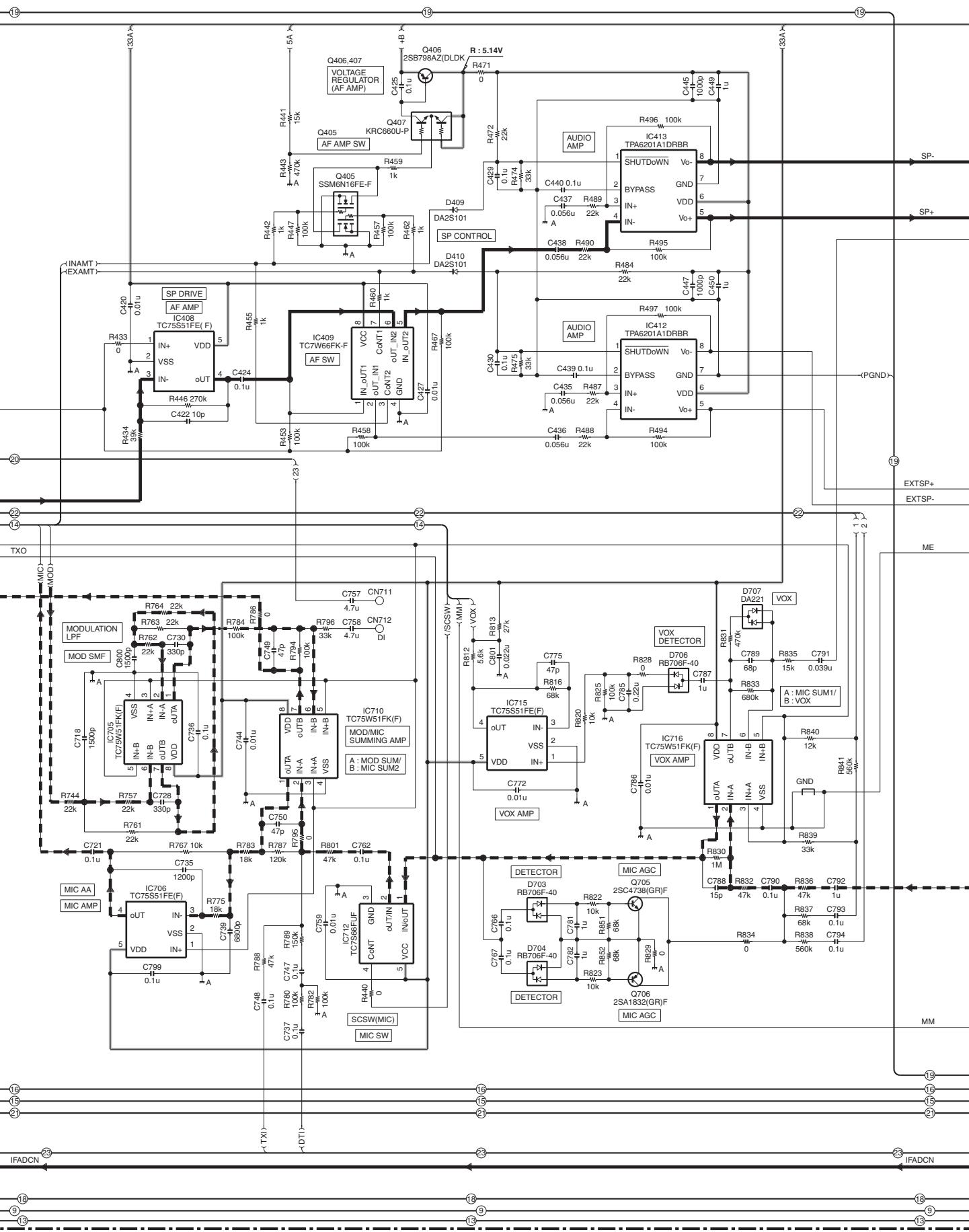
# SCHEMATIC DIAGRAM NX-200(G)

CONTROL UNIT (X53-4590-XX)



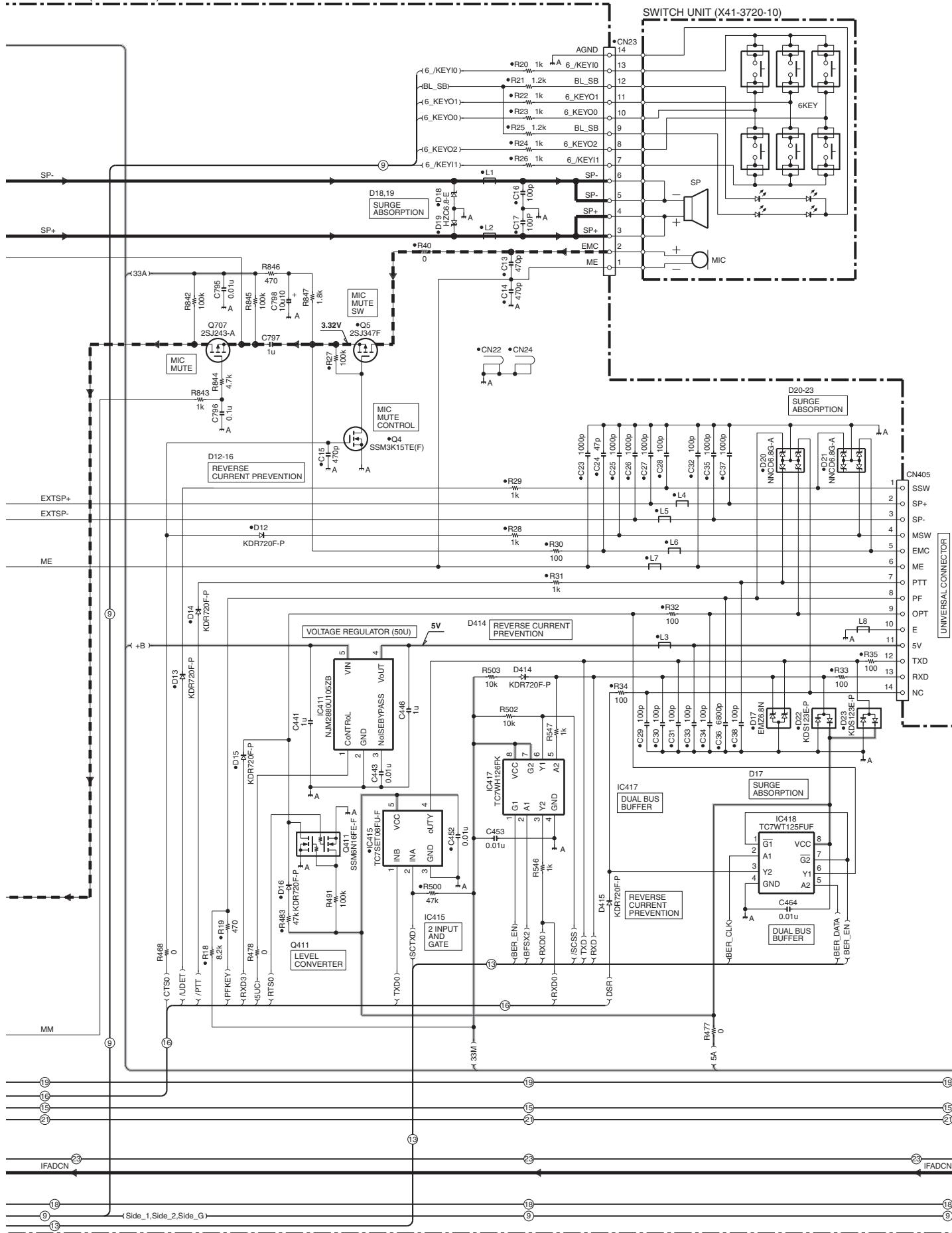
# NX-200(G) SCHEMATIC DIAGRAM

CONTROL UNIT (X53-4590-XX)



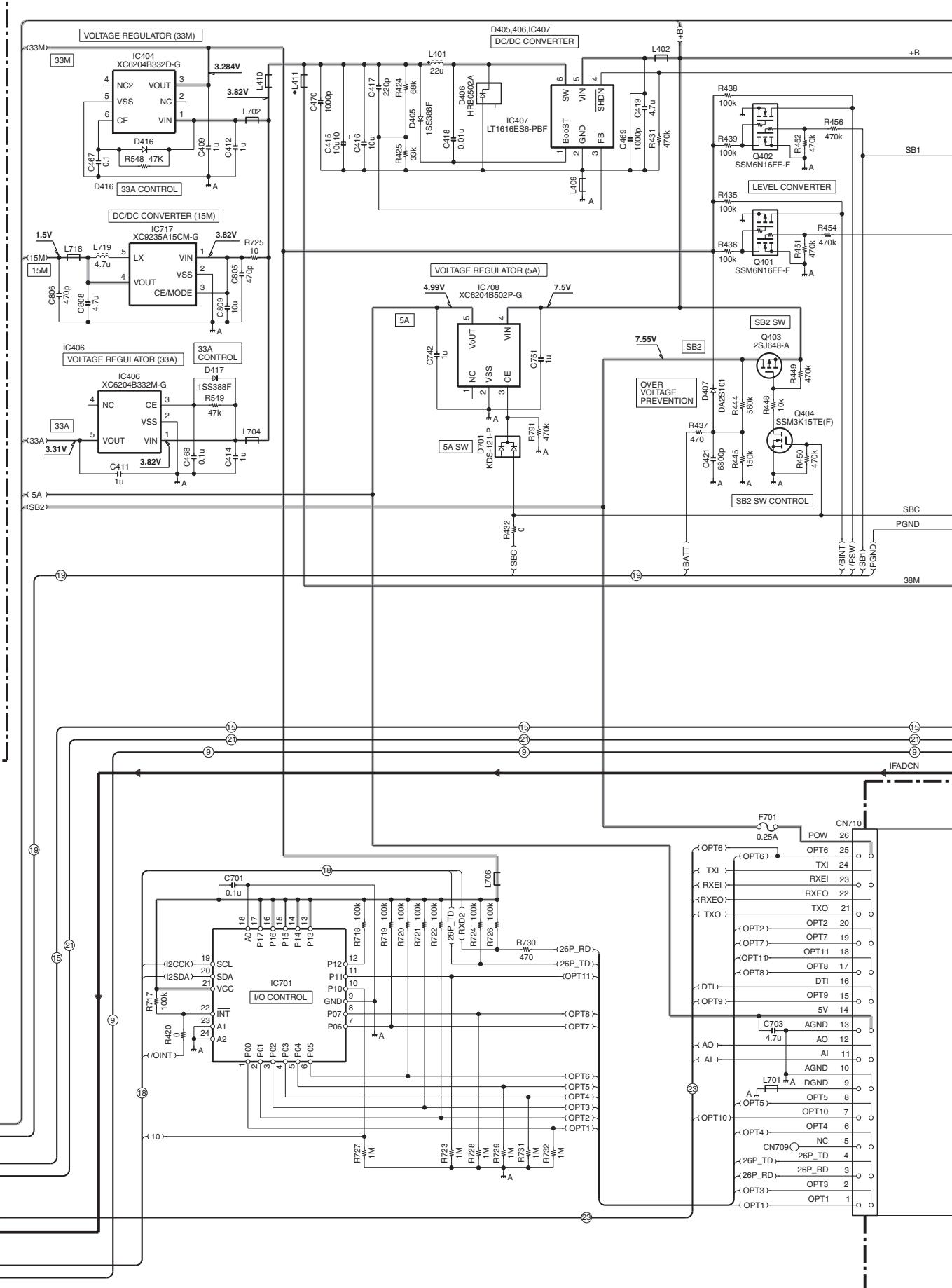
# SCHEMATIC DIAGRAM NX-200(G)

CONTROL UNIT (X53-4590-XX)



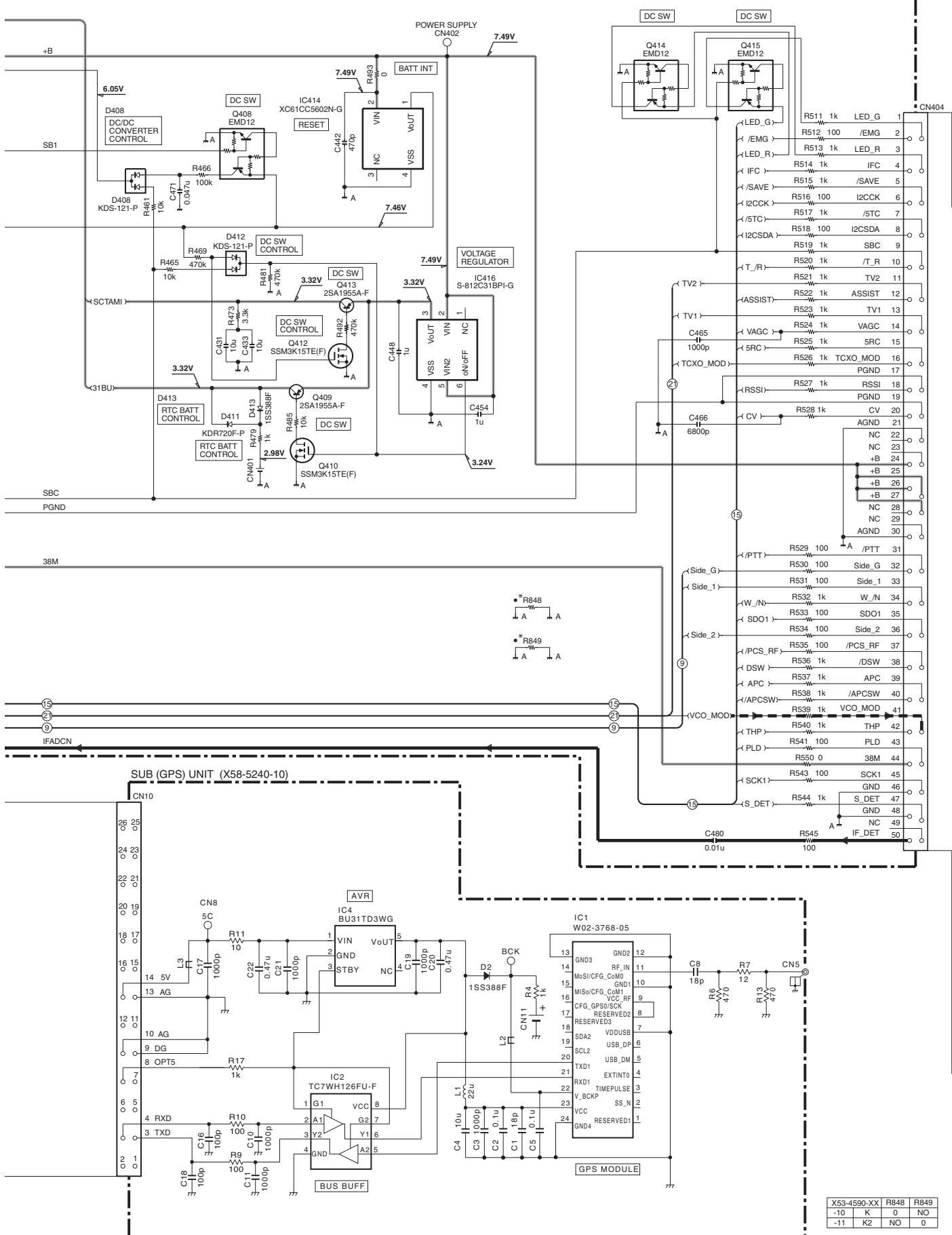
# NX-200(G) SCHEMATIC DIAGRAM

CONTROL UNIT (X53-4590-XX)



# SCHEMATIC DIAGRAM NX-200(G)

CONTROL UNIT (X53-4590-XX)



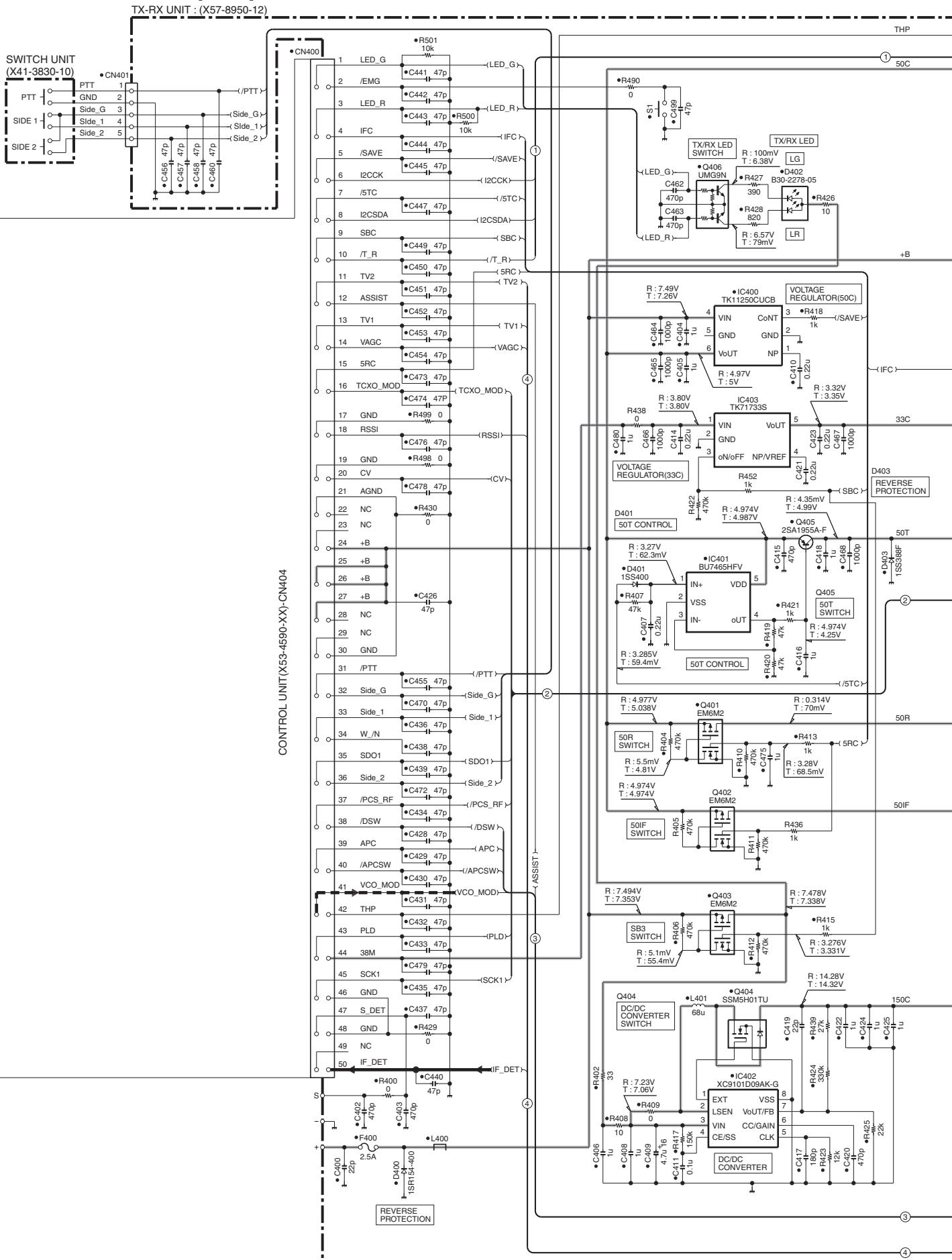
TX-RX UNIT(X57-7360-10) (A/2)-CN404

X53-4590-XX	R848	R849
-10	K	0

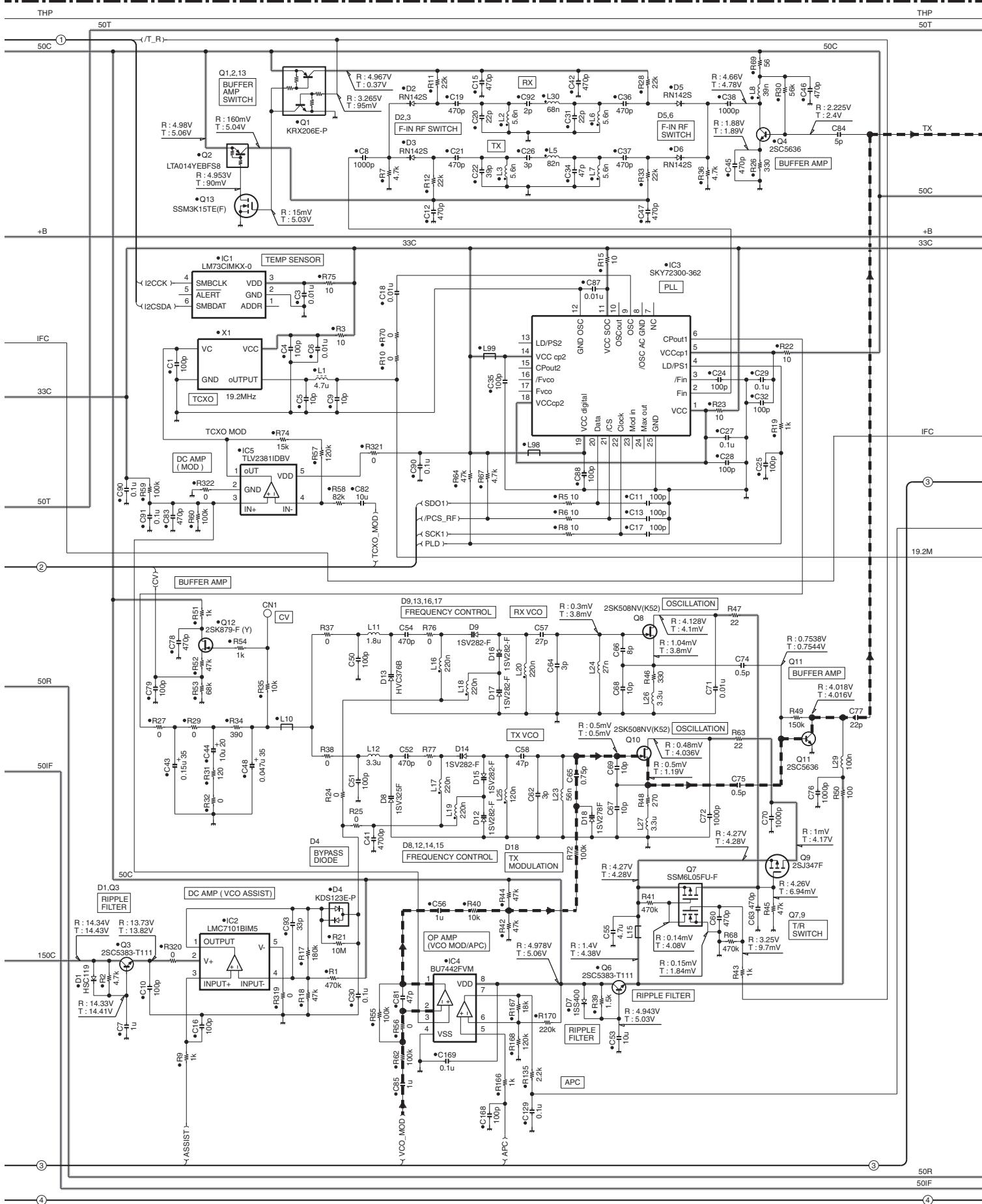
X53-4590-XX	R848	R849
-11	K2	NO

# NX-200(G) SCHEMATIC DIAGRAM



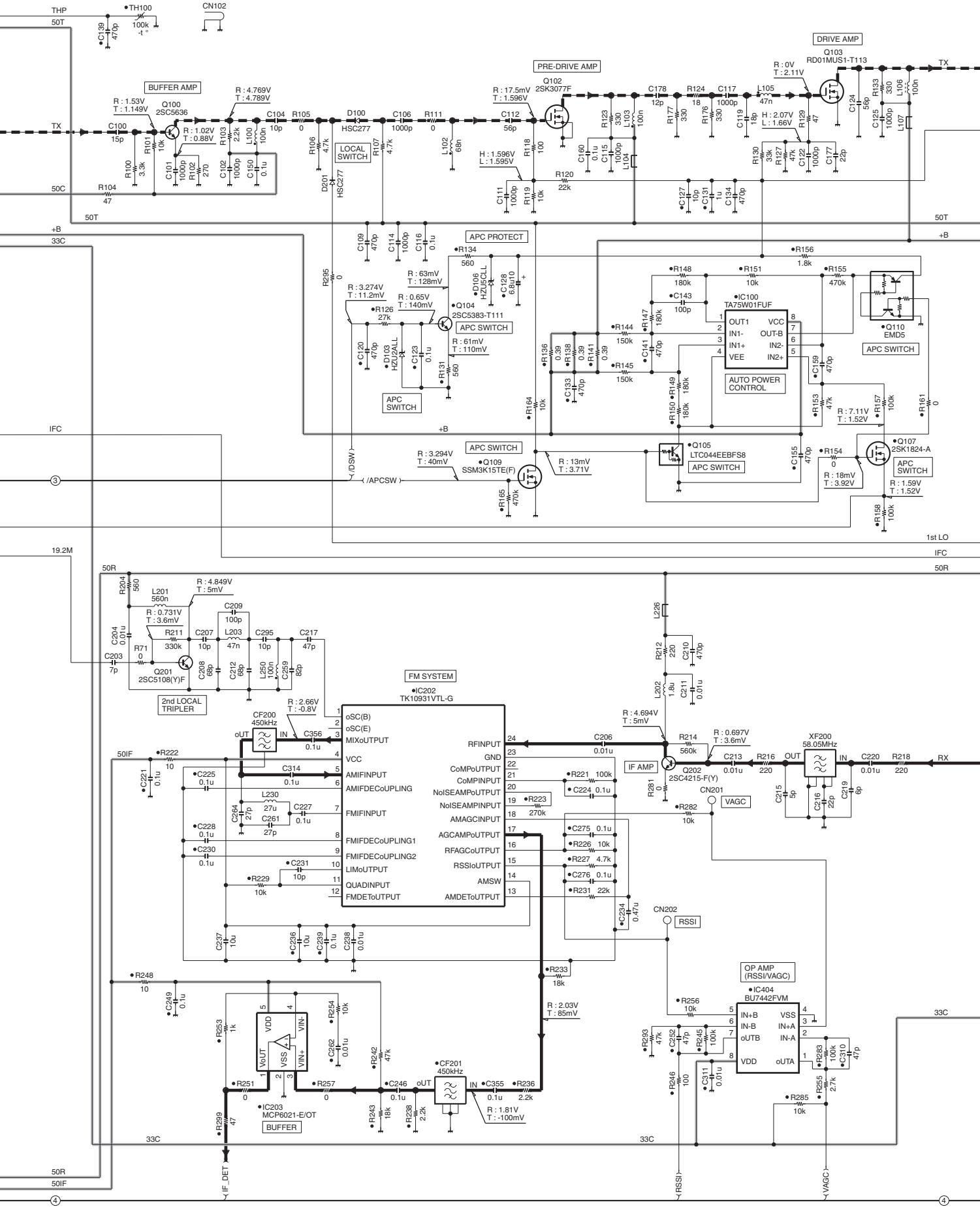
# SCHEMATIC DIAGRAM NX-200(G)

TX-RX UNIT (X57-8950-12)



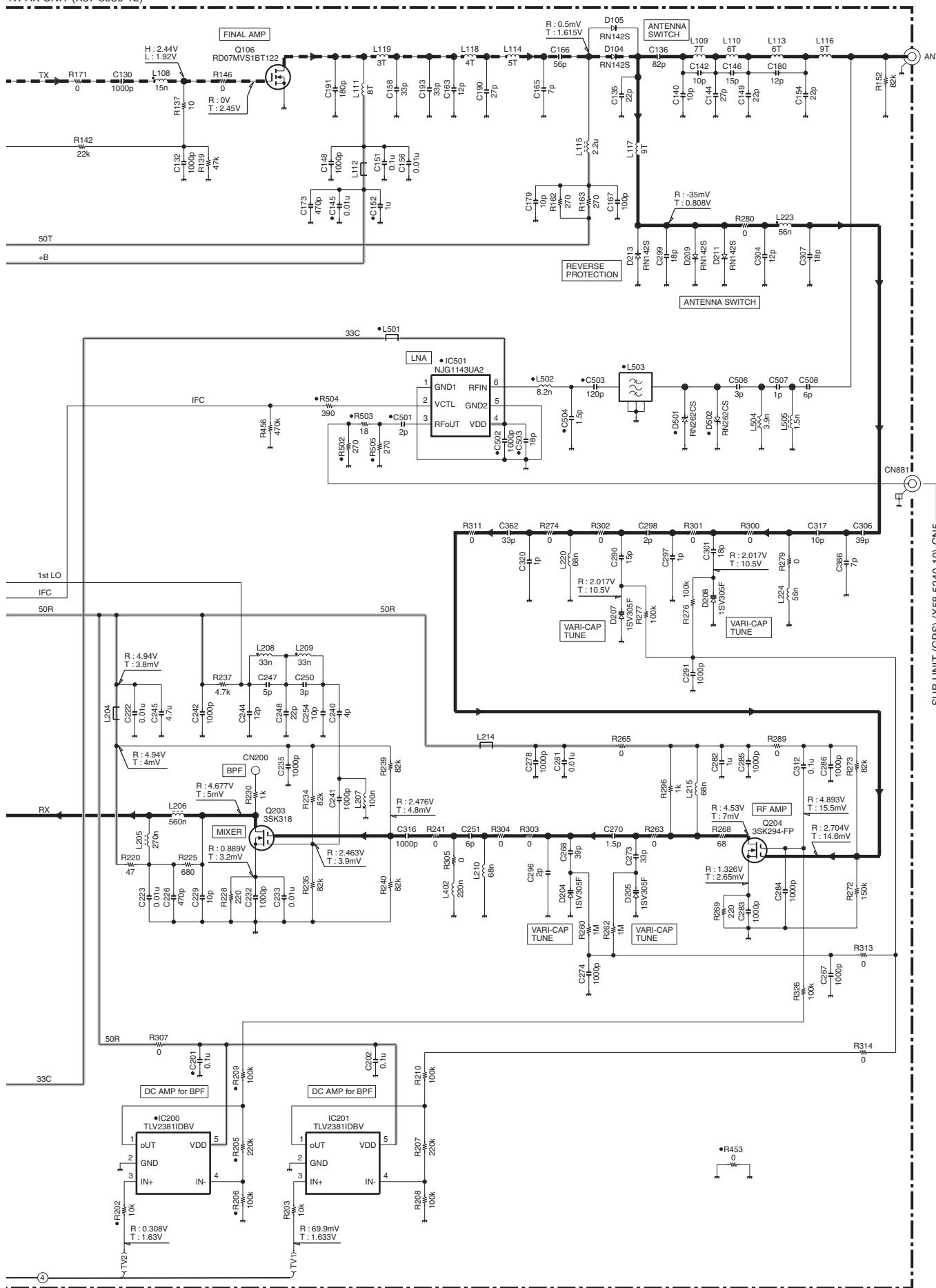
# NX-200(G) SCHEMATIC DIAGRAM

TX-RX UNIT (X57-8950-12)



# SCHEMATIC DIAGRAM NX-200(G)

TX-RX UNIT (X57-8950-12)

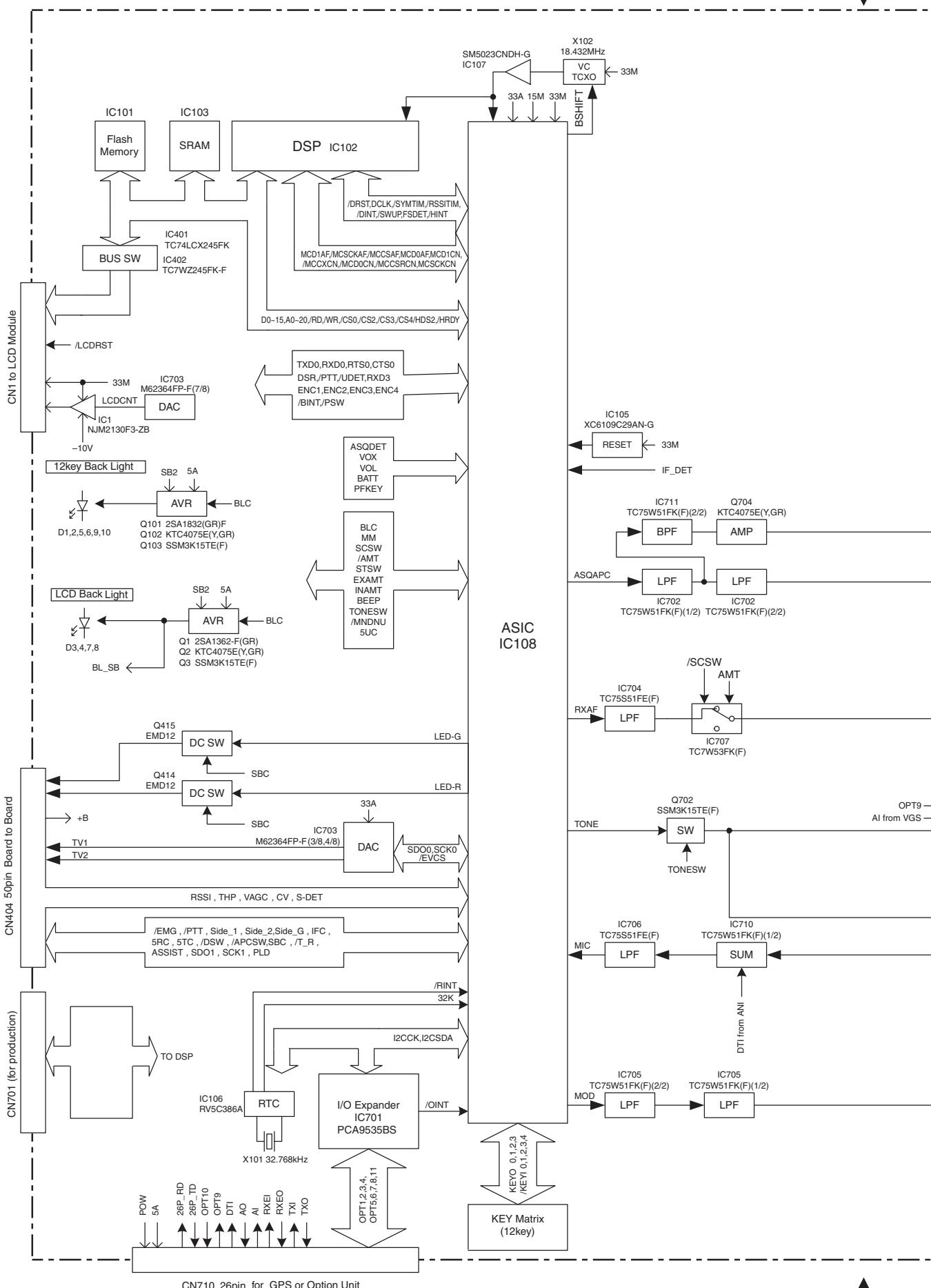


Note : The components marked with a dot (•) are parts of layer 1.

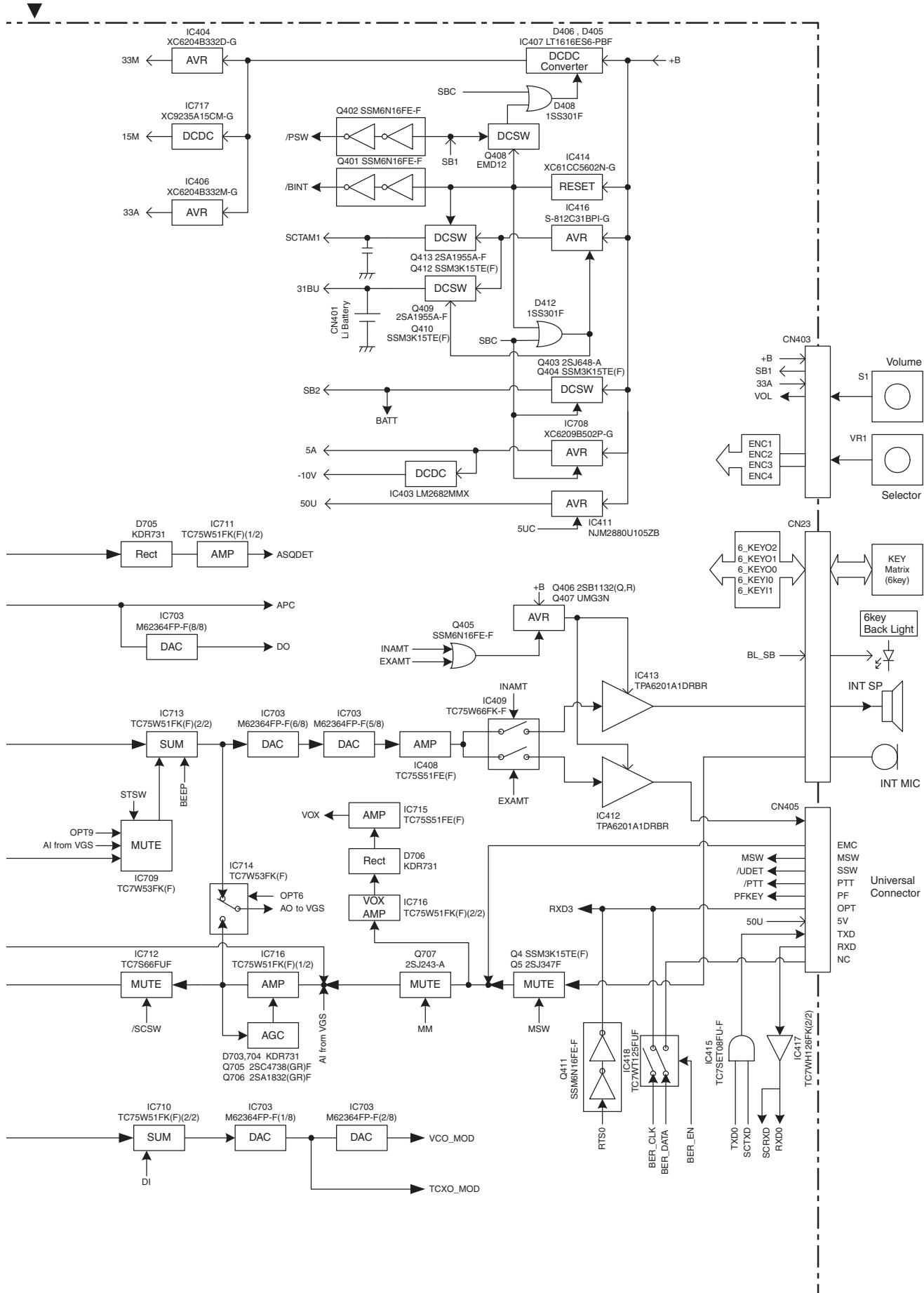
# NX-200(G)

# BLOCK DIAGRAM

## Control unit (X53-4590-XX)



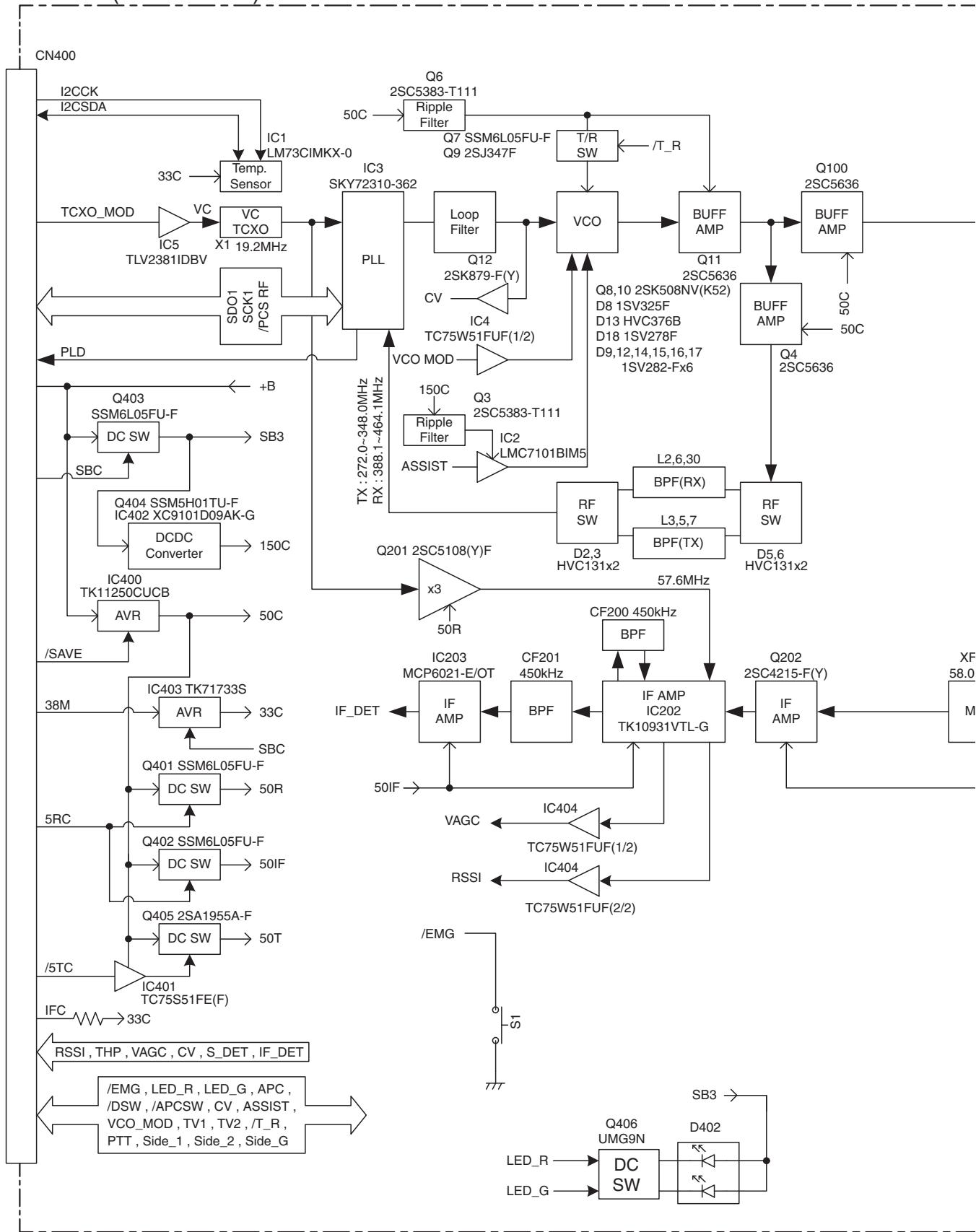
# BLOCK DIAGRAM NX-200(G)



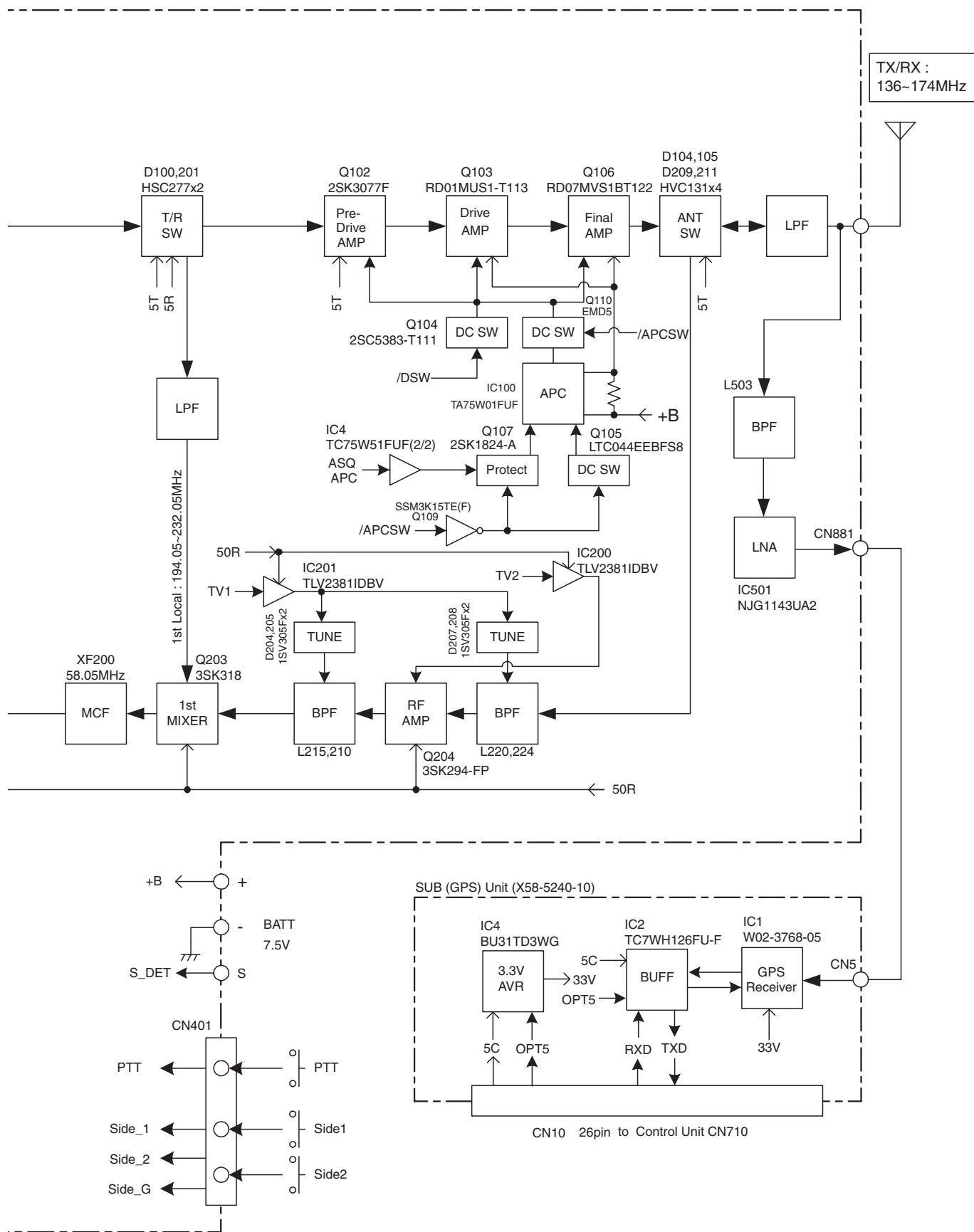
# NX-200(G)

## BLOCK DIAGRAM

### TX-RX unit (X57-8950-12)



## BLOCK DIAGRAM



# NX-200(G)

# LEVEL DIAGRAM

Receiver Section

Transmitter Section

**RF (Center Frequency)**

- VCO output (3.4dBm) through C100 to Q100.
- Q100 output (2.6dBm) through C104 to D100.
- D100 output (7.7dBm) through C112 to Q102.
- Q102 output (19.3dBm) through C130 to Q103.
- Q103 output (31.1dBm) through C166 to a power stage (31.0W).
- Power stage output to **RXLO**.

**AF (1kHz)**

- Microphone input (64mVrms at MIC terminal) through C790 to IC176.
- IC176 output (47.4mVrms) through C762 to IC710.
- IC710 output (125.9mVrms) through C721 to IC108.
- IC108 output (69.8mVrms) through C721 to IC102.
- IC102 contains a **DSP** and **ASIC**. It outputs (391.8mVrms) through C721 to IC705.
- IC705 output (391.8mVrms) through C703 to IC710.
- IC710 output (391.8mVrms) through C703 to IC705.
- IC705 output (391.8mVrms) through C85 to IC4.
- IC4 output (190.6mVrms) through C56 to the **VCO**.
- The **VCO** output (126.4mVrms) is split into two paths:
  - One path goes through C85 to IC703.
  - The other path goes through C56 to the **VCO**.

**Notes:**

- 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-47L (Li-ion Battery Pack)

■ External View



### KNB-48L (Li-ion Battery Pack)

■ External View



### ■ Specifications

Voltage..... 7.4V  
Battery capacity..... 1950mAh

### ■ Specifications

Voltage..... 7.4V  
Battery capacity..... 2550mAh

### 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

# NX-200(G)

## SPECIFICATIONS

### GENERAL

Models .....	K: Basic Model	K2: w/12-key Model
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 (with KNB-48L, GPS:OFF) .....	5-5-90 duty cycle: More than 14.5 hours 10-10-80 duty cycle: More than 9.0 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 5.02 x 1.63 in (58 x 127.5 x 41.3 mm)	
with KNB-47L .....	2.28 x 5.02 x 1.63 in (58 x 127.5 x 41.3 mm)	
with KNB-48L .....	2.28 x 5.02 x 1.91 in (58 x 127.5 x 48.5 mm)	
Weight		
Radio only .....	9.17 oz (260 g)	
with KNB-47L .....	13.23 oz (375 g)	
with KNB-48L .....	14.29 oz (405 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 ( $\pm 50$ , 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.

# KENWOOD

JVC KENWOOD Corporation  
Communications Equipment Div

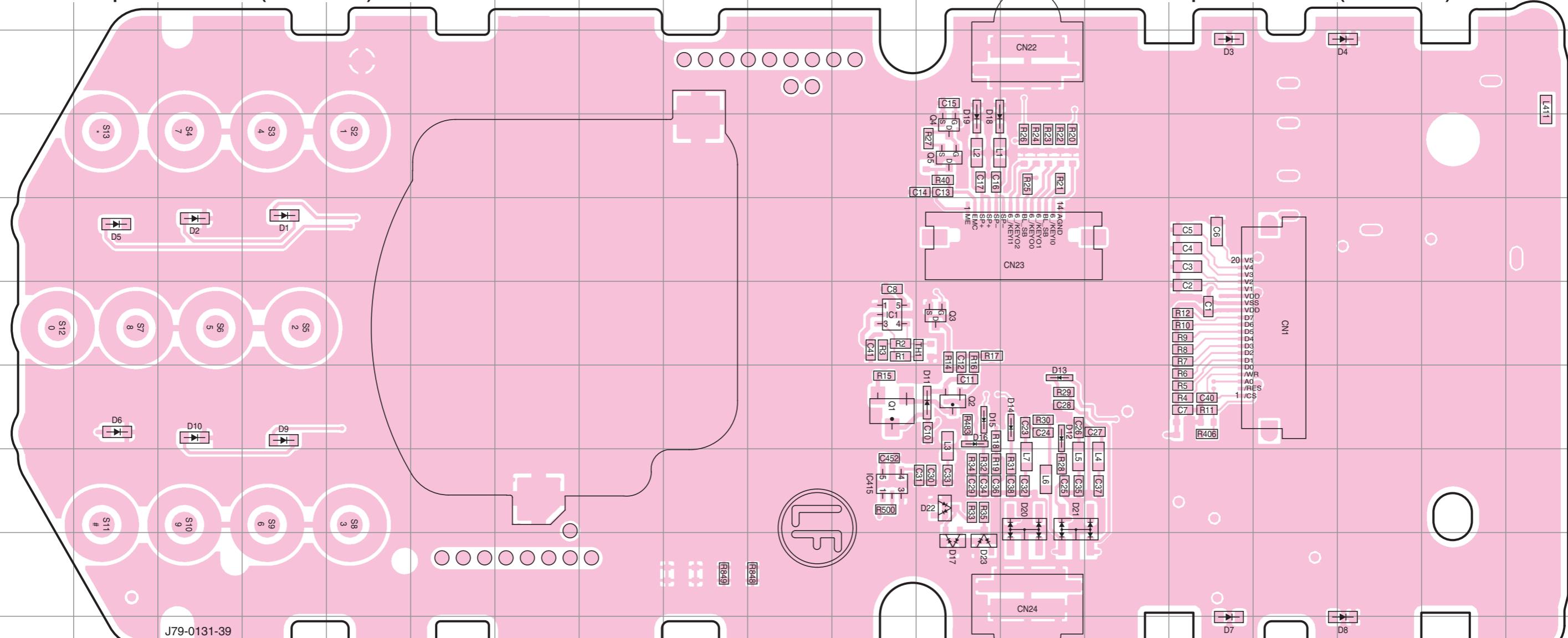
# NX-200(G) PC BOARD

# PC BOARD

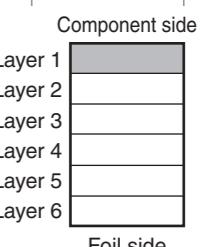
# NX-200(G)

CONTROL UNIT (X53-4590-XX) -10: K -11: K2  
Component side view (J79-0131-39)

CONTROL UNIT (X53-4590-XX) -10: K -11: K2  
Component side view (J79-0131-39)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	6K	D4	3Q	D14	7M
IC415	8K	D5	5B	D15	7L
Q1	7K	D6	7B	D16	7L
Q2	7L	D7	10O	D17	9L
Q3	6L	D8	10Q	D18	4L
Q4	4L	D9	7D	D19	4L
Q5	4L	D10	7C	D20	8M
D1	5D	D11	7L	D21	8M
D2	5C	D12	7M	D22	8L
D3	3O	D13	7M	D23	9L



Foil side

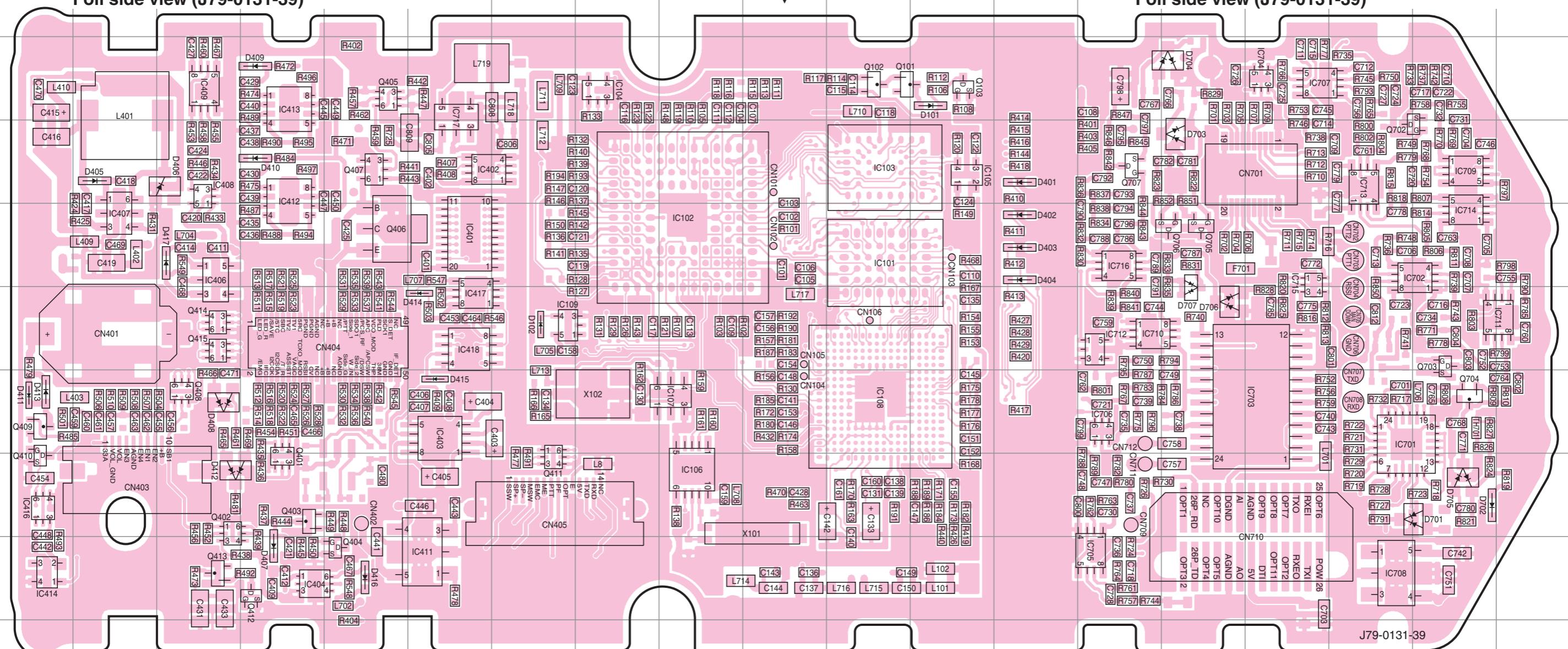
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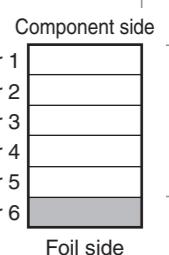
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CONTROL UNIT (X53-4590-XX) -10: K -11: K2  
Foil side view (J79-0131-39)

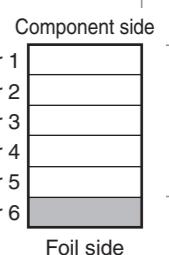
CONTROL UNIT (X53-4590-XX) -10: K -11: K2  
Foil side view (J79-0131-39)



Ref. No.	Address												
IC101	5K	IC404	9D	IC701	7Q	IC713	4Q	Q405	3E	Q703	6R	D406	4C
IC102	5I	IC406	5C	IC702	5R	IC714	5R	Q406	5E	Q704	7R	D407	9D
IC103	4K	IC407	5B	IC703	7P	IC715	5P	Q407	4E	Q705	5O	D408	7C
IC104	3H	IC408	4C	IC704	3P	IC716	5N	Q408	7C	Q706	5O	D409	3D
IC105	4L	IC409	3C	IC705	9N	IC717	3F	Q409	7A	Q707	4N	D410	4D
IC106	8I	IC411	9F	IC706	7N	Q101	3K	Q410	8A	D101	3L	D411	7A
IC107	7I	IC412	4D	IC707	3P	Q102	3K	Q411	8G	D102	6G	D412	8C
IC108	7K	IC413	3D	IC708	9Q	Q103	3L	Q412	9D	D401	4M	D413	7A
IC109	6G	IC414	9A	IC709	4R	Q401	8D	Q413	9C	D402	5M	D414	6F
IC401	5F	IC416	8A	IC710	6N	Q402	8C	Q414	6C	D403	5M	D415	7F
IC402	4F	IC417	6F	IC711	6S	Q403	8D	Q415	6C	D404	5M	D416	9E
IC403	7F	IC418	6F	IC712	6N	Q404	9E	Q702	4R	D405	4B	D417	5C



Foil side



Foil side

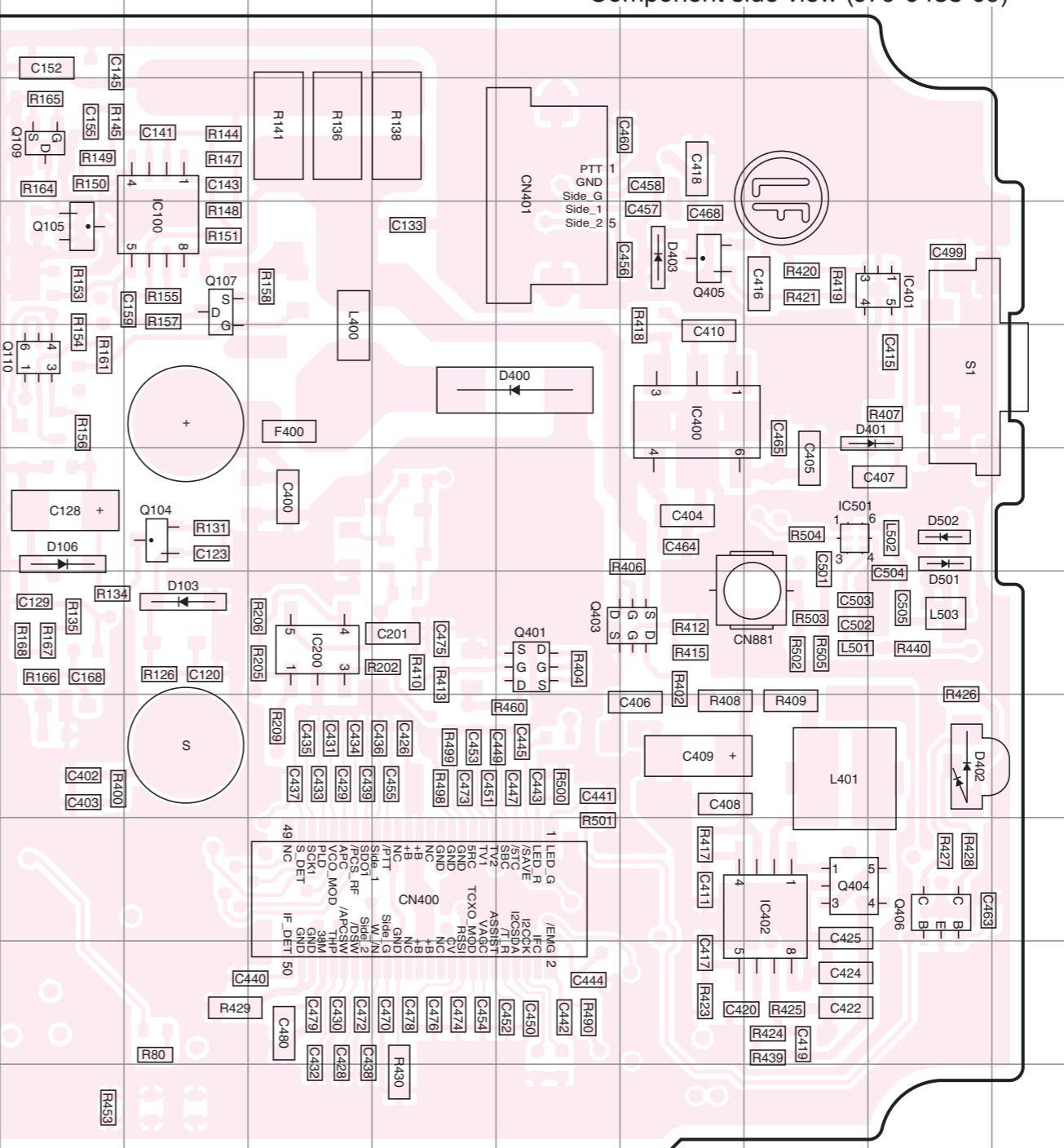
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# NX-200(G)

TX-RX UNIT (X57-8950-12)  
Component side view (J79-0438-09)

TX-RX UNIT (X57-8950-12)  
Component side view (J79-0438-09)



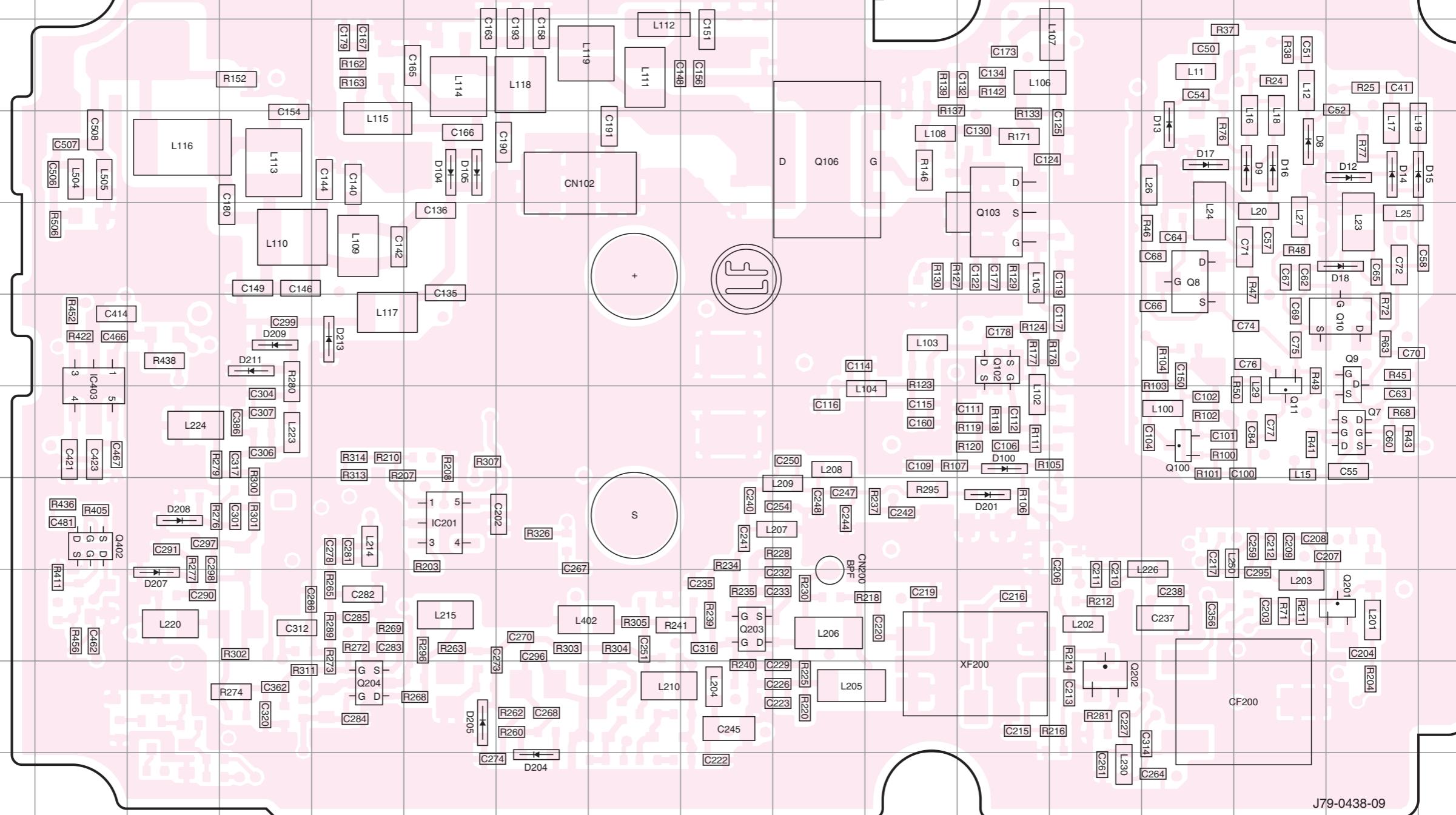
# NX-200(G) PC BOARD

# PC BOARD

# NX-200(G)

TX-RX UNIT (X57-8950-12)  
Foil side view (J79-0438-09)

TX-RX UNIT (X57-8950-12)  
Foil side view (J79-0438-09)



Ref. No.	Address										
IC201	8H	Q100	7P	Q204	10G	D15	4S	D201	8N	D213	6G
IC403	7D	Q102	6N	Q402	8D	D16	4Q	D204	11I		
Q7	7R	Q103	5N	D8	4Q	D17	4P	D205	10H		
Q8	5P	Q106	4L	D9	4Q	D18	5R	D207	9E		
Q9	6R	Q201	9R	D12	4R	D100	7N	D208	8E		
Q10	6R	Q202	10O	D13	4P	D104	4H	D209	6F		
Q11	7Q	Q203	9K	D14	4R	D105	4H	D211	6F		

