

NX-420

SERVICE MANUAL

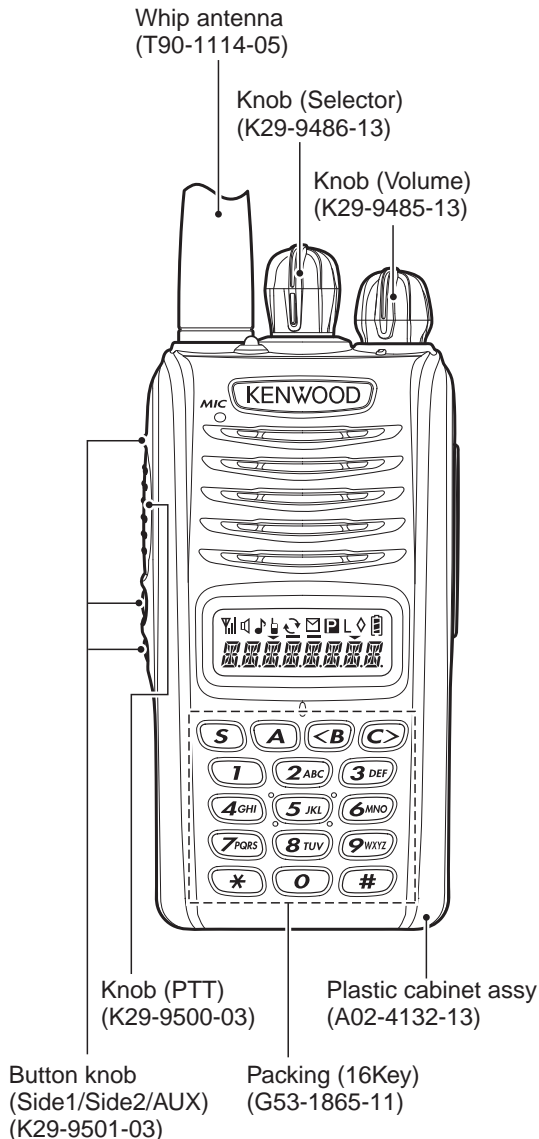
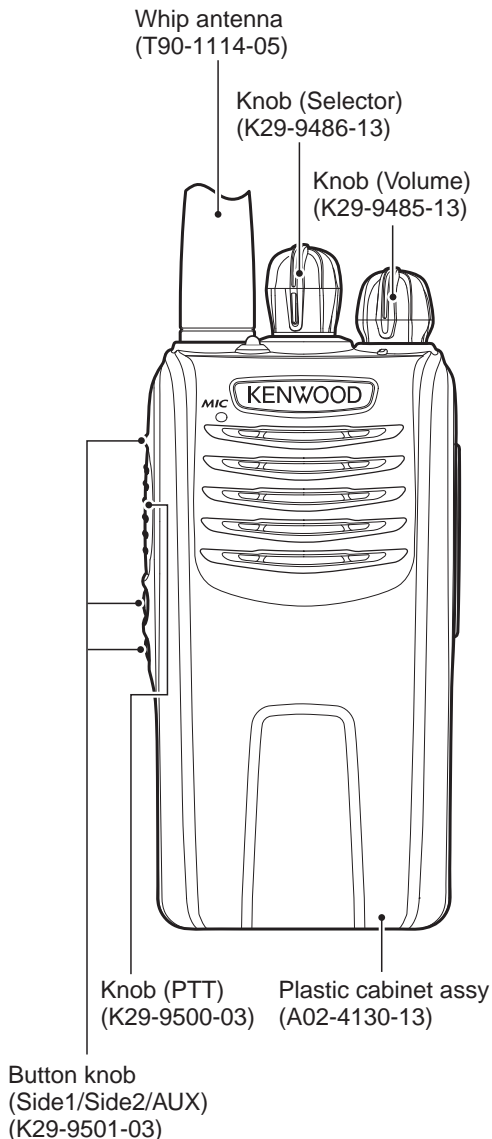
KENWOOD

JVCKENWOOD Corporation

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NX-420 K

NX-420 K3



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Transceivers containing AMBE+2™ Vocoder:

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

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.

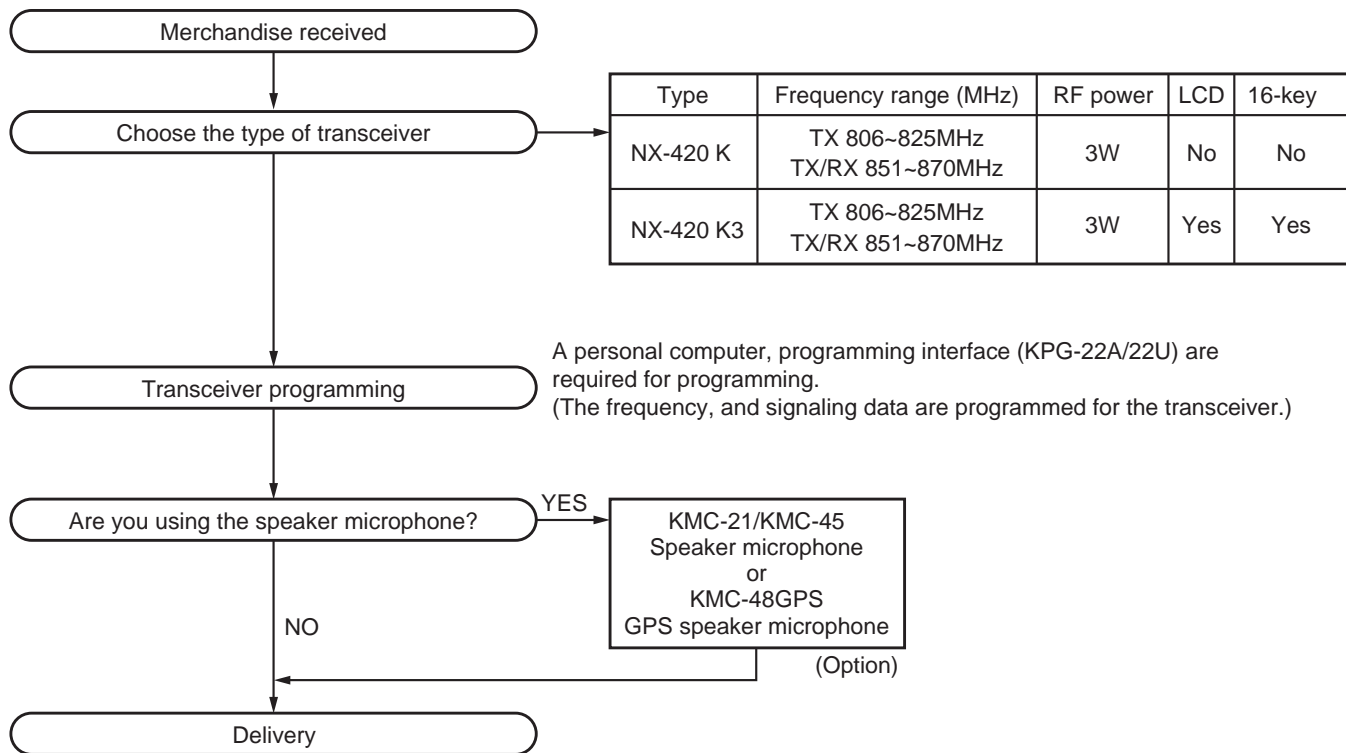
SERVICE

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

Model & Destination (Market code)		Display unit X54-376X-XX		TX-RX unit X57-8370-10	Frequency range	Remarks	LCD+16key
		0-10	0-12				
NX-420	K	-	レ	レ	TX:806~825MHz RX/TX:851~870MHz	1st IF: 49.95MHz LOC: 50.4MHz	-
	K3	レ	-	レ			レ

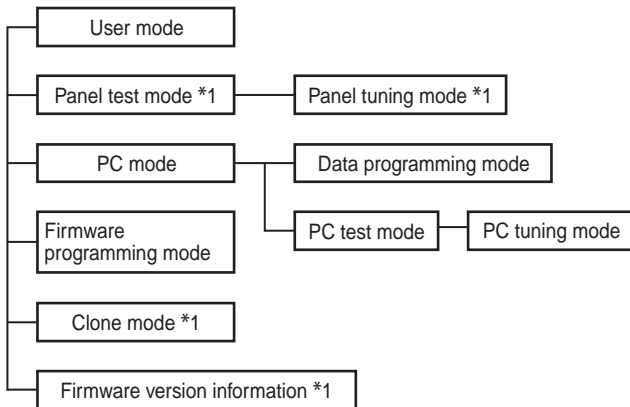
NX-420

SYSTEM SET-UP



REALIGNMENT

1. Modes



Mode	Function
User mode	For normal use.
Panel test mode * 1	Used by the dealer to check the fundamental characteristics.
Panel tuning mode * 1	Used by the dealer to tune the transceiver.
PC mode	Used for communication between the transceiver and PC.
Data programming mode	Used to read and write frequency data and other features to and from the transceiver.
PC test mode	Used to check the transceiver using the PC. This feature is included in the FPU.
Firmware programming mode	Used when changing the main program of the flash memory.
Clone mode * 1	Used to transfer programming data from one transceiver to another.
Firmware version information * 1	Used to confirm the internal firmware version.

* 1: K3 model only

2. How to Enter Each Mode

Mode	Operation
User mode	Power ON
Panel test mode * 2	[A] + Power ON
PC mode	Received commands from PC
Panel tuning mode * 2	[Panel test mode] + [S]
Firmware programming mode	[Side1] + Power ON
Clone mode * 2	[<B] + Power ON
Firmware version information * 2	[S] + Power ON

* 2: K3 model only

3. Panel Test Mode (K3 model only)

Setting method refer to ADJUSTMENT.

4. Panel Tuning Mode (K3 model only)

Setting method refer to ADJUSTMENT.

5. PC Mode

5-1. Preface

The transceiver is programmed by using a personal computer, programming interface (KPG-22A/22U) and programming software (KPG-141D).

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

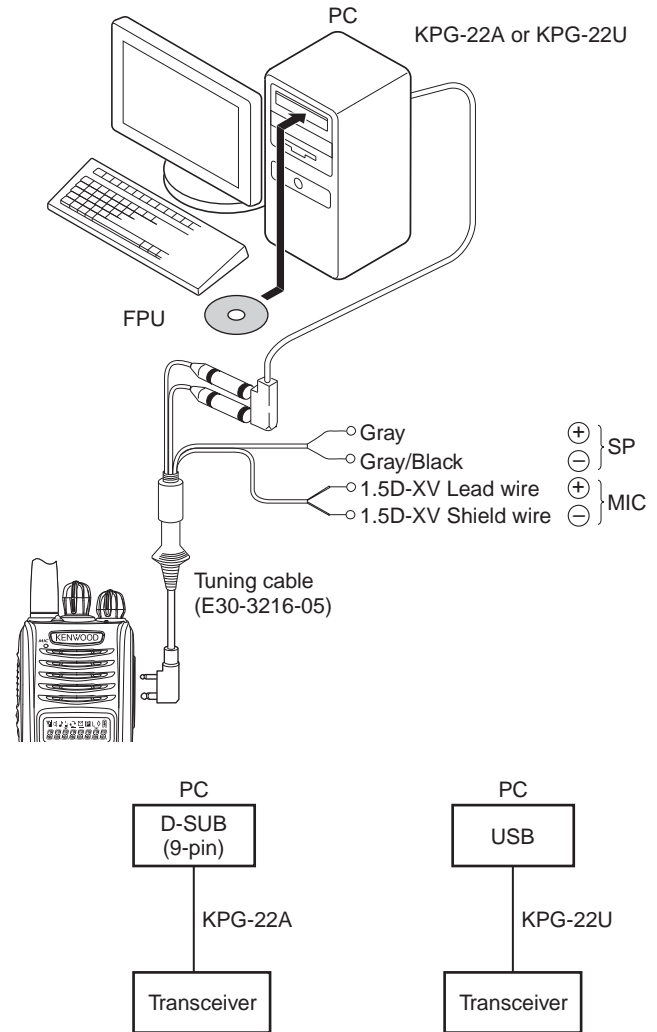


Fig. 1

5-2. Connection procedure

1. Connect the transceiver to the computer using the interface cable.

Note:

- You must install the KPG-22U driver in the computer to use the USB programming interface cable (KPG-22U).

REALIGNMENT

- When the POWER is switched on, you can immediately enter user mode. When the PC sends a command, the transceiver enters PC mode, and "PROGRAM" is displayed on the LCD.

When data is transmitting from the transceiver, the red LED lights.

When data is receiving by the transceiver, the green LED lights.

Note:

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

5-3. KPG-22A description

(PC programming interface cable: Option)

The KPG-22A is required to interface the transceiver to the computer. It has a circuit in its D-sub connector case that converts the RS-232C logic level to the TTL level.

The KPG-22A connects the SP/MIC connector of the transceiver to the RS-232C serial port of the computer.

5-4. KPG-22U description

(USB programming interface cable: Option)

The KPG-22U is a cable which connects to a USB port on a computer.

When using the KPG-22U, install the supplied CD-ROM (with driver software) in the computer. The KPG-22U driver runs under Windows XP, Vista or 7.

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 softwares KPG-141D (ver.3.10 or later) description

The KPG-141D is the programming software for the transceiver supplied on a CD-ROM. This software runs under Windows XP, Vista or 7 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.)

6-2. Connection procedure

Connect the transceiver to the personal computer using the interface cable (KPG-22A/22U) and USB adapter (KCT-53U: when the interface cable is KPG-22A, the KCT-53U can be used.). (Connection is the same as in the PC Mode.)

6-3. Programming

- Start up the firmware programming software (Fpro.exe (ver. 6.10 or later)). The Fpro.exe exists in the KPG-141D installed holder.
- Set the communications speed (normally, 115200 bps) and communications port in the configuration item.
- Set the firmware to be updated by File name item.
- Press and hold the [Side1] key while turning the transceiver power ON. Then, the orange LED on the transceiver lights and "FIRM PRG" is displayed.
- Check the connection between the transceiver and the personal computer, and make sure that the transceiver is in the Program mode.
- Press "write" button in the window. When the transceiver starts to receive data, the [LOADING] display lights.
- If writing ends successfully, the checksum is calculated and a result is displayed.
- If you want to continue programming other transceivers, repeat steps 4 to 7.

6-4. Function

If you press the [Side1] key while "FIRM PRG" is displayed, the checksum is calculated, and a result is displayed. If you press the [Side1] key again while the checksum is displayed, "FIRM PRG" is redisplayed.

Note:

- This mode cannot be entered if the Firmware Programming mode is set to Disable in the Programming software.
- Normally, write in the high-speed mode.
- The text message are displayed for K3 model only.

7. Clone Mode (K3 model only)

Programming data can be transferred from one transceiver to another by connecting them via their external SP/MIC 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
- ID (own) for MDC-1200

- Press and hold the [**B**] key while turning the transceiver power ON. If the Read authorization password is set to the transceiver, the transceiver displays "CLN LOCK". If the password is not set, the transceiver displays "CLONE".

REALIGNMENT

2. When you enter the correct password, and "CLONE" 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 (K3 model only);**

If one of keys 0 to 9 is pressed while the "CLN 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 [S] or [*] key, "CLONE" is displayed if the entered password is correct. If the password is incorrect, "CLN LOCK" is redisplayed.

• **How to enter the password using the Selector (K3 model only);**

If the Selector is rotated while "CLN LOCK" is displayed, the Read authorization password input screen is displayed.

If the Selector is rotated while the Read authorization password input screen is displayed, the number (0 to 9) blinks on the LCD. When you press the [S] key, the currently selected number is determined. If you press the [S] key after entering the password in this procedure, "CLONE" is displayed if the entered password is correct. If the password is incorrect, "CLN LOCK" is redisplayed.

4. Power ON the target transceiver.

5. Connect the cloning cable (part No. E30-3410-05) to the SP/MIC connectors on the source and target.

6. Press the [S] key on the source while the source displays "CLONE". 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 [S] key on the source is pressed while the source displays "END", the source displays "CLONE". 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.

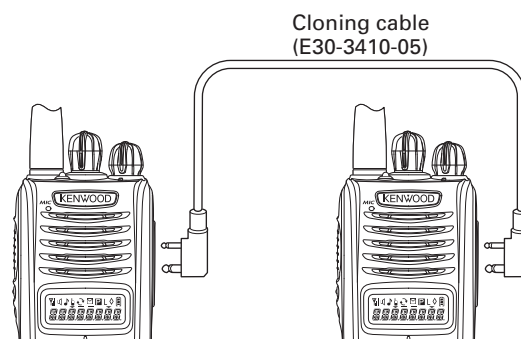


Fig. 2

8. Firmware Version Information (K3 model only)

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

DISASSEMBLY FOR REPAIR

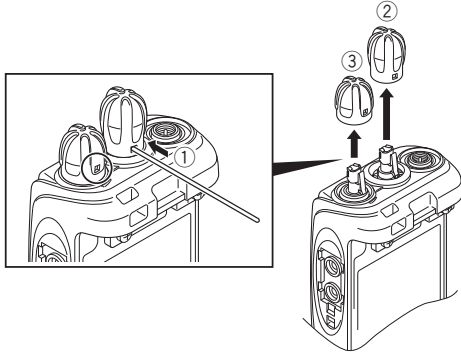
1. Precautions for Disassembly

■ Removing the selector knob and volume knob

- Using a thin tool, insert it in the hole on the selector knob side and push the knob spring. ①

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

- Lift and remove the selector knob ② while pushing the knob spring.
- Repeat steps 1 and 2 for the volume knob, to remove the volume knob ③.



Note:

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

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

■ Removing the selector knob spring and volume knob spring

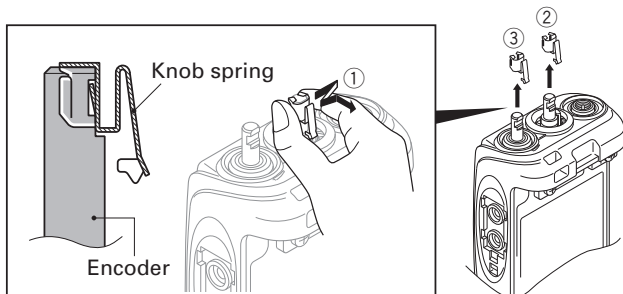
- Lightly grasp the left and right sides of the selector knob spring, then shift the knob spring to the left and right, little by little, as shown in the figure. ①

Note: Do not grasp the knob spring tightly.

- Remove the selector knob spring ②.

Note: Do not bring your fingers into contact with the flat spring of the knob spring as much as possible.

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



Note:

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

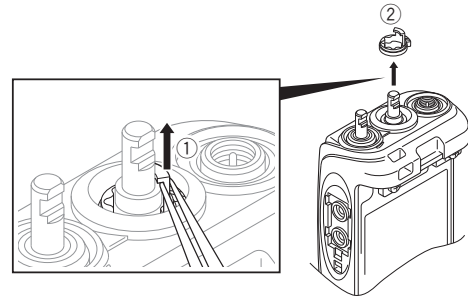
- Match the direction for the knob spring and the encoder.
- Insert the encoder onto the knob spring until a click sounds.

■ Removing the mechanical stopper (K3 model only)

- Pick up and lift the tab of a mechanical stopper using a pair of tweezers. ①

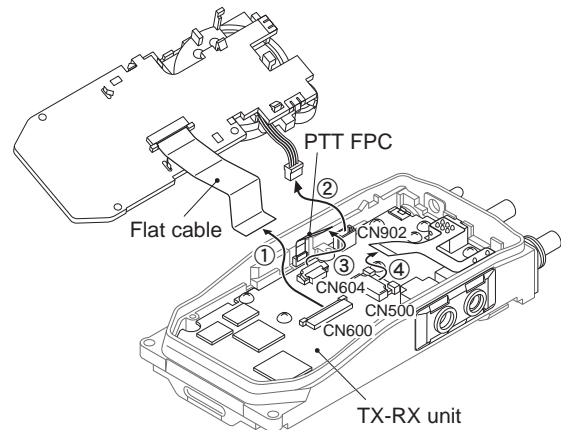
Note: Take care not to damage the packing.

- Remove the mechanical stopper ②.

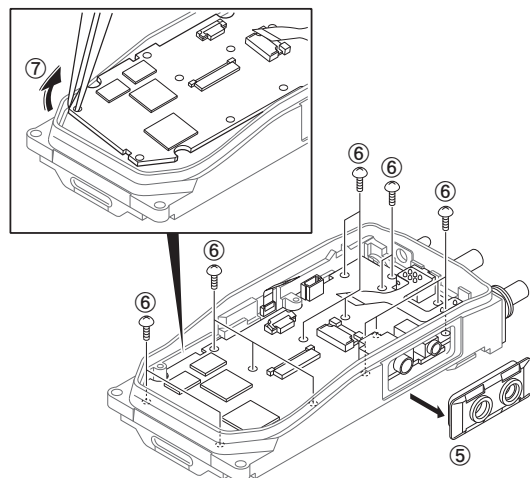


■ Removing the TX-RX unit from the chassis

- Remove the flat cable from the connector (CN600). ①
- Remove the Speaker lead wire from the connector (CN902). ②
- Remove the PTT FPC from the connector (CN604). ③
- Remove the VOL/SEL FPC from the connector (CN500). ④



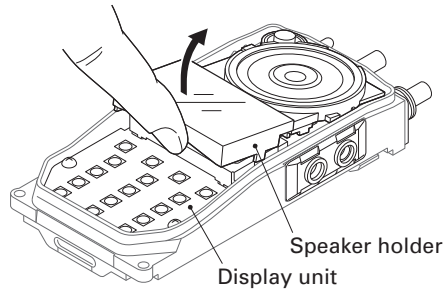
- Remove the packing ⑤ from the SP/MIC jack.
- Remove the 14 screws ⑥.
- Anchor the screw hole of the TX-RX unit using the tip of a pair of tweezers as shown in the figure. Then lift the TX-RX unit to remove it from the chassis. ⑦



DISASSEMBLY FOR REPAIR

■ Removing the speaker holder

There is a space of approximately 1mm (0.04 inch) between the center part of the front glass of the speaker holder and the surface of the Display unit. Set your finger on the space in the center part of the front glass, then lift and remove it.

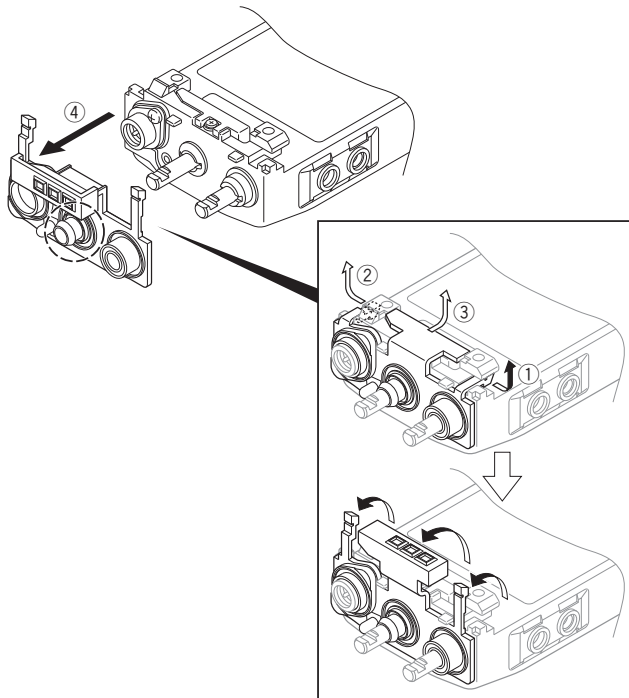


■ Removing the TOP packing

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

Note:

Remove the packing slowly, as the packing of the selector part might overset when the TOP packing is removed. If the packing is turned over, return it to the normal position using a soft tipped item (e.g., your finger).



2. 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

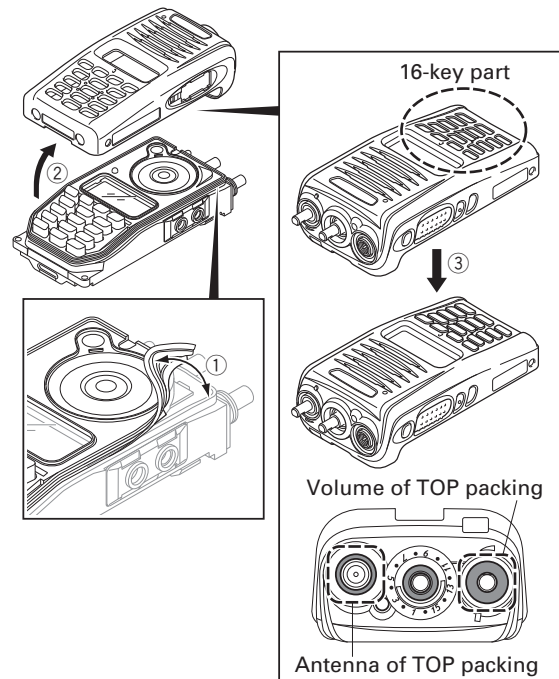
Note:

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

2. Mount the chassis onto the case. ②

Note:

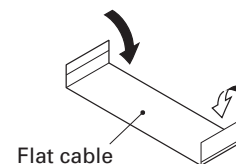
- After mounting the chassis onto the case, if the 16-key part on the key top gets stuck inside the case as shown in the figure, return it to the normal position using a soft tipped item (e.g., your finger). ③
Prying it with a pointed metal tool such as forceps, may damage the key top or packing.
- Confirm that the TOP packing is not caught in the Antenna or Volume holes of the case.



■ Forming the flat cable

Form the right and left end of the flat cable as shown in the figure. (Bend the terminal surface of the flat cable on the inside.)

Note: When bending the flat cable, bend it squarely. There is a possibility of disconnecting when the flat cable is bent too much.

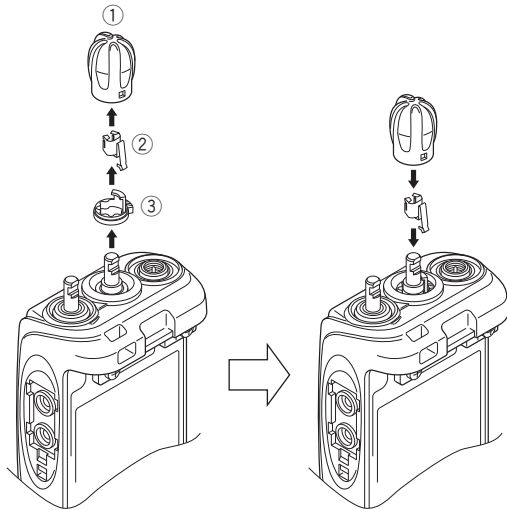


DISASSEMBLY FOR REPAIR

■ Changing the channel selector from 16-channel operation to free (without LCD models only)

1. Remove the channel selector knob ①. (Refer to page 8 for how to remove the channel selector knob.)
2. Remove the knob spring ②. (Refer to page 8 for how to remove the knob spring.)
3. Remove the mechanical stopper ③. (Refer to page 8 for how to remove the mechanical stopper.)
4. Reassemble the channel selector knob and knob spring that were removed in steps 1 and 2, in their original positions.

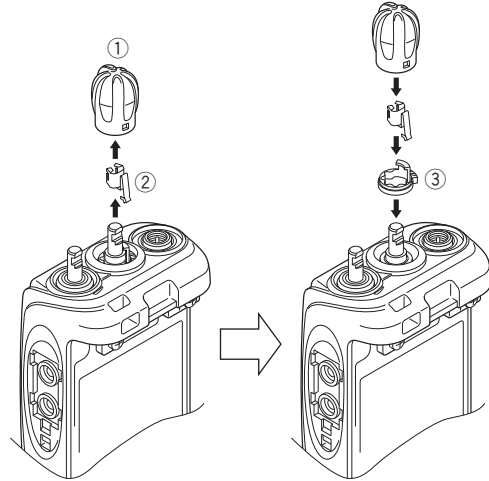
Note: Refer to page 8 for how to install the channel selector knob and knob spring.



■ Changing the channel selector from free operation to 16-channel (with LCD models only)

1. Remove the channel selector knob ①. (Refer to page 8 for how to remove the channel selector knob.)
2. Remove the knob spring ②. (Refer to page 8 for how to remove the knob spring.)
3. Pinch the supplied mechanical stopper ③ using your fingers, then install it into the groove of the selector part on the case.
4. Reassemble the channel selector knob and knob spring that were removed in steps 1 and 2, in their original positions.

Note: Refer to page 8 for how to install the channel selector knob and knob spring.

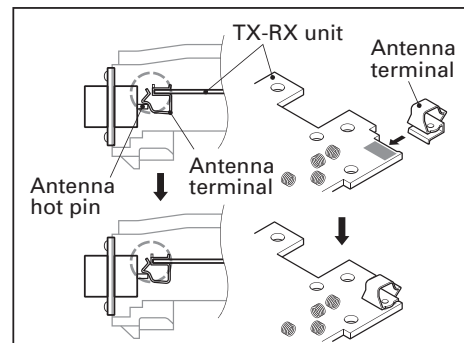


■ Connection place of the antenna hot pin and antenna terminal

An antenna hot pin is connected with the antenna terminal at the position shown in the figure.

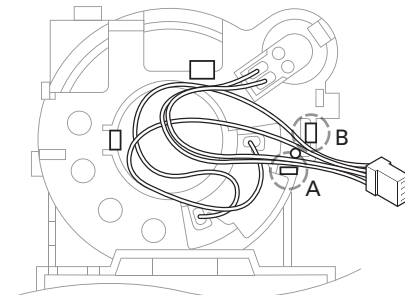
Confirm that the antenna hot pin has firmly come in contact with the terminal when the TX-RX unit is tightened with the screw.

Additionally, refer to the following figures for the connection place of the antenna terminal and the TX-RX unit.



■ Align the SP/MIC lead wire

Align the SP/MIC lead wire as shown in the figure. It is possible to fix temporarily by interweaving the two lead wires between the tabs (tab A and tab B) and boss of the speaker holder.



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 Assy (A02-4130-13 (without key)/A02-4132-13 (16-key))” is changed, “Sticker (B42-7417-04)” and “Fibrous Sheet (G10-1827-04)” should be ordered and changed together because Sticker (B42-7417-04) and Fibrous Sheet (G10-1827-04) are non-reusable.

Main Parts		Assembled Sheet/ Cushion			
Part Name	Part Number	Part Name	Part Number	Remark	
Plastic Cabinet Assy	(without key)	A02-4130-13	Sticker	B42-7417-04	“NEXEDGE” is printed.
	(16-key)	A02-4132-13	Fibrous sheet	G10-1827-04	
Speaker	T07-0787-05	Rubber Cushion (SP)	G11-4272-14		
		Sheet (SP)	G11-4527-04		
Chassis	A10-4148-01	Sheet (PTT)	G11-4543-04		
		Rubber Sheet (FET)	G11-4315-14	Used for stabilizing the radiation performance of the FET.	
		Sheet (Air)	G11-4500-04	This sheet is put on the air vent hole. This sheet lets air through, but does not let water through.	
MIC Element	T91-0673-05	Sheet (ECM)	G11-4558-04		

CIRCUIT DESCRIPTION

3-2. IF circuit

The first IF signal is passed through a four-pole monolithic crystal filter (XF300) to reject adjacent channel signals. The filtered first IF signal is amplified by the first IF amplifier (Q301) and then applied to the IF system IC (IC301). 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 50.4MHz of the second local oscillator output and produces the second IF signal of 450kHz.

The second IF signal is passed through the ceramic filter (CF300) to reject the adjacent channel signal. The filtered second IF signal is amplified by the AGC amplifier in IC301.

The signal from the AGC amplifier is input to the ASIC (IC607) through the ceramic filter (CF301).

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 the DSP. The audio signal from IC607 and IC601 goes through the amplifier (IC602). The signal then goes through an electronic volume control (IC4), and AF amplifier (IC901).

While AFSW is High, the power supply of audio power amplifier (IC901) is activated, and the output to the speaker turns ON.

3-4. Squelch circuit

It amplifies the demodulated noise signal from IC607 after filtering through the LPF and HPF circuit. The amplified signal is then converted to a DC signal by the detection circuit. The converted signal is fed back to IC607.

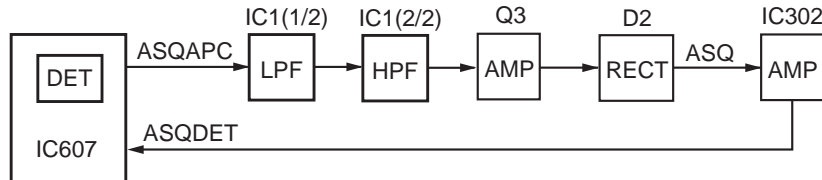


Fig. 3 Squelch circuit

4. Transmitter System

4-1. Audio band circuit

The signal from the microphone is amplified by IC2(2/2) and limited by the AGC circuit which is composed of D3, D4, Q4 and Q5. IC2 works as an anti-aliasing LPF filter.

4-2. Baseband circuit

The audio signal output from the baseband circuit is converted to digital data with a sampling frequency of 48kHz. This digital data is sent to the DSP (IC601), and voice signals of 300Hz or lower and frequencies of 3kHz or higher

are cut off and the 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 IC607. In Digital mode, the audio signal is converted to the 4-Level FSK baseband signal and output from IC607. The DTMF and MSK baseband signals are also generated by the DSP and output by IC607.

The LPF (IC6) works as a smoothing filter. The level output according to the transmit carrier is fine-adjusted according to each modulation method.

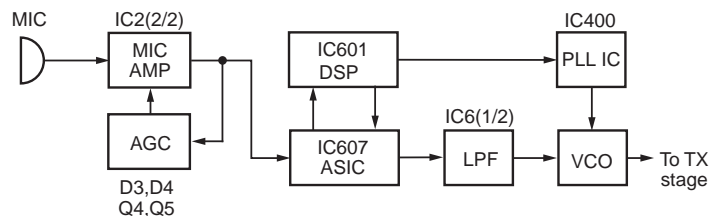


Fig. 4 Audio band and Baseband circuit

CIRCUIT DESCRIPTION

4-3. VOX

The DSP detects the audio level. If the detected level becomes higher than the threshold level, the VOX starts.

4-4. Drive and Final amplifier

The signal from the T/R switch (D412 is on) is amplified by the pre-drive amplifier (Q102) to 9~10dBm. The output of the pre-drive amplifier is amplified by the drive and final amplifiers (Q104, Q106) to 3.0W (1.0W when the power is low). Q104 and Q106 are MOS FETs. The output of the final amplifier is then passed through the harmonic filter (LPF) and antenna switch (D102, D103 are on) and applied to the antenna terminal.

4-5. APC circuit

The APC circuit always monitors the current flowing through the RF power amplifier (Q106) and keeps a constant current. The voltage drop at R132 and R133 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 IC607, and the output of IC100(2/2) controls the VGG of Q104 and Q106 to make the both current constant. The change of power high/low is carried out by the change of the reference voltage. IC106, Q107, Q108 and Q108 are turned on and Q103 and Q105 are turned off during transmission and the APC circuit is active.

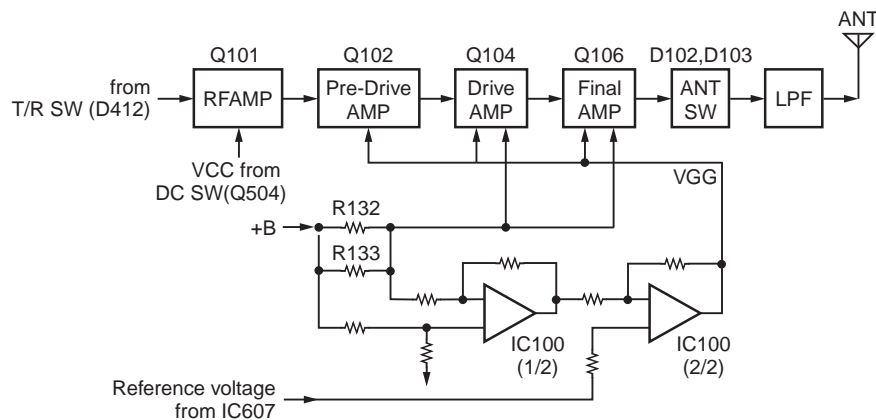


Fig. 5 Drive and final amplifier and APC circuit

5. PLL Frequency Synthesizer

5-1. TCXO (X400)

TCXO (X400) generates a reference frequency of 16.8MHz for the PLL frequency synthesizer. This reference frequency is applied to pin 9 of the PLL IC (IC400) and is connected to the IF circuit as a 2nd osc through the Tripler (Q300). The frequency adjustment is achieved by switching the ratio of dividing frequency. The resolution of the adjusting frequency is approximately 4Hz.

5-2. VCO

There are two VCOs (VCO-1 and VCO-2).

VCO-1 (Q401) generates the 1st local signal for the receiver and a carrier for the transmitter.

VCO-2 (Q402) generates a carrier for the transmitter of TA (Talk Around).

The oscillation frequency of the VCO is half of the carrier or 1st local signal. The VCO oscillates from 403 to 435MHz during transmit, and from 400.525 to 410.025MHz during reception.

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 (IC607).

When the /T_R logic is low, VCO-2 is activated, and when the /T_R logic is high, VCO-1 is activated.

The voltage control terminals, "CV" and "ASSIST", are controlled by the PLL IC (IC400) and ASIC (IC607) 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.

5-3. PLL IC (IC400)

The PLL IC compares the differences in phases of the VCO oscillation frequency and the TCXO 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.

CIRCUIT DESCRIPTION

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 (IC607) through the 3-line "SDO1", "PCK_RF", "/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.

"PLLMOD" receives the modulation data from the DSP (IC601).

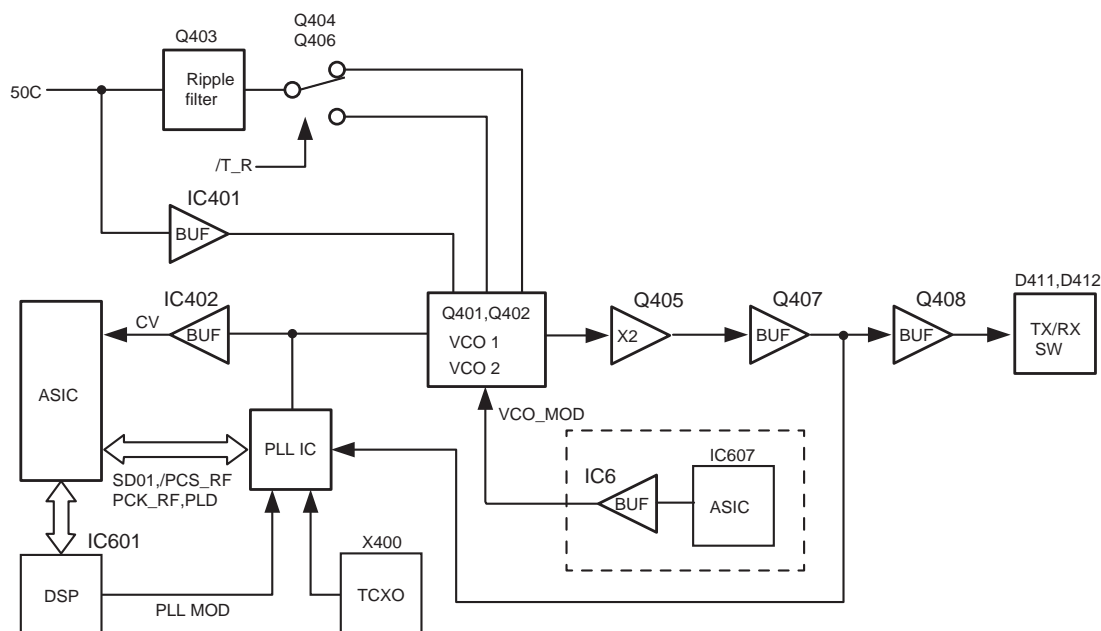


Fig. 6 PLL block diagram

6. Control Circuit

The control circuit consists of CPU in ASIC (IC607) and its peripheral circuits. CPU 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 (IC607) 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.

5-4. Local Switch (D411, D412)

The connection destination of the signal output from the buffer amplifier (Q408) is changed with the diode switch (D412) that is controlled by the transmission power supply, 50T, and the diode switch (D411) that is controlled by the receive power supply, 50R. If the 50T logic is high, it is connected to a send-side RF amplifier (Q101). If the 50T logic is low, it is connected to a receive-side mixer (IC200).

6-2. Memory Circuit

The memory circuit consists of the ASIC (IC607), the SRAM (IC603), and the flash memory (IC600). The flash memory has a 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 parameters that are written by the FPU. This program can be easily written from external devices. The SRAM has a 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-141D), 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.

CIRCUIT DESCRIPTION

6-3. LCD

The LCD is controlled using the 4 serial line from ASIC (IC607).

6-4. Key Detection Circuit (K3 model only)

Keys are detected using the LCD controller driver IC (IC8). If a pressed key is detected by IC8, it is informed to IC607 through the serial line.

6-5. Low Battery Warning

The battery voltage is divided using R500 and R502 and is detected by the ASIC (IC607). 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 (IC601) and processes the baseband signal. The DSP operates on an external clock of 18.432MHz (the same as the IC607), 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
- 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 (F500), and goes to the RF final amplifier, AVR ICs (IC504, IC900), DC/DC converter (IC505), and voltage detector IC (IC506). The voltage detector watches the battery voltage. If the battery voltage is 5.6V or higher, the detector outputs High.

When the VOL SW is turned on, SB1 becomes high (battery voltage). DC/DC (IC505) operates if both SB1 and the output of the detector are high. IC505 outputs 3.8V and activates IC501 (33M), IC502 (15M), IC500 (33A) and IC503 (33C). As a result, ASIC and DSP operate.

The SBC signal becomes High after the ASIC operates, IC504 (50C), IC900 (50V) and Q500 (SB2) are turned on.

When the /SAVE signal becomes High, Q503 (50C) operates. Switches (Q504, Q505) are controlled by the ASIC.

Q504 (50T) is turned on in transmit mode. Q505 (50R) is 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.

8. Signaling Circuit

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

Each signaling data signal of QT, DQT, LTR, DTMF and MSK is generated by the DSP circuit, superimposed on a modulation signal and output from IC607.

Each deviation of the TX QT, DQT, LTR, DTMF and MSK tone is adjusted by changing the output level of IC601 and the resulting signal is routed to the VCO and PLL.

8-2. Decode (QT/DQT/LTR/DTMF/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 (IC601) to perform this operation. The transceiver comander can be turned on or off using the FPU.

CIRCUIT DESCRIPTION

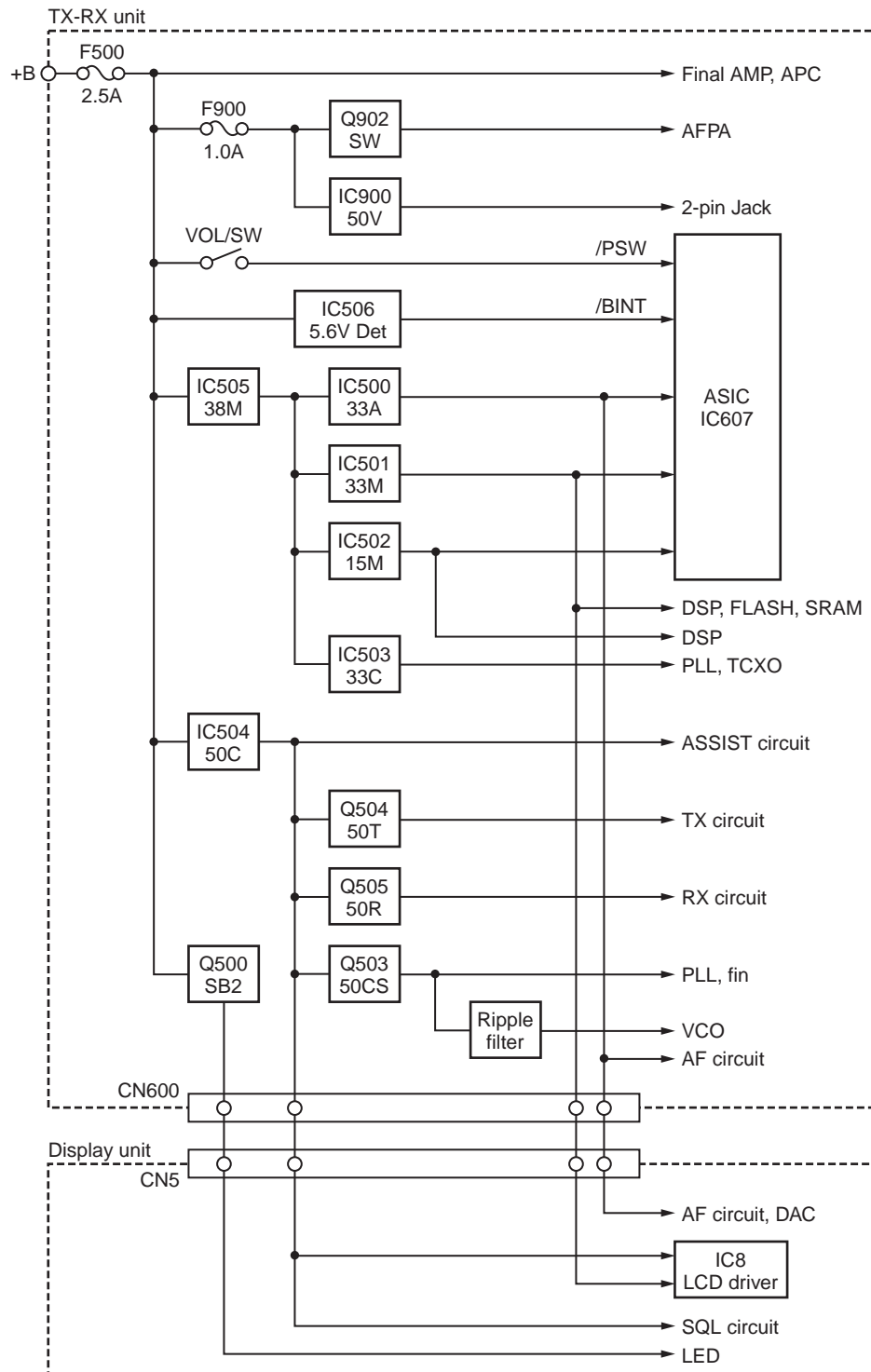


Fig. 7 Power supply circuit

COMPONENTS DESCRIPTION

Display unit (X54-3760-12) K type

Ref. No.	Part Name	Description
IC1	IC	ASQ BPF/ASQ BPF
IC2	IC	OP AMP(AF LPF/MIC AMP)
IC4	IC	D/A converter
IC6	IC	OP AMP(VCO_MOD/VREF)
IC8	IC	LCD driver
Q1	Transistor	TX/BUSY LED switch
Q2	FET	SQL switch
Q3	Transistor	SQL noise amplifier
Q4,5	Transistor	MIC AGC
Q6~8	Transistor	KEY backlight sw
D1	LED	TX/BUSY LED
D2	Diode	Noise detector
D3,4	Diode	AGC detector

Display unit (X54-3760-10) K3 type

Ref. No.	Part Name	Description
IC1	IC	ASQ BPF/ASQ BPF
IC2	IC	OP AMP(AF LPF/MIC AMP)
IC4	IC	D/A converter
IC6	IC	OP AMP(VCO_MOD/VREF)
IC8	IC	LCD driver
Q1	Transistor	TX/BUSY LED switch
Q2	FET	SQL switch
Q3	Transistor	SQL noise amplifier
Q4,5	Transistor	MIC AGC
Q6~8	Transistor	KEY backlight sw
D1	LED	TX/BUSY LED
D2	Diode	Noise detector
D3,4	Diode	AGC detector
D7~14	LED	KEY backlight
D15,16	Diode	KEY control
D18,19	LED	LCD backlight

TX-RX unit (X57-8370-10)

Ref No.	Part Name	Description
IC100	IC	APC control
IC200	IC	1st mixer
IC300	IC	Buffer amplifire (DET)
IC301	IC	FM system
IC302	IC	DC amplifire (ASQ/RSSI)
IC400	IC	PLL system
IC401	IC	DC amplifire (Assist)
IC402	IC	DC amplifire (CV/APC)
IC500	IC	Voltage regulator (33A)
IC501	IC	Voltage regulator (33M)
IC502	IC	Voltage regulator (15M)
IC503	IC	Voltage regulator (33C)
IC504	IC	Voltage regulator (50C)
IC505	IC	DC/DC converter (38M)
IC506	IC	Reset
IC600	IC	Flash memory
IC601	IC	DSP
IC602	IC	Sum amplifire
IC603	IC	SRAM
IC604	IC	Reset
IC605	IC	Motion sensor
IC606	IC	Buffer amplifire
IC607	IC	ASIC
IC608,609	IC	And gate (2 Input)
IC900	IC	Voltage regulator (50V)
IC901	IC	Audio power amplifire
Q101	Transistor	RF amplifire
Q102	FET	Pre-drive amplifire
Q103	Transistor	DC switch (FET BIAS)
Q104	FET	Drive amplifire
Q105	FET	DC switch (APC)
Q106	FET	Final amplifire
Q107	Transistor	DC switch (APC)
Q108	FET	Switch control (BIAS)
Q109	FET	Switch control (APC)
Q200	FET	RF amplifire(LNA)
Q300	Transistor	Tripler
Q301	Transistor	1st IF amplifire
Q401	FET	VCO (TX/RX)
Q402	FET	VCO (TA)

COMPONENTS DESCRIPTION

Ref No.	Part Name	Description
Q403	Transistor	Ripple Filter
Q404	FET	Switch control (Q406)
Q405	Transistor	Doubler
Q406	FET	DC switch (VCO)
Q407	Transistor	Buffer amplifire
Q408	Transistor	RF amplifire
Q500	FET	DC switch (SB2)
Q501	FET	Switch control (Q500)
Q502	Transistor	Switch control (Q504)
Q503	FET	DC switch (50CS)
Q504	Transistor	DC switch (50T)
Q505	Transistor	DC switch (50R)
Q506,507	FET	Level converter
Q508	Transistor	Switch control (SB1)
Q509	Transistor	Load
Q600	FET	DC switch (SB2)
Q900	Transistor	DC switch (SB2)
Q901	Transistor	Switch control (Q902)
Q902	Transistor	DC switch (AF AMP)
Q903	FET	Switch control (AF mute)
Q904	FET	AF mute switch
Q905	FET	Level converter
Q906	FET	AF mute switch
D100	Zener diode	Over voltage protection
D102-105	Diode	Antenna switch
D200	Diode	Limiter
D400	Diode	Limiter
D402,403	Variable capacitnce diode	VCO frequency control
D404-407	Variable capacitnce diode	VCO assist control
D408,409	Variable capacitnce diode	TX modulation
D410	Diode	Speed up
D411,412	Diode	RF switch
D500	Diode	Receive protection (+B)
D501	Diode	Speed up
D502,503	Diode	DC/DC converter
D505	Diode	Bypass
D506	Diode	Receive current prevention
D900,901	Diode	Receive current prevention

NX-420

PARTS LIST

* New Parts. Δ 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

Y : PX (Far East, Hawaii)

C : China

K : USA

T : England

X : Australia

P : Canada

E : Europe

M : Other Areas

NX-420

DISPLAY UNIT (X54-3760-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination
NX-420					
1	2B		A02-4130-13	PLASTIC CABINET ASSY	K
3	2B		A02-4132-13	PLASTIC CABINET ASSY(16KEY)	K3
4	1B		A10-4148-01	CHASSIS	
6	3A		B01-0694-13	ESCUTCHEON	
7	1C		B09-0686-03	CAP (ACCESSORY)	
8	1A		B11-1869-04	ILLUMINATION GUIDE(TX/BUSY)	
9	1A		B11-1890-04	FILTER(LCD)	K3
10	1A		B11-1891-02	ILLUMINATION GUIDE(LCD)	K3
11	1A		B38-0935-05	LCD	K3
12	1A		B42-7417-04	STICKER	
13	2D	*	B62-2470-00	INSTRUCTION MANUAL (ACCESSORY)	
16	1B,1D		D32-0454-04	STOPPER(16CH)	
18	3A		E04-0467-15	RF COAXIAL RECEPTACLE(SMA)	
19	2A		E23-1363-04	TERMINAL(ANT)	
20	1A		E29-1232-05	INTER CONNECTOR(LCD)	K3
21	1A		E37-1532-15	LEAD WIRE WITH CONNECTOR	
22	1A		E37-1537-05	FLAT CABLE(X57-X54)	
23	2A		E72-0435-03	TERMINAL BLOCK	
26	1A		G02-1864-04	EARTH SPRING(X54)	
27	1B		G09-0443-04	KNOB SPRING(VOL/SEL)	
28	1B		G10-1827-04	FIBROUS SHEET(SP)	
29	1A		G11-4272-14	RUBBER CUSHION(SP)	
30	3A		G11-4315-14	SHEET(Q106)	
31	1A		G11-4335-14	SHEET(LCD)	K3
32	1A		G11-4368-04	SHEET(TERMINAL BLOCK)	
33	3A		G11-4500-04	SHEET(AIR)	
34	1A		G11-4527-04	SHEET(SP)	
35	3A		G11-4543-04	SHEET(PTT)	
36	1A		G11-4558-04	SHEET(ECM)	
37	3A		G11-4561-04	SHEET(TX/BUSY)	
38	1A		G11-4562-04	SHEET(SP HOLDER)	
39	1A		G13-2068-04	CUSHION(VOL/SEL)	
40	2A		G13-2220-04	CUSHION(X54)	
41	2A		G13-2249-04	CUSHION	
42	3A		G53-1603-04	PACKING(SMA)	
43	2B		G53-1862-02	PACKING(TOP/BATT)	
44	2B		G53-1863-01	PACKING	K
45	1B		G53-1865-11	PACKING(16 KEY)	K3
46	1B		G53-1866-04	PACKING(TERMINAL)	
47	1A		G53-1885-03	PACKING(JACK)	
48	1C		H12-4312-02	PACKING FIXTURE	
49	3C	*	H52-2594-02	ITEM CARTON CASE	
51	1D		J19-5483-23	HOLDER (ACCESSORY)	
52	1A		J19-5547-01	HOLDER(FG-SP)	
53	1A		J21-8631-03	MOUNTING HARDWARE(LCD)	K3
54	1D		J29-0701-25	BELT CLIP (ACCESSORY)	
55	1A		J69-0370-04	RING(JACK)	
56	3A		J87-0027-05	FPC(PTT)	
57	2A		J87-0040-05	FPC(VOL/SEL)	
58	1A		K29-9485-13	KNOB(VOLUME)	

Ref. No.	Address	New parts	Parts No.	Description	Destination
59	1B		K29-9486-13	KNOB(SELECTOR)	
60	1B		K29-9500-03	KNOB(PTT)	
61	1B		K29-9501-03	BUTTON KNOB(PTT)	
A	3A		N09-2438-05	BINDING HEAD SCREW(ANT)	
B	3A		N09-6608-05	SPECIAL SCREW	
C	3A		N14-0864-04	CIRCULAR NUT(VOLUME)	
D	3A		N14-0865-04	CIRCULAR NUT(SELECTOR)	
E	3A		N30-3006-43	PAN HEAD MACHINE SCREW	
F	1A,2A,3A		N83-2005-48	PAN HEAD TAPTITE SCREW(X54/57)	
VR1	3A		R31-0685-05	VARIABLE RESISTOR(VOLUME)	
S101	2A		S60-0448-05	ROTARY SWITCH(SELECTOR)	
65	1A		T07-0787-05	SPEAKER	
66	1D	*	T90-1114-05	WHIP ANTENNA (ACCESSORY)	
		*	X57-8370-11	TX-RX UNIT(FOR SERVICE)	

DISPLAY UNIT (X54-3760-XX) -10: K3 -12: K,

D1			B30-2278-05	LED(RED/YELLOW)	
D7 -14			B30-2337-05	LED(YELLOW)	K3
D18 ,19			B30-2210-05	LED	K3
C1			CK73HB1H471K	CHIP C 470PF	K
C2			CK73HB1H681K	CHIP C 680PF	K
C3			CC73HCH1H270J	CHIP C 27PF	J
C4			CK73HB1H471K	CHIP C 470PF	K
C5			CK73HB1A104K	CHIP C 0.10UF	K
C6			CK73HB1H102K	CHIP C 1000PF	K
C7 ,8			CC73HCH1H470J	CHIP C 47PF	J
C10			CC73HCH1H101J	CHIP C 100PF	J
C11			CK73HB1H681K	CHIP C 680PF	K
C13			CC73HCH1H101J	CHIP C 100PF	J
C15			CK73HB1E103K	CHIP C 0.010UF	K
C16			CK73HB1H102K	CHIP C 1000PF	K
C19			CK73HB1A104K	CHIP C 0.10UF	K
C20			CK73HB1H102K	CHIP C 1000PF	K
C21			CK73HB1E103K	CHIP C 0.010UF	K
C22			CK73HB1A224K	CHIP C 0.22UF	K
C23			CC73HCH1H470J	CHIP C 47PF	J
C25			CK73HB1A224K	CHIP C 0.22UF	K
C26			CC73HCH1H470J	CHIP C 47PF	J
C28 ,29			CC73HCH1H470J	CHIP C 47PF	J
C30			CK73HB0J105K	CHIP C 1.0UF	K
C31			CC73HCH1H470J	CHIP C 47PF	J
C32			CK73HB1H122K	CHIP C 1200PF	K
C33 ,34			CC73HCH1H470J	CHIP C 47PF	J
C35			CK73HB1A104K	CHIP C 0.10UF	K
C36			CC73HCH1H470J	CHIP C 47PF	J
C37			CK73HB1H472K	CHIP C 4700PF	K
C38			CC73HCH1H181J	CHIP C 180PF	J
C39			CK73HB1A104K	CHIP C 0.10UF	K
C40			CC73HCH1H470J	CHIP C 47PF	J

PARTS LIST

DISPLAY UNIT (X54-3760-XX)

TX-RX UNIT (X57-8370-10)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C42 -44			CC73HCH1H470J	CHIP C 47PF J		R26			RK73HB1J683J	CHIP R 68K J 1/16W	
C45			CK73HB1H102K	CHIP C 1000PF K		R28 -30			RK73HB1J000J	CHIP R 0 J 1/16W	
C47			CK73HB1A104K	CHIP C 0.10UF K		R33 -35			RK73HB1J104J	CHIP R 100K J 1/16W	
C48			CK73HB0J105K	CHIP C 1.0UF K		R37			RK73HB1J154J	CHIP R 150K J 1/16W	
C49			CK73HB1H102K	CHIP C 1000PF K		R39 ,40			RK73HB1J103J	CHIP R 10K J 1/16W	
C52 ,53			CK73HB1A104K	CHIP C 0.10UF K		R41 ,42			RK73HB1J683J	CHIP R 68K J 1/16W	
C54			CK73HB1H331K	CHIP C 330PF K		R44 ,45			RK73HB1J104J	CHIP R 100K J 1/16W	
C58			CC73HCH1H680J	CHIP C 68PF J		R47			RK73HB1J223J	CHIP R 22K J 1/16W	
C62			CC73HCH1H101J	CHIP C 100PF J		R50			RK73HB1J223J	CHIP R 22K J 1/16W	
C63 ,64			CK73HB0J105K	CHIP C 1.0UF K		R52			RK73HB1J471J	CHIP R 470 J 1/16W	
C67			CK73HB1H102K	CHIP C 1000PF K		R53			RK73HB1J182J	CHIP R 1.8K J 1/16W	
C68			CK73HB1E103K	CHIP C 0.010UF K		R61 -64			RK73HB1J332J	CHIP R 3.3K J 1/16W	
C70			CK73HB0J105K	CHIP C 1.0UF K		R65			RK73HB1J682J	CHIP R 6.8K J 1/16W	
C71			CK73HB1A104K	CHIP C 0.10UF K		R66			RK73HB1J000J	CHIP R 0 J 1/16W	
C73			CK73GB0J106K	CHIP C 10UF K		R67			RK73HB1J471J	CHIP R 470 J 1/16W	
C74			CK73HB0J105K	CHIP C 1.0UF K		R69			RK73HB1J222J	CHIP R 2.2K J 1/16W	
C78			CK73HB1E103K	CHIP C 0.010UF K		R70 -72			RK73HB1J103J	CHIP R 10K J 1/16W	
C79			CK73HB1A473K	CHIP C 0.047UF K		R73			RK73GB2A433J	CHIP R 43K J 1/10W	
C83			CK73HB1H102K	CHIP C 1000PF K		R74			RK73HB1J121J	CHIP R 120 J 1/16W	
C84			CK73HB1A473K	CHIP C 0.047UF K		R75			RK73HB1J222J	CHIP R 2.2K J 1/16W	
C85			CK73HB1H681K	CHIP C 680PF K		R76			RK73HB1J681J	CHIP R 680 J 1/16W	
C90			CK73HB1E103K	CHIP C 0.010UF K		R77			RK73HB1J103J	CHIP R 10K J 1/16W	
C91			CK73HB1H471K	CHIP C 470PF K		R78			RK73HB1J682J	CHIP R 6.8K J 1/16W	
C92			CK73HB1H102K	CHIP C 1000PF K		R79			RK73HB1J563J	CHIP R 56K J 1/16W	
C93 ,94			CK73HB1E103K	CHIP C 0.010UF K		R81			RK73HB1J000J	CHIP R 0 J 1/16W	
CN5			E40-6893-05	FLAT CABLE CONNECTOR(24P)		R82			RK73HB1J332J	CHIP R 3.3K J 1/16W	
CN6			E40-6883-05	FLAT CABLE CONNECTOR(6P)		R83			RK73HB1J000J	CHIP R 0 J 1/16W	
L1 ,2			L92-0408-05	CHIP FERRITE		R83 ,84			RK73HB1J000J	CHIP R 0 J 1/16W	
L3			L92-0138-05	CHIP FERRITE	K3	R86			RK73HB1J000J	CHIP R 0 J 1/16W	
						R88			RK73HB1J000J	CHIP R 0 J 1/16W	
CP1			RK74HB1J101J	CHIP-COM 100 J 1/16W		S1 -4			S70-0516-05	TACT SWITCH	
CP2			RK74HB1J102J	CHIP-COM 1.0K J 1/16W		S5 -20			S70-0519-05	TACT SWITCH	K3
CP3			RK74HB1J471J	CHIP-COM 470 J 1/16W		MIC1			T91-0673-05	MIC ELEMENT	
CP4 ,5			RK74HB1J102J	CHIP-COM 1.0K J 1/16W		D2			KDR731	DIODE	
CP6			RK74HB1J471J	CHIP-COM 470 J 1/16W		D3 ,4			DA221	DIODE	
CP7 -9			RK74HB1J102J	CHIP-COM 1.0K J 1/16W		D15			HN2S03FE	DIODE	K3
CP10			RK74HB1J101J	CHIP-COM 100 J 1/16W		D16			1SS388F	DIODE	K3
CP11-13			RK74HB1J102J	CHIP-COM 1.0K J 1/16W		IC1 ,2			TC75W51FK(F)	MOS-IC	
CP14			RK74HA1J102J	CHIP-COM 1.0K J 1/16W		IC4			R2A20178NP	MICROCONTROLLER IC	
R1			RK73HB1J472J	CHIP R 4.7K J 1/16W		IC6			TC75W51FK(F)	MOS-IC	
R2			RK73HB1J103J	CHIP R 10K J 1/16W		IC8			LC75857W-E	MOS-IC	K3
R3			RK73HB1J391J	CHIP R 390 J 1/16W		Q1			UMG9N	TRANSISTOR	
R4			RK73HB1J823J	CHIP R 82K J 1/16W		Q2			SSM3K15TE(F)	FET	
R5			RK73HB1J100J	CHIP R 10 J 1/16W		Q3			KTC4075E(Y,GR)	TRANSISTOR	
R6			RK73HB1J821J	CHIP R 820 J 1/16W		Q4			2SC4738(GR)F	TRANSISTOR	
R7			RK73HB1J472J	CHIP R 4.7K J 1/16W		Q5			2SA1832(GR)F	TRANSISTOR	
R8			RK73HB1J153J	CHIP R 15K J 1/16W		Q6			2SA1362-F(GR)	TRANSISTOR	K3
R9			RK73HB1J333J	CHIP R 33K J 1/16W		Q7 ,8			2SC5383-T111	TRANSISTOR	K3
R10			RK73HB1J000J	CHIP R 0 J 1/16W		TH1			ERTJ0EV104H	THERMISTOR(100K)	
R11 ,12			RK73HB1J334J	CHIP R 330K J 1/16W							
R13			RK73HB1J471J	CHIP R 470 J 1/16W							
R14			RK73HB1J334J	CHIP R 330K J 1/16W							
R15			RK73HB1J332J	CHIP R 3.3K J 1/16W							
R16			RK73HB1J470J	CHIP R 47 J 1/16W							
R17			RK73HB1J104J	CHIP R 100K J 1/16W							
R18			RK73HB1J393J	CHIP R 39K J 1/16W							
R19 ,20			RK73HB1J224J	CHIP R 220K J 1/16W							
R21 ,22			RK73HB1J563J	CHIP R 56K J 1/16W							
R23			RK73HB1J222J	CHIP R 2.2K J 1/16W							
R24			RK73HB1J000J	CHIP R 0 J 1/16W							
TX-RX UNIT (X57-8370-10)											
C100			CC73HCH1H101J	CHIP C 100PF J							
C102			CK73HB1E103K	CHIP C 0.010UF K							
C103-108			CC73HCH1H101J	CHIP C 100PF J							
C110,111			CC73HCH1H080B	CHIP C 8.0PF B							
C112			CK73HB1E104K	CHIP C 0.10UF K							

PARTS LIST

TX-RX UNIT (X57-8370-10)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C113			CC73HCH1H100B	CHIP C 10PF B		C221			CC73HCH1H030B	CHIP C 3.0PF B	
C114-119			CC73HCH1H101J	CHIP C 100PF J		C222			CC73HCH1H101J	CHIP C 100PF J	
C120			CK73HB1E104K	CHIP C 0.10UF K		C224			CC73HCH1H080B	CHIP C 8.0PF B	
C121			CC73HCH1H120J	CHIP C 12PF J		C226			CC73HCH1H101J	CHIP C 100PF J	
C122,123			CK73HB1E104K	CHIP C 0.10UF K		C227			CK73HB1E104K	CHIP C 0.10UF K	
C124			CC73HCH1H101J	CHIP C 100PF J		C228			CK73HB1E103K	CHIP C 0.010UF K	
C126			CC73HCH1H090B	CHIP C 9.0PF B		C229			CC73HCH1H151J	CHIP C 150PF J	
C129			CS77BA1A4R7M	CHIP TNL 4.7UF 10WV		C230-232			CC73HCH1H101J	CHIP C 100PF J	
C130			CC73HCH1H101J	CHIP C 100PF J		C234			CC73HCH1H020B	CHIP C 2.0PF B	
C133			CC73HCH1H101J	CHIP C 100PF J		C236			CC73HCH1H100B	CHIP C 10PF B	
C136			CC73HCH1H100B	CHIP C 10PF B		C237,238			CC73HCH1H101J	CHIP C 100PF J	
C138			CC73GCH1H820J	CHIP C 82PF J		C239			CK73HB1E103K	CHIP C 0.010UF K	
C140			CK73GB1E105K	CHIP C 1.0UF K		C240			CC73HCH1H270J	CHIP C 27PF J	
C141			CC73HCH1H101J	CHIP C 100PF J		C300			CK73HB1E103K	CHIP C 0.010UF K	
C143			CC73HCH1H101J	CHIP C 100PF J		C301			CK73HB1A104K	CHIP C 0.10UF K	
C145			CC73HCH1H270G	CHIP C 27PF G		C302			CC73HCH1H100B	CHIP C 10PF B	
C146-148			CC73HCH1H101J	CHIP C 100PF J		C303			CK73HB1E103K	CHIP C 0.010UF K	
C150,151			CC73HCH1H101J	CHIP C 100PF J		C306			CC73HCH1H100B	CHIP C 10PF B	
C152			C93-0941-05	CHIP C 18PF G		C307			CC73HCH1H101J	CHIP C 100PF J	
C153			CK73HB1E103K	CHIP C 0.010UF K		C309			CC73HCH1H101J	CHIP C 100PF J	
C154			CC73GCH1H060B	CHIP C 6.0PF B		C310			CC73HCH1H151J	CHIP C 150PF J	
C155			CK73HB1E104K	CHIP C 0.10UF K		C312			CC73HCH1H330G	CHIP C 33PF G	
C156			CK73GB1E105K	CHIP C 1.0UF K		C313-315			CK73HB1A104K	CHIP C 0.10UF K	
C157			CC73GCH1H040B	CHIP C 4.0PF B		C316			CK73FB1C106K	CHIP C 10UF K	
C158			CK73HB1E103K	CHIP C 0.010UF K		C317			CC73HCH1H680J	CHIP C 68PF J	
C159			CC73HCH1H101J	CHIP C 100PF J		C318			CK73HB1A104K	CHIP C 0.10UF K	
C161			CC73HCH1H101J	CHIP C 100PF J		C319			CK73HB1E103K	CHIP C 0.010UF K	
C164			CC73HCH1H101J	CHIP C 100PF J		C320-322			CK73HB1A104K	CHIP C 0.10UF K	
C168			CC73HCH1H101J	CHIP C 100PF J		C323			CK73FB1C106K	CHIP C 10UF K	
C169			CC73GCH1H101J	CHIP C 100PF J		C325			CC73HCH1H100B	CHIP C 10PF B	
C171			CC73HCH1H101J	CHIP C 100PF J		C326			CK73HB1A104K	CHIP C 0.10UF K	
C172			CC73GCH1H020B	CHIP C 2.0PF B		C327			CK73HB1E103K	CHIP C 0.010UF K	
C173			CC73HCH1H020B	CHIP C 2.0PF B		C329-332			CK73HB1A104K	CHIP C 0.10UF K	
C175			CC73GCH1H101J	CHIP C 100PF J		C333			CK73GB1A474K	CHIP C 0.47UF K	
C177			CC73GCH1H101J	CHIP C 100PF J		C334			CK73HB1E103K	CHIP C 0.010UF K	
C178			CC73GCH1H2R5B	CHIP C 2.5PF B		C335			CC73HCH1H470J	CHIP C 47PF J	
C181			CC73HCH1H101J	CHIP C 100PF J		C336,337			CC73HCH1H101J	CHIP C 100PF J	
C182			CC73GCH1H2R5B	CHIP C 2.5PF B		C338,339			CK73HB1E103K	CHIP C 0.010UF K	
C183			CC73GCH1H150G	CHIP C 15PF G		C340			CC73HCH1H330J	CHIP C 33PF J	
C185			CC73GCH1H150G	CHIP C 15PF G		C341			CC73HCH1H030B	CHIP C 3.0PF B	
C190			CC73HCH1H040B	CHIP C 4.0PF B		C342			CC73HCH1H101J	CHIP C 100PF J	
C191			CC73HCH1H050B	CHIP C 5.0PF B		C343			CC73HCH1H470J	CHIP C 47PF J	
C192			CC73HCH1H101J	CHIP C 100PF J		C344			CC73HCH1H180G	CHIP C 18PF G	
C200			CK73HB1A105K	CHIP C 1.0UF K		C346			CC73HCH1H060B	CHIP C 6.0PF B	
C202			CK73HB1E103K	CHIP C 0.010UF K		C347			CK73HB1E103K	CHIP C 0.010UF K	
C203			CC73HCH1H101J	CHIP C 100PF J		C400			CK73HB1E103K	CHIP C 0.010UF K	
C204			CC73HCH1H040B	CHIP C 4.0PF B		C401			CC73HCH1H101J	CHIP C 100PF J	
C205			CC73HCH1H330J	CHIP C 33PF J		C402			CC73HCH1H100B	CHIP C 10PF B	
C207			CC73HCH1H010B	CHIP C 1.0PF B		C403			CK73HB1E103K	CHIP C 0.010UF K	
C208			CK73HB1E103K	CHIP C 0.010UF K		C404			CC73HCH1H100B	CHIP C 10PF B	
C209			CC73HCH1H010B	CHIP C 1.0PF B		C405			CK73HB1H102K	CHIP C 1000PF K	
C210			CC73HCH1H030B	CHIP C 3.0PF B		C406			CK73HB1E103K	CHIP C 0.010UF K	
C211			CC73HCH1H101J	CHIP C 100PF J		C407			CC73HCH1H101J	CHIP C 100PF J	
C212			CC73HCH1H330J	CHIP C 33PF J		C410			CC73HCH1H100B	CHIP C 10PF B	
C213			CC73HCH1H020B	CHIP C 2.0PF B		C411,412			CK73HB1E103K	CHIP C 0.010UF K	
C214			CC73HCH1H040B	CHIP C 4.0PF B		C413			CC73HCH1H101J	CHIP C 100PF J	
C215			CC73HCH1H010B	CHIP C 1.0PF B		C414			CK73HB1E103K	CHIP C 0.010UF K	
C216,217			CC73HCH1H040B	CHIP C 4.0PF B		C415-422			CC73HCH1H101J	CHIP C 100PF J	
C218			CC73HCH1H030B	CHIP C 3.0PF B		C423			CK73HB1A104K	CHIP C 0.10UF K	
C219			CC73HCH1H101J	CHIP C 100PF J		C424			CC73HCH1H101J	CHIP C 100PF J	

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Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C425			CK73HB1A104K	CHIP C 0.10UF K		C512			CK73HB1A104K	CHIP C 0.10UF K	
C426-429			CC73HCH1H101J	CHIP C 100PF J		C513,514			CC73HCH1H101J	CHIP C 100PF J	
C430			CK73HB1E103K	CHIP C 0.010UF K		C515			CK73HB1H682K	CHIP C 6800PF K	
C431			CS77MA1VR15M	CHIP TNTL 0.15UF 35WV		C516-520			CC73HCH1H101J	CHIP C 100PF J	
C432			C93-0787-05	CHIP C 0.1UF J		C521,522			CK73HB1A105K	CHIP C 1.0UF K	
C433			CS77BA1D100M	CHIP TNTL 10UF 20WV		C523			CK73GB0J106K	CHIP C 10UF K	
C435			CC73HCH1H101J	CHIP C 100PF J		C524			CC73HCH1H101J	CHIP C 100PF J	
C436			C93-1906-05	FILM CAP 0.047UF J		C525			CK73HB1A105K	CHIP C 1.0UF K	
C437			CK73HB1H102K	CHIP C 1000PF K		C526			CK73GB0J106K	CHIP C 10UF K	
C438			CK73HB1A104K	CHIP C 0.10UF K		C527			CK73HB1H102K	CHIP C 1000PF K	
C439-441			CC73HCH1H101J	CHIP C 100PF J		C529			CS77BP1A100M	CHIP TNTL 10UF 10WV	
C442,443			CK73HB1H471K	CHIP C 470PF K		C530			CK73HB1H102K	CHIP C 1000PF K	
C444			CC73HCH1H101J	CHIP C 100PF J		C531			CK73GB1E105K	CHIP C 1.0UF K	
C445			CK73HB1A104K	CHIP C 0.10UF K		C532			CK73GB0J106K	CHIP C 10UF K	
C446			CK73HB1H472K	CHIP C 4700PF K		C533			CK73HB1A224K	CHIP C 0.22UF K	
C448			CK73HB1A105K	CHIP C 1.0UF K		C534			CC73HCH1H560J	CHIP C 56PF J	
C449			CC73HCH1H070B	CHIP C 7.0PF B		C535			CK73HB1H102K	CHIP C 1000PF K	
C450			CC73HCH1H060B	CHIP C 6.0PF B		C536			CC73HCH1H101J	CHIP C 100PF J	
C451			CC73HCH1H1R5B	CHIP C 1.5PF B		C537			CK73HB1E103K	CHIP C 0.010UF K	
C452			CC73HCH1H010B	CHIP C 1.0PF B		C539,540			CK73HB1A105K	CHIP C 1.0UF K	
C454,455			CC73HCH1H0R5B	CHIP C 0.5PF B		C541			CK73HB1H102K	CHIP C 1000PF K	
C456			CC73HCH1H101J	CHIP C 100PF J		C542			CK73HB1H682K	CHIP C 6800PF K	
C457			CC73HCH1H040B	CHIP C 4.0PF B		C543			CK73HB1H102K	CHIP C 1000PF K	
C458			CC73HCH1H030B	CHIP C 3.0PF B		C545,546			CC73HCH1H101J	CHIP C 100PF J	
C459			CC73HCH1H060B	CHIP C 6.0PF B		C547			CK73HB1H102K	CHIP C 1000PF K	
C460			CC73HCH1H050B	CHIP C 5.0PF B		C548			CK73HB1A104K	CHIP C 0.10UF K	
C461			CS77BP1A100M	CHIP TNTL 10UF 10WV		C549			CK73FB1E475K	CHIP C 4.7UF K	
C462,463			CC73HCH1H050B	CHIP C 5.0PF B		C550			CK73HB1A104K	CHIP C 0.10UF K	
C464			CC73HCH1H101J	CHIP C 100PF J		C551			CK73FB1C106K	CHIP C 10UF K	
C465			CC73GCH1H101J	CHIP C 100PF J		C552			CC73HCH1H101J	CHIP C 100PF J	
C466			CC73HCH1H101J	CHIP C 100PF J		C553			CK73GB1E105K	CHIP C 1.0UF K	
C467			CC73HCH1H0R5B	CHIP C 0.5PF B		C554			CK73HB1H102K	CHIP C 1000PF K	
C468			CK73GB0J475K	CHIP C 4.7UF K		C563			CC73HCH1H101J	CHIP C 100PF J	
C469			CC73HCH1H0R5B	CHIP C 0.5PF B		C601,602			CK73GB0J106K	CHIP C 10UF K	
C470			CC73HCH1H101J	CHIP C 100PF J		C605,606			CK73HB1A104K	CHIP C 0.10UF K	
C472			CC73HCH1H101J	CHIP C 100PF J		C607			CK73HB1E103K	CHIP C 0.010UF K	
C473			CC73HCH1H100B	CHIP C 10PF B		C608			CK73HB1H102K	CHIP C 1000PF K	
C474			CC73HCH1H101J	CHIP C 100PF J		C609-611			CC73HCH1H470J	CHIP C 47PF J	
C475			CC73HCH1H040B	CHIP C 4.0PF B		C614			CC73HCH1H470J	CHIP C 47PF J	
C476-478			CC73HCH1H101J	CHIP C 100PF J		C618			CC73HCH1H470J	CHIP C 47PF J	
C479			CC73HCH1H020B	CHIP C 2.0PF B		C621-628			CC73HCH1H470J	CHIP C 47PF J	
C480			CC73HCH1H120J	CHIP C 12PF J		C629			CK73HB1H102K	CHIP C 1000PF K	
C481			CC73HCH1H020B	CHIP C 2.0PF B		C631			CK73HB1A105K	CHIP C 1.0UF K	
C482			CC73HCH1H150J	CHIP C 15PF J		C632			CK73HB1E103K	CHIP C 0.010UF K	
C483			CC73HCH1H1R5B	CHIP C 1.5PF B		C633			CC73HCH1H101J	CHIP C 100PF J	
C484			CC73HCH1H101J	CHIP C 100PF J		C634			CK73HB1H102K	CHIP C 1000PF K	
C486-488			CC73HCH1H101J	CHIP C 100PF J		C635-639			CK73HB1A104K	CHIP C 0.10UF K	
C489			CC73HCH1H020B	CHIP C 2.0PF B		C640			CK73HB1E103K	CHIP C 0.010UF K	
C492,493			CC73HCH1H040B	CHIP C 4.0PF B		C641			CK73HB1A105K	CHIP C 1.0UF K	
C494			CC73HCH1H120J	CHIP C 12PF J		C642			CK73HB1A104K	CHIP C 0.10UF K	
C495			CC73HCH1H050B	CHIP C 5.0PF B		C643			CK73HB1E103K	CHIP C 0.010UF K	
C496			CC73HCH1H101J	CHIP C 100PF J		C644			CK73HB1A683K	CHIP C 0.068UF K	
C500			CK73HB1H102K	CHIP C 1000PF K		C645			CK73HB1E103K	CHIP C 0.010UF K	
C501			CC73HCH1H220G	CHIP C 22PF G		C646			CK73HB1C473K	CHIP C 0.047UF K	
C503			CC73HCH1H101J	CHIP C 100PF J		C647			CK73HB1A105K	CHIP C 1.0UF K	
C506			CK73HB1A105K	CHIP C 1.0UF K		C648,649			CK73HB1E103K	CHIP C 0.010UF K	
C508			CK73HB1A105K	CHIP C 1.0UF K		C650			CK73HB1A104K	CHIP C 0.10UF K	
C509			CK73GB0J475K	CHIP C 4.7UF K		C651,652			CK73HB1E103K	CHIP C 0.010UF K	
C510			CC73HCH1H101J	CHIP C 100PF J		C654-657			CC73HCH1H470J	CHIP C 47PF J	
C511			CK73HB1H682K	CHIP C 6800PF K		C658			CK73HB1A104K	CHIP C 0.10UF K	
						C660			CK73HB1E103K	CHIP C 0.010UF K	

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Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C661			CK73HB1A104K	CHIP C 0.10UF K		L109			L92-0408-05	CHIP FERRITE	
C663			CK73GB0J106K	CHIP C 10UF K		L112			L34-4550-05	AIR-CORE COIL(7.5T)	
C664			CK73HB1E103K	CHIP C 0.010UF K		L113			L92-0149-05	CHIP FERRITE	
C665			CK73HB1H102K	CHIP C 1000PF K		L114			L41-6878-43	SMALL FIXED INDUCTOR(68NH)	
C666			CK73HB1E103K	CHIP C 0.010UF K		L115			L40-3975-71	SMALL FIXED INDUCTOR(39NH)	
C667			CK73HB1A105K	CHIP C 1.0UF K		L116			L34-4563-05	AIR-CORE COIL(3T)	
C668,669			CK73HB1A104K	CHIP C 0.10UF K		L117			L41-7568-45	SMALL FIXED INDUCTOR(7.5NH)	
C670			CK73HB1H682K	CHIP C 6800PF K		L118			L79-1468-05	FILTER MODULE	
C671			CK73GB0J106K	CHIP C 10UF K		L119			L34-4563-05	AIR-CORE COIL(3T)	
C672			CC73HCH1H030B	CHIP C 3.0PF B		L120			L34-4564-05	AIR-CORE COIL(4T)	
C673			CK73HB1E103K	CHIP C 0.010UF K		L190		*	L33-3032-05	CHOKO COIL	
C674			CK73HB1A105K	CHIP C 1.0UF K		L191		*	L40-1263-57	SMALL FIXED INDUCTOR(1.2NH)	
C675			CK73HB1A104K	CHIP C 0.10UF K		L202			L92-0446-05	BEADS CORE	
C677			CK73HB1E103K	CHIP C 0.010UF K		L203			L40-1075-92	SMALL FIXED INDUCTOR(10NH)	
C678			CK73HB1A105K	CHIP C 1.0UF K		L204			L40-1575-92	SMALL FIXED INDUCTOR(15NH)	
C679			CK73HB1A104K	CHIP C 0.10UF K		L205			L40-6865-71	SMALL FIXED INDUCTOR(6.8NH)	
C681			CK73HB1E103K	CHIP C 0.010UF K		L206			L40-8265-92	SMALL FIXED INDUCTOR(8.2NH)	
C682,683			CK73HB1H102K	CHIP C 1000PF K		L207			L40-5663-71	SMALL FIXED INDUCTOR(5.6NH)	
C684,685			CK73HB1E103K	CHIP C 0.010UF K		L208			L41-8768-45	SMALL FIXED INDUCTOR(8.7NH)	
C902			CK73HB1A105K	CHIP C 1.0UF K		L210			L40-8265-71	SMALL FIXED INDUCTOR(8.2NH)	
C903			CC73HCH1H101J	CHIP C 100PF J		L211			L41-7568-45	SMALL FIXED INDUCTOR(7.5NH)	
C904			CC73HCH1H221J	CHIP C 220PF J		L212			L79-1928-05	FILTER	
C905			CK73HB1H102K	CHIP C 1000PF K		L213			L92-0446-05	BEADS CORE	
C906			CK73GB1E105K	CHIP C 1.0UF K		L214			L41-1665-45	SMALL FIXED INDUCTOR(1.6NH)	
C907			CK73HB1A105K	CHIP C 1.0UF K		L215			L41-1278-45	SMALL FIXED INDUCTOR(12NH)	
C908			CK73HB1A104K	CHIP C 0.10UF K		L216			L41-6868-45	SMALL FIXED INDUCTOR(6.8NH)	
C909			CK73GB1E105K	CHIP C 1.0UF K		L217			L79-1928-05	FILTER	
C910			CK73GB0J106K	CHIP C 10UF K		L218			L41-5165-45	SMALL FIXED INDUCTOR(5.1NH)	
C911			CC73HCH1H101J	CHIP C 100PF J		L219			L41-1665-45	SMALL FIXED INDUCTOR(1.6NH)	
C912			CK73HB1A474K	CHIP C 0.47UF K		L300			L40-5681-86	SMALL FIXED INDUCTOR(0.56UH)	
C914			C92-0973-05	CHIP TNTL 220UF 6.3WV		L303			L40-5675-92	SMALL FIXED INDUCTOR(56NH)	
C915			CC73HCH1H101J	CHIP C 100PF J		L304			L40-1085-57	SMALL FIXED INDUCTOR(100NH)	
C916			CC73HCH1H470J	CHIP C 47PF J		L305			L40-3391-37	SMALL FIXED INDUCTOR(3.300UH)	
C917-921			CC73HCH1H101J	CHIP C 100PF J		L306			L92-0162-05	BEADS CORE	
C923			CC73HCH1H470J	CHIP C 47PF J		L307			L40-2281-86	SMALL FIXED INDUCTOR(0.22UH)	
C924			CC73HCH1H101J	CHIP C 100PF J		L400			L92-0163-05	BEADS CORE	
CN500			E40-6573-05	FLAT CABLE CONNECTOR		L401			L41-4795-39	SMALL FIXED INDUCTOR(4.7UH)	
CN600			E40-6893-05	FLAT CABLE CONNECTOR		L403,404			L92-0163-05	BEADS CORE	
CN604			E40-6568-05	FLAT CABLE CONNECTOR		L405-409			L40-2785-92	SMALL FIXED INDUCTOR(270NH)	
CN902			E41-2359-05	PIN ASSY(4P)		L410			L40-2285-92	SMALL FIXED INDUCTOR(220NH)	
J900			E11-0484-05	3.5D PHONE JACK(EXT MIC))		L411,412			L33-0745-05	SMALL FIXED INDUCTOR	
CN500			E40-6573-05	FLAT CABLE CONNECTOR		L413,414			L40-2785-92	SMALL FIXED INDUCTOR(270NH)	
CN600			E40-6893-05	FLAT CABLE CONNECTOR		L415			L92-0446-05	BEADS CORE	
CN604			E40-6568-05	FLAT CABLE CONNECTOR		L416,417			L40-2785-92	SMALL FIXED INDUCTOR(270NH)	
CN902			E41-2359-05	PIN ASSY(4P)		L418			L40-2763-71	SMALL FIXED INDUCTOR(2.7NH)	
J900			E11-0484-05	3.5D PHONE JACK(EXT MIC))		L419			L40-1575-71	SMALL FIXED INDUCTOR(15NH)	
J901			E11-0715-05	2.5D PHONE JACK(EXT SP)		L420			L40-2263-71	SMALL FIXED INDUCTOR(2.2NH)	
F500			F53-0324-15	FUSE(2.5A)		L421			L40-3363-71	SMALL FIXED INDUCTOR(3.3NH)	
F900			F53-0319-15	FUSE(1A)		L422			L40-2263-71	SMALL FIXED INDUCTOR(2.2NH)	
CF300			L72-1017-05	CERAMIC FILTER(450KHZ/F)		L423-426			L40-1075-71	SMALL FIXED INDUCTOR(10NH)	
CF301			L72-1040-05	CERAMIC FILTER(450KHZ/C)		L427			L40-2775-71	SMALL FIXED INDUCTOR(27NH)	
L100			L40-1575-71	SMALL FIXED INDUCTOR(15NH)		L428,429			L40-1075-71	SMALL FIXED INDUCTOR(10NH)	
L101			L40-8265-71	SMALL FIXED INDUCTOR(8.2NH)		L500			L92-0163-05	BEADS CORE	
L102			L92-0163-05	BEADS CORE		L501			L33-1494-05	SMALL FIXED INDUCTOR(4.7UH)	
L103			L40-6865-71	SMALL FIXED INDUCTOR(6.8NH)		L502			L92-0149-05	CHIP FERRITE	
L104	*		L40-3963-71	SMALL FIXED INDUCTOR(3.9NH)		L503			L92-0162-05	BEADS CORE	
L105			L92-0162-05	BEADS CORE		L504,505			L92-0467-05	CHIP FERRITE	
L108			L41-3978-45	SMALL FIXED INDUCTOR(39NH)		L506			L33-1530-05	SMALL FIXED INDUCTOR(15UH)	
						L507			L41-1092-02	SMALL FIXED INDUCTOR(1.0UH)	
						L601-603			L92-0408-05	CHIP FERRITE	

PARTS LIST

TX-RX UNIT (X57-8370-10)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
L605-607			L92-0444-05	CHIP FERRITE		R150			RK73HB1J000J	CHIP R 0 J 1/16W	
L608			L92-0162-05	BEADS CORE		R151			RK73HB1J271J	CHIP R 270 J 1/16W	
L609			L92-0163-05	BEADS CORE		R152			RK73FB2B000J	CHIP R 0 J 1/8W	
L610-612			L92-0444-05	CHIP FERRITE		R153			RK73HB1J104J	CHIP R 100K J 1/16W	
L900,901			L92-0408-05	CHIP FERRITE		R154			RK73HB1J184J	CHIP R 180K J 1/16W	
L902,903			L92-0163-05	BEADS CORE		R155			RK73HB1J104J	CHIP R 100K J 1/16W	
L904			L92-0408-05	CHIP FERRITE		R158			RK73HB1J000J	CHIP R 0 J 1/16W	
L906			L92-0408-05	CHIP FERRITE		R160			RK73EB2E823J	CHIP R 82K J 1/4W	
X400			L77-3073-05	TCXO(16.8MHZ)		R200			RK73HB1J151J	CHIP R 150 J 1/16W	
X600			L77-3015-05	TCXO(18.432MHZ)		R201			RK73HB1J471J	CHIP R 470 J 1/16W	
XF300			L71-0655-05	MCF(49.95MHZ)		R202			RK73HB1J120J	CHIP R 12 J 1/16W	
CP400			RK74HB1J100J	CHIP-COM 10 J 1/16W		R203			RK73HB1J471J	CHIP R 470 J 1/16W	
CP500			RK74HB1J104J	CHIP-COM 100K J 1/16W		R204			RK73HB1J180J	CHIP R 18 J 1/16W	
CP501			RK74HB1J102J	CHIP-COM 1.0K J 1/16W		R205			RK73HB1J271J	CHIP R 270 J 1/16W	
CP600			RK74HB1J103J	CHIP-COM 10K J 1/16W		R206,207			RK73HB1J474J	CHIP R 470K J 1/16W	
CP601-603			RK74HB1J104J	CHIP-COM 100K J 1/16W		R208			RK73HB1J000J	CHIP R 0 J 1/16W	
CP604			RK74HB1J101J	CHIP-COM 100 J 1/16W		R209			RK73HB1J560J	CHIP R 56 J 1/16W	
CP605			RK74HB1J000J	CHIP-COM 0 J 1/16W		R210			RK73HB1J2R2J	CHIP R 2.2 J 1/16W	
CP606			RK74HB1J104J	CHIP-COM 100K J 1/16W		R211			RK73HB1J333J	CHIP R 33K J 1/16W	
R1			RK73HB1J000J	CHIP R 0 J 1/16W		R212			RK73HB1J683J	CHIP R 68K J 1/16W	
R2			RK73HB1J000J	CHIP R 0 J 1/16W		R213			RK73HB1J104J	CHIP R 100K J 1/16W	
R100,101			RK73HB1J332J	CHIP R 3.3K J 1/16W		R214			RK73HB1J683J	CHIP R 68K J 1/16W	
R103			RK73HB1J182J	CHIP R 1.8K J 1/16W		R215,216			RK73HB1J474J	CHIP R 470K J 1/16W	
R104			RK73HB1J392J	CHIP R 3.9K J 1/16W		R217			RK73HB1J271J	CHIP R 270 J 1/16W	
R105			RK73HB1J000J	CHIP R 0 J 1/16W		R300			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R106			RK73HB1J330J	CHIP R 33 J 1/16W		R301			RK73HB1J561J	CHIP R 560 J 1/16W	
R107			RK73HB1J103J	CHIP R 10K J 1/16W		R303			RK73HB1J000J	CHIP R 0 J 1/16W	
R108			RK73HB1J331J	CHIP R 330 J 1/16W		R304			RK73HB1J100J	CHIP R 10 J 1/16W	
R110			RK73HB1J220J	CHIP R 22 J 1/16W		R305			RK73HB1J822J	CHIP R 8.2K J 1/16W	
R111			RK73HB1J390J	CHIP R 39 J 1/16W		R306			RK73HH1J334D	CHIP R 330K D 1/16W	
R113			RK73HB1J331J	CHIP R 330 J 1/16W		R308			RK73HB1J000J	CHIP R 0 J 1/16W	
R114			RK73HB1J273J	CHIP R 27K J 1/16W		R309			RK73GB2A821J	CHIP R 820 J 1/10W	
R115			RK73HB1J471J	CHIP R 470 J 1/16W		R310			RK73HB1J000J	CHIP R 0 J 1/16W	
R116			RK73HB1J472J	CHIP R 4.7K J 1/16W		R313			RK73HB1J103J	CHIP R 10K J 1/16W	
R117			RK73HB1J120J	CHIP R 12 J 1/16W		R317,318			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R118			RK73HB1J471J	CHIP R 470 J 1/16W		R319			RK73HB1J274J	CHIP R 270K J 1/16W	
R119			RK73HB1J103J	CHIP R 10K J 1/16W		R321			RK73HB1J104J	CHIP R 100K J 1/16W	
R120			RK73HB1J000J	CHIP R 0 J 1/16W		R322			RK73HB1J103J	CHIP R 10K J 1/16W	
R121			RK73HB1J561J	CHIP R 560 J 1/16W		R323			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R122			RK73HB1J103J	CHIP R 10K J 1/16W		R324			RK73HB1J223J	CHIP R 22K J 1/16W	
R123			RK73HB1J561J	CHIP R 560 J 1/16W		R325			RK73HB1J183J	CHIP R 18K J 1/16W	
R124			RK73HB1J103J	CHIP R 10K J 1/16W		R326			RK73HB1J103J	CHIP R 10K J 1/16W	
R125			RK73HB1J102J	CHIP R 1.0K J 1/16W		R327			RK73HB1J393J	CHIP R 39K J 1/16W	
R127			RK73HB1J102J	CHIP R 1.0K J 1/16W		R328			RK73HB1J391J	CHIP R 390 J 1/16W	
R128			RK73HB1J331J	CHIP R 330 J 1/16W		R329			RK73HB1J103J	CHIP R 10K J 1/16W	
R129			RK73GB2A000J	CHIP R 0 J 1/10W		R330			RK73HB1J104J	CHIP R 100K J 1/16W	
R130			RK73HB1J102J	CHIP R 1.0K J 1/16W		R331			RK73HB1J221J	CHIP R 220 J 1/16W	
R131			RK73HB1J103J	CHIP R 10K J 1/16W		R333			RK73HB1J564J	CHIP R 560K J 1/16W	
R132,133			RK73EB2HR22F	CHIP R 0.22 F 1/2W		R334			RK73HB1J103J	CHIP R 10K J 1/16W	
R136			RK73HB1J472J	CHIP R 4.7K J 1/16W		R335			RK73HB1J221J	CHIP R 220 J 1/16W	
R137			RK73HB1J103J	CHIP R 10K J 1/16W		R336			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R138,139			RK73HH1J154D	CHIP R 150K D 1/16W		R337			RK73HB1J104J	CHIP R 100K J 1/16W	
R141,142			RK73HH1J154D	CHIP R 150K D 1/16W		R338			RK73HB1J103J	CHIP R 10K J 1/16W	
R143			RK73HB1J682J	CHIP R 6.8K J 1/16W		R340			RK73HB1J101J	CHIP R 100 J 1/16W	
R144,145			RK73HH1J154D	CHIP R 150K D 1/16W		R400			RK73HB1J100J	CHIP R 10 J 1/16W	
R146			RK73HB1J472J	CHIP R 4.7K J 1/16W		R401			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R147			RK73HB1J271J	CHIP R 270 J 1/16W		R405			RK73HB1J100J	CHIP R 10 J 1/16W	
R148			RK73HB1J474J	CHIP R 470K J 1/16W		R406,407			RK73HB1J000J	CHIP R 0 J 1/16W	
R149			RK73HB1J473J	CHIP R 47K J 1/16W		R408			RK73HB1J102J	CHIP R 1.0K J 1/16W	
						R409			RK73HB1J100J	CHIP R 10 J 1/16W	

PARTS LIST

TX-RX UNIT (X57-8370-10)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R410			RK73HB1J473J	CHIP R 47K J 1/16W		R514			RK73HB1J471J	CHIP R 470 J 1/16W	
R411			RK73HB1J470J	CHIP R 47 J 1/16W		R515			RK73GB2A000J	CHIP R 0 J 1/10W	
R412			RK73HB1J102J	CHIP R 1.0K J 1/16W		R516			RK73HH1J394D	CHIP R 390K D 1/16W	
R413			RK73HH1J393D	CHIP R 39K D 1/16W		R517			RK73HH1J154D	CHIP R 150K D 1/16W	
R414			RK73HH1J473D	CHIP R 47K D 1/16W		R518			RK73HB1J103J	CHIP R 10K J 1/16W	
R415			RK73HB1J100J	CHIP R 10 J 1/16W		R520-522			RK73HB1J474J	CHIP R 470K J 1/16W	
R416			RK73HB1J106J	CHIP R 10M J 1/16W		R523			RK73GB2A1R0J	CHIP R 1 J 1/10W	
R417			RK73HH1J474D	CHIP R 470K D 1/16W		R524			RK73HB1J272J	CHIP R 2.7K J 1/16W	
R418			RK73HB1J106J	CHIP R 10M J 1/16W		R526			RK73HB1J474J	CHIP R 470K J 1/16W	
R419,420			RK73HB1J000J	CHIP R 0 J 1/16W		R527-530			RK73HB1J104J	CHIP R 100K J 1/16W	
R421			RK73HH1J121D	CHIP R 120 D 1/16W		R531			RK73HB1J000J	CHIP R 0 J 1/16W	
R422			RK73HH1J391D	CHIP R 390 D 1/16W		R532			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R423			RK73HB1J473J	CHIP R 47K J 1/16W		R533-536			RK73HB1J474J	CHIP R 470K J 1/16W	
R424			RK73HB1J683J	CHIP R 68K J 1/16W		R538			RK73HB1J474J	CHIP R 470K J 1/16W	
R425			RK73HB1J103J	CHIP R 10K J 1/16W		R541			RK73HB1J103J	CHIP R 10K J 1/16W	
R426			RK73HB1J104J	CHIP R 100K J 1/16W		R542			RK73HB1J474J	CHIP R 470K J 1/16W	
R427			RK73HB1J000J	CHIP R 0 J 1/16W		R543			RK73HB1J103J	CHIP R 10K J 1/16W	
R428			RK73HB1J102J	CHIP R 1.0K J 1/16W		R545			RK73HB1J000J	CHIP R 0 J 1/16W	
R429			RK73HB1J000J	CHIP R 0 J 1/16W		R600-602			RK73HB1J000J	CHIP R 0 J 1/16W	
R430			RK73HB1J224J	CHIP R 220K J 1/16W		R604			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R431			RK73HB1J124J	CHIP R 120K J 1/16W		R605			RK73HB1J104J	CHIP R 100K J 1/16W	
R432			RK73HB1J183J	CHIP R 18K J 1/16W		R606			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R433			RK73HB1J222J	CHIP R 2.2K J 1/16W		R607			RK73HB1J563J	CHIP R 56K J 1/16W	
R434,435			RK73HB1J000J	CHIP R 0 J 1/16W		R609			RK73HB1J101J	CHIP R 100 J 1/16W	
R436			RK73HB1J104J	CHIP R 100K J 1/16W		R610,611			RK73HB1J000J	CHIP R 0 J 1/16W	
R438			RK73HB1J823J	CHIP R 82K J 1/16W		R612			RK73HB1J103J	CHIP R 10K J 1/16W	
R439,440			RK73HB1J473J	CHIP R 47K J 1/16W		R613-615			RK73HB1J101J	CHIP R 100 J 1/16W	
R441			RK73HB1J104J	CHIP R 100K J 1/16W		R616			RK73HB1J103J	CHIP R 10K J 1/16W	
R442			RK73HB1J152J	CHIP R 1.5K J 1/16W		R617,618			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R444,445			RN73HH1J221D	CHIP R 220 D 1/16W		R619			RK73HB1J101J	CHIP R 100 J 1/16W	
R446			RK73HB1J474J	CHIP R 470K J 1/16W		R620			RK73HB1J823J	CHIP R 82K J 1/16W	
R447			RN73HH1J220D	CHIP R 22 D 1/16W		R621			RK73HB1J563J	CHIP R 56K J 1/16W	
R449			RK73HB1J104J	CHIP R 100K J 1/16W		R622			RK73HB1J184J	CHIP R 180K J 1/16W	
R450			RK73HB1J000J	CHIP R 0 J 1/16W		R623			RK73HB1J474J	CHIP R 470K J 1/16W	
R451			RN73HH1J220D	CHIP R 22 D 1/16W		R624			RK73HB1J223J	CHIP R 22K J 1/16W	
R452			RK73HB1J474J	CHIP R 470K J 1/16W		R625			RK73GB2A000J	CHIP R 0 J 1/10W	
R453			RK73HB1J102J	CHIP R 1.0K J 1/16W		R626,627			RK73HB1J103J	CHIP R 10K J 1/16W	
R454			RK73HB1J101J	CHIP R 100 J 1/16W		R628			RK73HB1J153J	CHIP R 15K J 1/16W	
R455			RK73HB1J473J	CHIP R 47K J 1/16W		R629,630			RK73HB1J100J	CHIP R 10 J 1/16W	
R456			RK73HB1J104J	CHIP R 100K J 1/16W		R631			RK73HB1J103J	CHIP R 10K J 1/16W	
R458,459			RK73HB1J101J	CHIP R 100 J 1/16W		R632,633			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R460			RK73HB1J000J	CHIP R 0 J 1/16W		R634			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R462,463			RK73HB1J101J	CHIP R 100 J 1/16W		R635			RK73HB1J000J	CHIP R 0 J 1/16W	
R464			RK73HB1J103J	CHIP R 10K J 1/16W		R638,639			RK73HB1J220J	CHIP R 22 J 1/16W	
R465			RK73HB1J682J	CHIP R 6.8K J 1/16W		R640			RK73HB1J000J	CHIP R 0 J 1/16W	
R466			RK73HB1J271J	CHIP R 270 J 1/16W		R641			RK73HB1J474J	CHIP R 470K J 1/16W	
R467			RK73HB1J331J	CHIP R 330 J 1/16W		R642			RK73HB1J000J	CHIP R 0 J 1/16W	
R469			RK73HB1J222J	CHIP R 2.2K J 1/16W		R643			RK73HB1J104J	CHIP R 100K J 1/16W	
R470,471			RK73HB1J000J	CHIP R 0 J 1/16W		R644,645			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R500			RK73HH1J274D	CHIP R 270K D 1/16W		R646			RK73HH1J104D	CHIP R 100K D 1/16W	
R501			RK73GB2A000J	CHIP R 0 J 1/10W		R647			RK73HH1J103D	CHIP R 10K D 1/16W	
R502			RK73HH1J184D	CHIP R 180K D 1/16W		R648			RK73HB1J104J	CHIP R 100K J 1/16W	
R504,505			RK73HB1J222J	CHIP R 2.2K J 1/16W		R649			RK73HB1J183J	CHIP R 18K J 1/16W	
R506			RK73HB1J000J	CHIP R 0 J 1/16W		R650-652			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R507			RK73HB1J683J	CHIP R 68K J 1/16W		R653			RK73HB1J474J	CHIP R 470K J 1/16W	
R508			RK73GB2A2R2J	CHIP R 2.2 J 1/10W		R654,655			RK73HB1J000J	CHIP R 0 J 1/16W	
R510			RK73HB1J100J	CHIP R 10 J 1/16W		R801			RK73HB1J000J	CHIP R 0 J 1/16W	
R511			RK73HB1J102J	CHIP R 1.0K J 1/16W		R803			RK73HB1J000J	CHIP R 0 J 1/16W	
R512			RK73HH1J683D	CHIP R 68K D 1/16W		R901			RK73HB1J103J	CHIP R 10K J 1/16W	
R513			RK73HH1J333D	CHIP R 33K D 1/16W		R902			RK73HB1J563J	CHIP R 56K J 1/16W	

PARTS LIST

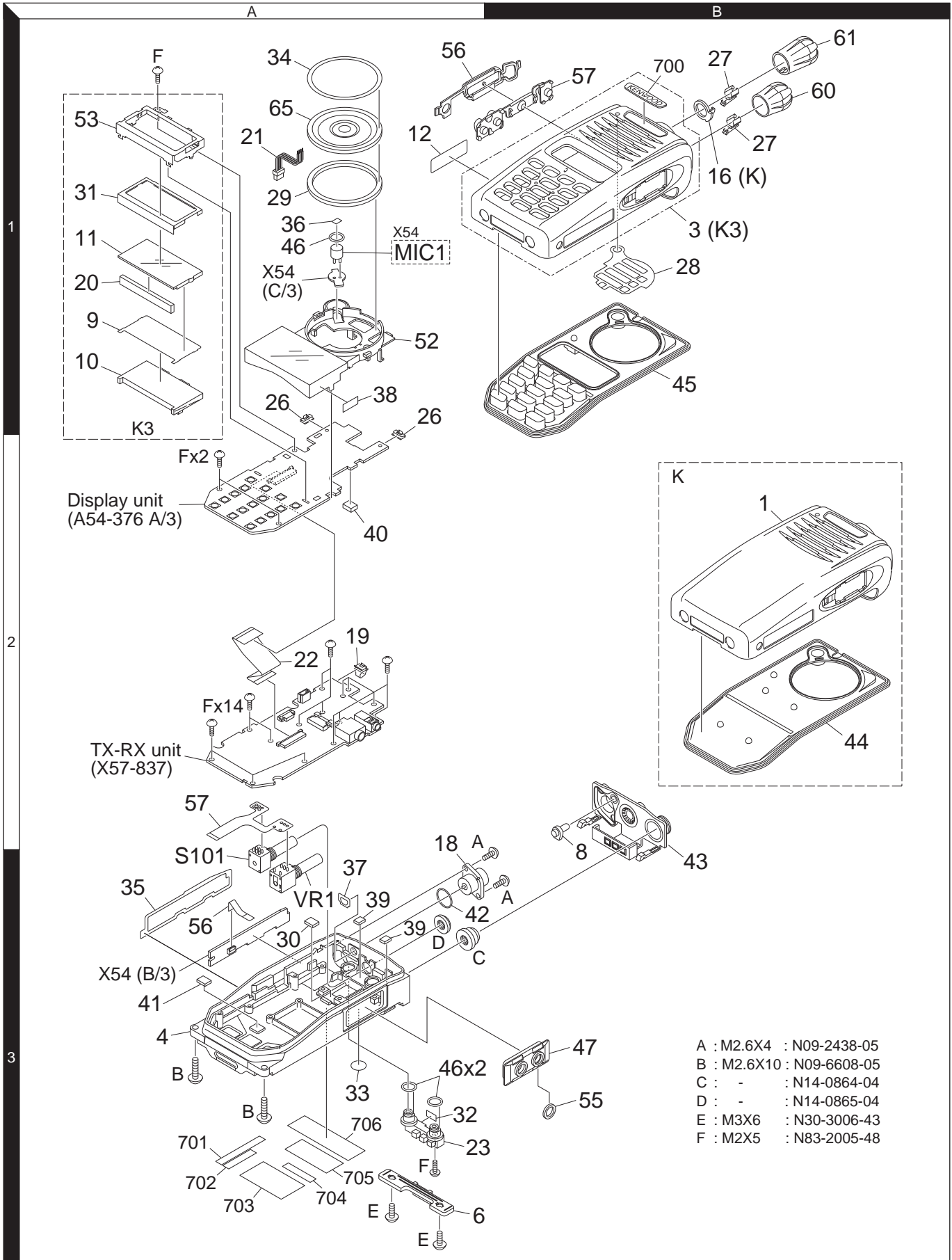
TX-RX UNIT (X57-8370-10)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R904			RK73HB1J473J	CHIP R 47K J 1/16W		Q101			2SC5636	TRANSISTOR	
R905			RK73GB2A104J	CHIP R 100K J 1/10W		Q102			2SK3077F	FET	
R906			RK73HB1J222J	CHIP R 2.2K J 1/16W		Q103			2SC5383-T111	TRANSISTOR	
R907			RK73HB1J473J	CHIP R 47K J 1/16W		Q104			RD01MUS1-T113	FET	
R908			RK73HH1J271D	CHIP R 270 D 1/16W		Q105			FK330301	FET	
R909			RK73HB1J682J	CHIP R 6.8K J 1/16W		Q106			RD07MUS2BT122	FET	
R910			RK73HB1J103J	CHIP R 10K J 1/16W		Q107			LTC014EEBFS8	TRANSISTOR	
R911			RK73HB1J473J	CHIP R 47K J 1/16W		Q108	*		FJ330301	FET	
R912			RK73HH1J334D	CHIP R 330K D 1/16W		Q109			FK330301	FET	
R913			RK73HB1J274J	CHIP R 270K J 1/16W		Q200			BB505CES-TL-E	FET	
R914			RK73HB1J473J	CHIP R 47K J 1/16W		Q300,301			2SC5108(Y)F	TRANSISTOR	
R916			RK73HB1J273J	CHIP R 27K J 1/16W		Q401,402			MCH3914(8)-H	FET	
R917			RK73HB1J101J	CHIP R 100 J 1/16W		Q403			2SC5383-T111	TRANSISTOR	
R918			RK73HB1J681J	CHIP R 680 J 1/16W		Q404			EM6M1	FET	
R919			RK73HB1J562J	CHIP R 5.6K J 1/16W		Q405			2SC5636	TRANSISTOR	
R920			RK73HB1J104J	CHIP R 100K J 1/16W		Q406	*		FJ330301	FET	
R956,957			RK73HB1J101J	CHIP R 100 J 1/16W		Q407,408			2SC5636	TRANSISTOR	
D100			UDZW5.1(B)	ZENER DIODE		Q500			2SJ648-A	FET	
D102,103			HVC131	DIODE		Q501			FK330301	FET	
D104,105			RN142S	DIODE		Q502			LTC014EEBFS8	TRANSISTOR	
D200			HSB88AS-E	DIODE		Q503			EM6M1	FET	
D400			DA221	DIODE		Q504			2SA1955A-F	TRANSISTOR	
D402,403			1SV323F	VARIABLE CAPACITANCE DIODE		Q505			EMD5	TRANSISTOR	
D404,405			1SV325F	VARIABLE CAPACITANCE DIODE		Q506,507	*		FC694301	FET	
D406,407			HVC376B	VARIABLE CAPACITANCE DIODE		Q508			EMD12	TRANSISTOR	
D408,409			1SV278F	VARIABLE CAPACITANCE DIODE		Q509			LTC014EEBFS8	TRANSISTOR	
D410			HSC119	DIODE		Q600			FK330301	FET	
D411,412			RN142S	DIODE		Q900,901			LTC014EEBFS8	TRANSISTOR	
D500			1SR154-400	DIODE		Q902			2SA1362-F(GR)	TRANSISTOR	
D501,502			1SS388F	DIODE		Q903			FK330301	FET	
D503			HRB0502A	DIODE		Q904			DMG6968U	FET	
D505			1SS388F	DIODE		Q905			UPA672T-A	FET	
D506	*		DA3S103E	DIODE		Q906			DMG6968U	FET	
D900			1SS416	DIODE		TH100			ERTJ0EV104H	THERMISTOR(100K)	
D901	*		DA3S103E	DIODE		TH400			ERTJ0EV104H	THERMISTOR(100K)	
IC100			NJM12904RB1	MOS-IC							
IC200			CMY210	MOS-IC							
IC301			TK10931VTL-G	ANALOGUE IC							
IC302			BU7242NUX	MOS-IC							
IC400			SKY72310-362	MOS-IC							
IC401			XC221A1200MRG	MOS-IC							
IC402			BU7462NUX	MOS-IC							
IC500,501			NJM2878F4-33	BI-POLAR IC							
IC502			XC9235A15CM-G	MOS-IC							
IC503			NJM2878F4-33	BI-POLAR IC							
IC504			XC6209B502P-G	MOS-IC							
IC505			LT1616ES6-PBF	ANALOGUE IC							
IC506			XC61CC5602N-G	MOS-IC							
IC600			Note1	ROM IC							
IC601			Note1	DSP							
IC602			BU7445HFV	MOS-IC							
IC603			Note1	SRAM IC							
IC604			XC6119C29ANR	MOS-IC							
IC605			KXUD9-2050	MOS-IC							
IC606			SM5023CNDH-G	MOS-IC							
IC607			Note1	ASIC							
IC608,609			TC7SH08FU-F	MOS-IC							
IC900			XC6209B502P-G	MOS-IC							
IC901			TA7368FG	MOS-IC							

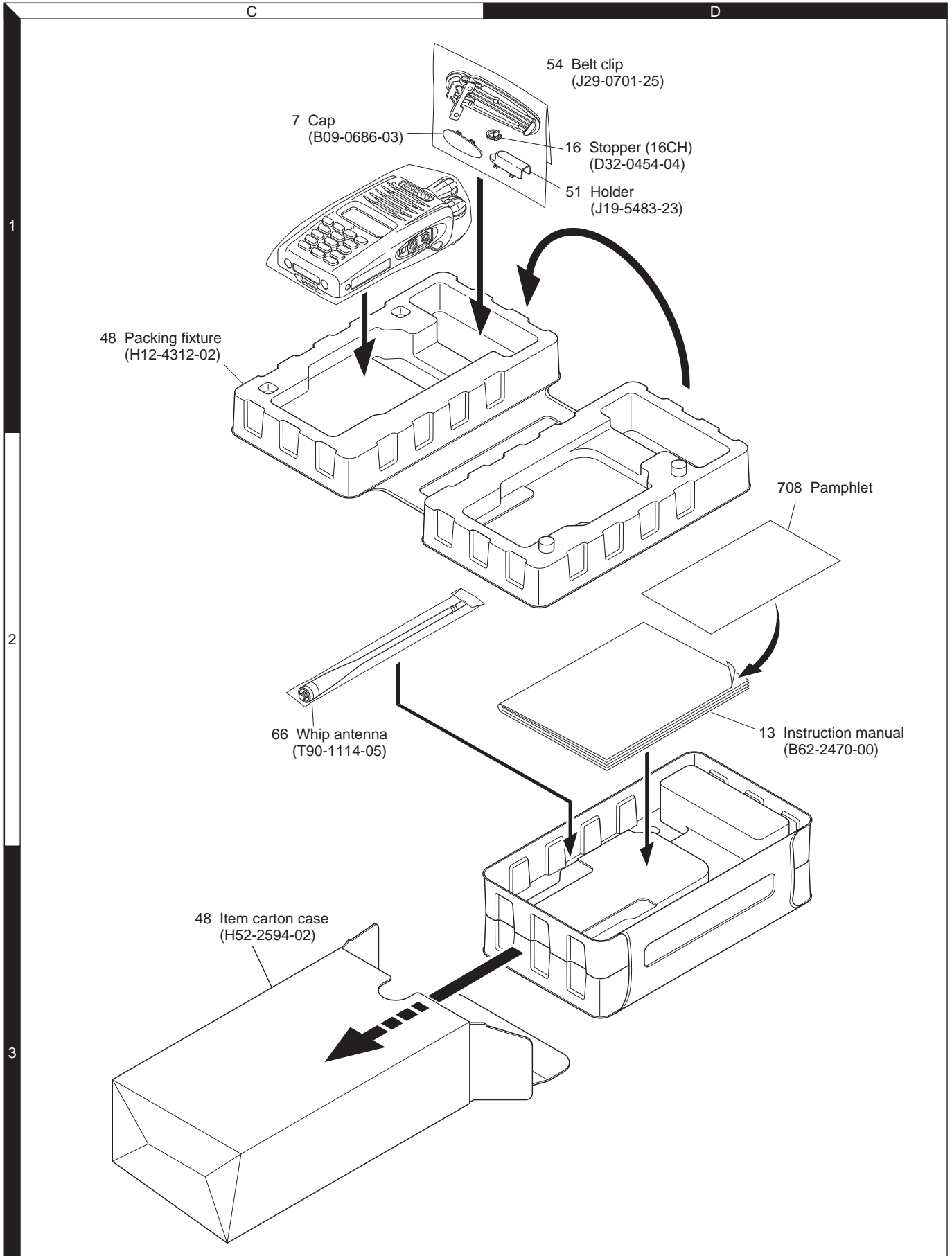
Note 1: This part cannot be replaced. Therefore, this part is not supplied as a service part.

NX-420

EXPLODED VIEW



PACKING



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

TROUBLE SHOOTING

Fault Diagnosis of the BGA (Ball Grid Array) IC

■ Overview

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

■ BGA parts

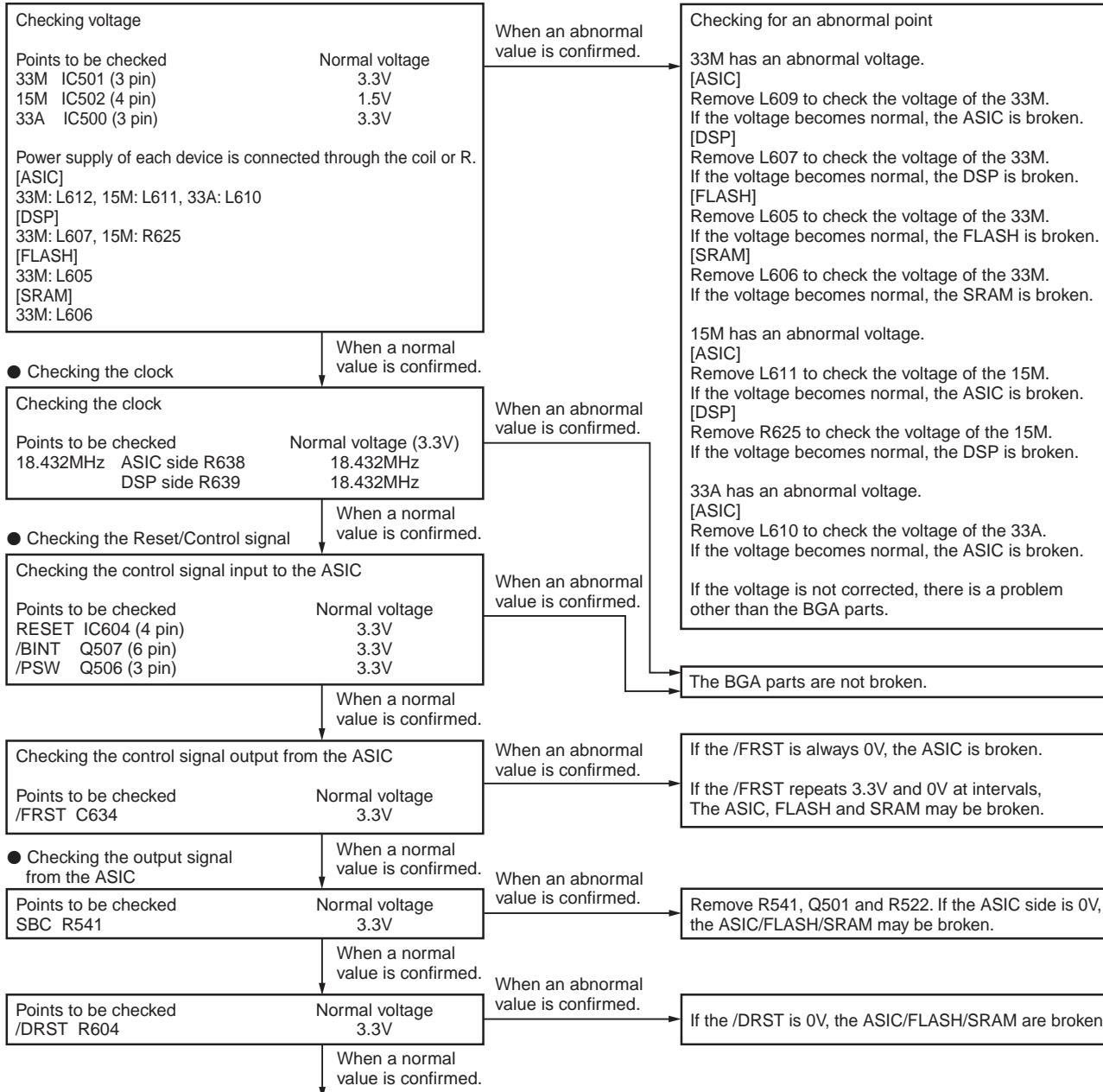
ASIC (IC607), DSP (IC601), FLASH (IC600), SRAM (IC603)

When the BGA IC is problematic, please bring the printed circuit board (X57-8370-10) in for service. Various ESN/default adjustment values are written on the printed circuit board for service.

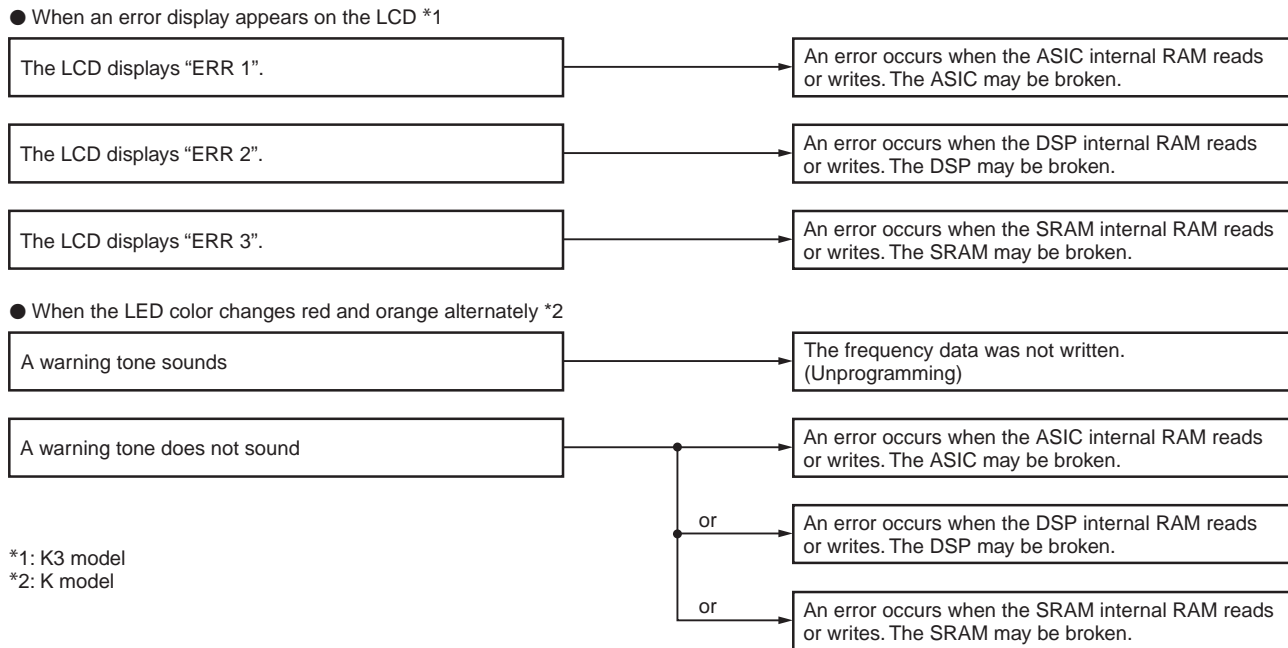
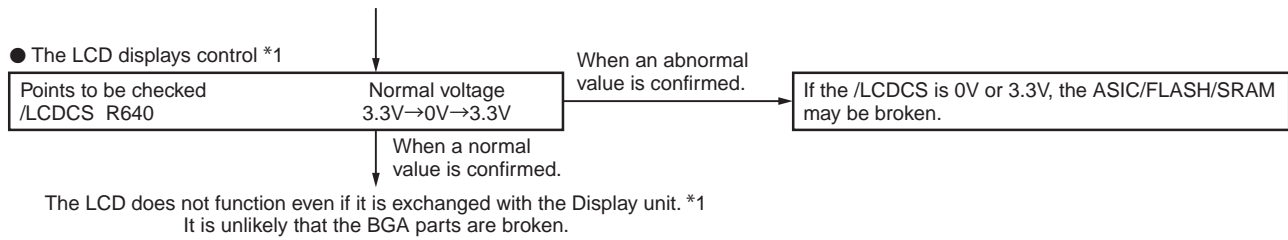
Additionally various ESN stickers are included. (Please refer to pages 32.)

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

● Checking power supply voltage



TROUBLE SHOOTING



■ Descriptions of signal names

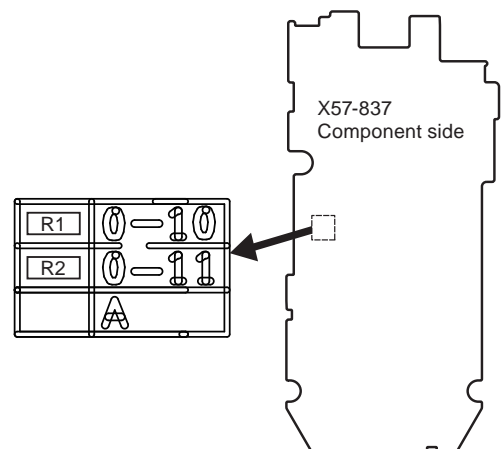
- | | |
|---|---------------------|
| 1) RST(RESET) : ASIC reset signal | LOW → Reset |
| 2) /BINT : Battery final voltage monitoring | LOW → Final voltage |
| 3) PSW : Power switch signal | HIGH → ON |
| 4) /FRST : FLASH reset signal | LOW → Reset |
| 5) SBC : Switch B control | HIGH → ON |
| 6) /DRST : DSP reset signal | LOW → Reset |

Replacing TX-RX Unit

■ TX-RX unit Information

Model Name	Original TX-RX unit Number	For Service TX-RX unit Number
NX-420 (K,K3)	X57-8370-10	X57-8370-11

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



TROUBLE SHOOTING

■ Supplied Accessories of “Service TX-RX unit”

Item (Including Parts Number)	Quantity
TX-RX Unit (X57-837)	1
KENWOOD ESN Label	1
NXDN ESN Label	1
MPT ESN Label	1
Addendum (B59-2655-XX)	1

■ “Service TX-RX unit” Data

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

Data Type	Description
Firmware	NX-420 K type Firmware.
FPU Data (PC programming mode)	X57-837 (NX-420) Kx type data.
Various Adjustment Data (PC Test mode)	General adjustment values for the X57-837 (NX-420).
KENWOOD ESN	Model name: NX-420S Type: Kx The same number as the KENWOOD ESN label is written.
NXDN ESN/MPT ESN	The same number as the NXDN ESN/MPT ESN label is written.

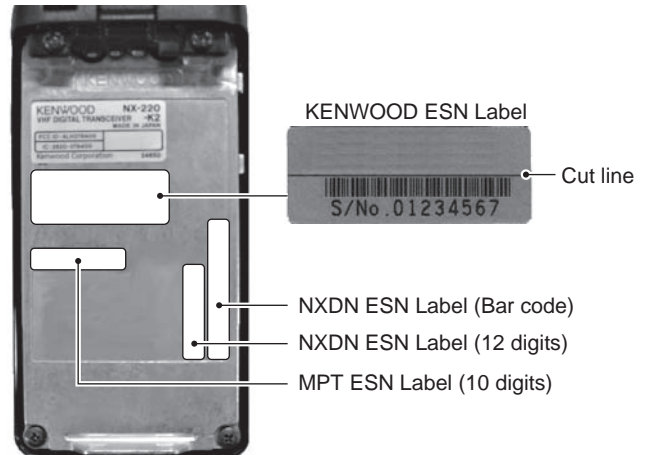
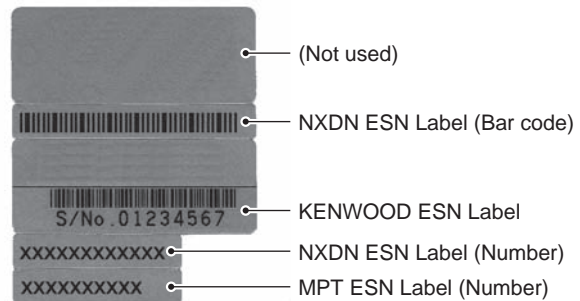
■ After Changing the PCB

- After changing the printed circuit board, write the up-to-date Firmware following the instructions in the “REALIGNMENT - 6.Firmware Programming Mode”.
 - Write the Firmware in accordance to the Market. If you write different Market Firmware, there are times communication with the FPU is not possible.
- Using the KPG-141D, 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 below for label placement.)
- If necessary, write the FPU data used by the customer with the KPG-141D.

Note:

- When using the ESN Validation function of Trunking, the ESN number changes when the circuit board is changed (the number is written on the circuit board); the Trunking System cannot be accessed. Maintain the ESN data of the Trunking System following the new ESN.
- When a new printed circuit board is used, the KENWOOD ESN changes, as does the Transceiver Information display of the KPG-141D, but this does not have any effect on the operation of the transceiver.
- If changing to the original ESN, please contact our service center.

■ ESN Label Layout

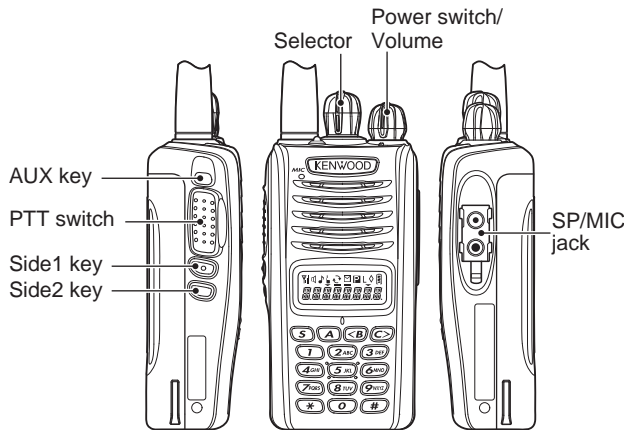


Note:

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

ADJUSTMENT

Controls



■ Preparations for checking/tuning the transceiver

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

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

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

Panel Test Mode (K3 model only)

■ Test mode operation features

This transceiver has a test mode. **To enter test mode, press and hold the [A] 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.

■ Key operation

Key	“—” not appears on the LCD display	
	Function	Display
[Selector]	Test channel up/down	Channel No.
[Side1]	Push: Squelch level up Hold: Squelch off	Squelch level Squelch off: icon appears
[Side2]	Wide 5k/Wide 4k/Narrow/ Very narrow	Analog Wide 5k: “W” Wide 4k: “S” Narrow : “N” NXDN Narrow : “N” Very narrow: “V”
[S]	Shift to panel tuning mode	-
[A]	Function on	“—” appears on the LCD display
[<B]	MSK 1200bps and 2400bps	2400bps: icon appears
[C>]	Push: Test signaling up Hold: Test signaling up continuously	Signaling No.
[AUX]	Analog/NXDN	Analog: “A”, NXDN: “N”
[PTT]	Transmit	-

Key	“—” not appears on the LCD display	
	Function	Display
[0] to [9] and [#], [*]	Use as the DTMF keypad. If a key is pressed during transmission, the DTMF corresponding to the key that was presses is sent.	-

Key	“—” appears on the LCD display	
	Function	Display
[Selector]	Test channel up/down	Channel No.
[Side1]	Function off	-
[Side2]	LCD all lights	LCD all point appears
[S]	High power/Low power	High: icon not appears Low: icon appears
[A]	Function off	-
[<B]	Compander on/off	On: icon appears
[C>]	Beat shift on/off	On: icon appears
[AUX]	Talk Around on/off	On: icon appears
[PTT]	Transmit	-
[0] to [9] and [#], [*]	Function off	-

• LED indicator

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

• LCD display in panel test mode

(Power ON)

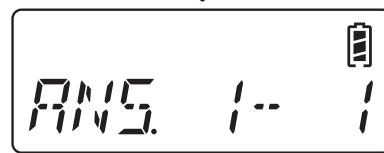
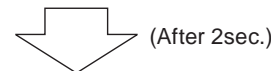


Market code

Frequency range
“800”: 806~870MHz

Battery type detect

“LI”: Li-ion battery
“MH”: Ni-MH battery
“AL”: Alkaline battery case



Squelch level

Signaling No.

Channel No.

AW : Analog wide 5k mode
AS : Analog wide 4k mode
AN : Analog narrow mode
NN : NXDN narrow mode
NV : NXDN very narrow mode

ADJUSTMENT

■ 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	K3	
	RX (MHz)	TX (MHz)
1	851.05000	806.05000
2	860.05000	815.05000
3	869.95000	824.95000
4	851.55000	806.55000
5	860.55000	815.55000
6	869.45000	824.45000
7-16	-	-

• 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
15	None	MSK PN9
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) (Simple BER Mea- surement)	Tone Pattern(1031Hz)

RAN: Radio Access Number

PN9: Pseudo-Random Pattern (for production only)

No.7/No.9 Item: PC test mode only.

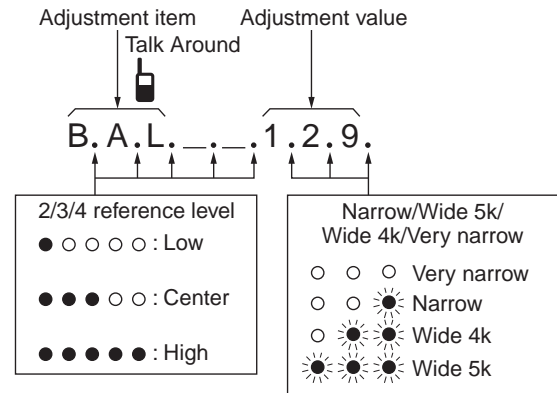
Panel Tuning Mode (K3 model only)

■ Transceiver tuning (To enter tuning mode)

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

Use the [**C>**] key to select the adjustment item through tuning modes. Use the [**A**] key to adjust 2/3/4 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/down	
[Side1]	20Hz/2kHz (During transmission in balance adjustment)	-
[Side2]	Wide/Narrow/Very narrow	-
[S]	Shift to panel test mode	-
[A]	To enter 5 reference level adjustments	-
[<B]	Writes the adjustment value	-
[C>]	Go to next adjustment item	Back to last adjustment item
[AUX]	-	
[PTT]	Transmit	
[0] to [9] and [#], [*]	-	

ADJUSTMENT

■ 2 reference level adjustments frequency

Receive Assist

Tuning point	RX (MHz)	TX (MHz)
Low	851.100000	806.000000
High	869.900000	825.000000

QT Deviation

DQT Deviation

LTR Deviation

DTMF Deviation

MSK Deviation

Tuning point	RX (MHz)	TX (MHz)
High	869.900000	825.000000
TA High	869.900000	870.000000

■ 3 reference level adjustments frequency

Tuning point	RX (MHz)	TX (MHz)
Low	851.100000	806.000000
Center	859.900000	815.000000
High	869.900000	825.000000


■ 4 reference level adjustments frequency

Tuning point	RX (MHz)	TX (MHz)
Low	851.100000	806.000000
High	869.900000	825.000000
TA Low	851.100000	851.000000
TA High	869.900000	870.000000

■ Adjustment item supplement

Adjustment Item	Description
Counterclockwise Volume	" Counterclockwise Volume" is adjusted at the minimum volume position. " Clockwise Volume " is adjusted at the maximum volume position. These adjustments can correct the volume variation. Both " Counterclockwise Volume " and " Clockwise Volume " must be adjusted. (The curve data of volume is applied.)
Clockwise Volume	
Receive Assist	The lock voltage of VCO (Receive) is adjusted. This item must be adjusted before all adjustment items for receiver section are adjusted. This item can be adjusted only in PC Test Mode.
Transmit Assist	The lock voltage of VCO (Transmit) is adjusted. This item must be adjusted before all adjustment items for transmitter section are adjusted. This item can be adjusted only in PC Test Mode.
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.
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 5k/Wide 4k/Narrow)	Maximum Deviation of Analog (Wide 5k/Wide 4k/Narrow) is adjusted. This item must be adjusted before all adjustment items for tone deviations are adjusted. Note: " Maximum Deviation (Analog Narrow) " must be adjusted before " CW ID 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.
MSK Deviation	MSK tone deviation is adjusted.
CW ID Deviation	CW ID tone deviation is adjusted. CW ID is used to inform the others who is transmitting on a 6.25kHz spacing channel. (In FCC rule, Analog mode or CW ID is required for each channel-spacing.)

ADJUSTMENT

Adjustment Item	Description
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.
High RSSI	Both " Low RSSI " and "High RSSI" must be adjusted. (The curve data of RSSI level is applied.)
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 item and Adjustment range

Order	Adjustment item	Panel tuning	PC test	AW (Analog Wide 5k)	AS (Analog Wide 4k)	AN (Analog Narrow)	NN (NXDN Narrow)	NV (NXDN Very Narrow)	Adjust item Number
				Adjustment range					
1	Counterclockwise Volume	↙	↙	1 point ADJ					Common Section 2
				1~256					
2	Clockwise Volume	↘	↘	1 point ADJ					Common Section 3
				1~256					
3	Receive Assist		↘	2 point ADJ					Common Section 4
				1~4096					
4	Transmit Assist		↘	4 point ADJ					Common Section 5
				1~4096					
5	Frequency		↘	1 point ADJ					Common Section 6
				1~4096					
6	High Transmit Power	↘	↘	-	-	4	-	-	Transmitter Section 1
				1~1024					
7	Low Transmit Power	↘	↘	-	-	4	-	-	Transmitter Section 2
				1~1024					
8	Balance	↘	↘	-	-	4	-	-	Transmitter Section 3
				1~1024					
9	Maximum Deviation (NXDN)	↘	↘	-	-	-	4	4	Transmitter Section 4
				1~1024					
10	Maximum Deviation (Analog)	↘	↘	4	4	4	-	-	Transmitter Section 5
				1~1024					
11	QT Deviation	↘	↘	2	2	2	-	-	Transmitter Section 6
				1~1024					
12	DQT Deviation	↘	↘	2	2	2	-	-	Transmitter Section 7
				1~1024					
13	LTR Deviation	↘	↘	2	2	2	-	-	Transmitter Section 8
				1~1024					
14	DTMF Deviation	↘	↘	2	2	2	-	-	Transmitter Section 9
				1~1024					
15	MSK Deviation	↘	↘	1	1	1	-	-	Transmitter Section 11
				1~1024					
16	CW ID Deviation	↘	↘	-	-	-	-	1	Transmitter Section 12
				1~1024					

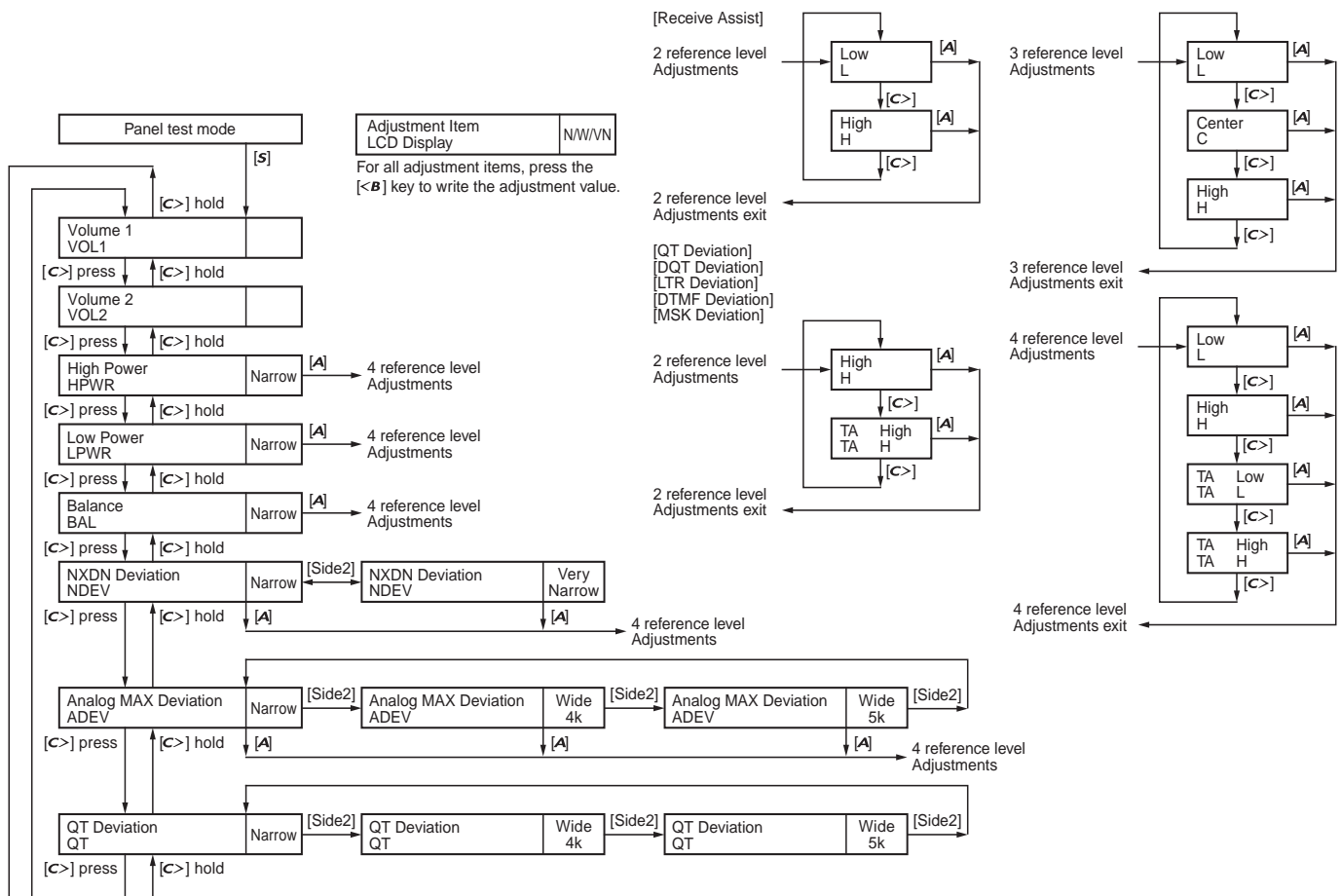
ADJUSTMENT

Order	Adjustment item	Panel tuning	PC test	AW (Analog Wide 5k)	AS (Analog Wide 4k)	AN (Analog Narrow)	NN (NXDN Narrow)	NV (NXDN Very Narrow)	Adjust item Number
				Adjustment range					
17	RSSI Reference	↙	↙	3	3	3	- *1	3	Receiver Section 4
				1~256					
18	Open Squelch	↙	↙	3	3	3	- *1	3	Receiver Section 5
				1~256					
19	Low RSSI	↙	↙	3	3	3	- *1	3	Receiver Section 6
				1~256					
20	High RSSI	↙	↙	3	3	3	- *1	3	Receiver Section 7
				1~256					
21	Tight Squelch	↙	↙	3	3	3	-	-	Receiver Section 8
				1~256					
22	Battery Warning Level	↙	↙	1 point ADJ				1~256	Transmitter Section 13

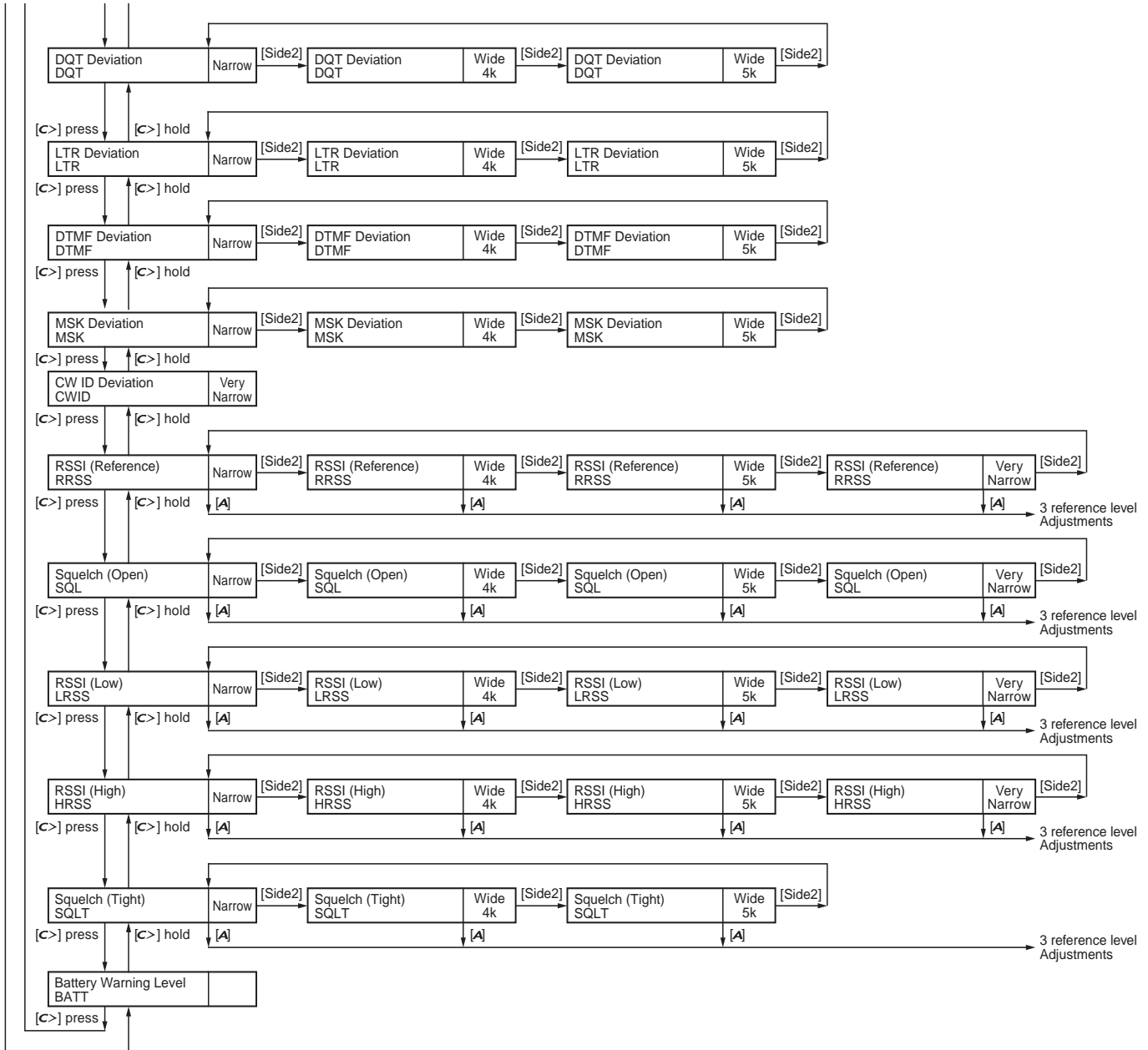
*1: Because NXDN Narrow is adjusted by adjusting Analog Narrow, it is not necessary to adjust NXDN Narrow.

■ Panel tuning mode flow chart

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



ADJUSTMENT



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. • 0.001ppm Use a standard oscillator for adjustments, if necessary.	800 to 900MHz Frequency modulation and external modulation -127dBm/0.1μV to greater than -20dBm/22.4mV
2. Power Meter	Input Impedance Operation Frequency Measurement Capability	50Ω 800 to 900MHz Vicinity of 10W
3. Deviation Meter	Frequency Range	800 to 900MHz
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 VTVM)	Frequency Range Voltage Range	50Hz to 10kHz 1mV to 10V
9. Audio Generator (AG)	Frequency Range Output	50Hz to 5kHz or more 0 to 1V
10. Distortion Meter	Capability Input Level	3% or less at 1kHz 50mV to 10Vrms
11. 8Ω Dummy Load		Approx. 8Ω, 3W
12. Regulated Power Supply		5V to 10V, approx. 3A Useful if ammeter equipped

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

■ Antenna connector adapter

The antenna connector of this transceiver uses an SMA terminal.

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

■ Nut wrench

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

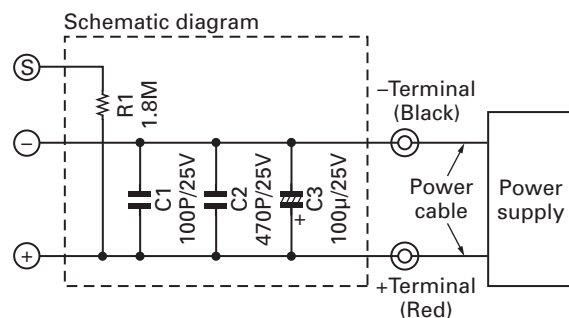
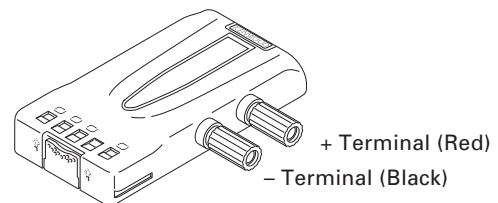
KENWOOD part No.: W05-1123-00

■ Battery Jig (W05-0909-00)

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

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

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.



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 from 20°C to 26°C.	806.04980~ 806.05020MHz (±0.25ppm @806.05MHz)
2. High power check (Batt: 7.5V)	1) CH-Sig: 2-1 PTT: ON	1) Test Channel Channel: 2 Test Signaling Mode: Analog Signaling: 1 PTT: Press [Transmit] button.	Power meter Ammeter					Check	2.7W~3.3W 2.0A or less
	2) CH-Sig: 2-1(TA) PTT: ON	2) Test Channel Channel: 2 Test Signaling Mode: Analog Signaling: 1 Talk Around : ON PTT: Press [Transmit] button.							
3. Low power check (Batt: 7.5V)	1) CH-Sig: 2-1 PTT: ON	1) Test Channel Channel: 2 Test Signaling Mode: Analog Signaling: 1 PTT: Press [Transmit] button.							0.7W~1.3W 1.1A or less
	2) CH-Sig: 2-1(TA) PTT: ON	2) Test Channel Channel: 2 Test Signaling Mode: Analog Signaling: 1 Talk Around : ON PTT: Press [Transmit] button.							
4. MIC sensitivity check	1) CH-Sig: 1-1 AG: 1kHz PTT: ON	1) Test Channel Channel: 1 Test Signaling Mode: Analog Signaling: 1 AG: 1kHz PTT: Press [Transmit] button.	Deviation meter Oscilloscope AG AF VM	Panel	ANT SP/MIC 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 5k : -117dBm (0.32μV) (MOD: 1kHz/±3kHz) Wide 4k : -117dBm (0.32μV) (MOD: 1kHz/±2.4kHz) Narrow: -117dBm (0.32μV) (MOD: 1kHz/±1.5kHz)	1) Test Channel Channel: 1 Test Signaling Mode: Analog Signaling: 1 SSG output Wide 5k : -117dBm (0.32μV) (MOD: 1kHz/±3kHz) Wide 4k : -117dBm (0.32μV) (MOD: 1kHz/±2.4kHz) Narrow: -117dBm (0.32μV) (MOD: 1kHz/±1.5kHz)	SSG AF VM Oscilloscope Distortion meter 8Ω dummy load	Panel	ANT SP/MIC 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 5k] MOD: 1kHz, DEV: 3kHz [Wide 4k] MOD: 1kHz, DEV: 2.4kHz [Narrow] MOD: 1kHz, DEV: 1.5kHz								
2. Counterclockwise Volume	1) Adj item: [VOL1] Adjust: [***]	1) Adj item: [Counterclockwise Volume]						[Panel tuning mode] Turn the volume knob counterclockwise fully. Press [B] 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 (R31-0685-05) is replaced.
3. Clockwise volume	1) Adj item: [VOL2] Adjust: [***]	1) Adj item: [Clockwise Volume]						[Panel tuning mode] Turn the volume knob clockwise fully. Press [B] key to store the adjustment value. [PC test mode] Turn the volume knob clockwise fully. Press [Apply] button to store the adjustment value.	This item is needed when the variable resistor (R31-0685-05) is replaced.

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
4. Receive Assist	* This adjustment can be performed only in PC test mode.	[Manual Adjustment] 1) Adj item: [Receive Assist] 2) Adj item: [Low], [High] Press [Apply All] button to store the adjustment value.				Panel	[PC test mode] [Automatic Adjustment] [◀],[▶] [Manual Adjustment] [V] indicator on the PC window shows VCO lock voltage. Change the adjustment value to get VCO lock voltage within the limit of the specified voltage. Note: Confirm the VCO lock voltage approximately 3 seconds after the adjustment value is changed.	2.5V±0.1V [Automatic Adjustment] After the automatic adjustment is performed, verify that the VCO lock voltage is within the voltage range which is specified by the manual adjustment. [Manual Adjustment] Press [Apply All] button to store the adjustment value after all adjustment points have been adjusted. Note: The assist adjustment value must be between from 340 to 3550.	
5. Transmit Assist	* This adjustment can be performed only in PC test mode.	[Manual Adjustment] 1) Adj item: [Transmit Assist] 2) Adj item: [Low], [High] [Low(TA)] [High(TA)] PTT: Press [Transmit] button. Press [Apply All] button to store the adjustment value.							
6. Frequency	* This adjustment can be performed only in PC test mode.	1) Adj item: [Frequency] SSG output: -20dBm (22.4mV) (CW (without modulation)) Caution: Perform the frequency adjustment under the following conditions. • Temperature range of +20°C to +26°C (+68.0°F to +78.8°F). (The temperature is displayed on the Frequency adjustment screen of the KPG-141D.) • Use an accuracy of 0.001ppm 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 has finished. Remark: "Frequency" is adjusted under receiving condition with SSG.	[PC test mode] "IF20" value = Within 0±25 digits. The value of "IF20" will become around "0" after the adjustment has finished.

ADJUSTMENT

Transmitter Section

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. High power (Batt: 7.5V)	1) Adj item: [HPWR] Adjust: [***** .] 2) Adj item: [H.PWR_] → [H.P.W.R._] → [H.PWR_] (TA) → [H.P.W.R._](TA) Adjust: [***** .] PTT: ON Press [<B] key to store the adjustment value.	1) Adj item: [High Transmit Power] 2) Adj item: [Low], [High], [Low(TA)], [High(TA)] PTT: Press [Transmit] button. Press [Apply All] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	[Panel tuning mode] Selector [PC test mode] [◀], [▶]	3.0W	±0.2W 2.0A or less [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment points have been adjusted.
2. Low power (Batt: 7.5V)	1) Adj item: [LPWR] Adjust: [***** .] 2) Adj item: [L.PWR_] → [L.P.W.R._] → [L.PWR_] (TA) → [L.P.W.R._](TA) Adjust: [***** .] PTT: ON Press [<B] key to store the adjustment value.	1) Adj item: [Low Transmit Power] 2) Adj item: [Low], [High], [Low(TA)], [High(TA)] PTT: Press [Transmit] button. Press [Apply All] button to store the adjustment value.						1.0W	±0.1W 1.1A or less [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment points have been adjusted.
3. Balance *2	1) Adj item: [BAL] Adjust: [***** .] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [B.AL_] → [B.A.L._] → [B.AL_] (TA) → [B.A.L._](TA) Adjust: [***** .] PTT: ON Press [<B] key to store the adjustment value. [Side1] key: Press while transmitting to change 20Hz and 2kHz. 20Hz: “-” not appears 2kHz: “-” appears	1) Adj item: [Balance] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low], [High], [Low(TA)], [High(TA)] 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	Panel	ANT	Panel	[Panel tuning mode] Selector [PC test mode] [◀], [▶]	The Deviation of 20Hz frequency is fixed. Change the 2kHz adjustment value to become the same deviation of 20Hz within the specified range.	2kHz Tone deviation is within ±1.0% of 20Hz tone deviation. [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment points have been adjusted.
*2: Refer to the “Necessary Deviation adjustment item for each signaling and mode” table on page 49. Balance adjustment is common with the adjustment of all signaling deviations.									
4. Maximum Deviation (NXDN) *3 [Narrow]	1) Adj item: [NDEV] Adjust: [***** .] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [N.DEV_] → [N.D.E.V._] → [N.DEV_] (TA) → [N.D.E.V._](TA) Adjust: [***** .] PTT: ON Press [<B] key to store the adjustment value.	1) Adj item: [Maximum Deviation (NXDN Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low], [High], [Low(TA)], [High(TA)] PTT: Press [Transmit] button. Press [Apply All] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] Selector [PC test mode] [◀], [▶]	3056Hz Write the value as followings. 513 (Reference value)	2995~3117Hz [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment points have been adjusted.

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
Maximum Deviation (NXDN) *3 [Very Narrow]	1) Adj item: [NDEV] Adjust: [****] 2) Adj item: [N.DEV_] → [N.D.E.V._] → [N.DEV_] (TA) → [N.D.E.V._](TA) Adjust: [****] PTT: ON Press [<B] key to store the adjustment value.	1) Adj item: [Maximum Deviation (NXDN Very Narrow)] 2) Adj item: [Low], [High],[Low(TA)], [High(TA)] PTT: Press [Transmit] button. Press [Apply All] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] Selector [PC test mode] [◀],[▶]	1337Hz Write the value as followings. 513 (Reference value)	1311~1363Hz [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment points have been adjusted.
5. Maximum Deviation (Analog) *3 [Narrow]	1) Adj item: [ADEV] Adjust: [*****] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [A.DEV_] → [A.D.E.V._] → [A.DEV_] (TA) → [A.D.E.V._](TA) Adjust: [*****] PTT: ON Press [<B] key to store the adjustment value.	1) Adj item: [Maximum Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low], [High], [Low(TA)], [High(TA)] PTT: Press [Transmit] button. Press [Apply All] button to store the adjustment value.						2100Hz Write the value as followings. 513 (Reference value)	2050~2150Hz [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment points have been adjusted.
[Wide 4k]	1) Adj item: [ADEV] Adjust: [***. * .] 2) Adj item: [A.DEV_] → [A.D.E.V._] → [A.DEV_] (TA) → [A.D.E.V._](TA) Adjust: [***. * .] PTT: ON Press [<B] key to store the adjustment value.	1) Adj item: [Maximum Deviation (Analog Wide 4k)] 2) Adj item: [Low], [High], [Low(TA)], [High(TA)] PTT: Press [Transmit] button. Press [Apply All] button to store the adjustment value.						3360Hz Write the value as followings. 513 (Reference value)	3310~3410Hz [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment points have been adjusted.

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
Maximum Deviation (Analog) *3 [Wide 5k]	1) Adj item: [ADEV] Adjust: [**. *. *.] 2) Adj item: [A.DEV_] → [A.D.E.V._] → [A.D.E.V._] (TA) → [A.D.E.V._] (TA) Adjust: [**. *. *.] PTT: ON Press [<B] key to store the adjustment value.	1) Adj item: [Maximum Deviation (Analog Wide 5k)] 2) Adj item: [Low], [High],[Low(TA)], [High(TA)] PTT: Press [Transmit] button. Press [Apply All] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] Selector [PC test mode] [<],[>]	4200Hz Write the value as followings. 513 (Reference value)	4150~4250Hz [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment points have been adjusted.
*3: Refer to the “Necessary Deviation adjustment item for each signaling and mode” table on page 49. Regarding Maximum Deviation (Analog), it is common with the adjustment of all analog signalings.									
6. QT Deviation *4 [Narrow]	1) Adj item: [QT] Adjust: [****.] 2) Adj item: [Q.T.] → [Q.T.](TA) Deviation meter LPF: 3kHz HPF: OFF PTT: ON Press [<B] key to store the adjustment value.	1) Adj item: [QT Deviation (Analog Narrow)] 2) Adj item: [Hight], [Hight](TA) 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] Selector [PC test mode] [<],[>]	Write the value as followings. 513 (Reference value)	0.35kHz±0.05kHz
[Wide 4k]	1) Adj item: [QT] Adjust: [***. *.] 2) Adj item: [Q.T.] → [Q.T.](TA) PTT: ON Press [<B] key to store the adjustment value.	1) Adj item: [QT Deviation (Analog Wide 4k)] 2) Adj item: [Hight], [Hight](TA) Deviation meter LPF: 3kHz HPF: OFF PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.							0.60kHz±0.05kHz
[Wide 5k]	1) Adj item: [QT] Adjust: [**. *. *.] 2) Adj item: [Q.T.] → [Q.T.](TA) PTT: ON Press [<B] key to store the adjustment value.	1) Adj item: [QT Deviation (Analog Wide 5k)] 2) Adj item: [Hight], [Hight](TA) Deviation meter LPF: 3kHz HPF: OFF PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.							0.75kHz±0.05kHz

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks	
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method		
7. DQT Deviation *4 [Narrow]	1) Adj item: [DQT] Adjust: [****.] 2) Adj item: [D.Q.T._._.] → [D.Q.T._._.](TA) Deviation meter LPF: 3kHz HPF: OFF PTT: ON Press [<B] key to store the adjustment value.	1) Adj item: [DQT Deviation (Analog Narrow)] 2) Adj item: [High], [High](TA) 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] Selector [PC test mode] [<],[>]	Write the value as followings. 430 (Reference value)	0.35kHz±0.05kHz	
	[Wide 4k]	1) Adj item: [DQT] Adjust: [***. *.] 2) Adj item: [D.Q.T._._.] → [D.Q.T._._.](TA) PTT: ON Press [<B] key to store the adjustment value.							1) Adj item: [DQT Deviation (Analog Wide 4k)] 2) Adj item: [High], [High](TA) PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.	0.60kHz±0.05kHz
	[Wide 5k]	1) Adj item: [DQT] Adjust: [***. *. *.] 2) Adj item: [D.Q.T._._.] → [D.Q.T._._.](TA) PTT: ON Press [<B] key to store the adjustment value.							1) Adj item: [DQT Deviation (Analog Wide 5k)] 2) Adj item: [High], [High](TA) PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.	0.75kHz±0.05kHz
8. LTR Deviation *4 [Narrow]	1) Adj item: [LTR] Adjust: [****.] 2) Adj item: [L.T.R._._.] → [L.T.R._._.](TA) Deviation meter LPF: 3kHz HPF: OFF PTT: ON Press [<B] key to store the adjustment value.	1) Adj item: [LTR Deviation (Analog Narrow)] 2) Adj item: [High], [High](TA) 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 4k]	1) Adj item: [LTR] 2) Adj item: [L.T.R._._.] → [L.T.R._._.](TA) Adjust: [****. *.] PTT: ON Press [<B] key to store the adjustment value.							1) Adj item: [LTR Deviation (Analog Wide 4k)] 2) Adj item: [High], [High](TA) PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.	0.90kHz±0.05kHz
	[Wide 5k]	1) Adj item: [LTR] 2) Adj item: [L.T.R._._.] → [L.T.R._._.](TA) Adjust: [***. *. *.] PTT: ON Press [<B] key to store the adjustment value.							1) Adj item: [LTR Deviation (Analog Wide 5k)] 2) Adj item: [High], [High](TA) PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.	1.00kHz±0.05kHz

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
9. DTMF Deviation *4 [Narrow]	1) Adj item: [DTMF] Adjust: [****.] 2) Adj item: [D.T.M.F._] → [D.T.M.F._](TA) Deviation meter LPF: 15kHz HPF: OFF PTT: ON Press [<B] key to store the adjustment value.	1) Adj item: [DTMF] Deviation (Analog Narrow) 2) Adj item: [Hight], [Hight](TA) 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] Selector [PC test mode] [<], [>]	Write the value as followings. 540 (Reference value)	1.25kHz±0.05kHz
[Wide 4k]	1) Adj item: [DTMF] Adjust: [***. *.] 2) Adj item: [D.T.M.F._] → [D.T.M.F._](TA) PTT: ON Press [<B] key to store the adjustment value.	1) Adj item: [DTMF] Deviation (Analog Wide 4k) 2) Adj item: [Hight], [Hight](TA) PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value							2.00kHz±0.05kHz
[Wide 5k]	1) Adj item: [DTMF] Adjust: [***. *.] 2) Adj item: [D.T.M.F._] → [D.T.M.F._](TA) PTT: ON Press [<B] key to store the adjustment value.	1) Adj item: [DTMF] Deviation (Analog Wide 5k) 2) Adj item: [Hight], [Hight](TA) PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.							2.50kHz±0.05kHz
10. MSK Deviation *4 [Narrow]	1) Adj item: [MSK] Adjust: [****.] 2) Adj item: [M.S.K._._] → [M.S.K._._](TA) Deviation meter LPF: 15kHz HPF: OFF PTT: ON Press [<B] key to store the adjustment value.	1) Adj item: [MSK] Deviation (Analog Narrow) 2) Adj item: [Hight], [Hight](TA) 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

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
MSK Deviation *4 [Wide 4k]	1) Adj item: [MSK] Adjust: [***. * .] 2) Adj item: [M.S.K._._.] → [M.S.K._._.](TA) PTT: ON Press [<B] key to store the adjustment value.	1) Adj item: [MSK Deviation (Analog Wide 4k)] 2) Adj item: [Hight], [Hight](TA) PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] Selector [PC test mode] [◀,▶]	Write the value as followings. 513 (Reference value)	2.40kHz±0.05kHz
	[Wide 5k]	1) Adj item: [MSK] Adjust: [***. * .] 2) Adj item: [M.S.K._._.] → [M.S.K._._.](TA) PTT: ON Press [<B] key to store the adjustment value.							1) Adj item: [MSK Deviation (Analog Wide 5k)] 2) Adj item: [Hight], [Hight](TA) PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.
12. CW ID Deviation *4 [NXDN Very Narrow]	1) Adj item: [CWID] Adjust: [****] Deviation meter LPF: 15kHz HPF: OFF PTT: ON Press [<B] 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)	1.00kHz±0.10kHz	
*4: Refer to the “Necessary Deviation adjustment item for each signaling and mode” table on page 70.									
13. Battery Warning Level 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 [<B] key to store the adjustment value. [PC test mode] Press [Apply] button to store the adjustment value.	
14. Battery Warning Level 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.

ADJUSTMENT

■ 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 5k)", this signaling is composed of three elements [Balance, Maximum Deviation (Analog Wide 5k) and QT Deviation (Wide 5k)]. Please adjust Balance and Maximum Deviation (Analog Wide 5k) before adjusting QT Deviation (Wide 5k).

Mode	Signaling	Necessary adjustment and order			
		Wide 5k	Wide 4k	Narrow	Very Narrow
Analog	Audio	Step 1. Balance adjust Step 2. Maximum Deviation (Analog Wide 5k)	Step 1. Balance adjust Step 2. Maximum Deviation (Analog Wide 4k)	Step 1. Balance adjust Step 2. Maximum Deviation (Analog Narrow)	-
	QT	Step 1. Balance adjust Step 2. Maximum Deviation (Analog Wide 5k) Step 3. QT Deviation (Wide 5k)	Step 1. Balance adjust Step 2. Maximum Deviation (Analog Wide 4k) Step 3. QT Deviation (Wide 4k)	Step 1. Balance adjust Step 2. Maximum Deviation (Analog Narrow) Step 3. QT Deviation (Narrow)	-
	DQT	Step 1. Balance adjust Step 2. Maximum Deviation (Analog Wide 5k) Step 3. DQT Deviation (Wide 5k)	Step 1. Balance adjust Step 2. Maximum Deviation (Analog Wide 4k) Step 3. DQT Deviation (Wide 4k)	Step 1. Balance adjust Step 2. Maximum Deviation (Analog Narrow) Step 3. DQT Deviation (Narrow)	-
	LTR	Step 1. Balance adjust Step 2. Maximum Deviation (Analog Wide 5k) Step 3. LTR Deviation (Wide 5k)	Step 1. Balance adjust Step 2. Maximum Deviation (Analog Wide 4k) Step 3. LTR Deviation (Wide 4k)	Step 1. Balance adjust Step 2. Maximum Deviation (Analog Narrow) Step 3. LTR Deviation (Narrow)	-
	DTMF	Step 1. Balance adjust Step 2. Maximum Deviation (Analog Wide 5k) Step 3. DTMF Deviation (Wide 5k)	Step 1. Balance adjust Step 2. Maximum Deviation (Analog Wide 4k) Step 3. DTMF Deviation (Wide 4k)	Step 1. Balance adjust Step 2. Maximum Deviation (Analog Narrow) Step 3. DTMF Deviation (Narrow)	-
	MSK (Fleet-Sync)	Step 1. Balance adjust Step 2. Maximum Deviation (Analog Wide 5k) Step 3. MSK Deviation (Analog Wide 5k)	Step 1. Balance adjust Step 2. Maximum Deviation (Analog Wide 4k) Step 3. MSK Deviation (Analog Wide 4k)	Step 1. Balance adjust Step 2. Maximum Deviation (Analog Narrow) Step 3. MSK Deviation (Analog Narrow)	-
NXDN	Audio	-	-	Step 1. Balance adjust Step 2. Maximum Deviation (NXDN Narrow)	Step 1. Balance adjust Step 2. Maximum Deviation (NXDN Very Narrow)
	CW ID	-	-	-	Step 1. Balance adjust Step 2. Maximum Deviation (Analog Narrow) Step 3. CW ID Deviation (NXDN Very Narrow)

- Balance is common with all the above deviation adjustments. If Balance (Transmitter Section 3) has already adjusted, please skip Step 1 and adjust from Step 2.
- Maximum Deviation (Analog Wide 5k/Wide 4k/Narrow) is common with all the analog signaling deviations and CWID Deviation (NXDN Very Narrow). If Balance and Maximum Deviation (Analog Wide 5k/Wide 4k/Narrow) (Transmitter Section 5) have already adjusted, please skip Step 2 and adjust from Step 3.

ADJUSTMENT

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 5k/Wide 4k/ Narrow: Narrow Beat Shift: Uncheck Compander: Uncheck	1) Test Channel Channel: 1 Test Signaling Mode: Analog Signaling: 1 Wide 5k/Wide 4k/ Narrow: Narrow Beat Shift: Uncheck Compander: Uncheck SSG output: -47dBm (1mV) (MOD: 1kHz/±1.5kHz)	SSG DVM AF VM Dummy load	Panel	ANT SP/MIC connector	Panel	Volume knob	Turn the Volume Knob to obtain 0.63V AF output.	0.63V±0.1V
2. RSSI reference *5 [Analog Narrow]	1) Adj item: [RRSS] Adjust: [***.] 2) Adj item: [R.RSS_] → [R.R.S.S_] → [R.R.S.S._] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)	1) Adj item: [RSSI Reference (Analog Narrow)] 2) Adj item: [Low], [Center], [High] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)	SSG	Panel	ANT SP/MIC connector			[Panel tuning mode] After input signal from SSG, press [<B] key to store the adjustment value. [PC test mode] After input signal from SSG, press [Apply] button to store the adjust- ment value.	
[Analog Wide 4k]	1) Adj item: [RRSS] Adjust: [*. *. *. .] 2) Adj item: [R.RSS_] → [R.R.S.S_] → [R.R.S.S._] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±2.4kHz)	1) Adj item: [RSSI Reference (Analog Wide 4k)] 2) Adj item: [Low], [Center], [High] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±2.4kHz)							
[Analog Wide 5k]	1) Adj item: [RRSS] Adjust: [*. *. *. *. .] 2) Adj item: [R.RSS_] → [R.R.S.S_] → [R.R.S.S._] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±3kHz)	1) Adj item: [RSSI Reference (Analog Wide 5k)] 2) Adj item: [Low], [Center], [High] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±3kHz)							
[NXDN Verry Narrow]	1) Adj item: [RRSS] Adjust: [***] 2) Adj item: [R.RSS_] → [R.R.S.S_] → [R.R.S.S._] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)	1) Adj item: [RSSI Ref- erence (NXDN Very Narrow)] 2) Adj item: [Low], [Center],[High] SSG output: 12dB SINAD level -3dB (MOD: 1kHz/±1.5kHz)							Adjust with the analog signal.

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

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
3. Open Squelch *6 (Squelch level 5 adjust) [Analog Narrow]	1) Adj item: [SQL] Adjust: [***.] 2) Adj item: [S.QL_] → [S.Q.L_] → [S.Q.L_] → SSG output: 12dB SINAD level (MOD: 1kHz/±1.5kHz)	1) Adj item: [Open Squelch (Analog Narrow)] 2) Adj item: [Low], [Center], [High] SSG output: 12dB SINAD level (MOD: 1kHz/±1.5kHz)	SSG	Panel	ANT SP/MIC connector			[Panel tuning mode] After input signal from SSG, press [B] 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. Remark: During production, a fixed value is written. Narrow: 110 (Fixed) Wide 4k: 110 (Fixed) Wide 5k: 110 (Fixed)
[Analog Wide 4k]	1) Adj item: [SQL] Adjust: [**.*.] 2) Adj item: [S.QL_] → [S.Q.L_] → [S.Q.L_] → SSG output: 12dB SINAD level (MOD: 1kHz/±2.4kHz)	1) Adj item: [Open Squelch (Analog Wide 4k)] 2) Adj item: [Low], [Center],[High] SSG output: 12dB SINAD level (MOD: 1kHz/±2.4kHz)							
[Analog Wide 5k]	1) Adj item: [SQL] Adjust: [*.*.*.] 2) Adj item: [S.QL_] → [S.Q.L_] → [S.Q.L_] → SSG output: 12dB SINAD level (MOD: 1kHz/±3kHz)	1) Adj item: [Open Squelch (Analog Wide 5k)] 2) Adj item: [Low], [Center], [High] SSG output: 12dB SINAD level (MOD: 1kHz/±3kHz)							
[NXDN Very Narrow]	1) Adj item: [SQL] Adjust: [***] 2) Adj item: [S.QL_] → [S.Q.L_] → [S.Q.L_] → 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], [Center], [High] SSG output: 12dB SINAD level for Analog Narrow -4dB (MOD: 400Hz/±1.1kHz)						[Panel tuning mode] After input signal from SSG, press [←B] 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. This item is adjusted under the condition that MOD is “400Hz” and Deviation is “±1.1kHz” due to the circuit configuration. Remark: During production, a fixed value is written. 215 (Fixed)
*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	
4. Low RSSI at -118dBm *7 [Analog Narrow]	1) Adj item: [LRSS] Adjust: [***.] 2) Adj item: [L.RSS_] → [L.R.S.S_] → [L.R.S.S._] SSG output: -118dBm (0.28μV) (MOD: 1kHz/±1.5kHz)	1) Adj item: [Low RSSI (Analog Narrow)] 2) Adj item: [Low], [Center], [High] SSG output: -118dBm (0.28μV) (MOD: 1kHz/±1.5kHz)	SSG	Panel	ANT SP/MIC connector			[Panel tuning mode] After input signal from SSG, press [<B] 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.
[Analog Wide 4k]	1) Adj item: [LRSS] Adjust: [**.*.] 2) Adj item: [L.RSS_] → [L.R.S.S_] → [L.R.S.S._] SSG output: -118dBm (0.28μV) (MOD: 1kHz/±2.4kHz)	1) Adj item: [Low RSSI (Analog Wide 4k)] 2) Adj item: [Low], [Center], [High] SSG output: -118dBm (0.28μV) (MOD: 1kHz/±2.4kHz)							
[Analog Wide 5k]	1) Adj item: [LRSS] Adjust: [*. *.* . * . * .] 2) Adj item: [L.RSS_] → [L.R.S.S_] → [L.R.S.S._] SSG output: -118dBm (0.28μV) (MOD: 1kHz/±3kHz)	1) Adj item: [Low RSSI (Analog Wide 5k)] 2) Adj item: [Low], [Center], [High] SSG output: -118dBm (0.28μV) (MOD: 1kHz/±3kHz)							
[NXDN Very Narrow]	1) Adj item: [LRSS] Adjust: [***] 2) Adj item: [L.RSS_] → [L.R.S.S_] → [L.R.S.S._] SSG output: -118dBm (0.28μV) (MOD: 1kHz/±1.5kHz)	1) Adj item: [Low RSSI (NXDN Very Narrow)] 2) Adj item: [Low], [Center], [High] SSG output: -118dBm (0.28μV) (MOD: 1kHz/±1.5kHz)							
*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).									
5. High RSSI at -80dBm *8 [Analog Narrow]	1) Adj item: [HRSS] Adjust: [***.] 2) Adj item: [H.RSS_] → [H.R.S.S_] → H.R.S.S._] SSG output: -80dBm (22.4μV) (MOD: 1kHz/±1.5kHz)	1) Adj item: [High RSSI (Analog Narrow)] 2) Adj item: [Low], [Center], [High] SSG output: -80dBm (22.4μV) (MOD: 1kHz/±1.5kHz)	SSG	Panel	ANT SP/MIC connector			[Panel tuning mode] After input signal from SSG, press [<B] key to store the adjustment value. [PC test mode] After input signal from SSG, press [Apply] button to store the adjustment value.	
[Analog Wide 4k]	1) Adj item: [HRSS] Adjust: [**.*.] 2) Adj item: [H.RSS_] → [H.R.S.S_] → [H.R.S.S._] SSG output: -80dBm (22.4μV) (MOD: 1kHz/±2.4kHz)	1) Adj item: [High RSSI (Analog Wide 4k)] 2) Adj item: [Low], [Center], [High] SSG output: -80dBm (22.4μV) (MOD: 1kHz/±2.4kHz)							

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
5. High RSSI at -80dBm *8 [Analog Wide 5k]	1) Adj item: [HRSS] Adjust: [* . * . * .] 2) Adj item: [H.RSS_] → [H.R.S.S_] → [H.R.S.S._] SSG output: -80dBm (22.4μV) (MOD: 1kHz/±3kHz)	1) Adj item: [High RSSI (Analog Wide 5k)] 2) Adj item: [Low], [Center], [High] SSG output: -80dBm (22.4μV) (MOD: 1kHz/±3kHz)	SSG	Panel	ANT SP/MIC connector			Panel tuning mode] After input signal from SSG, press [B] 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: [HRSS] Adjust: [***] 2) Adj item: [H.RSS_] → [H.R.S.S_] → [H.R.S.S._] SSG output: -80dBm (22.4μV) (MOD: 1kHz/±1.5kHz)	1) Adj item: [High RSSI (NXDN Very Narrow)] 2) Adj item: [Low], [Center],[High] SSG output: -80dBm (22.4μV) (MOD: 1kHz/±1.5kHz)							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 [Analog Narrow]	1) Adj item: [SQLT] Adjust: [***] 2) Adj item: [S.QLT_] → [S.Q.L.T_] → [S.Q.L.T._] SSG output: 12dB SINAD level +5dB (MOD: 1kHz/±1.5kHz)	1) Adj item: [Tight Squelch (Analog Narrow)] 2) Adj item: [Low], [Center], [High] SSG output: 12dB SINAD level +5dB (MOD: 1kHz/±1.5kHz)	SSG	Panel	ANT SP/MIC connector			[Panel tuning mode] After input signal from SSG, press [B] key to store the adjustment value. [PC test mode] After input signal from SSG, press [Apply] button to store the adjustment value.	Remark: During production, a fixed value is written. 225 (Fixed)
[Analog Wide 4k]	1) Adj item: [SQLT] Adjust: [* . * . * .] 2) Adj item: [S.QLT_] → [S.Q.L.T_] → [S.Q.L.T._] SSG output: 12dB SINAD level +5dB (MOD: 1kHz/±2.4kHz)	1) Adj item: [Tight Squelch (Analog Wide 4k)] 2) Adj item: [Low], [Center], [High] SSG output: 12dB SINAD level +5dB (MOD: 1kHz/±2.4kHz)	SSG	Panel	ANT SP/MIC connector			[Panel tuning mode] After input signal from SSG, press [B] key to store the adjustment value. [PC test mode] After input signal from SSG, press [Apply] button to store the adjustment value.	Remark: During production, a fixed value is written. Wide 4k: 230 (Fixed) Wide 5k: 230 (Fixed)
[Analog Wide 5k]	1) Adj item: [SQLT] Adjust: [S.S.S.] 2) Adj item: [S.QLT_] → [S.Q.L.T_] → [S.Q.L.T._] SSG output: 12dB SINAD level +5dB (MOD: 1kHz/±3kHz)	1) Adj item: [Tight Squelch (Analog Wide 5k)] 2) Adj item: [Low], [Center], [High] SSG output: 12dB SINAD level +5dB (MOD: 1kHz/±3kHz)							

TERMINAL FUNCTION

Display unit (X54-3760-XX A/3)

Pin No.	Name	I/O	Function
CN5			
1	33M	I	33M input
2	SCK0	I	Clock input
3	SDI0	I	Serial data input
4	SDO0	O	Serial data output
5	DISP_VER	O	Display version detection
6	/EVCS	I	Chip enable
7	/LCDCS	I	LCD IC chip enable
8	GND	-	GND
9	RXAF_2	I	RX AF input with BEEP and VOICE
10	ASQ	O	Analog squelch voltage output
11	ASQAPC	I	Analog squelch signal input
12	VOX	O	VOX voltage output
13	MIC	O	MIC modulation output
14	50C	I	50C input
15	MOD	I	AF modulation input
16	GND	-	GND
17	VCO_MOD	O	VCO modulation output
18	33A	I	33A input
19	TV2	O	Tuning control voltage 2 output
20	TV1	O	Tuning control voltage 1 output
21	SPAF	O	AF output for amplifier
22	GND	-	GND
23	MIC1	I	MIC modulation input
24	SB2	I	SB2 input

Display unit (X54-3760-XX B/3)

Pin No.	Name	I/O	Function
CN6			
1	GND	-	GND
2	PTT	O	Internal PTT input
3	/S1	O	Key input (SIDE1 key)
4	/S2	O	Key input (SIDE2 key)
5	/EMG	O	Key input (EMG key)
6	GND	-	GND

TX-RX unit (X57-8370-10)

Pin No.	Name	I/O	Function
CN500			
1	+B	O	Power output after passing through the fuse
2	SB1	I	Power input after power switch
3	NC	-	No connection
4	33A	O	33A output

Pin No.	Name	I/O	Function
5	VOL	I	Volume level input for audio control
6	VOL_GND	-	GND for volume level
7	ENC3	I	Rotary switch input
8	GND	-	GND
9	ENC4	I	Rotary switch input
10	ENC2	I	Rotary switch input
11	ENC1	I	Rotary switch input
CN600			
1	SB2	O	SB2 output
2	MIC1	O	MIC modulation output
3	GND	-	GND
4	SPAF	I	AF input for AF amplifier
5	TV1	I	Tuning control voltage 1 input
6	TV2	I	Tuning control voltage 2 input
7	33A	O	33A output
8	VCO_MOD	I	VCO modulation input
9	GND	-	GND
10	MOD	O	AF modulation output
11	50C	O	50C output
12	MIC	I	MIC modulation input
13	VOX	I	VOX voltage input
14	ASQAPC	O	Analog squelch signal output
15	ASQ	I	Analog squelch voltage input
16	RXAF_2	O	RX AF output with BEEP and VOICE
17	GND	-	GND
18	/LCDCS	O	LCD IC chip enable
19	/EVCS	O	Chip enable
20	DISP_VER	I	Display version detection
21	SDO0	O	Serial data output
22	SDI0	I	Serial data input
23	SCK0	O	Clock output
24	33M	O	33M output
CN604			
1	GND	-	GND
2	PTT	I	Internal PTT output
3	/S1	I	Key output (Side1 key)
4	/S2	I	Key output (Side2 key)
5	/EMG	I	Key output (EMG key)
6	GND	-	GND
CN902			
1	MIC+	I	Internal MIC input
2	MIC-	-	Internal MIC GND
3	SP+	O	Internal speaker output
4	SP-	-	Internal speaker GND

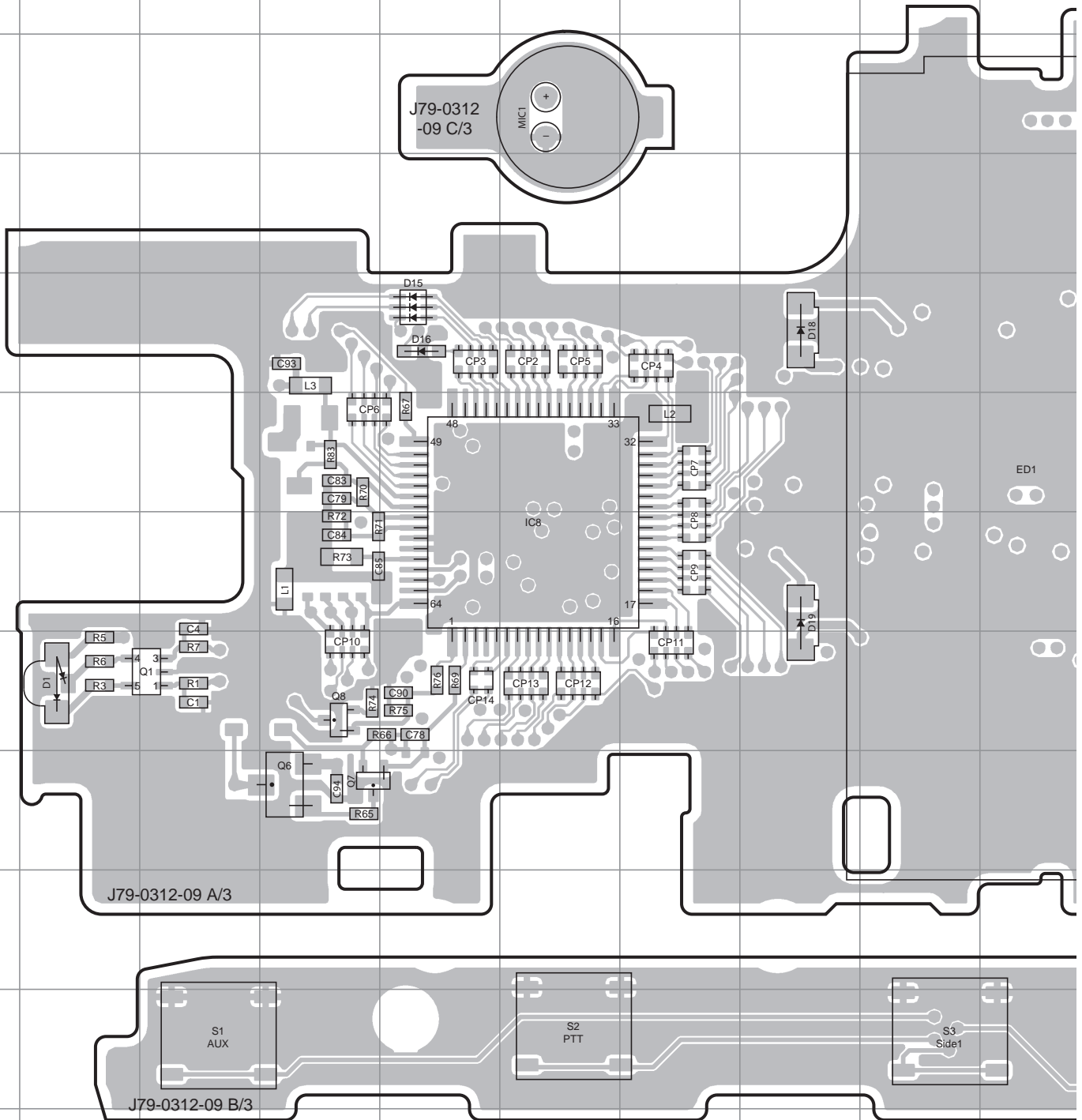
TERMINAL FUNCTION

SP/MIC Connector Specification

Pin No.	Pin Name	I/O	Signal Type	Description	Item and Condition	Min	Typ	Max	Unit	Note
1	PTT/RXD	I	Digital	PTT/RXD input Z _{in} =10kΩ	Input Voltage (High)	4	5	6	V	
					Input Voltage (Low)	0		0.5	V	
2	MICI	I	Analog	External MIC input Z _{in} =1.8kΩ@1kHz	Maximum Input Voltage			1100	mVrms	
					Standard Input Voltage	6.7	12.5	18.3	mVrms	AF=1kHz 60% deviation MIC sens=Normal
3	MICO	O	Analog	Internal MIC output						
4	OPTDET	I	Digital	External option detection Z _{in} =74kΩ						
5	50V	O	Power	DC 5V output	Output Voltage	4.9	5.0	5.1	V	I _o =30mA
					Maximum Output Current			100	mA	
6	AE	-	GND	GND	Maximum Input Current			700	mA	
7	TXD	O	Digital	TXD output Z _{out} =6.8kΩ	Output Voltage (High)	4.9	5.0	5.1	V	Load=Open
					Output Voltage (Low)	0		0.1	V	Load=Open
8	SPI	I	Analog	Internal Speaker input						
9	SPO	O	Analog	Internal Audio output	Maximum Output Power			1300	mW	AF=0.3~3kHz FM Dev.=Maximum Load=8Ω P.S.=9.0V
					Standard Output Power	400	500		mW	AF=1kHz Load=8Ω THD=10% P.S.=7.5V

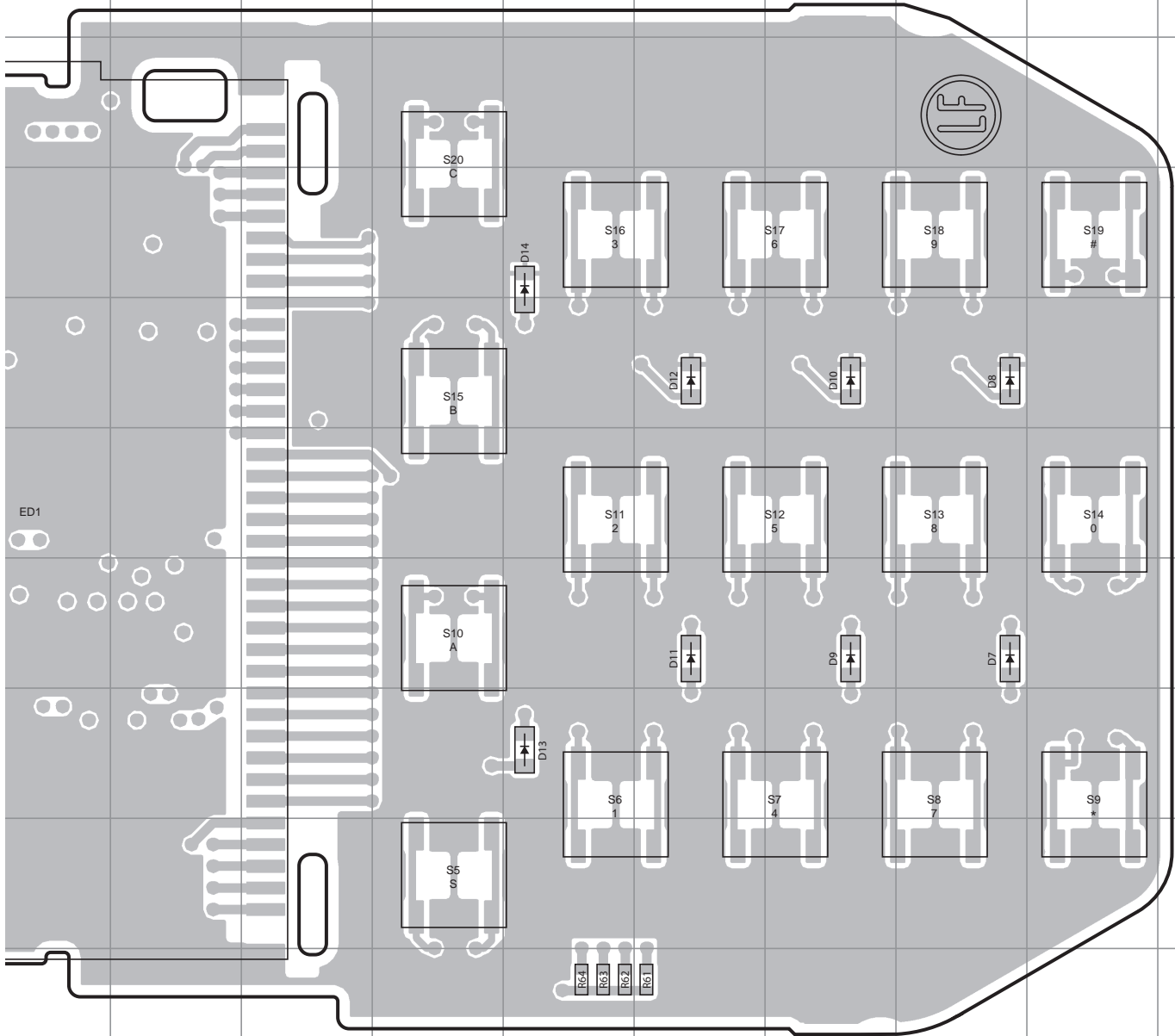
NX-420 PC BOARD

DISPLAY UNIT (X54-3760-XX) -10: K3 -12: K
Component side view (J79-0312-09)

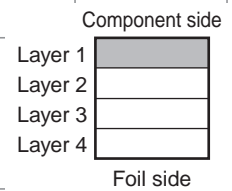


PC BOARD NX-420

DISPLAY UNIT (X54-3760-XX) -10: K3 -12: K
Component side view (J79-0312-09)

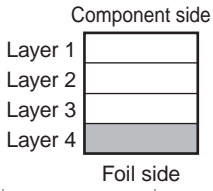
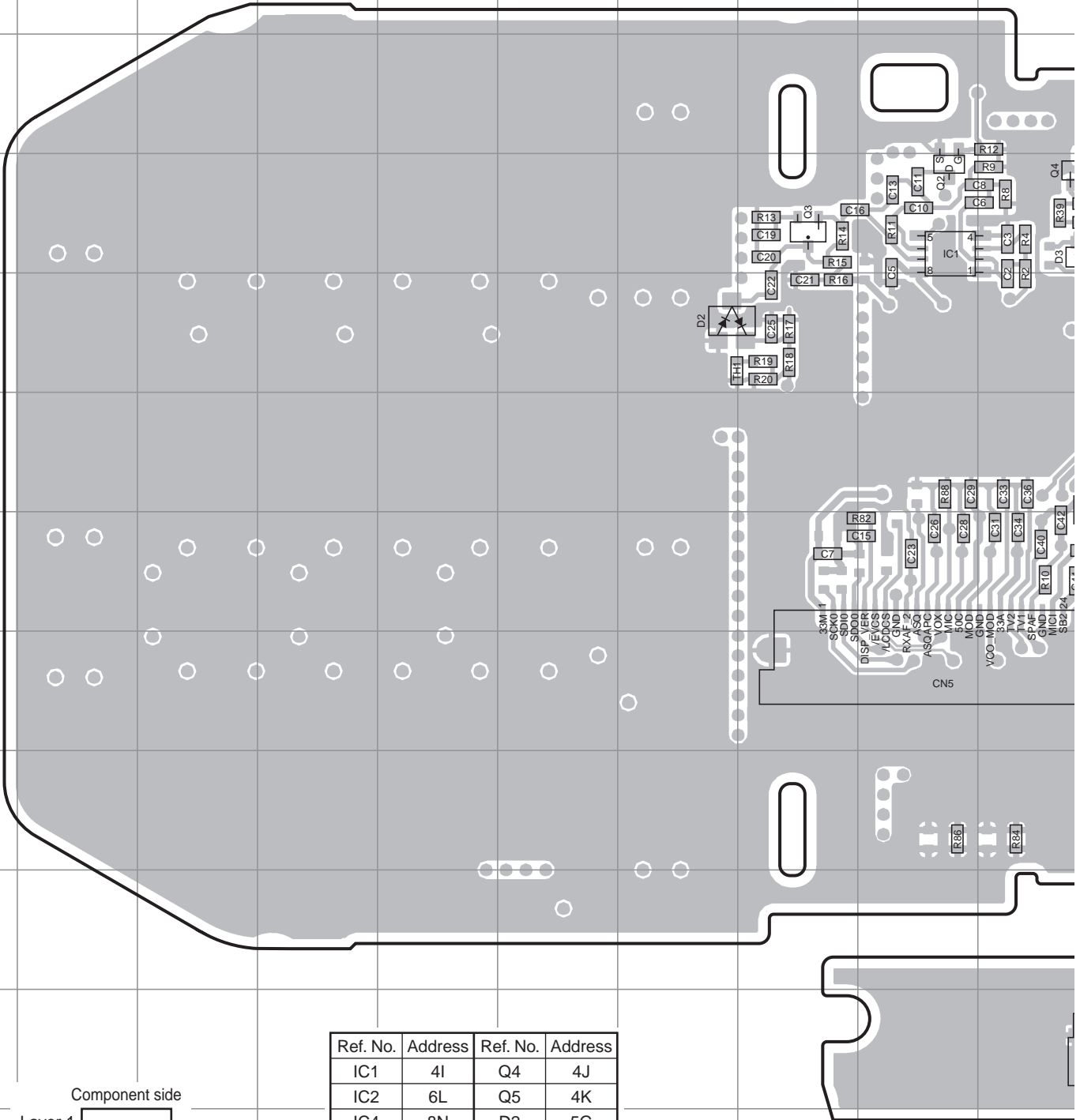


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IC8	7F	D10	5P
Q1	8C	D11	7O
Q6	9D	D12	5O
Q7	9D	D13	8N
Q8	8D	D14	4N
D1	8B	D15	5E
D7	7Q	D16	5E
D8	5Q	D18	5H
D9	7P	D19	7H



NX-420 PC BOARD

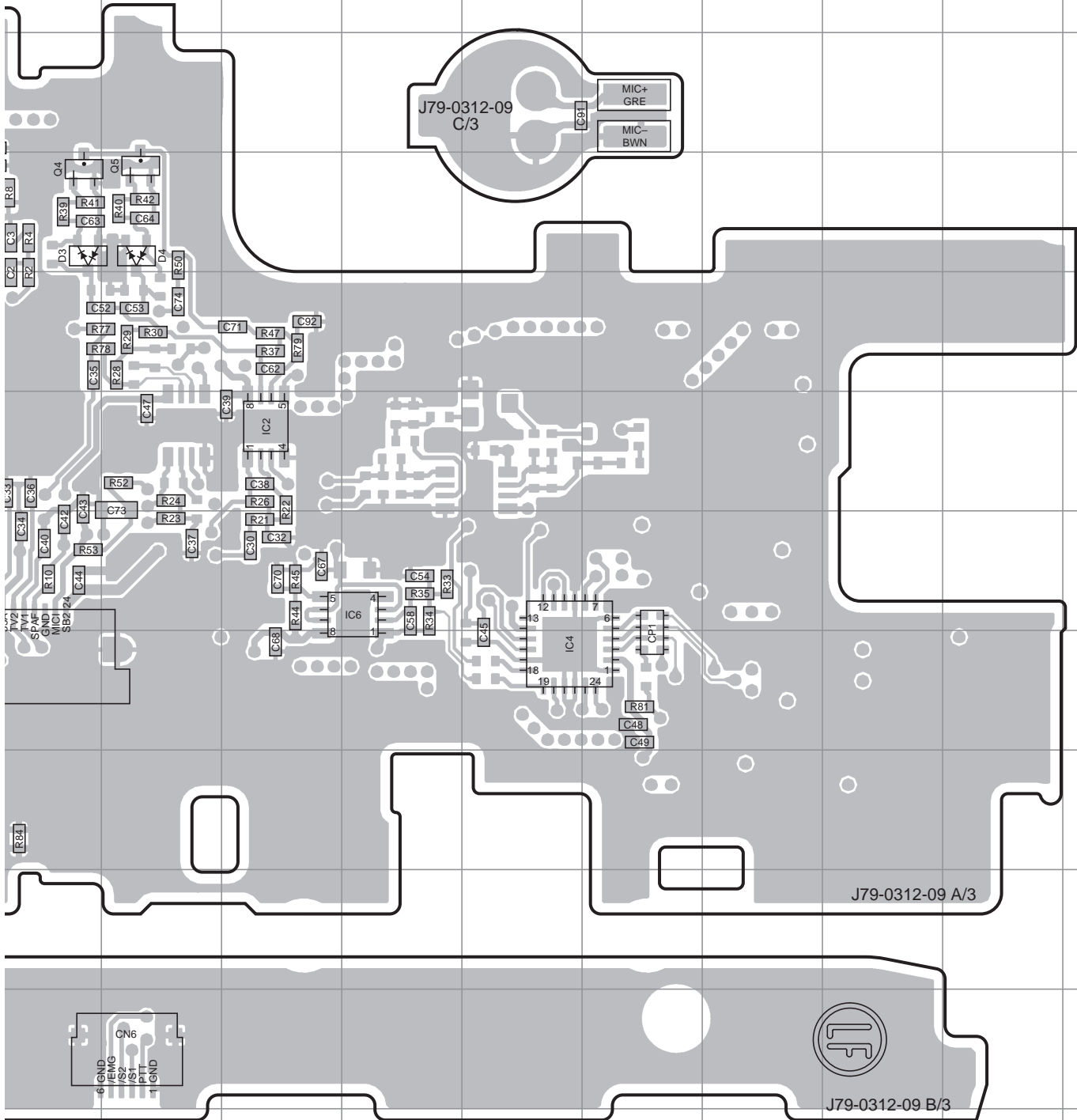
DISPLAY UNIT (X54-3760-XX) -10: K3 -12: K
Foil side view (J79-0312-09)



Ref. No.	Address	Ref. No.	Address
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IC2	6L	Q5	4K
IC4	8N	D2	5G
IC6	7M	D3	4J
Q2	4I	D4	4K
Q3	4H		

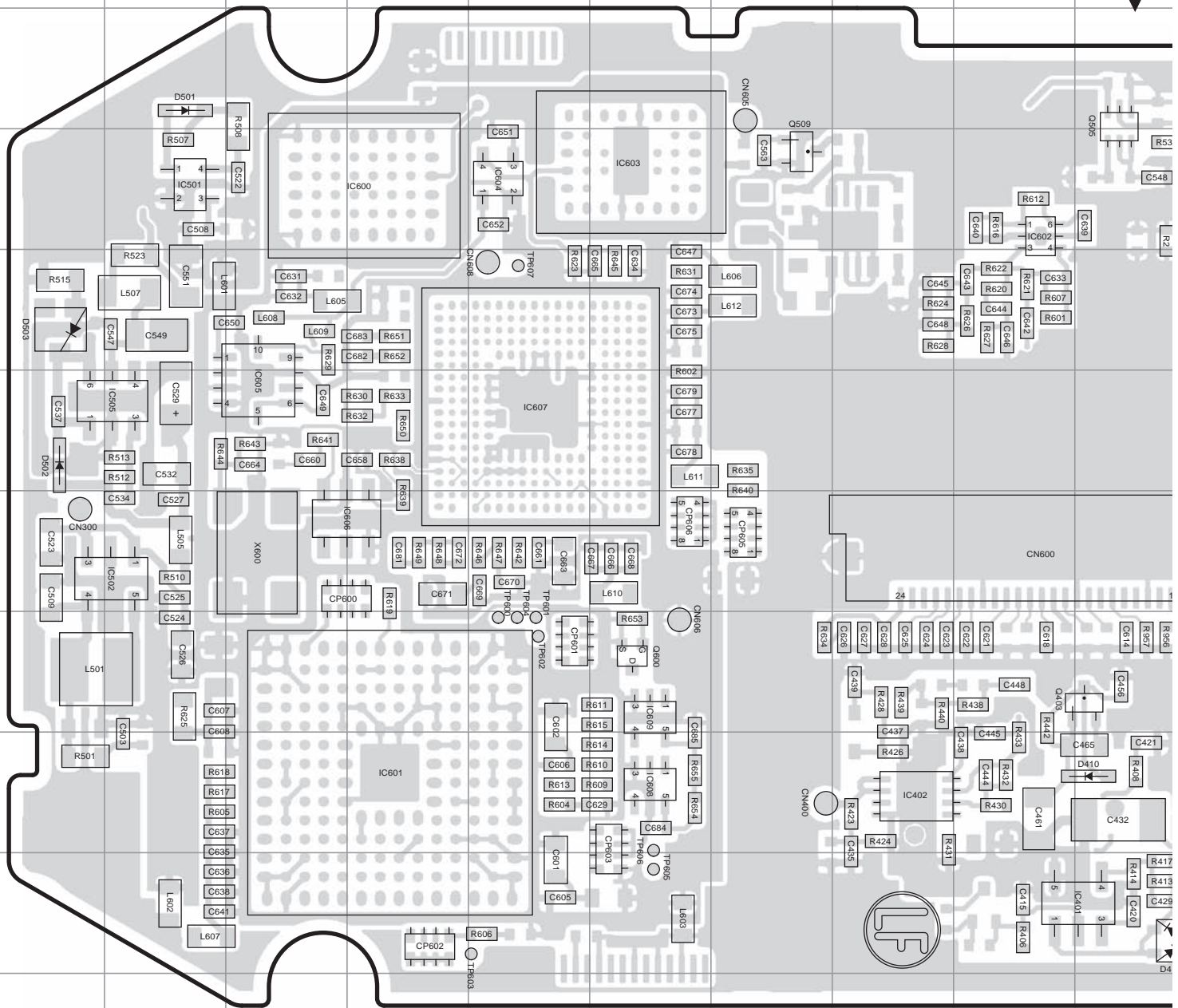
PC BOARD NX-420

DISPLAY UNIT (X54-3760-XX) -10: K3 -12: K
Foil side view (J79-0312-09)



NX-420 PC BOARD

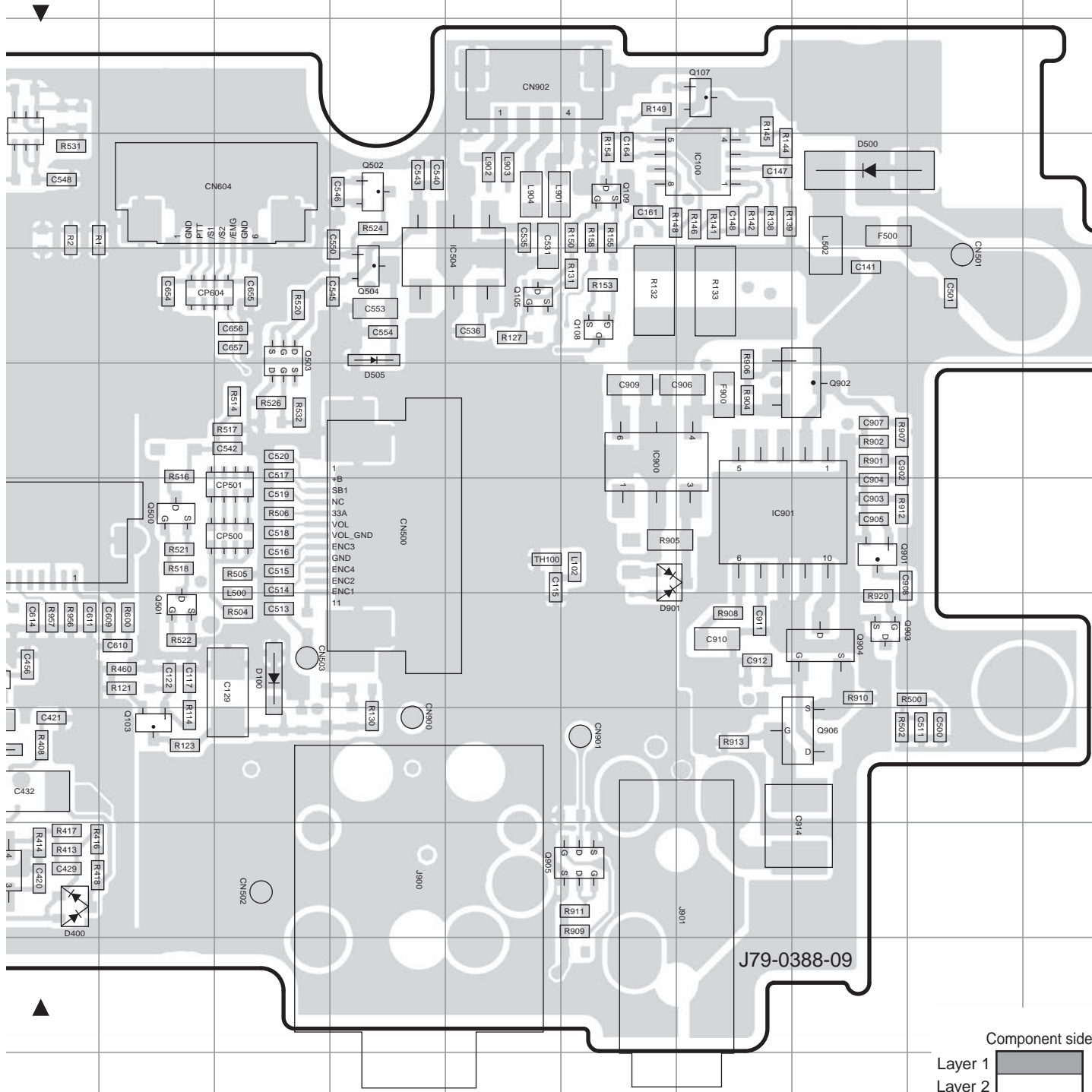
TX-RX UNIT (X57-8370-10)
Component side view (J79-0388-09)



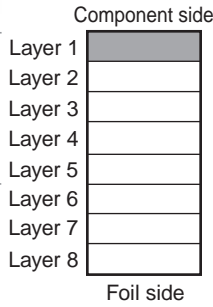
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D400	10J	IC401	10J	IC603	4F	Q103	9K	Q503	5L	Q905	10O
D410	9J	IC402	9H	IC604	4E	Q105	5N	Q504	5M	Q906	9Q
D500	4Q	IC501	4B	IC605	6C	Q107	3P	Q505	3J		
D501	3B	IC502	7B	IC606	7C	Q108	5O	Q509	4G		
D502	6A	IC504	5N	IC607	6E	Q109	4O	Q600	8F		
D503	5A	IC505	6B	IC609	8F	Q403	8J	Q901	7Q		
D505	5M	IC600	4D	IC608	9F	Q500	7K	Q902	6Q		
D901	7O	IC601	9D	IC900	6O	Q501	8K	Q903	8Q		

PC BOARD NX-420

TX-RX UNIT (X57-8370-10)
Component side view (J79-0388-09)

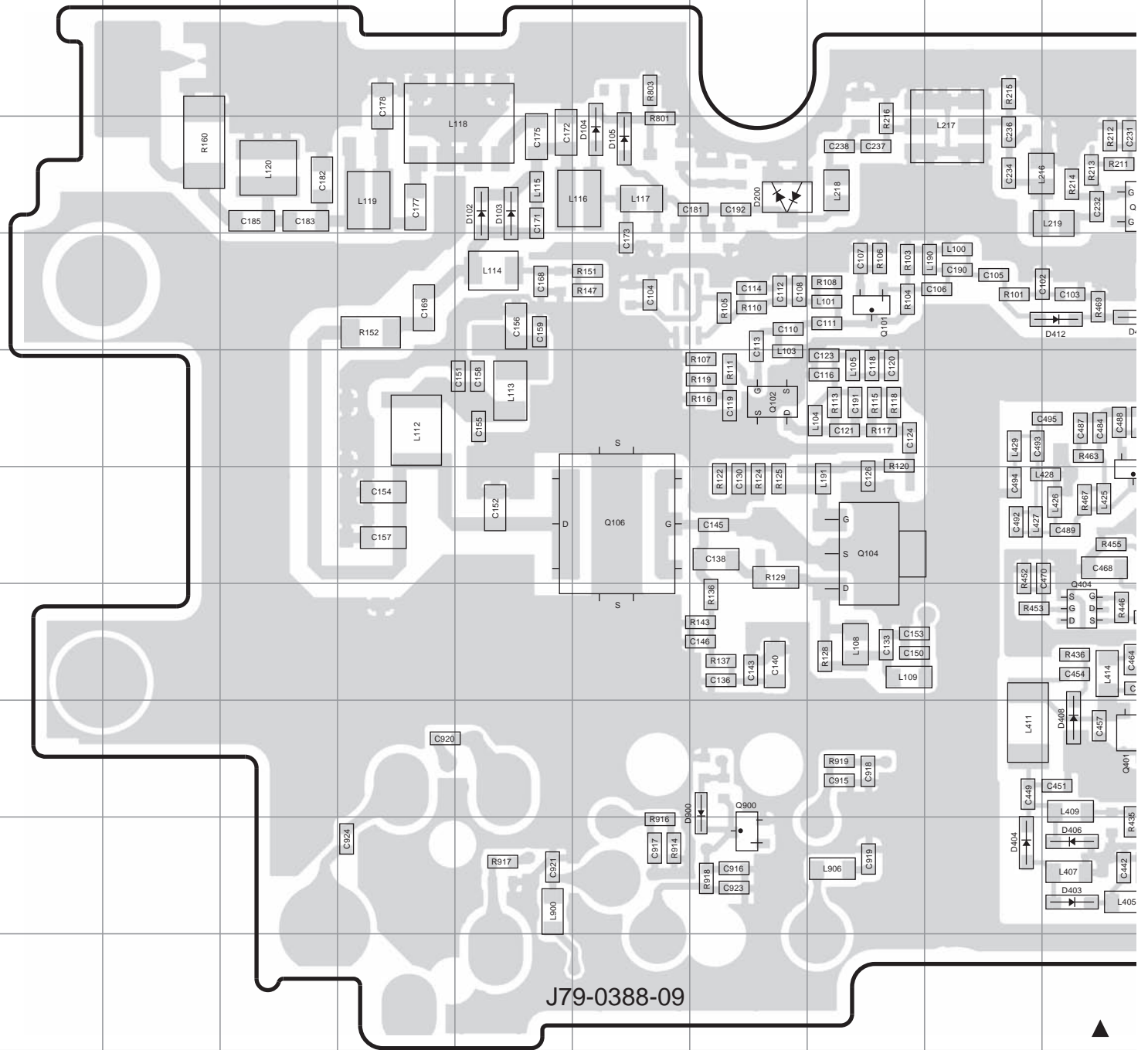


J79-0388-09



NX-420 PC BOARD

TX-RX UNIT (X57-8370-10)
Foil side view (J79-0388-09)

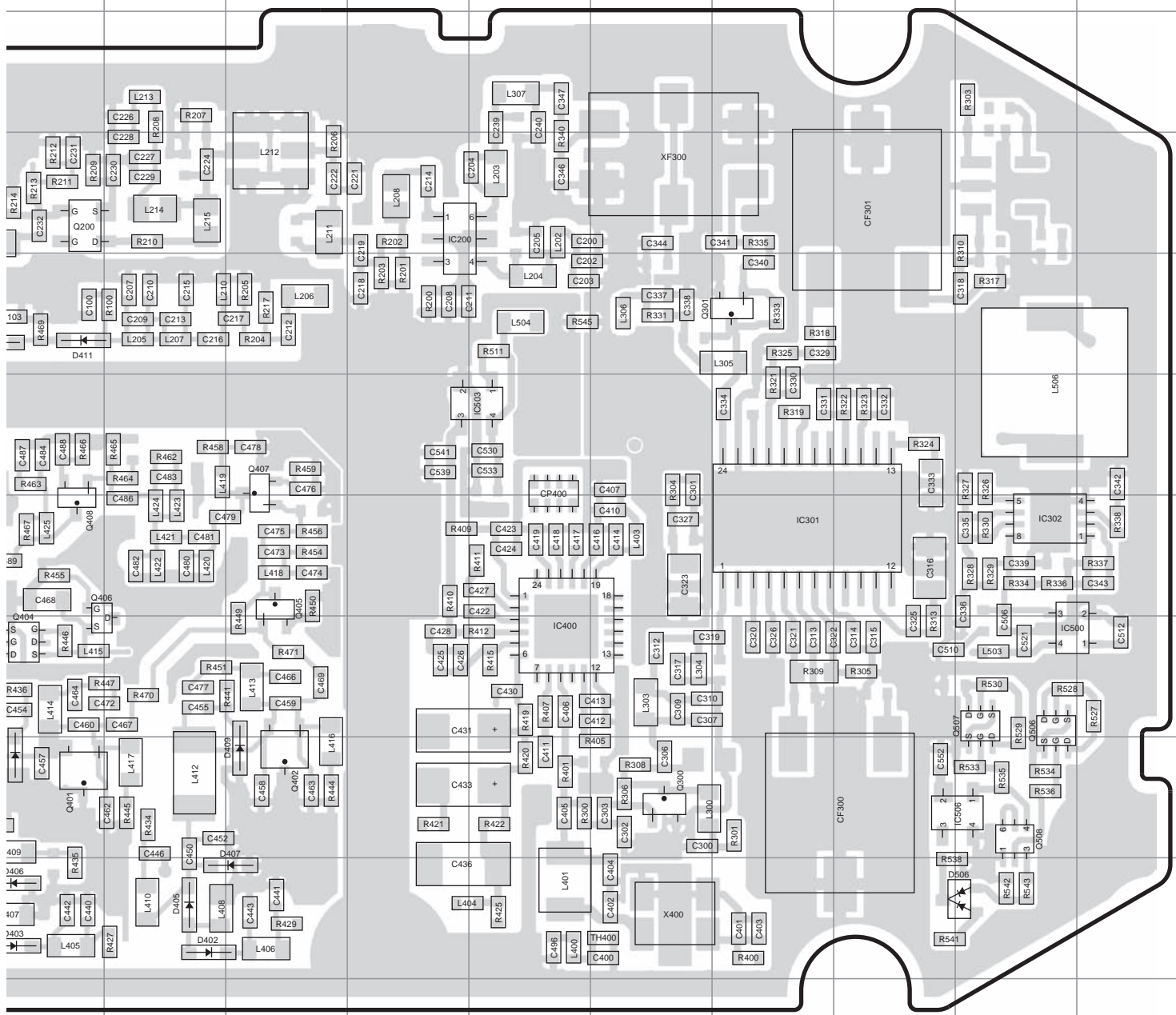


J79-0388-09

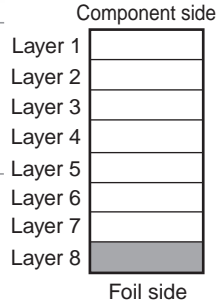
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IC301	7P	Q101	5H	Q301	5P	Q407	6L	D102	4E	D403	10J	D409	9L
IC302	7R	Q102	6G	Q401	9J	Q408	7J	D103	4E	D404	10I	D411	5J
IC400	8N	Q104	7H	Q402	9L	Q506	8R	D104	4F	D405	10K	D412	5J
IC500	8R	Q106	7F	Q404	8J	Q507	8R	D105	4F	D406	10J	D506	10R
IC503	6N	Q200	4J	Q405	7L	Q508	9R	D200	4G	D407	10L	D900	9G

PC BOARD NX-420

TX-RX UNIT (X57-8370-10)
Foil side view (J79-0388-09)

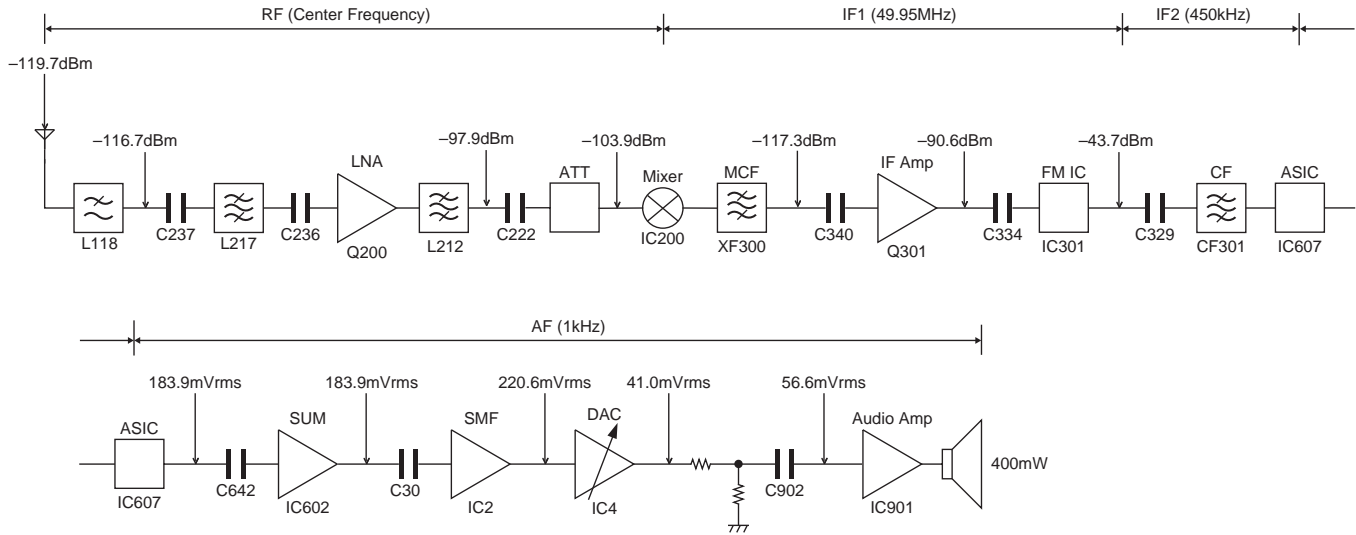


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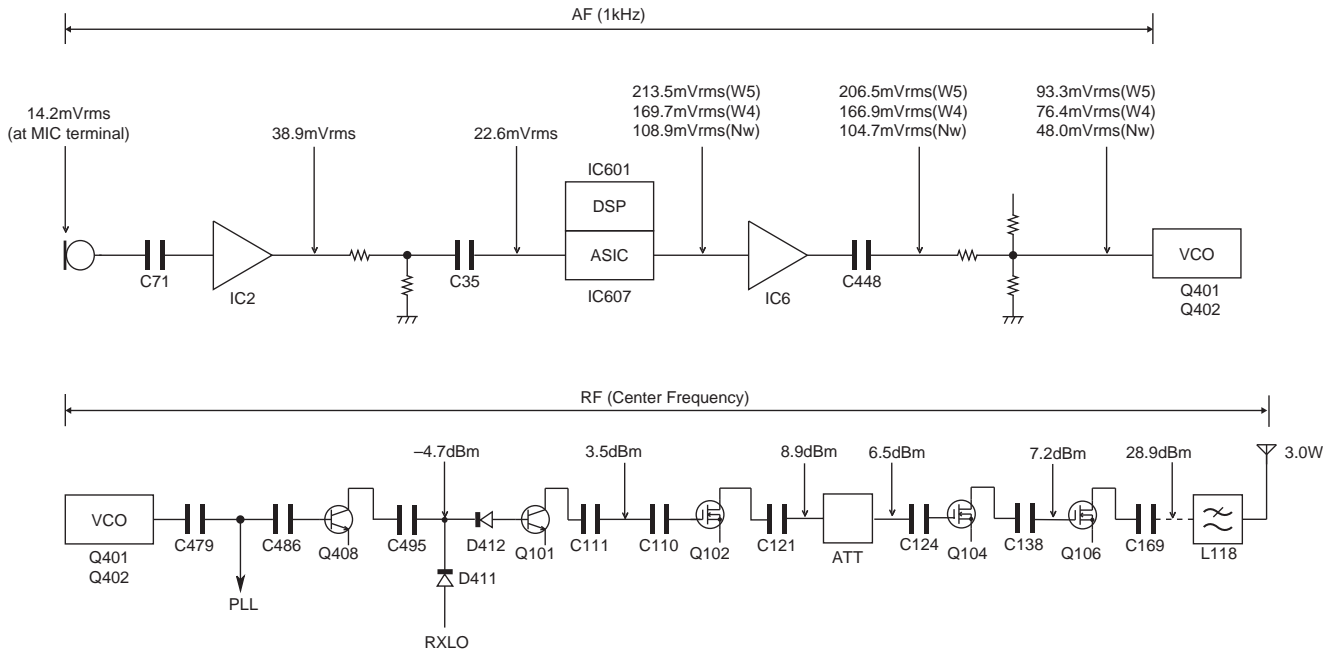
LEVEL DIAGRAM

Receiver Section



To make measurements in the AF section, connect the AC level meter. (ANT input: -47dBm, 1kHz FM, 3kHz DEV (Wide 5kHz))
 In the RF section, use a 100pF coupling capacitor.
 (The display shows the SSG input value required to obtain 12dB SINAD without local level.)

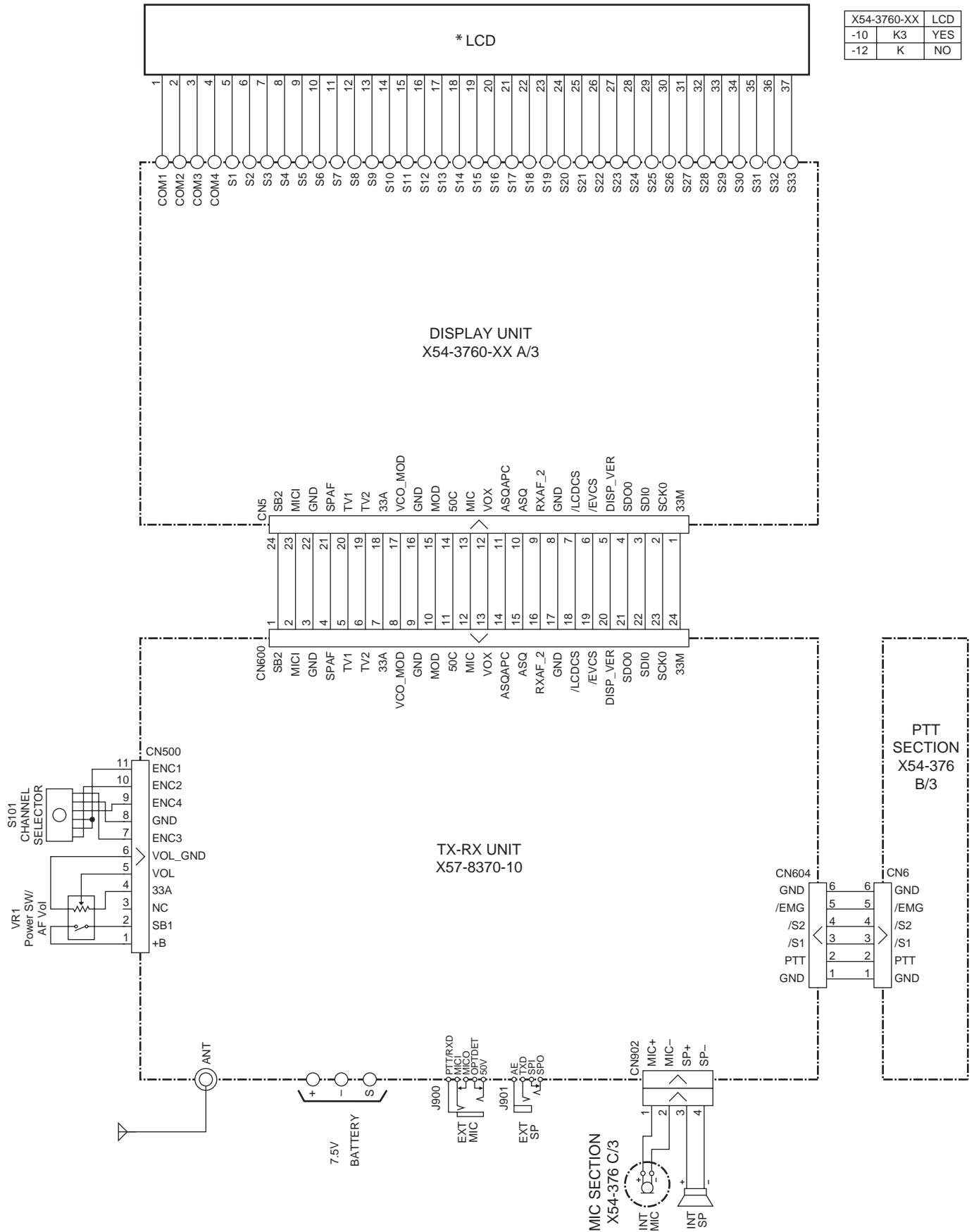
Transmitter Section



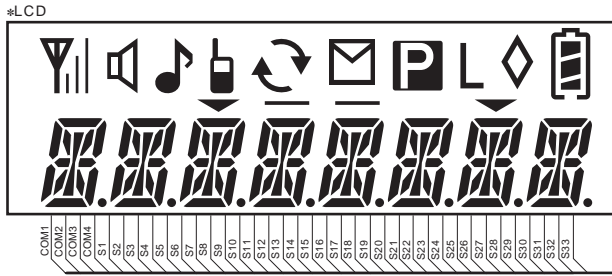
AG is set to the MIC input becomes (3kHz/2.4kHz/1.5kHz) at 1kHz MOD (Wide 5kHz/Wide 4kHz/Narrow).
 To make measurements in the AF section, connect the AC level meter.
 In the RF section, use a 100pF coupling capacitor.

INTERCONNECTION DIAGRAM

X54-3760-XX	LCD
-10	K3 YES
-12	K NO



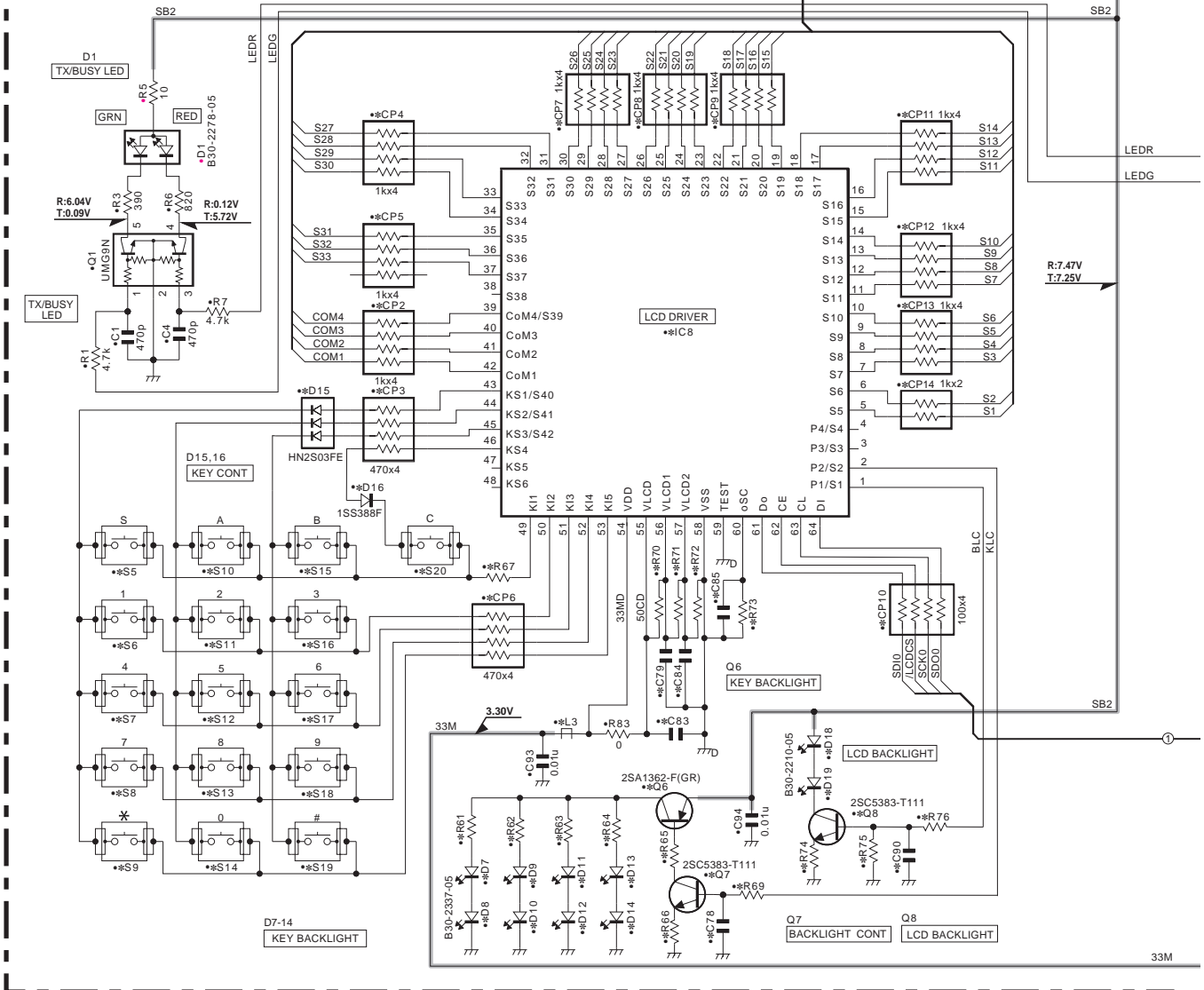
NX-420 SCHEMATIC DIAGRAM



X54-3760-XX	LCD	R61	R62	R63	R64	R65	R66	R67	R69	R70	R71	R72	R73
-10	K3	YES	3.3k	3.3k	3.3k	3.3k	6.8k	0	470	2.2k	10k	10k	43k
-12	K	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

X54-3760-XX	R74	R75	R76	C78	C79	C83	C84	C85	C90	
-10	K3	120	2.2k	680	0.01u	0.047u	1000p	0.047u	680p	0.01u
-12	K	NO	NO	NO	NO	NO	NO	NO	NO	NO

DISPLAY UNIT (X54-3760-XX)(A/3)



X54-3760-XX	CP2	CP3	CP4	CP5	CP6	CP7	CP8	CP9	CP10	CP11	CP12	CP13	CP14	L3
-10	K3	RK74HB1J102J	RK74HB1J1471J	RK74HB1J102J	RK74HB1J102J	RK74HB1J1471J	RK74HB1J102J	RK74HB1J102J	RK74HB1J101J	RK74HB1J102J	RK74HB1J102J	RK74HB1J102J	RK74HB1J102J	L92-0138-05
-12	K	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

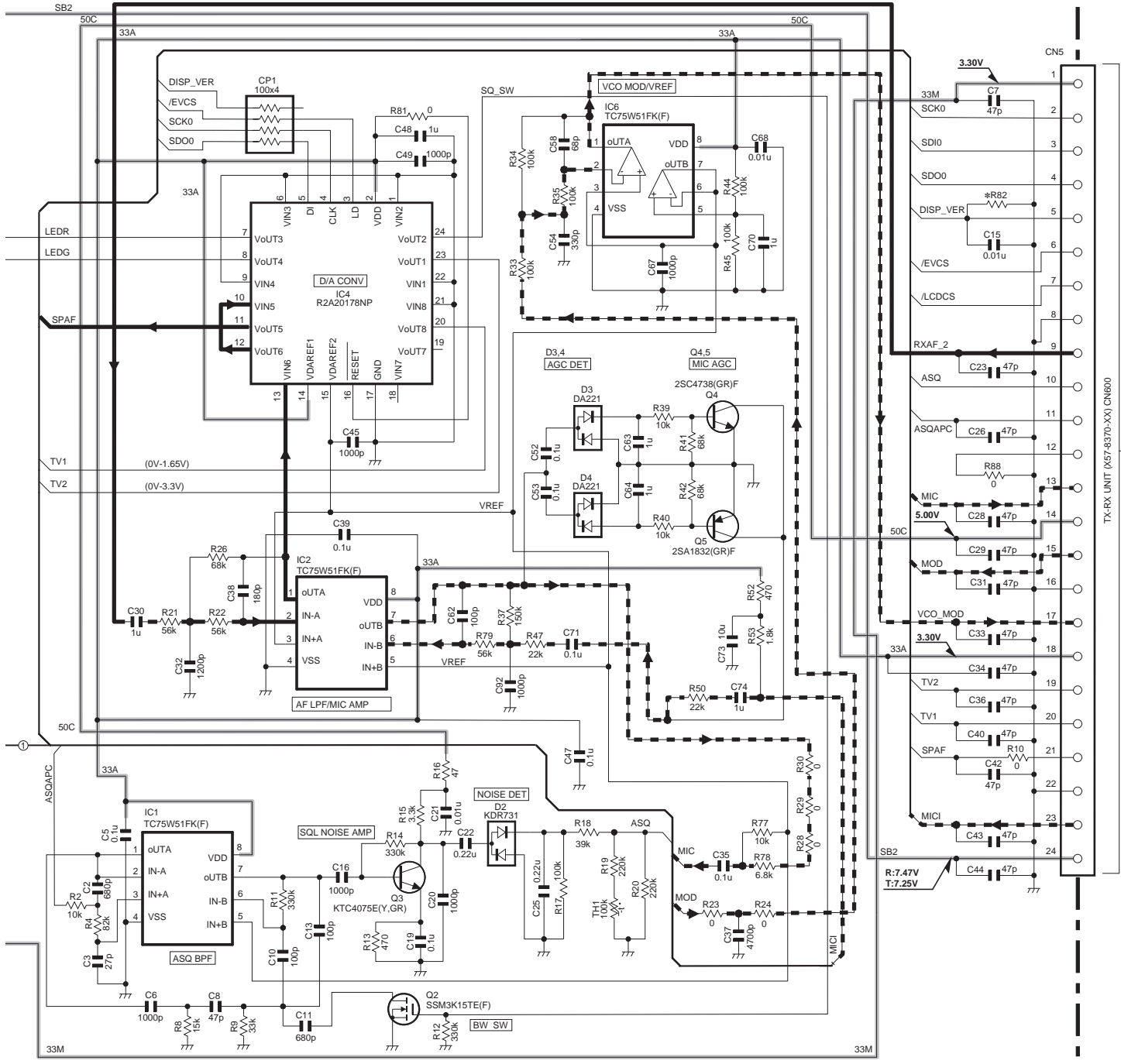
X54-3760-XX	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D18	D19	IC8	Q6	Q7	Q8
-10	K3	B30-2337-05	B30-2337-05	B30-2337-05	B30-2337-05	B30-2337-05	B30-2337-05	B30-2337-05	HN2S03FE	1SS388F	B30-2210-05	B30-2210-05	LC75857W-E	2SA1362-F(GR)	2SC5383-T111	2SC5383-T111
-12	K	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

X54-3760-XX	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18	S19	S20
-10	K3	S70-0519-05	S70-0519-05	S70-0519-05	S70-0519-05	S70-0519-05	S70-0519-05	S70-0519-05	S70-0519-05	S70-0519-05	S70-0519-05	S70-0519-05	S70-0519-05	S70-0519-05	S70-0519-05	S70-0519-05
-12	K	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

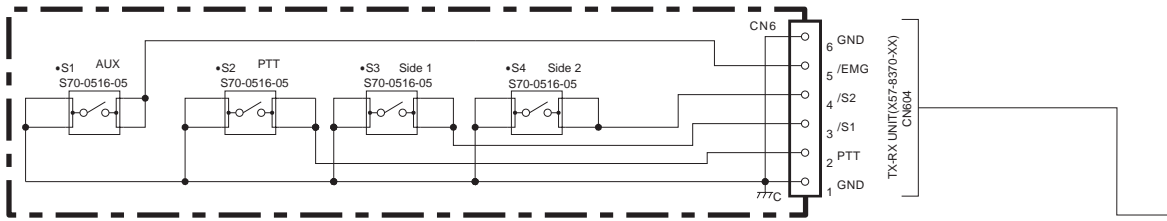
SCHEMATIC DIAGRAM NX-420

DISPLAY UNIT (X54-3760-XX) (A/3)

X54-3760-XX	R82	R84	R86
-10	K3	NO	0
-12	K	3.3k	NO

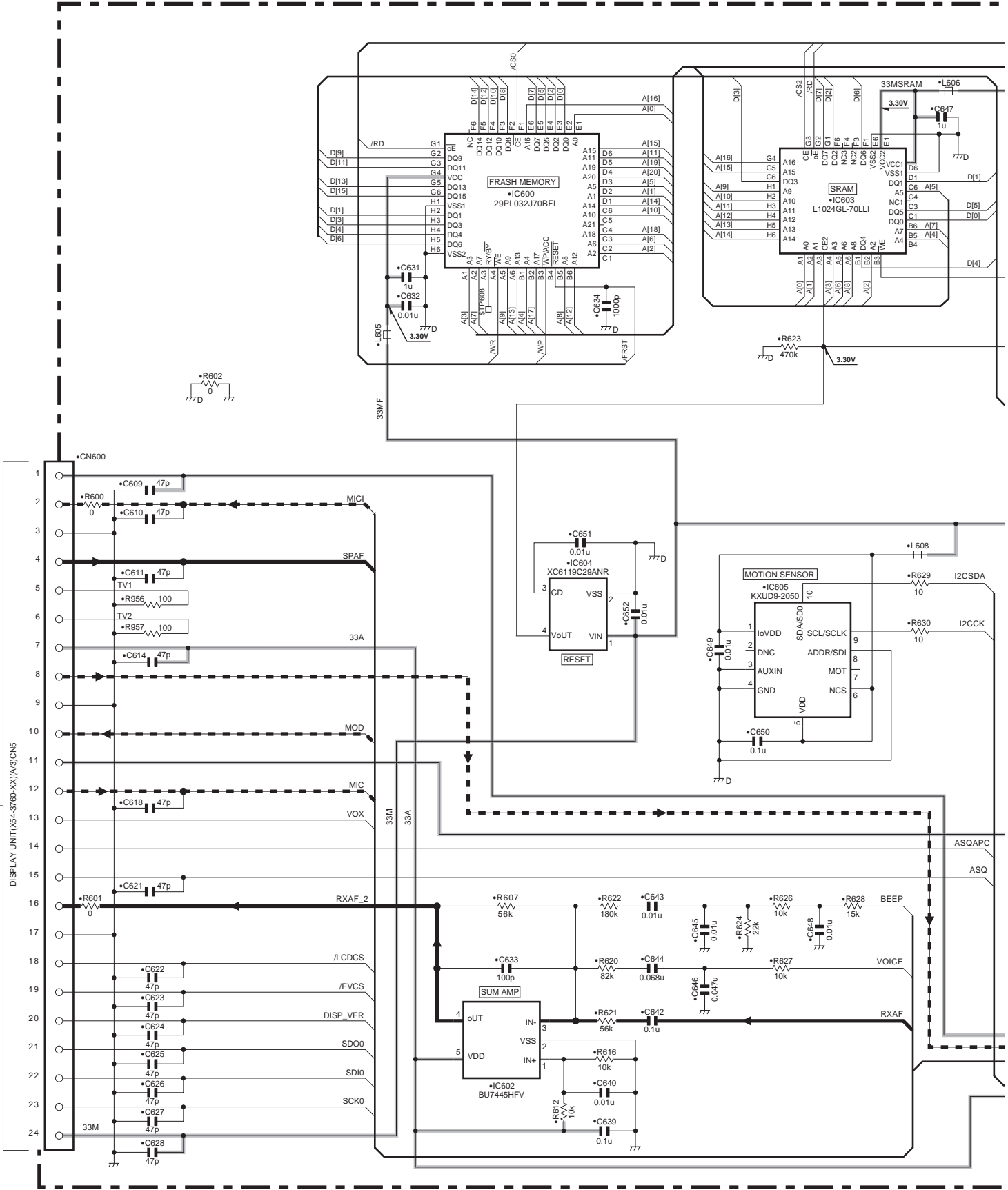


PTT SECTION
(X54-3760-XX)
(B/3)



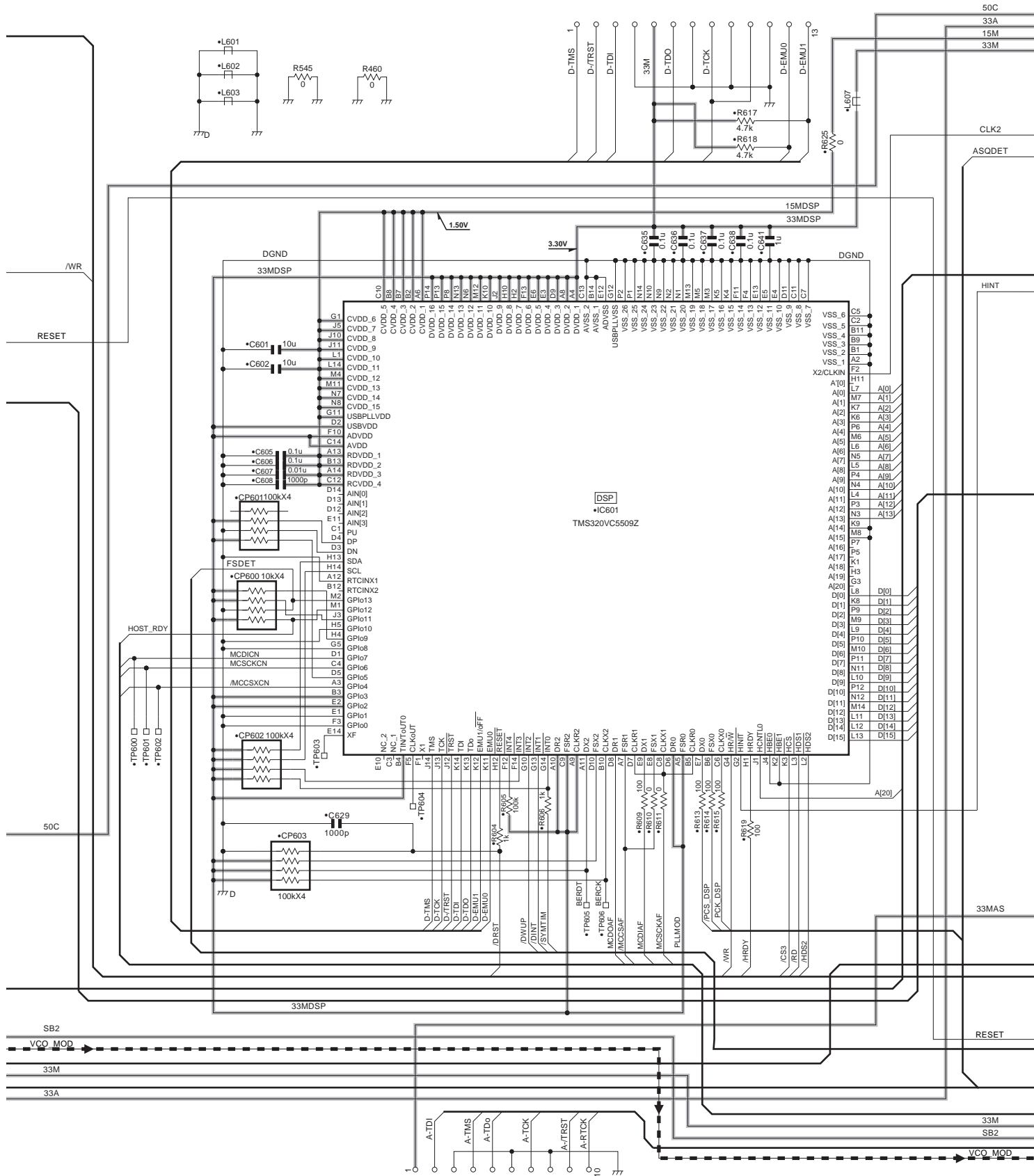
NX-420 SCHEMATIC DIAGRAM

TX-RX UNIT(X57-8370-10)



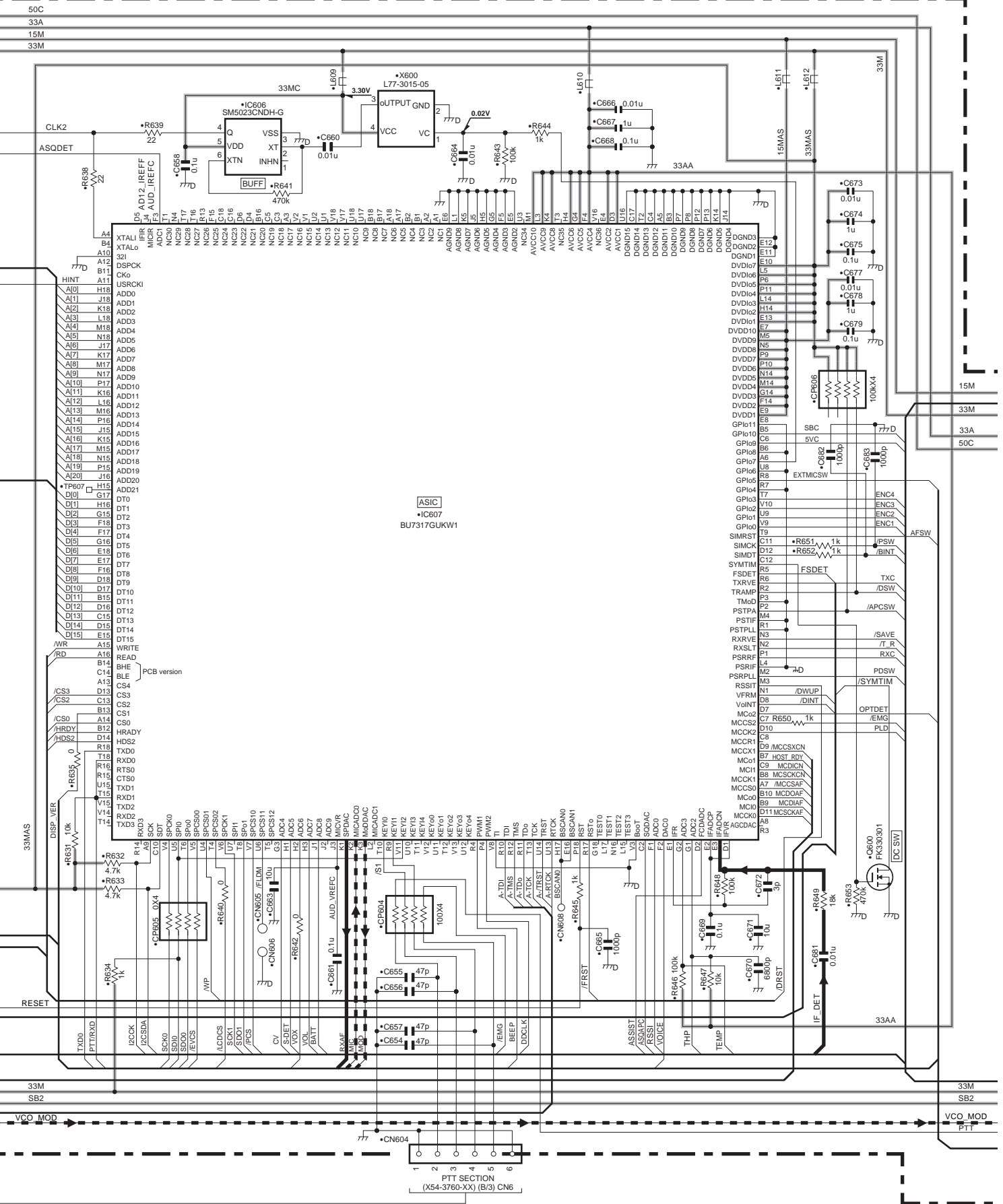
SCHEMATIC DIAGRAM NX-420

TX-RX UNIT (X57-8370-10)



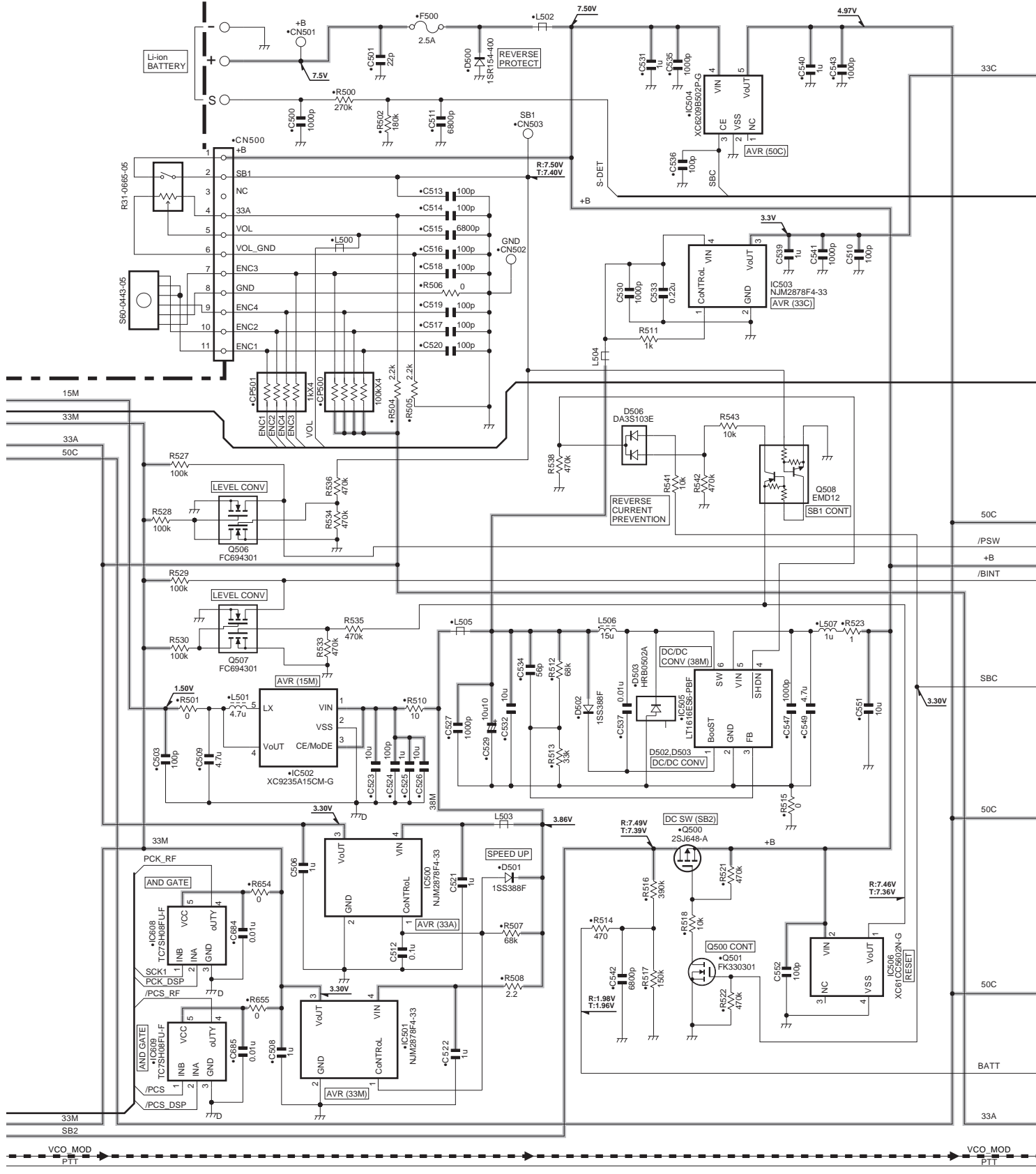
NX-420 SCHEMATIC DIAGRAM

TX-RX UNIT (X57-8370-10)



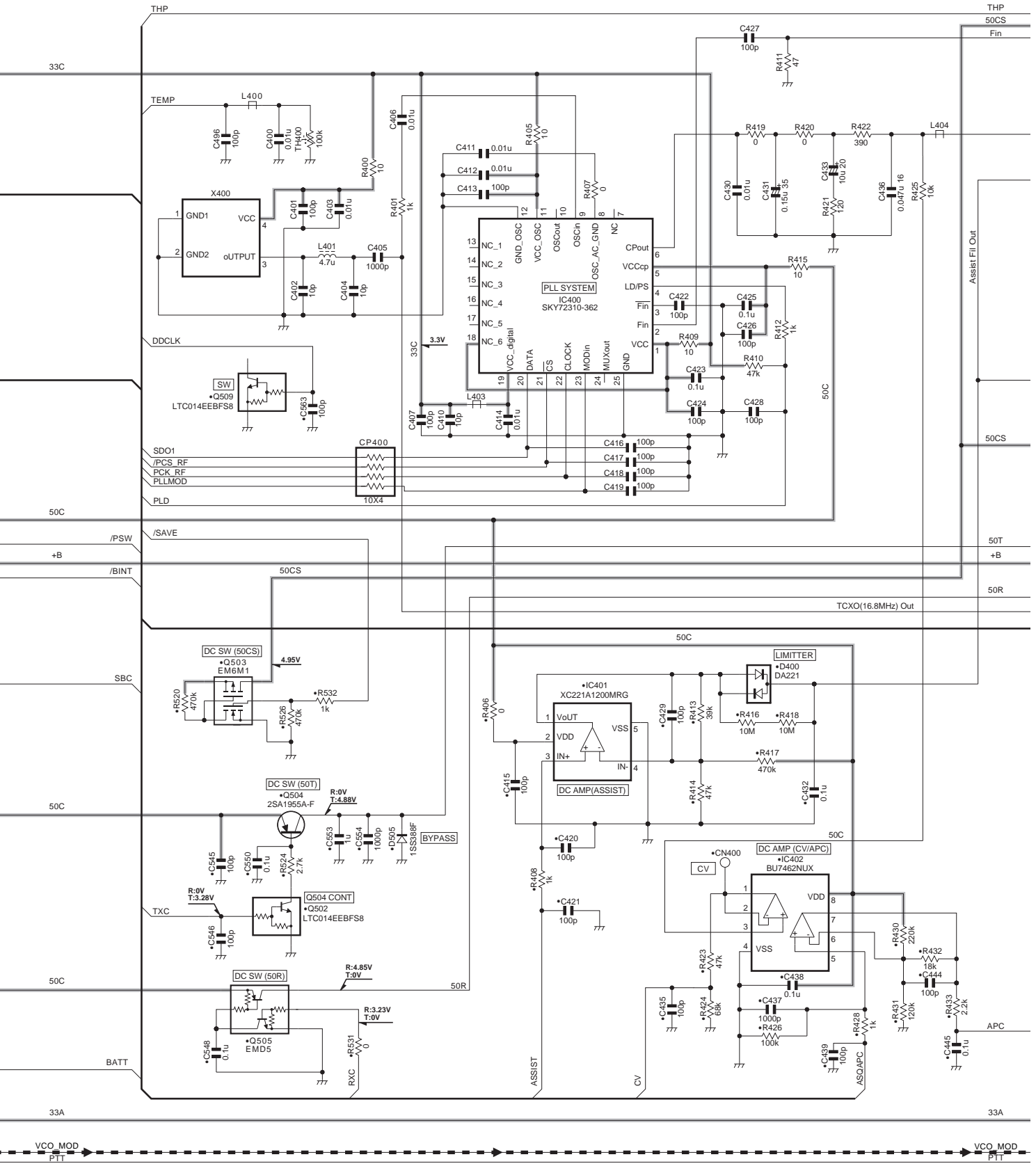
SCHEMATIC DIAGRAM NX-420

TX-RX UNIT (X57-8370-10)



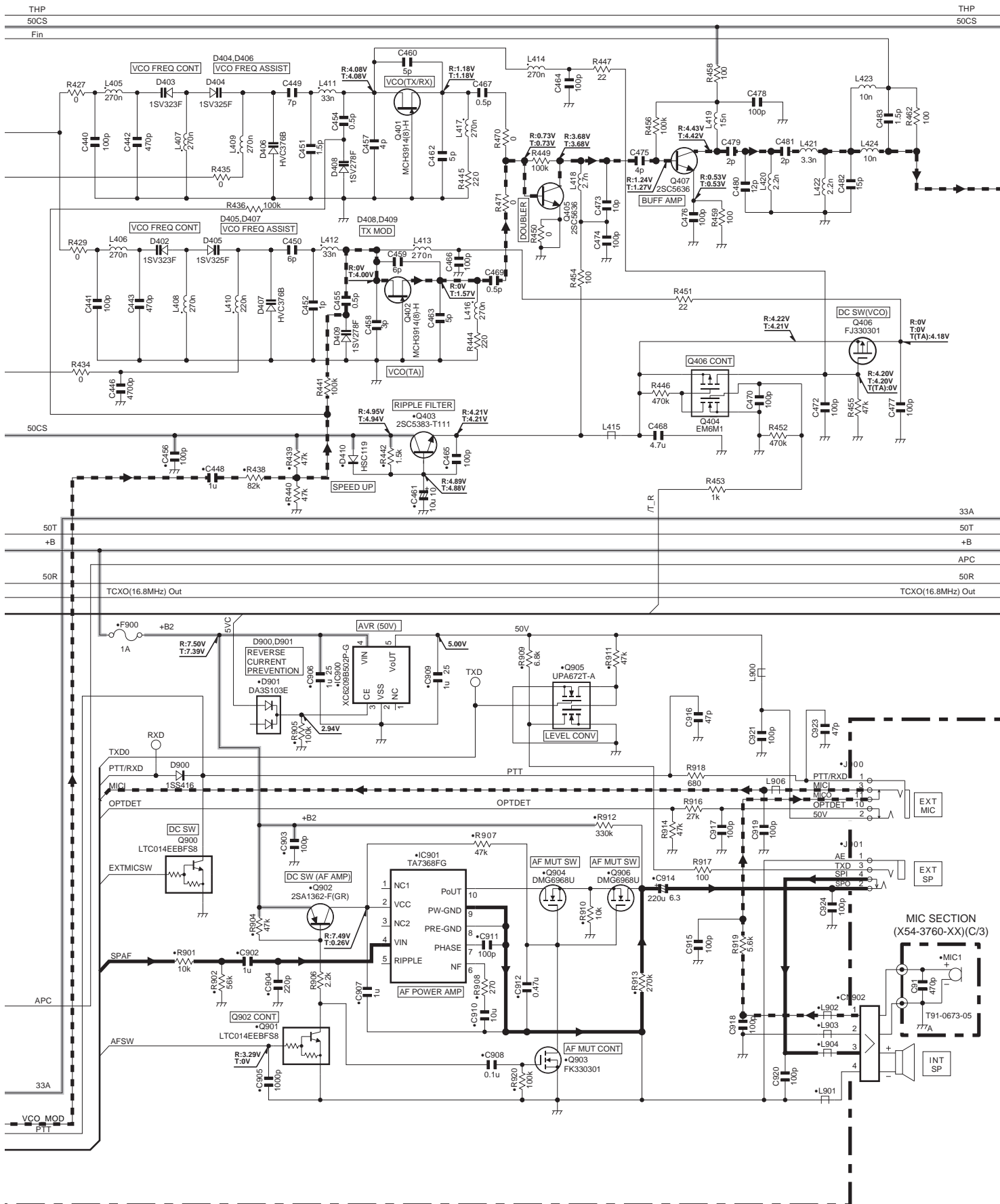
NX-420 SCHEMATIC DIAGRAM

TX-RX UNIT (X57-8370-10)



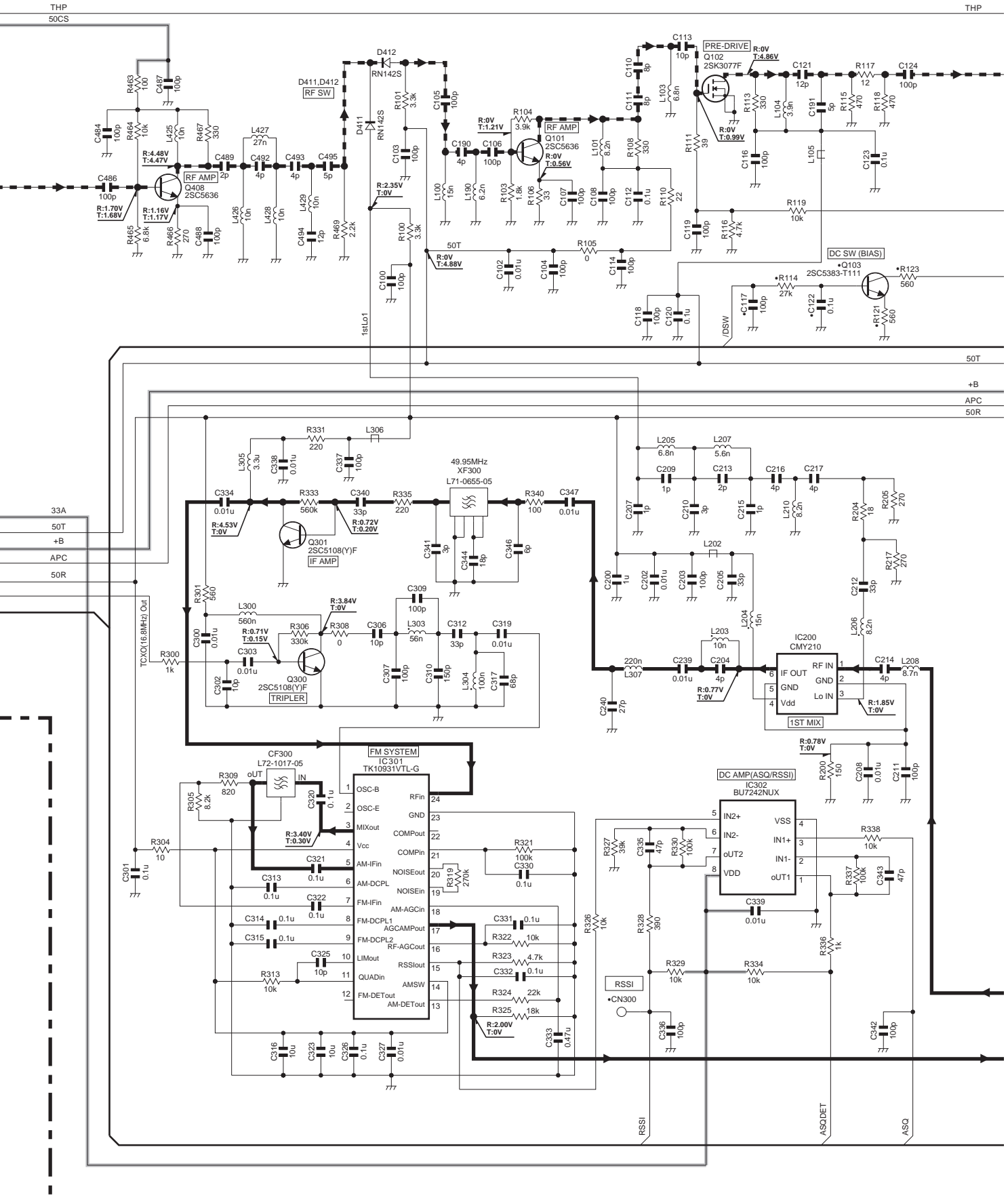
SCHEMATIC DIAGRAM NX-420

TX-RX UNIT (X57-8370-10)



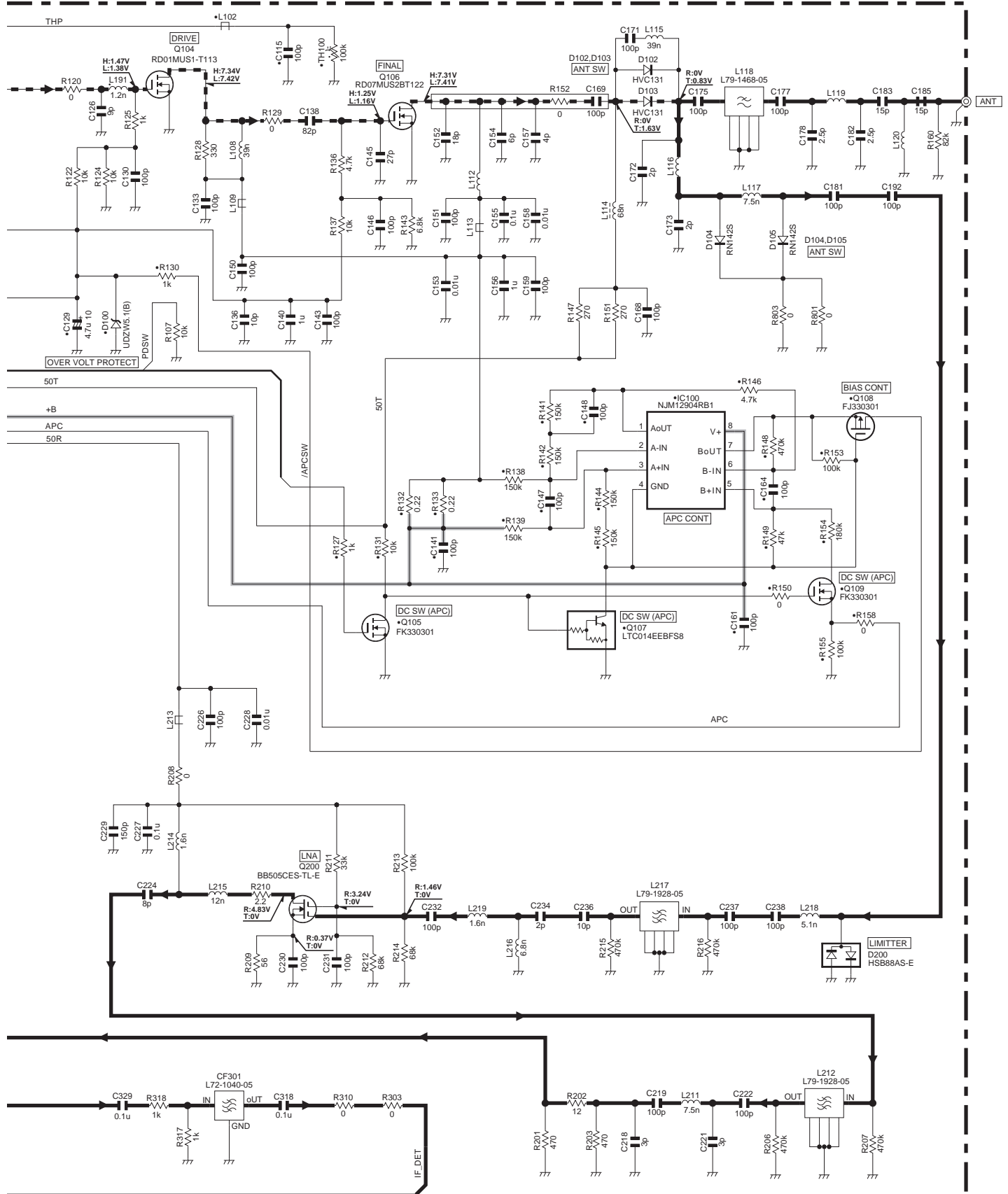
NX-420 SCHEMATIC DIAGRAM

TX-RX UNIT (X57-8370-10)



SCHEMATIC DIAGRAM NX-420

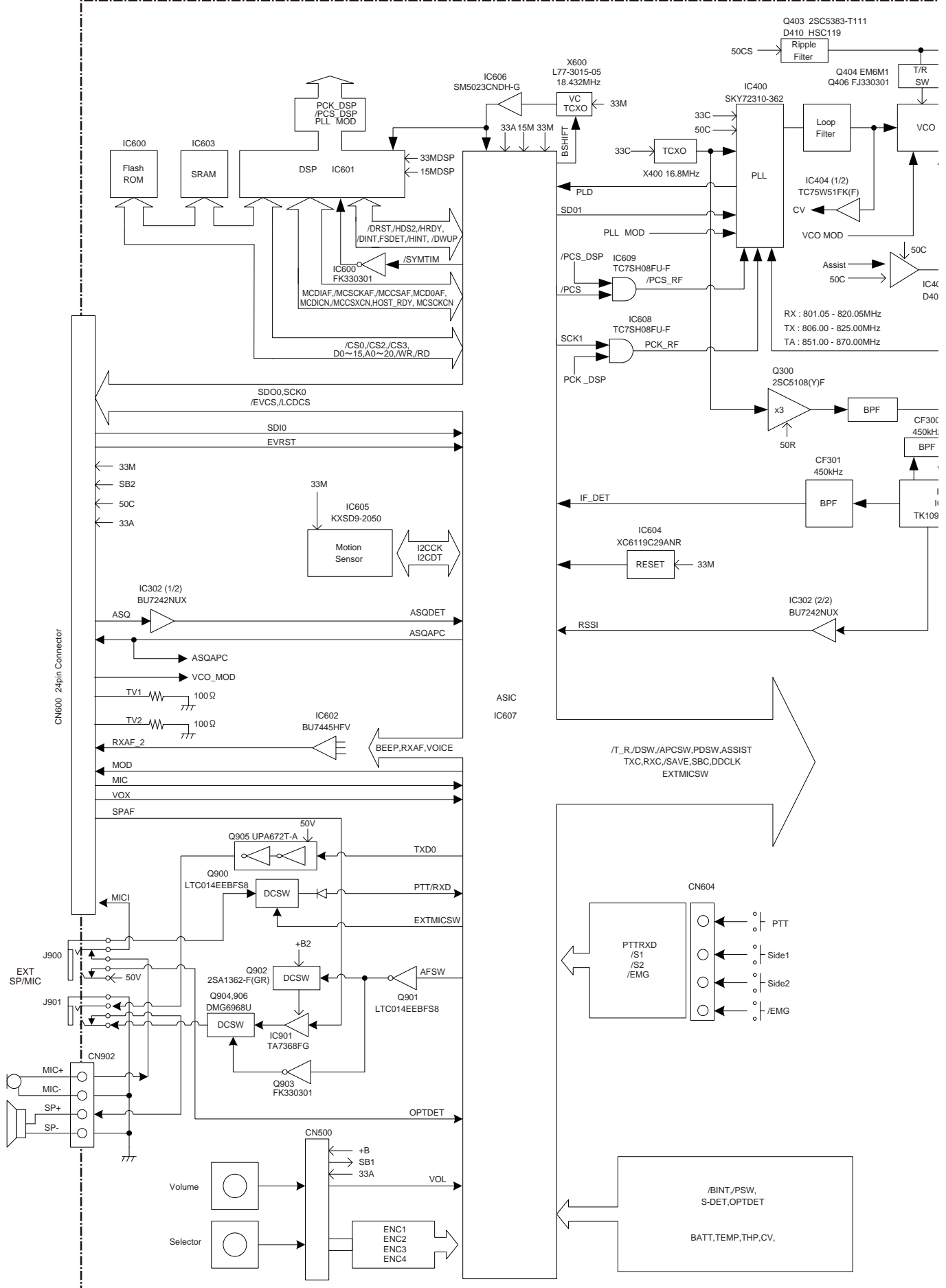
TX-RX UNIT (X57-8370-10)



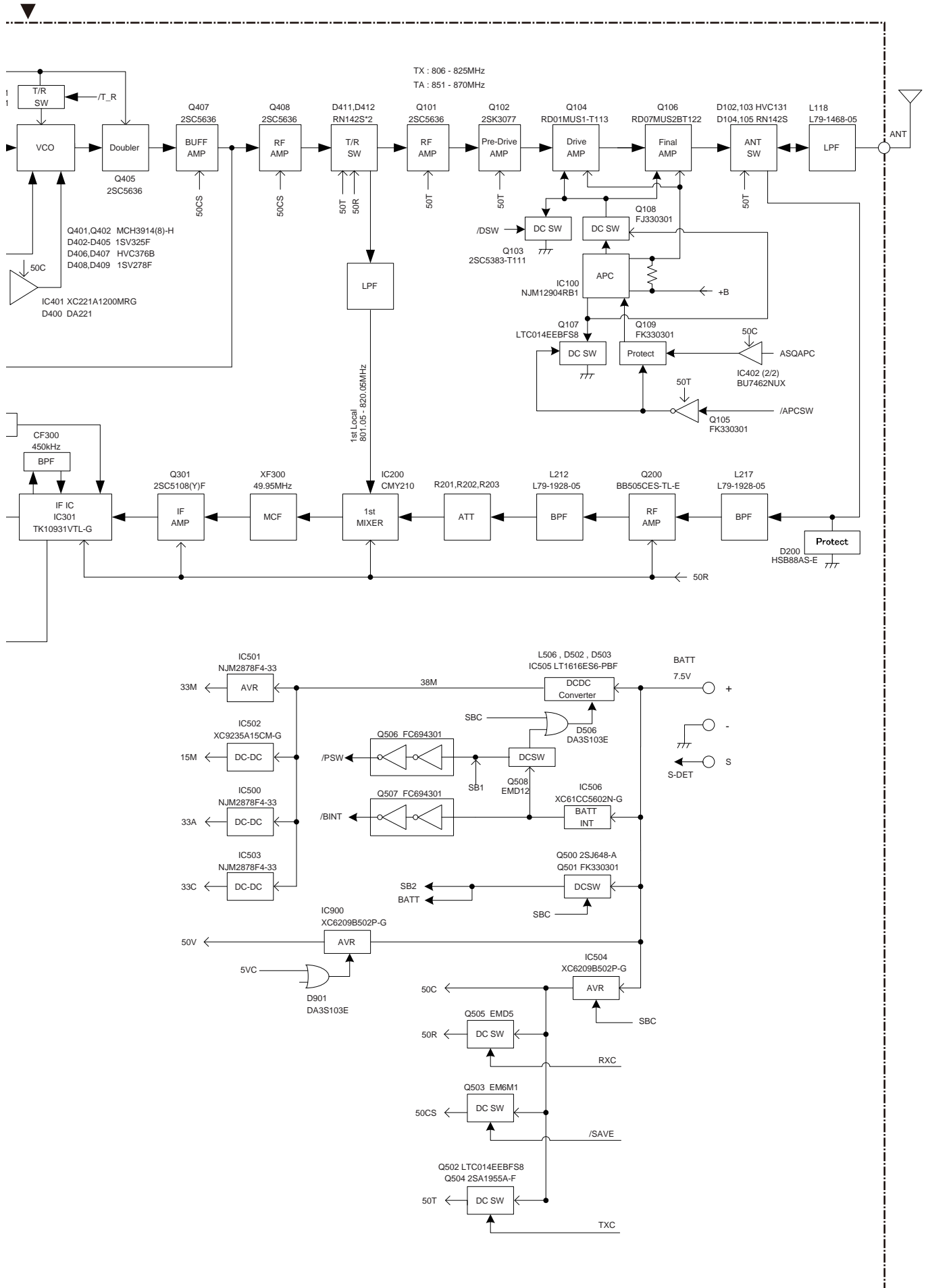
Note : The components marked with a dot (•) are parts of layer 1.

NX-420 BLOCK DIAGRAM

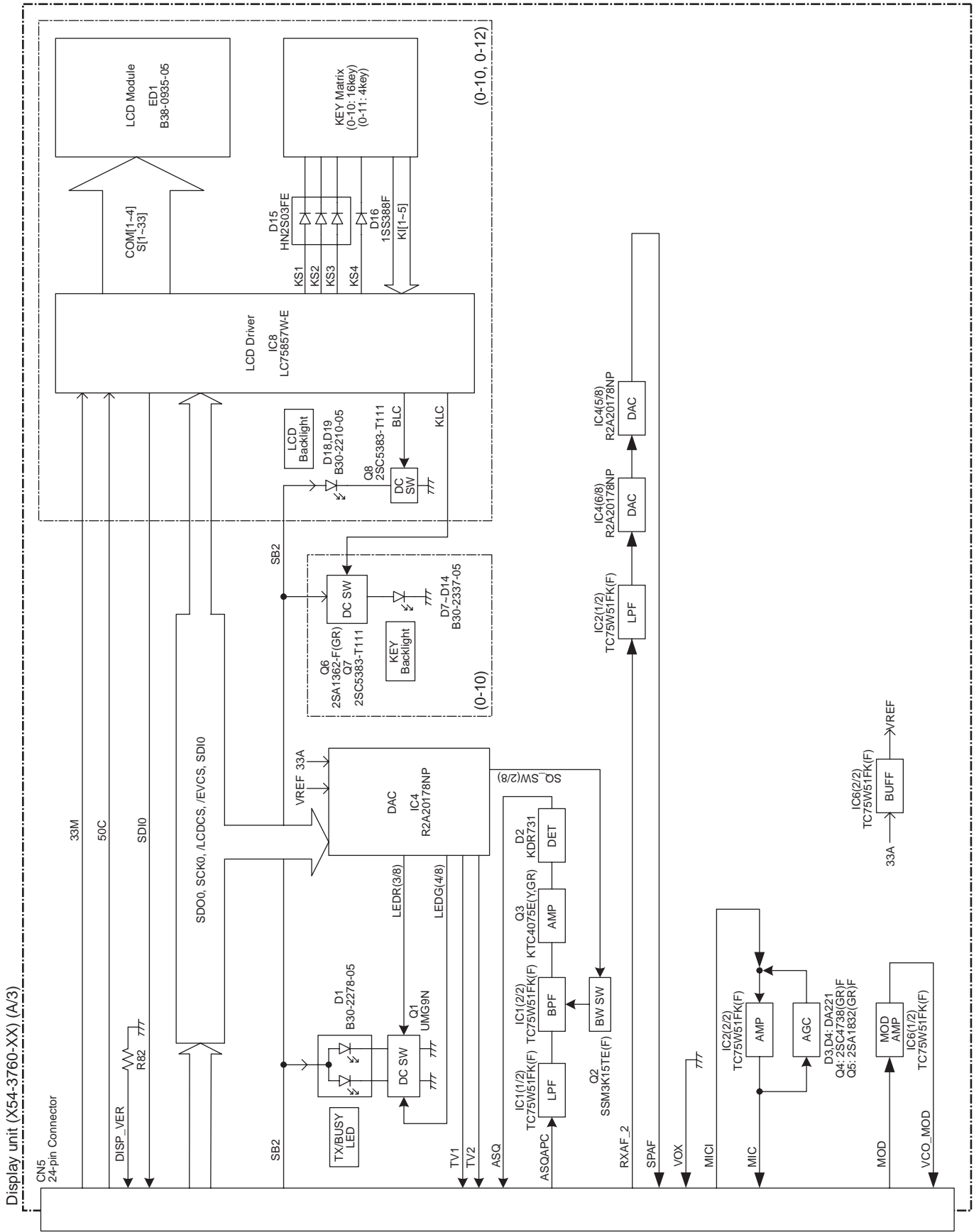
TX-RX unit (X57-8370-10)



BLOCK DIAGRAM NX-420



BLOCK DIAGRAM



SPECIFICATIONS

GENERAL

Models	K : Basic Model	
	K3 : Full Key w/LCD Model	
Frequency Range	TX : 806~825MHz, 851~870MHz RX : 851~870MHz	
Number of Channels.....	K3 : 260	K : 64
Zones.....	K3 : 128	K : 4
Max. Channels per Zone	K3 : 250	K : 16
Channel Spacing	Analog : 12.5/25kHz	Digital : 6.25/12.5kHz
Operating Voltage	7.5V DC \pm 20%	
Battery Life (5-5-90)		
with KNB-55L.....	Approx. 8.5 hours	
with KNB-56N.....	Approx. 8.5 hours	
with KNB-57L.....	Approx. 11.5 hours	
Operating Temperature Range	-22°F to +140°F (-30°C to +60°C)	
Frequency Stability	\pm 1.0ppm	
Antenna Impedance	50 Ω	
Dimensions (W x H x D) (Projections not included)		
K		
Radio only	2.20 x 4.35 x 1.48 in (56 x 110.5 x 37.5 mm)	
with KNB-55L	2.20 x 4.35 x 1.50 in (56 x 110.5 x 38.1 mm)	
with KNB-56N	2.20 x 4.35 x 1.72 in (56 x 110.5 x 43.8 mm)	
with KNB-57L	2.20 x 4.35 x 1.58 in (56 x 110.5 x 40.1 mm)	
K3		
Radio only	2.20 x 4.35 x 1.45 in (56 x 110.5 x 36.9 mm)	
with KNB-55L	2.20 x 4.35 x 1.48 in (56 x 110.5 x 37.5 mm)	
with KNB-56N	2.20 x 4.35 x 1.70 in (56 x 110.5 x 43.2 mm)	
with KNB-57L	2.20 x 4.35 x 1.56 in (56 x 110.5 x 39.5 mm)	
Weight (net)		
Radio only.....	K : 7.2 oz (205g)	K3 : 7.4 oz (210g)
with KNB-55L.....	K : 10.6 oz (300g)	K3 : 10.8 oz (305g)
with KNB-56N.....	K : 14.1 oz (400g)	K3 : 14.3 oz (405g)
with KNB-57L.....	K : 11.5 oz (325g)	K3 : 11.6 oz (330g)

RECEIVER

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

TRANSMITTER

RF Power Output	3W/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.
Kenwood reserves the right to change specifications without prior notice or obligation.

NX-420

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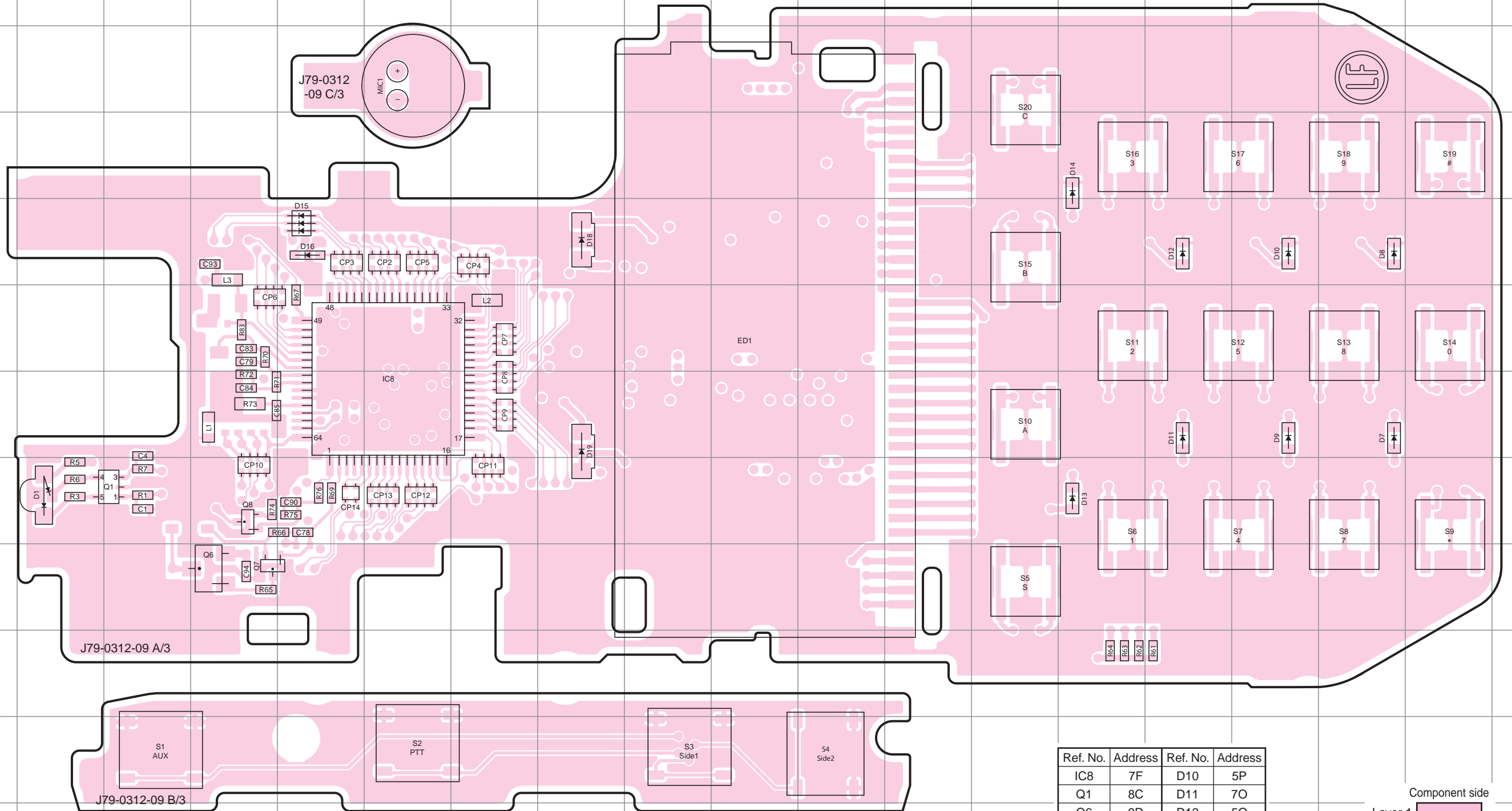
1 Ang Mo Kio Street 63, Singapore 569110

NX-420 PC BOARD

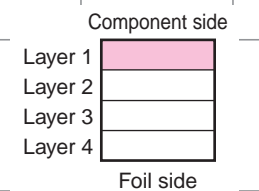
PC BOARD NX-420

DISPLAY UNIT (X54-3760-XX) -10: K3 -12: K
Component side view (J79-0312-09)

DISPLAY UNIT (X54-3760-XX) -10: K3 -12: K
Component side view (J79-0312-09)



Ref. No.	Address	Ref. No.	Address
IC8	7F	D10	5P
Q1	8C	D11	7O
Q6	9D	D12	5O
Q7	9D	D13	8N
Q8	8D	D14	4N
D1	8B	D15	5E
D7	7Q	D16	5E
D8	5Q	D18	5H
D9	7P	D19	7H

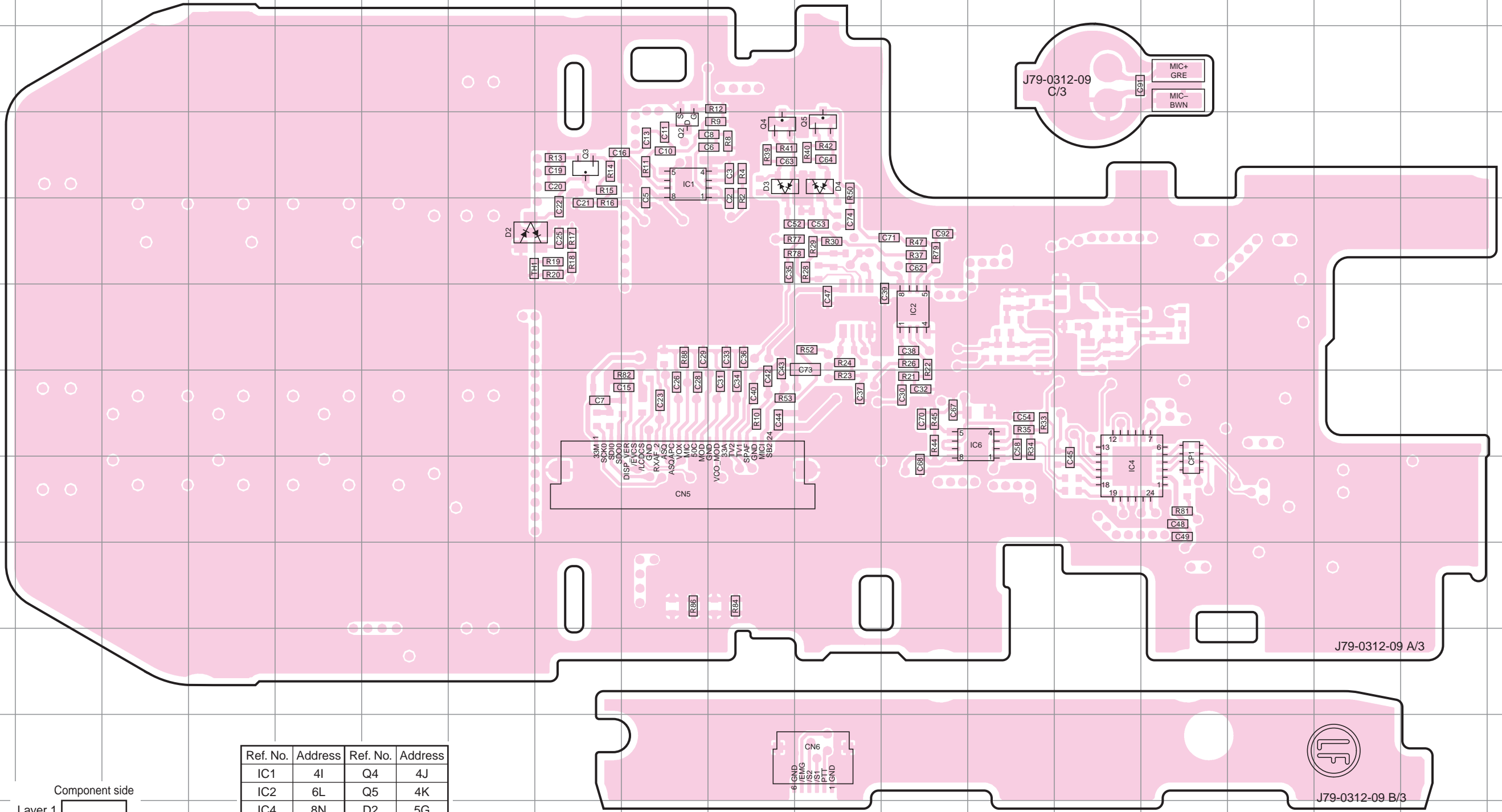


NX-420 PC BOARD

PC BOARD NX-420

DISPLAY UNIT (X54-3760-XX) -10: K3 -12: K
Foil side view (J79-0312-09)

DISPLAY UNIT (X54-3760-XX) -10: K3 -12: K
Foil side view (J79-0312-09)

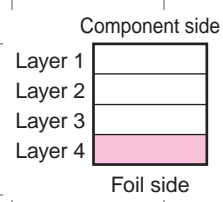


J79-0312-09 A/3



J79-0312-09 B/3

Ref. No.	Address	Ref. No.	Address
IC1	4I	Q4	4J
IC2	6L	Q5	4K
IC4	8N	D2	5G
IC6	7M	D3	4J
Q2	4I	D4	4K
Q3	4H		

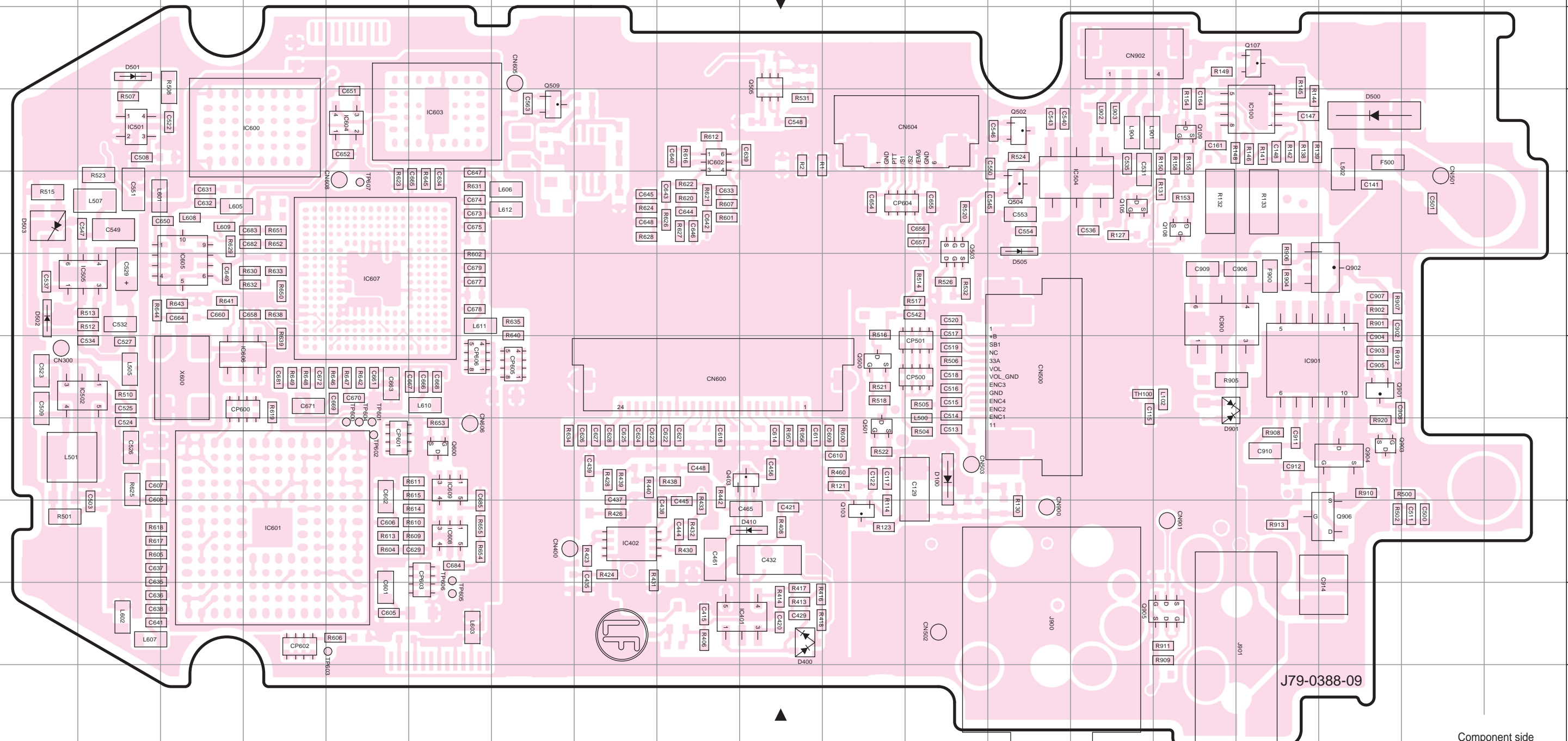


NX-420 PC BOARD

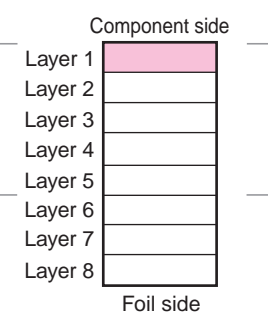
TX-RX UNIT (X57-8370-10)
Component side view (J79-0388-09)

PC BOARD NX-420

TX-RX UNIT (X57-8370-10)
Component side view (J79-0388-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
D100	8L	IC100	4P	IC602	4I	IC901	7P	Q502	4M	Q904	8Q
D400	10J	IC401	10J	IC603	4F	Q103	9K	Q503	5L	Q905	10O
D410	9J	IC402	9H	IC604	4E	Q105	5N	Q504	5M	Q906	9Q
D500	4Q	IC501	4B	IC605	6C	Q107	3P	Q505	3J		
D501	3B	IC502	7B	IC606	7C	Q108	5O	Q509	4G		
D502	6A	IC504	5N	IC607	6E	Q109	4O	Q600	8F		
D503	5A	IC505	6B	IC609	8F	Q403	8J	Q901	7Q		
D505	5M	IC600	4D	IC608	9F	Q500	7K	Q902	6Q		
D901	7O	IC601	9D	IC900	6O	Q501	8K	Q903	8Q		

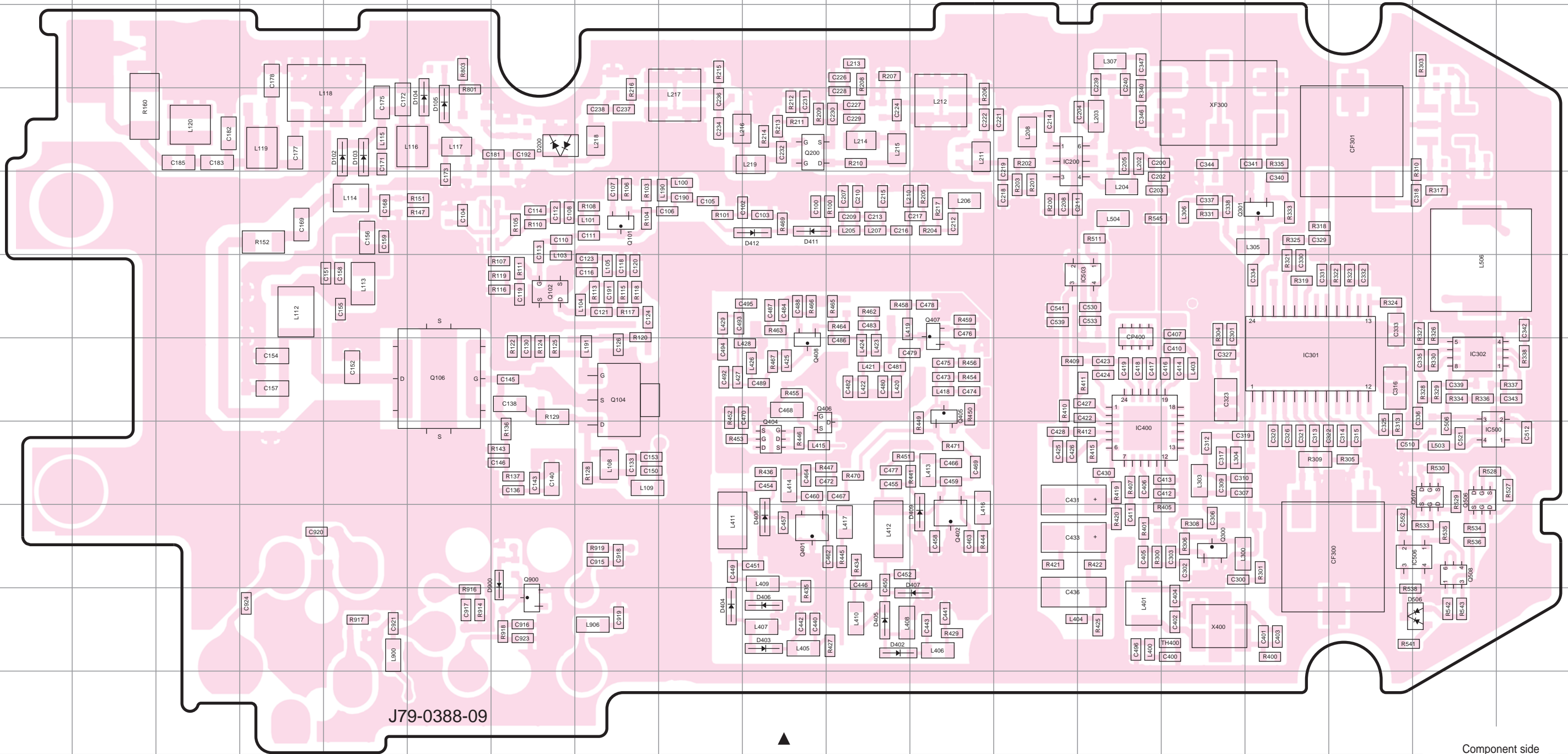


NX-420 PC BOARD

TX-RX UNIT (X57-8370-10)
Foil side view (J79-0388-09)

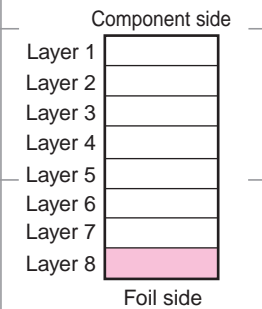
PC BOARD NX-420

TX-RX UNIT (X57-8370-10)
Foil side view (J79-0388-09)



J79-0388-09

Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC200	4M	IC506	9R	Q300	9O	Q406	8J	Q900	10G	D402	10K	D408	9J
IC301	7P	Q101	5H	Q301	5P	Q407	6L	D102	4E	D403	10J	D409	9L
IC302	7R	Q102	6G	Q401	9J	Q408	7J	D103	4E	D404	10I	D411	5J
IC400	8N	Q104	7H	Q402	9L	Q506	8R	D104	4F	D405	10K	D412	5J
IC500	8R	Q106	7F	Q404	8J	Q507	8R	D105	4F	D406	10J	D506	10R
IC503	6N	Q200	4J	Q405	7L	Q508	9R	D200	4G	D407	10L	D900	9G



TX-RX unit (X57-8370-10)

