VHF DIGITAL TRANSCEIVER / VHF 数字模拟双模手持对讲机

NX-200

SERVICE MANUAL / 维修手册

C version / C 版本

KENWOOD

Kenwood Corporation

B51-8889-00 (N)

Does not come with antenna. Antenna is available as an option.

不附带天线。天线是选购件。

无铅焊接通信产品
保护环境建伍领先

⚠ 注意：本产品是无铅化焊接产品
在维修时请使用无铅焊锡
和相应的焊接工具
详细事项请访问如下网址了解:
http://www.kenwoodhk.com.hk/

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

This product uses Lead Free solder.

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GENERAL / 概述

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.

引言

本手册的范围

本手册是提供给熟悉通信专业并且具有维修经验的技术人员使用的。它包括了维修该设备所需要的全部资料和现行出版日期。在出版后可能发生变动，如果需要，可以参照《维修通报》或《手册修订本》进行补充。

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.

替换零件的订购

当订购替换零件或设备资料时，应注意完整的零件识别号码。所有的零件均有识别号码：元件，组件或机壳。如果不知道零件的号码，为了正确地识别，必须注明此元件所属的机壳或组件的号码，并对元件进行充分的说明。

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.

个人安全

为了个人的安全，请注意下列事项：

- 在没有认真核实所有射频插头之前或有任何一个脱开的插头没有连接到相应端口上的情况下均不要发射。
- 在电爆管附近或在易燃性气体环境中，必须关闭电源，不要操作本设备。
- 本设备只应该由有资格的技术人员进行维修。

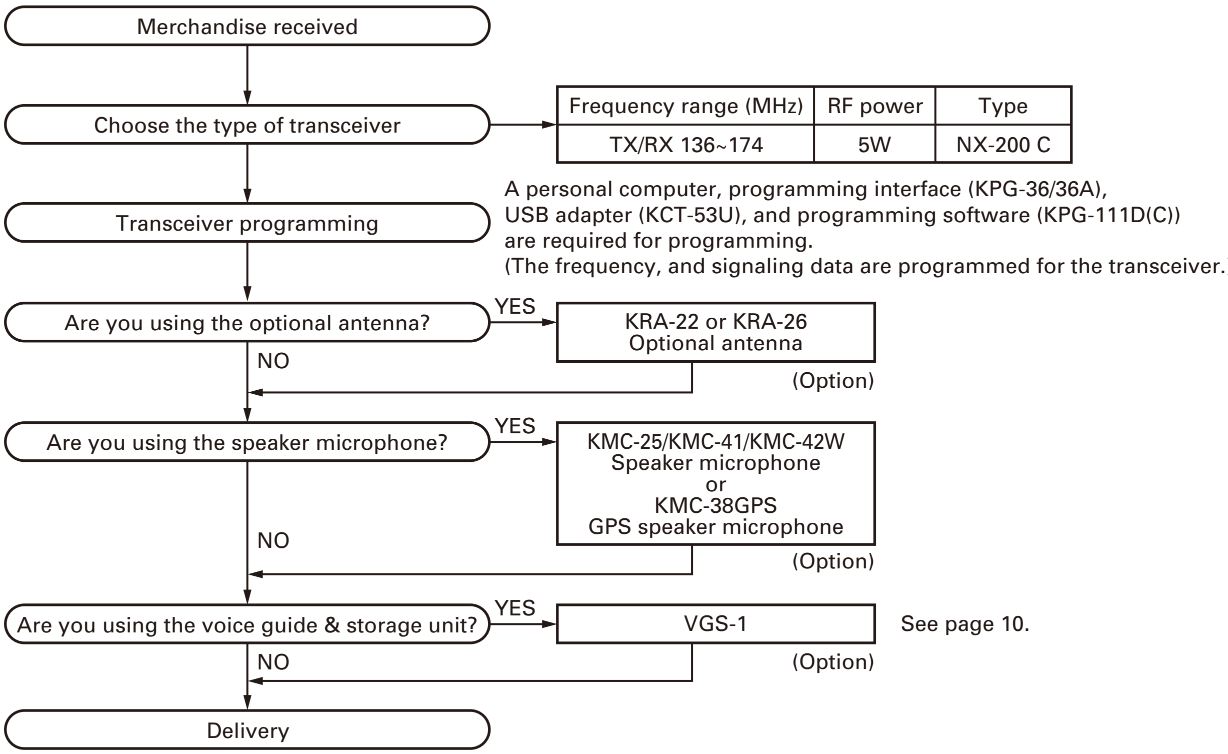
SERVICE

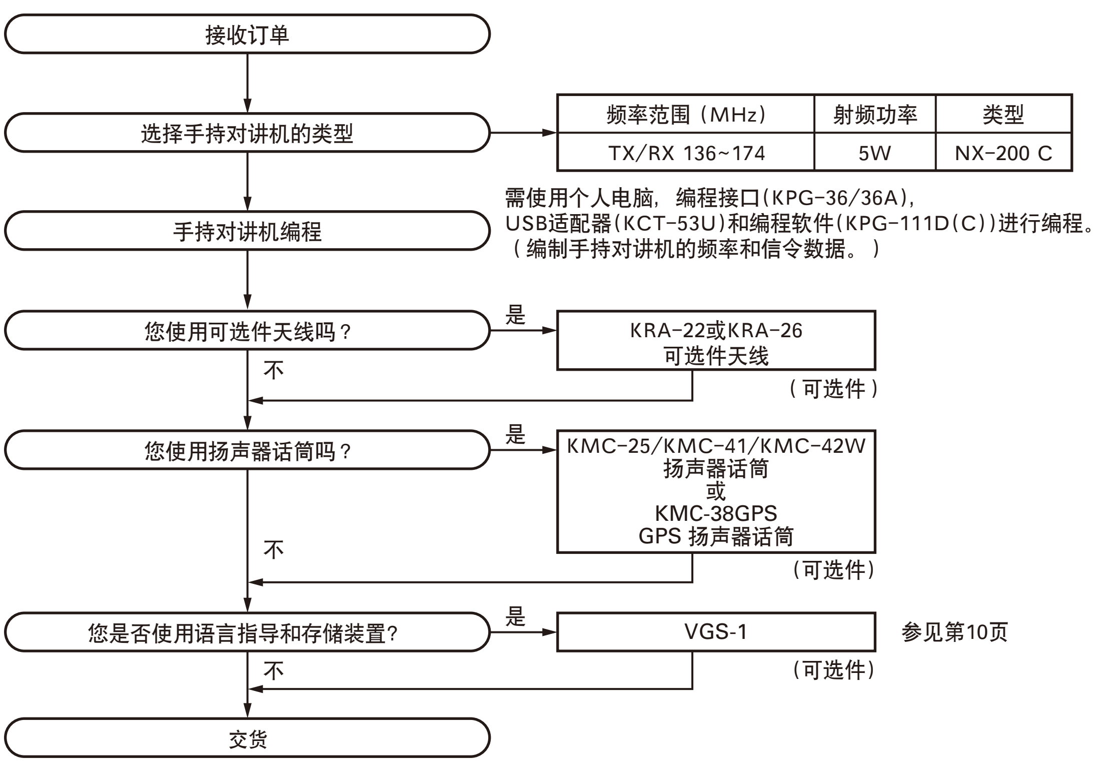
This transceiver is designed for easy servicing. Refer to the schematic diagrams, printed circuit board views, and alignment procedures contained within.

维修服务

为了便于维修本设备，建立了完整的维修服务体系，提供了包括原理图，印刷电路板图和调整步骤在内的资料供参考。

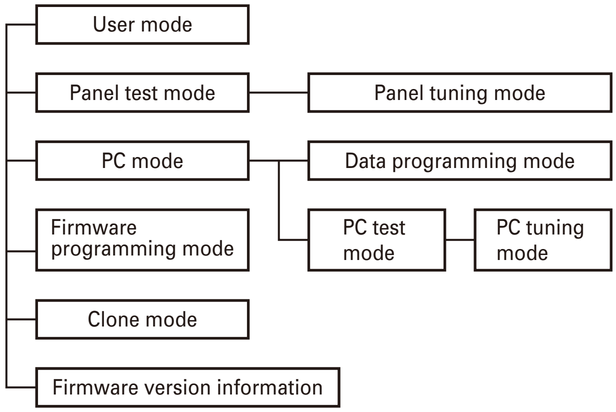
SYSTEM SET-UP / 系统体系





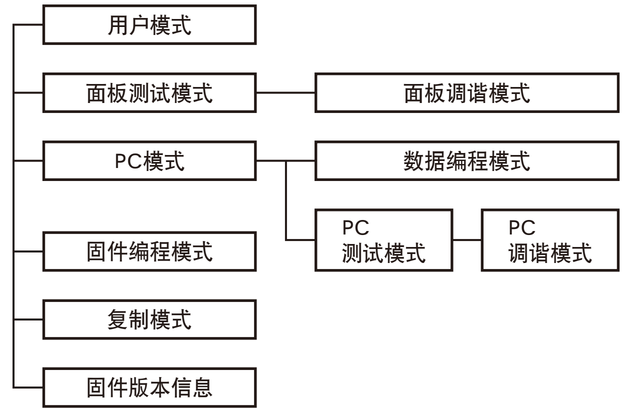
REALIGNMENT / 模式组合

1. Modes



Mode	Function
User mode	For normal use.
Panel test mode	Used by the dealer to check the fundamental characteristics.
Panel tuning mode	Used by the dealer to tune the transceiver.
PC mode	Used for communication between the transceiver and PC.
Data programming mode	Used to read and write frequency data and other features to and from the transceiver.
PC test mode	Used to check the transceiver using the PC. This feature is included in the FPU. See pages 84 to 115.
Firmware programming mode	Used when changing the main program of the flash memory.
Clone mode	Used to transfer programming data from one transceiver to another.
Firmware version information	Used to confirm the internal firmware version.

1. 模式



模　　式	功　　能
用户模式	一般使用。
面板测试模式	用于经销商检查基本功能。
面板调谐模式	用于经销商调整手持对讲机指标。
PC 模式	用于手持对讲机与 PC 之间的通信。
数据编程模式	用于阅读和写入频率数据以及其他功能。
PC 测试模式	用于通过 PC 检查手持对讲机。该功能内置于 FPU 中。参见第 84 至 115 页。
固件编程模式	当改变闪存中操作主程序时使用。
复制模式	用于将一台手持对讲机的编程数据传送到另一台。
固件版本信息	用于确认内部固件版本。

2. How to Enter Each Mode

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

2. 如何进入每一种模式

模　　式	操　　作
用户模式	接通电源
面板测试模式	[↩]+ 接通电源
PC 模式	从 PC 接收指令
面板调谐模式	[面板测试模式]+[⧉]
固件编程模式	[⧉]+ 接通电源
复制模式	[<]+ 接通电源
固件版本信息	[Side1]+ 接通电源

3. Panel Test Mode

Setting method refer to ADJUSTMENT.

3. 关于面板测试模式

关于设定方式，参见调整。

REALIGNMENT / 模式组合

4. Panel Tuning Mode

Setting method refer to ADJUSTMENT.

4. 关于面板调谐模式

关于设定方式，参见调整。

5. PC Mode

5-1. Preface

The transceiver is programmed by using a personal computer, programming interface (KPG-36/36A), USB adapter (KCT-53U) and programming software (KPG-111D(C)).

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

5. PC 模式

5–1. 前言

手持对讲机采用个人电脑，编程接口（KPG-36/36A），USB 适配器（KCT-53U）和编程软件（KPG-111D(C)）进行编程。

编程软件可在 PC 上使用。图 1 说明了 PC 进行编程的设置。

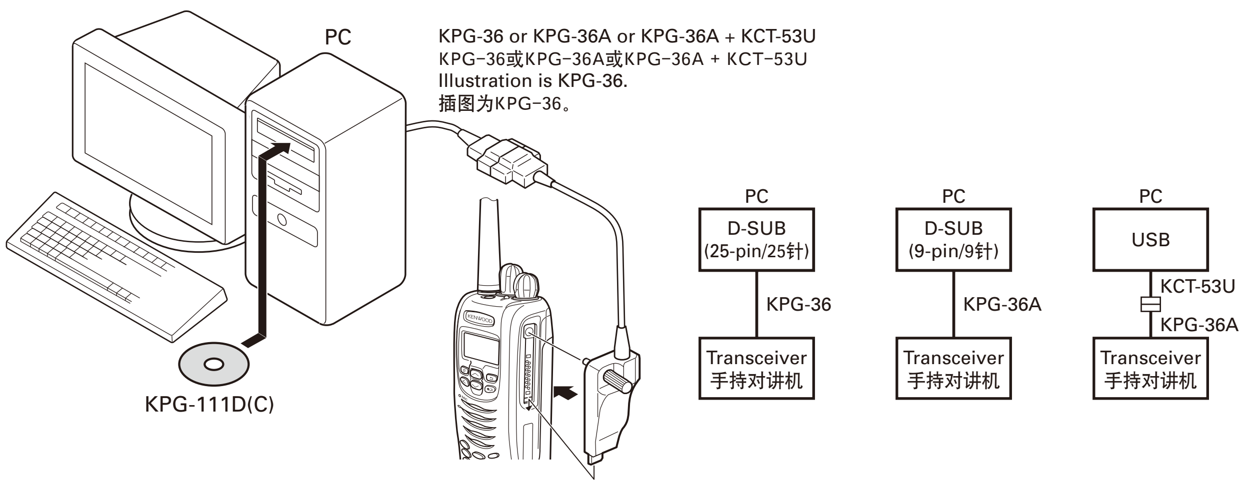


Fig. 1 / 图 1

5-2. Connection procedure

1. Connect the transceiver to the computer using the interface cable and USB adapter (When the interface cable is KPG-36A, the KCT-53U can be used.).

Note:

- You must install the KCT-53U driver in the computer to use the USB adapter (KCT-53U).
- When using the USB adapter (KCT-53U) for the first time, plug the KCT-53U into a USB port on the computer with the computer power ON.

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

Note:

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

5–2. 连接操作

1. 用接口电缆和 USB 适配器将手持对讲机连接到电脑（接口电缆为 KPG-36A 时，可以使用 KCT-53U）。

注意：

- 必须在电脑上安装 KCT–53U 驱动程序才能使用 USB 适配器（KCT–53U）。
- 首次使用 USB 适配器（KCT–53U）时，请在电脑电源打开的情况下将 KCT-53U 插入电脑的 USB 端口。

2. 手持对讲机电源开关打开时，可以立即进入用户模式。
   PC 发出手持对讲机进入 PC 模式的指令时，LCD 上显示“PROGRAM”。
   手持对讲机正在发送数据时，红色的 LED 点亮。
   手持对讲机正在接收数据时，绿色的 LED 点亮。

注意：

电脑保存的数据写入闪存时，必须与“型号名称”相符。

REALIGNMENT / 模式组合

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

The KPG-36/36A is required to interface the transceiver to the computer. It has a circuit in its D-sub connector (KPG-36: 25-pin, KPG-36A: 9-pin) case that converts the RS-232C logic level to the TTL level.

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

5-4. KCT-53U description (USB adapter: Option)

The KCT-53U is a cable which connects the KPG-36A to a USB port on a computer.

When using the KCT-53U, install the supplied CD-ROM (with driver software) in the computer. The KCT-53U driver runs under Windows 2000, XP or Vista (32-bit).

5-5. Programming software KPG-111D(C) description

The KPG-111D(C) is the programming software for the transceiver supplied on a CD-ROM. This software runs under Windows 2000, XP or Vista (32-bit) 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-36/36A) and USB adapter (KCT-53U: when the interface cable is KPG-36A, the KCT-53U can be used.). (Connection is the same as in the PC Mode.)

6-3. Programming

1. Start up the firmware programming software (Fpro.exe (ver. 4.0 or later)). The Fpro.exe exists in the KPG-111D(C) installed folder.
2. Set the communications speed (normally, 115200 bps) and communications port in the configuration item.
3. Set the firmware to be updated by File name item.
4. Press and hold the [⊡] key while turning the transceiver power ON. Then, the orange LED on the transceiver lights and “PROGRAM 115200” is displayed.
5. Check the connection between the transceiver and the personal computer, and make sure that the transceiver is in the Program mode.
6. Press “write” button in the window. When the transceiver starts to receive data, the [LOADING] display lights.
7. If writing ends successfully, the checksum is calculated and a result is displayed.
8. If you want to continue programming other transceivers, repeat steps 4 to 7.

5-3. KPG-36/KPG-36A 说明 （PC 编程接口电缆 : 选购件 ）

将手持对讲机连接到电脑需要 KPG-36/36A。该电缆的 D-sub 连接器（KPG-36:25 针，KPG-36A:9 针 ）盒具有将 RS-232C 逻辑电平转换为 TTL 电平的电路。

KPG-36/36A 将手持对讲机的通用连接器连接到电脑的 RS-232C 串行端口。

5-4. KCT-53U 说明（USB 适配器 : 选购件 ）

KCT-53U 是将 KPG-36A 连接到电脑 USB 端口的电缆。

使用 KCT-53U 时，请在电脑上安装附带的 CD-ROM（带有驱动程序软件 ）。KCT-53U 驱动程序在 Windows 2000，XP 或 Vista(32 位 ）下运行。

5-5. 编程软件 KPG-111D（C）说明

KPG-111D(C) 是 CD-ROM 附带的用于手持对讲机的编程软件。该软件在 PC 的 Windows 2000，XP 或 Vista(32 位 ）下运行。

可在手持对讲机上写入或读取数据，并可在电脑屏幕上进行编辑。可以打印编程或编辑的数据。此外，还可调谐手持对讲机。

6. 固件编程模式

6-1. 前言

闪存安装在手持对讲机上。将来发布新功能时，可以使手持对讲机进行升级。（有关如何获得固件的详情，请洽询客户服务机构。）

6-2. 连接操作

用接口电缆（KPG-36/36A）和 USB 适配器（KCT-53U: 接口电缆为 KPG-36A 时，可以使用 KCT-53U）将手持对讲机连接到个人电脑。（连接方式与 PC 模式下相同。）

6-3. 编程

1. 启动固件编程软件（Fpro.exe （ver.4.0 或更高版本 ））。Fpro.exe 存在于 KPG-111D(C) 安装文件夹内。
2. 在配置项中设置通信速度（通常为 115200 bps）和通信端口。
3. 通过文件名项目设置要更新的固件。
4. 打开手持对讲机电源时，按住 [⊡] 键。然后，手持对讲机上的橙色 LED 点亮，并显示“PROGRAM 115200”。
5. 检查手持对讲机与个人电脑之间的连接，确认手持对讲机处于编程模式。
6. 按窗口中的“write”按钮。手持对讲机开始接收数据时，显示 [LOADING]。
7. 如果写入操作成功完成，则计算校验和并显示结果。
8. 若要继续为其他手持对讲机编程，请重复步骤 4 至 7。

REALIGNMENT / 模式组合

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

6-4. Function

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

Note:
Normally, write in the high-speed mode.

7. Clone Mode

Programming data can be transferred from one transceiver to another by connecting them via their external universal connectors. The operation is as follows (the transmit transceiver is the source and the receive transceiver is a target).

The following data cannot be cloned.

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

Note:
The following data can be cloned.

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

Key guide on the Read authorization password input screen.

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

1. Press and hold the [<] key while turning the transceiver power ON. If the Read authorization password is set to the transceiver, the transceiver displays "CLONE LOCK". If the password is not set, the transceiver displays "CLONE MODE".

注意：
如果手持对讲机的固件编程模式设为禁用，则无法进入此模式。

6-4. 功能

1. 如果在显示"PROGRAM 115200"时按[Side2]键，则显示变为"PROGRAM 19200"(LED呈绿色闪烁)，表示写入速度为低速(19200bps)。如果在显示"PROGRAM 19200"时再次按[Side2]键，则显示变为"PROGRAM 38400"(LED呈红色和橙色交替点亮)。如果在显示"PROGRAM 38400"时再次按[Side2]键，则显示变为"PROGRAM 57600"(LED呈橙色闪烁)。如果在显示"PROGRAM 57600"时再次按[Side2]键，则显示返至"PROGRAM 115200"(LED呈橙色点亮)。
2. 如果在显示"PROGRAM 115200"时按[Side1]键，则计算校验和并显示结果。如果在显示校验和时再次按[Side1]键，则重新显示"PROGRAM 115200"。

注意：
通常以高速模式写入。

7. 复制模式

用外部通用连接器连接手持对讲机，可以将编程数据从一台手持对讲机传输到另一台手持对讲机。具体操作如下(发射机是主机，接收机是子机)。

不能复制以下数据。

- 调谐数据
- 带密码的嵌入信息
- 机型数据
- ESN(电子序列号)数据

注意：
可以复制以下数据。

- FleetSync的Fleet(自身)/ID(自身)
- NXDN的Unit ID(自身)

读取授权密码输入画面的按键说明。

- CONFRM([⧉]键)：密码确认
- DELETE([↩]键)：删除当前密码数字的最低位数字(按住可删除全部密码数字)
- SELECT([⧉]键)：确定密码数字的最低位数字

1. 打开手持对讲机电源时，按住[<]键。如果手持对讲机设置了读取授权密码，则手持对讲机会显示"CLONE LOCK"。如果没有设置密码，则手持对讲机显示"CLONE MODE"。

REALIGNMENT / 模式组合

2. When you enter the correct password, and "CLONE MODE" is displayed, the transceiver can be used as the cloning source. The following describes how to enter the password.
3.
- **How to enter the password using the keypad;**
  If one of keys 0 to 9 is pressed while the "CLONE LOCK" is displayed, the pressed number is displayed on the LCD.
  Each press of the key shifts the display in order to the left.
  When you enter the password and press the [⊡] or [✱] key, "CLONE MODE" is displayed if the entered password is correct. If the password is incorrect, "CLONE LOCK" is redisplayed.
- **How to enter the password using the [︿] and [﹀] keys;**
  If the [︿] / [﹀] key is pressed while "CLONE LOCK" is displayed, the Read authorization password input screen is displayed.
  If the [︿] key or [﹀] key is pressed while the Read authorization password input screen is displayed, the number (0 to 9) blinks on the LCD. When you press the [⊡] key, the currently selected number is determined. If you press the [⊡] key after entering the password in this procedure, "CLONE MODE" is displayed if the entered password is correct. If the password is incorrect, "CLONE LOCK" is redisplayed.
4. Power ON the target transceiver.
5. Connect the cloning cable (part No. E30-3325-05) to the universal connectors on the source and target.
6. Press the [⊡] key on the source while the source displays "CLONE MODE". The data of the source is sent to the target. While the target is receiving the data, "PROGRAM" is displayed. When cloning of data is completed, the source displays "END", and the target automatically operates in the User mode. The target can then be operated by the same program as the source.
7. The other target can be continuously cloned. When the [⊡] key on the source is pressed while the source displays "END", the source displays "CLONE MODE". Carry out the operation in step 4 to 6.

Note:
- Cannot be cloned if the password (overwrite password) is programmed to the target.
- "Model Name" must be same to clone the transceiver.

2. 输入正确的密码后，显示“CLONE MODE”，手持对讲机可以作为复制源使用。下面描述如何输入密码。
3.
- **如何使用键盘输入密码；**
  在显示“CLONE LOCK”时按0至9当中的某个键，LCD上将显示按下的数字。
  每次按该键按向左的顺序移动显示。
  输入密码并按[⊡]或[✱]键时，如果输入的密码正确，则显示“CLONE MODE”。如果密码不正确，将重新显示“CLONE LOCK”。
- **如何使用[︿]和[﹀]键输入密码；**
  在显示“CLONE LOCK”时按[︿]/[﹀]键，将显示读取授权密码输入画面。
  在显示读取授权密码输入画面时按[︿]或[﹀]键，数字(0至9)将在LCD上闪烁。按[⊡]键时，确定当前选择的数字。按该步骤输入密码后按[⊡]键时，如果输入的密码正确，则显示“CLONE MODE”。如果密码不正确，则重新显示“CLONE LOCK”。
4. 打开子手持对讲机的电源。
5. 将复制电缆(零件号E30-3325-05)连接到主手持对讲机和子手持对讲机的通用连接器上。
6. 主手持对讲机显示“CLONE MODE”时，按主手持对讲机上的[⊡]键。主手持对讲机的数据便被发送到子手持对讲机。子手持对讲机正在接收数据时，显示“PROGRAM”。数据复制完成后，主手持对讲机显示“END”，子手持对讲机自动按用户模式操作。然后子手持对讲机就可以按照与主手持对讲机相同的程序操作。
7. 可以继续对另一台子手持对讲机进行复制。如果在主手持对讲机显示“END”时按主手持对讲机上的[⊡]键，则主手持对讲机显示“CLONE MODE”。执行步骤4至6的操作。

注意：
- 如果子手持对讲机编程设有密码(改写密码)，则无法复制。
- 要对手持对讲机进行复制，“型号名称”必须相同。

Cloning cable / 复制电缆
(E30-3325-05)

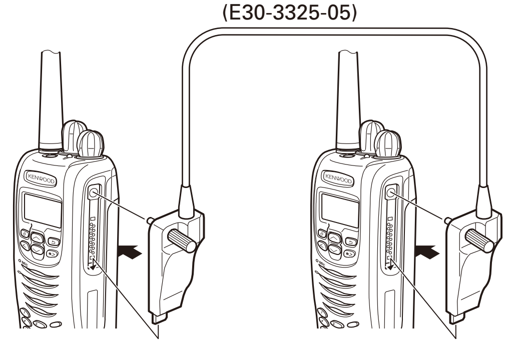


Fig. 2 / 图 2

8. Firmware Version Information

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

8. 固件版本信息

打开手持对讲机电源时按住[Side1]键，然后一直按住[Side1]键，LCD上便出现固件版本信息。

INSTALLATION / 安装

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

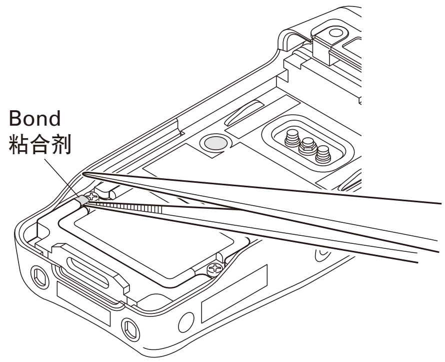
■ Installing the VGS-1 (Voice Guide & Storage Unit) in the transceiver

1. Remove the bond from between the chassis and the screw for the option board cover using a pair of tweezers.

语言指导及存储单元（VGS-1: 选购件）

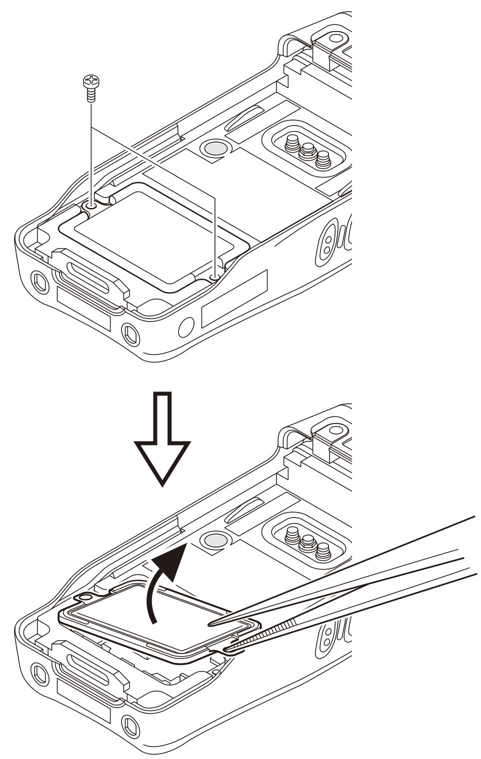
■在手持对讲机中安装 VGS-1(语言指导及存储单元）

1. 用镊子除去底座与可选板盖的螺丝之间的粘合剂。



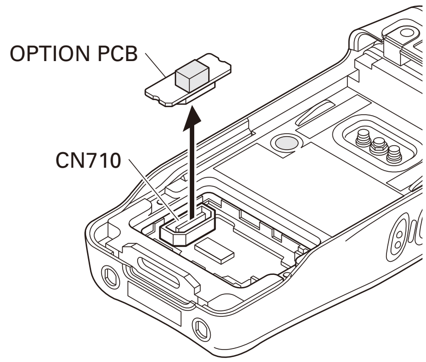
2. Remove the two screws from the cover.
3. Remove the cover by inserting the tip of a pair of tweezers into the screw hole of the cover and prying it open.

2. 卸下盖子上的两颗螺丝。
3. 将镊子的尖端插入盖子的螺丝孔将其撬开，取下盖子。

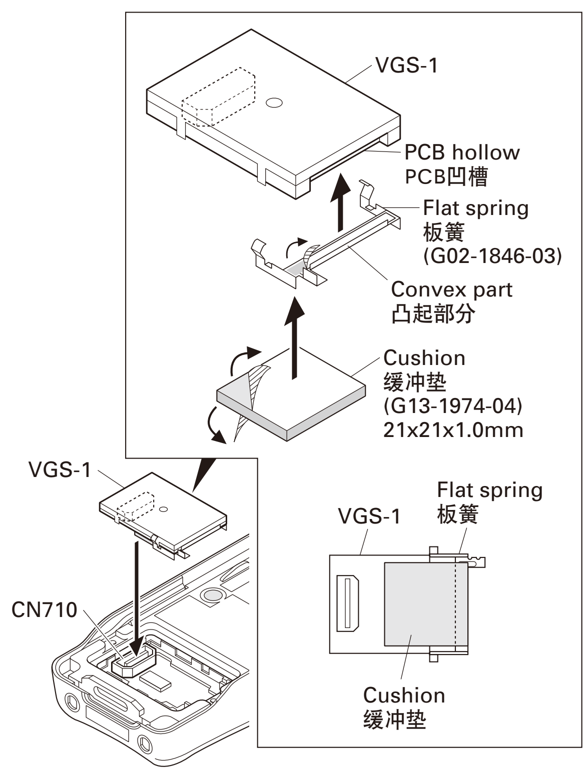


INSTALLATION / 安装

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



5. Attach the flat spring (G02-1846-03) to the VGS-1 as shown in the figure.
   Note:
   Attach the flat spring so that its convex fits the PCB hollow of the VGS-1.
6. Attach the cushion (G13-1974-04) to the VGS-1 as shown in the figure.
   Note:
   Be sure not to cover the VGS-1 connector with the cushion.
7. Insert the VGS-1 connector into the connector (CN710) of the Control PCB.



8. Reinstall the cover using the two screws removed in step 2.
9. Perform the water resistance confirmation and then apply the bond to the two left side screws, tightened in the rear of the transceiver. (Refer to pages 23 to 30.)

4. 从控制 PCB 的连接器 (CN710) 上取下 OPTION PCB。

5. 如图所示，将板簧 (G02-1846-03) 安装到 VGS-1 上。
   注意：
   安装板簧时，应使其凸起部分与 VGS-1 的 PCB 凹槽相吻合。
6. 如图所示，将缓冲垫 (G13-1974-04) 安装到 VGS-1 上。
   注意：
   请勿将缓冲垫盖住 VGS-1 连接器。
7. 将 VGS-1 连接器插入控制 PCB 的连接器 (CN710)。

8. 用步骤 2 拆下的两颗螺丝重新安装盖子。
9. 进行防水性能确认，然后在手持对讲机背面拧紧的两颗左侧螺丝上涂上粘合剂。（请参阅第 23 至 30 页。）

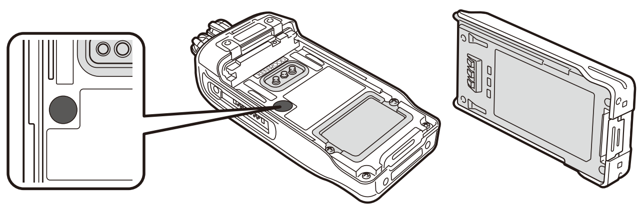
DISASSEMBLY FOR REPAIR / 维修拆卸

1. Precautions for Waterproof

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

1. 防水注意事项

- 请勿拆下手持对讲机背面的黑色薄片（参见下图）。拆下该薄片会降低手持对讲机的防水效能，如果有水渗入手持对讲机内部，可能会引发故障。
- 手持对讲机背面的橙色包装材料对手持对讲机的防水效能十分重要。请勿在图中所示的包装材料的上面或周围，或者在电池的背面贴标签或其他材料。
  否则可能削弱手持对讲机的防水效能，并可能导致手持对讲机毁坏。此外，为防止包装材料的损坏，请勿使其接触异物。



■ Water resistance maintenance of the transceiver

The transceiver satisfies protection levels (IP standard) IP67 specified by international standard IEC 60529. IP indicates a level of dust resistance and water resistance. The first characteristic numeral indicates “dust resistance”, and the second characteristic numeral indicates “water resistance”.

The overview of the IP67 requirements are provided below:

- IP6* (Dust resistant type): Reduce pressure in the set to a maximum of 2kPa to prevent entry of dust of 25 microns.
- IP*7 (Water immersion endurance): There is no ill effect on performance or function when the unit is immersed in water at a depth of 0.15 to 1m (0.49 to 3.28 feet) for 30 minutes. (In case of the test unit with a height less than 850mm, the bottom part of test unit can be placed 1000mm below the surface of the water.)

Disassemble the transceiver with the facility or in the environment in which water resistance can be fully confirmed.

Those who perform the procedure described here must be experienced qualified engineers who understand the contents of this service manual.

■保持手持对讲机的防水性能

本手持对讲机达到了 IEC 60529 国际标准规定的防护等级（IP 标准）IP67。IP 代表防尘和防水等级。第一位特征数字代表“防尘”，第二位特征数字代表“防水”。

IP67 的总体要求如下：

- IP6*（防尘型）：将装置中的压力减小到最高 2kPa 以防止 25 微米的灰尘进入。
- IP*7（耐水浸）：将装置浸没于 0.15 到 1m 深的水中 30 分钟时，不会对性能或功能产生不良影响。（如果试验装置的高度小于 850mm，可将试验装置的底部置于水面下 1000mm。）

使用可完全确认防水的设备，或在可完全确认防水的环境中拆卸手持对讲机。

执行此处所述操作的人员必须是有经验，有资质的工程技术人员，并理解本维修手册的内容。

DISASSEMBLY FOR REPAIR / 维修拆卸

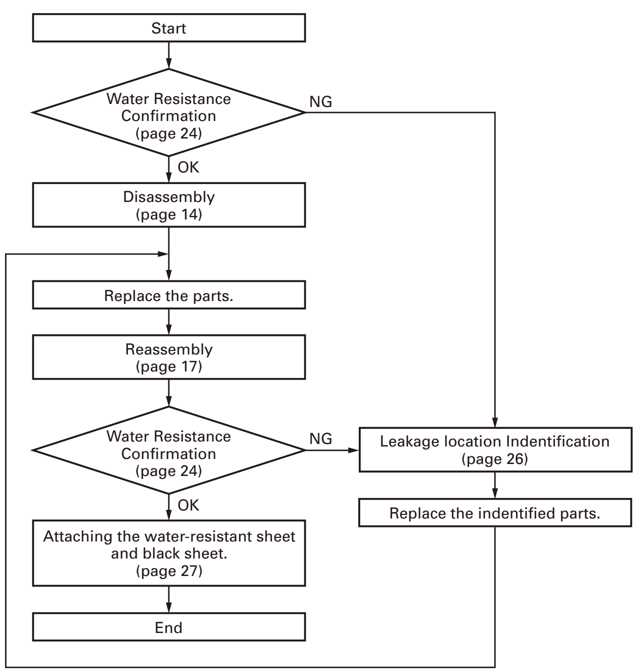
Perform the following work when you restore the waterproof performance of the transceiver at the IP67 level after the transceiver is repaired.

Attach the two pieces of double-sided adhesive tape (J99-0727-04, J99-0728-04) between the top packing and the chassis.	Refer to page 15.
Apply the silicon grease (W05-1492-00) onto the speaker part of the key top and around the chassis.	Refer to page 18.
Apply the silicon grease (W05-1492-00) around the hole of the negative (-) terminal in the rear of the chassis.	Refer to page 19.
Perform "Leakage Location Identification" and identify the location where air is leaking.	Refer to page 26.
Repair the location where air is leaking. (step 8 of "Leakage Location Identification")	Refer to page 27.
Apply bond to the top of the left side screw for the chassis and between the chassis and the left side screw for the option board cover.	Refer to page 28.

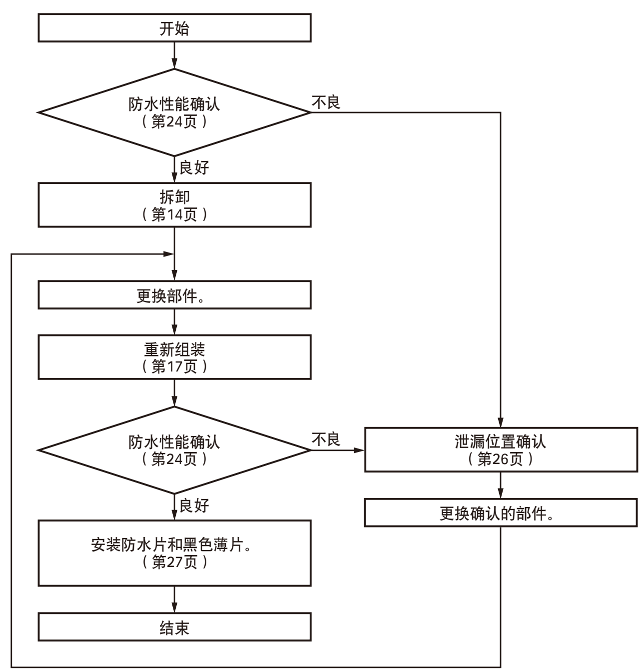
在维修手持对讲机之后将其防水性能恢复到 IP67 等级时，请执行以下操作。

在顶盖和底座之间贴上两块双面胶带（J99-0727-04，J99-0728-04）。	请参阅第 15 页。
在键帽的扬声器部分上面和底座周围涂上硅脂（W05-1492-00）。	请参阅第 18 页。
在底座后部的负（-）端子的孔周围涂上硅脂（W05-1492-00）。	请参阅第 19 页。
进行"泄漏位置确认"，确定漏气位置。	请参阅第 26 页。
对漏气位置进行维修。（"泄漏位置确认"的步骤 8）	请参阅第 27 页。
在底座左侧螺丝的上面和底座与可选板盖的左侧螺丝之间涂上粘合剂。	请参阅第 28 页。

■ Repair procedure flow chart



■维修步骤流程图



DISASSEMBLY FOR REPAIR / 维修拆卸

2. Precautions for Disassembly

Perform “Water Resistance Confirmation” on page 23 before disassembling the transceiver. If it fails, perform “Leakage Location Identification” on page 26.

2. 拆卸注意事项

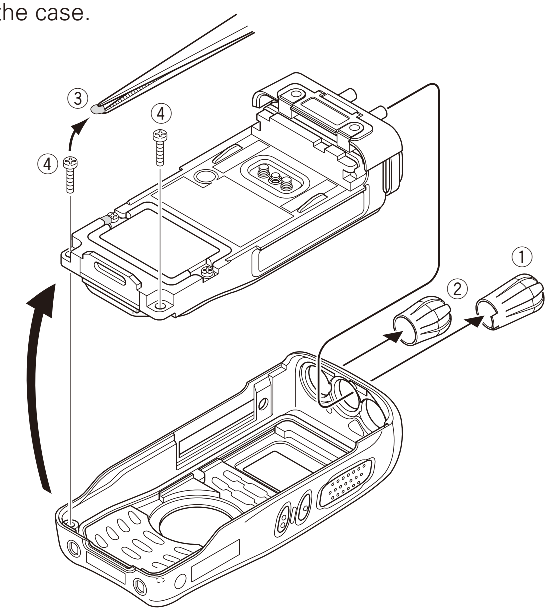
拆卸手持对讲机之前，先进行第 23 页的“防水性能确认”。如果确认失败，请进行第 26 页的“泄漏位置确认”。

■ Disassembly procedure

1. Remove the channel knob ① and volume knob ②.
2. Remove the bond ③ from the screw using a pair of tweezers.
3. Remove the two screws ④.
4. Lift and remove the chassis from the case.

■拆卸步骤

1. 拆下信道旋钮 ① 和音量旋钮 ②。
2. 用镊子除去螺丝上的粘合剂 ③。
3. 拆下两颗螺丝 ④。
4. 从壳体中提起并取出底座。

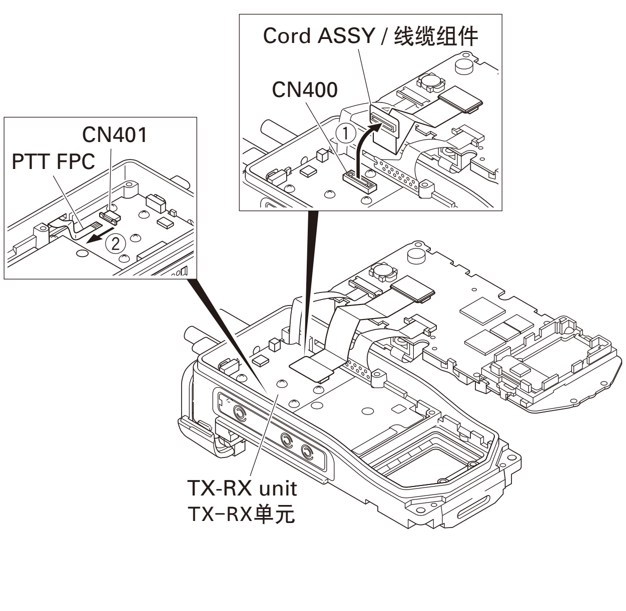


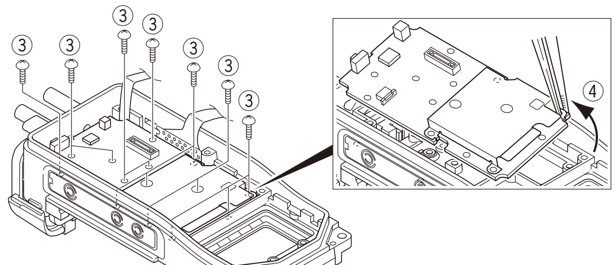
■ Removing the TX-RX unit from the chassis

1. Remove the cord ASSY from the connector of the TX-RX unit (CN400) ①.
2. Remove the PTT FPC from the connector of the TX-RX unit (CN401) ②.
3. Remove the 14 screws ③.
4. Anchor the screw hole of the TX-RX unit using the tip of a pair of tweezers as shown in the figure. Then, lift the TX-RX unit to remove it from the chassis ④.

■从底座取下 TX-RX 单元

1. 拆下 TX-RX 单元 (CN400) 连接器的线缆组件 ①。
2. 拆下 TX-RX 单元 (CN401) 连接器的 PTT FPC ②。
3. 拆下 14 颗螺丝 ③。
4. 如图所示，用镊子的末端固定 TX-RX 单元的螺丝孔。然后，提起 TX-RX 单元，将其从底座取下 ④。





DISASSEMBLY FOR REPAIR / 维修拆卸

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

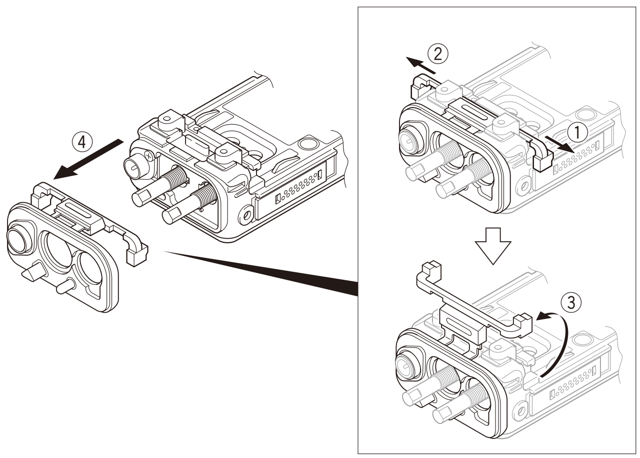
1. Pull the TOP packing to the left to remove the packing that is fit into the left groove of the chassis ①.
2. Pull the TOP packing to the right to remove the packing that is fit into the right groove of the chassis ②.
3. Turn back the TOP packing as shown in the figure ③.
4. Remove the TOP packing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

Note:
Take care not to damage the TOP packing when peeling off, as it is attached to the chassis with two pieces of double-sided adhesive tape (J99-0727-04, J99-0728-04).

■拆下顶盖（G53–1762–02）

1. 向左拉顶盖，拆下装在底座左侧凹槽内的盖 ①。
2. 向右拉顶盖，拆下装在底座右侧凹槽内的盖 ②。
3. 如图所示回转顶盖 ③。
4. 取下顶盖 ④。

注意：
剥离时小心不要损坏顶盖，因为顶盖通过两块双面胶带（J99–0727–04，J99–0728–04）贴在底座上。

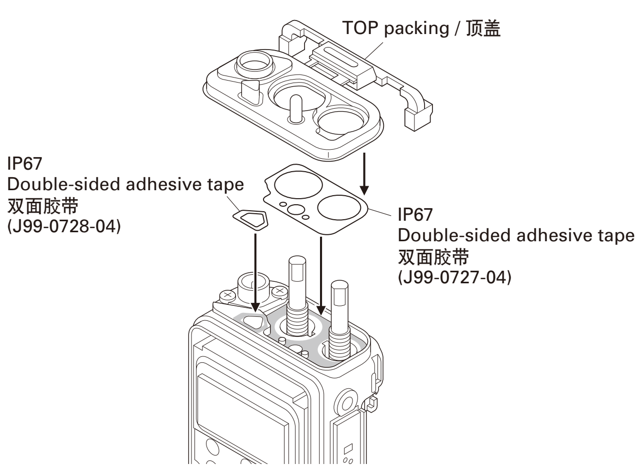


Note:
The two pieces of double-sided adhesive tape attached to the TOP packing cannot be reused.
Perform the following procedures when you reassemble the TOP packing.

1) Attach the TOP packing after attaching new double-sided adhesive tape to the chassis as shown in the figure.

注意：
贴在顶盖上的两块双面胶带不能重新使用。
重新组装顶盖时，请执行以下操作。

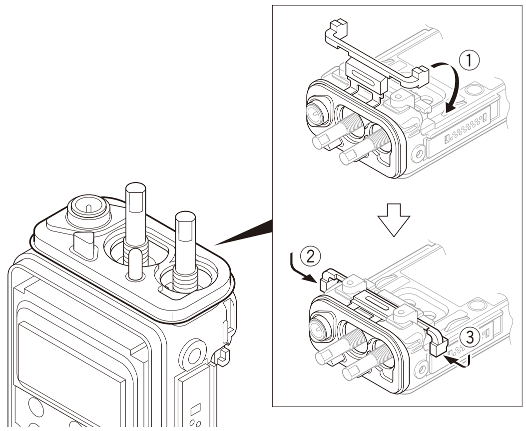
1）如图所示在底座上贴上新的双面胶带之后，再安装顶盖。



DISASSEMBLY FOR REPAIR / 维修拆卸

2) Move the TOP packing as shown in the figure, and attach it to the chassis ①.
3) Fit the TOP packing into the right groove of the chassis ②.
4) Fit the TOP packing into the left groove of the chassis ③.

2）如图所示移动顶盖，将其安装到底座上 ①。
3）将顶盖装入底座的右侧凹槽 ②。
4）将顶盖装入底座的左侧凹槽 ③。

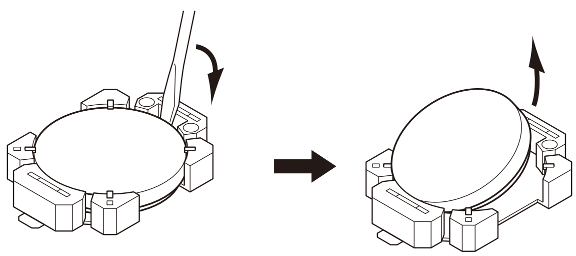


■ Removing the lithium cell (W09-0971-05)

Insert a non-conductive screwdriver to groove of one side of the socket (CN401) and pry the lithium cell up from the socket.

■取出锂电池（W09–0971–05）

将不导电的螺丝刀插入电池座（CN401）的一侧，从电池座中撬起锂电池。

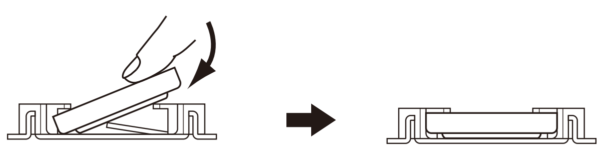


■ Installing the lithium cell (W09-0971-05)

Insert a lithium cell into one side of the socket (CN401). Push the lithium cell to insert the lithium cell into the socket.

■安装锂电池（W09–0971–05）

将锂电池插入电池座（CN401）的一侧。
推动锂电池，将其插入电池座中。



DISASSEMBLY FOR REPAIR / 维修拆卸

3. Precautions for Reassembly

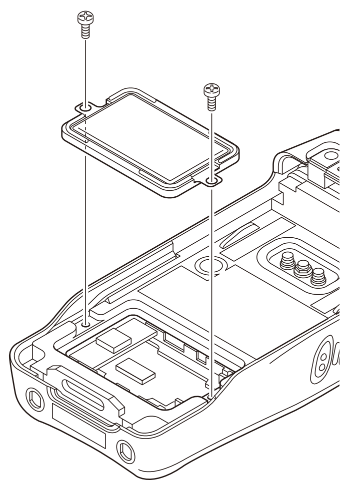
■ Installing the option board cover onto the chassis

1. Install the option board cover onto the chassis using the two screws.
   Note:
   Confirm that there is no foreign matters on the water-proof rib of the option board cover. (Wipe it clean when foreign matters adhere to it.)

3. 重新组装注意事项

■将可选板盖安装到底座

1. 用两颗螺丝将可选板盖安装到底座上。
   注意：
   确认可选板盖的防水肋片上没有异物。（如有附着的异物，应将其擦干净。）



2. Perform the water resistance confirmation and then apply the bond to the two left side screws, tightened in the rear of the transceiver. (Refer to pages 23 to 30.)

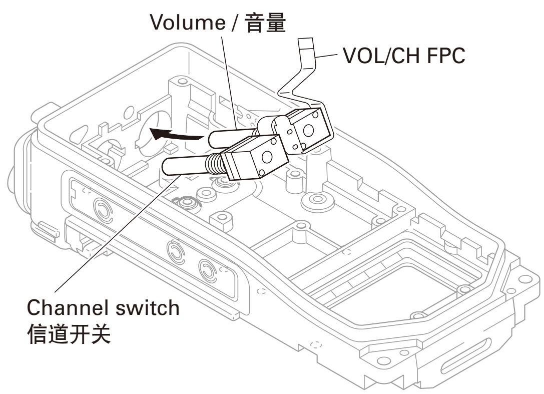
2. 进行防水性能确认，然后在手持对讲机后面拧紧的两颗左侧螺丝上涂上粘合剂。（请参阅第 23 至 30 页。）

■ Inserting the Volume and Channel j50 into the chassis

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

■将音量和信道开关插入底座

将音量和信道开关插入底座，使 VOL/CH FPC 的形状如图所示。



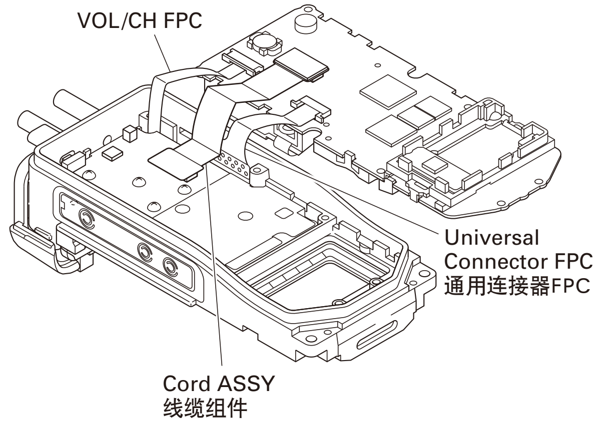
DISASSEMBLY FOR REPAIR / 维修拆卸

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

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

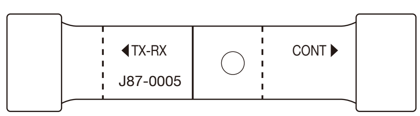
■确定 VOL/CH FPC，线缆组件和通用连接器 FPC 的形状

使 VOL/CH FPC，线缆组件和通用连接器 FPC 的形状如图所示。

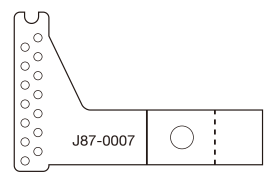


Note:
Fold indications are printed on the Cord ASSY and Universal Connector FPC.
"——" line shows creased line on the top.
"- - - -" line shows creased line on the bottom.

注意：
线缆组件和通用连接器 FPC 上印有折叠标志。
"——" 线表示顶部的折线。
"- - - -" 线表示底部的折线。



Cord ASSY
线缆组件



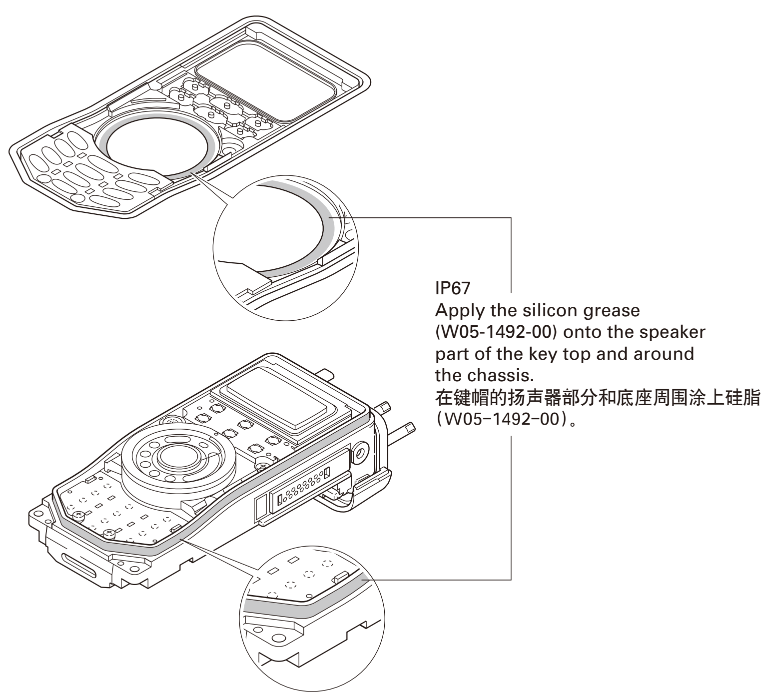
Universal Connector FPC
通用连接器FPC

■ Mounting the chassis onto the case

1. Apply the silicon grease (W05-1492-00) onto the speaker part of the key top and around the chassis.

■将底座安装到壳体上

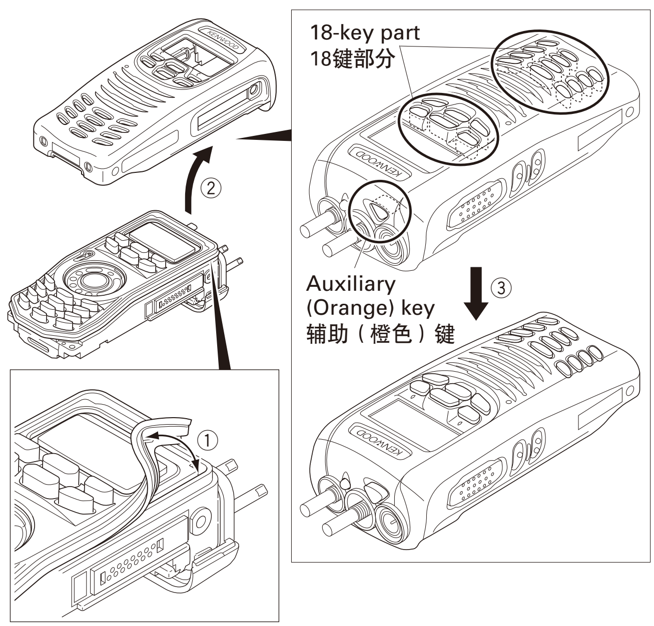
1. 在键帽的扬声器部分和底座周围涂上硅脂（W05-1492-00）。



DISASSEMBLY FOR REPAIR / 维修拆卸

2. 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.
3. Mount the chassis onto the case ②.
   Note:
   After mounting the chassis onto the case, if the 18-key part on the key top or the Auxiliary (Orange) key part of the VOL/CH packing gets stuck inside the case as shown in the figure, return it to the normal position using a soft tipped item (e.g., finger) ③.
   Prying it with a pointed metal tool such as forceps, may damage the key top or packing.

2. 将键帽安置到底座上。然后，将底座紧密装配到键帽的凹槽内 ①。
   注意：
   确认键帽的整个凹槽与底座紧密吻合。
3. 将底座安装到壳体上 ②。
   注意：
   将底座安装到壳体上之后，如果键帽 18 键部分或 VOL/CH 衬垫的辅助（橙色）键部分如图所示卡在壳体内，请使用末端柔软的物体（例如手指）将其恢复到正常位置 ③。用镊子等尖头金属工具撬动可能会损坏键帽或衬垫。

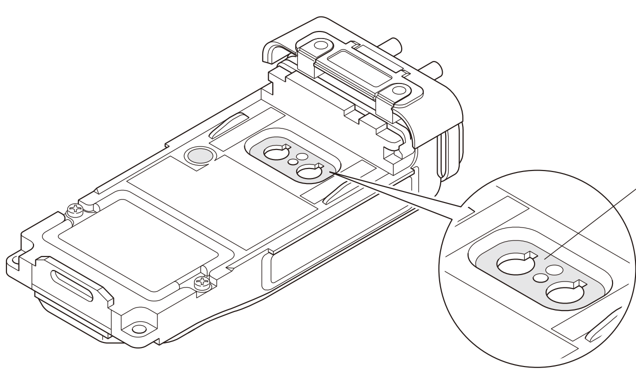


■ Correspondence when replacing the Terminal block (E72-0425-03) or Packing (G53-1763-03)

Apply the silicon grease (W05-1492-00) around the hole of the negative (–) terminal in the rear of the chassis when replacing the terminal block (E72-0425-03) or packing (G53-1763-03).

■ 更换接线盒（E72-0425-03）或衬垫（G53-1763-03）时的相应操作

更换接线盒（E72-0425-03）或衬垫（G53-1763-03）时，在底座背面的负（－）端子的孔的周围涂上硅脂（W05-1492-00）。



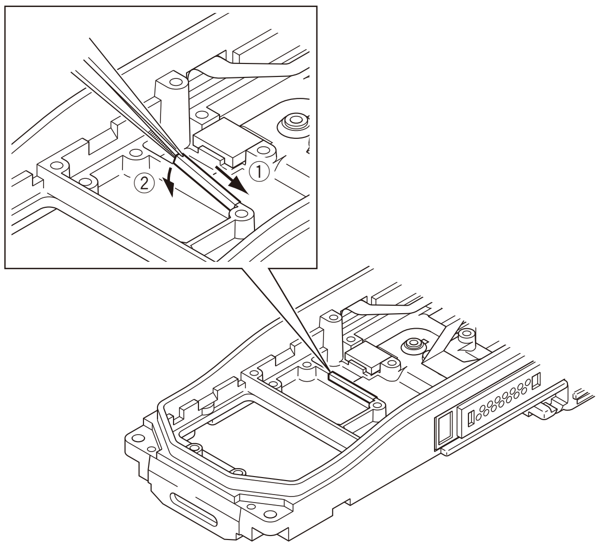
DISASSEMBLY FOR REPAIR / 维修拆卸

■ Relay hardware (E29-1221-14) installation procedure

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

■中间硬件（E29–1221–14）安装操作

1. 用镊子将中间硬件的一侧装配到底座的右边角 ①。
2. 将中间硬件的另一侧装到底座的肋片 ②。

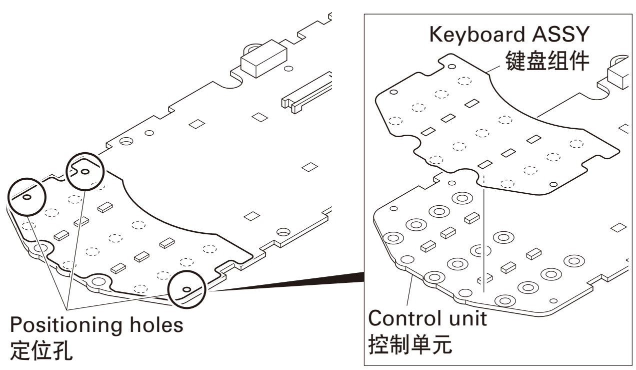


■ Affixing the keyboard ASSY (S79-0472-05)

Affix the keyboard ASSY to the Control unit as shown in the figure.
After affixing the keyboard ASSY to the Control unit, confirm that the three positioning holes of the keyboard ASSY and the Control unit are not misaligned.
Note:
If the holder (Option board) is removed from the Control unit, it becomes easy to confirm the three positioning holes.

■安装键盘组件（S79–0472–05）

如图所示，将键盘组件安装到控制单元。
将键盘组件安装到控制单元后，确认键盘组件的三个定位孔与控制单元对准。
注意：
从控制单元上拆下支架（可选板），可便于确认三个定位孔。



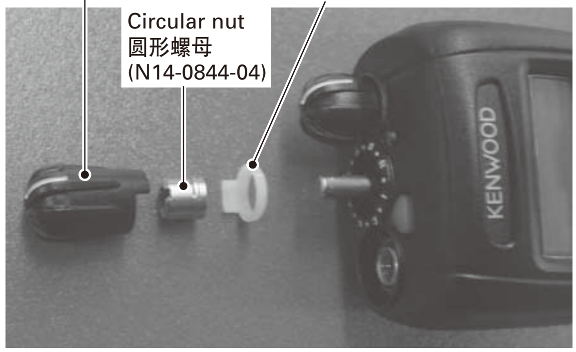
■ Changing the channel selector from 16-channel operation to free

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

■将信道选择器由 16 信道操作改为自由操作

1. 拆下信道选择旋钮。
2. 拆下圆形螺母。
3. 拆下机械挡块。
4. 将步骤 1 和 2 中拆下的圆形螺母和信道选择旋钮重新装回原位置。

DISASSEMBLY FOR REPAIR / 维修拆卸



■ Assembly information (Sheet/Cushion)

When "Main Parts" is changed (ordered), "Assembled Sheet/Cushion" should also be changed (ordered) together.
The Sticker and Sheet etc are non-reusable parts. It requires the new one to get the radio's performance after repairs.
For example, when "Plastic Cabinet (A02-4003-23 (18-key))" is changed, "Sticker (B42-7296-04)", "Badge (B43-1606-04)" and "Fibrous Sheet (G10-1373-04)" should be ordered and changed together because Sticker (B42-7296-04), Badge (B43-1606-04) and Fibrous Sheet (G10-1373-04) are non-reusable.

Main Parts		Assembled Sheet/ Cushion		
Part Name	**Part Number**	**Part Name**	**Part Number**	**Remark**
Plastic Cabinet (18-key)	A02-4003-23	Sticker	B42-7296-04	"NXDN" is printed.
		Badge	B43-1606-04	"KENWOOD" is printed.
		Fibrous Sheet (SP)	G10-1373-04	
LCD ASSY	B38-0923-05	Adhesive Sheet (LCD)	J99-0714-04	Used for fixing the LCD ASSY on the Illumination Guide (LCD). Also used for fixing the Illumination Guide (LCD) on the Control Unit.
Cord ASSY (50-pin FPC)	X42-3340-10	Cushion (50-pin FPC)	G13-2258-04	
Speaker	T07-0755-15	Rubber Cushion (SP)	G11-4272-14	
		Sheet (SP)	G11-4458-14	Used for stabilizing the waterproof performance. "•" (a hole) on the Sheet (SP) shows the upper side (6-key FPC side).
Switch Unit (6-key FPC)	X41-3720-10	Adhesive Sheet (6-key FPC)	J99-0390-04	Used for fixing the Switch Unit (6-key FPC) from the back side of the Holder (FG-SP) before soldering.
		Adhesive Sheet (6-key FPC)	J99-0712-14	Used for fixing the Switch Unit (6-key FPC) on the Holder (FG-SP).
Switch Unit (PTT FPC)	X41-3710-10	Sheet (PTT)	G11-4428-04	Used for fixing the Push Knob (PTT) on the Switch Unit (PTT FPC) and stabilizing the waterproof performance.
		Adhesive Sheet (PTT FPC)	J99-0711-04	Used for fixing the Switch Unit (PTT FPC) on the Chassis.
Chassis	A10-4127-01	Relay Hardware (VCO-Chassis)	E29-1221-14	Used for stabilizing the shield performance of the VCO.
		Sheet (Air)	G11-4331-04	This sheet is put on the leak check hole. This sheet lets air through, but does not let water through.
		Rubber Sheet (FET)	G11-4429-04	Used for stabilizing the radiation performance of the FET.
		Sheet (Air)	G11-4440-04	This sheet is a protect cover of the sheet (G11-4331-04).
		Cushion (ANT)	G13-2220-04	Used for fixing the Terminal ASSY.
Terminal Block	E72-0425-03	Adhesive Sheet (Terminal Block)	J99-0725-04	Used for fixing the Terminal Block and the Packing (Terminal Block).

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■组装信息（薄片／缓冲垫）

更换（定购）“主要部件”时，“组装的薄片／缓冲垫”也应当一同更换（定购）。
标签和薄片等属于不可重复使用的部件。需使用新部件方可在维修后获得手持对讲机的性能。
例如，更换“塑料机壳（A02-4003-23(18 键)）”时，“标签（B42-7296-04）”,“徽标（B43-1606-04）”和“纤维片（G10-1373-04）”也应当一并定购和更换，因为标签（B42-7296-04），徽标（B43-1606-04）和纤维片（G10-1373-04）不能重复使用。

主要部件		组装的薄片／缓冲垫		
零件名称	零件号	零件名称	零件号	备　注
塑料机壳（18 键）	A02-4003-23	标签	B42-7296-04	印有“NXDN”。
		徽标	B43-1606-04	印有“KENWOOD”。
		纤维片（SP）	G10-1373-04	
LCD 组件	B38-0923-05	黏结片（LCD）	J99-0714-04	用于将 LCD 组件固定到光导板（LCD）上。 此外，还用于将光导板（LCD）固定到控制单元上。
线缆组件（50 针 FPC）	X42-3340-10	缓冲垫（50 针 FPC）	G13-2258-04	
扬声器	T07-0755-15	橡胶垫（SP）	G11-4272-14	
		薄片（SP）	G11-4458-14	用于稳定防水性能。 薄片（SP）上的“•”（一个孔）表示上侧（6 键 FPC 侧）。
开关单元（6 键 FPC）	X41-3720-10	黏结片（6 键 FPC）	J99-0390-04	用于在焊接前从支架（FG-SP）的背面固定开关单元（6 键 FPC）。
		黏结片（6 键 FPC）	J99-0712-14	用于将开关单元（6 键 FPC）固定到支架（FG-SP）上。
开关单元（PTT FPC）	X41-3710-10	薄片（PTT）	G11-4428-04	用于将掀下旋钮（PTT）固定到开关单元（PTT FPC）上，并稳定防水性能。
		黏结片（PTT FPC）	J99-0711-04	用于将开关单元（PTT FPC）固定到底座上。
底座	A10-4127-01	中间硬件（VCO- 底座）	E29-1221-14	用于稳定 VCO 的屏蔽性能。
		薄片（空气）	G11-4331-04	该薄片可让空气透过，而不让水透过。
		橡胶片（FET）	G11-4429-04	用于稳定 FET 的辐射性能。
		薄片（空气）	G11-4440-04	该薄片是薄片（G11-4331-04）的防护盖。
		缓冲垫（ANT）	G13-2220-04	用于固定端子组件。
接线盒	E72-0425-03	黏结片（接线盒）	J99-0725-04	用于固定接线盒和衬垫（接线盒）。

DISASSEMBLY FOR REPAIR / 维修拆卸

4. Water-resistant Inspection Method

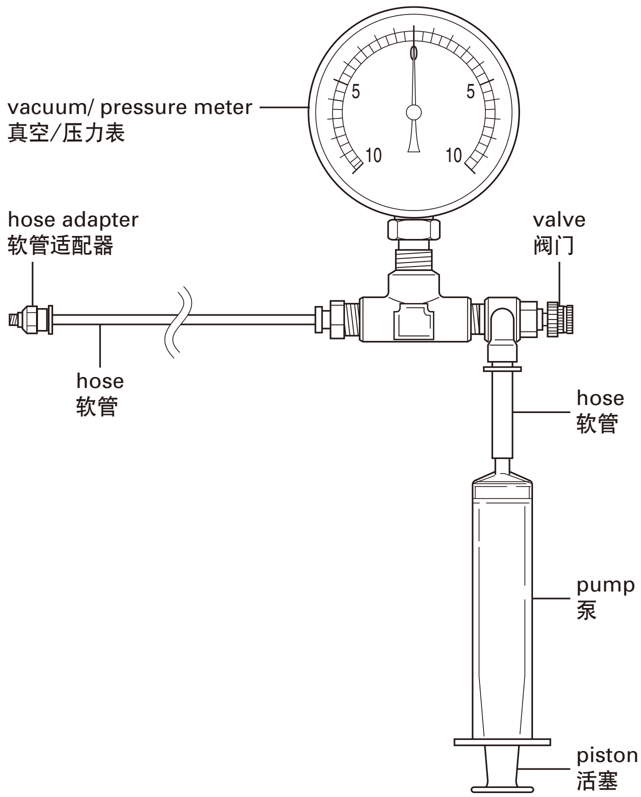
Preparation

- **Water-resistant Inspection Jig (W05-1499-00)**

4. 防水检验方法

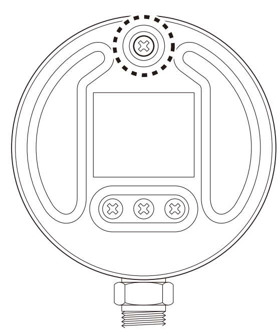
准备

- 防水检验夹具（W05-1499-00）



Note:
0 point adjustment of the meter needle can be done by turning the screw on the rear of the meter.

注意：
可通过转动仪表背面的螺丝进行表针的 0 位调整。



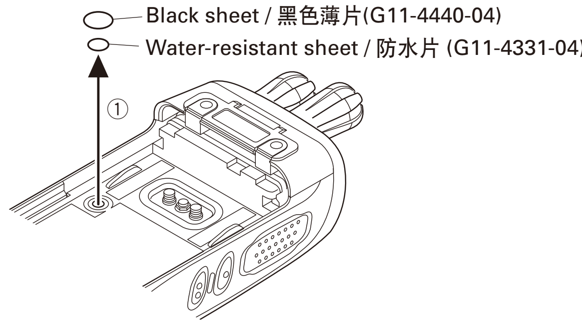
DISASSEMBLY FOR REPAIR / 维修拆卸

■ Water Resistance Confirmation

1) Install the universal connector cap over the universal connector.
2) Remove the water-resistant sheet (G11-4331-04) and black sheet (G11-4440-04) attached to the right side of the rear of the chassis using a pair of tweezers ①. This water-resistant sheet allows air to pass, but not water.
   Note:
   Take sufficient care to prevent damage to the surface of the chassis when removing the water-resistant sheet.

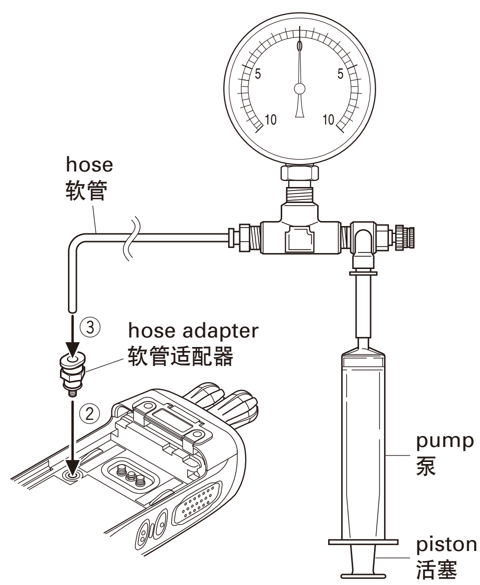
■防水性能确认

1) 将通用连接器盖装到通用连接器上。
2) 用镊子拆下装在底座背面右侧的防水片（G11-4331-04）和黑色薄片（G11-4440-04）①。该防水片可让空气通过，而不让水通过。
   注意：
   应十分小心，防止在拆下防水片时损坏底座的表面。



3) There is a screw hole under the water-resistant sheet. Insert the hose adapter into this screw hole while turning it ②.
4) Insert the water-resistant inspection jig hose into the hose adapter ③.
   Note:
   The piston of the water-resistant inspection jig pump must be pushed in to the end.

3) 防水片下面有一个螺丝孔。
   将软管适配器转动着插入该螺丝孔 ②。
4) 将防水检验夹具的软管插入软管适配器 ③。
   注意：
   防水检验夹具泵的活塞必须推到底。



5) Turn and open the valve on the side of the pump of the water-resistant inspection jig, then pull the pump piston to reduce the pressure in the transceiver. Pull the piston until the meter needle of the water-resistant inspection jig indicates 10kPa (left side of meter). If the meter needle does not reach 10kPa when the piston is pulled to the end, perform the following steps.

5) 转动并打开防水检验夹具泵侧的阀门，然后拉泵的活塞以减小手持对讲机内的压力。拉动活塞，直至防水检验夹具的表针指示 10kPa（仪表左侧）。如果在活塞拉到底时表针达不到 10kPa，请执行以下步骤。

DISASSEMBLY FOR REPAIR / 维修拆卸

a) Close the valve on the side of the pump.
b) Remove the pump from the hose.
c) Push the piston of the removed pump to the end.
d) Insert the pump into the hose.
e) Open the valve and pull the pump piston.
Repeat steps a) to e) until the meter needle indicates 10kPa (left side of meter). Disassemble and reassemble the transceiver when you do not reach 10kPa even if the step from a) to e) is repeated three times.

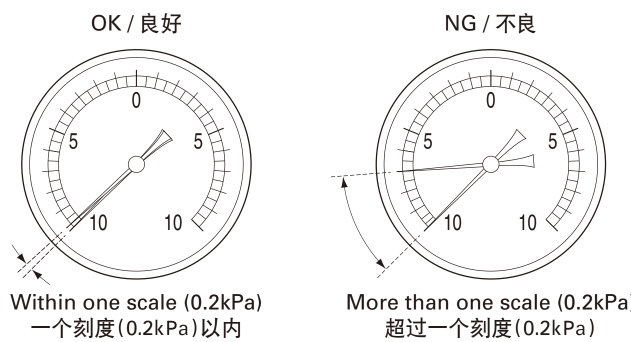
Note:
Do not push the piston with the pump inserted in the hose because the meter needle of the water-resistant inspection jig will break with excessive pressure.

6) When the meter needle reaches 10kPa (left side of meter), close the valve on the side of the pump and observe the movement of the meter needle.
If the change of the meter needle is within one scale (0.2kPa) in 30 seconds, the transceiver will retain normal water resistance.
It is not necessary to perform the “Leakage Location Identification” test on page 26 under these conditions.
If the change of the meter needle is more than one scale (0.2kPa), water resistance is not adequate. Perform the “Leakage Location Identification” procedure on page 26.
Note:
If the valve is not closed, the pump piston is drawn by the negative pressure of the transceiver and the meter needle will move unexpectedly. Be sure to close the valve, before beginning the observation.

a) 关闭泵侧阀门。
b) 从软管中取出泵。
c) 将取出的泵的活塞推到底。
d) 将泵插入软管。
e) 打开阀门并拉泵的活塞。
重复步骤 a）至 e），直至表针指示 10kPa（仪表左侧）。
如果步骤 a）至 e）重复三次后表针仍无法达到 10kPa，请拆卸并重新组装手持对讲机。

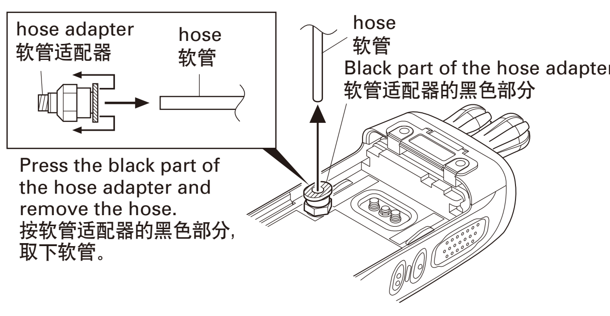
注意：
请勿在将泵插入软管的状态下推动活塞，因为压力过大时防水检验夹具的表针会断裂。

6) 当表针达到 10kPa（仪表左侧）时，关闭泵侧的阀门并观察表针的移动。如果在 30 秒内表针的变动范围在一个刻度（0.2kPa）以内，表示手持对讲机会保持正常防水性能。
在这些条件下，不需要进行第 26 页的“泄漏位置确认”测试。
如果表针的变化范围超过一个刻度（0.2kPa），则表示防水性能不佳。
请进行第 26 页的“泄漏位置确认”操作。
注意：
如果阀门未关闭，手持对讲机的负压会抽动泵的活塞，表针会意外移动。开始观察之前，请务必关闭阀门。



7) If water resistance retention is confirmed, press the black part of the hose adapter and remove the hose. Then turn the hose adapter and remove it from the chassis.

7) 如果防水性能的保持得到确认，请按软管适配器的黑色部分，取下软管。
然后，转动软管适配器，将其从底座上取下。



DISASSEMBLY FOR REPAIR / 维修拆卸

8) Perform the "Attaching the water-resistant sheet and black sheet" on page 27.

■ Leakage Location Identification

If step 6 of "Water Resistance Confirmation" on page 25 fails, perform this procedure.

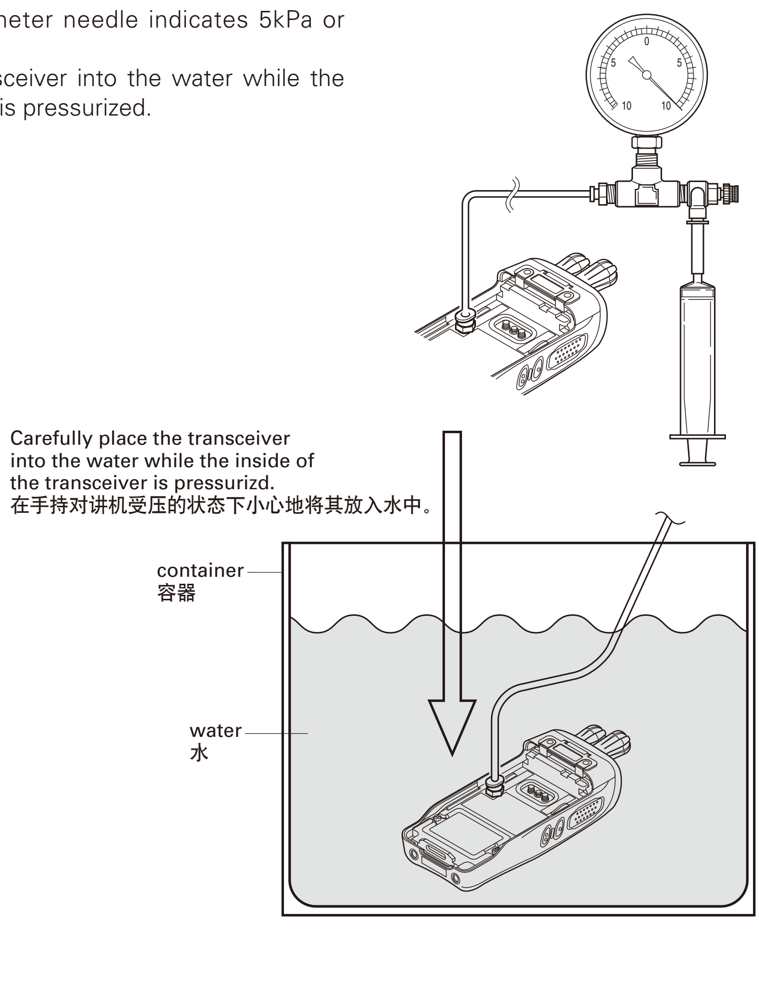
1) Prepare for a container that can contain the transceiver sufficiently and put water to a height of approximately 20 cm (7.87 inch) from the bottom of the container. The water temperature must be between 10ºC (50ºF) and 30ºC (86ºF).
2) Open the valve on the side of the pump, push the pump piston and increase the inside pressure of the transceiver to approximately 10kPa (right side of meter). If the meter needle does not reach 10kPa when the piston is pushed in to the end, perform the following steps.
   a) Close the valve on the side of the pump.
   b) Remove the pump from the hose.
   c) Pull the piston of the removed pump to the end.
   d) Insert the pump into the hose.
   e) Open the valve and push the pump piston.
   Repeat steps a) to e) until the meter needle indicates approximately 10kPa (right side of meter).
   Disassemble and reassembly the transceiver when you do not reach approximately 10kPa even if the step from a) to e) is repeated three times.
3) Wait for one minute after the meter needle reaches approximately 10kPa. Go to the next step if the meter needle indicates 5kPa or more. Disassemble and reassemble the transceiver if the meter needle indicates 5kPa or less.
4) Carefully place the transceiver into the water while the inside of the transceiver is pressurized.

8) 进行第 27 页的“安装防水片和黑色薄片”。

■泄漏位置确认

如果第 25 页的“防水性能确认”的步骤 6 失败，请执行此操作。

1) 准备一个足以容纳手持对讲机的容器，将水放到距容器底部约 20cm 的高度。水温必须介于 10º C 和 30º C 之间。
2) 打开泵侧的阀门，推动活塞，将手持对讲机的内部压力增大到约 10kPa（仪表右侧）。如果在活塞推到底时表针达不到 10kPa，请执行以下步骤。
   a) 关闭泵侧阀门。
   b) 从软管中取出泵。
   c) 将取出的泵的活塞拉到底。
   d) 将泵插入软管。
   e) 打开阀门并推泵的活塞。
   重复步骤 a) 至 e)，直至表针指示约 10kPa（仪表右侧）。
   如果步骤 a) 至 e) 重复三次后表针仍无法达到约 10kPa，请拆卸并重新组装手持对讲机。
3) 表针达到约 10kPa 后，等待一分钟。如果表针指示 5kPa 或以上，继续执行下一步。如果表针指示 5kPa 或以下，请拆卸并重新组装手持对讲机。
4) 在手持对讲机受压的状态下小心地将其放入水中。



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The meter needle will move down gradually due to air leakage. Place the transceiver into the water before it reaches 5kPa.
Air leakage can be confirmed by air bubbles. When the meter needle indicates 3 to 4kPa (right side of meter), perform steps a) to e) in 3) above to increase the pressure to approximately 10kPa.
Note:
If the transceiver is left under water when the meter needle is 0kPa, water may be leaked inside the transceiver. Take the transceiver out of the water before the meter needle reaches 3kPa. Because the meter needle indicates 3kPa or more, pressurized air in the transceiver is released in water as bubbles, so water cannot leaked inside the transceiver.

5) Observe the transceiver while it is under water, while paying attention to the meter needle value.
With the transceiver under water, air leaks if air bubbles are produced continuously.
If air bubbles are not produced continuously, it is not a leakage location.
Note:
If air bubbles come out of the speaker grill and are not continuous, they are air that is collected in the front of the speaker and do not indicate a leakage location.
6) Identify the component from which continuous air bubbles are released.
7) Remove the transceiver from the water, wipe off the water and dry it completely.
Shake the transceiver to remove excess water from the microphone and speaker grill.
Sound may be muffled or distorted if water remains in the microphone and speaker grill.
Wipe off the battery terminal on the rear of the chassis.
Note:
Take special care because water collected between the transceiver case and chassis may be leaked inside the transceiver during disassembly and damage the transceiver components.
8) After the transceiver is dried completely, replace the components with the leakage location identified while paying attention to foreign matters.
Refer to page 29 for parts concerning the waterproof of each leakage location.
9) Perform the “Water Resistance Confirmation” on page 24 after reassembly.

■ Attaching the water-resistant sheet and black sheet

Attach a new water-resistant sheet to the screw hole on the rear of the chassis, then attach a new black sheet onto the water-resistant sheet.
Note:
- Remove any adhesive trace from the location where the water-resistant sheet and black sheet of the chassis is attached before attaching a new water-resistant sheet and black sheet to the screw hole.
- Attach the water-resistant sheet and black sheet to the chassis firmly; failure to do so may allow water to pass into the transceiver.

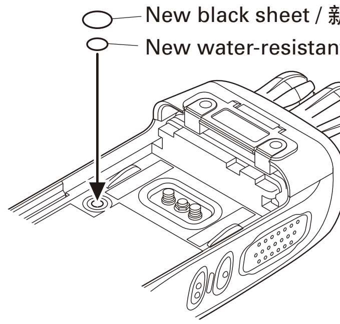
表针会因空气泄漏而逐渐向下移动。应在表针达到 5kPa 之前将手持对讲机放入水中。可通过气泡确认是否漏气。当表针指示 3 到 4kPa（仪表右侧）时，执行上述 3) 中的步骤 a) 至 e)，将压力增大到约 10kPa。
注意：
如果在表针为 0kPa 时将手持对讲机留在水下，水可能会泄漏到手持对讲机内部。
应在表针达到 3kPa 之前从水中取出手持对讲机。因为当表针指示 3kPa 或以上时，手持对讲机内的受压空气将以气泡的形式释放到水中，因此，水无法泄漏到手持对讲机的内部。

5) 手持对讲机在水下时，对手持对讲机进行观察，同时注意表针的数值。
手持对讲机在水下时，如果连续产生气泡，则表示漏气。
如果不连续产生气泡，则不是泄漏位置。
注意：
如果气泡从扬声器网罩发出而且不连续，则这些气泡是扬声器前部聚集的空气，而不代表泄漏位置。
6) 确定连续放出气泡的部件。
7) 从水中取出手持对讲机，擦掉水分并使其完全干燥。
晃动手持对讲机，排出麦克风和扬声器网罩中剩余的水分。
如果麦克风和扬声器网罩中有残留的水，声音可能会模糊不清或失真。
擦干底座后面的电池端子。
注意：
手持对讲机壳体和底座之间聚集的水可能泄漏到手持对讲机的内部，损坏手持对讲机的部件，因此，应特别注意。
8) 手持对讲机完全干燥之后，更换已确定有泄漏位置的部件，同时注意是否有异物。与各泄漏位置的防水有关的部分，请参阅第 29 页。
9) 重新组装之后，执行第 24 页的“防水性能确认”。

■ 安装防水片和黑色薄片

将新的防水片安装到底座后面的螺丝孔上，然后将新的黑色薄片安装到防水片上。
注意：
- 将新的防水片和黑色薄片安装到螺丝孔之前，应清除底座的防水片和黑色薄片安装位置的胶痕。
- 将防水片和黑色薄片牢固安装到底座上，否则可能会使水进入手持对讲机内。

DISASSEMBLY FOR REPAIR / 维修拆卸



■ After repairing and reassembling

After repairing and reassembling, apply bond to the top of the left side screw for the chassis and between the chassis and the left side screw for the option board cover.

Note:

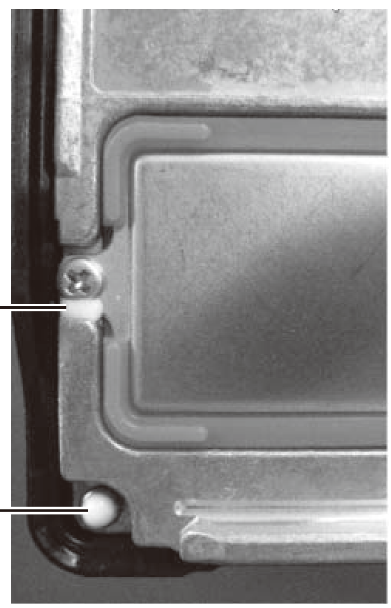
- Take care that the bond does not protrude above the chassis surface. (Take care that the bond does not come into contact with the battery.)
- Use a silicon based bond.

■维修并重新组装之后

维修并重新组装之后，在底座左侧螺丝的上面和底座与可选板盖的左侧螺丝之间涂上粘合剂。

注意 :

- 注意不要使粘合剂突出于底座表面之上。（注意不要使粘合剂与电池接触。）
- 使用硅基粘合剂。



DISASSEMBLY FOR REPAIR / 维修拆卸

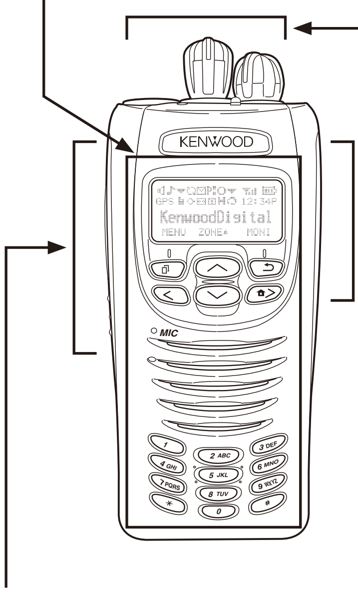
■ Parts list concerning the waterproof of each leakage location

LCD Display, Front Key, Speaker,
The space of the Front panel and the chassis

Part Name	Part Number
Plastic Cabinet (18-key)	A02-4003-23
Packing (18-key)	G53-1766-11
Holder (FG-SP)	J19-5505-11
Sheet (SP)	G11-4458-14

ANT, Volume Knob, Selector Knob,
The space of the TOP panel and the chassis

Part Name	Part Number
Packing (TOP)	G53-1762-02
Illumination Guide (TX/BUSY)	B11-1855-04
Panel (TOP)	A62-1156-02
Double-sided adhesive tape (AUX)	J99-0728-04
Double-sided adhesive tape (VOL/CH)	J99-0727-04
Packing (VOL,CH O-RING)	G53-1768-04
Packing (SMA O-RING)	G53-1792-04
Terminal ASSY (SMA)	X60-3860-10
Variable Resistor (VOL)	R31-0666-05
Rotary Switch (CH)	S60-0437-05
Circular Nut (VOL,CH)	N14-0844-04

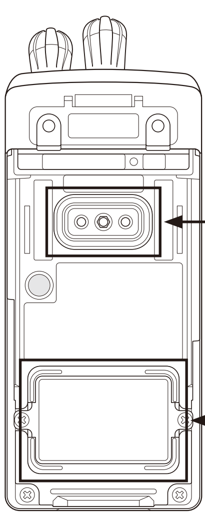


Universal Connector

Part Name	Part Number
Rectangular Receptacle (SP/MIC)	E58-0532-05
FPC (Lead Free/Universal)	J87-0007-15

PTT Switch, Side1/ 2 Key

Part Name	Part Number
Sheet (PTT)	G11-4428-04



Battery Terminal

Part Name	Part Number
Packing (Terminal Block)	G53-1763-03
Terminal Block	E72-0425-03
Adhesive Sheet (Terminal Block)	J99-0725-04
Cushion (BATT-)	G13-2265-04

Option Board Cover

Part Name	Part Number
Packing (Option Board Cover)	G53-1764-03
Adhesive Sheet (Option Board Cover)	J99-0732-04

DISASSEMBLY FOR REPAIR / 维修拆卸

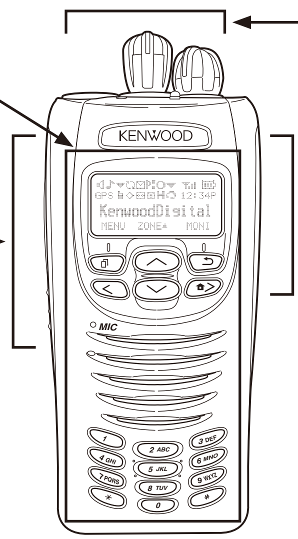
■与各泄漏位置的防水有关的零部件列表

LCD 显示器，前键，扬声器，
前面板和底座的空间

零件名称	零件号
塑料机壳（18 键）	A02-4003-23
衬垫（18 键）	G53-1766-11
支架（FG-SP）	J19-5505-11
薄片（SP）	G11-4458-14

ANT，音量旋钮，选择旋钮，
顶部面板和底座的空间

零件名称	零件号
衬垫（TOP）	G53-1762-02
光导板（TX/BUSY）	B11-1855-04
面板（TOP）	A62-1156-02
双面胶带 （AUX）	J99-0728-04
双面胶带（VOL/CH）	J99-0727-04
衬垫（VOL,CH O-RING）	G53-1768-04
衬垫（SMA O-RING）	G53-1792-04
端子组件（SMA）	X60-3860-10
可变电阻器（VOL）	R31-0666-05
旋转开关（CH）	S60-0437-05
圆形螺母（VOL,CH）	N14-0844-04

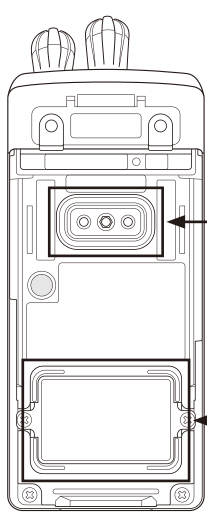


通用连接器

零件名称	零件号
直角插座（SP/MIC）	E58-0532-05
FPC（无铅 / 通用）	J87-0007-15

PTT 开关，Side1/2 键

零件名称	零件号
薄片（PTT）	G11-4428-04



电池端子

零件名称	零件号
衬垫（接线盒）	G53-1763-03
接线盒	E72-0425-03
黏结片（接线盒）	J99-0725-04
缓冲垫（BATT-）	G13-2265-04

可选板盖

零件名称	零件号
衬垫（可选板盖）	G53-1764-03
黏结片（可选板盖）	J99-0732-04

CIRCUIT DESCRIPTION / 电路说明

1. Overview

The NX-200 is a VHF portable transceiver designed to operate in the frequency range of 136 to 174MHz. The unit consists of receiver, transmitter, phase-locked loop (PLL) frequency synthesizer, base band parts, power supply, and control circuits.

1. 概述

NX-200 为 VHF 便携式手持对讲机，设计用于 136 至 174MHz 的频率范围。该设备由接收机，发射机，锁相环（PLL）频率合成器，基带部分，电源和控制电路组成。

2. Frequency Configuration

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

2. 频率构成

接收机为二次变频超外差方式，使用的第一中频（IF）为 58.05MHz，第二中频为 450kHz。天线接收到的信号与 PLL 电路的本振信号混频，从而产生第一个 58.05MHz 的中频。然后与第二个 57.6MHz 的本地振荡器输出信号混频，进而产生第二个 450kHz 的中频。发射的信号频率由 PLL VCO 生成，并经 DSP 信号调制。最后，该信号频率经过放大并发送到天线。

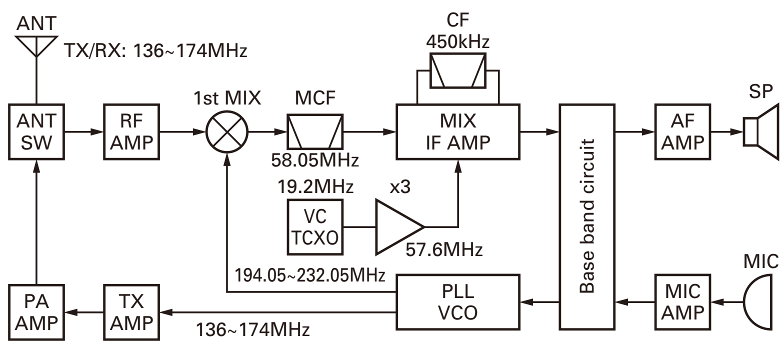


Fig. 1 Frequency configuration / 图 1 频率构成

CIRCUIT DESCRIPTION / 电路说明

3. Receiver System

3-1. RF Circuit

An incoming RF signal from the antenna terminal is passed through the antenna switch (D104, D105, D209 and D211) and then the bandpass filter (L220, L224). The bandpass filter is adjusted by a variable capacitor. The input voltage to the variable capacitor is regulated by the voltage output from the D/A converter (IC703). The signal is amplified by an RF amplifier (Q204), and passed through the bandpass filter (L212, L215). The resulting signal is applied to the first mixer (Q203), where it is mixed with the first local oscillator signal output from the frequency synthesizer to produce the first IF (58.05MHz).

3-2. IF Circuit

The first IF signal is passed through a four-pole monolithic crystal filter (XF200) to reject adjacent channel signals. The filtered first IF signal is amplified by the first IF amplifier (Q202) and then applied to the IF system IC (IC202). The IF system IC provides a second mixer, AGC amplifier, and RSSI (Received Signal Strength Indicator).

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

The second IF signal is passed through the ceramic filter (CF200) to reject the adjacent channel signal. The filtered second IF signal is amplified by the AGC amplifier.

The signal from the AGC amplifier is input to the ASIC (IC108) through the ceramic filter (CF201) and operational amplifier (IC203).

3. 接收部系统

3–1. RF 电路

天线端子接收到的 RF 信号依次通过天线开关 (D104，D105，D209 和 D211) 和带通滤波器 (L220，L224)。带通滤波器经由可变电容器调整。可变电容器的输入电压经由数模转换器 (IC703) 的输出电压调整。随后，信号被 RF 放大器 (Q204) 放大，然后通过带通滤波器 (L212，L215)。最终的信号被运用到第一混频器 (Q203)。在该混频器中，信号与频率合成器输出的第一本地振荡器信号混频，从而产生第一中频 (58.05MHz)。

3–2. 中频电路

第一中频信号经过一个四极的单片晶体滤波器 (XF200) 以消除临近信道的信号。

滤波后的第一中频信号经过第一中频放大器 (Q202) 的放大后，加到中频系统 IC(IC202) 上。

中频系统 IC 提供一个第二混频器，AGC 放大器和 RSSI(接收信号强度指示器)。

第二混频器混合第一中频信号及 57.6MHz 的第二本地振荡器输出，生成 450kHz 的第二中频信号。

第二中频信号通过陶瓷滤波器 (CF200) 以消除临近信道的信号。滤波后的信号由 AGC 放大器进行放大。

AGC 放大器的信号通过陶瓷滤波器 (CF201) 和运算放大器 (IC203) 输入 ASIC(IC108)。

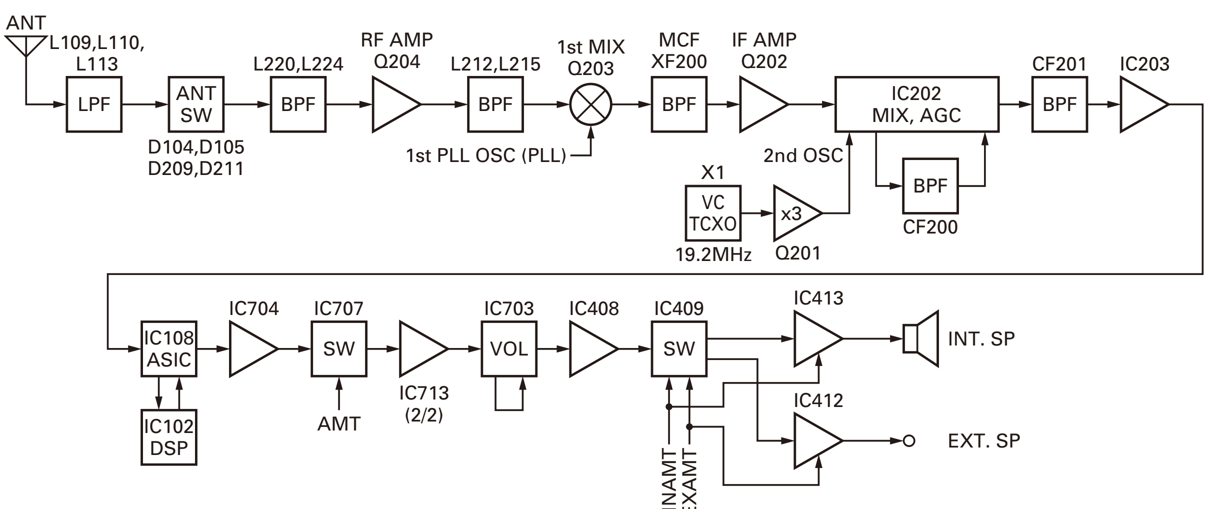


Fig. 2 RF and IF circuit / 图 2 RF 和 IF 电路

CIRCUIT DESCRIPTION / 电路说明

3-3. Audio Amplifier Circuit

Audio processing (high-pass filter, low-pass filter, de-emphasized and so on) at FM mode and decoding at NXDN mode are processed by DSP. The audio signal from IC108 and IC102 goes through the amplifier (IC704). The signal then goes through a mute switch (IC707), amplifier (IC713), electronic volume control (IC703), and AF amplifier (IC408).

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

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

3–3. 音频放大器电路

FM模式的音频处理（高通滤波器，低通滤波器，去加重等）和NXDN模式的解码由DSP进行处理。IC108和IC102的音频信号通过放大器（IC704）。然后，信号通过静音开关（IC707），放大器（IC713），电子音量控制器（IC703）和AF放大器（IC408）。

繁忙时，AMT变低以开启IC707，信号被送到AF开关。INAMT变高时，AF开关（IC409）选择内部扬声器，音频信号被送到内部音频功率放大器（IC413），并输出到内部扬声器。而EXAMT变高时，AF开关（IC409）选择外部扬声器，音频信号被送到外部音频功率放大器（IC412），并输出到外部扬声器。INAMT或EXAMT变高时，IC413 和IC412的电源开启。

扬声器由通用连接器上的扬声器切换端子SSW的逻辑进行切换。未安装SP-MIC时，SSW变高。IC108检测SSW的逻辑并启动INAMT或EXAMT。

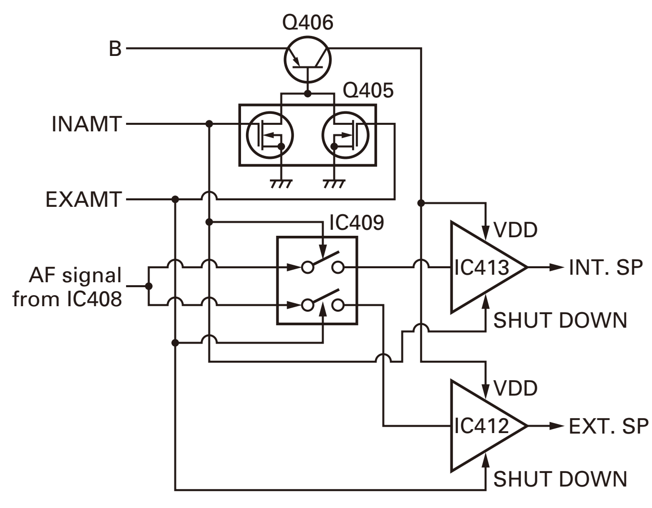


Fig. 3 Audio amplifier circuit / 图 3 音频放大器电路

3-4. Squelch Circuit

It amplifies the demodulated noise signal from IC108 after filtering through the BPF circuit. Then, the amplified signal is converted to a DC signal by the detection circuit. The converted signal is fed back to IC108.

3–4. 静噪电路

通过BPF电路滤波后，该电路放大IC108的已解调噪音信号。随后，放大的信号由检测电路转换为DC信号。转换的信号被反馈给IC108。

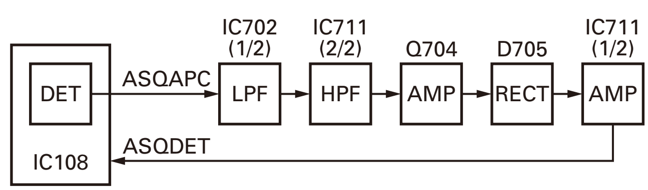


Fig. 4 Squelch circuit / 图 4 静噪电路

CIRCUIT DESCRIPTION / 电路说明

4. Transmitter System

4-1. Audio Band Circuit

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

4-2. Base Band Circuit

The audio signal output from the base band circuit is converted to digital data with a sampling frequency of 48kHz. This digital data is sent to the DSP (IC102), and voice signals of 300Hz or lower and frequencies of 3kHz or higher are cut off and an audio range of 300Hz to 3kHz is extracted. The audio signal is then pre-emphasized in FM mode and synthesized with the signals, such as QT and DQT, as required, and is then output from IC108. In Digital mode, the audio signal is converted to the 4-Level FSK base band signal and output from IC108. The DTMF and MSK base band signals are also generated by the DSP and output by IC108.

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

4. 发射部系统

4–1. 音频频带电路

内部麦克风的信号通过静音开关（Q5）。如未连接 SP-MIC，则通用连接器上的麦克风切换端子（MSW）变为高，同时静音开关（Q5）打开。如连接 SP-MIC，MSW 在 SP-MIC 内部与 GND 连接。因此，Q5 关闭，内部麦克风静音，仅外部麦克风的输入被提供到麦克风放大器。

麦克风的信号通过静音开关（Q707），由 IC716(1/2) 进行放大，并由 AGC 电路限幅。AGC 电路由 D703，D704，Q705 和 Q706 组成。

4–2. 基带电路

从基带电路输出的音频信号被转换为取样频率为 48kHz 的数字信号。该数字信号被发送给 DSP(IC102)，300Hz 或更低的语音信号和 3kHz 或更高的频率被截止，并选取 300Hz 至 3kHz 的音频范围。然后，音频信号以 FM 模式预加重，并与所需的 QT 和 DQT 等信号合成，然后从 IC108 输出。在数字模式下，音频信号被转换为 4 级 FSK 基带信号，从 IC108 输出。DTMF 和 MSK 基带信号也由 DSP 生成并由 IC108 输出。

LPF(IC705) 用作平滑滤波器。DAC(IC703) 将基带信号分配到 VCO 和 VCTCXO(X1)。此时，将按照各自的调制方式对按照发射载波输出的电平进行微调。

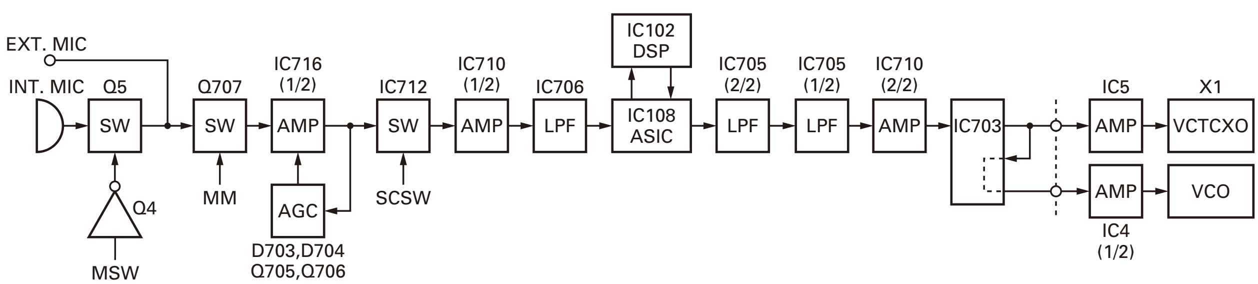


Fig. 5 Audio band and Base band circuit / 图 5 音频频带和基带电路

4-3. VOX

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

4–3. VOX（声控发射）

IC716(2/2) 放大麦克风中采集的音频信号。

然后，信号由 D706 进行整流，转换为 DC 电压。DC 电压激活 ASIC(IC108)，VOX 启动。

CIRCUIT DESCRIPTION / 电路说明

4-4. Drive and Final Amplifier

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

4-4. 驱动和末级放大器

来自 T/R 开关（D100 打开）的信号由驱动放大器（Q102 和 Q103）放大到 25~27dBm。驱动放大器的输出由 RF 功率放大器（Q106）放大到 5.0W（当功率低时为 1W）。RF 功率放大器为 MOS FET。RF 功率放大器的输出随之通过谐波滤波器（LPF）及天线开关（D104，D105 打开），然后加到天线端子上。

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

4-5. APC 电路

APC 电路随时监测通过 RF 功率放大器（Q106）的电流，并保持恒定电流。R136，R138 及 R141 的压降是由通过 RF 功率放大器的电流所形成的，并且该电压加到差动放大器（IC100 1/2）。IC100(2/2) 比较 IC100(1/2) 的输出电压及 IC108 的基准电压，同时 IC100(2/2) 的输出对 Q102，Q103 及 Q106 的 VGG 进行控制，使两个电压相同。功率高 / 低的变化通过基准电压的变化来执行。在发射时 Q105, Q107 及 Q110 打开，Q104 和 Q109 关闭，同时 APC 电路激活。

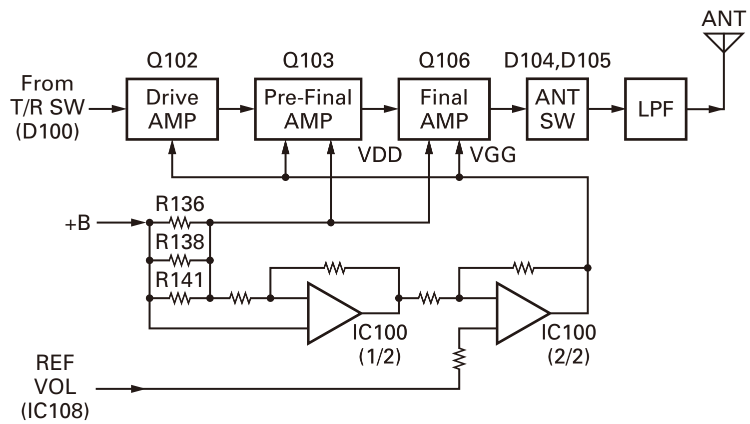


Fig. 6 Drive and final amplifier and APC circuit / 图 6 驱动和末级放大器和 APC 电路

CIRCUIT DESCRIPTION / 电路说明

5. PLL Frequency Synthesizer

5-1. VCTCXO (X1)

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

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

5-2. VCO

There is a RX VCO and a TX VCO.

The TX VCO (Q10) generates a transmit carrier and the RX VCO (Q8) generates a 1st local signal. For the VCO oscillation frequency, the transmit carrier is 136 to 174 MHz and the 1st local receive signal is 194.05 to 232.05MHz.

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

The operation switching terminal, “T/R”, is controlled by the control line (/T_R) output from the ASIC (IC108). When the /T_R logic is low, the VCO outputs the transmit carrier and when it is high, it outputs a 1st local receive signal.

The voltage control terminals, “CV” and “ASSIST”, are controlled by the PLL IC (IC3) and ASIC (IC108) and the output frequency changes continuously according to the applied voltage. For the modulation input terminal, “VCO_MOD”, the output frequency changes according to the applied voltage. This is used to modulate the VCO output. “VCO_MOD” works only when “/T_R” is low.

5-3. PLL IC (IC3)

The PLL IC compares the differences in phases of the VCO oscillation frequency and the VCTCXO reference frequency, returns the difference to the VCO CV terminal and realizes the “Phase Locked Loop” for the return control. This allows the VCO oscillation frequency to accurately match (lock) the desired frequency.

When the frequency is controlled by the PLL, the frequency convergence time increases as the frequency difference increases when the set frequency is changed. To supplement this, the ASIC is used before control by the PLL IC to bring the VCO oscillation frequency close to the desired frequency. As a result, the VCO CV voltage does not change and is always stable at approximately 2.5V.

The desired frequency is set for the PLL IC by the ASIC (IC108) through the 3-line “SDO1”, “SCK1”, “/PCS_RF” serial bus. Whether the PLL IC is locked or not is monitored by the ASIC through the “PLD” signal line. If the VCO is not the desired frequency (unlock), the “PLD” logic is low.

5. PLL 频率合成器

5-1. VCTCXO(X1)

VCTCXO(X1) 为 PLL 频率合成器产生 19.2MHz 的基准频率。该基准频率被施加到 PLL IC(IC3) 的第 9 针，作为第 2 本振信号通过三倍频器 (Q201) 后送到 IF 电路。VCTCXO 振荡频率由 VC 端子的 DC 电压决定。VC 电压由 R59 和 R60 固定为 1.65V，通过 IC5 施加于 VC 端子。调制信号也通过 IC5 送入 VC 端子。通过切换未经外加到 VC 的 DC 电压调整的分割频率的比率，实现频率调整。调整频率的分辨率约为 8Hz。由于 PLL IC 的输入频率输入两倍的 VCO 输出，发送频率和接收频率可按照约 4Hz 的分辨率进行调整。

5-2. VCO

有一个 RX VCO 和一个 TX VCO。TX VCO(Q10) 生成发射载波，RX VCO(Q8) 生成第 1 本振信号。对于 VCO 震荡频率，发射载波为 136 到 174MHz，第 1 本振信号为 194.05 到 232.05MHz。VCO 震荡频率由一个操作切换端子“T/R”系统和两个电压控制端子“CV”和“ASSIST”系统决定。操作切换端子“T/R”由 ASIC(IC108) 输出的控制线路 (/T_R) 进行控制。/T_R 逻辑较低时，VCO 输出发射载波，较高时，输出第 1 本地接收信号。

电压控制端子“CV”和“ASSIST”由 PLL IC(IC3 和 ASIC(IC108) 控制，输出频率根据施加的电压持续改变。对于调制输入端子“VCO_MOD”，输出频率根据施加的电压改变。籍此调制 VCO 输出。“VCO_MOD”仅在“/T_R”低时工作。

5-3. PLL IC(IC3)

PLL IC 对比 VCO 震荡频率和 VCTCXO 基准频率的相位差，将相位差返回 VCO CV 端子，实现返回控制的“锁相环路”。

这可以使 VCO 震荡频率与所需的频率精确匹配 (锁定)。

频率由 PLL 控制时，频率锁定时间将随着设定频率改变时频率差的增大而增加。为对此进行补充，在由 PLL IC 控制之前使用 ASIC 以使 VCO 震荡频率接近所需的频率。因此，VCO CV 的电压不变，始终稳定在约 2.5V。

PLL IC 的所需电压由 ASIC(IC108) 通过 3 线路“SD01”，“SCK1”，“/PCS_RF”串行总线进行设置。PLL IC 是否锁定由 ASIC 通过“PLD”信号线路进行监测。如果 VCO 不是所需的频率 (失锁)，则“PLD”逻辑较低。

CIRCUIT DESCRIPTION / 电路说明

5-4. Doubler (Q4)

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

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

5-4. 倍频器（Q4）

倍频器（Q4）从 VCO 的信号当中选取两倍的谐波成分。然后，这两倍的谐波成份通过带通滤波器送入 PLL（IC3）。

带通滤波器由两个滤波器组成。一个用于 TX（L3，L5，L7），通频带为 272.0 到 348.0MHz。另一个用于 RX 第 1 本地（L2，L6，L30），通频带为 388.1 到 464.1MHz。

5-5. Local Switch (D100, D201)

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

5-5. 本地开关（D100，D201）

缓冲放大器（Q100）输出信号的连接目标由二极管开关（D100）（由发射电源 50T 控制）和二极管开关（D201）（由接收电源 50R 控制）进行改变。如果 50T 逻辑高，则它被连接到发送侧预驱动（Q102）。如果 50T 逻辑低，则它被连接到接收侧混频器（Q203）。

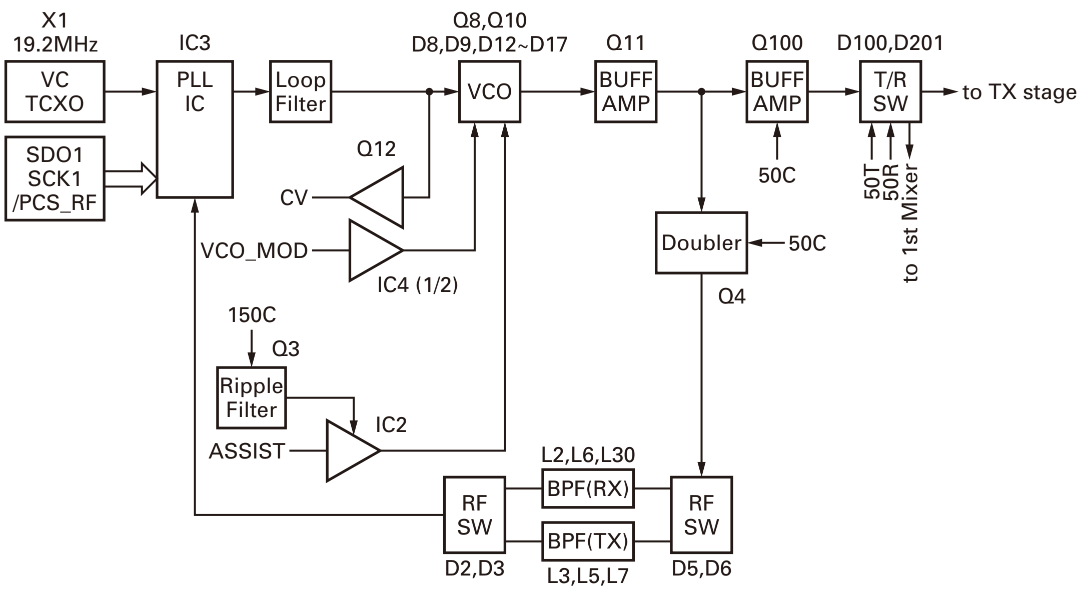


Fig. 7　PLL block diagram / 图 7　PLL 结构图

6. Control Circuit

The control circuit consists of the ASIC (IC108) and its peripheral circuits. IC108 mainly performs the following;

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

6. 控制电路

控制电路由 ASIC（IC108）和外围电路组成。IC108 主要有以下功能：

1) 由输入的 PTT 信号切换发射和接收。
2) 从存储电路读取系统，区域，频率和编程数据。
3) 将频率数据发送到 PLL。
4) 由静噪电路的 DC 电压控制静噪的开 / 关。
5) 由输入的解码数据控制音频静音电路。

CIRCUIT DESCRIPTION / 电路说明

6-1. ASIC

The ASIC (IC108) is a 32-bit RISC processor, equipped with peripheral function and ADC/DAC.

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

6-2. Memory Circuit

The memory circuit consists of the ASIC (IC108) and the SRAM (IC103) and flash memory (IC101). The flash memory has capacity of 32M-bit that contains the transceiver control program for the ASIC and stores the data. It also stores the data for transceiver channels and operating parameter that are written by the FPU. This program can be easily written from external devices. The SRAM has capacity of 1M-bit that contains work area and data area.

■ Flash memory

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

■ SRAM (Static memory)

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

■ Real-time clock

The clock function is based on real-time clock IC (IC106). When the power supply is off, it is backed up by an internal secondary lithium battery.

6-3. LCD

The LCD is controlled using the bus lines on the connector (CN1) of the Control unit (X53-426). It corrects the LCD contrast voltage using IC1.

6-4. Key Detection Circuit

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

6-5. Low Battery Warning

The battery voltage is divided using R444 and R445 and is detected by the ASIC (IC108). When the battery voltage falls below the voltage set by the Low battery warning adjustment, the red LED blinks to notify the operator that it is time to replace the battery. If the battery voltage falls even more (approx. 5.8V), a beep sounds and transmission stops.

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

6-1. ASIC

ASIC(IC108) 是一个 32 位 RISC 处理器，具备外围功能和 ADC/DAC。

该 ASIC 以 18.432MHz 时钟和 3.3V/1.5V DC 运行。它控制闪存，SRAM，DSP，接收电路，发射机电路，控制电路以及显示电路，并与外部设备双向传输数据。

6-2. 存储电路

存储电路由 ASIC(IC108)，SRAM(IC103) 和闪存 (IC101) 组成。闪存具有 32M 位的容量，包含 ASIC 的手持对讲机控制程序并储存数据。它也保存手持对讲机信道的数据和由 FPU 写入的操作参数。此程序很容易从外部设备写入。SRAM 具有 1M 位的容量，包含工作区和数据区。

■闪存

注意：闪存可储存由 FPU(KPG-111D(C)) 写入的数据，调谐数据（频偏，静噪等）以及固件程序（用户模式，测试模式，调谐模式等）。更换闪存后，此数据必须重写。

■ SRAM（静态存储器）

注意:SRAM 含有临时数据区和工作区。当电源关闭时，则以内部二次锂电池作为后备电源。因此，保存的数据不会丢失。

■实时时钟

时钟功能以实时时钟 IC(IC106) 为基础。当电源关闭时，则以内部二次锂电池作为后备电源。

6-3. LCD

LCD 通过控制单元 (X53-426) 的通用连接器 (CN1) 上的总线线路进行控制。它使用 IC1 校正 LCD 电压差异。

6-4. 按键检测电路

按键用 IC108 中的按键扫描电路进行检测。按任意按键时，通常降低的 /KEYI 信号会升高。

6-5. 低电池电量警告

电池电压用 R444 和 R445 进行分割，由 ASIC(IC108) 进行检测。当电池电压下降到由低电池电量警告调整设定的电压以下时，红色 LED 闪烁，通知操作者应当更换电池了。如果电池电压进一步下降（约 5.8V)，则会响起提示音，发射将停止。

低电池电量警告	电池状态
发射期间红色 LED 闪烁。	电池电压低，但手持对讲机仍能使用。
按下 PTT 开关时，红色 LED 闪烁并响起警告音。	电池电压低，不能使用手持对讲机进行呼叫。

CIRCUIT DESCRIPTION / 电路说明

6-6. DSP

The DSP circuit consists of a DSP (IC102) and processes the base band signal. The DSP operates on an external clock of 18.432MHz (the same as the IC108), the I/O section operates at 3.3V and the core section operates at 1.5V. The DSP carries out the following processes:

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

7. Power Supply Circuit

The battery voltage (+B) is provided from the battery terminal on the TX/RX unit (X57). The battery voltage passes through the 2.5A fuse (F400), and goes to the RF final amplifier, AVR ICs (IC400, IC403), and Control unit (X53-426).

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

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

The SBC signal becomes High after the ASIC operates, IC708 (5A), Q403 on the Control unit (SB2) and Q403 on the TX-RX unit (SB3) are turned on. IC402 and IC403 operate by turning on these AVR ICs and FET switches.

The 5UC signal becomes High when an option is installed on the universal connector. Then IC411 (50U) operates.

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

When the VOL SW is turned off, the /PSW signal becomes Low. After detecting the /PSW signal, the ASIC changes the SBC signal to Low. Then the power supplies except IC416 (31BU) stop.

6–6. DSP

DSP 电路由 DSP（IC102）组成，可处理基带信号。DSP 在 18.432MHz 的外部时钟上运行（与 IC108 相同），I/O 部分以 3.3V 运行，核心部分以 1.5V 运行。DSP 执行以下处理：

- 4 级 FSK 处理
- 模拟 FM 预加重 / 去加重
- 音频编解码器和调制 / 解调之间的声码器处理
- CAI 处理，例如纠错编码
- QT/DQT 编码 / 解码
- LTR 编码 / 解码
- DTMF 编码 / 解码
- MSK 编码 / 解码
- 2 音编码 / 解码
- 压缩器 / 扩展器处理
- 语音扰频器处理
- 发射 / 接收音频滤波处理
- 麦克风放大器 AGC 处理
- 音频静音处理
- 调制电平处理

7. 电源电路

电池电压（+B）从 TX/RX 单元（X57）上的电池端子提供。电池电压通过 2.5A 保险丝（F400），进入 RF 末级放大器，AVR IC(IC400，IC403）和控制单元（X53-426）。

在控制单元中，+B 被连接到 DC/DC（IC407），AVR IC(IC411, IC708, IC416）和电压检测器 IC（IC414）。电压检测器观测电池电压。如果电池电压为 5.6V 或更高，则检测器输出高。IC414 的输出高时，IC416 和 Q409 为后备部分提供 3.1V(31BU）。

VOL SW 打开时，SB1 变高（电池电压）。如果 SB1 和检测器的输出都很高，DC/DC(IC407) 将会运行。IC407 输出 3.8V 并激活 IC404(33M)，IC717(15M) 和 IC406(33A)。从而使 ASIC 和 DSP 运行。

SBC 信号在 ASIC 运行后变高，控制单元（SB2）上的 IC708(5A)，Q403 和 TX-RX 单元（SB3）上的 Q403 打开。IC402 和 IC403 通过打开这些 AVR IC 和 FET 开关运行。

通用连接器上装有选购件时，5UC 信号变高。此时 IC411(50U) 运行。

/SAVE 信号变高时，IC400(50C) 运行。IC400 的输出连接到三个 FET 开关（Q401, Q402, Q405）。SBC 信号变高时，IC403(33C) 运行。FET 开关由 ASIC 控制。发射模式中打开 Q405(50T)。接收模式中打开 Q401(50R) 和 Q402(50IF)。

VOL SW 关闭时，/PSW 信号变低。检测 /PSW 信号之后，ASIC 将 SBC 信号改为低。随后除 IC416(31BU) 以外的供电停止。

CIRCUIT DESCRIPTION / 电路说明

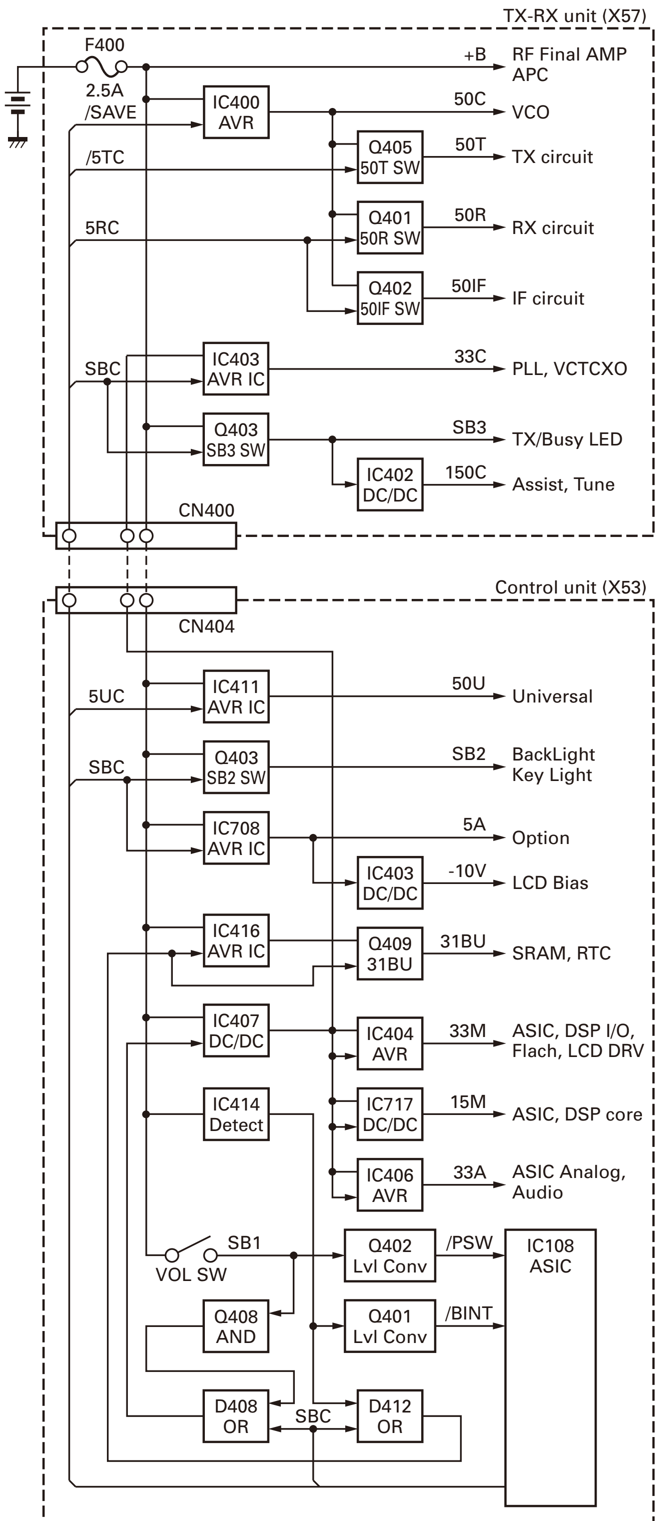


Fig. 8 Power supply circuit / 图 8 电源电路

CIRCUIT DESCRIPTION / 电路说明

8. Signaling Circuit

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

Each signaling data signal of QT, DQT, LTR, DTMF, 2-tone and MSK is generated by the DSP circuit, superposed on a modulation signal and output from IC108. The modulation balance of the QT/DQT/LTR signal is adjusted by the D/A converter(IC703) and the resulting signal is routed to the modulation input of the VCO and VCXO (X1). Each deviation of the TX QT, DQT, LTR, DTMF, 2-tone and MSK tone is adjusted by changing the output level of IC108 and the resulting signal is routed to the VCO and VCXO. The RX DTMF tone is routed to the receive audio signal system, and is output from the speaker.

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

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

9. Compander Circuit

The term “compander” means compressor and expander. The compander reduces noise by utilizing a compressor and an expander. The transceiver contains a DSP (IC102) to perform this operation. The transceiver compander can be turned on or off using the FPU.

8. 信令电路

8-1. 编码（QT/DQT/LTR/DTMF/2 音 /MSK）

QT，DQT，LTR，DTMF，2 音和 MSK 的各信令信号由 DSP 电路产生，叠加到调制信号上并从 IC108 输出。QT/DQT/LTR 信号的调制平衡由 D/A 转换器（IC703）进行调整，产生的信号送入 VCO 和 VCXO(X1) 的调制输入。TX QT，DQT，LTR，DTMF，2 音和 MSK 音各自的频偏通过 IC108 输出电平的变化进行调整，产生的信号被送入 VCO 和 VCXO。RX DTMF 音被送入接收音频信号系统，从扬声器输出。

8-2. 解码（QT/DQT/LTR/DTMF/2 音 /MSK）

音频信号从发送到 DSP 电路的 FM 检测信号中移除，产生的信号被解码。

9. 压扩器电路

“compander”一词表示压缩器和扩展器。

压扩器利用压缩器和扩展器减低噪音。手持对讲机含有 DSP(IC102)，用以执行此操作。可用 FPU 打开或关闭手持对讲机的压扩器。

COMPONENTS DESCRIPTION / 元件说明

Control unit (X53-4260-11)

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

控制单元（X53-4260-11）

有关号码	零件名称	说　　明
IC1	IC	LCD 对比度
IC101	IC	FLASH ROM
IC102	IC	DSP
IC103	IC	SRAM
IC104	IC	2 输入 AND 栅
IC105	IC	复位
IC106	IC	RTC
IC107	IC	缓冲器
IC108	IC	ASIC
IC109	IC	2 输入 AND 栅
IC401, 402	IC	总线开关
IC403	IC	倍压变换器
IC404	IC	稳压器 (33M)
IC406	IC	稳压器 (33A)
IC407	IC	DC/DC 转换器
IC408	IC	AF AMP
IC409	IC	AF 开关
IC411	IC	稳压器 (50U)
IC412, 413	IC	音频 AMP
IC414	IC	复位
IC415	IC	2 输入 AND 栅
IC416	IC	稳压器
IC417, 418	IC	双总线缓冲器
IC701	IC	I/O 控制
IC702	IC	APC LPF
IC703	IC	数模转换器
IC704	IC	RX AF LPF
IC705	IC	调制 LPF
IC706	IC	MIC AMP
IC707	IC	RX AF 开关
IC708	IC	稳压器 (5A)
IC709	IC	侧音静音
IC710	IC	MOD/MIC 加法 AMP
IC711	IC	SQL BPF/SQL DC AMP
IC712	IC	MIC 开关
IC713	IC	1.65V REF/RX 加法 AMP
IC714	IC	OPT 开关
IC715, 716	IC	VOX AMP
IC717	IC	DC/DC 转换器 (15M)
Q1, 2	晶体管	LCD 背光开关
Q3	场效应管	LCD 背光开关
Q4	场效应管	MIC 静音控制
Q5	场效应管	MIC 静音开关
Q101, 102	晶体管	12 键背光开关

COMPONENTS DESCRIPTION / 元件说明

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

有关号码	零件名称	说　　明
Q103	场效应管	12 键背光开关
Q401, 402	场效应管	电平转换器
Q403	晶体管	SB2 开关
Q404	场效应管	SB2 开关控制
Q405	场效应管	AF AMP 开关
Q406, 407	晶体管	稳压器 (AF AMP)
Q408, 409	晶体管	DC 开关
Q410	场效应管	DC 开关
Q411	场效应管	电平转换器
Q412	场效应管	DC 开关控制
Q413~415	晶体管	DC 开关
Q701	晶体管	OPT 开关
Q702	场效应管	音调开关
Q703	场效应管	W/N 噪音开关
Q704	晶体管	SQL 噪音放大器
Q705, 706	晶体管	MIC AGC
Q707	场效应管	麦克风静音
D1, 2	LED	12 键背光
D3, 4	LED	LCD 背光
D5, 6	LED	12 键背光
D7, 8	LED	LCD 背光
D9, 10	LED	12 键背光
D11	二极管	LCD 背光开关
D12~16	二极管	逆向电流防止
D17~21	稳压二极管	电涌吸收
D22, 23	二极管	电涌吸收
D101	二极管	12 键背光开关
D102	二极管	逆向电流防止
D401~404	二极管	12 键控制
D405, 406	二极管	DC/DC 转换器
D407	二极管	过电压防护
D408	二极管	DC/DC 转换器控制
D409, 410	二极管	SP 控制
D411	二极管	RTC BATT 控制
D412	二极管	DC 开关控制
D413	二极管	RTC BATT 控制
D414, 415	二极管	逆向电流防止
D416	二极管	33M 控制
D417	二极管	33M 控制
D701	二极管	5A 开关
D702	二极管	PLD 控制
D703, 704	二极管	检测器
D705	二极管	噪音检测器
D706	二极管	VOX 检测器
D707	二极管	VOX

COMPONENTS DESCRIPTION / 元件说明

TX-RX unit (X57-7360-10)

Ref. No.	Part Name	Description
IC1	IC	Temperature sensor
IC2	IC	AF AMP for VCO tune
IC3	IC	PLL IC
IC4	IC	OP AMP (VCO MOD/APC)
IC5	IC	DC AMP for TCXO MOD
IC100	IC	Auto power control
IC200,201	IC	DC AMP for BPF
IC202	IC	FM IC
IC203	IC	Buffer
IC400	IC	Voltage regulator (50C)
IC401	IC	50T control
IC402	IC	DC/DC converter
IC403	IC	Voltage regulator (33C)
IC404	IC	OP AMP (RSSI/VAGC)
Q1,2	Transistor	Buffer AMP switch
Q3	Transistor	Ripple filter
Q4	Transistor	Buffer AMP
Q6	Transistor	Ripple filter
Q7	FET	T/R switch
Q8,10	FET	VCO oscillation
Q9	FET	T/R switch
Q11	Transistor	Buffer AMP
Q12	FET	Buffer AMP
Q13	FET	Buffer AMP switch
Q100	Transistor	Buffer AMP
Q102	FET	Drive AMP
Q103	FET	Pre-final AMP
Q104,105	Transistor	APC switch
Q106	FET	RF final AMP
Q107,109	FET	APC switch
Q110	Transistor	APC switch
Q201	Transistor	2nd Local tripler
Q202	Transistor	IF AMP
Q203	FET	Mixer
Q204	FET	RF AMP
Q401	FET	50R switch
Q402	FET	50IF switch
Q403	FET	SB3 switch
Q404	FET	DC/DC converter switch
Q405	Transistor	50T switch
Q406	Transistor	TX/RX LED switch
D1	Diode	Ripple filter
D2,3	Diode	fin RF switch
D4	Diode	Bypass diode

TX-RX 单元（X57-7360-10）

有关号码	零件名称	说　　明
IC1	IC	温度传感器
IC2	IC	VCO 调谐用 AF AMP
IC3	IC	PLL IC
IC4	IC	OP AMP (VCO MOD/APC)
IC5	IC	TCXO MOD 的 DC AMP
IC100	IC	自动电源控制
IC200, 201	IC	BPF 的 DC AMP
IC202	IC	FM IC
IC203	IC	缓冲器
IC400	IC	稳压器（50C）
IC401	IC	50T 控制
IC402	IC	DC/DC 转换器
IC403	IC	稳压器（33C）
IC404	IC	OP AMP(RSSI/VAGC)
Q1, 2	晶体管	缓冲 AMP 开关
Q3	晶体管	纹波滤波器
Q4	晶体管	缓冲 AMP
Q6	晶体管	纹波滤波器
Q7	场效应管	T/R 开关
Q8, 10	场效应管	VCO 振荡
Q9	场效应管	T/R 开关
Q11	晶体管	缓冲 AMP
Q12	场效应管	缓冲 AMP
Q13	场效应管	缓冲 AMP 开关
Q100	晶体管	缓冲 AMP
Q102	场效应管	驱动 AMP
Q103	场效应管	前级 - 末级 AMP
Q104, 105	晶体管	APC 开关
Q106	场效应管	RF 末级 AMP
Q107, 109	场效应管	APC 开关
Q110	晶体管	APC 开关
Q201	晶体管	第二本地三倍频器
Q202	晶体管	IF AMP
Q203	场效应管	混频器
Q204	场效应管	RF AMP
Q401	场效应管	50R 开关
Q402	场效应管	50IF 开关
Q403	场效应管	SB3 开关
Q404	场效应管	DC/DC 转换器开关
Q405	晶体管	50T 开关
Q406	晶体管	TX/RX LED 开关
D1	二极管	纹波滤波器
D2, 3	二极管	fin RF 开关
D4	二极管	旁路二极管

COMPONENTS DESCRIPTION / 元件说明

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

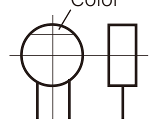
有关号码	零件名称	说　　明
D5, 6	二极管	fin RF 开关
D7	二极管	纹波滤波器
D8, 9 D12~17	可变电容二极管	频率控制
D18	可变电容二极管	TX 调制
D100	二极管	本地开关
D103	稳压二极管	APC 开关
D104, 105	二极管	天线开关
D106	稳压二极管	APC 保护
D201	二极管	本地开关
D204, 205, D207, 208	可变电容二极管	变容二极管调谐
D209	二极管	天线开关
D211	二极管	天线开关
D213	二极管	逆向保护
D400	二极管	逆向保护
D401	二极管	50T 控制
D402	LED	TX/RX LED
D403	二极管	逆向保护

PARTS LIST / 零件表

CAPACITORS

CC 45 TH 1H 220 J
1 2 3 4 5 6

1 = Type ... ceramic, electrolytic, etc.
2 = Shape ... round, square, etc.
3 = Temp. coefficient
4 = Voltage rating
5 = Value
6 = Tolerance



• Capacitor value

010 = 1pF
100 = 10pF
101 = 100pF
102 = 1000pF = 0.001µF
103 = 0.01µF

2 2 0 = 22pF
Multiplier
2nd number
1st number

• Temperature coefficient

1st Word	C	L	P	R	S	T	U
Color*	Black	Red	Orange	Yellow	Green	Blue	Violet
ppm/°C	0	–80	–150	–220	–330	–470	–750

2nd Word	G	H	J	K	L
ppm/°C	±30	±60	±120	±250	±500

Example : CC45TH = –470±60ppm/°C

• Tolerance (More than 10pF)

Code	C	D	G	J	K	M	X	Z	P	No code
(%)	±0.25	±0.5	±2	±5	±10	±20	+40 –20	+80 –20	+100 –0	More than 10µF : –10~+50 Less than 4.7µF : –10~+75

(Less than 10pF)

Code	B	C	D	F	G
(pF)	±0.1	±0.25	±0.5	±1	±2

• Voltage rating

2nd word / 1st word	A	B	C	D	E	F	G	H	J	K	V
0	1.0	1.25	1.6	2.0	2.5	3.15	4.0	5.0	6.3	8.0	–
1	10	12.5	16	20	25	31.5	40	50	63	80	35
2	100	125	160	200	250	315	400	500	630	800	–
3	1000	1250	1600	2000	2500	2150	4000	5000	6300	8000	–

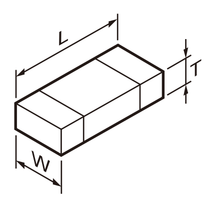
• Chip capacitors

(EX) CC 73 F SL 1H 000 J
1 2 3 4 5 6 7
(Chip) (CH, RH, UJ, SL)

(EX) CK 73 F F 1H 000 Z
1 2 3 4 5 6 7
(Chip) (B, F)

Refer to the table above.
1 = Type
2 = Shape
3 = Dimension
4 = Temp. coefficient
5 = Voltage rating
6 = Value
7 = Tolerance

• Dimension



Chip capacitor

Code	L	W	T
Empty	5.6±0.5	5.0±0.5	Less than 2.0
A	4.5±0.5	3.2±0.4	Less than 2.0
B	4.5±0.5	2.0±0.3	Less than 2.0
C	4.5±0.5	1.25±0.2	Less than 1.25
D	3.2±0.4	2.5±0.3	Less than 1.5
E	3.2±0.2	1.6±0.2	Less than 1.25
F	2.0±0.3	1.25±0.2	Less than 1.25
G	1.6±0.2	0.8±0.2	Less than 1.0
H	1.0±0.05	0.5±0.05	0.5±0.05

Chip resistor

Code	L	W	T
E	3.2±0.2	1.6±0.2	1.0
F	2.0±0.3	1.25±0.2	1.0
G	1.6±0.2	0.8±0.2	0.5±0.1
H	1.0±0.05	0.5±0.05	0.35±0.05

RESISTORS

• Chip resistor (Carbon)

(EX) RD 73 E B 2B 000 J
1 2 3 4 5 6 7
(Chip) (B, F)

• Carbon resistor (Normal type)

(EX) RD 14 B B 2C 000 J
1 2 3 4 5 6 7

1 = Type
2 = Shape
3 = Dimension
4 = Temp. coefficient
5 = Rating wattage
6 = Value
7 = Tolerance

• Rating wattage

Code	Wattage	Code	Wattage	Code	Wattage
1J	1/16W	2C	1/6W	3A	1W
2A	1/10W	2E	1/4W	3D	2W
2B	1/8W	2H	1/2W		

PARTS LIST / 零件表

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

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

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
			NX-200		
2	1A		A02-4003-23	PLASTIC CABINET (18KEYS)	
3	3A		A10-4127-01	CHASSIS	
4	2B		A62-1156-02	PANEL (TOP)	
6	1B,1D		B09-0712-03	CAP ACCESSORY	
7	1A		B11-1853-24	FILTER (LCD)	
8	1A		B11-1854-02	ILLUMINATION GUIDE (LCD)	
9	3B		B11-1855-04	ILLUMINATION GUIDE (TX/BUSY)	
10	1A		B38-0923-05	LCD ASSY	
12	1A		B42-7417-04	STICKER	
13	1B		B43-1606-04	BADGE	
14	2D	✻	B62-2189-10	INSTRUCTION MANUAL	
17	2B		D32-0446-14	STOPPER (16CH)	
19	2A		E29-1220-04	RELAY HARDWARE (VCO-PCB)	
20	3A		E29-1221-14	RELAY HARDWARE (VCO-CHASSIS)	
21	3B		E58-0532-05	RECTANGULAR RECEPTACLE (SP/MIC)	
22	3B		E72-0425-03	TERMINAL BLOCK	
24	3A		F07-1931-04	COVER (OP BOARD)	
27	2A		G02-1836-13	EARTH SPRING (SP)	
28	1A		G10-1373-04	FIBROUS SHEET (SP)	
29	2B		G10-1384-14	FIBROUS SHEET (PANEL)	
30	2A		G11-4272-14	RUBBER CUSHION (SP)	
31	3A		G11-4331-04	SHEET (AIR)	
33	2A		G11-4428-04	SHEET (PTT)	
34	3A		G11-4429-04	RUBBER SHEET (FET)	
35	3A		G11-4440-04	SHEET (AIR)	
36	2A		G11-4458-14	SHEET (SP)	
37	2A		G11-4459-04	SHEET (TX-RX PCB)	
38	2A		G11-4476-04	SHEET (MIC ELEMENT)	
39	1A		G11-4497-04	SHEET (LCD)	
40	2A		G13-2129-14	CUSHION (TX-RX PCB)	
41	2A,3B		G13-2220-04	CUSHION (ANT/OP BOARD)	
42	2A		G13-2249-04	CUSHION (TX-RX PCB)	
43	2A		G13-2258-04	CUSHION (50PIN FPC)	
45	2A		G13-2265-04	CUSHION (BATT-)	
46	2B		G53-1762-02	PACKING (TOP)	
47	3B		G53-1763-03	PACKING (TERMINAL BLOCK)	
48	3A		G53-1764-03	PACKING (OP BOARD)	
51	1A		G53-1766-11	PACKING (18KEY)	
52	2B		G53-1768-04	PACKING (VOL,CH O-RING)	
53	1B,1D		G53-1769-04	PACKING (CAP)	
54	2B		G53-1792-04	PACKING (SMA O-RING)	
56	2A		J19-5505-11	HOLDER (FG-SP)	
57	2B		J19-5506-03	HOLDER (VOL,CH)	
58	2A		J19-5507-02	HOLDER (OP BOARD)	
59	2B		J21-8579-04	MOUNTING HARDWARE (FG-SP HOLDER)	
60	1C		J29-0730-05	BELT CLIP ACCESSORY	
62	2B		J30-1296-04	SPACER (VOL)	
64	3B	✻	J87-0007-15	FPC (LEAD FREE/UNIVERSAL)	
63	2B	✻	J87-0028-05	FPC (LEAD FREE/VOL,CH)	
66	2B		J99-0390-04	ADHESIVE SHEET (6KEY FPC)	
67	3A		J99-0711-04	ADHESIVE SHEET (PTT FPC)	
68	2B		J99-0712-14	ADHESIVE SHEET (6KEY FPC)	
69	1A,2A		J99-0714-04	ADHESIVE SHEET (LCD)	
70	3B		J99-0715-08	ADHESIVE SHEET (UNIVERSAL)	
72	3B		J99-0725-04	ADHESIVE SHEET (TERMINAL BLOCK)	
73	3B		J99-0727-04	ADHESIVE SHEET (TOP)	
74	3B		J99-0728-04	ADHESIVE SHEET (EMG)	
75	3A		J99-0732-04	ADHESIVE SHEET (OP BOARD COVER)	
77	3A		K25-2001-03	PUSH KNOB (PTT)	
78	1A		K29-9405-03	KNOB (PTT)	
79	1A		K29-9406-03	BUTTON KNOB (SIDE KEY)	
80	1B		K29-9407-03	KNOB (VOL)	
81	1B		K29-9408-13	KNOB (CH)	
A	1B,1D		N08-0564-04	DRESSED SCREW ACCESSORY	
B	3B		N09-2426-14	HEXAGON HEAD SCREW (BATT-)	
C	3A		N09-2440-15	SPECIAL SCREW (BATT-)	
D	2A,2B		N09-6549-04	STEPPED SCREW (FG-SP HOLDER)	
E	2B,3A		N09-6554-05	PAN HEAD SCREW (ANT/OP BOARD)	
F	2B		N14-0844-04	CIRCULAR NUT (VOL,CH)	
G	1C		N30-3008-60	PAN HEAD MACHINE SCREW (BELT CLIP)	
H	1A,2A,2B		N83-2005-48	PAN HEAD TAPTITE SCREW (PCB)	
83	1A		S79-0472-05	KEYBOARD ASSY (12KEY)	
85	2A		T07-0755-15	SPEAKER	
86	2A		T91-0575-05	MIC ELEMENT	
88	2A		W09-0971-05	LITHIUM CELL	
90	3A		X41-3710-10	SWITCH UNIT (PTT FPC)	
91	2B		X41-3720-10	SWITCH UNIT (6KEY FPC)	
92	2A		X42-3340-10	CORD ASSY (50PIN FPC)	
93	2B		X60-3860-10	TERMINAL ASSY (SMA)	
			CONTROL UNIT (X53-4260-11)		
D1-10			B30-2215-05	LED	
C1			CK73HB1A104K	CHIP C 0.10UF K	
C2-6			CK73GB1E105K	CHIP C 1.0UF K	
C7,8			CK73HB1A104K	CHIP C 0.10UF K	
C10			CK73HB1A104K	CHIP C 0.10UF K	
C11			CK73HB0J105K	CHIP C 1.0UF K	
C12-15			CK73HB1H471K	CHIP C 470PF K	
C16,17			CC73HCH1H101J	CHIP C 100PF J	
C23			CK73HB1H102K	CHIP C 1000PF K	
C24			CC73HCH1H470J	CHIP C 47PF J	
C25-27			CK73HB1H102K	CHIP C 1000PF K	
C28-34			CC73HCH1H101J	CHIP C 100PF J	
C35			CK73HB1H102K	CHIP C 1000PF K	
C36			CK73HB1E682K	CHIP C 6800PF K	
C37			CK73HB1H102K	CHIP C 1000PF K	
C38			CC73HCH1H101J	CHIP C 100PF J	
C40			CC73HCH1H221J	CHIP C 220PF J	
C41			CC73HCH1H101J	CHIP C 100PF J	
C101-104			CK73HB1A104K	CHIP C 0.10UF K	

PARTS LIST / 零件表

CONTROL UNIT (X53-4260-11)

Ref. No.	Address	New parts	Parts No.	Description			Desti- nation
C105			CK73HB0J105K	CHIP C	1.0UF	K	
C106			CK73HB1E103K	CHIP C	0.010UF	K	
C107,108			CK73HB1A104K	CHIP C	0.10UF	K	
C109,110			CK73HB1H102K	CHIP C	1000PF	K	
C111-113			CK73HB1A104K	CHIP C	0.10UF	K	
C114			CK73HB0J105K	CHIP C	1.0UF	K	
C115			CK73HB1H471K	CHIP C	470PF	K	
C116,117			CK73HB1A104K	CHIP C	0.10UF	K	
C118,119			CK73HB0J105K	CHIP C	1.0UF	K	
C120,121			CK73HB1A104K	CHIP C	0.10UF	K	
C122-124			CK73HB1E103K	CHIP C	0.010UF	K	
C130			CK73HB1E103K	CHIP C	0.010UF	K	
C131			CK73HB1A104K	CHIP C	0.10UF	K	
C133			CS77CP0J100M	CHIP TNTL	10UF	6.3WV	
C134			CK73HB1E103K	CHIP C	0.010UF	K	
C135			CK73HB1H102K	CHIP C	1000PF	K	
C136			CK73HB1E103K	CHIP C	0.010UF	K	
C137			CK73GB1E105K	CHIP C	1.0UF	K	
C138-140			CK73HB1A104K	CHIP C	0.10UF	K	
C141			CC73HCH1H101J	CHIP C	100PF	J	
C142			CS77CP0J100M	CHIP TNTL	10UF	6.3WV	
C143			CK73HB1E103K	CHIP C	0.010UF	K	
C144			CK73GB1E105K	CHIP C	1.0UF	K	
C145-148			CK73HB1A104K	CHIP C	0.10UF	K	
C149			CK73HB1E103K	CHIP C	0.010UF	K	
C150			CK73GB1E105K	CHIP C	1.0UF	K	
C151-155			CK73HB1A104K	CHIP C	0.10UF	K	
C156,157			CK73HB1H102K	CHIP C	1000PF	K	
C158			CK73HB1E103K	CHIP C	0.010UF	K	
C159			CK73HB1A104K	CHIP C	0.10UF	K	
C160,161			CK73HB1E682K	CHIP C	6800PF	K	
C401,402			CK73HB1A104K	CHIP C	0.10UF	K	
C403-405			CS77AP1C2R2M	CHIP TNTL	2.2UF	16WV	
C406			CK73HB0J105K	CHIP C	1.0UF	K	
C407,408			CK73HB1H102K	CHIP C	1000PF	K	
C409			CK73HB0J105K	CHIP C	1.0UF	K	
C411,412			CK73HB0J105K	CHIP C	1.0UF	K	
C414			CK73HB0J105K	CHIP C	1.0UF	K	
C415			CS77AP1A100M	CHIP TNTL	10UF	10WV	
C416			CK73FB1A106K	CHIP C	10UF	K	
C417			CC73HCH1H221J	CHIP C	220PF	J	
C418			CK73HB1E103K	CHIP C	0.010UF	K	
C419			CK73FB1E475K	CHIP C	4.7UF	K	
C420			CK73HB1E103K	CHIP C	0.010UF	K	
C421			CK73HB1E682K	CHIP C	6800PF	K	
C422			CC73HCH1H100C	CHIP C	10PF	C	
C424,425			CK73HB1A104K	CHIP C	0.10UF	K	
C427			CK73HB1E103K	CHIP C	0.010UF	K	
C428			CC73HCH1H030C	CHIP C	3.0PF	C	
C429,430			CK73HB1A104K	CHIP C	0.10UF	K	
C431			CK73FB1A106K	CHIP C	10UF	K	
C433			CK73FB1A106K	CHIP C	10UF	K	
C435-438			CK73HB1A563K	CHIP C	0.056UF	K	
C439,440			CK73HB1A104K	CHIP C	0.10UF	K	
C441			CK73GB1E105K	CHIP C	1.0UF	K	
C442			CK73HB1H471K	CHIP C	470PF	K	
C443			CK73HB1E103K	CHIP C	0.010UF	K	
C445			CK73HB1H102K	CHIP C	1000PF	K	
C446			CK73GB1E105K	CHIP C	1.0UF	K	
C447			CK73HB1H102K	CHIP C	1000PF	K	
C448-450			CK73HB0J105K	CHIP C	1.0UF	K	
C452,453			CK73HB1E103K	CHIP C	0.010UF	K	
C454			CK73GB1E105K	CHIP C	1.0UF	K	
C455-457			CK73HB1H471K	CHIP C	470PF	K	
C459			CK73HB1H471K	CHIP C	470PF	K	
C460			CK73HB1E682K	CHIP C	6800PF	K	
C461-463			CK73HB1H471K	CHIP C	470PF	K	
C464			CK73HB1E103K	CHIP C	0.010UF	K	
C465			CK73HB1H102K	CHIP C	1000PF	K	
C466			CK73HB1E682K	CHIP C	6800PF	K	
C467,468			CK73HB1A104K	CHIP C	0.10UF	K	
C469,470			CK73HB1H102K	CHIP C	1000PF	K	
C480			CK73HB1E103K	CHIP C	0.010UF	K	
C701			CK73HB1A104K	CHIP C	0.10UF	K	
C703			CK73GB0J475K	CHIP C	4.7UF	K	
C704,705			CK73HB1A104K	CHIP C	0.10UF	K	
C706			CC73HCH1H680J	CHIP C	68PF	J	
C707			CC73HCH1H270J	CHIP C	27PF	J	
C708			CK73HB1A104K	CHIP C	0.10UF	K	
C709			CK73HB0J105K	CHIP C	1.0UF	K	
C710			CK73HB1E103K	CHIP C	0.010UF	K	
C711			CK73HB1A104K	CHIP C	0.10UF	K	
C712			CK73HB1E103K	CHIP C	0.010UF	K	
C713			CK73HB1H332K	CHIP C	3300PF	K	
C714			CK73HB1H122K	CHIP C	1200PF	K	
C715			CK73HB1A104K	CHIP C	0.10UF	K	
C716			CK73HB1H681K	CHIP C	680PF	K	
C717			CK73HB1E103K	CHIP C	0.010UF	K	
C718			CK73HB1H152K	CHIP C	1500PF	K	
C719			CK73HB1A104K	CHIP C	0.10UF	K	
C720			CK73HB1E103K	CHIP C	0.010UF	K	
C721			CK73HB1A104K	CHIP C	0.10UF	K	
C722			CK73HB1E103K	CHIP C	0.010UF	K	
C723			CK73HB1A104K	CHIP C	0.10UF	K	
C724			CK73HB1E103K	CHIP C	0.010UF	K	
C725			CC73HCH1E181J	CHIP C	180PF	J	
C726,727			CK73HB1A104K	CHIP C	0.10UF	K	
C728			CK73HB1H331K	CHIP C	330PF	K	
C730			CK73HB1H331K	CHIP C	330PF	K	
C731,732			CK73HB1E103K	CHIP C	0.010UF	K	
C734			CK73HB1H102K	CHIP C	1000PF	K	
C735			CK73HB1H122K	CHIP C	1200PF	K	
C736,737			CK73HB1A104K	CHIP C	0.10UF	K	
C738			CK73HB1H102K	CHIP C	1000PF	K	
C739			CK73HB1E682K	CHIP C	6800PF	K	
C740			CK73HB1H102K	CHIP C	1000PF	K	
C742			CK73GB1E105K	CHIP C	1.0UF	K	
C743			CK73HB0J105K	CHIP C	1.0UF	K	
C744-746			CK73HB1E103K	CHIP C	0.010UF	K	
C747,748			CK73HB1A104K	CHIP C	0.10UF	K	
C749,750			CC73HCH1H470J	CHIP C	47PF	J	
C751			CK73GB1E105K	CHIP C	1.0UF	K	
C752,753			CC73HCH1H101J	CHIP C	100PF	J	
C755			CC73HCH1H470J	CHIP C	47PF	J	
C756			CK73HB1A104K	CHIP C	0.10UF	K	
C757,758			CK73GB0J475K	CHIP C	4.7UF	K	
C759,760			CK73HB1E103K	CHIP C	0.010UF	K	
C761			CC73HCH1H100D	CHIP C	10PF	D	
C762			CK73HB1A104K	CHIP C	0.10UF	K	
C763			CK73HB1E103K	CHIP C	0.010UF	K	

PARTS LIST / 零件表

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Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C764			CK73HB1H102K	CHIP C 1000PF K	
C765-767			CK73HB1A104K	CHIP C 0.10UF K	
C768			CK73HB1H102K	CHIP C 1000PF K	
C771			CK73HB1A224K	CHIP C 0.22UF K	
C772			CK73HB1E103K	CHIP C 0.010UF K	
C775			CC73HCH1H470J	CHIP C 47PF J	
C777			CK73HB1H102K	CHIP C 1000PF K	
C778			CK73HB0J105K	CHIP C 1.0UF K	
C779			CK73HB1E103K	CHIP C 0.010UF K	
C780			CK73HB1A224K	CHIP C 0.22UF K	
C781,782			CK73HB0J105K	CHIP C 1.0UF K	
C785			CK73HB1A224K	CHIP C 0.22UF K	
C786			CK73HB1E103K	CHIP C 0.010UF K	
C787			CK73HB0J105K	CHIP C 1.0UF K	
C788			CC73HCH1H150J	CHIP C 15PF J	
C789			CC73HCH1H680J	CHIP C 68PF J	
C790			CK73HB1A104K	CHIP C 0.10UF K	
C791			CK73HB1A393K	CHIP C 0.039UF K	
C792			CK73HB0J105K	CHIP C 1.0UF K	
C793,794			CK73HB1A104K	CHIP C 0.10UF K	
C795			CK73HB1E103K	CHIP C 0.010UF K	
C796			CK73HB1A104K	CHIP C 0.10UF K	
C797			CK73HB0J105K	CHIP C 1.0UF K	
C798			CS77AP1A100M	CHIP TNTL 10UF 10WV	
C799			CK73HB1A104K	CHIP C 0.10UF K	
C800			CK73HB1H152K	CHIP C 1500PF K	
C801			CK73HB1C223K	CHIP C 0.022UF K	
C802			CK73HB1E103K	CHIP C 0.010UF K	
C803			CK73HB1H102K	CHIP C 1000PF K	
C804			CC73HCH1H470J	CHIP C 47PF J	
C805,806			CK73HB1H471K	CHIP C 470PF K	
C808			CK73GB0J475K	CHIP C 4.7UF K	
C809			CK73FB1A106K	CHIP C 10UF K	
C812			CK73HB0J105K	CHIP C 1.0UF K	
CN1			E40-6755-05	FLAT CABLE CONNECTOR	
CN22			E23-1325-05	TERMINAL	
CN23			E40-6758-05	PIN ASSY	
CN24			E23-1325-05	TERMINAL	
CN403			E40-6813-05	PIN ASSY	
CN404			E40-6421-15	PIN ASSY	
CN405			E40-6754-05	FLAT CABLE CONNECTOR	
CN701			E40-6586-05	SOCKET FOR PIN ASSY	
CN710			E40-6757-05	PIN ASSY	
F701			F53-0360-05	FUSE (0.25A)	
CN401			J19-5386-05	HOLDER	
L1,2			L92-0408-05	CHIP FERRITE	
L3			L92-0140-05	CHIP FERRITE	
L4-7			L92-0408-05	CHIP FERRITE	
L8			L92-0140-05	CHIP FERRITE	
L101,102			L92-0408-05	CHIP FERRITE	
L401			L33-1496-05	SMALL FIXED INDUCTOR (22UH)	
L402			L92-0467-05	CHIP FERRITE	
L403			L92-0466-05	CHIP FERRITE	
L409-411			L92-0467-05	CHIP FERRITE	
L701			L92-0140-05	CHIP FERRITE	
L702			L92-0162-05	BEADS CORE	
L704-709			L92-0162-05	BEADS CORE	
L710-712			L92-0444-05	CHIP FERRITE	
L713			L92-0163-05	BEADS CORE	
L714-717			L92-0444-05	CHIP FERRITE	
L718			L92-0408-05	CHIP FERRITE	
L719			L33-1494-05	SMALL FIXED INDUCTOR (4.7UH)	
X101			L77-1802-05	CRYSTAL RESONATOR (32768HZ)	
X102			L77-3015-05	TCXO (18.432MHZ)	
R1			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R2			RK73HB1J104J	CHIP R 100K J 1/16W	
R3			RK73HB1J123J	CHIP R 12K J 1/16W	
R4-10			RK73HB1J103J	CHIP R 10K J 1/16W	
R11			RK73HB1J104J	CHIP R 100K J 1/16W	
R12			RK73HB1J103J	CHIP R 10K J 1/16W	
R14			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R15			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R16			RK73HB1J331J	CHIP R 330 J 1/16W	
R17			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R18			RK73HB1J822J	CHIP R 8.2K J 1/16W	
R19			RK73HB1J471J	CHIP R 470 J 1/16W	
R20			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R21			RK73HB1J122J	CHIP R 1.2K J 1/16W	
R22-24			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R25			RK73HB1J122J	CHIP R 1.2K J 1/16W	
R26			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R27			RK73HB1J104J	CHIP R 100K J 1/16W	
R28,29			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R30			RK73HB1J101J	CHIP R 100 J 1/16W	
R31			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R32-35			RK73HB1J101J	CHIP R 100 J 1/16W	
R40			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R101,102			RK73HB1J474J	CHIP R 470K J 1/16W	
R103			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R105			RK73HB1J104J	CHIP R 100K J 1/16W	
R106			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R107			RK73HB1J104J	CHIP R 100K J 1/16W	
R108			RK73HB1J474J	CHIP R 470K J 1/16W	
R110,111			RK73HB1J104J	CHIP R 100K J 1/16W	
R112			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R113			RK73HB1J104J	CHIP R 100K J 1/16W	
R114			RK73HB1J331J	CHIP R 330 J 1/16W	
R115			RK73HB1J104J	CHIP R 100K J 1/16W	
R116			RK73HB1J473J	CHIP R 47K J 1/16W	
R117			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R118			RK73HB1J473J	CHIP R 47K J 1/16W	
R119			RK73HB1J104J	CHIP R 100K J 1/16W	
R120			RK73HB1J474J	CHIP R 470K J 1/16W	
R121-123			RK73HB1J104J	CHIP R 100K J 1/16W	
R126			RK73HB1J101J	CHIP R 100 J 1/16W	
R127,128			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R129-131			RK73HB1J101J	CHIP R 100 J 1/16W	
R132,133			RK73HB1J104J	CHIP R 100K J 1/16W	
R135-137			RK73HB1J104J	CHIP R 100K J 1/16W	
R138			RK73HB1J473J	CHIP R 47K J 1/16W	
R139			RK73HB1J104J	CHIP R 100K J 1/16W	
R140			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R141-143			RK73HB1J104J	CHIP R 100K J 1/16W	
R144			RK73HB1J471J	CHIP R 470 J 1/16W	
R145-147			RK73HB1J104J	CHIP R 100K J 1/16W	
R148			RK73HB1J151J	CHIP R 150 J 1/16W	
R149			RK73HB1J000J	CHIP R 0.0 J 1/16W	

PARTS LIST / 零件表

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Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R150			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R153,154			RK73HB1J104J	CHIP R 100K J 1/16W	
R155			RK73HB1J473J	CHIP R 47K J 1/16W	
R156,157			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R158,159			RK73HB1J220J	CHIP R 22 J 1/16W	
R160,161			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R162			RK73HB1J474J	CHIP R 470K J 1/16W	
R163			RK73HH1J104D	CHIP R 100K D 1/16W	
R165			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R166			RK73HB1J104J	CHIP R 100K J 1/16W	
R167			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R168			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R170			RK73HH1J103D	CHIP R 10K D 1/16W	
R171-173			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R174-178			RK73HB1J104J	CHIP R 100K J 1/16W	
R180,181			RK73HB1J104J	CHIP R 100K J 1/16W	
R182			RK73HB1J474J	CHIP R 470K J 1/16W	
R183			RK73HB1J104J	CHIP R 100K J 1/16W	
R184			RK73HB1J473J	CHIP R 47K J 1/16W	
R185			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R186			RK73HB1J473J	CHIP R 47K J 1/16W	
R187			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R188			RK73HB1J473J	CHIP R 47K J 1/16W	
R189			RK73HB1J104J	CHIP R 100K J 1/16W	
R190			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R191			RK73HB1J474J	CHIP R 470K J 1/16W	
R192			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R193,194			RK73HB1J104J	CHIP R 100K J 1/16W	
R401			RK73HB1J152J	CHIP R 1.5K J 1/16W	
R402			RK73HB1J151J	CHIP R 150 J 1/16W	
R403			RK73HB1J152J	CHIP R 1.5K J 1/16W	
R404			RK73HB1J151J	CHIP R 150 J 1/16W	
R405			RK73HB1J152J	CHIP R 1.5K J 1/16W	
R406			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R407,408			RK73HB1J103J	CHIP R 10K J 1/16W	
R409			RK73HB1J470J	CHIP R 47 J 1/16W	
R410-416			RK73HB1J471J	CHIP R 470 J 1/16W	
R417			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R418			RK73HB1J471J	CHIP R 470 J 1/16W	
R419,420			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R424			RK73HH1J683D	CHIP R 68K D 1/16W	
R425			RK73HH1J333D	CHIP R 33K D 1/16W	
R426-429			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R431			RK73HB1J474J	CHIP R 470K J 1/16W	
R432,433			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R434			RK73HB1J393J	CHIP R 39K J 1/16W	
R435,436			RK73HB1J104J	CHIP R 100K J 1/16W	
R437			RK73HB1J471J	CHIP R 470 J 1/16W	
R438,439			RK73HB1J104J	CHIP R 100K J 1/16W	
R440			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R441			RK73HB1J153J	CHIP R 15K J 1/16W	
R442			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R443			RK73HB1J474J	CHIP R 470K J 1/16W	
R444			RK73HB1J564J	CHIP R 560K J 1/16W	
R445			RK73HB1J154J	CHIP R 150K J 1/16W	
R446			RK73HB1J274J	CHIP R 270K J 1/16W	
R447			RK73HB1J104J	CHIP R 100K J 1/16W	
R448			RK73HB1J103J	CHIP R 10K J 1/16W	
R449-452			RK73HB1J474J	CHIP R 470K J 1/16W	
R453			RK73HB1J104J	CHIP R 100K J 1/16W	
R454			RK73HB1J474J	CHIP R 470K J 1/16W	
R455			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R456			RK73HB1J474J	CHIP R 470K J 1/16W	
R457,458			RK73HB1J104J	CHIP R 100K J 1/16W	
R459,460			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R461			RK73HB1J103J	CHIP R 10K J 1/16W	
R462			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R463			RK73HB1J104J	CHIP R 100K J 1/16W	
R464			RK73HB1J474J	CHIP R 470K J 1/16W	
R465,466			RK73HB1J103J	CHIP R 10K J 1/16W	
R467			RK73HB1J104J	CHIP R 100K J 1/16W	
R468			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R469			RK73HB1J474J	CHIP R 470K J 1/16W	
R470			RK73HB1J183J	CHIP R 18K J 1/16W	
R471			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R472			RK73HB1J223J	CHIP R 22K J 1/16W	
R473			RK73HB1J332J	CHIP R 3.3K J 1/16W	
R474,475			RK73HB1J333J	CHIP R 33K J 1/16W	
R477,478			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R479			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R481			RK73HB1J474J	CHIP R 470K J 1/16W	
R483			RK73HB1J473J	CHIP R 47K J 1/16W	
R484			RK73HB1J223J	CHIP R 22K J 1/16W	
R485			RK73HB1J103J	CHIP R 10K J 1/16W	
R487-490			RK73HH1J223D	CHIP R 22K D 1/16W	
R491			RK73HB1J104J	CHIP R 100K J 1/16W	
R492			RK73HB1J474J	CHIP R 470K J 1/16W	
R493			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R494-497			RK73HH1J104D	CHIP R 100K D 1/16W	
R500			RK73HB1J473J	CHIP R 47K J 1/16W	
R501			RK73HB1J222J	CHIP R 2.2K J 1/16W	
R502,503			RK73HB1J103J	CHIP R 10K J 1/16W	
R504			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R506			RK73HB1J222J	CHIP R 2.2K J 1/16W	
R507-511			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R512			RK73HB1J101J	CHIP R 100 J 1/16W	
R513-515			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R516			RK73HB1J101J	CHIP R 100 J 1/16W	
R517			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R518			RK73HB1J101J	CHIP R 100 J 1/16W	
R519-528			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R529-531			RK73HB1J101J	CHIP R 100 J 1/16W	
R532			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R533-535			RK73HB1J101J	CHIP R 100 J 1/16W	
R536-540			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R541			RK73HB1J101J	CHIP R 100 J 1/16W	
R543			RK73HB1J101J	CHIP R 100 J 1/16W	
R544			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R545			RK73HB1J101J	CHIP R 100 J 1/16W	
R546,547			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R548,549			RK73HB1J473J	CHIP R 47K J 1/16W	
R550			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R701-707			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R709-715			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R716			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R717-722			RK73HB1J104J	CHIP R 100K J 1/16W	
R723			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R724			RK73HB1J104J	CHIP R 100K J 1/16W	
R725			RK73HB1J100J	CHIP R 10 J 1/16W	
R726			RK73HB1J104J	CHIP R 100K J 1/16W	

PARTS LIST / 零件表

CONTROL UNIT (X53-4260-11)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R727-729			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R730			RK73HB1J471J	CHIP R 470 J 1/16W	
R731,732			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R733			RK73HB1J473J	CHIP R 47K J 1/16W	
R735			RK73HB1J473J	CHIP R 47K J 1/16W	
R736			RK73HB1J823J	CHIP R 82K J 1/16W	
R737			RK73HB1J153J	CHIP R 15K J 1/16W	
R738			RK73HB1J563J	CHIP R 56K J 1/16W	
R739			RK73HB1J823J	CHIP R 82K J 1/16W	
R740			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R741			RK73HB1J474J	CHIP R 470K J 1/16W	
R742,743			RK73HB1J103J	CHIP R 10K J 1/16W	
R744			RK73HB1J223J	CHIP R 22K J 1/16W	
R745			RK73HB1J682J	CHIP R 6.8K J 1/16W	
R746			RK73HB1J563J	CHIP R 56K J 1/16W	
R747			RK73HB1J333J	CHIP R 33K J 1/16W	
R748			RK73HB1J103J	CHIP R 10K J 1/16W	
R749			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R750			RK73HB1J103J	CHIP R 10K J 1/16W	
R752			RK73HB1J101J	CHIP R 100 J 1/16W	
R753			RK73HB1J683J	CHIP R 68K J 1/16W	
R754			RK73HB1J564J	CHIP R 560K J 1/16W	
R755			RK73HB1J104J	CHIP R 100K J 1/16W	
R756			RK73HB1J101J	CHIP R 100 J 1/16W	
R757			RK73HB1J223J	CHIP R 22K J 1/16W	
R758			RK73HB1J103J	CHIP R 10K J 1/16W	
R759			RK73HB1J101J	CHIP R 100 J 1/16W	
R761-764			RK73HB1J223J	CHIP R 22K J 1/16W	
R765			RK73HB1J334J	CHIP R 330K J 1/16W	
R766			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R767			RK73HB1J103J	CHIP R 10K J 1/16W	
R768			RK73HB1J224J	CHIP R 220K J 1/16W	
R769,770			RK73HB1J334J	CHIP R 330K J 1/16W	
R771			RK73HB1J153J	CHIP R 15K J 1/16W	
R775			RK73HB1J183J	CHIP R 18K J 1/16W	
R777			RK73HB1J473J	CHIP R 47K J 1/16W	
R778			RK73HB1J333J	CHIP R 33K J 1/16W	
R779			RK73HB1J473J	CHIP R 47K J 1/16W	
R780			RK73HB1J104J	CHIP R 100K J 1/16W	
R782			RK73HB1J104J	CHIP R 100K J 1/16W	
R783			RK73HB1J183J	CHIP R 18K J 1/16W	
R784			RK73HB1J104J	CHIP R 100K J 1/16W	
R785			RK73HB1J682J	CHIP R 6.8K J 1/16W	
R786			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R787			RK73HB1J124J	CHIP R 120K J 1/16W	
R788			RK73HB1J473J	CHIP R 47K J 1/16W	
R789			RK73HB1J154J	CHIP R 150K J 1/16W	
R790			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R791			RK73HB1J474J	CHIP R 470K J 1/16W	
R793			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R794			RK73HB1J104J	CHIP R 100K J 1/16W	
R795			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R796			RK73HB1J333J	CHIP R 33K J 1/16W	
R797			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R798			RK73HB1J104J	CHIP R 100K J 1/16W	
R799			RK73HB1J334J	CHIP R 330K J 1/16W	
R800			RK73HB1J474J	CHIP R 470K J 1/16W	
R801			RK73HB1J473J	CHIP R 47K J 1/16W	
R802			RK73HB1J474J	CHIP R 470K J 1/16W	
R803			RK73HB1J103J	CHIP R 10K J 1/16W	
R804			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R805,806			RK73HB1J473J	CHIP R 47K J 1/16W	
R807			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R808			RK73HB1J471J	CHIP R 470 J 1/16W	
R809			RK73HB1J334J	CHIP R 330K J 1/16W	
R810			RK73HB1J332J	CHIP R 3.3K J 1/16W	
R811			RK73HB1J823J	CHIP R 82K J 1/16W	
R812			RK73HB1J562J	CHIP R 5.6K J 1/16W	
R813			RK73HB1J273J	CHIP R 27K J 1/16W	
R814			RK73HB1J564J	CHIP R 560K J 1/16W	
R815			RK73HB1J104J	CHIP R 100K J 1/16W	
R816			RK73HB1J683J	CHIP R 68K J 1/16W	
R818			RK73HB1J104J	CHIP R 100K J 1/16W	
R819,820			RK73HB1J103J	CHIP R 10K J 1/16W	
R821			RK73HB1J104J	CHIP R 100K J 1/16W	
R822,823			RK73HB1J103J	CHIP R 10K J 1/16W	
R824			RK73HB1J393J	CHIP R 39K J 1/16W	
R825			RK73HB1J104J	CHIP R 100K J 1/16W	
R826			RK73HB1J334J	CHIP R 330K J 1/16W	
R827			RK73HB1J184J	CHIP R 180K J 1/16W	
R828,829			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R830			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R831			RK73HB1J474J	CHIP R 470K J 1/16W	
R832			RK73HB1J473J	CHIP R 47K J 1/16W	
R833			RK73HB1J684J	CHIP R 680K J 1/16W	
R834			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R835			RK73HB1J153J	CHIP R 15K J 1/16W	
R836			RK73HB1J473J	CHIP R 47K J 1/16W	
R837			RK73HB1J683J	CHIP R 68K J 1/16W	
R838			RK73HB1J564J	CHIP R 560K J 1/16W	
R839			RK73HB1J333J	CHIP R 33K J 1/16W	
R840			RK73HB1J123J	CHIP R 12K J 1/16W	
R841			RK73HB1J564J	CHIP R 560K J 1/16W	
R842			RK73HB1J104J	CHIP R 100K J 1/16W	
R843			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R844			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R845			RK73HB1J104J	CHIP R 100K J 1/16W	
R846			RK73HB1J471J	CHIP R 470 J 1/16W	
R847			RK73HB1J182J	CHIP R 1.8K J 1/16W	
R849,850			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R851,852			RK73HB1J683J	CHIP R 68K J 1/16W	
VR1	2B		R31-0666-05	VARIABLE RESISTOR (VOL)	
S1	2B		S60-0437-05	ROTARY SWITCH (CH)	
D11			MA2S111-F	DIODE	
D12-16			1SS416	DIODE	
D17			EMZ6.8N	ZENER DIODE	
D18,19			HZC6.8-E	ZENER DIODE	
D20,21			NNCD6.8G-A	ZENER DIODE	
D22,23			DA221	DIODE	
D101			MA2S111-F	DIODE	
D102			1SS416	DIODE	
D401-405			1SS388F	DIODE	
D406			HRB0502A	DIODE	
D407			MA2S111-F	DIODE	
D408			1SS301F	DIODE	
D409,410			MA2S111-F	DIODE	
D411			1SS416	DIODE	
D412			1SS301F	DIODE	

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

PARTS LIST / 零件表

CONTROL UNIT (X53-4260-11)
TX-RX UNIT (X57-7360-10)

Ref. No.	Address	New parts	Parts No.	Description	Desti- nation
D413			1SS388F	DIODE	
D414,415			1SS416	DIODE	
D416,417			1SS388F	DIODE	
D701			1SS301F	DIODE	
D702			MA2S111-F	DIODE	
D703-706			RB706F-40	DIODE	
D707			DA221	DIODE	
IC1			NJM2130F3-ZB	BI-POLAR IC	
IC101			**Note1**	ROM IC	
IC102			**Note1**	MICROPROCESSOR IC	
IC103			**Note1**	SRAM IC	
IC104			TC7SH08FU-F	MOS-IC	
IC105			XC6109C29ANN	ANALOGUE IC	
IC106			RV5C386A	MOS-IC	
IC107			SM5023CNDH-G	MOS-IC	
IC108			**Note1**	MOS-IC	
IC109			TC7SH08FU-F	MOS-IC	
IC401			TC74LCX245FK	MOS-IC	
IC402			TC7WZ245FK-F	MOS-IC	
IC403			LM2682MMX	MOS-IC	
IC404			XC6204B332D	MOS-IC	
IC406			XC6204B332M	MOS-IC	
IC407			LT1616ES6-PBF	ANALOGUE IC	
IC408			TC75S51FE (F)	MOS-IC	
IC409			TC7W66FK-F	MOS-IC	
IC411			NJM2880U105ZB	ANALOGUE IC	
IC412,413			TPA6201A1DRBR	ANALOGUE IC	
IC414			XC61CC5602NR	MOS-IC	
IC415			TC7SET08FU-F	MOS-IC	
IC416			S-812C31BPI-G	ANALOGUE IC	
IC417			TC7WH126FK	MOS-IC	
IC418			TC7WT125FUF	MOS-IC	
IC701			**Note1**	MOS-IC	
IC702			TC75W51FK (F)	MOS-IC	
IC703			M62364FP-F	MOS-IC	
IC704			TC75S51FE (F)	MOS-IC	
IC705			TC75W51FK (F)	MOS-IC	
IC706			TC75S51FE (F)	MOS-IC	
IC707			TC7W53FK (F)	MOS-IC	
IC708			XC6209B502PR	MOS-IC	
IC709			TC7W53FK (F)	MOS-IC	
IC710,711			TC75W51FK (F)	MOS-IC	
IC712			TC7S66FUF	MOS-IC	
IC713			TC75W51FK (F)	MOS-IC	
IC714			TC7W53FK (F)	MOS-IC	
IC715			TC75S51FE (F)	MOS-IC	
IC716			TC75W51FK (F)	MOS-IC	
IC717			XC9235A15CM1	MOS-IC	
Q1			2SA1362-F (GR)	TRANSISTOR	
Q2			2SC4617 (S)	TRANSISTOR	
Q3,4			SSM3K15TE (F)	FET	
Q5			2SJ347F	FET	
Q101			2SA1832 (GR)F	TRANSISTOR	
Q102			2SC4617 (S)	TRANSISTOR	
Q103			SSM3K15TE (F)	FET	
Q401,402			SSM6N16FE-F	FET	
Q403			2SJ648-A	FET	
Q404			SSM3K15TE (F)	FET	
Q405			SSM6N16FE-F	FET	
Q406			2SB1132 (Q,R)	TRANSISTOR	
Q407			UMG3N	TRANSISTOR	
Q408			EMD12	TRANSISTOR	
Q409			2SA1955A-F	TRANSISTOR	
Q410			SSM3K15TE (F)	FET	
Q411			SSM6N16FE-F	FET	
Q412			SSM3K15TE (F)	FET	
Q413			2SA1955A-F	TRANSISTOR	
Q414,415			EMD12	TRANSISTOR	
Q701			2SA1832 (GR)F	TRANSISTOR	
Q702,703			SSM3K15TE (F)	FET	
Q704			2SC4617 (S)	TRANSISTOR	
Q705			2SC4738 (GR)F	TRANSISTOR	
Q706			2SA1832 (GR)F	TRANSISTOR	
Q707			2SJ243-A	FET	
TH1			ERTJ0EV104H	THERMISTOR	
TH701			ERTJ0EV104H	THERMISTOR	
-			X53-4260-13	SERVICE CONTROL UNIT (18KEY)	

TX-RX UNIT (X57-7360-10)

Ref. No.	Address	New parts	Parts No.	Description	Desti- nation
D402			B30-2278-05	LED (RED/YELLOW)	
C1			CC73HCH1H101J	CHIP C 100PF J	
C3			CK73HB1C103K	CHIP C 0.010UF K	
C4			CC73HCH1H101J	CHIP C 100PF J	
C5			CC73HCH1H100C	CHIP C 10PF C	
C6			CK73HB1C103K	CHIP C 0.010UF K	
C7			CK73GB1E105K	CHIP C 1.0UF K	
C8			CK73HB1H102K	CHIP C 1000PF K	
C9			CC73HCH1H100C	CHIP C 10PF C	
C10,11			CC73HCH1H101J	CHIP C 100PF J	
C12			CK73HB1H471K	CHIP C 470PF K	
C13			CC73HCH1H101J	CHIP C 100PF J	
C15			CK73HB1H471K	CHIP C 470PF K	
C16,17			CC73HCH1H101J	CHIP C 100PF J	
C18			CK73HB1C103K	CHIP C 0.010UF K	
C19			CK73HB1H471K	CHIP C 470PF K	
C20			CC73HCH1H220G	CHIP C 22PF G	
C21			CK73HB1H471K	CHIP C 470PF K	
C22			CC73HCH1H390G	CHIP C 39PF G	
C24,25			CC73HCH1H101J	CHIP C 100PF J	
C26			CC73HCH1H030B	CHIP C 3.0PF B	
C27			CK73HB1A104K	CHIP C 0.10UF K	
C28			CC73HCH1H101J	CHIP C 100PF J	
C29			CK73HB1A104K	CHIP C 0.10UF K	
C30			C93-0787-05	CERAMIC 0.1UF 50WV	
C31			CC73HCH1H220G	CHIP C 22PF G	
C32			CC73HCH1H101J	CHIP C 100PF J	
C34			CC73HCH1H470G	CHIP C 47PF G	
C35			CC73HCH1H101J	CHIP C 100PF J	
C36,37			CK73HB1H471K	CHIP C 470PF K	
C38			CK73HB1H102K	CHIP C 1000PF K	
C41			CK73HB1H472K	CHIP C 4700PF K	
C42			CK73HB1H471K	CHIP C 470PF K	
C43			CS77AA1VR15M	CHIP TNTL 0.15UF 35WV	
C44			CS77BA1D100M	CHIP TNTL 10UF 20WV	
C45-47			CK73HB1H471K	CHIP C 470PF K	

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

PARTS LIST / 零件表

TX-RX UNIT (X57-7360-10)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C48			C92-0863-05	CHIP TNTL 0.047UF 35WV	
C50,51			CC73HCH1H101J	CHIP C 100PF J	
C52			CK73HB1H471K	CHIP C 470PF K	
C53			CK73FB0J106K	CHIP C 10UF K	
C54			CK73HB1H471K	CHIP C 470PF K	
C55			CK73GB0J475K	CHIP C 4.7UF K	
C56			CK73HB0J105K	CHIP C 1.0UF K	
C57			CC73HCH1H270J	CHIP C 27PF J	
C58			CC73HCH1H470J	CHIP C 47PF J	
C60			CK73HB1H471K	CHIP C 470PF K	
C62			CC73HCH1H030B	CHIP C 3.0PF B	
C63			CK73HB1H471K	CHIP C 470PF K	
C64			CC73HCH1H030B	CHIP C 3.0PF B	
C65			CC73HCH1HR75B	CHIP C 0.75PF B	
C66			CC73HCH1H080B	CHIP C 8.0PF B	
C67-69			CC73HCH1H100B	CHIP C 10PF B	
C70			CK73HB1H102K	CHIP C 1000PF K	
C71			CK73GB1H103K	CHIP C 0.010UF K	
C72			CK73GB1H102K	CHIP C 1000PF K	
C74,75			CC73HCH1H0R5B	CHIP C 0.5PF B	
C76			CK73HB1H102K	CHIP C 1000PF K	
C77			CC73HCH1H220J	CHIP C 22PF J	
C78			CK73HB1H471K	CHIP C 470PF K	
C79			CC73HCH1H101J	CHIP C 100PF J	
C81			CC73HCH1H470J	CHIP C 47PF J	
C82			CK73FB0J106K	CHIP C 10UF K	
C83			CK73HB1H471K	CHIP C 470PF K	
C84			CC73HCH1H050B	CHIP C 5.0PF B	
C85			CK73HB0J105K	CHIP C 1.0UF K	
C87			CK73HB1C103K	CHIP C 0.010UF K	
C88			CC73HCH1H101J	CHIP C 100PF J	
C90,91			CK73HB1A104K	CHIP C 0.10UF K	
C92			CC73HCH1H020B	CHIP C 2.0PF B	
C93			CC73HCH1H330J	CHIP C 33PF J	
C100			CC73HCH1H150J	CHIP C 15PF J	
C101,102			CK73HB1H102K	CHIP C 1000PF K	
C104			CC73HCH1H100C	CHIP C 10PF C	
C106			CK73HB1H102K	CHIP C 1000PF K	
C109			CK73HB1H471K	CHIP C 470PF K	
C111			CK73HB1H102K	CHIP C 1000PF K	
C112			CC73HCH1H560J	CHIP C 56PF J	
C114,115			CK73HB1H102K	CHIP C 1000PF K	
C116			CK73HB1A104K	CHIP C 0.10UF K	
C117			CK73HB1H102K	CHIP C 1000PF K	
C119			CC73HCH1H180J	CHIP C 18PF J	
C120			CK73HB1H471K	CHIP C 470PF K	
C122			CK73HB1H102K	CHIP C 1000PF K	
C123			CK73HB1A104K	CHIP C 0.10UF K	
C124			CC73HCH1H560J	CHIP C 56PF J	
C125			CK73HB1H102K	CHIP C 1000PF K	
C127			CC73HCH1H100C	CHIP C 10PF C	
C128			CS77AA1A6R8M	CHIP TNTL 6.8UF 10WV	
C129			CK73HB1A104K	CHIP C 0.10UF K	
C130			CK73HB1H102K	CHIP C 1000PF K	
C131			CK73GB1E105K	CHIP C 1.0UF K	
C132			CK73HB1H102K	CHIP C 1000PF K	
C133,134			CK73HB1H471K	CHIP C 470PF K	
C135			CC73GCH1H220G	CHIP C 22PF G	
C136			CK73GB1H102K	CHIP C 1000PF K	
C139			CK73HB1H471K	CHIP C 470PF K	
C140			CC73GCH1H070B	CHIP C 7.0PF B	
C141			CK73HB1H471K	CHIP C 470PF K	
C142			CC73GCH1H090B	CHIP C 9.0PF B	
C143			CC73HCH1H101J	CHIP C 100PF J	
C144			CC73GCH1H240G	CHIP C 24PF G	
C145			CK73HB1C103K	CHIP C 0.010UF K	
C146			CC73GCH1H090B	CHIP C 9.0PF B	
C148			CK73HB1H102K	CHIP C 1000PF K	
C149			CC73GCH1H120G	CHIP C 12PF G	
C150			CK73HB1A104K	CHIP C 0.10UF K	
C151			CK73GB1C104K	CHIP C 0.10UF K	
C152			CK73GB1E105K	CHIP C 1.0UF K	
C154			CC73GCH1H030B	CHIP C 3.0PF B	
C155			CK73HB1H471K	CHIP C 470PF K	
C156			CK73HB1C103K	CHIP C 0.010UF K	
C158			CC73GCH1H330G	CHIP C 33PF G	
C159			CK73HB1H471K	CHIP C 470PF K	
C160			CK73HB1A104K	CHIP C 0.10UF K	
C163			CC73GCH1H120G	CHIP C 12PF G	
C165			CC73GCH1H070B	CHIP C 7.0PF B	
C166			CC73GCH1H560J	CHIP C 56PF J	
C167,168			CC73HCH1H101J	CHIP C 100PF J	
C169			CK73HB1A104K	CHIP C 0.10UF K	
C173			CK73HB1H471K	CHIP C 470PF K	
C177			CC73HCH1H220J	CHIP C 22PF J	
C178			CC73HCH1H120J	CHIP C 12PF J	
C179			CC73HCH1H100B	CHIP C 10PF B	
C180			CC73GCH1H120G	CHIP C 12PF G	
C190			CC73GCH1H270G	CHIP C 27PF G	
C191			CC73GCH1H181J	CHIP C 180PF J	
C193			CC73GCH1H330G	CHIP C 33PF G	
C201,202			CK73GB1H104K	CHIP C 0.10UF K	
C203			CC73HCH1H070B	CHIP C 7.0PF B	
C204			CK73HB1C103K	CHIP C 0.010UF K	
C206			CK73HB1C103K	CHIP C 0.010UF K	
C207			CC73HCH1H100B	CHIP C 10PF B	
C208			CC73HCH1H680J	CHIP C 68PF J	
C209			CC73HCH1H101J	CHIP C 100PF J	
C210			CK73HB1H471K	CHIP C 470PF K	
C211			CK73HB1C103K	CHIP C 0.010UF K	
C212			CC73HCH1H680J	CHIP C 68PF J	
C213			CK73HB1C103K	CHIP C 0.010UF K	
C215			CC73HCH1H050B	CHIP C 5.0PF B	
C216			CC73HCH1H220G	CHIP C 22PF G	
C217			CC73HCH1H470J	CHIP C 47PF J	
C219			CC73HCH1H060B	CHIP C 6.0PF B	
C220			CK73HB1C103K	CHIP C 0.010UF K	
C221			CK73HB1A104K	CHIP C 0.10UF K	
C222,223			CK73HB1C103K	CHIP C 0.010UF K	
C224,225			CK73HB1A104K	CHIP C 0.10UF K	
C226			CK73HB1H471K	CHIP C 470PF K	
C227,228			CK73HB1A104K	CHIP C 0.10UF K	
C229			CC73HCH1H100B	CHIP C 10PF B	
C230			CK73HB1A104K	CHIP C 0.10UF K	
C231			CC73HCH1H100B	CHIP C 10PF B	
C232			CK73HB1H102K	CHIP C 1000PF K	
C233			CK73HB1C103K	CHIP C 0.010UF K	
C234			CK73FB1E474K	CHIP C 0.47UF K	
C235			CK73HB1H102K	CHIP C 1000PF K	
C236,237			CK73FB1A106K	CHIP C 10UF K	

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TX-RX UNIT (X57-7360-10)

Ref. No.	Address	New parts	Parts No.	Description			Desti-nation
C238			CK73HB1C103K	CHIP C	0.010UF	K	
C239			CK73HB1A104K	CHIP C	0.10UF	K	
C240			CC73HCH1H040B	CHIP C	4.0PF	B	
C241,242			CK73HB1H102K	CHIP C	1000PF	K	
C244			CC73HCH1H120G	CHIP C	12PF	G	
C245			CK73FB1A475K	CHIP C	4.7UF	K	
C246			CK73HB1A104K	CHIP C	0.10UF	K	
C247			CC73HCH1H050B	CHIP C	5.0PF	B	
C248			CC73HCH1H220G	CHIP C	22PF	G	
C249			CK73HB1A104K	CHIP C	0.10UF	K	
C250			CC73HCH1H030B	CHIP C	3.0PF	B	
C251			CC73HCH1H060B	CHIP C	6.0PF	B	
C252			CC73HCH1H470G	CHIP C	47PF	G	
C254			CC73HCH1H100B	CHIP C	10PF	B	
C259			CC73HCH1H820J	CHIP C	82PF	J	
C261			CC73HCH1H270J	CHIP C	27PF	J	
C262			CK73HB1C103K	CHIP C	0.010UF	K	
C264			CC73HCH1H270J	CHIP C	27PF	J	
C267			CK73HB1H102K	CHIP C	1000PF	K	
C268			CC73HCH1H390J	CHIP C	39PF	J	
C270			CC73HCH1H1R5B	CHIP C	1.5PF	B	
C273			CC73HCH1H330J	CHIP C	33PF	J	
C274			CK73HB1H102K	CHIP C	1000PF	K	
C275,276			CK73HB1A104K	CHIP C	0.10UF	K	
C278			CK73HB1H102K	CHIP C	1000PF	K	
C281			CK73HB1C103K	CHIP C	0.010UF	K	
C282			CK73GB1E105K	CHIP C	1.0UF	K	
C283-286			CK73HB1H102K	CHIP C	1000PF	K	
C290			CC73HCH1H150J	CHIP C	15PF	J	
C291			CK73HB1H102K	CHIP C	1000PF	K	
C295			CC73HCH1H100B	CHIP C	10PF	B	
C296			CC73HCH1H020B	CHIP C	2.0PF	B	
C297			CC73HCH1H010B	CHIP C	1.0PF	B	
C298			CC73HCH1H020B	CHIP C	2.0PF	B	
C299			CC73HCH1H180J	CHIP C	18PF	J	
C301			CC73HCH1H180J	CHIP C	18PF	J	
C304			CC73HCH1H120J	CHIP C	12PF	J	
C306			CC73HCH1H390J	CHIP C	39PF	J	
C307			CC73HCH1H180J	CHIP C	18PF	J	
C310			CC73HCH1H470G	CHIP C	47PF	G	
C311			CK73HB1C103K	CHIP C	0.010UF	K	
C312			CK73GB1H104K	CHIP C	0.10UF	K	
C314			CK73HB1A104K	CHIP C	0.10UF	K	
C316			CK73HB1H102K	CHIP C	1000PF	K	
C317			CC73HCH1H100B	CHIP C	10PF	B	
C320			CC73HCH1H010B	CHIP C	1.0PF	B	
C355,356			CK73HB1A104K	CHIP C	0.10UF	K	
C362			CC73HCH1H330J	CHIP C	33PF	J	
C386			CC73HCH1H070B	CHIP C	7.0PF	B	
C400			CC73GCH1H220J	CHIP C	22PF	J	
C402,403			CK73HB1H471K	CHIP C	470PF	K	
C404-406			CK73GB1E105K	CHIP C	1.0UF	K	
C407			CK73GB1C224K	CHIP C	0.22UF	K	
C408			CK73GB1E105K	CHIP C	1.0UF	K	
C409			C92-0765-05	CHIP TNTL	4.7UF	16WV	
C410			CK73GB1C224K	CHIP C	0.22UF	K	
C411			CK73HB1A104K	CHIP C	0.10UF	K	
C414			CK73GB1C224K	CHIP C	0.22UF	K	
C415			CK73HB1H471K	CHIP C	470PF	K	
C416			CK73GB1E105K	CHIP C	1.0UF	K	

Ref. No.	Address	New parts	Parts No.	Description			Desti-nation
C417			CC73HCH1E181J	CHIP C	180PF	J	
C418			CK73GB1E105K	CHIP C	1.0UF	K	
C419			CC73HCH1H220J	CHIP C	22PF	J	
C420			CK73HB1H471K	CHIP C	470PF	K	
C421			CK73GB1C224K	CHIP C	0.22UF	K	
C422			CK73GB1E105K	CHIP C	1.0UF	K	
C423			CK73GB1C224K	CHIP C	0.22UF	K	
C424,425			CK73GB1E105K	CHIP C	1.0UF	K	
C426			CC73HCH1H470J	CHIP C	47PF	J	
C428-445			CC73HCH1H470J	CHIP C	47PF	J	
C447			CC73HCH1H470J	CHIP C	47PF	J	
C449-458			CC73HCH1H470J	CHIP C	47PF	J	
C460			CC73HCH1H470J	CHIP C	47PF	J	
C462,463			CK73HB1H471K	CHIP C	470PF	K	
C464-468			CK73HB1H102K	CHIP C	1000PF	K	
C470			CC73HCH1H470J	CHIP C	47PF	J	
C472-474			CC73HCH1H470J	CHIP C	47PF	J	
C475			CK73HB0J105K	CHIP C	1.0UF	K	
C476			CC73HCH1H470J	CHIP C	47PF	J	
C478,479			CC73HCH1H470J	CHIP C	47PF	J	
C480			CK73GB1E105K	CHIP C	1.0UF	K	
C499			CC73HCH1H470J	CHIP C	47PF	J	
CN102			E23-1326-05	TERMINAL			
CN400			E40-6422-15	SOCKET FOR PIN ASSY			
CN401			E40-6752-05	FLAT CABLE CONNECTOR			
CN736			E40-6358-05	SOCKET FOR PIN ASSY			
F400			F53-0324-05	FUSE (2.5A)			
CF200			L72-1017-05	CERAMIC FILTER			
CF201			L72-1020-05	CERAMIC FILTER			
L1			L41-4795-39	SMALL FIXED INDUCTOR (4.7U)			
L2,3			L40-5667-92	SMALL FIXED INDUCTOR (5.6NH)			
L5			L40-8275-92	SMALL FIXED INDUCTOR (82NH)			
L6,7			L40-5667-92	SMALL FIXED INDUCTOR (5.6NH)			
L8			L40-3975-92	SMALL FIXED INDUCTOR (39NH)			
L10			L92-0163-05	BEADS CORE			
L11			L40-1891-86	SMALL FIXED INDUCTOR (1.8U)			
L12			L40-3391-86	SMALL FIXED INDUCTOR (3.3UH)			
L15			L92-0446-05	BEADS CORE			
L16-20			L40-2285-92	SMALL FIXED INDUCTOR (220NH)			
L23			L40-5678-67	SMALL FIXED INDUCTOR (56NH)			
L24			L40-2778-67	SMALL FIXED INDUCTOR (27NH)			
L25			L40-1285-92	SMALL FIXED INDUCTOR (120NH)			
L26,27			L40-3391-86	SMALL FIXED INDUCTOR (3.3UH)			
L29			L40-1085-71	SMALL FIXED INDUCTOR (100NH)			
L30			L40-6875-92	SMALL FIXED INDUCTOR (68NH)			
L98,99			L92-0163-05	BEADS CORE			
L100			L40-1085-92	SMALL FIXED INDUCTOR (100NH)			
L102			L40-6875-92	SMALL FIXED INDUCTOR (68NH)			
L103			L40-1085-92	SMALL FIXED INDUCTOR (100NH)			
L104			L92-0138-05	CHIP FERRITE			
L105			L40-4775-92	SMALL FIXED INDUCTOR (47NH)			
L106			L41-1085-43	SMALL FIXED INDUCTOR (100NH)			
L107			L92-0149-05	CHIP FERRITE			
L108			L40-1575-92	SMALL FIXED INDUCTOR (15NH)			
L109,110			L34-4568-05	AIR-CORE COIL			
L111			L34-4576-05	AIR-CORE COIL			
L112			L92-0149-05	CHIP FERRITE			
L113			L34-4566-05	AIR-CORE COIL			

PARTS LIST / 零件表

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Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
L114			L34-4565-05	AIR-CORE COIL	
L115			L41-2295-39	SMALL FIXED INDUCTOR (2.2UH)	
L117			L34-4577-05	AIR-CORE COIL	
L118			L34-4564-05	AIR-CORE COIL	
L119			L34-4563-05	AIR-CORE COIL	
L201			L40-5681-86	SMALL FIXED INDUCTOR (0.56UH)	
L202			L40-1891-86	SMALL FIXED INDUCTOR (1.8UH)	
L203			L41-4778-45	SMALL FIXED INDUCTOR (47NH)	
L204			L92-0138-05	CHIP FERRITE	
L205			L41-2785-39	SMALL FIXED INDUCTOR (0.27UH)	
L206			L41-5685-39	SMALL FIXED INDUCTOR (0.56UH)	
L207			L40-1085-92	SMALL FIXED INDUCTOR (100NH)	
L208,209			L40-3375-92	SMALL FIXED INDUCTOR (33NH)	
L210			L41-6878-14	SMALL FIXED INDUCTOR (68NH)	
L214			L92-0138-05	CHIP FERRITE	
L223			L40-5675-92	SMALL FIXED INDUCTOR (56NH)	
L224			L41-5678-14	SMALL FIXED INDUCTOR (56NH)	
L226			L92-0138-05	CHIP FERRITE	
L230			L40-2702-86	SMALL FIXED INDUCTOR (27UH)	
L250			L40-1085-57	SMALL FIXED INDUCTOR (100NH)	
L400			L92-0149-05	CHIP FERRITE	
L401			L33-1462-05	SMALL FIXED INDUCTOR (68UH)	
L402			L41-2285-14	SMALL FIXED INDUCTOR (220NH)	
X1			L77-3014-05	TCXO (19.2MHZ)	
XF200			L71-0640-05	MCF (58.05MHZ)	
R1			RK73HH1J474D	CHIP R 470K D 1/16W	
R2			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R3			RK73HB1J100J	CHIP R 10 J 1/16W	
R5,6			RK73HB1J100J	CHIP R 10 J 1/16W	
R7			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R8			RK73HB1J100J	CHIP R 10 J 1/16W	
R9			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R10			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R11,12			RK73HB1J223J	CHIP R 22K J 1/16W	
R15			RK73HB1J100J	CHIP R 10 J 1/16W	
R17			RK73HH1J184D	CHIP R 180K D 1/16W	
R18			RK73HH1J473D	CHIP R 47K D 1/16W	
R19			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R21			RK73HB1J106J	CHIP R 10M J 1/16W	
R22,23			RK73HB1J100J	CHIP R 10 J 1/16W	
R24,25			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R26			RK73HB1J331J	CHIP R 330 J 1/16W	
R27			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R28			RK73HB1J223J	CHIP R 22K J 1/16W	
R29			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R30			RK73HB1J563J	CHIP R 56K J 1/16W	
R31			RK73HB1J121J	CHIP R 120 J 1/16W	
R32			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R33			RK73HB1J223J	CHIP R 22K J 1/16W	
R34			RK73HH1J391D	CHIP R 390 D 1/16W	
R35			RK73HB1J103J	CHIP R 10K J 1/16W	
R36			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R37,38			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R39			RK73HB1J152J	CHIP R 1.5K J 1/16W	
R40			RK73HB1J103J	CHIP R 10K J 1/16W	
R41			RK73HB1J474J	CHIP R 470K J 1/16W	
R42			RK73HB1J473J	CHIP R 47K J 1/16W	
R43			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R44,45			RK73HB1J473J	CHIP R 47K J 1/16W	
R46			RK73HH1J331D	CHIP R 330 D 1/16W	

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R47			RK73HB1J220J	CHIP R 22 J 1/16W	
R48			RK73HH1J271D	CHIP R 270 D 1/16W	
R49			RK73HB1J154J	CHIP R 150K J 1/16W	
R50			RK73HB1J101J	CHIP R 100 J 1/16W	
R51			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R52			RK73HB1J473J	CHIP R 47K J 1/16W	
R53			RK73HB1J683J	CHIP R 68K J 1/16W	
R54			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R55			RK73HB1J104J	CHIP R 100K J 1/16W	
R56			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R57			RK73HB1J124J	CHIP R 120K J 1/16W	
R58			RK73HB1J823J	CHIP R 82K J 1/16W	
R59,60			RN73HH1J104D	CHIP R 100K D 1/16W	
R62			RK73HB1J104J	CHIP R 100K J 1/16W	
R63			RK73HB1J220J	CHIP R 22 J 1/16W	
R64			RK73HB1J473J	CHIP R 47K J 1/16W	
R67			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R68			RK73HB1J474J	CHIP R 470K J 1/16W	
R69			RK73HB1J560J	CHIP R 56 J 1/16W	
R70,71			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R72			RK73HB1J104J	CHIP R 100K J 1/16W	
R74			RK73HB1J153J	CHIP R 15K J 1/16W	
R75			RK73HB1J100J	CHIP R 10 J 1/16W	
R76,77			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R100			RK73HB1J332J	CHIP R 3.3K J 1/16W	
R101			RK73HB1J103J	CHIP R 10K J 1/16W	
R102			RK73HB1J271J	CHIP R 270 J 1/16W	
R103			RK73HB1J222J	CHIP R 2.2K J 1/16W	
R104			RK73HB1J470J	CHIP R 47 J 1/16W	
R105			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R106,107			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R111			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R118			RK73HB1J101J	CHIP R 100 J 1/16W	
R119			RK73HB1J103J	CHIP R 10K J 1/16W	
R120			RK73HB1J223J	CHIP R 22K J 1/16W	
R123			RK73HB1J331J	CHIP R 330 J 1/16W	
R124			RK73HB1J180J	CHIP R 18 J 1/16W	
R126			RK73HB1J273J	CHIP R 27K J 1/16W	
R127			RK73HB1J473J	CHIP R 47K J 1/16W	
R129			RK73HB1J470J	CHIP R 47 J 1/16W	
R130			RK73HB1J333J	CHIP R 33K J 1/16W	
R131			RK73HB1J561J	CHIP R 560 J 1/16W	
R133			RK73HB1J331J	CHIP R 330 J 1/16W	
R134			RK73HB1J561J	CHIP R 560 J 1/16W	
R135			RK73HB1J222J	CHIP R 2.2K J 1/16W	
R136			RK73EB2ER39K	CHIP R 0.39 K 1/4W	
R137			RK73HB1J100J	CHIP R 10 J 1/16W	
R138			RK73EB2ER39K	CHIP R 0.39 K 1/4W	
R139			RK73HB1J473J	CHIP R 47K J 1/16W	
R141			RK73EB2ER39K	CHIP R 0.39 K 1/4W	
R142			RK73HB1J223J	CHIP R 22K J 1/16W	
R144,145			RK73HH1J154D	CHIP R 150K D 1/16W	
R146			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R147-150			RK73HH1J184D	CHIP R 180K D 1/16W	
R151			RK73HB1J103J	CHIP R 10K J 1/16W	
R152			RK73EB2E823J	CHIP R 82K J 1/4W	
R153			RK73HB1J473J	CHIP R 47K J 1/16W	
R154			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R155			RK73HB1J474J	CHIP R 470K J 1/16W	
R156			RK73HB1J182J	CHIP R 1.8K J 1/16W	

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Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R157,158			RK73HB1J104J	CHIP R 100K J 1/16W	
R161			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R162,163			RK73HB1J271J	CHIP R 270 J 1/16W	
R164			RK73HB1J103J	CHIP R 10K J 1/16W	
R165			RK73HB1J474J	CHIP R 470K J 1/16W	
R166			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R167			RK73HB1J183J	CHIP R 18K J 1/16W	
R168			RK73HB1J124J	CHIP R 120K J 1/16W	
R170			RK73HB1J224J	CHIP R 220K J 1/16W	
R171			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R176,177			RK73HB1J331J	CHIP R 330 J 1/16W	
R202,203			RK73HB1J103J	CHIP R 10K J 1/16W	
R204			RK73HB1J561J	CHIP R 560 J 1/16W	
R205			RK73HB1J224J	CHIP R 220K J 1/16W	
R206			RK73HB1J104J	CHIP R 100K J 1/16W	
R207			RK73HB1J224J	CHIP R 220K J 1/16W	
R208-210			RK73HB1J104J	CHIP R 100K J 1/16W	
R211			RK73HB1J334J	CHIP R 330K J 1/16W	
R212			RK73HB1J221J	CHIP R 220 J 1/16W	
R214			RK73HB1J564J	CHIP R 560K J 1/16W	
R216			RK73HB1J221J	CHIP R 220 J 1/16W	
R218			RK73HB1J221J	CHIP R 220 J 1/16W	
R220			RK73HB1J470J	CHIP R 47 J 1/16W	
R221			RK73HB1J104J	CHIP R 100K J 1/16W	
R222			RK73HB1J100J	CHIP R 10 J 1/16W	
R223			RK73HB1J274J	CHIP R 270K J 1/16W	
R225			RK73HB1J681J	CHIP R 680 J 1/16W	
R226			RK73HB1J103J	CHIP R 10K J 1/16W	
R227			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R228			RK73HB1J221J	CHIP R 220 J 1/16W	
R229			RK73HB1J103J	CHIP R 10K J 1/16W	
R230			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R231			RK73HB1J223J	CHIP R 22K J 1/16W	
R233			RK73HB1J183J	CHIP R 18K J 1/16W	
R234,235			RK73HB1J823J	CHIP R 82K J 1/16W	
R236			RK73HB1J222J	CHIP R 2.2K J 1/16W	
R237			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R238			RK73HB1J222J	CHIP R 2.2K J 1/16W	
R239,240			RK73HB1J823J	CHIP R 82K J 1/16W	
R241			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R242			RK73HB1J473J	CHIP R 47K J 1/16W	
R243			RK73HB1J183J	CHIP R 18K J 1/16W	
R245			RK73HB1J104J	CHIP R 100K J 1/16W	
R246			RK73HB1J101J	CHIP R 100 J 1/16W	
R248			RK73HB1J100J	CHIP R 10 J 1/16W	
R251			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R253			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R254			RK73HB1J103J	CHIP R 10K J 1/16W	
R255			RK73HB1J272J	CHIP R 2.7K J 1/16W	
R256			RK73HB1J103J	CHIP R 10K J 1/16W	
R257			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R260			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R262			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R263			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R265			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R268			RK73HB1J680J	CHIP R 68 J 1/16W	
R269			RK73HB1J221J	CHIP R 220 J 1/16W	
R272			RK73HB1J154J	CHIP R 150K J 1/16W	
R273			RK73HB1J823J	CHIP R 82K J 1/16W	
R274			RK73GB2A000J	CHIP R 0.0 J 1/10W	

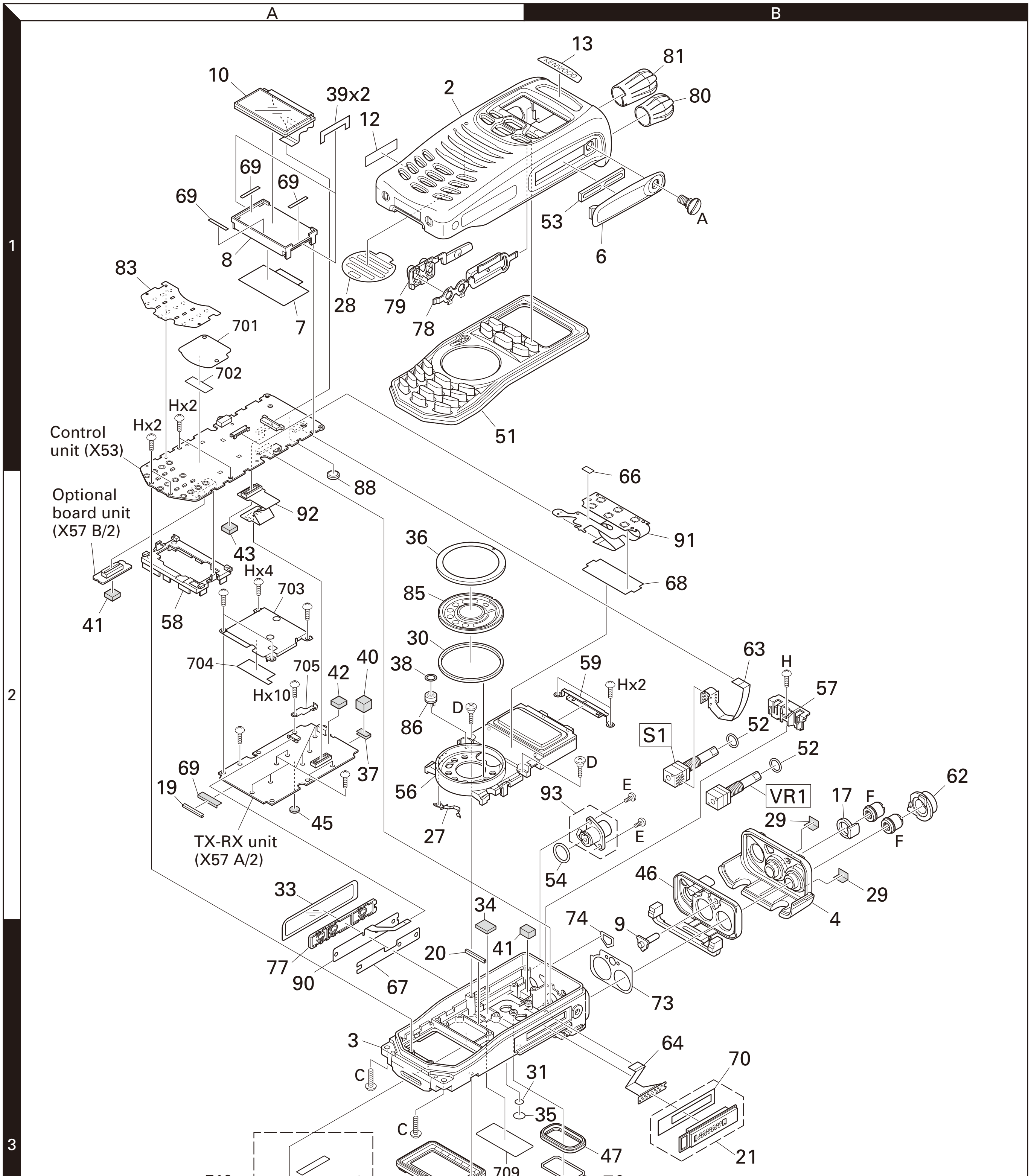
Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R276,277			RK73HB1J104J	CHIP R 100K J 1/16W	
R279			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R280			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R281			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R282			RK73HB1J103J	CHIP R 10K J 1/16W	
R283			RK73HB1J104J	CHIP R 100K J 1/16W	
R285			RK73HB1J103J	CHIP R 10K J 1/16W	
R289			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R293			RK73HB1J473J	CHIP R 47K J 1/16W	
R295			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R296			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R299			RK73HB1J470J	CHIP R 47 J 1/16W	
R300-305			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R307			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R310,311			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R313,314			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R319-322			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R325			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R326			RK73HB1J104J	CHIP R 100K J 1/16W	
R400			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R402			RK73HB1J330J	CHIP R 33 J 1/16W	
R404-406			RK73HB1J474J	CHIP R 470K J 1/16W	
R407			RK73HB1J473J	CHIP R 47K J 1/16W	
R408			RK73GB2A100J	CHIP R 10 J 1/10W	
R409			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R410-412			RK73HB1J474J	CHIP R 470K J 1/16W	
R413			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R415			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R417			RK73HB1J154J	CHIP R 150K J 1/16W	
R418			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R419,420			RK73HB1J473J	CHIP R 47K J 1/16W	
R421			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R422			RK73HB1J474J	CHIP R 470K J 1/16W	
R423			RK73HB1J123J	CHIP R 12K J 1/16W	
R424			RK73HH1J334D	CHIP R 330K D 1/16W	
R425			RK73HH1J223D	CHIP R 22K D 1/16W	
R426			RK73HB1J100J	CHIP R 10 J 1/16W	
R427			RK73HB1J391J	CHIP R 390 J 1/16W	
R428			RK73HB1J821J	CHIP R 820 J 1/16W	
R429,430			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R435			RK73HB1J104J	CHIP R 100K J 1/16W	
R436			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R438			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R439			RK73HB1J273J	CHIP R 27K J 1/16W	
R450			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R452			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R490			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R498,499			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R500,501			RK73HB1J103J	CHIP R 10K J 1/16W	
S1			S70-0483-05	TACT SWITCH	
D1			HSC119	DIODE	
D2,3			HVC131	DIODE	
D4			DA221	DIODE	
D5,6			HVC131	DIODE	
D7			HSC119	DIODE	
D8			1SV325F	VARIABLE CAPACITANCE DIODE	
D9			1SV282-F	VARIABLE CAPACITANCE DIODE	
D12			1SV282-F	VARIABLE CAPACITANCE DIODE	
D13			HVC376B	VARIABLE CAPACITANCE DIODE	

PARTS LIST / 零件表

TX-RX UNIT (X57-7360-10)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
D14-17			1SV282-F	VARIABLE CAPACITANCE DIODE	
D18			1SV278F	VARIABLE CAPACITANCE DIODE	
D100			HSC277	DIODE	
D103			HZU2ALL	ZENER DIODE	
D104,105			HVC131	DIODE	
D106			HZU5CLL	ZENER DIODE	
D201			HSC277	DIODE	
D204,205			1SV305F	VARIABLE CAPACITANCE DIODE	
D207,208			1SV305F	VARIABLE CAPACITANCE DIODE	
D209			HVC131	DIODE	
D211			HVC131	DIODE	
D213			HVC131	DIODE	
D400			1SR154-400	DIODE	
D401			HSC119	DIODE	
D403			1SS388F	DIODE	
IC1			LM73CIMKX-0	MOS-IC	
IC2			LMC7101BIM5	MOS-IC	
IC3			SKY72300-362	MOS-IC	
IC4			TC75W51FUF	MOS-IC	
IC5			TLV2381IDBV	MOS-IC	
IC100			TA75W01FUF	MOS-IC	
IC200,201			TLV2381IDBV	MOS-IC	
IC202			TK10931VTL-G	ANALOGUE IC	
IC203			MCP6021-E/OT	MOS-IC	
IC400			TK11250CUCB	MOS-IC	
IC401			TC75S51FE (F)	MOS-IC	
IC402			XC9101D09AKR	ANALOGUE IC	
IC403			TK71733S	BI-POLAR IC	
IC404			TC75W51FUF	MOS-IC	
Q1			EMD9	TRANSISTOR	
Q2		✻	RT1P144U-T111	TRANSISTOR	
Q3			2SC5383-T111	TRANSISTOR	
Q4			2SC5636	TRANSISTOR	
Q6			2SC5383-T111	TRANSISTOR	
Q7			SSM6L05FU-F	FET	
Q8			2SK508NV (K52)	FET	
Q9			2SJ347F	FET	
Q10			2SK508NV (K52)	FET	
Q11			2SC5636	TRANSISTOR	
Q12			2SK879-F (Y)	FET	
Q13			SSM3K15TE (F)	FET	
Q100			2SC5636	TRANSISTOR	
Q102			2SK3077F	FET	
Q103			RD01MUS1-T113	FET	
Q104			2SC5383-T111	TRANSISTOR	
Q105			RT1N441U-T111	TRANSISTOR	
Q106			RD07MVS1BT122	FET	
Q107			2SK1824-A	FET	
Q109			SSM3K15TE (F)	FET	
Q110			EMD5	TRANSISTOR	
Q201			2SC5108 (Y)F	TRANSISTOR	
Q202			2SC4215-F (Y)	TRANSISTOR	
Q203			3SK318	FET	
Q204			3SK294-FP	FET	
Q401-403			SSM6L05FU-F	FET	
Q404			SSM5H01TU-F	FET	
Q405			2SA1955A-F	TRANSISTOR	
Q406			UMG9N	TRANSISTOR	
TH100			ERTJ0EV104H	THERMISTOR	

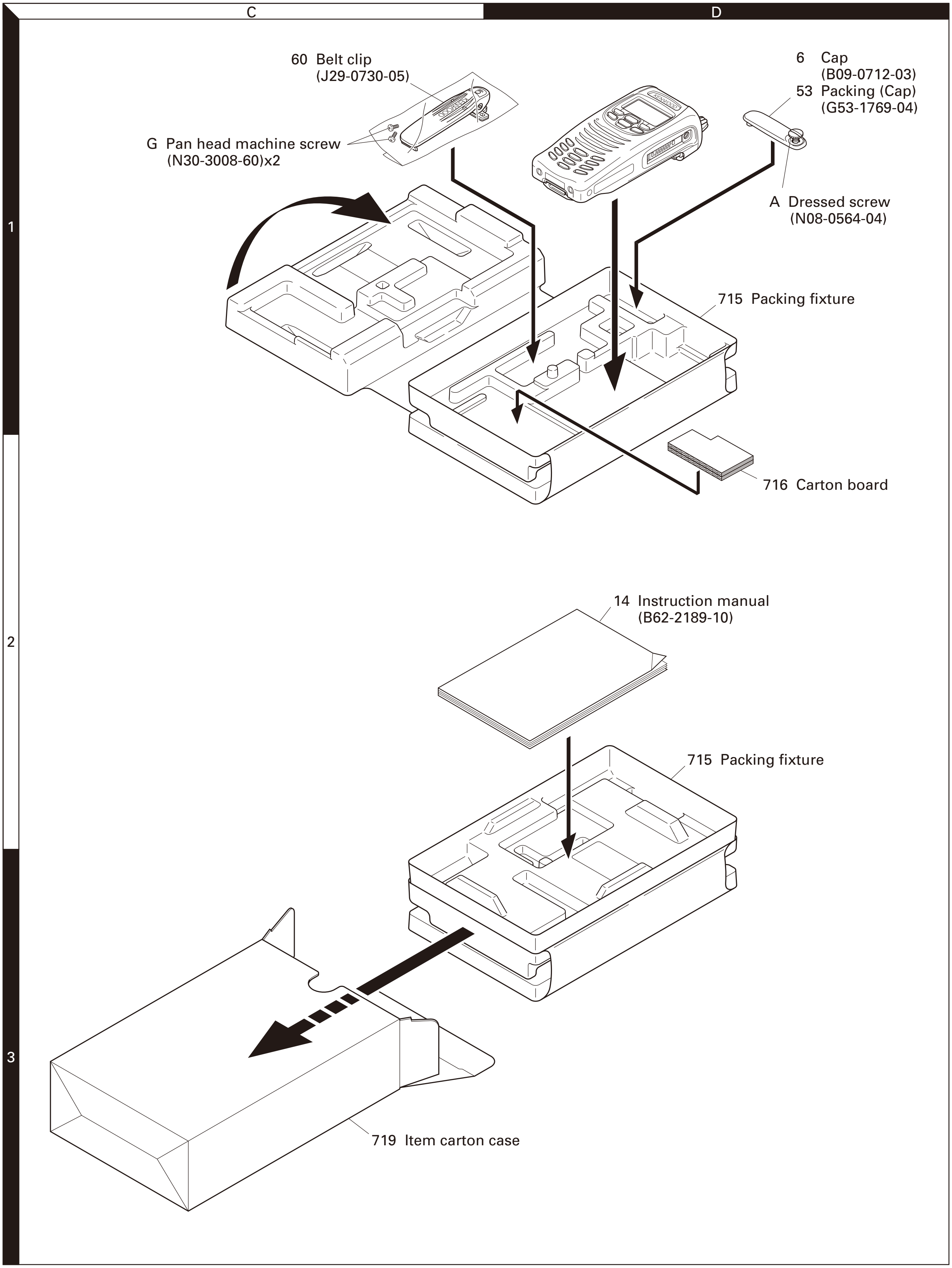
EXPLODED VIEW / 部件分解图



A		: N08-0564-04
B		: N09-2426-14
C		: N09-2440-15
D		: N09-6549-04
E		: N09-6554-05
F		: N14-0844-04
H	M2 x 5	: N83-2005-48

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

PACKING / 包装



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

TROUBLE SHOOTING / 故障排除

Fault Diagnosis of the BGA (Ball Grid Array) IC

■ Overview

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

■ BGA parts

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

When the BGA IC is problematic, please bring the printed circuit board (X53-4260-13 for 18-key) in for service. Various ESN/ default adjustment values are written on the printed circuit board for service.
Additionally various ESN stickers are included. (Please refer to pages 64 and 66.)
Button type lithium battery (W09-0971-05) does not belong to the printed circuit board for service. Please use the part which has been attached to the printed circuit board. After the printed circuit board has been readjusted, please attach any ESN stickers to the chassis. When “ESN Validation” is used with NXDN Trunking, you must modify the ESN register.

● Checking power supply voltage

Checking voltage

Points to be checked		Normal voltage
33M	IC404 (3 pin)	3.3V
15M	IC717 (4 pin)	1.5V
33A	IC406 (5 pin)	3.3V
31BU	IC416 (3 pin)	3.1V

Power supply of each device is connected through the coil.
[ASIC]
33M: L714, 15M: L715, 33A: L716
[DSP]
33M: L712, 15M: L711
[FLASH]
33M: L717
[SRAM]
31BU: L710

When an abnormal value is confirmed. →

Checking for an abnormal point

33M has an abnormal voltage.
[ASIC]
Remove L714 to check the voltage of the 33M.
If the voltage becomes normal, the ASIC is broken.
[DSP]
Remove L712 to check the voltage of the 33M.
If the voltage becomes normal, the DSP is broken.
[FLASH]
Remove L717 to check the voltage of the 33M.
If the voltage becomes normal, the FLASH is broken.

15M has an abnormal voltage.
[ASIC]
Remove L715 to check the voltage of the 15M.
If the voltage becomes normal, the ASIC is broken.
[DSP]
Remove L711 to check the voltage of the 15M.
If the voltage becomes normal, the DSP is broken.

33A has an abnormal voltage.
[ASIC]
Remove L716 to check the voltage of the 33A.
If the voltage becomes normal, the ASIC is broken.

31BU has an abnormal voltage.
[SRAM]
Remove L710 to check the voltage of the 31BU.
If the voltage becomes normal, the SRAM is broken.

If the voltage is not corrected, there is a problem other than the BGA parts.

When a normal value is confirmed. ↓

● Checking the clock

Checking the clock

Points to be checked		Normal voltage (3.3V)
18.432MHz	ASIC side R158	18.432MHz
	ASIC & DSP side R159	18.432MHz
32.768kHz	IC106 (1 pin)	32.768kHz

When an abnormal value is confirmed. → The BGA parts are not broken.

When a normal value is confirmed. ↓

● Checking the Reset/Control signal

Checking the control signal input to the ASIC

Points to be checked		Normal voltage
RESET	IC105 (4 pin)	3.3V
/BINT	Q401 (6 pin)	3.3V
/PSW	Q402 (3 pin)	3.3V

When an abnormal value is confirmed. → The BGA parts are not broken.

When a normal value is confirmed. ↓

Checking the control signal output from the ASIC

Points to be checked		Normal voltage
/FRST	C110	3.3V

When an abnormal value is confirmed. →

If the /FRST is always 0V, the ASIC is broken.

If the /FRST repeats 3.3V and 0V at intervals,
The ASIC, FLASH and SRAM may be broken.

When a normal value is confirmed. ↓

TROUBLE SHOOTING / 故障排除

BGA(球状矩阵排列)IC 的故障诊断

■概述

用于确定手持对讲机因 BGA 部分损坏时是否可以开启电源（即使打开电源开关 LCD 也不工作）的流程。

■ BGA 部分

ASIC(IC108)，DSP(IC102)，FLASH(IC101)，SRAM(IC103)
BGA IC 出现问题时，请带印刷电路板（18 键的 X53-4260-13）进行维修。各种 ESN/ 默认调整值写在用于维修的印刷电路板上。此外还包括各种 ESN 标签。（请参阅第 64 和 66 页。）
纽扣式锂电池（W09-0971-05）不属于用于维修的印刷电路板。请使用已经安装在印刷电路板上的部分。印刷电路板经过重新调整后，请将 ESN 标签贴到底座上。“ESN 验证”用于 NXDN 集群时，必须修改 ESN 登记。

●检查电源电压

检查电压

检查点		正常电压
33M	IC404（3 针）	3.3V
15M	IC717（4 针）	1.5V
33A	IC406（5 针）	3.3V
31BU	IC416（3 针）	3.1V

各装置的电源连通线圈。
[ASIC]
33M: L714, 15M: L715, 33A: L716
[DSP]
33M: L712, 15M: L711
[FLASH]
33M: L717
[SRAM]
31BU: L710

确认数值异常时 →

检查异常点

检查异常点33M有异常电压。
[ASIC]
取出L714检查33M的电压。
如果电压变正常，则ASIC已损坏。
[DSP]
取出L712检查33M的电压。
如果电压变正常，则DSP已损坏。
[FLASH]
取出L717检查33M的电压。
如果电压变正常，则FLASH已损坏。

检查异常点15M有异常电压。
[ASIC]
取出L715检查15M的电压。
如果电压变正常，则ASIC已损坏。
[DSP]
取出L711检查15M的电压。
如果电压变正常，则DSP已损坏。

检查异常点33M有异常电压。
[ASIC]
取出L716检查33M的电压。
如果电压变正常，则ASIC已损坏。

31BU有异常电压。
[SRAM]
取出L710检查31BU的电压。
如果电压变正常，则SRAM已损坏。

如果电压无法纠正，
则是BGA部分之外的其他部分的问题。

确认数值正常时 ↓

●检查时钟

检查时钟

检查点		正常电压（3.3V）
18.432MHz	ASIC侧R158	18.432MHz
	ASIC & DSP侧R159	18.432MHz
32.768kHz	IC106（1 针）	32.768kHz

确认数值异常时 → BGA部分未损坏。

确认数值正常时 ↓

●检查复位/控制信号

检查输入到ASIC的控制信号

检查点		正常电压
RESET	IC105（4 针）	3.3V
/BINT	Q401（6 针）	3.3V
/PSW	Q402（3 针）	3.3V

确认数值异常时 → BGA部分未损坏。

确认数值正常时 ↓

检查从ASIC输出的控制信号

检查点		正常电压
/FRST	C110	3.3V

确认数值异常时 →

如果 /FRST始终为0V，则ASIC已损坏。

如果/FRST交替重复3.3V和0V，
则ASIC、FLASH和SRAM可能已损坏。

确认数值正常时 ↓

TROUBLE SHOOTING / 故障排除

● Checking the output signal from the ASIC

When a normal value is confirmed.

Points to be checked SBC R432 — Normal voltage 3.3V

When an abnormal value is confirmed. → Remove R432. If the ASIC side is 0V, the ASIC/FLASH/SRAM may be broken.

When a normal value is confirmed.

Points to be checked /DRST C109 — Normal voltage 3.3V

When an abnormal value is confirmed. → If the /DRST is 0V, the ASIC/FLASH/SRAM are broken.

● The LCD displays control

When a normal value is confirmed.

Points to be checked /LCDRST R406 — Normal voltage 3.3V

When an abnormal value is confirmed. → Remove R406. If the ASIC side is 0V, the ASIC/FLASH/SRAM may be broken.

When a normal value is confirmed.

Points to be checked /CS4 IC402 (7 pin) — Normal voltage 3.3V→0V→3.3V

When an abnormal value is confirmed. → If the /CS4 is 0V or 3.3V, the ASIC/FLASH/SRAM may be broken.

When a normal value is confirmed.

Points to be checked 5A IC708 (5 pin) — Normal voltage 5.0V

When an abnormal value is confirmed. → If 5A is 0V, parts other than the BGA are broken.

When a normal value is confirmed.

It is unlikely that the BGA parts are broken.

● When an error display appears on the LCD.

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

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

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

■ Descriptions of signal names

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

TROUBLE SHOOTING / 故障排除

确认数值正常时

● 检查ASIC的输出信号

检查点	正常电压	确认数值异常时
SBC R432	3.3V	取下R432。如果ASIC侧为0V，则ASIC/FLASH/SRAM可能已损坏。

确认数值正常时

检查点	正常电压	确认数值异常时
/DRST C109	3.3V	如果/DRST侧为0V，则ASIC/FLASH/SRAM已损坏。

确认数值正常时

● LCD显示控制

检查点	正常电压	确认数值异常时
/LCDRST R406	3.3V	取下R406。如果ASIC侧为0V，则ASIC/FLASH/SRAM可能已损坏。

确认数值正常时

检查点	正常电压	确认数值异常时
/CS4 IC402（7 针）	3.3V→0V→3.3V	如果/CS4为0V或3.3V,，则ASIC/FLASH/SRAM可能已损坏。

确认数值正常时

检查点	正常电压	确认数值异常时
5A IC708（5 针）	5.0V	如果5A为0V，则BGA以外的其他部分损坏。

确认数值正常时

很可能不是BGA部分的损坏。

● LCD上出现错误显示时。

LCD显示“INIT ERROR1”。	ASIC内部RAM读取或写入时发生错误。ASIC可能已损坏。
LCD显示“INIT ERROR2”。	DSP内部RAM读取或写入时发生错误。DSP可能已损坏。
LCD显示“INIT ERROR3”。	SRAM内部RAM 读取或写入时发生错误。SRAM可能已损坏。

■信号名称说明

1) RST(RESET)	：ASIC 复位信号	LOW→复位
2) /BINT	：电池终止电压监测	LOW→终止电压
3) /PSW	：电源开关信号	LOW→ ON
4) /FRST	：FLASH 复位信号	LOW→复位
5) SBC	：开关 B 控制	HIGH→ ON
6) /DRST	：DSP 复位信号	LOW→复位
7) /LCDRS	：LCD 复位信号	LOW→复位
8) /CS4	：LCD 控制器芯片选择信号	LOW→激活
9) 5A	：模拟外围控制 5.0V 电源	

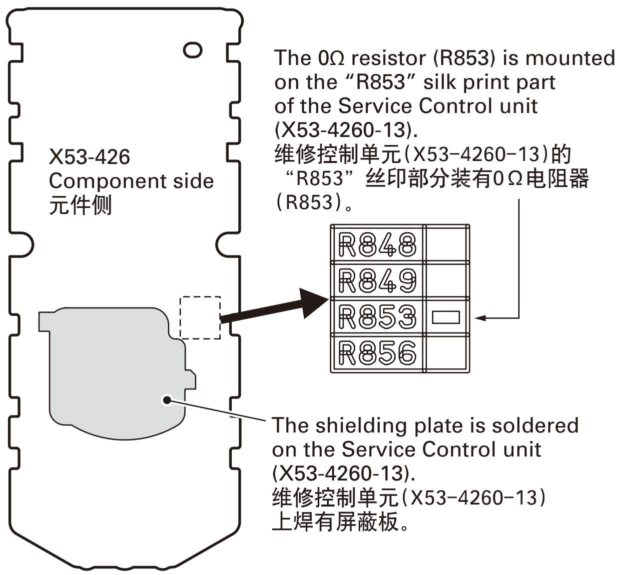
TROUBLE SHOOTING / 故障排除

Replacing Control Unit

■ Control unit Information

Model Name	Original Control unit Number	For Service Control unit Number
NX-200 (C: 18-key)	X53-4260-11	X53-4260-13

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



X53-426	R848	R849	R853	R856
0-11	(None)	0Ω	(None)	(None)
0-13	(None)	0Ω	0Ω	(None)

Note:
- The 0Ω resistor (R849 and R853) is used to differentiate the destination with a visual check. These are not connected with any PCB pattern; they are specifically for production control. There is no need to change the mount of these resistors.
- There is no difference between the schematic diagram of the Service Control unit (X53-4260-13) and the schematic diagram of the original Control unit (X53-4260-11). (R849 and R853 are connected with GND (ground) only.)

更换控制单元

■控制单元信息

型号名称	原始控制单元编号	维修控制单元编号
NX-200(C:18 键)	X53-4260-11	X53-4260-13

■ “原始控制单元”和“维修控制单元”的确认方法

X53-426	R848	R849	R853	R856
0-11	(无)	0Ω	(无)	(无)
0-13	(无)	0Ω	0Ω	(无)

注意:
- 0Ω 电阻器(R849 和 R853)用于通过目视检查区分目标。它们不与任何 PCB 图形相连,专门用于生产控制。无须改动安装的这些电阻器。
- 维修控制单元(X53-4260-13)的原理图和原始控制单元(X53-4260-11)的原理图并无差别。(R849 和 R853 仅连接 GND(接地))。

TROUBLE SHOOTING / 故障排除

■ Supplied Accessories of “Service Control unit”

Item (Including Part Number)	Quantity
	Kx
Control Unit (X53-426)	1
Kenwood ESN Label	1
NXDN ESN Label	1
Product Number Label (for Kx type)	1
MPT ESN Label	1
Addendum (B59-2576-XX)	1

Note:

- “Kx” refers to a K-type series (K2 for example).
- The service control unit of the NX-200 (C types) uses the service control unit of the NX-200 (K2 types).

■ “Service Control unit” Data

The following data is written on the service control unit:

Data Type	Description
Firmware	NX-200/300 Firmware.
FPU Data (PC programming mode)	X53-426 (NX-300) Kx type data.
Various Adjustment Data (PC Test mode)	General adjustment values for the X53-426 (NX-300).
Kenwood ESN	Model Name: [X53-426] NX-xxxSx Type: Kx The same number as the Kenwood ESN label is written.
NXDN ESN/ MPT ESN/ Product number	The same number as the NXDN ESN/ MPT ESN/ Product Number label is written.

■ After Changing the PCB

1. After changing the printed circuit board, write the up-to-date Firmware following the instructions in the “REALIGNMENT - 6.Firmware Programming Mode”.
2. Using the KPG-111D(C), select your desired item (Model Name and Frequency) from the Model> Product Information menu, then use Program> Write Data to the Transceiver to write the FPU data (PC Programming mode). When writing to the transceiver, a Warning Message, corresponding to the item selected, appears. Click [OK] to continue writing the data.
3. Enter Program> Test Mode, then adjust the various adjustment data (PC Test Mode) as described in the “ADJUSTMENT”.
4. Attach the new labels corresponding to the new printed circuit board. (Refer to the images on page 66 for label placement.)
5. If necessary, write the FPU data used by the customer with the KPG-111D(C).

■ “维修控制单元”的附件

项目（包括零件号）	数　量
	Kx
控制单元 (X53-426)	1
Kenwood ESN 标签	1
NXDN ESN 标签	1
产品编号标签 (Kx 型）	1
MPT ESN 标签	1
附加物 (B59-2576-XX)	1

注意：

- “Kx”指 K 型系列（例如 K2）。
- NX-200(C 型）的维修控制单元使用 NX-200(K2 型）的控制单元。

■ “维修控制单元”数据

维修控制单元上写有以下数据。

数据类型	说　明
固件	NX-200/300 固件。
FPU 数据 (PC 编程模式）	X53-426(NX-300) Kx 型数据。
各种调整数据 (PC 测试模式）	X53-426(NX-300) 的一般调整值。
Kenwood ESN	型号名称： [X53-426] NX-xxxSx 型式 :Kx 写有与Kenwood ESN标签相同的编号。
NXDN ESN/ MPT ESN/ 产品编号	写有与 NXDN ESN/ MPT ESN/ 产品编号标签相同的编号。

■ 更换 PCB 后

1. 更换印刷电路板之后，按照“模式组合 -6. 固件编程模式”的说明写入最新的固件。
2. 使用 KPG-111D(C)，从 Model> Product Information 菜单中选择所需的项目（型号名称和频率），然后用 Program> Write Data to the Transceiver 写入 FPU 数据 (PC 编程模式）。
   写入手持对讲机时，会出现与所选项目对应的警告讯息。
   单击 [OK] 继续写入数据。
3. 进入 Program>Test Mode，然后按照“调整”中的说明调整各项调整数据 (PC 测试模式）。
4. 贴上与新印刷电路板对应的新标签。（关于标签位置，请参阅第 66 页的图像。）
5. 如有必要，使用 KPG-111D(C) 写入用户使用的 FPU 数据。

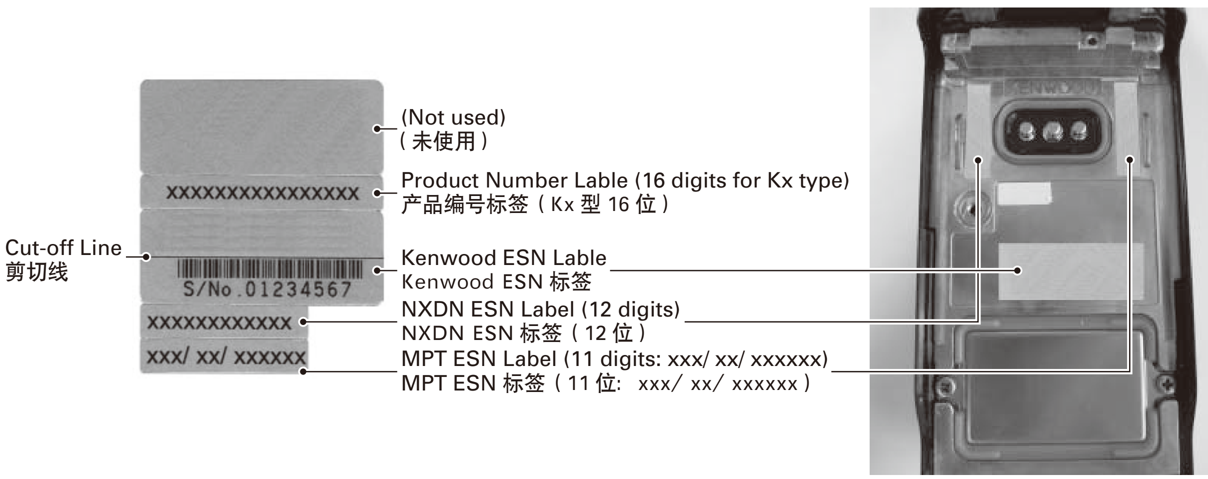
TROUBLE SHOOTING / 故障排除

Note:

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

注意 :

- 使用 NXDN 集群的 ESN 验证功能时，因 NXDN ESN 编号在更换电路板时发生改变（该编号写在电路板上），所以无法接入 NXDN 系统。
  可使用 NXDN 系统侧的 KPG-110SM 重新编制 NXDN ESN 编号。
- 使用新印刷电路板时，Kenwood ESN 会改变，KPG-111D(C) 的手持对讲机信息显示也会改变，但这并不影响手持对讲机的操作。
- 若要改为原来的 Kenwood ESN 和 NXDN ESN，请与我方的维修中心联系。



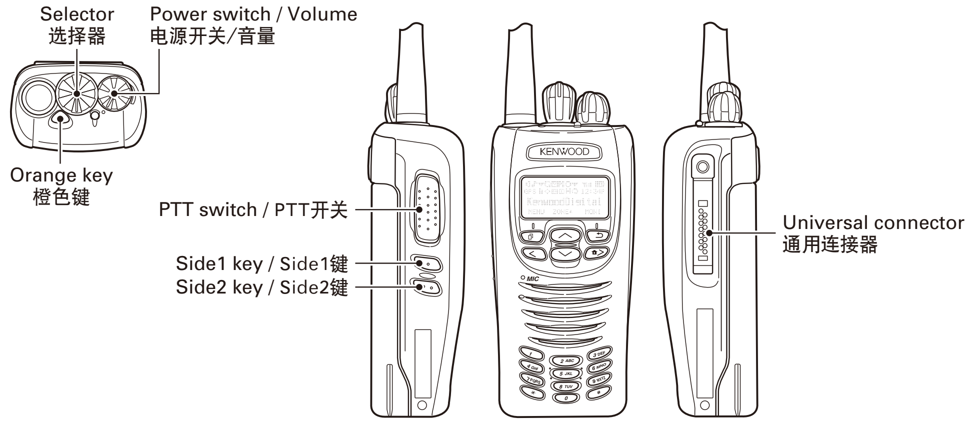
Note: A UPC code and UPC barcode is not printed on the Kenwood ESN Label. If necessary, cut the label at the cut-off line and attach only the serial number.

注意 : Kenwood ESN 标签上未印制 UPC 代码和 UPC 条码。如有必要，可在剪切线处切断标签，仅贴上序列号。

ADJUSTMENT / 调整

Controls

控制器



Panel Test Mode

■ Test mode operation features

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

面板测试模式

■测试模式操作功能

本手持对讲机有测试模式。**要进入测试模式，打开手持对讲机电源时，按住［⊃］键。手持对讲机进入测试模式之前，LCD 上短时间出现频率版本信息。**可以通过编程禁用测试模式。如需退出测试模式，请关闭手持对讲机电源。在测试模式可以使用下列功能。

■ Key operation

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

■键操作

键	副 LCD 显示上不出现"FNC"	
	功　能	显　示
［选择器］	–	–
［︿］	按下：测试信道递增 按住：测试信道持续递增	信道号
［﹀］	按下：测试信道递减 按住：测试信道持续递减	信道号
［Side1］	按下：静噪电平递增 按住：静噪关	静噪电平 静噪关。图标出现
［Side2］	宽 / 窄 / 超窄	宽："w" 窄："n" 超窄："v"
［回］	换到面板调谐模式	–
［⊃］	功能开	副 LCD 显示上出现"FNC"
［<］	MSK 1200bps 和 2400bps	2400bps: 图标出现
［⌂>］	按下：测试信令递增 按住：测试信令持续递增	信令号
［橙色］	–	–
［PTT］	发射	–
［0］至［9］和［#］，［*］	用作 DTMF 键盘。如果在发射时按下某个键，则发送与按下的键对应的 DTMF。	–

ADJUSTMENT / 调整

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

键	副 LCD 显示上出现 "FNC"	
	功　能	显　示
[选择器]	–	–
[∧]	功能关	–
[∨]	模拟 /NXDN	模拟："A" NXDN："N"
[Side1]	功能关	–
[Side2]	LCD 全亮	LCD 全点显示
[⊡]	高功率 / 低功率	高："H" 低："L"
[↩]	功能关	–
[<]	压扩器打开 / 关闭	开：↰ 图标出现
[⌂>]	拍频偏移打开 / 关闭	开：◇ 图标出现
[橙色]	功能关	–
[PTT]	发射	–
[0] 至 [9] 和 [#]，[*]	功能关	–

• LED indicator

Red LED　Lights during transmission.

Green LED　Lights when there is carrier.

• Sub LCD indicator

"FNC"　Appears at function on.

• LCD display in panel test mode

• LED 指示灯

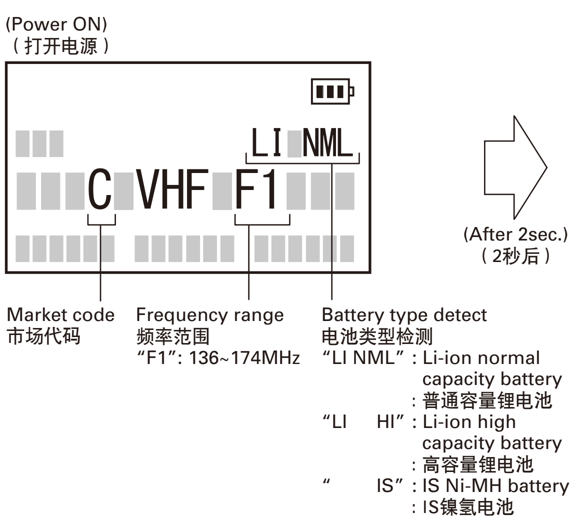
红色 LED　发射时点亮。

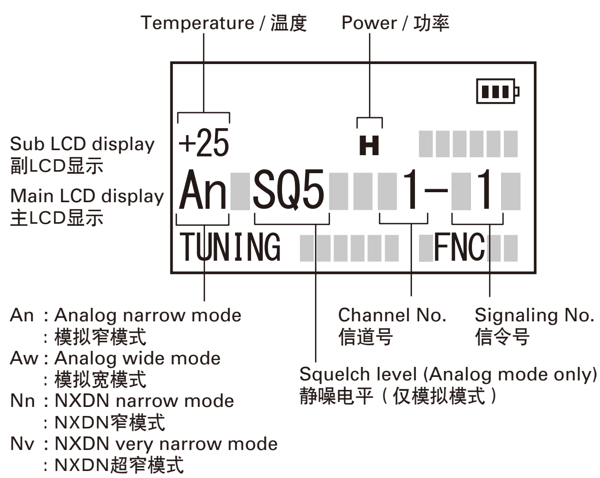
绿色 LED　有载波时点亮。

• 副 LCD 指示

"FNC"　功能开启时出现。

• 面板测试模式时的 LCD 显示。





ADJUSTMENT / 调整

■ Frequency and Signaling

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

• Test frequency

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

• Analog mode signaling

No.	RX	TX
1	None	None
2	None	100Hz Square Wave
3	LTR Data: AREA=0, GOTO=12 HOME=12 ID=47, FREE=25	LTR Data: AREA=0, GOTO=12 HOME=12 ID=47, FREE=25
4	QT: 67.0Hz	QT: 67.0Hz
5	QT: 151.4Hz	QT: 151.4Hz
6	QT: 210.7Hz	QT: 210.7Hz
7	QT: 254.1Hz	QT: 254.1Hz
8	DQT: D023N	DQT: D023N
9	DQT: D754I	DQT: D754I
10	DTMF: 159D	DTMF: 159D
11	None	DTMF Code 9
12	2-tone: A: 304.7Hz B: 3106.0Hz	2-tone: A: 304.7Hz B: 3106.0Hz
13	Single Tone: 979.9Hz	Single Tone: 979.9Hz
14	None	Single Tone: 1000Hz
15	None	MSK
16	MSK	MSK

• NXDN mode signaling

No.	RX	TX
1	RAN1	RAN1
2	None	PN9
3	RAN1	Maximum deviation pattern
7	None	FSW+PN9

RAN: Radio Access Number
PN9: Pseudo-Random Pattern (for production only)

■ 频率和信令

已经根据下表所示的频率调整了设置。需要时，按调整步骤重新调整，以获得实际操作时想要的频率

• 测试频率

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

• 模拟模式信令

No.	接收	发射
1	无	无
2	无	100Hz 方波
3	LTR 数据： AREA=0, GOTO=12 HOME=12 ID=47, FREE=25	LTR 数据： 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	无	DTMF 代码 9
12	2- 音： A: 304.7Hz B: 3106.0Hz	2- 音： A: 304.7Hz B: 3106.0Hz
13	单音：979.9Hz	单音：979.9Hz
14	无	单音：1000Hz
15	无	MSK
16	MSK	MSK

• NXDN 模式信令

No.	接收	发射
1	RAN1	RAN1
2	无	PN9
3	RAN1	最大频偏模式
7	无	FSW+PN9

RAN: 无线接入编号
PN9: 伪随机模式（仅用于生产）

ADJUSTMENT / 调整

Panel Tuning Mode

■ Preparations for tuning the transceiver

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

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

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

■ Transceiver tuning (To enter tuning mode)

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

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

• LCD display in panel tuning mode

面板调谐模式

■调谐手持对讲机的准备

在尝试调谐手持对讲机前，请将手持对讲机连接到合适的电源上。

发射打开时，手持对讲机必须连接到合适的等效负载上（如功率表）。

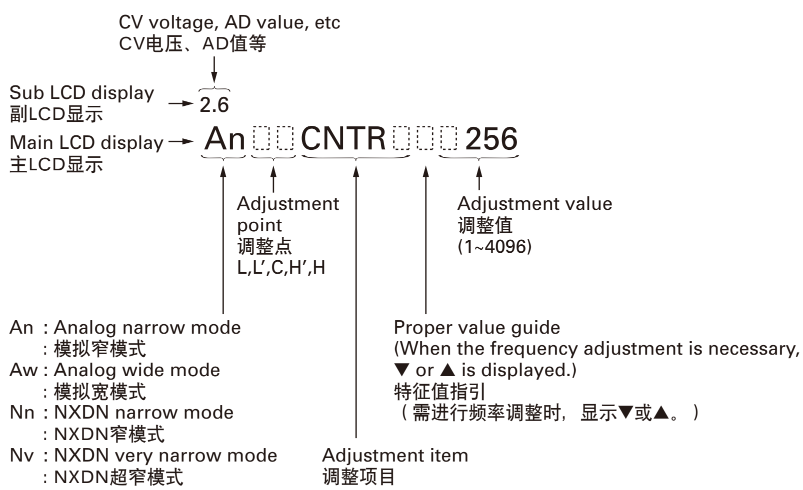
扬声器输出连接器必须端接 8Ω 的等效负载，调谐期间，必须始终连接到交流电压表和音频失真仪或 SINAD 测量仪表上。

■手持对讲机调谐（进入调谐模式）

要进入调谐模式，请在手持对讲机处于测试模式时按 [⊡] 键。用 [<] 键写入调谐模式的调谐数据，用 [︿]/[﹀] 键调整调谐要求（LCD 上出现 1 到 4096）。

用 [✿>] 键选择调谐模式的调整项目。用 [⮌] 键调整 5 点基准电平调整，然后用 [Side2] 键切换宽 / 窄 / 超窄。

• 面板调谐模式时的 LCD 显示。



ADJUSTMENT / 调整

■ Key operation

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

■ 键操作

键	功　　能	
	按　　下	按住（1 秒钟）
[选择器]	–	
[︿]	调整值递增	连续增加
[﹀]	调整值递减	连续减小
[Side1]	自动调整开始	–
[Side2]	宽 / 窄 / 超窄	–
[⎕]	换到面板测试模式	–
[↩]	进入 5 点基准电平调整	–
[<]	写入调整值	–
[⌂>]	转到下一调整项目	返回到最后调整的项目
[橙色]	–	
[PTT]	发射	
[0] 至 [9] 和 [#]，[*]	–	

■ 5 reference level adjustments frequency

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

■ 5 点基准电平调节频率

调谐点	接收（MHz）	发射（MHz）
低	136.05000	136.10000
低’	145.55000	145.60000
中心	155.05000	155.10000
高’	164.55000	164.60000
高	173.95000	173.90000

ADJUSTMENT / 调整

■ Adjustment item supplement

Adjustment Item	Description
LCD contrast	The contrast of LCD display can be changed.
Counterclockwise Volume	“Counterclockwise Volume” is adjusted at the minimum volume position. “Clockwise Volume” is adjusted at the maximum volume position. These adjustments can correct the volume variation. Both “Counterclockwise Volume” and “Clockwise Volume” must be adjusted. (The curve data of volume is applied.)
Clockwise Volume	
Receive Assist	The lock voltage of VCO (Receive) is adjusted. This item must be adjusted before all adjustment items for receiver section are adjusted.
Transmit Assist	The lock voltage of VCO (Transmit) is adjusted. This item must be adjusted before all adjustment items for transmitter section are adjusted.
Frequency	Frequency stability is adjusted under receiving condition with SSG. The SSG needs 0.003ppm accuracy so please use a standard oscillator if necessary. This item can be adjusted only in PC Test Mode so that the adjustment value is not changed easily.
RTC	Real-Time Clock (RTC) is adjusted. This item uses the internal clock. (Any measurement equipment is not required.)
High Transmit Power	High Transmit Power is adjusted.
Low Transmit Power	Low Transmit Power is adjusted.
Balance	The transmit audio frequency response is adjusted. This item is adjusted so that the deviation of 2kHz becomes the same deviation of 20Hz. This item must be adjusted before all adjustment items for deviations are adjusted.
Maximum Deviation (NXDN Narrow/Very Narrow)	Maximum Deviation of NXDN (Narrow/Very Narrow) is adjusted.
Maximum Deviation (Analog Wide/Narrow)	Maximum Deviation of Analog (Wide/Narrow) is adjusted. This item must be adjusted before all adjustment items for tone deviations are adjusted. Note: “Maximum Deviation (Analog Narrow)” must be adjusted before “CWID Deviation (NXDN Very Narrow)” is adjusted.
QT Deviation	QT tone deviation is adjusted.
DQT Deviation	DQT tone deviation is adjusted.
LTR Deviation	LTR tone deviation is adjusted.
DTMF Deviation	DTMF tone deviation is adjusted.
Single Tone Deviation	The deviation of Single Tone used in “2-tone” is adjusted.
MSK Deviation	MSK tone deviation is adjusted.
CWID Deviation	CWID tone deviation is adjusted. CWID is used to inform the others who is transmitting on a 6.25-kHz spacing channel. (In FCC rule, Analog mode or CWID is required for each channel-spacing.)
VOX 1	VOX sensitivity at “VOX 1” is adjusted.
VOX 10	VOX sensitivity at “VOX 10” is adjusted.
Sensitivity 1	Band-Pass Filter is adjusted. The performance of Receive Sensitivity is improved.
Sensitivity 2	The gain of RF amplifier is adjusted. The performance of the interfering wave is improved.
RSSI Reference	The minimum RSSI level for scan stop is adjusted.
Open Squelch	The squelch level at level “5” is adjusted.
Low RSSI	RSSI display level “Tııl“ is adjusted. Both “Low RSSI” and “High RSSI” must be adjusted. (The curve data of RSSI level is applied.)
High RSSI	
Tight Squelch	The squelch level at level “9” is adjusted.
Battery Warning Level	Battery Warning Level (LED blinking level) is adjusted. Battery Warning Level minus 0.4V is the transmission inhibited level.

ADJUSTMENT / 调整

■调整项目补充

调整项目	说　　明
LCD 对比度	可更改 LCD 显示的对比度。
逆时针音量	“逆时针音量”调整在最小音量位置。 “顺时针音量”调整在最大音量位置。 这些调整可纠正音量差异。 “逆时针音量”和“顺时针音量”都必须调整。 （应用音量的曲线数据。）
顺时针音量	
接收辅助	调整 VCO（接收）的锁定电压。 必须在调整接收机部分的所有调整项目之前调整此项。
发射辅助	调整 VCO（发射）的锁定电压。 必须在调整发射机部分的所有调整项目之前调整此项。
频率	调整 SSG 接收条件下的频率稳定性。 SSG 需要 0.003ppm 的精度，因此，必要时请使用标准振荡器。 此项只能在 PC 测试模式下进行调整，以使调整值不易改变。
RTC	调整实时时钟 (RTC)。 此项使用内部时钟。 （无须使用任何测量设备。）
高发射功率	调整高发射功率。
低发射功率	调整低发射功率。
平衡	调整发射音频频率响应。 通过调整此项，使 2kHz 的频偏变成 20Hz 的相同频偏。 必须在调整频偏的所有调整项目之前调整此项。
最大频偏 (NXDN 窄 / 超窄）	调整 NXDN 最大频偏（窄 / 超窄）。
最大频偏（模拟宽 / 窄）	调整模拟最大频偏（宽 / 窄）。 必须在调整音调频偏的所有调整项目之前调整此项。 注意：必须在调整“CWID 频偏 (NXDN 超窄）”之前调整“最大频偏（模拟窄）”。
QT 频偏	调整 QT 音调频偏。
DQT 频偏	调整 DQT 音调频偏。
LTR 频偏	调整 LTR 音调频偏。
DTMF 频偏	调整 DTMF 音调频偏。
单音频偏	调整“2 音”中使用的单音频偏。
MSK 频偏	调整 MSK 音调频偏。
CWID 频偏	调整 CWID 音调频偏。 CWID 用于通知在 6.25-kHz 间隔信道上发射的其他人。 （按照 FCC 规则，各信道间隔须使用模拟模式或 CWID。）
VOX1	调整“VOX 1”的 VOX 灵敏度。
VOX10	调整“VOX 10”的 VOX 灵敏度。
灵敏度 1	调整带通滤波器。 提高接收灵敏度的性能。
灵敏度 2	调整 RF 放大器的增益。 提高干涉波的性能。
RSSI 基准	调整扫描停止的最低 RSSI 电平。
静噪开	调整“5”级的静噪电平。
低 RSSI	调整 RSSI 显示电平“”。 “低 RSSI”和“高 RSSI”都必须调整。 （应用 RSSI 电平的曲线数据。）
高 RSSI	
深静噪	调整电平“9”的静噪电平。
电池警告电平	调整电池警告电平 (LED 闪烁电平）。 电池警告电平减去 0.4V 为发射禁止电平。

ADJUSTMENT / 调整

■ Adjustment item and Display

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

ADJUSTMENT / 调整

■调整项目和显示

<table>
<tr><th rowspan="2">顺序</th><th rowspan="2">调整项目</th><th rowspan="2">主 LCD 显示</th><th rowspan="2">副 LCD 显示</th><th>Aw（模拟宽）</th><th>An（模拟窄）</th><th>Nn（NXDN 窄）</th><th>Nv（NXDN 超窄）</th><th rowspan="2">调整项目编号</th></tr>
<tr><th colspan="4">调整范围</th></tr>
<tr><td rowspan="2">1</td><td rowspan="2">LCD 对比度</td><td rowspan="2">CNTR</td><td rowspan="2">–</td><td colspan="4">1 点调整</td><td rowspan="2">共通部分 2</td></tr>
<tr><td colspan="4">1~256</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">逆时针音量</td><td rowspan="2">VOL1</td><td rowspan="2">VOL 测量值</td><td colspan="4">1 点调整</td><td rowspan="2">共通部分 3</td></tr>
<tr><td colspan="4">1~256</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">顺时针音量</td><td rowspan="2">VOL2</td><td rowspan="2">VOL 测量值</td><td colspan="4">1 点调整</td><td rowspan="2">共通部分 4</td></tr>
<tr><td colspan="4">1~256</td></tr>
<tr><td rowspan="2">4</td><td rowspan="2">接收辅助</td><td rowspan="2">RAST</td><td rowspan="2">(CV 电压)</td><td colspan="4">5 点调整</td><td rowspan="2">共通部分 5</td></tr>
<tr><td colspan="4">1~4096</td></tr>
<tr><td rowspan="2">5</td><td rowspan="2">发射辅助</td><td rowspan="2">TAST</td><td rowspan="2">(CV 电压)</td><td colspan="4">5 点调整</td><td rowspan="2">共通部分 5</td></tr>
<tr><td colspan="4">1~4096</td></tr>
<tr><td rowspan="2">6</td><td rowspan="2">RTC(实时时钟)</td><td rowspan="2">RTC</td><td rowspan="2">–</td><td colspan="4">1 点调整</td><td rowspan="2">共通部分 6</td></tr>
<tr><td colspan="4">–62~–1/0/+1~+62</td></tr>
<tr><td rowspan="2">7</td><td rowspan="2">高发射功率</td><td rowspan="2">HIPWR</td><td rowspan="2">–</td><td>–</td><td>5</td><td>–</td><td>–</td><td rowspan="2">发射机部分 1</td></tr>
<tr><td colspan="4">1~1024</td></tr>
<tr><td rowspan="2">8</td><td rowspan="2">低发射功率</td><td rowspan="2">LOPWR</td><td rowspan="2">–</td><td>–</td><td>5</td><td>–</td><td>–</td><td rowspan="2">发射机部分 2</td></tr>
<tr><td colspan="4">1~1024</td></tr>
<tr><td rowspan="2">9</td><td rowspan="2">平衡</td><td rowspan="2">BAL</td><td rowspan="2">(编码频率)</td><td>–</td><td>5</td><td>–</td><td>–</td><td rowspan="2">发射机部分 3</td></tr>
<tr><td colspan="4">1~256</td></tr>
<tr><td rowspan="2">10</td><td rowspan="2">最大频偏 (NXDN)</td><td rowspan="2">NDEV</td><td rowspan="2">–</td><td>–</td><td>–</td><td>5</td><td>5</td><td rowspan="2">发射机部分 4</td></tr>
<tr><td colspan="4">1~1024</td></tr>
<tr><td rowspan="2">11</td><td rowspan="2">最大频偏(模拟)</td><td rowspan="2">ADEV</td><td rowspan="2">–</td><td>5</td><td>5</td><td>–</td><td>–</td><td rowspan="2">发射机部分 5</td></tr>
<tr><td colspan="4">1~1024</td></tr>
<tr><td rowspan="2">12</td><td rowspan="2">QT 频偏</td><td rowspan="2">QT</td><td rowspan="2">–</td><td>1</td><td>1</td><td>–</td><td>–</td><td rowspan="2">发射机部分 6</td></tr>
<tr><td colspan="4">1~1024</td></tr>
<tr><td rowspan="2">13</td><td rowspan="2">DQT 频偏</td><td rowspan="2">DQT</td><td rowspan="2">–</td><td>1</td><td>1</td><td>–</td><td>–</td><td rowspan="2">发射机部分 7</td></tr>
<tr><td colspan="4">1~1024</td></tr>
<tr><td rowspan="2">14</td><td rowspan="2">LTR 频偏</td><td rowspan="2">LTR</td><td rowspan="2">–</td><td>1</td><td>1</td><td>–</td><td>–</td><td rowspan="2">发射机部分 8</td></tr>
<tr><td colspan="4">1~1024</td></tr>
<tr><td rowspan="2">15</td><td rowspan="2">DTMF 频偏</td><td rowspan="2">DTMF</td><td rowspan="2">–</td><td>1</td><td>1</td><td>–</td><td>–</td><td rowspan="2">发射机部分 9</td></tr>
<tr><td colspan="4">1~1024</td></tr>
<tr><td rowspan="2">16</td><td rowspan="2">单音频偏</td><td rowspan="2">TONE</td><td rowspan="2">–</td><td>1</td><td>1</td><td>–</td><td>–</td><td rowspan="2">发射机部分 10</td></tr>
<tr><td colspan="4">1~1024</td></tr>
<tr><td rowspan="2">17</td><td rowspan="2">MSK 频偏</td><td rowspan="2">MSK</td><td rowspan="2">–</td><td>1</td><td>1</td><td>–</td><td>–</td><td rowspan="2">发射机部分 11</td></tr>
<tr><td colspan="4">1~1024</td></tr>
<tr><td rowspan="2">18</td><td rowspan="2">CWID 频偏</td><td rowspan="2">CWID</td><td rowspan="2">–</td><td>–</td><td>–</td><td>–</td><td>1</td><td rowspan="2">发射机部分 12</td></tr>
<tr><td colspan="4">1~1024</td></tr>
<tr><td rowspan="2">19</td><td rowspan="2">VOX1</td><td rowspan="2">VOX1</td><td rowspan="2">VOX 测量值</td><td colspan="4">1 point ADJ</td><td rowspan="2">发射机部分 13</td></tr>
<tr><td colspan="4">1~256</td></tr>
<tr><td rowspan="2">20</td><td rowspan="2">VOX10</td><td rowspan="2">VOX10</td><td rowspan="2">VOX 测量值</td><td colspan="4">1 point ADJ</td><td rowspan="2">发射机部分 14</td></tr>
<tr><td colspan="4">1~256</td></tr>
<tr><td rowspan="2">21</td><td rowspan="2">灵敏度 1</td><td rowspan="2">SENS1</td><td rowspan="2">(RSSI 测量值)</td><td>–</td><td>5</td><td>–</td><td>–</td><td rowspan="2">接收机部分 2</td></tr>
<tr><td colspan="4">1~256</td></tr>
</table>

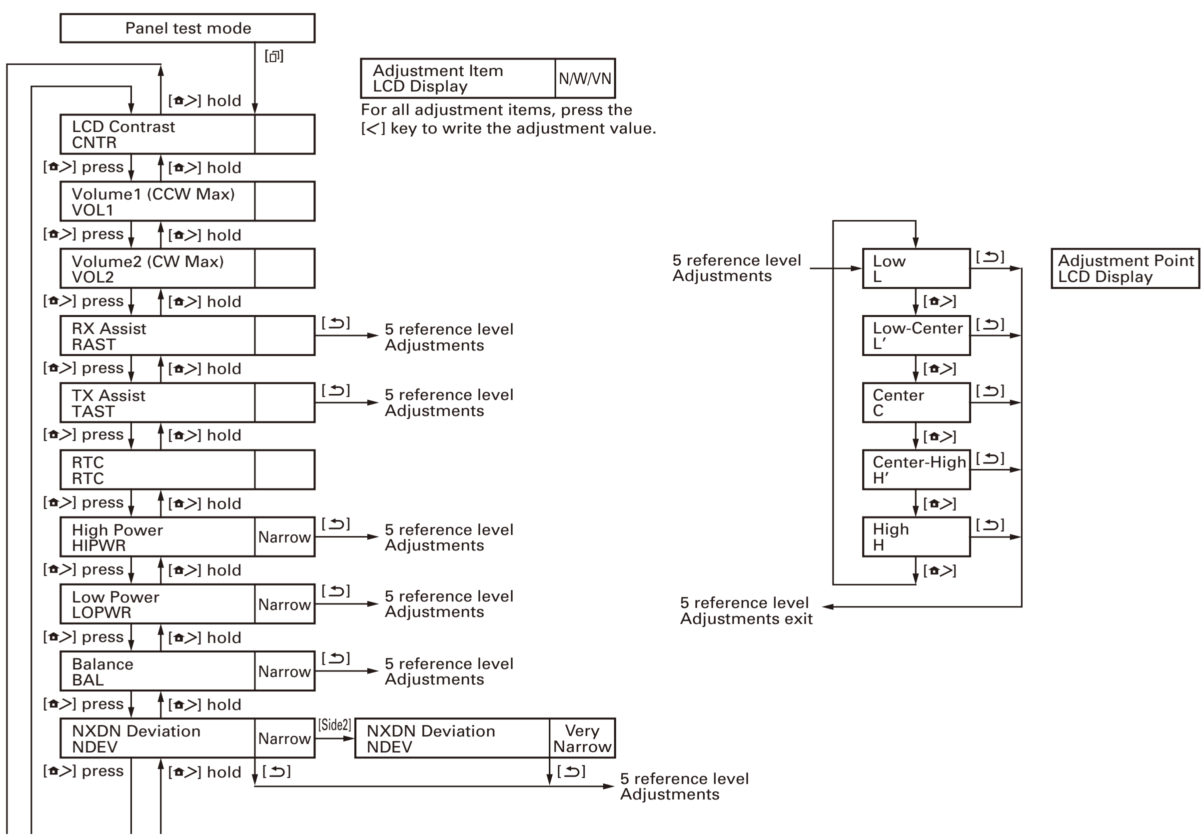
ADJUSTMENT / 调整

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

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

■ Panel tuning mode flow chart

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



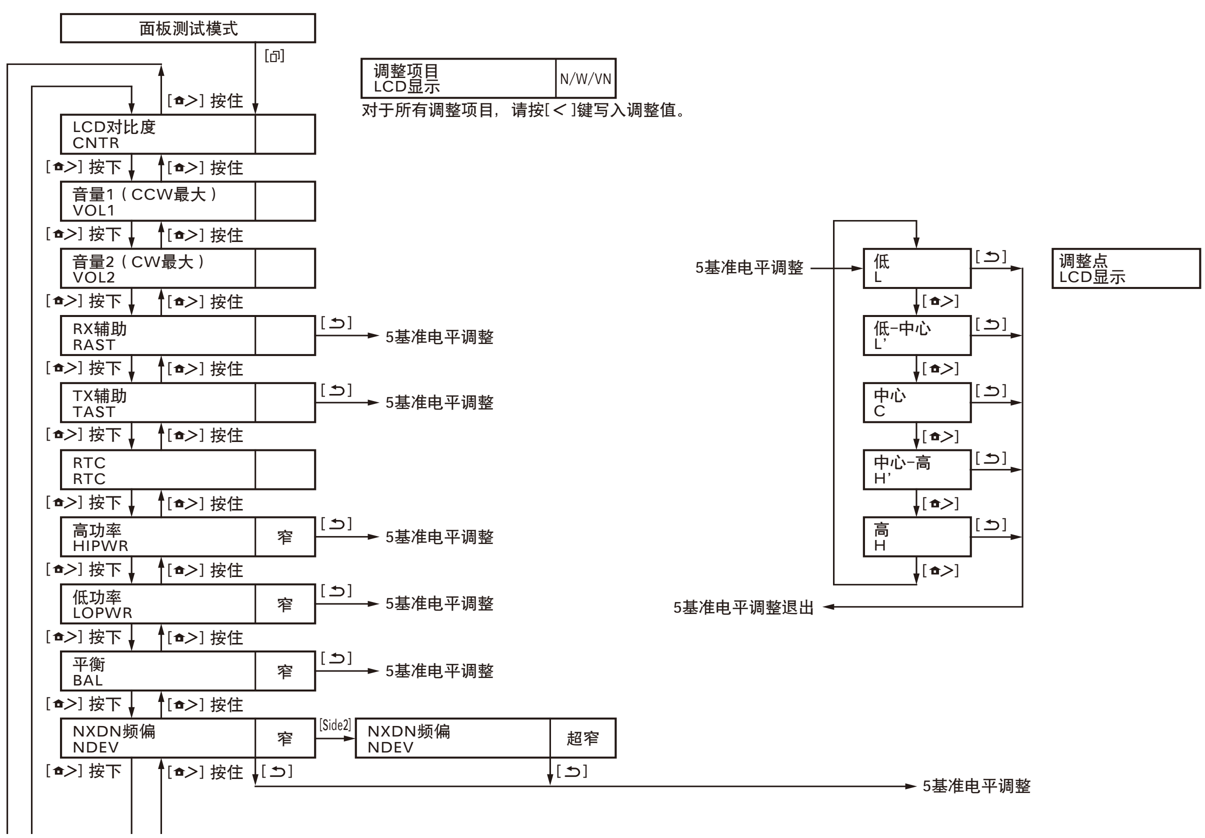
ADJUSTMENT / 调整

顺序	调整项目	主 LCD 显示	副 LCD 显示	Aw（模拟宽）	An（模拟窄）	Nn（NXDN 窄）	Nv（NXDN 超窄）	调整项目编号
				调整范围				
22	灵敏度 2	SENS2	(RSSI 测量值）	-	5	-	-	接收机部分 3
				1~256				
23	RSSI 基准	RRSSI	(RSSI 测量值）	5	5	- *1	5	接收机部分 4
				1~256				
24	静噪开	SQL	(ASQDET 测量值）	5	5	- *1	5	接收机部分 5
				1~256				
25	低 RSSI	LRSSI	(RSSI 测量值）	5	5	- *1	5	接收机部分 6
				1~256				
26	高 RSSI	HRSSI	(RSSI 测量值）	5	5	- *1	5	接收机部分 7
				1~256				
27	深静噪	SQLT	(ASQDET 测量值）	5	5	-	-	接收机部分 8
				1~256				
28	电池警告电平	BATT	(BATT 测量值）	1 点调整				发射机部分 15
				1~256				

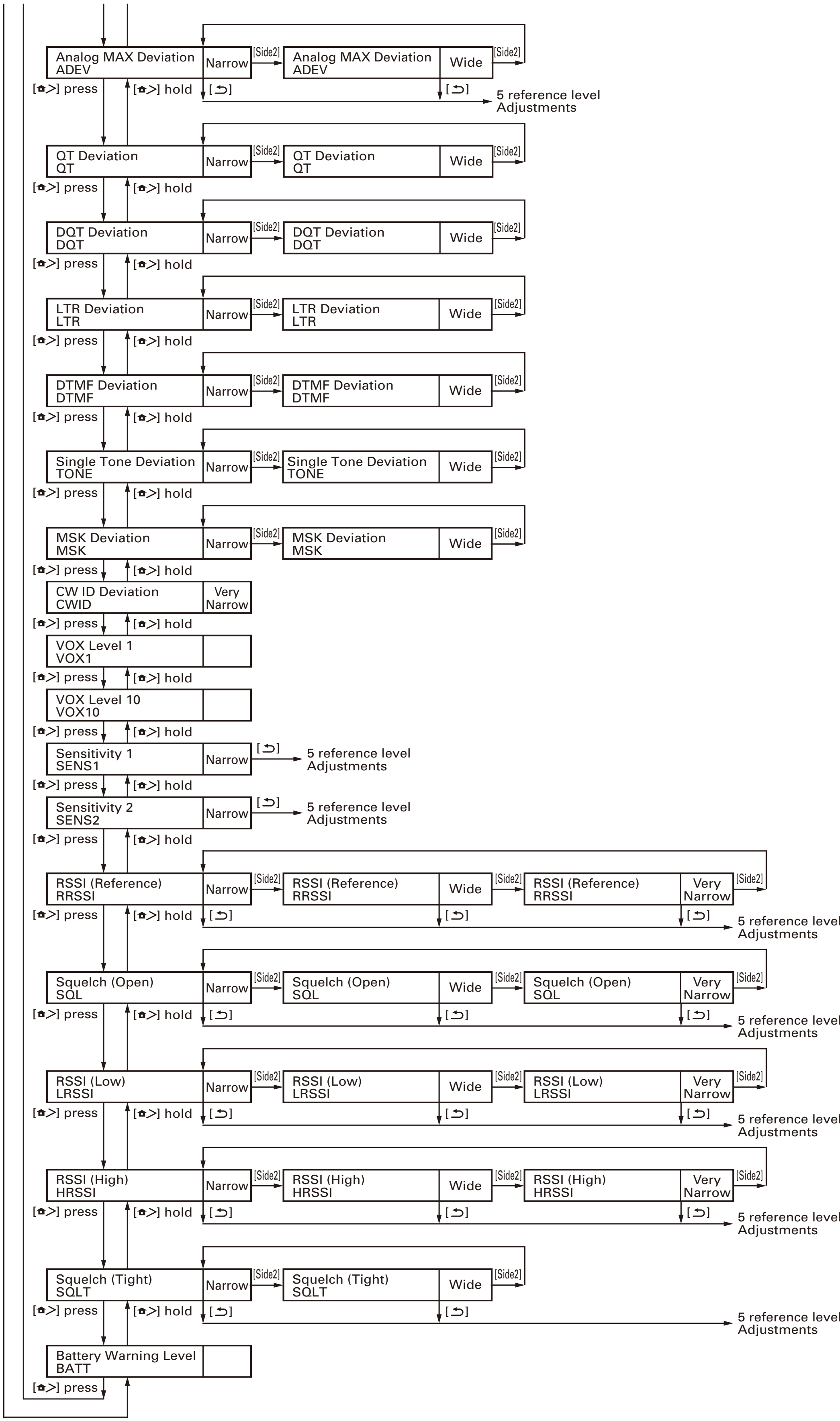
*1: 由于 NXDN 窄通过调整模拟窄进行调整，因此不需要调整 NXDN 窄。

■面板调谐模式流程图

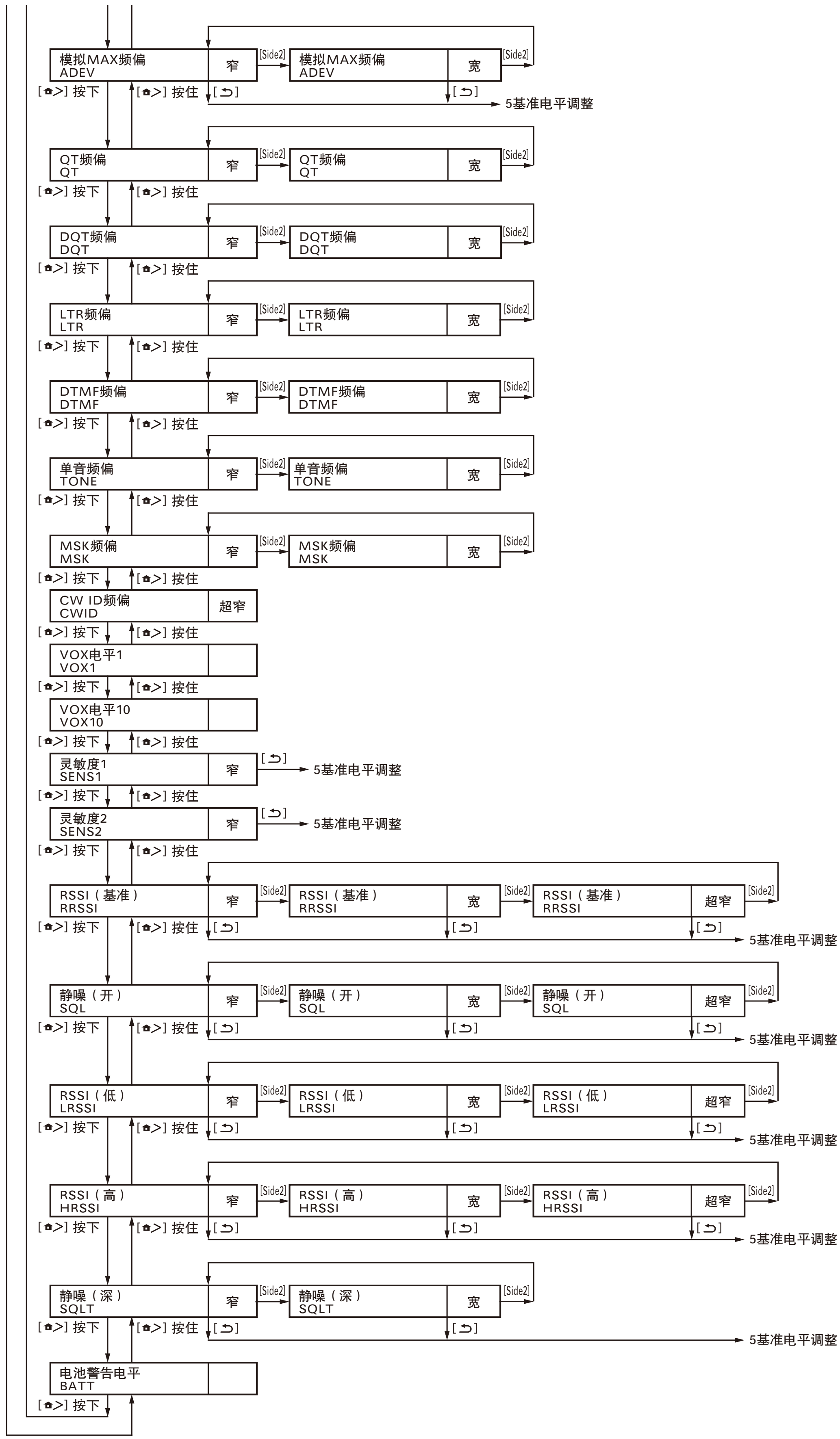
注意：在此面板调谐模式流程图中，调整项目的名称作了修改。



ADJUSTMENT / 调整



ADJUSTMENT / 调整



ADJUSTMENT / 调整

Test Equipment Required for Alignment

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

■ Antenna connector adapter

The antenna connector of this transceiver uses an SMA terminal.

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

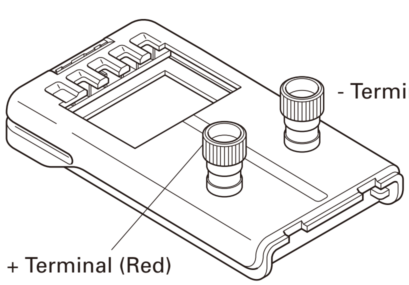
■ Nut wrench

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

KENWOOD part No.: W05-1123-00

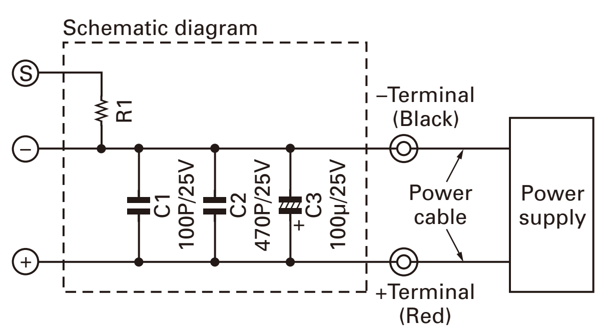
■ Battery jig (W05-1370-00)

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



Note:

- When using the battery jig, you must measure the voltage at the terminals of the battery jig. Otherwise, a slight voltage drop may occur within the power cable, between the power supply and the battery jig, especially while the transceiver transmits.
- The battery jig is detected as "Li-ion High Capacity Battery".
  Li-ion High Capacity Battery: R1=Open
  Li-ion Normal Capacity Battery: R1=560kΩ



ADJUSTMENT / 调整

调整所需的测试设备

测 试 设 备	主 要 规 格	
1. 标准信号发生器 (SSG)	频率范围 调制 输出 进行频率调整时，需要以下精度。 • 0.003ppm 如有必要，请使用标准振荡器进行调整。	136 到 174MHz 调频和外部调制 -127dBm/0.1μV 到大于 -20dBm/22.4mV
2. 功率计	输入阻抗 操作频率 测量范围	50Ω 136 到 174MHz 10W 左右
3. 频偏仪	频率范围	136 到 174MHz
4. 数字电压表 (DVM)	测量范围 输入阻抗	直流 10mV 到 10V 为最小电路负载高输入阻抗
5. 示波器		直流到 30MHz
6. 高灵敏度频率计数器	频率范围 频率稳定性	10Hz 到 1000MHz 0.2ppm 或更低
7. 电流表		5A
8. 音频电压表 (AF VTVM)	频率范围 电压范围	50Hz 到 10kHz 1mV 到 10V
9. 音频发生器 (AG)	频率范围 输出	50Hz 到 5kHz 或更高 0 到 1V
10. 失真测试仪	能力 输入电平	在 1kHz 时 3%或更低 50mV 到 10Vrms
11. 8Ω 假负载		大约 8Ω，3W
12. 可调电源		5V 到 10V，大约 3A 配备了电流表时更好

■天线接口转换头

此对讲机的天线接口使用 SMA 终端。

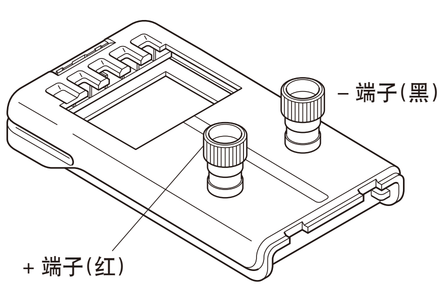
使用天线接口转换头 [SMA(f)-BNC(f) 或 SMA(f)-N(f)] 进行调整。(转换头不作为可选件提供,因此请购买商用转换头。)

■螺母扳手

为了转动音量螺母和信道选择螺母，请使用推荐的工具。
KENWOOD 零件号 :W05-1123-00

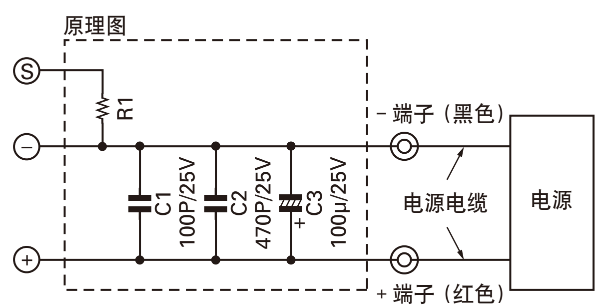
■电池夹具 (W05-1370-00)

在对讲机的电池夹具和电源之间连接适当的电源电缆，确认了输出电压之后接通电源开关，电压超过或极性颠倒都有可能损坏对讲机。



注意 :

- 当使用电池夹具时,你必须测定电池夹具的终端电压。因为，电源和电池夹具之间会有一些的电压下降，尤其在对讲机发射的时候。
- 电池夹被检测为“高容量锂电池”。
  高容量锂电池 :R1=Open
  普通容量锂电池 :R1=560kΩ



ADJUSTMENT / 调整

■ Universal connector

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

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

■通用连接器

使用用于PC调谐的接口电缆（KPG-36/36A），或带有插头(E30-3287-28)的导线及用于面板调谐的螺丝(N08-0535-08)。将插头连接到手持对讲机的通用连接器并旋紧螺丝。

带有插头(E30-3287-28)的导线及用于面板调谐的螺丝(N08-0535-08)如图所示。数字为通用连接器上的端子编号。

Caution

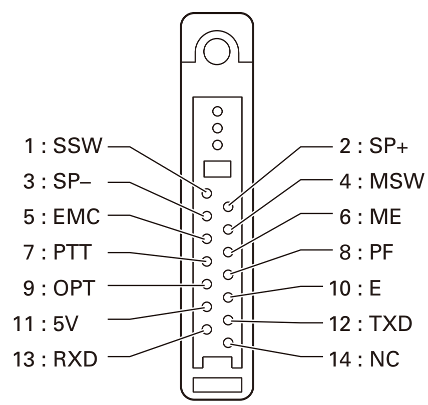
1. When connecting the plug to the universal connector of the transceiver, a short circuit may occur. To prevent this, be sure to turn the transceiver POWER switch off.
2. Since the RX AF output is a BTL output, there is a DC component. Isolate this with a capacitor or transformer as shown in the figure.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

警告

1. 将插头连接到手持对讲机的通用连接器时，可能发生短路。为避免该情况，请确定关闭手持对讲机的电源开关。
2. 由于RX AF输出为BTL输出，因此可能会产生直流分量。如图所示，用一个电容或变压器隔离该分量。
3. 请勿在红线（或黑线）与GND间连接设备。

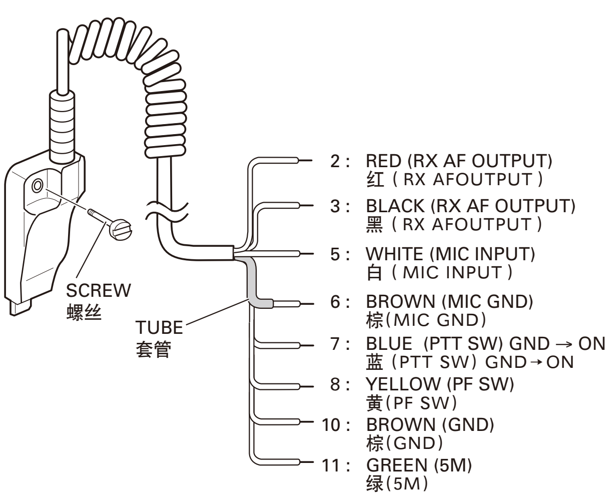
• Universal connector

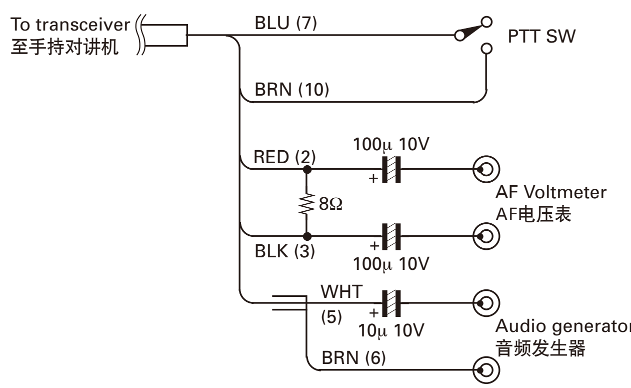
• 通用连接器



• Panel tuning

• 面板调谐





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

注意：针脚1(SSW)和针脚4(MSW)连接到针脚10(GND)以启动外部SP和外部MIC。

ADJUSTMENT / 调整

• PC tuning

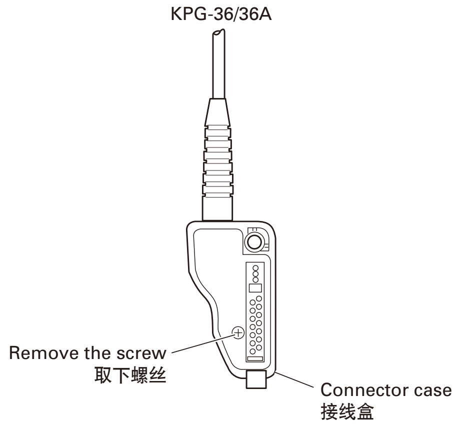
Connect the wires to the PCB in the connector case of interface cable.

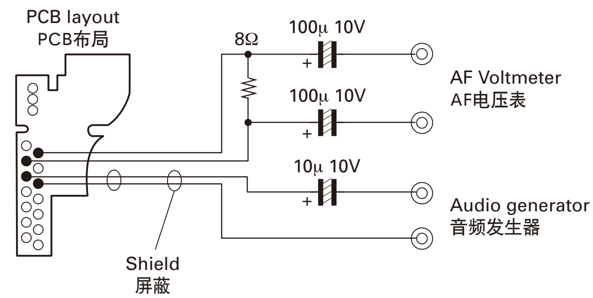
For output the wires out of the connector case, need to process the connector case.

• PC 调谐

将配线连接到接口电缆接线盒内的 PCB。

为将配线引出接线盒，需要对接线盒进行处理。





ADJUSTMENT

Radio Check Section

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

调　　整

通信机检查部分

项　目	条　　件		测　　量			调　　整			规 格 / 备 注
	面板测试模式	PC 测试模式	测量装置	单元	端子	单元	部件	方　法	
1. 频率检查	1)CH-Sig:1-1 PTT: 开启	1) 测试信道 信道 :1 测试信令 模式 : 模拟 信令 :1 PTT: 按 [Transmit] 按钮。	频率计数器	面板	天线			确认手持对讲机的内部温度在 25℃ ±2℃范围内。	±0.5ppm －77.55Hz~+77.55Hz @155.1MHz
2. 高功率检查 (电池电压 :7.5V)	1)CH-Sig:1-1 PTT: 开启	1) 测试信道 信道 :1 测试信令 模式 : 模拟 信令 :1 PTT: 按 [Transmit] 按钮。	功率计 电流表					检查	4.5W~5.5W 2.0A 或更低
	2)CH-Sig:2-1 PTT: 开启	2) 测试信道 信道 :2 测试信令 模式 : 模拟 信令 :1 PTT: 按 [Transmit] 按钮。							
	3)CH-Sig:3-1 PTT: 开启	3) 测试信道 信道 :3 测试信令 模式 : 模拟 信令 :1 PTT: 按 [Transmit] 按钮。							
3. 低功率检查 (电池电压 :7.5V)	1)CH-Sig:1-1 PTT: 开启	1) 测试信道 信道 :1 测试信令 模式 : 模拟 信令 :1 PTT: 按 [Transmit] 按钮。							0.7W~1.2W 1.0A 或更低
	2)CH-Sig:2-1 PTT: 开启	2) 测试信道 信道 :2 测试信令 模式 : 模拟 信令 :1 PTT: 按 [Transmit] 按钮。							
	3)CH-Sig:3-1 PTT: 开启	3) 测试信道 信道 :3 测试信令 模式 : 模拟 信令 :1 PTT: 按 [Transmit] 按钮。							
4. 麦克风灵敏度检查	1)CH-Sig:1-1 AG:1kHz PTT: 开启	1) 测试信道 信道 :1 测试信令 模式 : 模拟 信令 :1 AG:1kHz PTT: 按 [Transmit] 按钮。	频偏仪 示波器 AG AF VTVM		天线 通用连接器			调整 AG 输入以获得标准 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: –116dBm (0.35µV) (MOD: 1kHz/±3kHz) Narrow: –115dBm (0.40µV) (MOD: 1kHz/±1.5kHz)	1) Test Channel Channel: 1 Test Signaling Mode: Analog Signaling: 1 SSG output Wide: –116dBm (0.35µV) (MOD: 1kHz/±3kHz) Narrow: –115dBm (0.40µV) (MOD: 1kHz/±1.5kHz)	SSG AF VTVM Oscilloscope Distortion meter 8Ω Dummy load		ANT Universal connector			Check	12dB SINAD or more

Common Section

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting	1) DC voltage: 7.5V 2) SSG standard modulation [Wide] MOD: 1kHz, DEV: 3kHz [Narrow] MOD: 1kHz, DEV: 1.5kHz								
2. LCD contrast	1) Adj item: [CNTR] Adjust: [***] Press [<] key to store the adjustment value.	1) Adj item: [LCD Contrast] Press [Apply] button to store the adjustment value.				Panel	**[Panel tuning mode]** [∧], [∨] [PC test mode] [◀],[▶]	Adjust the LCD contrast by looking.	This item is needed when the LCD ASSY (B38-0923-05) is replaced.
3. Counter-clockwise Volume	1) Adj item: [VOL1] Adjust: [***]	1) Adj item: [Counter-clockwise Volume]						**[Panel tuning mode]** Turn the volume knob counterclockwise fully. Press [<] key to store the adjustment value. **[PC test mode]** Turn the volume knob counterclockwise fully. Press [Apply] button to store the adjustment value.	This item is needed when the variable resistor (R31-0666-05) is replaced.

调　　整

项　目	条　　件		测　　量			调　　整			规　格 / 备　注
	面板测试模式	PC 测试模式	测量装置	单元	端子	单元	部件	方　法	
5. 灵敏度 检查	1) CH-Sig:1-1 SSG 输出 宽 : －116dBm(0.35μV) (MOD:1kHz/±3kHz) 窄 : －115dBm(0.40μV) (MOD:1kHz/±1.5kHz)	1) 测试信道 信道 :1 测试信令 模式 : 模拟 信令 :1 SSG 输出 宽 : －116dBm(0.35μV) (MOD:1kHz/±3kHz) 窄 : －115dBm(0.40μV) (MOD:1kHz/±1.5kHz)	SSG AF VTVM 示波器 失真测试仪 8Ω 假负载		天线 通用连接器			检查	12dB SINAD 或更高

共通部分

项　目	条　　件		测　　量			调　　整			规　格 / 备　注
	面板调谐模式	PC 测试模式	测量装置	单元	端子	单元	部件	方　法	
1. 设置	1) DC 电压 :7.5V 2) SSG 标准调制 [宽] MOD:1kHz, DEV:3kHz [窄] MOD:1kHz, DEV:1.5kHz								
2. LCD 对比度	1) 调整项目 :[CNTR] 调整 :[***] 按 [<] 键储存调整值。	1) 调整项目 : [LCD Contrast] 按 [Apply] 按钮储存调整值。				面板	[面板调谐模式] [︿], [﹀] [PC 测试模式] [◄], [►]	通过观察调整 LCD 对比度。	更换 LCD 组件 (B38-0923-05) 时需调整此项。
3. 逆时针 音量	1) 调整项目 :[VOL1] 调整 :[***]	1) 调整项目 : [Counterclockwise Volume]						**[面板调谐模式]** 逆时针完全转动音量旋钮。 按 [<] 键储存调整值。 **[PC 测试模式]** 逆时针完全转动音量旋钮。 按 [Apply] 按钮储存调整值。	更换可变电阻器 (R31-0666-05) 时需调整此项。

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
4. Clockwise Volume	1) Adj item: [VOL2] Adjust: [✻✻✻]	1) Adj item: [Clock-wise Volume]				Panel		**[Panel tuning mode]** Turn the volume knob clockwise fully. Press [<] key to store the adjust-ment value. **[PC test mode]** Turn the volume knob clockwise fully. Press [Apply] but-ton to store the adjustment value.	This item is needed when the variable resistor (R31-0666-05) is replaced.
5. Receive Assist	1) Adj item: [RAST] Adjust: [✻✻✻✻] 2) Adj item: [L RAST]→ [L' RAST]→ [C RAST]→ [H' RAST]→ [H RAST] Adjust: [✻✻✻✻] Press [<] key to store the adjust-ment value.	1) Adj item: [Receive Assist] 2) Adj item: [Low], [Low'], [Center], [High'], [High] Press [Apply All] button to store the adjustment value.					[Panel tuning mode] [∧], [∨] [PC test mode] [◀],[▶]	The sub LCD display and [V] indicator on the PC window shows VCO lock voltage. Change the adjustment value to get VCO lock voltage within the limit of the speci-fied voltage. **Note:** Confirm the VCO lock voltage approxi-mately 3 seconds after the adjustment value is changed.	2.5V±0.1V **[PC test mode]** Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.
Transmit Assist	1) Adj item: [TAST] Adjust: [✻✻✻✻] 2) Adj item: [L TAST]→ [L' TAST]→ [C TAST]→ [H' TAST]→ [H TAST] Adjust: [✻✻✻✻] PTT : ON (RF power is not output.) Press [<] key to store the adjust-ment value.	1) Adj item: [Transmit Assist] 2) Adj item: [Low], [Low'], [Center], [High'], [High] PTT: Press [Transmit] button. Press [Apply All] button to store the adjustment value.							
6. RTC oscillation frequency adjust	1) Adj item: [RTC] Adjust: [✻✻✻]	1) Adj item: [RTC (Real-time clock)]					[Side1]	**[Panel tuning mode]** Press [Side1] key. After automatic ad-justment adjusted value is displayed on the LCD. Press [<] key to store the adjust-ment value. **[PC test mode]** Press [Start] button of "Auto Tuning". Press [Apply] button to store the adjust-ment value after the automatic adjust-ment was finished.	

调　　整

项　目	条　　件		测　　量			调　　整			规 格 / 备 注
	面板调谐模式	PC 测试模式	测量装置	单元	端子	单元	部件	方　法	
4. 顺时针 音量	1) 调整项目 :[VOL2] 调整 :[∗∗∗]	1) 调整项目 : [Clockwise Volume]				面板		**[面板调谐模式]** 顺时针完全转动音量旋钮。 按 [<] 键储存调整值。 **[PC 测试模式]** 顺时针完全转动音量旋钮。 按 [Apply] 按钮储存调整值。	更换可变电阻器 (R31-0666-05) 时需调整此项。
5. 接收辅助	1) 调整项目 :[RAST] 调整 :[∗∗∗∗] 2) 调整项目 : [L RAST]→ [L’ RAST]→ [C RAST]→ [H’ RAST]→ [H RAST] 调整 :[∗∗∗∗] 按 [<] 键储存调整值。	1) 调整项目 : [Receive Assist] 2) 调整项目 :[Low], [Low’],[Center], [High’],[High] 按 [Apply All] 按钮储存调整值。					[面板调谐模式] [︿], [﹀] [PC 测试模式] [◄], [►]	副 LCD 显示和 PC 窗口上的 [V] 指示显示了 VCO 锁定电压。 更改调整值，以获得指定电压范围内的 VCO 锁定电压。 **注意 :** 在更改调整值约 3 秒后确认 VCO 锁定电压。 调整所有调整点之后，按 [Apply All] 按钮储存调整值。	2.5V±0.1V **[PC 测试模式]** 调整所有调整点之后，按 [Apply All] 按钮储存调整值。
发射辅助	1) 调整项目 :[TAST] 调整 :[∗∗∗∗] 2) 调整项目 : [L TAST]→ [L’ TAST]→ [C TAST]→ [H’ TAST]→ [H TAST] 调整 :[∗∗∗∗] PTT: 开启 (RF 功率不輸出。) 按 [<] 键储存调整值。	1) 调整项目 : [Transmit Assist] 2) 调整项目 :[Low], [Low’],[Center], [High’],[High] PTT: 按 [Transmit] 按钮。 按 [Apply All] 按钮储存调整值。							
6. RTC 振荡 频率调整	1) 调整项目 :[RTC] 调整 :[∗∗∗]	1) 调整项目 : [RTC (Real-time clock)]					[Side1]	**[面板调谐模式]** 按 [Side1] 键。 自动调整的调整值显示在 LCD 上之后。 按 [<] 键储存调整值。 **[PC 测试模式]** 按 “Auto Tuning” 的 [Start] 按钮。 自动调整完成之后，按 [Apply] 按钮储存调整值。	

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
7. Frequency adjust	* The Frequency adjustment can be performed only in PC test mode.	1) Adj item: [Frequency] SSG output : –20dBm (22.4mV) (CW (without modulation)) **Caution:** Perform the frequency adjustment under the following conditions. • Temperature range of +23˚C to +27˚C (+73.4˚F to +80.6˚F). (The temperature is displayed on the Frequency adjustment screen of the KPG-111D(C) and the LCD of the transceiver.) • Use an accuracy of 0.003ppm for the SSG. (Use a standard oscillator if necessary.)	SSG	Panel	ANT	Panel	[Side1]	[PC test mode] Press [Start] button of "Auto Tuning". Press [Apply] button to store the adjustment value after the automatic adjustment was finished.	[PC test mode] The value of "IF20" will become around "0" after the adjustment was finished. Remark: "Frequency" is adjusted under receiving condition with SSG.

Transmitter Section

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. High Transmit Power adjust (Battery voltage: 7.5V)	1) Adj item: [HIPWR] Adjust: [✻✻✻✻] 2) Adj item: [L HIPWR]→ [L' HIPWR]→ [C HIPWR]→ [H' HIPWR]→ [H HIPWR] Adjust: [✻✻✻✻] PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [High Transmit Power] 2) Adj item: [Low], [Low'], [Center], [High'], [High] PTT: Press [Transmit] button. Press [Apply All] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	[Panel tuning mode] [︿], [﹀] [PC test mode] [◀],[▶]	5.0W	±0.2W 2.0A or less [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.
2. Low Transmit Power adjust (Battery voltage: 7.5V)	1) Adj item: [LOPWR] Adjust: [✻✻✻✻] 2) Adj item: [L LOPWR]→ [L' LOPWR]→ [C LOPWR]→ [H' LOPWR]→ [H LOPWR] Adjust: [✻✻✻✻] PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [Low Transmit Power] 2) Adj item: [Low], [Low'], [Center], [High'], [High] PTT: Press [Transmit] button. Press [Apply All] button to store the adjustment value.						0.8W	±0.1W 1.0A or less [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.

调　　整

项　目	条　　件		测　　量			调　　整			规　格 / 备　注
	面板调谐模式	PC 测试模式	测量装置	单元	端子	单元	部件	方　法	
7. 频率调整	* 频率调整只能在 PC 测试模式中进行。	1) 调整项目 : [Frequency] SSG 输出 : －20dBm(22.4mV) (CW(无调制)) **注意 :** 在下述条件下进行频率调整。 • 温度范围 +23℃至 +27℃。 (KPG-111D(C) 的频率调整画面和手持对讲机的 LCD 上显示频率。) • 使用 0.003ppm 的 SSG 精度。(如有必要，请使用标准振荡器。)	SSG	面板	天线	面板	[Side1]	**[PC 测试模式]** 按“Auto Tuning”的 [Start] 按钮。自动调整完成之后，按 [Apply] 按钮储存调整值。	**[PC 测试模式]** 调整结束后，“IF20”的值将变成“0”左右。 **备注 :** 在 SSG 接收条件下调整“Frequency”。

发射机部分

项　目	条　　件		测　　量			调　　整			规　格 / 备　注
	面板调谐模式	PC 测试模式	测量装置	单元	端子	单元	部件	方　法	
1. 高发射功率调整 (电池电压 :7.5V)	1) 调整项目 :[HIPWR] 调整 :[∗∗∗∗] 2) 调整项目 : [L HIPWR]→ [L’ HIPWR]→ [C HIPWR]→ [H’ HIPWR]→ [H HIPWR] 调整 :[∗∗∗∗] PTT: 开启 按 [＜] 键储存调整值。	1) 调整项目 :[High Transmit Power] 2) 调整项目 :[Low],[Low’],[Center],[High’],[High] PTT: 按 [Transmit] 按钮。 按 [Apply All] 按钮储存调整值。	功率计 电流表	面板	天线	面板	**[面板调谐模式]** [︿],[﹀] **[PC 测试模式]** [◀],[▶]	5.0W	±0.2W 2.0A 或更低 **[PC 测试模式]** 调整所有调整点之后，按 [Apply All] 按钮储存调整值。
2. 低发射功率调整 (电池电压 :7.5V)	1) 调整项目 :[LOPWR] 调整 :[∗∗∗∗] 2) 调整项目 : [L LOPWR]→ [L’ LOPWR]→ [C LOPWR]→ [H’ LOPWR]→ [H LOPWR] 调整 :[∗∗∗∗] PTT: 开启 按 [＜] 键储存调整值。	1) 调整项目 :[Low Transmit Power] 2) 调整项目 :[Low],[Low’],[Center],[High’],[High] PTT: 按 [Transmit] 按钮。 按 [Apply All] 按钮储存调整值。						0.8W	±0.1W 1.0A 或更低 **[PC 测试模式]** 调整所有调整点之后，按 [Apply All] 按钮储存调整值。

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
3. Balance adjust *2	1) Adj item: [BAL] Adjust: [✳✳✳] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [L BAL]→ [L' BAL]→ [C BAL]→ [H' BAL]→ [H BAL] Adjust: [✳✳✳] PTT: ON Press [<] key to store the adjust-ment value. Sub LCD: Tone frequency [Side1] key: Press while transmitting to change 20Hz and 2kHz.	1) Adj item: [Balance] Deviation meter LPF : 3kHz HPF : OFF 2) Adj item: [Low], [Low'], [Center], [High'], [High] PTT: Press [Transmit] button. Press [Apply All] button to store the adjustment value. [2kHz Sine Wave Check box]: Check while transmitting change to 2kHz.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [∧], [∨] [PC test mode] [◀],[▶]	The Deviation of 20Hz frequency is fixed. Change the 2kHz adjustment value to become the same deviation of 20Hz within the specified range.	2kHz Tone deviation is within ±1.0% of 20Hz tone devia-tion. [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.

*2: Refer to the "Necessary Deviation adjustment item for each signaling and mode" table on page 102.
Balance adjustment is common with the adjustment of all signaling deviations.

Item	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	Specifications / Remarks
4. Maximum Deviation (NXDN) adjust *3 [Narrow]	1) Adj item: [Nn NDEV] Adjust: [✳✳✳✳] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [NnL NDEV]→ [NnL' NDEV]→ [NnC NDEV]→ [NnH' NDEV]→ [NnH NDEV] Adjust: [✳✳✳✳] PTT: ON Press [<] key to store the adjust-ment value.	1) Adj item: [Maximum Deviation (NXDN Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low], [Low'], [Center], [High'], [High] PTT: Press [Transmit] button. Press [Apply All] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [∧], [∨] [PC test mode] [◀],[▶]	3056Hz	2995~3117Hz [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.
[Very Narrow]	1) Adj item: [Nv NDEV] Adjust: [✳✳✳✳] 2) Adj item: [NvL NDEV]→ [NvL' NDEV]→ [NvC NDEV]→ [NvH' NDEV]→ [NvH NDEV] Adjust: [✳✳✳✳] PTT: ON Press [<] key to store the adjust-ment value.	1) Adj item: [Maximum Deviation (NXDN Very Narrow)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] PTT: Press [Transmit] button. Press [Apply All] button to store the adjustment value.						1337Hz	1311~1363Hz [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.

调　整

项 目	条 件		测 量			调 整			规 格 / 备 注
	面板调谐模式	PC 测试模式	测量装置	单元	端子	单元	部件	方 法	
3. 平衡调整 *2	1) 调整项目 :[BAL] 调整 :[∗∗∗] 频偏仪 LPF:3kHz HPF: 关闭 2) 调整项目 : [L BAL]→ [L' BAL]→ [C BAL]→ [H' BAL]→ [H BAL] 调整 :[∗∗∗] PTT: 开启 按 [<] 键储存调整值。 副 LCD: 单音频率 [Side1] 键 : 发射时按此键更改 20Hz 和 2kHz。	1) 调整项目 : [Balance] 频偏仪 LPF:3kHz HPF: 关闭 2) 调整项目 :[Low], [Low'],[Center], [High'],[High] PTT: 按 [Transmit] 按钮。 按 [Apply All] 按钮储存调整值。 [2kHz Sine Wave Check box]: 发射时复选此项改为 2kHz。	频偏仪 示波器	面板	天线	面板	[面板调谐模式] [∧], [∨] [PC 测试模式] [◀], [▶]	20Hz 频率的频偏固定。 更改 2kHz 调整值，变成指定范围内 20Hz 的相同频偏。	2kHz 音调频偏在 20Hz 音调频偏的 ±1.0% 以内。 [PC 测试模式] 调整所有调整点之后，按 [Apply All] 按钮储存调整值。
*2: 请参阅第 103 页的“各信令和模式所需的频偏调整项目”表。 所有信令频偏的平衡调整共用。									
4. 最大频偏 (NXDN) 调整 *3 [窄]	1) 调整项目 : [Nn NDEV] 调整 :[∗∗∗∗] 频偏仪 LPF:3kHz HPF: 关闭 2) 调整项目 : [NnL NDEV]→ [NnL' NDEV]→ [NnC NDEV]→ [NnH' NDEV]→ [NnH NDEV] 调整 :[∗∗∗∗] PTT: 开启 按 [<] 键储存调整值。	1) 调整项目 : [Maximum Deviation (NXDN Narrow)] 频偏仪 LPF:3kHz HPF: 关闭 2) 调整项目 :[Low], [Low'],[Center], [High'],[High] PTT: 按 [Transmit] 按钮。 按 [Apply All] 按钮储存调整值。	频偏仪 示波器	面板	天线	面板	[面板调谐模式] [∧], [∨] [PC 测试模式] [◀], [▶]	3056Hz	2995~3117Hz [PC 测试模式] 调整所有调整点之后，按 [Apply All] 按钮储存调整值。
[超窄]	1) 调整项目 : [Nv NDEV] 调整 :[∗∗∗∗] 2) 调整项目 : [NvL NDEV]→ [NvL' NDEV]→ [NvC NDEV]→ [NvH' NDEV]→ [NvH NDEV] 调整 :[∗∗∗∗] PTT: 开启 按 [<] 键储存调整值。	1) 调整项目 : [Maximum Deviation (NXDN Very Narrow)] 2) 调整项目 :[Low], [Low'],[Center], [High'],[High] PTT: 按 [Transmit] 按钮。 按 [Apply All] 按钮储存调整值。						1337Hz	1311~1363Hz [PC 测试模式] 调整所有调整点之后，按 [Apply All] 按钮储存调整值。

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
5. Maximum Deviation (Analog) adjust *3 [Narrow]	1) Adj item: [An ADEV] Adjust: [✻✻✻✻] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [AnL ADEV]→ [AnL' ADEV]→ [AnC ADEV]→ [AnH' ADEV]→ [AnH ADEV] Adjust: [✻✻✻✻] Press [<] key to store the adjust-ment value.	1) Adj item: [Maximum Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low], [Low'], [Center], [High'], [High] Press [Apply All] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [︿], [﹀] [PC test mode] [◀],[▶]	Write the same adjustment value of "NXDN Deviation [Narrow]" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is between 2050Hz and 2150Hz. Deviation meter LPF: 15kHz HPF: OFF [Panel tuning mode] PTT: ON [PC test mode] PTT: Press [Transmit] button	2050~2150Hz [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.
[Wide]	1) Adj item: [Aw ADEV] Adjust: [✻✻✻✻] 2) Adj item: [AwL ADEV]→ [AwL' ADEV]→ [AwC ADEV]→ [AwH' ADEV]→ [AwH ADEV] Adjust: [✻✻✻✻] Press [<] key to store the adjust-ment value.	1) Adj item: [Maximum Deviation (Analog Wide)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] Press [Apply All] button to store the adjustment value.						Write the same adjustment value of "NXDN Deviation [Narrow]" for each adjustment point. Transmit at each adjustment point and check that the Analog deviation is between 4150Hz and 4250Hz. Deviation meter LPF: 15kHz HPF: OFF [Panel tuning mode] PTT: ON [PC test mode] PTT: Press [Transmit] button	4150~4250Hz [PC test mode] Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.

*3: Refer to the "Necessary Deviation adjustment item for each signaling and mode" table on page 102.
Regarding Maximum Deviation (Analog), it is common with the adjustment of all analog signalings.

Item	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	Specifications / Remarks
6. QT Deviation adjust *4 [Narrow]	1) Adj item: [An QT] Adjust: [✻✻✻✻] Deviation meter LPF: 3kHz HPF: OFF PTT: ON Press [<] key to store the adjust-ment value.	1) Adj item: [QT Devia-tion (Analog Narrow)] Deviation meter LPF: 3kHz HPF: OFF PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [︿], [﹀] [PC test mode] [◀],[▶]	Write the value as followings. 513 (Reference value)	0.35kHz±0.05kHz
[Wide]	1) Adj item: [Aw QT] Adjust: [✻✻✻✻] PTT: ON Press [<] key to store the adjust-ment value.	1) Adj item: [QT Devia-tion (Analog Wide)] PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.							0.75kHz±0.05kHz

调　　整

项　目	条　件		测　量			调　整			规格 / 备注
	面板测试模式	PC 测试模式	测量装置	单元	端子	单元	部件	方　法	
5. 最大频偏 （模拟） 调整 *3 ［窄］	1) 调整项目： [An ADEV] 调整：[****] 频偏仪 LPF:15kHz HPF: 关闭 2) 调整项目： [AnL ADEV]→ [AnL' ADEV]→ [AnC ADEV]→ [AnH' ADEV]→ [AnH ADEV] 调整：[****] 按［<］键储存调整值。	1) 调整项目： [Maximum Deviation (Analog Narrow)] 频偏仪 LPF:15kHz HPF: 关闭 2) 调整项目：[Low], [Low'], [Center], [High'], [High] 按 [Apply All] 按钮储存调整值。	频偏仪 示波器	面板	天线	面板	[面板调谐模式] [︿], [﹀] [PC 测试模式] [◀], [▶]	为每个调整点写入相同的“NXDN 频偏［窄］”调整值。 在每个调整点发射，检查模拟频偏是否在 2050Hz 和 2150Hz 之间。 频偏仪 LPF:15kHz HPF: 关闭 **[面板调谐模式]** PTT: 开启 **[PC 测试模式]** PTT: 按 [Transmit] 按钮。	2050~2150Hz **[PC 测试模式]** 调整所有调整点之后，按 [Apply All] 按钮储存调整值。
［宽］	1) 调整项目： [Aw ADEV] 调整：[****] 2) 调整项目： [AwL ADEV]→ [AwL' ADEV]→ [AwC ADEV]→ [AwH' ADEV]→ [AwH ADEV] 调整：[****] 按［<］键储存调整值。	1) 调整项目： [Maximum Deviation (Analog Wide)] 2) 调整项目：[Low], [Low'], [Center], [High'], [High] 按 [Apply All] 按钮储存调整值。						为每个调整点写入相同的“NXDN 频偏［窄］”调整值。 在每个调整点发射，检查模拟频偏是否在 4150Hz 和 4250Hz 之间。 频偏仪 LPF:15kHz HPF: 关闭 **[面板调谐模式]** PTT: 开启 **[PC 测试模式]** PTT: 按 [Transmit] 按钮。	4150~4250Hz **[PC 测试模式]** 调整所有调整点之后，按 [Apply All] 按钮储存调整值。
*3: 请参阅第 103 页的“各信令和模式所需的频偏调整项目”表。 对于最大频偏（模拟），所有模拟信令的调整共用。									
6. QT 频偏调整 *4 ［窄］	1) 调整项目：[An QT] 调整：[****] 频偏仪 LPF:3kHz HPF: 关闭 PTT: 开启 按［<］键储存调整值。	1) 调整项目：[QT Deviation (Analog Narrow)] 频偏仪 LPF:3kHz HPF: 关闭 PTT: 按 [Transmit] 按钮。 按 [Apply] 按钮储存调整值。	频偏仪 示波器	面板	天线	面板	[面板调谐模式] [︿], [﹀] [PC 测试模式] [◀], [▶]	写入以下值。 513（基准值）	0.35kHz±0.05kHz
［宽］	1) 调整项目：[Aw QT] 调整：[****] PTT: 开启 按［<］键储存调整值。	1) 调整项目：[QT Deviation (Analog Wide)] PTT: 按 [Transmit] 按钮。 按 [Apply] 按钮储存调整值。							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 adjust *4 [Narrow]	1) Adj item: [An DQT] Adjust: [∗∗∗∗] Deviation meter LPF: 3kHz HPF: OFF PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [DQT Deviation (Analog Narrow)] Deviation meter LPF: 3kHz HPF: OFF PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [︿], [﹀] [PC test mode] [◀],[▶]	Write the value as followings. 415 (Reference value)	0.35kHz±0.05kHz
[Wide]	1) Adj item: [Aw DQT] Adjust: [∗∗∗∗] PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [DQT Deviation (Analog Wide)] PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.							0.75kHz±0.05kHz
8. LTR Deviation adjust *4 [Narrow]	1) Adj item: [An LTR] Adjust: [∗∗∗∗] Deviation meter LPF: 3kHz HPF: OFF PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [LTR Deviation (Analog Narrow)] Deviation meter LPF: 3kHz HPF: OFF PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.						Write the value as followings. 465 (Reference value)	0.75kHz±0.05kHz
[Wide]	1) Adj item: [Aw LTR] Adjust: [∗∗∗∗] PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [LTR Deviation (Analog Wide)] PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.							1.00kHz±0.05kHz
9. DTMF Deviation adjust *4 [Narrow]	1) Adj item: [An DTMF] Adjust: [∗∗∗∗] Deviation meter LPF: 15kHz HPF: OFF PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [DTMF Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.						Write the value as followings. 540 (Reference value)	1.25kHz±0.05kHz
[Wide]	1) Adj item: [Aw DTMF] Adjust: [∗∗∗∗] PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [DTMF Deviation (Analog Wide)] PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.							2.50kHz±0.05kHz

调　　整

<table>
<tr><th rowspan="2">项　目</th><th colspan="2">条　　件</th><th colspan="3">测　　量</th><th colspan="3">调　　整</th><th rowspan="2">规 格 / 备 注</th></tr>
<tr><th>面板调谐模式</th><th>PC 测试模式</th><th>测量装置</th><th>单元</th><th>端子</th><th>单元</th><th>部件</th><th>方　法</th></tr>
<tr><td>7. DQT
频偏调整
*4
[窄]</td><td>1) 调整项目 :
[An DQT]
调整 :[∗∗∗∗]
频偏仪
LPF:3kHz
HPF: 关闭
PTT: 开启
按 [<] 键储存调整值。</td><td>1) 调整项目 :[DQT Deviation (Analog Narrow)]
频偏仪
LPF:3kHz
HPF: 关闭
PTT: 按 [Transmit] 按钮。
按 [Apply] 按钮储存调整值。</td><td rowspan="6">频偏仪
示波器</td><td rowspan="6">面板</td><td rowspan="6">天线</td><td rowspan="6">面板</td><td rowspan="6">[面板调谐模式]
[︿],
[﹀]

[PC 测试模式]
[◀],
[▶]</td><td rowspan="2">写入以下值。
415(基准值)</td><td>0.35kHz±0.05kHz</td></tr>
<tr><td>[宽]</td><td>1) 调整项目 :
[Aw DQT]
调整 :[∗∗∗∗]
PTT: 开启
按 [<] 键储存调整值。</td><td>1) 调整项目 :[DQT Deviation (Analog Wide)]
PTT: 按 [Transmit] 按钮。
按 [Apply] 按钮储存调整值。</td><td>0.75kHz±0.05kHz</td></tr>
<tr><td>8. LTR
频偏调整
*4
[窄]</td><td>1) 调整项目 :
[An LTR]
调整 :[∗∗∗∗]
频偏仪
LPF:3kHz
HPF: 关闭
PTT: 开启
按 [<] 键储存调整值。</td><td>1) 调整项目 :[LTR Deviation (Analog Narrow)]
频偏仪
LPF:3kHz
HPF: 关闭
PTT: 按 [Transmit] 按钮。
按 [Apply] 按钮储存调整值。</td><td rowspan="2">写入以下值。
465(基准值)</td><td>0.75kHz±0.05kHz</td></tr>
<tr><td>[宽]</td><td>1) 调整项目 :
[Aw LTR]
调整 :[∗∗∗∗]
PTT: 开启
按 [<] 键储存调整值。</td><td>1) 调整项目 :[LTR Deviation (Analog Wide)]
PTT: 按 [Transmit] 按钮。
按 [Apply] 按钮储存调整值。</td><td>1.00kHz±0.05kHz</td></tr>
<tr><td>9. DTMF
频偏调整
*4
[窄]</td><td>1) 调整项目 :
[An DTMF]
调整 :[∗∗∗∗]
频偏仪
LPF:15kHz
HPF: 关闭
PTT: 开启
按 [<] 键储存调整值。</td><td>1) 调整项目 :[DTMF Deviation (Analog Narrow)]
频偏仪
LPF:15kHz
HPF: 关闭
PTT: 按 [Transmit] 按钮。
按 [Apply] 按钮储存调整值。</td><td rowspan="2">写入以下值。
540(基准值)</td><td>1.25kHz±0.05kHz</td></tr>
<tr><td>[宽]</td><td>1) 调整项目 :
[Aw DTMF]
调整 :[∗∗∗∗]
PTT: 开启
按 [<] 键储存调整值。</td><td>1) 调整项目 :[DTMF Deviation (Analog Wide)]
PTT: 按 [Transmit] 按钮。
按 [Apply] 按钮储存调整值。</td><td>2.50kHz±0.05kHz</td></tr>
</table>

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	**PC test mode**	**Test-equipment**	**Unit**	**Terminal**	**Unit**	**Parts**	**Method**	
10. Single Tone Deviation adjust *4 [Narrow]	1) Adj item: [An TONE] Adjust: [✻✻✻✻] Deviation meter LPF: 15kHz HPF: OFF PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [Single Tone Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	[Panel tuning mode] [∧], [∨] [PC test mode] [◀],[▶]	Write the value as followings. 513 (Reference value)	1.50kHz±0.05kHz
[Wide]	1) Adj item: [Aw TONE] Adjust: [✻✻✻✻] PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [Single Tone Deviation (Analog Wide)] PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.							3.00kHz±0.05kHz
11. MSK Deviation adjust *4 [Narrow]	1) Adj item: [An MSK] Adjust: [✻✻✻✻] Deviation meter LPF: 15kHz HPF: OFF PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [MSK Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.						Write the value as followings. 513 (Reference value)	1.50kHz±0.05kHz
[Wide]	1) Adj item: [Aw MSK] Adjust: [✻✻✻✻] PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [MSK Deviation (Analog Wide)] PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.							3.00kHz±0.05kHz
12. CWID Deviation adjust *4 [Very Narrow]	1) Adj item: [Nv CWID] Adjust: [✻✻✻✻] Deviation meter LPF: 15kHz HPF: OFF PTT: ON Press [<] key to store the adjustment value.	1) Adj item: [CW ID Deviation (NXDN Very Narrow)] Deviation meter LPF: 15kHz HPF: OFF PTT: Press [Transmit] button. Press [Apply] button to store the adjustment value.						Write the value as followings. 376 (Reference value)	1.10kHz±0.10kHz

*4: Refer to the “Necessary Deviation adjustment item for each signaling and mode” table on page 102.

调　　整

项　目	条　件		测　量			调　整			规 格 / 备 注
	面板调谐模式	PC 测试模式	测量装置	单元	端子	单元	部件	方　法	
10. 单音 频偏调整 *4 ［窄］	1)调整项目： [An TONE] 调整：[****] 频偏仪 LPF:15kHz HPF:关闭 PTT:开启 按［<］键储存调整值。	1)调整项目：[Single Tone Deviation (Analog Narrow)] 频偏仪 LPF:15kHz HPF:关闭 PTT:按[Transmit]按钮。 按[Apply]按钮储存调整值。	频偏仪 示波器	面板	天线	面板	[面板调谐模式] [︿], [﹀] [PC 测试模式] [◀], [▶]	写入以下值。 513(基准值)	1.50kHz±0.05kHz
［宽］	1)调整项目：[Aw TONE] 调整：[****] PTT:开启 按［<］键储存调整值。	1)调整项目：[Single Tone Deviation (Analog Wide)] PTT:按[Transmit]按钮。 按[Apply]按钮储存调整值。							3.00kHz±0.05kHz
11.MSK 频偏调整 *4 ［窄］	1)调整项目： [An MSK] 调整：[****] 频偏仪 LPF:15kHz HPF:关闭 PTT:开启 按［<］键储存调整值。	1)调整项目：[MSK Deviation (Analog Narrow)] 频偏仪 LPF:15kHz HPF:关闭 PTT:按[Transmit]按钮。 按[Apply]按钮储存调整值。						写入以下值。 513(基准值)	1.50kHz±0.05kHz
［宽］	1)调整项目： [Aw MSK] 调整：[****] PTT:开启 按［<］键储存调整值。	1)调整项目：[MSK Deviation (Analog Wide)] PTT:按[Transmit]按钮。 按[Apply]按钮储存调整值。							3.00kHz±0.05kHz
12. CWID 频偏调整 *4 ［超窄］	1)调整项目： [Nv CWID] 调整：[****] 频偏仪 LPF:15kHz HPF:关闭 PTT:开启 按［<］键储存调整值。	1)调整项目：[CW ID Deviation (NXDN Very Narrow)] 频偏仪 LPF:15kHz HPF:关闭 PTT:按[Transmit]按钮。 按[Apply]按钮储存调整值。						写入以下值。 376(基准值)	1.10kHz±0.10kHz

*4：请参阅第 103 页的“各信令和模式所需的频偏调整项目”表。
对于最大频偏(模拟)，所有模拟信令的调整共用。

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
13. VOX1 adjust	1) Adj item: [VOX1] Adjust: [✳✳✳] AG: 1kHz/45mV at MIC terminal	1) Adj item: [VOX1] AG: 1kHz/45mV at MIC terminal	AG	Panel	Universal connector			[Panel tuning mode] After apply signal from AG, press [<] key to store the adjustment value. [PC test mode] After apply signal from AG, press [Apply] button to store the adjustment value.	
14. VOX10 adjust	1) Adj item: [VOX10] Adjust: [✳✳✳] AG: 1kHz/3mV at MIC terminal	1) Adj item: [VOX10] AG: 1kHz/3mV at MIC terminal							
15. BATT detection writing	1) Adj item: [BATT] Adjust: [✳✳✳] PTT: ON	1) Adj item:[Battery Warning Level] PTT: Press [Transmit] button.	Power meter DVM	Panel	ANT BATT terminal			Press the PTT switch or [Transmit] button on the PC window. Apply 6.20V to battery terminal. Confirm that one pre-determined numeric in the range 1 to 256 appears. [Panel tuning mode] Press [<] key to store the adjustment value. [PC test mode] Press [Apply] button to store the adjustment value.	
16. BATT detection check	[Panel test mode] 1) CH-Sig: 1-1 BATT terminal voltage: 6.0V while transmitting	1) Test Channel Channel: 1 Test Signaling Mode: Analog Signaling: 1 BATT terminal voltage: 6.0V while transmitting						Check	The transceiver can transmit with causing the LED to blink.

调　　整

项　目	条　　件		测　　量			调　　整			规　格 / 备　注
	面板调谐模式	PC 测试模式	测量装置	单元	端子	单元	部件	方　法	
13. VOX1 调整	1) 调整项目 :[VOX1] 调整 :[∗∗∗] AG:MIC 端子处 1kHz/45mV	1) 调整项目 :[VOX1] AG:MIC 端子处 1kHz/45mV	AG	面板	通用连接器			**[面板调谐模式]** 从 AG 施加信号之后，按 [<] 键储存调整值。 **[PC 测试模式]** 从 AG 施加信号之后，按 [Apply] 按钮储存调整值。	
14. VOX10 调整	1) 调整项目 :[VOX10] 调整 :[∗∗∗] AG:MIC 端子处 1kHz/3mV	1) 调整项目 :[VOX10] AG:MIC 端子处 1kHz/3mV							
15. BATT 检测写入	1) 调整项目 :[BATT] 调整 :[∗∗∗] PTT: 开启	1) 调整项目 : [Battery Warning Level] PTT: 按 [Transmit] 按钮。	功率计 DVM	面板	天线 BATT 终端			按 PTT 开关或 PC 窗口上的 [Transmit] 按钮。 在电池端子上施加 6.20V。确认范围 1 至 256 中出现预定的数字。 **[面板调谐模式]** 按 [<] 键储存调整值。 **[PC 测试模式]** 按 [Apply] 按钮储存调整值。	
16. BATT 检测检查	**[面板测试模式]** 1) CH-Sig:1-1 BATT 端子电压 : 发射时 6.0V	1) 测试信道 信道 :1 测试信令 模式 : 模拟 信令 :1 BATT 端子电压 : 发射时 6.0V						检查	手持对讲机可以发射，使 LED 闪烁。

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

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

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

调　　整

■各信令和模式所需的频偏调整项目

下表显示了各信令频偏所需的调整项目。请按照以下示例阅读下表。对于信令“QT（宽）”，该信令包含三个组成部分 [平衡，最大频偏（模拟宽）和 QT 频偏（宽）]。请在调整 QT 频偏（宽）之前调整平衡和最大频偏（模拟宽）。

<table>
<tr><th rowspan="2">模式</th><th rowspan="2">信令</th><th colspan="3">所需的调整和顺序</th></tr>
<tr><th>宽</th><th>窄</th><th>超窄</th></tr>
<tr><td rowspan="7">模拟</td><td>音频</td><td>步骤 1. 平衡调整
步骤 2. 最大频偏（模拟宽）</td><td>步骤 1. 平衡调整
步骤 2. 最大频偏（模拟窄）</td><td>-</td></tr>
<tr><td>QT</td><td>步骤 1. 平衡调整
步骤 2. 最大频偏（模拟宽）
步骤 3. QT 频偏（宽）</td><td>步骤 1. 平衡调整
步骤 2. 最大频偏（模拟窄）
步骤 3. QT 频偏（窄）</td><td>-</td></tr>
<tr><td>DQT</td><td>步骤 1. 平衡调整
步骤 2. 最大频偏（模拟宽）
步骤 3. DQT 频偏（宽）</td><td>步骤 1. 平衡调整
步骤 2. 最大频偏（模拟窄）
步骤 3. DQT 频偏（窄）</td><td>-</td></tr>
<tr><td>LTR</td><td>步骤 1. 平衡调整
步骤 2. 最大频偏（模拟宽）
步骤 3. LTR 频偏（宽）</td><td>步骤 1. 平衡调整
步骤 2. 最大频偏（模拟窄）
步骤 3. LTR 频偏（窄）</td><td>-</td></tr>
<tr><td>DTMF</td><td>步骤 1. 平衡调整
步骤 2. 最大频偏（模拟宽）
步骤 3. DTMF 频偏（宽）</td><td>步骤 1. 平衡调整
步骤 2. 最大频偏（模拟窄）
步骤 3. DTMF 频偏（窄）</td><td>-</td></tr>
<tr><td>2- 音</td><td>步骤 1. 平衡调整
步骤 2. 最大频偏（模拟宽）
步骤 3. 单音频偏（模拟宽）</td><td>步骤 1. 平衡调整
步骤 2. 最大频偏（模拟窄）
步骤 3. 单音频偏（模拟窄）</td><td>-</td></tr>
<tr><td>MSK
(FleetSync)</td><td>步骤 1. 平衡调整
步骤 2. 最大频偏（模拟宽）
步骤 3. MSK 频偏（模拟宽）</td><td>步骤 1. 平衡调整
步骤 2. 最大频偏（模拟窄）
步骤 3. MSK 频偏（模拟窄）</td><td>-</td></tr>
<tr><td rowspan="2">NXDN</td><td>音频</td><td>-</td><td>步骤 1. 平衡调整
步骤 2. 最大频偏 (NXDN 窄）</td><td>步骤 1. 平衡调整
步骤 2. 最大频偏 (NXDN 超窄）</td></tr>
<tr><td>CWID</td><td>-</td><td>-</td><td>步骤 1. 平衡调整
步骤 2. 最大频偏（模拟窄）
步骤 3. CWID 频偏 (NXDN 超窄）</td></tr>
</table>

• 上述所有频偏调整的平衡共用。如果已经调整了平衡（发射机部分 3)，请跳过步骤 1，从步骤 2 开始调整。
• 对于所有的模拟信令频偏和 CWID 频偏 (NXDN 超窄），最大频偏（模拟宽 / 窄）共用。
如果已经调整了平衡和最大频偏（模拟宽 / 窄）(发射机部分 5)，请跳过步骤 2，从步骤 3 开始调整。

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/Narrow: Narrow Beat Shift: Uncheck Compander: Uncheck	1) Test Channel Channel: 1 Test Signaling Mode: Analog Signaling: 1 Wide/Narrow: Narrow Beat Shift: Uncheck Compander: Uncheck SSG output: –47dBm (1mV) (MOD: 1kHz/±1.5kHz)	SSG DVM AF VTVM Dummy load	Panel	ANT Universal connector	Panel	Volume knob	Turn the Volume knob to obtain 0.63V AF output.	0.63V±0.1V
2. Sensitivity 1 adjust	1) Adj item: [SENS1] Adjust: [✻✻✻] 2) Adj item: [L SENS1]→ [L' SENS1]→ [C SENS1]→ [H' SENS1]→ [H SENS1] Adjust: [✻✻✻] Press [<] key to store the adjustment value.	1) Adj item: [Sensitivity 1] 2) Adj item: [Low], [Low'], [Center], [High'], [High] Press [Apply All] button to store the adjustment value.	SSG AF VTVM Oscilloscope	Panel	ANT Universal connector	Panel	[Panel tuning mode] [︿], [﹀] [PC test mode] [◀],[▶]	Write the value as followings [L SENS1] / [Low] : 10 (Preset) [L' SENS1] / [Low'] : 50 (Preset) [C SENS1] / [Center] : 95 (Fixed) [H' SENS1] / [High'] : 135 (Fixed) [H SENS1] / [High] : 180 (Fixed)	
	3) Adj item: [L SENS1]→ [L' SENS1]	3) Adj item: [Low], [Low']						Increase the adjustment value from the preset value to get the maximum RSSI level.	
	Caution: Perform the step 2 adjustments of "3. Sensitivity 2 adjust" before performing the [L SENS1] / [L' SENS1] adjustment.								
	Adjust: [✻✻✻] SSG output: –90dBm (7.08µV) (MOD: 1kHz/±1.5kHz) Press [<] key to store the adjustment value.	Press [Apply All] button to store the adjustment value.							
3. Sensitivity 2 adjust	1) Adj item: [SENS2] Adjust: [✻✻✻] 2) Adj item: [L SENS2]→ [L' SENS2]→ [C SENS2]→ [H' SENS2]→ [H SENS2] Adjust: [✻✻✻] Press [<] key to store the adjustment value.	1) Adj item: [Sensitivity 2] 2) Adj item: [Low], [Low'], [Center], [High'], [High] Press [Apply All] button to store the adjustment value.						Write the value as followings [L SENS2] / [Low] : 256 (Preset) [L' SENS2] / [Low'] : 256 (Preset) [C SENS2] / [Center] : 256 (Preset) [H' SENS2] / [High'] : 256 (Preset) [H SENS2] / [High] : 256 (Preset)	

调　　整

接收机部分

项　目	条　件		测　量			调　整			规　格／备　注
	面板测试模式	PC 测试模式	测量装置	单元	端子	单元	部件	方　法	
1. AF 电平设置	**[面板测试模式]** 1) CH-Sig:1-1 SSG 输出： －47dBm(1mV) (MOD:1kHz/±1.5kHz) 宽／窄：窄 拍频偏移：不选 压缩扩展器：不选	1) 测试信道 信道：1 测试信令 模式：模拟 信令：1 宽／窄：窄 拍频偏移：不选 压缩扩展器：不选 SSG 输出： －47dBm(1mV) (MOD:1kHz/±1.5kHz)	SSG DVM AF VTVM 假负载	面板	天线 通用连接器	面板	音量旋钮	转动音量旋钮以获得 0.63V AF 输出。	0.63V±0.1V
2. 灵敏度 1 调整	1) 调整项目：[SENS1] 调整：[∗∗∗] 2) 调整项目： [L SENS1]→ [L' SENS1]→ [C SENS1]→ [H' SENS1]→ [H SENS1] 调整：[∗∗∗] 按 [＜] 键储存调整值。	1) 调整项目： [Sensitivity 1] 2) 调整项目：[Low], [Low'],[Center], [High'],[High] 按 [Apply All] 按钮储存调整值。	SSG AF VTVM 示波器	面板	天线 通用连接器	面板	**[面板调谐模式]** [︿], [﹀] **[PC 测试模式]** [◄], [►]	写入以下值。 [L SENS1]/[Low] :10(预设) [L'SENS1]/[Low'] :50(预设) [C SENS1]/[Center] :95(固定) [H'SENS1]/[High'] :135(固定) [H SENS1]/[High] :180(固定)	
	3) 调整项目： [L SENS1]→ [L' SENS1]	3) 调整项目：[Low], [Low']						从预设值增大调整值，以获得最大 RSSI 电平。	
	注意： 进行 [L SENS1]/[L' SENS1] 调整之前，请进行“3. 灵敏度 2 调整”的步骤 2 的调整。								
	调整：[∗∗∗] SSG 输出： －90dBm(7.08µV) (MOD:1kHz/±1.5kHz) 按 [＜] 键储存调整值。	按 [Apply All] 按钮储存调整值。							
3. 灵敏度 2 调整	1) 调整项目：[SENS2] 调整：[∗∗∗] 2) 调整项目： [L SENS2]→ [L' SENS2]→ [C SENS2]→ [H' SENS2]→ [H SENS2] 调整：[∗∗∗] 按 [＜] 键储存调整值。	1) 调整项目： [Sensitivity 2] 2) 调整项目：[Low], [Low'],[Center], [High'],[High] 按 [Apply All] 按钮储存调整值。						写入以下值。 [L SENS2]/[Low] :256(预设) [L'SENS2]/[Low'] :256(预设) [C SENS2]/[Center] :256(固定) [H'SENS2]/[High'] :256(固定) [H SENS2]/[High] :256(固定)	

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
3. Sensitivity 2 adjust	3) Adj item: [L SENS2]→ [L' SENS2]→ [C SENS2]→ [H' SENS2]→ [H SENS2] Adjust: [∗∗∗] SSG output: –118dBm (0.28μV) (MOD: 1kHz/±1.5kHz) Press [<] key to store the adjustment value.	3) Adj item: [Low], [Low'], [Center], [High'], [High] Press [Apply All] button to store the adjustment value.	SSG AF VTVM Oscilloscope	Panel	ANT Universal connector	Panel	[Panel tuning mode] [︿], [﹀] [PC test mode] [◀],[▶]	Decrease the adjustment value from preset value (256) to get 12dB SINAD.	
4. RSSI reference adjust *5 [Analog Narrow]	1) Adj item: [An RRSSI] Adjust: [∗∗∗] 2) Adj item: [AnL RRSSI]→ [AnL' RRSSI]→ [AnC RRSSI]→ [AnH' RRSSI]→ [AnH RRSSI] Adjust: [∗∗∗] SSG output: 12dB SINAD level –3dB (MOD: 1kHz/±1.5kHz)	1) Adj item: [RSSI Reference (Analog Narrow)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: 12dB SINAD level –3dB (MOD: 1kHz/±1.5kHz)	SSG Distortion meter Oscilloscope					[Panel tuning mode] After input signal from SSG, press [<] key to store the adjustment value. [PC test mode] After input signal from SSG, press [Apply] button to store the adjustment value.	
[Analog Wide]	1) Adj item: [Aw RRSSI] Adjust: [∗∗∗] 2) Adj item: [AwL RRSSI]→ [AwL' RRSSI]→ [AwC RRSSI]→ [AwH' RRSSI]→ [AwH RRSSI] Adjust: [∗∗∗] SSG output: 12dB SINAD level –3dB (MOD: 1kHz/±3kHz)	1) Adj item: [RSSI Reference (Analog Wide)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: 12dB SINAD level –3dB (MOD: 1kHz/±3kHz)							
[NXDN Very Narrow]	1) Adj item: [Nv RRSSI] Adjust: [∗∗∗] 2) Adj item: [NvL RRSSI]→ [NvL' RRSSI]→ [NvC RRSSI]→ [NvH' RRSSI]→ [NvH RRSSI] Adjust: [∗∗∗] SSG output: 12dB SINAD level for Analog Narrow –3dB (MOD: 1kHz/±1.5kHz)	1) Adj item: [RSSI Reference (NXDN Very Narrow)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: 12dB SINAD level for Analog Narrow –3dB (MOD: 1kHz/±1.5kHz)						[Panel tuning mode] After input signal from SSG, press [<] key to store the adjustment value. [PC test mode] After input signal from SSG, press [Apply] button to store the adjustment value.	Adjust with the analog signal.

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

调　　整

<table>
<tr><th rowspan="2">项　目</th><th colspan="2">条　　件</th><th colspan="3">测　　量</th><th colspan="3">调　　整</th><th rowspan="2">规　格 / 备　注</th></tr>
<tr><th>面板调谐模式</th><th>PC 测试模式</th><th>测量装置</th><th>单元</th><th>端子</th><th>单元</th><th>部件</th><th>方　法</th></tr>
<tr><td>3. 灵敏度 2 调整</td><td>3) 调整项目 :
[L SENS2]→
[L' SENS2]→
[C SENS2]→
[H' SENS2]→
[H SENS2]
调整 :[***]
SSG 输出 :
－118dBm(0.28μV)
(MOD:1kHz/±1.5kHz)
按 [＜] 键储存调整值。</td><td>3) 调整项目 :[Low],
[Low'],[Center],
[High'],[High]
按 [Apply All] 按钮储存调整值。</td><td>SSG
AF VTVM
示波器</td><td rowspan="4">面板</td><td rowspan="4">天线通用连接器</td><td>面板</td><td>[面板调谐模式]
[︿],
[﹀]

[PC 测试模式]
[◄],
[►]</td><td>从预设值 (256) 减小调整值以获得 12dB SINAD。</td><td></td></tr>
<tr><td>4. RSSI 基准调整 *5

[模拟窄]</td><td>1) 调整项目 :
[An RRSSI]
调整 :[***]
2) 调整项目 :
[AnL RRSSI]→
[AnL' RRSSI]→
[AnC RRSSI]→
[AnH' RRSSI]→
[AnH RRSSI]
调整 :[***]
SSG 输出 :12dB
SINAD 电平 －3dB
(MOD:1kHz/±1.5kHz)</td><td>1) 调整项目 :
[RSSI Reference (Analog Narrow)]
2) 调整项目 :[Low],
[Low'],[Center],
[High'],[High]
SSG 输出 :12dB
SINAD 电平 －3dB
(MOD:1kHz/±1.5kHz)</td><td rowspan="3">SSG
失真测试仪
示波器</td><td rowspan="3"></td><td rowspan="3"></td><td rowspan="2">[面板调谐模式]
从 SSG 输入信号之后，按 [＜] 键储存调整值。

[PC 测试模式]
从 SSG 输入信号之后，按 [Apply] 按钮储存调整值。</td><td rowspan="2"></td></tr>
<tr><td>[模拟宽]</td><td>1) 调整项目 :
[Aw RRSSI]
调整 :[***]
2) 调整项目 :
[AwL RRSSI]→
[AwL' RRSSI]→
[AwC RRSSI]→
[AwH' RRSSI]→
[AwH RRSSI]
调整 :[***]
SSG 输出 :12dB
SINAD 电平 －3dB
(MOD:1kHz/±3kHz)</td><td>1) 调整项目 :
[RSSI Reference (Analog Wide)]
2) 调整项目 :[Low],
[Low'],[Center],
[High'],[High]
SSG 输出 :12dB
SINAD 电平 －3dB
(MOD:1kHz/±3kHz)</td></tr>
<tr><td>[NXDN 超窄]</td><td>1) 调整项目 :
[Nv RRSSI]
调整 :[***]
2) 调整项目 :
[NvL RRSSI]→
[NvL' RRSSI]→
[NvC RRSSI]→
[NvH' RRSSI]→
[NvH RRSSI]
调整 :[***]
SSG 输出 :
模拟窄的 12dB
SINAD 电平 －3dB
(MOD:1kHz/±1.5kHz)</td><td>1) 调整项目 :[RSSI Reference (NXDN Very Narrow)]
2) 调整项目 :[Low],
[Low'],[Center],
[High'],[High]
SSG 输出 :12dB
SSG 输出 :
模拟窄的 12dB
SINAD 电平 －3dB
(MOD:1kHz/±1.5kHz)</td><td>[面板调谐模式]
从 SSG 输入信号之后，按 [＜] 键储存调整值。

[PC 测试模式]
从 SSG 输入信号之后，按 [Apply] 按钮储存调整值。</td><td>用模拟信号进行调整。</td></tr>
<tr><td colspan="10">*5: 由于 RSSI 基准 (NXDN 窄) 通过调整 RSSI 基准 (模拟窄) 进行调整，因此不需要调整 RSSI 基准 (NXDN 窄)。</td></tr>
</table>

ADJUSTMENT

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

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

调　　整

项　目	条　　件		测　　量			调　　整			规　格／备　注
	面板调谐模式	PC 测试模式	测量装置	单元	端子	单元	部件	方　法	
5. 静噪开 调整 *6 （静噪 电平 5 调整） ［模拟窄］	1) 调整项目： [An SQL] 调整：[***] 2) 调整项目： [AnL SQL]→ [AnL' SQL]→ [AnC SQL]→ [AnH' SQL]→ [AnH SQL] 调整：[***] SSG 输出：12dB SINAD 电平 (MOD:1kHz/±1.5kHz)	1) 调整项目： [Open Squelch (Analog Narrow)] 2) 调整项目：[Low], [Low'],[Center], [High'],[High] SSG 输出：12dB SINAD 电平 (MOD:1kHz/±1.5kHz)	SSG 失真测试 仪 示波器	面板	天线 通用连 接器			**［面板调谐模式］** 从 SSG 输入信号之后，按［<］键储存调整值。 **[PC 测试模式］** 从 SSG 输入信号之后，按 [Apply] 按钮储存调整值。	如果 MOD 和频偏错误，则不能正确调整“静噪开”。
［模拟宽］	1) 调整项目： [Aw SQL] 调整：[***] 2) 调整项目： [AwL SQL]→ [AwL' SQL]→ [AwC SQL]→ [AwH' SQL]→ [AwH SQL] 调整：[***] SSG 输出：12dB SINAD 电平 (MOD:1kHz/±3kHz)	1) 调整项目： [Open Squelch (Analog Wide)] 2) 调整项目：[Low], [Low'],[Center], [High'],[High] SSG 输出：12dB SINAD 电平 (MOD:1kHz/±3kHz)							
[NXDN 超窄］	1) 调整项目： [Nv SQL] 调整：[***] 2) 调整项目： [NvL SQL]→ [NvL' SQL]→ [NvC SQL]→ [NvH' SQL]→ [NvH SQL] 调整：[***] SSG 输出： 模拟窄的 12dB SINAD 电平 －4dB (MOD:400Hz/±1.1kHz)	1) 调整项目： [Open Squelch (NXDN Very Narrow)] 2) 调整项目：[Low], [Low'],[Center], [High'],[High] SSG 输出： 模拟窄的 12dB SINAD 电平 －4dB (MOD:400Hz/±1.1kHz)						**［面板调谐模式］** 从 SSG 输入信号之后，按［<］键储存调整值。 **[PC 测试模式］** 从 SSG 输入信号之后，按 [Apply] 按钮储存调整值。	用模拟信号进行调整。 由于电路结构，此项在 MOD 为“400Hz”和频偏为“±1.1kHz”的条件下进行调整。

*6: 由于静噪开 (NXDN 窄）通过调整静噪开（模拟窄）进行调整，因此不需要调整静噪开 (NXDN 窄）。

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
6. Low RSSI at –118dBm adjust *7 [Analog Narrow]	1) Adj item: [An LRSSI] Adjust: [✳✳✳] 2) Adj item: [AnL LRSSI]→ [AnL' LRSSI]→ [AnC LRSSI]→ [AnH' LRSSI]→ [AnH LRSSI] Adjust: [✳✳✳] SSG output: –118dBm (0.28µV) (MOD: 1kHz/±1.5kHz)	1) Adj item: [Low RSSI (Analog Narrow)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: –118dBm (0.28µV) (MOD: 1kHz/±1.5kHz)	SSG	Panel	ANT Universal connector			[Panel tuning mode] After input signal from SSG, press [<] key to store the adjustment value. [PC test mode] After input signal from SSG, press [Apply] button to store the adjust-ment value.	
[Analog Wide]	1) Adj item: [Aw LRSSI] Adjust: [✳✳✳] 2) Adj item: [AwL LRSSI]→ [AwL' LRSSI]→ [AwC LRSSI]→ [AwH' LRSSI]→ [AwH LRSSI] Adjust: [✳✳✳] SSG output: –118dBm (0.28µV) (MOD: 1kHz/±3kHz)	1) Adj item: [Low RSSI (Analog Wide)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: –118dBm (0.28µV) (MOD: 1kHz/±3kHz)							
[NXDN Very Narrow]	1) Adj item: [Nv LRSSI] Adjust: [✳✳✳] 2) Adj item: [NvL LRSSI]→ [NvL' LRSSI]→ [NvC LRSSI]→ [NvH' LRSSI]→ [NvH LRSSI] Adjust: [✳✳✳] SSG output: –118dBm (0.28µV) (MOD: 1kHz/±1.5kHz)	1) Adj item: [Low RSSI (NXDN Very Narrow)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: –118dBm (0.28µV) (MOD: 1kHz/±1.5kHz)							Adjust with the ana-log signal.

*7: Because Low RSSI at –118dBm (NXDN Narrow) is adjusted by adjusting Low RSSI at –118dBm (Analog Narrow), it is not necessary to adjust Low RSSI at –118dBm (NXDN Narrow).

调　　整

项　目	条　件		测　量			调　整			规　格 / 备　注
	面板调谐模式	PC 测试模式	测量装置	单元	端子	单元	部件	方　法	
6. －118dBm 低 RSSI 调整 *7 [模拟窄]	1) 调整项目 : [An LRSSI] 调整 :[∗∗∗] 2) 调整项目 : [AnL LRSSI]→ [AnL’ LRSSI]→ [AnC LRSSI]→ [AnH’ LRSSI]→ [AnH LRSSI] 调整 :[∗∗∗] SSG 输出 : －118dBm(0.28µV) (MOD:1kHz/±1.5kHz)	1) 调整项目 :[Low RSSI (Analog Narrow)] 2) 调整项目 :[Low],[Low’],[Center],[High’],[High] SSG 输出 : －118dBm(0.28µV) (MOD:1kHz/±1.5kHz)	SSG	面板	天线 通用连 接器			**[面板调谐模式]** 从 SSG 输入信号之后，按 [<] 键储存调整值。 **[PC 测试模式]** 从 SSG 输入信号之后，按 [Apply] 按钮储存调整值。	
[模拟宽]	1) 调整项目 : [Aw LRSSI] 调整 :[∗∗∗] 2) 调整项目 : [AwL LRSSI]→ [AwL’ LRSSI]→ [AwC LRSSI]→ [AwH’ LRSSI]→ [AwH LRSSI] 调整 :[∗∗∗] SSG 输出 : －118dBm(0.28µV) (MOD:1kHz/±3kHz)	1) 调整项目 :[Low RSSI (Analog Wide)] 2) 调整项目 :[Low],[Low’],[Center],[High’],[High] SSG 输出 : －118dBm(0.28µV) (MOD:1kHz/±3kHz)							
[NXDN 超窄]	1) 调整项目 : [Nv LRSSI] 调整 :[∗∗∗] 2) 调整项目 : [NvL LRSSI]→ [NvL’ LRSSI]→ [NvC LRSSI]→ [NvH’ LRSSI]→ [NvH LRSSI] 调整 :[∗∗∗] SSG 输出 : －118dBm(0.28µV) (MOD:1kHz/±1.5kHz)	1) 调整项目 :[Low RSSI (NXDN Very Narrow)] 2) 调整项目 :[Low],[Low’],[Center],[High’],[High] SSG 输出 : －118dBm(0.28µV) (MOD:1kHz/±1.5kHz)							用模拟信号进行调整。

*7: 由于 －118dBm 低 RSSI(NXDN 窄) 通过调整 －118dBm 低 RSSI(模拟窄) 进行调整，因此不需要调整 －118dBm 低 RSSI(NXDN 窄)。

ADJUSTMENT

Item	Condition: Panel tuning mode	Condition: PC test mode	Measurement: Test-equipment	Measurement: Unit	Measurement: Terminal	Adjustment: Unit	Adjustment: Parts	Adjustment: Method	Specifications / Remarks
7. High RSSI at –80dBm adjust *8 [Analog Narrow]	1) Adj item: [An HRSSI] Adjust: [***] 2) Adj item: [AnL HRSSI]→ [AnL' HRSSI]→ [AnC HRSSI]→ [AnH' HRSSI]→ [AnH HRSSI] Adjust: [***] SSG output: –80dBm (22.4µV) (MOD: 1kHz/±1.5kHz)	1) Adj item: [High RSSI (Analog Narrow)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: –80dBm (22.4µV) (MOD: 1kHz/±1.5kHz)	SSG	Panel	ANT Universal connector			[Panel tuning mode] After input signal from SSG, press [<] key to store the adjustment value. [PC test mode] After input signal from SSG, press [Apply] button to store the adjustment value.	
[Analog Wide]	1) Adj item: [Aw HRSSI] Adjust: [***] 2) Adj item: [AwL HRSSI]→ [AwL' HRSSI]→ [AwC HRSSI]→ [AwH' HRSSI]→ [AwH HRSSI] Adjust: [***] SSG output: –80dBm (22.4µV) (MOD: 1kHz/±3kHz)	1) Adj item: [High RSSI (Analog Wide)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: –80dBm (22.4µV) (MOD: 1kHz/±3kHz)							
[NXDN Very Narrow]	1) Adj item: [Nv HRSSI] Adjust: [***] 2) Adj item: [NvL HRSSI]→ [NvL' HRSSI]→ [NvC HRSSI]→ [NvH' HRSSI]→ [NvH HRSSI] Adjust: [***] SSG output: –80dBm (22.4µV) (MOD: 1kHz/±1.5kHz)	1) Adj item: [High RSSI (NXDN Very Narrow)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: –80dBm (22.4µV) (MOD: 1kHz/±1.5kHz)							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).

调　　整

项　目	条　　件		测　　量			调　　整			规　格 / 备　注
	面板调谐模式	PC 测试模式	测量装置	单元	端子	单元	部件	方　法	
7. －80dB 高 RSSI 调整 *8 [模拟窄]	1) 调整项目 : [An HRSSI] 调整 :[***] 2) 调整项目 : [AnL HRSSI]→ [AnL' HRSSI]→ [AnC HRSSI]→ [AnH' HRSSI]→ [AnH HRSSI] 调整 :[***] SSG 输出 : －80dBm(22.4μV) (MOD:1kHz/±1.5kHz)	1) 调整项目 :[High RSSI (Analog Narrow)] 2) 调整项目 :[Low],[Low'],[Center],[High'],[High] SSG 输出 : －80dBm(22.4μV) (MOD:1kHz/±1.5kHz)	SSG	面板	天线通用连接器			**[面板调谐模式]** 从 SSG 输入信号之后，按 [<] 键储存调整值。 **[PC 测试模式]** 从 SSG 输入信号之后，按 [Apply] 按钮储存调整值。	
[模拟宽]	1) 调整项目 : [Aw HRSSI] 调整 :[***] 2) 调整项目 : [AwL HRSSI]→ [AwL' HRSSI]→ [AwC HRSSI]→ [AwH' HRSSI]→ [AwH HRSSI] 调整 :[***] SSG 输出 : －80dBm(22.4μV) (MOD:1kHz/±3kHz)	1) 调整项目 :[High RSSI (Analog Wide)] 2) 调整项目 :[Low],[Low'],[Center],[High'],[High] SSG 输出 : －80dBm(22.4μV) (MOD:1kHz/±3kHz)							
[NXDN 超窄]	1) 调整项目 : [Nv HRSSI] 调整 :[***] 2) 调整项目 : [NvL HRSSI]→ [NvL' HRSSI]→ [NvC HRSSI]→ [NvH' HRSSI]→ [NvH HRSSI] 调整 :[***] SSG 输出 : －80dBm(22.4μV) (MOD:1kHz/±1.5kHz)	1) 调整项目 :[High RSSI (NXDN Very Narrow)] 2) 调整项目 :[Low],[Low'],[Center],[High'],[High] SSG 输出 : －80dBm(22.4μV) (MOD:1kHz/±1.5kHz)							用模拟信号进行调整。

*8: 由于 －80dBm 高 RSSI(NXDN 窄) 通过调整 －80dBm 高 RSSI(模拟窄) 进行调整，因此不需要调整 －80dBm 高 RSSI(NXDN 窄)。

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
8. Tight Squelch adjust (Squelch level 9 adjust) [Analog Narrow]	1) Adj item: [An SQLT] Adjust: [✳✳✳] 2) Adj item: [AnL SQLT]→ [AnL' SQLT]→ [AnC SQLT]→ [AnH' SQLT]→ [AnH SQLT] Adjust: [✳✳✳] SSG output: 12dB SINAD level +5dB (MOD: 1kHz/±1.5kHz)	1) Adj item: [Tight Squelch (Analog Narrow)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: 12dB SINAD level +5dB (MOD: 1kHz/±1.5kHz)	SSG	Panel	ANT Universal connector			[Panel tuning mode] After input signal from SSG, press [<] key to store the adjustment value. [PC test mode] After input signal from SSG, press [Apply] button to store the adjust-ment value.	
[Analog Wide]	1) Adj item: [Aw SQLT] Adjust: [✳✳✳] 2) Adj item: [AwL SQLT]→ [AwL' SQLT]→ [AwC SQLT]→ [AwH' SQLT]→ [AwH SQLT] Adjust: [✳✳✳] SSG output: 12dB SINAD level +5dB (MOD: 1kHz/±3kHz)	1) Adj item: [Tight Squelch (Analog Wide)] 2) Adj item: [Low], [Low'], [Center], [High'], [High] SSG output: 12dB SINAD level +5dB (MOD: 1kHz/±3kHz)							

调　　整

项　目	条　件		测　量			调　整			规格／备注
	面板调谐模式	PC 测试模式	测量装置	单元	端子	单元	部件	方　法	
8. 静噪深调整（静噪电平 9 调整） ［模拟窄］	1) 调整项目：[An SQLT] 调整：[∗∗∗] 2) 调整项目：[AnL SQLT]→[AnL' SQLT]→[AnC SQLT]→[AnH' SQLT]→[AnH SQLT] 调整：[∗∗∗] SSG 输出：12dB SINAD 电平 +5dB (MOD:1kHz/±1.5kHz)	1) 调整项目：[Tight Squelch (Analog Narrow)] 2) 调整项目：[Low], [Low'], [Center], [High'], [High] SSG 输出：12dB SINAD 电平 +5dB (MOD:1kHz/±1.5kHz)	SSG	面板	天线通用连接器			**［面板调谐模式］** 从 SSG 输入信号之后，按［<］键储存调整值。 **[PC 测试模式］** 从 SSG 输入信号之后，按 [Apply] 按钮储存调整值。	
［模拟宽］	1) 调整项目：[Aw SQLT] 调整：[∗∗∗] 2) 调整项目：[AwL SQLT]→[AwL' SQLT]→[AwC SQLT]→[AwH' SQLT]→[AwH SQLT] 调整：[∗∗∗] SSG 输出：12dB SINAD 电平 +5dB (MOD:1kHz/±3kHz)	1) 调整项目：[Tight Squelch (Analog Wide)] 2) 调整项目：[Low], [Low'], [Center], [High'], [High] SSG 输出：12dB SINAD 电平 +5dB (MOD:1kHz/±3kHz)							

TERMINAL FUNCTION / 端子功能

Control unit (X53-4260-11)

Pin No.	Name	I/O	Function
CN1			
1	/CS	O	Chip select output
2	/RES	O	LCD reset output
3	A0	O	Address bus 0 output
4	/WR	O	WR bus output
5	D0	I/O	Data bus 0
6	D1	I/O	Data bus 1
7	D2	I/O	Data bus 2
8	D3	I/O	Data bus 3
9	D4	I/O	Data bus 4
10	D5	I/O	Data bus 5
11	D6	I/O	Data bus 6
12	D7	I/O	Data bus 7
13	VDD	O	3.3V LCD power supply output
14	VSS	-	GND
15	VDD	O	3.3V LCD power supply output
16	V1	-	LCD drive power supply
17	V2	-	LCD drive power supply
18	V3	-	LCD drive power supply
19	V4	-	LCD drive power supply
20	V5	O	LCD drive power supply
CN23			
1	ME	-	Internal MIC GND
2	EMC	I	Internal MIC input
3	SP+	O	BTL output + for internal speaker
4	SP+	O	BTL output + for internal speaker
5	SP-	O	BTL output – for internal speaker
6	SP-	O	BTL output – for internal speaker
7	6_/KEYI1	I	Key matrix input (KEYI1 for 6-key)
8	6_/KEYO2	O	Key matrix output (KEYO2 for 6-key)
9	BL_SB	O	LCD backlight voltage output
10	6_/KEYO0	O	Key matrix output (KEYO0 for 6-key)
11	6_/KEYO1	O	Key matrix output (KEYO1 for 6-key)
12	BL_SB	O	LCD backlight voltage output
13	6_/KEYI0	I	Key matrix input (KEYI0 for 6-key)
14	AGND	-	GND
CN403			
1	33A	O	3.3V for volume level
2	VOL_GND	-	GND for volume level
3	VOL	I	Volume level input for audio control
4	EN3	I	Rotary switch input
5	AGND	-	GND
6	EN4	I	Rotary switch input
7	EN1	I	Rotary switch input
8	EN2	I	Rotary switch input

控制单元（X53-4260-11）

管脚号码	名 称	输入/输出	功 能
CN1			
1	/CS	输出	芯片选择输出
2	/RES	输出	LCD 复位输出
3	A0	输出	地址总线 0 输出
4	/WR	输出	WR 总线输出
5	D0	输入/输出	数据总线 0
6	D1	输入/输出	数据总线 1
7	D2	输入/输出	数据总线 2
8	D3	输入/输出	数据总线 3
9	D4	输入/输出	数据总线 4
10	D5	输入/输出	数据总线 5
11	D6	输入/输出	数据总线 6
12	D7	输入/输出	数据总线 7
13	VDD	输出	3.3V LCD 电源输出
14	VSS	–	GND
15	VDD	输出	3.3V LCD 电源输出
16	V1	–	LCD 驱动电源
17	V2	–	LCD 驱动电源
18	V3	–	LCD 驱动电源
19	V4	–	LCD 驱动电源
20	V5	输出	LCD 驱动电源
CN23			
1	ME	–	内置 MIC GND
2	EMC	输入	内置 MIC 输入
3	SP+	输出	内置扬声器的 BTL 输出 +
4	SP+	输出	内置扬声器的 BTL 输出 +
5	SP–	输出	内置扬声器的 BTL 输出 –
6	SP–	输出	内置扬声器的 BTL 输出 –
7	6_/KEYI1	输入	按键矩阵输入（6 键 KEYI1）
8	6_/KEYO2	输出	按键矩阵输出（6 键 KEYO2）
9	BL_SB	输出	LCD 背光电压输出
10	6_/KEYO0	输出	按键矩阵输出（6 键 KEYO0）
11	6_/KEYO1	输出	按键矩阵输出（6 键 KEYO1）
12	BL_SB	输出	LCD 背光电压输出
13	6_/KEYI0	输入	按键矩阵输入（6 键 KEYI0）
14	AGND	–	GND
CN403			
1	33A	输出	用于音量电平的 3.3V
2	VOL_GND	–	用于音量电平的 GND
3	VOL	输入	用于音频控制的音量电平输入
4	EN3	输入	旋转开关输入
5	AGND	–	GND
6	EN4	输入	旋转开关输入
7	EN1	输入	旋转开关输入
8	EN2	输入	旋转开关输入

TERMINAL FUNCTION / 端子功能

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

管脚号码	名 称	输入/输出	功　能
9	+B	输出	通过保险丝后的电源输出
10	SB1	输入	电源开关后的电源输入
		CN404	
1	LED_G	输出	绿色 LED 控制输出
2	/EMG	输入	紧急报警（橙色）键输入
3	LED_R	输出	红色 LED 控制输出
4	IFC	输入	TX-RX PCB 版本确认输入
5	/SAVE	输出	50C Reg. 控制输出
6	I2CCK	输出	TCXO 温度计时钟输出
7	/5TC	输出	50T Reg. 开关控制输出
8	I2CSDA	输入/输出	TCXO 温度计时钟输入 / 输出
9	SBC	输出	SB3 开关控制输出
10	/T_R	输出	TX/RX 控制输出
11	TV2	输出	RX 调谐电压 2 输出
12	ASSIST	输出	VCO 调谐电压输出
13	TV1	输出	RX 调谐电压 1 输出
14	VAGC	输入	AGC 电压输入
15	5RC	输出	50R 开关控制输出
16	TCXO_MOD	输出	TCXO 调制输出
17	PGND	-	GND
18	RSSI	输入	RSSI 电压输入
19	PGND	-	GND
20	CV	输入	CV 电压输入
21	AGND	-	GND
22	NC	-	未连接
23	NC	-	未连接
24	+B	输入	通过保险丝后的电源输入
25	+B	输入	通过保险丝后的电源输入
26	+B	输入	通过保险丝后的电源输入
27	+B	输入	通过保险丝后的电源输入
28	NC	-	未连接
29	NC	-	未连接
30	AGND	-	GND
31	/PTT	输入	PTT 输入
32	Side_G	输出	键矩阵输出 (SIDE1，2 键）
33	Side_1	输入	键矩阵输入 (SIDE1 键）
34	W_/N	输出	W/N 控制输出
35	SDO1	输出	PLL 串行数据输出
36	Side_2	输入	键矩阵输入 (SIDE2 键）
37	/PCS_RF	输出	PLL 启用输出
38	/DSW	输出	APC 电压放电开关控制输出
39	APC	输出	APC 控制电压输出
40	/APCSW	输出	APC 开关控制输出
41	VCO_MOD	输出	VCO 调制输出

TERMINAL FUNCTION / 端子功能

Pin No.	Name	I/O	Function
42	THP	I	Thermistor voltage input
43	PLD	I	PLL lock detect input
44	38M	O	38M output
45	SCK1	O	PLL clock output
46	GND	-	GND
47	S_DET	I	Battery select input
48	GND	-	GND
49	NC	-	No connection
50	IF_DET	I	IF input
CN405			
1	SSW	I	EXT/INT speaker switch input
2	SP+	O	BTL output + for external speaker
3	SP-	O	BTL output – for external speaker
4	MSW	I	EXT/INT MIC switch input
5	EMC	I	External MIC input
6	ME	-	External MIC GND
7	PTT	I	External PTT input
8	PF	I	Programmable function key input
9	OPT	I/O	Option interface I/O
10	E	-	GND
11	5V	O	5V output
12	TXD	O	Serial data output
13	RXD	I	Serial data input
14	NC	-	No connection
CN701 (for production)			
1~20			
CN710			
1	OPT1	I/O	Refer to “CN710 26-pin connector specification” described on pages 124 to 129.
2	OPT3	I/O	
3	26P_RD	I	
4	26P_TD	O	
5	NC	-	
6	OPT4	O	
7	OPT10	O	
8	OPT5	O	
9	DGND	-	
10	AGND	-	
11	AI	I	
12	AO	O	
13	AGND	-	
14	5V	O	
15	OPT9	I	
16	DTI	I	
17	OPT8	I/O	
18	OPT11	O	
19	OPT7	I/O	

管脚号码	名 称	输入/输出	功 能
42	THP	输入	热敏电阻电压输入
43	PLD	输入	PLL 锁定检测输入
44	38M	输出	38M 输出
45	SCK1	输出	PLL 锁定输出
46	GND	–	GND
47	S_DET	输入	电池选择输入
48	GND	–	GND
49	NC	–	未连接
50	IF_DET	输入	IF 输入
CN405			
1	SSW	输入	EXT/INT 扬声器开关输入
2	SP+	输出	外部扬声器的 BTL 输出 +
3	SP–	输出	外部扬声器的 BTL 输出 –
4	MSW	输入	EXT/INT 麦克风开关输入
5	EMC	输入	外部麦克风输入
6	ME	–	外部麦克风接地
7	PTT	输入	外部 PTT 输入
8	PF	输入	可编程功能键输入
9	OPT	输入/输出	可选接口 I/O
10	E	–	GND
11	5V	输出	5V 输出
12	TXD	输出	串行数据输出
13	RXD	输入	串行数据输入
14	NC	–	未连接
CN701（用于生产）			
1~20			
CN710			
1	OPT1	输入/输出	请参阅第 124 至 129 页介绍的“CN710 26 针连接器规格”。
2	OPT3	输入/输出	
3	26P_RD	输入	
4	26P_TD	输出	
5	NC	–	
6	OPT4	输出	
7	OPT10	输出	
8	OPT5	输出	
9	DGND	–	
10	AGND	–	
11	AI	输入	
12	AO	输出	
13	AGND	–	
14	5V	输出	
15	OPT9	输入	
16	DTI	输入	
17	OPT8	输入/输出	
18	OPT11	输出	
19	OPT7	输入/输出	

TERMINAL FUNCTION / 端子功能

Pin No.	Name	I/O	Function
20	OPT2	I/O	Refer to "CN710 26-pin connector specification" described on pages 124 to 129.
21	TXO	O	
22	RXEO	O	
23	RXEI	I	
24	TXI	I	
25	OPT6	O	
26	POW	O	

管脚号码	名 称	输入/输出	功　能
20	OPT2	输入/输出	请参阅第 124 至 129 页介绍的"CN710 26 针连接器规格"。
21	TXO	输出	
22	RXEO	输出	
23	RXEI	输入	
24	TXI	输入	
25	OPT6	输出	
26	POW	输出	

TX-RX unit (X57-7360-10 A/2)

Pin No.	Name	I/O	Function
CN400			
1	LED_G	I	Green LED control input
2	/EMG	O	Emergency (Orange) key output
3	LED_R	I	Red LED control input
4	IFC	O	TX-RX PCB version recognition output
5	/SAVE	I	50C Reg. control input
6	I2CCK	I	TCXO thermometer clock input
7	/5TC	I	50T Reg. switch control input
8	I2CSDA	I/O	TCXO thermometer data input/output
9	SBC	I	SB3 switch control input
10	/T_R	I	TX/RX control input
11	TV2	I	RX tuning voltage 2 input
12	ASSIST	I	VCO tuning voltage input
13	TV1	I	RX tuning voltage 1 input
14	VAGC	O	AGC voltage output
15	5RC	I	50R switch control input
16	TCXO_MOD	I	TCXO modulation input
17	GND	-	GND
18	RSSI	O	RSSI voltage output
19	GND	-	GND
20	CV	O	CV voltage output
21	GND	-	GND
22	NC	-	No connection
23	NC	-	No connection
24	+B	O	Power output after passing through the fuse
25	+B	O	Power output after passing through the fuse
26	+B	O	Power output after passing through the fuse
27	+B	O	Power output after passing through the fuse
28	NC	-	No connection
29	NC	-	No connection
30	GND	-	GND
31	/PTT	O	PTT output

TX-RX 单元 (X57-7360-10 A/2)

管脚号码	名 称	输入/输出	功　能
CN400			
1	LED_G	输入	绿色 LED 控制输入
2	/EMG	输出	紧急报警（橙色）键输出
3	LED_R	输入	红色 LED 控制输入
4	IFC	输出	TX-RX PCB 版本确认输出
5	/SAVE	输入	50C Reg. 控制输入
6	I2CCK	输入	TCXO 温度计时钟输入
7	/5TC	输入	50T Reg. 开关控制输入
8	I2CSDA	输入/输出	TCXO 温度计时钟输出 / 输入
9	SBC	输入	SB3 开关控制输入
10	/T_R	输入	TX/RX 控制输入
11	TV2	输入	RX 调谐电压 2 输入
12	ASSIST	输入	VCO 调谐电压输入
13	TV1	输入	RX 调谐电压 1 输入
14	VAGC	输出	AGC 电压输出
15	5RC	输入	50R 开关控制输入
16	TCXO_MOD	输入	TCXO 调制输入
17	GND	-	GND
18	RSSI	输出	RSSI 电压输出
19	GND	-	GND
20	CV	输出	CV 电压输出
21	GND	-	GND
22	NC	-	未连接
23	NC	-	未连接
24	+B	输出	通过保险丝后的电源输出
25	+B	输出	通过保险丝后的电源输出
26	+B	输出	通过保险丝后的电源输出
27	+B	输出	通过保险丝后的电源输出
28	NC	-	未连接
29	NC	-	未连接
30	GND	-	GND
31	/PTT	输出	PTT 输出

TERMINAL FUNCTION / 端子功能

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

管脚号码	名 称	输入/输出	功　能
32	Side_G	输入	键矩阵输入（SIDE1，2 键）
33	Side_1	输出	键矩阵输出（SIDE1 键）
34	W_/N	输入	未连接
35	SDO1	输入	PLL 串行数据输入
36	Side_2	输出	键矩阵输出（SIDE2 键）
37	/PCS_RF	输入	PLL 启用输入
38	/DSW	输入	APC 电压放电开关控制输入
39	APC	输入	APC 控制电压输入
40	/APCSW	输入	APC 开关控制输入
41	VCO_MOD	输入	VCO 调制输入
42	THP	输出	热敏电阻电压输出
43	PLD	输出	PLL 锁定检测输出
44	38M	输入	38M 输入
45	SCK1	输入	PLL 锁定输入
46	GND	–	GND
47	S_DET	输出	电池选择输出
48	GND	–	GND
49	NC	–	未连接
50	IF_DET	输出	IF 输出
CN401			
1	PTT	输入	内部 PTT 输入
2	GND	–	GND
3	Side_G	输出	键矩阵输出（SIDE1，2 键）
4	Side_1	输入	键矩阵输入（SIDE1 键）
5	Side_2	输入	键矩阵输入（SIDE2 键）

Option board unit (X57-7360-10 B/2)

Pin No.	Name	I/O	Function
CN736			
1	OPT1	I/O	Refer to "CN736 Option board connector specification" described on page 130.
2	OPT3	I/O	
3	26P_RD	O	
4	26P_TD	I	
5	NC	-	
6	OPT4	I	
7	OPT10	I	
8	OPT5	I	
9	DGND	-	
10	AGND	-	
11	NC	-	
12	NC	-	
13	AGND	-	
14	5V	I	
15	OPT9	O	
16	DTI	O	

可选板单元（X57-7360-10 B/2）

管脚号码	名 称	输入/输出	功　能
CN736			
1	OPT1	输入/输出	请参阅第 130 页介绍的“CN736 可选板连接器规格”。
2	OPT3	输入/输出	
3	26P_RD	输出	
4	26P_TD	输入	
5	NC	–	
6	OPT4	输入	
7	OPT10	输入	
8	OPT5	输入	
9	DGND	–	
10	AGND	–	
11	NC	–	
12	NC	–	
13	AGND	–	
14	5V	输入	
15	OPT9	输出	
16	DTI	输出	

TERMINAL FUNCTION / 端子功能

Pin No.	Name	I/O	Function
17	OPT8	I/O	Refer to "CN736 Option board connector specification" described on page 130.
18	OPT11	I	
19	OPT7	I/O	
20	OPT2	I/O	
21	TXO	I	
22	RXEO	I	
23	RXEI	O	
24	TXI	O	
25	OPT6	I	
26	POW	I	

管脚号码	名 称	输入/输出	功 能
17	OPT8	输入/输出	请参阅第 130 页介绍的"CN736 可选板连接器规格"。
18	OPT11	输入	
19	OPT7	输入/输出	
20	OPT2	输入/输出	
21	TXO	输入	
22	RXEO	输入	
23	RXEI	输出	
24	TXI	输出	
25	OPT6	输入	
26	POW	输入	

Solder Pad

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

焊盘

名 称	输入/输出	信号类型	功 能	额定值和条件				
				参 数	最小	标准	最大	单位
PTT2	O	数字	PTT 输出	[输出] 输出阻抗			10k	Ω
PTT1	输入	数字	PTT 输入	[输入] VIH	2.8		3.3	V
				[输入] VIL	0		0.5	V
MDSW	输入	数字	人员事故开关输入	[输入] VIH	2.8		3.3	V
				[输入] VIL	0		0.5	V
GND	-	GND	GND	容许电流值				mA
TXD	输出	数字	串行数据输出	VOH(Io=-5mA)	4.0	-	5.3	V
				VOL(Io=5mA)	0	-	0.8	V
				波特率			19200	bps
RXD	输入	数字	串行数据输入	VIH	2.8	-	5.3	V
				VIL	0	-	0.8	V
				波特率			19200	bps
RSSI	输出	模拟	RSSI 输出	输出阻抗			10k	Ω

TERMINAL FUNCTION / 端子功能

Universal connector

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

TERMINAL FUNCTION / 端子功能

通用连接器

管脚号码	名 称	输入/输出	信号类型	功 能	额定值和条件				
					参 数	最小	标准	最大	单位
1	SSW	输入	数字	EXT/INT 扬声器开关输入 L: 外部扬声器 ON H: 内部扬声器 ON	VIH	2.8	-	5.3	V
					VIL	0	-	0.7	V
2	SP+	输出	模拟	外部扬声器的 BTL 输出 +	[8Ω 负载] 最大输出功率 (1kHz，电池电压 =7.5V)		1.3	1.8	W
					[8Ω 负载] DC 偏置		2.5		V
					[8Ω 负载] 容许频率	300		3000	Hz
3	SP -	输出	模拟	外部扬声器的 BTL 输出 -	[16Ω 负载] 最大输出功率 (1kHz，电池电压 =7.5V)		0.9	1.4	W
					[16Ω 负载] DC 偏置		2.5		V
					[16Ω 负载] 容许频率	300		3000	Hz
4	MSW	输入	数字	EXT/INT 麦克风开关输入 L: 外部 MIC ON H: 内部 MIC ON	VIH	2.8	-	5.3	V
					VIL	0	-	0.5	V
5	EMC	输入	模拟	外部麦克风输入	音频电平 (STD 频偏)	7.7	12.5	17.3	mV
					DC 偏置		3.3		V
					容许频率	300		3000	Hz
					输入阻抗	-	1.8	-	kΩ
6	ME	-	-	外部麦克风接地					
7	PTT	输入	数字	外部 PTT 输入 L: PTT ON	VIH	2.8	-	5.3	V
					VIL	0	-	0.7	V
8	PF	输入	模拟	可编程功能键输入	V (PF2 键 ON)	2.2	-	2.8	V
					V (PF1 键 ON)	1.7	-	2.2	V
					V (PF1，PF2 键 ON)	1.3	-	1.7	V
9	OPT	输入	数字	人员事故输入 可编程启动 H/L	VIH	2.8	-	5.3	V
					VIL	0	-	0.7	V
10	E	-	-	GND					
11	5V	-	功率	5V 电源输出 (输出控制为 FPU 可编程)	输出电压 (Iout=100mA)	4.9	5.0	5.1	V
					最大电流	-	-	0.2	A
12	TXD	输出	数字	串行数据输出	VOH (Io= - 5mA)	4.0	-	5.3	V
					VOL (Io=5mA)	0	-	0.8	V
					波特率			19200	bps
13	RXD	输入	数字	串行数据输入	VIH	2.8	-	5.3	V
					VIL	0	-	0.8	V
					波特率			115200	bps
14	NC	-	-	未使用 (留待以后的选购件使用)					

TERMINAL FUNCTION / 端子功能

CN710 26-pin connector specification

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

TERMINAL FUNCTION / 端子功能

CN710 26 针连接器规格

管脚号码	名 称	输入 / 输出	信号类型	额定值和条件				
				参 数	最小	标准	最大	单位
1	OPT1	输入 / 输出	数字	[输入] VIH	2.8		3.3	V
6	OPT4			[输入] VIL	0		0.5	V
8	OPT5			[输出] VOH	2.8		3.5	V
17	OPT8			[输出] VOL	0		0.5	V
18	OPT11							
2	OPT3	输入 / 输出	数字	[输入] VIH	2.8		3.3	V
19	OPT7			[输入] VIL	0		0.5	V
20	OPT2			[输出] VOH	2.8		3.5	V
25	OPT6			[输出] VOL	0		0.5	V
3	26P_RD	输入	数字	[输入] VIH	2.8		3.3	V
				[输入] VIL	0		0.5	V
				波特率			19200	bps
4	26P_TD	输出	数字	[输出] VOH	2.8		3.5	V
				[输出] VOL	0		0.5	V
				波特率			19200	bps
15	OPT9	输入	模拟	输入振幅 (方波)	-	3.3	-	Vp-p
				耦合电容	-	0.01	-	μF
				输入阻抗	22k	-	-	Ω
				容许频率	300	-	3000	Hz
7	OPT10	输出	模拟 / 数字	输出振幅 (1kHz,, 60% 频偏)	0.9	1.3	1.7	Vp-p
				耦合电容		0.1		μF
				输出阻抗			22k	Ω
				容许频率	300		3000	Hz
11	AI	输入	模拟	输入振幅 (1kHz,, 60% 频偏)	0.3	0.5	0.7	Vp-p
				耦合电容	-	0.1	-	μF
				输入阻抗	-	12k	-	Ω
				容许频率	300		3000	Hz
12	AO	输出	模拟	输出振幅 (1kHz,, 60% 频偏)	30	50	70	mVp-p
				耦合电容	-	0.1	-	μF
				输出阻抗	-	35k	-	Ω
				容许频率	300		3000	Hz
16	DTI	输入	模拟	输入振幅 (1kHz,, 60% 频偏)	0.8	1.1	1.4	Vp-p
				耦合电容	-	0.1	-	μF
				输入阻抗	22k	-	-	Ω
				容许频率	300	-	3000	Hz
21	TXO	输出	模拟	输出振幅 (1kHz,, 60% 频偏) 外部 MIC 时	160	260	360	mVp-p
				输出振幅 (1kHz,, 60% 频偏) 内部 MIC 时	-	130	-	mVp-p
				耦合电容	-	0.1	-	μF
				输出阻抗	-	-	2.2k	Ω
				容许频率	300		3000	Hz

TERMINAL FUNCTION / 端子功能

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

CN710 26-pin connector specification

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

TERMINAL FUNCTION / 端子功能

<table>
<tr><th rowspan="2">管脚号码</th><th rowspan="2">名 称</th><th rowspan="2">输入 / 输出</th><th rowspan="2">信号类型</th><th colspan="5">额定值和条件</th></tr>
<tr><th>参 数</th><th>最小</th><th>标准</th><th>最大</th><th>单位</th></tr>
<tr><td rowspan="4">22</td><td rowspan="4">RXEO</td><td rowspan="4">输出</td><td rowspan="4">模拟</td><td>输出振幅 (1kHz,，60% 频偏)</td><td>450</td><td>640</td><td>830</td><td>mVp-p</td></tr>
<tr><td>耦合电容</td><td>-</td><td>0.1</td><td>-</td><td>μF</td></tr>
<tr><td>输出阻抗</td><td>-</td><td>-</td><td>2.2k</td><td>Ω</td></tr>
<tr><td>容许频率</td><td>300</td><td>-</td><td>3000</td><td>Hz</td></tr>
<tr><td rowspan="4">23</td><td rowspan="4">RXEI</td><td rowspan="4">输入</td><td rowspan="4">模拟</td><td>输入振幅 (1kHz,，60% 频偏)</td><td>450</td><td>640</td><td>830</td><td>mVp-p</td></tr>
<tr><td>耦合电容</td><td></td><td>0.1</td><td></td><td>μF</td></tr>
<tr><td>输入阻抗</td><td>22k</td><td></td><td></td><td>Ω</td></tr>
<tr><td>容许频率</td><td>300</td><td></td><td>3000</td><td>Hz</td></tr>
<tr><td rowspan="5">24</td><td rowspan="5">TXI</td><td rowspan="5">输入</td><td rowspan="5">模拟</td><td>输入振幅 (1kHz,，60% 频偏)
外部 MIC 时</td><td>160</td><td>260</td><td>360</td><td>mVp-p</td></tr>
<tr><td>输入振幅 (1kHz,，60% 频偏)
内部 MIC 时</td><td>-</td><td>130</td><td>-</td><td>mVp-p</td></tr>
<tr><td>耦合电容</td><td>-</td><td>0.1</td><td>-</td><td>μF</td></tr>
<tr><td>输入阻抗</td><td>22k</td><td>-</td><td>-</td><td>Ω</td></tr>
<tr><td>容许频率</td><td>300</td><td>-</td><td>3000</td><td>Hz</td></tr>
<tr><td rowspan="2">14</td><td rowspan="2">5V</td><td rowspan="2">输出</td><td rowspan="2">功率</td><td>输出电压</td><td></td><td>5</td><td></td><td>V</td></tr>
<tr><td>输出电流</td><td></td><td></td><td>78</td><td>mA</td></tr>
<tr><td rowspan="2">26</td><td rowspan="2">POW</td><td rowspan="2">输出</td><td rowspan="2">功率</td><td>输出电压</td><td></td><td>7.5</td><td></td><td>V</td></tr>
<tr><td>输出电流</td><td></td><td></td><td>100</td><td>mA</td></tr>
<tr><td>9</td><td>DGND</td><td rowspan="3">-</td><td rowspan="3">GND</td><td rowspan="3">容许电流值 (3 针的总电流)</td><td rowspan="3"></td><td rowspan="3"></td><td rowspan="3">100</td><td rowspan="3">mA</td></tr>
<tr><td>10</td><td rowspan="2">AGND</td></tr>
<tr><td>13</td></tr>
<tr><td>5</td><td>NC</td><td>-</td><td>-</td><td>-</td><td></td><td></td><td></td><td></td></tr>
</table>

CN710 26 针连接器规格

<table>
<tr><th>管脚号码</th><th>名 称</th><th>装 置</th><th>输入 / 输出</th><th>连 接</th><th>功 能</th></tr>
<tr><td rowspan="2">1</td><td rowspan="2">OPT1</td><td>ANI 板</td><td>输出</td><td>AUX INPUT</td><td>[COR]
常规 /LTR
L: 接收
H: 无接收
[TOR]
常规 /LTR
L: 接收 (SUB TONE 或 LTR ID OK)
H: 非接收
[LOK]
常规
L: 发射
H: 未发射
LTR
L: 发射链接中 (直至发射结束)
H: 非发射链接</td></tr>
<tr><td>VGS-1</td><td>输入</td><td>BUSY</td><td>繁忙指示</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">OPT3</td><td>ANI 板</td><td>输入</td><td>KEY</td><td>发射要求输入</td></tr>
<tr><td>VGS-1</td><td>输入</td><td>PLAY</td><td>播放指示</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">26P_RD</td><td>ANI 板</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>VGS-1</td><td>输入</td><td>SO</td><td>串行数据输入</td></tr>
</table>

TERMINAL FUNCTION / 端子功能

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

TERMINAL FUNCTION / 端子功能

管脚号码	名 称	装 置	输入 / 输出	连 接	功 能
4	26P_TD	ANI 板	-	-	-
		VGS-1	输出	SI	串行数据输出
5	NC	-	-	-	-
6	OPT4	ANI 板	输出	PTT	PTT 信号输出
		VGS-1	输出	EN	启用
7	OPT10	ANI 板	-	-	-
		VGS-1	输出	USEL	UART 速度选择输出
8	OPT5	ANI 板	输出	紧急报警	紧急报警信号输出
		VGS-1	输出	RST	复位输出
9	DGND	ANI 板	-	A -	GND
		VGS-1	-	DGND	DGND
10	AGND	ANI 板	-	A -	GND
		VGS-1	-	AGND	AGND
11	AI	ANI 板	-	-	-
		VGS-1	输入	AO	VGS 音频输入
12	AO	ANI 板	-	-	-
		VGS-1	输出	AI	VGS 音频输出
13	AGND	ANI 板	-	A -	GND
		VGS-1	-	AGND	AGND
14	5V	ANI 板	-	-	注意 :POW 和 5V 不能同时使用。
		VGS-1	输出	5C	5V 电源
15	OPT9	ANI 板	输入	SIDETONE	侧音输入
		VGS-1	-	-	-
16	DTI	ANI 板	输入	DATA OUT	数据信号输入
		VGS-1	-	-	-
17	OPT8	ANI 板	输入	TONE CONTROL	扬声器静音信号输入
		VGS-1	-	-	-
18	OPT11	ANI 板	输出	MAN-DOWN	人员事故输出
		VGS-1	-	-	-
19	OPT7	ANI 板	输入	MIC MUTE	麦克风静音信号输入
		VGS-1	-	-	-
20	OPT2	ANI 板	输入	AUX OUTPUT	紧急报警信号输入
		VGS-1	-	-	-
21	TXO	ANI 板	-	-	-
		VGS-1	-	-	-
22	RXEO	ANI 板	-	-	-
		VGS-1	-	-	-
23	RXEI	ANI 板	-	-	-
		VGS-1	-	-	-
24	TXI	ANI 板	-	-	-
		VGS-1	-	-	-
25	OPT6	ANI 板	-	-	-
		VGS-1	-	-	-
26	POW	ANI 板	输出	A+	开关 B 输出
		VGS-1	-	-	注意 :POW 和 5V 不能同时使用。

TERMINAL FUNCTION / 端子功能

CN736 Option board connector specification

Pin No.	Name	Device	I/O	Connection	Function
1	OPT1	ANI board	I	AUX OUTPUT	[COR] Conv/LTR L: Activity receiving H: Not activity receiving [TOR] Conv/LTR L: Activity receiving (Sub Tone or LTR ID is OK) H: Not activity receiving [LOK] Conv L: TX Complete H: Not TX Complete LTR L: TX Link Complete (until TX finishes) H: Not TX Link Complete
2	OPT3	ANI board	O	KEY	TX requirement output
3	26P_RD	ANI board	-	-	-
4	26P_TD	ANI board	-	-	-
5	NC	-	-	-	-
6	OPT4	ANI board	I	PTT	PTT signal input
7	OPT10	ANI board	-	-	-
8	OPT5	ANI board	I	Emergency	Emergency signal input
9	DGND	ANI board	-	A–	GND
10	AGND	ANI board	-	A–	GND
11	NC	-	-	-	-
12	NC	-	-	-	-
13	AGND	ANI board	-	A–	GND
14	5V	ANI board	-	-	Note: POW and 5V can not be used simultaneously.
15	OPT9	ANI board	O	SIDETONE	Sidetone output
16	DTI	ANI board	O	DATA OUT	Data signal output
17	OPT8	ANI board	O	TONE CONTROL	Speaker mute signal output
18	OPT11	ANI board	I	MAN-DOWN	Man-Down input
19	OPT7	ANI board	O	MIC MUTE	MIC mute signal output
20	OPT2	ANI board	O	AUX OUTPUT	Emergency signal output
21	TXO	ANI board	-	-	-
22	RXEO	ANI board	-	-	-
23	RXEI	ANI board	-	-	-
24	TXI	ANI board	-	-	-
25	OPT6	ANI board	-	-	-
26	POW	ANI board	I	A+	Switched B input

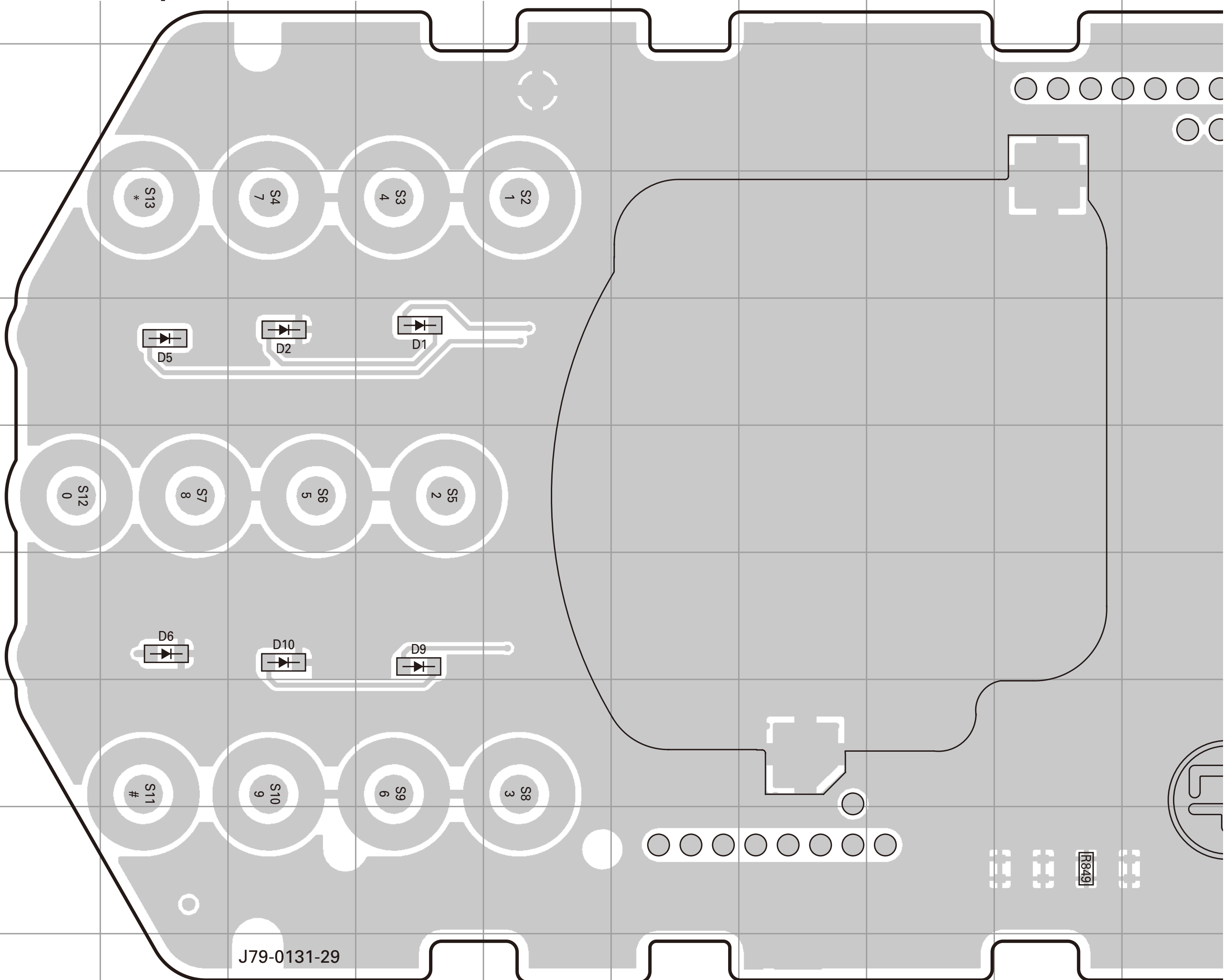
TERMINAL FUNCTION / 端子功能

CN736 选件板连接器规格

管脚号码	名 称	装 置	输入/输出	连 接	功 能
1	OPT1	ANI 板	输入	AUX OUTPUT	[COR] 常规 /LTR L: 接收 H: 无接收 [TOR] 常规 /LTR L: 接收 (Sub Tone 或 LTR ID OK) H: 非接收 [LOK] 常规 L: 发射 H: 未发射 LTR L: 发射链接中 (直至发射结束) H: 非发射链接
2	OPT3	ANI 板	输出	KEY	发射要求输出
3	26P_RD	ANI 板	-	-	-
4	26P_TD	ANI 板	-	-	-
5	NC	-	-	-	-
6	OPT4	ANI 板	输入	PTT	PTT 信号输入
7	OPT10	ANI 板	-	-	-
8	OPT5	ANI 板	输入	紧急报警	紧急报警信号输入
9	DGND	ANI 板	-	A -	GND
10	AGND	ANI 板	-	A -	GND
11	NC	-	-	-	-
12	NC	-	-	-	-
13	AGND	ANI 板	-	A -	GND
14	5V	ANI 板	-	-	注意 :POW 和 5V 不能同时使用。
15	OPT9	ANI 板	输出	SIDETONE	侧音输出
16	DTI	ANI 板	输出	DATA OUT	数据信号输出
17	OPT8	ANI 板	输出	TONE CONTROL	扬声器静音信号输出
18	OPT11	ANI 板	输入	MAN-DOWN	人员事故输入
19	OPT7	ANI 板	输出	MIC MUTE	麦克风静音信号输出
20	OPT2	ANI 板	输出	AUX OUTPUT	紧急报警信号输出
21	TXO	ANI 板	-	-	-
22	RXEO	ANI 板	-	-	-
23	RXEI	ANI 板	-	-	-
24	TXI	ANI 板	-	-	-
25	OPT6	ANI 板	-	-	-
26	POW	ANI 板	输入	A+	开关 B 输入

NX-200 PC BOARD / PC板

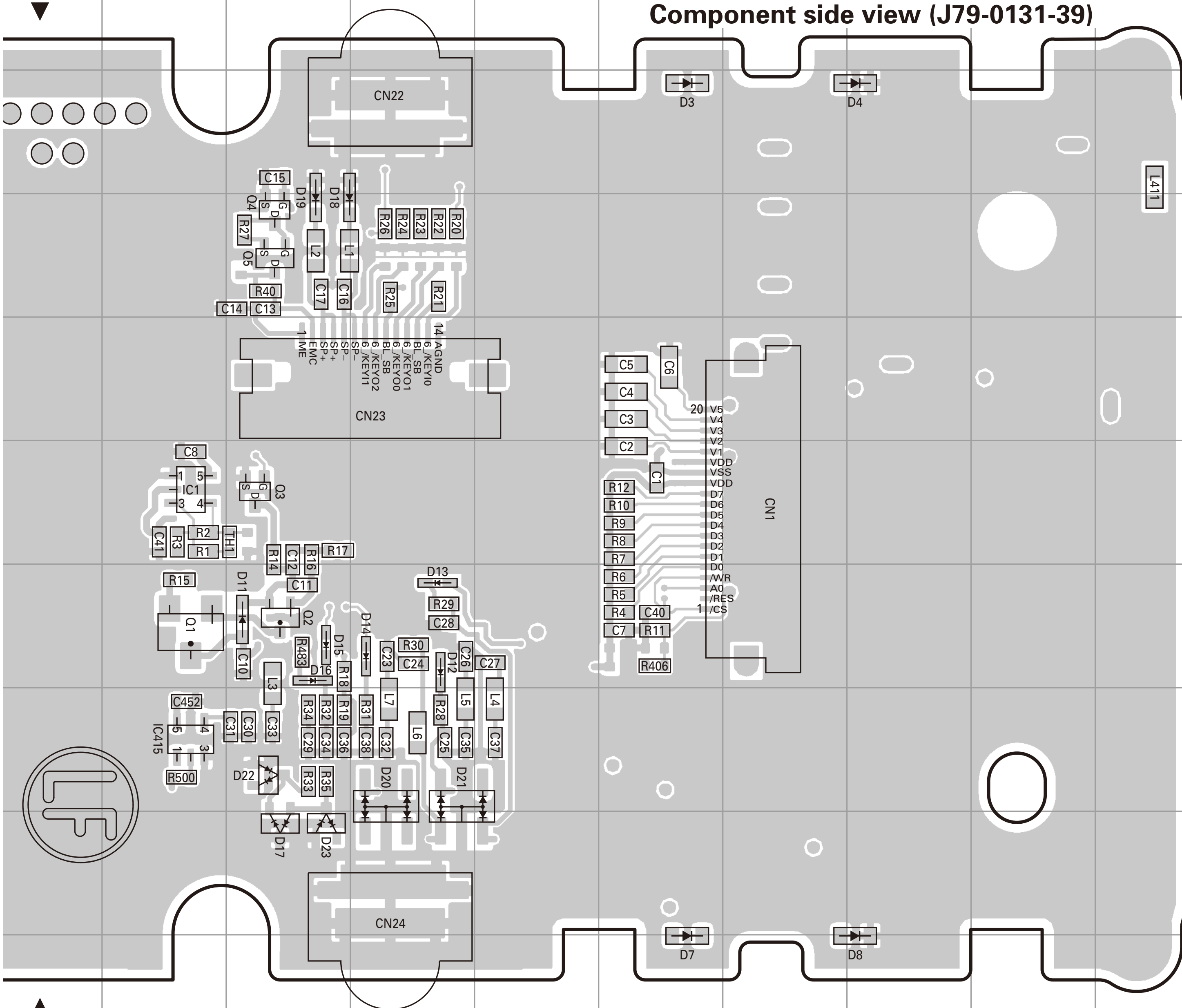
CONTROL UNIT (X53-4260-11)
Component side view (J79-0131-39)



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

PC BOARD / PC板 NX-200

CONTROL UNIT (X53-4260-11)
Component side view (J79-0131-39)



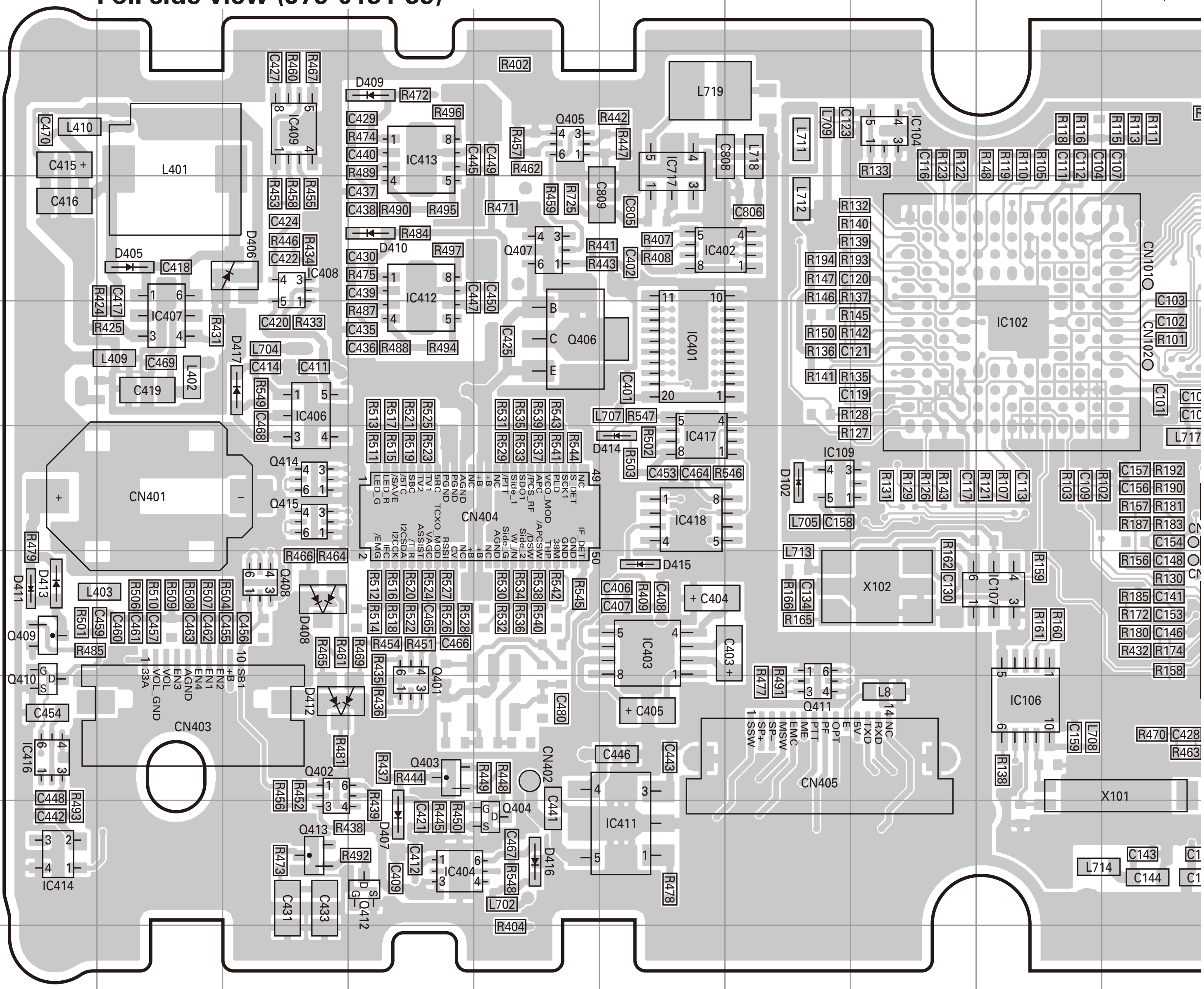
Component side

Layer 1
Layer 2
Layer 3
Layer 4
Layer 5
Layer 6

Foil side

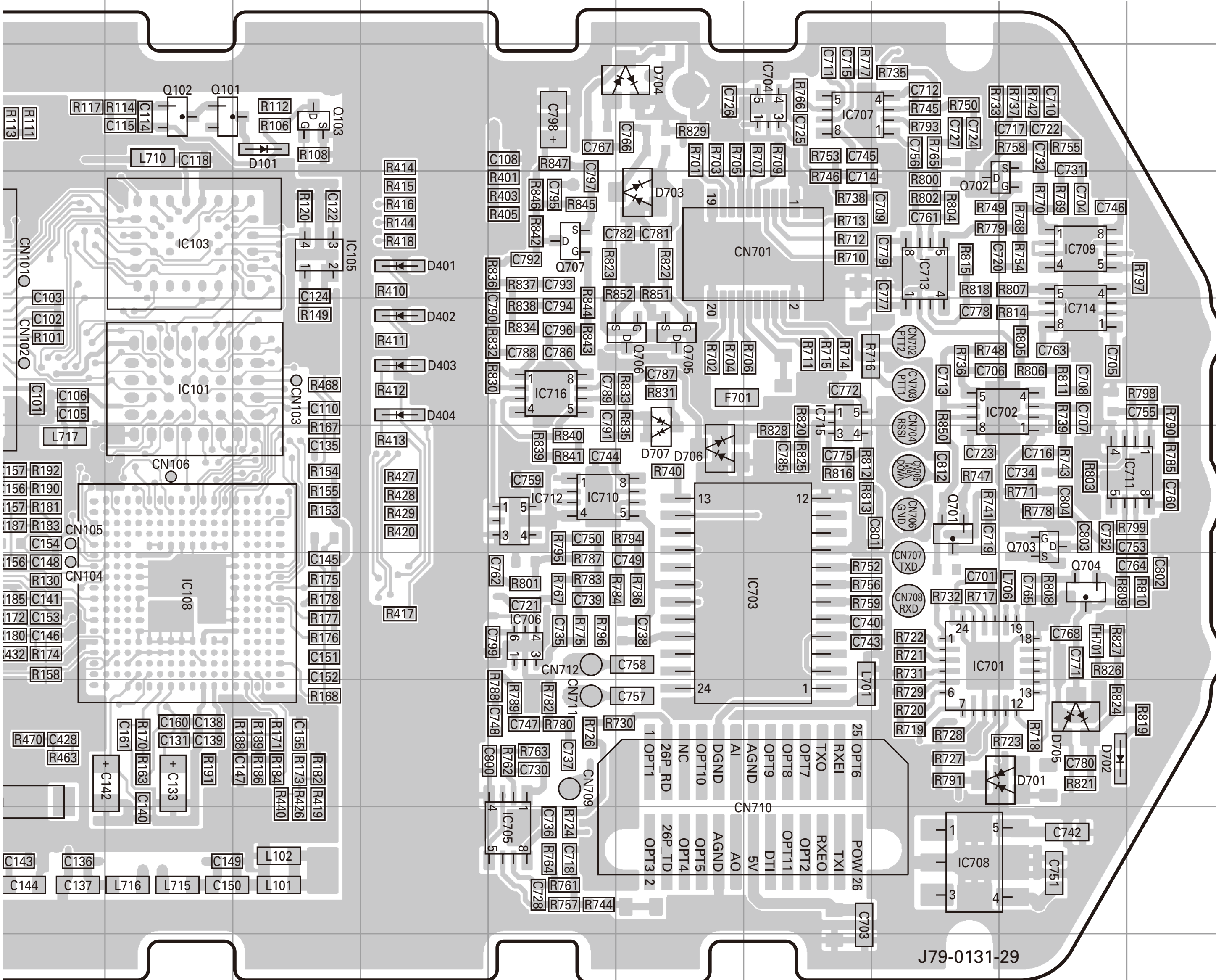
NX-200 PC BOARD / PC板

CONTROL UNIT (X53-4260-11)
Foil side view (J79-0131-39)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. N
IC101	5K	IC404	9D	IC701	7Q	IC713	4Q	Q405	3E	Q702	4R	D405	4B	D417
IC102	5I	IC406	5C	IC702	5R	IC714	5R	Q406	5E	Q703	6R	D406	4C	D701
IC103	4K	IC407	5B	IC703	7P	IC715	5P	Q407	4E	Q704	7R	D407	9D	D702
IC104	3H	IC408	4C	IC704	3P	IC716	5N	Q408	7C	Q705	5O	D408	7C	D703
IC105	4L	IC409	3C	IC705	9N	IC717	3F	Q409	7A	Q706	5O	D409	3D	D704
IC106	8I	IC411	9F	IC706	7N	Q101	3K	Q410	8A	Q707	4N	D410	4D	D705
IC107	7I	IC412	4D	IC707	3P	Q102	3K	Q411	8G	D101	3L	D411	7A	D706
IC108	7K	IC413	3D	IC708	9Q	Q103	3L	Q412	9D	D102	6G	D412	8C	D707
IC109	6G	IC414	9A	IC709	4R	Q401	8D	Q413	9C	D401	4M	D413	7A	
IC401	5F	IC416	8A	IC710	6N	Q402	8C	Q414	6C	D402	5M	D414	6F	
IC402	4F	IC417	6F	IC711	6S	Q403	8D	Q415	6C	D403	5M	D415	7F	
IC403	7F	IC418	6F	IC712	6N	Q404	9E	Q701	6Q	D404	5M	D416	9E	

CONTROL UNIT (X53-4260-11)
Foil side view (J79-0131-39)

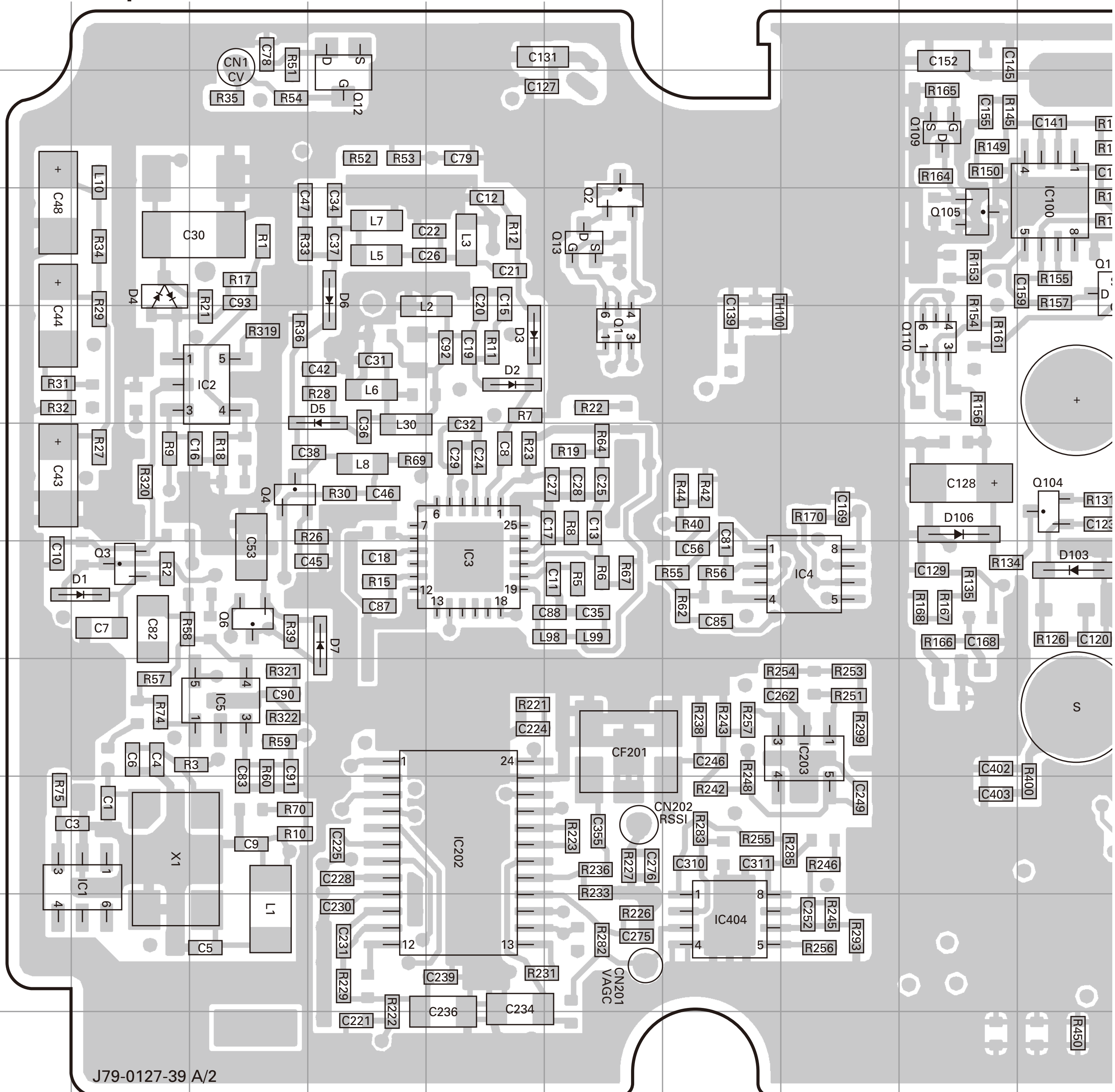


ss	Ref. No.	Address
	D417	5C
	D701	8R
	D702	8R
	D703	4O
	D704	3O
	D705	8R
	D706	6O
	D707	6O

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

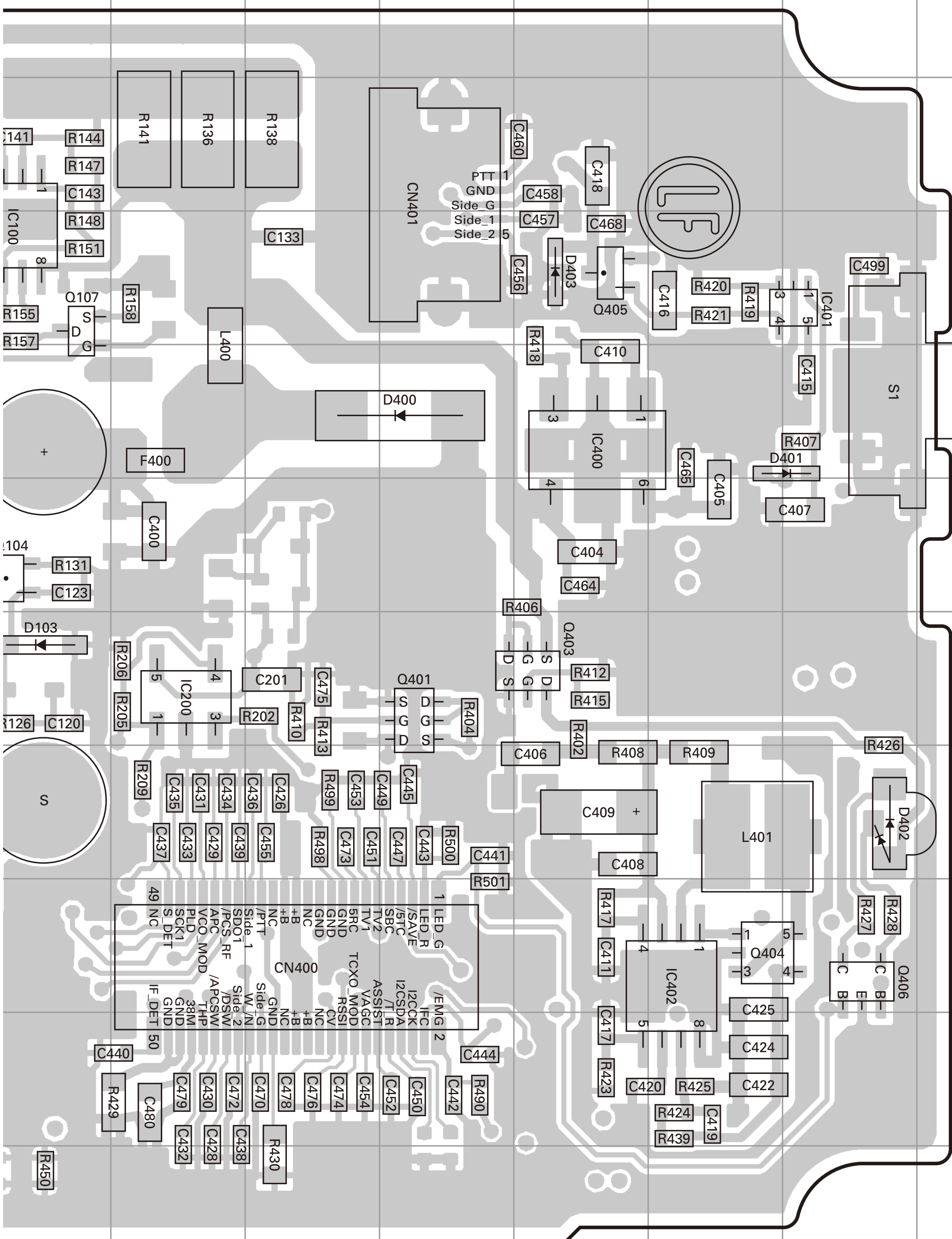
NX-200 PC BOARD / PC板

TX-RX UNIT (X57-7360-10) (A/2)
Component side view (J79-0127-39 A/2)

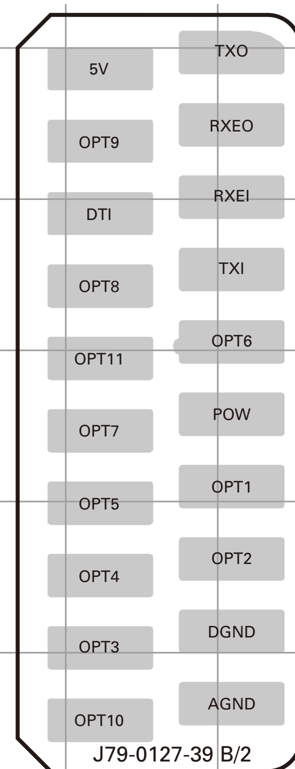


Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	9B	IC203	8H	Q4	6C	Q110	5I	D3	5E	D401	5P
IC2	5C	IC400	5N	Q6	7C	Q401	7M	D4	4B	D402	8P
IC3	7E	IC401	4P	Q12	3D	Q403	7N	D5	5D	D403	4N
IC4	7H	IC402	9O	Q13	4F	Q404	9O	D6	4D		
IC5	8C	IC404	10G	Q104	6J	Q405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

TX-RX UNIT (X57-7360-10) (A/2)
Component side view (J79-0127-39 A/2)



TX-RX UNIT (X57-7360-10) (B/2)

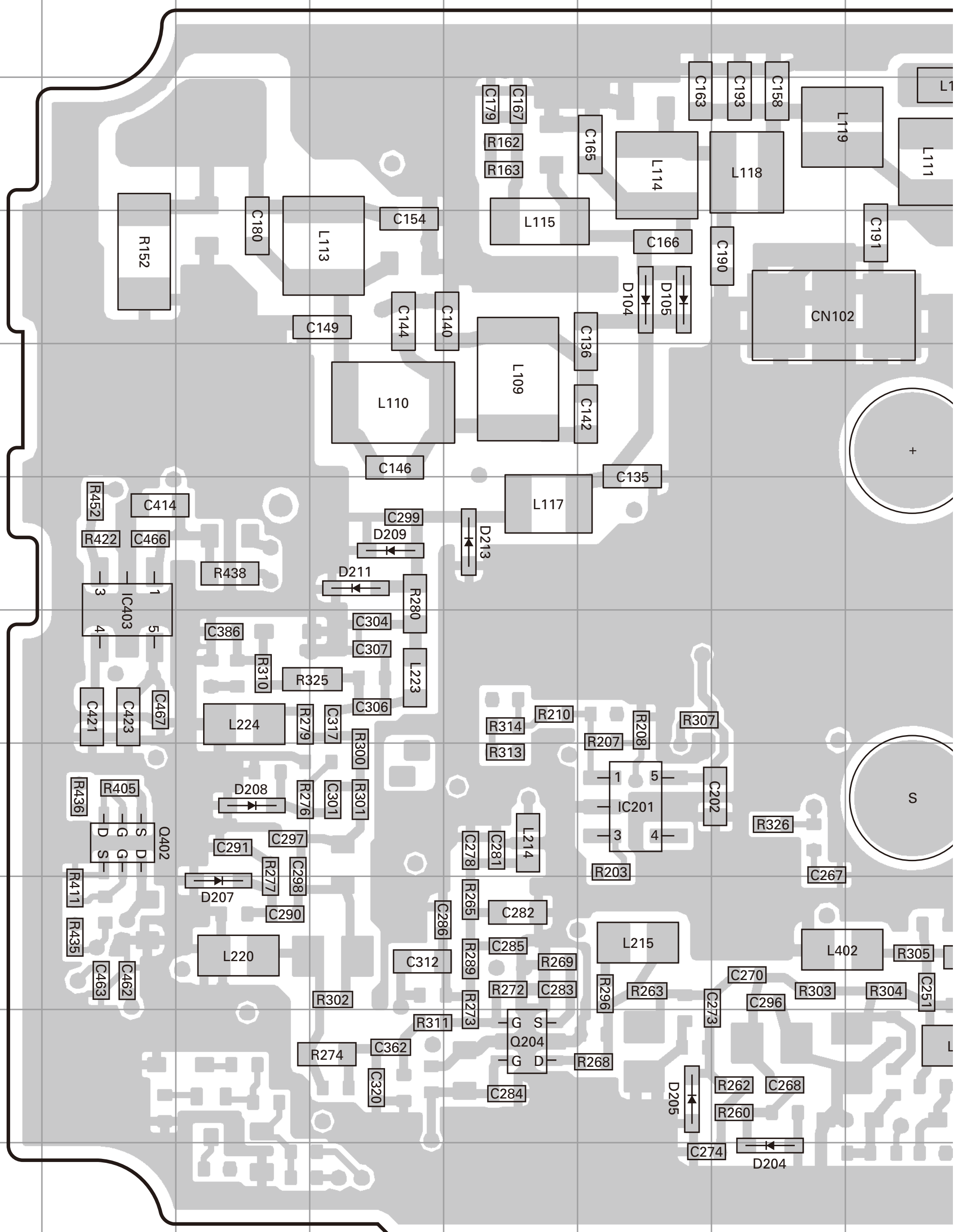


Component side
Layer 1
Layer 2
Layer 3
Layer 4
Layer 5
Layer 6
Foil side

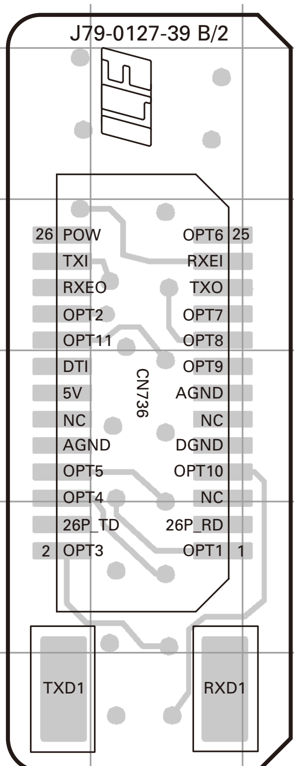
A B C D E F G H I J

NX-200 PC BOARD / PC板

TX-RX UNIT (X57-7360-10) (A/2)
Foil side view (J79-0127-39 A/2)



TX-RX UNIT (X57-7360-10) (B/2)



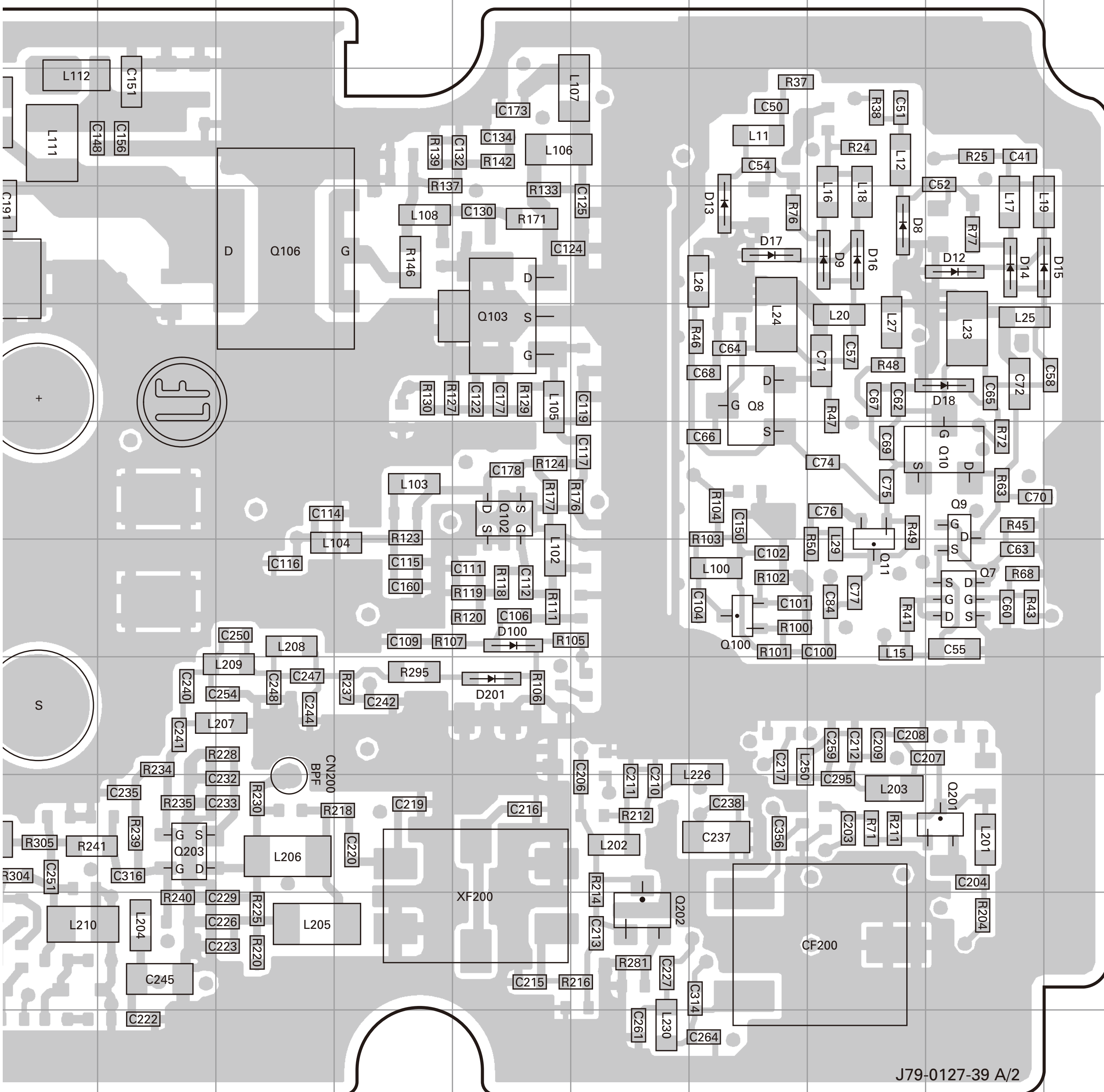
Component side

Layer 1	
Layer 2	
Layer 3	
Layer 4	
Layer 5	
Layer 6	

Foil side

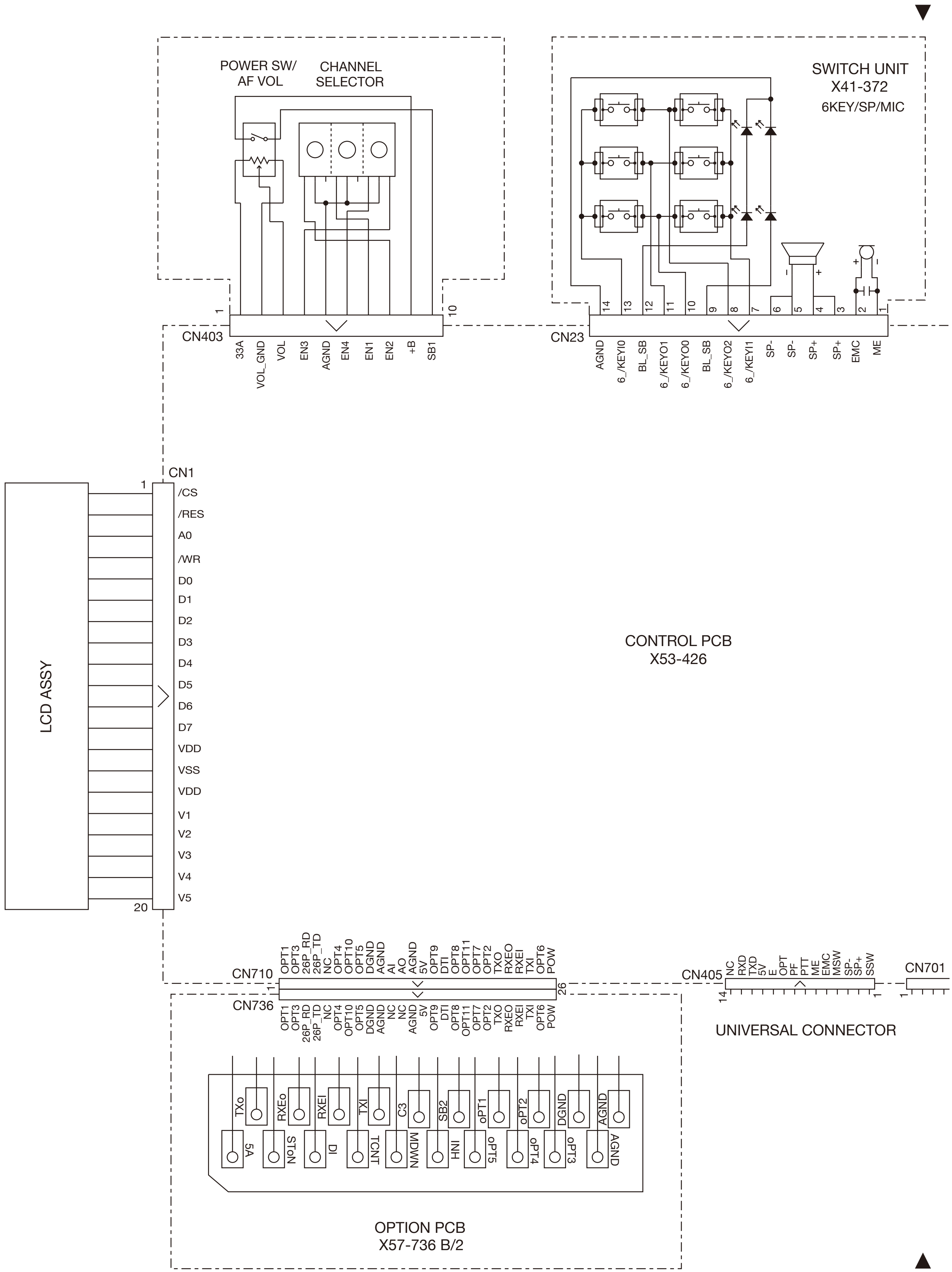
PC BOARD / PC板 NX-200

TX-RX UNIT (X57-7360-10) (A/2)
Foil side view (J79-0127-39 A/2)

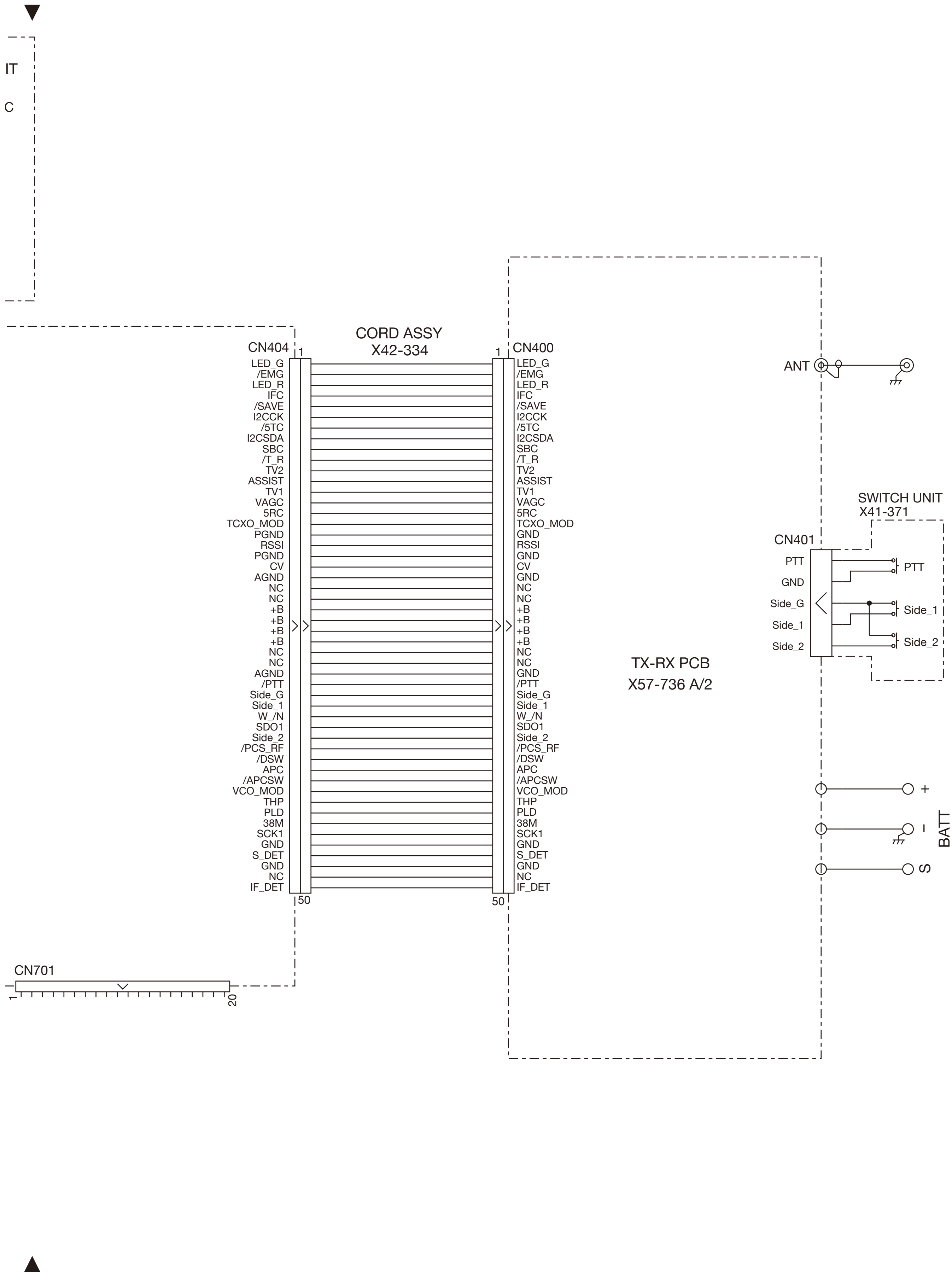


Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC201	8H	Q100	7P	Q204	10G	D15	4S	D201	8N	D213	6G
IC403	7D	Q102	6N	Q402	8D	D16	4Q	D204	11I		
Q7	7R	Q103	5N	D8	4Q	D17	4P	D205	10H		
Q8	5P	Q106	4L	D9	4Q	D18	5R	D207	9E		
Q9	6R	Q201	9R	D12	4R	D100	7N	D208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

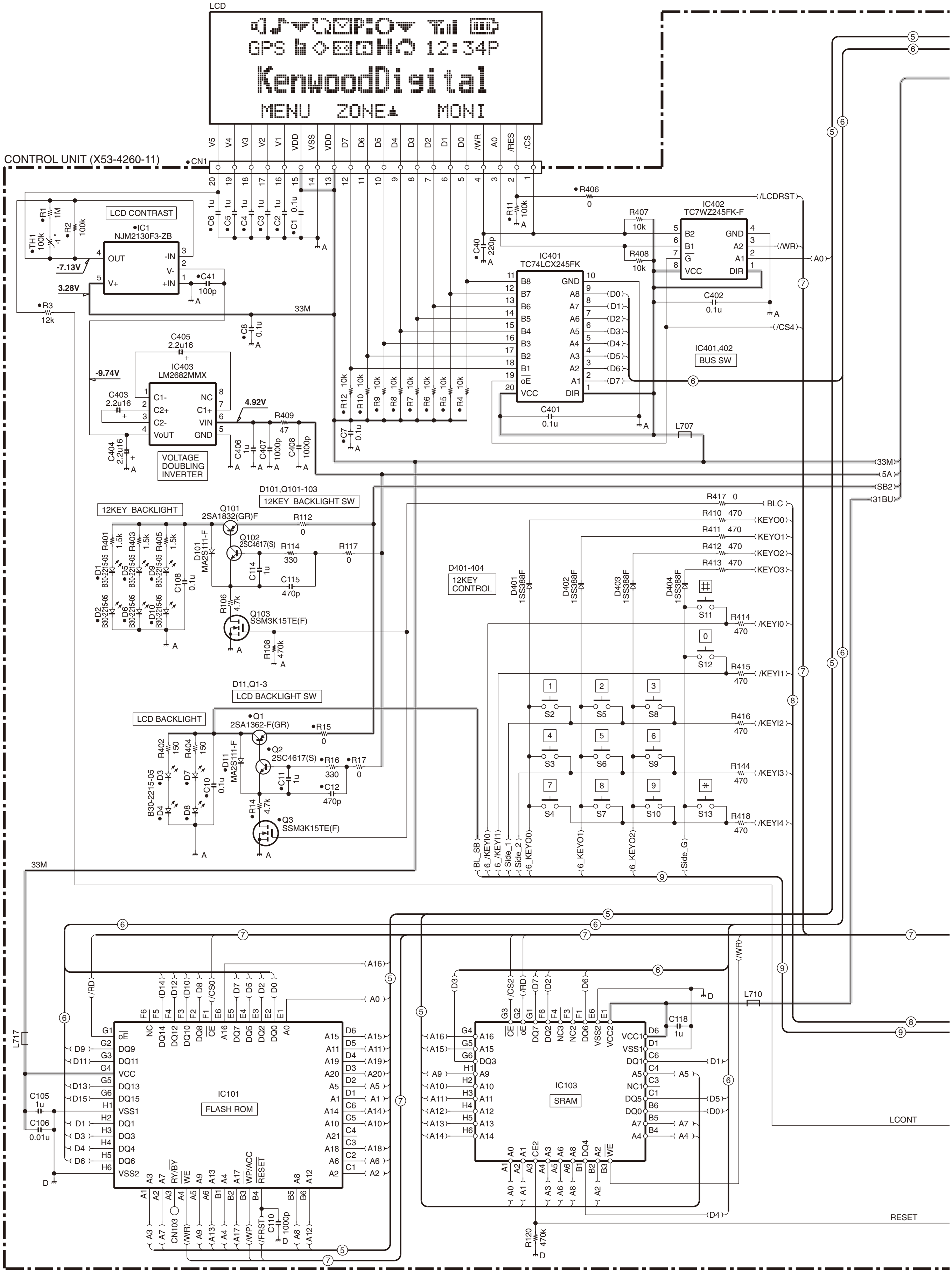
INTERCONNECTION DIAGRAM / 互连图



INTERCONNECTION DIAGRAM / 互连图

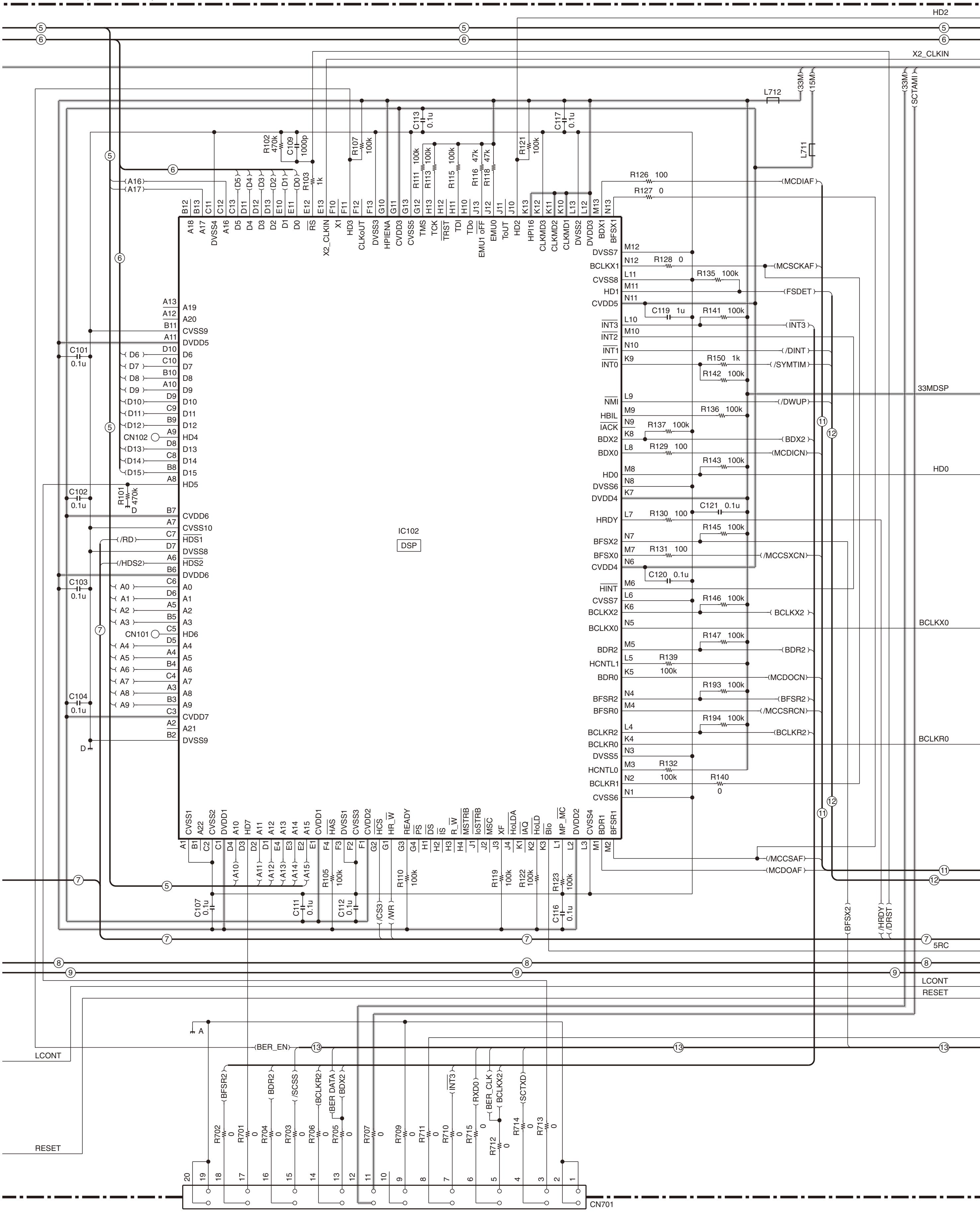


NX-200 SCHEMATIC DIAGRAM / 原理图



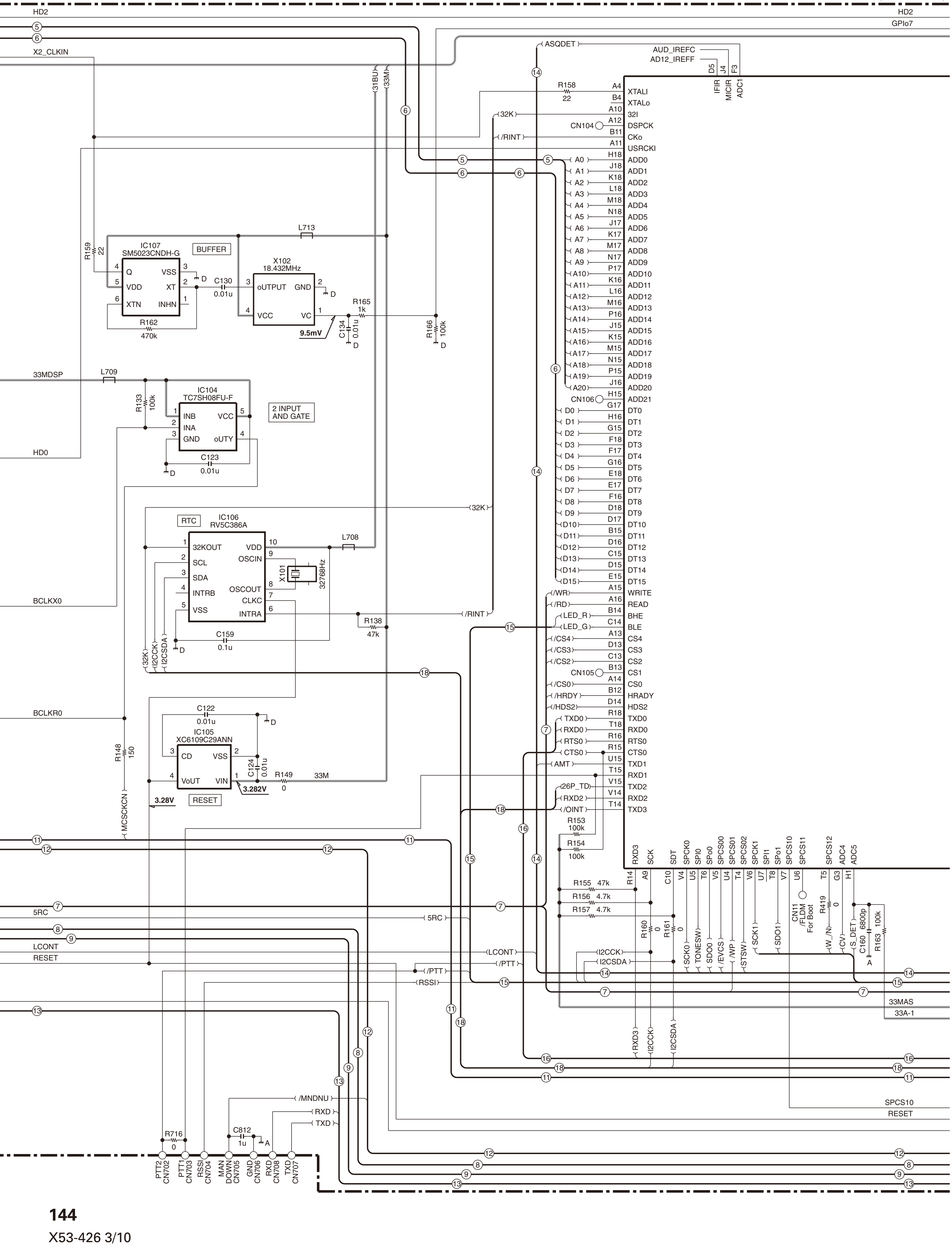
SCHEMATIC DIAGRAM / 原理图 NX-200

CONTROL UNIT (X53-4260-11)



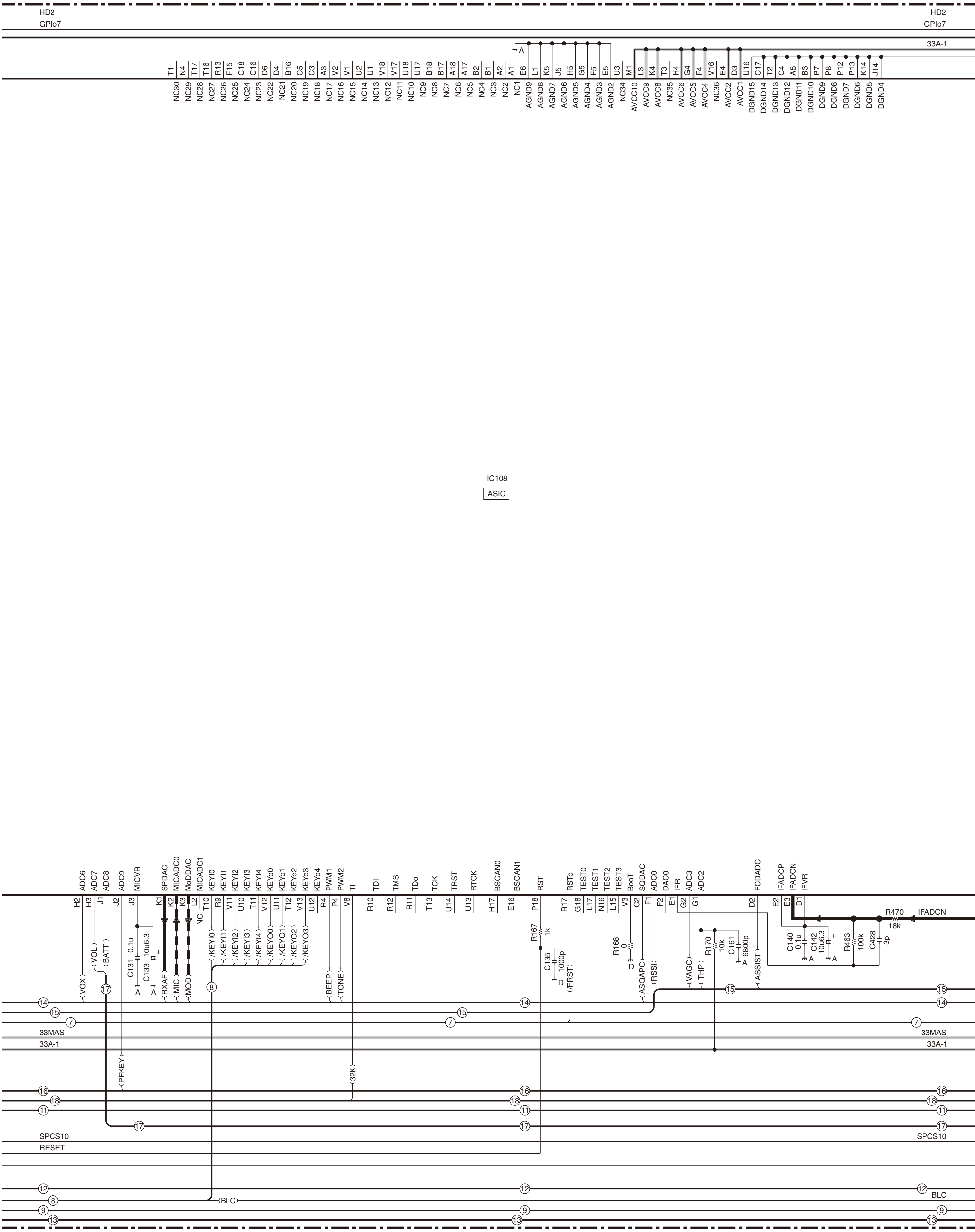
NX-200 SCHEMATIC DIAGRAM / 原理图

CONTROL UNIT (X53-4260-11)



SCHEMATIC DIAGRAM / 原理图 NX-200

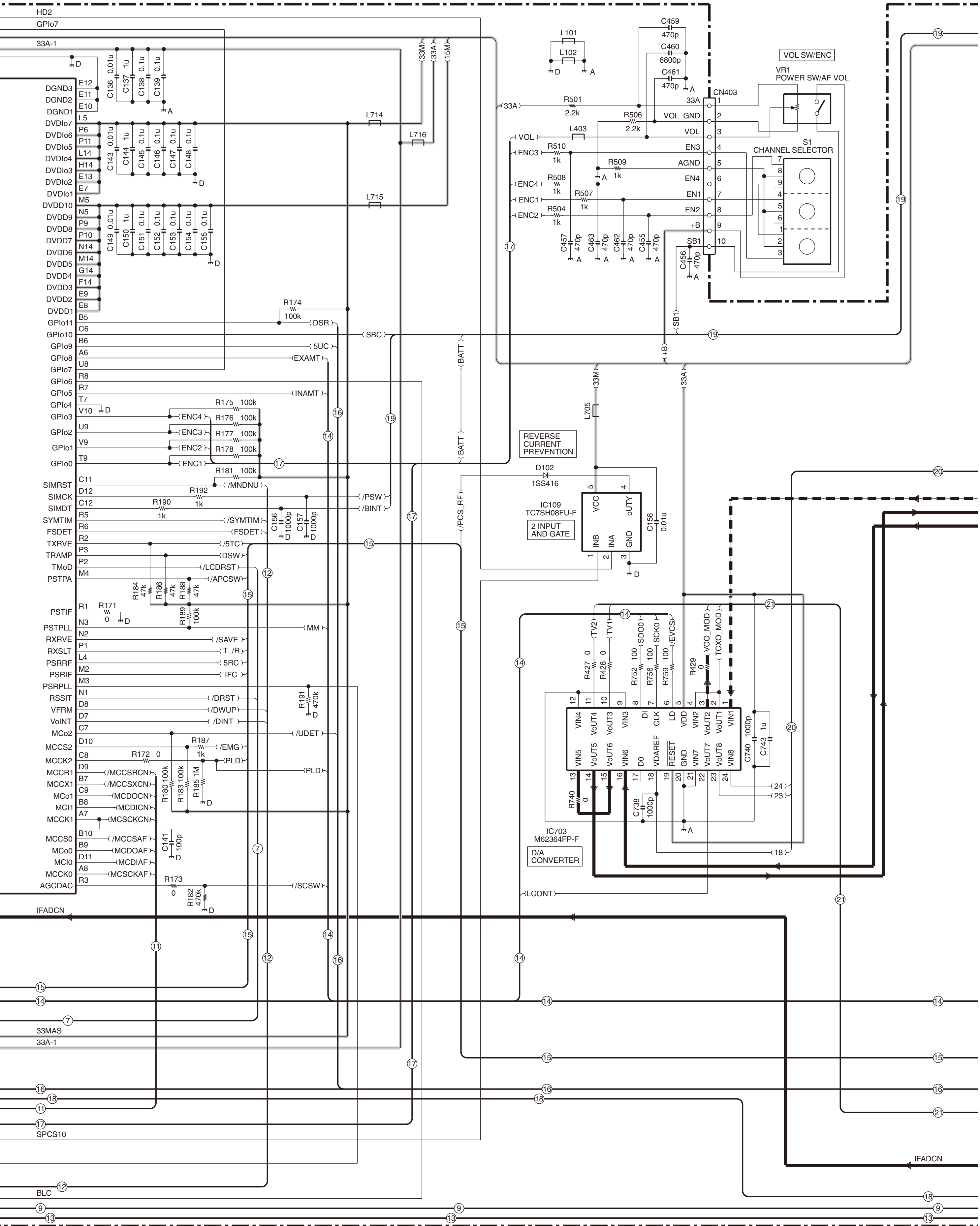
CONTROL UNIT (X53-4260-11)



U V W X Y

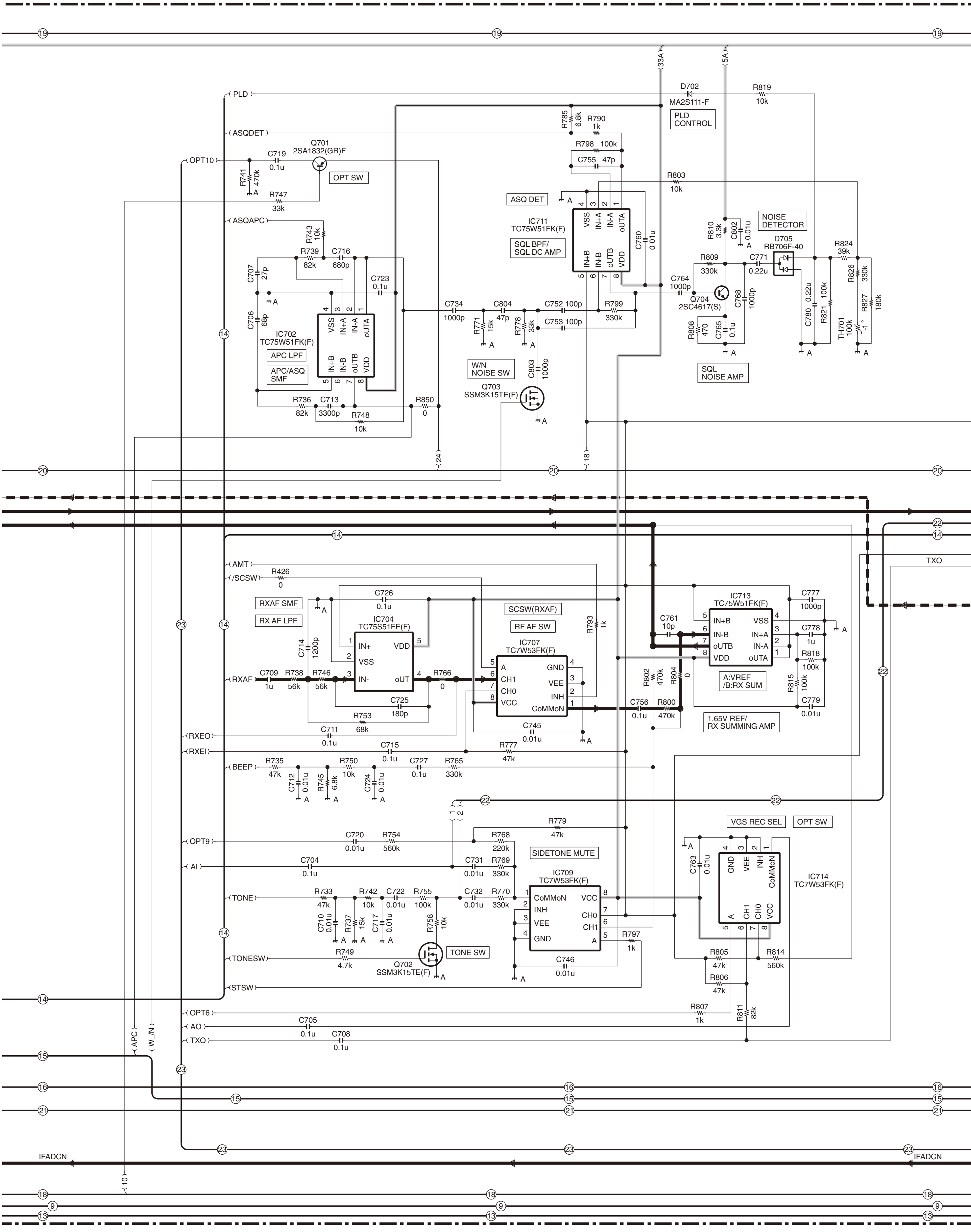
NX-200 SCHEMATIC DIAGRAM / 原理图

CONTROL UNIT (X53-4260-11)



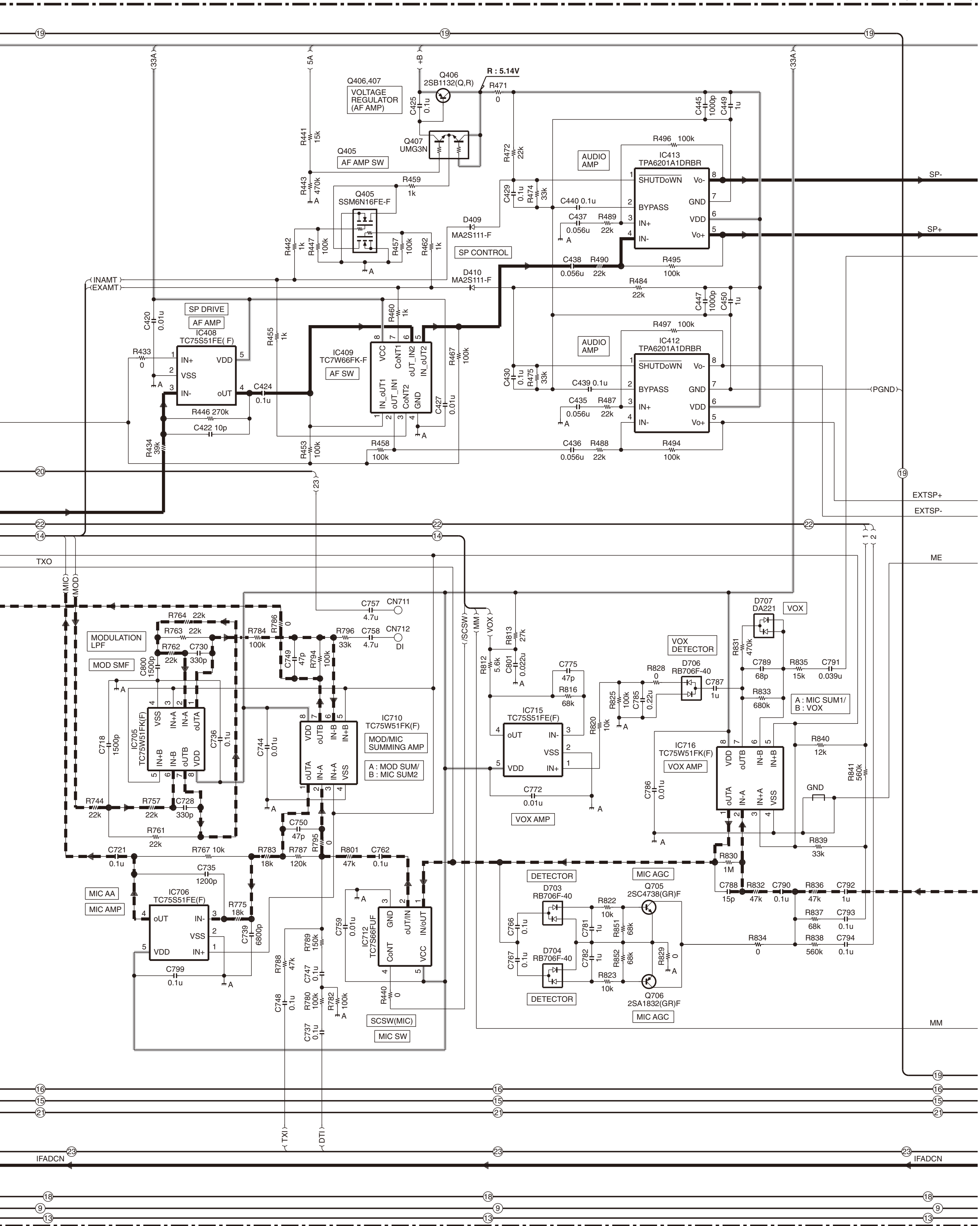
SCHEMATIC DIAGRAM / 原理图 NX-200

CONTROL UNIT (X53-4260-11)



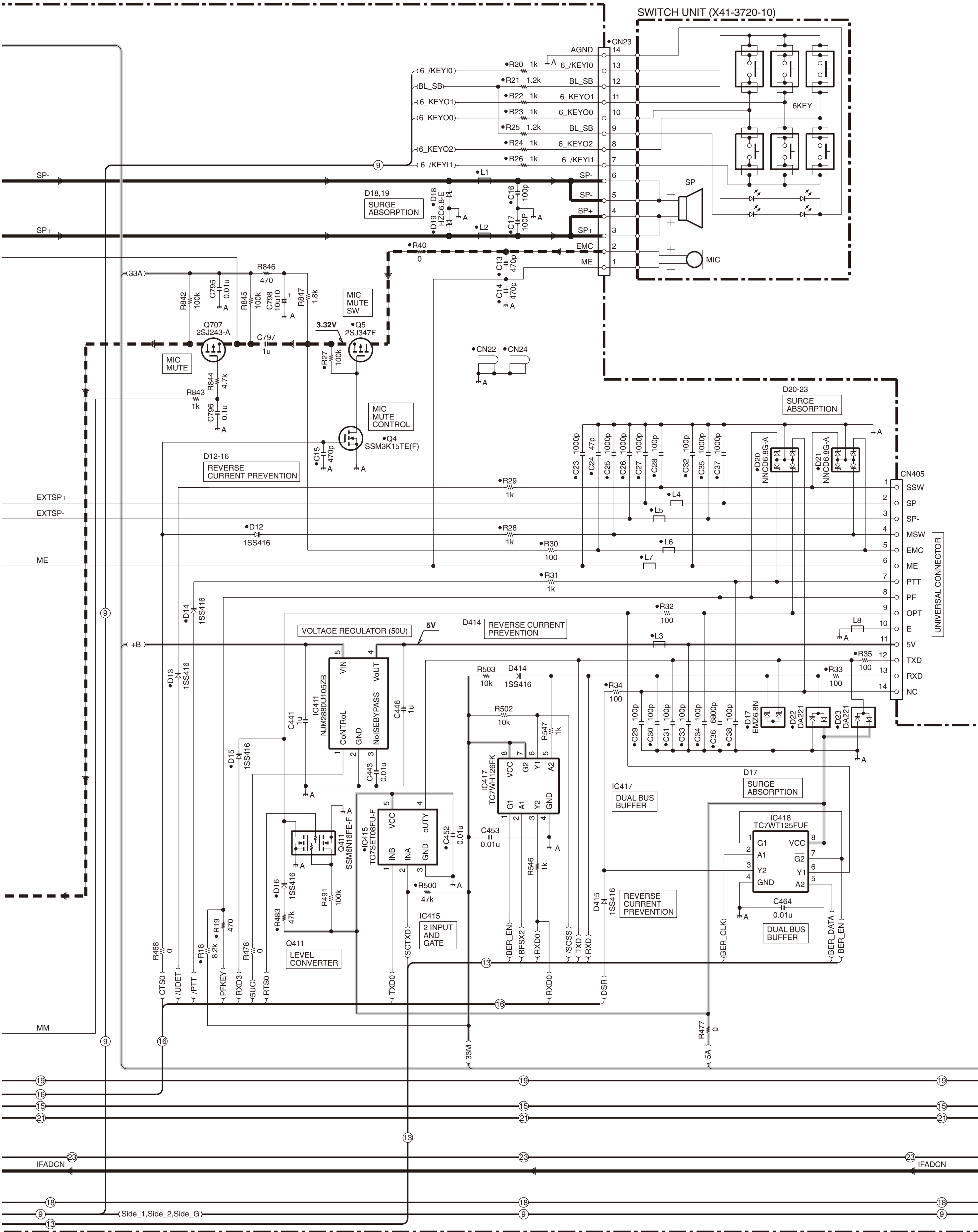
NX-200 SCHEMATIC DIAGRAM / 原理图

CONTROL UNIT (X53-4260-11)



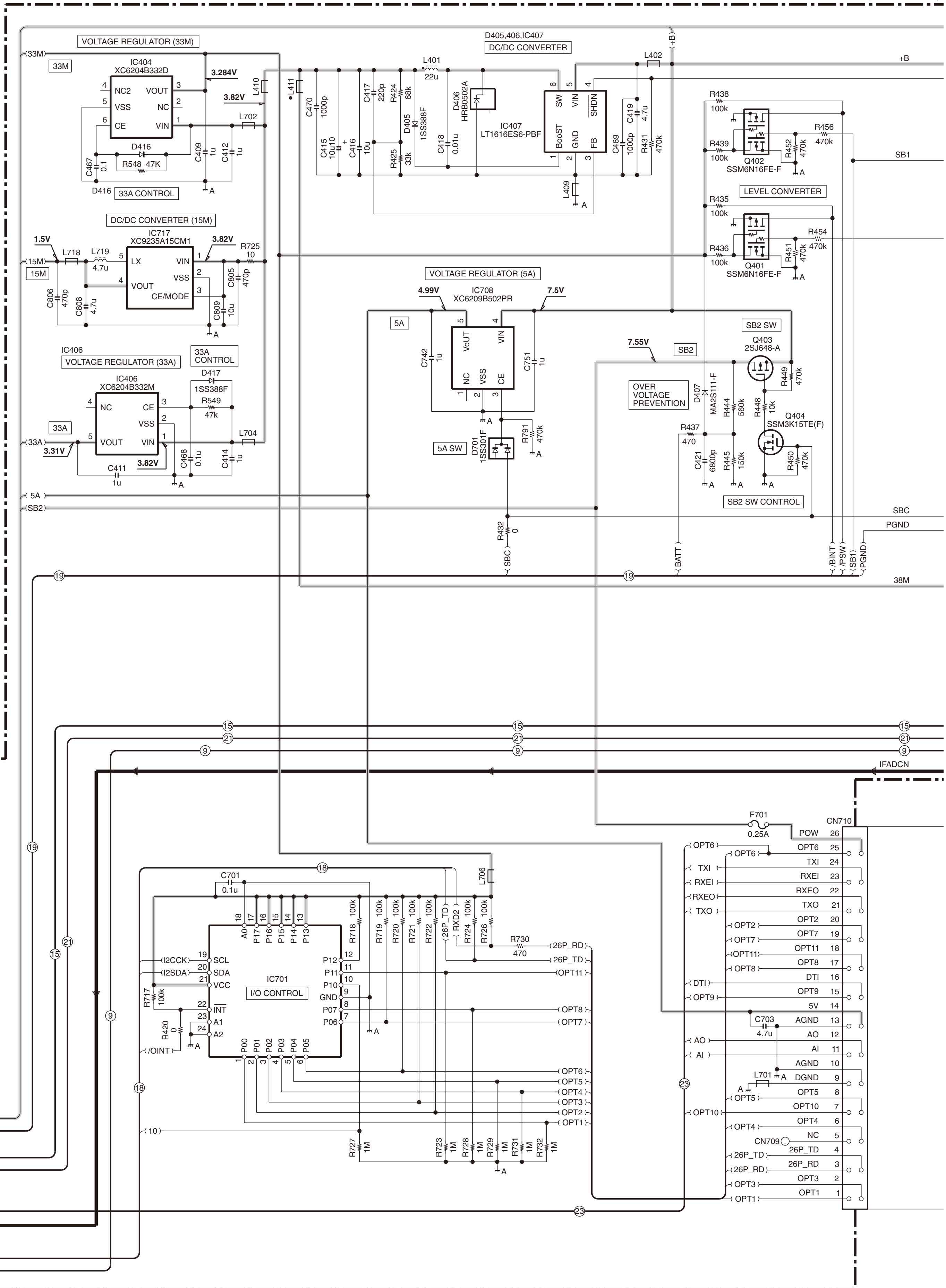
SCHEMATIC DIAGRAM / 原理图 NX-200

CONTROL UNIT (X53-4260-11)



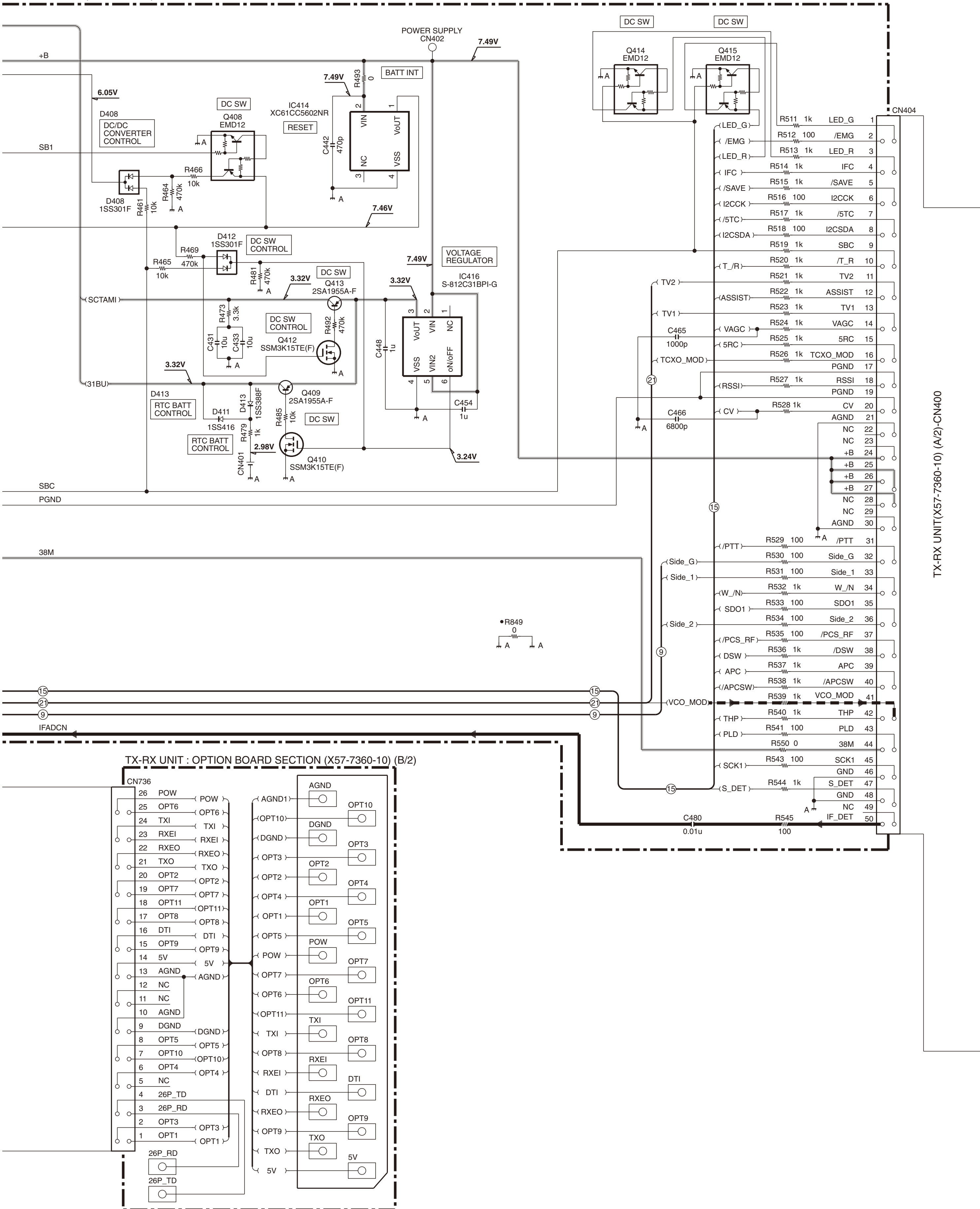
NX-200 SCHEMATIC DIAGRAM / 原理图

CONTROL UNIT (X53-4260-11)



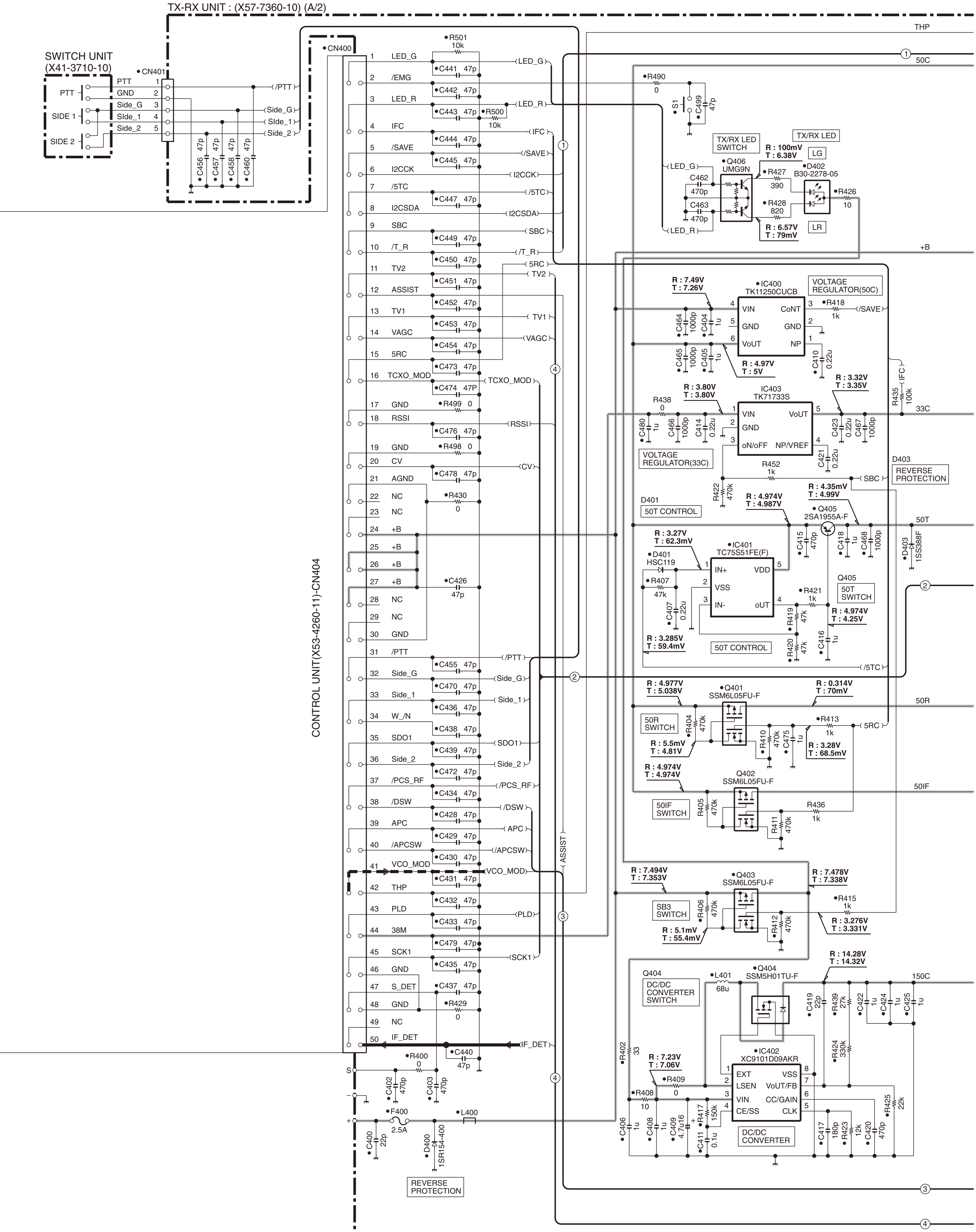
SCHEMATIC DIAGRAM / 原理图 NX-200

CONTROL UNIT (X53-4260-11)



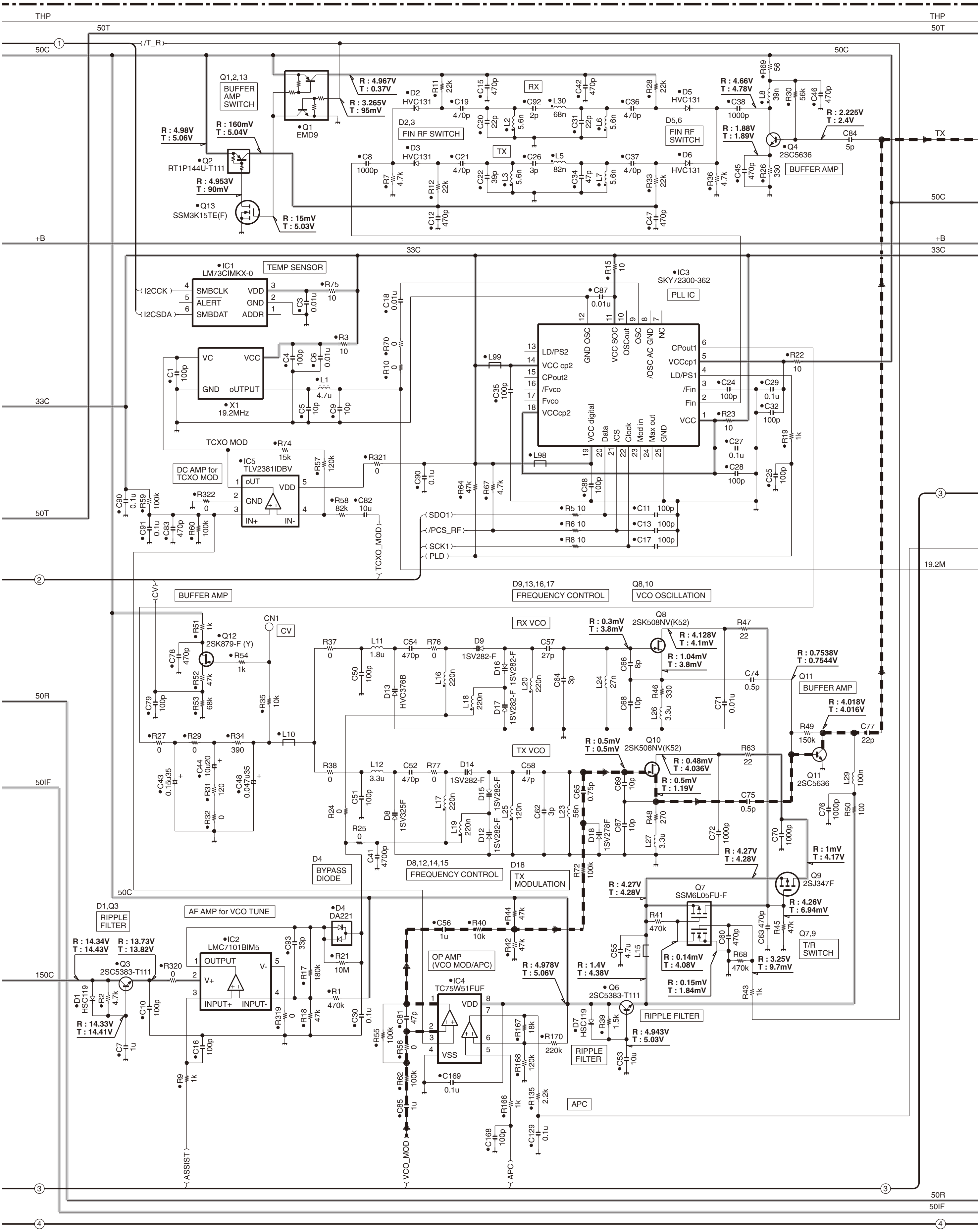
Note : The components marked with a dot (•) are parts of layer 1.

NX-200 SCHEMATIC DIAGRAM / 原理图



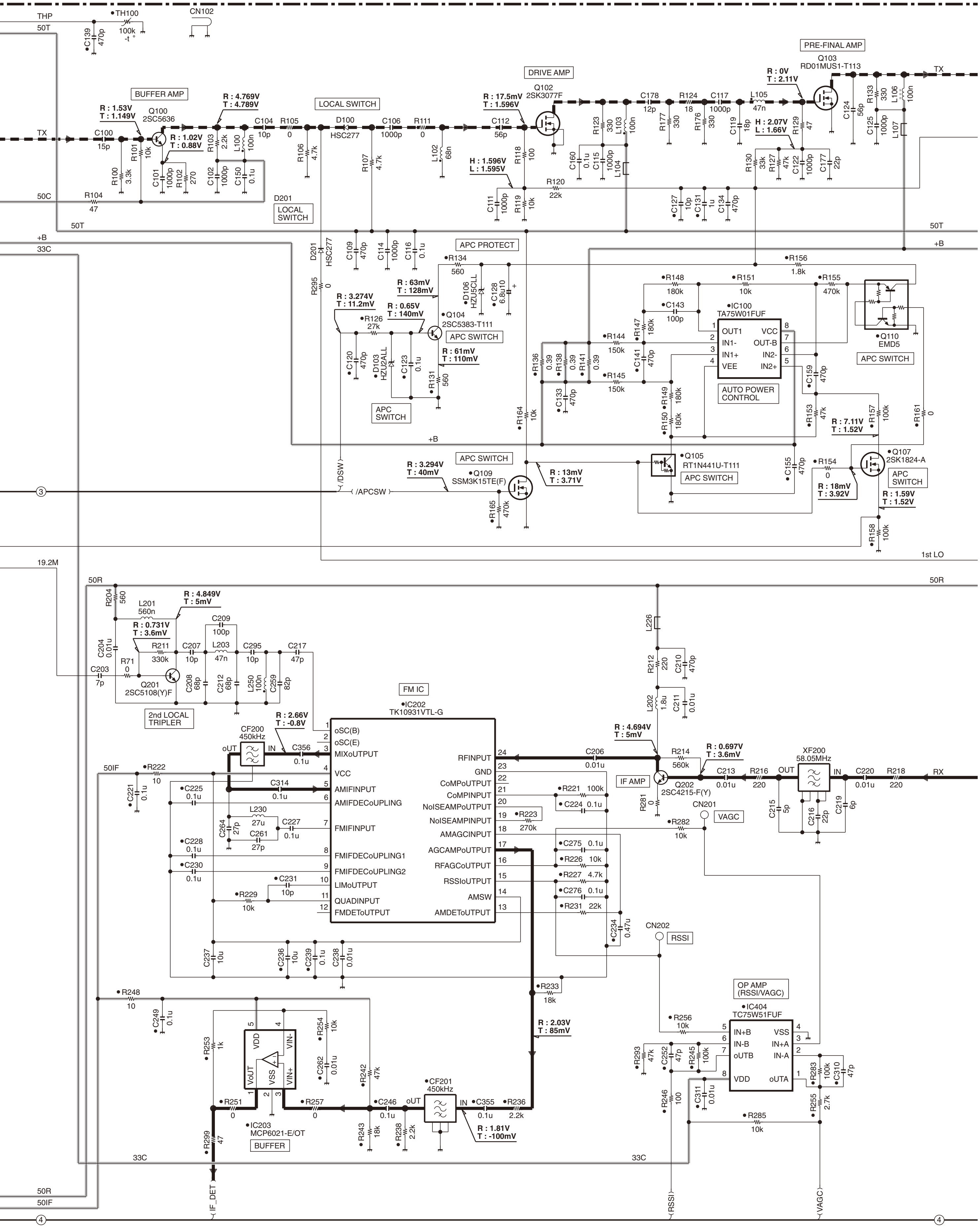
SCHEMATIC DIAGRAM / 原理图 NX-200

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



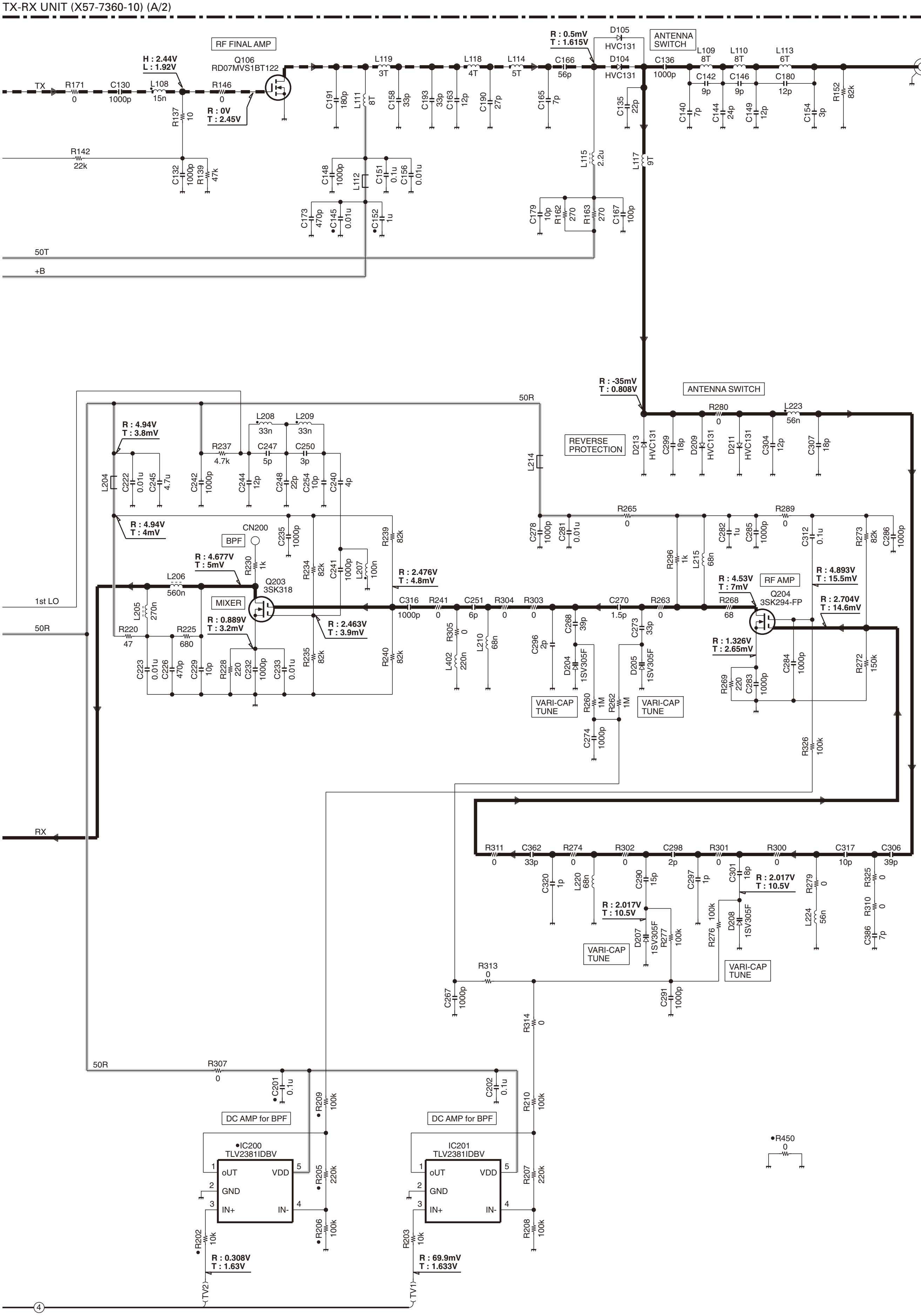
NX-200 SCHEMATIC DIAGRAM / 原理图

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



SCHEMATIC DIAGRAM / 原理图 NX-200

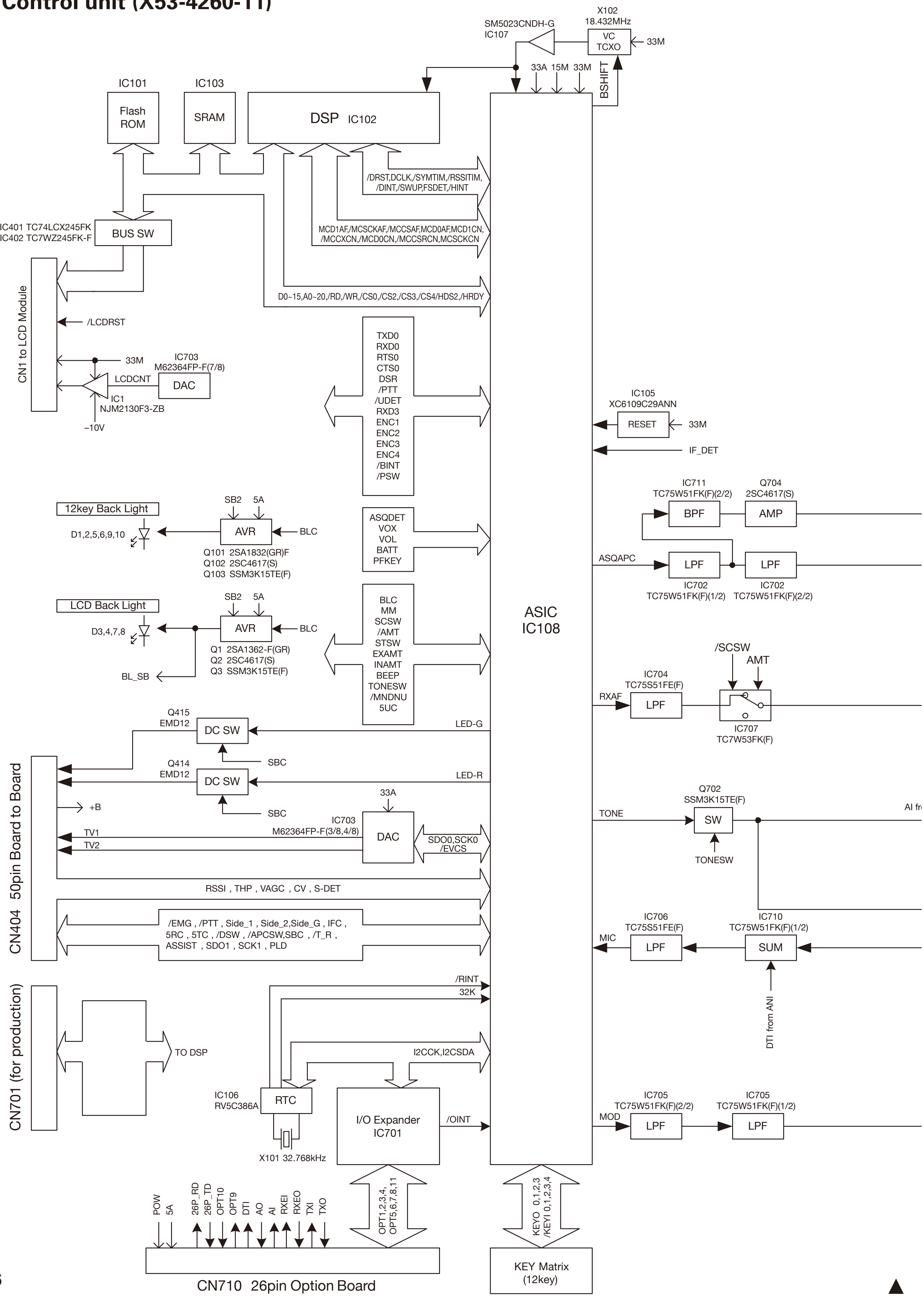
TX-RX UNIT (X57-7360-10) (A/2)

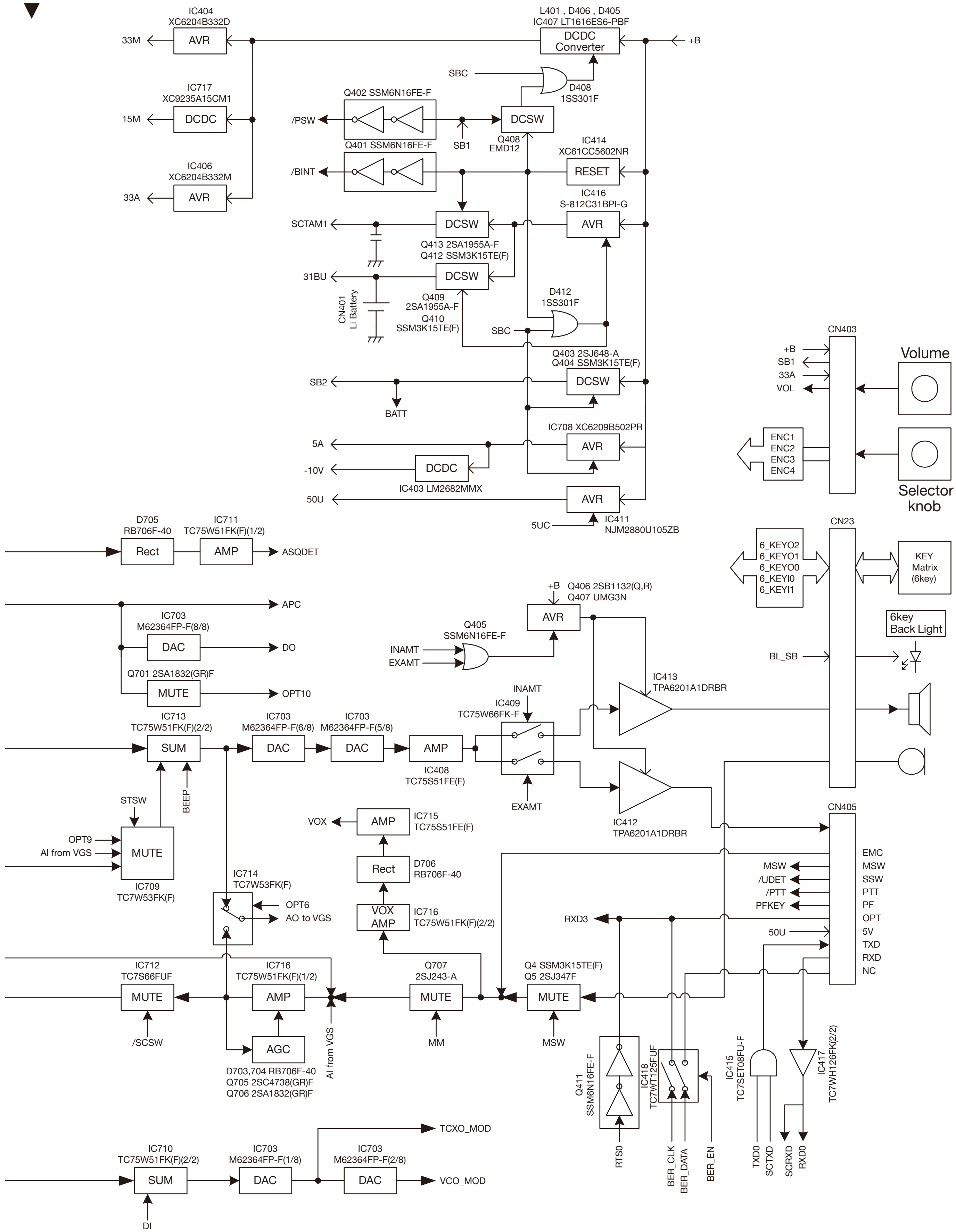


Note : The components marked with a dot (•) are parts of layer 1.

NX-200 BLOCK DIAGRAM / 方块图

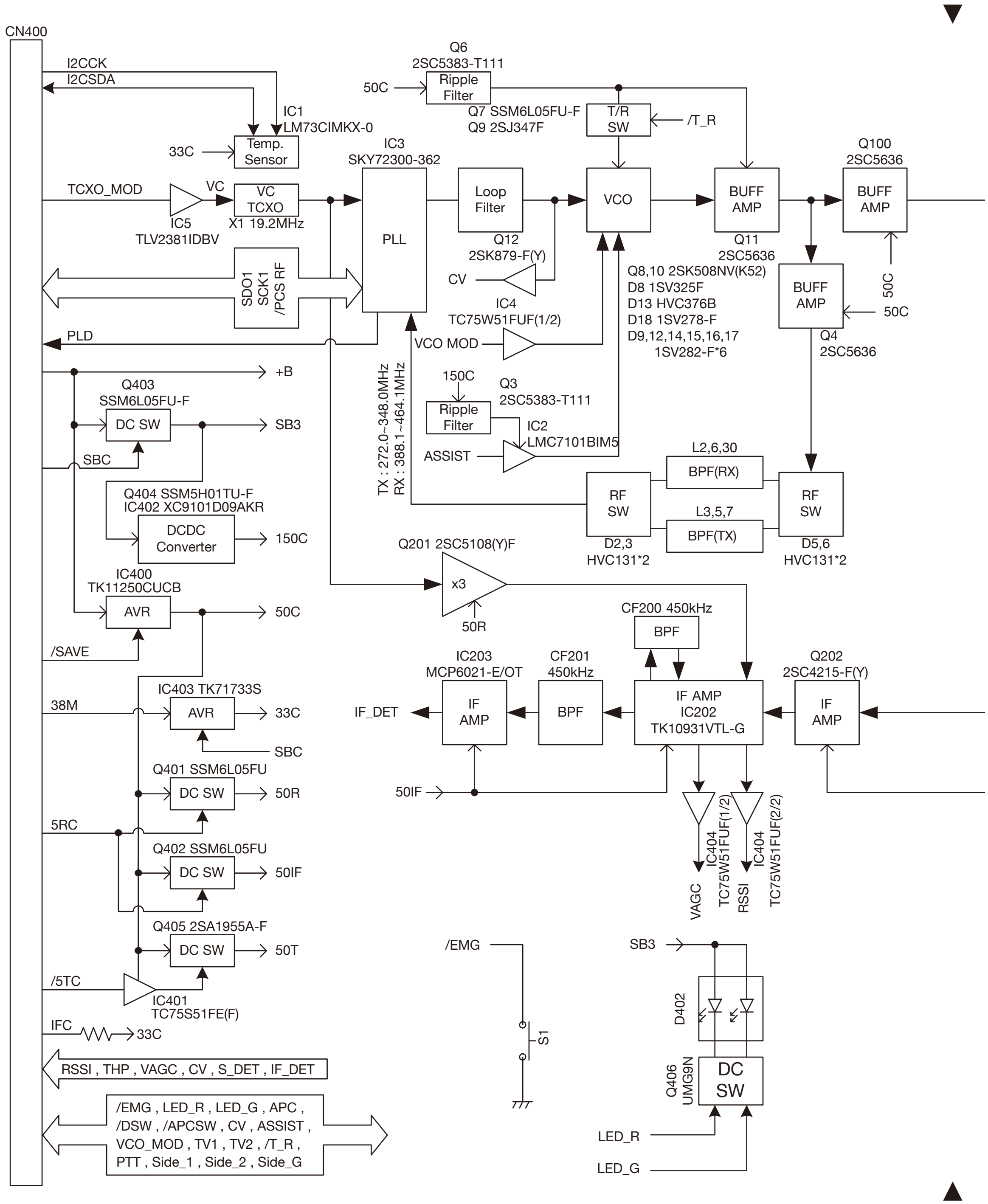
Control unit (X53-4260-11)



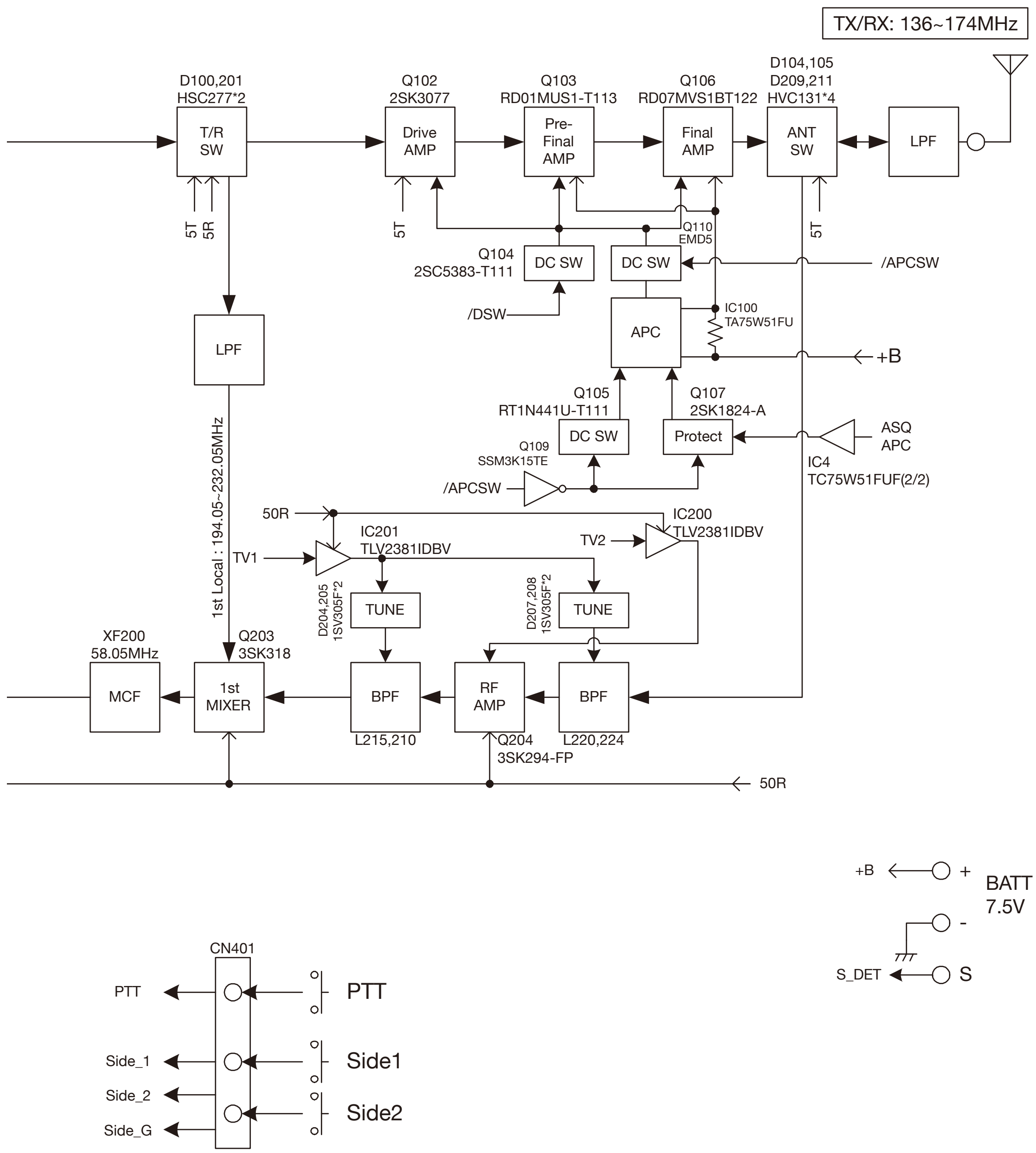

IC404
XC6204B332D
33M
AVR
L401 , D406 , D405
IC407 LT1616ES6-PBF
DCDC
Converter
+B
SBC
D408
1SS301F
IC717
XC9235A15CM1
15M
DCDC
Q402 SSM6N16FE-F
/PSW
DCSW
Q408
EMD12
Q401 SSM6N16FE-F
SB1
IC414
XC61CC5602NR
IC406
XC6204B332M
/BINT
RESET
33A
AVR
IC416
S-812C31BPI-G
SCTAM1
DCSW
AVR
Q413 2SA1955A-F
Q412 SSM3K15TE(F)
31BU
DCSW
CN401
Li Battery
Q409
2SA1955A-F
Q410
SSM3K15TE(F)
D412
1SS301F
SBC
Q403 2SJ648-A
Q404 SSM3K15TE(F)
SB2
DCSW
BATT
IC708 XC6209B502PR
5A
AVR
-10V
DCDC
IC403 LM2682MMX
50U
AVR
5UC
IC411
NJM2880U105ZB
CN403
+B
SB1
33A
VOL
Volume
ENC1
ENC2
ENC3
ENC4
Selector
knob
CN23
6_KEYO2
6_KEYO1
6_KEYO0
6_KEYI0
6_KEYI1
KEY
Matrix
(6key)
6key
Back Light
BL_SB
D705
RB706F-40
IC711
TC75W51FK(F)(1/2)
Rect
AMP
ASQDET
APC
IC703
M62364FP-F(8/8)
DAC
DO
Q701 2SA1832(GR)F
MUTE
OPT10
+B
Q406 2SB1132(Q,R)
Q407 UMG3N
AVR
Q405
SSM6N16FE-F
INAMT
EXAMT
IC413
TPA6201A1DRBR
INAMT
IC409
TC75W66FK-F
IC713
TC75W51FK(F)(2/2)
IC703
M62364FP-F(6/8)
IC703
M62364FP-F(5/8)
SUM
DAC
DAC
AMP
IC408
TC75S51FE(F)
EXAMT
STSW
BEEP
IC412
TPA6201A1DRBR
CN405
VOX
AMP
IC715
TC75S51FE(F)
OPT9
AI from VGS
MUTE
IC709
TC7W53FK(F)
Rect
D706
RB706F-40
EMC
MSW
SSW
PTT
PF
OPT
5V
TXD
RXD
NC
MSW
/UDET
/PTT
PFKEY
IC714
TC7W53FK(F)
OPT6
AO to VGS
VOX
AMP
IC716
TC75W51FK(F)(2/2)
RXD3
50U
IC712
TC7S66FUF
IC716
TC75W51FK(F)(1/2)
Q707
2SJ243-A
Q4 SSM3K15TE(F)
Q5 2SJ347F
MUTE
AMP
MUTE
MUTE
/SCSW
AGC
AI from VGS
MM
MSW
D703,704 RB706F-40
Q705 2SC4738(GR)F
Q706 2SA1832(GR)F
Q411
SSM6N16FE-F
IC418
TC7WT125FUF
IC415
TC7SET08FU-F
IC417
TC7WH126FK(2/2)
RTS0
BER_CLK
BER_DATA
BER_EN
TXD0
SCTXD
SCRXD
RXD0
TCXO_MOD
IC710
TC75W51FK(F)(2/2)
IC703
M62364FP-F(1/8)
IC703
M62364FP-F(2/8)
SUM
DAC
DAC
VCO_MOD
DI

BLOCK DIAGRAM / 方块图

TX-RX unit (X57-7360-10)

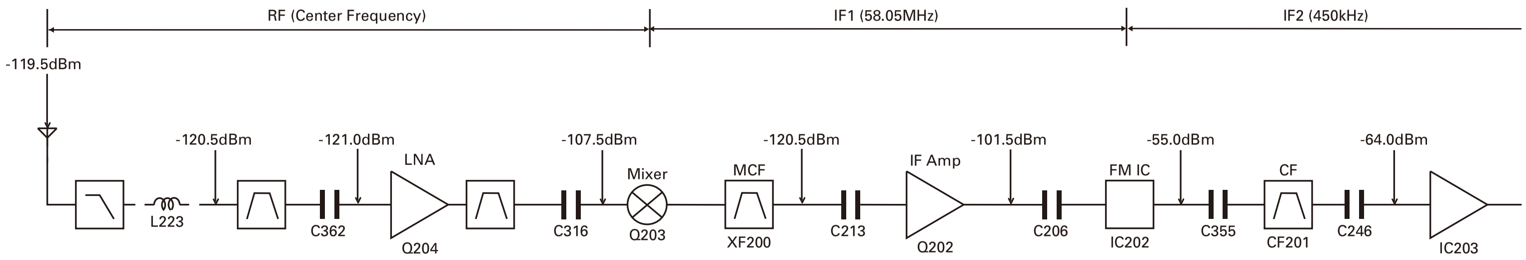


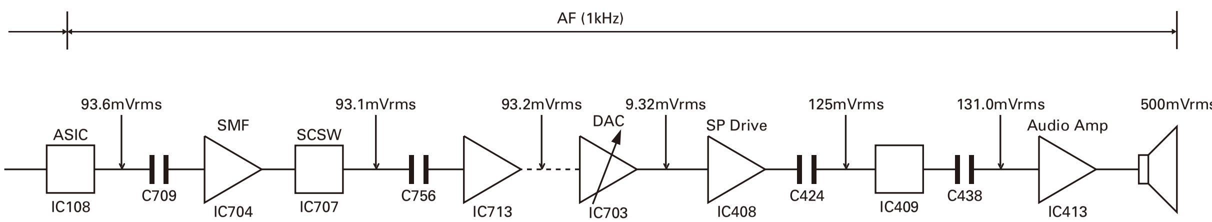
BLOCK DIAGRAM / 方块图



LEVEL DIAGRAM / 电平图

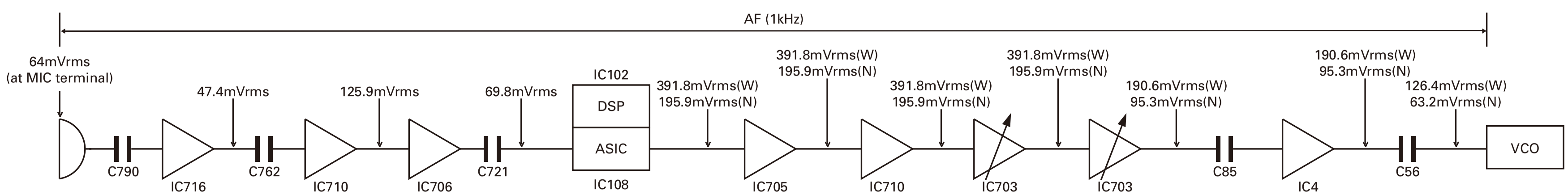
Receiver Section / 接收部分

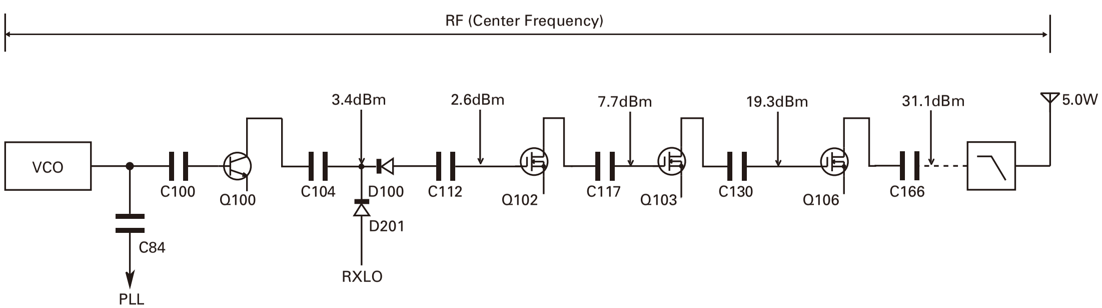




To make measurements in the AF section, connect the AC level meter. (ANT input: –53dB, 1kHz FM, 3kHz DEV (Wide))
In the RF section, use a 1000pF coupling capacitor.
(The display shows the SSG input value required to obtain 12dB SINAD without local level.)
如要在 AF 部测量，则连接 AC 电平表。
（天线输入 :–53dBm, 1kHz FM, 3kHz DEV（宽））
如要在 RF 部测量，请使用 1000pF 耦合电容器。
（图中显示了获得 12dB SINAD 所需的 SSG 输入值，没有本地电平。）

Transmitter Section / 发射部分





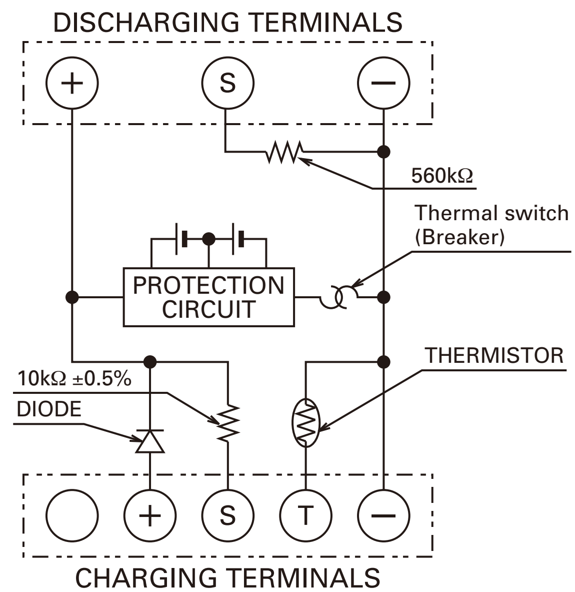
AG is set to the MIC input becomes 3kHz/1.5kHz DEV at 1kHz MOD (Wide/Narrow).
To make measurements in the AF section, connect the AC level meter.
In the RF section, use a 1000pF coupling capacitor.
AG 被设为麦克风输入，在 1kHz MOD（宽 / 窄）时为 3kHz/1.5kHz DEV。
如要在 AF 部测量，则连接 AC 电平表。
如要在 RF 部测量，请使用 1000pF 耦合电容器。

OPTIONAL ACCESSORIES / 可选附件

KNB-47L (Li-ion Battery Pack / 锂离子电池)

■ External View / 外视图

■ Schematic Diagram / 电路图



■ Specifications / 规格

Voltage / 电压..7.4V
Battery capacity / 电池容量..................................... 1950mAh

SPECIFICATIONS

GENERAL

Frequency Range	136~174MHz
Number of Channels	512
Zones	128
Max. Channels per Zone	250
Channel Spacing	Analog: 12.5/25 kHz Digital: 6.25/12.5 kHz
Operating Voltage	7.5V DC ± 20%
Battery Life (with KNB-47L)	5-5-90 duty cycle: More than 11 hours 10-10-80 duty cycle: More than 7 hours
Operating Temperature Range	–30°C~+60°C
Frequency Stability	±2.0ppm
Antenna Impedance	50Ω
Dimensions (W x H x D) (Projections not included)	58 x 127.5 x 41.3 mm
Weight	
Radio only	250g
with KNB-47L	375g

RECEIVER

Sensitivity	Digital @6.25kHz (3% BER): 0.25µV Digital @12.5kHz (3% BER): 0.32µV Analog @12.5kHz (12dB SINAD): 0.32µV Analog @25kHz (12dB SINAD): 0.28µV
Adjacent Channel Selectivity (Analog)	25kHz: 72dB 12.5kHz: 65dB
Intermodulation (Analog)	70dB
Spurious Response Rejection (Analog)	70dB
Audio Distortion	Less than 3%
Audio Output	500mW/8Ω

TRANSMITTER

RF Power Output	5W/1W
Modulation Limiting (Analog)	±5.0kHz at 25kHz ±2.5kHz at 12.5kHz
Spurious Emission	–36dBm ≤ 1GHz, –30dBm > 1GHz
FM Noise (Analog)	25kHz: 45dB 12.5kHz: 40dB
Modulation Distortion	Less than 3%
Modulation	Analog @25kHz: 16K0F3E Analog @12.5kHz: 8K50F3E Digital @12.5kHz: 8K30F1E Digital @6.25kHz: 4K00F1E

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

规　　格

通　　用

频率范围................................ 136~174MHz
信道数量................................ 512
区域分区数量............................ 128
每区域最大信道数量...................... 250
信道间隔................................ 模拟 :12.5/25 kHz　　数字 :6.25/12.5 kHz
工作电源电压............................ 7.5V DC ± 20%
电池使用时间（使用 KNB-47L 电池时）...... 5-5-90 工作循环：大于 11 小时
　10-10-80 工作循环：大于 7 小时
工作温度范围............................ -30℃ ~ +60℃
频率稳定度.............................. ±2.0ppm
天线阻抗................................ 50Ω
外型尺寸（宽 × 高 × 长）................ 58×127.5×41.3 mm
（未包括凸起部分）
重量
　仅主机 250g
　带 KNB-47L 电池时 375g

接　　收

接收灵敏度.............................. 数字 @6.25kHz(3% 误码率):0.25μV
　数字 @12.5kHz(3% 误码率):0.32μV
　模拟 @12.5kHz(12dB SINAD):0.32μV
　模拟 @25kHz(12dB SINAD):0.28μV
邻道选择性（模拟）...................... 25kHz:72dB　　12.5kHz:65dB
互调抑制（模拟）........................ 70dB
杂散响应（模拟）........................ 70dB
音频失真................................ 3% 以下
音频输出功率............................ 500mW(8Ω 时)

发　　射

发射功率................................ 5W/1W
调制限制（模拟）........................ ±5.0kHz(25kHz 信道)　±2.5kHz(12.5kHz 信道)
杂散抑制................................ -36dBm ≦ 1GHz, -30dBm ＞ 1GHz
调频噪声（模拟）........................ 25kHz:45dB　　12.5kHz:40dB
调制失真................................ 3% 以下
电波类型................................ 模拟 @25kHz:16K0F3E　　模拟 @12.5kHz:8K50F3E
　数字 @12.5kHz:8K30F1E　　数字 @6.25kHz:4K00F1E

依据 TIA/EIA 603 获得的模拟测量值和所示规格均为典型值。
建伍公司有权变更技术规格，恕不预先通知。

NX-200

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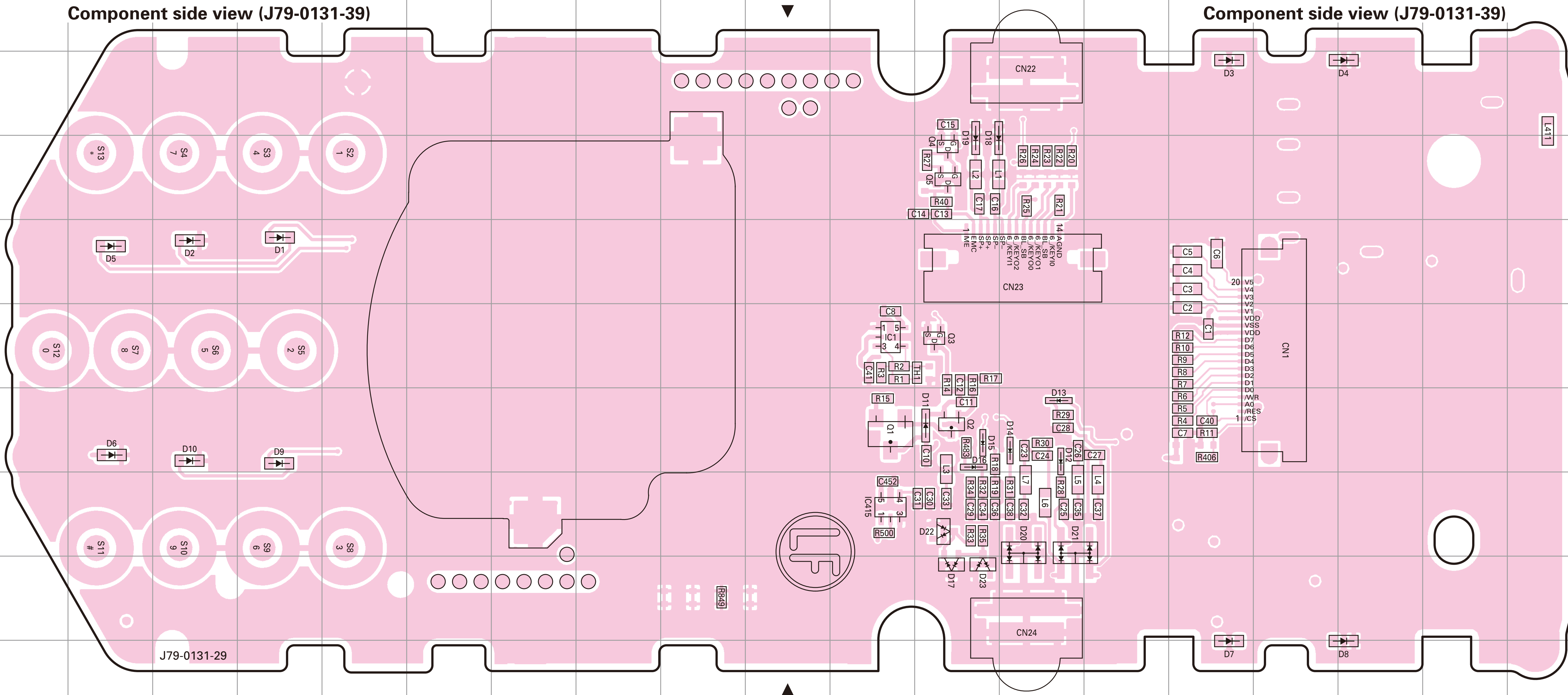
NX-200 PC BOARD / PC板

PC BOARD / PC板 NX-200

CONTROL UNIT (X53-4260-11)
Component side view (J79-0131-39)

CONTROL UNIT (X53-4260-11)
Component side view (J79-0131-39)



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

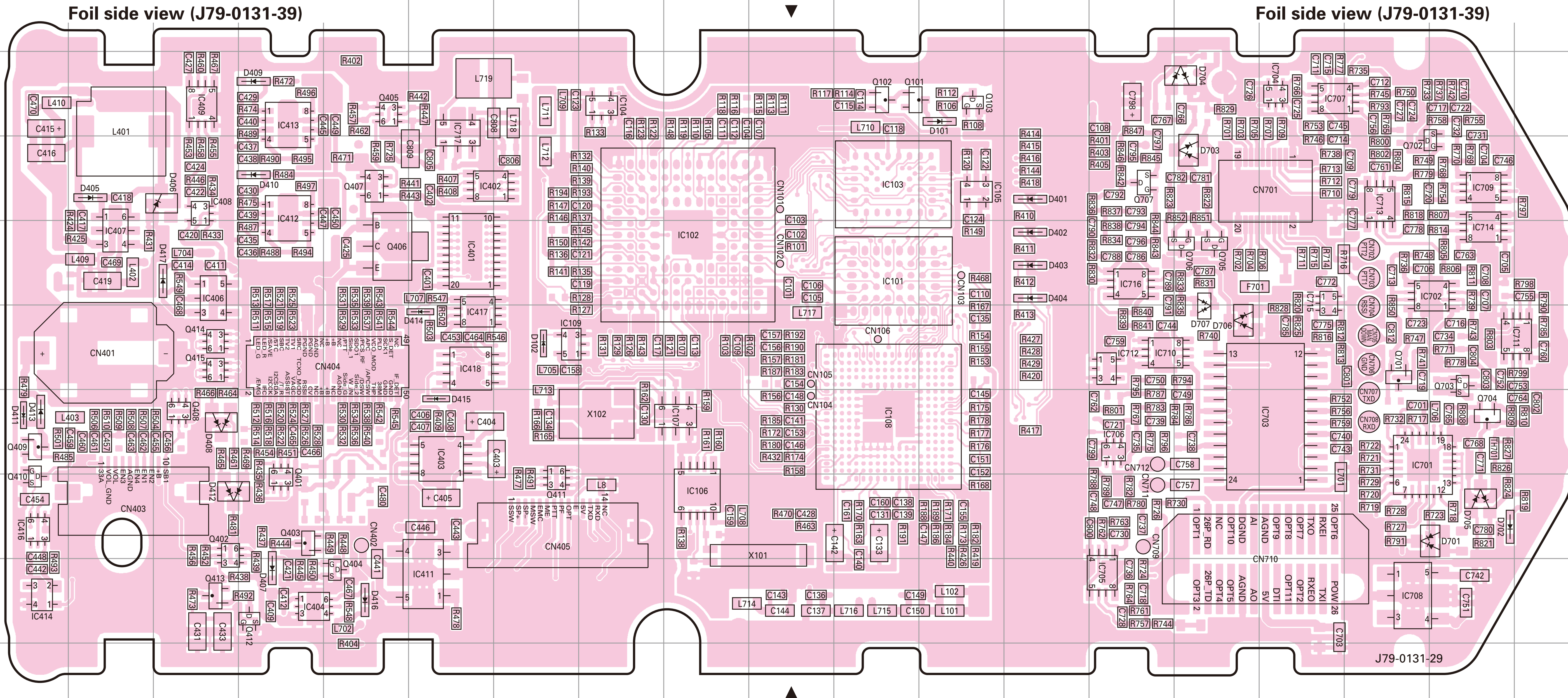
Component side
Layer 1
Layer 2
Layer 3
Layer 4
Layer 5
Layer 6
Foil side

NX-200 PC BOARD / PC板

PC BOARD / PC板 NX-200

CONTROL UNIT (X53-4260-11)
Foil side view (J79-0131-39)

CONTROL UNIT (X53-4260-11)
Foil side view (J79-0131-39)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC101	5K	IC404	9D	IC701	7Q	IC713	4Q	Q405	3E	Q702	4R	D405	4B	D417	5C
IC102	5I	IC406	5C	IC702	5R	IC714	5R	Q406	5E	Q703	6R	D406	4C	D701	8R
IC103	4K	IC407	5B	IC703	7P	IC715	5P	Q407	4E	Q704	7R	D407	9D	D702	8R
IC104	3H	IC408	4C	IC704	3P	IC716	5N	Q408	7C	Q705	5O	D408	7C	D703	4O
IC105	4L	IC409	3C	IC705	9N	IC717	3F	Q409	7A	Q706	5O	D409	3D	D704	3O
IC106	8I	IC411	9F	IC706	7N	Q101	3K	Q410	8A	Q707	4N	D410	4D	D705	8R
IC107	7I	IC412	4D	IC707	3P	Q102	3K	Q411	8G	D101	3L	D411	7A	D706	6O
IC108	7K	IC413	3D	IC708	9Q	Q103	3L	Q412	9D	D102	6G	D412	8C	D707	6O
IC109	6G	IC414	9A	IC709	4R	Q401	8D	Q413	9C	D401	4M	D413	7A		
IC401	5F	IC416	8A	IC710	6N	Q402	8C	Q414	6C	D402	5M	D414	6F		
IC402	4F	IC417	6F	IC711	6S	Q403	8D	Q415	6C	D403	5M	D415	7F		
IC403	7F	IC418	6F	IC712	6N	Q404	9E	Q701	6Q	D404	5M	D416	9E		

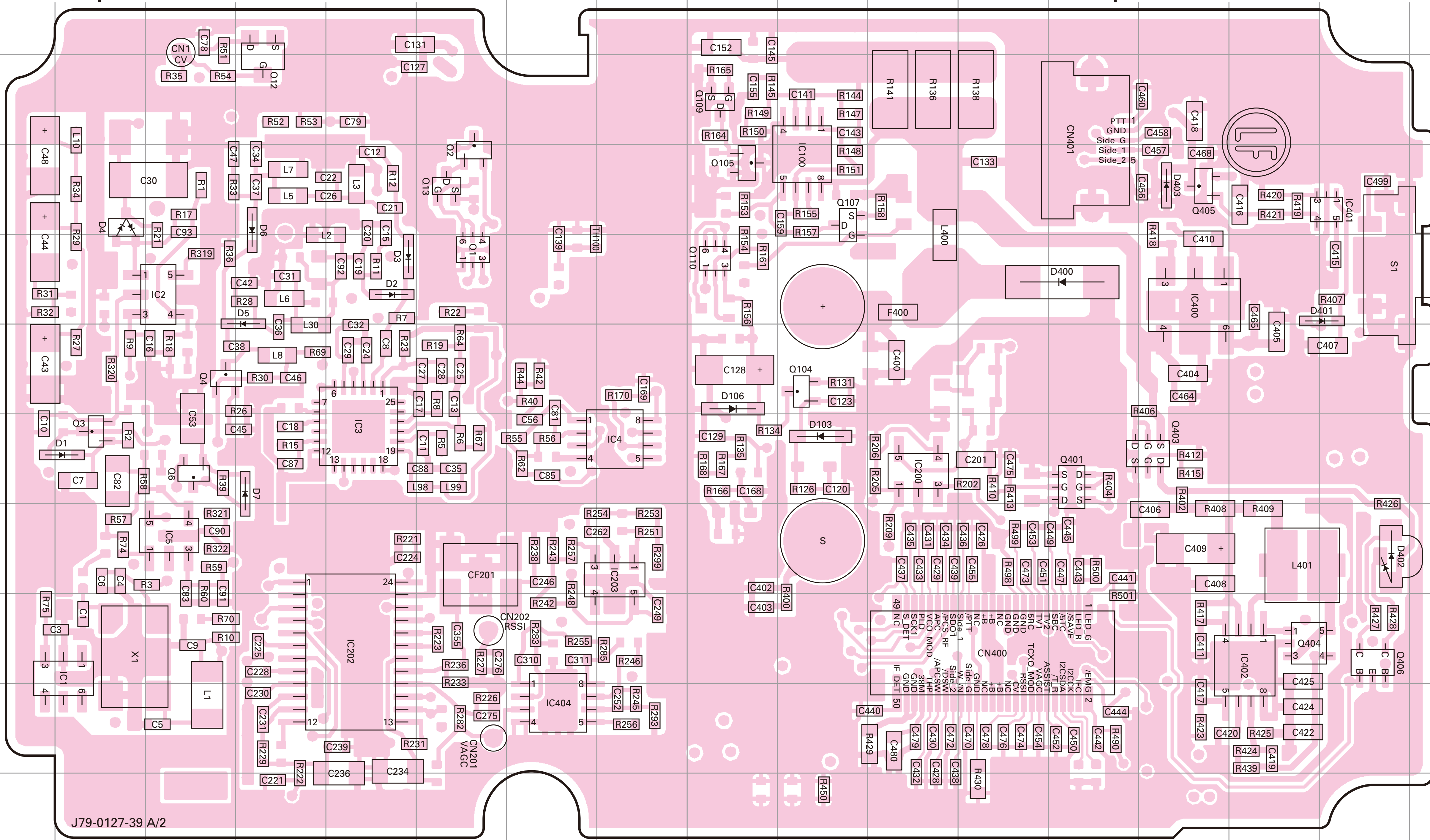
Component side
Layer 1
Layer 2
Layer 3
Layer 4
Layer 5
Layer 6
Foil side

NX-200 PC BOARD / PC板

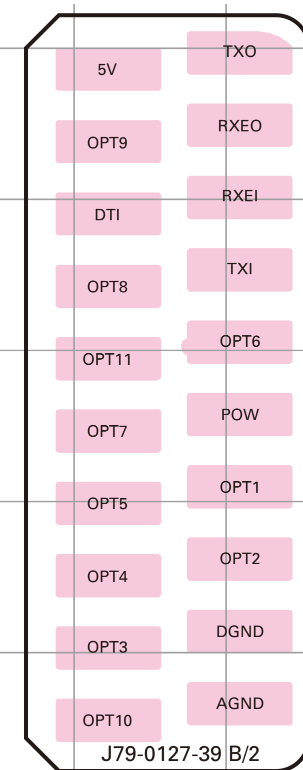
PC BOARD / PC板 NX-200

TX-RX UNIT (X57-7360-10) (A/2)
Component side view (J79-0127-39 A/2)

TX-RX UNIT (X57-7360-10) (A/2)
Component side view (J79-0127-39 A/2)



TX-RX UNIT
(X57-7360-10) (B/2)



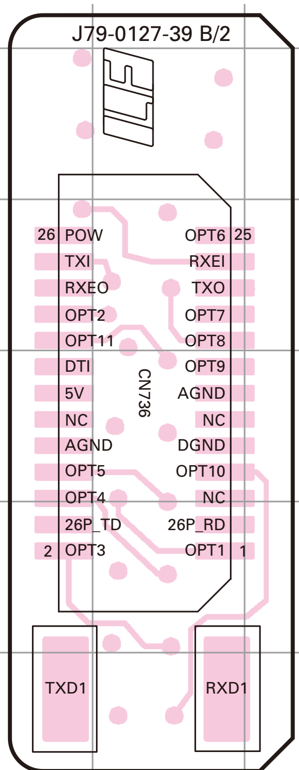
Component side
Layer 1
Layer 2
Layer 3
Layer 4
Layer 5
Layer 6
Foil side

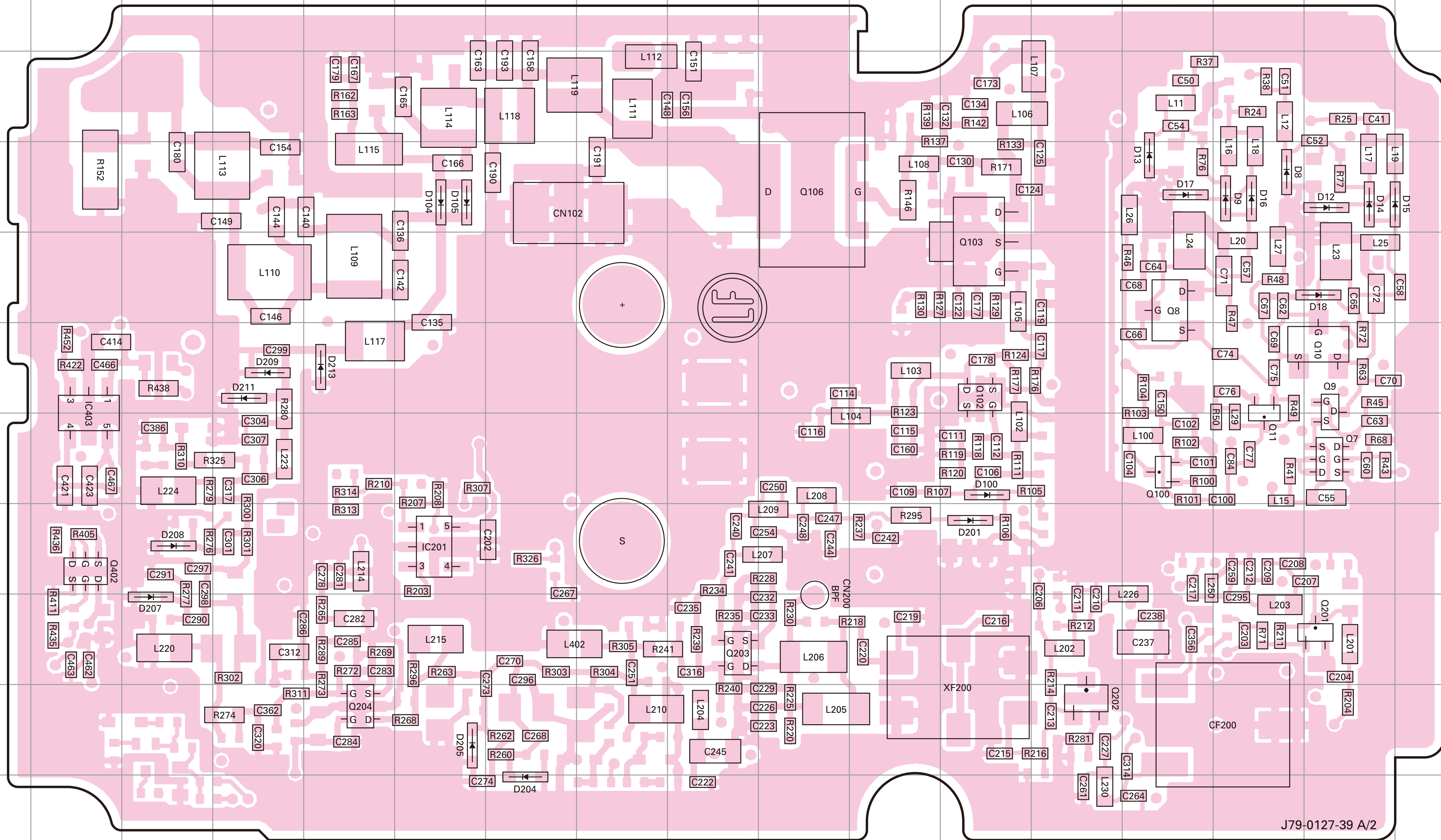
Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	9B	IC203	8H	Q4	6C	Q110	5I	D3	5E	D401	5P
IC2	5C	IC400	5N	Q6	7C	Q401	7M	D4	4B	D402	8P
IC3	7E	IC401	4P	Q12	3D	Q403	7N	D5	5D	D403	4N
IC4	7H	IC402	9O	Q13	4F	Q404	9O	D6	4D		
IC5	8C	IC404	10G	Q104	6J	Q405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

NX-200 PC BOARD / PC板

TX-RX UNIT (X57-7360-10) (A/2)
Foil side view (J79-0127-39 A/2)

TX-RX UNIT (X57-7360-10) (B/2)



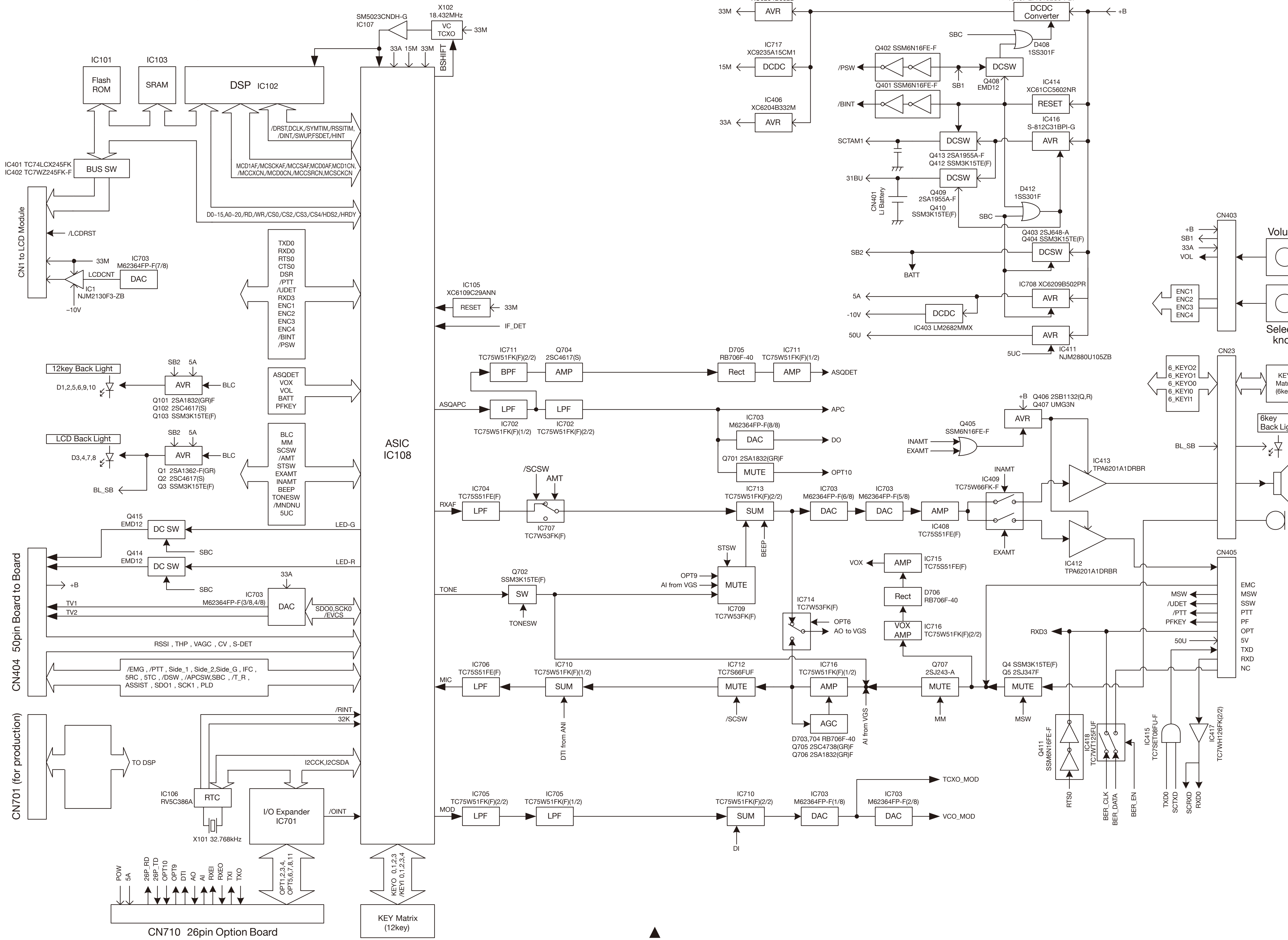


Component side
Layer 1
Layer 2
Layer 3
Layer 4
Layer 5
Layer 6
Foil side

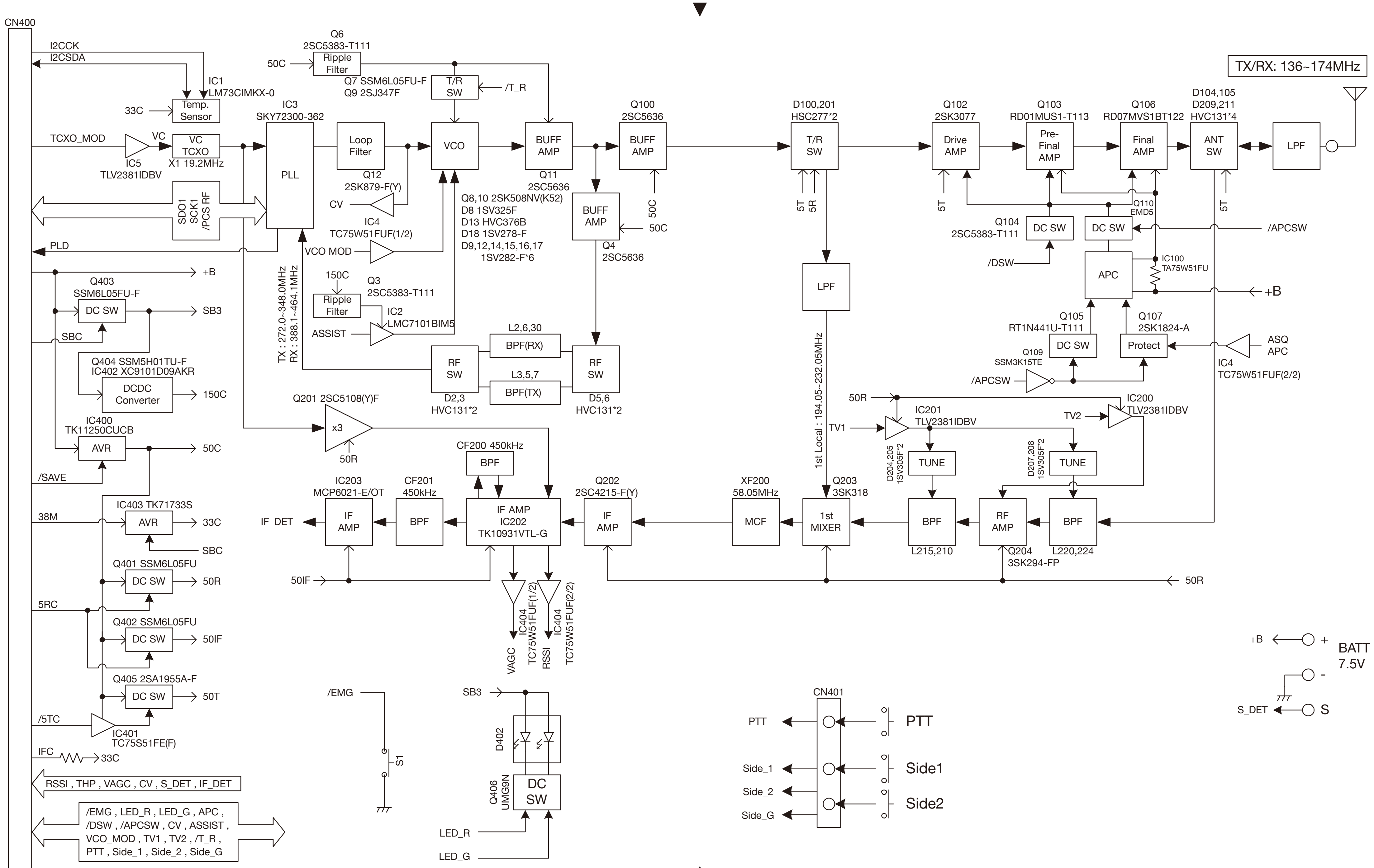
Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC201	8H	Q100	7P	Q204	10G	D15	4S	D201	8N	D213	6G
IC403	7D	Q102	6N	Q402	8D	D16	4Q	D204	11I		
Q7	7R	Q103	5N	D8	4Q	D17	4P	D205	10H		
Q8	5P	Q106	4L	D9	4Q	D18	5R	D207	9E		
Q9	6R	Q201	9R	D12	4R	D100	7N	D208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

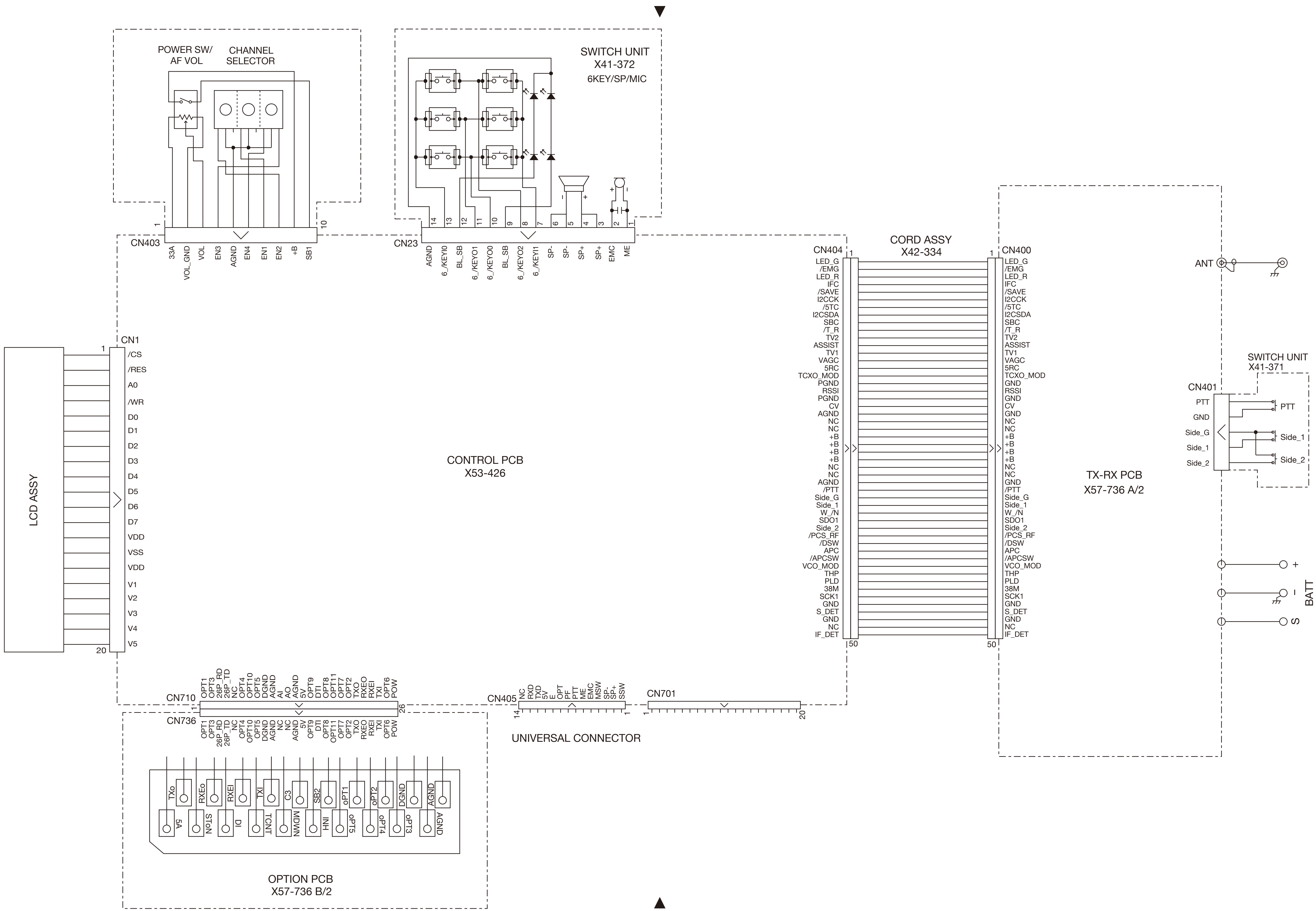

LCD
KenwoodDigital
MENU ZONE MONI
CONTROL UNIT (X53-4260-11)
LCD CONTRAST

Control unit (X53-4260-11)



TX-RX unit (X57-7360-10)




POWER SW/ AF VOL
CHANNEL SELECTOR
SWITCH UNIT X41-372 6KEY/SP/MIC
CN403
33A VOL_GND VOL EN3 AGND EN4 EN1 EN2 +B SB1
CN23
AGND 6_/KEYI0 BL_SB 6_/KEYO1 6_/KEYO0 BL_SB 6_/KEYO2 6_/KEYI1 SP- SP- SP+ SP+ EMC ME
CORD ASSY X42-334
CN404
CN400
LED_G /EMG LED_R IFC /SAVE I2CCK /5TC I2CSDA SBC /T_R TV2 ASSIST TV1 VAGC 5RC TCXO_MOD PGND RSSI PGND CV AGND NC NC +B +B +B +B NC NC AGND /PTT Side_G Side_1 W_/N SDO1 Side_2 /PCS_RF /DSW APC /APCSW VCO_MOD THP PLD 38M SCK1 GND S_DET GND NC IF_DET
ANT
SWITCH UNIT X41-371
CN401
PTT GND Side_G Side_1 Side_2
TX-RX PCB X57-736 A/2
BATT
CN1
/CS /RES A0 /WR D0 D1 D2 D3 D4 D5 D6 D7 VDD VSS VDD V1 V2 V3 V4 V5
LCD ASSY
CONTROL PCB X53-426
CN710
CN736
OPT1 OPT3 26P_RD 26P_TD NC OPT4 OPT10 OPT5 DGND AGND AI AO AGND 5V OPT9 DTI OPT8 OPT11 OPT7 OPT2 TXO RXEO RXEI TXI OPT6 POW
CN405
NC RXD TXD 5V E OPT PF PTT ME EMC MSW SP- SP+ SSW
CN701
UNIVERSAL CONNECTOR
TXo RXEo RXEI TXI C3 SB2 oPT1 oPT2 DGND AGND
5A SToN DI TCNT MDWN HNI oPT5 oPT4 oPT3 AGND
OPTION PCB X57-736 B/2