

KENWOOD

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TK-8100

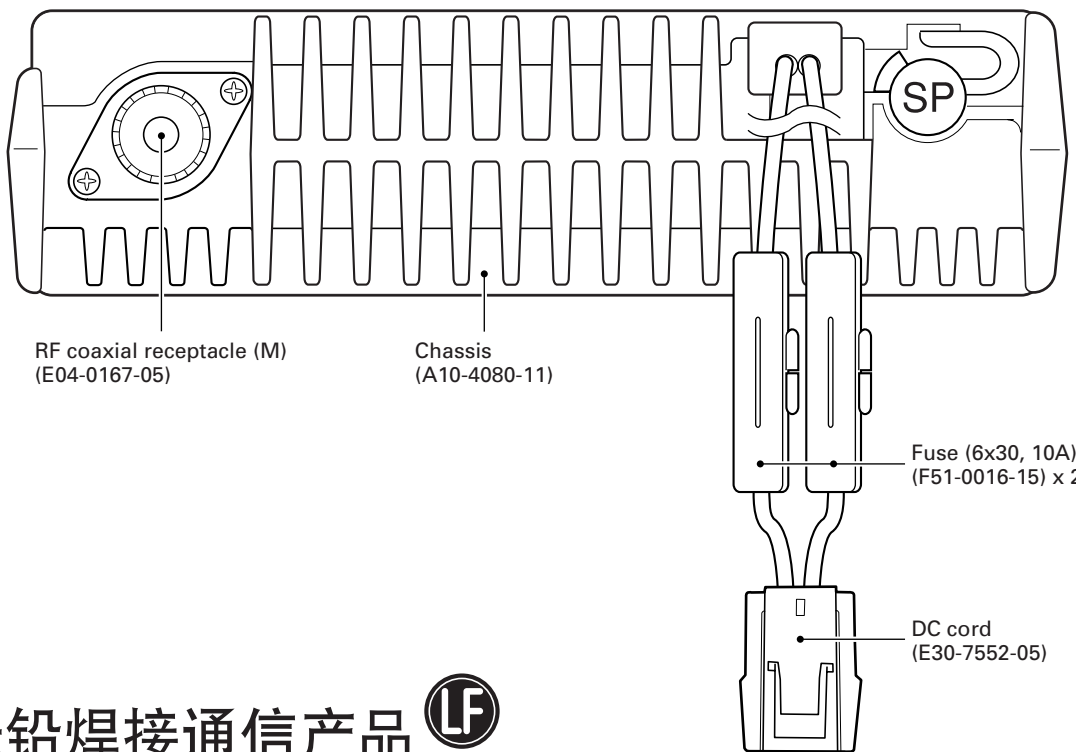
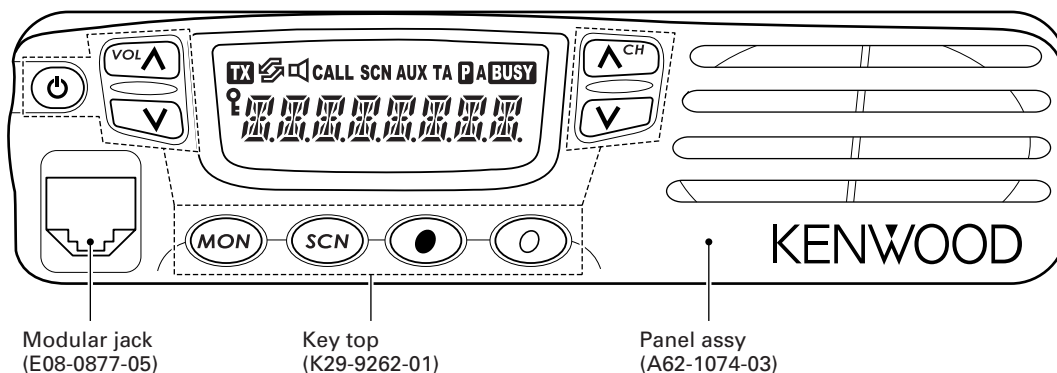
SERVICE MANUAL / 维修手册

C6 version

KENWOOD

Kenwood Corporation

© 2005-10 PRINTED IN JAPAN
B51-8739-00 (N) 566



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/>



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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 this publication date. Changes which may occur after publication are covered by either Service Bulletins or Manual Revisions, which are issued as required.

ORDERING REPLACEMENT PARTS

When ordering replacement parts or equipment information, the full part identification number should be included. This applies to all parts : components, kits, and 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.

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。

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。

GENERAL / 概述

PERSONAL SAFETY

The following precautions are recommended for personal safety :

- DO NOT transmit if someone is within two feet (0.6 meter) of the antenna.
- DO NOT transmit until all RF connectors are secure and any open connectors are properly terminated.
- SHUT OFF this equipment when near electrical blasting caps or while in an explosive atmosphere.
- All equipment should be properly grounded before power-up for safe operation.
- This equipment should be serviced by only qualified technicians.

PRE-INSTALLATION CONSIDERATIONS

1. UNPACKING

Unpack the radio from its shipping container and check for accessory items. If any item is missing, please contact KENWOOD immediately.

2. PRE-INSTALLATION CHECKOUT

2-1. Introduction

Each radio is adjusted and tested before shipment. However, it is recommended that receiver and transmitter operation be checked for proper operation before installation.

2-2. Testing

The radio should be tested complete with all cabling and accessories as they will be connected in the final installation. Transmitter frequency, deviation, and power output should be checked, as should receiver sensitivity, squelch operation, and audio output. Signaling equipment operation should be verified.

3. PLANNING THE INSTALLATION

3-1. General

Inspect the vehicle and determine how and where the radio antenna and accessories will be mounted.

Plan cable runs for protection against pinching or crushing wiring, and radio installation to prevent overheating.

3-2. Antenna

The favored location for an antenna is in the center of a large, flat conductive area, usually at the roof center. The trunk lid is preferred, bond the trunk lid and vehicle chassis using ground straps to ensure the lid is at chassis ground.

3-3. Radio

The universal mount bracket allows the radio to be mounted in a variety of ways. Be sure the mounting surface is adequate to support the radio's weight. Allow sufficient space around the radio for air cooling. Position the radio close enough to the vehicle operator to permit easy access to the controls when driving.

个人安全

为了个人的安全, 请注意下列事项:

- 如果有人在天线两英尺 (0.6 米) 范围之内时, 不要进行发射。
- 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。
- 为了操作的安全, 在接通电源之前所有设备应该连接地线。
- 本设备只应该由有资格的技术人员进行维修。

安装前条件

1. 开箱

从运输包装中取出本无线电设备并检查附件。如果有任何组件遗失, 请立即与KENWOOD联系。

2. 安装前检查

2-1. 说明

在运输之前每一台无线电设备均已调整和测试过。但是, 在安装之前最好检查接收和发射以便操作正确。

2-2. 测试

无线电设备应该按照电缆和附件最终安装时的连接进行完整的测试。应该检查发射频率, 频偏和输出功率, 同样应该检查接收灵敏度, 静噪和音频输出。应该检验信令操作。

3. 安装的步骤

3-1. 概述

检查车辆并确认如何以及在何处安装无线电天线和附件。

安排好电缆的位置, 避免挤压或碾碎布线, 同时无线电设备避免过热。

3-2. 天线

天线的最佳位置应该在一个宽阔, 平整导电区域的中心, 通常在车顶的中心。行李箱的盖子更好, 将地线黏结在行李箱的盖子和车辆的外壳上确保行李箱盖子接地。

3-3. 无线电设备

通用安装托架允许以多种方法安装无线电设备。确认安装的表面足以支撑无线电设备的重量。无线电设备的周围留出适当的空间进行散热。将无线电设备尽可能的安装在靠近车辆操作者的位置上, 以便在驾驶时易于控制。

GENERAL / 概述

3-4. DC Power and wiring

1. This radio may be installed in negative ground electrical systems only. Reverse polarity will cause the cable fuse to blow. Check the vehicle ground polarity before installation to prevent wasted time and effort.
2. Connect the positive power lead directly to the vehicle battery positive terminal. Connecting the Positive lead to any other positive voltage source in the vehicle is not recommended.
3. Connect the ground lead directly to the battery negative terminal.
4. The cable provided with the radio is sufficient to handle the maximum radio current demand. If the cable must be extended, be sure the additional wire is sufficient for the current to be carried and length of the added lead.

4. INSTALLATION PLANNING – CONTROL STATIONS

4-1. Antenna system

Control station. The antenna system selection depends on many factors and is beyond the scope of this manual. Your KENWOOD dealer can help you select an antenna system that will best serve your particular needs.

4-2. Radio location

Select a convenient location for your control station radio which is as close as practical to the antenna cable entry point. Secondly, use your system's power supply (which supplies the voltage and current required for your system). Make sure sufficient air can flow around the radio and power supply to allow adequate cooling.

SERVICE

This radio is designed for easy servicing. Refer to the schematic diagrams, printed circuit board views, and alignment procedures contained in this manual.

NOTE

If you do not intend to use the 3.5-mm jack for the external speaker, fit the supplied speaker-jack cap to stop dust and sand from getting in.

3-4. 直流电源和布线

1. 本无线电设备只能被安装在负极接地电子系统中。反向极性将导致电缆保险丝熔断。在安装之前检查车辆的接地极性，避免工作效率低以及浪费时间。
2. 将电源的正极引线直接连接到车载电池的正极端点上。不要将正极引线与其他正极电压连接。
3. 将接地引线直接与电池的负极连接。
4. 与无线电设备一起提供的电缆适用于所需的最大无线电流。如果电缆必须加长，要确认附加的电线适用于所载的电流和添加引线的长度。

4. 安装步骤-基站

4-1. 天线系统

基站。天线系统的选择取决于许多因素和本手册的范围。用户的KENWOOD销售商可以帮助用户选择最能满足用户特殊要求的天线系统。

4-2. 无线电位置

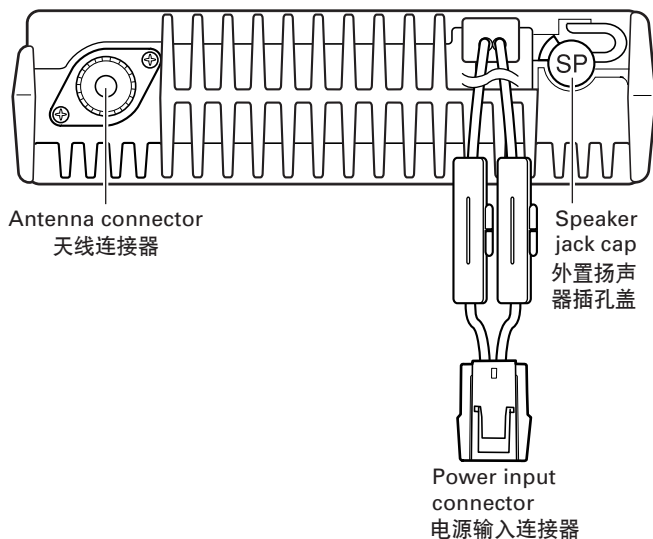
为用户的基站无线电设备选择一个方便的位置，此位置应尽量靠近天线电缆输入点。其次，使用用户系统的电源（为用户的系统提供所需的电压和电流）。确认无线电设备周围的空气流通顺畅并且足以使电源冷却。

维修服务

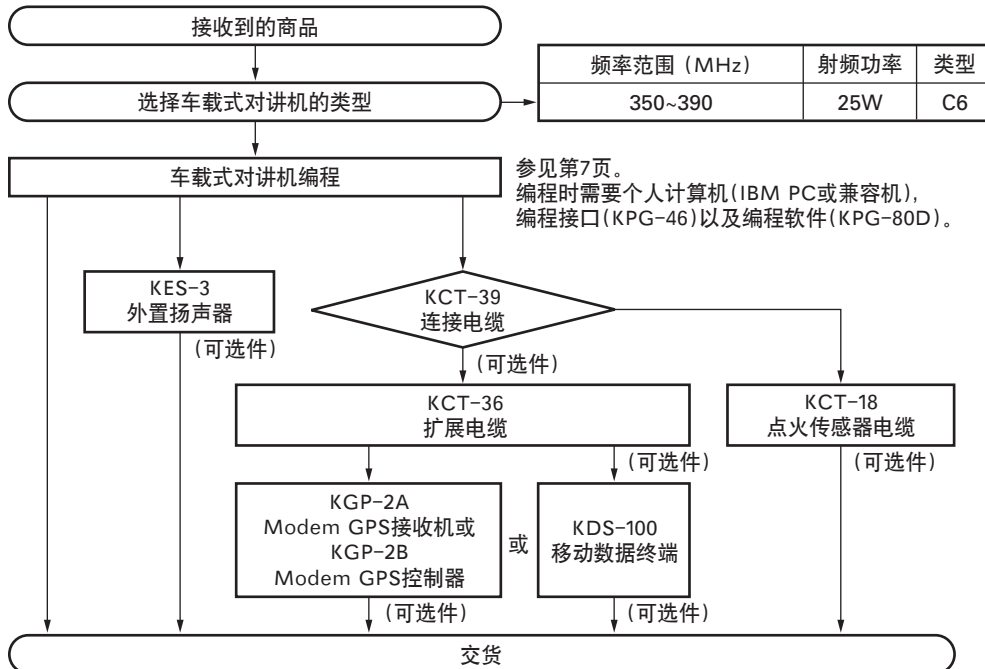
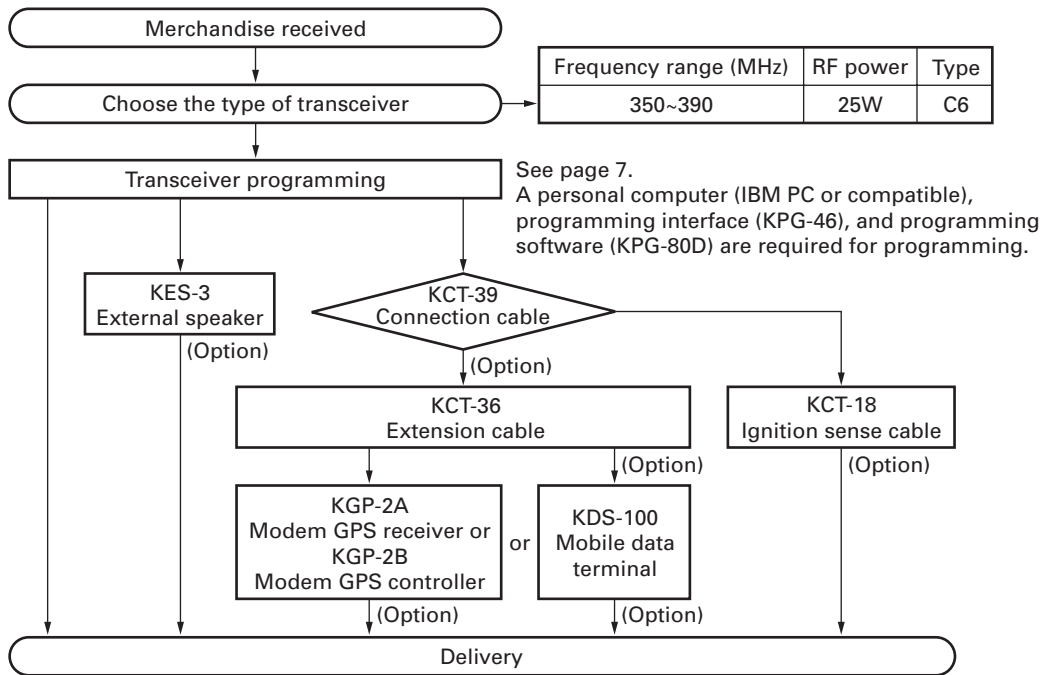
为了便于维修本设备，建立了完整的维修服务体系，提供了包括原理图，印刷电路板图和调整步骤在内的资料供参考。

注意事项

3.5mm外部扬声器插孔不用时，请用提供的扬声器插孔帽将其盖上，以防止沙尘进入。



SYSTEM SET-UP / 系统体系

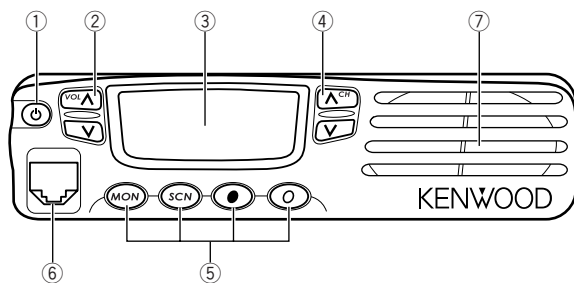


TK-8100

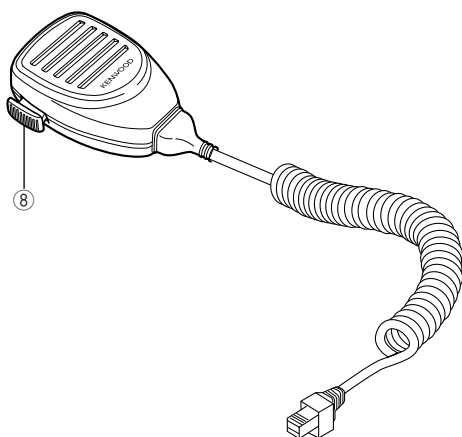
OPERATING FEATURES / 操作特性

1. 控制和功能

1-1. 前面板



1-2. 麦克风



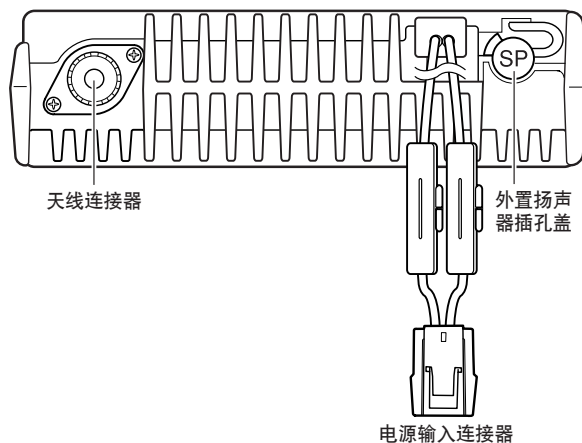
- ① (电源) 开关
按开关打开对讲机。按住开关约1秒钟关闭对讲机。
- ② VOL ▲ / ▼ 键 (左边)
按该键增大或减小音量。
- ③ 显示屏
请参阅右边。
- ④ CH ▲ / ▼ 键 (右边)
按该键增大或减小信道号。
- ⑤ MON / SCN / ● / ○ 键
PF (可编程功能) 键。按下每个键激活键的可编程功能。
- ⑥ 麦克风插孔
将麦克风插头插入该插孔。
- ⑦ 扬声器
内置扬声器。
- ⑧ PTT开关
按下此开关, 然后对着麦克风讲话呼叫某个电台。

1-3. 显示屏



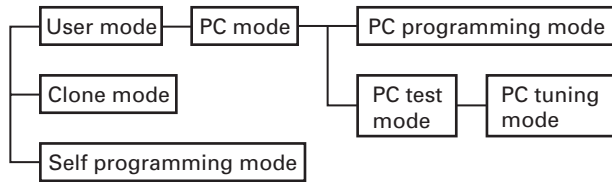
指示灯	描述
TX	发射时出现。
	激活集群时出现。
	监听所选的信道时出现 (静噪打开)。
CALL	使用编码静噪或选择呼叫进行呼叫时出现。 接收到编码静噪呼叫时出现并闪烁。
SCN	扫描时出现。
AUX	当AUX端口被激活或当选择了扰频器功能时出现。
TA	使用脱网通信功能时出现。
P	所选的信道被设为优先信道。
A	所选的信道被添加到扫描序列中。
BUSY	在当前所选的信道中检测到信号时出现。
	使用键盘锁定功能锁定对讲机的键盘时出现。
	显示当前所选的组和信道号或信道名称。

1-4. 后面板



REALIGNMENT / 模式组合

1. Modes



Mode	Function
User mode	For normal use.
PC mode	Communication between the transceiver and PC (IBM compatible).
PC programming mode	Read and write frequency data and other features from and to the transceiver.
PC test mode	Check the transceiver using the PC. This feature is included in the FPU.
PC tuning mode	Tune the transceiver using the PC.
Clone mode	Transfer programming data from one transceiver to another.
Self programming mode	You can program the frequency, signaling and other functions using only the transceiver.

2. How to Enter Each Mode

Mode	Operation
User mode	Power ON
PC mode	Received commands from PC
Clone mode	[CH DOWN]+Power ON (Two seconds)
Self programming mode	[MON]+Power ON (Two seconds)

3. PC Mode

3-1. Preface

The TK-8100 transceiver is programmed using a personal computer, a programming interface (KPG-46) and programming software (KPG-80D).

The programming software can be used with an IBM PC or compatible. Figure 1 shows the setup of an IBM PC for programming.

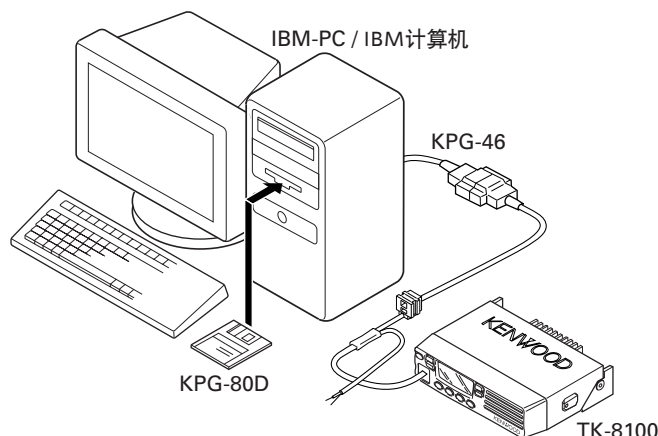
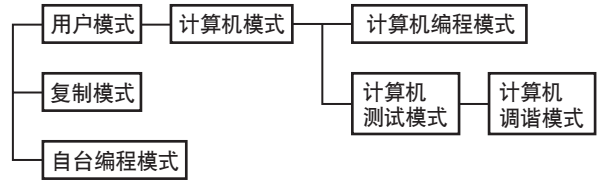


Fig. 1 / 图1

1. 模式



模式	功能
用户模式	一般使用。
计算机模式	用于车载式对讲机与计算机 (IBM兼容机) 之间的通信。
计算机编程模式	用于阅读和写入频率数据以及其他功能。
计算机测试模式	用于使用计算机检测。此特性包括在FPU内。
计算机调谐模式	用来利用计算机调谐车载式对讲机。
复制模式	用于从一个车载式对讲机编程数据复制到另一个车载式对讲机。
自台编程模式	您可以只使用车载式对讲机自身来进行编程频率信令和其他功能。

2. 如何进入每一种模式

模式	操作
用户模式	接通电源
计算机模式	从计算机接收指令
复制模式	[CH DOWN] + 电源开 (2秒钟)
自台编程模式	[MON] + 电源开 (2秒钟)

3. 计算机模式

3-1. 前言

TK-8100车载式对讲机使用计算机, 编程电缆 (KPG-46) 和编程软件 (KPG-80D) 进行编程。

IBM计算机或兼容机可以使用编程软件。图1显示IBM计算机编程的设置。

REALIGNMENT / 模式组合

3-2. Connection Procedure

1. Connect the TK-8100 to the personal computer with the interface cable.
2. When the Power is switched on, user mode can be entered immediately. When the PC sends a command, the transceiver enters PC mode.
When data is transmitted from transceiver, the TX indicator blink.
When data is received by the transceiver, the BUSY indicator blink.
In the PC mode, " PC " is displayed on the LCD.

3-3. KPG-46 Description (PC programming interface cable : Option)

The KPG-46 is required to interface the TK-8100 to the computer. It has a circuit in its D-sub connector (25-pin) case that converts the RS-232C logic level to the TTL level.

The KPG-46 connects the modular microphone jack of the TK-8100 to the computers RS-232C serial port.

3-4. Programming Software Description

The KPG-80D programming disk is supplied in 3-1/2" disk format. The software on this disk allows a user to program TK-8100 transceiver via a programming interface cable (KPG-46).

4. Clone Mode

Programming data can be transferred from one transceiver to another by connecting them via their modular microphone jacks. The operation is as follows (the transmit transceiver is the master and the receive transceiver is the slave).

Note :

- Clone mode should be enabled.
1. Turn the master TK-8100 power ON with the [CH DOWN] key held down (2 seconds), " CLONE " is displayed on the LCD.
 2. Power on the slave TK-8100.
 3. Connect the cloning cable (No. E30-3382-05) to the modular microphone jacks on the master and slave.
 4. Press the [MON] key on the master TK-8100 transceiver. The data of the master is sent to the slave. While the master is sending data, [TX] icon blinked. While the slave is receiving the data, " -PC- " is displayed and [BUSY] icon blinked. When cloning of data is completed, the master display "END", and the master [TX] icon turned off, and the slave automatically operates in the User mode. The slave can then be operated by the same program as the master.
 5. The other slave can be continuously cloned. Carry out the operation in step 2 to 4.

3-2. 连接步骤

1. 使用编程电缆将TK-8100与计算机连接。
2. 当接通电源时,可以立即进入用户模式。当计算机发出一个指令时,车载式对讲机进入计算机编程模式。
从车载式对讲机发射数据时,TX指示灯闪烁。
当通过车载式对讲机接收数据时,BUSY指示灯闪烁。
在计算机模式下," PC " 出现在显示器上。

3-3. KPG-46说明 (计算机编程电缆:可选项)

KPG-46用于将TK-8100与计算机连接。在其D型副插座(25芯)中有一个电平转换电路,此电路可以把RS-232C逻辑电平转换为TTL电平。

KPG-46将TK-8100的麦克风插座与计算机的RS-232C串行口连接。

3-4. 编程软件说明

KPG-80D编程软盘是一张3-1/2"软盘。软盘内的软件允许用户经由编程电缆(KPG-46)对TK-8100进行编程设定。

4. 复制模式

可以利用标准麦克风插孔连接从一台车载式对讲机向另一台车载式对讲机传送编程数据。按照下述步骤操作(发射方车载式对讲机为主机,接收方车载式对讲机为子机)。

注意:

- 启用复制模式。
1. 按住 [CH DOWN] 键打开主机TK-8100的电源(2秒钟)," CLONE " 出现在显示器上。
 2. 开启子机TK-8100的电源。
 3. 将数据复制电缆(No.E30-3382-05)连接到主机及从子机的标准麦克风插孔。
 4. 按TK-8100主机上的 [MON] 键。
主机的数据被发送到子机。主机正在发送数据时,[TX]图标闪烁。子机正在接收数据时,显示 " - PC - " 并且 [BUSY]图标闪烁。数据复制完成后,主机显示 "END" 且 [TX]图标消失,而子机自动按用户模式操作。
 5. 另一台子机可以继续复制。进行步骤2到4的操作。

REALIGNMENT / 模式组合

4-1. Adding the Data Password

If the data password is set in the optional feature menu, you must enter the password (Master transceiver) to activate a clone mode.

You can use 1, 2, 3, and 4 to configure the password. The maximum length of the password is 6 digits.

1. [CH DOWN]+Power ON.
2. "CLN LOCK" is displayed on the LCD.
3. Enter the password using 1: [MON] key, 2: [SCN] key, 3: [●] key and 4: [○] key.
4. Press [CH DOWN] key.
5. If the password matches, the transceiver enters a clone mode and "CLONE" is displayed. Otherwise, transceiver beeps and returns to the password input mode.

4-1. 添加数据密码

如果在FPU的“可选功能”菜单中设置了数据密码，则您必须输入密码以激活复制模式（主车载式对讲机）。

您可以使用1~4设置密码。密码最大长度为6位。

1. [CH DOWN] + 电源开。
2. LCD上显示“CLN LOCK”。
3. 输入密码1: [MON] 键, 2: [SCN] 键, 3: [●] 键, 4: [○] 键。
4. 按 [CH DOWN] 键。
5. 如果密码相符，则车载式对讲机进入复制模式并显示“CLONE”。否则，车载式对讲机响起警告音并返回密码输入模式。

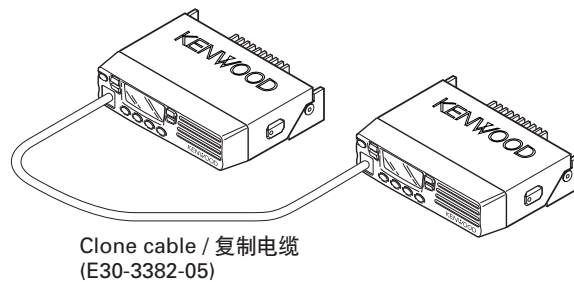
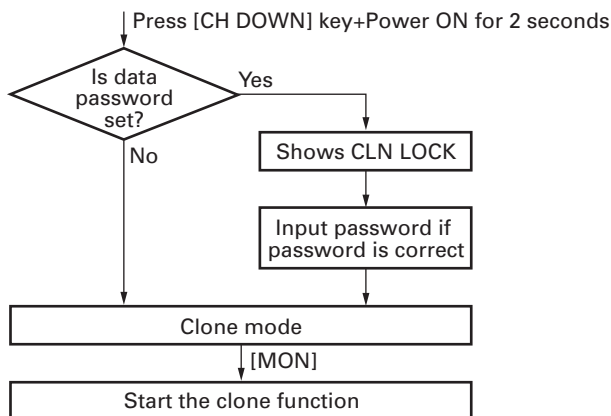
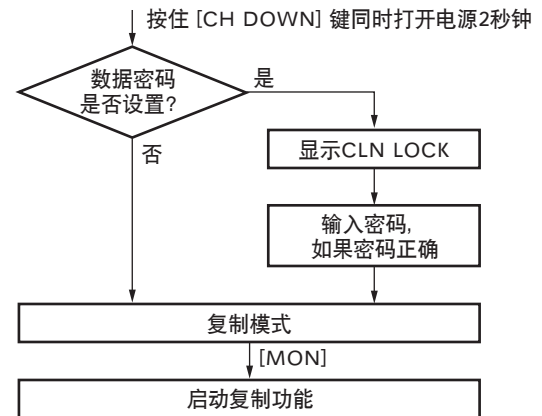


Fig. 2 / 图2

■ Flow Chart (Master transceiver)



■ 流程图（主车载式对讲机）



5. Self Programming Mode

Write mode for frequency data and signaling, etc. To be used ONLY by the authorized service person maintaining the user's equipment. After programming, reset the FPU to the "Self- Programming" disabled mode. Transceivers CANNOT be delivered to the end-user in the self-programming mode.

5-1. Enter to the Self Programming Mode

Hold down the [MON] key and turn the power switch on. When enter the self programming mode, "SELF" is displayed.

5. 自台编程模式

频率数据和信令等的写入模式。只能由维护用户设备的授权服务人员使用。编程后，请将FPU复位到“自台编程”禁用模式。车载式对讲机不能以自台编程模式交付最终用户。

5-1. 进入自台编程模式

按住 [MON] 键并打开电源开关。进入自台编程模式后，显示“SELF”。

REALIGNMENT / 模式组合

5-2. Adding the Data Password

If the data password is set in the optional feature menu, you must enter the password to activate a self programming mode.

You can use 1, 2, 3 and 4 to configure the password. The maximum length of the password is 6 digits.

1. [MON]+Power ON.
2. "SELFLOCK" is displayed on the LCD.
3. Enter the password using 1 : [MON] key, 2 : [SCN] key, 3 : [●] key and 4 : [○] key.
4. Press [CH DOWN] key.
5. If the password matches, the transceiver enters a self programming mode and "SELF" is displayed. Otherwise, transceiver beeps and returns to the password input mode.

Note :

This mode (self programming mode) cannot be set when it has been disabled with the FPU.

5-3. Channel Setting Mode

Each channel can be setup in its action mode by using the panel keys.

- Pressing [MON] when "SELF" is displayed, sets channel setting mode.
- Select an item set using [●] then change the selection with the [CH UP] or [CH DOWN].
- The data displayed using [SCN] is stored in the memory and then proceeds to the next item.
- Pressing [●] proceeds to the next item without storing it in the memory.
- Press [MON] to set the display to "SELF" and return to reset (default) status.

The setup items for channel setting mode are listed below.

No.	Function	Choices	Display	Remarks
	Select channel	1~64	1- 1. 1- 64.	● key : Group/Channel selection
	Select group	1~8	1.- 1 8.- 1	● key : Group/Channel selection
1	RX frequency	Step 2.5kHz~ 1MHz	STP 250 STP 1M	Display when an item is selected or a step is changed (about 0.5 seconds). ○ key : Select the frequency step
		Blank 100.0000~ 550.0000MHz	R.----- R.350.0000	○ key : Hold 1 second to frequency on/blank switching. The right most dot indicates 50Hz digit. (On=5, Off=0)

5-2. 添加数据密码

如果在FPU的“可选功能”菜单中设置了数据密码,则您必须输入密码以激活自台编程模式。

您可以使用1~4设置密码。密码最大长度为6位。

1. [MON]+电源开。
2. LCD上显示“SELFLOCK”。
3. 输入密码1: [MON] 键, 2: [SCN] 键, 3: [●] 键, 4: [○] 键。
4. 按 [CH DOWN] 键。
5. 如果密码相符,则车载式对讲机进入自台编程模式并显示“SELF”。否则,车载式对讲机响起警告音并返回密码输入模式。

注意 :

如果FPU已经禁用自台编程模式,则不能设置该模式(自台编程模式)。

5-3. 信道设置模式

通过按面板按键,各个信道可以在其动作模式下进行设置。

- 显示“SELF”时按 [MON],配置信道设置模式。
- 按 [●] 选择项目设置,然后按 [CH UP] 或 [CH DOWN] 更改选项。
- 按 [SCN] 显示的数据被保存在存储器中,然后进入下一项目。
- 按 [●] 则无需将数据保存在存储器中即可进入下一项目。
- 按 [MON] 将显示屏设置到“SELF”,然后返回到复位(默认)状态。

信道设置模式的设置选项如下所列。

编号	功能	选择	显示	备注
	选择信道	1~64	1- 1. 1- 64.	● 键: 组/信道选择
	选择组	1~8	1.- 1 8.- 1	● 键: 组/信道选择
1	RX频率	步长2.5kHz~ 1MHz	STP 250 STP 1M	选择了一个项目或改变了步长时显示(约0.5秒)。 ○ 键: 选择频率步长
		空白 100.0000~ 550.0000MHz	R.----- R.350.0000	○ 键: 按住1秒钟切换频率开启/空白。 最右边的点表示50Hz位。 (On=5, Off=0)

REALIGNMENT / 模式组合

No.	Function	Choices	Display	Remarks
2	RX signaling	Off	-----	O key : Off/QT/DQT switching
		QT 67.0~254.1 (0.1Hz step mode)	QT 67.0* QT 254.1*	
		QT 67.0~250.3 (EIA mode)	QT 67.0 QT 250.3	
		DQT 000~777 Normal (1 step mode)	DQT000N* DQT777N*	
		DQT 023~754 Normal (Standard table mode)	DQT023N DQT754N	
		DQT 000~777 Inverse (1 step mode)	DQT000I* DQT777I*	O key : Hold 1 second to switch between Normal/Inverse.
		DQT 023~754 Inverse (Standard table mode)	DQT023I DQT754I	
3	TX frequency	Step 2.5kHz~1MHz	STP 250 STP 1M	Display when an item is selected or a step is changed (about 0.5 seconds). O key : Select the frequency step
		Blank 100.0000~550.0000MHz	T.----- T.350.0000	O key : Hold 1 second to frequency on/blank switching. The right most dot indicates 50Hz digit. (On=5, Off=0)
4	TX signaling	Off	-----	O key : Off/QT/DQT switching
		QT 67.0~254.1 (0.1Hz step mode)	QT 67.0* QT 254.1*	
		QT 67.0~250.3 (EIA mode)	QT 67.0 QT 250.3	
		DQT 000~777 Normal (1 step mode)	DQT000N* DQT777N*	
		DQT 023~754 Normal (Standard table mode)	DQT023N DQT754N	

编号	功能	选择	显示	备注
2	RX信令	Off	-----	O 键: 切换Off/QT/DQT
		QT 67.0~254.1 (0.1Hz步长模式)	QT 67.0* QT 254.1*	
		QT 67.0~250.3 (EIA模式)	QT 67.0 QT 250.3	
		DQT 000~777 常规 (1步长模式)	DQT000N* DQT777N*	
		DQT 023~754 常规 (标准表模式)	DQT023N DQT754N	
		DQT 000~777 反向 (1步长模式)	DQT000I* DQT777I*	O 键: 按住1秒钟切换常规/反向。
3	TX频率	步长2.5kHz~1MHz	STP 250 STP 1M	选择了一个项目或改变了步长时显示(约0.5秒)。 O 键: 选择频率步长
		空白 100.0000~550.0000MHz	T.----- T.350.0000	O 键: 按住1秒钟切换频率开启/空白 最右边的点表示50Hz位。 (On=5, Off=0)
4	TX信令	Off	-----	O 键: 切换Off/QT/DQT
		QT 67.0~254.1 (0.1Hz步长模式)	QT 67.0* QT 254.1*	
		QT 67.0~250.3 (EIA模式)	QT 67.0 QT 250.3	
		DQT 000~777 常规 (1步长模式)	DQT000N* DQT777N*	
		DQT 023~754 常规 (标准表模式)	DQT023N DQT754N	

REALIGNMENT / 模式组合

No.	Function	Choices	Display	Remarks
		DQT 000~777 Inverse (1 setp mode)	DQT000I* DQT777I*	○ key : Hold 1 second to switch between Normal/Inverse.
		DQT 023~754 Inverse (Standard table mode)	DQT023I DQT754I	
5	Option signaling	Off DTMF	NONE DTMF	Default
6	SP unmute	Carrier QT/DQT Carrier+DTMF QT/DQT+ DTMF	S.UM CARR S.UM QTDO S.UM C+DT S.UM Q+DT	Not used when QT/ DQT decode is not set. Not used when option signaling is none. Not used when option signaling is none.
7	Busy channel lockout	Off Carrier QT/DQT DTMF	BCL OFF BCL CARR BCL QTDO BCL DTMF	Default If QT/DQT decode is not set, it cannot be selected. If option signaling is set to off, it cannot be selected.
8	Beat shift	No Yes	SHFT NO SHFT YES	Default
9	RF power	High power Low power	PWR H PWR L	Default
10	Wide/ Narrow	Wide Narrow	WIDE NARROW	Default
11	Scan Del/Add	Delete Add	SCAN DEL SCAN ADD	Default
12	Priority channel	No Yes	P.CH NO P.CH YES	Default Not used when scan priority is not fixed.
13	PTT ID	Off Begin of TX End of TX Both	P.ID OFF P.ID BOT P.ID EOT P.ID BOTH	Default
14	Scrambler	Off On	SCR OFF SCR ON	Default
15	Scrambler code	1~16	SCR 1 SCR 16	Default

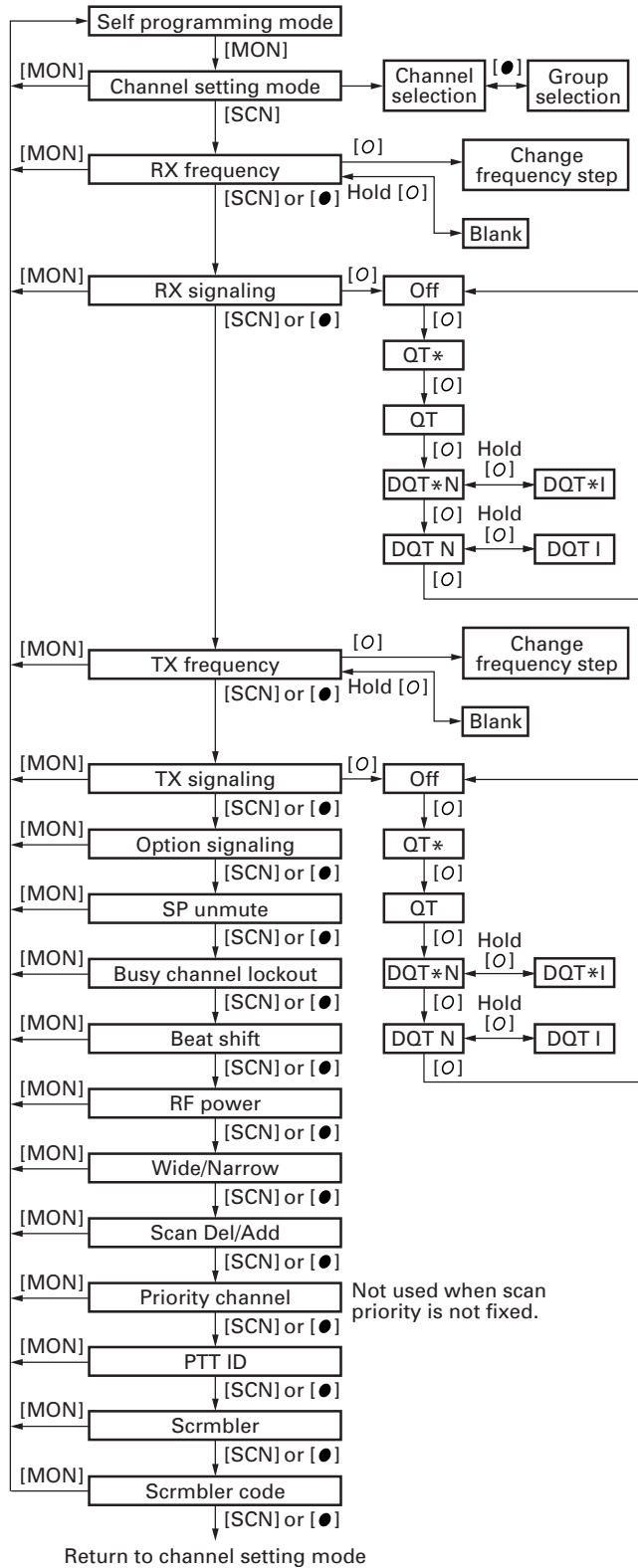
编号	功能	选择	显示	备注
		DQT 000~777 反向 (1步长模式)	DQT000I* DQT777I*	○ 键: 按住1秒钟 切换常规/反向。
		DQT 023~754 反向 (标准表模式)	DQT023I DQT754I	
5	可选 信令	Off DTMF	NONE DTMF	默认
6	SP 不静音	载波 QT/DQT 载波+DTMF QT/DQT+ DTMF	S.UM CARR S.UM QTDO S.UM C+DT S.UM Q+DT	当QT/DQT解码不 设置时不能使用。 当可选信令没有设 置时不能使用。 当可选信令没有设 置时不能使用。
7	繁忙 信道 锁定	Off 载波 QT/DQT DTMF	BCL OFF BCL CARR BCL QTDO BCL DTMF	默认 当QT/DQT解码不 设置时不能选择。 当可选信令设置为 无时不能选择。
8	拍频 偏移	否 是	SHFT NO SHFT YES	默认
9	RF功率	高功率 低功率	PWR H PWR L	默认
10	宽/窄	宽 窄	WIDE NARROW	默认
11	扫描删 除/添加	删除 添加	SCAN DEL SCAN ADD	默认
12	优先 信道	否 是	P.CH NO P.CH YES	默认 当扫描优先没有设置 为固定时不能使用。
13	PTT ID	Off 发射开始 发射结束 两者	P.ID OFF P.ID BOT P.ID EOT P.ID BOTH	默认
14	扰频器	Off On	SCR OFF SCR ON	默认
15	扰频器 代码	1~16	SCR 1 SCR 16	默认

- Finish beep will sound when displayed data is stored.
- The settings for scrambler and scrambler code can only be selected when voice scrambler board is installed.

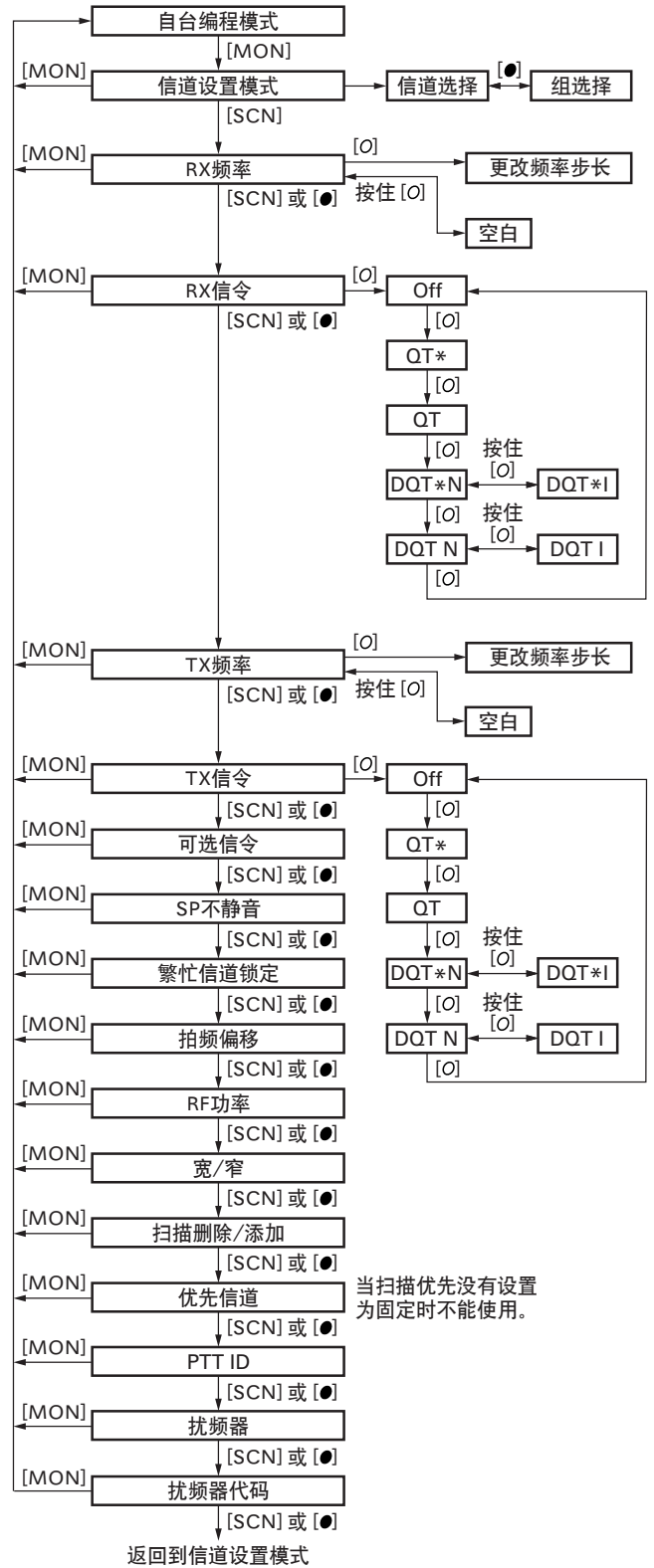
- 保存完显示的数据后,表明完成的提示音将响起。
- 安装语音扰频器板后,方可选择扰频器和扰频器代码的设置。

REALIGNMENT / 模式组合

Flow Chart



流程图



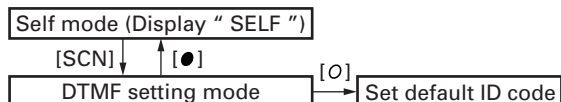
REALIGNMENT / 模式组合

5-4. DTMF Setting Mode

Each transceiver can be setup in its action mode by using the panel keys.

- Pressing [SCN] when " SELF " is displayed, sets the DTMF setting mode.
- The data displayed using [SCN] is stored in the memory.
- Pressing [●] to without storing it in the memory.
- Press [○] to default status.

■ Flow Chart



The setup items for DTMF setting mode are listed below.

No.	Function	Choices	Display	Remarks
1	ID code	000~ 9999999999 (Code squelch)	ID	Display when an item is selected (about 0.5 seconds).
			1 2 3 4 5 6 7 8	Display of the current setting (If it is 8 or more digits, scroll it).
			-----9 8 7	Display when a code is input (Input it with DTMF key only).
			-----0 0 0	○ key : Set to default data
		0000~9999 (Selective call) (*1)	ID	Display when an item is selected (about 0.5 seconds).
			----1 2 3 4 (*1)	Display of the current setting (Input the code with DTMF key only).
-----0 0 0 (*1)	○ key : Set to default data			

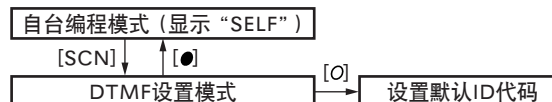
- Finish beep will sound when displayed data is stored.
- (*1) : ID code range is from 3 to 4 digits when selective call is selected.

5-4. DTMF设置模式

通过按面板按键, 各个车载式对讲机可以在其动作模式下进行设置。

- 显示 " SELF " 时按 [SCN], 配置DTMF设置模式。
- 按 [SCN] 显示的数据被保存在存储器中。
- 按 [●] 无需将数据保存在存储器中。
- 按 [○] 返回到默认状态。

■ 流程图



DTMF设置模式的设置选项如下所列。

编号	功能	选择	显示	备注
1	ID代码	000~ 9999999999 (代码静噪)	ID	选择某个项目时显示(约0.5秒)。
			1 2 3 4 5 6 7 8	当前设置显示 (如果是8或以上的数字, 请滚动它)。
			-----9 8 7	输入代码时显示 (只能用DTMF键输入)。
			-----0 0 0	○ 键: 设置为默认数据
		0000~9999 (选择呼叫) (*1)	ID	选择某个项目时显示(约0.5秒)。
			----1 2 3 4 (*1)	当前设置显示 (只能用DTMF键输入代码)。
-----0 0 0 (*1)	○ 键: 设置为默认数据			

- 保存完显示的数据后, 表明完成的提示音将响起。
- (*1) : 进行选择呼叫后, ID代码范围为3到4个数字。

REALIGNMENT / 模式组合

6. Accessory Connection Cable (KCT-39)

The KCT-39 is an accessory connection cable for connecting external equipment. The connector has 15 pins and the necessary signal lines are selected for use.

6-1. Installing the KCT-39 in the Transceiver

1. Lift the DC cord bushing (❶) from the chassis. Peel the pad as shown in Figure 3 (❷).

6. 附件连接电缆 (KCT-39)

KCT-39是用于连接外部设备的附件连接电缆。连接器具有15个针脚,所用信号线按需选择。

6-1. 将KCT-39安装到对讲机中

1. 从底座提起直流电源线套管 (❶)。如图3所示揭去软垫 (❷)。

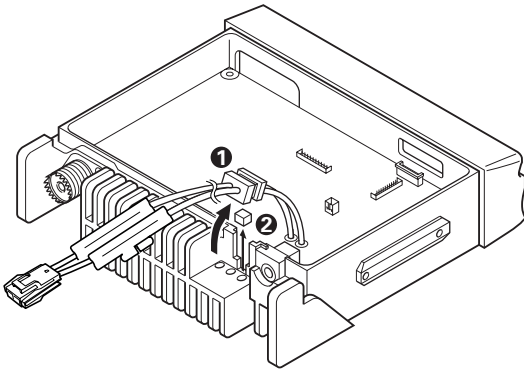


Fig. 3 / 图3

2. Stick the pad to the DC cord (❸) and chassis (❹), both of which are supplied with the KCT-39.

2. 将KCT-39附带的软垫粘贴到直流电源线 (❸) 和底座 (❹) 上。

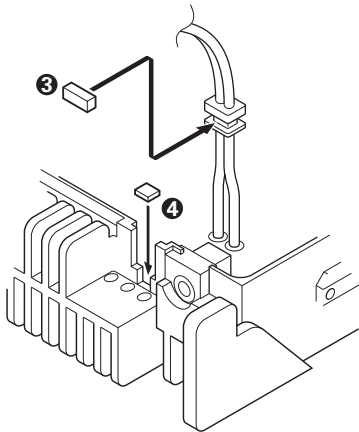


Fig. 4 / 图4

3. Insert the KCT-39 cable (❺) into the chassis (❻). The wire harness band (❼) must be inside the chassis and face down.
4. Connect the KCT-39 to the TX-RX unit as shown in Figure 5 (❸).

3. 将KCT-39电缆 (❺) 插入底座 (❻)。线束带 (❼) 必须面向下置于底座中。
4. 如图5所示,将KCT-39连接到TX-RX装置 (❸)。

Avoid forming the wiring towards the shielding cover closure area.
避免配线缠绕在屏蔽盖闭合区域。

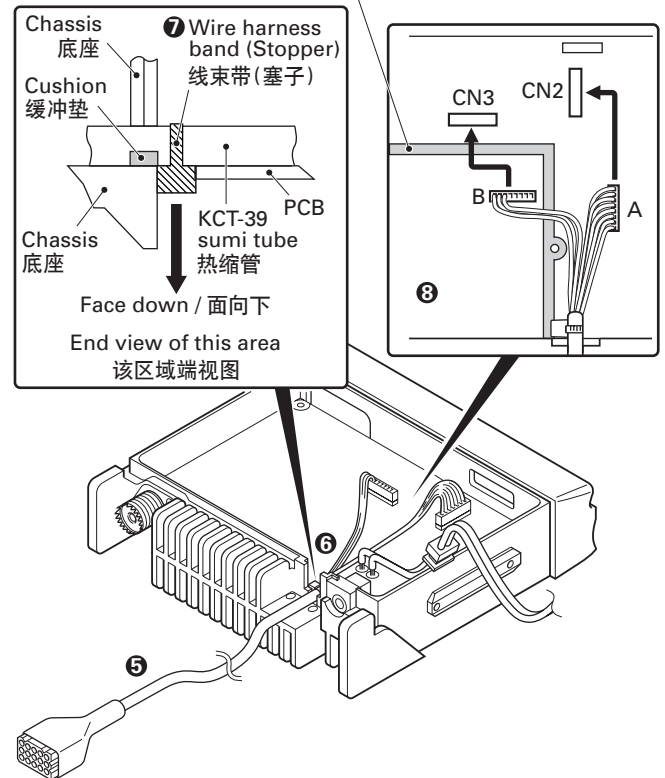


Fig. 5 / 图5

REALIGNMENT / 模式组合

5. Connect the KCT-39 to the external accessory by inserting the crimp terminal (9) into the square plug (10), both of which are supplied with the KCT-39.
5. 将压接式端子 (9) 插入方形插头 (10) (均由KCT-39附带), 然后将KCT-39连接到外部附件。

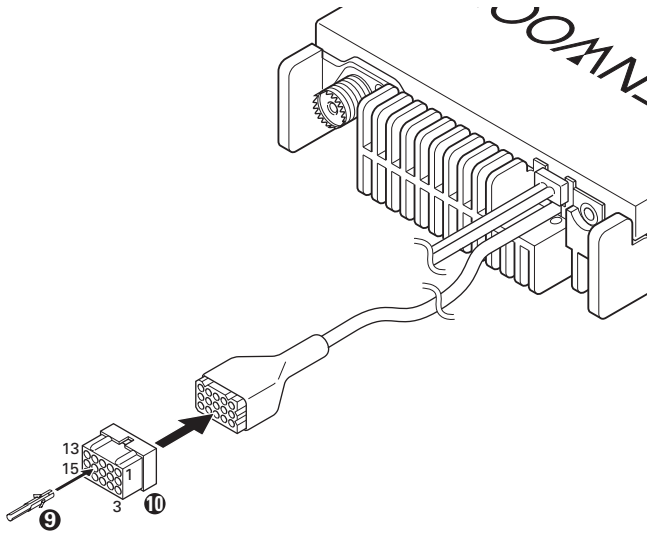
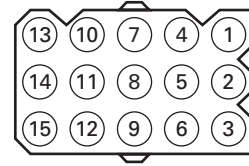


Fig. 6 / 图6

■ Accessory Port Function / 附件端口功能



No.	Color	Internal connector	Name
1	Red	CN2-1	SB
2	Pink	CN3-1	IGN
3	Black	CN2-3	GND
4	Brown	CN3-3	DETO
5	Orange	CN3-2	DATAI
6	Yellow	CN2-8	FNC4
7	Green	CN2-7	FNC3
8	Blue	CN2-9	FNC5
9	Purple	CN2-12	FNC8
10	Grey	CN2-10	FNC6
11	White	CN2-11	FNC7
12	NC	NC	
13	NC	NC	
14	Sky blue	CN2-6	FNC2
15	Turquoise	CN2-5	FNC1

编号	颜色	内部连接器	名称
1	红色	CN2-1	SB
2	桃色	CN3-1	IGN
3	黑色	CN2-3	GND
4	茶色	CN3-3	DETO
5	橙色	CN3-2	DATAI
6	黄色	CN2-8	FNC4
7	绿色	CN2-7	FNC3
8	青色	CN2-9	FNC5
9	紫色	CN2-12	FNC8
10	灰色	CN2-10	FNC6
11	白色	CN2-11	FNC7
12	NC	NC	
13	NC	NC	
14	天蓝色	CN2-6	FNC2
15	青绿色	CN2-5	FNC1

REALIGNMENT / 模式组合

7. Ignition Sense Cable (KCT-18)

The KCT-18 is an optional cable for enabling the ignition function. The ignition function lets you turn the power to the transceiver on and off with the car ignition key.

7-2. Connecting the KCT-18 to the Transceiver

1. Install the KCT-39 in the transceiver. (See the KCT-39 section)
2. Insert the KCT-18 lead terminal (❶) into pin 2 of the KCT-39 (❷).

7. 点火传感器电缆 (KCT-18)

KCT-18是用于点火功能的选件电缆。点火功能可以使得你用汽车点火钥匙来开启和关闭车载式对讲机的电源。

7-2. 把KCT-18连接到通信机

1. 在车载式对讲机上安装KCT-39。(参见KCT-39部分)
2. 把KCT-18线夹(❶)插到KCT-39(❷)的引脚2上。

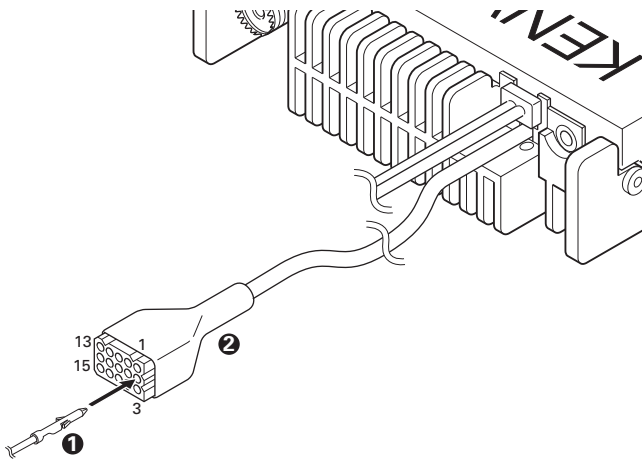


Fig. 7 / 图7

7-3. Modifying the Transceiver

Modify the transceiver as follows to turn the power on and off with the ignition key.

1. Remove the resistor R71 of the TX-RX unit.

■ Setting With the KPG-80D

Select "External Devices" from the "Edit" menu and enable the "Ignition Sense".

7-3. 改装通信机

按照下述方法改装车载式对讲机以便使用汽车点火钥匙开启和关闭车载式对讲机电源。

1. 卸下TX-RX单元的电阻器R71。

■ 用KPG-80D进行设置

在“编辑”菜单上选择“外部设备”，然后启动“点火传感器”。

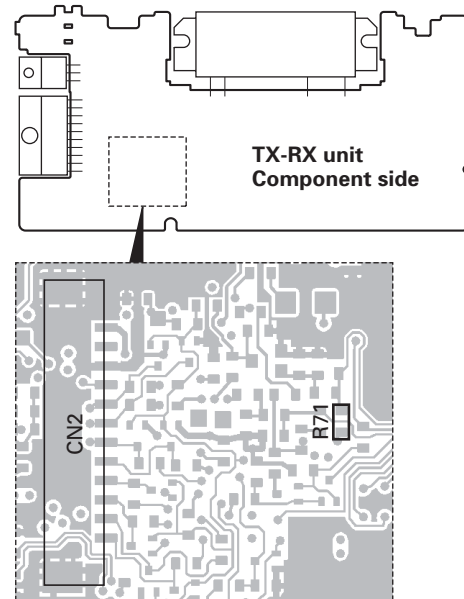


Fig. 8 / 图8

INSTALLATION / 安装

1. Optional Board

1-1. Voice Scrambler Board Connection

■ Modification

1. Remove the cabinet and shielding cover from the transceiver.
2. Delete R202 and R267 on the TX-RX unit.

1. 选件板

1-1. 语音扰频器板的连接

■ 改装

1. 从车载式对讲机上卸下机壳和屏蔽罩。
2. 卸下TX-RX单元上的R202和R267。

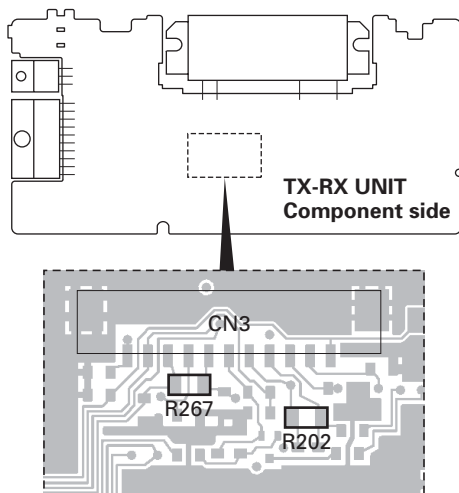


Fig. 1 / 图1

■ Connection

The functions of pins of CN2 and CN3 on the TX-RX unit are shown in the TERMINAL FUNCTION section (page 50).

■ 连接

有关TX-RX单元的CN2和CN3引脚的功能请参阅端子功能部分(第51页)。

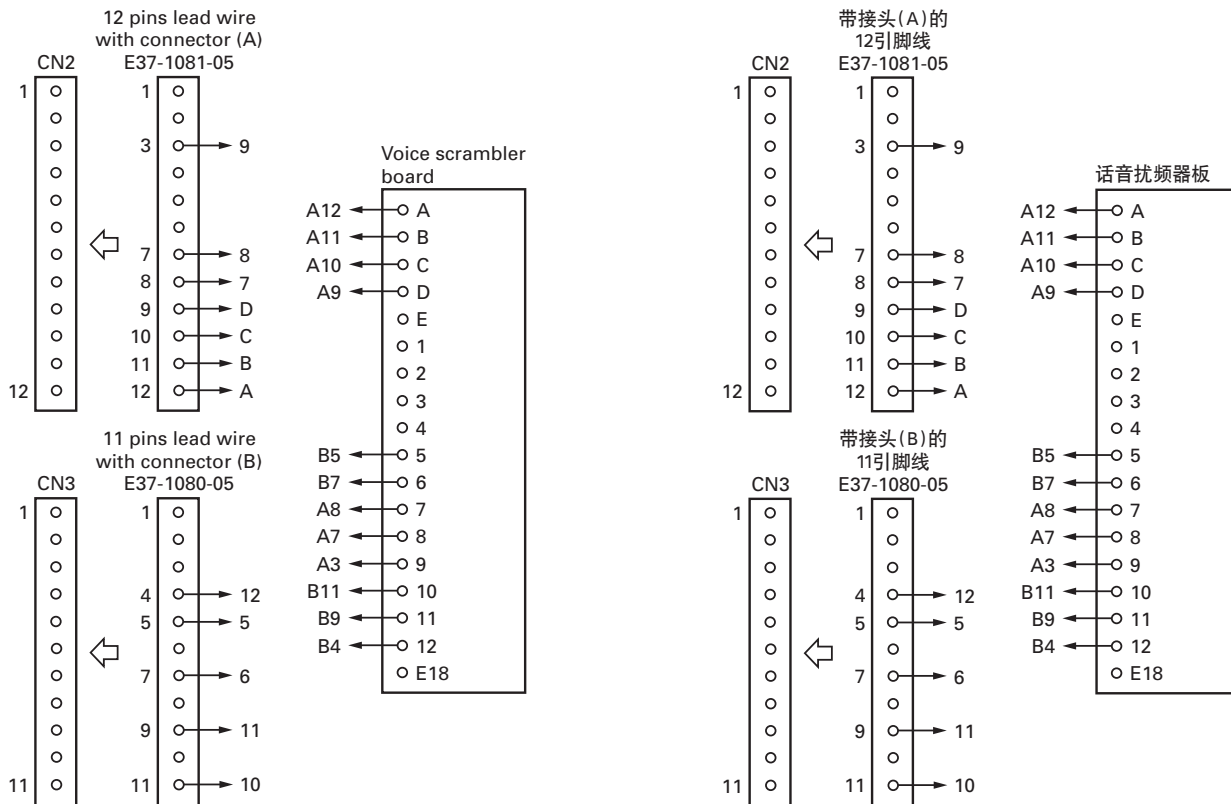


Fig. 2

图2

INSTALLATION / 安装

■ Pins Connection

Voice scrambler functions	12 pins lead wire with connector (A)	11 pins lead wire with connector (B)
A	A-12	-
B	A-11	-
C	A-10	-
D	A-9	-
5	-	B-5
6	-	B-7
7	A-8	-
8	A-7	-
9	A-3	-
10	-	B-11
11	-	B-9
12	-	B-4

■ 引脚连接

语音扰频器功能	带接头(A)的12引脚线	带接头(B)的11引脚线
A	A-12	-
B	A-11	-
C	A-10	-
D	A-9	-
5	-	B-5
6	-	B-7
7	A-8	-
8	A-7	-
9	A-3	-
10	-	B-11
11	-	B-9
12	-	B-4

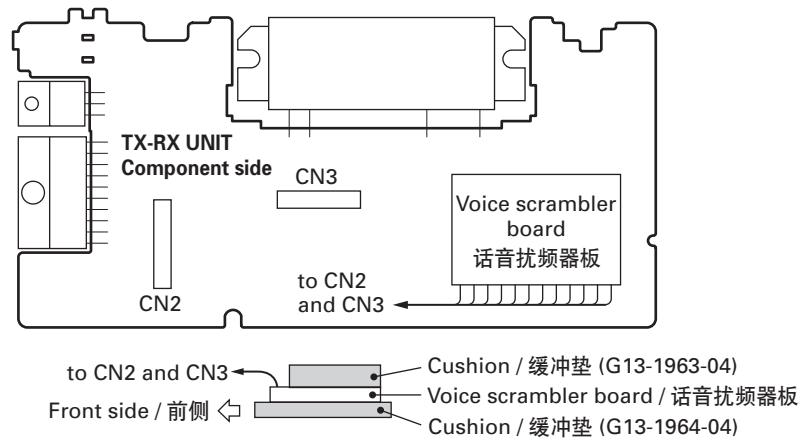


Fig. 3 / 图3

■ Setting With the KPG-80D

Select "External Devices" from the "Edit" menu and set the "Scrambler".

Note :

The voice scrambler board is connected subsequent to the de-emphasis circuit.

■ 用KPG-80D进行设置

在“编辑”菜单上选择“外部设备”，然后启动“扰频器”。

注意：

语音扰频器板是连接在去加重电路的后面。

TK-8100

DISASSEMBLY FOR REPAIR / 维修拆卸

1. When you remove the panel, turn the transceiver up side down. Detach the panel by lifting the tabs as shown below.

1. 要卸下面板时, 请翻转车载式对讲机, 按下图所示抬起翼片卸除面板。

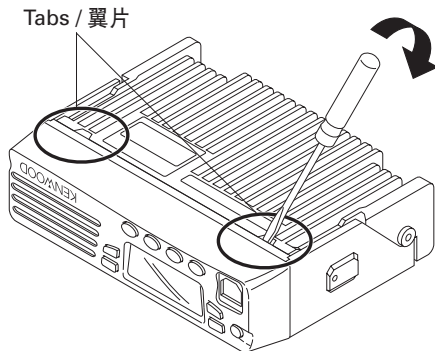


Fig. 1 / 图1

2. To remove the cabinet, first turn the transceiver up side down. Detach the cabinet by prying the tabs as shown below.

2. 要卸下机箱时, 请先翻转车载式对讲机, 按下图所示撬起翼片卸除机箱。

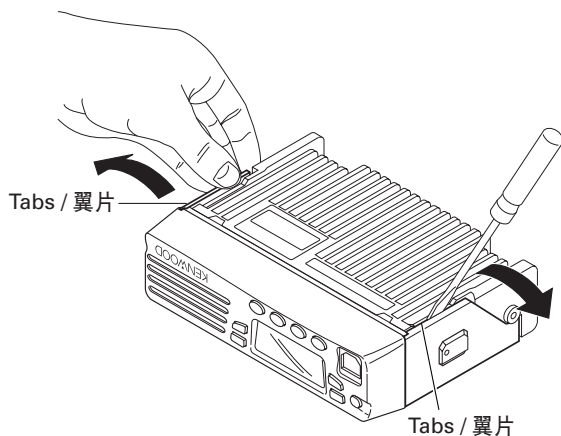


Fig. 2 / 图2

3. When mounting the front panel, match the 4 tabs of the chassis with the panel, being sure they attach securely.

3. 安装前面板时, 应将底架的4个翼片与面板接合, 并确保其结合紧密。

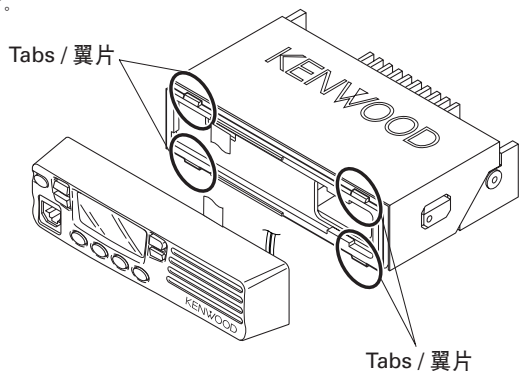


Fig. 3 / 图3

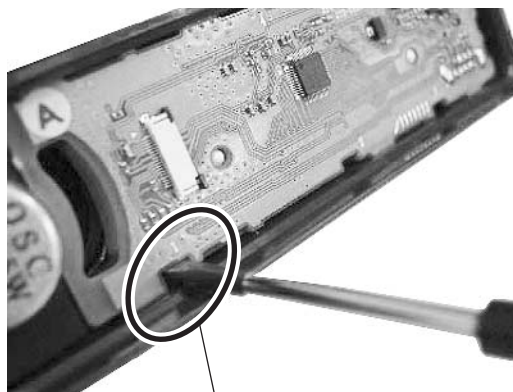
4-1. Remove the display unit

To remove the display unit from the panel, follow the correct procedures shown (A regular screw driver is needed as illustrated).

4-1. 取出显示单元

如需从面板取出显示单元, 请遵照所示的正确步骤进行操作 (如图所示, 需要通用螺丝刀)。

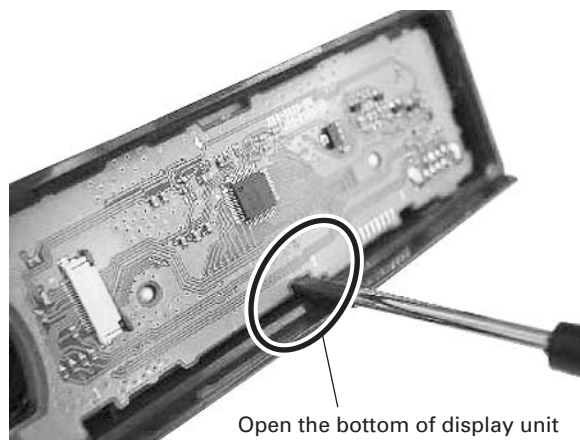
①



Open the bottom of display unit at No. 1 as indicated.

如编号1所示打开显示单元底部。

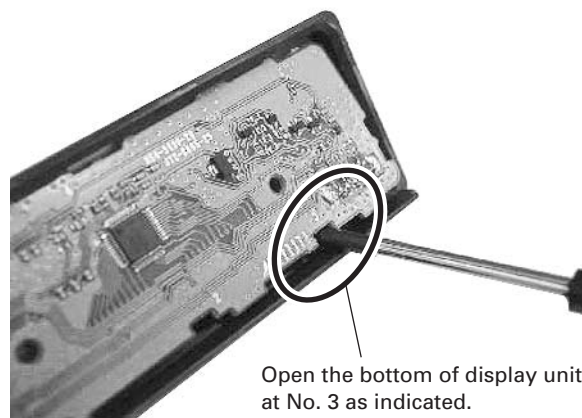
②



Open the bottom of display unit at No. 2 as indicated.

如编号2所示打开显示单元底部。

③



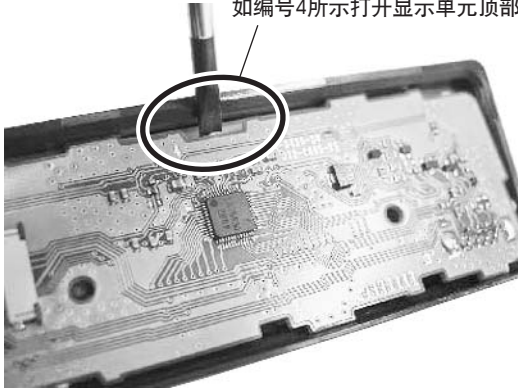
Open the bottom of display unit at No. 3 as indicated.

如编号3所示打开显示单元底部。

DISASSEMBLY FOR REPAIR / 维修拆卸

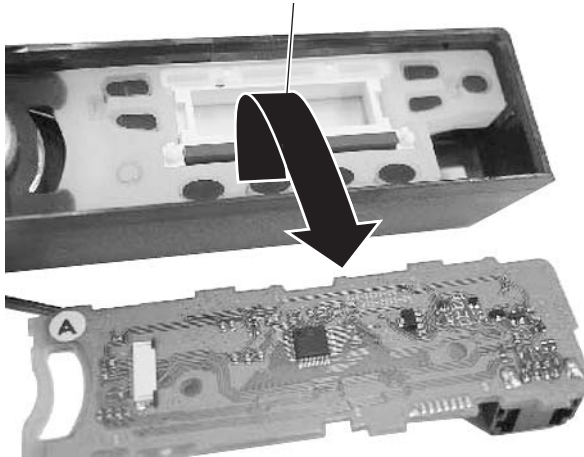
④

Open the top of display unit at No. 4 as indicated.
如编号4所示打开显示单元顶部。



⑤

Lift up the display unit and remove.
提起显示单元并将其取出。



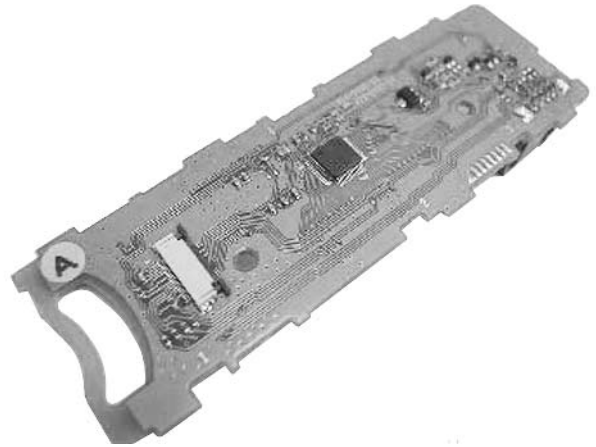
4-2. Mount the display unit

To mount the display unit on the panel, follow the correct procedures shown to ensure easy display unit assembly and good fitting onto the panel.

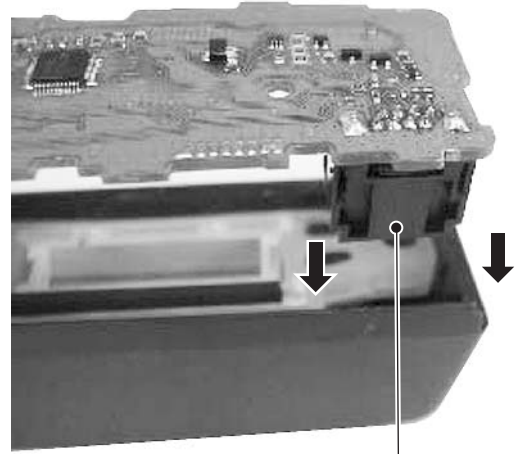
4-2. 安装显示单元

如需将显示单元安装到面板上, 请遵照所示的正确步骤进行操作, 确保显示单元组装妥当, 面板吻合良好。

①




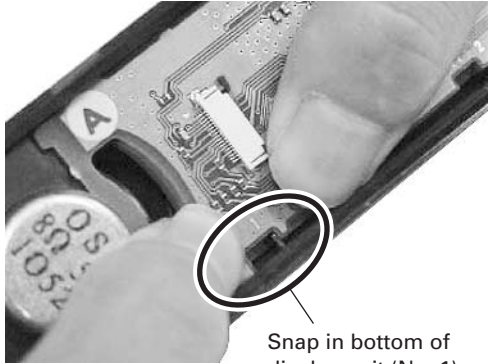
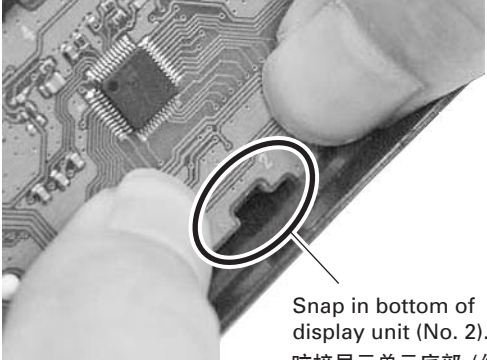
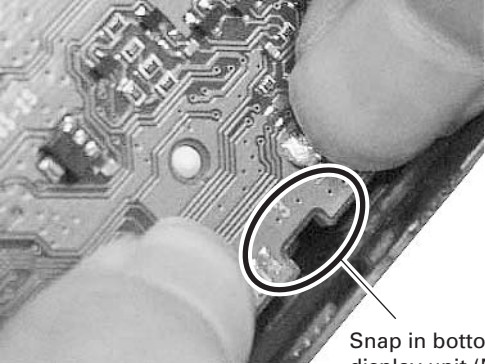
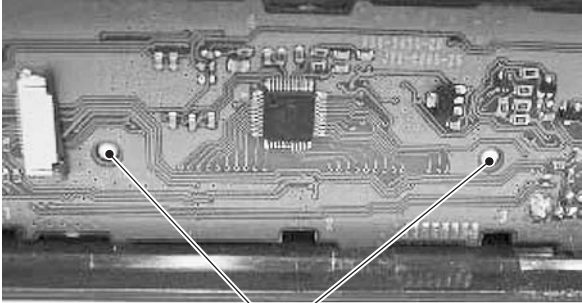
②



Insert phone jack into panel first.
首先将麦克风插孔插入面板。

TK-8100

DISASSEMBLY FOR REPAIR / 维修拆卸

- ③ Snap in top of display unit (No. 4).
咬接显示单元顶部 (编号4)。
- 
- ④ Snap in bottom of display unit (No. 1).
咬接显示单元底部 (编号1)。
- 
- ⑤ Snap in bottom of display unit (No. 2).
咬接显示单元底部 (编号2)。
- 
- ⑥ Snap in bottom of display unit (No. 3).
咬接显示单元底部 (编号3)。
- 
- ⑦ Ensure that display unit holes locator is properly located on the illumination guide locators as shown.
如图所示, 确保显示单元定位孔正确地定位在可见的定位器上。
- 

CIRCUIT DESCRIPTION / 电路说明

Frequency Configuration

The receiver utilizes double conversion. The first IF is 49.95MHz and the second IF is 450kHz. The first local oscillator signal is supplied from the PLL circuit.

The PLL circuit in the transmitter generates the necessary frequencies. Figure 1 shows the frequencies.

频率构成

接收部采用二次变频超外差方式。第一中频为49.95MHz，第二中频为450kHz。第一本振频率信号由锁相环电路提供。

发射部由锁相环电路直接产生所需要的频率。图1显示各种频率。

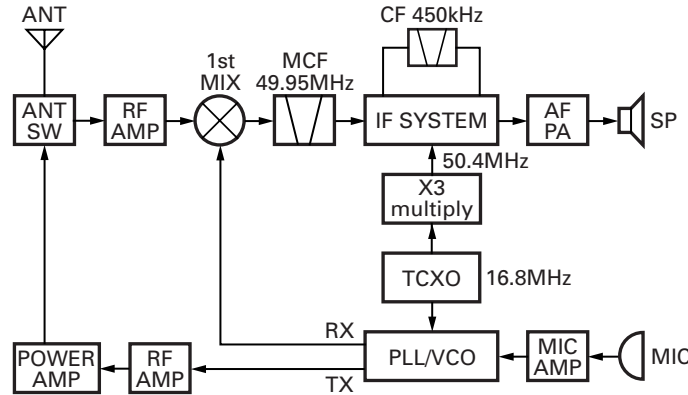


Fig. 1 Frequency configuration / 图1 频率构成

Receiver System

The receiver is double conversion superheterodyne. The frequency configuration is shown in Figure 1.

■ Front-end RF Amplifier Circuit

An incoming signal from the antenna is applied to an RF amplifier (Q353) after passing through a transmit/receive switch circuit (D604 and D605 are off) and a BPF (L359, L358, L360, L361 and varactor diodes : D353, D354, D355). After the signal is amplified (Q353), the signal is filtered by a BPF (L354, L355 and varactor diodes: D351, D352) to eliminate unwanted signals before it is passed to the first mixer.

The voltage of these diodes are controlled by tracking the CPU (IC101) center frequency of the band pass filter. (See Fig. 2)

■ First Mixer Circuit

The signal from the RF amplifier is heterodyned with the first local oscillator signal from the PLL frequency synthesizer circuit at the first mixer (Q352) to create a 49.95MHz first intermediate frequency (1st IF) signal. The first IF signal is then fed through one pair of monolithic crystal filter (MCF : XF351) to further remove spurious signals.

接收部系统

接收部为二次变频超外差方式。频率构成如图1所示。

■前级射频放大器电路

从天线进入的信号经过收发转换电路 (D604和D605断开) 和带通滤波器 (L359、L358、L360、L361和变容二极管：D353、D354、D355) 进入射频放大器 (Q353)。信号被放大 (Q353) 之后，信号被带通滤波器 (L354、L355和变容二极管：D351、D352) 滤波，在进入第一混频器之前消除不需要的信号。

通过跟踪带通滤波器的CPU (IC101) 中心频率来控制这些二极管的电压。(参见图2)

■第一混频器电路

来自于射频放大器的信号与来自于第一混频器 (Q352) 的锁相环频率合成器电路的第一本振信号混合后产生49.95MHz的第一中频 (1st IF) 信号。然后，第一中频信号进入两个单片晶体滤波器 (MCFs : XF351) 进一步消除寄生信号。

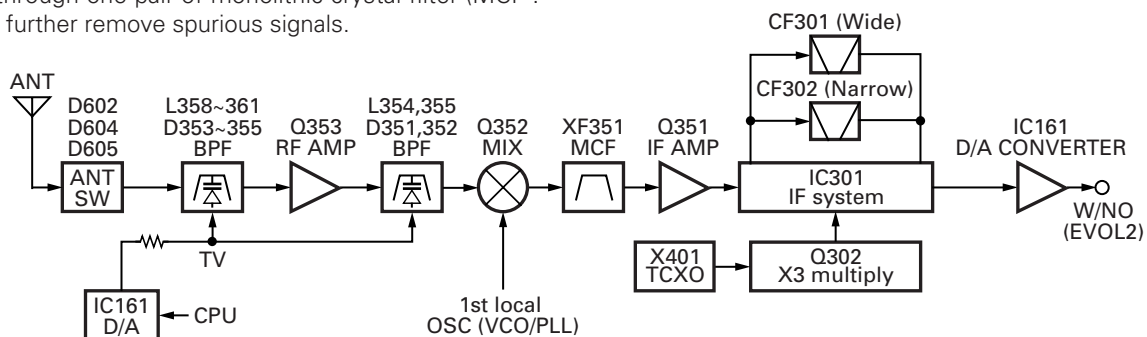


Fig. 2 Receiver system / 图2 接收部系统

CIRCUIT DESCRIPTION / 电路说明

■ IF Amplifier Circuit

The first IF signal is amplified by Q351, and the enters IC301 (FM processing IC). The signal is heterodyned again with a second local oscillator signal within IC301 to create a 450kHz second IF signal. The second IF signal is then fed through a 450kHz ceramic filter (Wide : CF301, Narrow : CF302) to further eliminate unwanted signals before it is amplified and FM detected in IC301.

Item	Rating
Nominal center frequency	49.95MHz
Pass bandwidth	±5.0kHz or more at 3dB
35dB stop bandwidth	±20.0kHz or less
Ripple	1.0dB or less
Insertion loss	5.0dB or less
Guaranteed attenuation	80dB or more at fo±1MHz Spurious : 40dB or more within fo±1MHz
Terminal impedance	350Ω / 5.5pF

Table 1 Crystal filter (L71-0591-05) : XF351

Item	Rating
Nominal center frequency	450kHz
6dB bandwidth	±6.0kHz or more
50dB bandwidth	±12.5kHz or less
Ripple	2.0dB or less
Insertion loss	6.0dB or less
Guaranteed attenuation	35.0dB or more within fo±100kHz
Terminal impedance	2.0kΩ

Table 2 Ceramic filter (L72-0993-05) : CF301

Item	Rating
Nominal center frequency	450kHz
6dB bandwidth	±4.5kHz or more
50dB bandwidth	±10.0kHz or less
Ripple	2.0dB or less
Insertion loss	6.0dB or less
Guaranteed attenuation	55.0dB or more within fo±100kHz
Terminal impedance	2.0kΩ

Table 3 Ceramic filter (L72-0959-05) : CF302

■中频放大器电路

第一中频信号通过Q351被放大, 然后进入IC301 (调频处理芯片)。信号再次与IC301中的第二本振信号混合后产生450kHz的第二中频信号。第二中频信号在被放大之前进入450kHz的陶瓷滤波器(宽: CF301、窄: CF302)进一步消除不需要的信号并且在IC301中调频检测。

项目	额定值
额定中心频率	49.95MHz
通频带宽	在3dB时 ± 5.0kHz或更大
35dB停止带宽	± 20.0kHz或更小
脉动	1.0dB或更低
插入损耗	5.0dB或更低
保证衰减	在fo ± 1MHz时80dB或更大 寄生信号: 在fo ± 1MHz之内40dB或更大
端点阻抗	350Ω/5.5pF

表1 晶体滤波器 (L71-0591-05) : XF350

项目	额定值
额定中心频率	450kHz
6dB带宽	± 6.0kHz或更大
50dB带宽	± 12.5kHz或更小
脉动	2.0dB或更低
插入损耗	6.0dB或更低
保证衰减	在fo ± 100kHz之内35.0dB或更大
端点阻抗	2.0kΩ

表2 陶瓷滤波器 (L72-0993-05) : CF301

项目	额定值
额定中心频率	450kHz
6dB带宽	± 4.5kHz或更大
50dB带宽	± 10.0kHz或更小
脉动	2.0dB或更低
插入损耗	6.0dB或更低
保证衰减	在fo ± 100kHz之内55.0dB或更大
端点阻抗	2.0kΩ

表3 陶瓷滤波器 (L72-0959-05) : CF302

CIRCUIT DESCRIPTION / 电路说明

■ Wide/Narrow Switching Circuit

The Wide port (pin 65) and Narrow port (pin 64) of the CPU is used to switch between ceramic filters. When the Wide port is high, the ceramic filter SW diodes (D303, D302) cause CF301 to turn on to receive a Wide signal.

When the Narrow port is high, the ceramic filter SW diodes (D303, D302) cause CF302 to turn on to receive a Narrow signal.

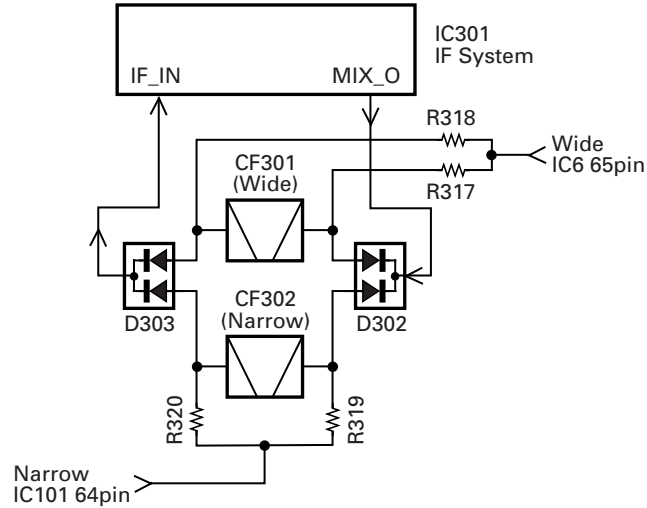


Fig. 3 Wide/Narrow switching circuit / 图3 宽/窄转换电路

■ 宽 / 窄转换电路

CPU的宽端口(管脚65)和窄端口(管脚64)用于陶瓷滤波器之间的切换。当宽端口为高电平时,陶瓷滤波器SW二极管(D303、D302)使CF301导通来接收宽带信号。

当窄端口为高电平时,陶瓷滤波器SW二极管(D303、D302)使CF302导通来接收窄带信号。

■ AF Signal Circuit

The detection signal from IF IC (IC301) goes to D/A converter (IC161) to adjust the gain and is output to AF filter (IC251) for characterizing the signal. The AF signal output from IC251 and the DTMF signal, BEEP signal are summed and the resulting signal goes to the D/A converter (IC161). The AFO output level is adjusted by the D/A converter. The signal output from the D/A converter is input to the audio power amplifier (IC252). The AF signal from IC252 switches between the internal speaker and speaker jack (J1) output.

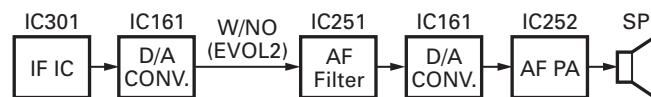


Fig. 4 AF signal circuit / 图4 音频信号电路

■ 音频信号电路

来自于IF IC (IC301) 的检测信号进入数/模转换器 (IC161), 调整增益并输出到AF滤波器 (IC251) 来表示信号的特征。从IC161输出的AF信号, DTMF信号和BEEP信号被累加, 并且将获得的信号送到数/模转换器 (IC161)。AFO输出电平被数/模转换器调整。从数/模转换器输出的信号被输入到音频功率放大器 (IC252)。来自于IC252的AF信号在内部扬声器和扬声器插口 (J1) 输出之间变换。

■ Squelch Circuit

The detection output from the FM IF IC (IC301) passes through a noise amplifier (Q301) to detect noise. A voltage is applied to the CPU (IC101). The CPU controls squelch according to the voltage (SQIN) level. The signal from the RSSI pin of IC301 is monitored. The electric field strength of the receive signal can be known before the SQIN voltage is input to the CPU, and the scan stop speed is improved.

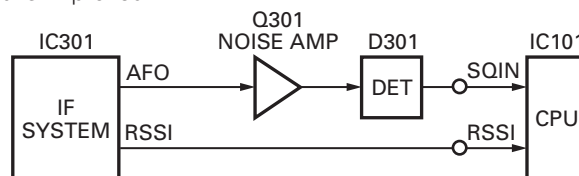


Fig. 5 Squelch circuit / 图5 静噪电路

■ 静噪电路

从调频中频芯片 (IC301) 输出的检测经过噪音放大器 (Q301) 检测噪音。向CPU (IC101) 输入电压。CPU按照电压 (SQIN) 电平控制静噪。来自于IC301的RSSI管脚的信号被监听。在SQIN电压被输入到CPU之前可以识别接收信号的电场强度, 并且扫描停止速度将增快。

CIRCUIT DESCRIPTION / 电路说明

PLL Frequency Synthesizer

The PLL circuit generates the first local oscillator signal for reception and the RF signal for transmission.

■ PLL

The frequency step of the PLL circuit is 5 or 6.25kHz. A 16.8MHz reference oscillator signal is divided at IC401 by a fixed counter to produce the 5 or 6.25kHz reference frequency. The voltage controlled oscillator (VCO) output signal is buffer amplified by Q410, then divided in IC401 by a dual-module programmable counter. The divided signal is compared in phase with the 5 or 6.25kHz reference signal in the phase comparator in IC401. The output signal from the phase comparator is filtered through a low-pass filter and passed to the VCO to control the oscillator frequency. (See Fig. 6)

■ VCO

The operating frequency is generated by Q406 in transmit mode and Q405 in receive mode. The oscillator frequency is controlled by applying the VCO control voltage, obtained from the phase comparator, to the varactor diodes (D405 and D406 in transmit mode and D403 and D404 in receive mode). The TX/RX pin is set low in receive mode causing Q408 and Q407 to turn Q406 off, and turn Q405 on. The TX/RX pin is set high in transmit mode. The outputs from Q405 and Q406 are amplified by Q410 and sent to the RF amplifiers.

■ Unlock Circuit

During reception, the 8RC signal goes high, the 8TC signal goes low, and Q34 turns on. Q33 turns on and a voltage is applied to the collector (8R). During transmission, the 8RC signal goes low, the 8TC signal goes high and Q36 turns on. Q35 turns on and a voltage is applied to 8T.

The CPU in the control unit monitors the PLL (IC401) LD signal directly. When the PLL is unlocked during transmission, the PLL LD signal goes low. The CPU detects this signal and makes the 8TC signal low. When the 8TC signal goes low, no voltage is applied to 8T, and no signal is transmitted.

锁相环频率合成器

锁相环电路产生接收机的第一本振信号和用于发射的射频载波信号。

■ 锁相环电路

锁相环电路的步进频率为5或6.25kHz。16.8MHz的参考振荡器信号通过一个混合计数器在芯片IC401中被分频生成5或6.25kHz参考频率。压控振荡器(VCO)输出信号通过Q410被缓冲放大,然后在芯片IC401中被双模可编程计数器分频。被分频的信号在带有5或6.25kHz参考信号的相位比较器的芯片IC401中被比较。从相位比较器输出的信号进入一个低通滤波器后,通过压控振荡器控制振荡频率。(参见图6)

■ 压控振荡器

在发射模式中通过Q406产生操作频率,在接收模式中通过Q405产生操作频率。控制信号通过相位比较器到变容二极管(在发射中为D405和D406,在接收模式中为D403和D404)。在接收模式中,由于Q408和Q407切断Q406并且导通Q405,所以发射/接收管脚设置为低电平。发射/接收管脚在发射模式内被设置为高电平。来自于Q405和Q406的输出被Q410放大并送至RF放大器。

■ 失锁电路

在接收的过程中,8RC信号为高电平,8TC信号为低电平,并且Q34导通。Q33导通并且向集合器(8R)提供电压。在发射过程中,8RC信号为低电平,8TC信号为高电平,并且Q36导通。Q35导通并且向8T提供电压。

控制单元中的CPU直接监听锁相环电路(IC401)LD信号。当发射过程中锁相环电路失锁时,锁相环电路LD信号为低电平。CPU检测此信号并使8TC信号变为低电平。当8TC信号为低电平时,不向8T提供电压,并且不发射任何信号。

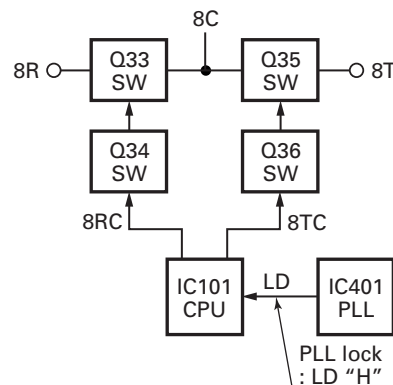


Fig. 7 Unlock circuit / 图7 失锁电路

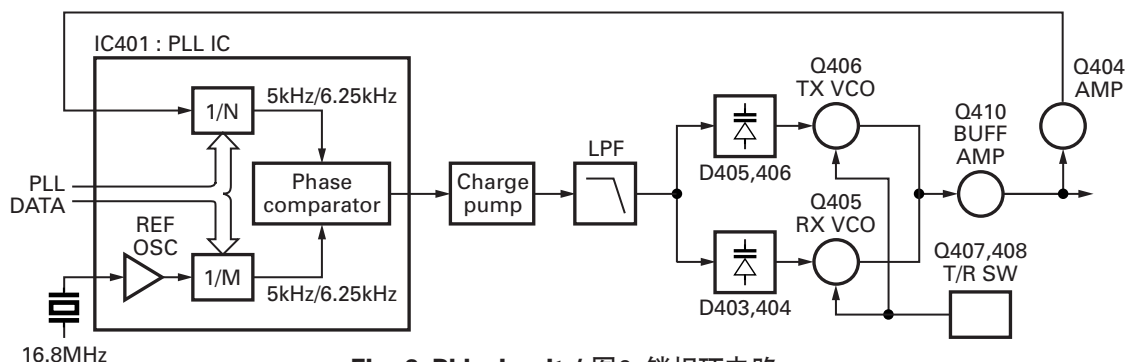


Fig. 6 PLL circuit / 图6 锁相环电路

CIRCUIT DESCRIPTION / 电路说明

Transmitter System

■ Outline

The transmitter circuit produces and amplifies the desired frequency directly. It FM-modulates the carrier signal by means of a varicap diode.

■ Power Amplifier Circuit

The transmit output signal from the VCO passes through the transmission/reception selection diode (D409) and amplified by Q500, Q501 and Q502. The amplified signal goes to the power amplifier (IC502) through a low-pass filter. The low-pass filter removes unwanted high-frequency harmonic components, and the resulting signal is goes the antenna terminal.

发射部系统

■ 概要

发射部电路直接产生和放大需要的频率。通过各色二极管的含义对载波信号进行频率调制。

■ 功率放大器电路

来自于压控振荡器的发射信号经过发射/接收选择二极管 (D409) 并通过驱动装置 (Q500、Q501和Q502) 被放大为功率模组 (IC502) 的一个特定电平。被放大的信号进入一个低通滤波器。此低通滤波器消除不必要的高频谐波成份, 获得的信号进入天线终端。

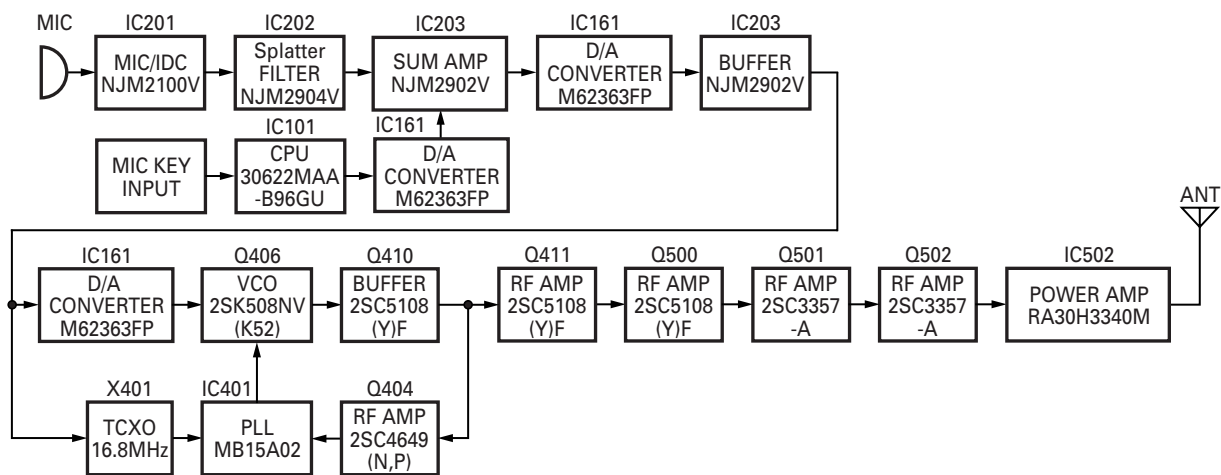


Fig. 8 Transmitter system / 图8 发射部系统

■ APC Circuit

The automatic transmission power control (APC) circuit detects the power amplifier (IC502) output with a diode (D606, D607) and applies a voltage to IC501. IC501 compares the APC control voltage (PC) generated by the D/A converter (IC161) and DC amplifier (IC203) with the detection output voltage. IC501 generates the voltage to control IC502 and stabilizes transmission output.

The APC circuit is configured to protect over current of IC502 due to fluctuations of the load at the antenna end and to stabilize transmission output at voltage and temperature variations.

■ 自动功率控制电路

自动发射功率控制 (APC) 电路使用一个二极管 (D606、D607) 检测功率模组 (IC502) 输出的一部分, 并向IC501提供电压。IC501将D/A变换器 (IC161) 和DC放大器 (IC203) 产生的APC控制电压 (PC) 与检测输出电压进行比较。IC501产生电压控制IC502, 使发射输出稳定。

自动功率控制电路的构成用于防止由于天线终端负载的波动而产生的功率模组 (IC502) 的过载电流并且使发射输出电压和温度变化稳定。

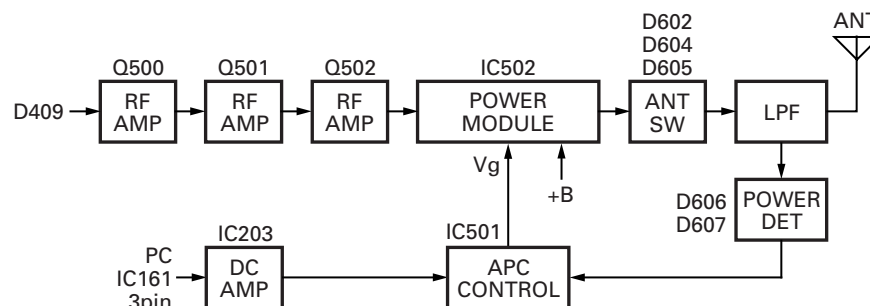


Fig. 9 APC circuit / 图9 自动功率控制电路

CIRCUIT DESCRIPTION / 电路说明

Control Circuit

The CPU carries out the following tasks:

- 1) Controls the WIDE, NARROW, TX/RX outputs.
- 2) Adjusts the AF signal level of the AF filter (IC251) and turns the filter select compounder on or off.
- 3) Controls the display unit.
- 4) Controls the PLL (IC401).
- 5) Controls the D/A converter (IC161) and adjusts the volume, modulation and transmission power.

控制电路

CPU具有下述任务：

- 1) 控制宽, 窄, 发射 / 接收输出。
- 2) 调整AF滤波器 (IC251) 的AF信号电平并且开启或关闭滤波器选择混合器。
- 3) 控制显示单元。
- 4) 控制锁相环电路 (IC401)。
- 5) 控制数/模转换器 (IC161) 并且调整音量, 调制和发射功率。

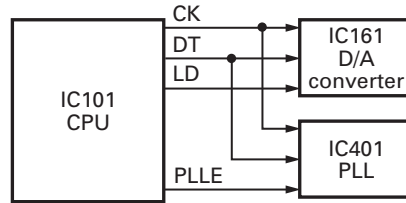


Fig. 10 Control circuit / 图10 控制电路

Memory Circuit

The transceiver has a 64k-bit EEPROM (IC66). The EEPROM contains adjustment data. The CPU (IC101) controls the EEPROM through three serial data lines.

存储器电路

车载台具有一个64k-bit EEPROM (IC66)。EEPROM包含调整数据。CPU (IC101) 经过三条串行数据线控制EEPROM。

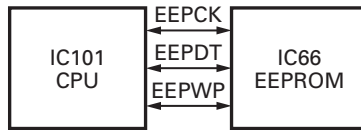


Fig. 11 Memory circuit / 图11 存储器电路

Display Circuit

The CPU (IC101) controls the display LCD and LEDs. When power is on, the CPU will use the MBL line to control the LCD illumination and key backlight LEDs.

The dimmer function is controlled by the switch Q11. The LCD controller (IC2) controls the functions of the LCD through the CE, CK, DI lines from the CPU.

显示电路

CPU (IC101) 控制着显示LCD和LED。电源打开后, CPU将使用MBL线路控制LCD照明和按键背光LED。

调光器功能由开关Q11控制。LCD控制器 (IC2) 通过CPU的CE、CK、DI线路控制着LCD功能。

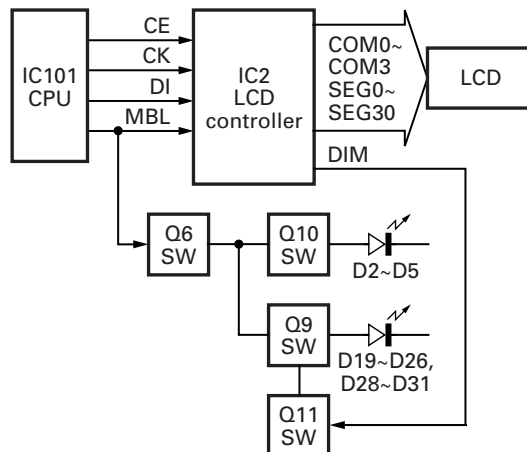


Fig. 12 Display circuit / 图12 显示电路

CIRCUIT DESCRIPTION / 电路说明

■ Key Matrix Circuit

The TK-8100 front panel has function keys. Each of them is connected to a cross point of a matrix of the KMI1 to KMO2 ports of the microprocessor. The KMO1 to KMO2 ports are always high, while the KMI1 to KMI4 ports are always low.

The microprocessor monitors the status of the KMI1 to KMO2 ports. If the state of one of the ports changes, the microprocessor assumes that the key at the matrix point corresponding to that port has been pressed.

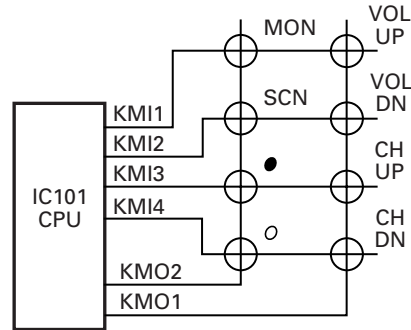


Fig. 13 Key matrix circuit / 图13 按键矩阵电路

■ 按键矩阵电路

TK-8100的前端面板有功能键。每一个按键被连接到微处理器的KMI1到KMO2端口矩阵的一个交叉点。当KMI1到KMI4端口通常为低电平时, KMO1到KMO2端口通常为高电平。

微处理器监听KMI1到KMO2端口的状态。如果其中一个端口的状态发生了变化, 微处理器认定对应于此端口的在矩阵点的按键已被按下。

■ Encode

The QT and DQT signals are output from QT/DQT of the CPU (IC101) and summed with the external pin DI line by the summing amplifier (IC203) and the resulting signal goes to the D/A converter (IC161). The DTMF signal is output from DTMF of the CPU and goes to the D/A converter (IC161). The signal is summed with a MIC signal by the summing amplifier (IC203), and the resulting signal goes to the D/A converter (IC161).

The D/A converter (IC161) adjusts the MO level and the balance between the MO and QT/DQT levels. Part of a QT/DQT signal is summed with MO and the resulting signal goes to the VCOMOD pin of the VCO. This signal is applied to a varicap diode in the VCO for direct FM modulation.

■ 编码

从CPU (IC101) 的QT/DQT输出的QT和DQT信号通过总和放大器 (IC203) 与外置引脚DI线计算总和。获得的信号进入数/模转换器 (IC161)。从CPU的DTMF输出的DTMF和信号进入数/模转换器 (IC161)。总和放大器 (IC203) 计算信号和MIC信号的总和, 获得的信号进入数/模转换器 (IC161)。

数/模转换器 (IC161) 调整MO电平和MO与QT/DQT电平之间的平衡。计算QT/DQT信号的端口和MO的总和, 获得的信号进入压控振荡器的VCOMOD管脚。此信号提供给压控振荡器中的各色二极管直接进行调频调制。

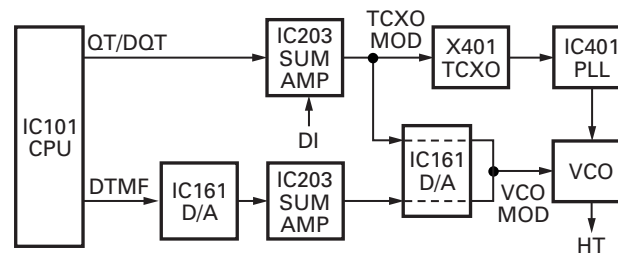


Fig. 14 Encode / 图14 编码

■ Decode

The signal (W/NO (EVOL2)) goes to SIGNAL (pin 88) of CPU (IC101). The QT/DQT signal will pass through the low-pass filters in the CPU (IC101) and be decoded within the CPU (IC101). The DTMF signal will be decoded within the CPU (IC101).

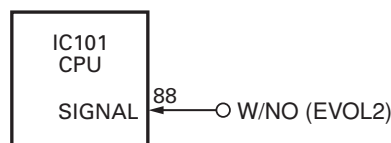


Fig. 15 Decode / 图15 解码

■ 解码

信号 (W/NO (EVOL2)) 进入到CPU (IC101) 的SIGNAL (引脚88)。QT/DQT信号将通过CPU (IC101) 上的低通滤波器, 并在CPU (IC101) 内被解码。DTMF信号也在CPU (IC101) 内被解码。

SEMICONDUCTOR DATA / 半导体数据

Microprocessor / 微处理器 : 30622MAA-B96GU (TX-RX Unit IC101)

■ Terminal Function

Pin No.	Name	I/O	Function
1	QT/DQT	O	QT/DQT output
2	DTMF/MSK	O	DTMF/MSK/BEEP output
3	PLLE	O	PLL IC chip select
4,5	NC	I	
6	GND	-	GND
7	CNVSS	-	CNVss for flash
8	EVLLD	O	E-volume LD
9	BSHIFT	O	Beat shift
10	RESET	-	Reset
11	XOUT	-	X'tal (14.318MHz)
12	VSS	-	GND
13	XIN	-	X'tal (14.318MHz)
14	VCC	-	+5V
15	GND	-	GND (Input only)
16	NC	I	
17	POWER	I	Power key input
18	INT	I	μcom stop
19	NC	I	
20	TX/RX	O	TX/RX
21	UL	O	PLL unlock detect
22~25	NC	I	
26	EEPWP	O	EEPROM write protect
27	EEPCK	O	EEPROM clock (N ch open drain)
28	EEPDT	I/O	EEPROM data (N ch open drain)
29	FNC1	I/O	Function P1/TxD for flash
30	FNC2	I/O	Function P2/RxD for flash
31	CLKFLS	I	SCLK for flash
32	BSYFLS	O	Busy for flash
33	TXD	O	To FPU
34	RXD	I	From FPU
35	PTT	I	PTT key
36	HOOK	I	Hook
37,38	NC	I	
39	EMPFLS	I/O	EPM for flash
40~42	NC	I	
43	FNC3	I/O	Function port 3
44	CEFLS	I/O	CE for flash
45,46	FNC4, FNC5	I/O	Function port 4, 5
47,48	FNC7, FNC6	I/O	Function port 7, 6
49	FNC8	I/O	Function port 8
50	AFM	O	AF mute

■ 端子功能

管脚号	端口名称	输入/输出	功能
1	QT/DQT	输出	QT/DQT输出
2	DTMF/MSK	输出	DTMF/MSK/BEEP输出
3	PLLE	输出	锁相环IC芯片选择
4, 5	NC	输入	
6	GND	-	接地
7	CNVSS	-	闪存用CNVss
8	EVLLD	输出	E-音量LD
9	BSHIFT	输出	拍频偏移
10	RESET	-	复位
11	XOUT	-	X' tal (14.318MHz)
12	VSS	-	接地
13	XIN	-	X' tal (14.318MHz)
14	VCC	-	+5V
15	GND	-	接地 (输入)
16	NC	输入	
17	POWER	输入	电源键输入
18	INT	输入	μCOM停止
19	NC	输入	
20	TX/RX	输出	发射/接收
21	UL	输出	锁相环解锁检测
22 ~ 25	NC	输入	
26	EEPWP	输出	EEPROM写保护
27	EEPCK	输出	EEPROM时钟
28	EEPDT	输入/输出	EEPROM数据
29	FNC1	输入/输出	闪存用功能P1/TxD
30	FNC2	输入/输出	闪存用功能P2/RxD
31	CLKFLS	输入	闪存用SCLK
32	BSYFLS	输出	闪存用Busy
33	TXD	输出	到FPU
34	RXD	输入	由FPU
35	PTT	输入	PTT键
36	HOOK	输入	挂钩
37, 38	NC	输入	
39	EMPFLS	输入/输出	闪存用EPM
40 ~ 42	NC	输入	
43	FNC3	输入/输出	功能端口3
44	CEFLS	输入/输出	闪存用CE
45, 46	FNC4, FNC5	输入/输出	功能端口4, 5
47, 48	FNC7, FNC6	输入/输出	功能端口7, 6
49	FNC8	输入/输出	功能端口8
50	AFM	输出	音频静音

Pin No.	Name	I/O	Function
51	SPM	O	Speaker mute
52	AMPSW	O	AF AMP switch
53	DT	O	Common data
54	CK	O	Common clock
55,56	NC	I	
57~59	DST1~DST3	I	Destination 1~3
60	VCC	-	+5V
61	NC	I	
62	VSS	-	GND
63	NC	I	
64	NARROW	O	
65	WIDE	O	
66~68	NC	I	
69	CL	O	Clock for LCD
70	CE	O	Chip enable for LCD
71	DI	O	Transfer data to LCD
72	IGN	I	Ignition
73	MICMT1	O	Mic 1 mute
74	MICEM	O	Mic 2 mute
75	MICMT2	O	Mic 3 mute
76	8RC	O	8R control
77	8TC	O	8T control
78	CM	I/O	Mic key check
79~81	NC	I	
82	SBC	O	Battery switch
83	KMI2	I	Key matrix 2
84	KMI1	I	Key matrix 1
85	KMI3	I	Key matrix 3
86	KMI4	I	Key matrix 4
87	NC	I	
88	SIGNAL	I	DTMF/QT/DQT input
89	TEMP2	I	Temperature 2
90	TEMP1	I	Temperature 1
91	BATT	I	Battery voltage
92	RSSI	I	RSSI input
93	SQIN	I	Squelch input
94	AVSS	-	GND
95	NC	I	
96	VREF	-	+5V
97	AVCC	-	+5V
98	NC	I	
99	KMO1	O	Key matrix output 1
100	KMO2	O	Key matrix output 2

管脚号	端口名称	输入/输出	功 能
51	SPM	输出	扬声器静音
52	AMPSW	输出	音频放大开关
53	DT	输出	公共数据
54	CK	输出	公共时钟
55, 56	NC	输入	
57~59	DST1 ~ DST3	输入	目的地1~3
60	VCC	-	+5V
61	NC	输入	
62	VSS	-	接地
63	NC	输入	
64	NARROW	输出	
65	WIDE	输出	
66~68	NC	输入	
69	CL	输出	LCD时钟
70	CE	输出	LCD芯片启动
71	DI	输出	传送数据到LCD
72	IGN	输入	点火
73	MICMT1	输出	麦克风1静音
74	MICEM	输出	麦克风2静音
75	MICMT2	输出	麦克风3静音
76	8RC	输出	8R控制
77	8TC	输出	8T控制
78	CM	输入/输出	麦克风键检查
79~81	NC	输入	
82	SBC	输出	电池开关
83	KMI2	输入	键矩阵输入2
84	KMI1	输入	键矩阵输入1
85	KMI3	输入	键矩阵输入3
86	KMI4	输入	键矩阵输入4
87	NC	输入	
88	SIGNAL	输入	DTMF/QT/DQT输入
89	TEMP2	输入	温度2
90	TEMP1	输入	温度1
91	BATT	输入	电池电压
92	RSSI	输入	RSSI输入
93	SQIN	输入	静噪输入
94	AVSS	-	接地
95	NC	输入	
96	VREF	-	+5V
97	AVCC	-	+5V
98	NC	输入	
99	KMO1	输出	键矩阵输出1
100	KMO2	输出	键矩阵输出2

COMPONENTS DESCRIPTION / 元件说明

Display Unit (X54-3430-20)

Ref. No.	Parts name	Description
IC2	IC	LCD controller
Q6	Transistor	DC switch
Q9	Transistor	LCD backlit switch
Q10	Transistor	Key backlit switch
Q11	Transistor	Dimmer function switch
D2~5	LED	Key & LCD backlit
D17	Diode	DC switch
D18	Diode	DC controller
D19~26	LED	Key & LCD backlit
D27	Diode	Surge absorption
D28~31	LED	Key & LCD backlit

显示单元 (X54-3430-20)

有关号码	零件名称	说明
IC2	IC	LCD控制器
Q6	晶体管	直流电源开关
Q9	晶体管	LCD背光开关
Q10	晶体管	按键背光开关
Q11	晶体管	调光器功能开关
D2~5	发光二极管	按键及LCD背光
D17	二极管	直流电源开关
D18	二极管	直流电源控制器
D19~26	发光二极管	按键及LCD背光
D27	二极管	电涌吸收
D28~31	发光二极管	按键及LCD背光

TX-RX Unit (X57-6923-03)

Ref. No.	Parts name	Description
IC31	IC	Voltage regulator (8C)
IC32	IC	Voltage regulator (5C)
IC33	IC	Voltage regulator (5M)
IC34	IC	Voltage detector reset
IC35	IC	Voltage detector int
IC66	IC	EEPROM
IC101	IC	CPU
IC161	IC	Digital potentiometer
IC201	IC	MIC amplifier / IDC
IC202	IC	MIC amplifier / Splatter filter
IC203	IC	Buffer amplifier / SUM amplifier / DC amplifier / 1/2 Vcc
IC251	IC	Audio filter
IC252	IC	Audio amplifier
IC301	IC	FM demodulation
IC401	IC	PLL synthesizer
IC501	IC	APC controller
IC502	IC	Power module
Q1	Transistor	TX AF
Q31	Transistor	DC switch (SB) / Active when power is on
Q32	FET	DC switch (SB) / Active when power is on
Q33,34	Transistor	DC switch (8R) / Active while RX
Q35,36	Transistor	DC switch (8T) / Active while TX
Q61	Transistor	Over voltage detection / Active when PS voltage is more than 18V
Q71	Transistor	Ignition / Ignition sense
Q86,87	Transistor	Beat shift / Active while beat shift is on
Q201	Transistor	AF amplifier / MIC mute / Emergency MIC mute
Q202	FET	Emergency MIC mute / Active when MICEM is H

TX-RX单元 (X57-6923-03)

有关号码	零件名称	说明
IC31	IC	电压调节器 (8C)
IC32	IC	电压调节器 (5C)
IC33	IC	电压调节器 (5M)
IC34	IC	电压检测器复位
IC35	IC	电压检测器int
IC66	IC	EEPROM
IC101	IC	微处理器
IC161	IC	数码电位计
IC201	IC	扬声器放大/IDC
IC202	IC	扬声器放大/边带干扰消除器
IC203	IC	缓冲放大器/总和放大器/直流放大器/1/2Vcc
IC251	IC	音频过滤器
IC252	IC	音频放大器
IC301	IC	FM检波
IC401	IC	锁相环同步器
IC501	IC	APC控制器
IC502	IC	功率模块
Q1	晶体管	发射音频
Q31	晶体管	直流开关 (SB)/通电时生效
Q32	场效应管	直流开关 (SB)/通电时生效
Q33, 34	晶体管	直流开关 (8R)/接收生效
Q35, 36	晶体管	直流开关 (8T)/发射生效
Q61	晶体管	过电压检测/ PS电压大于18V时启动
Q71	晶体管	点火/点火器传感
Q86, 87	晶体管	拍频偏移/节拍漂移开启时启动
Q201	晶体管	音频放大器/话筒静音/紧急话筒静音
Q202	场效应管	紧急话筒静音/ 当MICEM是H时生效

COMPONENTS DESCRIPTION / 元件说明

Ref. No.	Parts name	Description
Q251	Transistor	Buffer amplifier / RX audio
Q252,253	FET	AF mute / Active while AFM is H
Q254	Digital transistor	AF mute / Active while SPM is H
Q255	Transistor	AF mute / Active while AMPSW is H
Q301	Transistor	SQL amplifier / Noise amplifier
Q302	Transistor	Buffer amplifier / 16.8MHz 3rd over tone
Q351	Transistor	IF amplifier
Q352	FET	Mixer
Q353	FET	RF amplifier / LNA
Q402,403	Transistor	Charge pump
Q404	Transistor	RF amplifier / PLL F in
Q405	FET	RX VCO
Q406	FET	TX VCO
Q407	FET	T/R switch
Q408	Transistor	T/R switch
Q410	Transistor	Buffer amplifier / Output of VCO
Q411	Transistor	RF amplifier / Output of VCO
Q440	Transistor	Ripple filter
Q500	Transistor	RF switch (TX/RX)
Q501,502	Transistor	RF amplifier
D1	Diode	Surge absorption / CM
D2	Diode	Surge absorption / HOOK
D3	Diode	Surge absorption / PTT
D4~11	Diode	Surge absorption / FNC1~8
D31	Diode	Reverse connection protection
D32	Poly switch	Current protection
D61	Diode	Over voltage detection
D201	Diode	OR gate / MIC mute, AGC
D202	Diode	AGC
D251	Diode	Limiter
D301	Diode	Detection
D302,303	Diode	IF switch (Wide/Narrow)
D351~355	Varicap	RF BPF tuning
D401	Diode	Ripple filter
D402	Diode	Voltage dropped
D403,404	Varicap	RX VCO
D405,406	Varicap	TX VCO
D407	Varicap	Modulation
D408	Diode	Ripple filter
D409	Diode	RF switch (TX/RX)
D502	Diode	Temperature compensation
D503	Diode	Voltage protection
D602	Diode	ANT switch
D604,605	Diode	ANT switch
D606,607	Diode	APC voltage detect
D608,609	Diode	Temperature compensation

有关号码	零件名称	说明
Q251	晶体管	缓冲放大器/接收音频
Q252, 253	场效应管音	音频静音/当AFM是H时生效
Q254	数字晶体管	音频静音/当SPM是H时生效
Q255	晶体管	音频静音/当AMPSW是H时生效
Q301	晶体管	噪音放大器/SQL放大器
Q302	晶体管	缓冲放大器/16.8MHz第三完毕提示音
Q351	晶体管	中频放大器
Q352	场效应管音	混频器
Q353	场效应管音	射频放大器/LNA
Q402, 403	晶体管	负载增压
Q404	晶体管	射频放大器/锁相环散热片
Q405	场效应管音	接收压空振荡器
Q406	场效应管音	发射压空振荡器
Q407	场效应管音	发射/接收开关
Q408	晶体管	发射/接收开关
Q410	晶体管	缓冲放大器/VCO输出
Q411	晶体管	射频放大器/VCO输出
Q440	晶体管	脉动滤波器
Q500	晶体管	射频开关(发射/接收)
Q501, 502	晶体管	射频放大器
D1	二极管	过压吸收/CM
D2	二极管	过压吸收/HOOK
D3	二极管	过压吸收/PTT
D4 ~ 11	二极管	过压吸收/FNC1 ~ 8
D31	二极管	反向电流保护
D32	多相开关	电流保护
D61	二极管	过电压检测
D201	二极管	或门/话筒静音, AGC
D202	二极管	AGC
D251	二极管	限幅器
D301	二极管	检测
D302, 303	二极管	中频开关(宽/窄)
D351 ~ 355	变容二极管	射频BPF调谐
D401	二极管	脉动滤波器
D402	二极管	电压降低
D403, 404	变容二极管	接收压空振荡器
D405, 406	变容二极管	发射压空振荡器
D407	变容二极管	调制
D408	二极管	脉动滤波器
D409	二极管	射频开关(发射/接收)
D502	二极管	温度补偿
D503	二极管	电压保护
D602	二极管	天线开关
D604, 605	二极管	天线开关
D606, 607	二极管	自动功率控制电压检测
D608, 609	二极管	温度补偿

PARTS LIST / 零件表

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

TK-8100 (Y51-4973-01)

DISPLAY UNIT (X54-3430-20)

TX-RX UNIT (X57-6923-03)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
TK-8100						TX-RX UNIT (X57-6923-03)					
1	1B		A01-2178-02	CABINET		C19			CK73GB1H681K	CHIP C 680PF K	
2	3B		A10-4080-11	CHASSIS		C22,23			CK73GB1H102K	CHIP C 1000PF K	
3	3A		A62-1074-03	PANEL ASSY		C24			CK73GB1H103K	CHIP C 0.010UF K	
5	3A		B11-1299-02	ILLUMINATION GUIDE		C25			CK73GB1H102K	CHIP C 1000PF K	
6	3A		B38-0878-05	LCD		C27,28			CK73GB1H102K	CHIP C 1000PF K	
7	1C		B62-1879-00	INSTRUCTION MANUAL		C30			CK73GB1H103K	CHIP C 0.010UF K	
10	3B		E04-0167-05	RF COAXIAL RECEPTACLE (M)		C31-33			CK73GB1H102K	CHIP C 1000PF K	
11	3A		E29-1197-15	INTER CONNECTOR (LCD)		CN1			E40-6005-05	FLAT CABLE CONNECTOR	
13	2B		E30-7552-05	DC CORD (RADIO)		J1			E08-0877-05	MODULAR JACK	
14	3A		E37-0962-05	SPEAKER CABLE		L1			L92-0138-05	CHIP FERRITE	
15	2A		E37-1041-05	FLAT CABLE (TX/RX_DISPLAY)		CP1			R90-0724-05	MULTI-COMP 1K X4	
-			E37-1080-05	PROCESSED CABLE (B) 11P		R4-9			RK73GB1J102J	CHIP R 1.0K J 1/16W	
-			E37-1081-05	PROCESSED CABLE (A) 12P		R10,11			RK73GB1J272J	CHIP R 2.7K J 1/16W	
-			E37-1117-05	SMARTRUNK CABLE		R21-23			RK73GB1J103J	CHIP R 10K J 1/16W	
20	2B		F10-2414-03	SHIELDING PLAT E(POWER MODULE)		R24			RK73GB1J474J	CHIP R 470K J 1/16W	
21	2B		F10-2491-12	SHIELDING COVER (TX/RX)		R25			RK73GB1J473J	CHIP R 47K J 1/16W	
22	2B		F10-2498-03	SHIELDING CASE (POWER MODULE)		R26			RK73GB1J392J	CHIP R 3.9K J 1/16W	
23	1D		F51-0016-15	FUSE (6X30 10A)		R33			RK73FB2A560J	CHIP R 56 J 1/10W	
25	2B		G02-0887-03	EARTH SPRING (ANTENNA TERMINAL)		R34			RK73GB1J101J	CHIP R 100 J 1/16W	
26	2B		G10-0792-14	FIBROUS SHEET (POWER MODULE)		R36			RK73FB2A560J	CHIP R 56 J 1/10W	
-			G13-1963-04	CUSHION (SCRAMBLER)		R37			RK73GB1J100J	CHIP R 10 J 1/16W	
-			G13-1964-04	CUSHION (SCRAMBLER)		R38,39			RK73FB2A390J	CHIP R 39 J 1/10W	
30	3B		G13-2003-04	CUSHION (DC CORD)		R40			RK73FB2A473J	CHIP R 47K J 1/10W	
-			G13-2005-04	CUSHION (SMARTRUNK)		D17			MA2S111	DIODE	
-			G13-2006-04	CUSHION (SMARTRUNK)		D18			DA204U	DIODE	
-			G13-2007-04	CUSHION (SMARTRUNK)		D27			DA221	DIODE	
34	1B		G53-1524-02	PACKING (CABINET)		IC2			LC75834W	MOS-IC	
35	3B		G53-1525-03	PACKING (PANEL)		Q6			KRC102S	DIGITAL TRANSISTOR	
36	2B		G53-1542-03	PACKING (PHONE JACK)		Q9			2SB1132(Q,R)	TRANSISTOR	
39	1D		H10-6636-13	POLYSTYRENE FOAMED FIXTURE		Q10			KRA225S	DIGITAL TRANSISTOR	
40	2C		H10-6639-03	POLYSTYRENE FOAMED FIXTURE		Q11			RN47A4	TRANSISTOR	
43	2D		H52-1700-12	ITEM CARTON CASE		TX-RX UNIT (X57-6923-03)					
48	3A		K29-9262-01	KEY TOP		C10			CK73GB1H102K	CHIP C 1000PF K	
A	2B		N67-3008-46	PAN HEAD SEMS SCREW		C13-23			CK73GB1H471K	CHIP C 470PF K	
B	2B,3B		N87-2606-46	BRAZIER HEAD TAPTITE SCREW		C26-28			CK73GB1H221K	CHIP C 220PF K	
C	1B,2B		N87-2614-46	BRAZIER HEAD TAPTITE SCREW		C29			CK73GB1H471K	CHIP C 470PF K	
52	3A		T07-0739-15	SPEAKER		C30			CK73GB1H102K	CHIP C 1000PF K	
DISPLAY UNIT (X54-3430-20)						C32			CK73GB1H102K	CHIP C 1000PF K	
D2-5			B30-2205-05	LED (YG)		C33			CK73GB1H471K	CHIP C 470PF K	
D19-26			B30-2205-05	LED (YG)		C34			C92-0721-05	ELECTRO 330UF 25WV	
D28-31			B30-2205-05	LED (YG)		C35-38			CK73GB1H471K	CHIP C 470PF K	
C4			CC73GCH1H101J	CHIP C 100PF J		C39,40			CK73GB1C104K	CHIP C 0.10UF K	
C6			CK73GB1H103K	CHIP C 0.010UF K		C41			C92-0795-05	CHIP-TAN 22UF 10WV	
C15,16			CC73GCH1H101J	CHIP C 100PF J		C42			CK73GB1H103K	CHIP C 0.010UF K	
C18			CK73FB1A105K	CHIP C 1.0UF K		C43-45			C92-0795-05	CHIP-TAN 22UF 10WV	
						C48-50			CK73GB1H103K	CHIP C 0.010UF K	
						C51			C92-0560-05	CHIP-TAN 10UF 6.3WV	
						C52,53			CK73GB1H471K	CHIP C 470PF K	
						C54,55			CK73GB1C104K	CHIP C 0.10UF K	
						C56			CK73GB1H471K	CHIP C 470PF K	

PARTS LIST / 零件表

TX-RX UNIT (X57-6923-03)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C61			CK73GB1H471K	CHIP C 470PF K		C270			C92-0507-05	CHIP-TAN 4.7UF 6.3WV	
C66			CK73GB1H471K	CHIP C 470PF K		C271			CK73GB1H332K	CHIP C 3300PF K	
C72			CK73GB1H471K	CHIP C 470PF K		C272			CK73GB1H102K	CHIP C 1000PF K	
C77			CK73GB1H471K	CHIP C 470PF K		C273			CK73GB1A105K	CHIP C 1.0UF K	
C78			CK73GB1H102K	CHIP C 1000PF K		C274			CK73FB1C224K	CHIP C 0.22UF K	
C82			CK73GB1H471K	CHIP C 470PF K		C275			CK73GB1A105K	CHIP C 1.0UF K	
C83			CK73GB1C104K	CHIP C 0.10UF K		C276,277			CK73GB1H471K	CHIP C 470PF K	
C87			CC73GCH1H180J	CHIP C 18PF J		C278			CK73GB1C104K	CHIP C 0.10UF K	
C88,89			CC73GCH1H060B	CHIP C 6.0PF B		C279			C92-0516-05	CHIP-TAN 4.7UF 16WV	
C90			CC73GCH1H180J	CHIP C 18PF J		C280			C92-0040-05	CHIP-ELE 47UF 16WV	
C97,98			CK73GB1H471K	CHIP C 470PF K		C281			CK73GB1H471K	CHIP C 470PF K	
C101			CK73GB1H471K	CHIP C 470PF K		C282			C92-0722-05	ELECTRO 470UF 16WV	
C102			CK73GB1C104K	CHIP C 0.10UF K		C283			CK73GB1H102K	CHIP C 1000PF K	
C103			CK73GB1H102K	CHIP C 1000PF K		C301			C92-0507-05	CHIP-TAN 4.7UF 6.3WV	
C104			CK73GB1C104K	CHIP C 0.10UF K		C302			CK73GB1H102K	CHIP C 1000PF K	
C151			CK73GB1H182K	CHIP C 1800PF K		C303			CK73GB1H472K	CHIP C 4700PF K	
C152			CK73GB1H392K	CHIP C 3900PF K		C304,305			CC73GCH1H221J	CHIP C 220PF J	
C161			CK73GB1H102K	CHIP C 1000PF K		C306			CK73GB1H102K	CHIP C 1000PF K	
C162			C92-0507-05	CHIP-TAN 4.7UF 6.3WV		C307			CK73GB1E223K	CHIP C 0.022UF K	
C163			CK73GB1H471K	CHIP C 470PF K		C308			CK73GB1H102K	CHIP C 1000PF K	
C164			C92-0560-05	CHIP-TAN 10UF 6.3WV		C309			CK73GB1E223K	CHIP C 0.022UF K	
C201			CK73GB1C104K	CHIP C 0.10UF K		C310			CK73FB1C334K	CHIP C 0.33UF K	
C202			CK73GB1H471K	CHIP C 470PF K		C311,312			CK73GB1C104K	CHIP C 0.10UF K	
C203			CK73GB1C273K	CHIP C 0.027UF K		C313			C92-0662-05	CHIP-TAN 15UF 6.3WV	
C204			C92-0514-05	CHIP-TAN 2.2UF 10WV		C314			CK73GB1H103K	CHIP C 0.010UF K	
C205			CK73GB1C104K	CHIP C 0.10UF K		C315-318			CK73GB1C104K	CHIP C 0.10UF K	
C206			CK73GB1H102K	CHIP C 1000PF K		C319			CC73GCH1H101J	CHIP C 100PF J	
C207			CK73GB1C223K	CHIP C 0.022UF K		C321			CC73GCH1H330J	CHIP C 33PF J	
C208			CK73GB1H103K	CHIP C 0.010UF K		C322			CC73GCH1H560J	CHIP C 56PF J	
C210			CK73GB1C104K	CHIP C 0.10UF K		C323			CC73GCH1H271J	CHIP C 270PF J	
C211			CK73GB1H821K	CHIP C 820PF K		C324			CK73GB1H103K	CHIP C 0.010UF K	
C212			CK73GB1H122K	CHIP C 1200PF K		C326			CK73GB1H103K	CHIP C 0.010UF K	
C213			CK73GB1H332K	CHIP C 3300PF K		C351			CC73GCH1H330J	CHIP C 33PF J	
C214			CC73GCH1H151J	CHIP C 150PF J		C353			CK73GB1H103K	CHIP C 0.010UF K	
C215			CK73GB1C104K	CHIP C 0.10UF K		C354			CC73GCH1H060B	CHIP C 6.0PF B	
C217,218			C92-0560-05	CHIP-TAN 10UF 6.3WV		C355			CC73GCH1H180J	CHIP C 18PF J	
C220			C92-0507-05	CHIP-TAN 4.7UF 6.3WV		C356			CC73GCH1H020B	CHIP C 2.0PF B	
C221			CK73GB1C104K	CHIP C 0.10UF K		C357			CK73GB1H103K	CHIP C 0.010UF K	
C225			C92-0004-05	CHIP-TAN 1.0UF 16WV		C358			CK73GB1H471K	CHIP C 470PF K	
C226			CK73GB1H472K	CHIP C 4700PF K		C359			CC73GCH1H120J	CHIP C 12PF J	
C227			CK73GB1E103K	CHIP C 0.010UF K		C360			CC73GCH1H080B	CHIP C 8.0PF B	
C228			C92-0560-05	CHIP-TAN 10UF 6.3WV		C361,362			CK73GB1H471K	CHIP C 470PF K	
C229			C92-0507-05	CHIP-TAN 4.7UF 6.3WV		C363			CK73GB1H103K	CHIP C 0.010UF K	
C230			CK73GB1C104K	CHIP C 0.10UF K		C364			CK73GB1H471K	CHIP C 470PF K	
C231,232			CK73GB1H471K	CHIP C 470PF K		C366			CK73GB1C104K	CHIP C 0.10UF K	
C233			C92-0507-05	CHIP-TAN 4.7UF 6.3WV		C367			CK73GB1H471K	CHIP C 470PF K	
C250			CK73GB1C104K	CHIP C 0.10UF K		C368			CC73GCH1H070B	CHIP C 7.0PF B	
C251			C92-0714-05	CHIP-TAN 4.7UF 6.3WV		C369			CC73GCH1HR75B	CHIP C 0.75PF B	
C252			CC73GCH1H390J	CHIP C 39PF J		C370			CK73GB1H471K	CHIP C 470PF K	
C253,254			CK73GB1A105K	CHIP C 1.0UF K		C371			CC73GCH1H0R5B	CHIP C 0.5PF B	
C255			CK73GB1H822K	CHIP C 8200PF K		C372			CC73GCH1H150J	CHIP C 15PF J	
C256			CK73GB1E183K	CHIP C 0.018UF K		C373,374			CC73GCH1H070B	CHIP C 7.0PF B	
C257			CK73GB1C393K	CHIP C 0.039UF K		C375-380			CK73GB1H471K	CHIP C 470PF K	
C258-261			CK73GB1H103J	CHIP C 0.010UF J		C381			CC73GCH1H080B	CHIP C 8.0PF B	
C262			CK73GB1H471K	CHIP C 470PF K		C382			CK73GB1H471K	CHIP C 470PF K	
C263,264			CK73GB1C333K	CHIP C 0.033UF K		C383			CC73GCH1H0R5B	CHIP C 0.5PF B	
C265,266			CK73GB1C104K	CHIP C 0.10UF K		C384			CC73GCH1H070B	CHIP C 7.0PF B	
C267			CK73GB1A474K	CHIP C 0.47UF K		C385			CK73GB1H471K	CHIP C 470PF K	
C268			CK73GB1C104K	CHIP C 0.10UF K		C386			CC73GCH1H010B	CHIP C 1.0PF B	
C269			CK73GB1A105K	CHIP C 1.0UF K		C387			CC73GCH1H0R5B	CHIP C 0.5PF B	

PARTS LIST / 零件表

TX-RX UNIT (X57-6923-03)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C388			CC73GCH1H070B	CHIP C 7.0PF B		C531			C92-0543-05	CHIP-TAN 3.3UF 10WV	
C389			CK73GB1H103K	CHIP C 0.010UF K		C532			CK73GB1H471K	CHIP C 470PF K	
C390			CC73GCH1H080B	CHIP C 8.0PF B		C534			CK73FB1H471K	CHIP C 470PF K	
C391			CK73GB1H471K	CHIP C 470PF K		C537			C92-0719-05	ELECTRO 47UF 25WV	
C401-403			CC73GCH1H101J	CHIP C 100PF J		C538			CK73GB1C104K	CHIP C 0.10UF K	
C404			C92-0662-05	CHIP-TAN 15UF 6.3WV		C539,540			CK73GB1H471K	CHIP C 470PF K	
C406			CK73GB1H102K	CHIP C 1000PF K		C559			CK73GB1H103K	CHIP C 0.010UF K	
C408			CC73GCH1H220J	CHIP C 22PF J		C560			CK73GB1H471K	CHIP C 470PF K	
C409			CK73GB1C104K	CHIP C 0.10UF K		C571			CK73GB1H471K	CHIP C 470PF K	
C410			C92-0560-05	CHIP-TAN 10UF 6.3WV		C572,573			CK73GB1H103K	CHIP C 0.010UF K	
C411			CK73GB1C104K	CHIP C 0.10UF K		C601			CC73GCH1H100C	CHIP C 10PF C	
C412			C92-0560-05	CHIP-TAN 10UF 6.3WV		C602			C93-0603-05	CHIP C 1000PF K	
C413			CK73GB1H103K	CHIP C 0.010UF K		C603			CC73GCH1H0R5B	CHIP C 0.5PF B	
C414			CK73GB1C104K	CHIP C 0.10UF K		C604			CC73GCH1H020B	CHIP C 2.0PF B	
C416,417			CK73GB1H471K	CHIP C 470PF K		C605			C93-0555-05	CHIP C 5.0PF C	
C418			CK73GB1H102K	CHIP C 1000PF K		C606			C93-0554-05	CHIP C 4.0PF C	
C421,422			CK73GB1H471K	CHIP C 470PF K		C607			CC73GCH1H0R5B	CHIP C 0.5PF B	
C423			C92-0555-05	CHIP-TAN 0.047UF 35WV		C608			CC73GCH1H020B	CHIP C 2.0PF B	
C424			C92-0543-05	CHIP-TAN 3.3UF 10WV		C609			C93-0550-05	CHIP C 1.0PF C	
C425			C92-0001-05	CHIP-TAN 0.1UF 35WV		C610			C93-0560-05	CHIP C 10PF D	
C426			CC73GCH1H100C	CHIP C 10PF C		C611			C93-0555-05	CHIP C 5.0PF C	
C427			CC73GCH1H040B	CHIP C 4.0PF B		C612			C93-0551-05	CHIP C 1.5PF C	
C428			CK73GB1H471K	CHIP C 470PF K		C613,614			CK73GB1H471K	CHIP C 470PF K	
C429			CC73GCH1H010B	CHIP C 1.0PF B		TC352			C05-0400-05	TRIMMER CAPACITOR (3PF)	
C430			CC73GCH1H040B	CHIP C 4.0PF B		TC353			C05-0399-05	TRIMMER CAPACITOR (6PF)	
C431			CC73GCH1H030B	CHIP C 3.0PF B		TC401,402			C05-0245-05	TRIMMER CAPACITOR (10PF)	
C432			CC73GCH1H0R5B	CHIP C 0.5PF B		J1			E11-0425-05	3.5D PHONE JACK (3P)	
C433			CK73GB1H471K	CHIP C 470PF K		-			E23-1278-05	TERMINAL	
C434,435			CC73GCH1H050B	CHIP C 5.0PF B		-			E41-0927-05	PIN ASSY	
C436			CC73GCH1H0R5B	CHIP C 0.5PF B		CN1			E40-6268-05	FLAT CABLE CONNECTOR	
C437			CK73GB1H471K	CHIP C 470PF K		CN2			E40-5702-05	PIN ASSY	
C438			CC73GCH1H020B	CHIP C 2.0PF B		CN3			E40-6292-05	PIN ASSY	
C439			CC73GCH1H040B	CHIP C 4.0PF B		-			F20-3370-04	INSULATING SHEET	
C440			CC73GCH1H4R5B	CHIP C 4.5PF B		CF301			L72-0993-05	CERAMIC FILTER	
C441			CC73GCH1H0R3B	CHIP C 0.3PF B		CF302			L72-0959-05	CERAMIC FILTER	
C442			C92-0560-05	CHIP-TAN 10UF 6.3WV		L101			L92-0443-05	CHIP FERRITE	
C444			CK73GB1H471K	CHIP C 470PF K		L201			L92-0443-05	CHIP FERRITE	
C448,449			CK73GB1H471K	CHIP C 470PF K		L301			L34-4554-05	COIL	
C450			C92-0568-05	CHIP-TAN 22UF 10WV		L302			L41-3385-08	SMALL FIXED INDUCTOR (330NH)	
C451,452			CK73GB1H471K	CHIP C 470PF K		L303,304			L40-3381-86	SMALL FIXED INDUCTOR (0.33UH)	
C454			CC73GCH1H060B	CHIP C 6.0PF B		L351,352			L41-4785-39	SMALL FIXED INDUCTOR (0.47UH)	
C455			CC73GCH1H020B	CHIP C 2.0PF B		L354			L34-4645-05	AIR-CORE COIL	
C456			CC73GCH1H040B	CHIP C 4.0PF B		L355			L34-4606-05	AIR-CORE COIL	
C461			CK73GB1H471K	CHIP C 470PF K		L356			L40-2775-92	SMALL FIXED INDUCTOR (27NH)	
C463,464			CK73GB1H471K	CHIP C 470PF K		L357			L40-3975-92	SMALL FIXED INDUCTOR (39NH)	
C466			CC73GCH1H050B	CHIP C 5.0PF B		L358			L34-4645-05	AIR-CORE COIL	
C467			CK73GB1H471K	CHIP C 470PF K		L359			L34-4606-05	AIR-CORE COIL	
C469			CC73GCH1H100C	CHIP C 10PF C		L360			L34-4605-05	AIR-CORE COIL	
C470			CC73GCH1H050B	CHIP C 5.0PF B		L361			L34-4604-05	AIR-CORE COIL	
C472			CC73GCH1H100C	CHIP C 10PF C		L403			L41-1005-08	SMALL FIXED INDUCTOR (10UH)	
C501			CK73GB1H471K	CHIP C 470PF K		L404			L92-0442-05	CHIP FERRITE	
C502			CC73GCH1H020B	CHIP C 2.0PF B		L405			L92-0443-05	CHIP FERRITE	
C504,505			CK73GB1H471K	CHIP C 470PF K		L406,407			L40-2785-92	SMALL FIXED INDUCTOR (270NH)	
C507			CK73GB1H471K	CHIP C 470PF K		L408			L40-8278-67	SMALL FIXED INDUCTOR (82NH)	
C509			CC73GCH1H050B	CHIP C 5.0PF B		L409			L40-2285-92	SMALL FIXED INDUCTOR (220NH)	
C510-515			CK73GB1H471K	CHIP C 470PF K		L410-412			L40-2785-92	SMALL FIXED INDUCTOR (270NH)	
C516			CC73GCH1H080B	CHIP C 8.0PF B		L413			L40-5678-67	SMALL FIXED INDUCTOR (56NH)	
C520-522			CK73GB1H471K	CHIP C 470PF K		L414,415			L40-2785-92	SMALL FIXED INDUCTOR (270NH)	
C523			CC73GCH1H050B	CHIP C 5.0PF B							
C527			CK73GB1H221K	CHIP C 220PF K							

PARTS LIST / 零件表

TX-RX UNIT (X57-6923-03)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
L416,417			L92-0443-05	CHIP FERRITE		R122,123			RK73GB2A000J	CHIP R 0.0 J 1/10W	
L418			L41-2775-06	SMALL FIXED INDUCTOR (27NH)		R124			RK73GB2A473J	CHIP R 47K J 1/10W	
L420			L41-2775-06	SMALL FIXED INDUCTOR (27NH)		R125-128			RK73GB2A102J	CHIP R 1.0K J 1/10W	
L421			L40-1875-92	SMALL FIXED INDUCTOR (18NH)		R129			RK73GB2A000J	CHIP R 0.0 J 1/10W	
L501			L41-2775-06	SMALL FIXED INDUCTOR (27NH)		R130,131			RK73GB2A102J	CHIP R 1.0K J 1/10W	
L502			L41-1875-08	SMALL FIXED INDUCTOR (18NH)		R151			RK73GB2A103J	CHIP R 10K J 1/10W	
L504			L41-2275-08	SMALL FIXED INDUCTOR (22NH)		R152			RK73GB2A472J	CHIP R 4.7K J 1/10W	
L505			L92-0179-05	CHIP FERRITE		R161			RK73GB2A122J	CHIP R 1.2K J 1/10W	
L509			L34-4667-05	AIR-CORE COIL		R162			RK73GB2A152J	CHIP R 1.5K J 1/10W	
L601			L34-4669-05	AIR-CORE COIL		R163			RK73GB2A473J	CHIP R 47K J 1/10W	
L602,603			L34-1039-05	AIR-CORE COIL		R164-166			RK73GB2A102J	CHIP R 1.0K J 1/10W	
L604			L34-4667-05	AIR-CORE COIL		R201			RK73GB2A681J	CHIP R 680 J 1/10W	
X86			L77-1934-05	CRYSTAL RESONATOR (14.31818MHZ)		R202			RK73FB2B000J	CHIP R 0.0 J 1/8W	
X401			L77-1868-15	TCXO (16.8MHZ)		R203			RK73GB2A104J	CHIP R 100K J 1/10W	
XF351			L71-0591-05	MCF (49.95MHZ)		R204			RK73GB2A183J	CHIP R 18K J 1/10W	
R1			RK73GB2A101J	CHIP R 100 J 1/10W		R205			RK73GB2A821J	CHIP R 820 J 1/10W	
R2			RK73GB2A000J	CHIP R 0.0 J 1/10W		R206			RK73GB2A101J	CHIP R 100 J 1/10W	
R3			RK73GB2A102J	CHIP R 1.0K J 1/10W		R207			RK73GB2A754J	CHIP R 750K J 1/10W	
R4			RK73GB2A332J	CHIP R 3.3K J 1/10W		R208			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R5			RK73GB2A223J	CHIP R 22K J 1/10W		R209			RK73GB2A244J	CHIP R 240K J 1/10W	
R31			RK73GB2A472J	CHIP R 4.7K J 1/10W		R211,212			RK73GB2A823J	CHIP R 82K J 1/10W	
R32		*	RK73RB2H221J	CHIP R 220 J 1/2W		R213			RK73GB2A334J	CHIP R 330K J 1/10W	
R33			RK73GB2A473J	CHIP R 47K J 1/10W		R214,215			RK73GB2A683J	CHIP R 68K J 1/10W	
R34			RK73GB2A472J	CHIP R 4.7K J 1/10W		R216			RK73GB2A274J	CHIP R 270K J 1/10W	
R35			RK73GB2A473J	CHIP R 47K J 1/10W		R217			RK73GB2A224J	CHIP R 220K J 1/10W	
R36			RK73GB2A152J	CHIP R 1.5K J 1/10W		R218			RK73GB2A823J	CHIP R 82K J 1/10W	
R37			RK73GB2A103J	CHIP R 10K J 1/10W		R219			RK73GB2A563J	CHIP R 56K J 1/10W	
R38			RK73GB2A334J	CHIP R 330K J 1/10W		R220,221			RK73GH2A153D	CHIP R 15K D 1/10W	
R39			RK73GB2A474J	CHIP R 470K J 1/10W		R222			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R40			RK73GB2A394J	CHIP R 390K J 1/10W		R223			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R41			RK73GB2A334J	CHIP R 330K J 1/10W		R224			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R61			RK73GB2A471J	CHIP R 470 J 1/10W		R225			RK73GB2A154J	CHIP R 150K J 1/10W	
R62			RK73GB2A102J	CHIP R 1.0K J 1/10W		R226			RK73GB2A104J	CHIP R 100K J 1/10W	
R66,67			RK73GB2A473J	CHIP R 47K J 1/10W		R227			RK73GB2A223J	CHIP R 22K J 1/10W	
R68,69			RK73GB2A102J	CHIP R 1.0K J 1/10W		R228			RK73GB2A103J	CHIP R 10K J 1/10W	
R70			RK73GB2A473J	CHIP R 47K J 1/10W		R229			RK73GB2A684J	CHIP R 680K J 1/10W	
R71			RK73GB2A472J	CHIP R 4.7K J 1/10W		R230			RK73GB2A124J	CHIP R 120K J 1/10W	
R72			RK73GB2A105J	CHIP R 1.0M J 1/10W		R231			RK73GB2A683J	CHIP R 68K J 1/10W	
R73			RK73GB2A104J	CHIP R 100K J 1/10W		R232			RK73GB2A912J	CHIP R 9.1K J 1/10W	
R74			RK73GB2A473J	CHIP R 47K J 1/10W		R233			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R75			RK73GB2A102J	CHIP R 1.0K J 1/10W		R249-251			RK73GB2A473J	CHIP R 47K J 1/10W	
R76			RK73GH2A183D	CHIP R 18K D 1/10W		R252			RK73GB2A474J	CHIP R 470K J 1/10W	
R77			RK73GH2A134D	CHIP R 130K D 1/10W		R253			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R78			RK73GB2A102J	CHIP R 1.0K J 1/10W		R254			RK73GB2A681J	CHIP R 680 J 1/10W	
R81			RK73GB2A473J	CHIP R 47K J 1/10W		R255,256			RK73GB2A562J	CHIP R 5.6K J 1/10W	
R82			RK73GB2A000J	CHIP R 0.0 J 1/10W		R257			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R86			RK73GB2A000J	CHIP R 0.0 J 1/10W		R258			RK73GB2A272J	CHIP R 2.7K J 1/10W	
R87			RK73GB2A102J	CHIP R 1.0K J 1/10W		R259			RK73GB2A123J	CHIP R 12K J 1/10W	
R91,92			RK73GB2A102J	CHIP R 1.0K J 1/10W		R260			RK73GB2A224J	CHIP R 220K J 1/10W	
R93			RK73GB2A123J	CHIP R 12K J 1/10W		R261			RK73GB2A124J	CHIP R 120K J 1/10W	
R94			RK73GB2A103J	CHIP R 10K J 1/10W		R262			RK73GB2A183J	CHIP R 18K J 1/10W	
R101,102			RK73GB2A473J	CHIP R 47K J 1/10W		R263			RK73GH2A913D	CHIP R 91K D 1/10W	
R103-106			RK73GB2A102J	CHIP R 1.0K J 1/10W		R264			RK73GH2A124D	CHIP R 120K D 1/10W	
R107,108			RK73GB2A473J	CHIP R 47K J 1/10W		R265			RK73GH2A562D	CHIP R 5.6K D 1/10W	
R109			RK73GB2A152J	CHIP R 1.5K J 1/10W		R266			RK73GB2A562J	CHIP R 5.6K J 1/10W	
R110			RK73GB2A473J	CHIP R 47K J 1/10W		R267			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R111			RK73GB2A102J	CHIP R 1.0K J 1/10W		R268			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R112,113			RK73GB2A473J	CHIP R 47K J 1/10W		R269			RK73GB2A823J	CHIP R 82K J 1/10W	
R114-119			RK73GB2A102J	CHIP R 1.0K J 1/10W		R270			RK73GB2A272J	CHIP R 2.7K J 1/10W	
R120			RK73GB2A000J	CHIP R 0.0 J 1/10W		R271			RK73GB2A561J	CHIP R 560 J 1/10W	

PARTS LIST / 零件表

TX-RX UNIT (X57-6923-03)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R272			RK73GB2A152J	CHIP R 1.5K J 1/10W		R409			RK73GB2A104J	CHIP R 100K J 1/10W	
R273			RK73GB2A472J	CHIP R 4.7K J 1/10W		R410,411			RK73GB2A103J	CHIP R 10K J 1/10W	
R274,275			RK73GB2A153J	CHIP R 15K J 1/10W		R412			RK73GB2A123J	CHIP R 12K J 1/10W	
R276			RK73GB2A473J	CHIP R 47K J 1/10W		R413			RK73GB2A103J	CHIP R 10K J 1/10W	
R277			RK73GB2A683J	CHIP R 68K J 1/10W		R414,415			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R278			RK73GB2A123J	CHIP R 12K J 1/10W		R416			RK73GB2A471J	CHIP R 470 J 1/10W	
R279			RK73GB2A472J	CHIP R 4.7K J 1/10W		R417			RK73GB2A224J	CHIP R 220K J 1/10W	
R280			RK73GB2A391J	CHIP R 390 J 1/10W		R418,419			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R281			RK73FB2B000J	CHIP R 0.0 J 1/8W		R420			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R301,302			RK73GB2A472J	CHIP R 4.7K J 1/10W		R421			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R303			RK73GB2A223J	CHIP R 22K J 1/10W		R422			RK73GB2A103J	CHIP R 10K J 1/10W	
R304			RK73GB2A472J	CHIP R 4.7K J 1/10W		R423			RK73GB2A471J	CHIP R 470 J 1/10W	
R305			RK73GB2A182J	CHIP R 1.8K J 1/10W		R424			RK73GB2A331J	CHIP R 330 J 1/10W	
R306			RK73GB2A274J	CHIP R 270K J 1/10W		R425,426			RK73GB2A473J	CHIP R 47K J 1/10W	
R308			RK73GB2A334J	CHIP R 330K J 1/10W		R427			RK73GB2A104J	CHIP R 100K J 1/10W	
R309			RK73GB2A332J	CHIP R 3.3K J 1/10W		R428			RK73GB2A473J	CHIP R 47K J 1/10W	
R310			RK73GB2A102J	CHIP R 1.0K J 1/10W		R429,430			RK73GB2A101J	CHIP R 100 J 1/10W	
R311			RK73GB2A333J	CHIP R 33K J 1/10W		R431			RK73GB2A104J	CHIP R 100K J 1/10W	
R312			RK73GB2A473J	CHIP R 47K J 1/10W		R432			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R313			RK73GB2A104J	CHIP R 100K J 1/10W		R433			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R314			RK73GB2A222J	CHIP R 2.2K J 1/10W		R434			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R315			RK73GB2A183J	CHIP R 18K J 1/10W		R435			RK73GB2A101J	CHIP R 100 J 1/10W	
R316			RK73GB2A223J	CHIP R 22K J 1/10W		R436			RK73GB2A124J	CHIP R 120K J 1/10W	
R317-320			RK73GB2A103J	CHIP R 10K J 1/10W		R439			RK73GB2A124J	CHIP R 120K J 1/10W	
R321			RK73GB2A223J	CHIP R 22K J 1/10W		R440			RK73GB2A101J	CHIP R 100 J 1/10W	
R322			RK73GB2A101J	CHIP R 100 J 1/10W		R441			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R323			RK73GB2A104J	CHIP R 100K J 1/10W		R442			RK73GB2A101J	CHIP R 100 J 1/10W	
R324			RK73GB2A000J	CHIP R 0.0 J 1/10W		R443			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R325			RK73GB2A333J	CHIP R 33K J 1/10W		R444			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R351			RK73GB2A471J	CHIP R 470 J 1/10W		R445			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R352			RK73GB2A101J	CHIP R 100 J 1/10W		R501			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R353			RK73GB2A104J	CHIP R 100K J 1/10W		R502			RK73FB2B100J	CHIP R 10 J 1/8W	
R354			RK73GB2A561J	CHIP R 560 J 1/10W		R506			RK73GB2A563J	CHIP R 56K J 1/10W	
R355			RK73GB2A681J	CHIP R 680 J 1/10W		R507			RK73GB2A181J	CHIP R 180 J 1/10W	
R358			RK73GB2A470J	CHIP R 47 J 1/10W		R509			RK73GB2A101J	CHIP R 100 J 1/10W	
R359			RK73GB2A334J	CHIP R 330K J 1/10W		R511			RK73GB2A471J	CHIP R 470 J 1/10W	
R360			RK73GB2A474J	CHIP R 470K J 1/10W		R512			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R361			RK73GB2A220J	CHIP R 22 J 1/10W		R513			RK73GB2A221J	CHIP R 220 J 1/10W	
R362			RK73GB2A474J	CHIP R 470K J 1/10W		R514			RK73GB2A681J	CHIP R 680 J 1/10W	
R363			RK73GB2A154J	CHIP R 150K J 1/10W		R515			RK73GB2A100J	CHIP R 10 J 1/10W	
R364			RK73GB2A000J	CHIP R 0.0 J 1/10W		R516			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R365,366			RK73GB2A104J	CHIP R 100K J 1/10W		R517			RK73GB2A100J	CHIP R 10 J 1/10W	
R367			RK73GB2A101J	CHIP R 100 J 1/10W		R519			RK73FB2B331J	CHIP R 330 J 1/8W	
R369			RK73GB2A151J	CHIP R 150 J 1/10W		R520			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R370			RK73GB2A474J	CHIP R 470K J 1/10W		R521			RK73GB2A101J	CHIP R 100 J 1/10W	
R371			RK73GB2A394J	CHIP R 390K J 1/10W		R522			RK73RB2H220J	CHIP R 22 J 1/2W	
R372			RK73GB2A684J	CHIP R 680K J 1/10W		R523			RK73FB2B332J	CHIP R 3.3K J 1/8W	
R373			RK73GB2A184J	CHIP R 180K J 1/10W		R524			RK73FB2B181J	CHIP R 180 J 1/8W	
R374			RK73GB2A104J	CHIP R 100K J 1/10W		R525			RK73FB2B330J	CHIP R 33 J 1/8W	
R375			RK73GB2A000J	CHIP R 0.0 J 1/10W		R526			RK73FB2B181J	CHIP R 180 J 1/8W	
R376			RK73GB2A104J	CHIP R 100K J 1/10W		R527			RK73GB2A334J	CHIP R 330K J 1/10W	
R377			RK73GB2A000J	CHIP R 0.0 J 1/10W		R528,529			RK73GB2A103J	CHIP R 10K J 1/10W	
R378			RK73GB2A104J	CHIP R 100K J 1/10W		R530			RK73GB2A562J	CHIP R 5.6K J 1/10W	
R380			RK73GB2A104J	CHIP R 100K J 1/10W		R531			RK73GB2A473J	CHIP R 47K J 1/10W	
R381			RK73GB2A100J	CHIP R 10 J 1/10W		R532,533			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R401-403			RK73GB2A102J	CHIP R 1.0K J 1/10W		R534			RK73GB2A822J	CHIP R 8.2K J 1/10W	
R404			RK73GB2A103J	CHIP R 10K J 1/10W		R535			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R405			RK73GB2A000J	CHIP R 0.0 J 1/10W		R536			RK73EB2E470J	CHIP R 47 J 1/4W	
R407			RK73GB2A152J	CHIP R 1.5K J 1/10W		R537			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R408			RK73GB2A100J	CHIP R 10 J 1/10W		R538			RK73EB2E000J	CHIP R 0.0 J 1/4W	

PARTS LIST / 零件表

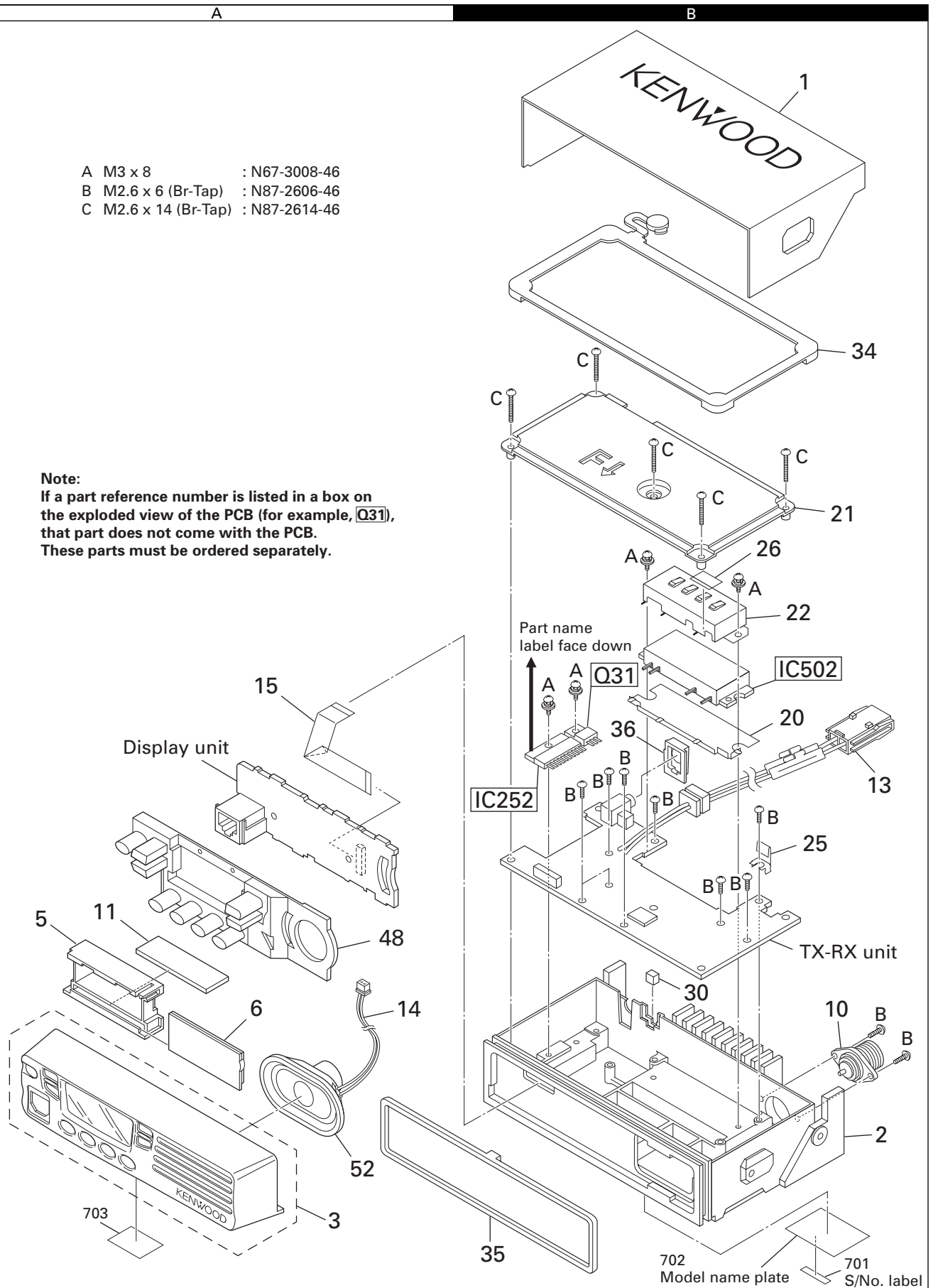
TX-RX UNIT (X57-6923-03)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R539			RK73RB2H101J	CHIP R 100 J 1/2W		Q301			2SC2412K	TRANSISTOR	
R601,602			RK73GB2A103J	CHIP R 10K J 1/10W		Q302			2SC4649(N,P)	TRANSISTOR	
R603			RK73GB2A473J	CHIP R 47K J 1/10W		Q351			2SC5108(Y)F	TRANSISTOR	
R605			RK73GB2A473J	CHIP R 47K J 1/10W		Q352,353			3SK255	FET	
R606			RK73GB2A102J	CHIP R 1.0K J 1/10W		Q402			2SA1832(GR)F	TRANSISTOR	
R800			R92-1061-05	JUMPER REST 0 OHM		Q403			2SC4738(GR)F	TRANSISTOR	
D1-11			DA221	DIODE		Q404			2SC4649(N,P)	TRANSISTOR	
D31			ZSH5MA27	SURGE ABSORBER		Q405,406			2SK508NV(K52)	FET	
D32			1812L110PR	VARIATOR		Q407			2SJ243	FET	
D61			02DZ18F-X,Y	ZENER DIODE		Q408			KRX102U	TRANSISTOR	
D201			DAN222	DIODE		Q410,411			2SC5108(Y)F	TRANSISTOR	
D202			1SS372	DIODE		Q440			2SC4617(S)	TRANSISTOR	
D251			MA742	DIODE		Q500			2SC5108(Y)F	TRANSISTOR	
D301			MA742	DIODE		Q501,502			2SC3357-A	TRANSISTOR	
D302,303			DAN222	DIODE		TH97,98			B57331V2104J	THERMISTOR	
D351-355			HVC376B	VARIABLE CAPACITANCE DIODE		TH301			B57331V2104J	THERMISTOR	
D401			MA2S111	DIODE		TH351			NCP18XW332J03	THERMISTOR	
D402			HZU5ALL	DIODE							
D403-406			MA2S304	VARIABLE CAPACITANCE DIODE							
D407			MA360	VARIABLE CAPACITANCE DIODE							
D408			MA2S111	DIODE							
D409			DAN235E	DIODE							
D502			DA221	DIODE							
D503			02DZ5.1F-Y	ZENER DIODE							
D602			MA4PH633	DIODE							
D604,605			XB15A709	DIODE							
D606,607			MA742	DIODE							
D608,609			1SS355	DIODE							
IC31			KIA7808AF	ANALOGUE IC							
IC32,33			NJM78L05UA	BI-POLAR IC							
IC34,35			PST9140NR	MOS-IC							
IC66		*	AT24C64A10SI18	ROM IC							
IC101			30622MAA-B96GU	MICROCONTROLLER IC							
IC161			M62363FP	MOS-IC							
IC201			NJM2100V	MOS-IC							
IC202			NJM2904V	MOS-IC							
IC203			NJM2902V	MOS-IC							
IC251			NJM2902V	MOS-IC							
IC252	2B		LA4600	BI-POLAR IC (TX/RX IC252)							
IC301			TK14489V	BI-POLAR IC							
IC401			MB15A02	MOS-IC							
IC501			TA75W01FUF	MOS-IC							
IC502	2B		RA30H3340M	POWER MODULE (TX/RX IC502)							
Q1			2SK1824	FET							
Q31	2B		KTA1046(Y)	TRANSISTOR							
Q32			2SK1824	FET							
Q33			2SA1745(6,7)	TRANSISTOR							
Q34			KRC102S	DIGITAL TRANSISTOR							
Q35			KTA1664(Y)	TRANSISTOR							
Q36			KRC102S	DIGITAL TRANSISTOR							
Q61			KRC404RTK	DIGITAL TRANSISTOR							
Q71			KRC414RTK	DIGITAL TRANSISTOR							
Q86,87			2SK1824	FET							
Q201			2SC4919	TRANSISTOR							
Q202			2SJ243	FET							
Q251			2SC4617(S)	TRANSISTOR							
Q252,253			2SK1824	FET							
Q254			DTC363EU	DIGITAL TRANSISTOR							
Q255			KRC102S	DIGITAL TRANSISTOR							

EXPLODED VIEW / 部件分解图

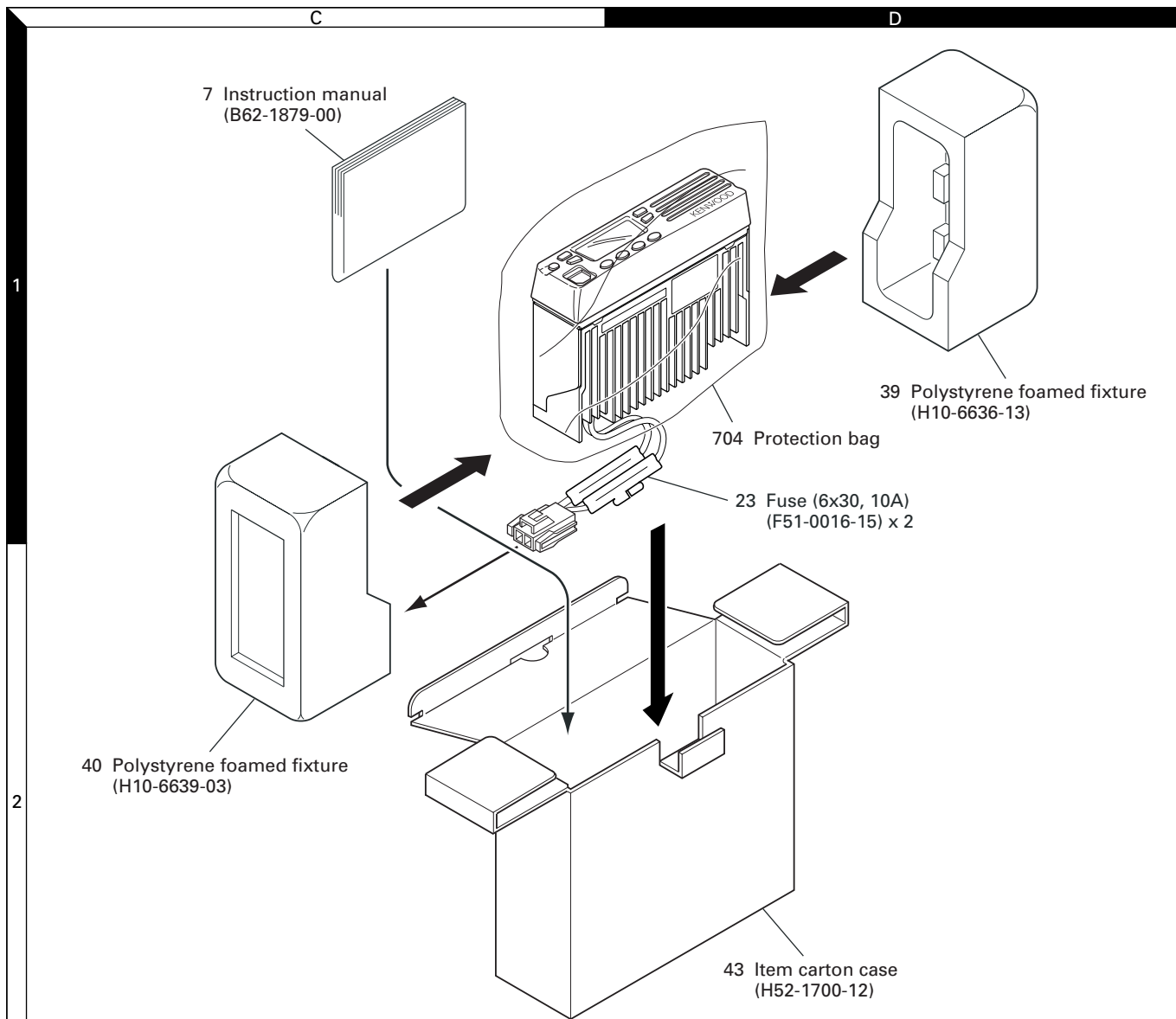
- | | | | |
|---|--------------------|---|-------------|
| A | M3 x 8 | : | N67-3008-46 |
| B | M2.6 x 6 (Br-Tap) | : | N87-2606-46 |
| C | M2.6 x 14 (Br-Tap) | : | N87-2614-46 |

Note:
 If a part reference number is listed in a box on the exploded view of the PCB (for example, **Q31**), that part does not come with the PCB. These parts must be ordered separately.

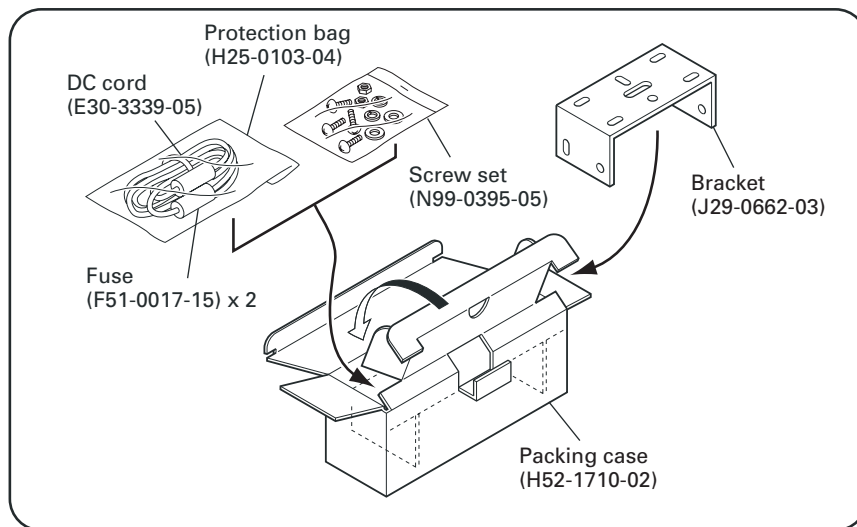


Parts with the exploded numbers larger than 700 are not supplied.

PACKING / 包装



KMB-19 (Option installation kit)

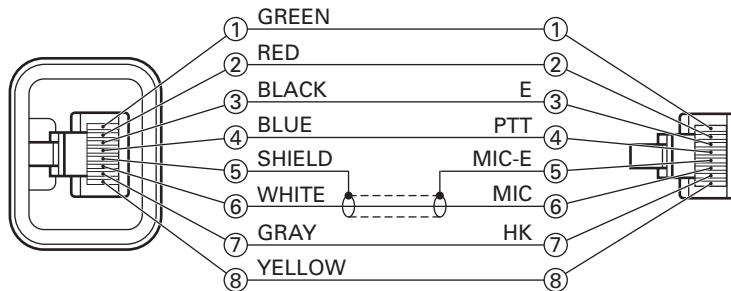


ADJUSTMENT

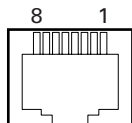
Test Equipment Required for Alignment

Test Equipment	Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range	350 to 390MHz
	Modulation	Frequency modulation and external modulation
	Output	-127dBm/0.1μV to greater than -7dBm/100mV
2. Power Meter	Input Impedance	50Ω
	Operation Frequency	350 to 390MHz or more
	Measurement Capability	Vicinity of 100W
3. Deviation Meter	Frequency Range	350 to 390MHz
4. Digital Volt Meter (DVM)	Measuring Range	1 to 20V DC
	Accuracy	High input impedance for minimum circuit loading
5. Oscilloscope		DC through 30MHz
6. High Sensitivity Frequency Counter	Frequency Range	10Hz to 1000MHz
	Frequency Stability	0.2ppm or less
7. Ammeter		20A
8. AF Volt Meter (AF VTVM)	Frequency Range	50Hz to 10kHz
	Voltage Range	1mV to 3V
9. Audio Generator (AG)	Frequency Range	20Hz to 20kHz or more
	Output	0 to 1V
10. Distortion Meter	Capability	3% or less at 1kHz
	Input Level	50mV to 10Vrms
11. 4Ω Dummy Load		Approx. 4Ω, 10W or more
12. Regulated Power Supply		13.6V, approx. 20A (adjustable from 9 to 17V) Useful if ammeter equipped
13. Spectrum Analyzer	Center frequency	50kHz to 600MHz
14. Tracking Generator	Output Voltage	100mV or more

Test cable for microphone input (E30-3360-08)



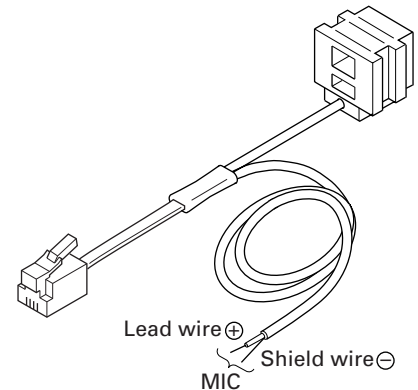
MIC connector (Front view)



- 1 : BLC
- 2 : PSB
- 3 : E
- 4 : PTT
- 5 : ME
- 6 : MIC
- 7 : HOOK
- 8 : CM

Tuning cable (E30-3383-05)

Adapter cable (E30-3383-05) is required for injecting an audio if PC tuning is used. See "PC Mode" section for the connection.



Test Frequency (MHz)

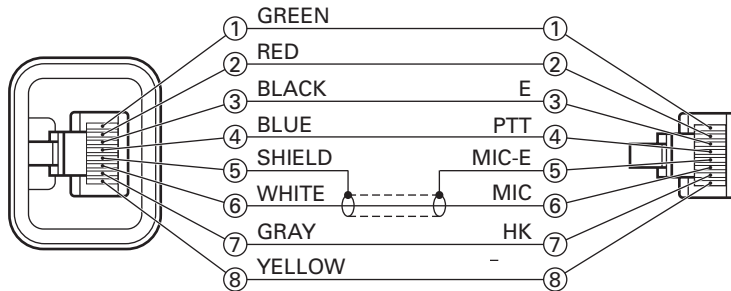
Channel	TX	RX
1 : Center	370.100	370.050
2 : Low	350.100	350.050
3 : High	389.900	389.950
4	370.000	370.000
5	370.200	370.200
6	370.400	370.400

调整

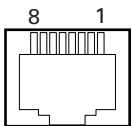
所需的用于调整的测试设备

测试设备	主要特性	
1. 标准信号发生器 (SSG)	频率范围 调制 输出	350到390MHz 调频和外部调制 -127dBm/0.1μV到大于 -7dBm/100mV
2. 功率计	输入阻抗 工作频率 测量范围	50Ω 350到390MHz或更高 100W左右
3. 偏差仪	频率范围	350到390MHz
4. 数字电压表 (DVM)	测量范围 输入阻抗	直流1V到20V 最小电路负载时为高输入阻抗
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		20A
8. 音频电压表 (AF VTVM)	频率范围 电压范围	50Hz到10kHz 1mV到3V
9. 音频发生器 (AG)	频率范围 输出	20Hz到20kHz或更高 0到1V
10. 失真测试仪	测量能力 输入电平	在1kHz时3%或更低 50mV到10Vrms
11. 4Ω假负载		大约4Ω, 10W或更高
12. 可调电源		13.6V, 大约20A (adjustable from 9 to 17V) 最好具备电流表
13. 频谱分析仪	中心频率	50kHz到600MHz
14. 轨迹发生器	输出电压	100mV或更高

用于麦克风输入的测试电缆 (E30-3360-08)



话筒连接器 (前视)

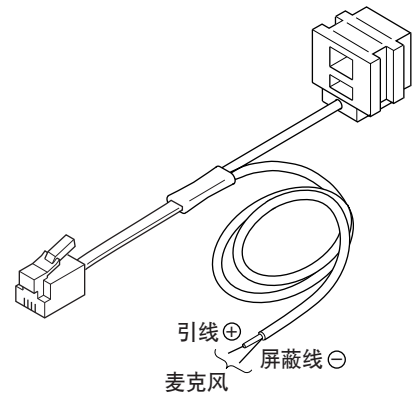


- 1: BLC
- 2: PSB
- 3: E
- 4: PTT
- 5: ME
- 6: MIC
- 7: HOOK
- 8: CM

调谐电缆 (E30-3383-05)

如果使用计算机调谐, 接头电缆 (E30-3383-05) 将用于接入音频信号。

参见“计算机模式”章节有关连接的内容。



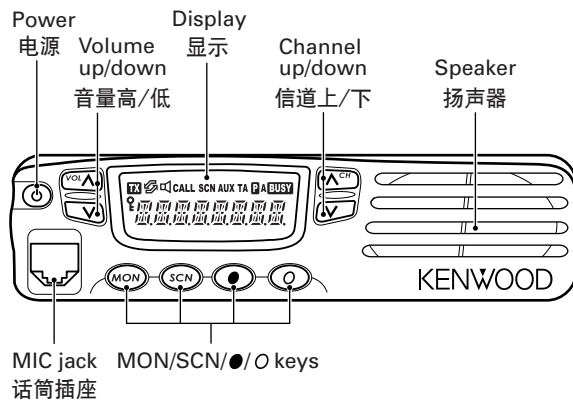
测试频率 (MHz)

信道	发射	接收
1: 中心	370.100	370.050
2: 低	350.100	350.050
3: 高	389.900	389.950
4	370.000	370.000
5	370.200	370.200
6	370.400	370.400

ADJUSTMENT / 调整

Adjustment Location / 调整定位

■ Switch / 开关

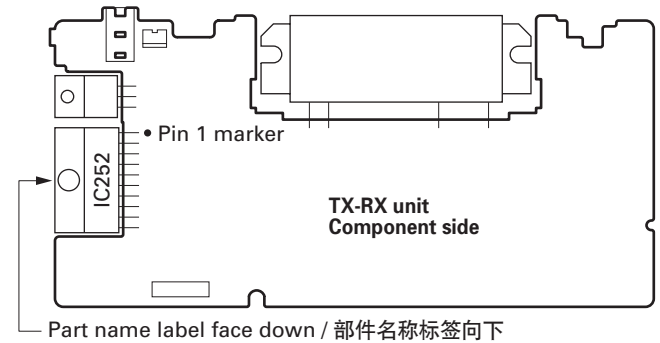


• AF PA IC (IC252)

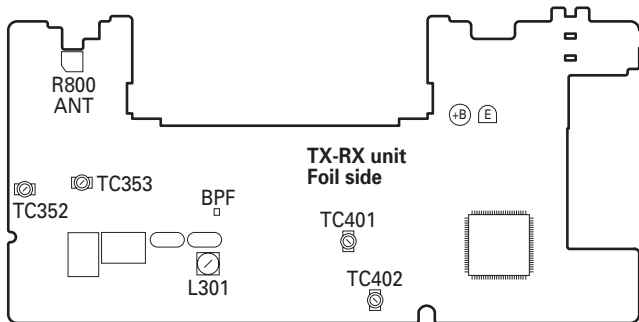
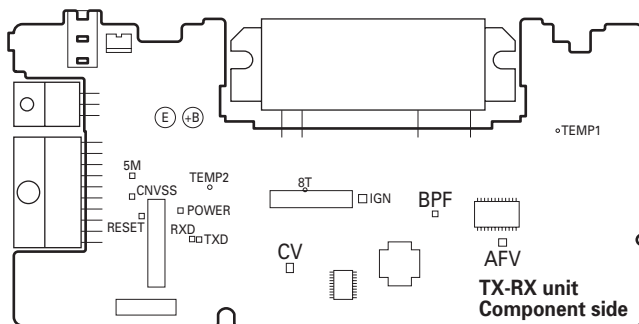
How to mounting the IC252.

● 音频放大器 (IC252)

IC252安装方法。



■ Adjustment Points / 调整点

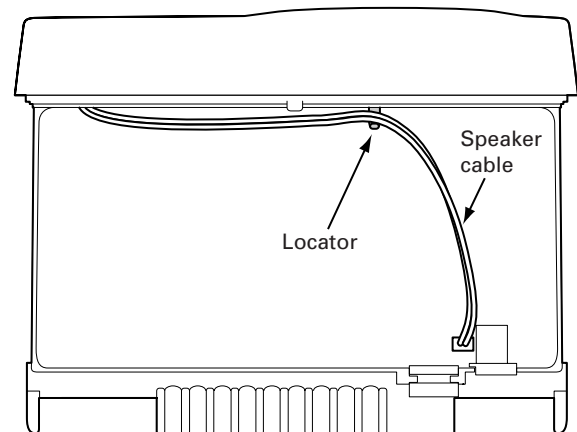


• Speaker Cable

The speaker cable should be formed before mounting the shield cover as below.

● 扬声器电缆

安装屏蔽罩前, 按如下所示整理扬声器电缆。



■ Notes

• EEPROM

The tuning data (Deviation, Squelch, etc.) for the EEPROM, is stored in memory. When parts are changed, re-adjust the transceiver.

● EEPROM

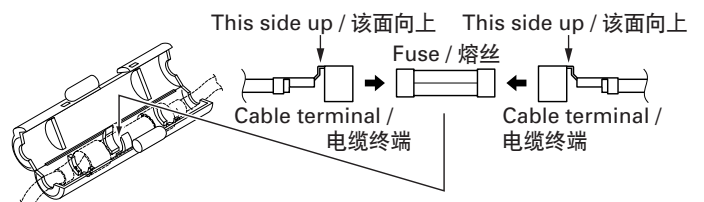
EEPROM的调谐数据(偏差, 静噪等等)被储存在存储器中。当零件被改变时, 调整车载式对讲机。

• Fuse

To mount the fuse, the cable terminal direction must be as follows.

● 熔丝

安装熔丝, 电缆端子方向必须为如下所示。



ADJUSTMENT

PCB Section

Item	Condition	Measurement		Adjustment		Specifications/ Remarks
		Test equipment	Terminal	Parts	Method	
1. Setting	1) Power supply voltage DC Power supply terminal : 13.6V					
2. VCO lock voltage	1) CH : TX high	Digital voltmeter	CV	TC402	5.5V	±0.1V
	2) CH : RX high			TC401	5.5V	±0.1V
	3) CH : TX low				Check	0.7V or more
	4) CH : RX low					0.5V or more
3. IF coil	1) CH : RX center (Wide) 2) SSG output : -53dBm (501μV) Mod : 1kHz Dev : 3kHz	SSG Digital voltmeter	AFV	L301	3.25~3.35V (DC)	
4. RF bandpass filter	1) CH : RX center (Wide) CH : RX low (Wide) CH : RX high (Wide) 2) Track generator output : -30dBm Connect the spectrum analyzer to BPF terminal	Tracking generator Spectrum analyzer	ANT BPF	TC352 TC353	Adjust the BPF waveform to Fig. 1	

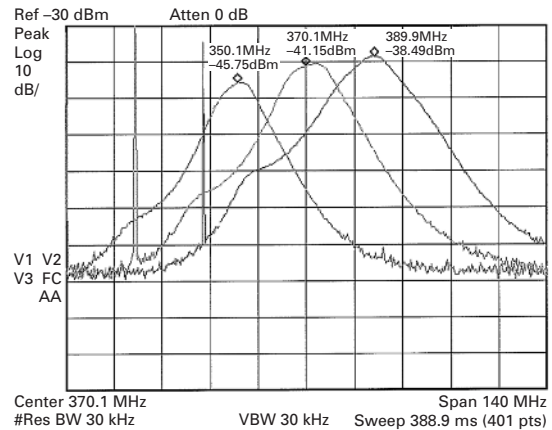


Fig. 1

Receiver Section

Item	Condition	Measurement		Adjustment		Specifications/ Remarks
		Test equipment	Terminal	Parts	Method	
1. Sensitivity	1) CH : RX low (Wide/Narrow) CH : RX center (Wide/Narrow) CH : RX high (Wide/Narrow) 2) SSG output : -118dBm (0.28μV) (Wide) : -116dBm (0.35μV) (Narrow) Mod : 1kHz Dev : ±3.0kHz (Wide) Dev : ±1.5kHz (Narrow)	SSG Oscilloscope AF V.M Distortion meter	ANT EXT. SP		Check	SINAD : 12dB or higher
2. Squelch 9	1) CH : RX low (Wide) CH : RX center (Wide/Narrow) CH : RX high (Wide) 2) SSG output : -115dBm (0.4μV) (Wide) : -114dBm (0.45μV) (Narrow) Mod : 1kHz Dev : ±3.0kHz (Wide) Dev : ±1.5kHz (Narrow)			PC key	Adjust to open the squelch	

调 整

PCB部分

项 目	条 件	测 量		调 整		规格 / 备注
		测试设备	终端	部件	方 法	
1. 设定	1) 电源电压 直流电源终端：13.6V					
2. 压控振荡器电压	1) CH：发射高频点	数字电压表	CV	TC402	5.5V	± 0.1V
	2) CH：接收高频点			TC401	5.5V	± 0.1V
	3) CH：发射低频点				检查	0.7V或更高
	4) CH：接收低频点					0.5V或更高
3. IF coil	1) 接收中频点(宽) 2) 标准信号发生器输出 ：-53dBm (501μV) 调制：1kHz 频偏：3kHz	SSG 数字电压表	AFV	L301	3.25 ~ 3.35V (DC)	
4. RF带 电滤波器	1) CH：接收中频点(宽) CH：接收低频点(宽) CH：接收高频点(宽) 2) 轨迹发生器输出：-30dBm 连接频率分析仪到BPF终端	轨迹发生器 频谱分析仪	天线 BPF	TC351 TC352	按图1调整BPF波形	

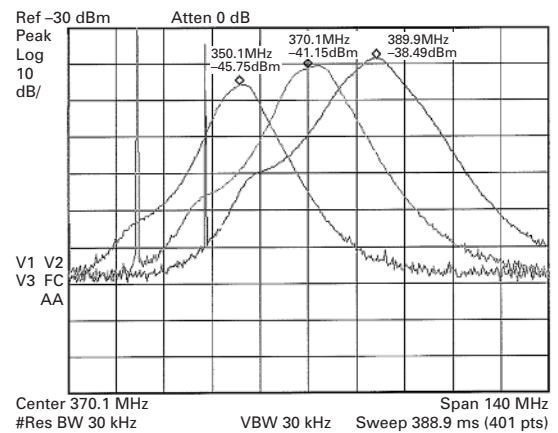


图1

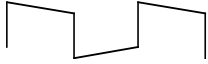
接收部分

项 目	条 件	测 量		调 整		规格 / 备注
		测试设备	终端	部件	方 法	
1. 灵敏度	1) CH：接收低频点(宽/窄) CH：接收中心频点(宽/窄) CH：接收高频点(宽/窄) 2) 标准信号发生器输出 ：-118dBm (0.28μV) (宽) ：-116dBm (0.35μV) (窄) 调制：1kHz 频偏：± 3.0kHz (宽) 频偏：± 1.5kHz (窄)	SSG 示波器 AF V.M 失真测试仪	天线 外部扬声器		检查	SINAD ：12dB或更高
2. 静噪抑制 电路9	1) CH：接收低频点(宽) CH：接收中心频点(宽/窄) CH：接收高频点(宽) 2) 标准信号发生器输出 ：-115dBm (0.4μV) (宽) ：-114dBm (0.45μV) (窄) 调制：1kHz 频偏：± 3.0kHz (宽) 频偏：± 1.5kHz (窄)			PC机键	经调整打开静噪	

ADJUSTMENT

Item	Condition	Measurement		Adjustment		Specifications/ Remarks
		Test equipment	Terminal	Parts	Method	
3. Squelch 1	1) CH : RX low (Wide) CH : RX center (Wide/Narrow) CH : RX high (Wide) 2) SSG output : -120dBm (0.22μV) (Wide) : -119dBm (0.25μV) (Narrow) Mod : 1kHz Dev : ±3.0kHz (Wide) Dev : ±1.5kHz (Narrow)			PC key	Adjust to open the squelch	

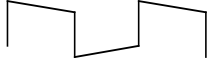
Transmitter Section

Item	Condition	Measurement		Adjustment		Specifications/ Remarks
		Test equipment	Terminal	Parts	Method	
1. Frequency	1) CH : TX center 2) Transmit	Frequency counter	ANT	PC key	Adjust to center frequency	Within ±100Hz
2. Maximum power check	1) CH : TX high 2) Transmit	Power meter			Hex data : 255	28W or more
3. High power	1) CH : TX low CH : TX low' CH : TX center CH : TX high' CH : TX high 2) Transmit				25W	±1.0W
4. Low power	1) CH : TX low CH : TX low' CH : TX center CH : TX high' CH : TX high 2) Transmit				5W	±1.0W
5. DQT balance	1) CH : TX low (Wide) CH : TX center (Wide/Narrow) CH : TX high (Wide) 2) Transmit	Modulation analyzer or Linear detector (LPF : 3kHz) Oscilloscope			Adjust the waveform as below 	
6. MAX deviation	1) CH : TX low (Wide) CH : TX center (Wide/Narrow) CH : TX high (Wide) 2) AG : 1kHz/50mV 3) Transmit	Modulation analyzer or Linear detector (LPF : 15kHz) Oscilloscope AG AF V.M	ANT MIC		±4.0kHz (Wide) ±2.0kHz (Narrow) Adjust to the larger value of + or - deviation.	±50Hz
7. MIC sensitivity	1) CH : TX center (Wide/Narrow) 2) AG : 1kHz/5mV 3) Transmit				Check	±3kHz±0.2kHz (Wide) ±1.5kHz±0.1kHz (Narrow)
8. DQT deviation	1) CH : TX low (Wide) CH : TX center (Wide/Narrow) CH : TX high (Wide) 2) Transmit	Modulation analyzer or Linear detector (LPF : 3kHz) Oscilloscope			±0.75kHz (Wide) ±0.35kHz (Narrow)	±0.05kHz
9. QT deviation	1) CH : TX low (Wide) CH : TX center (Wide/Narrow) CH : TX high (Wide) 2) Transmit				±0.75kHz (Wide) ±0.35kHz (Narrow)	±0.05kHz
10. DTMF deviation	1) CH : TX center (Wide/Narrow) 2) Transmit				±3.0kHz (Wide) ±1.5kHz (Narrow)	±0.2kHz

调 整

项 目	条 件	测 量		调 整		规格 / 备注
		测试设备	终 端	部 件	方 法	
3. 静噪抑制电路1	1) CH: 接收低频点 (宽) CH: 接收中心频点 (宽/窄) CH: 接收高频点 (宽) 2) 标准信号发生器输出 : -120dBm (0.22 μ V) (宽) : -119dBm (0.25 μ V) (窄) 调制: 1kHz 频偏: ± 3.0 kHz (宽) 频偏: ± 1.5 kHz (窄)			PC机键	经调整打开静噪	

发射部分

项 目	条 件	测 量		调 整		规格 / 备注
		测试设备	终 端	部 件	方 法	
1. 频率	1) CH: 发射中心频点 2) 发射	频率计数器	天线	PC机键	调整中心频率	± 100 Hz以内
2. 最大功率检查	1) CH: 发射高频点 2) 发射	功率表			Hex data 255	28W或更高
3. 高功率	1) CH: 发射低频点 CH: 发射低频点' CH: 发射中心频点 CH: 发射高频点' CH: 发射高频点 2) 发射				25W	± 1.0 W
4. 低功率	1) CH: 发射低频点 CH: 发射低频点' CH: 发射中心频点 CH: 发射高频点' CH: 发射高频点 2) 发射				5W	± 1.0 W
5. DQT平衡	1) CH: 发射低频点 (宽) CH: 发射中心频点 (宽/窄) CH: 发射高频点 (宽) 2) 发射	频谱分析仪 或线性失真检测 (LPF: 3kHz) 示波器			调整波形如下 	
6. 最大频偏	1) CH: 发射低频点 (宽) CH: 发射中心频点 (宽/窄) CH: 发射高频点 (宽) 2) AG: 1kHz/50mV 3) 发射	频谱分析仪 或线性失真检测 (LPF: 15kHz) 示波器 AG AF V.M	天线 MIC		± 4.0 kHz (宽) ± 2.0 kHz (窄) 按照 + 或 - 频偏较大值调整	± 50 Hz
7. 调制灵敏度	1) CH: 发射中心频点 (宽/窄) 2) AG: 1kHz/5mV 3) 发射				检查	± 3 kHz ± 0.2 kHz (宽) ± 1.5 kHz ± 0.1 kHz (窄)
8. DQT频偏	1) CH: 发射低频点 (宽) CH: 发射中心频点 (宽/窄) CH: 发射高频点 (宽) 2) 发射	频谱分析仪 或线性失真检测 (LPF: 3kHz) 示波器			± 0.75 kHz (宽) ± 0.35 kHz (窄)	± 0.05 kHz
9. QT频偏	1) CH: 发射低频点 (宽) CH: 发射中心频点 (宽/窄) CH: 发射高频点 (宽) 2) 发射				± 0.75 kHz (宽) ± 0.35 kHz (窄)	± 0.05 kHz
10. DTMF频偏	1) CH: 发射中心频点 (宽/窄) 2) 发射				± 3.0 kHz (宽) ± 1.5 kHz (窄)	± 0.2 kHz

TERMINAL FUNCTION

CN1

No.	Name	I/O	Function
1	DI		Data
2	CL		Clock
3	CE		Chip enable
4	5C		5V
5	SB		Switched B
6	KMO2	O	Key matrix output 2
7	KMI4	I	Key matrix input 4
8	KMO1	O	Key matrix output 1
9	KMI3	I	Key matrix input 3
10	KMI1	I	Key matrix input 1
11	CM		MIC data detection
12	KMI2	I	Key matrix input 2
13	HOOK		Hook detection/RXD
14	ME		MIC ground
15	POWER		Power switch
16	MIC	I	MIC signal input
17	PTT		PTT/TXD
18	GND		Ground

CN2

No.	Name	I/O	Function
1	SB	O	Battery voltage DC supply
2	NC	-	-
3	GND	O	Ground
4	DETO2	O	FM detector output
5	FNC1	I/O	Programable I/O (programmed by FPU)
6	FNC2	I/O	Programable I/O (programmed by FPU)
7	FNC3	I/O	Programable I/O (programmed by FPU)
8	FNC4	I/O	Programable I/O (programmed by FPU)
9	FNC5	I/O	Programable I/O (programmed by FPU)
10	FNC6	I/O	Programable I/O (programmed by FPU)
11	FNC7	I/O	Programable I/O (programmed by FPU)
12	FNC8	I/O	Programable I/O (programmed by FPU)

Function Port Assignment

KDS-100, KGP-2A/2B		
	Name	I/O
FNC1	-	-
FNC2	-	-
FNC3	Data Channel	I
FNC4	PTT	I
FNC5	Carrier Operated Relay	O
FNC6	Audio Mute	I
FNC7	Mic Mute	I
FNC8	TX Relay	O
Scrambler		
	Name	I/O
FNC1	-	-
FNC2	-	-
FNC3	TX Relay	O
FNC4	Scrambler	O
FNC5	Scrambler Code1 (1)	O
FNC6	Scrambler Code2 (2)	O
FNC7	Scrambler Code3 (4)	O
FNC8	Scrambler Code4 (8)	O

Port Function is Low Active. (Exclude : Scrambler Code)

CN3

No.	Name	I/O	Function
1	IGN	I	Ignition sens input
2	DATAI	I	External transmit signal input
3	DETO	O	FM detector output
4	TXAFI	I	TX audio input from scrambler board
5	TXAFO	O	TX audio output to scrambler board
6	EMGMIC	I	Emergency MIC input (1kHz/1.2mVrms)
7	RXAFO	O	RX audio output to scrambler board
8	ALTI	I	External alert tone signal input
9	RXAFI	I	RX audio input from scrambler board
10	5C	O	5V DC power supply (50mA MAX)
11	8C	O	8V DC power supply (50mA MAX)

端子功能

CN1

No.	名称	I/O	功能
1	DI		数据
2	CL		时钟
3	CE		芯片有效
4	5C		5V
5	SB		转换的B+
6	KMO2	O	按键矩阵输出2
7	KMI4	I	按键矩阵输入4
8	KMO1	O	按键矩阵输出1
9	KMI3	I	按键矩阵输入3
10	KMI1	I	按键矩阵输入1
11	CM		麦克风数据检测
12	KMI2	I	按键矩阵输入2
13	HOOK		接通检测/RXD
14	ME		麦克风接地
15	POWER		电源开关
16	MIC	I	麦克风信输入
17	PTT		PTT/TXD
18	GND		接地

CN2

No.	名称	I/O	功能
1	SB	O	电池电压DC电源
2	NC	-	-
3	GND	O	接地
4	DETO2	O	FM检测器输出
5	FNC1	I/O	可编程的I/O (由FPU编程)
6	FNC2	I/O	可编程的I/O (由FPU编程)
7	FNC3	I/O	可编程的I/O (由FPU编程)
8	FNC4	I/O	可编程的I/O (由FPU编程)
9	FNC5	I/O	可编程的I/O (由FPU编程)
10	FNC6	I/O	可编程的I/O (由FPU编程)
11	FNC7	I/O	可编程的I/O (由FPU编程)
12	FNC8	I/O	可编程的I/O (由FPU编程)

■功能端口分配

KDS-100, KGP-2A/2B		
	名称	I/O
FNC1	-	-
FNC2	-	-
FNC3	数据信道	I
FNC4	PTT	I
FNC5	载波状态输出	O
FNC6	音频静音	I
FNC7	麦克风静音	I
FNC8	TX状态输出	O
扰频器		
	名称	I/O
FNC1	-	-
FNC2	-	-
FNC3	TX状态输出	O
FNC4	扰频器	O
FNC5	扰频器代码1 (1)	O
FNC6	扰频器代码2 (2)	O
FNC7	扰频器代码3 (4)	O
FNC8	扰频器代码4 (8)	O

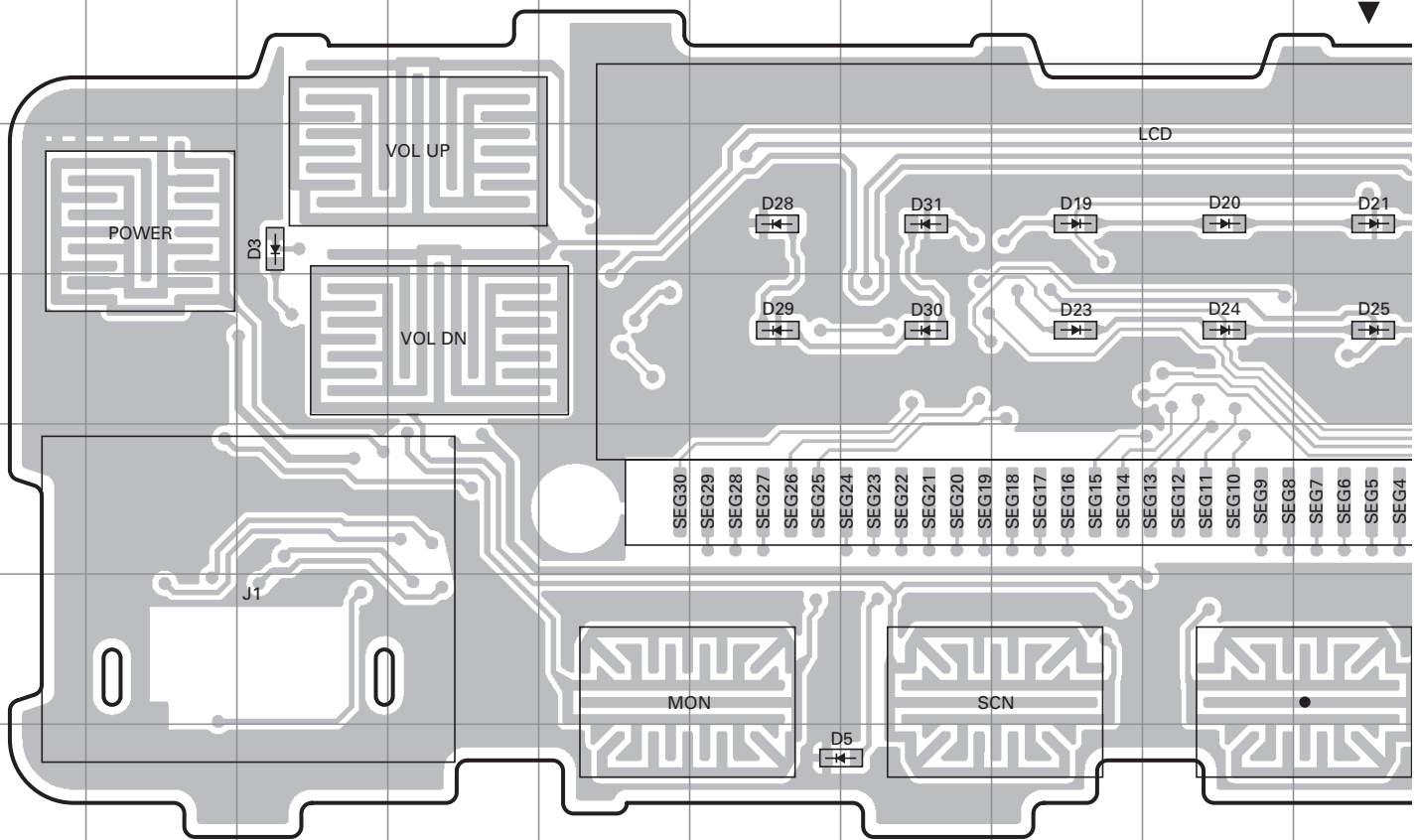
端口功能为低电平有效。(除：扰频器代码)

CN3

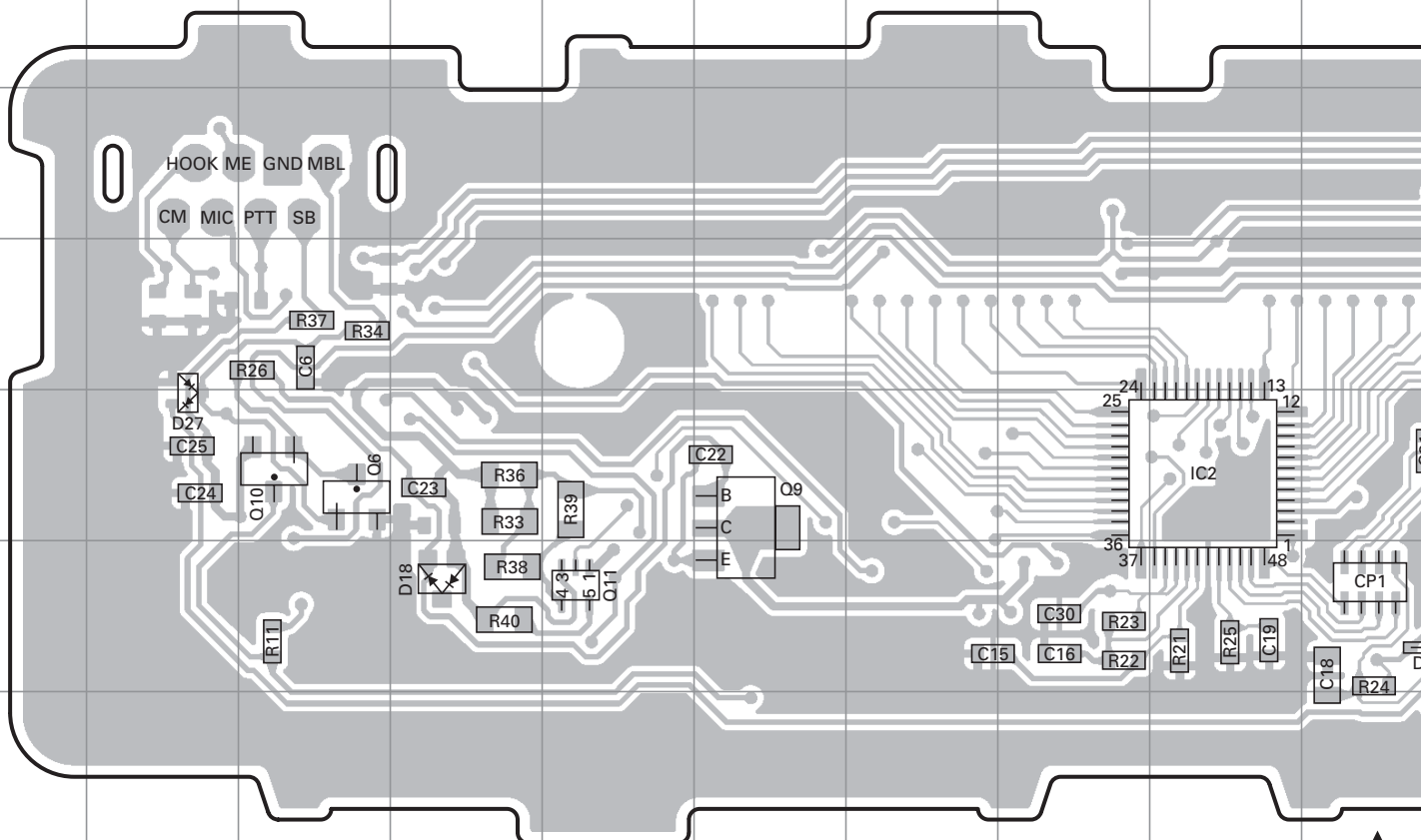
No.	名称	I/O	功能
1	IGN	I	点火传感器信号输入
2	DATAI	I	外部设备发射信号输入
3	DETO	O	FM检测器输出
4	TXAFI	I	从扰频器板输入的TX音频
5	TXAFO	O	TX音频输出到扰频器板
6	EMGMIC	I	紧急报警MIC输入 (1kHz/1.2mVrms)
7	RXAFO	O	RX音频输出到扰频器板
8	ALTI	I	外部报警音信号输入
9	RXAFI	I	从扰频器板输入的RX音频
10	5C	O	5V DC电源 (最大50mA)
11	8C	O	8V DC电源 (最大50mA)

TK-8100 PC BOARD / PC板

DISPLAY UNIT (X54-3430-20) Component side view (J72-0885-09)

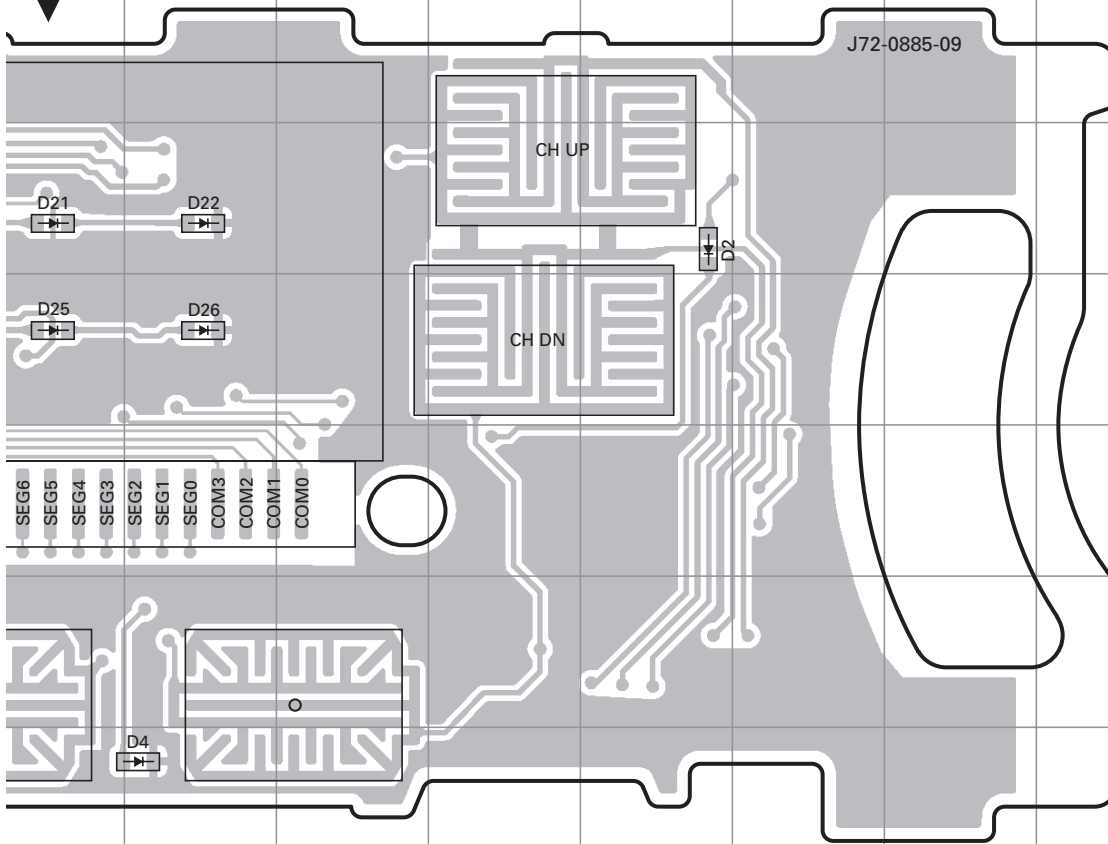


DISPLAY UNIT (X54-3430-20) Foil side view (J72-0885-09)

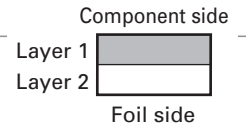


PC BOARD / PC板 TK-8100

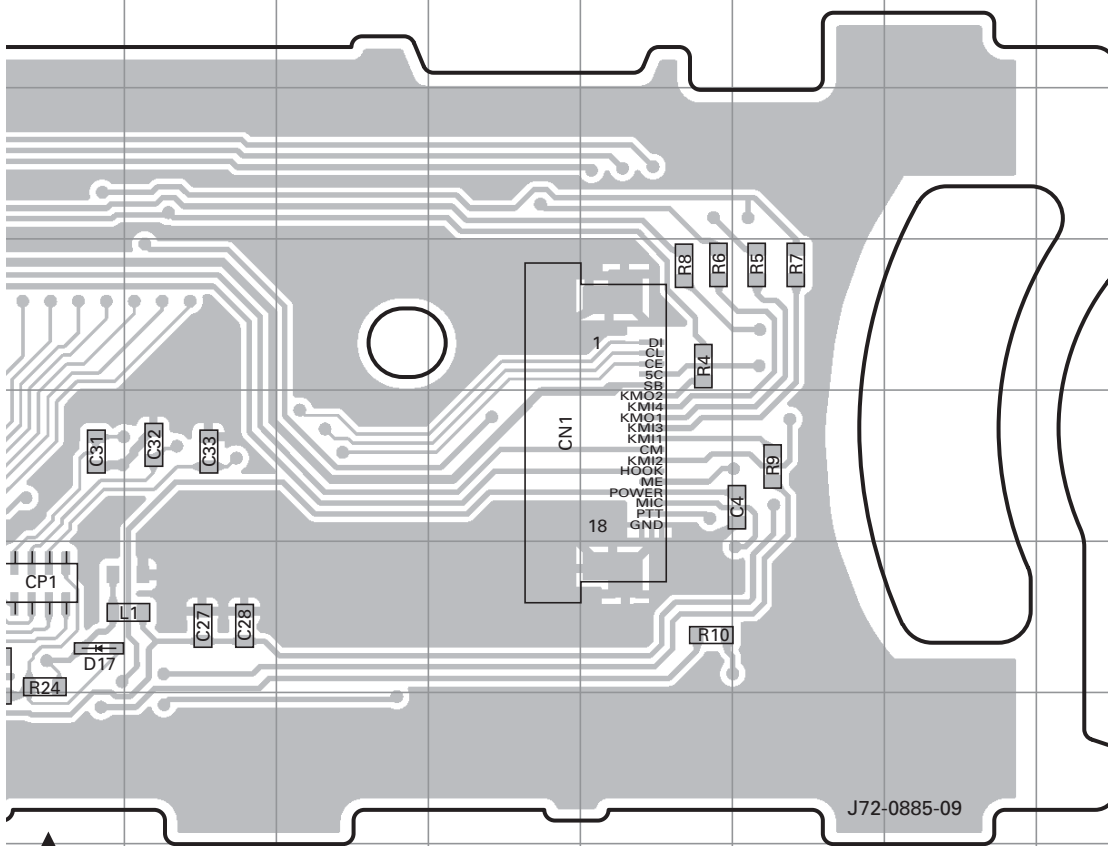
DISPLAY UNIT (X54-3430-20) Component side view (J72-0885-09)



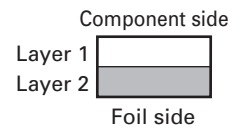
Ref. No.	Address	Ref. No.	Address
D2	3N	D23	4H
D3	3C	D24	4I
D4	7K	D25	4J
D5	7G	D26	4K
D19	3H	D28	3F
D20	3I	D29	4F
D21	3J	D30	4G
D22	3K	D31	3G



DISPLAY UNIT (X54-3430-20) Foil side view (J72-0885-09)



Ref. No.	Address	Ref. No.	Address
IC2	11I	Q11	12E
Q6	11C	D17	12J
Q9	11F	D18	12D
Q10	11C	D27	11B

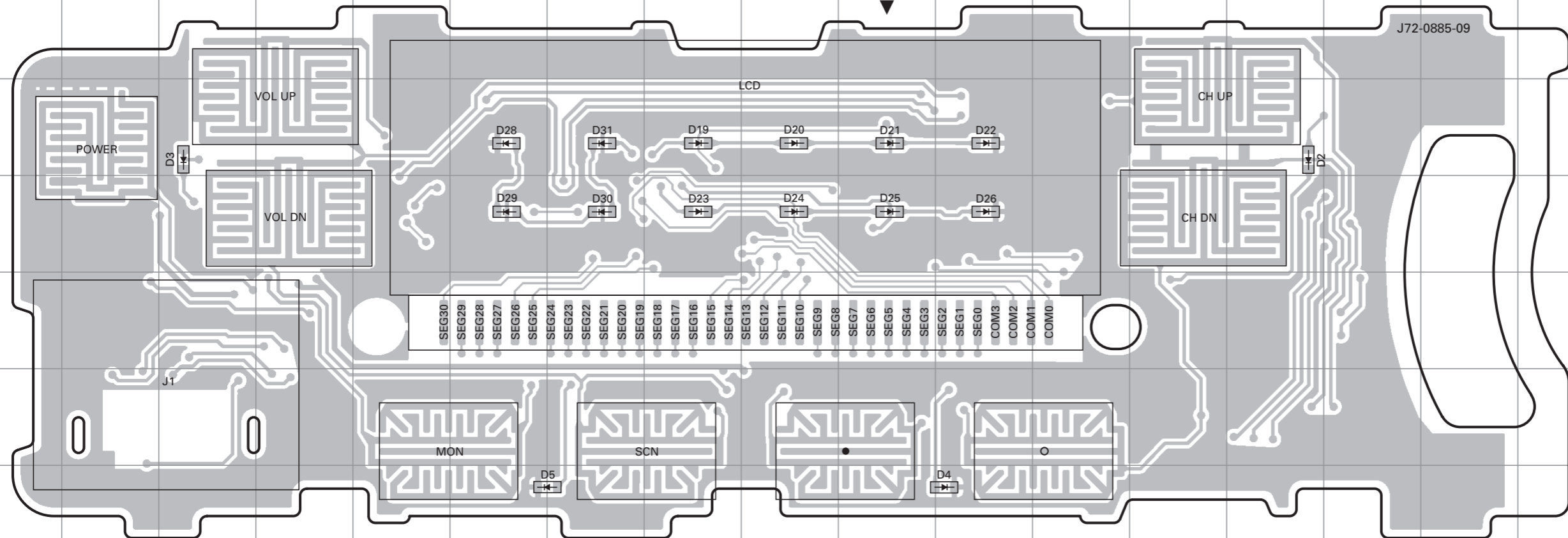


TK-8100 PC BOARD / PC板

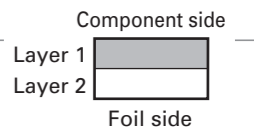
PC BOARD / PC板 TK-8100

DISPLAY UNIT (X54-3430-20) Component side view (J72-0885-09)

DISPLAY UNIT (X54-3430-20) Component side view (J72-0885-09)

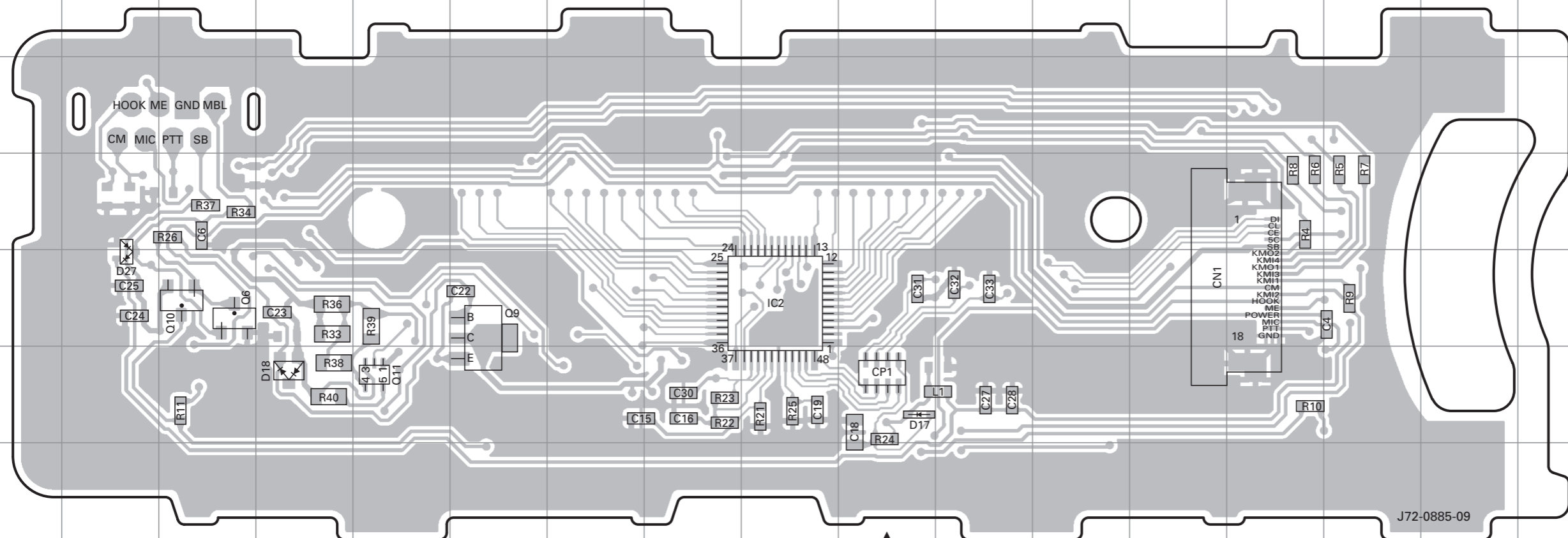


Ref. No.	Address	Ref. No.	Address
D2	3N	D23	4H
D3	3C	D24	4I
D4	7K	D25	4J
D5	7G	D26	4K
D19	3H	D28	3F
D20	3I	D29	4F
D21	3J	D30	4G
D22	3K	D31	3G

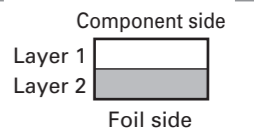


DISPLAY UNIT (X54-3430-20) Foil side view (J72-0885-09)

DISPLAY UNIT (X54-3430-20) Foil side view (J72-0885-09)

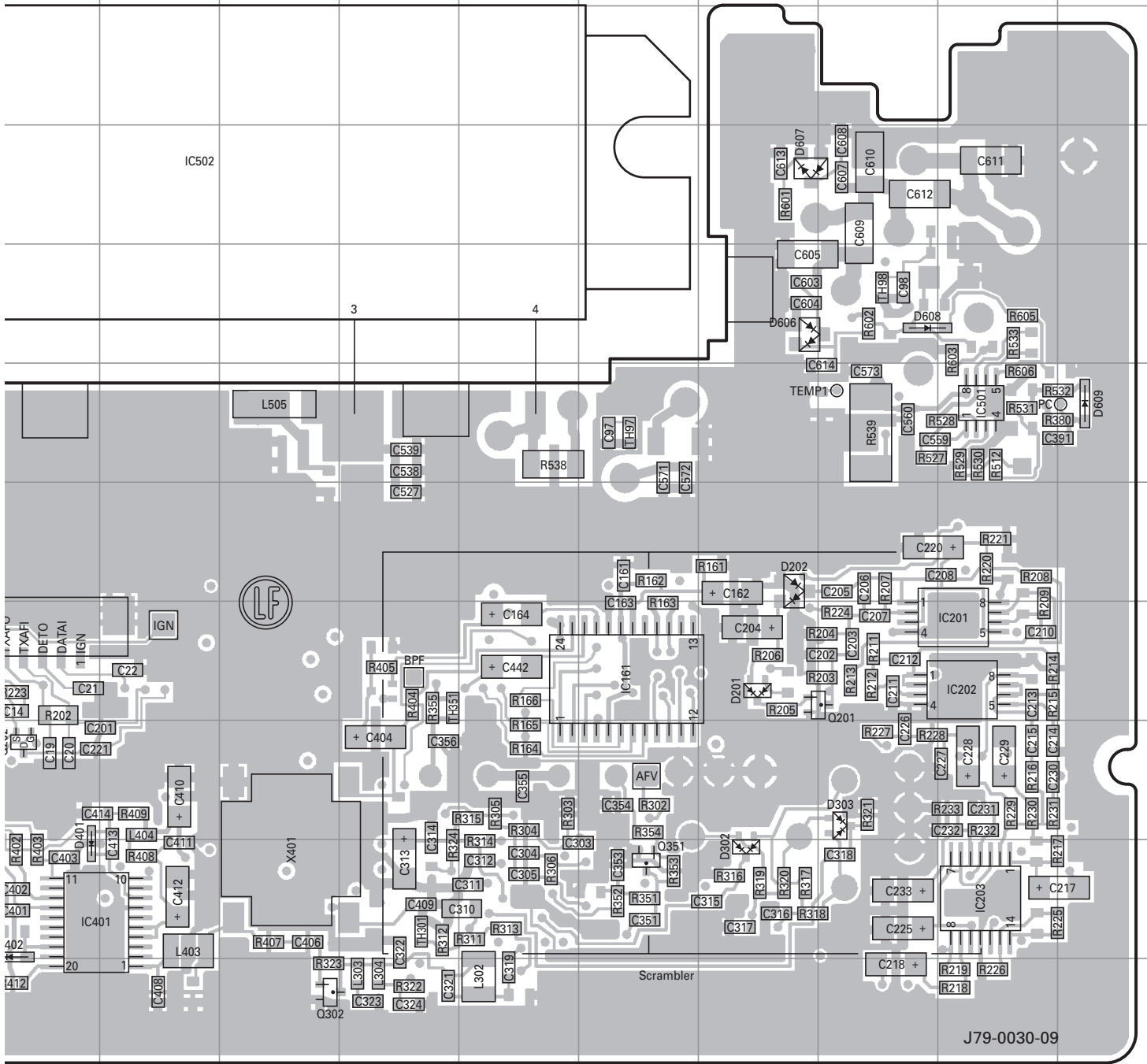


Ref. No.	Address	Ref. No.	Address
IC2	11I	Q11	12E
Q6	11C	D17	12J
Q9	11F	D18	12D
Q10	11C	D27	11B

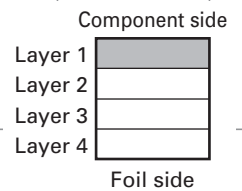


PC BOARD / PC板 TK-8100

TX-RX UNIT (X57-6923-03) Component side view (J79-0030-09)



J79-0030-09

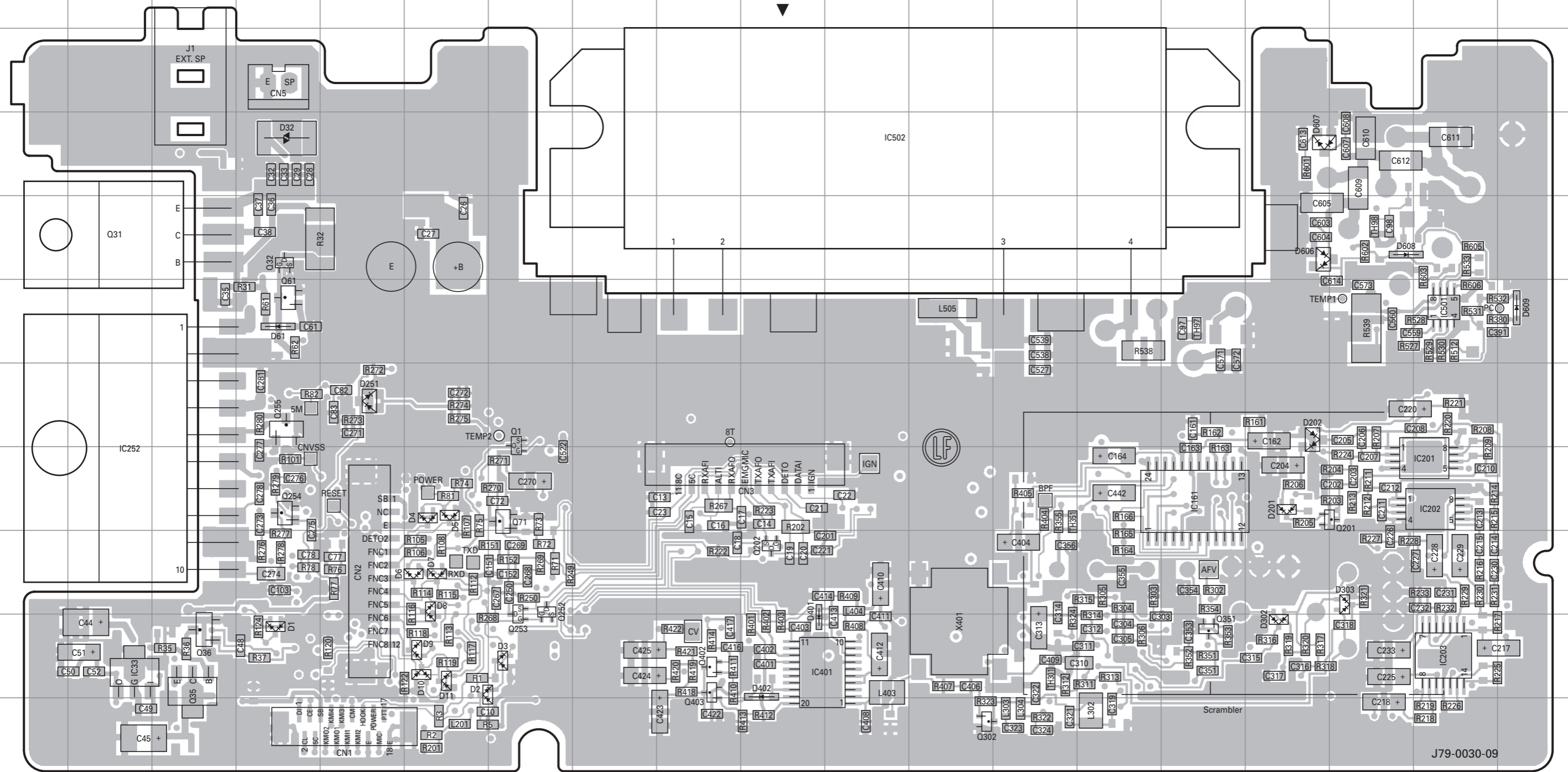


TK-8100 PC BOARD / PC板

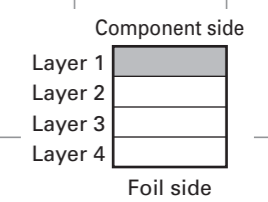
PC BOARD / PC板 TK-8100

**TX-RX UNIT (X57-6923-03)
Component side view (J79-0030-09)**

**TX-RX UNIT (X57-6923-03)
Component side view (J79-0030-09)**

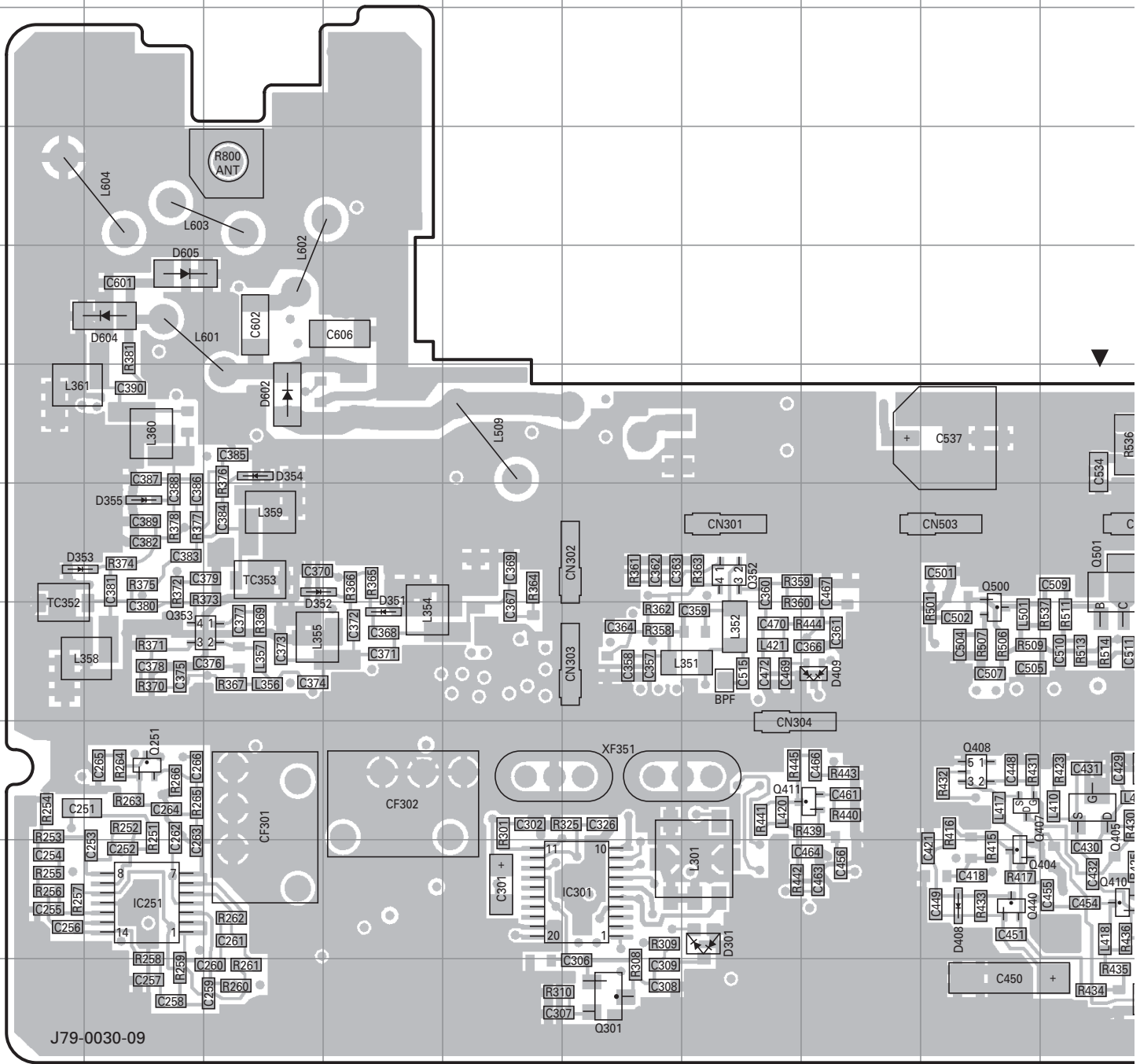


Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC33	10B	IC502	4K	Q201	8Q	Q402	10I	D7	9F	D202	7P	D608	5Q
IC161	8O	Q1	7G	Q202	9J	Q403	10I	D8	9F	D251	7E	D609	6S
IC201	8R	Q31	5B	Q252	9G	D1	10D	D9	10F	D302	10P		
IC202	8R	Q32	5D	Q253	10G	D2	10F	D10	10F	D303	9Q		
IC203	10R	Q35	10C	Q254	8D	D3	10G	D11	10F	D401	10J		
IC252	8B	Q36	10C	Q255	7D	D4	8F	D32	4D	D402	10J		
IC401	10J	Q61	6D	Q302	11L	D5	8F	D61	6D	D606	5P		
IC501	6R	Q71	8G	Q351	10O	D6	9F	D201	8P	D607	4P		



TK-8100 PC BOARD / PC板

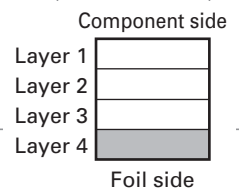
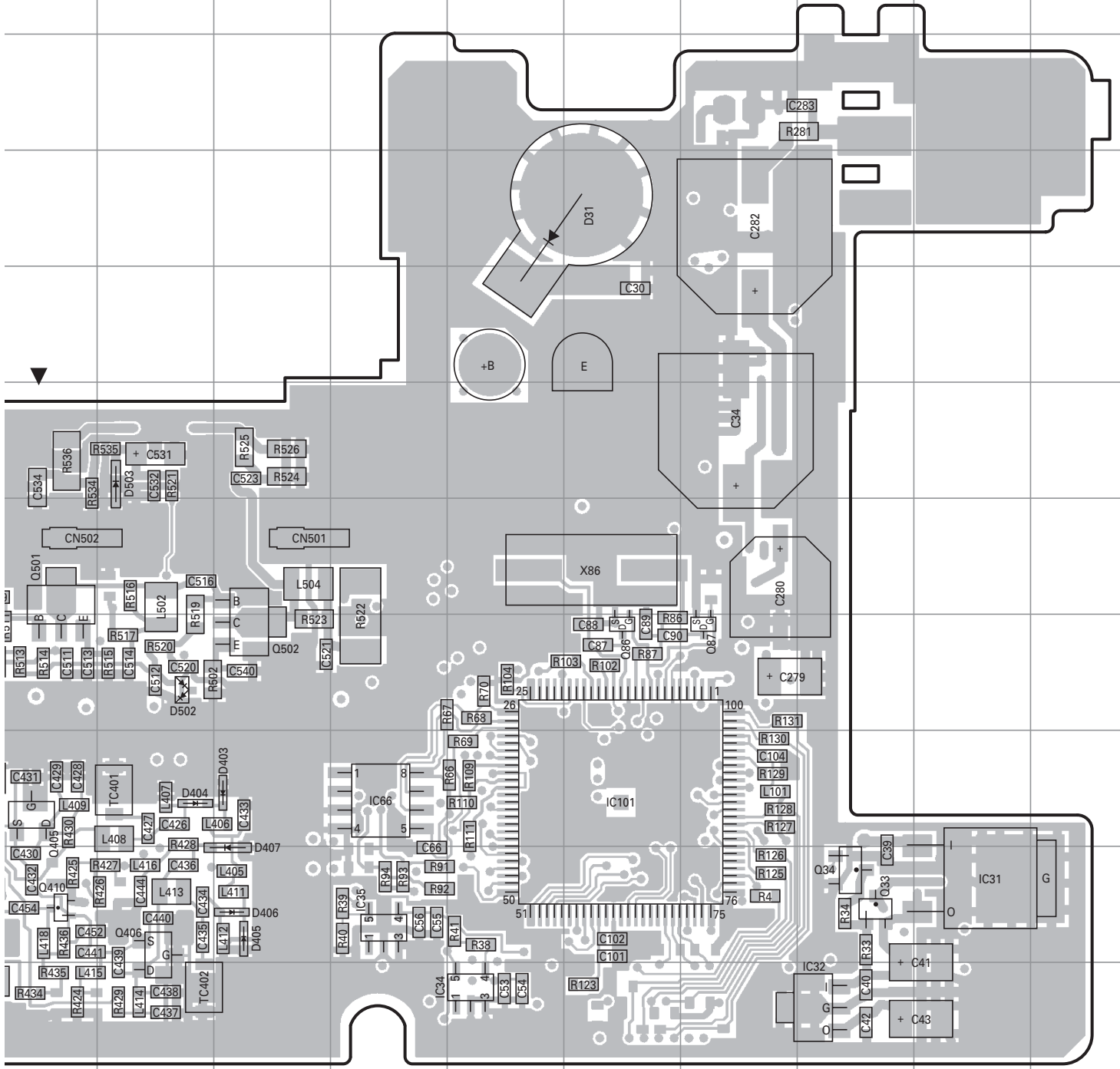
TX-RX UNIT (X57-6923-03)
Foil side view (J79-0030-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC31	10R	Q33	10Q	Q404	10I	Q500	8I	D354	6C	D409	8H
IC32	11Q	Q34	10Q	Q405	9J	Q501	7J	D355	7B	D502	8K
IC34	11N	Q86	8O	Q406	10K	Q502	8L	D403	9L	D503	6K
IC35	10M	Q87	8P	Q407	9I	D31	4O	D404	9K	D602	6C
IC66	9M	Q251	9B	Q408	9I	D301	10G	D405	10L	D604	5B
IC101	9O	Q301	11F	Q410	10J	D351	8D	D406	10L	D605	5B
IC251	10B	Q352	7G	Q411	9H	D352	7C	D407	10L		
IC301	10F	Q353	8B	Q440	10I	D353	7A	D408	10I		

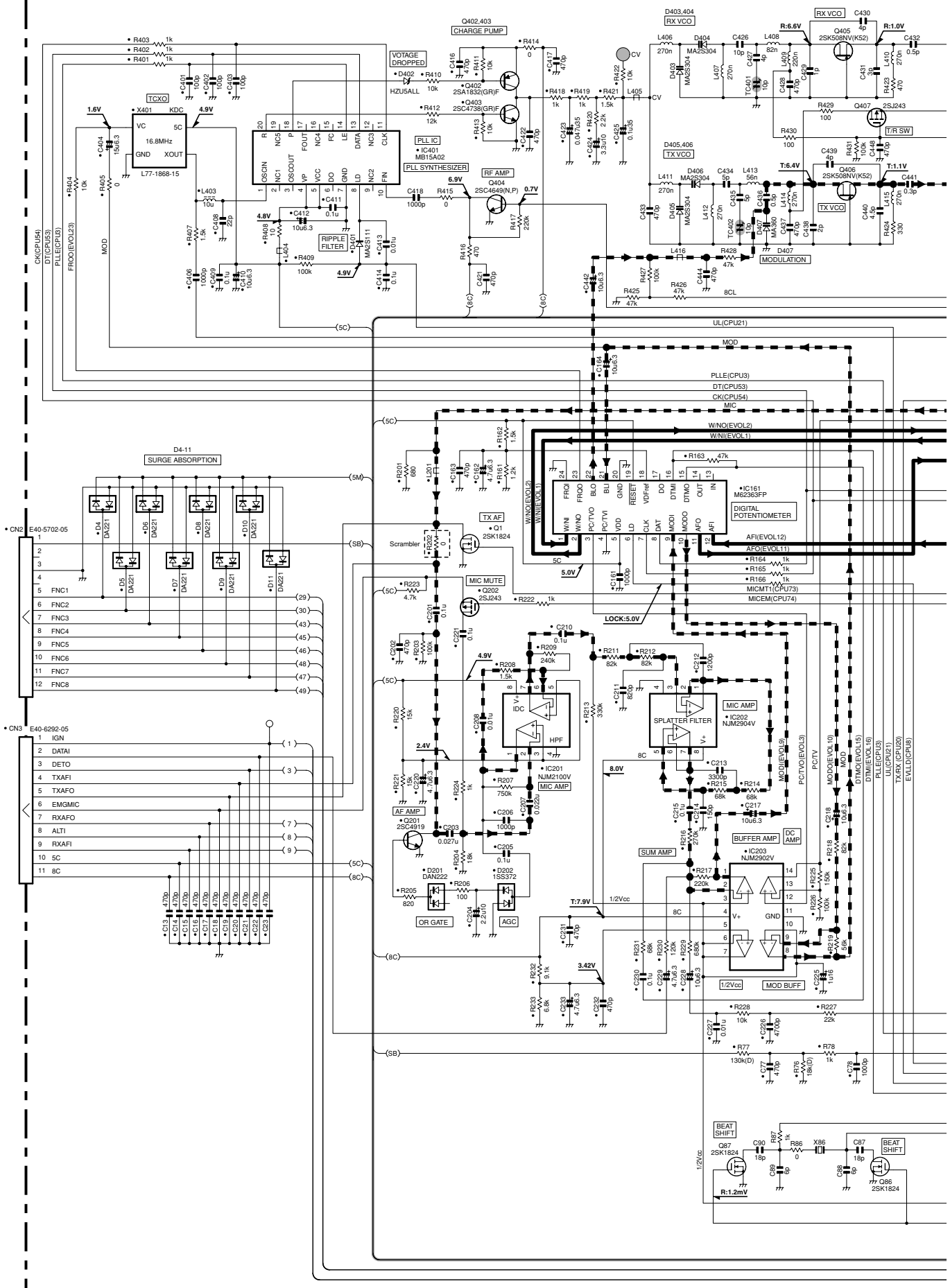
PC BOARD / PC板 TK-8100

TX-RX UNIT (X57-6923-03)
Foil side view (J79-0030-09)

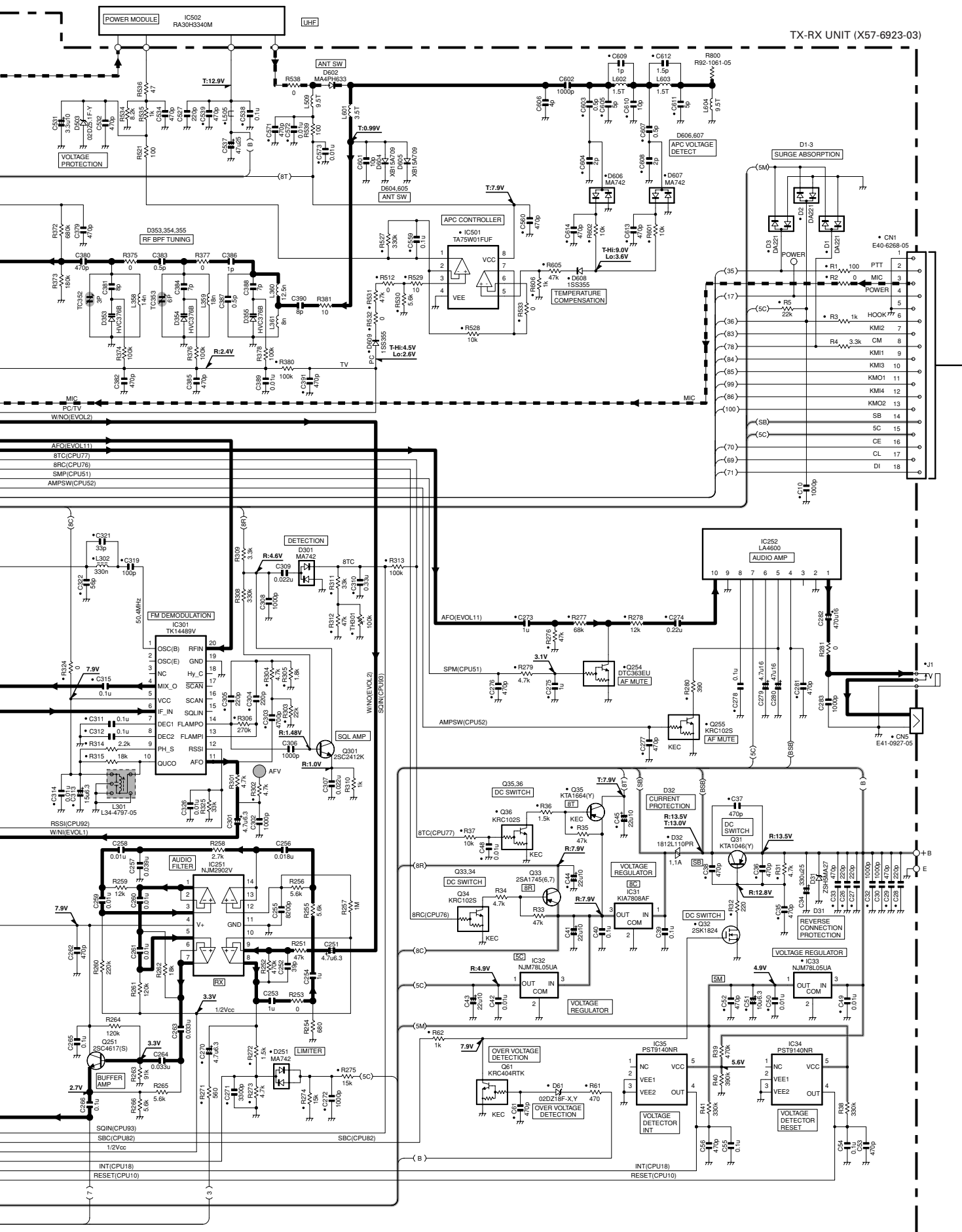


TK-8100 SCHEMATIC DIAGRAM / 原理图

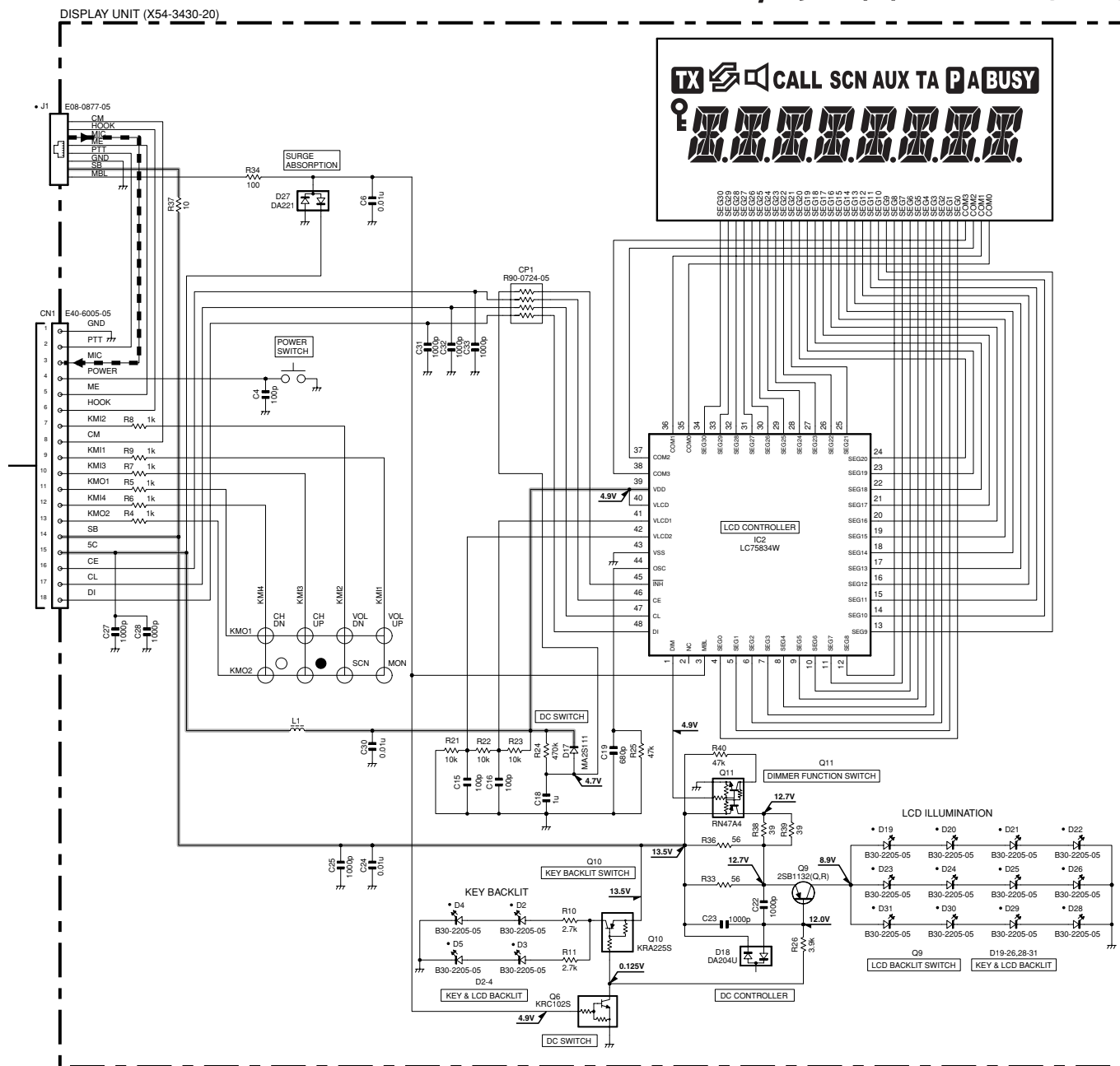
TX-RX UNIT (X57-6923-03)



TK-8100 SCHEMATIC DIAGRAM / 原理图

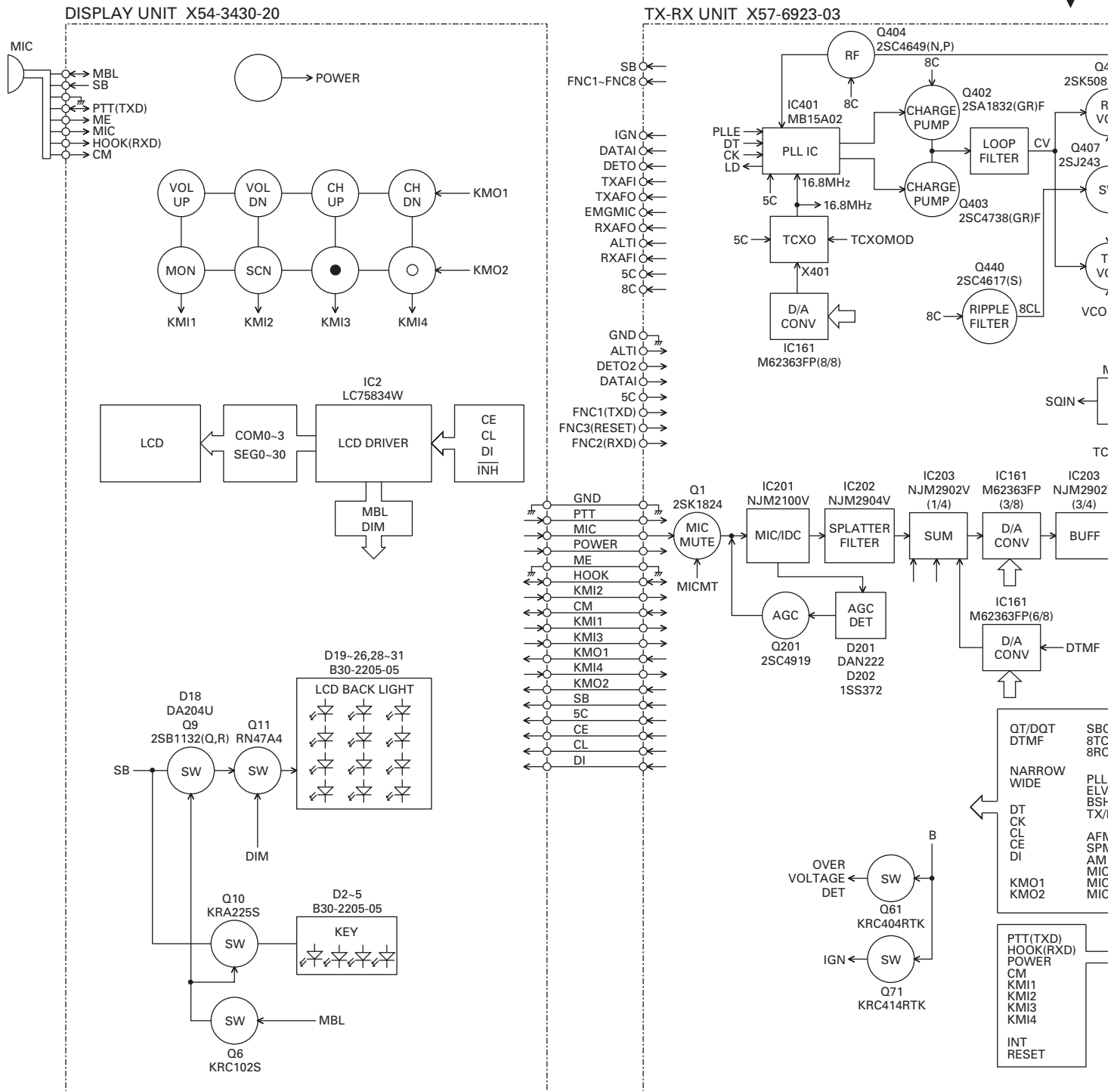


SCHEMATIC DIAGRAM / 原理图 TK-8100

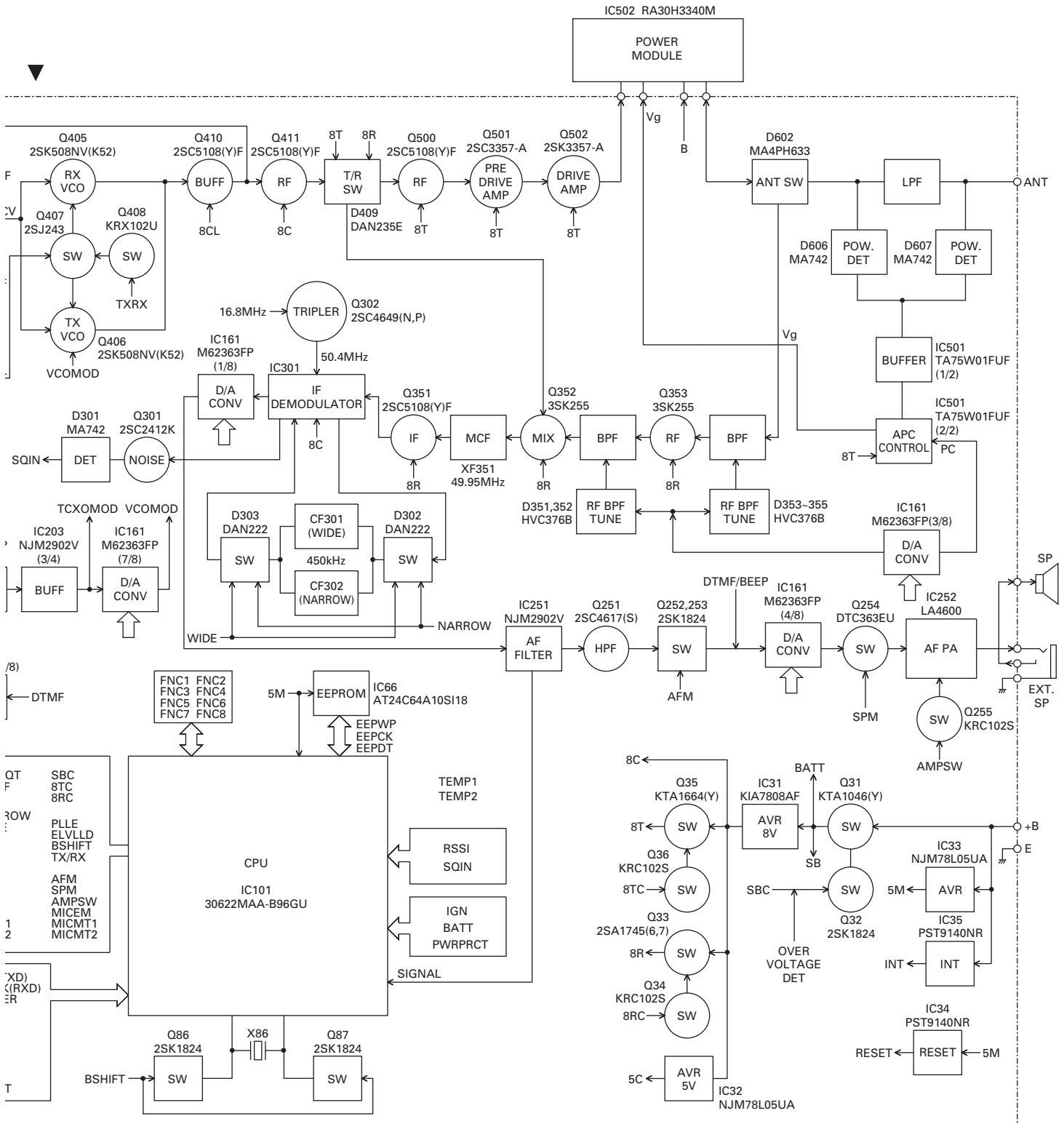


Note : The components marked with a dot (•) are parts of layer 1.

BLOCK DIAGRAM / 方块图

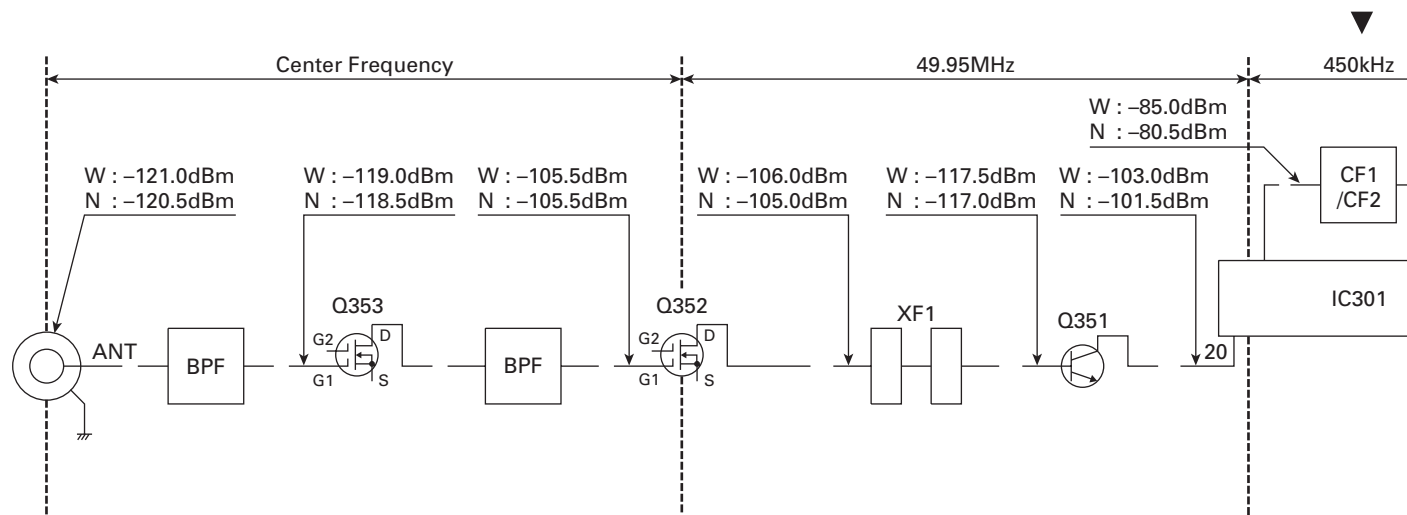


BLOCK DIAGRAM / 方块图



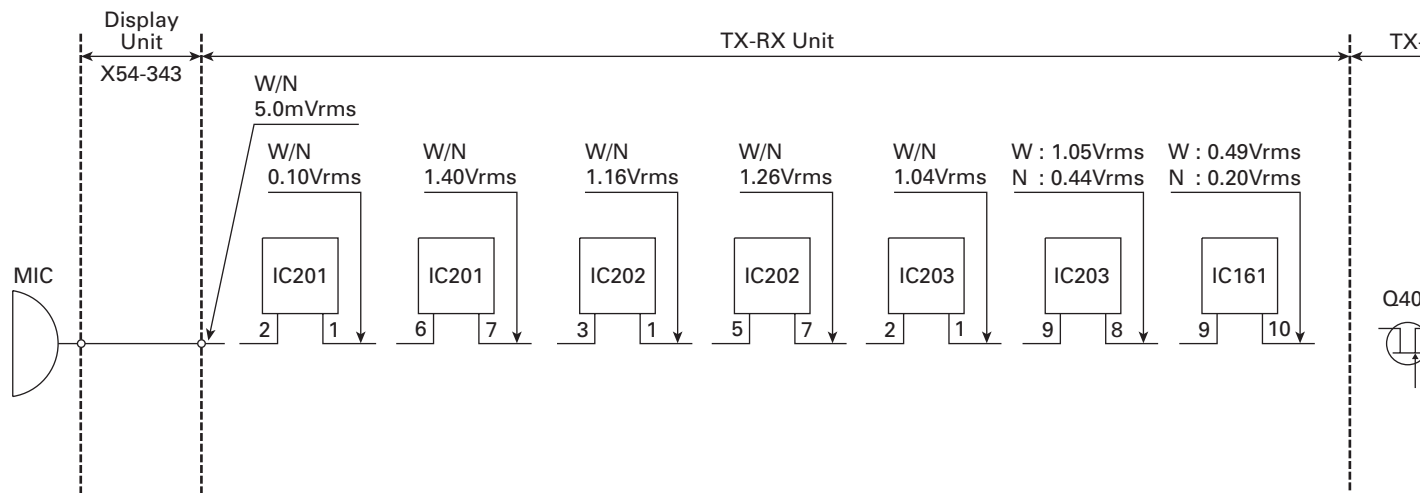
LEVEL DIAGRAM / 电平图

Receiver Section / 接收部



To make measurements in the RF section, connect the RF level meter. In the RF section, use a $0.01\mu\text{F}$ coupling capacitor. (The display shows the SSG input value required to obtain 12dB SINAD.)
 如在RF部分进行测量, 请连接RF电平表。在RF部分, 请使用 $0.01\mu\text{F}$ 耦合电容。(图中显示获得12dB SINAD所需的SSG输入。)

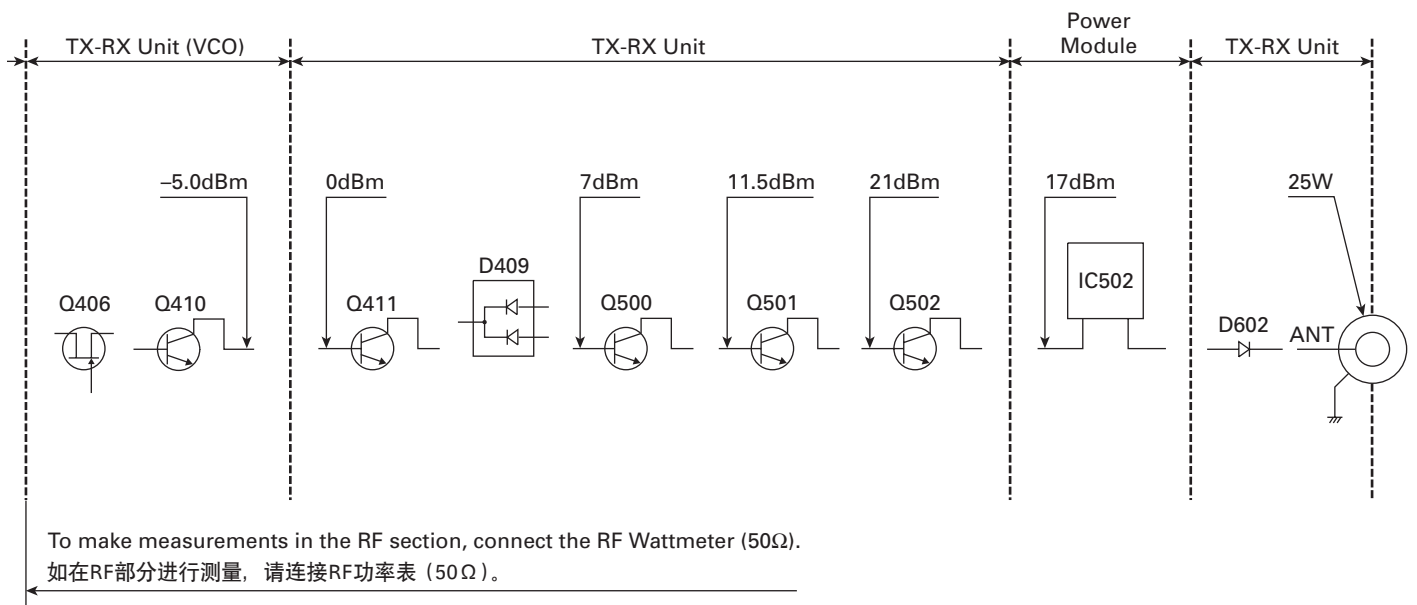
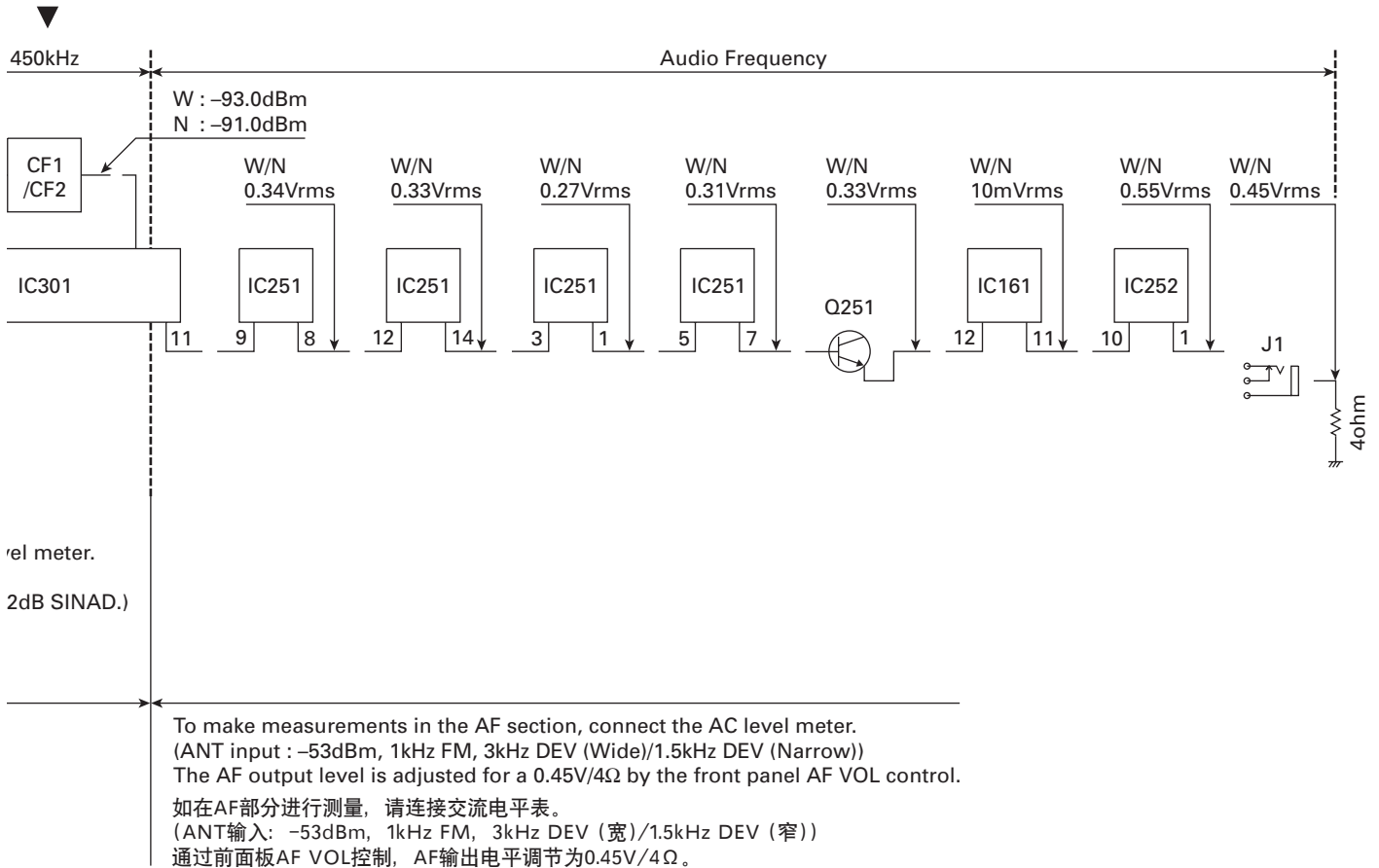
Transmitter Section / 发射部



To make measurements in the AF section, connect the AC level meter. AG is set so that MIC input becomes 3kHz/1.5kHz (Wide/Narrow) DEV at 1kHz MOD.
 如在AF部分进行测量, 请连接交流电平表。AG被设置成MIC输入从而在1kHz MOD时为3kHz/1.5kHz (宽/窄) DEV。

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LEVEL DIAGRAM / 电平图



SPECIFICATIONS

GENERAL

Frequency Range	350 to 390MHz
Channels / Groups	64CH / 8GRP
Channel Spacing	Wide : 25kHz Narrow : 12.5kHz
PLL Channel Stepping	5.0, 6.25kHz
Operating Voltage	13.6V DC \pm 15%
Current Drain	Less than 0.4A on standby Less than 1.0A on receive Less than 8.0A on transmit
Operating Temperature Range	-30°C to +60°C
Dimensions & Weight	160 W x 43 H x 107 D mm, 1.0kg
Channel Frequency Spread	40MHz

RECEIVER (Measurements made per EIA standard EIA/TIA-603)

Sensitivity (12dB SINAD)	Wide : 0.28 μ V Narrow : 0.35 μ V
Selectivity	Wide : 75dB Narrow : 65dB
Intermodulation	Wide : 70dB Narrow : 60dB
Spurious Response	75dB
Audio Output (4 Ω , 5% distortion)	4.0W
Frequency Stability	\pm 2.5ppm

TRANSMITTER (Measurements made per EIA standard EIA/TIA-603)

RF Power Output	High : 25W Low : 5W
Spurious and Harmonics	70dB
Modulation	Wide : 16K0F3E Narrow : 11K0F3E
FM Noise	Wide : 45dB Narrow : 40dB
Audio Distortion	Less than 3%
Frequency Stability	\pm 2.5ppm

规 格

概 述

频率范围	350 ~ 390MHz
信道数/组数	64信道/8组
信道间距	宽：25kHz 窄：12.5kHz
锁相环电路步进频率	5, 6.25kHz
工作电压	13.6V直流 ± 15%
电流消耗	备用时：低于0.4A 接收时：低于1.0A 发射时：低于8.0A
工作温度范围	- 30℃ 到 + 60℃
尺寸和重量	160 (宽) × 43 (高) × 107 (长) 毫米, 约1.0kg
信道频率扩展	40MHz

接收部 (以每EIA标准EIA/TIA-603进行测量)

灵敏度 (12dB SINAD)	宽：0.28 μ V 窄：0.35 μ V
选 择 性	宽：75dB 窄：65dB
互 调	宽：70dB 窄：60dB
杂散响应抗扰性	75dB
音频功率输出 (4 Ω , 失真低于5%)	4.0W
频率稳定性	± 2.5ppm

发射部 (以每EIA标准EIA/TIA-603进行测量)

射频功率输出	高：25W 低：5W
杂散射频分量	70dB
调 制	宽：16K0F3E 窄：11K0F3E
频率调制噪音	宽：45dB 窄：40dB
音频失真	低于3%
频率稳定性	± 2.5ppm

TK-8100

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