

KENWOOD

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TK-385

SERVICE MANUAL / 维修手册

KENWOOD

© 2000-8 PRINTED IN JAPAN
B51-8543-00(S) 666



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CAUTION

When using an external power connector, please use with maximum final module protection of 9V.

注意

当使用外置稳压电源时, 请最好使电源的最大输出不超过 9V

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GENERAL / 概述

INTRODUCTION

SCOPE OF THIS MANUAL

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

ORDERING REPLACEMENT PARTS

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

PERSONNEL SAFETY

The following precautions are recommended for personnel safety:

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

SERVICE

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

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。在出版后如果发生变动、则根据需要使用《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、应注明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。

个人安全

为了个人的安全、请注意下列事项：

- 在没有认真核实所有射频插头之前或有任何一个打开的插头没有连接到相应端子上的情况下、均不要发射。
- 在电爆管附近或在易燃性气体环境中、必须关掉电源、不要操作本设备。
- 本设备只应该由有资格的技术人员来维修。

维修服务

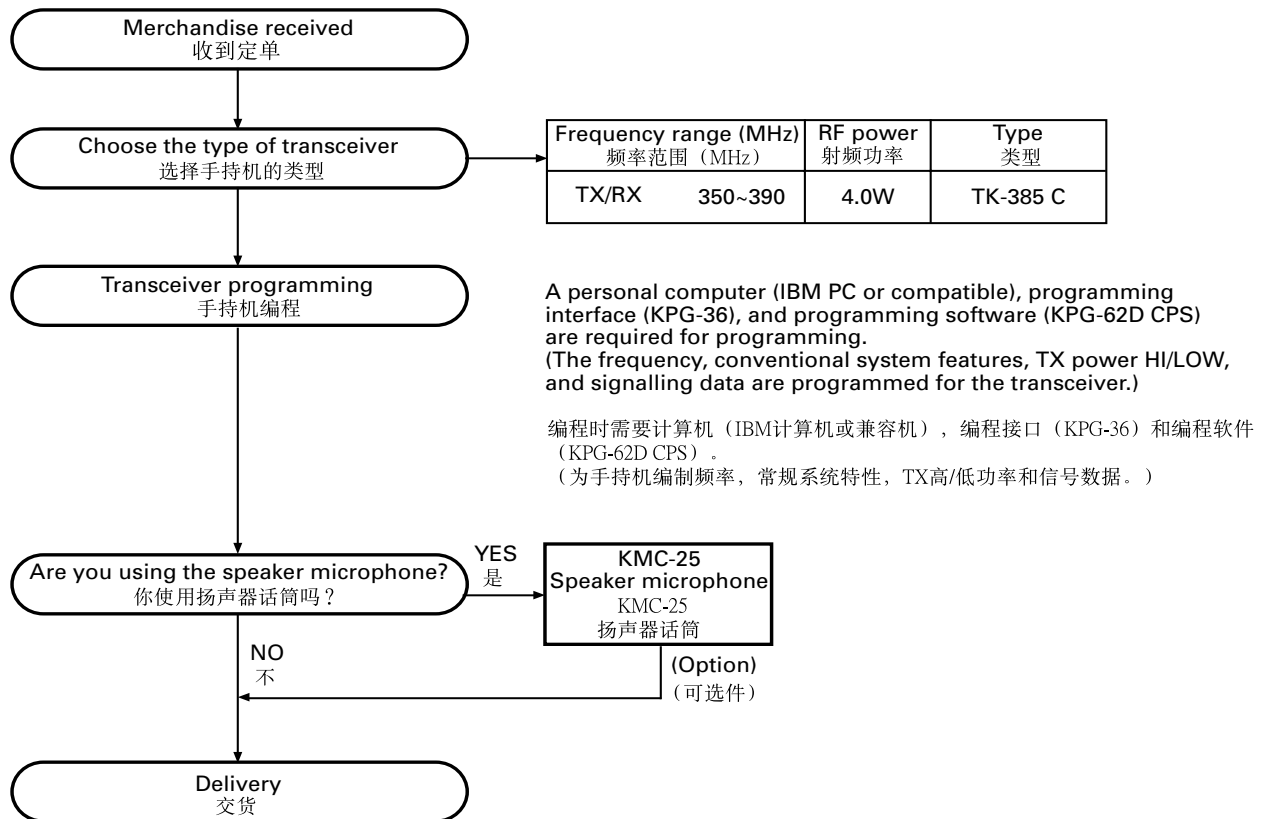
为了便于维修本设备、建立了完整的维修服务体系、提供了包括原理图、印刷线路板图和调整步骤在内的资料供参考。

SYSTEM SET-UP / 系统体系

Model & destination		Unit	TX-RX unit	Display unit	Frequency range	Remarks	Charger	Battery
TK-385	C		X57-6203-01	X54-3210-12	350~390MHz	IF1 : 44.85MHz LOC : 44.395MHz	OP	OP

型号和类型		单元	TX-RX单元	显示单元	频率范围	备注	充电器	电池
TK-385	C		X57-6203-01	X54-3210-12	350~390MHz	IF1 : 44.85MHz LOC : 44.395MHz	可选件	可选件

SYSTEM SET-UP / 系统体系



OPERATING FEATURES / 操作特性

1. Operation Features

The TK-385 is a UHF FM Radio designed in both Trunking Mode and Conventional Mode.

1. 操作特性

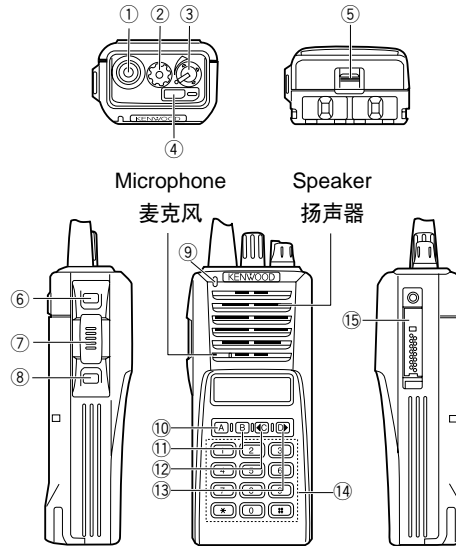
TK-385具有中继模式和常规模式的UHF FM Radio。

2. Transceiver Controls and Indicators

2-1. Physical Layout

2. 手持机的控制和指示

2-1. 主机外形



2-2. Panel controls

The key on the top and front panel is momentary-type push buttons. The functions of these keys and knob are explained below.

2-2. 控制面板

最上面以及面板上的键是按钮键, 有关这些键的功能以下说明。

- ① **Antenna connector**
Connect the antenna here.
- ② **Rotary encoder**
- ③ **POWER switch/ VOLUME control**
Turn clockwise to switch ON the transceiver. Rotate to adjust the volume. Turn counterclockwise fully to switch OFF the transceiver.
- ④ **Auxiliary (orange) key**
- ⑤ **Battery pack release latch**
Pull back on this latch to release the battery pack.
- ⑥ **Clear key**
- ⑦ **PTT (Push-To-Talk) switch**
- ⑧ **Call key**
- ⑨ **Transmit/ Receive indicator**
- ⑩ **A key**
- ⑪ **B key**
- ⑫ **◀ C key**
- ⑬ **D ▶ key**
- ⑭ **DTMF keypad**
- ⑮ **Universal connector**
Connect the (optional KMC-25) speaker/ microphone here. Otherwise, keep the supplied cover in place.

- ① **天线连接器**
在这里连接天线。
- ② **旋转编码器**
- ③ **电源开关/音量控制器**
顺时针旋转可接通对讲机电源。旋转调整音量。逆时针旋转到底可切断对讲机电源。
- ④ **辅助 (橙黄色) 键**
- ⑤ **电池组释放闩锁**
向后拉闩锁可取下电池组。
- ⑥ **清除键**
- ⑦ **PTT (按讲) 开关**
- ⑧ **呼叫键**
- ⑨ **传送/接收指示灯**
- ⑩ **A 键**
- ⑪ **B 键**
- ⑫ **◀ C 键**
- ⑬ **D ▶ 键**
- ⑭ **DTMF 键盘**
- ⑮ **通用接口**
在这里连接 (选购件 KMC-25) 扬声器/麦克风, 否则应将附带的盖板保持在原位。

OPERATING FEATURES / 操作特性

2-3. Key functions

Trunking mode

- ② **Rotary encoder**
Rotate this encoder to select your desired call address (voice calls) or status (status calls).
- ④ **Auxiliary (orange) key** (default setting: **None**)
Press to activate its auxiliary function.
- ⑥ **Clear key**
Press to end the current call.
- ⑦ **PTT (Push-To-Talk) switch**
Press to transmit. Also press to initiate a call if "PTT to Initiate Call" has been programmed.
- ⑧ **Call key**
Press to call the displayed call address.
- ⑨ **Transmit indicator**
Lights red while transmitting.
- ⑩ **A key** (default setting: **Status/ Stack**)
Press to activate its auxiliary function.
- ⑪ **B key** (default setting: **Function Menu**)
Press to activate its auxiliary function.
- ⑫ **◀ C key** (default setting: **Conventional**)
Press to activate its auxiliary function. Also press to scroll left while viewing stack entries.
- ⑬ **D ▶ key** (default setting: **Scan**)
Press to activate its auxiliary function. Also press to scroll right while viewing stack entries.
- ⑭ **DTMF keypad**
Press to input a call address or dialing function.

Conventional mode

- ② **Rotary encoder**
Rotate this encoder to select your desired channel.
- ⑥ **Clear key**
Press to return to Trunking mode.
- ⑦ **PTT (Push-To-Talk) switch**
Press this switch, then speak into the microphone to call a station.
- ⑧ **Call key**
Press to turn the monitor function ON in order to monitor your selected channel.
- ⑨ **Transmit/ Receive indicator**
Lights green while receiving a signal. Lights red while transmitting.
- ⑩ **A key**
Press to turn the display and keypad backlight ON. The backlight remains ON for 5 seconds.
- ⑪ **B key**
Press to add/delete channel(s) to/from Scan list.
- ⑬ **D ▶ key**
Press to turn Scan ON (or OFF).

2-3. 键功能

中继模式

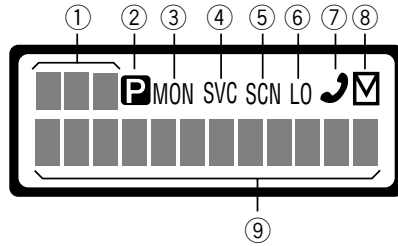
- ② **旋转编码器**
旋转本编码器选择您需要呼叫的地址 (语音呼叫) 或者状态 (状态呼叫)。
- ④ **辅助 (橙黄色) 键** (初始设定: **无**)
按下可开启该辅助功能。
- ⑥ **清除键**
按下可结束当前的呼叫。
- ⑦ **PTT (按讲) 开关**
按下可传送。当编程了“按 PTT 开始呼叫”后, 也可按下开始呼叫。
- ⑧ **呼叫键**
按下可呼叫显示的呼叫地址。
- ⑨ **传送指示灯**
在传送中点亮红色。
- ⑩ **A 键** (初始设定: **状态/堆栈**)
按下可开启该辅助功能。
- ⑪ **B 键** (初始设定: **功能选单**)
按下可开启该辅助功能。
- ⑫ **◀ C 键** (初始设定: **常规**)
按下可开启该辅助功能。当观察堆栈条目时, 按下可向左侧滚动。
- ⑬ **D ▶ 键** (初始设定: **扫描**)
按下可开启该辅助功能。当观察堆栈条目时, 按下可向右侧滚动。
- ⑭ **DTMF 键盘**
按下输入呼叫地址或拨号功能。

常规模式

- ② **旋转编码器**
旋转本编码器选择您所需要的信道。
- ⑥ **清除键**
按下可恢复到中继模式。
- ⑦ **PTT (按讲) 开关**
按下该开关, 然后对着麦克风讲话呼叫电台。
- ⑧ **呼叫键**
按下可接通监听功能来监听您所选择的信道。
- ⑨ **接收指示灯**
在接收信号时点亮绿色。在传送中点亮红色。
- ⑩ **A 键**
按下可接通显示屏和键盘背后照明。背后照明将保持接通 5 秒钟。
- ⑪ **B 键**
按下可向/从扫描中添加/删除信道。
- ⑬ **D ▶ 键**
按下可接通扫描 (或者切断扫描)。

REALIGNMENT / 模式组合

2-4. Display / 显示



① Sub display

■■■ displays the strength of received signals.

② Programming indicator

P appears while in AUX A or Scrambler is being activated.

③ MON (Monitor) indicator

MON appears while you are monitoring a channel by pressing the **Clear** key. (Conventional Mode only)

④ SVC (Service) indicator

SVC appears when a control channel is found. It flashes while the transceiver is searching for a control channel.

⑤ SCN (Scan) indicator

SCN appears while you are scanning.

⑥ LO indicator

This icon blinks while in battery warning, if “Always” or “Always W/beep” is selected in the battery warning settings.

⑦ Handset indicator

📞 flashes when you activate call diversion.

⑧ MAIL indicator

✉ appears while there is data in the stack. It flashes when there is new data in the stack.

⑨ Alphanumeric display

■■■■■■■■■■■■■■■■■■■■ displays call addresses, the call duration timer, data messages, and the current operating status of the transceiver.

① 子显示字段

□ ■■■ 显示接收到信号的强度。

② “P” 显示图标

当AUX A或语音加密被激活时显示 **P**

③ MON (监听) 指示

当用户按下 Clear 键监听某一信道时显示 “MON”。(只适用于常规模式)

④ SVC (服务) 指示

当找到一个控制信道时显示 “SVC”。当手持机正在搜索控制信道时，此图标闪烁。

⑤ SCN (扫描) 指示

□ 当用户正在扫描时显示“SCN”。

⑥ LO 指示

如果在电池电压告警设定中选择 “Always” 或 “Always W/beep”，则电池电压不足时，此图标闪烁。

⑦ 呼叫转移指示

当手持机处于转移状态时，此 📞 闪烁。

⑧ 信箱指示

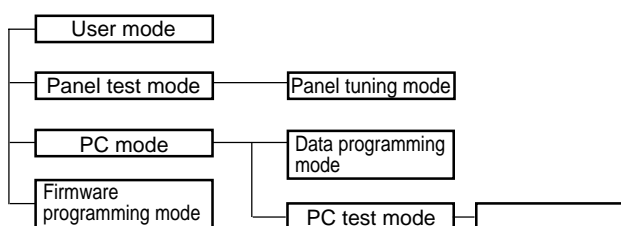
当存储器堆栈中有接收信息时显示 ✉。当存储器堆栈中有新信息时，此图标闪烁。

⑨ 字母数字显示字段

□ ■■■■■■■■■■■■■■■■■■■■■ 显示呼叫地址, 呼叫过程计时器, 数据信息以及手持机当前的操作状态等。

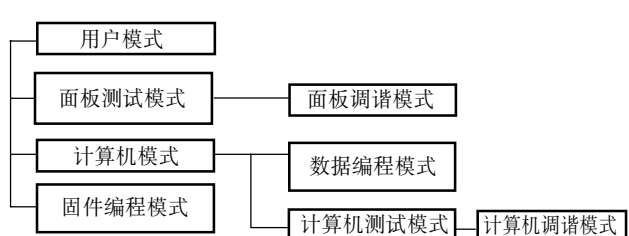
REALIGNMENT

1. Modes



模式组合

1. 模式



REALIGNMENT / 模式组合

Mode	Function
User mode	For normal use.
Panel test mode	Used by the dealer to check the fundamental characteristics.
Panel tuning mode	Used by the dealer to tune the radio.
PC mode	Used for communication between the radio and PC (IBM compatible).
Data programming mode	Used to read and write frequency data and other features to and from the radio.
PC test mode	Used to check the radio using the PC. This feature is included in the FPU. See panel tuning.
Firmware programming mode	Used when changing the main program of the flash memory.

2. How to Enter Each Mode

Mode	Operation
User mode	Power ON
Panel test mode	[B]+Power ON
PC mode	Received commands from PC
Panel tuning mode	[Panel test mode]+[A]
Firmware programming mode	[A]+Power ON

3. Panel Test Mode

Setting method refer to ADJUSTMENT.

4. Panel Tuning Mode

Setting method refer to ADJUSTMENT.

5. PC Mode

5-1. Preface

The TK-385C transceiver is programmed by using a personal computer, programming interface (KPG-36) and programming software (KPG-62D CPS).

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

5-2. Connection procedure

1. Connect the TK-385C to the personal computer with the interface cable.
2. When the POWER switch on, user mode can be entered immediately. When PC sends command the radio enter PC mode, and "PROGRAM" is displayed on the LCD. When data transmitting from transceiver, the red LED is blinking. When data receiving to transceiver, the green LED is blinking.

Notes:

- The data stored in the personal computer must match model type, when it is written into the flash memory.
- Change the TK-385 to PC mode, then attach the interface cable.

模式	功能
用户模式	一般用户使用。
面板测试模式	用于经销商检查基本功能。
面板调谐模式	用于经销商调整手持机指标。
计算机模式	用于手持机与计算机 (IBM 兼容机) 之间的通信。
数据编程模式	用于读出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。参见面板调谐。
固件编程模式	当更新 Flash Rom 中的主程序时使用。

2. 如何进入每一种模式

模式	操作
用户模式	接通电源
面板测试模式	[B] + 接通电源
计算机模式	从计算机接收指令
面板调谐模式	[面板测试模式] + [A]
固件编程模式	[A] + 通电

3. 面板测试模式

设定方式, 参见调整。

4. 面板调谐模式

设定方式, 参见调整。

5. 计算机模式

5-1. 前言

TK-385C 手持机使用计算机, 编程电缆 (KPG-36) 和编程软件 (KPG-62D CPS) 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。

5-2. 连接步骤

1. 使用编程电缆将 TK-385C 与计算机连接。
2. 当接通电源时, 立即进入用户模式。当 PC 机发出指令使手持机进入 PC 模式时, "PROGRAM" 出现在显示器上。当手持机发送数据时, 红色指示灯闪烁。当手持机接收数据时, 绿色指示灯闪烁。

注释:

- 储存在计算机内的数据必须与写入到 EEPROM 的格式相匹配。
- 将 TK-385 改变为计算机编程模式, 然后连接编程电缆。

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

The KPG-36 is required to interface the TK-385 to the computer. It has a circuit in its D-subconnector (25-pin) case that converts the RS-232C logic level to the TTL level.

The KPG-36 connects the universal connector of the TK-385 to the computers RS-232C serial port.

5-4. Programming software KPG-62D CPS Description

The KPG-62D CPS is the programming software for the transceiver supplied on three 3.5" floppy disks. This software runs under MS-Windows 95/98 on an IBM-PC or compatible machine.

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

We recommend that install the KPG-62D CPS for example to hard disk first then use it.

5-5. Programming with IBM PC

If data is transferred to the transceiver from an IBM PC with the KPG-62D CPS, the destination data (basic radio information) for each set can be modified. Normally, it is not necessary to modify the destination data because their values are determined automatically when the frequency range (frequency type) is set.

The values should be modified only if necessary. Data can be programmed into the flash memory in RS-232C format via the universal connector.

5-3. KPG-36 说明**(PC 机编程接口电缆：可选项)**

TK-385需要通过KPG-36接口电缆与电脑连接。此接口电缆的D连接器(25芯)中有一个将RS-232C逻辑电平转换为TTL电平的电路。

KPG-36 将TK-385的通用接口连接到电脑的RS-232C串口上。

5-4. 编程软件 KPG-62D CPS 说明

KPG-62D CPS是手持机的编程软件,共3张3.5"软盘。此软件的运行环境为IBM-PC机或兼容机的MS-Windows 95/98。

数据可以被写入到手持机或从手持机中读取数据,并且能在屏幕上进行编辑。已被编程或编辑的数据可以打印出来。也可以调整手持机的指示。

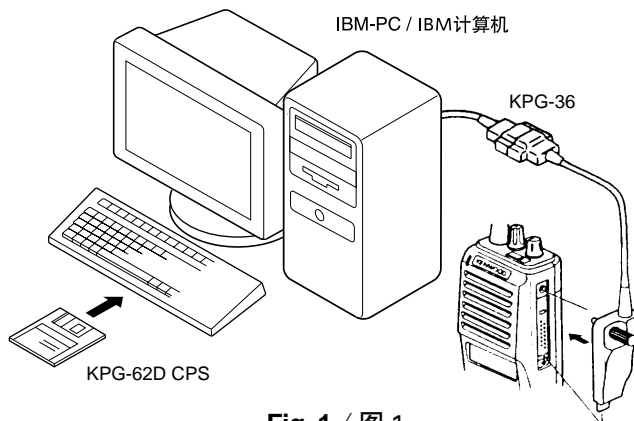
建议用户在使用之前将KPG-62D CPS安装到硬盘上。

5-5. 使用 IBM 计算机编程

如果从使用KPG-62D CPS软件的IBM计算机将数据发送到手持机,设定的通信机型号数据(通信机的基本信息)均可被修改。由于设定频率范围(频率类型)时,型号数据就已被确定了,所以一般不需要修改型号数据。

只有在必要的情况下才修改型号数据。

RS-232C格式的数据经由通用接口输入到通信机的EEPROM中。

**Fig. 1 / 图 1****6. Firmware Programming Mode****6-1. Preface**

Flash memory is mounted on the TK-385. This allows the TK-385 to be upgraded when new features are released in the future. (For details on how to obtain the firmware, contact Customer Service.)

6-2. Connection procedure

Connect the TK-385 to the personal computer (IBM PC or compatible) with the interface cable (KPG-36). (Connection is the same as in the PC Mode.)

6. 固件编程模式**6-1. 前言**

Flash Rom被安装在TK-385上。当将来出现新功能时,允许TK-385升级。(要了解如何获得固件的详细情况,请与供应商联系。)

6-2. 连接步骤

使用编程电缆(KPG-36)将TK-385与计算机(IBM计算机或兼容机)连接。(与计算机编程模式中的连接方法一样。)

REALIGNMENT / 模式组合

6-3. Programming

1. Start up the firmware programming software (Fpro.exe).
2. Set the communications speed (normally, 57600 bps) and communications port in the configuration item.
3. Set the firmware to be updated by File name item.
4. Turn the TK-385 power ON with the [A] switch held down. Hold the switch down until the display changes to "PROG 57600". When "PROG 57600" appears, release your finger from the switch.
5. Check the connection between the TK-385 and the personal computer, and make sure that the TK-385 is in the Program mode.
6. Press write button in the window. A window opens on the display to indicate progress of writing. When the TK-385 starts to receive data, the [P] icon is blinking.
7. If writing ends successfully, the LED on the TK-385 lights and the checksum is displayed.
8. If you want to continue programming other TK-385 s, repeat steps 4 to 7.

Notes:

- This mode cannot be entered if the Firmware Programming mode is set to Disable in the Programming software (KPG-62D CPS).
- When programming the firmware, it is recommend to copy the data from the floppy disk to your hard disk before update the radio firmware.
Directry copying from the floppy disk to the radio may not work because the access speed is too slow.

6-4. Function

1. If you press the [Clear] switch (top of left side) while "PROG 57600" is displayed, the version is displayed. If you press the [Clear] switch again while the version is displayed, "PROG 57600" is redisplayed.
2. If you press the [Call] switch (bottom of left side) while "PROG 57600" is displayed, the display changes to "PROG 19200" to indicate that the write speed is low speed (19200 bps). If you press the [Call] switch again while "PROG 19200" is displayed, the display changes to "PROG 38400", and the write speed becomes the middle-speed mode (38400 bps). If you press the [Call] switch again while "PROG 38400" is displayed, the display returns to "PROG 57600".
3. If you press the [Call] switch while the version is displayed, the checksum is displayed. If you press the [Call] switch again while the checksum is displayed, the version is redisplayed.

Note:

Normally, write in the high-speed mode.

6-3. 编程

1. 启动固件编程程序 (FPRO.exe)。
2. 在配置项中设定通信速率 (通常为 57600bps) 和通信端口。
3. 在文件名称项中选定新固件的文件名。
4. 按住[A]键并接通TK-385的电源。按住[A]键直到显示器出现“PROG57600”为止。当“PROG57600”出现时, 松开[A]键。
5. 检查TK-385与个人电脑之间的连接是否正确, 并且确认TK-385是否处于编程模式。
6. 点击计算机程序上的写入按钮。屏幕上开启一个窗口显示写入的进程。当TK-385开始接收数据时, [P]图标开始闪动。
7. 写入完成后, TK-385上的指示灯发光, 并且显示校验码。
8. 如果用户需要继续编程其他的TK-385, 重复步骤4到7。

注释:

- 如果在编程软件 (KPG-62D CPS) 中固件编程模式设定为禁用, 则不能进入此模式。
- 当进行固件编程时, 在用户更新通信机固件之前, 建议从软盘向硬盘复制数据。
由于读取速率太低, 所以直接从软盘复制到通信机可能无效。

6-4. 功能

1. 当显示“PROG57600”时, 如果用户按下Clear键 (位于左侧的顶部), 则显示版本。如果显示版本时再次按下Clear键, 则显示“PROG57600”。
2. 当显示“PROG57600”时, 如果用户按下Call键 (位于左侧的底部), 则显示变为“PROG19200”, 表示写入速率为低速 (19200bps)。当显示“PROG19200”时, 如果用户再次按下Call键, 则显示变为“PROG38400”, 表示写入速率为中速 (38400bps)。当显示“PROG38400”时, 如果用户再次按下Call键, 则显示返回到“PROG57600”。
3. 当显示版本时, 如果用户按下Call键, 则显示校验码。当显示校验码时, 如果用户再次按下Call键, 则显示版本。

注释:

通常在高速率模式中写入。

1. Overview

This transceiver is UHF/FM portable transceiver designed to operate in the frequency range of 350 to 390MHz (C).

2. Circuit Configuration by Frequency

The receiver is a double-conversion superheterodyne with a first intermediate frequency (IF) of 44.85MHz and a second IF of 455kHz. Incoming signals from the antenna are mixed with the local signal from the PLL to produce the first IF of 44.85MHz.

This is then mixed with the 44.395MHz second local oscillator output to produce the 455kHz second IF. This is detected to give the demodulated signal.

The transmit signal frequency is generated by the PLL VCO, and modulated by the signal from the microphone. It is then amplified and sent to the antenna.

1. 综述

本手持机是在350到390MHz的频率范围内工作的UHF/FM手持式设备。

2. 电路的频率构成

接收部采用44.85MHz的第一中频和455kHz的第二中频的二次变频超外差方式。通过天线接收到的信号与来自于锁相环电路的本振信号混频生成44.85MHz的第一中频。

然后与44.395MHz的第二本振信号混频生成455kHz的第二中频。此频率被检测并产生解调信号。

锁相环压控振荡器生成发射信号频率，并且被来自于麦克风的信号调制。然后被放大并发送到天线。

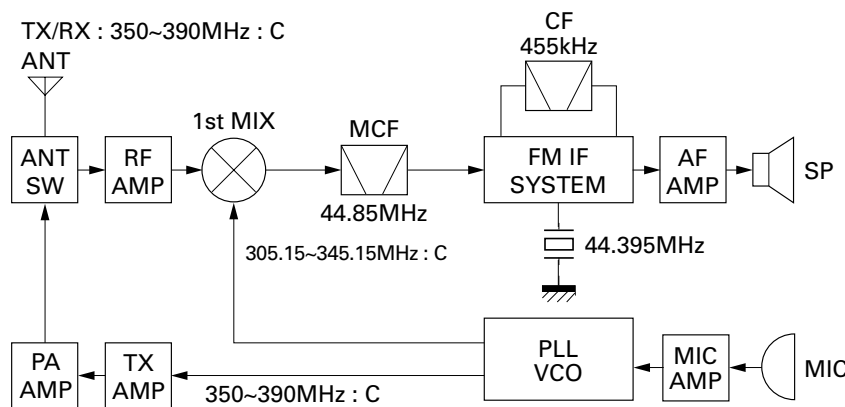


Fig. 1 Frequency configuration / 图 1 频率构成

3. Receiver System

3-1. RF unit

An incoming RF signal from the antenna terminal is passed through the antenna switch (D12, D14, D15 and D401 are off) and then the bandpass filter (L47,48,49,51,52,54,55,56). The bandpass filter is adjusted by a variable capacitor. The input voltage to the variable capacitor is regulated by the voltage output from the D/A converter (IC8). The signal is amplified by RF amplifier Q24, and passed through the bandpass filter (L29,31,33,34,36) and band-eliminate filter (L27) to remove the spurious signal again. The resulting signal is applied to the first mixer (IC18), where it is mixed with the first local oscillator signal output from the frequency synthesizer to produce the first IF (44.85MHz). The 1st mixer uses the GaAs IC.

3. 接收部系统

3-1. 射频单元

由天线接收到的射频信号进入天线开关 (D12, D14, D15 和 D401 截止)，然后通过带通滤波器 (L47, 48, 49, 51, 52, 54, 55, 56)。带通滤波器由可变电容进行调整。向可变电容输出的电压通过来自于数/模转换器 (IC8) 的电压输出进行调节。此信号被射频放大器 Q24 放大，并通过带通滤波器 (L29, 31, 33, 34, 36) 和频带消除滤波器 (L27) 再次消除寄生信号。生成的信号进入第一混频器 (IC18)，并且与来自于频率合成器的第一本振信号混频生成第一中频 (44.85MHz)。第一混频器使用 GaAs 芯片。

CIRCUIT DESCRIPTION / 电路说明

3-2. IF unit

The first IF signal is passed through a crystal filter (XF1) to remove a adjacent channel signal. The filtered first IF signal is amplified by the first IF amplifier (Q12) and then applied to the IF system IC (IC12). The IF system IC provides a second mixer, second local oscillator, limiting amplifier, quadrature detector and RSSI (Received Signal Strength Indicator). The second mixer mixes the first IF signal with the 44.395MHz of second local oscillator output (crystal unit X2) and produces the second IF signal of 455kHz.

The second IF signal is passed through the ceramic filter (CF1; Wide, CF2; Narrow) to more remove the adjacent channel signal. The filtered second IF signal is amplified by the limiting amplifier and demodulated by the quadrature detector with ceramic discriminator (CD1). The demodulated signal is routed to the audio circuit.

3-2. 中频单元

第一中频信号通过晶体滤波器(XF1)消除相邻信道的信号。经滤波的第一中频信号被第一中频放大器(Q12)放大并进入中频系统芯片(IC12)。中频系统芯片提供第二混频器,第二本振信号,限幅放大器,正交检测器和RSSI(接收信号强度指示器)。第二混频器将第一中频信号与44.395MHz的第二本振信号输出(晶体单元X2)进行混频,并生成455kHz的第二中频信号。

第二中频信号通过陶瓷滤波器(CF1:宽,CF2:窄)继续消除相邻信道的信号。经滤波的第二中频信号被限幅放大器放大并被带有陶瓷鉴频器(CD1)的正交检测器进行解调。经解调的信号进入音频电路。

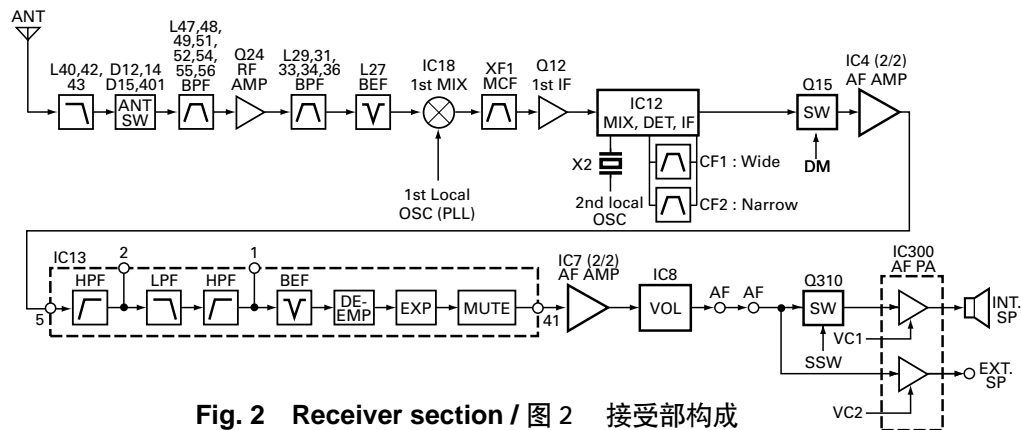


Fig. 2 Receiver section / 图2 接受部构成

3-3. Wide/Narrow changeover circuit

Narrow and Wide settings can be made for each channel by switching the ceramic filters CF1 (Wide), CF2 (Narrow).

The WIDE (high level) and NARROW (low level) data is output from IC19 (microcomputer) pin 99.

When a WIDE (high level) data is received, Q6 turn off and Q7 turn on. When a NARROW (low level) data is received, Q6 turn on and Q7 turn off. D5, D7 are switched to ceramic filters when a high/low level data is received.

Q9 turns on/off with the Wide/Narrow data and the IC12 detector output level is changed to maintain a constant output level during wide or narrow signals.

3-3. 宽/窄转换电路

可以通过开启陶瓷滤波器CF1(宽),CF2(窄)对每一个信道进行窄宽设定。

IC19(微电脑)的管脚99输出宽(高电平)和窄(低电平)信号。

当接收到宽(高电平)数据时,Q6断开且Q7接通。当接收到窄(低电平)数据时,Q6接通且Q7断开。当接收到高/低电平数据时,D5,D7开启陶瓷滤波器。

Q9伴随着宽/窄数据而接通/断开,IC12检测器输出电平经常变化用来维持宽或窄信号过程中的恒定输出电平。

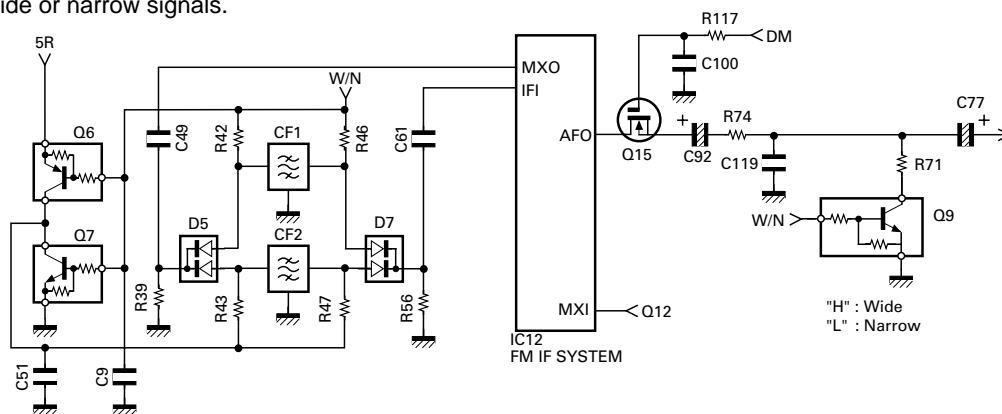


Fig. 3 Wide/Narrow changeover circuit / 图3 宽/窄转换电路

CIRCUIT DESCRIPTION / 电路说明

3-4. Audio amplifier circuit

The demodulated signal from IC12 goes through the mute switch (Q15) and is amplified by IC4 (2/2), high-pass filtered, low-pass filtered, high-pass filtered, band-eliminate filtered, and de-emphasized by IC13.

The signal then goes through an AF amplifier IC7 (2/2), an electronic volume control (IC8), and an AF switch (Q310 is on), and is routed to audio power amplifier (IC300), where it is amplified and output to the internal speaker.

The audio mute signal (AM) from the shift register becomes Low in the standby and Q304, Q305 which are power supply circuit for IC300 turn off. Also, IC13 is set to the power down mode according to data from microprocessor, and the AF signal is muted. When the audio is output, AM becomes High to turn Q304, Q305 ON, and voltage is supplied to power terminal VP of IC300. Also, IC13 is canceled out of the power down mode.

The speaker is switched by the logic of speaker switching terminal SSW on the universal connector. When SP-MIC is not attached, the logic of SSW becomes High and SW (Q310) is turned ON, and the AF signal is input to both amplifiers of IC300.

When SP-MIC is attached, SSW is connected to GND at inside of SP-MIC. For this reason, Q310 is turned OFF, and the AF signal is input only to amplifier for EXT SP of IC300.

Change of INT/EXT SP refer to Fig. 4.

AM	SSW	VC1	VC2	SP
H	H	H	L	INT
H	L	L	H	EXT
L	H	L	L	MUTE
L	L	L	L	MUTE

3-4. 音频放大器电路

来自于IC12的解调信号进入静音开关(Q15), 并且被IC4(2/2)放大, 被IC13高通滤波, 低通滤波, 高通滤波, 频带消除滤波和去加重。

然后信号通过音频放大器IC7(2/2), 电子音量控制器(IC8)和音频开关(Q310接通), 并且发送到音频功率放大器(IC300), 被放大后输出到内置扬声器。

来自于位移存储器的音频静音信号(AM)待机时变为低电平, 给IC300提供功率的电路Q304, Q305断开。同时, IC13按照来自于微处理器的数据被设定为低功耗模式, 音频信号处于静音状态。当输出音频时, 音频静音信号变为高电平并接通Q304, Q305, 并向IC300的功率端点VP提供电压。同时, IC13取消低功耗模式。

扬声器被通用接口上的扬声器开关端点SSW的逻辑电路开启。当扬声器-话筒不匹配时, SSW的逻辑电路变为高电平且SW(Q310)被接通, 同时信号被输入到IC300的两个放大器。

当扬声器-话筒匹配时, SSW与扬声器-话筒内的地线连接。因此, Q310断开, 音频信号只输入到IC300的EXT SP放大器。

有关INT/EXT SP的变化参见图4。

AM	SSW	VC1	VC2	SP
H	H	H	L	INT
H	L	L	H	EXT
L	H	L	L	静音
L	L	L	L	静音

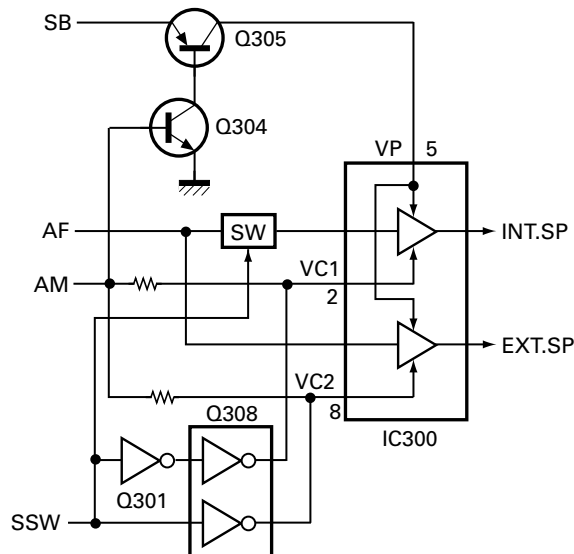


Fig. 4 Audio amplifier circuit / 图4 音频放大器电路

CIRCUIT DESCRIPTION / 电路说明

3-5. Squelch circuit

The output from IC12 enters FM IF IC again, then passed through a band-pass filter. The noise component output from IC12 is amplified by Q4 and rectified by D4 to produce a DC voltage corresponding to the noise level. The DC voltage is sent to the analog port of the CPU (IC19). And IC12 outputs a DC voltage (RSSI) corresponding to the input of the IF amplifier. The CPU reads the RSSI signal via pin 93.

IC19 determines whether to output sounds from the speaker by comparing the input voltage of pin 91 and pin 93 with the preset value.

3-5. 静噪电路

IC12的输出再次进入调频中频芯片，然后通过带通滤波器。IC12输出的噪音成分被Q4放大并且被D4整流生成一个相对于噪音电平的直流电压。直流电压被发送到CPU (IC19) 的模拟端口。IC12生成一个相对于中频放大器输入的直流电压 (RSSI)。CPU通过管脚93读取RSSI。

IC19将管脚91和管脚93的输入电压与预设值进行比较后决定是否通过扬声器输出声音。

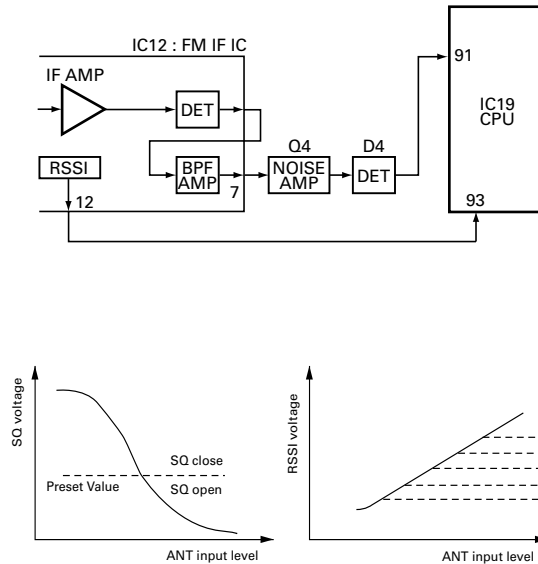


Fig. 6 Squelch and RSSI voltage vs ANT input level /

图6 静噪和RSSI电压与ANT输入电平

4. Transmitter System

4-1. Microphone amplifier

The signal from the internal microphone goes through the mute switch (Q300).

When the SP-MIC is not attached, the microphone switching terminal (MSW) on the universal connector becomes High, and mute switch (Q300) is turned ON. When the SP-MIC is attached, MSW is connected to GND at inside of SP-MIC. For this reason, Q300 is turned OFF, the internal microphone is muted, and only the input of the external microphone is supplied to the microphone amplifier of the TX-RX unit.

The signal from microphone passes through the limiter circuit in D8, Mic mute switch (Q17 is off in TX) and through the low-pass filter (IC25 : 1/2), the high-pass filter, the ALC circuit, the low-pass filter, the high-pass filter, and pre-emphasis/IDC circuit in IC13. When encoding DTMF, mute switch (Q13) is turned OFF for muting the microphone input signal.

The signal passes through the D/A converter (IC8) for the maximum deviation adjustment, and enters the summing amplifier consisting of IC7 (1/2), and is mixed with the low speed data from the CPU (IC19) and 9600bps DATA from Optional Board Terminal.

4. 发射部系统

4-1. 话筒放大器

来自于内置话筒的信号进入静音开关 (Q300)。

当扬声器-话筒不匹配时，通用接口上的话筒开关端点 (MSW) 变为高电平，静音开关 (Q300) 接通。当扬声器-话筒匹配时，MSW与扬声器-话筒内的地线连接。因此，Q300断开，内置话筒静音，并且只有外置话筒的输入提供给TX-RX单元的话筒放大器。

来自于话筒的信号通过D8中的限幅电路，话筒静音开关 (TX中的Q7断开)，并且通过低通滤波器 (IC25: 1/2)，高通滤波器，ALC电路，低通滤波器，高通滤波器以及IC13中的预加重/IDC电路。当DTMF进行编码时，静音开关 (Q13) 断开使话筒输入信号静音。

信号通过数/模转换器进行最大偏差调整，然后进入由IC7 (1/2) 组成的总和放大器，并且与来自于CPU (IC19) 的低速率数据和来自于可选电路板端点的9600bps数据进行混合。

CIRCUIT DESCRIPTION / 电路说明

The output signal from the summing amplifier passes through the D/A converter (IC8) again and goes to the VCO modulation input.

The other output signal from the summing amplifier passes through the D/A converter (IC8) again for the BAL adjustment, and the buffer amplifier (IC1 (2/2)), and goes to the TCXO modulation input.

来自于总和放大器的输出信号再次通过数/模转换器 (IC8) 并进入 VCO 调变输入。

来自于总和放大器的其他输出信号再次通过数/模转换器 (IC8) 进行 BAL 调整, 并通过缓冲放大器 (IC1 2/2), 然后进入 TCXO 调变输入。

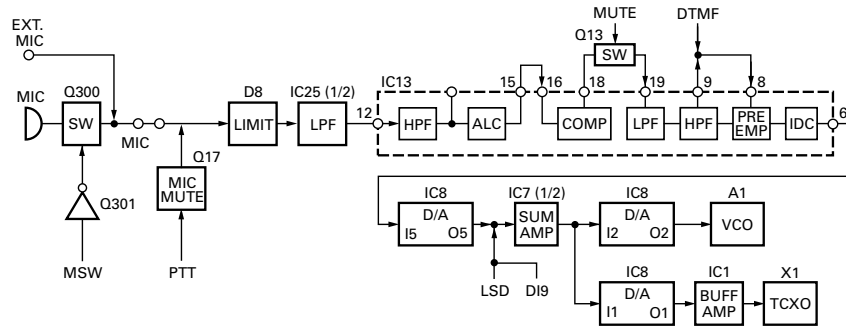


Fig. 7 Microphone amplifier / 图7 音频放大

4-2. Drive and Final amplifier

The signal from the T/R switch (D9 is on) is amplified by the pre-drive (Q18) and drive amplifier (Q20) to 50mW.

The output of the drive amplifier is amplified by the RF power amplifier (IC100) to 4.0W (1W when the power is low). The RF power amplifier consists of two stages MOS FET transistor. The output of the RF power amplifier is then passed through the harmonic filter (LPF) and antenna switch (D12, D401 is on) and applied to the antenna terminal.

4-2. 驱动和末级放大器

来自于 T/R 开关 (D9 接通) 的信号被前置驱动 (Q18) 和驱动放大器 (Q20) 放大到 50mW。

驱动放大器的输出被射频功率放大器 (IC100) 放大到 4.0W (当低功率时为 1W)。射频功率放大器由两个分段式 MOS FET 晶体管组成。然后射频功率放大器的输出通过谐波滤波器 (LPF) 和天线开关 (D12, D401 接通) 提供给天线端点。

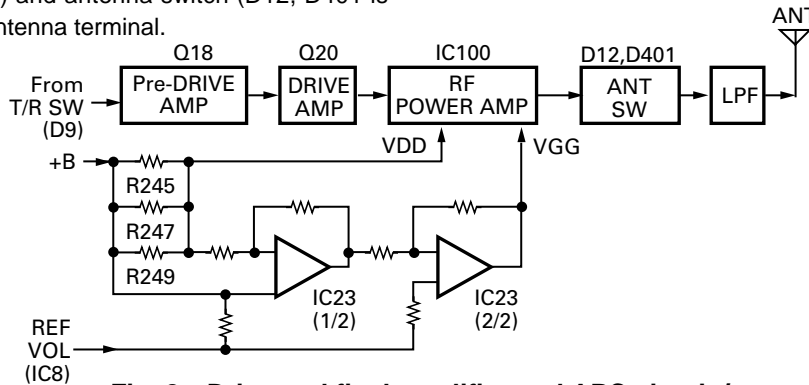


Fig. 8 Drive and final amplifier and APC circuit / 图8 驱动和末级放大器和自动功率控制电路

4-3. APC circuit

The APC circuit always monitors the current flowing through the RF power amplifier (IC100) and keeps a constant current. The voltage drop at R245, R247 and R249 is caused by the current flowing through the RF power amplifier and this voltage is applied to the differential amplifier (IC23 1/2).

IC23(2/2) compares the output voltage of IC23(1/2) with the reference voltage from IC8, and the output of IC23(2/2) controls the VGG of the RF power amplifier to make the both voltages to same voltage.

The change of power high/low is carried out by the change of the reference voltage. Q22,23 and 25 are turned on in transmit and the APC circuit is active.

4-3. 自动功率控制电路

自动功率控制电路通常监视流经射频功率放大器 (IC100) 的电流并保持其稳定。流经射频功率放大器的电流使 R245, R247 和 R249 的电压降低并且此电压提供给不同的放大器 (IC23 1/2)。

IC23 (2/2) 将 IC23 (1/2) 的输出电压与来自于 IC8 的参考电压进行比较, IC3 (2/2) 的输出控制射频功率放大器的 VGG 使两种电压保持一致。

通过改变参考电压来进行高/低功率的修改。发送时 Q22, Q23 和 Q25 接通并且自动功率控制电路被激活。

CIRCUIT DESCRIPTION / 电路说明

5. Frequency Synthesizer Unit

5-1. Frequency synthesizer

The frequency synthesizer consists of the TCXO (X1), VCO (A1), PLL IC (IC14) and buffer amplifiers.

The TCXO generates 16.8MHz. The frequency stability is 1.5ppm within the temperature range of -30 to +60°C. The frequency tuning and modulation of the TCXO are done to apply a voltage to pin 1 of the TCXO. The output of the TCXO is applied to pin 8 of the PLL IC.

The TK-385's VCO consists of 2VCO and covers a dual range of the 305.15~445.15MHz and the 350~390MHz. The VCO generates 405.15~425.15MHz for providing to the first local signal in receive. In TX, the pin 3 of the VCO goes low and the VCO generates 350~390MHz.

The output of the VCO is amplified by the buffer amplifier (Q16) and routed to the pin 5 of the PLL IC. Also the output of the VCO is amplified by the buffer amplifier (Q18) and routed to the next stage according to T/R switch (D9, D23).

The PLL IC consists of a prescaler, fractional divider, reference divider, phase comparator, charge pump. This PLL IC is fractional-N type synthesizer and performs in the 40,50 or 60kHz reference signal which is eighth of the channel step (6.25kHz). The input signal from the pins 5 and 8 of the PLL IC is divided down to the 50kHz and compared at phase comparator. The pulsed output signal of the phase comparator is applied to the charge pump and transformed into DC signal in the loop filter (LPF). The DC signal is applied to the pin 1 of the VCO and locked to keep the VCO frequency constant.

PLL data is output from DT (pin 75). CP (pin 19) and EP (pin 47) of the microprocessor (IC19). The data are input to the PLL IC when the channel is changed or when transmission is changed to reception and vice versa.

5. 频率合成器单元

5-1. 频率合成器

频率合成器由 TCXO (X1), VCO (A1), PLL IC (IC14) 和缓冲放大器组成。

TCXO产生16.8MHz的频率。在-30到+60°C的温度范围内，频率稳定性为1.5ppm。TCXO的频率调谐和调变给TCXO的管脚1提供电压。TCXO的输出提供给PLL IC的管脚8。

TK-385的VCO由两个VCO组成，并且控制两个范围，305.15~445.15MHz和350~390MHz。VCO产生405.15~425.15MHz的频率提供给接收中的第一本振信号。在发送中，VCO的管脚3变为低电平，VCO产生350~390MHz的频率。

VCO的输出被缓冲放大器(Q16)放大，然后进入PLL IC的管脚5。同时，VCO的输出被缓冲放大器(Q18)放大，然后按照T/R开关(D9, D23)进入下一级。

PLL IC由预标度器，分级驱动器，参考驱动器，相位比较器和负载增压组成。PLL IC是N级合成器，并且以第8级信道(6.25kHz)频率为40,50或60kHz的参考信号运行。来自于PLL IC的管脚5和管脚8的输入信号被分割为50kHz，并且在相位比较器中进行比较。相位比较器的脉冲输出信号提供给负载增压，并且被变压后进入环路滤波器(LPF)中的直流信号。直流信号提供给VCO的管脚1并被锁定，以保持VCO频率的稳定性。

微处理器(IC19)的DT(管脚75)，CP(管脚19)和EP(管脚47)输出PLL数据。当信道改变或发送变为接收和声音反转时，数据被输入到PLL IC。

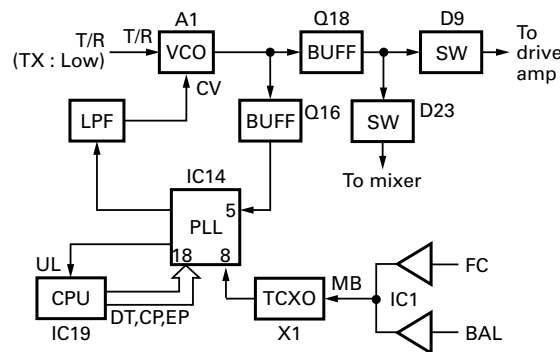


Fig. 9 PLL block diagram / 图9 锁相环方块图

6. Control Circuit

The control circuit consists of microprocessor (IC19) and its peripheral circuits. It controls the TX-RX unit and transfers data to and from the display unit. IC19 mainly performs the following;

- 1) Switching between transmission and reception by PTT signal input.
- 2) Reading system, group, frequency, and program data from the memory circuit.

6. 控制电路

控制电路由微处理器 (IC19) 和其外围电路组成。微处理器控制TX-RX单元和发送到显示单元的数据以及从显示单元发送的数据。IC19主要执行下述功能：

- 1) 通过PTT信号输出在发射和接收之间转换。
- 2) 从存储器电路读取系统，组，频率和编程数据。

CIRCUIT DESCRIPTION / 电路说明

- 3) Sending frequency program data to the PLL.
- 4) Controlling squelch on/off by the DC voltage from the squelch circuit.
- 5) Controlling the audio mute circuit by decode data input.
- 6) Transmitting tone and encode data.

- 3) 向PLL发送频率编程数据。
- 4) 通过来自于静噪电路的直流电压控制静噪的开启/关闭。
- 5) 通过解码数据输入控制音频静音电路。
- 6) 发送音频和编码数据。

6-1. Memory circuit

Memory circuit consists of the CPU (IC19) and a flash memory (IC17).

A flash memory has a capacity of 2M bits and contains the transceiver control program for the CPU and the data for operating features.

This program can be easily downloaded from an external device.

• Flash Memory

Note : The flash memory stores the data containing the FPU (KPG-62D CPS) program, Security Number (MPT Serial Number) and firmware program (User mode, Test mode, Tuning mode, etc.).

This data must be reinstalled when replacing the flash memory.

• EEPROM

Note : The EEPROM stores tuning data (Deviation, Squelch, etc.).

Realign the transceiver after replacing the EEPROM.

6-1. 存储器电路

存储器电路由CPU (IC19) 和闪存存储器 (IC17) 组成。

闪存为2M位, 包括CPU的手持机控制程序和操作特性数据。此程序可以从外置设备轻易写入。

• 闪存

注释: 闪存保存的数据包括FPU(KPG-62D CPS)程序, 安全码(MPT序列号)和固件编程(用户模式, 测试模式, 调谐模式等)。当更换闪存时, 必须重新安装数据。

• EEPROM

注释: EEPROM保存调谐数据(正交, 噪音抑制电路等)。更换EEPROM后重新调校手持机。

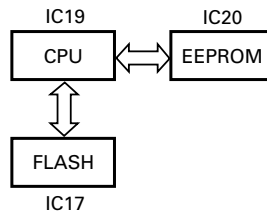


Fig. 10 Memory circuit / 图 10 存储器电路

6-2. Low battery warning

The battery voltage is monitored by the microprocessor (IC19). When the battery voltage falls below the voltage set by the Low Battery Warning adjustment, the red LED flashes to notify the operator that it is time to replace the battery. If the battery voltage falls even more (approx. 5.8V), a beep sounds and transmission is stopped.

Low battery warning	Battery condition
The red LED flashes during transmission	The battery voltage is low but the transceiver is still usable.
The red LED flashes and continuous beep sounds while PTT pressed	The battery voltage is low and the transceiver is not usable to make calls.

6-2. 电池低压告警

通过微处理器 (IC19) 监视电池电压。当电池的电压低于通过电池低压告警调整设定的电压时, 红色指示灯闪烁以提示操作者更换电池。如果电池的电压继续降低 (大约 5.8V), 则发出 beep 音并停止发送。

电池低压告警	电池状态
发射过程中红色指示灯闪烁。	电池电压降低但仍可使用手持机。
当按下 PTT 键时红色指示灯闪烁并且手持机发出连续 beep 音。	电池电压降低不能使用手持机发出呼叫。

CIRCUIT DESCRIPTION / 电路说明

6-3. Key input

If the clock is supplied to CLK terminal when the RES terminal (CPU pin 78) of the decade counter (IC301) is set to Low, Q0 to Q7 become High sequentially. Normally, KI1 and KI2 are Low (pulled down). When any key is pressed, KI1 or KI2 become High. The CPU detects which key is pressed, according to the voltage of KI1 and KI2 and clock timing.

6-3. 按键输入

当解码计数器 (IC301) 的 RES 端点 (CPU 管脚 78) 设定为低电平时, 如果向 CLK 端点输入时钟, 则 Q0 和 Q7 变为连续的高电平。通常情况下, KI1 和 KI2 为低电平 (降低)。当按下任何按键时, KI1 或 KI2 变为高电平。CPU 检测按下的是哪一个按键, 然后按照 KI1 和 KI2 的电压, 时钟开始计时。

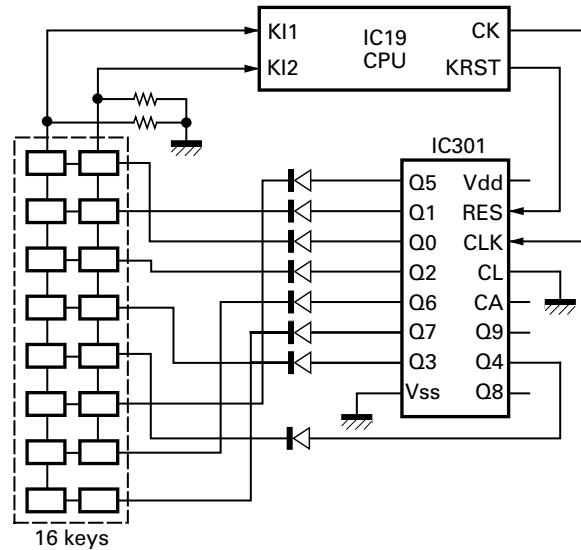


Fig. 11 Key input / 图 11 按键输入

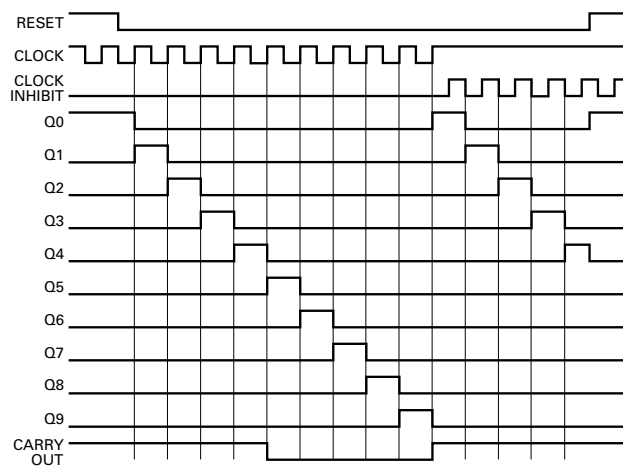


Fig. 12 Decade counter timing chart / 图 12 解码计数器计时图表

CIRCUIT DESCRIPTION / 电路说明

7. Signalling Circuit

7-1. Encode

• Low-speed data (QT,DQT)

Low-speed data is output from pin 1 of the CPU. The signal passes through a low-pass CR filter, and goes to the summing amplifier (IC7 1/2). The signal is mixed with the audio signal and goes to the VCO (A1) and TCXO (X1) modulation input after passing through the D/A converter (IC8) for BAL adjustment.

• High-speed data (DTMF)

High-speed data is output from pin 2 of the CPU. The signal passes through a low-pass filter consisting of IC10, and provides a TX HSD tone and a RX HSD tone TX HSD deviation making an adjustment by microprocessor is passed through the D/A converter (IC8), and then applied to the audio processor (IC13).

The signal is mixed with the audio signal and goes to the VCO and TCXO, the RX HSD tone is passed a summing amplifier (IC7 2/2), the D/A converter (IC8) for audio control, audio power amplifier and then to the speaker.

• FFSK

ESN utilizes 1200bps FFSK signal. FFSK signal is output from pin 6 of IC13. The signal passes through the D/A converter (IC8) for the FFSK deviation adjustment. and is routed to the VCO. When encoding FFSK, the microphone input signal is muted.

7. 信令电路

7-1. 编码

• 低速率数据 (QT, DQT)

CPU的管脚1输出低速率数据。信号通过低通陶瓷滤波器进入总和放大器 (IC7 1/2)。此信号与音频信号混合, 通过数/模转换器 (IC8) 进行BAL调整后进入VCO (A1) 和TCXO (X1) 调变输入。

• 高速率数据 (DTMF)

CPU的管脚2输出高速率数据。信号通过IC10组成的低通滤波器, 并提供TX HSD音频和RX HSD音频。通过微处理器进行调整的TX HSD偏差进入数/模转换器 (IC8), 然后提供给音频处理器 (IC13)。

此信号与音频信号混合后进入VCO和TCXO, RX HSD通过总和放大器 (IC7 2/2), 数/模转换器 (IC8) 进行音频控制, 音频功率放大器, 然后进入扬声器。

• FFSK

ESN使用1200bps FFSK信号。IC13的管脚6输出FFSK信号。此信号通过数/模转换器 (IC8) 进行FFSK偏差调整, 然后进入VCO。当编码FFSK时, 话筒输入信号为静音。

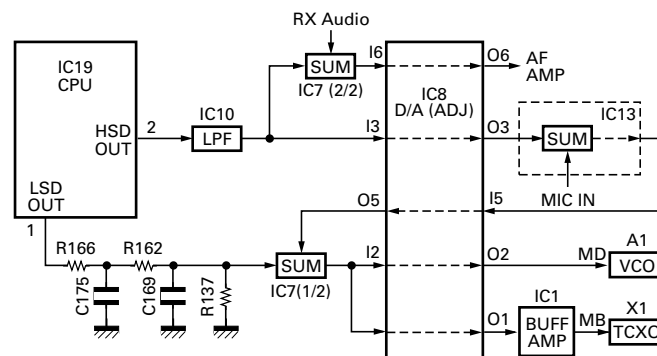


Fig. 13 Encode / 图 13 编码

7-2. Decode

• Low-speed data (QT,DQT)

The demodulated signal from the IF IC (IC12) is amplified by IC4 (2/2) and passes through a low-pass filter (IC11) to remove audio components. The signal is input to pin 95 of the CPU.

The CPU digitizes this signal, performs processing such as DC restoration, and decodes the signal.

7-2. 解码

• 低速率数据 (QT, DQT)

来自于中频芯片 (IC12) 的已解调的信号被IC4 (2/2) 放大, 然后通过低通滤波器 (IC11) 消除音频成分。此信号被输入到CPU的管脚95。

CPU使信号数字化, 执行诸如直流恢复和解码信号这样的步骤。

CIRCUIT DESCRIPTION / 电路说明

• FFSK

The FFSK input signal from the IF IC is amplified by IC4 (1/2) and goes to pin 5 of IC13. The signal is demodulated by FFSK demodulator in IC13. The demodulated data goes to the CPU for processing.

• FFSK

来自于中频芯片的FFSK输入信号被IC4(1/2)放大, 然后进入IC13的管脚5。此信号被IC13中的FFSK解调器解调。已解调的数据进入CPU执行操作。

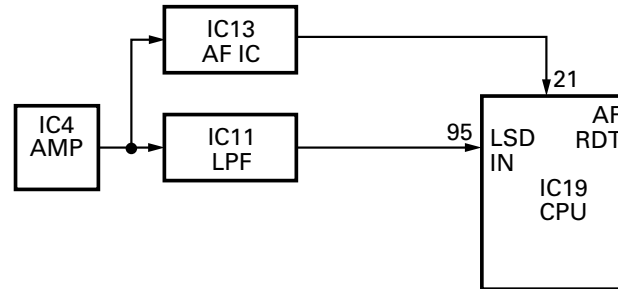


Fig. 14 Decode / 图 14 解码

8. Power Supply Circuit

Battery +B is supplied via a 3A fuse from the battery terminal connected to the TX-RX unit. After passing through the power switch, power supply (SB) is applied to the three AVRs. IC5 supplies 5V (5M) to the control circuit, and IC9 supplies 5V (5C) to common circuits. IC6 supplies to the TX circuit, the RX circuit and common circuits of needless save mode. During transmission, 5TC becomes Low and Q3 is turned ON to supply 5V (5T) to the TX circuit. During reception, 5RC becomes Low and Q2 is turned ON to supply 5V (5R) to the RX Circuit.

8. 电源电路

经由来自于连接到TX-RX单元的电池端点的3A保险丝提供电池 + B。通过电源开关后, 电源 (SB) 向 3 个 AVRs 提供电压。IC5 向控制电路提供 5V (5M) 电压, IC9 向共用电路提供 5V (5C) 电压。IC6 向 TX 电路, RX 电路和共用电路的保存模式提供电压。在发送过程中, 5TC 变为低电平, 且 Q3 接通并向 TX 电路提供 5V (5T) 电压。在接收过程中, 5RC 变为低电平, 且 Q2 接通并向 RX 电路提供 5V (5R) 电压。

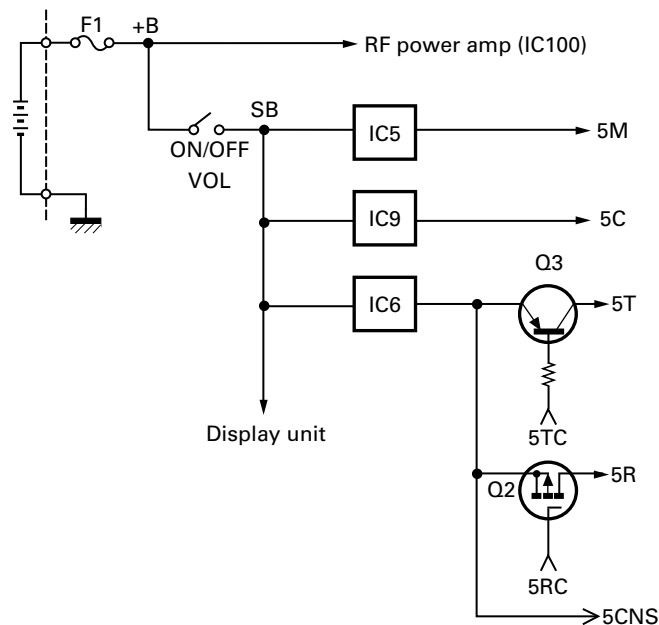


Fig. 15 Power supply circuit / 图 15 电源电路

CIRCUIT DESCRIPTION / 电路说明

9. Optional Board Terminal

Terminals for mounting the option board are provided at the bottom edge of the TX-RX unit. The table below shows the correspondence between the board and terminals. R37, R69, R250, R259, R260, R276, R280 may have to be removed depending on the type of option board being used.

Name	Function
SB	Battery (7.5V)
GND	Ground
TXD	Serial data
RXD	Serial data
SQ	Busy: high
LOK	Link acquired : low (TX mode)
DI/ANI	Modulation (ANI) input
DEO	Detect output
TXAI/MUTE	Modulation output from board or mic mute: low
TXAO	Modulation input to board
RXAI	Received signal input to board
RXAO	Received signal output from board
D1	Binary 1
D2	Binary 2
OPT	Scramble, Emergency:low
PTTIN	PTT switch signal input to board (TX:low)
5CNS	Battery (5V)
DI9	9600 bps data input
RXEMAO	Received signal output from board (after de-emphasis)
RXEMAI	Received signal input to board (after de-emphasis)
PTTOUT	PTT switch signal output from board (TX:low)
MONI	Busy:low
LAMP	Busy:low
AAC	Audio Amp Control signal output from board (Busy:high)
Audio Beep	Beep signal output from board.
AUX TXD	Serial data
AUX RXD /EXT SW	Serial data/Option switch port

Table 1 Terminal name and function

9. 可选电路板端子

TX-RX单元的底部边缘提供了安装可选电路板的端子。下表给出了电路板和端子之间的对应关系。按照选用的可选电路板的型号，可能需要去掉R37, R69, R250, R259, R260, R276, R280。

名称	功能
SB	电池 (7.5V)
GDN	接地
TXD	串行数据
RXD	串行数据
SQ	忙：高电平
LOK	链接成功：低电平 (TX 模式)
DI/ANI	调制 (ANI) 输入
DEO	检测输出
TXAI/MUTE	从电路板的调制输出 / 麦克风静音：低电平
TXAO	调制输入到电路板
RXAI	接收到的信号输入到电路板
RXAO	从电路板输出的接收到的信号
D1	二进制 1
D2	二进制 2
OPT	语音加密, 紧急：低电平
PTTIN	PTT 开关信号输入到电路板 (TX：低电平)
5CNS	电池 (5V)
DI9	9600bps数据输入
RXEMAO	从电路板输出的接收到的信号 (去加重后)
RXEMAI	接收到的信号输入到电路板 (去加重后)
PTTOUT	从电路板输出的 PTT 开关信号 (TX：低电平)
MONI	忙：低电平
LAMP	忙：低电平
AAC	从电路板输出的音频放大控制信号 (忙：高电平)
Audio Beep	从电路板输出的 Beep 信号
AUX TXD	串行数据
AUX RXD /EXTSW	串行数据/可选开关端口

表 1 端子名称和功能

SEMICONDUCTOR DATA / 半导体数据

Microprocessor : 30620M8A-394GP
(TX-RX UNIT : IC19)

■ Pin function

Pin No.	Port Name	I/O	Function
1	LSDOUT	O	Low speed data output.
2	HSDOUT	O	High speed data output.
3	HSDIN	I	High speed data input.
4	DTMSTD	I	DTMF decode IC data detect input.
5	SELF	I	Self programming mode input.
6	BYTE	I	+5V.
7	CNVSS	I	GND.
8	SFTOE	O	Shift register output enable.
9	LCDCS	O	LCD driver chip select output.
10	RESET	I	Microcomputer reset input.
11	XOUT	-	9.8304MHz (System clock).
12	VSS	-	GND.
13	XIN	-	9.8304MHz (System clock).
14	VCC	-	+5V
15	AUX	I	AUX switch input.
16	AFTRD	I	FFSK modulation data output timing pulse input.
17	AFRTM	I	FFSK demodulation data input timing pulse input.
18	EN2	I	Encoder pulse input 2.
19	PLLCLK	O	PLL IC clock output.
20	BEEP	O	Beep data output.
21	AFRDT	I	FFSK demodulation data input.
22	AFREG1	O	AF IC register switching data output 1.
23	AFREG2	O	AF IC register switching data output 2.
24	EEPDAT	O	EEPROM data output.
25	DACSTB	O	D/A converter IC data strobe output.
26	AFCLR	O	FFSK flame reset output.
27	SAVE	O	Battery save output.
28	LAMP	I	LAMP switch input.
29	AUXTXD	O	External Serial interface output.
30	AUXRXD	I	External Serial interface input.
31	PLLUL	I	PLL unlock detect input.
32	AFFFSKE	O	FFSK modulation enable (Enable active "H").
33	TXD	O	Serial interface output (ex. PC).
34	RXD	I	Serial interface input (ex. PC).
35	AFDAT	O	FFSK data output.
36	PTT	I	PTT switch input.
37	RDY	-	Not used.
38	ALE	-	Not used.
39	HOLD	-	Not used.
40	HLDA	-	Not used.
41	BLCK	-	Not used.
42	RD	-	Flash memory RD bus.
43	BHE	-	Not used.
44	WR	-	Flash memory WR bus.
45	DTMCLK	O	DTMF decode IC clock output.
46	CNTCLK	O	Common clock output.
47	PLLSTB	O	PLL IC data strobe output.
48	CS0	O	Flash memory chip enable.
49	A19	-	Not used.

微处理器 : 30620M8A-394GP
(TX-RX 单元 : IC19)

■ 管脚功能

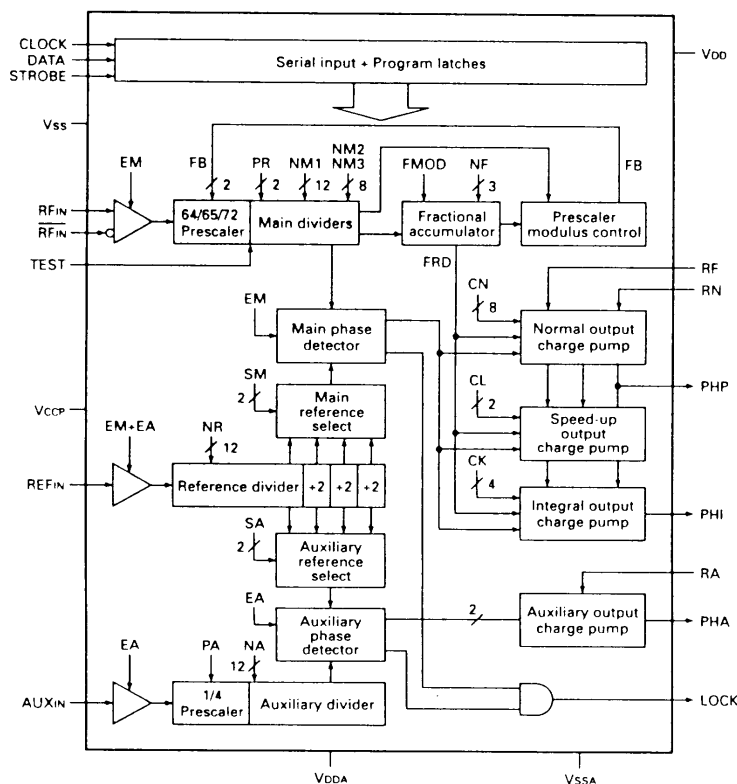
管脚号	端口名称	输入/输出	管脚功能
1	LSDOUT	输出	低速率数据输出
2	HSDOUT	输出	高速率数据输出
3	HSDIN	输入	高速率数据输入
4	DTMSTD	输入	DTMF 解码 IC 数据检测输入
5	SELF	输入	自台编程模式输入
6	BYTE	输入	+ 5V
7	CNVSS	输入	接地
8	SFTOE	输出	位移寄存器输出有效
9	LCDCS	输出	LCD 驱动芯片选择输出
10	RESET	输入	微处理器复位输入
11	XOUT	-	9.8304MHz(系统时钟)
12	VSS	-	接地
13	XIN	-	9.8304MHz(系统时钟)
14	VCC	-	+ 5V
15	AUX	输入	AUX 开关输入
16	AFTRD	输入	FFSK 调制数据输出定时脉冲输入
17	AFRTM	输入	FFSK 调制数据输入定时脉冲输入
18	EN2	输入	编码脉冲输入 2
19	PLLCLK	输出	PLL IC 时钟输出
20	BEEP	输出	beep 数据输出
21	AFRDT	输入	FFSK 解调数据输入
22	AFREG1	输出	音频芯片位移开关数据输出 1
23	AFREG2	输出	音频芯片位移开关数据输出 2
24	EEPDAT	输出	EEPROM 数据输出
25	DACSTB	输出	数/模转换器芯片数据选通输出
26	AFCLR	输出	FFSK 复位输出
27	SAVE	输出	电池省电模式输出
28	LAMP	输入	LAMP 开关输入
29	AUXTXD	输出	外置串口输出
30	AUXRXD	输入	外置串口输入
31	PLLUL	输入	PLL 失锁检测输入
32	AFFFSKE	输出	FFSK 调制有效 (有效 "高电平")
33	TXD	输出	串口输出 (例如 PC 机)
34	RXD	输入	串口输入 (例如 PC 机)
35	AFDAT	输出	FFSK 数据输出
36	PTT	输入	PTT 开关输入
37	RDY	-	不使用
38	ALE	-	不使用
39	HOLD	-	不使用
40	HLDA	-	不使用
41	BLCK	-	不使用
42	RD	-	闪存存储器 RD 总线
43	BHE	-	不使用
44	WR	-	闪存存储器 WR 总线
45	DTMCLK	输出	DTMF 解码芯片时钟输出
46	CNTCLK	输出	共用时钟输出
47	PLLSTB	输出	PLL 芯片数据选通输出
48	CS0	输出	闪存芯片有效
49	A19	-	不使用

Pin No.	Port Name	I/O	Function
50-59	A9-A18	-	Flash memory address bus.
60	VCC	-	+5V
61	A8	-	Flash memory address bus.
62	VSS	-	GND.
63-70	A0-A7	-	Flash memory address bus.
71	MONI	I	Monitor switch input.
72	EN4	I	Encoder pulse input 4.
73	EN3	I	Encoder pulse input 3.
74	EN1	I	Encoder pulse input 1.
75	MINDAT	O	Common data output.
76	KEY2	I	Key scan input 2.
77	KEY1	I	Key scan input 1.
78	RESET	O	Key scan IC reset output..
79-86	D0-D7	-	Flash memory data bus.
87	DTMDAT	I	DTMF decode IC data input.
88	PF	I	PF switch input.
89	VOL	I	Volume level input.
90	BATT	I	Battery voltage input.
91	ANLSQL	I	Squelch level input.
92	TEMP	I	Thermistor input.
93	RSSI	I	Received signal strength indicator input (RSSI).
94	AVSS	-	GND.
95	LSDIN	I	Low speed data input.
96	VREF	-	+5V
97	AVCC	-	+5V
98	SFTSTB1	O	Shift register data strobe output.
99	W/N	O	Wide/Narrow switching output.
100	AFSTB	O	AF IC data strobe output.

管脚号	端口名称	输入/输出	管脚功能
50-59	A9-A18	-	闪存地址总线
60	VCC	-	+ 5V
61	A8	-	闪存地址总线
62	VSS	-	接地
63-70	A0-A7	-	闪存地址总线
71	MONI	输入	监听开关输入
72	EN4	输入	编码脉冲输入 4
73	EN3	输入	编码脉冲输入 3
74	EN1	输入	编码脉冲输入 1
75	MINDAT	输出	共用数据输出
76	KEY2	输入	按键扫描输入 2
77	KEY1	输入	按键扫描输入 1
78	RESET	输出	按键扫描 IC 复位输出
79-86	D0-D7	-	闪存数据总线
87	DTMDAT	输入	DTMF 解码 IC 数据输入
88	PF	输入	PF 开关输入
89	VOL	输入	音量电平输入
90	BATT	输入	电池电压输入
91	ANLSQL	输入	静噪电路电平输入
92	TEMP	输入	热敏电阻输入
93	RSSI	输入	接收到的信号强度指示输入 (RSSI)
94	AVSS	-	接地
95	LSDIN	输入	低速率数据输入
96	VREF	-	+ 5V
97	AVCC	-	+ 5V
98	SFTSTB1	输出	位移寄存器数据选通输出
99	W/N	输出	宽/窄带开关输出
100	AFSTB	输出	音频芯片数据选通输出

PLL System : SA7025DK (TX-RX Unit : IC14)

Block diagram



SEMICONDUCTOR DATA / 半导体数据

■ Pin description

Pin No.	Symbol	Description
1	CLOCK	Serial clock input.
2	DATA	Serial data input.
3	STROBE	Serial strobe input.
4	VSS	Digital ground.
5	RFIN	Prescaler positive input.
6	$\overline{\text{RFIN}}$	Prescaler negative input.
7	VCCP	Prescaler positive Supply voltage. This pin supplies power to the prescaler and RF input buffer.
8	REFIN	Reference divider input.
9	RA	Auxiliary current setting; resistor to VSSA.
10	AUXIN	Auxiliary divider input.
11	PHA	Auxiliary phase detector output.
12	VSSA	analog ground.
13	PHI	Integral phase detector output.
14	PHP	Proportional phase detector output.
15	VDDA	Analog supply voltage. This pin supplies power to the charge pumps, Auxiliary prescaler, Auxiliary and Reference buffers.
16	RN	Main current setting; resistor to VSSA.
17	RF	Fractional compensation current setting; resistor to VSSA.
18	LOCK	Lock detector output.
19	TEST	Test pin; connect to VDD.
20	VDD	Digital supply voltage. This pin supplies power to the CMOS digital part of the device.

■ 管脚说明

管脚号		说明
1	CLOCK	串行时钟输入
2	DATA	串行数据输入
3	STROBE	串行选通输入
4	VSS	数字接地
5	RFIN	预标定器正极输入
6	$\overline{\text{RFIN}}$	预标定器负极输入
7	VCCP	预标定器正极供给电压。此管脚向预标定器和射频输入缓冲器提供电源。
8	REFIN	参考分频器输入
9	RA	辅助电流设定; 用于 VSSA 的电阻
10	AUXIN	辅助分频器输入
11	PHA	辅助相位检测器输出
12	VSSA	模拟接地
13	PHI	总体相位检测器输出
14	PHP	均衡相位检测器输出
15	VDDA	模拟供给电压。此管脚向负载增压, 辅助预标定器, 辅助和参考缓冲器提供电源。
16	RN	主电流设定; 用于 VSSA 的电阻
17	RF	部分补偿电流设定; 用于 VSSA 的电阻
18	LOCK	锁定检测输出
19	TEST	测试管脚; 连接到 VDD。
20	VDD	数字供给电压。此管脚向本设备的 CMOS 数字部分提供电源。

DESCRIPTION OF COMPONENTS / 元件说明

DISPLAY UNIT (X54-3210-12)

Ref. No.	Use/Function	Operation/Condition
IC300	IC	Audio power amplifier
IC301	IC	Counter /Key scan
Q300	FET	DC switch / INT MIC on/off
Q301	FET	DC switch
Q302	Transistor	DC switch / LED (Red) driver
Q303	Transistor	DC switch / LED (Green) driver
Q304	Transistor	DC switch
Q305	Transistor	Current driver / Audio amp AVR
Q306	Transistor	DC switch
Q307	Transistor	Current driver / LCD back light LED AVR
Q308	FET	DC switch / SP INT/EXT
Q309	Transistor	Temperature compensation
Q310	FET	Mute switch
D300	Zener diode	Surge absorption
D301	LED	LED / Red, Green
D302	Diode	Quick discharge /AF mute
D303	Zener diode	Voltage reference
D304	Diode	Voltage reference
D305-310	LED	LCD back light
D315-318	Diode	Reverse current prevention
D319-321	Zener diode	Surge absorption

显示单元(X54-3210-12)

Ref. No.	使用 / 功能	操作 / 状态
IC300	芯片	音频功率放大器
IC301	芯片	计数器 / 键扫描
Q300	场效应管	直流转换开关 / 内置话筒 on/off
Q301	场效应管	直流转换开关
Q302	晶体管	直流转换开关 / 发光二极管 (红) 驱动
Q303	晶体管	直流转换开关 / 发光二极管 (绿) 驱动
Q304	晶体管	直流转换开关
Q305	晶体管	电流驱动 / 音频放大 AVR
Q306	晶体管	直流转换开关
Q307	晶体管	电流驱动 / LCD背景灯 LED AVR
Q308	场效应管	直流转换开关 / 扬声器INT/EXT
Q309	晶体管	温度补偿
Q310	场效应管	静音开关
D300	齐纳二极管	浪涌吸收
D301	发光二极管	发光二极管 / 红, 绿
D302	二极管	快速放电 / 音频静音
D303	齐纳二极管	电压参考
D304	二极管	电压参考
D305-310	发光二极管	LCD背景灯光
D315-318	二极管	反向电流保护
D319-321	齐纳二极管	浪涌吸收

TX-RX UNIT (X57-6203-01)

Ref. No.	Use/Function	Operation/Condition
IC1,2	IC	Buffer amplifier
IC3	IC	Voltage detector / Reset
IC4	IC	Buffer amplifier
IC5	IC	Voltage regulator / 5M
IC6	IC	Voltage regulator / 5V
IC7	IC	Buffer amplifier
IC8	IC	D/A converter (Adjustment)
IC9	IC	Voltage regulator / 5C
IC10	IC	Active filter / For HSDout
IC11	IC	Active filter / For LSDin
IC12	IC	FM IF system
IC13	IC	Audio processor
IC14	IC	PLL system
IC16	IC	DTMF decoder
IC17	IC	Flash memory
IC18	IC	Active DBM
IC19	IC	Microprocessor
IC20	IC	EEPROM
IC21,22	IC	Shift register / Output expander
IC23	IC	Comparator (APC)
IC24	IC	Analog switch
IC25	IC	Active filter
Q1	Transistor	Switch
Q2	FET	DC switch / 5R
Q3	Transistor	DC switch / 5T
Q4	Transistor	Noise amplifier / Squelch
Q5	FET	DC switch / Save

TX-RX单元 X57-6203-01)

Ref. No.	使用 / 功能	操作 / 状态
IC1,2	IC	缓冲放大器
IC3	IC	电压检测 / 复位
IC4	IC	缓冲放大器
IC5	IC	电压调节器 / 5M
IC6	IC	电压调节器 / 5V
IC7	IC	缓冲放大器
IC8	IC	数字 / 模拟转换器 (调整)
IC9	IC	电压调节器 / 5C
IC10	IC	有源滤波器 / 用于HSDout
IC11	IC	有源滤波器 / 用于LSDin
IC12	IC	中频系统
IC13	IC	音频处理器
IC14	IC	锁相环电路系统
IC16	IC	DTMF解码器
IC17	IC	Flash存储器
IC18	IC	有源DBM
IC19	IC	微处理器
IC20	IC	EEPROM
IC21,22	IC	移位寄存器 / 输出扩展器
IC23	IC	比较器 (自动功率控制)
IC24	IC	模拟开关
IC25	IC	有源滤波器
Q1	晶体管	开关
Q2	场效应管	直流开关 / 5R
Q3	晶体管	直流开关 / 5T
Q4	晶体管	噪声放大器 / 静噪电路
Q5	场效应管	直流开关 / 省电模式

DESCRIPTION OF COMPONENTS / 元件说明

Ref. No.	Use/Function	Operation/Condition
Q6	Transistor	2 nd IF W/N switch sets to on when Narrow
Q7	Transistor	2 nd IF W/N switch sets to on when Wide
Q8	Transistor	Ripple filter
Q9	Transistor	DC switch / W/N audio amplitude adjust
Q10	Transistor	AF mute switch
Q11	FET	Mute switch
Q12	Transistor	IF amplifier
Q13	FET	Mute switch / MIC line mute
Q14	FET	DC switch
Q15	FET	DET mute
Q16	Transistor	PLL IC fin amplifier
Q17,18	Transistor	Buffer amplifier
Q19	Transistor	Clock frequency shift
Q20	Transistor	RF amplifier / TX driver
Q21	FET	DC switch
Q22	Transistor	DC switch
Q23	FET	DC switch
Q24	FET	RF amplifier
Q25	Transistor	DC switch
Q26	FET	Mute switch / MIC line mute
D1	Diode	Reverse protection
D2	Diode	Overload protection
D3	Diode	Reverse current protection
D4	Diode	Noise detection
D5	Diode	RF switch (2 nd IF wide/narrow)
D6	Diode	Current steering
D7	Diode	RF switch (2 nd IF wide/narrow)
D8	Diode	Voltage clamp
D9	Diode	TX/RX switch
D10	Diode	Overload protection
D11	Diode	Speed up
D12,14,15	Diode	ANT switch
D16	Diode	Overload protection
D17,18	Diode	Surge absorption
D20,22	Diode	Varactor tuning
D23	Diode	Voltage drop
D24,25	Diode	ANT switch
D401	Diode	ANT switch
D402	Diode	Discharge

Ref. No.	使用 / 功能	操作 / 状态
Q6	晶体管	当窄带时第二中频宽 / 窄转换开关设定为开启
Q7	晶体管	当宽带时第二中频宽 / 窄转换开关设定为开启
Q8	晶体管	脉动滤波器
Q9	晶体管	直流开关 / 宽 / 窄音频振幅调整
Q10	晶体管	音频静音开关
Q11	场效应管	静音开关
Q12	晶体管	中频放大器
Q13	场效应管	静音开关 / 麦克风 line 静音
Q14	场效应管	直流开关
Q15	场效应管	DET静音
Q16	晶体管	锁相环电路芯片 fin 放大器
Q17,18	晶体管	缓冲放大器
Q19	晶体管	时钟频率偏移
Q20	晶体管	射频放大器 / 发射驱动器
Q21	场效应管	直流开关
Q22	晶体管	直流开关
Q23	场效应管	直流开关
Q24	场效应管	射频放大器
Q25	晶体管	直流开关
Q26	场效应管	静音开关 / 麦克风 line 静音
D1	二极管	反向保护
D2	二极管	过载保护
D3	二极管	反向电流保护
D4	二极管	噪音检测
D5	二极管	射频开关 (第二中频宽 / 窄)
D6	二极管	电流方向
D7	二极管	射频开关 (第二中频宽 / 窄)
D8	二极管	钳位电压
D9	二极管	发射 / 接收开关
D10	二极管	过载保护
D11	二极管	加速
D12,14,15	二极管	天线开关
D16	二极管	过载保护
D17,18	二极管	浪涌吸收
D20,22	二极管	变容调谐
D23	二极管	电压降低
D24,25	二极管	天线开关
D401	二极管	天线开关
D402	二极管	放电

SUB UNIT (X58-4843-00)

Ref. No.	Use/Function	Operation/Condition
Q50	FET	VCO oscillation
Q51	FET	DC switch
Q52	FET	VCO oscillation
Q53	Transistor	DC switch
Q54	Transistor	RF Buffer amplifier
D50-D57	Diode	Frequency control
D58	Diode	TX modulation

SUB单元 X58-4843-00)

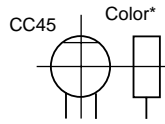
Ref. No.	使用 / 功能	操作 / 状态
Q50	场效应管	VCO 振荡
Q51	场效应管	直流开关
Q52	场效应管	VCO 振荡
Q53	晶体管	直流开关
Q54	晶体管	射频缓冲放大器
D50-57	二极管	频率控制
D58	二极管	发射调制

PARTS LIST / 零件表

CAPACITORS

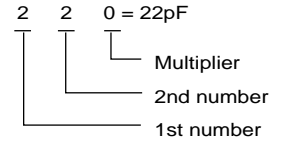
CC 45 TH 1H 220 J
 1 2 3 4 5 6

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



Capacitor value

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



Temperature coefficient

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

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

Example : CC45TH = -470 ± 60ppm/°C

Tolerance (More than 10pF)

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

(Less than 10pF)

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

Voltage rating

2nd word	A	B	C	D	E	F	G	H	J	K	V	
1st word	0	1.0	1.25	1.6	2.0	2.5	3.15	4.0	5.0	6.3	8.0	-
1	10	12.5	16	20	25	31.5	40	50	63	80	35	-
2	100	125	160	200	250	315	400	500	630	800	-	-
3	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	-	-

Chip capacitors

(EX) C C 7 3 F S L 1 H 0 0 0 J
 1 2 3 4 5 6 7

(Chip)(CH,RH<UJ,SL)

(EX) C K 7 3 F F 1 H 0 0 0 Z
 1 2 3 4 5 6 7

(Chip)(B,F)

Refer to the table above.

- 1 = Type
- 2 = Shape
- 3 = Dimension
- 4 = Temp. coefficient
- 5 = Voltage rating
- 6 = Value
- 7 = Tolerance

Dimension (Chip capacitors)

Dimension code	L	W	T
Empty	5.6 ± 0.5	5.0 ± 0.5	Less than 2.0
A	4.5 ± 0.5	3.2 ± 0.4	Less than 2.0
B	4.5 ± 0.5	2.0 ± 0.3	Less than 2.0
C	4.5 ± 0.5	1.25 ± 0.2	Less than 1.25
D	3.2 ± 0.4	2.5 ± 0.3	Less than 1.5
E	3.0 ± 0.2	1.6 ± 0.2	Less than 1.25
F	2.0 ± 0.3	1.25 ± 0.2	Less than 1.25
G	1.6 ± 0.2	0.8 ± 0.2	Less than 1.0
H	1.0 ± 0.05	0.5 ± 0.05	0.5 ± 0.05

RESISTORS

Chip resistor (Carbon)

(EX) R K 7 3 E B 2 B 0 0 0 J
 1 2 3 4 5 6 7

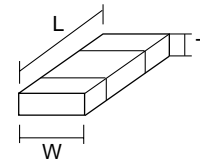
(Chip)(B,F)

Carbon resistor (Nomal type)

(EX) R D 1 4 B B 2 C 0 0 0 J
 1 2 3 4 5 6 7

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

Dimension



Dimension (Chip resistor)

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

Rating wattage

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

PARTS LIST / 零件表

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

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

TK-385

DISPLAY UNIT (X54-3210-12)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
TK-385						DISPLAY UNIT (X54-3210-12)					
1	1A		A02-2055-53	CABINET ASSY (16KEYS)		A	3B		N14-0569-04	CIRCULAR NUT(VOL,ENC)	
2	3B		A62-0535-04	PANEL ASSY		B	3B		N30-2604-46	PAN HEAD MACHINE SCREW(ANT)	
3	2C		B09-0363-03	CAP (SP/MIC) ACSY		C	3A		N30-2610-46	PAN HEAD MACHINE SCREW(CASE)	
4	2A		B38-0834-05	LCD ASSY		D	2B		N67-2606-46	PAN HEAD SEMS SCREW W(P-MODULE)	
5	1B		B43-1106-14	BADGE (KENWOOD)		E	3A,3B		N79-2025-46	PAN HEAD TAPTITE SCREW(TERMINAL)	
7	2C	*	B62-1265-10	INSTRUCTION MANUAL ACSY		F	2A,2B		N83-2005-46	PAN HEAD TAPTITE SCREW(UNIT)	
8	3B	*	B72-1720-04	MODEL NAME PLATE		53	2C		N99-2004-05	SCREW SET ACSY	
9	3B		E04-0416-05	RF COAXIAL RECEPTACLE(SMA)		54	3B		R31-0617-05	VARIABLE RESISTOR(POWER SW/VOL)	
10	2B		E23-1104-04	TERMINAL (ANT)		55	2B		S70-0414-05	TACT SWITCH	
11	3A,3B		E23-1166-04	RELAY TERMINAL		SP	1B		T07-0714-05	SPEAKER	
12	2B		E37-0672-05	FLAT CABLE		ANT	2C	*	T90-0735-05	HELICAL ANTENNA ACSY	
13	3A		E37-0673-05	LEAD WIRE WITH CONNECTOR(PTT)		MIC	2B		T91-0579-05	MIC ELEMENT	
14	1B		E37-0674-15	LEAD WIRE WITH CONNECTOR(SP)		IC100	2B	*	M68732SLA	IC(POWER MODULE)	
15	3B		E58-0440-05	SQUARE SOCKET (SP/MIC)		56	3B		W02-1814-05	ENCODER	
16	3B	*	E72-0412-13	TERMINAL BLOCK		57	3A		G13-1794-04	CUSHION(MCF)	
17	2B		F10-2272-03	SHIELDING CASE (DBM)		DISPLAY UNIT (X54-3210-12)					
18	2A		F10-2310-03	SHIELDING PLATE(LCD)		D301			B30-2019-05	LED(RE/GR)	
19	2A		F10-2340-03	SHIELDING CASE (VCO-OUT)		D305-310			B30-2171-05	LED	
20	3B		F10-2353-14	SHIELDING PLATE(P-MODULE)		C301			CC73GCH1H470J	CHIP C 47PF J	
21	2B		F10-2360-03	SHIELDING CASE (FRONT END)		C302			C92-0560-05	CHIP-TAN 10UF 6.3WV	
22	2B	*	F10-2373-14	SHIELDING CASE		C304			CK73FB1C474K	CHIP C 0.47UF K	
23	3B		F20-1181-04	INSULATING SHEET		C305			CC73GCH1H101J	CHIP C 100PF J	
24	2B		F20-3303-04	INSULATING SHEET(MIC/GND)		C307			CK73GB1C104K	CHIP C 0.10UF K	
25	1A		G01-0881-04	COIL SPRING		C308			CC73GCH1H101J	CHIP C 100PF J	
26	1B		G09-0418-05	KNOB SPRING (MIC,ENC)		C309			CK73FB1C474K	CHIP C 0.47UF K	
27	1B		G10-0799-04	FIBROUS SHEET (SP)		C310			CK73GB1C104K	CHIP C 0.10UF K	
28	3A		G11-2544-04	SHEET (CHASSIS)		C311			CC73GCH1H470J	CHIP C 47PF J	
29	3A		G11-2590-04	SHEET (PTT)		C312			CK73GB1C104K	CHIP C 0.10UF K	
30	2A		G13-1731-04	CUSHION (LCD)		C313			C92-0628-05	CHIP-TAN 10UF 10WV	
31	2A		G13-1736-04	CUSHION		C314			C92-0647-05	TAN C 3.3UF 4WV	
32	3B		G13-1762-04	CUSHION (VOL/CHASSIS)		C315			CC73GCH1H101J	CHIP C 100PF J	
33	3A,3B	*	G13-1834-04	CUSHION (TERMINAL)		C316,317			CC73GCH1H470J	CHIP C 47PF J	
34	3B		G53-0811-03	PACKING (TOP)		C318			CC73GCH1H101J	CHIP C 100PF J	
35	1B		G53-0896-02	PACKING (16KEYS)		C321-333			CC73GCH1H470J	CHIP C 47PF J	
36	3A		G53-1510-04	PACKING (BATT+)		C335-339			CC73GCH1H470J	CHIP C 47PF J	
37	3B		G53-1520-24	PACKING (TERMINAL)		C340			CK73GB1E153K	CHIP C 0.015UF K	
38	2D		H12-3014-02	PACKING FIXTURE		C341-344			CC73GCH1H470J	CHIP C 47PF J	
39	1D		H13-1072-04	CARTON BOARD		CN300			E40-5891-05	FLAT CABLE CONNECTOR(24P)	
40	3D	*	H52-1576-02	ITEM CARTON CASE		CN301			E40-5892-05	FLAT CABLE CONNECTOR(14P)	
41	1A		J19-1572-04	HOLDER		CN302			E40-5662-05	PIN ASSY SOCKET(2P:SP)	
42	2B		J21-8398-03	HARDWARE FIXTURE(P-MODULE)		CN303			E40-5887-05	PIN ASSY(4P:PTT)	
43	2C		J29-0658-05	HOOK ACSY		CN304			E40-5823-05	FLAT CABLE CONNECTOR(10P:LCD)	
46	3B		J82-0045-05	FPC (VOL,ENC)		L300,301			L92-0141-05	FERRITE CHIP	
47	3B		J82-0066-05	FPC (SQUARE SOCKET)		L302,303			L92-0138-05	FERRITE CHIP	
48	1A		K29-5157-03	KNOB (PTT)		L304,305			L92-0141-05	FERRITE CHIP	
49	1A		K29-5158-03	KEY TOP (PTT)		L306,307			L92-0138-05	FERRITE CHIP	
50	1A		K29-5165-03	LEVER KNOB		L308,309			L92-0141-05	FERRITE CHIP	
51	1B		K29-5231-03	KNOB (VOL)		CP300,301			R90-0723-05	MULTI-COMP 47K X2	
52	1B		K29-5232-03	KNOB (ENC)							

PARTS LIST / 零件表

DISPLAY UNIT (X54-3210-12)

TX-RX UNIT (X57-6203-01)

Ref. No.	Address	New parts	Parts No.	Description	Destination
CP302,303			R90-0724-05	MULTI-COMP 1K X4	
R300			RK73GB1J103J	CHIP R 10K J 1/16W	
R301			RK73FB2A101J	CHIP R 100 J 1/10W	
R302			RK73GB1J470J	CHIP R 47 J 1/16W	
R303			RK73GB1J471J	CHIP R 470 J 1/16W	
R304			RK73GB1J182J	CHIP R 1.8K J 1/16W	
R305			RK73GB1J104J	CHIP R 100K J 1/16W	
R306			R92-1252-05	CHIP R 0 OHM	
R307			RK73GB1J821J	CHIP R 820 J 1/16W	
R308			RK73GB1J153J	CHIP R 15K J 1/16W	
R309			R92-1252-05	CHIP R 0 OHM	
R310			RK73GB1J331J	CHIP R 330 J 1/16W	
R311			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R312			RK73GB1J104J	CHIP R 100K J 1/16W	
R313,314			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R315			RK73GB1J104J	CHIP R 100K J 1/16W	
R316			RK73GB1J473J	CHIP R 47K J 1/16W	
R317			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R318			RK73GB1J104J	CHIP R 100K J 1/16W	
R319-321			RK73GB1J820J	CHIP R 82 J 1/16W	
R324,325			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R326			RK73GB1J124J	CHIP R 120K J 1/16W	
R327			RK73GB1J563J	CHIP R 56K J 1/16W	
R328			RK73GB1J124J	CHIP R 120K J 1/16W	
R331			RK73GB1J103J	CHIP R 10K J 1/16W	
R332			RK73GB1J272J	CHIP R 2.7K J 1/16W	
R333			RK73GB1J103J	CHIP R 10K J 1/16W	
R336			R92-1252-05	CHIP R 0 OHM	
R337			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R338-341			RK73GB1J101J	CHIP R 100 J 1/16W	
S301-303			S70-0457-05	TACT SWITCH(PTT)	
D300			NNCD6.8G	ZENER DIODE	
D302			1SS373	DIODE	
D303			015AZ2.4-X	ZENER DIODE	
D304			MA2S111	DIODE	
D315			IMN10	DIODE	
D316,317			MA2S111	DIODE	
D318			IMN10	DIODE	
D319-321			015AZ6.8	ZENER DIODE	
IC300			TDA7053AT	IC(AUDIO AMP)	
IC301		*	TC74HC4017AF	IC(COUNTER)	
Q300			2SJ243	FET	
Q301			UPA672T	FET	
Q302-304			2SC4617(S)	TRANSISTOR	
Q305			2SB798(DL,DK)	TRANSISTOR	
Q306			2SC4617(S)	TRANSISTOR	
Q307			2SB1132(Q,R)	TRANSISTOR	
Q308			UPA672T	FET	
Q309			2SC4617(S)	TRANSISTOR	
Q310			2SK1824	FET	
TH300			TN10-3S154JT	THERMISTOR	

Ref. No.	Address	New parts	Parts No.	Description	Destination
TX-RX UNIT (X57-6203-01)					
C1			CK73GB1H471K	CHIP C 470PF K	
C2,3			CK73GB1E103K	CHIP C 0.010UF K	
C4-6			CK73GB1H471K	CHIP C 470PF K	
C7			CK73GB1C104K	CHIP C 0.10UF K	
C9			CK73GB1C104K	CHIP C 0.10UF K	
C10			CK73GB1E103K	CHIP C 0.010UF K	
C11			CK73GB1H471K	CHIP C 470PF K	
C12			CK73GB1E103K	CHIP C 0.010UF K	
C13			CC73GCH1H101J	CHIP C 100PF J	
C14			C92-0628-05	CHIP-TAN 10UF 10WV	
C15			C92-0592-05	CHIP-TAN 4.7UF 6.3WV	
C16			CK73GB1H471K	CHIP C 470PF K	
C17			C92-0650-05	TANTAL 10UF 6.3WV	
C18			CK73FB1C334K	CHIP C 0.33UF K	
C19			C92-0628-05	CHIP-TAN 10UF 10WV	
C20			CK73GB1C104K	CHIP C 0.10UF K	
C21			C92-0592-05	CHIP-TAN 4.7UF 6.3WV	
C22			CK73GB1H331K	CHIP C 330PF K	
C23			C92-0592-05	CHIP-TAN 4.7UF 6.3WV	
C24,25			CK73GB1H471K	CHIP C 470PF K	
C26			CK73GB1E223K	CHIP C 0.022UF K	
C27-29			CK73GB1H471K	CHIP C 470PF K	
C30			CK73GB1H102K	CHIP C 1000PF K	
C31			CK73GB1C104K	CHIP C 0.10UF K	
C32			CK73FB1A105K	CHIP C 1.0UF K	
C33,34			CK73GB1H471K	CHIP C 470PF K	
C35			CK73GB1E103K	CHIP C 0.010UF K	
C36			CK73GB1C104K	CHIP C 0.10UF K	
C37			CK73GB1H471K	CHIP C 470PF K	
C38			CK73GB1H102K	CHIP C 1000PF K	
C39,40			CK73GB1C104K	CHIP C 0.10UF K	
C41			C92-0713-05	TAN C 10UF 6.3WV	
C42			CK73GB1H102K	CHIP C 1000PF K	
C43			CK73GB1C333K	CHIP C 0.033UF K	
C44			CK73GB1H471K	CHIP C 470PF K	
C45			CC73GCH1H100D	CHIP C 10PF D	
C46			CC73GCH1H121J	CHIP C 120PF J	
C47			CK73GB1C104K	CHIP C 0.10UF K	
C48			CK73GB1H471K	CHIP C 470PF K	
C49			CK73GB1C104K	CHIP C 0.10UF K	
C50			CC73GCH1H100D	CHIP C 10PF D	
C51			CK73GB1E103K	CHIP C 0.010UF K	
C52			CC73GCH1H271J	CHIP C 270PF J	
C53			CK73GB1H102K	CHIP C 1000PF K	
C54			CK73GB1E103K	CHIP C 0.010UF K	
C55			CK73GB1C104K	CHIP C 0.10UF K	
C56			C92-0662-05	CHIP-TAN 15UF 6.3WV	
C57			CK73GB1H102K	CHIP C 1000PF K	
C58			CK73GB1H471K	CHIP C 470PF K	
C59			CK73GB1H222K	CHIP C 2200PF K	
C60			CK73GB1E123K	CHIP C 0.012UF K	
C61			CK73GB1C104K	CHIP C 0.10UF K	
C62			CK73GB1E123K	CHIP C 0.012UF K	
C63			CK73GB1H122K	CHIP C 1200PF K	
C64			CK73GB1H102K	CHIP C 1000PF K	

PARTS LIST / 零件表

TX-RX UNIT (X57-6203-01)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C65,66			CC73GCH1H820J	CHIP C 82PF J		C133			CC73GCH1H070B	CHIP C 7.0PF B	
C67			CK73GB1C104K	CHIP C 0.10UF K		C134			CK73GB1E153K	CHIP C 0.015UF K	
C68,69			CK73GB1E103K	CHIP C 0.010UF K		C135			CK73GB1E103K	CHIP C 0.010UF K	
C70			CK73GB1C104K	CHIP C 0.10UF K		C136			CK73GB1C683J	CHIP C 0.068UF J	
C71			CC73GCH1H220J	CHIP C 22PF J		C137			CK73GB1E103K	CHIP C 0.010UF K	
C72			CK73GB1C683K	CHIP C 0.068UF K		C138			CC73GCH1H040B	CHIP C 4.0PF B	
C73			CC73GCH1H220J	CHIP C 22PF J		C139			CK73GB1H471K	CHIP C 470PF K	
C74			CK73GB1C104K	CHIP C 0.10UF K		C140			CC73GCH1H070B	CHIP C 7.0PF B	
C75			CK73GB1E103K	CHIP C 0.010UF K		C141			C92-0592-05	CHIP-TAN 4.7UF 6.3WV	
C76			CK73GB1C104K	CHIP C 0.10UF K		C142			CK73GB1H471K	CHIP C 470PF K	
C77			C92-0773-05	TAN C 15UF 6.3WV		C143			CC73GCH1H100D	CHIP C 10PF D	
C78			CK73GB1H562J	CHIP C 5600PF J		C144			C92-0714-05	TAN C 4.7UF 6.3WV	
C79			C92-0713-05	TAN C 10UF 6.3WV		C145			CK73FB1H563K	CHIP C 0.056UF K	
C80			CC73HCH1H101J	CHIP C 100PF J		C146,147			CK73GB1H102K	CHIP C 1000PF K	
C81			CK73GB1H471K	CHIP C 470PF K		C149			CK73GB1H471K	CHIP C 470PF K	
C82			CK73GB1C333K	CHIP C 0.033UF K		C150			CC73GCH1H050B	CHIP C 5.0PF B	
C84			CK73GB1H562J	CHIP C 5600PF J		C152			CC73GCH1H330J	CHIP C 33PF J	
C85			CK73GB1H471K	CHIP C 470PF K		C155			CK73GB1H471K	CHIP C 470PF K	
C86			CK73GB1H562J	CHIP C 5600PF J		C157			CK73GB1H471K	CHIP C 470PF K	
C87			CK73GB1C333K	CHIP C 0.033UF K		C159			CK73HB1C103K	CHIP C 0.010UF K	
C88			CK73GB1C104K	CHIP C 0.10UF K		C160			CK73GB1C104K	CHIP C 0.10UF K	
C89			CC73GCH1H820J	CHIP C 82PF J		C161			CC73GCH1H040B	CHIP C 4.0PF B	
C90			CC73GCH1H470J	CHIP C 47PF J		C162			CK73GB1H471K	CHIP C 470PF K	
C91			CK73GB1H471K	CHIP C 470PF K		C165			CK73GB1E103K	CHIP C 0.010UF K	
C92			C92-0773-05	TAN C 15UF 6.3WV		C166			CK73HB1C103K	CHIP C 0.010UF K	
C93			CK73GB1H272J	CHIP C 2700PF J		C167			CC73GCH1H060B	CHIP C 6.0PF B	
C95			CK73GB1H471K	CHIP C 470PF K		C168			CC73GCH1H120J	CHIP C 12PF J	
C96			CC73GCH1H330J	CHIP C 33PF J		C169			CK73GB1E103K	CHIP C 0.010UF K	
C97			CC73GCH1H030B	CHIP C 3.0PF B		C170			CK73HB1C103K	CHIP C 0.010UF K	
C98,99			CK73GB1H272J	CHIP C 2700PF J		C171			CC73GCH1H100D	CHIP C 10PF D	
C100			CK73GB1C104K	CHIP C 0.10UF K		C172			CC73GCH1H200J	CHIP C 20PF J	
C101			C92-0656-05	TAN C 2.2UF 6.3WV		C173			CK73GB1H471K	CHIP C 470PF K	
C102			CK73GB1C104K	CHIP C 0.10UF K		C174			CK73GB1C104K	CHIP C 0.10UF K	
C103			CC73GCH1H151J	CHIP C 150PF J		C175			CK73GB1H472K	CHIP C 4700PF K	
C104			CK73GB1H152J	CHIP C 1500PF J		C176-180			CK73GB1H471K	CHIP C 470PF K	
C105			CK73GB1H102K	CHIP C 1000PF K		C181			CK73GB1E103K	CHIP C 0.010UF K	
C106			CK73GB1E103K	CHIP C 0.010UF K		C182			CC73GCH1H080B	CHIP C 8.0PF B	
C107			CC73GCH1H030B	CHIP C 3.0PF B		C183			CC73GCH1H270J	CHIP C 27PF J	
C108			C92-0650-05	TANTAL 10UF 6.3WV		C184			CC73GCH1H680J	CHIP C 68PF J	
C109			C92-0714-05	TAN C 4.7UF 6.3WV		C185			CK73GB1H471K	CHIP C 470PF K	
C110			CK73GB1C104K	CHIP C 0.10UF K		C186			CC73GCH1H270J	CHIP C 27PF J	
C111			CK73GB1H471K	CHIP C 470PF K		C188,189			CK73GB1H471K	CHIP C 470PF K	
C112			C92-0713-05	TAN C 10UF 6.3WV		C190			CK73HB1C103K	CHIP C 0.010UF K	
C113,114			CK73GB1C104K	CHIP C 0.10UF K		C191,192			CK73GB1H471K	CHIP C 470PF K	
C117,118			CK73GB1C104K	CHIP C 0.10UF K		C193			CC73GCH1H150J	CHIP C 15PF J	
C119			CC73GCH1H181J	CHIP C 180PF J		C194			CC73GCH1H040B	CHIP C 4.0PF B	
C120			CK73GB1C473K	CHIP C 0.047UF K		C195			CK73HB1H471K	CHIP C 470PF K	
C121,122			CK73GB1C104K	CHIP C 0.10UF K		C196			CC73GCH1H240J	CHIP C 24PF J	
C123			CK73GB1E103K	CHIP C 0.010UF K		C197			CK73FB1C474K	CHIP C 0.47UF K	
C124,125			CK73GB1C104K	CHIP C 0.10UF K		C198			CC73GCH1H020B	CHIP C 2.0PF B	
C126			C92-0504-05	CHIP-TAN 0.68UF 20WV		C199			CC73GCH1H101J	CHIP C 100PF J	
C127			C92-0714-05	TAN C 4.7UF 6.3WV		C200			C92-0565-05	CHIP-TAN 6.8UF 10WV	
C128			CK73GB1C104K	CHIP C 0.10UF K		C201			CC73GCH1H080B	CHIP C 8.0PF B	
C129			CK73GB1H562J	CHIP C 5600PF J		C202			CK73GB1H471K	CHIP C 470PF K	
C130			CK73GB1H102K	CHIP C 1000PF K		C203			CC73GCH1H150J	CHIP C 15PF J	
C131			CK73GB1H562J	CHIP C 5600PF J		C204			CC73GCH1H0R5B	CHIP C 0.5PF B	

PARTS LIST / 零件表

TX-RX UNIT (X57-6203-01)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C205			CC73GCH1H101J	CHIP C 100PF J		CN1			E40-5823-05	FLAT CABLE CONNECTOR(10P)	
C206			CC73GCH1H020B	CHIP C 2.0PF B		CN2			E40-9517-05	PIN ASSY SOCKET(4P)	
C208			CK73GB1E103K	CHIP C 0.010UF K		CN3			E40-5890-05	FLAT CABLE CONNECTOR(24P)	
C209			CK73GB1H471K	CHIP C 470PF K		CN4			E23-0342-05	TEST TERMINAL	
C210			CC73GCH1H060B	CHIP C 6.0PF B		CN5-12			E23-1081-05	TERMINAL	
C211			CK73FB1C474K	CHIP C 0.47UF K		F1			F53-0130-05	FUSE(3A)	
C212			CC73GCH1H220J	CHIP C 22PF J		CD1			L79-1072-05	TUNING COIL	
C213			CC73GCH1H101J	CHIP C 100PF J		CF1			L72-0962-05	CERAMIC FILTER(455KHZ)	
C214			CC73GCH1H060B	CHIP C 6.0PF B		CF2			L72-0963-05	CERAMIC FILTER(455KHZ)	
C215,216			CC73GCH1H150J	CHIP C 15PF J		L1			L92-0149-05	FERRITE CHIP	
C217			CC73GCH1H070B	CHIP C 7.0PF B		L2			L92-0138-05	FERRITE CHIP	
C218			CC73GCH1H120J	CHIP C 12PF J		L3			L40-4791-37	SMALL FIXED INDUCTOR(4.7UH)	
C220			CC73GCH1H120J	CHIP C 12PF J		L4			L40-1091-37	SMALL FIXED INDUCTOR(1.0UH)	
C221			CK73GB1H471K	CHIP C 470PF K		L5,6			L92-0138-05	FERRITE CHIP	
C222			CC73GCH1H060B	CHIP C 6.0PF B		L9			L40-1571-36	SMALL FIXED INDUCTOR(15NH)	
C223			CC73GCH1H030B	CHIP C 3.0PF B		L10			L40-3971-36	SMALL FIXED INDUCTOR(39NH)	
C225			CC73GCH1H101J	CHIP C 100PF J		L11,12			L92-0138-05	FERRITE CHIP	
C226			CK73GB1H471K	CHIP C 470PF K		L13			L40-3971-36	SMALL FIXED INDUCTOR(39NH)	
C227			CC73GCH1H2R5B	CHIP C 2.5PF B		L14			L40-1081-36	SMALL FIXED INDUCTOR(100NH)	
C230			CC73GCH1H030B	CHIP C 3.0PF B		L15			L40-2271-36	SMALL FIXED INDUCTOR(22NH)	
C231			CK73GB1H471K	CHIP C 470PF K		L17			L40-2271-36	SMALL FIXED INDUCTOR(22NH)	
C232			CC73GCH1H470J	CHIP C 47PF J		L18			L39-1272-05	TOROIDAL COIL	
C233			CK73GB1H471K	CHIP C 470PF K		L19			L92-0138-05	FERRITE CHIP	
C234			CC73GCH1H180J	CHIP C 18PF J		L20			L40-2771-36	SMALL FIXED INDUCTOR(27NH)	
C235			CC73GCH1H020B	CHIP C 2.0PF B		L21,22			L39-1272-05	TOROIDAL COIL	
C236			CC73GCH1H470J	CHIP C 47PF J		L24			L92-0138-05	FERRITE CHIP	
C237			CC73GCH1H010B	CHIP C 1.0PF B		L25			L40-2771-36	SMALL FIXED INDUCTOR(27NH)	
C238			CK73GB1E103K	CHIP C 0.010UF K		L26			L92-0138-05	FERRITE CHIP	
C239			CK73GB1H471K	CHIP C 470PF K		L27			L40-5678-67	SMALL FIXED INDUCTOR(56NH)	
C241			CC73GCH1H220J	CHIP C 22PF J		L28			L92-0138-05	FERRITE CHIP	
C242,243			CK73GB1H471K	CHIP C 470PF K		L29		*	L40-8261-67	SMALL FIXED INDUCTOR(8.2NH)	
C245			CC73GCH1H040B	CHIP C 4.0PF B		L30			L92-0149-05	FERRITE CHIP	
C247			CK73GB1H471K	CHIP C 470PF K		L31			L40-1878-67	SMALL FIXED INDUCTOR(18NH)	
C248			CC73GCH1H060B	CHIP C 6.0PF B		L32			L34-4564-05	AIR-CORE COIL(4T)	
C250			CK73GB1H471K	CHIP C 470PF K		L33			L40-1878-67	SMALL FIXED INDUCTOR(18NH)	
C252,253			CK73GB1H471K	CHIP C 470PF K		L34			L40-2278-67	SMALL FIXED INDUCTOR(22NH)	
C254			CC73GCH1H180J	CHIP C 18PF J		L35			L40-1085-34	SMALL FIXED INDUCTOR(100NH)	
C256			CC73GCH1H180J	CHIP C 18PF J		L36			L40-2778-67	SMALL FIXED INDUCTOR(27NH)	
C257,258			CK73GB1H471K	CHIP C 470PF K		L37			L34-4564-05	AIR-CORE COIL(4T)	
C259			CC73GCH1H180J	CHIP C 18PF J		L38			L40-1578-67	SMALL FIXED INDUCTOR(15NH)	
C261,262			CK73HB1C103K	CHIP C 0.010UF K		L39			L40-2771-36	SMALL FIXED INDUCTOR(27NH)	
C263			CK73GB1H103K	CHIP C 0.010UF K		L40			L34-4564-05	AIR-CORE COIL(4T)	
C264			CC73GCH1H120J	CHIP C 12PF J		L42,43			L34-4564-05	AIR-CORE COIL(4T)	
C265			CK73GB1H103K	CHIP C 0.010UF K		L44			L40-3378-67	SMALL FIXED INDUCTOR(33NH)	
C269			CC73GCH1H030B	CHIP C 3.0PF B		L45			L40-1092-81	SMALL FIXED INDUCTOR	
C401			CK73GB1C104K	CHIP C 0.10UF K		L46			L40-1288-67	SMALL FIXED INDUCTOR(120NH)	
C402			CK73GB1H331K	CHIP C 330PF K		L48,49			L34-4564-05	AIR-CORE COIL(4T)	
C403			CC73GCH1H300J	CHIP C 30PF J		L51,52			L34-4564-05	AIR-CORE COIL(4T)	
C404			CK73GB1H102K	CHIP C 1000PF K		L53			L92-0138-05	FERRITE CHIP	
C405			C92-0602-05	CHIP-TAN 1.0UF 10WV		L54-56			L40-2771-36	SMALL FIXED INDUCTOR(27NH)	
C407			C92-0714-05	TAN C 4.7UF 6.3WV		L457,458			L34-4567-05	AIR-CORE COIL(7T)	
C408			CK73HB1A104K	CHIP C 0.10UF K		X1			L77-1789-05	TCXO (16.8MHZ)	
C421			CK73GB1H471K	CHIP C 470PF K		X2			L77-1760-15	CRYSTAL RESONATOR(44.395MHZ)	
C422			CK73GB1C473K	CHIP C 0.047UF K		X3			L77-1708-05	CRYSTAL RESONATOR(3.579545MHZ)	
C423			CC73GCH1H100D	CHIP C 10PF D		X4			L78-0462-05	RESONATOR (9.8304MHZ)	
C424			CC73GCH1H470J	CHIP C 47PF J		XF1			L71-0572-05	MCF (44.85MHZ)	

PARTS LIST / 零件表

TX-RX UNIT (X57-6203-01)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
CP1			R90-0724-05	MULTI-COMP 1K X4		R59			RK73GB1J564J	CHIP R	560K J 1/16W
CP2			R90-0718-05	MULTI-COMP 4.7K X4		R60			RK73GB1J123J	CHIP R	12K J 1/16W
CP4,5			R90-0743-05	MULTIPLE RESISTOR 47K X2		R61			RK73GB1J223J	CHIP R	22K J 1/16W
CP6-21			R90-0741-05	MULTIPLE RESISTOR 1K X2		R62			RN73GH1J913D	CHIP R	91K D 1/16W
CP22-24			R90-0743-05	MULTIPLE RESISTOR 47K X2		R63			RK73GB1J474J	CHIP R	470K J 1/16W
R1			RK73GB1J103J	CHIP R 10K J 1/16W		R64			RK73GB1J153J	CHIP R	15K J 1/16W
R2			RK73GB1J473J	CHIP R 47K J 1/16W		R65			RK73GB1J223J	CHIP R	22K J 1/16W
R3			RK73GB1J154J	CHIP R 150K J 1/16W		R66			R92-1252-05	CHIP R	0 OHM
R4			RK73GB1J104J	CHIP R 100K J 1/16W		R67	*		RN73GH1J184D	CHIP R	180K D 1/16W
R5			RK73HB1J103J	CHIP R 10K J 1/16W		R68			RK73GB1J223J	CHIP R	22K J 1/16W
R6,7			RK73GB1J104J	CHIP R 100K J 1/16W		R69			R92-1252-05	CHIP R	0 OHM
R8			R92-1368-05	CHIP R 0 OHM		R70	*		RN73GH1J622D	CHIP R	6.2K D 1/16W
R9			RK73HB1J474J	CHIP R 470K J 1/16W		R71			RK73GB1J183J	CHIP R	18K J 1/16W
R10			RK73HB1J103J	CHIP R 10K J 1/16W		R72			RK73GB1J155J	CHIP R	1.5M J 1/16W
R11			RK73GB1J104J	CHIP R 100K J 1/16W		R73			RK73GB1J393J	CHIP R	39K J 1/16W
R12			RK73GB1J184J	CHIP R 180K J 1/16W		R74			RK73GB1J183J	CHIP R	18K J 1/16W
R13			RK73GB1J104J	CHIP R 100K J 1/16W		R75			RN73GH1J683D	CHIP R	68K D 1/16W
R14			R92-1252-05	CHIP R 0 OHM		R76			RK73GB1J474J	CHIP R	470K J 1/16W
R15			RK73GB1J104J	CHIP R 100K J 1/16W		R78			RN73GH1J682D	CHIP R	6.8K D 1/16W
R16,17			RK73GB1J473J	CHIP R 47K J 1/16W		R79			RK73GB1J101J	CHIP R	100 J 1/16W
R18			RK73GB1J154J	CHIP R 150K J 1/16W		R80			RK73GB1J152J	CHIP R	1.5K J 1/16W
R19			RK73GB1J104J	CHIP R 100K J 1/16W		R81			RK73GB1J220J	CHIP R	22 J 1/16W
R20			RK73HB1J104J	CHIP R 100K J 1/16W		R83			RK73GB1J184J	CHIP R	180K J 1/16W
R21			RK73GB1J563J	CHIP R 56K J 1/16W		R85			RK73GB1J103J	CHIP R	10K J 1/16W
R22,23			RK73GB1J823J	CHIP R 82K J 1/16W		R86			RK73GB1J223J	CHIP R	22K J 1/16W
R24			RK73GB1J473J	CHIP R 47K J 1/16W		R89			RK73GB1J102J	CHIP R	1.0K J 1/16W
R25			RK73HB1J472J	CHIP R 4.7K J 1/16W		R90			RK73GB1J153J	CHIP R	15K J 1/16W
R26			RK73GB1J473J	CHIP R 47K J 1/16W		R91			RK73GB1J473J	CHIP R	47K J 1/16W
R27			RK73GB1J332J	CHIP R 3.3K J 1/16W		R93			RK73GB1J183J	CHIP R	18K J 1/16W
R28			RK73GB1J474J	CHIP R 470K J 1/16W		R94			RK73GB1J153J	CHIP R	15K J 1/16W
R29			RK73GB1J184J	CHIP R 180K J 1/16W		R95			RK73GB1J474J	CHIP R	470K J 1/16W
R30			RK73GB1J334J	CHIP R 330K J 1/16W		R96			RK73GB1J272J	CHIP R	2.7K J 1/16W
R31			RK73GB1J102J	CHIP R 1.0K J 1/16W		R97			RK73GB1J151J	CHIP R	150 J 1/16W
R32			RK73GB1J104J	CHIP R 100K J 1/16W		R100			R92-1252-05	CHIP R	0 OHM
R33			RK73GB1J184J	CHIP R 180K J 1/16W		R101			RK73GB1J560J	CHIP R	56 J 1/16W
R34			RK73GB1J683J	CHIP R 68K J 1/16W		R102			RK73GB1J393J	CHIP R	39K J 1/16W
R35			RK73GB1J220J	CHIP R 22 J 1/16W		R104			RK73GB1J102J	CHIP R	1.0K J 1/16W
R36			RK73GB1J154J	CHIP R 150K J 1/16W		R106			RK73GB1J470J	CHIP R	47 J 1/16W
R37			R92-1252-05	CHIP R 0 OHM		R107			RK73GB1J473J	CHIP R	47K J 1/16W
R38			RK73GB1J101J	CHIP R 100 J 1/16W		R109			RK73GB1J182J	CHIP R	1.8K J 1/16W
R39			RK73GB1J472J	CHIP R 4.7K J 1/16W		R110			RK73GB1J220J	CHIP R	22 J 1/16W
R40,41			RK73GB1J334J	CHIP R 330K J 1/16W		R114			R92-1252-05	CHIP R	0 OHM
R42,43			RK73GB1J223J	CHIP R 22K J 1/16W		R115			RK73GB1J184J	CHIP R	180K J 1/16W
R44			RK73GB1J473J	CHIP R 47K J 1/16W		R116			RK73GB1J103J	CHIP R	10K J 1/16W
R45			RK73GB1J472J	CHIP R 4.7K J 1/16W		R117			RK73GB1J184J	CHIP R	180K J 1/16W
R46,47			RK73GB1J223J	CHIP R 22K J 1/16W		R118			RK73GB1J331J	CHIP R	330 J 1/16W
R48			R92-1252-05	CHIP R 0 OHM		R119			RK73GB1J102J	CHIP R	1.0K J 1/16W
R49			RK73GB1J223J	CHIP R 22K J 1/16W		R120			RK73GB1J104J	CHIP R	100K J 1/16W
R50			RN73GH1J393D	CHIP R 39K D 1/16W		R121			RK73GB1J222J	CHIP R	2.2K J 1/16W
R51			RN73GH1J683D	CHIP R 68K D 1/16W		R122			RK73GB1J331J	CHIP R	330 J 1/16W
R52			RN73GH1J393D	CHIP R 39K D 1/16W		R125			RK73GB1J124J	CHIP R	120K J 1/16W
R53			RK73GB1J393J	CHIP R 39K J 1/16W		R126			RK73GB1J180J	CHIP R	18 J 1/16W
R54			RK73GB1J123J	CHIP R 12K J 1/16W		R127			RK73GB1J103J	CHIP R	10K J 1/16W
R56			RK73GB1J472J	CHIP R 4.7K J 1/16W		R128			R92-1252-05	CHIP R	0 OHM
R57			RK73GB1J183J	CHIP R 18K J 1/16W		R129			RK73HB1J104J	CHIP R	100K J 1/16W
R58			RK73GB1J184J	CHIP R 180K J 1/16W		R130			R92-1252-05	CHIP R	0 OHM

PARTS LIST / 零件表

TX-RX UNIT (X57-6203-01)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R131			RK73GB1J470J	CHIP R 47 J 1/16W		R273			RK73GB1J223J	CHIP R 22K J 1/16W	
R132			RK73GB1J684J	CHIP R 680K J 1/16W		R274			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R133,134			R92-1368-05	CHIP R 0 OHM		R276			R92-1252-05	CHIP R 0 OHM	
R135			RK73GB1J272J	CHIP R 2.7K J 1/16W		R277			RK73GB1J223J	CHIP R 22K J 1/16W	
R136			RK73GB1J122J	CHIP R 1.2K J 1/16W		R278-280			R92-1252-05	CHIP R 0 OHM	
R137			RK73GB1J103J	CHIP R 10K J 1/16W		R282			RK73GB1J223J	CHIP R 22K J 1/16W	
R138			RK73HB1J103J	CHIP R 10K J 1/16W		R283			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R140,141			RK73HB1J473J	CHIP R 47K J 1/16W		R284			RK73GB1J221J	CHIP R 220 J 1/16W	
R142,143			RK73HB1J102J	CHIP R 1.0K J 1/16W		R285			R92-1252-05	CHIP R 0 OHM	
R144			R92-1252-05	CHIP R 0 OHM		R296			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R145-152			RK73HB1J102J	CHIP R 1.0K J 1/16W		R297,298			RK73HB1J473J	CHIP R 47K J 1/16W	
R154			RK73GB1J183J	CHIP R 18K J 1/16W		R299			RK73GB1J101J	CHIP R 100 J 1/16W	
R156			RK73GB1J102J	CHIP R 1.0K J 1/16W		R401			RK73GB1J224J	CHIP R 220K J 1/16W	
R160			RK73GB1J682J	CHIP R 6.8K J 1/16W		R402,403			RK73GB1J394J	CHIP R 390K J 1/16W	
R162			RK73GB1J103J	CHIP R 10K J 1/16W		R404,405			RK73GB1J104J	CHIP R 100K J 1/16W	
R163			RK73HB1J103J	CHIP R 10K J 1/16W		R406,407			RK73GB1J822J	CHIP R 8.2K J 1/16W	
R166			RK73GB1J223J	CHIP R 22K J 1/16W		R408			RK73HB1J473J	CHIP R 47K J 1/16W	
R167			R92-1252-05	CHIP R 0 OHM		R410			RK73GB1J183J	CHIP R 18K J 1/16W	
R168			RK73GB1J680J	CHIP R 68 J 1/16W		R411			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R177			RK73GB1J101J	CHIP R 100 J 1/16W		R412			RK73GB1J394J	CHIP R 390K J 1/16W	
R180			RK73GB1J473J	CHIP R 47K J 1/16W		R413			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R184			RK73GB1J102J	CHIP R 1.0K J 1/16W		R414			RK73HB1J331J	CHIP R 330 J 1/16W	
R185			RK73GB1J220J	CHIP R 22 J 1/16W		R415			RK73HB1J184J	CHIP R 180K J 1/16W	
R189			RK73HB1J473J	CHIP R 47K J 1/16W		R416,417			RK73GB1J474J	CHIP R 470K J 1/16W	
R190			RK73GB1J472J	CHIP R 4.7K J 1/16W		R418-420			R92-1252-05	CHIP R 0 OHM	
R195			RK73GB1J222J	CHIP R 2.2K J 1/16W		D1			1SR154-400	DIODE	
R199			RK73HB1J102J	CHIP R 1.0K J 1/16W		D2,3			MA2S111	DIODE	
R202			RK73GB1J271J	CHIP R 270 J 1/16W		D4			RB706F-40	DIODE	
R210			RK73GB1J561J	CHIP R 560 J 1/16W		D5			DAN222	DIODE	
R216			RK73GB1J152J	CHIP R 1.5K J 1/16W		D6			MA2S111	DIODE	
R218			RK73HB1J473J	CHIP R 47K J 1/16W		D7			DAN222	DIODE	
R219			RK73GB1J220J	CHIP R 22 J 1/16W		D8			RB706F-40	DIODE	
R221			RK73HB1J102J	CHIP R 1.0K J 1/16W		D9			MA2S077	DIODE	
R241			RK73GB1J331J	CHIP R 330 J 1/16W		D10			HZU5ALL	DIODE	
R244			RK73GB1J150J	CHIP R 15 J 1/16W		D11			MA742	DIODE	
R245			RK73EB2ER39K	CHIP R 0.39 K 1/4W		D12			HVC131	DIODE	
R247			RK73EB2ER39K	CHIP R 0.39 K 1/4W		D14,15			HVC131	DIODE	
R248			R92-1252-05	CHIP R 0 OHM		D16			HSM88AS	DIODE	
R249			RK73EB2ER39K	CHIP R 0.39 K 1/4W		D17,18			DA221	DIODE	
R250			R92-1252-05	CHIP R 0 OHM		D20		*	HVC375B	VARIABLE CAPACITANCE DIODE	
R251-253			RN73GH1J154D	CHIP R 150K D 1/16W		D22		*	HVC375B	VARIABLE CAPACITANCE DIODE	
R254			RK73GB1J271J	CHIP R 270 J 1/16W		D23			1SS373	DIODE	
R255-257			RN73GH1J154D	CHIP R 150K D 1/16W		D24,25			MA2S077	DIODE	
R258			RK73GB1J271J	CHIP R 270 J 1/16W		D401			HVC131	DIODE	
R259,260			R92-1252-05	CHIP R 0 OHM		D402			MA2S111	DIODE	
R261			RK73GB1J103J	CHIP R 10K J 1/16W		IC1,2			TC75W51FU	IC(BUFFER AMP)	
R262			RK73GB1J470J	CHIP R 47 J 1/16W		IC3			RN5VL42C	IC(VOLTAGE DETECTOR)	
R263,264			RK73GB1J104J	CHIP R 100K J 1/16W		IC4			TC75W51FU	IC(BUFFER AMP)	
R265			RK73GB1J473J	CHIP R 47K J 1/16W		IC5			S-81350HG-KD	IC(VOLTAGE REGULATOR/5M)	
R266			R92-1252-05	CHIP R 0 OHM		IC6			NJU7201U50	IC(VOLTAGE REGULATOR/5V)	
R267			RK73GB1J181J	CHIP R 180 J 1/16W		IC7			TC75W51FU	IC(BUFFER AMP)	
R268			RK73GB1J105J	CHIP R 1.0M J 1/16W		IC8			M62364FP	IC(D/A CONVERTER)	
R269			RK73GB1J682J	CHIP R 6.8K J 1/16W		IC9			TK11250BM	IC(VOLTAGE REGULATOR/5C)	
R270			R92-1252-05	CHIP R 0 OHM		IC10			TC75S51F	IC(ACTIVE FILTER)	
R271			RK73GB1J222J	CHIP R 2.2K J 1/16W		IC11			TC75W51FU	IC(ACTIVE FILTER)	
R272			R92-1252-05	CHIP R 0 OHM		IC12			TA31136FN	IC(FM IF)	

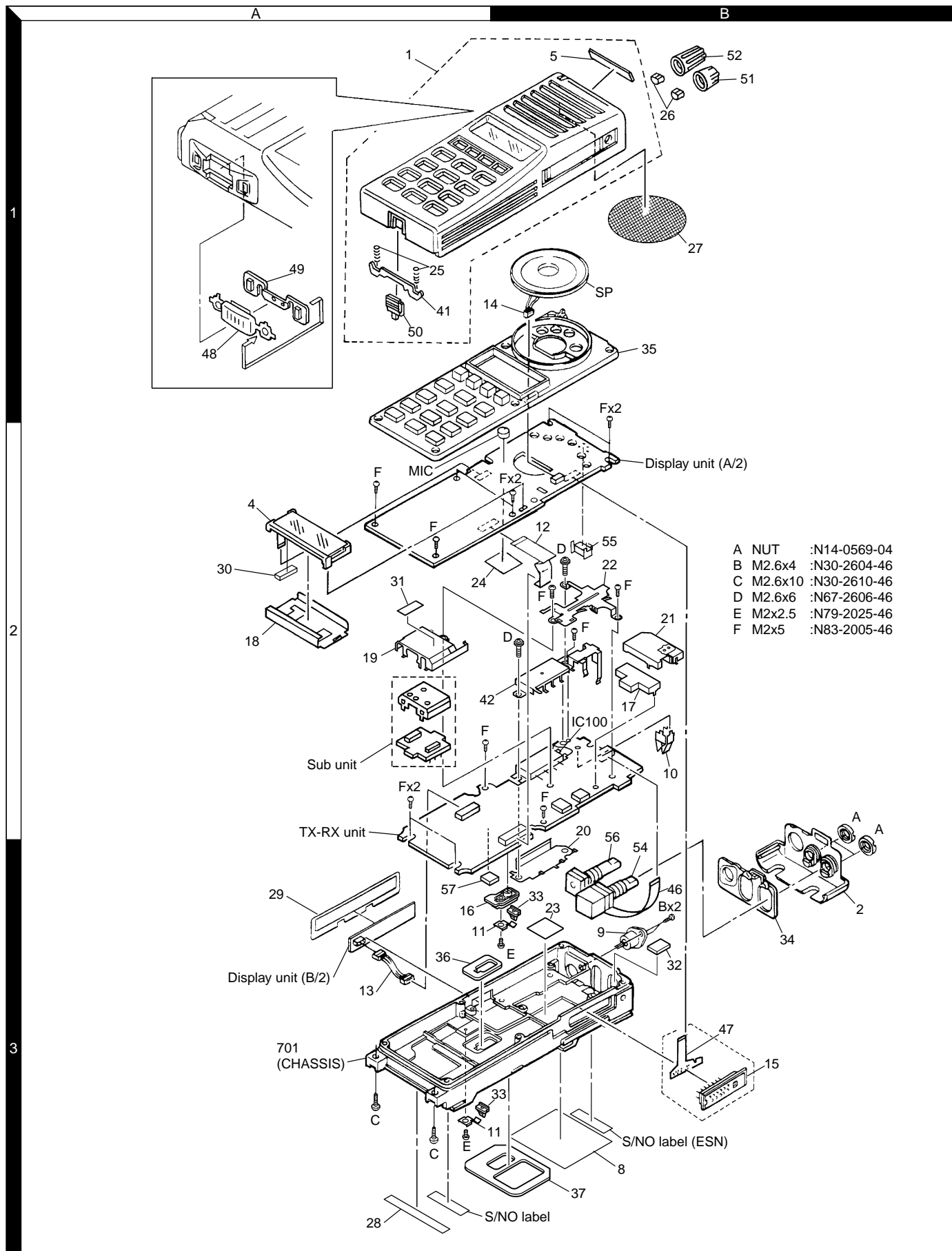
PARTS LIST / 零件表

TX-RX UNIT (X57-6203-01)

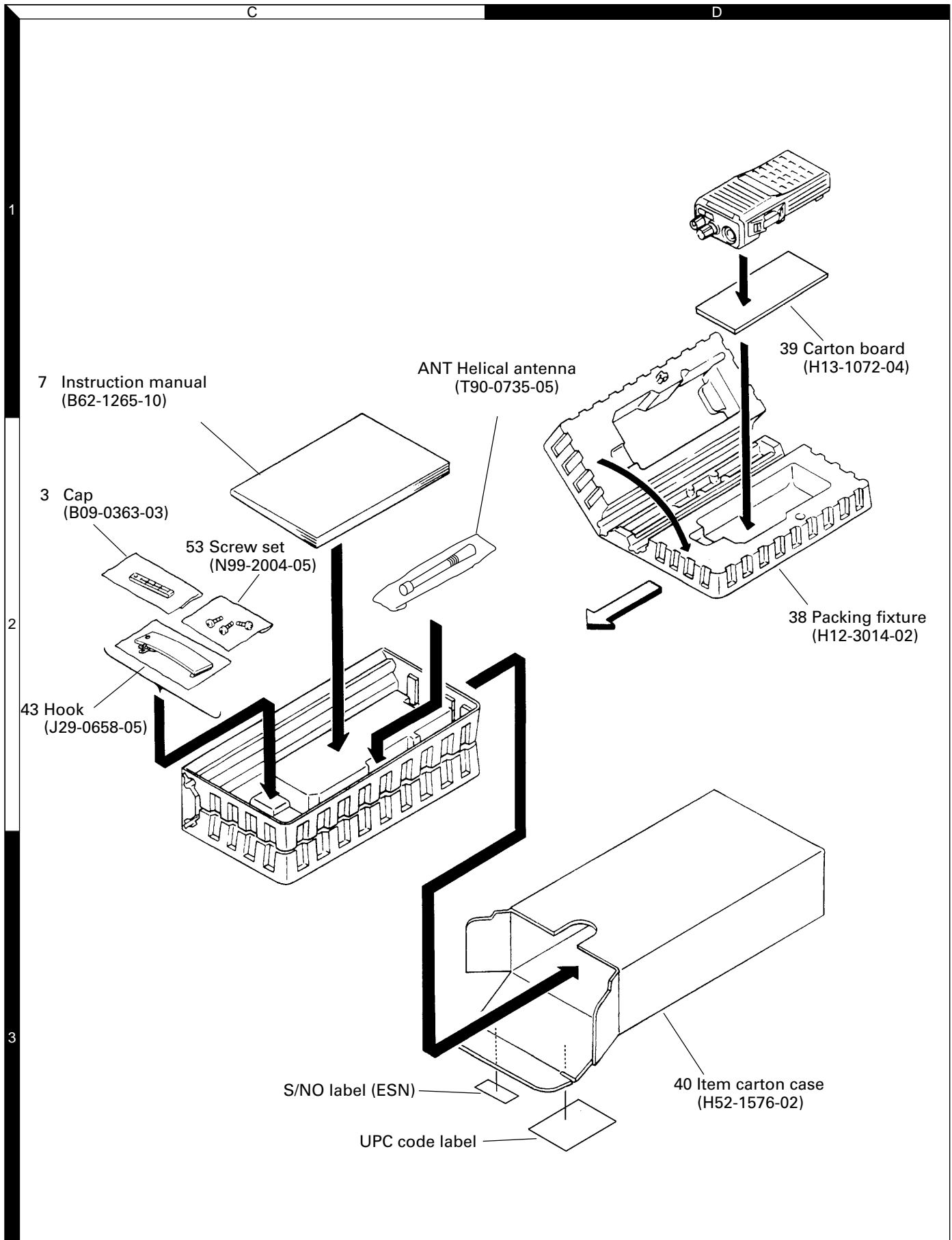
SUB UNIT (X58-4843-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
IC13			TC35453F	IC(AUDIO PROCESSOR)		TC50,51			C05-0384-05	CERAMIC TRIMMER CAP(10P)	
IC14			SA7025DK	IC(PLL SYSTEM)		CN50,51			E40-5622-05	PIN ASSY(3P)	
IC16			LC73872M	IC(DTMF DECODER)		L50-53			L40-2785-92	SMALL FIXED INDUCTOR(270NH)	
IC17			AT29C020-90TI	IC(FLASH MEMORY)		L56			L40-3978-67	SMALL FIXED INDUCTOR(39NH)	
IC18			GN2011(Q)	IC(ACTIVE DBM)		L57			L40-4778-67	SMALL FIXED INDUCTOR(47NH)	
IC19			30620M8-394GP	IC(CPU)		L58,59			L40-1885-92	SMALL FIXED INDUCTOR(180NH)	
IC20			AT2416N10SI2.5	IC(EEPROM)		L60,61			L40-3391-37	SMALL FIXED INDUCTOR(3.3UH)	
IC21,22			BU4094BCFV	IC(SHIFT REGISTER)		L62			L92-0138-05	FERRITE CHIP	
IC23			NJM2904V	IC(APC)		L63			L40-2275-44	SMALL FIXED INDUCTOR(22.0NH)	
IC24			TC7S66FU	IC(ANALOG SWITCH)		R50			RK73HB1J473J	CHIP R 47K J 1/16W	
IC25			TC75W51FU	IC(ACTIVE FILTER)		R51			RK73HB1J103J	CHIP R 10K J 1/16W	
Q1			DTC144EE	DIGITAL TRANSISTOR		R52			RK73HB1J473J	CHIP R 47K J 1/16W	
Q2			2SJ243	FET		R53,54			RK73HB1J101J	CHIP R 100 J 1/16W	
Q3			2SA1745(6,7)	TRANSISTOR		R55			RK73HB1J104J	CHIP R 100K J 1/16W	
Q4			2SC4617(S)	TRANSISTOR		R56			RK73HB1J181J	CHIP R 180 J 1/16W	
Q5			2SJ243	FET		R57			RK73HB1J151J	CHIP R 150 J 1/16W	
Q6			DTA144EE	DIGITAL TRANSISTOR		R58			RK73HB1J474J	CHIP R 470K J 1/16W	
Q7			DTC144EE	DIGITAL TRANSISTOR		R59			RK73HB1J101J	CHIP R 100 J 1/16W	
Q8			2SC4617(S)	TRANSISTOR		D50-57	*		HVC375B	VARIABLE CAPACITANCE DIODE	
Q9,10			DTC144EE	DIGITAL TRANSISTOR		D58			HVC351	VARIABLE CAPACITANCE DIODE	
Q11			2SK1824	FET		Q50			2SK508NV(K52)	FET	
Q12			2SC5108(Y)	TRANSISTOR		Q51			2SJ243	FET	
Q13-15			2SK1824	FET		Q52			2SK508NV(K52)	FET	
Q16-18			2SC5108(Y)	TRANSISTOR		Q53			UMC4	TRANSISTOR	
Q19			2SC4619	TRANSISTOR		Q54			2SC5108(Y)	TRANSISTOR	
Q20			2SC4988	TRANSISTOR							
Q21,22			DTC114EE	DIGITAL TRANSISTOR							
Q23			2SK1824	FET							
Q24			3SK239A	FET							
Q25			DTA144EE	DIGITAL TRANSISTOR							
Q26			2SK1824	FET							
TH1			157-302-65801	THERMISTOR							
TH401			157-104-65001	THERMISTOR							
A1		*	X58-4843-00	SUB UNIT							
A1:SUB UNIT (VCO) (X58-4843-00)											
The A1 is replaceable as a unit assembly so individual parts are not kept in stock.											
C50			CC73HCH1H330J	CHIP C 33PF J							
C51			CC73HCH1H050B	CHIP C 5.0PF B							
C53			CC73HCH1H0R5B	CHIP C 0.5PF B							
C54			CC73HCH1H020B	CHIP C 2.0PF B							
C55			CC73HCH1H030B	CHIP C 3.0PF B							
C56			CC73HCH1H060B	CHIP C 6.0PF B							
C57			CC73HCH1H470J	CHIP C 47PF J							
C58			CC73HCH1H0R5B	CHIP C 0.5PF B							
C59			CK73HB1H471K	CHIP C 470PF K							
C60			CC73HCH1H060B	CHIP C 6.0PF B							
C61,62			CK73HB1H102K	CHIP C 1000PF K							
C63			CK73HB1H471K	CHIP C 470PF K							
C64,65			CC73HCH1H470J	CHIP C 47PF J							
C66			CC73HCH1H101J	CHIP C 100PF J							
C67			CC73HCH1H050B	CHIP C 5.0PF B							
C68,69			CC73HCH1H040B	CHIP C 4.0PF B							
C70			CC73HCH1H060B	CHIP C 6.0PF B							
C71			CC73HCH1H0R5B	CHIP C 0.5PF B							
C74			CC73HCH1H040B	CHIP C 4.0PF B							

EXPLODED VIEW / 部件分解图



PACKING / 包装



ADJUSTMENT / 调整

Test Equipment Required for Alignment

Test Equipment	Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range Modulation Output	350 to 400MHz Frequency modulation and external modulation. -127dBm/0.1 μ V to greater than -47dBm/1mV
2. Power Meter	Input Impedance Operation Frequency Measurement Range	50 Ω . 350 to 400MHz or more. Vicinity of 10W
3. Deviation Meter	Frequency Range	350 to 400MHz.
4. Digital Volt Meter (DVM)	Measuring Range Input Impedance	10mV to 10V DC High input impedance for minimum circuit loading.
5. Oscilloscope		DC through 30MHz.
6. High Sensitivity Frequency Counter	Frequency Range Frequency Stability	10Hz to 1000MHz. 0.2ppm or less.
7. Ammeter		5A.
8. AF Volt Meter (AF VTVM)	Frequency Range Voltage Range	50Hz to 10kHz. 1mV to 10V.
9. Audio Generator (AG)	Frequency Range Output	50Hz to 5kHz or more. 0 to 1V.
10. Distortion Meter	Capability Input Level	3% or less at 1kHz. 50mV to 10Vrms.
11. Spectrum Analyzer	Measuring Range	DC to 1GHz or more
12. Tracking Generator	Center frequency Output Voltage	50kHz to 600MHz 100mV or more
13. 16 Ω Dummy Load		Approx. 16 Ω , 3W.
14. Regulated Power Supply		5V to 10V, approx. 5A Useful if ammeter equipped.

所需的用于调整的测试设备

测试设备	主要规格	
1. 标准信号发生器 (SSG)	频率范围 调制 输出	350到400MHz 调频和外部调制 -127dBm/0.1 μ V到大于-47dBm/1mV
2. 功率计	输入阻抗 操作频率 测量范围	50 Ω 350到400MHz或更高 10W左右
3. 频偏仪	频率范围	350到400MHz
4. 数字电压表 (DVM)	测量范围 输入阻抗	直流 10mV到10V 为最小电路负载高输入阻抗
5. 示波器		直流到30MHz
6. 高灵敏度频率计数器	频率范围 频率稳定性	10Hz到1000MHz 0.2ppm或更低
7. 电流表		5A.
8. 音频电压表 (AF VTVM)	频率范围 电压范围	50Hz到10kHz 1mV到10V
9. 音频发生器	频率范围 输出	50Hz到5kHz或更高 0到1V
10. 失真测试仪	能力 输入电平	在1kHz时3%或更低 50mV到10Vrms
11. 频谱分析仪	测量范围	直流到1GHz或更高
12. 轨迹发生器	中心频率 输出电压	50kHz到600MHz 100mV或更高
13. 16 Ω 假负载		大约 16 Ω , 3W
14. 可调电源		5V到10V, 大约 5A 配备了电流表时更好

ADJUSTMENT / 调整

■ The following parts are required for adjustment

1. Antenna connector adapter

The antenna connector of this radio uses an SMA terminal.

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

Note

When the antenna connector adapter touches the knob, draw out the knob to mount the connector.

2. Universal connector

Use the interface cable (KPG-36) for PC tuning or the lead wire with plug (E30-3287-18) and screw (N08-0535-08) for panel tuning. Connect the plug to the universal connector of the radio and tighten the screw.

The lead wire with plug (E30-3287-18) and screw (N08-0535-08) terminals are as follows. Numbers are universal connector terminal numbers.

Caution

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

• Universal connector

■ 下面是调整时所需的部件

1. 天线接口转换头

此手持机的天线接口使用 SMA 终端。

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

注释

当天线接口转换头接触到其他旋钮时, 拔出该旋钮并安装转换头。

2. 通用接口

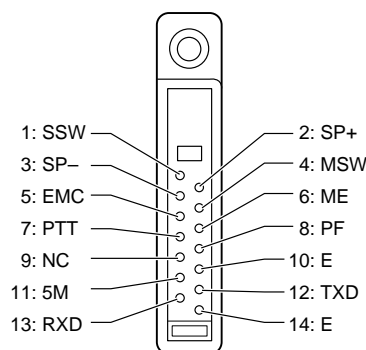
使用接口电缆(KPG-36)进行PC机调谐或使用带有插头(E30-3287-18)和螺钉(N08-0535-08)的引线进行面板调谐。

带有插头(E30-3287-18)和螺钉(N08-0535-08)的引线端点如下所示。号码是通用接口端子号码。

注意事项

1. 将插头与手持机通用接口连接时, 可能发生短路。为了避免出现这种情况, 一定要关闭手持机的电源开关。
2. 由于RX音频输出是BTL输出, 所以有一个直流分量。如图所示, 用电容或变压器将其隔离。
3. 在红色或黑色与接地之间不要连接仪器设备。

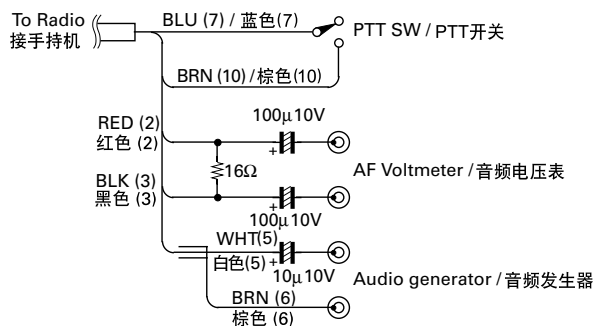
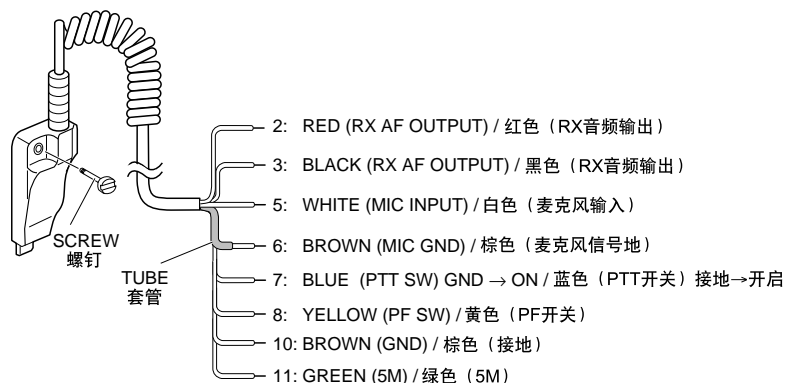
• 通用接口



ADJUSTMENT / 调整

- Panel tuning

- 面板调谐



- PC tuning

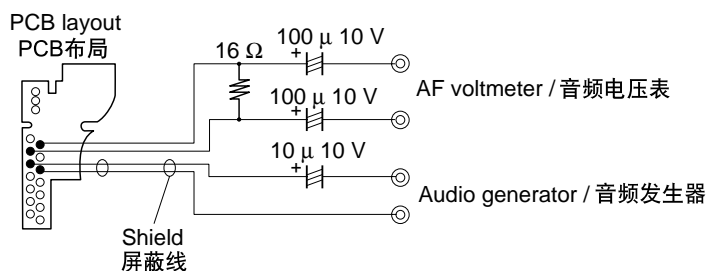
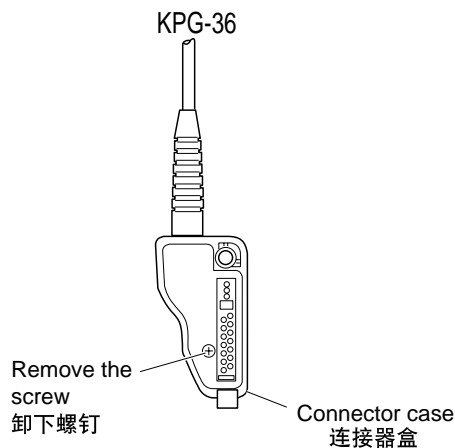
Connect the wires to the PCB in the connector case of interface cable.

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

- PC 机调谐

将电线连接到接口电缆连接器的 PCB 板上。

要从连接器上拉出电线，需要取下连接器盒。



ADJUSTMENT / 调整

Repair Jig (Chassis)

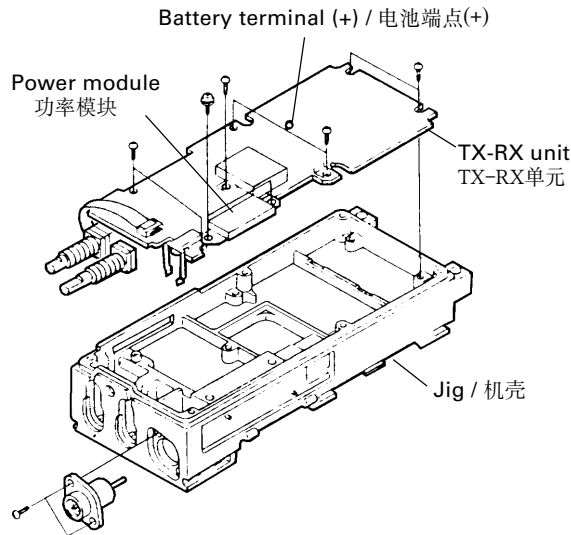
Use jig (part No.: W05-0825-00) for repairing the TK-385. Place the TX-RX unit on the jig and fit it with 7 screws.

The jig facilitates the voltage check and protects the module when the voltage on the flow side of the TX-RX unit is checked during repairs.

维修机架（机壳）

使用机壳 (W05-0825-00) 维修 TK-385。将 TX-RX 单元放置在机壳上，并且拧上 7 颗螺钉。

在维修过程中，当在 TX-RX 单元的电路板上检测到电压时，机壳可以方便地进行电压检测，并且保护模块。

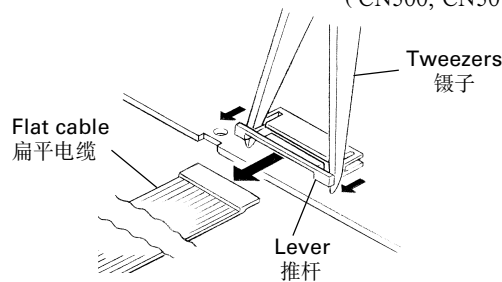


How to Remove the Flat Cable

1. Gently draw out both sides of the connector lever uniformly in the direction of the arrow with tweezers. (CN300, CN301)

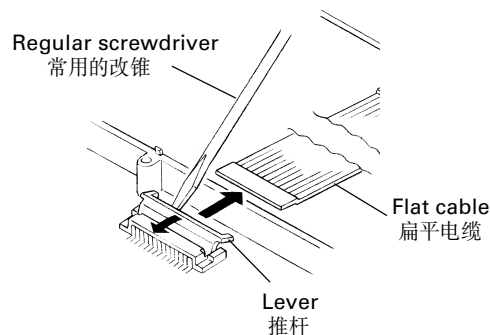
如何取下扁平电缆

1. 按照箭头所示的方向，用镊子均匀地将连接器推杆的两侧撬开。(CN300, CN301)



2. Gently rise up the connector lever in the direction of the arrow with a fine regular screwdriver or tweezers. (CN1, CN3, CN304)

2. 使用常用的小型改锥，按照箭头所示的方向小心地抬起连接器的推杆。(CN1, CN3, CN304)



ADJUSTMENT / 调整

Test Mode



■ Test mode operating features

This transceiver has a test mode. **To enter test mode, press [B] key and turn power on. Hold [B] key until test channel No. and test signalling No. appears on LCD.** Test mode can be inhibited by programming. To exit test mode, switch the power on again. The following functions are available in test mode.

• Controls

Controls	"FNC" appears	"FNC" not appears
[PTT]	Used when making a transmission.	Used when making a transmission.
[AUX]	Release FNC	Unused
[Clear]	Release FNC	Monitor ON and OFF.
[Call]	Lamp ON/OFF	Wide/Narrow
[A]	FFSK 1200bps and 2400bps	Sets to the Tuning mode.
[B]	Release FNC	FNC ON.
[C]	Compander function ON and OFF.	RF power HIGH and LOW.
[D]	Beat shift ON and OFF	Changes signalling.
[O] to [9], and [#], [*]	No Func	No Func
[ENCODER]	Release FNC	Changes channel.

• LCD indicator

"SCN"	Unused
" 	Lights at Compander ON.
"LO"	Lights at RF Power Low.
"P"	Unused
"MON"	Lights at monitor ON.
"SVC"	Unlock
" 	Lights at FFSK 2400bps.
"W"	Wide/Narrow

• LED indicator

Red LED	Lights during transmission. Blinks at the low battery voltage warning.
Green LED	Lights when there is a carrier.

• Sub LCD indicator

"FNC"	appears at Function ON.
-------	-------------------------

■ Frequency and signalling

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

Frequency (MHz) (C type)

Channel No.	RX frequency	TX frequency
1	375.05000	375.10000
2	350.05000	350.10000
3	399.95000	399.90000
4	370.00000	370.00000
5	370.20000	370.20000
6	370.40000	370.40000
7 ~ 16	—	—

测试模式



■ 测试模式操作特性

手持机具有测试模式。要进入测试模式，需要按[B]键，然后接通电源开关。按住[B]键直到测试信道号码和信令号码出现在显示器上为止。测试模式可以通过编程禁止使用。要退出测试模式，需要再次接通电源开关。下述功能在测试模式中有效。

• 控制

控制	显示 "FNC"	不显示 "FNC"
[PTT]	发送时使用	发送时使用
[AUX]	释放FNC	不用
[Clear]	释放FNC	开启和关闭监听
[Call]	开启/关闭指示灯	宽/窄
[A]	FFSK1200bps和2400bps	设定为调谐模式
[B]	释放FNC	开启FNC
[C]	开启和关闭语音压扩器	射频功率高和低
[D]	开启和关闭 Beat shift	改变信令
[0]到[9], 和[#], [*]	不用	不用
[ENCODER]	释放FNC	改变信道

• LCD 显示

"SCN"	不用
" 	语音压扩器开启时点亮
"LO"	射频功率为低时点亮
"P"	不用
"MON"	开启监听时点亮
"SVC"	失锁
" 	FFSK为2400bps时点亮
"W"	宽/窄带

• 发光二极管指示灯

红色发光二极管 发射时发光。电池低压告警时闪动。

绿色发光二极管 有载波时发光。

• 子显示器指示灯

"FNC" 开启功能时显示。

■ 频率和信令

下述表格中频率的设定可以被调整。需要时，可以按照调整步骤重新设定这些频率，从而获得用户实际操作需要的频率。

频率 (MHz) (C 型)

信道号码	RX 频率	TX 频率
1	375.05000	375.10000
2	350.05000	350.10000
3	399.95000	399.90000
4	370.00000	370.00000
5	370.20000	370.20000
6	370.40000	370.40000
7 - 16	—	—

ADJUSTMENT / 调整

Note

You must adjust the frequencies in all channels as shown above, even though the channel frequencies in the 3 row are below the specifications of the TK-385.

Signalling

Signalling No.	RX	TX
1	None	None
2	None	100Hz Square wave
3	QT 67.0Hz	QT 67.0Hz
4	QT 151.4Hz	QT 151.4Hz
5	QT 210.7Hz	QT 210.7Hz
6	QT 250.3Hz	QT 250.3Hz
7	DQT 023N	DQT 023N
8	DQT 754I	DQT 754I
9	None	DTMF tone 9
10	None	Single Tone 1600Hz (HSD OUT)
11	None	Single Tone 1200Hz (MODEM OUT)
12	None	Single Tone 1800Hz (MODEM OUT)
13	None	FFSK(PN pattern)
14	FFSK(CODE)	FFSK(CODE)

• Preparations for tuning the transceiver

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

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

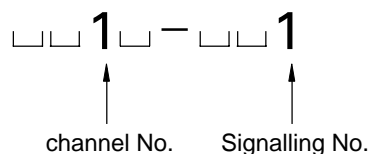
The speaker output connector must be terminated with a 16Ω dummy load and connected to an AC voltmeter and an audio distortion meter or a SINAD measurement meter at all times during tuning.

• Transceiver tuning

(To place transceiver in tuning mode)

Channel appears on LCD. Set channel according to tuning requirements.

LCD display (Test mode)



Press [A], now in tuning mode. Use [◀ C] button to write tuning data through tuning modes, and channel selector knob to adjust tuning requirements (1 to 256 appears on LCD).

Use [D ▶] button to select the adjustment item through tuning modes. Use [B] button to adjust 3 or 5 point tuning.

注释

用户必须调整上述所有信道中的频率，即使第3行的信道频率低于TK-385的规格。

信令

信令号码	RX	TX
1	无	无
2	无	100Hz方形波
3	QT67.0Hz	QT67.0Hz
4	QT151.4Hz	QT151.4Hz
5	QT210.7Hz	QT210.7Hz
6	QT250.3Hz	QT250.3Hz
7	DQT023N	DQT023N
8	DQT754I	DQT754I
9	无	DTMF音频9
10	无	单音1600Hz (HSD输出)
11	无	单音1200Hz (调制解调器输出)
12	无	单音1800Hz (调制解调器输出)
13	无	FFSK (PN形式)
14	FFSK (代码)	FFSK (代码)

• 调整手持机的准备

在进行调整手持机之前，将主机与电源连接。

无论何时调整发射部分，主机必须连接到合适的假负载（或功率仪）。

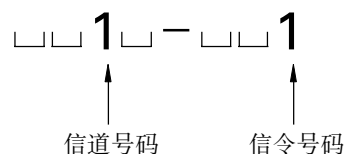
在整个调整过程中，扬声器输出必须经过16Ω假负载并被连接到一个交流电压表和一个音频失真测试仪或一个SINAD测量仪。

• 手持机调整

(将手持机置于调整模式)

信道显示在LCD上。按照调整所需设定信道。

LCD 显示 (测试模式)

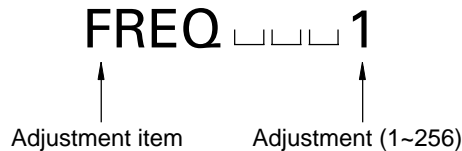


按[A]键进入调谐模式。使用[◀ C]键通过调谐模式写入调谐数据，信道选择器按钮调整调谐要求(1到256出现在显示器上)。

使用[D ▶]键通过调谐模式选择调整的项目。使用[B]键调整3或5点调谐。

ADJUSTMENT / 调整

LCD display (Tuning mode)



LCD 显示 (调谐模式)



Panel Tuning Mode (C Type)

TEST Ch	RX frequency (MHz)	TX frequency (MHz)
L	350.05000	350.10000
L2	362.55000	362.60000
C	375.05000	375.10000
H2	387.55000	387.60000
H	399.95000	399.90000

面板调谐模式 (C 型)

测试信道	RX 频率 (MHz)	TX 频率 (MHz)
L	350.05000	350.10000
L2	362.55000	362.60000
C	375.05000	375.10000
H2	387.55000	387.60000
H	399.95000	399.90000

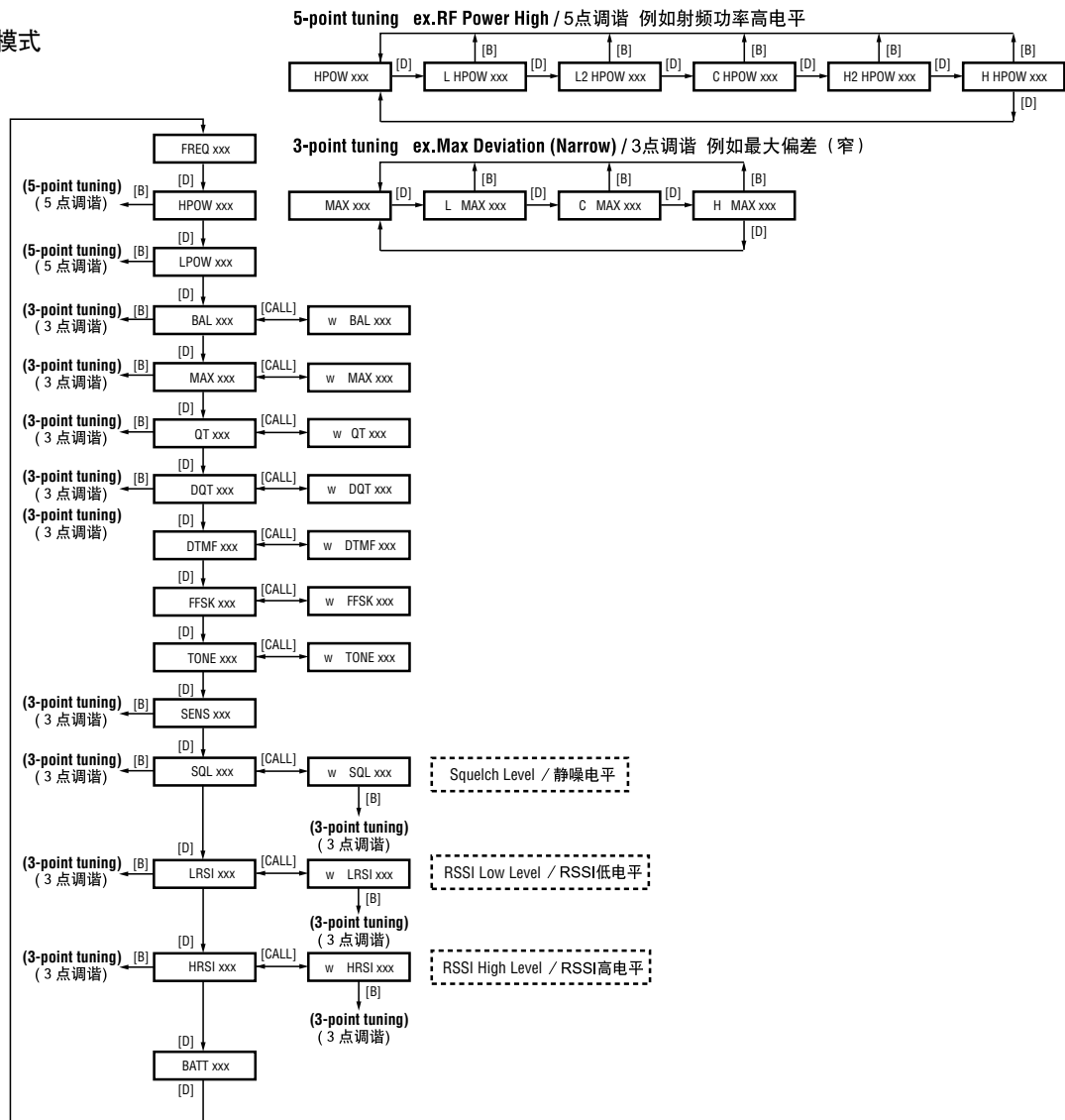
Note

You must adjust the frequencies in all test channels as shown above, even though the test channel frequencies in the H row are below the specifications of the TK-385.

注释

用户必须调整上述所有测试信道中的频率，即使第H行的测试信道频率低于TK-385的规格。

■ Tuning mode / 调谐模式



ADJUSTMENT

Common Section

Item	Condition	Measurement			Adjustment			Specifications/ Remark
		Test equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting	1) BATT terminal voltage:7.5V 2) SSG Standard modulation [Wide] MOD:1kHz, DEV:3kHz [Narrow] MOD:1kHz, DEV:1.5kHz							
2. VCO lock voltage	[Panel Test Mode] 1) CH-Sig:2-1	Power meter	Panel	ANT			Check	0.8V or more
RX	2) CH-Sig:3-1	DVM	TX-RX	CV (CN14)				4.4V or less
TX	3) CH-Sig:2-1 PTT:ON							0.8V or more
	4) CH-Sig:3-1 PTT:ON							4.4V or less

Transmitter Section [Panel Tuning Mode except when Panel TEST Mode is specified.]

Item	Condition	Measurement			Adjustment			Specifications/ Remark
		Test equipment	Unit	Terminal	Unit	Parts	Method	
1. Frequency Adjust	1) Adj item [FREQ] Adjust [***] PTT:ON	Freq. Counter Power meter Am meter	Panel	ANT	Panel	Encoder knob	Center frequency $\pm 100\text{Hz}$ (Note:)After replacing the TCXO (X1),align using KPG-62D CPS	
2. Max Power Check	1) Adj item [HPOW] Adjust [256] 2) Adj item [L HPOW] → [L2 HPOW] → [C HPOW] → [H2 HPOW] → [H HPOW] Adjust [256] PTT:ON						Check	4.3W or more
3. Hight Power Adjust	1) Adj item [HPOW] Adjust [***] 2) Adj item [L HPOW] → [L2 HPOW] → [C HPOW] → [H2 HPOW] → [H HPOW] Adjust [***] PTT:ON					Encoder knob	4.0W	$\pm 0.1\text{W}$ 2.2A or less
4. Hight Power Check	[Panel Test Mode] 1) CH-Sig:1-1 PTT:ON 2) CH-Sig:2-1 PTT:ON 3) CH-Sig:3-1 PTT:ON						Check	3.8~4.2W 2.3A or less
5. Low Power Adjust	1) Adj item [LPOW] Adjust [***] 2) Adj item [L LPOW] → [L2 LPOW] → [C LPOW] → [H2 LPOW] → [H LPOW] Adjust [***] PTT:ON				Panel	Encoder knob	0.8W	$\pm 0.1\text{W}$ 1.0A or less
6. Low Power Check	[Panel Test Mode] 1) CH-Sig:1-1 Set low power (Push [C]) PTT:ON 2) CH-Sig:2-1 PTT:ON 3) CH-Sig:3-1 PTT:ON						Check	0.5~1.5W 1.2A or less

调整

公用部分


项目	条件	测量			调整			规格 / 备注
		测试设备	单元	终端	单元	部件	方法	
1. 设定	1) 电池终端 电压 : 7.5V 2)SSG 标准 调制 [宽带]MOD:1kHz DEV:3kHz [窄带]MOD:1kHz DEV:1.5kHz							
2. 压控振荡器电压	[面板测试模式] 1) CH-Sig:2-1 RX 2) CH-Sig:3-1 TX 3) CH-Sig:2-1 PTT: 开启 4) CH-Sig:3-1 PTT: 开启	功率仪 DVM	面板 TX-RX	ANT CV (CN14)			检查	0.8V 或更高 4.4V 或更低 0.8V 或更高 4.4V 或更低

发射部分 [面板调谐模式除非面板测试模式已被指定]

项目	条件	测量			调整			规格 / 备注
		测试设备	单元	终端	单元	部件	方法	
1. 频率调整	1) 调整项目[FREQ] 调整[* * *] PTT: 开启	频率计 功率仪 电流表	面板	ANT	面板	编码旋钮	中心频率 ± 100HZ (注释:) 更换 TCXO (X1) 之后, 使用KPG-62D CPS进行调整。	
2. 最大功率检查	1) 调整项目[HPOW] 调整[256] 2) 调整项目 [L HPOW] → [L2 HPOW] → [C HPOW] → [H2 HPOW] → [H HPOW] 调整[256] PTT: 开启						检查	4.3W 或更高
3. 高功率调整	1) 调整项目[HPOW] 调整[* * *] 2) 调整项目 [L HPOW] → [L2 HPOW] → [C HPOW] → [H2 HPOW] → [H HPOW] 调整[* * *] PTT: 开启					编码旋钮	4.0W	± 0.1W 2.2A 或更低
4. 高功率检查	[面板测试模式] 1) CH-Sig:1-1 PTT: 开启 2) CH-Sig:2-1 PTT: 开启 3) CH-Sig:3-1 PTT: 开启						检查	3.8~4.2W 2.3A 或更低
5. 低功率调整	1) 调整项目[LPOW] 调整[* * *] 2) 调整项目 [L LPOW] → [L2 LPOW] → [C LPOW] → [H2 LPOW] → [H LPOW] 调整[* * *] PTT: 开启				面板	编码旋钮	0.8W	± 0.1W 1.0A 或更低
6. 低功率检查	[面板测试模式] 1) CH-Sig:1-1 设定低功率 (按[C]键) PTT: 开启 2) CH-Sig:2-1 PTT: 开启 3) CH-Sig:3-1 PTT: 开启						检查	0.5~1.5W 1.2A 或更低

ADJUSTMENT

Transmitter Section [Panel Tuning Mode except when Panel TEST Mode is specified.]

Item	Condition	Measurement			Adjustment			Specifications/ Remark
		Test equipment	Unit	Terminal	Unit	Parts	Method	
7. DQT Balance Adjust [Narrow]	1) Adj item [BAL] Adjust [***] LPF:3kHz HPF:OFF	Power meter Deviation meter Oscilloscope AG AF VTVM	Panel	ANT Universal connector	Panel	Encoder knob	Make the demodulation waves into square waves	
	2) Adj item [L BAL] → [C BAL] → [H BAL] Adjust [***] PTT:ON							
	[Wide] 3) Adj item [w BAL] Adjust [***] PTT:ON							
8. Max DEV Adjust [Narrow]	1) Adj item [MAX] Adjust [***] AG:1kHz / 80mV Deviation meter filter LPF:15kHz HPF:OFF						1.85kHz (According to the larger+,-)	±50Hz
	2) Adj item [L MAX] → [C MAX] → [H MAX] Adjust [***] PTT:ON							
	[Wide] 3) Adj item [w MAX] Adjust [***] PTT:ON							
9. MIC Sensitivity Check	[Panel Test Mode] 1) CH-Sig: 1-1 AG:1kHz / 8mV LPF:15kHz PTT:ON						Check	1.2~2.0 kHz
10. QT Deviation Adjust [Narrow]	1) Adj item [QT] Adjust [***] LPF:3kHz HPF:OFF		Panel	ANT Universal connector	Panel	Encoder knob	0.35kHz	±50Hz
	2) Adj item [L QT] → [C QT] → [H QT] Adjust [***] PTT:ON							
	[Wide] 3) Adj item [w QT] Adjust [***] PTT:ON							
11. DQT Devition Adjust [Narrow]	1) Adj item [DQT] Adjust [***] LPF:3kHz HPF:OFF						0.35kHz	
	2) Adj item [L DQT] → [C DQT] → [H DQT] Adjust [***] PTT:ON							
	[Wide] 3) Adj item [w DQT] Adjust [***] PTT:ON							

调整

发射部分 [面板调谐模式除非面板测试模式已被指定]

项目	条件	测量			调整			规格/备注
		测试设备	单元	终端	单元	部件	方法	
7. DQT 平衡 调整 [窄]	1) 调整项目[BAL] 调整[* * *] LPF:3kHz HPF:关闭	功率仪 偏差仪 示波器 AG AFVTVM	面板	ANT 通用接口	面板	编码旋钮	使调整波形为 方形波。	
	2) 调整项目 [L BAL] → [C BAL] → [H BAL] 调整[* * *] PTT:开启							
[宽]	3) 调整项目[w BAL] 调整[* * *] PTT:开启							
8. 最大DEV 调整 [窄]	1) 调整项目[MAX] 调整[* * *] AG:1kHz/80mV 频偏仪滤波器 LPF:15kHz HPF:关闭						1.85kHz (按照较大+,-)	± 50Hz
	2) 调整项目 [L MAX] → [C MAX] → [H MAX] 调整[* * *] PTT:开启							
[宽]	3) 调整项目[w MAX] 调整[* * *] PTT:开启						4.20kHz (按照较大+,-)	
9. 话筒 灵敏度 检查	[面板测试模式] 1) CH-Sig:1-1 AG:1kHz/8mV LPF:15kHz PTT:开启						检查	1.2~2.0kHz
10. QT 频偏 调整 [窄]	1) 调整项目[QT] 调整[* * *] LPF:3kHz HPF:关闭		面板	ANT 通用接口	面板	编码旋钮	0.35kHz	± 50Hz
	2) 调整项目 [L QT] → [C QT] → [H QT] 调整[* * *] PTT:开启							
[宽]	3) 调整项目[w QT] 调整[* * *] PTT:开启						0.75kHz	
11. DQT 频偏 调整 [窄]	1) 调整项目[DQT] 调整[* * *] LPF:3kHz HPF:关闭						0.35kHz	
	2) 调整项目 [L DQT] → [C DQT] → [H DQT] 调整[* * *] PTT:开启							
[宽]	3) 调整项目[w DQT] 调整[* * *] PTT:开启						0.75kHz	

ADJUSTMENT

Transmitter Section [Panel Tuning Mode except when Panel TEST Mode is specified.]

Item	Condition	Measurement			Adjustment			Specifications/ Remark
		Test equipment	Unit	Terminal	Unit	Parts	Method	
12. DTMF Deviation Adjust [Narrow]	1) Adj item [DTMF] Adjust [***] LPF:15kHz HPF:OFF PTT:ON	Power meter Deviation meter Oscilloscope AG AF VTVM	Panel	ANT Universal connector	Panel	Encoder knob	1.45kHz	±0.05kHz
	[Wide]						2) Adj item [w DTMF] Adjust [***] PTT:ON	3.0kHz
13. FFSK Deviation Adjust [Narrow]	1) Adj item [FFSK] Adjust [***] LPF:15kHz HPF:OFF PTT:ON						1.45kHz	±0.05kHz
	[Wide]						2) Adj item [w FFSK] Adjust [***] PTT:ON	3.0kHz
14. TONE Deviation Adjust [Narrow]	1) Adj item [TONE] Adjust [***] LPF:15kHz HPF:OFF PTT:ON						1.45kHz	±0.05kHz
	[Wide]						2) Adj item [w TONE] Adjust [***] PTT:ON	3.0kHz
15. BATT Detection Writing	1) Adj item [BATT] Adjust [***] PTT:ON	Power meter DVM		ANT BATT terminal			After pressing the PTT switch, confirm that one predetermined numeric in the range of 1 to 256 appears and then press the [C] key. That number will be stored in memory	BATT terminal voltage:6.2V
16. BATT Detection Check	[Panel Test Mode] 1) CH-Sig:1-1 BATT terminal voltage:6.5V PTT:ON 2) BATT terminal voltage:5.7V PTT:ON						Check	No blinking of LED
								Blinking of LED

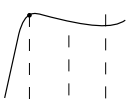
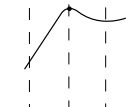

调整

发射部分 [面板调谐模式除非面板测试模式已被指定]

项目	条件	测量			调整			规格/备注					
		测试设备	单元	终端	单元	部件	方法						
12. DTMF 频偏 调整 [窄]	1) 调整项目[DTMF] 调整[* * *] LPF:15kHz HPF:关闭 PTT:开启	功率仪 偏差仪 示波器 AG AFVTVM	面板	ANT 通用接口	面板	编码旋钮	1.45kHz	± 0.05kHz					
	[宽]						2) 调整项目[w DTMF] 调整[* * *] PTT:开启	3.0kHz	± 0.1kHz				
13. FFSK 频偏 调整 [窄]	1) 调整项目[FFSK] 调整[* * *] LPF:15kHz HPF:关闭 PTT:开启						1.45kHz	± 0.05kHz					
	[宽]						2) 调整项目[w FFSK] 调整[* * *] PTT:开启	3.0kHz	± 0.1kHz				
14. TONE 频偏 调整 [窄]	1) 调整项目[TONE] 调整[* * *] LPF:15kHz HPF:关闭 PTT:开启						功率仪 DVM	面板	ANT 电池 终端	面板	编码旋钮	1.45kHz	± 0.05kHz
	[宽]											2) 调整项目[w TONE] 调整[* * *] PTT:开启	3.0kHz
15. 电池 检测 写入	1) 调整项目[BATT] 调整[* * *] PTT:开启											按下 PTT 开关 后, 确认一个1 到 256 内的预 定数字出现, 然后按 [C]键。 此数字将储存 在存储器中。	电池终端 电压 : 6.2V
	16. 电池 检测 检查											[面板测试模式] 1) CH-Sig:1-1 电池终端电压 : 6.5V PTT : 开启	检查
	2) 电池终端电压 : 5.7V PTT : 开启		LED 闪烁										

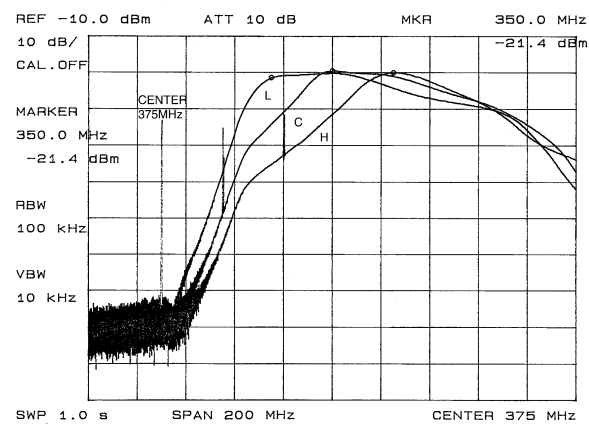
ADJUSTMENT

Receiver Section [Panel Tuning Mode except when Panel TEST Mode is specified.]

Item	Condition	Measurement			Adjustment			Specifications/ Remark
		Test equipment	Unit	Terminal	Unit	Parts	Method	
1. Sensitivity Adjust (BPF characteristic)	1) Adj item [SENS] Adjust [***] 2) Low-edge frequency Adj item [L SENS] Spe-Ana setting Center-f : 375MHz Span : 200MHz RBW : 100kHz VBW : 10kHz REF level : -10dBm ATT : 10dB Tra-G setting Input level:-30dBm 3) Center frequency Adj item [C SENS] 4) High-edge frequency Adj item [H SENS]	Tracking generator	Panel	ANT	Panel	Encoder knob	Adjustment Low-edge-f Turn a knob and make peak point.  Adjustment Center-f Turn a knob and make peak point.  Adjustment High-edge-f Turn a knob and make peak point. 	REF -10.0 dBm ATT 10 dB MKR 350.0 MHz 10 dB/CAL.OFF MARKER 350.0 MHz -21.4 dBm RBW 100 KHz VBW 10 KHz SWP 1.0 s SPAN 200 MHz CENTER 375 MHz Band Pass Filter Characteristic (C)
		Spectrum analyzer	TX-RX	TP (CN13) Need couple capacitor (1000PF)				
2. Sensitivity Check	[Panel Test Mode] 1) CH-Sig:1-1 SSG OUT Wide: -118dBm(0.28μV) (MOD:1kHz / ±3kHz) Narrow: -117dBm(0.316μV) (MOD:1kHz / ±1.5kHz)	SSG AF VTVM Oscilloscope	Panel	ANT Universal connector			Check	12dB SINAD or more
3. Squelch (Preset) Adjust [Narrow]	1) Adj item [SQL] Adjust [***] SSG OUT: 12dB SINAD level 2) Adj item [L SQL] → [C SQL] → [H SQL] Adjust [***]					Encoder knob	Adjust to point of opening squelch	
	[Wide]							

调整

接收部分 [面板调谐模式除非面板测试模式已被指定]

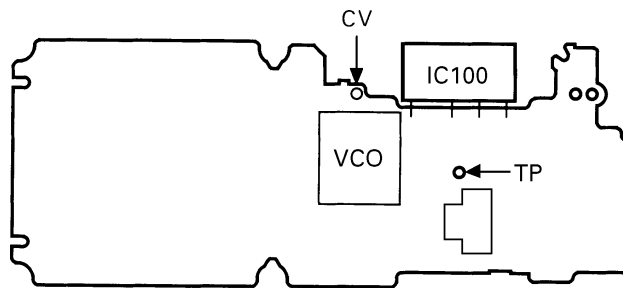
项目	条件	测量			调整			规格/备注
		测试设备	单元	终端	单元	部件	方法	
1. 灵敏度调整 (BPF特性)	1) 调整项目 调整[* * *] 2) 低边频率 调整项目[L SENS] Spe-Ana设定 Center-f: 375MHz Span: 200MHz RBW: 100kHz VBW: 10kHz REF电平: -10dBm ATT: 10dB Tra-G设定 Input电平: -30dBm 3) 中心频率 调整项目[C SENS] 4) 高边频率 调整项目[H SENS]	轨迹发生器 频谱分析仪	面板 TX-RX	ANT TP (CN13) 需要耦合电容 (1000PF)	面板	编码旋钮	调整低边频率 调谐按钮到峰值 调整中心频率 调谐按钮到峰值 调整高边频率 调谐按钮到峰值	 <p>带电滤波器特性 (C)</p>
2. 灵敏度检查	[面板测试模式] 1) CH-Sig: 1-1 标准信号发生器输出 宽: -118dBm (0.28μV) (MOD: 1kHz/ ± 3kHz) 窄: -117dBm (0.316μV) (MOD: 1kHz/ ± 1.5kHz)	SSG AFVTVM 示波器	面板	ANT 通用接口			检查	12dB SINAD 或更高
3. 静音抑制电路 (Preset) 调整 [窄]	1) 调整项目[SQL] 调整[* * *] 标准信号发生器输出 12dB SINAD 电平					编码旋钮	调整到打开 噪音抑制电 路点。	
[宽]	2) 调整项目 [L SQL] → [C SQL] → [H SQL] 调整[* * *] 3) 调整项目[w SQL] 调整[* * *] 12dB SINAD 电平 4) 调整项目 [wL SQL] → [wC SQL] → [wH SQL] 调整[* * *]							

ADJUSTMENT

Receiver Section [Panel Tuning Mode except when Panel TEST Mode is specified.]

Item	Condition	Measurement			Adjustment			Specifications/ Remark
		Test equipment	Unit	Terminal	Unit	Parts	Method	
4. RSSI (Low) Adjust [Narrow]	1) Adj item [LRSI] Adjust [***] SSG OUT: 12dB SINAD level	SSG AF VTVM Oscilloscope	Panel	ANT Universal connector		Encoder knob	After input signal from SSG, press [D] key. That numeric will be stored in memory	
	2) Adj item [L LRSI] → [C LRSI] → [H LRSI] Adjust [***]							
	[Wide]							
	3) Adj item [w LRSI] Adjust [***] 12dB SINAD level							
	4) Adj item [wL LRSI] → [wC LRSI] → [wH LRSI] Adjust [***]							
5. Squelch (Preset) Check	[Panel Test Mode] 1) CH-Sig:1-1 SSG OUT: 12dB SINAD level						Check	Squelch must be opened
	2) SSG OUT:OFF							Squelch must be closed.
6. RSSI (High) Adjust [Narrow]	1) Adj item [HRSI] Adjust [***] SSG OUT: -70dBm(70.7μV)						After input signal from SSG, press [D] key. That numeric be stored in memory	
	2) Adj item [L HRSL] → [C HRSL] → [H HRSL] Adjust [***]							
	[Wide]							
	3) Adj item [wL HRSL] → [wC HRSL] → [wH HRSL] Adjust [***]							

Adjustment points
TX-RX unit (X57-6203-01)
component side view

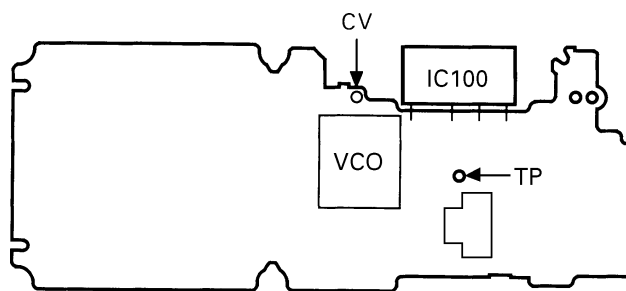


调整

接收部分 [面板调谐模式除非面板测试模式已被指定]

项目	条件	测量			调整			规格 / 备注
		测试设备	单元	终端	单元	部件	方法	
4. RSSI (低) 调整 [窄]	1) 调整项目[LRSI] 调整[* * *] 标准信号发生器输出 12dB SINAD 电平	SSG AFVTVM 示波器	面板	ANT 通用接口		编码旋钮	从 SSG 输入 信号后, 按 [D]键, 此数 值将被保存 在存储器中。	
	2) 调整项目 [L LRSI] → [C LRSI] → [H LRSI] 调整[* * *]							
	[宽]							
	3) 调整项目[w LRSI] 调整[* * *] 12dB SINAD 电平							
	4) 调整项目 [wL LRSI] → [wC LRSI] → [wH LRSI] 调整[* * *]							
5. 静噪抑制电路 (Preset) 检查	[面板测试模式] 1) CH-Sig:1-1 标准信号发生器输出 12dB SINAD 电平						检查	静噪必须被打开。
	2) 标准信号发生器输出: 关闭							静噪必须被关闭。
6. RSSI (高) 调整 [窄]	1) 调整项目[HRSL] 调整[* * *] 标准信号发生器输出 -70dBm(70.7μV)						从 SSG 输入 信号后, 按 [D]键, 此数 值将被保存 在存储器中。	
	2) 调整项目 [L HRSL] → [C HRSL] → [H HRSL] 调整[* * *]							
	[宽]	3) 调整项目 [wL HRSL] → [wC HRSL] → [wH HRSL] 调整[* * *]						

调整点

TX-RX UNIT (X57-6203-01)
元件侧视图

TERMINAL FUNCTION / 端子功能

CN No.	Pin No.	Name	I/O	Function
TX-RX UNIT (X57-6203-01): TX-RX section				
CN1	1	B	O	Power input after passing through the fuse.
	2	B	O	Power input after passing through the fuse.
	3	SB	I	Power output after power switch.
	4	SB	I	Power output after power switch.
	5	5M	O	5V.
	6	VOL	I	Volume level input for audio control.
	7	E	-	GND
	8	EN2	I	Encoder pulse input.
	9	E	-	GND
	10	EN1	I	Encoder pulse input.
CN2 for X54- SW section	1	MON	I	Normally; 5V. MON when connected GND.
	2	LAMP	I	Normally; 5V. LAMP when connected GND.
	3	PTT	I	Normally; 5V. transmit when connected GND.
	4	GND	-	GND
CN3 for X54- Display unit	1	AF	O	Audio output.
	2	AFE	-	Audio GND.
	3	NC	-	Not use.
	4	PF	I	External PF signal input.
	5	CK	O	Clock data output.
	6	RXD	I	Serial control signal input.
	7	TXD	O	Serial control signal output.
	8	DT	O	Data output for LCD driver/decade counter.
	9	KRS	O	Key scan IC reset output.
	10	KI1	I	KEY input
	11	KI2	I	KEY input
	12	GND	-	GND
	13	5M	O	5V.
	14	AM	O	Audio mute signal output. Mute: "L". Unmute: "H"
	15	CS	O	LCD driver chip select output.
	16	NC	-	Not use.
	17	PTT	I	PTT signal input.
	18	AUX	I	AUX key input.
	19	LR	O	TX LED control. Normally: 0V, lighting: 5V.
	20	LG	O	RX LED control. Normally: 0V, lighting: 5V.
	21	LBL	O	Backlight LED control. Normally: 0V, lighting: 5V.
	22	ME	-	MIC GND.
	23	MIC	I	MIC signal input.
	24	SB	O	Power output after power switch.
DISPLAY UNIT (X54-3210-12 A/2) : DISPLAY section				
CN300 for X57- TX-RX unit	1	SB	I	Power input after power switch.
	2	MIC	O	MIC signal output.
	3	ME	-	MIC GND.
	4	LBL	I	Backlight LED control. Normally: 0V, lighting: 5V.
	5	LG	I	RX LED control. Normally: 0V, lighting: 5V.
	6	LR	I	TX LED control. Normally: 0V, lighting: 5V.
	7	AUX	O	AUX key output.
	8	PTT	O	PTT signal output.
	9	NC	-	Not use.
	10	CS	I	LCD driver chip select input.
	11	AM	I	Audio mute signal input. Mute: "L", Unmute: "H"
	12	5M	I	5V.

CN 号码	管脚 号码	名称	输入 / 输出	功能
TX-RX 单元 (X57-6203-01) : TX-RX 部分				
CN1	1	B	输出	通过保险丝后输入电源。
	2	B	输出	通过保险丝后输入电源。
	3	SB	输入	接通电源开关后输出电源。
	4	SB	输入	接通电源开关后输出电源。
	5	5M	输出	5V.
	6	VOL	输入	用于音频控制的音量电平输入。
	7	E	-	接地
	8	EN2	输入	编码器脉冲输入。
	9	E	-	接地
	10	EN1	输入	编码器脉冲输入。
CN2 用于X54- SW 部分	1	MON	输入	一般; 5V, 接地时 MON
	2	LAMP	输入	一般; 5V, 接地时 LAMP
	3	PTT	输入	一般; 5V, 接地时发送
	4	GND	-	接地
CN3 用于 X54- 显示 单元	1	AF	输出	音频输出。
	2	AFE	-	音频接地。
	3	NC	-	不使用。
	4	PF	输入	外置 PF 信号输入。
	5	CK	输出	时钟数据输出。
	6	RXD	输入	串行控制信号输入。
	7	TXD	输出	串行控制信号输出。
	8	DT	输出	显示器驱动器 / 解码计数器数据输出。
	9	KRS	输出	按键扫描 IC 复位输出。
	10	KI1	输入	按键输入。
	11	KI2	输入	按键输入。
	12	GND	-	接地
	13	5M	输出	5V.
	14	AM	输出	音频静音信号输出. 静音: "低电平". 不静音: "高电平"
	15	CS	输出	显示器驱动器芯片选择输出。
	16	NC	-	不使用。
	17	PTT	输入	PTT 信号输入。
	18	AUX	输入	AUX 按键输入。
	19	LR	输出	TX LED 控制. 一般: 0V, 发光: 5V
	20	LG	输出	RX LED 控制. 一般: 0V, 发光: 5V
	21	LBL	输出	背景灯光 LED 控制. 一般: 0V, 发光: 5V
	22	ME	-	麦克风信号地。
	23	MIC	输入	麦克风信号输入。
	24	SB	输出	接通电源开关后输出电源。
显示器单元 (X54-3210-12 A/2) : 显示部分				
CN300 用于 X57- TX-RX 单元	1	SB	输入	接通电源开关后输入电源。
	2	MIC	输出	麦克风信号输出。
	3	ME	-	麦克风信号地。
	4	LBL	输入	背景灯光 LED 控制。 一般: 0V, 发光: 5V.
	5	LG	输入	RX LED 控制. 一般: 0V, 发光: 5V
	6	LR	输入	TX LED 控制. 一般: 0V, 发光: 5V
	7	AUX	输出	AUX 按键输出。
	8	PTT	输出	PTT 信号输出。
	9	NC	-	不使用。
	10	CS	输入	显示器驱动器芯片选择输入。
	11	AM	输入	音频静音信号输入。 静音: "低电平", 不静音: "高电平"
	12	5M	输入	5V

TERMINAL FUNCTION / 端子功能

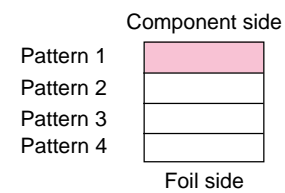
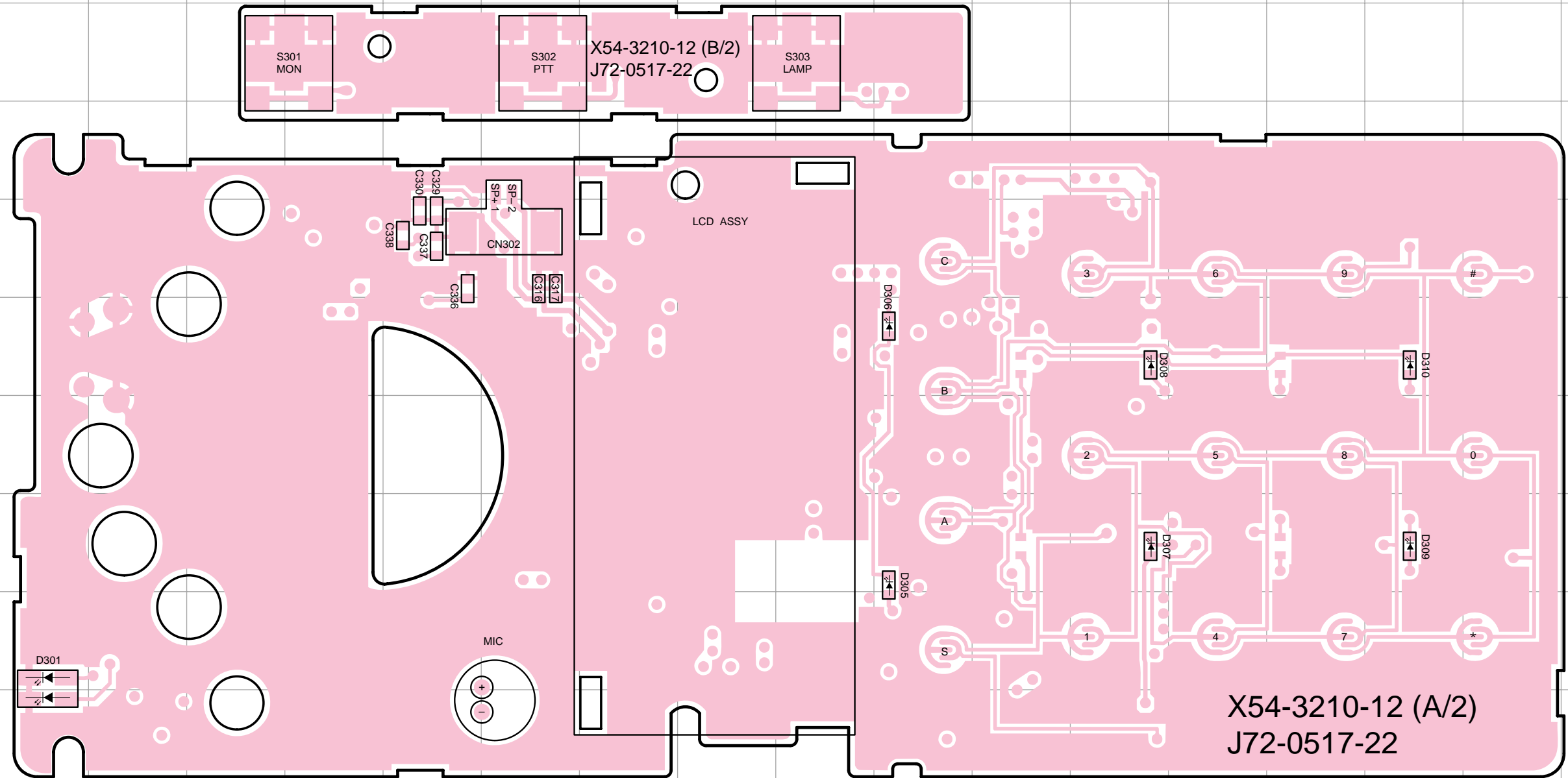
CN No.	Pin No.	Name	I/O	Function
	13	GND	-	GND
	14	KI2	O	KEY output
	15	KI1	O	KEY output
	16	KRS	I	Key scan IC reset input
	17	DT	I	Data input for LCD driver/decade counter.
	18	TXD	I	Serial control signal input.
	19	RXD	O	Serial control signal output.
	20	CK	I	Clock data input.
	21	PF	O	External PF signal output.
	22	NC	-	Not use.
	23	AFE	-	Audio GND.
	24	AF	I	Audio input.
CN301	1	SSW	I	EXT/INT speaker switch input.
	2	SP+	O	BTL output + for external speaker.
	3	SP-	O	BTL output - for external speaker.
	4	MSW	I	EXT/INT MIC switch input.
	5	EMC	I	External microphone input.
	6	ME	-	External microphone ground.
	7	PTT	I	External PTT input.
	8	PF	I	Programmable function key input.
	9	NC	-	Not use.
	10	E	-	GND
	11	5M	O	5V output
	12	TXD	O	Serial data output.
	13	RXD	I	Serial data input.
	14	NC (E)	-	Not use (GND)
CN302	1	SP	O	Output for internal speaker.
	2	E	-	GND
CN304	1	NC	-	Not use.
	2	LEDK	I	Backlight LED control.
	3	LEDA	O	Backlight LED control.
	4	VCI	O	LCD power supply.
	5	SOD	O	Serial data output for LCD driver.
	6	SID	I	Serial data input for LCD driver.
	7	SCLK	O	Clock data output for LCD driver.
	8	CS	O	LCD driver chip select output.
	9	Vcc	O	5V
	10	GND	-	GND
DISPLAY UNIT (X54-3210-12 B/2) : SW section				
CN303 for X57- TX-RX unit	1	MON	O	Normally; 5V, MON when connected GND.
	2	LAMP	O	Normally; 5V, LAMP when connected GND.
	3	PTT	O	Normally; 5V, transmit when connected GND.
	4	GND	-	GND

CN 号码	管脚 号码	名称	输入 / 输出	功能
	13	GND	-	接地
	14	KI2	输出	按键输出
	15	KI1	输出	按键输出
	16	KRS	输入	按键扫描 IC 复位输入
	17	DT	输入	显示器驱动器/解码计数器数据输出。
	18	TXD	输入	串行控制信号输入
	19	RXD	输出	串行控制信号输出
	20	CK	输入	时钟数据输入
	21	PF	输出	外置 PF 信号输出
	22	NC	-	不使用
	23	AFE	-	音频接地
	24	AF	输入	音频输入
CN301	1	SSW	输入	外置/内置扬声器开关输入
	2	SP+	输出	用于外置扬声器的 BTL 输出 +
	3	SP-	输出	用于外置扬声器的 BTL 输出 +
	4	MSW	输入	外置/内置麦克风开关输入
	5	EMC	输入	外置麦克风输入
	6	ME	-	外置麦克风信号地
	7	PTT	输入	外置 PTT 输入
	8	PF	输入	可编程功能键输入
	9	NC	-	不使用
	10	E	-	接地
	11	5M	输出	5V 输出
	12	TXD	输出	串行数据输出
	13	RXD	输入	串行数据输入
	14	NC(E)	-	不使用 (接地)
CN302	1	SP	输出	内置扬声器输出
	2	E	-	接地
CN304	1	NC	-	不使用
	2	LEDK	输入	背景灯光 LED 控制
	3	LEDA	输出	背景灯光 LED 控制
	4	VCI	输出	显示器电源
	5	SOD	输出	显示器驱动器的串行数据输出
	6	SID	输入	显示器驱动器的串行数据输入
	7	SCLK	输出	显示器驱动器的时钟数据输出
	8	CS	输出	显示器驱动器芯片选择输出
	9	Vcc	输出	5V
	10	GND	-	接地
显示器单元 (X54-3210-12 B/2) : SW 部分				
CN303 用于X57- TX-RX 单元	1	MON	输出	一般; 5V, 接地时 MON
	2	LAMP	输出	一般; 5V, 接地时 LAMP
	3	PTT	输出	一般; 5V, 接地时发送
	4	GND	-	接地

DISPLAY UNIT (X54-3210-12) Component Side View

DISPLAY UNIT
(X54-3210-12)

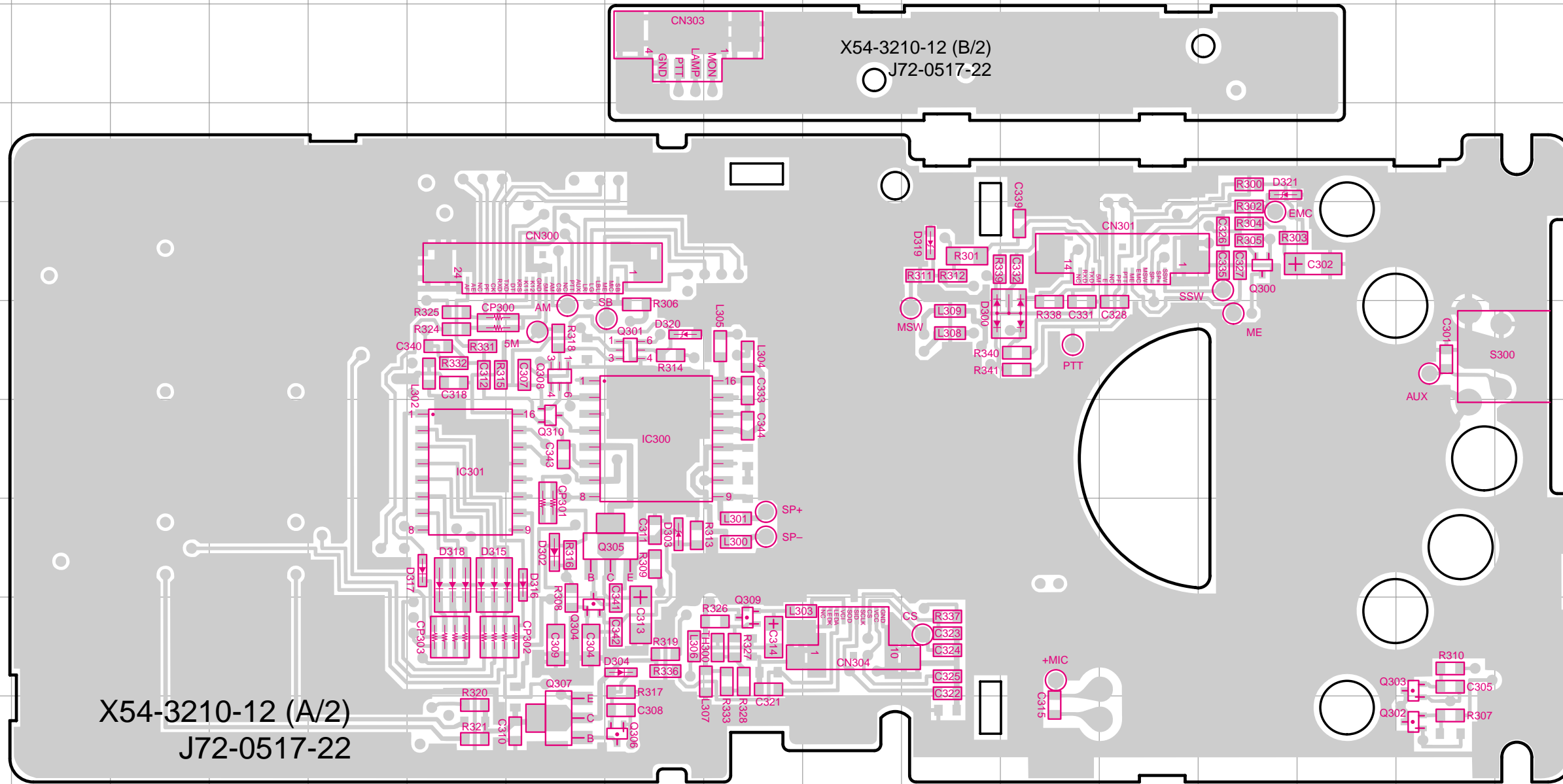
Ref. No.	Address
D301	9C
D305	8L
D306	6L
D307	8N
D308	6N
D309	8Q
D310	6Q



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PC BOARD VIEW / PC 板视图

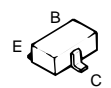
DISPLAY UNIT (X54-3210-12) Foil Side View



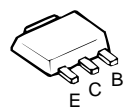
DISPLAY UNIT (X54-3210-12)

Ref. No.	Address
D300	6L
D302	8G
D303	8H
D304	9H
D315	8F
D316	8G
D317	8F
D318	8F
D319	5K
D320	6H
D321	4N
IC300	7H
IC301	7F
Q300	5N
Q301	6H
Q302	10P
Q303	9P
Q304	9G
Q305	8H
Q306	10H
Q307	10G
Q308	6G
Q309	9I
Q310	7G

2SC4617



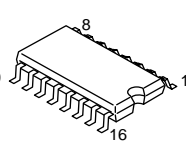
2SB798



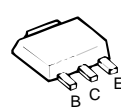
2SJ243
2SK1824



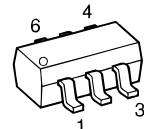
TC74HC4017AF



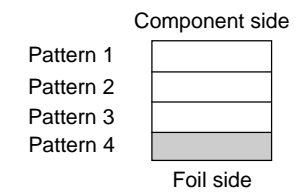
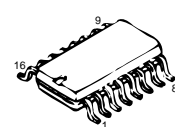
2SB1132



UPA672T



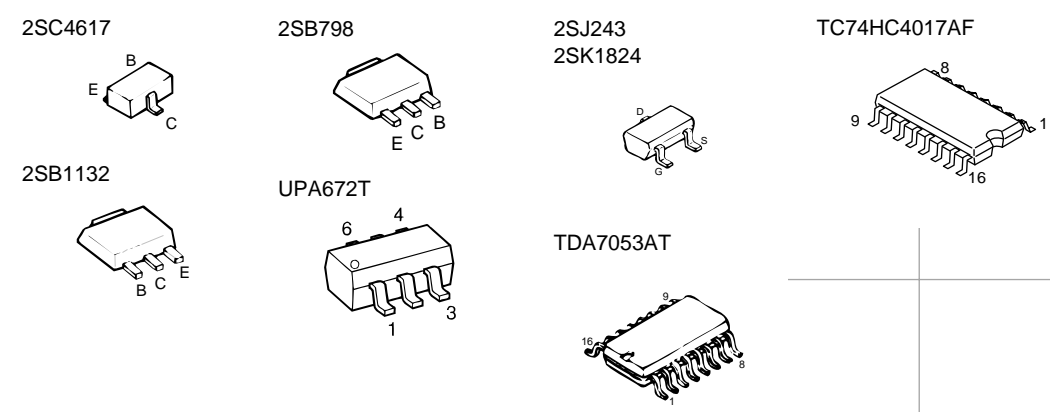
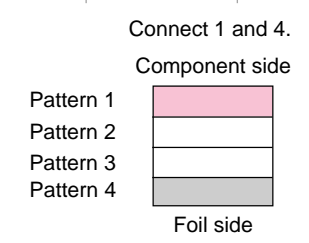
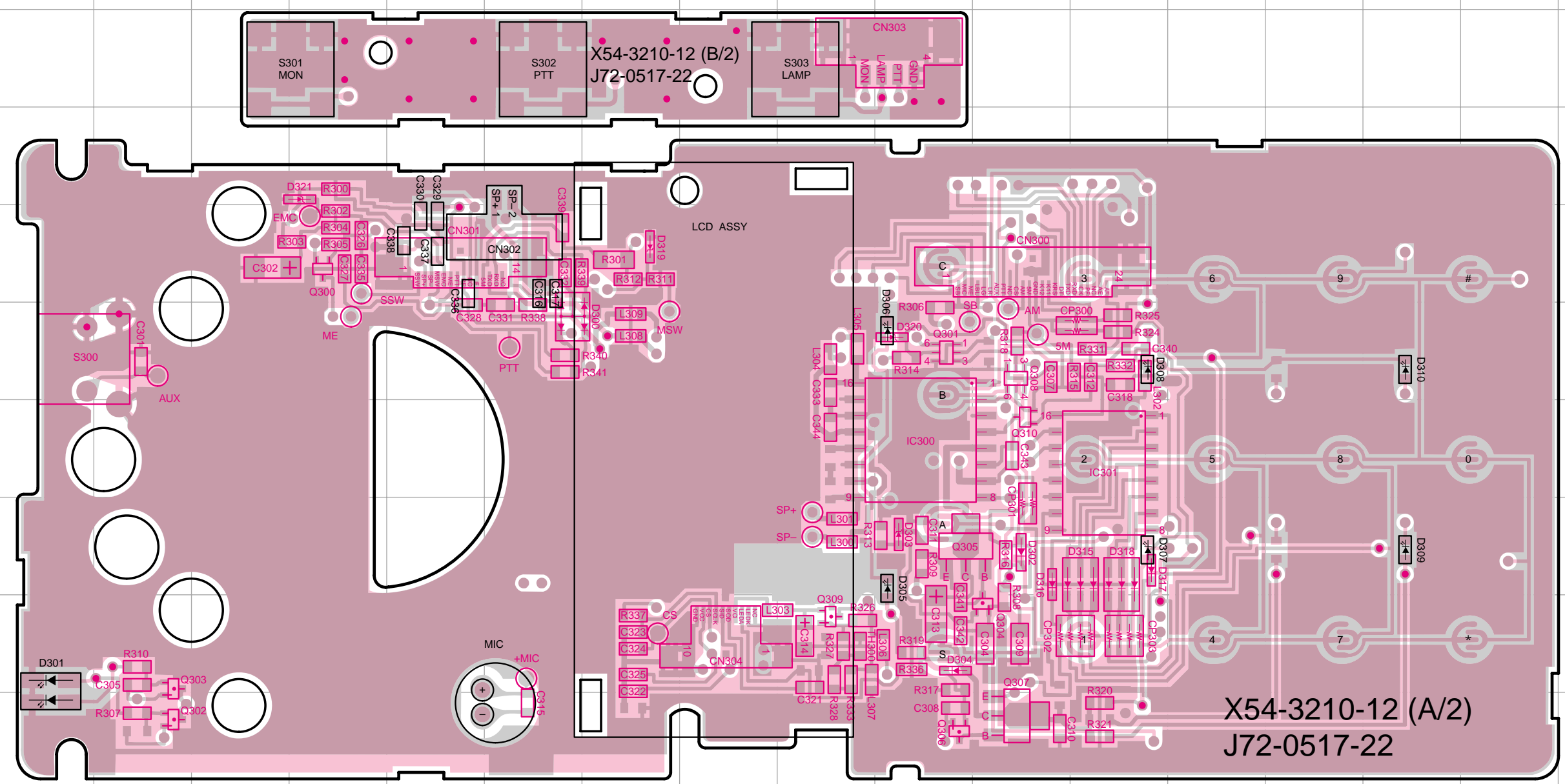
TDA7053AT



DISPLAY UNIT (X54-3210-12) Component Side + Foil Side View

DISPLAY UNIT (X54-3210-12)

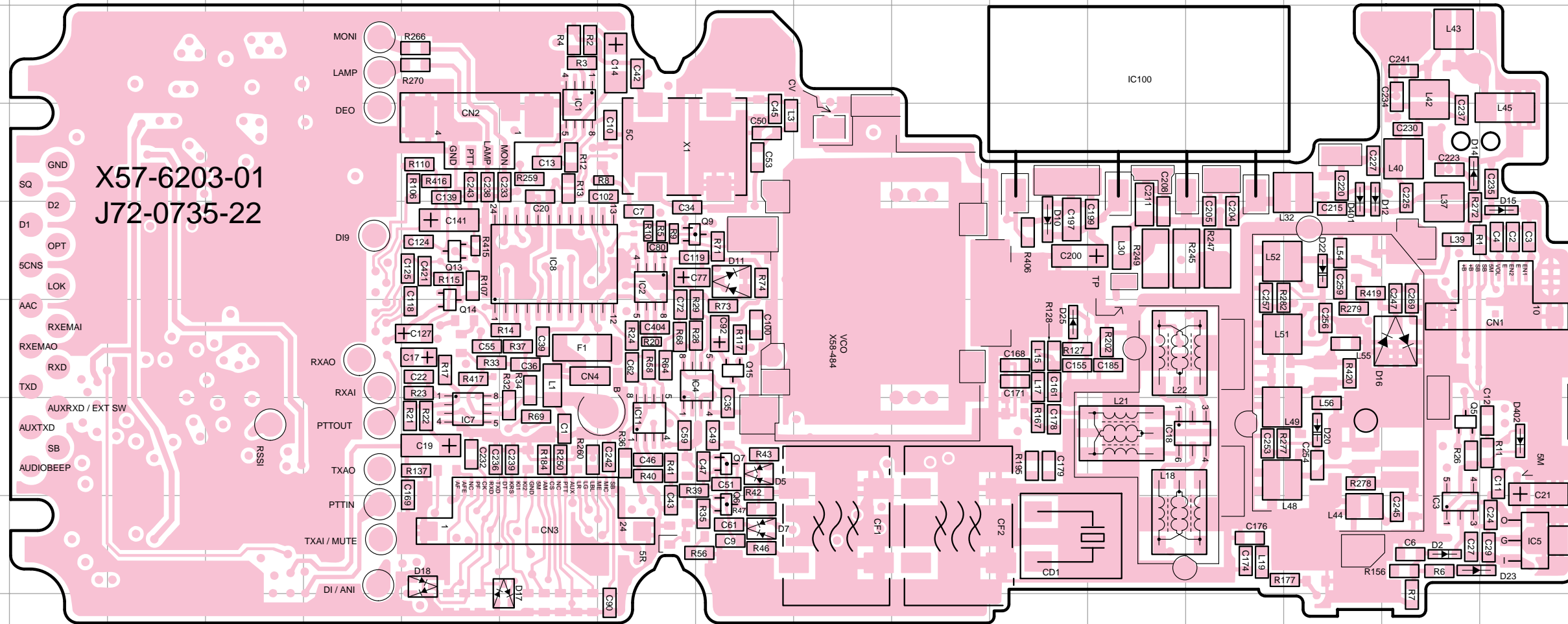
Ref. No.	Address
D300	6H
D301	9C
D302	8M
D303	8L
D304	9L
D305	8L
D306	6L
D307	8N
D308	6N
D309	8Q
D310	6Q
D315	8N
D316	8M
D317	8N
D318	8N
D319	5I
D320	6L
D321	4F
IC300	7L
IC301	7N
Q300	5F
Q301	6L
Q302	10D
Q303	9D
Q304	9M
Q305	8L
Q306	10L
Q307	10M
Q308	6M
Q309	9K
Q310	7M



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PC BOARD VIEW / PC 板视图

TX-RX UNIT (X57-6203-01) Component Side View

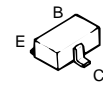


X57-6203-01
J72-0735-22

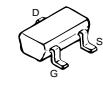
TX-RX UNIT (X57-6203-01)

Ref. No.	Address
D2	8P
D5	7I
D7	8I
D10	5L
D11	5I
D12	4O
D14	4P
D15	5Q
D16	6P
D17	8G
D18	8F
D20	7O
D22	5O
D23	8P
D25	6L
D401	4O
D402	7Q
IC1	4G
IC2	5H
IC3	8P
IC4	6I
IC5	8Q
IC7	7F
IC8	5G
IC11	7H
IC18	7N
Q5	7P
Q6	8I
Q7	7I
Q9	5I
Q13	5F
Q14	5F
Q15	6I

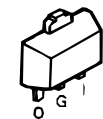
DTA144EE
DTC144EE



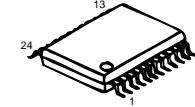
2SJ243
2SK1824



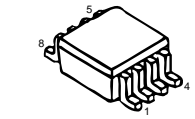
S-81350HG-KD



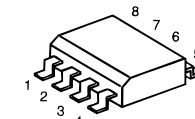
M62364FP



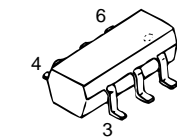
TC75W51FU



RN5VL42C



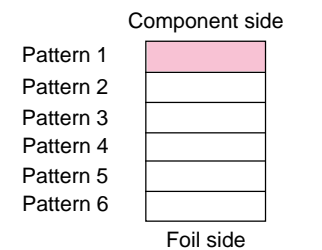
GN2011



DA221
HSM88AS



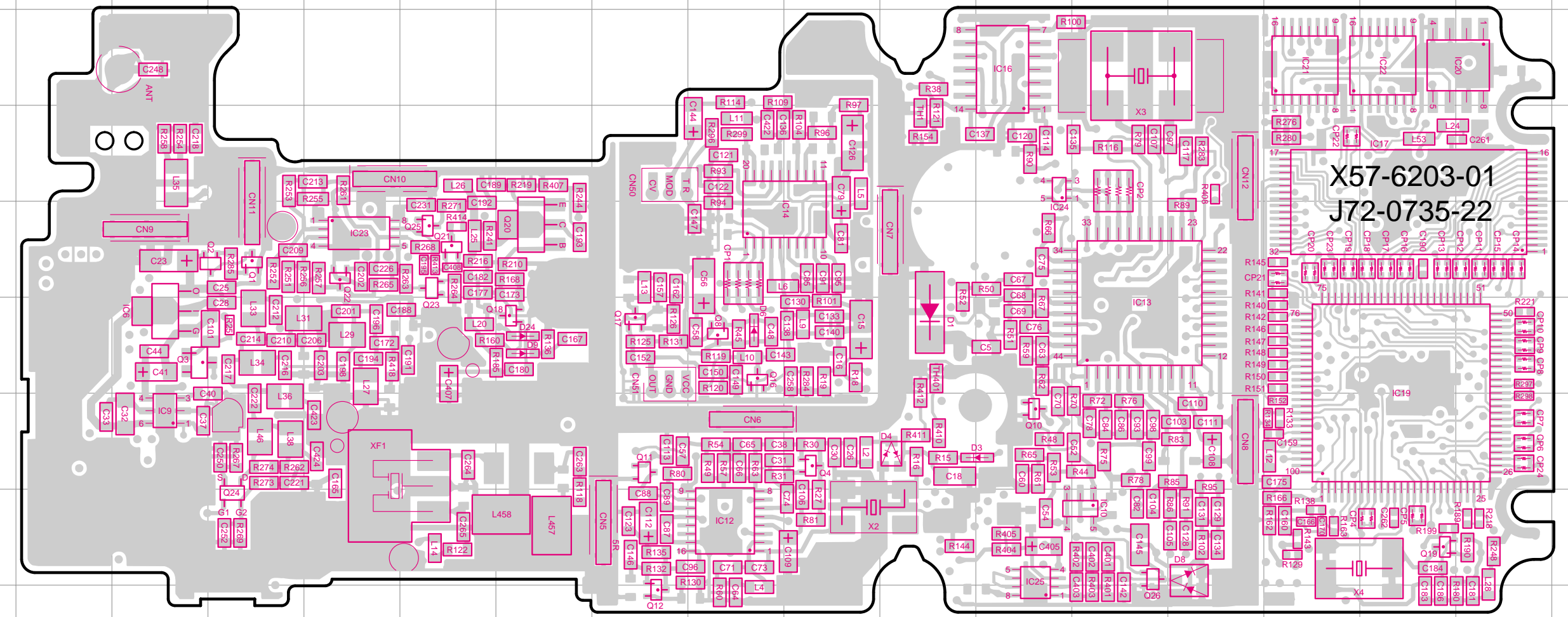
MA742



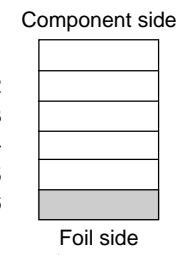
TX-RX UNIT (X57-6203-01) Foil Side View

TX-RX UNIT (X57-6203-01)

Ref. No.	Address
D1	6L
D3	7L
D4	7L
D6	6J
D8	8O
D9	6H
D24	6H
IC6	6D
IC9	7D
IC10	8N
IC12	8J
IC13	6N
IC14	5J
IC16	3M
IC17	4Q
IC19	7Q
IC20	3Q
IC21	3P
IC22	3Q
IC23	5F
IC24	4M
IC25	8M
Q1	5E
Q2	5D
Q3	6D
Q4	7K
Q8	6J
Q10	7M
Q11	7I
Q12	9I
Q16	6J
Q17	6I
Q18	6H
Q19	8Q
Q20	5H
Q21	5G
Q22	5F
Q23	5G
Q24	8E
Q25	5G
Q26	8N



X57-6203-01
J72-0735-22

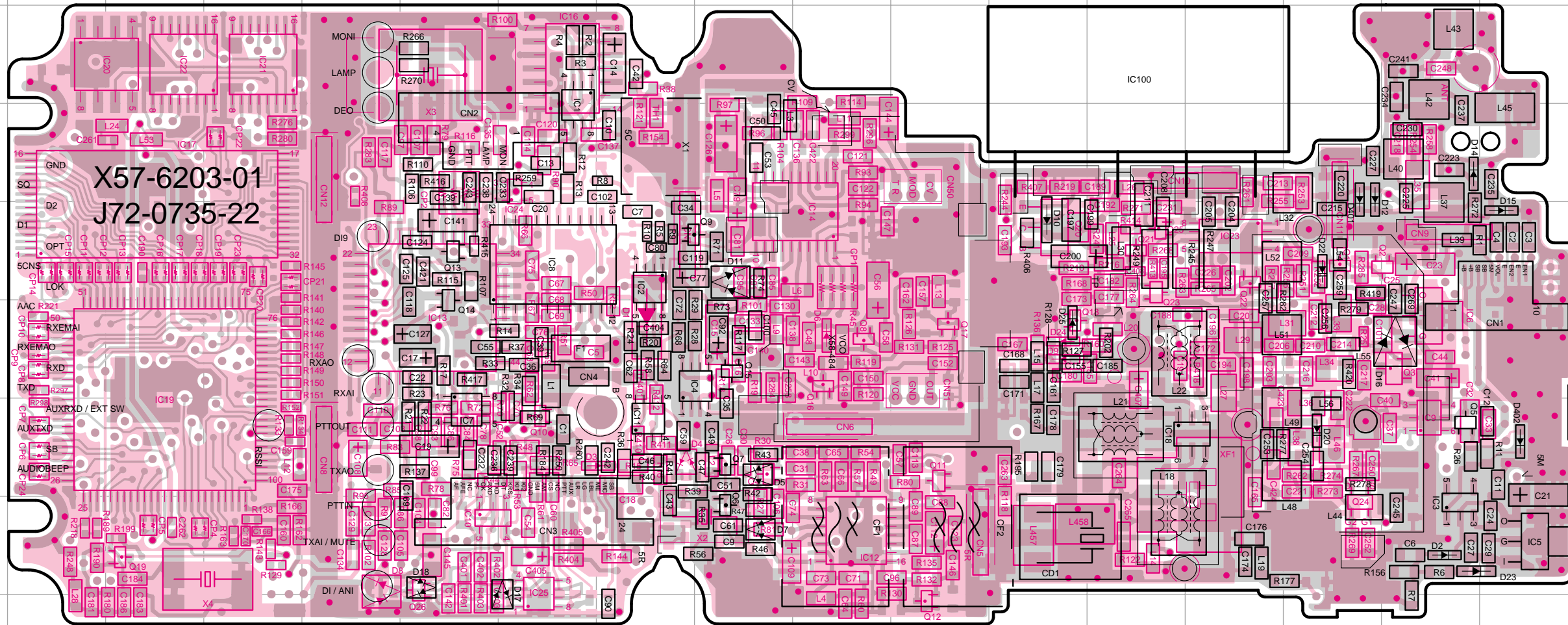


DTA144EE DTC114EE DTC144EE 2SA1745 2SC4617 2SC4619 2SC5108	2SJ243 2SK1824	TC35453F	BU4094BCFV	TA31136FN	AT29C020-90TI
TC7S66FU TC7S54F	TC7S66FU TC7S54F	SA7025DK	NJM2904V	30620M8-394GP	TC75W51FU
2SC4988	TK11250BM	NJU7201U50	LC73872M	AT2416N10SI2.5	
3SK239A					

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PC BOARD VIEW / PC 板视图

TX-RX UNIT (X57-6203-01) Component Side + Foil Side View



TX-RX UNIT
(X57-6203-01)

Ref. No.	Address
D1	6H
D2	8P
D3	7H
D4	7H
D5	7I
D6	6J
D7	8I
D8	8E
D9	6L
D10	5L
D11	5I
D12	4O
D14	4P
D15	5Q
D16	6P
D17	8G
D18	8F
D20	7O
D22	5O
D23	8P
D24	6L
D25	6L
D401	4O
D402	7Q
IC1	4G
IC2	5H
IC3	8P
IC4	6I
IC5	8Q
IC6	6P
IC7	7F
IC8	5G
IC9	7P
IC10	8F
IC11	7H
IC12	8J
IC13	6F
IC14	5J
IC16	3G
IC17	4C
IC18	7N
IC19	7C
IC20	3C
IC21	3D
IC22	3C
IC23	5N
IC24	4G
IC25	8G
Q1	5O
Q2	5P
Q3	6P
Q4	7I
Q5	7P
Q6	8I
Q7	7I
Q8	6J
Q9	5I
Q10	7G
Q11	7K
Q12	9K
Q13	5F
Q14	5F
Q15	6I
Q16	6J
Q18	6L
Q19	8C
Q20	5L
Q21	5M
Q22	5N
Q23	5M
Q24	8O
Q25	5M
Q26	8F

DTA144EE
DTC114EE
DTC144EE
2SA1745
2SC4617
2SC4619
2SC5108

2SJ243
2SK1824

TK11250BM

SA7025DK

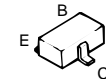
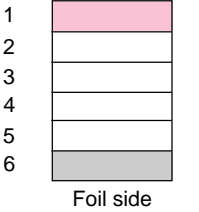
NJM2904V

RN5VL42C

DA221
HSM88AS

Connect 1 and 6.

Component side



TC7S66FU
TC7S51F

AT29C020-90T1

NJU7201U50

M62364FP

LC73872M

MA742

2SC4988

S-81350HG-KD

TC35453F

BU4094BCFV

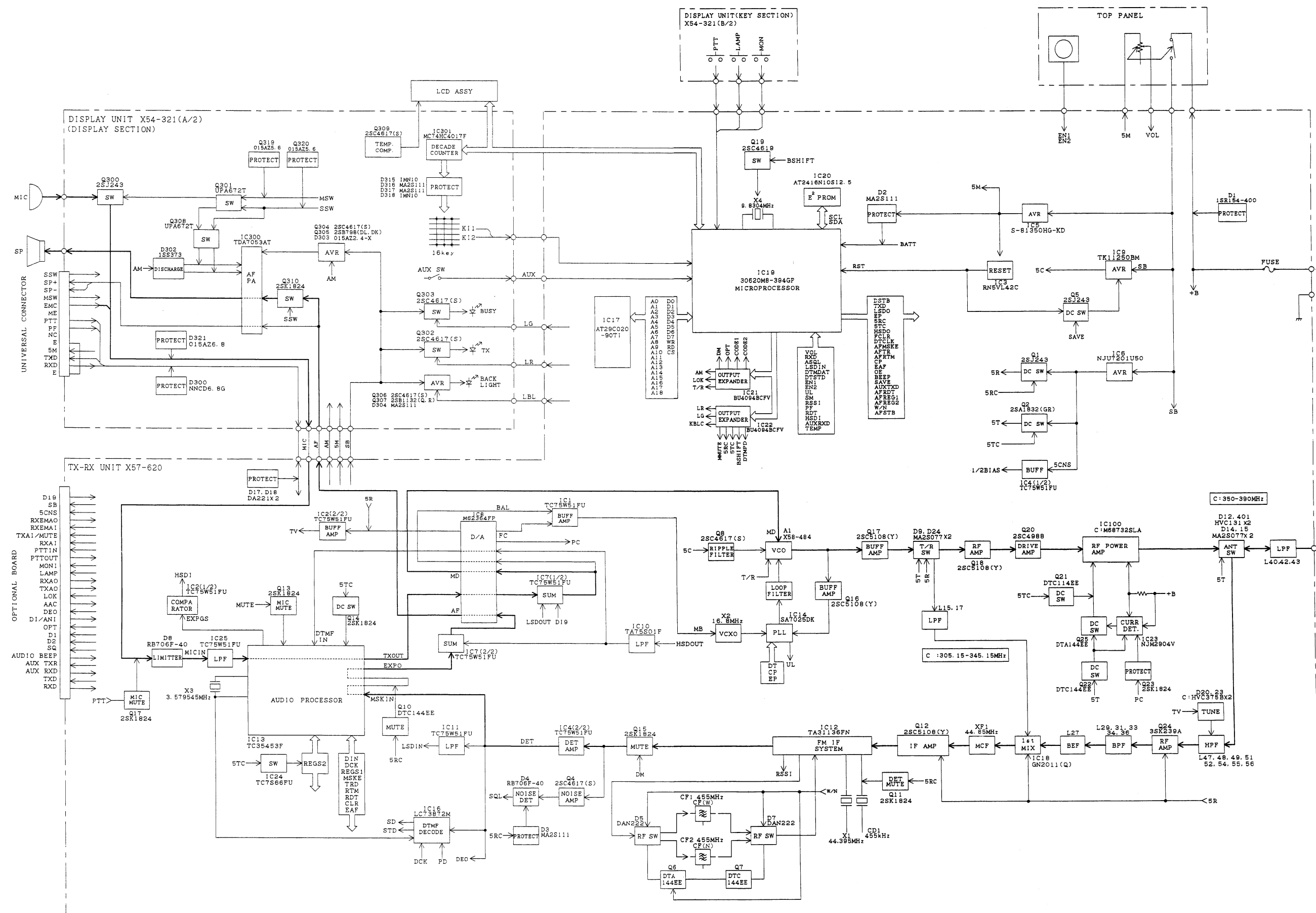
TC75W51FU

GN2011

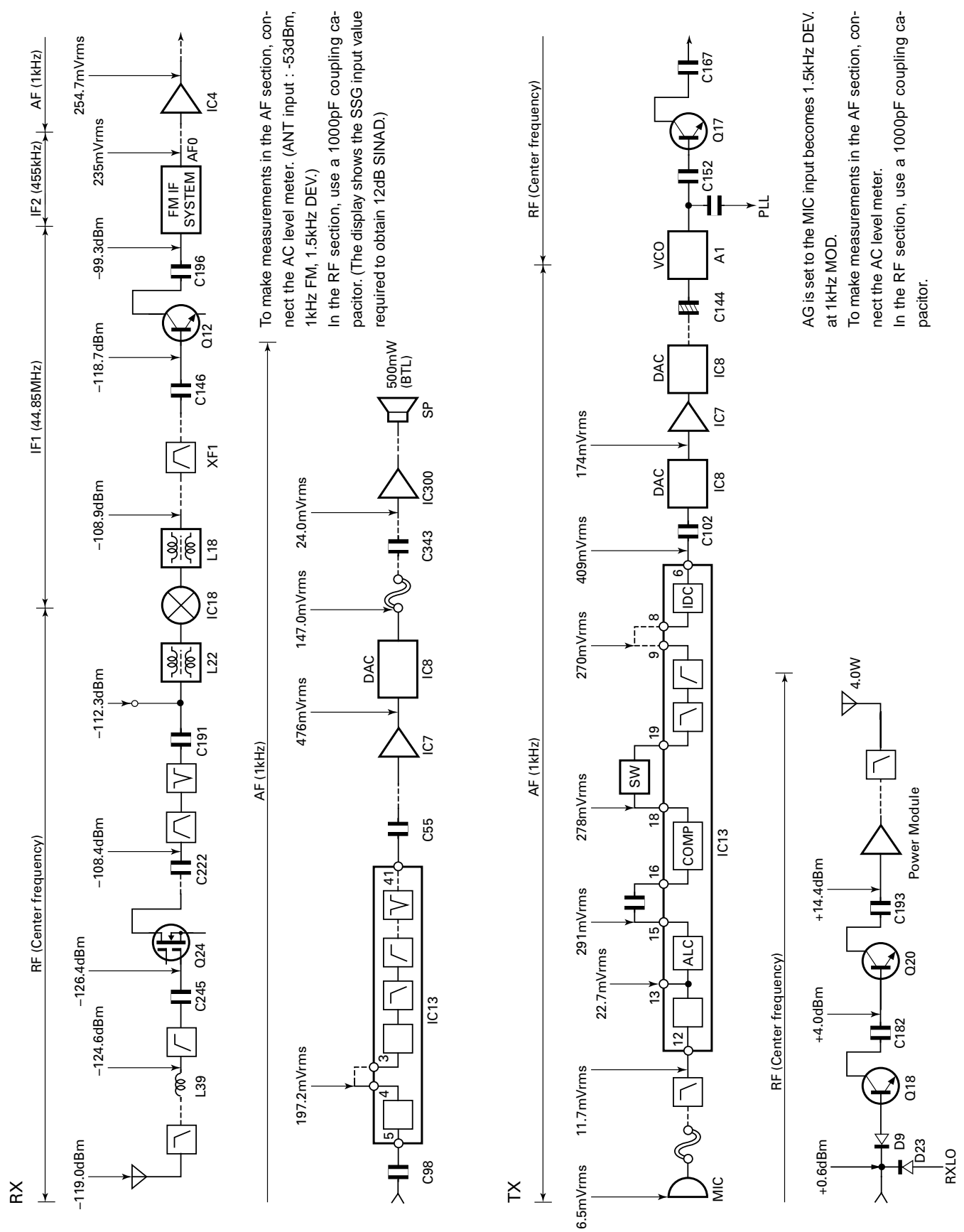
3SK239A

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BLOCK DIAGRAM / 方块图

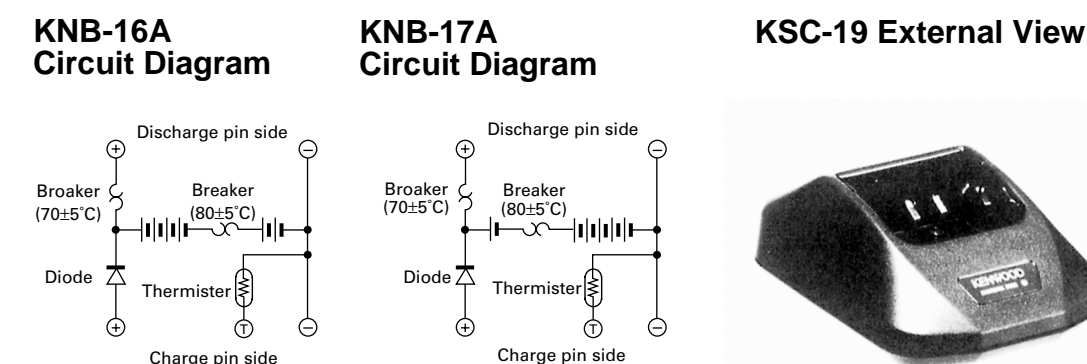


LEVEL DIAGRAM / 电平图



TK-385 TK-385

KNB-16A/17A (Ni-Cd BATTERY) / KPG-36 (PROGRAMMING INTERFACE CABLE) / KSC-19 (CHARGER)



KNB-16A Specifications

Voltage	7.2V (1.2V x 6)
Charging current	1100mAh
Dimensions (mm)	58 W x 110.8 H x 17.2 D (Projections included)
Charger and charging time	
KSC-19 (Normal Charger)	Approx. 8 hours
KSC-20 (Rapid Charger)	Approx. 1 hour
Weight	180g

KNB-17A Specifications

Voltage	7.2V (1.2V x 6)
Charging current	1500mAh
Dimensions (mm)	58.0 W x 110.8 H x 20.0 D (Projections included)
Charger and charging time	
KSC-19 (Normal Charger)	Approx. 8 hours
KSC-20 (Rapid Charger)	Approx. 1.3 hour
Weight	220g

KSC-19 Charging

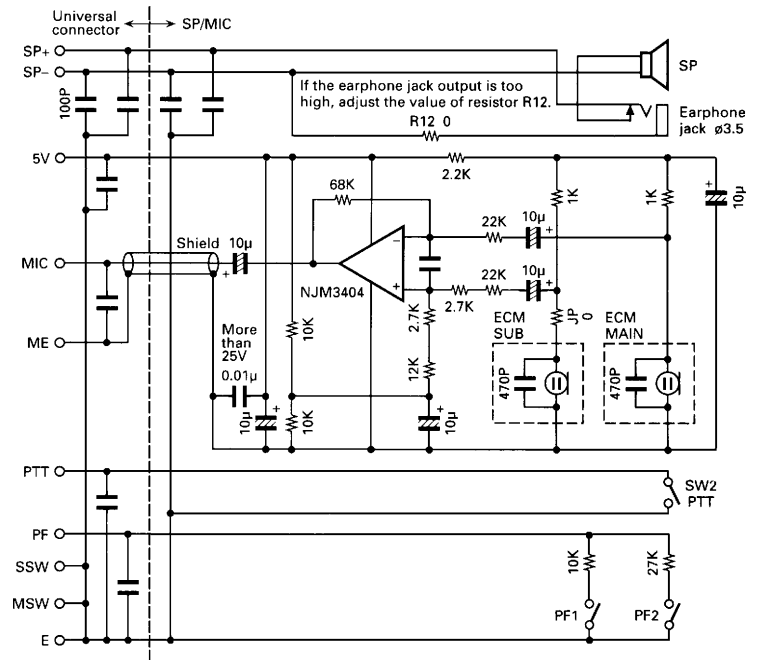
KNB-16A	
Voltage	7.2V
Battery capacity	1100mAh
Charging time	Approx. 8 hours
KNB-17A	
Voltage	7.2V
Battery capacity	1500mAh
Charging time	Approx. 8 hours

KMC-25 (SPEAKER MICROPHONE)

External View



Circuit Diagram



Specifications

- Microphone
 - Impedance 2k Ω
 - Sensitivity -65dB \pm 4.0dB at 1kHz
- Speaker
 - Impedance 16 Ω
 - Input 0.5W
 - Maximum input 1.5W
- Dimensions 62W x 81 H x 29 D (mm)
- Weight (With plug cord) Approx. 0.17kg

SPECIFICATIONS

General

Frequency Range	
RX, TX	350 to 390MHz
Channel Spacing	12.5kHz (Narrow)/25kHz(Wide) (PLL channel stepping 6.25kHz)
Battery Voltage	DC 7.5V \pm 20%
Battery Life	More than 8 hours at 4W (5-5-90 duty cycle with KNB-16A battery) More than 10 hours at 4W (5-5-90 duty cycle with KNB-17A battery)
Temperature Range	-30°C to +60°C (-22°F to + 140°F)
Dimension and Weight	
With KNB-16A (1100mAh battery)	135 (5.33) H x 58 (2.29) W x 34 (1.34) D mm (inch) 1.01lbs (460g)
	(Dimensions not including protrusions, weight includes antenna and belt hook)

Receiver (Measurements made per TIA/EIA-603)

RF Input Impedance	50 Ω
Sensitivity	
12dB SINAD	0.28 μ V (Narrow)/0.25 μ V (Wide)
Selectivity	62dB (Narrow)/70dB (Wide)
Intermodulation	62dB (Narrow)/70dB (Wide)
Spurious (Except for IF 1/2)	70dB
Frequency Stability	\pm 0.00025% (-30°C to +60°C)
Channel Spread	40MHz
Audio Power Output	500mW at 16 Ω less than 5% distortion

Transmitter (Measurements made per TIA/EIA-603)

RF Power Output	
Hi	4W
Low	1W
RF Output Impedance	50 Ω
Spurious	-70dB
Modulation	11K0F3E, 10K5F2D (Narrow)/16K0F3E, 15K0F2D (Wide)
FM Noise	-40dB (Narrow)/-45dB (Wide)
Audio Distortion	Less than 3%
Frequency Stability	\pm 0.00025% (-30°C to +60°C)
Channel Spread	40MHz

规格

概述

频率范围	
RX, TX	350 ~ 390MHz
信道间距	12.5kHz (窄) / 25kHz (宽) (锁相环电路步进频率 6.25kHz)
电池电压	直流 7.5V \pm 20%
电池寿命	4W 时长于 8 个小时 (使用 KNB-16A 电池 5-5-90 工作周期) 4W 时长于 10 个小时 (使用 KNB-17A 电池 5-5-90 工作周期)
温度范围	-30°C 到 + 60°C (-22° F 到 + 140° F)
尺寸和重量	
带有 KNB-16A (1100mAh 电池)	135 (5.33) 高 \times 58 (2.29) 宽 \times 34 (1.34) 长 mm (英寸)
(尺寸大小不包括突出部分, 重量包括天线和皮带夹子)	1.01lbs (460g)

接收部 (以每 TIA/EIA-603 进行测量)

射频输入阻抗	50 Ω
灵敏度	
12dB SINAD	0.28 μ V (窄) / 0.25 μ V (宽)
选择性	62dB (窄) / 70dB (宽)
互调	62dB (窄) / 70dB (宽)
假信号响应 (不包括中频 1/2)	70dB
频率稳定性	\pm 0.00025% (-30°C 到 + 60°C)
信道频率扩展	40MHz
音频功率输出	16 Ω 时为 500mW, 失真小于 5%

发射部 (以每 TIA/EIA-603 进行测量)

射频功率输出	
高	4W
低	1W
射频输出阻抗	50 Ω
寄生	-70dB
调制	11K0F3E, 10K5F2D (窄) / 16K0F3E, 15K0F2D (宽)
频率调制噪音	-40dB (窄) / -45dB (宽)
音频失真	低于 3%
频率稳定性	\pm 0.00025% (-30°C 到 + 60°C)
信道频率扩展	40MHz

TK-385

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