UHF FM TRANSCEIVER / UHF 调频对讲机

TK-3230

SERVICE MANUAL / 维修手册

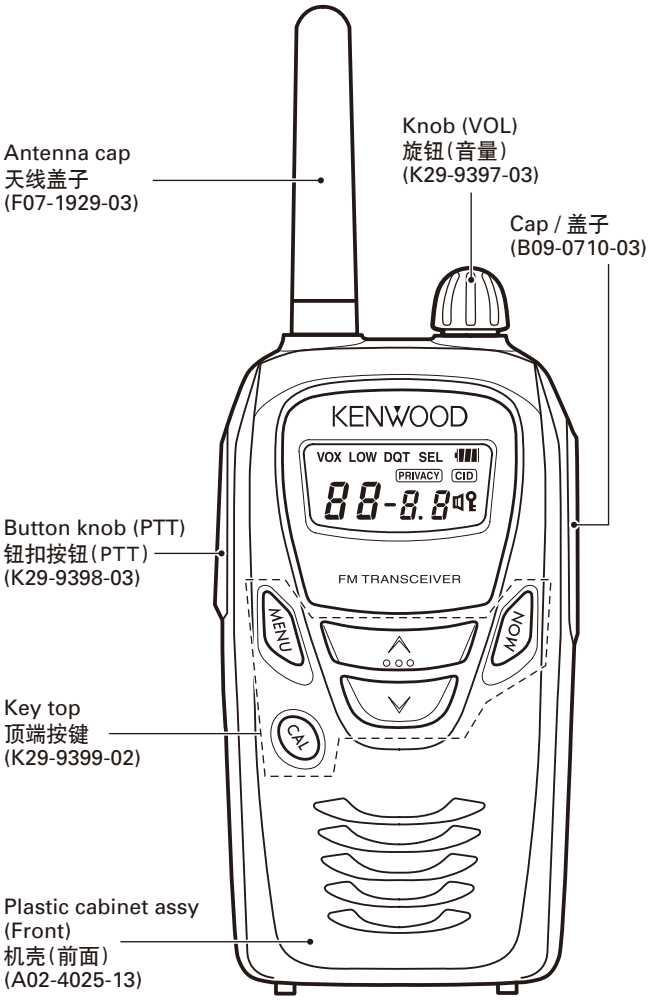
C2 version / C2 版本

KENWOOD

Kenwood Corporation

B51-8830-00 (N) 486

SUPPLEMENT/追补版



This TK-3230 (C2) service manual contains a number of sections which differ from the service manual (B51-8808-00) for the TK-3230 (C).
For items other than those in this TK-3230 (C2) service manual please refer to the service manual (B51-8808-00) for the TK-3230 (C).

本 TK-3230(C2) 维修手册记述了不同于 TK-3230(C) 用维修手册 (B51-8808-00) 部分的内容。
对于本 TK-3230(C2) 维修手册中未予记载的项目，请参阅 TK-3230(C) 的维修手册 (B51-8808-00)。

Service Manual List

Title	Parts number	Remarks	Market code	TX-RX unit number
TK-3230	B51-8808-00		C	X57-7330-10 J79-0103-19
TK-3230	B51-8830-00 (This service manual)	SUPPLEMENT	C2	X57-7333-01 J79-0204-09

维修手册表

型号	零件号码	备注	市场代码	TX-RX 单元号码
TK-3230	B51-8808-00		C	X57-7330-10 J79-0103-19
TK-3230	B51-8830-00 (本维修手册)	追补版	C2	X57-7333-01 J79-0204-09

无铅焊接通信产品 LF
保护环境建伍领先

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

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

LF

This product uses Lead Free solder.

TK-3230

CONTENTS / 目录

Disclaimer

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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.

PERSONAL SAFETY

The following precautions are recommended for personal safety:

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

SERVICE

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

引言

本手册的范围

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

替换零件的订购

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

个人安全

为了个人的安全，请注意下列事项：

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

维修服务

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

REALIGNMENT / 模式组合

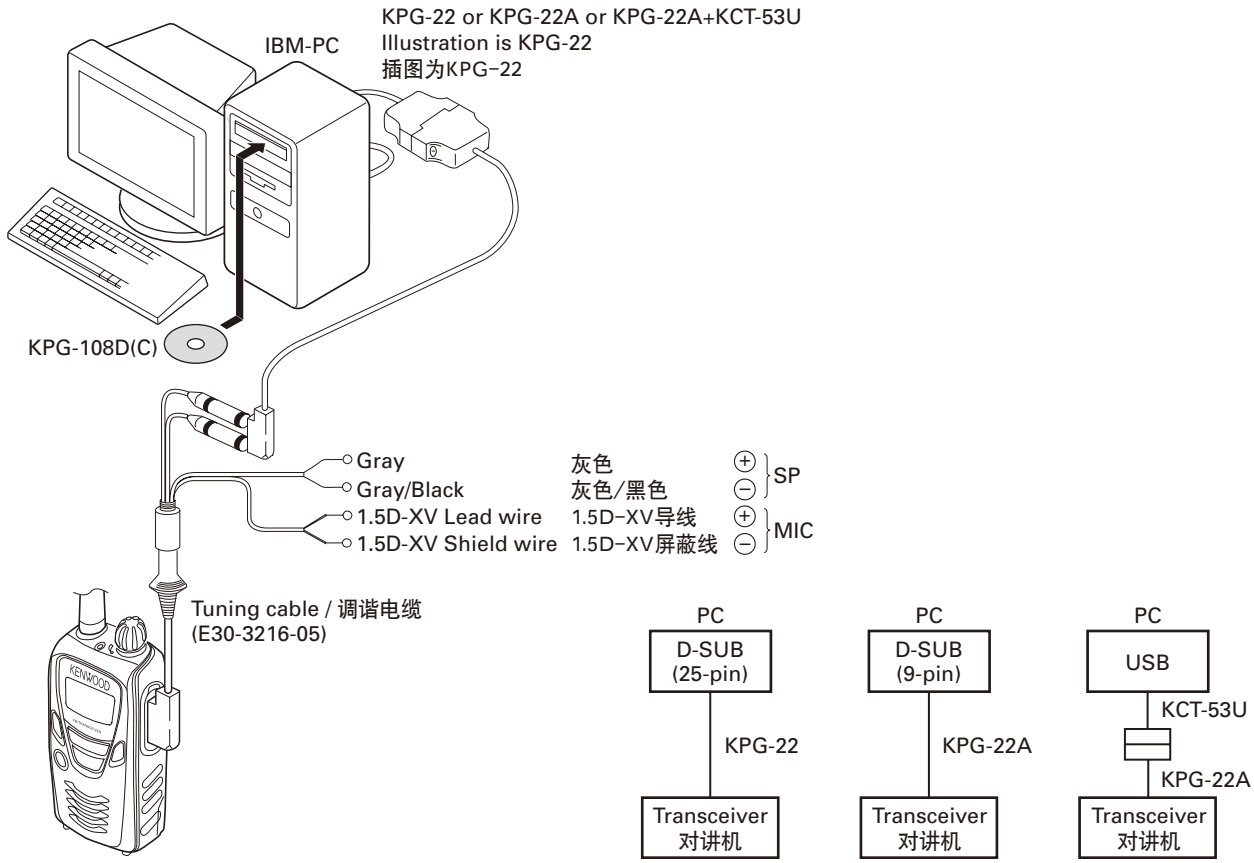

Fig. 1 / 图 1

3. Wireless Clone Mode

3-1. Outline

"Wireless Clone Mode" copies the transceiver data to another transceiver.

The dealer can copy the transceiver data to another transceiver even without the use of a personal computer.

3-2. Example

The transceiver can copy the programming data to one or more transceivers via RF communication.

The clone source and clone target/s must be in Wireless Clone mode.

3-3. Operation

1. To switch the clone target/s to Wireless Clone mode, press and hold the [PTT] and [MON] keys while turning the transceiver power ON.
2. Keep holding [PTT] and [MON] keys for 1 second. Transceiver sound key on tone and enters Wireless Clone mode with "CL on" display.
3. Wait for 2 seconds. Transceiver displays "FQ- 1".
4. Select a channel table number using [∧] (increment channel table number) and [∨] (decrement channel table number) keys.

3. 无线复制模式

3-1. 概述

“无线复制模式”能将对讲机数据复制到其他对讲机。

即使没有使用个人电脑，经销商也能将对讲机数据复制到其他对讲机。

3-2. 实例

通过 RF 通信，对讲机可以将编程数据复制到一台或多台对讲机。

复制源和复制目标必须均处于无线复制模式。

3-3. 操作

1. 如需将复制目标切换到无线复制模式，请在打开对讲机电源的同时按住 [PTT] 和 [MON] 键。
2. 按住 [PTT] 和 [MON] 键 1 秒钟。对讲机响起键音并进入无线复制模式，同时显示“CL on”。
3. 等候 2 秒钟。对讲机显示“FQ- 1”。
4. 使用 [∧]（增大信道表）和 [∨]（减小信道表）键选择信道表号。

REALIGNMENT / 模式组合

5. To switch the clone source to Wireless Clone mode, press and hold the [PTT] and [MON] keys while turning the transceiver power ON.
6. Keep holding [PTT] and [MON] keys for 1 second. Transceiver sound key on tone and enters Wireless Clone mode with "CL on" display.
7. Wait for 2 seconds. Transceiver displays "FG- 1".
8. Select the same channel table number as the clone target/s.
9. Press [PTT] on the clone source to begin data transmission. When the clone target starts to receive data, the LED will light green.
   When the clone source finishes sending data, a "confirmation" tone will sound with "End " displayed.
   If data transmission fails while cloning, an "error" tone will sound from the Target unit with "Err " displayed.
10. If the cloning fails, no data will be available in the Target unit when it is returned to User mode.
11. When the cloning is successful, the Target unit's "Scan", "Key Lock" and "Super Lock" functions will return to their default values (Scan = OFF, Key Lock = OFF, Super Lock = OFF).
12. After clone has completed, it is necessary for the Target unit to set its required ID Type of ID List for FleetSync. This can be done by using unit's ID List Setting Mode.

Notes:

- The dealer can clone data to two or more transceivers by repeating the above procedures.
- If the transceiver's Clone Mode is configured as "Disabled", the transceiver cannot enter Clone mode.
- A unit cannot be a "Source Unit" if it is unprogrammed. If [PTT] is pressed, an "error" tone will sound.
- Once a unit is set to be the Source, it cannot be a target after the data has been transmitted. This protects the data in the Source unit.
- If the Target unit is cloned unsuccessfully, "error" tone will sound with "Err " display.
- After 4 seconds, Target unit returns to display "FG-XX". "xx" means the last selected channel table number.
- The Source unit and Target unit must be of the same model type and destination in order for Clone to operate.
- It is not possible to read/write setup data from the clone source/target when it is in Wireless Clone mode. But it will trigger to go to cloning mode (TX) when try to read/write.
- Electronic interface may cause a failure in data transfer during Wireless Clone, such as when waveforms or electromagnetics are being performed at the workbench.
- Wireless Clone mode can be used ONLY by the authorized service personnel.
- The Wireless Clone mode setting must be configured as "Disable" before being delivered to the end-user.
- When Wireless Clone mode is used, the environment must ensure that the radio wave does not leak to outside.
- The transmit output power is automatically set to Low in Wireless Clone mode.
- Battery saver function is automatically set to off in Wireless Clone mode.

5. 如需将复制源切换到无线复制模式，请在打开对讲机电源的同时按住 [PTT] 和 [MON] 键。
6. 按住 [PTT] 和 [MON] 键 1 秒钟。对讲机响起键音并进入无线复制模式，同时显示“CL on”。
7. 等候 2 秒钟。对讲机显示“FG- 1”。
8. 选择与复制目标相同的信道表号。
9. 按复制源上的 [PTT] 开始数据发射。复制目标开始接收数据时，LED 将会点亮绿色。
   复制源发送数据完成时，将会响起“确认”音并显示“End ”。
   如果复制期间数据发射失败，则复制目标将会响起“错误”音并显示“Err ”。
10. 如果复制失败，则复制目标返回到用户模式时没有任何数据。
11. 复制成功时，复制目标的“扫描”、“按键锁定”和“超级锁定”功能将会返回到各自的默认值（扫描 =OFF，按键锁定 =OFF，超级锁定 =OFF）。
12. 复制完成后，复制目标需要设置 FleetSync 对应 ID 列表的 ID 类型。
    使用对讲机的 ID 列表设置模式即可完成。

注意：

- 通过重复上述操作，经销商可以将数据复制到两台或多台对讲机。
- 如果对讲机的复制模式被配置为“禁用”，则对讲机无法进入复制模式。
- 如果未经编程，则对讲机无法成为“复制源”。此时按 [PTT] 将会响起“错误”音。
- 出于保护复制源数据的目的，对讲机一旦被设置为复制源，则发射数据后无法成为复制目标。
- 如果复制目标没有成功复制，则将会响起“错误”音并显示“Err ”。
- 4 秒钟后，复制目标返回“FG-XX”显示。“xx”表示最新选择的信道表号。
- 为了能够进行复制操作，复制源和复制目标的机型和型号必须相同。
- 处于复制模式时，无法读 / 写复制源 / 目标的设置数据。但在尝试读 / 写时将会触发进入无线复制模式 (TX)。
- 无线复制期间，电子干扰可能会导致数据传送失败，例如工作台上存在干扰电波或电磁场等。
- 无线复制模式只能由授权服务人员使用。
- 交付最终用户之前，无线复制模式设置必须配置为“禁用”。
- 使用无线复制模式时，必须确保无线电波不会向外部泄漏的环境。
- 在无线复制模式下，发射输出功率自动设置为低。
- 在无线复制模式下，电池省电功能自动设置为关。

CIRCUIT DESCRIPTION / 电路说明

Frequency Configuration　　频率构成

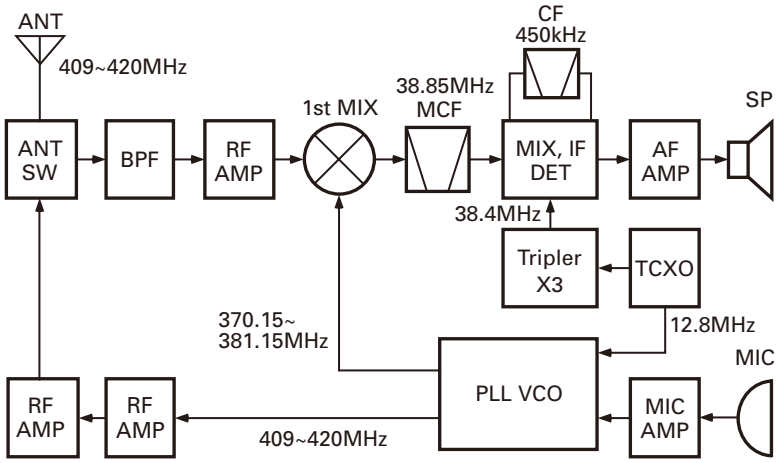

Fig. 1　Frequency configuration / 图 1　频率构成

PLL System

■ VCO Circuit

The VCO is housed in a shield case.

The VCO circuit consists of a transistor (Q2), a variable capacity diode (D2) for frequency control, a variable capacity diode (D4) for modulation, transmit/receive frequency shift diode (D1), control transistor (Q1) and oscillator buffer amplifier (Q5).

In receive mode, the shift signal T/R goes low, Q1 turns off, and the shift diode (D1) not contact. Q2 produces the first local frequency for reception. (Receive channel frequency – 38.85MHz)

In transmit mode, the shift signal T/R goes high, Q1 turns on and D1 does conducts. Q2 produces about 409~420MHz and the VCO frequency equals the transmit channel frequency.

The 3.0V circuit voltage is produced by ripple removing filter circuit Q4.

PLL 系统

■ VCO 电路

VCO 外嵌屏蔽罩。

VCO 电路由晶体管 (Q2)、用于频率控制的可变电容二极管 (D2)、用于调制的可变电容二极管 (D4)、发射 / 接收频率偏移二极管 (D1)、控制晶体管 (Q1) 和振荡缓冲放大器 (Q5) 组成。

在接收模式下，移位信号 T/R 变低，Q1 关闭并且二极管 (D1) 不导通。Q2 产生用于接收的第一本振频率。(接收信道频率 – 38.85MHz)

在发射模式下，移位信号 T/R 变高，Q1 打开并且 D1 导通。Q2 产生 409 ～ 420MHz 的频率并且 VCO 频率与发射信道频率相同。

由纹波消除滤波电路 Q4 产生 3.0V 的电路电压。

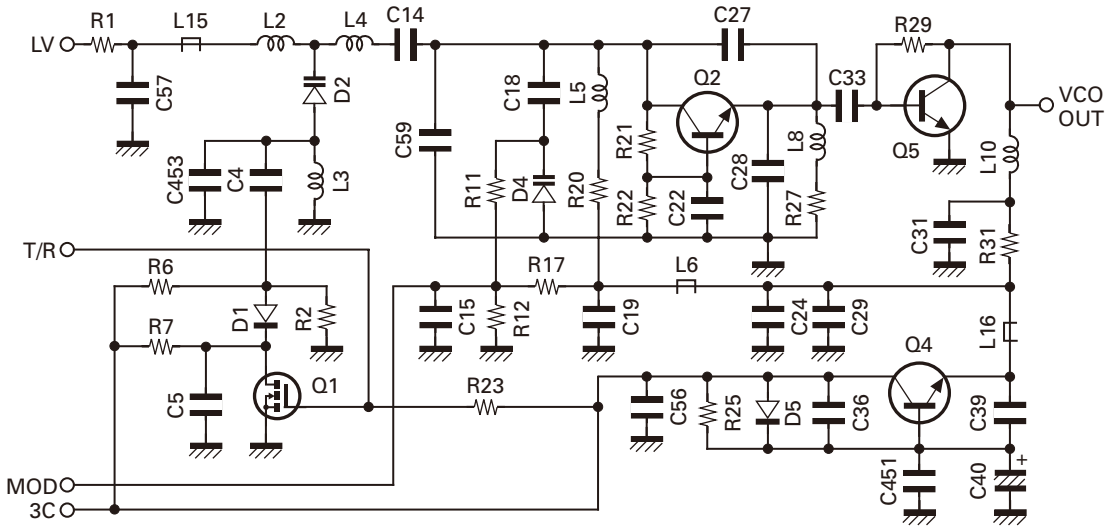

Fig. 2　VCO circuit / 图 2　VCO 电路

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-3230 (Y50-6163-02)
TX-RX UNIT (X57-7333-01)

Ref. No.	Address	New parts	Parts No.	Description	Destination
TK-3230					
1	3A	✻	A02-3975-33	PLASTIC CABINET ASSY (REAR)	
2	1A	✻	A02-4025-13	PLASTIC CABINET ASSY (FRONT)	
4	3B		B09-0710-03	CAP (SP/MIC)	
5	1C		B62-2028-00	INSTRUCTION MANUAL	
8	2A		E37-1390-05	PARALLEL CORD (SPEAKER)	
10	2B		F07-1929-03	ANTENNA CAP	
12	2B		G10-1378-04	FIBROUS SHEET (ANTENNA)	
16	3D		H52-2218-02	ITEM CARTON CASE	
18	1A		J19-5508-03	HOLDER (PTT)	
19	2C		J29-0736-05	HOOK ASSY ACCESSORY	
21	2B		K29-9397-03	KNOB (VOLUME)	
22	1A		K29-9398-03	BUTTON KNOB (PTT)	
23	2A		K29-9399-02	KEY TOP	
A	2B		N14-0840-05	CIRCULAR NUT	
C	2A,3A		N80-2006-43	PAN HEAD TAPTITE SCREW	
25	2C		N99-2063-05	SCREW SET ACCESSORY	
27	2A		T07-0362-25	SPEAKER	
28	2B	✻	T90-1079-05	ANTENNA ELEMENT	
TX-RX UNIT (X57-7333-01)					
101	2B		B11-1849-03	ILLUMINATION GUIDE (LCD)	
102	1B		B38-0925-05	LCD	
D400			B30-2143-05	LED (YG)	
D401			B30-2278-05	LED (RED/YELLOW)	
C1			CC73HCH1H101J	CHIP C 100PF J	
C2			CS77AA1VR33M	CHIP TNTL 0.33UF 35WV	
C3			CK73HB1H471K	CHIP C 470PF K	
C4,5			CC73HCH1H101J	CHIP C 100PF J	
C6			CS77AA1A2R2M	CHIP TNTL 2.2UF 10WV	
C7-9			CC73HCH1H101J	CHIP C 100PF J	
C10			CK73FB0J106K	CHIP C 10UF K	
C11			CS77CA1V0R1M	CHIP TNTL 0.1UF 35WV	
C12			CC73HCH1H470J	CHIP C 47PF J	
C13			CC73HCH1H101J	CHIP C 100PF J	
C14		✻	C93-1720-05	CHIP C 3.8PF 50WV	
C15			CC73HCH1H101J	CHIP C 100PF J	
C17			CC73HCH1H101J	CHIP C 100PF J	
C18			CC73HCH1H010B	CHIP C 1.0PF B	
C19,20			CK73HB1H471K	CHIP C 470PF K	
C21			CC73HCH1H470J	CHIP C 47PF J	
C22			CK73HB1H471K	CHIP C 470PF K	
C23			CK73HB1C103K	CHIP C 0.010UF K	
C24,25			CK73HB1H471K	CHIP C 470PF K	
C27			CC73HCH1H160G	CHIP C 16PF G	
C28			CC73HCH1H080B	CHIP C 8.0PF B	
C29			CC73HCH1H101J	CHIP C 100PF J	
C30			CK73GB1H103K	CHIP C 0.010UF K	

Ref. No.	Address	New parts	Parts No.	Description	Destination
C31,32			CC73HCH1H100D	CHIP C 10PF D	
C33			CC73HCH1H0R5B	CHIP C 0.5PF B	
C34,35			CC73HCH1H100D	CHIP C 10PF D	
C36			CC73HCH1H101J	CHIP C 100PF J	
C37,38			CK73HB1H471K	CHIP C 470PF K	
C39			CC73HCH1H101J	CHIP C 100PF J	
C40			CS77AA0J220M	CHIP TNTL 22UF 6.3WV	
C41			CC73HCH1H050B	CHIP C 5.0PF B	
C43			CC73HCH1H100D	CHIP C 10PF D	
C44			CC73HCH1H030B	CHIP C 3.0PF B	
C45,46			CK73HB1H471K	CHIP C 470PF K	
C47			CK73HB1A104K	CHIP C 0.10UF K	
C48			CC73HCH1H090B	CHIP C 9.0PF B	
C49			CK73HB1H471K	CHIP C 470PF K	
C50,51			CC73HCH1H030B	CHIP C 3.0PF B	
C52			CC73HCH1H050B	CHIP C 5.0PF B	
C53			CC73HCH1H080B	CHIP C 8.0PF B	
C54			CC73HCH1H050B	CHIP C 5.0PF B	
C55			CC73HCH1H101J	CHIP C 100PF J	
C56			CK73HB1H471K	CHIP C 470PF K	
C57,58			CC73HCH1H101J	CHIP C 100PF J	
C59			CC73HCH1H030B	CHIP C 3.0PF B	
C60			CC73HCH1H120J	CHIP C 12PF J	
C100			CK73HB1H471K	CHIP C 470PF K	
C101			CC73HCH1H1R5B	CHIP C 1.5PF B	
C111			CK73HB1A104K	CHIP C 0.10UF K	
C112			CK73HB1H471K	CHIP C 470PF K	
C113			CC73HCH1H150G	CHIP C 15PF G	
C114			CC73HCH1H050B	CHIP C 5.0PF B	
C116			CK73HB1H471K	CHIP C 470PF K	
C117			CC73HCH1H101J	CHIP C 100PF J	
C119,120			CK73HB1H471K	CHIP C 470PF K	
C121			CC73HCH1H330J	CHIP C 33PF J	
C122			CK73HB1A104K	CHIP C 0.10UF K	
C123			CC73HCH1H0R5B	CHIP C 0.5PF B	
C124			CK73HB1H471K	CHIP C 470PF K	
C126			CK73HB1H471K	CHIP C 470PF K	
C127			CK73HB0J105K	CHIP C 1.0UF K	
C128			CC73GCH1H240J	CHIP C 24PF J	
C129			CK73HB1A104K	CHIP C 0.10UF K	
C130			CK73HB1C103K	CHIP C 0.010UF K	
C131			CK73HB1A104K	CHIP C 0.10UF K	
C132			CK73HB1H471K	CHIP C 470PF K	
C133			CC73HCH1H080B	CHIP C 8.0PF B	
C134			CC73GCH1H471J	CHIP C 470PF J	
C136			CK73HB0J105K	CHIP C 1.0UF K	
C137			CK73HB1C103K	CHIP C 0.010UF K	
C138			CK73HB1A104K	CHIP C 0.10UF K	
C200			CK73HB1H182K	CHIP C 1800PF K	
C202			CK73HB1H271K	CHIP C 270PF K	
C203,204			CK73HB1H102K	CHIP C 1000PF K	
C205			CK73HB1A104K	CHIP C 0.10UF K	
C206			CK73HB1H271K	CHIP C 270PF K	
C207			CK73HB1A104K	CHIP C 0.10UF K	
C208			CC73HCH1H680J	CHIP C 68PF J	

PARTS LIST / 零件表

TX-RX UNIT (X57-7333-01)

Ref. No.	Address	New parts	Parts No.	Description	Destination
C209			CK73HB1H471K	CHIP C 470PF K	
C210			CK73FB0J106K	CHIP C 10UF K	
C211			CK73HB1A224K	CHIP C 0.22UF K	
C212,213			CK73HB1H471K	CHIP C 470PF K	
C215-217			CK73HB1C103K	CHIP C 0.010UF K	
C218			CK73HB1H471K	CHIP C 470PF K	
C219			CK73HB1C103K	CHIP C 0.010UF K	
C220			CC73HCH1H010B	CHIP C 1.0PF B	
C221			CK73GB1H183K	CHIP C 0.018UF K	
C222			CK73HB1H331K	CHIP C 330PF K	
C223			CK73HB1C103K	CHIP C 0.010UF K	
C224			CC73HCH1H070B	CHIP C 7.0PF B	
C225			CC73HCH1H150G	CHIP C 15PF G	
C226			CC73HCH1H010B	CHIP C 1.0PF B	
C228			CK73HB1C103K	CHIP C 0.010UF K	
C229			CC73HCH1H680J	CHIP C 68PF J	
C230,231			CK73HB1C103K	CHIP C 0.010UF K	
C232			CC73HCH1H330J	CHIP C 33PF J	
C233			CC73HCH1H121J	CHIP C 120PF J	
C234			CK73HB1H471K	CHIP C 470PF K	
C235			CC73HCH1H330J	CHIP C 33PF J	
C236			CC73HCH1H220J	CHIP C 22PF J	
C237			CC73HCH1H680J	CHIP C 68PF J	
C239			CC73HCH1H030B	CHIP C 3.0PF B	
C240			CK73HB1C103K	CHIP C 0.010UF K	
C241,242			CK73HB1H471K	CHIP C 470PF K	
C243			CC73HCH1H470J	CHIP C 47PF J	
C244-246			CK73HB1H471K	CHIP C 470PF K	
C247			CC73HCH1H040B	CHIP C 4.0PF B	
C248			CK73HB1C103K	CHIP C 0.010UF K	
C250,251			CK73HB1H471K	CHIP C 470PF K	
C252,253			CC73HCH1H470J	CHIP C 47PF J	
C254			CK73HB1H331K	CHIP C 330PF K	
C255			CC73HCH1H050B	CHIP C 5.0PF B	
C256			CC73HCH1H1R5B	CHIP C 1.5PF B	
C257			CC73HCH1H010B	CHIP C 1.0PF B	
C258			CC73HCH1H110G	CHIP C 11PF G	
C259			CK73HB1H471K	CHIP C 470PF K	
C261			CC73HCH1H110G	CHIP C 11PF G	
C262			CC73HCH1H0R5B	CHIP C 0.5PF B	
C263			CC73HCH1H020B	CHIP C 2.0PF B	
C264			CC73HCH1H3R5B	CHIP C 3.5PF B	
C267,268			CK73HB1A104K	CHIP C 0.10UF K	
C301			CK73HB1E682K	CHIP C 6800PF K	
C303			CC73HCH1H090B	CHIP C 9.0PF B	
C304			CK73GB1C563K	CHIP C 0.056UF K	
C306			CK73HB1H681K	CHIP C 680PF K	
C307,308			CK73HB0J105K	CHIP C 1.0UF K	
C309			CC73HCH1H101J	CHIP C 100PF J	
C310			CK73HB1C473K	CHIP C 0.047UF K	
C311			CK73FB0J106K	CHIP C 10UF K	
C312			CK73HB1A473K	CHIP C 0.047UF K	
C313			CK73FB0J106K	CHIP C 10UF K	
C314			CK73HB1H392K	CHIP C 3900PF K	
C315			CK73HB1H471K	CHIP C 470PF K	
C316			CC73HCH1H221J	CHIP C 220PF J	
C317			CK73HB1A473K	CHIP C 0.047UF K	
C318			CK73HB0J105K	CHIP C 1.0UF K	
C319			CK73HB1H272K	CHIP C 2700PF K	
C320			CK73FB0J106K	CHIP C 10UF K	

Ref. No.	Address	New parts	Parts No.	Description	Destination
C321			CK73HB1H471K	CHIP C 470PF K	
C322,323			CK73HB1A104K	CHIP C 0.10UF K	
C324			CC73HCH1H180G	CHIP C 18PF G	
C325			CK73GB0J475K	CHIP C 4.7UF K	
C326			CK73HB1A104K	CHIP C 0.10UF K	
C327			CK73HB1A683K	CHIP C 0.068UF K	
C328			CK73GB0J475K	CHIP C 4.7UF K	
C329			CC73HCH1H151J	CHIP C 150PF J	
C330,331			CK73HB1A473K	CHIP C 0.047UF K	
C332,333			CK73HB1A104K	CHIP C 0.10UF K	
C336			CK73HB1A104K	CHIP C 0.10UF K	
C337			CK73FB1A225K	CHIP C 2.2UF K	
C338			CK73HB1C103K	CHIP C 0.010UF K	
C339			C92-0864-05	CHIP TNTL 10UF 10WV	
C340			CK73HB0J105K	CHIP C 1.0UF K	
C341			CK73HB1H471K	CHIP C 470PF K	
C342			CK73HB0J105K	CHIP C 1.0UF K	
C343			CK73HB1A333K	CHIP C 0.033UF K	
C345			CK73HB1H471K	CHIP C 470PF K	
C346			CK73HB1A104K	CHIP C 0.10UF K	
C348			CK73HB1A104K	CHIP C 0.10UF K	
C349			CK73HB1H102K	CHIP C 1000PF K	
C350			CS77CP0J100M	CHIP TNTL 10UF 6.3WV	
C351		✻	CK73HB1A154K	CHIP C 0.15UF K	
C353			CK73HB1H102K	CHIP C 1000PF K	
C354			CS77AB20J101M	CHIP TNTL 100UF 6.3WV	
C358			CC73HCH1H470J	CHIP C 47PF J	
C359-361			CC73HCH1H101J	CHIP C 100PF J	
C363			CK73HB0J105K	CHIP C 1.0UF K	
C364		✻	CC73HCH1H0R3B	CHIP C 0.3PF B	
C365-367			CC73HCH1H221J	CHIP C 220PF J	
C400			CK73HB1H471K	CHIP C 470PF K	
C401			CK73HB0J105K	CHIP C 1.0UF K	
C402			CK73HB1H471K	CHIP C 470PF K	
C404			CK73HB1H471K	CHIP C 470PF K	
C405			CK73FB1A105K	CHIP C 1.0UF K	
C408			CK73HB1H471K	CHIP C 470PF K	
C411			CK73HB1H471K	CHIP C 470PF K	
C412			CS77AA1A100M	CHIP TNTL 10UF 10WV	
C413-415			CK73HB1A104K	CHIP C 0.10UF K	
C417			CK73HB1H471K	CHIP C 470PF K	
C418			CK73HB1A104K	CHIP C 0.10UF K	
C419			CK73FB0J106K	CHIP C 10UF K	
C420			CC73HCH1H080B	CHIP C 8.0PF B	
C421			CK73HB1H471K	CHIP C 470PF K	
C422			CC73HCH1H330J	CHIP C 33PF J	
C423			CC73HCH1H080B	CHIP C 8.0PF B	
C426			CK73HB1H102K	CHIP C 1000PF K	
C427			CC73HCH1H330J	CHIP C 33PF J	
C428			CC73HCH1H101J	CHIP C 100PF J	
C430			CK73GB1A105K	CHIP C 1.0UF K	
C431			CK73HB1C103K	CHIP C 0.010UF K	
C432			CK73HB1C223K	CHIP C 0.022UF K	
C433			CK73HB1A104K	CHIP C 0.10UF K	
C434			CK73HB1A683K	CHIP C 0.068UF K	
C437			CK73HB1C103K	CHIP C 0.010UF K	
C440			CC73HCH1H101J	CHIP C 100PF J	
C442,443			CC73HCH1H101J	CHIP C 100PF J	
C444			CK73HB1A104K	CHIP C 0.10UF K	
C445			CK73HB1H471K	CHIP C 470PF K	

PARTS LIST / 零件表

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Ref. No.	Address	New parts	Parts No.	Description	Destination
C446			CK73HB0J105K	CHIP C 1.0UF K	
C448			CC73GCH1H101J	CHIP C 100PF J	
C449			CC73HCH1H101J	CHIP C 100PF J	
C451			CK73HB1H471K	CHIP C 470PF K	
C453			CC73HCH1H2R5B	CHIP C 2.5PF B	
C454			CC73HCH1H101J	CHIP C 100PF J	
C455			CK73HB0J105K	CHIP C 1.0UF K	
C456			CK73HB1A104K	CHIP C 0.10UF K	
C459			CC73HCH1H050B	CHIP C 5.0PF B	
C460			CK73HB1A104K	CHIP C 0.10UF K	
C461			CK73HB1H471K	CHIP C 470PF K	
C464			CK73HB1C103K	CHIP C 0.010UF K	
C465			CK73HB0J105K	CHIP C 1.0UF K	
C468			CK73HB1A104K	CHIP C 0.10UF K	
C470			CK73HB1C183K	CHIP C 0.018UF K	
103	1B		E29-1217-05	INTER CONNECTOR	
J300			E11-0703-05	PHONE JACK (2.5/3.5)	
-			F10-3083-04	SHIELDING CASE	
F300			F53-0324-05	FUSE (2.5A)	
104	1B	✻	J21-8570-14	MOUNTING HARDWARE	
-			J30-1282-14	SPACER	
CD200			L79-1866-05	TUNING COIL	
CF200			L72-0958-05	CERAMIC FILTER	
L1			L92-0140-05	CHIP FERRITE	
L2			L41-1001-06	SMALL FIXED INDUCTOR (10UH)	
L3			L41-1078-14	SMALL FIXED INDUCTOR (10NH)	
L4			L41-4772-43	SMALL FIXED INDUCTOR (47NH)	
L5,6			L41-1001-06	SMALL FIXED INDUCTOR (10UH)	
L7			L41-1005-08	SMALL FIXED INDUCTOR (10UH)	
L8			L41-2285-06	SMALL FIXED INDUCTOR (220NH)	
L10			L40-3375-57	SMALL FIXED INDUCTOR (33.0NH)	
L12			L40-3375-57	SMALL FIXED INDUCTOR (33.0NH)	
L13,14			L40-1275-57	SMALL FIXED INDUCTOR (12.0NH)	
L15,16			L92-0161-05	BEADS CORE	
L17			L40-1075-57	SMALL FIXED INDUCTOR (10.0NH)	
L101			L40-6875-57	SMALL FIXED INDUCTOR (68.0NH)	
L102			L40-8265-92	SMALL FIXED INDUCTOR (8.2NH)	
L103			L40-2775-92	SMALL FIXED INDUCTOR (27NH)	
L104			L92-0149-05	CHIP FERRITE	
L105			L40-3963-92	SMALL FIXED INDUCTOR (3.9NH)	
L106		✻	L41-3963-14	SMALL FIXED INDUCTOR (3.9NH)	
L107			L92-0149-05	CHIP FERRITE	
L108			L41-2285-43	SMALL FIXED INDUCTOR (220NH)	
L109			L92-0138-05	CHIP FERRITE	
L111			L34-4568-05	AIR-CORE COIL	
L112			L92-0161-05	BEADS CORE	
L201			L40-1091-37	SMALL FIXED INDUCTOR (1.000UH)	
L205			L40-5681-86	SMALL FIXED INDUCTOR (0.56UH)	
L206			L41-4781-06	SMALL FIXED INDUCTOR (470NH)	
L208			L40-2285-92	SMALL FIXED INDUCTOR (220NH)	
L209			L41-2785-39	SMALL FIXED INDUCTOR (0.27UH)	
L210			L40-2285-92	SMALL FIXED INDUCTOR (220NH)	
L211		✻	L41-5681-06	SMALL FIXED INDUCTOR (560NH)	
L212			L40-3375-57	SMALL FIXED INDUCTOR (33.0NH)	
L214			L40-2775-57	SMALL FIXED INDUCTOR (27.0NH)	
L215			L40-3975-57	SMALL FIXED INDUCTOR (39.0NH)	
L217			L41-1092-44	SMALL FIXED INDUCTOR (1UH)	
L218		✻	L79-1930-05	FILTER	

Ref. No.	Address	New parts	Parts No.	Description	Destination
L219-222			L34-4563-05	AIR-CORE COIL	
L300,301			L92-0138-05	CHIP FERRITE	
L400			L92-0140-05	CHIP FERRITE	
L401,402			L92-0138-05	CHIP FERRITE	
L403			L92-0140-05	CHIP FERRITE	
L404-407			L92-0161-05	BEADS CORE	
L408			L40-3381-86	SMALL FIXED INDUCTOR (0.33UH)	
L409			L40-5663-57	SMALL FIXED INDUCTOR (5.6NH)	
L410			L92-0149-05	CHIP FERRITE	
L411			L40-3363-57	SMALL FIXED INDUCTOR (3.3NH)	
L412			L40-2775-57	SMALL FIXED INDUCTOR (27.0NH)	
X1			L77-3019-05	TCXO	
X400		✻	L77-3036-05	CRYSTAL RESONATOR (7.3728MHZ)	
XF200			L71-0586-05	MCF (38.85MHZ)	
CP400-402			RK74HB1J103J	CHIP-COM 10K J 1/16W	
R1			RK73HB1J103J	CHIP R 10K J 1/16W	
R2,3			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R4			RK73HB1J100J	CHIP R 10 J 1/16W	
R5			RK73HB1J392J	CHIP R 3.9K J 1/16W	
R6			RK73HB1J681J	CHIP R 680 J 1/16W	
R7			RK73HB1J473J	CHIP R 47K J 1/16W	
R8			RK73HB1J101J	CHIP R 100 J 1/16W	
R9			RK73HB1J563J	CHIP R 56K J 1/16W	
R10			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R11			RK73HB1J473J	CHIP R 47K J 1/16W	
R12			RK73HB1J223J	CHIP R 22K J 1/16W	
R13			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R14-16			RK73HB1J101J	CHIP R 100 J 1/16W	
R17			RK73HB1J563J	CHIP R 56K J 1/16W	
R20			RK73HB1J470J	CHIP R 47 J 1/16W	
R21			RK73HB1J222J	CHIP R 2.2K J 1/16W	
R22			RK73HB1J562J	CHIP R 5.6K J 1/16W	
R23			RK73HB1J103J	CHIP R 10K J 1/16W	
R24			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R25			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R26			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R27			RK73GB2A330J	CHIP R 33 J 1/10W	
R29,30			RK73HB1J104J	CHIP R 100K J 1/16W	
R31			RK73HB1J101J	CHIP R 100 J 1/16W	
R32			RK73HB1J104J	CHIP R 100K J 1/16W	
R34			RK73HB1J101J	CHIP R 100 J 1/16W	
R39			RK73HB1J332J	CHIP R 3.3K J 1/16W	
R40			RK73HB1J103J	CHIP R 10K J 1/16W	
R42,43			RK73HB1J103J	CHIP R 10K J 1/16W	
R44			RK73HB1J471J	CHIP R 470 J 1/16W	
R100			RK73HB1J332J	CHIP R 3.3K J 1/16W	
R107			RK73GB2A393J	CHIP R 39K J 1/10W	
R112			RK73HB1J822J	CHIP R 8.2K J 1/16W	
R114			RK73HH1J391D	CHIP R 390 D 1/16W	
R115			RK73HB1J680J	CHIP R 68 J 1/16W	
R119			RK73HB1J150J	CHIP R 15 J 1/16W	
R120			RK73HB1J681J	CHIP R 680 J 1/16W	
R122			RK73HB1J562J	CHIP R 5.6K J 1/16W	
R123			RK73HH1J331D	CHIP R 330 D 1/16W	
R124			RK73GB2A181J	CHIP R 180 J 1/10W	
R126			RK73HB1J152J	CHIP R 1.5K J 1/16W	
R128			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R129,130			RK73HB1J221J	CHIP R 220 J 1/16W	
R131			RK73HB1J471J	CHIP R 470 J 1/16W	

PARTS LIST / 零件表

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Ref. No.	Address	New parts	Parts No.	Description	Destination
R133			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R200			RK73HB1J122J	CHIP R 1.2K J 1/16W	
R201			RK73HB1J152J	CHIP R 1.5K J 1/16W	
R202			RK73HB1J272J	CHIP R 2.7K J 1/16W	
R204			RK73HB1J124J	CHIP R 120K J 1/16W	
R205			RK73HB1J332J	CHIP R 3.3K J 1/16W	
R206			RK73HB1J394J	CHIP R 390K J 1/16W	
R207			RK73HB1J332J	CHIP R 3.3K J 1/16W	
R208			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R209			RK73HB1J122J	CHIP R 1.2K J 1/16W	
R211			RK73HB1J222J	CHIP R 2.2K J 1/16W	
R212			RK73HB1J101J	CHIP R 100 J 1/16W	
R213			RK73HB1J564J	CHIP R 560K J 1/16W	
R214			RK73HB1J334J	CHIP R 330K J 1/16W	
R215			RK73HB1J561J	CHIP R 560 J 1/16W	
R216			RK73HB1J101J	CHIP R 100 J 1/16W	
R217			RK73HB1J561J	CHIP R 560 J 1/16W	
R218			RK73HB1J331J	CHIP R 330 J 1/16W	
R219			RK73HB1J224J	CHIP R 220K J 1/16W	
R220			RK73HB1J683J	CHIP R 68K J 1/16W	
R221			RK73HB1J473J	CHIP R 47K J 1/16W	
R222			RK73HB1J224J	CHIP R 220K J 1/16W	
R223			RK73HB1J100J	CHIP R 10 J 1/16W	
R224			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R226			RK73HB1J560J	CHIP R 56 J 1/16W	
R227			RK73HB1J124J	CHIP R 120K J 1/16W	
R228			RK73HB1J104J	CHIP R 100K J 1/16W	
R230			RK73HB1J273J	CHIP R 27K J 1/16W	
R231			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R232,233			RK73HB1J564J	CHIP R 560K J 1/16W	
R234			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R300			RK73HB1J153J	CHIP R 15K J 1/16W	
R302			RK73HB1J822J	CHIP R 8.2K J 1/16W	
R303			RK73HB1J104J	CHIP R 100K J 1/16W	
R304			RK73HB1J273J	CHIP R 27K J 1/16W	
R305			RK73HB1J274J	CHIP R 270K J 1/16W	
R306			RK73HB1J154J	CHIP R 150K J 1/16W	
R307			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R308			RK73HB1J101J	CHIP R 100 J 1/16W	
R309,310			RK73HB1J104J	CHIP R 100K J 1/16W	
R311			RK73HB1J101J	CHIP R 100 J 1/16W	
R313			RK73HB1J473J	CHIP R 47K J 1/16W	
R314			RK73HB1J563J	CHIP R 56K J 1/16W	
R315,316			RK73HB1J153J	CHIP R 15K J 1/16W	
R317			RK73HB1J333J	CHIP R 33K J 1/16W	
R318			RK73HB1J104J	CHIP R 100K J 1/16W	
R319			RK73HB1J823J	CHIP R 82K J 1/16W	
R321			RK73HB1J223J	CHIP R 22K J 1/16W	
R322			RK73HB1J183J	CHIP R 18K J 1/16W	
R323			RK73HB1J474J	CHIP R 470K J 1/16W	
R324			RK73HB1J153J	CHIP R 15K J 1/16W	
R325			RK73HB1J331J	CHIP R 330 J 1/16W	
R327			RK73HB1J683J	CHIP R 68K J 1/16W	
R328			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R329,330			RK73HB1J104J	CHIP R 100K J 1/16W	
R332			RK73HB1J104J	CHIP R 100K J 1/16W	
R333			RK73HB1J682J	CHIP R 6.8K J 1/16W	
R334			RK73HB1J473J	CHIP R 47K J 1/16W	
R335			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R336			RK73HB1J223J	CHIP R 22K J 1/16W	
R338			RK73HB1J153J	CHIP R 15K J 1/16W	
R339			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R340			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R342,343			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R344,345			RK73HB1J104J	CHIP R 100K J 1/16W	
R346			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R347			RK73HB1J560J	CHIP R 56 J 1/16W	
R348			RK73HB1J104J	CHIP R 100K J 1/16W	
R349			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R350			RK73HB1J182J	CHIP R 1.8K J 1/16W	
R351			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R352			RK73HB1J471J	CHIP R 470 J 1/16W	
R354			RK73HB1J101J	CHIP R 100 J 1/16W	
R355			RK73HB1J151J	CHIP R 150 J 1/16W	
R356,357			RK73HB1J331J	CHIP R 330 J 1/16W	
R358			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R359			RK73HB1J104J	CHIP R 100K J 1/16W	
R360,361			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R363			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R365			RK73HB1J560J	CHIP R 56 J 1/16W	
R370			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R400			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R401			RK73HB1J181J	CHIP R 180 J 1/16W	
R402,403			RK73HB1J473J	CHIP R 47K J 1/16W	
R404			RK73HB1J101J	CHIP R 100 J 1/16W	
R405			RK73HB1J473J	CHIP R 47K J 1/16W	
R406-408			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R409			RK73HB1J473J	CHIP R 47K J 1/16W	
R410,411			RK73HB1J101J	CHIP R 100 J 1/16W	
R412			RK73HB1J473J	CHIP R 47K J 1/16W	
R413,414			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R416			RK73HH1J104D	CHIP R 100K D 1/16W	
R417			RK73HH1J154D	CHIP R 150K D 1/16W	
R418			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R419-421			RK73HB1J473J	CHIP R 47K J 1/16W	
R422,423			RK73HB1J393J	CHIP R 39K J 1/16W	
R424			RK73HB1J101J	CHIP R 100 J 1/16W	
R425			RK73HB1J393J	CHIP R 39K J 1/16W	
R428			RK73HB1J101J	CHIP R 100 J 1/16W	
R429,430			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R431			RK73HB1J103J	CHIP R 10K J 1/16W	
R433			RK73HB1J473J	CHIP R 47K J 1/16W	
R434			RK73HB1J103J	CHIP R 10K J 1/16W	
R435			RK73HB1J473J	CHIP R 47K J 1/16W	
R437			RK73HB1J473J	CHIP R 47K J 1/16W	
R441			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R442			RK73HB1J680J	CHIP R 68 J 1/16W	
R443			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R444			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R445			RK73HB1J152J	CHIP R 1.5K J 1/16W	
R446-450			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R453			RK73HB1J473J	CHIP R 47K J 1/16W	
R460			RK73HB1J473J	CHIP R 47K J 1/16W	
R464			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R466			RK73HB1J104J	CHIP R 100K J 1/16W	
R468-471			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R472			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R473			RK73HB1J223J	CHIP R 22K J 1/16W	
R474			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R475			RK73HB1J104J	CHIP R 100K J 1/16W	

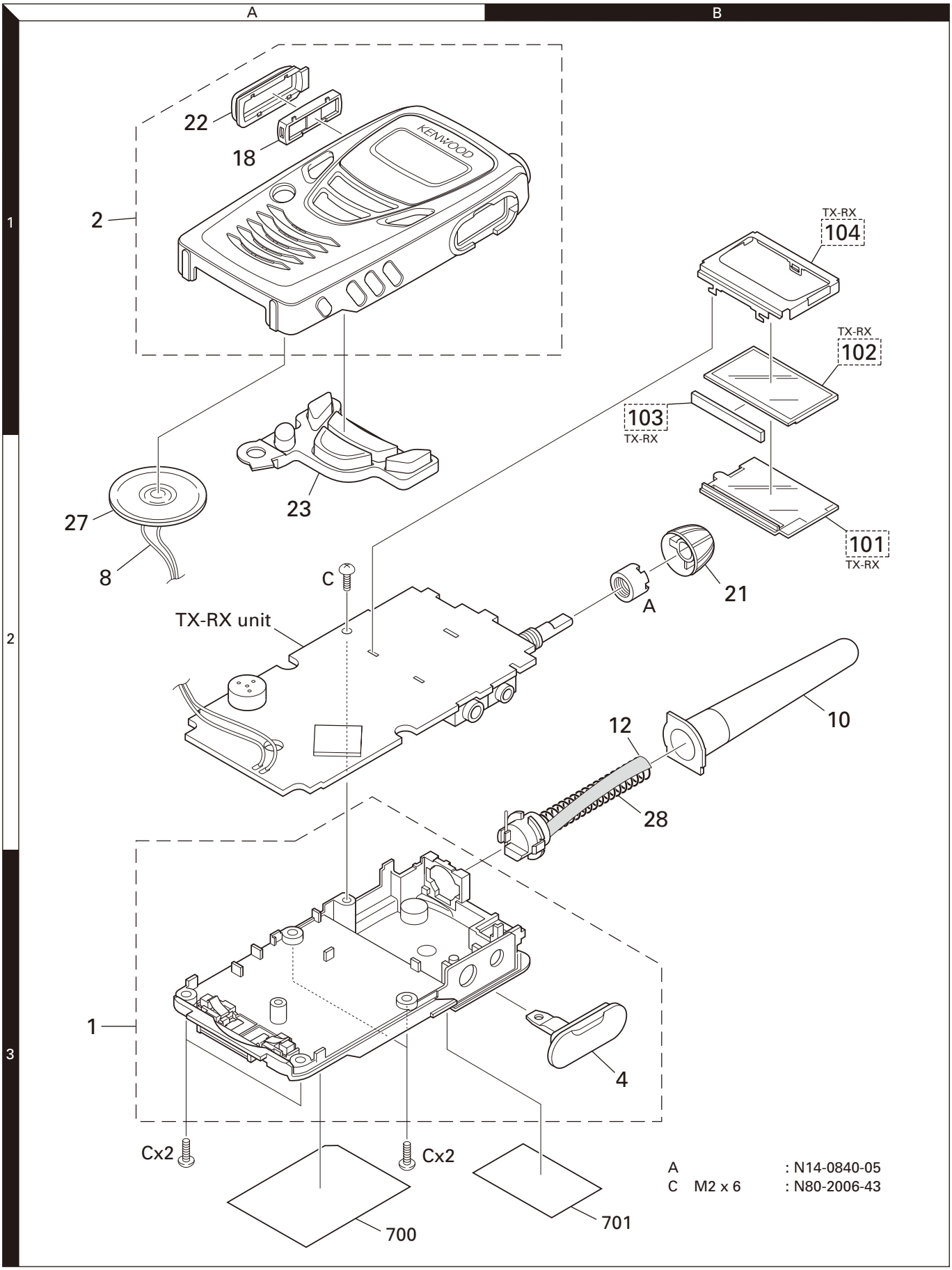
PARTS LIST / 零件表

TX-RX UNIT (X57-7333-01)

Ref. No.	Address	New parts	Parts No.	Description	Destination
R476			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R479			RK73HB1J182J	CHIP R 1.8K J 1/16W	
R482			RK73HB1J273J	CHIP R 27K J 1/16W	
R483			RK73HB1J121J	CHIP R 120 J 1/16W	
R484			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R486			RK73HB1J823J	CHIP R 82K J 1/16W	
R487			RK73HB1J154J	CHIP R 150K J 1/16W	
R490			RK73HB1J473J	CHIP R 47K J 1/16W	
R491			RK73HB1J104J	CHIP R 100K J 1/16W	
R492			RK73HB1J123J	CHIP R 12K J 1/16W	
R493			RK73HB1J182J	CHIP R 1.8K J 1/16W	
VR300			R32-0735-05	SEMI FIXED VARIABLE RESISTOR	
VR301			R31-0667-05	VARIABLE RESISTOR	
S1			S70-0414-05	TACT SWITCH	
MIC300			T91-0651-15	MIC ELEMENT	
D1		✻	RKS151KJ	DIODE	
D2			1SV270-F	VARIABLE CAPACITANCE DIODE	
D3			MA2S111-F	DIODE	
D4		✻	1SV304-F	VARIABLE CAPACITANCE DIODE	
D5			MA2S111-F	DIODE	
D6			HSC277	DIODE	
D7		✻	RKS151KJ	DIODE	
D101			HVC131	DIODE	
D200,201			HSC277	DIODE	
D300			DA221	DIODE	
D301,302			RB706F-40	DIODE	
D303			DAN222	DIODE	
D304			GN1G	DIODE	
D305-308			KDZ3.3V	ZENER DIODE	
IC1			TB31202FNG	MOS-IC	
IC100			BH2219FVM	ANALOGUE IC	
IC200			TA31136FNG	MOS-IC	
IC300			AK2346	MOS-IC	
IC301			NJM2100V-ZB	MOS-IC	
IC302			TK62012F	MOS-IC	
IC303			LM4865M-N	BI-POLAR IC	
IC400			XC61CN2802N	MOS-IC	
IC401			XC61CN2702N	MOS-IC	
IC403		✻	D338327A30WV	MICRO CONTROL UNIT	
IC404			BH30FB1WG	MOS-IC	
IC405			TC7W74FU-F	MOS-IC	
IC406			BR24L08FJ-W	ROM IC	
Q1			2SK1824-A	FET	
Q2,3			2SC5488	TRANSISTOR	
Q4			2SC4617(S)	TRANSISTOR	
Q5,6			2SC5066-F(O)	TRANSISTOR	
Q101			2SC5092-F	TRANSISTOR	
Q103		✻	RQA0004PXDQS	FET	
Q104			RQA0002DNS	FET	
Q200			KRA304E-P	DIGITAL TRANSISTOR	
Q201,202			2SC4082	TRANSISTOR	
Q203			3SK318	FET	
Q204			3SK294-FP	FET	
Q300-302			2SK1824-A	FET	
Q303			2SC4919	TRANSISTOR	
Q400-402			DTC114EE	DIGITAL TRANSISTOR	
Q403			2SC4919	TRANSISTOR	
Q404-406			KRA305E	DIGITAL TRANSISTOR	

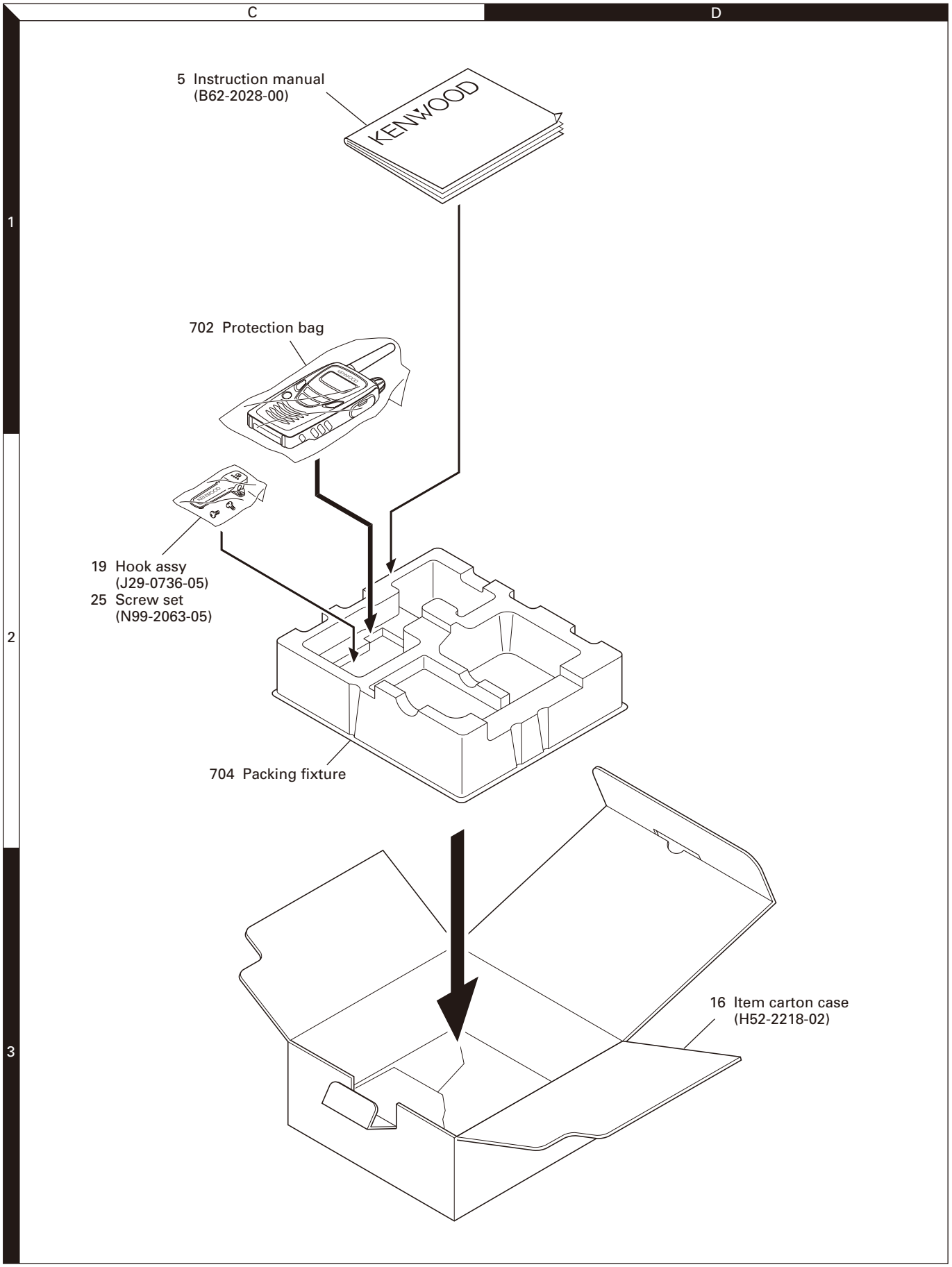
Ref. No.	Address	New parts	Parts No.	Description	Destination
Q408			2SC4919	TRANSISTOR	
TH101		✻	NCP18WM474J0S	THERMISTOR	
TH102		✻	PRF15BC471QB1	THERMISTOR	
TH302			ERTJ0EV104H	THERMISTOR	

EXPLODED VIEW / 部件分解图



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

PACKING / 包装



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

ADJUSTMENT

Required Test Equipment

1. Stabilized Power Supply
1) The supply voltage can be changed between 0V and 10V, and the current is 3A or more
2) The standard voltage is 3.8V

2. DC Ammeter
1) Class 1 ammeter (17 ranges and other features).
2) The full scale can be set to either 300mA or 3A.
3) A cable of less internal loss must be used.

3. Frequency Counter (f. counter)
1) Frequencies of up to 1GHz or so can be measured.
2) The sensitivity can be changed to 500MHz or below, and measurements are highly stable and accurate (0.2ppm or so).

4. Power Meter
1) Measurable frequency : Up to 600MHz
2) Impedance : 50Ω, unbalanced
3) Measuring range : Full scale of 3W or so
4) A standard cable (5D2W 1m) must be used.

5. RF Voltmeter (RF V.M)
1) Measurable frequency : Up to 600MHz or so

6. Linear Detector
1) Measurable frequency : Up to 600MHz or so
2) Characteristics are flat, and CN is 60dB or more

7. Digital Voltmeter
1) Voltage range : FS=10V or so
2) Input resistance : 1MΩ or more

8. Oscilloscope
1) Measuring range : DC to 30MHz
2) Provides highly accurate measurements for 5 to 25MHz.

9. AF Voltmeter (AF V.M)
1) Measurable frequency : 50Hz to 1MHz
2) Maximum sensitivity : 1mV or more

10. Standard Signal Generator (SSG)
1) Maximum frequency : 600MHz or more
2) Output : –133dBm/0.05μV to 7dBm/501mV
3) Output impedance : 50Ω

11. Dummy Load
1) 8Ω, 1W or more

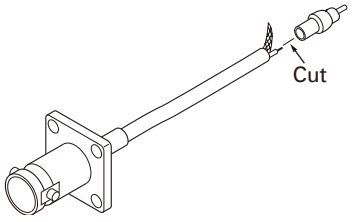
12. AF Generator (AG)
1) Frequency range : 100Hz to 100kHz
2) Output : 0.5mV to 1V

13. Distortion Meter
1) Measurable frequency : 30Hz to 100kHz
2) Input level : 50mV to 10Vrms

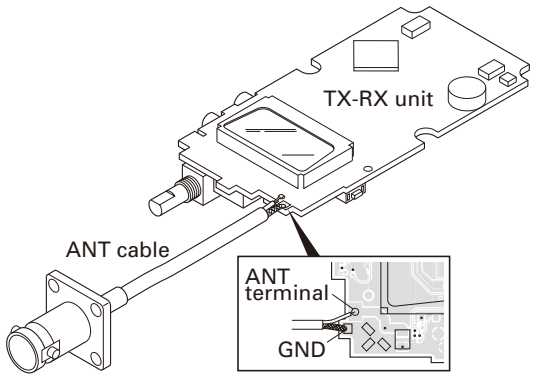
Service Jig

■ ANT cable (E30-3418-08)

Modify the cable as shown below.

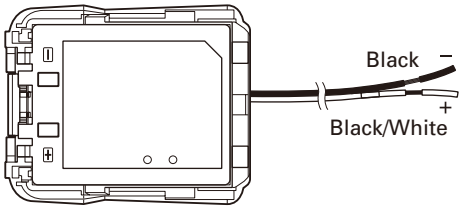


Solder the ANT cable to the ANT terminal on the TX-RX unit.



■ Battery jig (W05-1365-00)

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



Note: When using the battery jig, you must measure the voltage at the terminals of the battery jig. Otherwise, a slight voltage drop may occur within the power cable, between the power supply and the battery jig, especially while the transceiver transmits.

Test Signaling

No.	Receive	Transmit
1	None	None
2	None	100Hz Square Wave
3	QT 67.0Hz	QT 67.0Hz
4	QT 151.4Hz	QT 151.4Hz
5	QT 250.3Hz	QT 250.3Hz
6	DQT D023N	DQT D023N
7	DQT D754I	DQT D754I
8	MSK Code (100-1000)	MSK Code (100-1000)
9	None	MSK (1010…)

调　整

所需测试设备

1. 稳定电源
1) 电源电压可以在 0V 和 10V 之间切换，并且电流为 3A 或更大
2) 标准电压为 3.8V

2. 直流安培表
1) 1 级安培表 (17 量程和其他功能)。
2) 全刻度可以设置为 300mA 或 3A。
3) 必须使用较小内部损耗的电缆。

3. 频率计数器 (f. counter)
1) 可以测量最高 1GHz 左右的频率。
2) 灵敏度可以切换到 500MHz 或以下，测量结果高度稳定、精确 (0.2ppm 左右)。

4. 功率表
1) 可测频率：最高 600MHz
2) 阻抗：50Ω，不平衡
3) 测量范围：全刻度 3W 左右
4) 必须使用标准电缆 (5D2W 1m)。

5. RF 电压表 (RF V.M)
1) 可测频率：最高 600MHz 左右

6. 线性检波器
1) 可测频率：最高 600MHz 左右
2) 特性固定且 CN 为 60dB 或更大

7. 数字电压表
1) 电压范围：FS=10V 左右
2) 输入电阻：1MΩ 或更大

8. 示波器
1) 测量范围：直流到 30MHz
2) 5 ～ 25MHz 之间提供高精确测量。

9. 音频伏特表 (AF V.M)
1) 可测频率 :50Hz ～ 1MHz
2) 最大灵敏度：1mV 或更大

10. 标准信号发生器 (SSG)
1) 最大频率：600MHz 或更大
2) 输出：-133dBm/0.05μV ～ 7dBm/501mV
3) 输出阻抗：50Ω

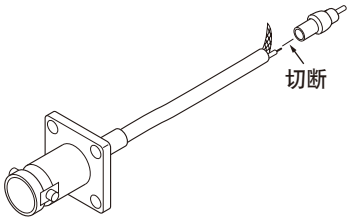
11. 等效负载
1) 8Ω，1W 或更大

12. 音频发生器 (AG)
1) 频率范围：100Hz ～ 100kHz
2) 输出：0.5mV ～ 1V

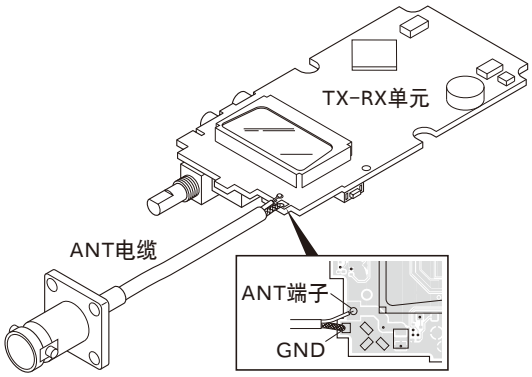
13. 失真仪
1) 可测频率：30Hz ～ 100kHz
2) 输入电平：50mV ～ 10Vrms

维修夹具

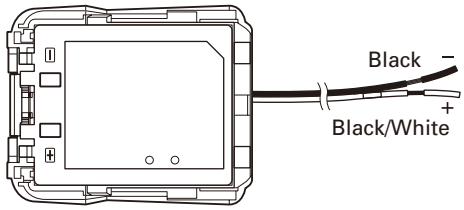
■ ANT 电缆 (E30-3418-08)
如下所示修改电缆。



将 ANT 电缆焊接到 TX-RX 单元的 ANT 端子。



■电池夹具 (W05-1365-00)
将电源线正确连接对讲机安装的电池夹具与电源，并且打开电源之前确认输出电压和电源极性，否则过电压和逆向连接可能会损坏对讲机或 / 和电源。



注意：使用电池夹具时，必须测量电池夹具端子处的电压。否则，电源与电池夹具之间的电源线可能会发生微小的压降，尤其是对讲机发射时。

测试信令

号	接　收	发　射
1	无	无
2	无	100Hz 方波
3	QT 67.0Hz	QT 67.0Hz
4	QT 151.4Hz	QT 151.4Hz
5	QT 250.3Hz	QT 250.3Hz
6	DQT D023N	DQT D023N
7	DQT D754I	DQT D754I
8	MSK 代码 (100-1000)	MSK 代码 (100-1000)
9	无	MSK (1010…)

ADJUSTMENT

Test Frequency

No.	Receive (MHz)	Transmit (MHz)
1 (Low)	410.05000	410.10000
2 (High)	419.95000	419.90000
3	410.00000	410.00000
4	410.20000	410.20000
5	410.40000	410.40000
6	410.60000	410.60000

Adjustment Frequency List

CH	Receive (MHz)	Transmit (MHz)
Center	415.55000	415.50000
Frequency Shift 6.25KHz	-	410.50625
Frequency Shift 5KHz	-	410.50500

Common Section

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting	1) Set battery jig Battery terminal: 3.8V							
2. VCO Lock Voltage (Test mode)	1) CH: TX high PTT: ON	Digital voltmeter	TX-RX	LV			Check	2.5V or less
	2) CH: RX high							
	3) CH: RX low							0.4V or more
	4) CH: TX low PTT: ON							

Transmitter Section

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Frequency Adjustment	1) PC tune CH: TX center PTT: ON	f. counter		ANT Jig cable SP/MIC jack		PC key	Adjust to the center frequency.	Within ±100Hz
2. Frequency Shift 6.25KHz	1) PC tune CH: TX 410.50625MHz PTT: ON						Adjust to the desired frequency.	Within ±100Hz
3. Frequency Shift 5KHz	1) PC tune CH: TX 410.50500MHz PTT: ON							
4. High Transmit Power	1) PC tune CH: TX center	Power meter DC ammeter					Adjust it to 1.5W	±0.1W Less than 1.6A
	2) Test mode CH: TX low, high PTT: ON						Check	1.15~1.85W Less than 1.6A
5. Low Transmit Power	1) PC tune CH: TX center PTT: ON					PC key	Adjust it to 0.55W	±0.1W Less than 0.9A
	2) Test mode CH: TX low, high PTT: ON						Check	300~800mW Less than 0.9A
6. DQT Balance	1) Test mode CH: TX low SIG: TX 100Hz square wave Linear detector filter LPF: 3kHz PTT: ON	Linear detector Oscilloscope			TX-RX	VR300	Adjust the wave-form to square wave.	

调　　整

测试频率

号	接收 (MHz)	发射 (MHz)
1(低)	410.05000	410.10000
2(高)	419.95000	419.90000
3	410.00000	410.00000
4	410.20000	410.20000
5	410.40000	410.40000
6	410.60000	410.60000

调整频率表

信　道	接收 (MHz)	发射 (MHz)
中心	415.55000	415.50000
频率偏移 6.25KHz	-	410.50625
频率偏移 5KHz	-	410.50500

公用部分

项　目	条　　件	测　　量			调　　整			规　格　/　备　注
		测量装置	单元	端子	单元	部件	方　法	
1. 设定	1) 设置电池夹具 BATT 端子电压 : 3.8V							
2.VCO 锁定电压（测试模式）	1)CH: TX 高 PTT: 开启	数字电压表	TX-RX	LV			检查	2.5V 或更低
	2)CH: RX 高							
	3)CH: RX 低							0.4V 或更高
	4)CH: TX 低 PTT: 开启							

发射部分

项　目	条　　件	测　　量			调　　整			规　格　/　备　注
		测量装置	单元	端子	单元	部件	方　法	
1. 频率调整	1)PC 同调 CH: TX 中心 PTT: 开启	频率计数器		ANT 夹具电缆 SP/MIC 插孔		PC 键	调整到中心频率	±100Hz 以内
2. 频率偏移 6.25KHz	1)PC 同调 CH: TX 410.50625MHz PTT: 开启						调整到想要的频率	±100Hz 以内
3. 频率偏移 5KHz	1)PC 同调 CH: TX 410.50500MHz PTT: 开启							
4. 高发射功率	1)PC 同调 CH: TX 中心	功率表 直流安培表					调整到 1.5W	±0.1W 1.6A 或更低
	2) 测试模式 CH: TX 低，高 PTT: 开启						检查	1.15 ～ 1.85W 1.6A 或更低
5. 低发射功率	1)PC 同调 CH: TX 中心 PTT: 开启					PC 键	调整到 0.55W	±0.1W 0.9A 或更低
	2) 测试模式 CH: TX 低，高 PTT: 开启						检查	300 ～ 800mW 0.9A 或更低
6.DQT 平衡	1) 测试模式 CH: TX 低 SIG: TX 100Hz 方波 调制分析滤波器 LPF: 3kHz PTT: 开启	线性检波器 示波器			TX-RX	VR300	将波形调整到方波	

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
7. Maximum Deviation (Wide)	1) PC tune CH: TX center Linear detector filter LPF: 15kHz AG: 1kHz/150mV PTT: ON	Linear detector AG AF V.M		ANT Jig cable SP/MIC jack		PC key	Adjust it to 4.2kHz. ± peak whichever higher	±0.1kHz
(Narrow)							Adjust it to 2.1kHz. ± peak whichever higher	±0.1kHz
8. MIC Sensitivity (Wide)	1) Test mode CH: TX low, high Linear detector filter LPF: 15kHz AG: 1kHz/13mV PTT: ON						Check	±2.5~3.8kHz
(Narrow)								±1.1~1.9kHz
9. QT Fine Deviation	1) PC tune CH: TX center (Wide) QT: 151.4Hz Linear detector filter LPF: 3kHz PTT: ON	Linear detector				PC key	Adjust it to 0.75kHz.	±0.05kHz
	2) PC tune CH: TX center (Narrow) QT: 151.4Hz Linear detector filter LPF: 3kHz PTT: ON						Adjust it to 0.35kHz.	±0.05kHz
10. DQT Fine Deviation	1) PC tune CH: TX center (Wide) DQT: 023N Linear detector filter LPF: 3kHz PTT: ON						Adjust it to 0.75kHz.	±0.05kHz
	2) PC tune CH: TX center (Narrow) DQT: 023N Linear detector filter LPF: 3kHz PTT: ON						Adjust it to 0.35kHz.	±0.05kHz
11. MSK Fine Deviation	1) PC tune CH: TX center (Wide) MSK Linear detector filter LPF: 15kHz PTT: ON						Adjust it to 3.0kHz.	±0.1kHz
	2) CH: TX center (Narrow) MSK Linear detector filter LPF: 15kHz PTT: ON						Check	±1.0~±2.0kHz
12. VOX Level	1) PC tune AG: 1kHz/40mV	AG				PC key (Start)	Write	
13. Battery Indicator Level	1) PC tune Battery terminal: 3.25V	Digital voltmeter		Battery terminal				

调　整

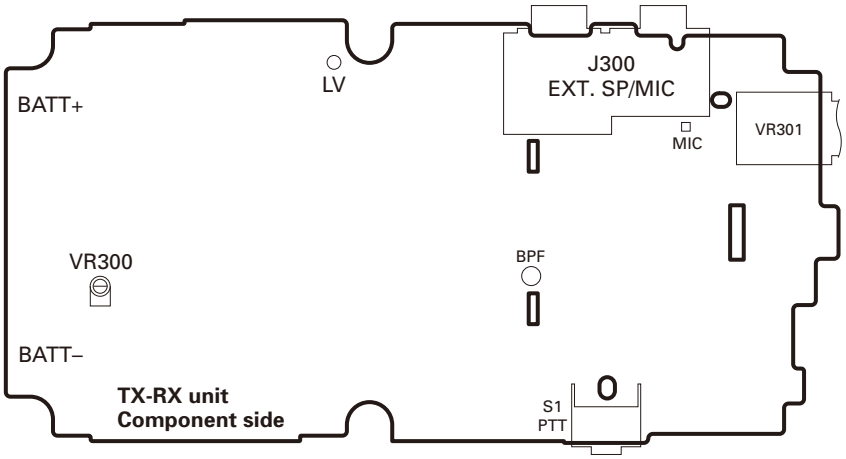
项　目	条　件	测　量			调　整			规　格 / 备　注
		测量装置	单元	端子	单元	部件	方　法	
7. 最大频偏 （宽）	1)PC 同调 CH: TX 中心 调制分析滤波器 LPF: 15kHz AG: 1kHz/150mV PTT: 开启	线性检波器 AG AF V.M		ANT 夹具电缆 SP/MIC 插孔		PC 键	调整到 4.2kHz。 ± 较高峰值	±0.1kHz
（窄）							调整到 2.1kHz。 ± 较高峰值	±0.1kHz
8. 麦克风灵敏度 （宽）	1) 测试模式 CH: TX 低，高 调制分析滤波器 LPF: 15kHz AG: 1kHz/13mV PTT: 开启						检查	±2.5 ～ 3.8kHz
（窄）								±1.1 ～ 1.9kHz
9.QT 细频偏	1)PC 同调 CH: TX 中心（宽） QT: 151.4Hz 调制分析滤波器 LPF: 3kHz PTT: 开启	线性检波器				PC 键	调整到 0.75kHz	±0.05kHz
	2)PC 同调 CH: TX 中心（窄） QT: 151.4Hz 调制分析滤波器 LPF: 3kHz PTT: 开启						调整到 0.35kHz	±0.05kHz
10.DQT 细频偏	1)PC 同调 CH: TX 中心（宽） DQT: 023N 调制分析滤波器 LPF: 3kHz PTT: 开启						调整到 0.75kHz	±0.05kHz
	2)PC 同调 CH: TX 中心（窄） DQT: 023N 调制分析滤波器 LPF: 3kHz PTT: 开启						调整到 0.35kHz	±0.05kHz
11.MSK 细频偏	1)PC 同调 CH: TX 中心（宽） MSK 调制分析滤波器 LPF: 15kHz PTT: 开启						调整到 3.0kHz	±0.1kHz
	2)CH: TX 中心（窄） MSK 调制分析滤波器 LPF: 15kHz PTT: 开启						检查	±1.0 ～ ±2.0kHz
12.VOX 电平	1)PC 同调 AG: 1kHz/40mV	AG				PC 键 （开始）	写	
13. 电池指示电平	1)PC 同调 BATT 端子电压： 3.25V	数字电压表		BATT 端子				

ADJUSTMENT

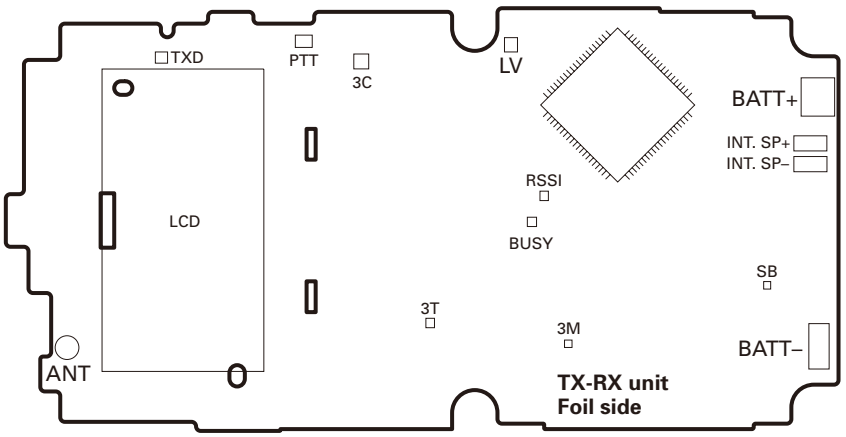
Receiver Section

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Sensitivity (Wide)	1) Test mode CH: RX low, high SSG output: –117dBm (0.32µV) SSG MOD: 1kHz SSG DEV: ±3kHz	SSG Oscilloscope AF V.M Distortion meter		ANT Jig cable SP/MIC jack			Check	SINAD: 12dB or more
(Narrow)	2) Test mode CH: RX low, high SSG output: –116dBm (0.35µV) SSG MOD: 1kHz SSG DEV: ±1.5kHz							
2. Squelch Level (Open)	1) PC tune CH: RX center (Wide) SSG output: –123dBm (0.16µV) SSH MOD: 1kHz SSG DEV: ±3.0kHz					PC key	Adjust to open the squelch.	
	2) PC tune CH: RX center (Narrow) SSG output: –122dBm (0.18µV) SSH MOD: 1kHz SSG DEV: ±1.5kHz							

Adjustment Points



LV: VCO lock voltage measurement
VR300: DQT balance adjustment



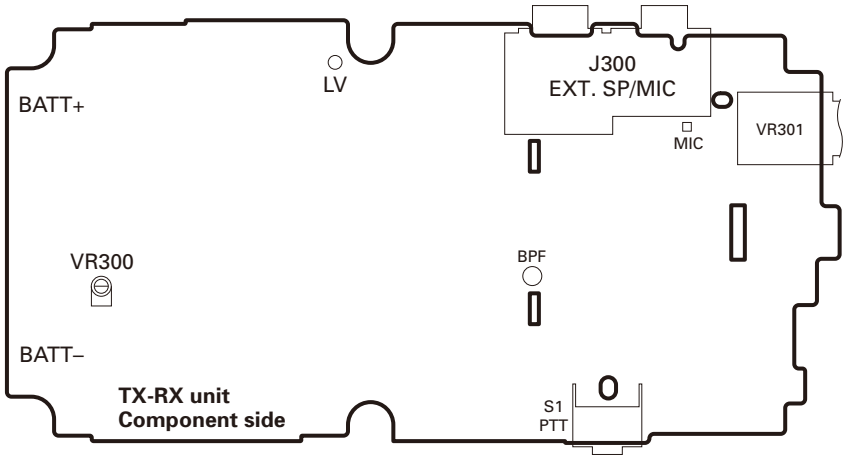
BATT+/–: External power supply terminal (Fasten it with an alligator clip)

调　整

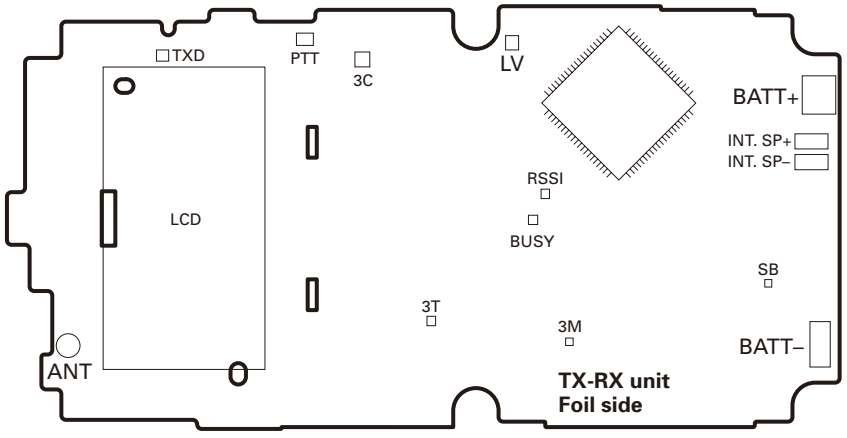
接收部分

项　目	条　件	测　量			调　整			规　格 / 备　注
		测量装置	单元	端子	单元	部件	方　法	
1. 灵敏度（宽）	1) 测试模式 CH: RX 低，高 SSG输出：－117dBm (0.32μV) SSG 调制：1kHz SSG 频偏：±3kHz	SSG 示波器 AF V.M 失真仪		ANT 夹具电缆 SP/MIC 插孔			检查	SINAD: 12dB 或更高
（窄）	2) 测试模式 CH: RX 低，高 SSG输出：－116dBm (0.35μV) SSG 调制：1kHz SSG 频偏：±1.5kHz							
2. 静噪电平（打开）	1)PC 同调 CH: RX 中心（宽） SSG输出：－123dBm (0.16μV) SSH 调制：1kHz SSG 频偏：±3.0kHz					PC 键	调整到打开静噪	
	2)PC 同调 CH: RX 中心（窄） SSG输出：－122dBm (0.18μV) SSH 调制：1kHz SSG 频偏：±1.5kHz							

调整点



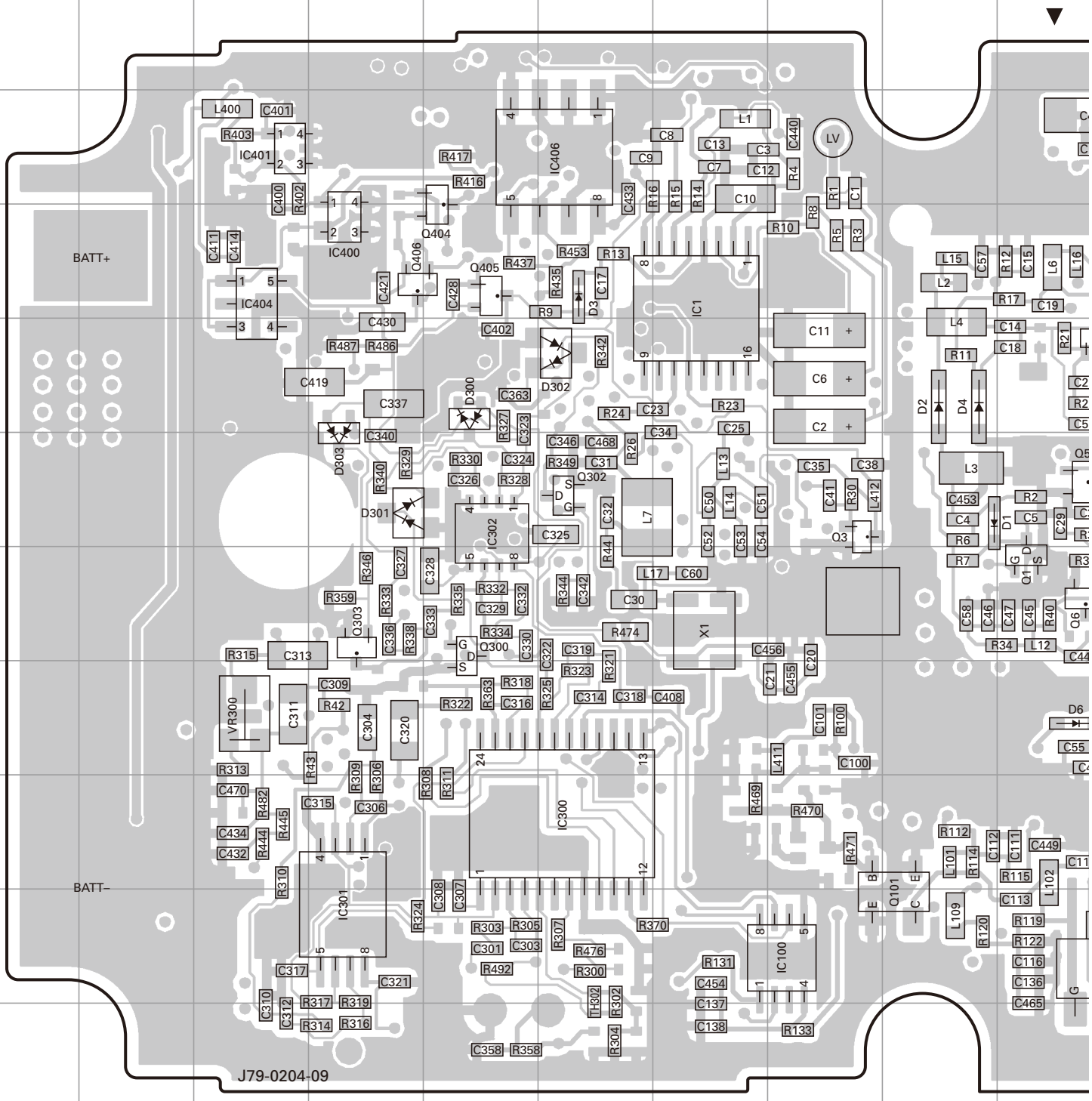
LV: VCO 锁定电压测量
VR300: DQT 平衡调整



BATT+/–: 外部电源端子
（采用弹簧夹将其固定）

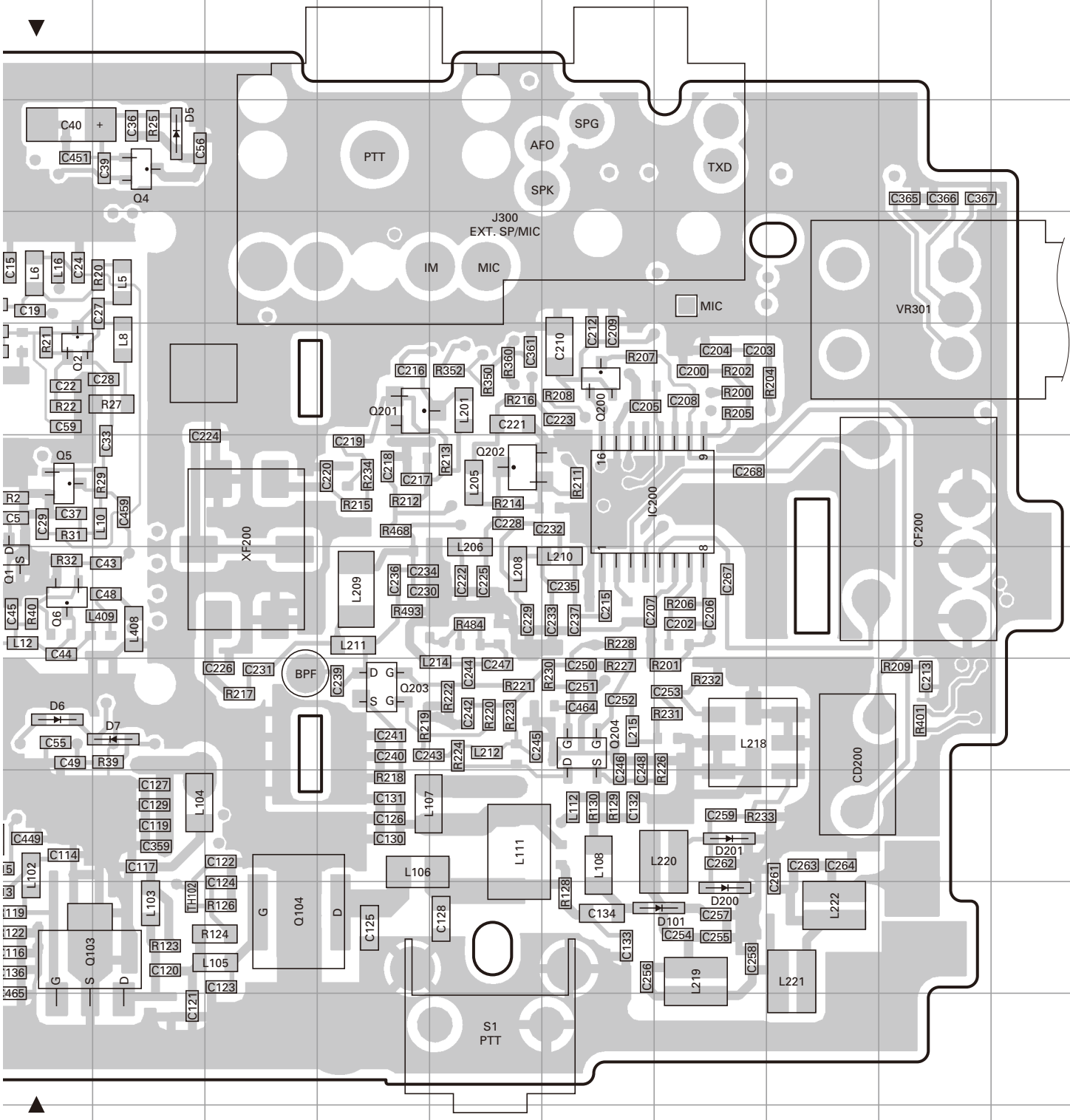
TK-3230 PC BOARD / PC板

TX-RX UNIT (X57-7333-01) Component side view (J79-0204-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	4G	IC404	4C	Q101	10J	Q300	7E	D3	4F	D300	5E
IC100	10H	IC406	3F	Q103	10J	Q302	6F	D4	5I	D301	6D
IC200	6O	Q1	7J	Q104	10L	Q303	7D	D5	3K	D302	5F
IC300	9F	Q2	5J	Q200	5O	Q404	4E	D6	8J	D303	6D
IC301	10D	Q3	6H	Q201	5M	Q405	4E	D7	8K		
IC302	6E	Q4	3K	Q202	6N	Q406	4D	D101	10P		
IC400	4D	Q5	6J	Q203	8M	D1	6I	D200	10P		
IC401	3C	Q6	7J	Q204	8O	D2	5I	D201	9P		

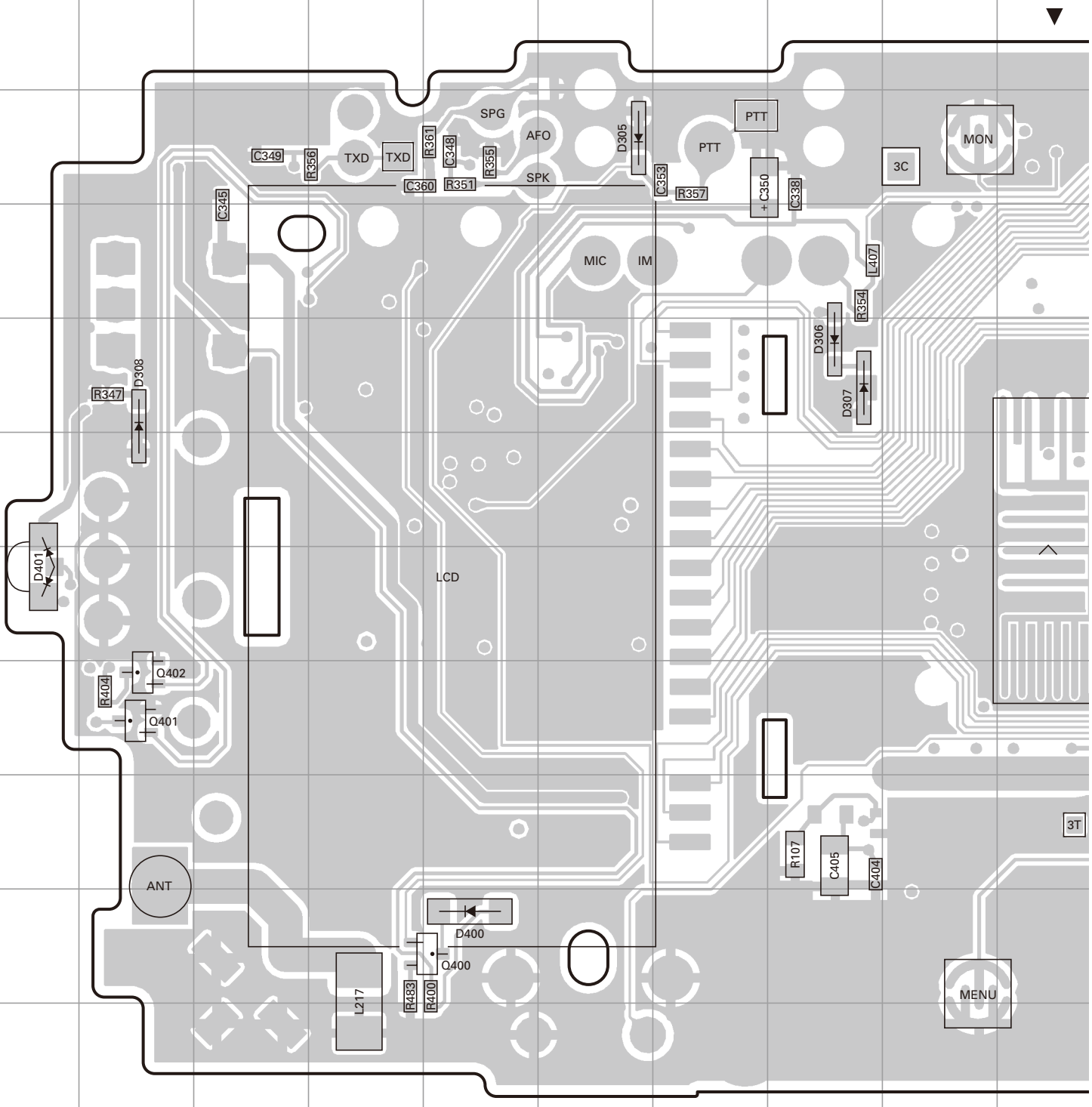
TX-RX UNIT (X57-7333-01) Component side view (J79-0204-09)



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

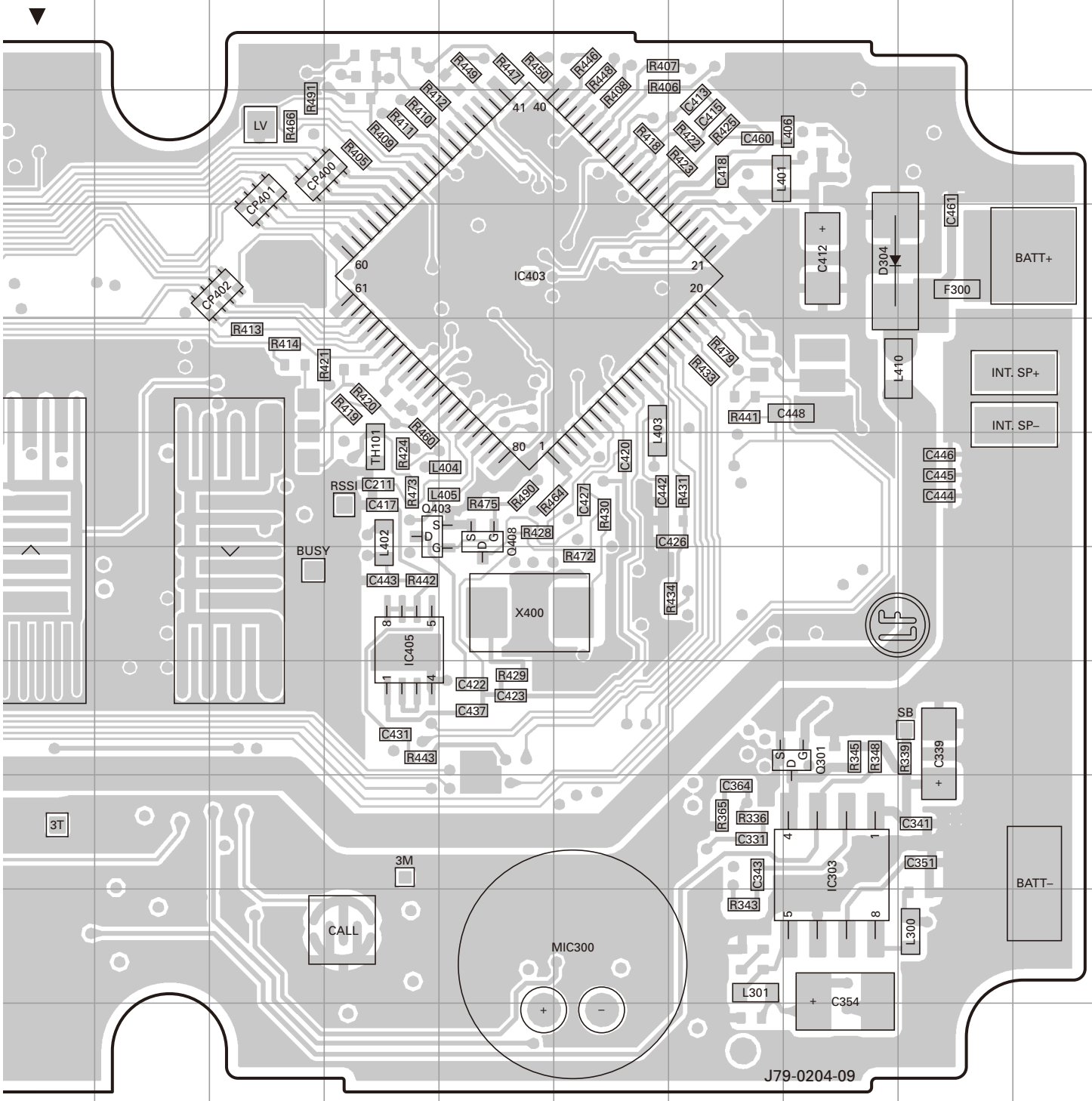
TK-3230 PC BOARD / PC板

TX-RX UNIT (X57-7333-01) Foil side view (J79-0204-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC303	9Q	Q402	8B	D307	5H
IC403	4N	Q403	6M	D308	5B
IC405	7M	Q408	6N	D400	10E
Q301	8Q	D304	4Q	D401	7A
Q400	10E	D305	3F		
Q401	8B	D306	5H		

TX-RX UNIT (X57-7333-01) Foil side view (J79-0204-09)



Component side

Layer 1

Layer 2

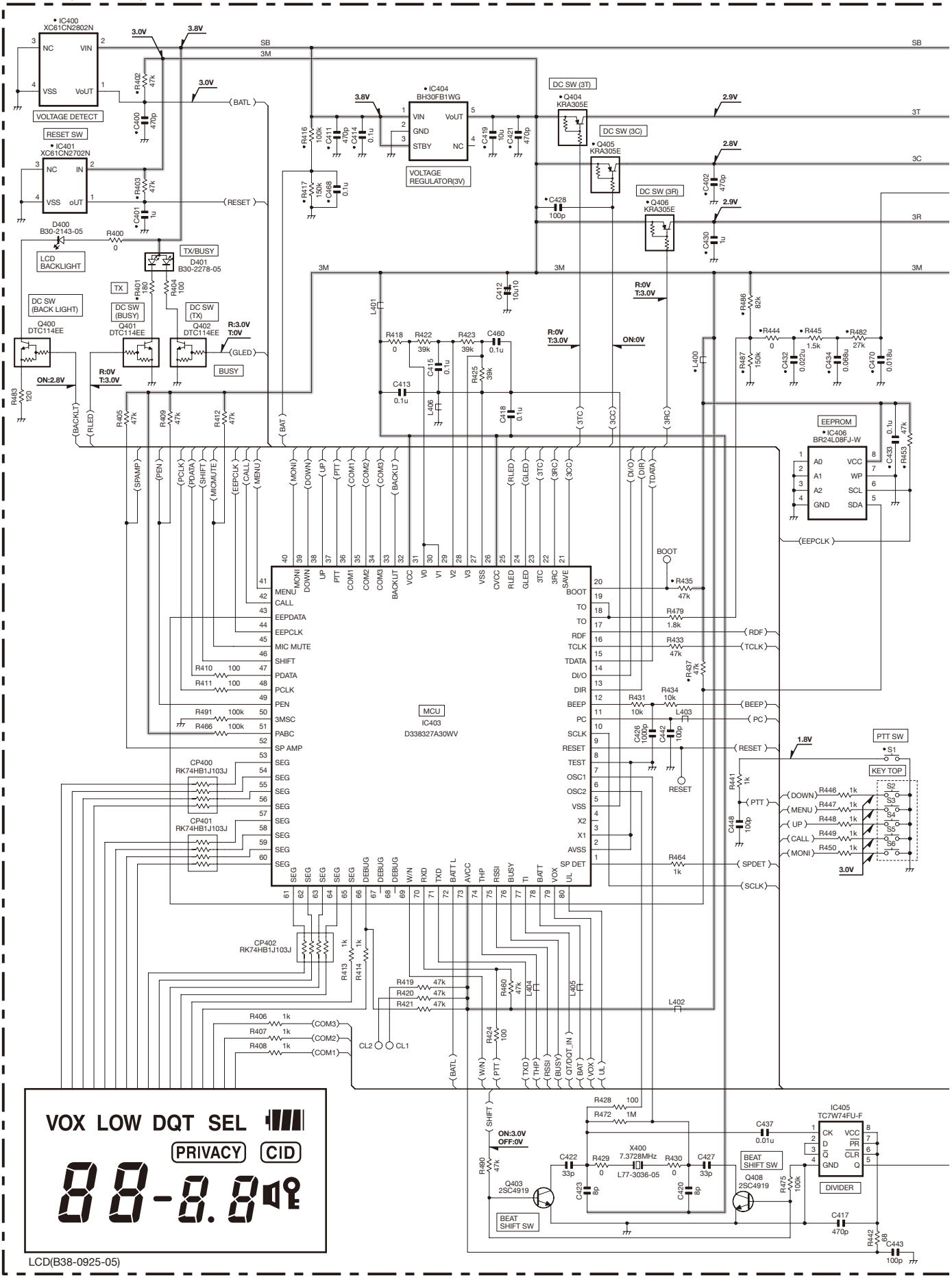
Layer 3

Layer 4

Foil side

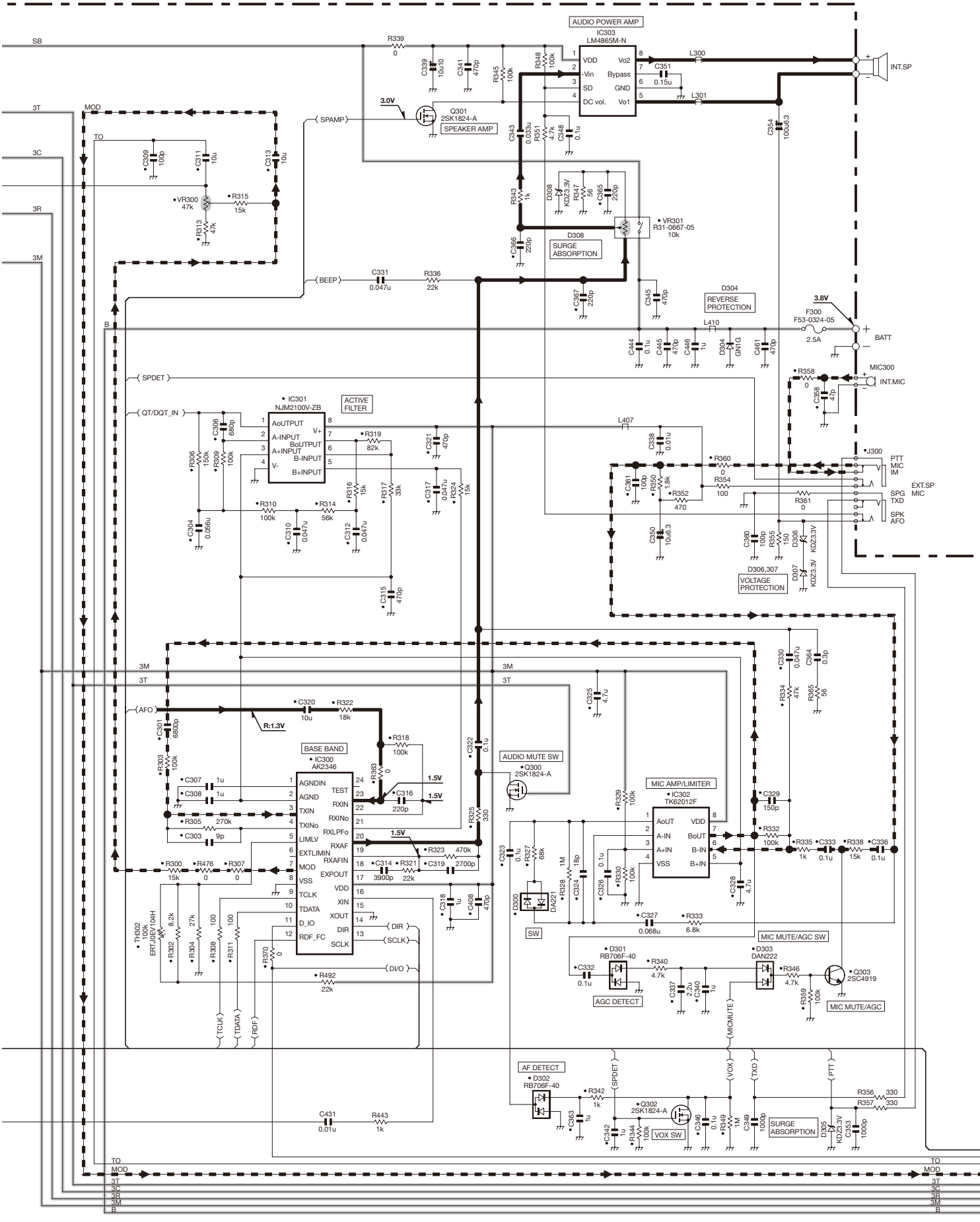
TK-3230 SCHEMATIC DIAGRAM / 原理图

TX-RX UNIT (X57-7333-01)



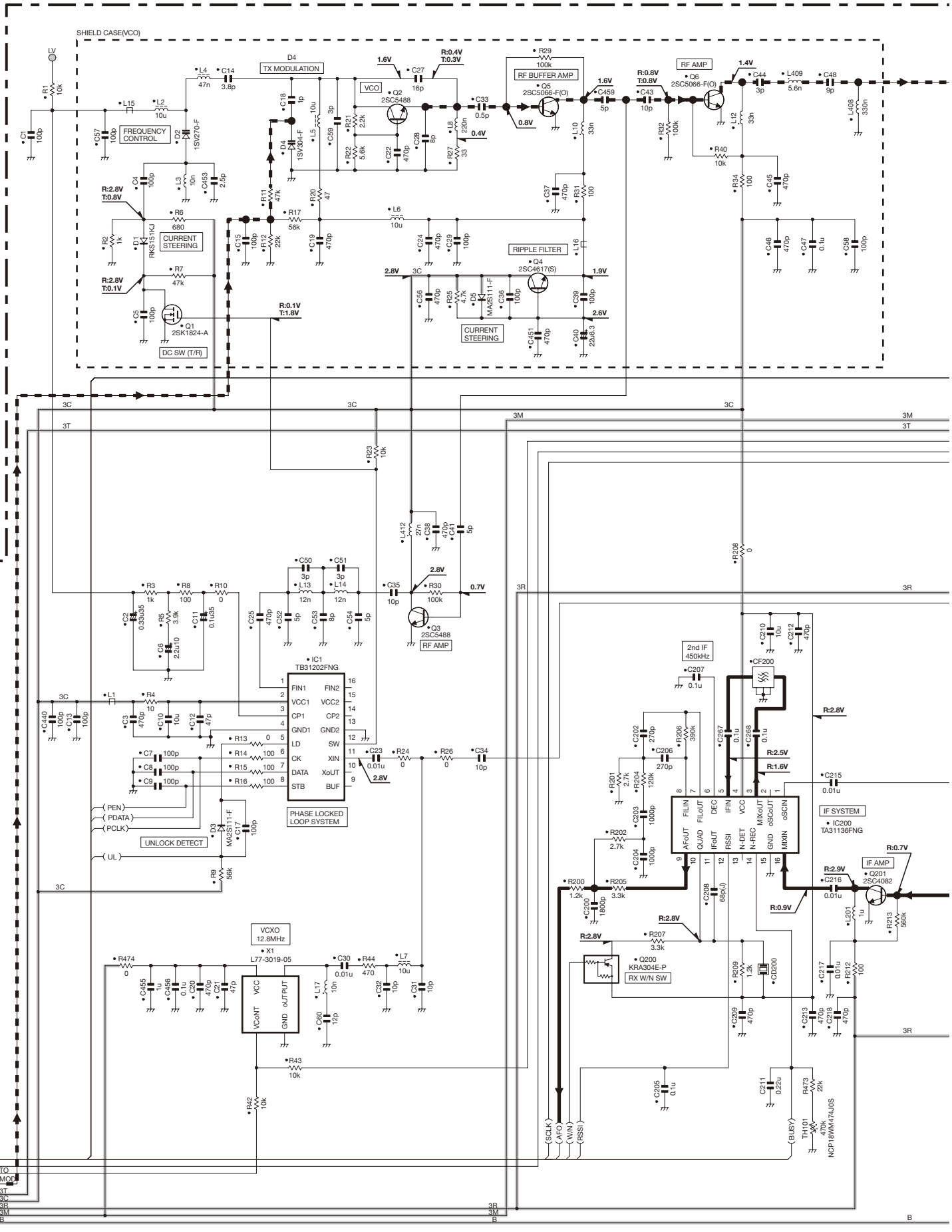
SCHEMATIC DIAGRAM / 原理图 TK-3230

TX-RX UNIT (X57-7333-01)



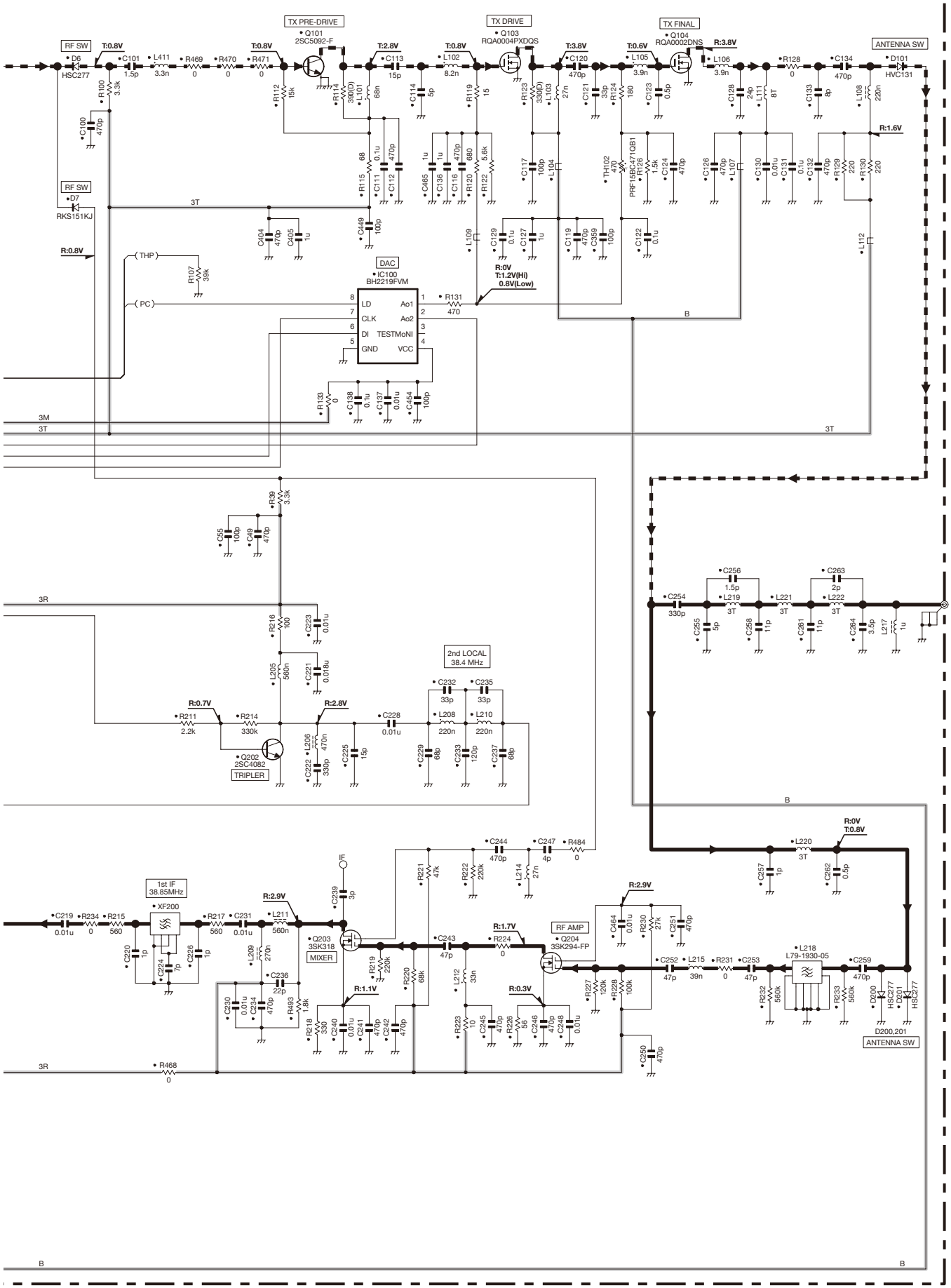
TK-3230 SCHEMATIC DIAGRAM / 原理图

TX-RX UNIT (X57-7333-01)



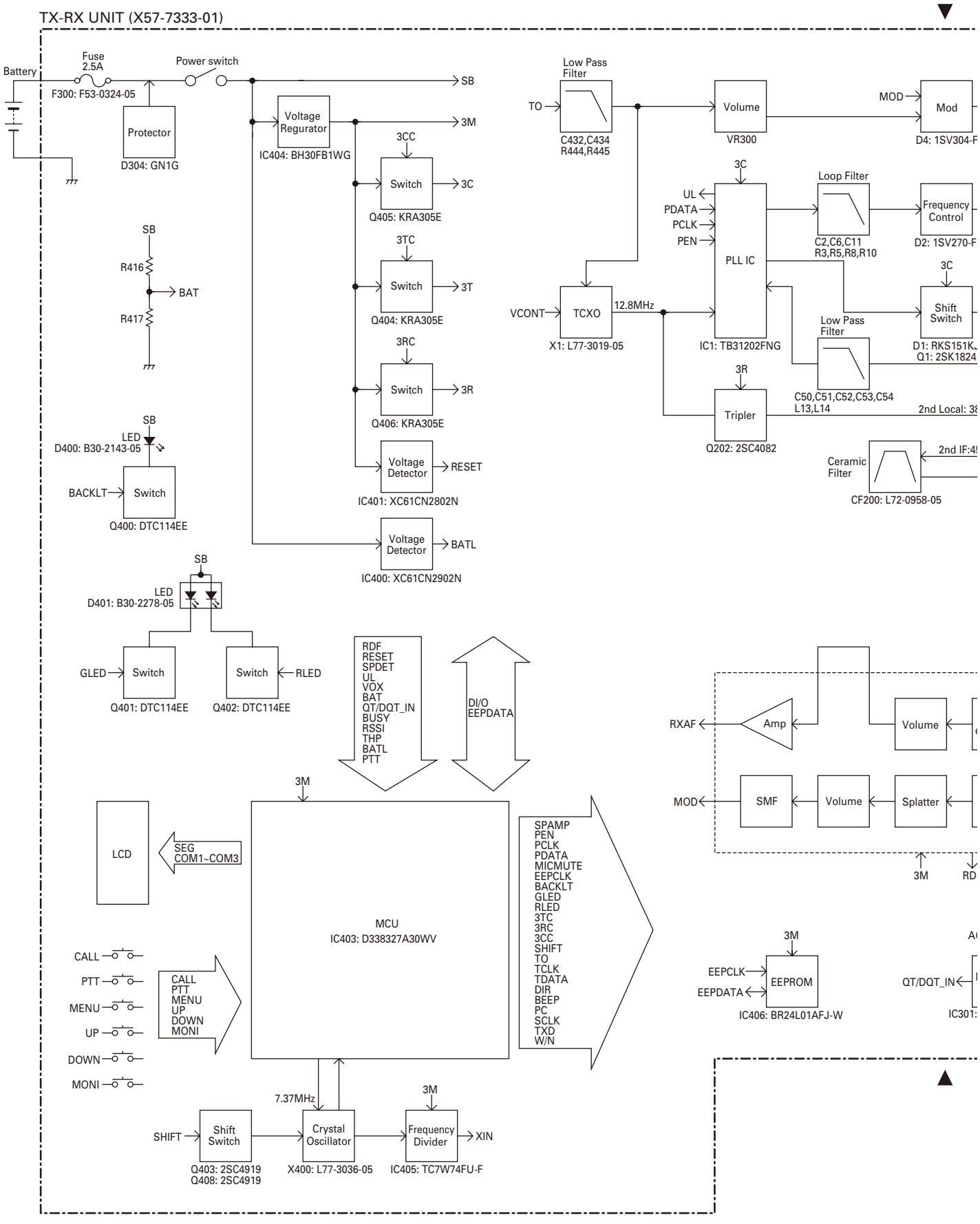
SCHEMATIC DIAGRAM / 原理图 TK-3230

TX-RX UNIT (X57-7333-01)

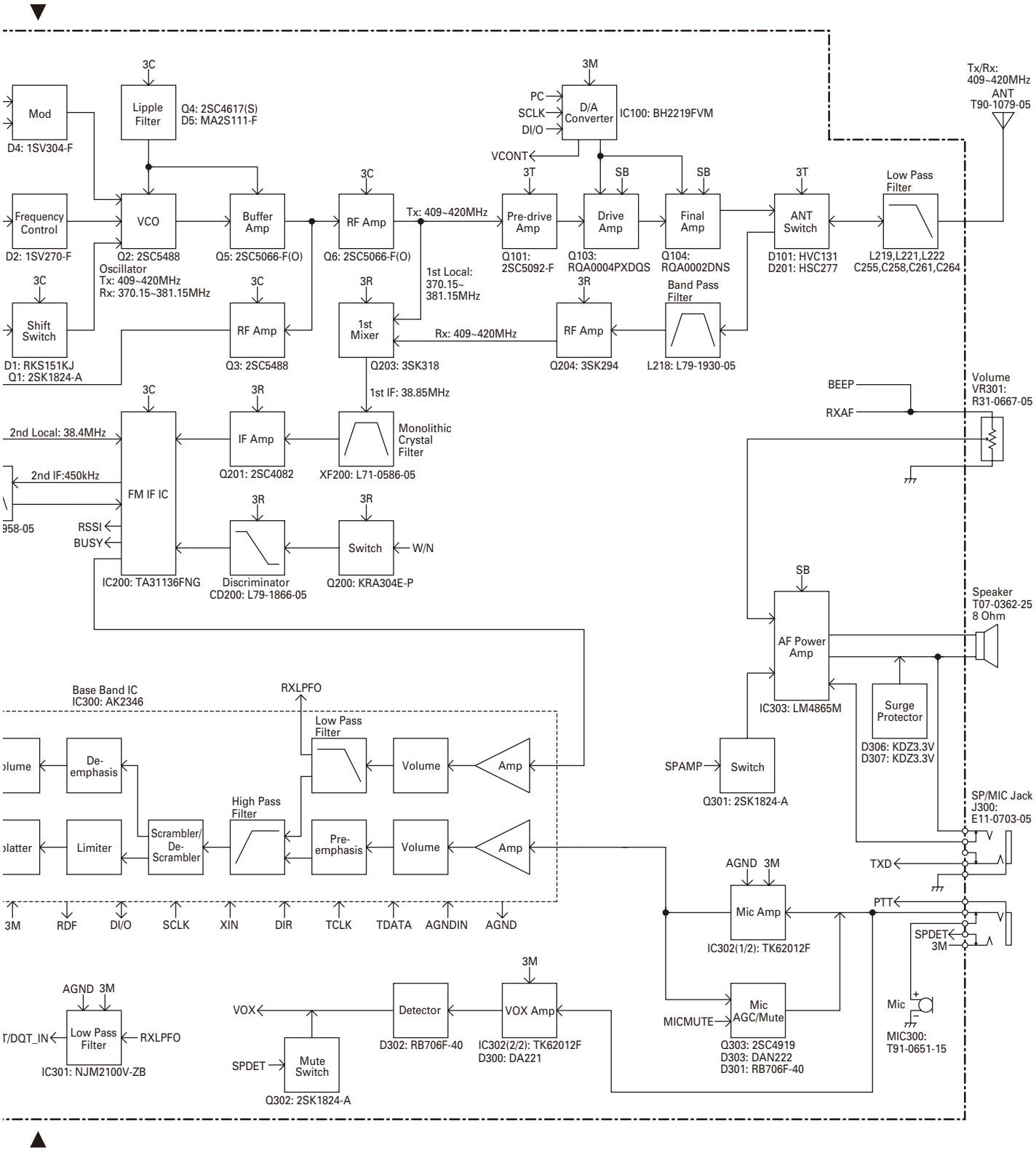


Note : The components marked with a dot (•) are parts of layer 1.

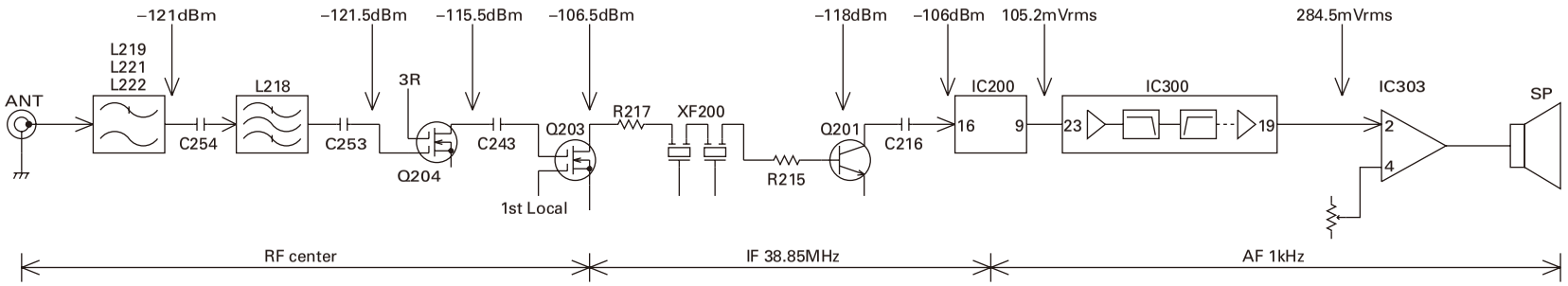
BLOCK DIAGRAM / 方块图



BLOCK DIAGRAM / 方块图



Receiver Section / 接收部分



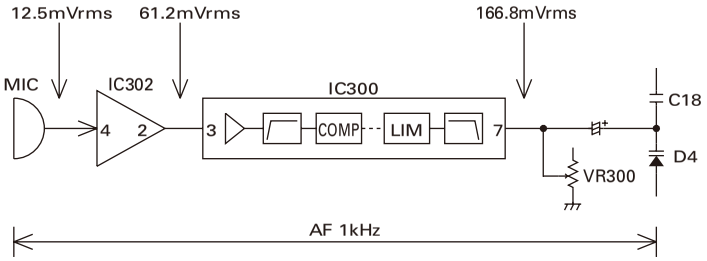
SG output level for obtaining 12dB/SINAD when injected to each point through a 470pF coupling capacitor.

通过470pF耦合电容，用于获得12dB/SINAD时的注入各点的SG输出电平。

Modulate the AF level with a frequency of 1kHz and deviation of 1.5kHz (Narrow), 3kHz (Wide). Then take the signal from the signal generator output when set to –53dBm and obtain the level shown on an AF VTVM when the AF output has been adjusted to 0.63Vrms with the AF vol.

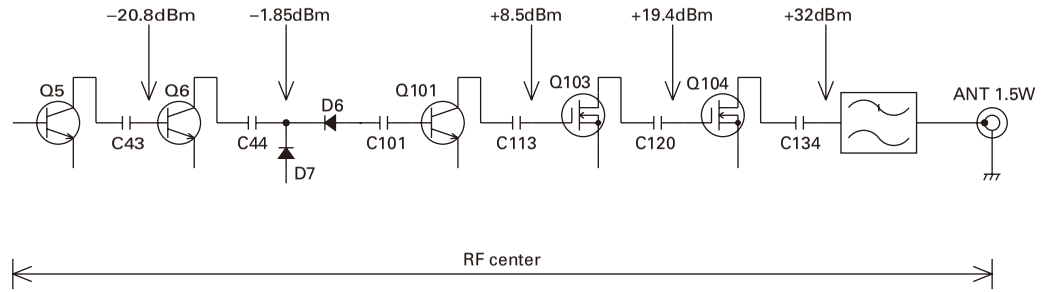
采用1kHz频率和1.5kHz(窄)及3kHz(宽)频偏调制AF电平。
随后在设置为–53dBm时采集信号发生器输出的信号，在采用AF音量器将AF输出信号调整到0.63Vrms时获得AF VTVM所示的电平。

Transmitter Section / 发射部分



AG is set to the MIC input becomes 3.0kHz DEV. at 1kHz.
To make measurements in the AF section,connect the AC level meter.
In the RF section, use a 1000pF coupling capacitor.

AG被设为麦克风输入，1kHz时为3.0kHz频偏。
如在AF部分进行测量，请连接交流电平表。
在RF部分，请使用1000pF耦合电容。



SPECIFICATIONS / 规格

General

Frequency Range	409 to 420MHz
Number of Channels	16CH
PLL Channel Stepping	6.25kHz, 5kHz
Modulation (Wide/Narrow)	16K0F3E/11K0F3E
RF Output Power (High/Low)	1.5W / 500mW
Operating Voltage	3.8V DC (3.4~4.2V)
Battery Life (5-5-90 Duty Cycle)	Up to 14 hours (at KNB-46L high power)
Operating Temperature Range	–10°C to +60°C (+14°F to +140°F)
Frequency Stability	±2.5ppm
Dimensions	52 (W) x 103.5 (H) x 28.7 (D) mm (155.5mm (H) included antenna) (Projections not included)
Weight	Approx. 155g with KNB-46L battery
Standard Load	
Antenna Impedance	50Ω
MIC Input	2kΩ
AF Output	8Ω

一般

频率范围	409 ～ 420MHz
信道数	16 信道
PLL 信道步长	6.25kHz、5kHz
调制（宽 / 窄）	16K0F3E/11K0F3E
RF 输出功率（高 / 低）	1.5W / 500mW
工作电压	3.8V 直流 (3.4 ～ 4.2V)
电池工作时间 (5-5-90 工作循环）	最长 14 小时 (KNB-46L 高功率下）
工作温度范围	-10℃～ +60℃
频率稳定性	±2.5ppm
尺寸	52（宽）×103.5（高）×28.7（深）mm（包括天线时为 155.5mm（高）） （未包括凸起部分）
重量	约 155g（带有 KNB-46L 电池）
标准负载	
天线阻抗	50Ω
麦克风输入	2kΩ
音频输出	8Ω

TK-3230

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Kenwood Electronics (Hong Kong) Ltd.

Unit 3712-3724, Level 37, Tower one Metroplaza, 223 Hing Fong Road, Kwai Fong, N.T., Hong Kong

Kenwood Electronics Singapore Pte Ltd

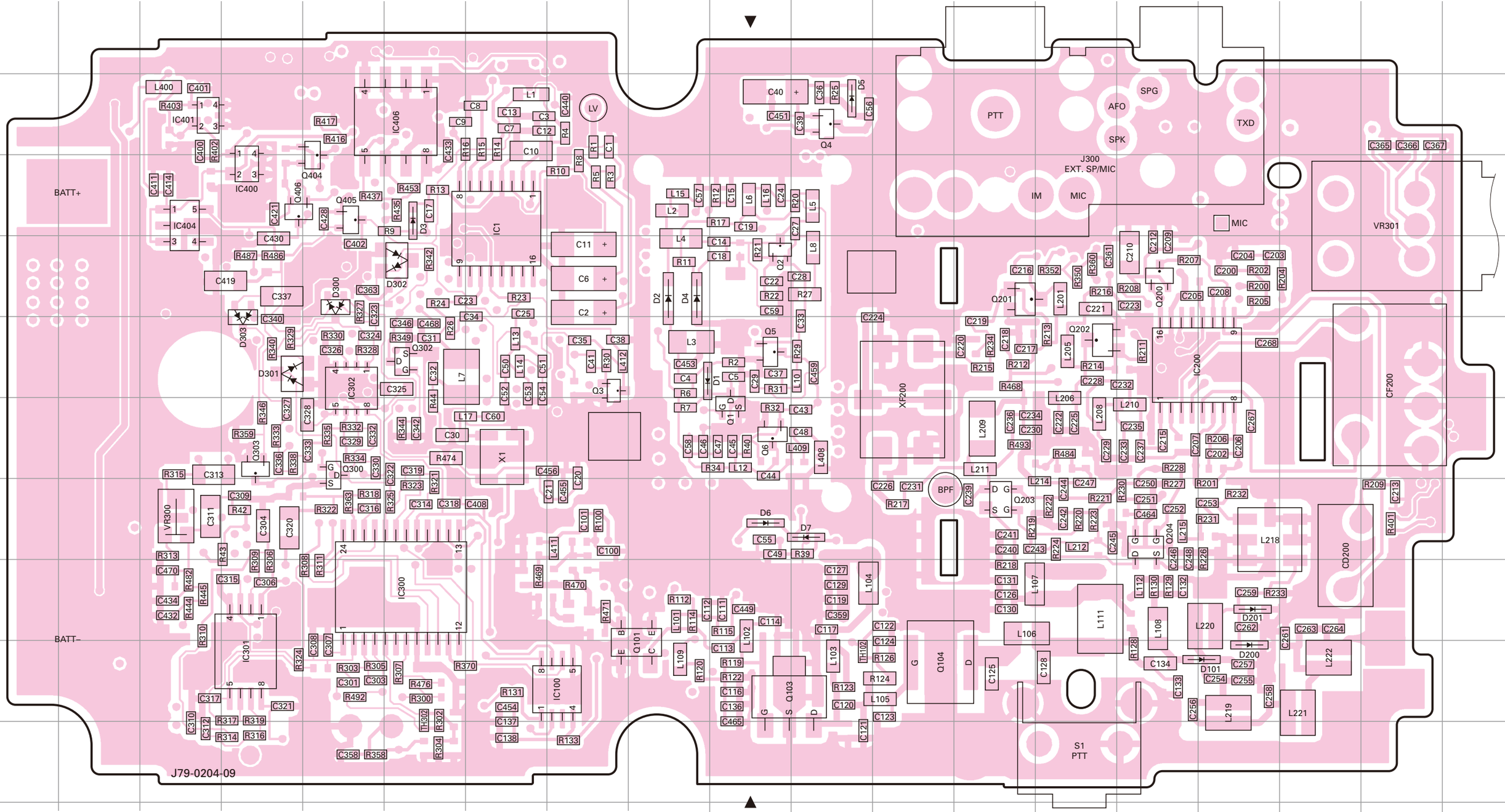
1 Ang Mo Kio Street 63, Singapore 569110

TK-3230 PC BOARD / PC板

PC BOARD / PC板 TK-3230

TX-RX UNIT (X57-7333-01) Component side view (J79-0204-09)

TX-RX UNIT (X57-7333-01) Component side view (J79-0204-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	4G	IC404	4C	Q101	10J	Q300	7E	D3	4F	D300	5E
IC100	10H	IC406	3F	Q103	10J	Q302	6F	D4	5I	D301	6D
IC200	6O	Q1	7J	Q104	10L	Q303	7D	D5	3K	D302	5F
IC300	9F	Q2	5J	Q200	5O	Q404	4E	D6	8J	D303	6D
IC301	10D	Q3	6H	Q201	5M	Q405	4E	D7	8K		
IC302	6E	Q4	3K	Q202	6N	Q406	4D	D101	10P		
IC400	4D	Q5	6J	Q203	8M	D1	6I	D200	10P		
IC401	3C	Q6	7J	Q204	8O	D2	5I	D201	9P		

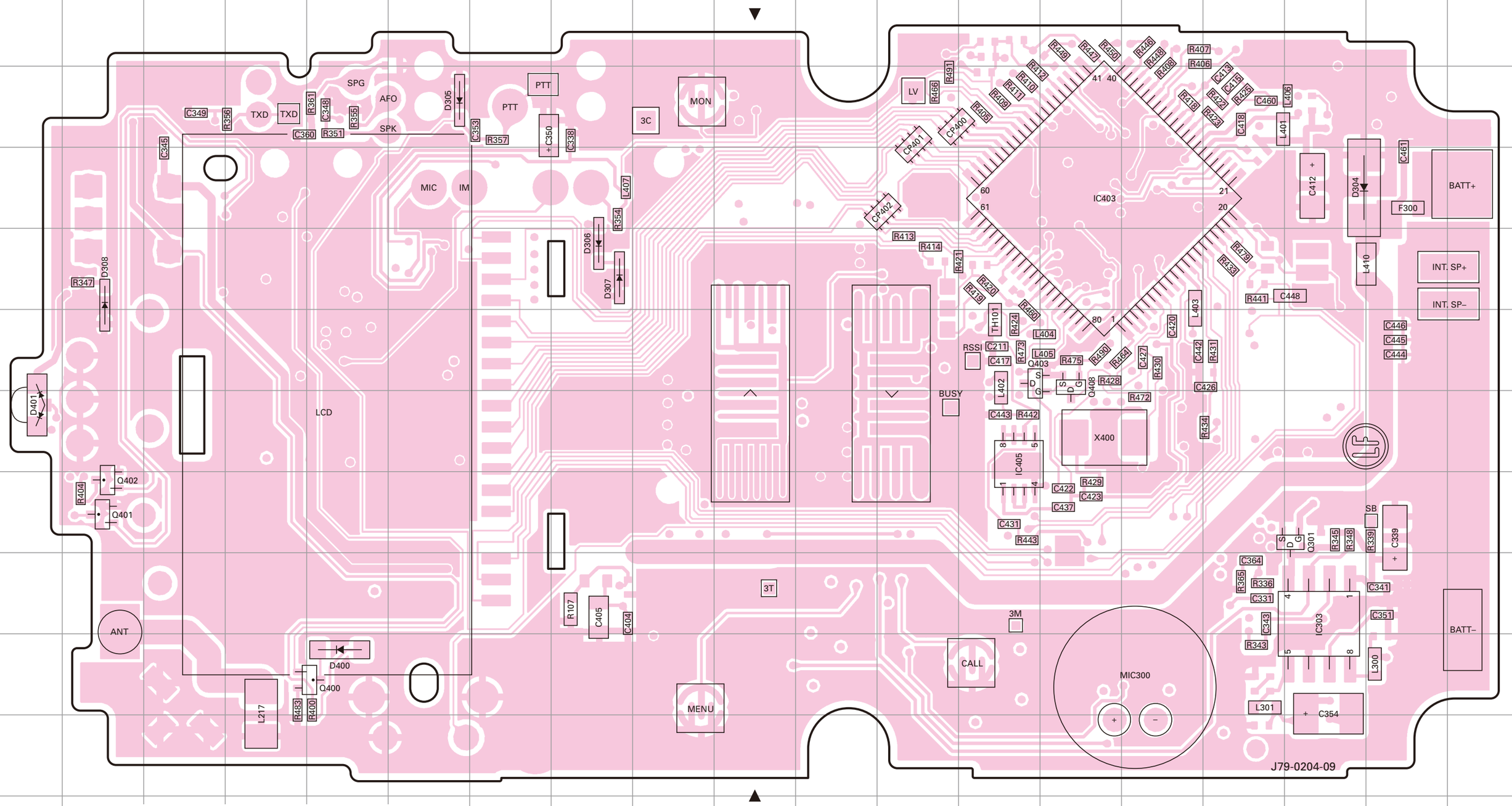
Component side
Layer 1
Layer 2
Layer 3
Layer 4
Foil side

TK-3230 PC BOARD / PC板

PC BOARD / PC板 TK-3230

TX-RX UNIT (X57-7333-01) Foil side view (J79-0204-09)

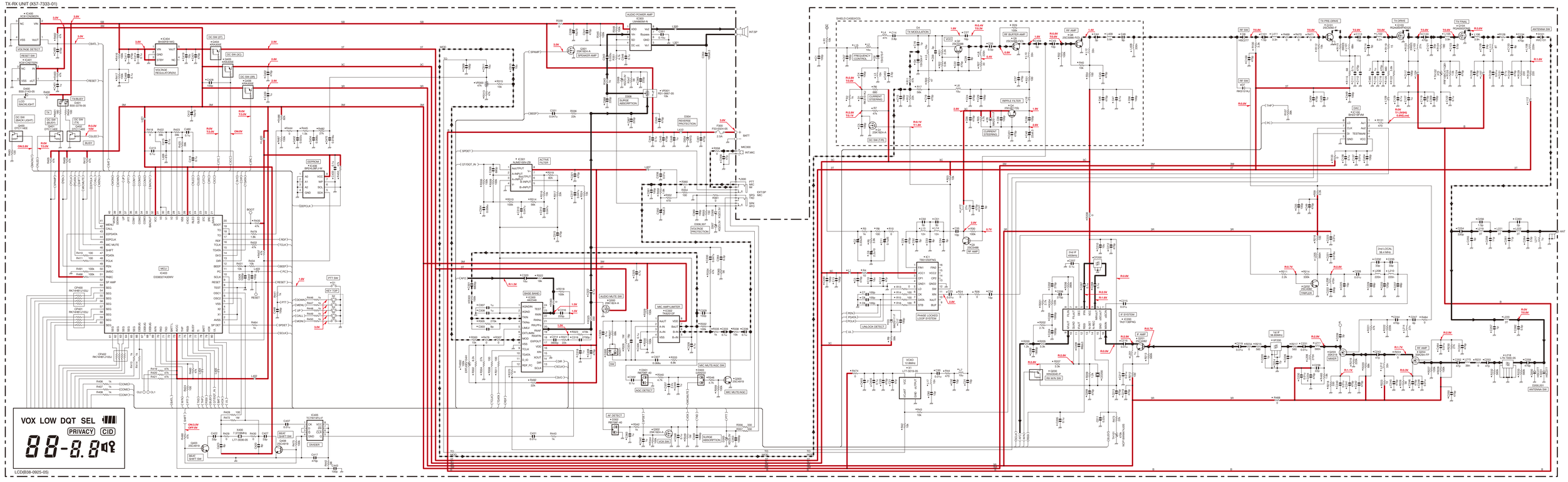
TX-RX UNIT (X57-7333-01) Foil side view (J79-0204-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC303	9Q	Q402	8B	D307	5H
IC403	4N	Q403	6M	D308	5B
IC405	7M	Q408	6N	D400	10E
Q301	8Q	D304	4Q	D401	7A
Q400	10E	D305	3F		
Q401	8B	D306	5H		

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

TX-RX UNIT (X57-7333-01)



TX-RX UNIT (X57-7333-01)

Battery
Fuse 2.5A
F300: F53-0324-05
Power switch
Protector
D304: GN1G
Voltage Regurator
IC404: BH30FB1WG
SB
3M
3CC
Switch
3C
Q405: KRA305E
3TC
Switch
3T
Q404: KRA305E
3RC
Switch
3R
Q406: KRA305E
Voltage Detector
RESET
IC401: XC61CN2802N
Voltage Detector
BATL
IC400: XC61CN2902N
SB
R416
BAT
R417
SB
LED
D400: B30-2143-05
BACKLT
Switch
Q400: DTC114EE
SB
LED
D401: B30-2278-05
GLED
Switch
Q401: DTC114EE
Switch
RLED
Q402: DTC114EE
RDF
RESET
SPDET
UL
VOX
BAT
QT/DQT_IN
BUSY
RSSI
THP
BATL
PTT
DI/O
EEPDATA
3M
LCD
SEG
COM1~COM3
MCU
IC403: D338327A30WV
SPAMP
PEN
PCLK
PDATA
MICMUTE
EEPCLK
BACKLT
GLED
RLED
3TC
3RC
3CC
SHIFT
TO
TCLK
TDATA
DIR
BEEP
PC
SCLK
TXD
W/N
CALL
PTT
MENU
UP
DOWN
MONI
CALL
PTT
MENU
UP
DOWN
MONI
7.37MHz
3M
SHIFT
Shift Switch
Q403: 2SC4919
Q408: 2SC4919
Crystal Oscillator
X400: L77-3036-05
Frequency Divider
XIN
IC405: TC7W74FU-F
Low Pass Filter
TO
C432,C434
R444,R445
Volume
VR300
MOD
Mod
D4: 1SV304-F
3C
Lipple Filter
Q4: 2SC4617(S)
D5: MA2S111-F
3C
UL
PDATA
PCLK
PEN
PLL IC
IC1: TB31202FNG
Loop Filter
C2,C6,C11
R3,R5,R8,R10
Frequency Control
D2: 1SV270-F
VCO
Q2: 2SC5488
Oscillator
Tx: 409~420MHz
Rx: 370.15~381.15MHz
Buffer Amp
Q5: 2SC5066-F(O)
3C
RF Amp
Q6: 2SC5066-F(O)
Tx: 409~420MHz
1st Local:
370.15~
381.15MHz
3M
PC
SCLK
DI/O
D/A Converter
IC100: BH2219FVM
VCONT
3T
Pre-drive Amp
Q101:
2SC5092-F
SB
Drive Amp
Q103:
RQA0004PXDQS
SB
Final Amp
Q104:
RQA0002DNS
3T
ANT Switch
D101: HVC131
D201: HSC277
Low Pass Filter
L219,L221,L222
C255,C258,C261,C264
Tx/Rx:
409~420MHz
ANT
T90-1079-05
VCONT
TCXO
12.8MHz
X1: L77-3019-05
Low Pass Filter
C50,C51,C52,C53,C54
L13,L14
3C
Shift Switch
D1: RKS151KJ
Q1: 2SK1824-A
3C
RF Amp
Q3: 2SC5488
3R
1st Mixer
Q203: 3SK318
Rx: 409~420MHz
3R
RF Amp
Q204: 3SK294
Band Pass Filter
L218: L79-1930-05
3R
Tripler
Q202: 2SC4082
2nd Local: 38.4MHz
3C
FM IF IC
IC200: TA31136FNG
3R
IF Amp
Q201: 2SC4082
1st IF: 38.85MHz
Monolithic Crystal Filter
XF200: L71-0586-05
Ceramic Filter
CF200: L72-0958-05
2nd IF:450kHz
RSSI
BUSY
3R
Discriminator
CD200: L79-1866-05
3R
Switch
W/N
Q200: KRA304E-P
BEEP
RXAF
Volume
VR301:
R31-0667-05
SB
AF Power Amp
IC303: LM4865M
Speaker
T07-0362-25
8 Ohm
Surge Protector
D306: KDZ3.3V
D307: KDZ3.3V
SPAMP
Switch
Q301: 2SK1824-A
SP/MIC Jack
J300:
E11-0703-05
TXD
PTT
SPDET
3M
AGND
3M
Mic Amp
IC302(1/2): TK62012F
MICMUTE
Mic AGC/Mute
Q303: 2SC4919
D303: DAN222
D301: RB706F-40
Mic
MIC300:
T91-0651-15
Base Band IC
IC300: AK2346
RXLPFO
RXAF
Amp
Volume
De-emphasis
Low Pass Filter
Volume
Amp
MOD
SMF
Volume
Splatter
Limiter
Scrambler/ De-Scrambler
High Pass Filter
Pre-emphasis
Volume
Amp
3M
RDF
DI/O
SCLK
XIN
DIR
TCLK
TDATA
AGNDIN
AGND
3M
EEPCLK
EEPDATA
EEPROM
IC406: BR24L01AFJ-W
AGND
3M
QT/DQT_IN
Low Pass Filter
RXLPFO
IC301: NJM2100V-ZB
VOX
SPDET
Mute Switch
Q302: 2SK1824-A
Detector
D302: RB706F-40
3M
VOX Amp
IC302(2/2): TK62012F
D300: DA221