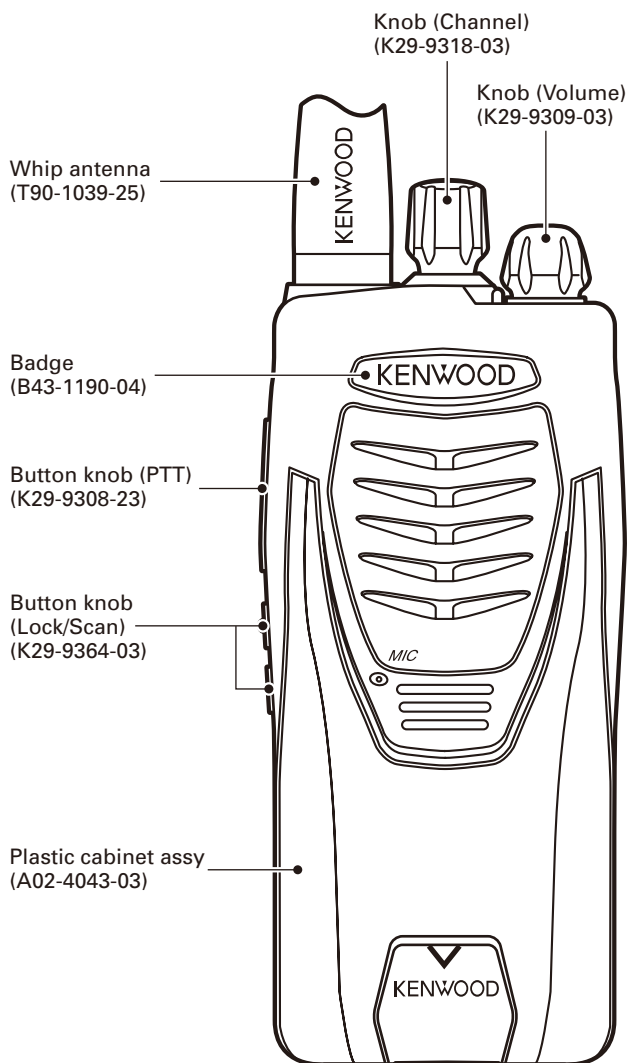


TK-361SA

SERVICE MANUAL

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GENERAL

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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.

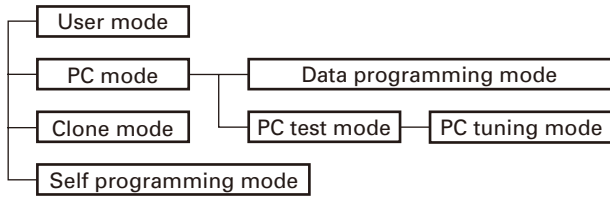
SERVICE

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

Destination	Number Of CH	Frequency No. / Frequency	Factory default CH setting	RF power output
M	8 channel	CH1 463.975MHz CH2 464.125MHz CH3 464.175MHz CH4 464.325MHz CH5 464.375MHz	CH1 463.975MHz / QT 94.8Hz CH2 464.125MHz / QT 88.5Hz CH3 464.175MHz / QT 103.5Hz CH4 464.325MHz / QT 79.7Hz CH5 464.375MHz / QT 107.2Hz CH6 OFF CH7 OFF CH8 OFF	2W

REALIGNMENT

1. Modes

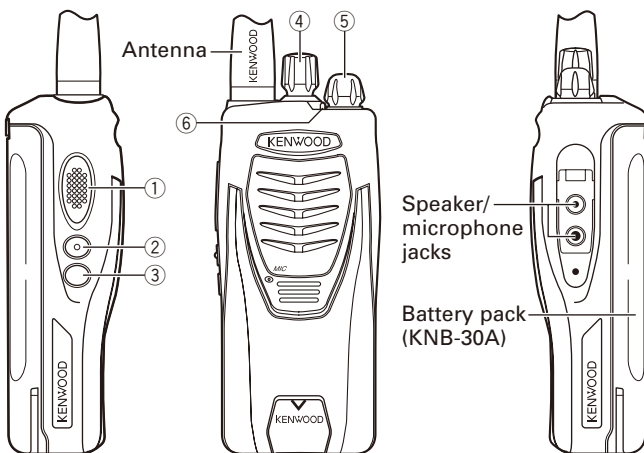


Mode	Function
User mode	For normal use.
PC mode	Used for communication between the transceiver and PC.
Data programming mode	Used to read and write frequency data and other features to and from the transceiver.
PC test mode	Used to check the transceiver using the PC. This feature is included in the KPG-88D(M2).
Clone mode	Used to transfer programming data from one transceiver to another.
Self programming mode	Used to program the transceiver without any external programming device.

2. How to Enter Each Mode

Mode	Operation
User mode	Power ON
PC mode	Received commands from PC
Clone mode	[PTT]+[Side2]+Power ON (Two seconds)
Self programming mode	[PTT]+[Side1]+Power ON (Two seconds)

3. Getting Acquainted



- ① PTT (Push to Talk) switch
Press and hold, then speak into the microphone to transmit.
- ② Side 1 key
Super lock (default).
- ③ Side 2 key
Scan + Temporary delete (default)
- ④ Channel selector
Rotate to change the operating channel.
- ⑤ Power switch/Volume control
Turn clockwise to switch the power ON and counter-clockwise to switch the power OFF. Rotate to adjust the volume.
- ⑥ LED indicator
Indicates the transceiver status. Lights red while transmitting, green while receiving, and flashes red when the battery power is low while transmitting.

4. PC Mode

4-1. Preface

The transceiver is programmed by using a personal computer, a programming interface (KPG-22/22A, USB adapter (KCT-53U)) and programming software (KPG-88D(M2)).

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

4-2. Connection Procedure

1. Connect the transceiver to the personal computer with the interface cable and USB adapter (when the interface cable is KPG-22A, the KCT-53U can be used.).

Notes:

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

2. When the POWER is switched on, user mode can be entered immediately. When the PC sends a command, the transceiver enters PC mode.

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

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

Notes :

- The data stored in the personal computer must match Model Name when it is written into EEPROM.
- Change the transceiver to PC mode, then attach the interface cable.

4-3. KPG-22/KPG-22A Description (PC programming interface cable : Option)

The KPG-22/22A is required to interface the transceiver with the computer. It has a circuit in its D-sub connector (KPG-22: 25-pin, KPG-22A: 9-pin) case that converts the RS-232C logic level to the TTL level.

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

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

The KCT-53U is a cable which connects the KPG-22A to a USB port on a computer.

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

REALIGNMENT

4-5. Programming Software Description

The KPG-88D(M2) is the programming software for the transceiver supplied on a CD-ROM. The software on this disk allows a user to program the transceiver radios via Programming interface cable (KPG-22/22A).

4-6. Programming with PC

If data is transferred to the transceiver from a PC with the KPG-88D(M2), the data for each set can be modified.

Data can be programmed into the EEPROM in RS-232C format via the SP/MIC jack.

In this mode the PTT line operate as TXD and RXD data lines respectively.

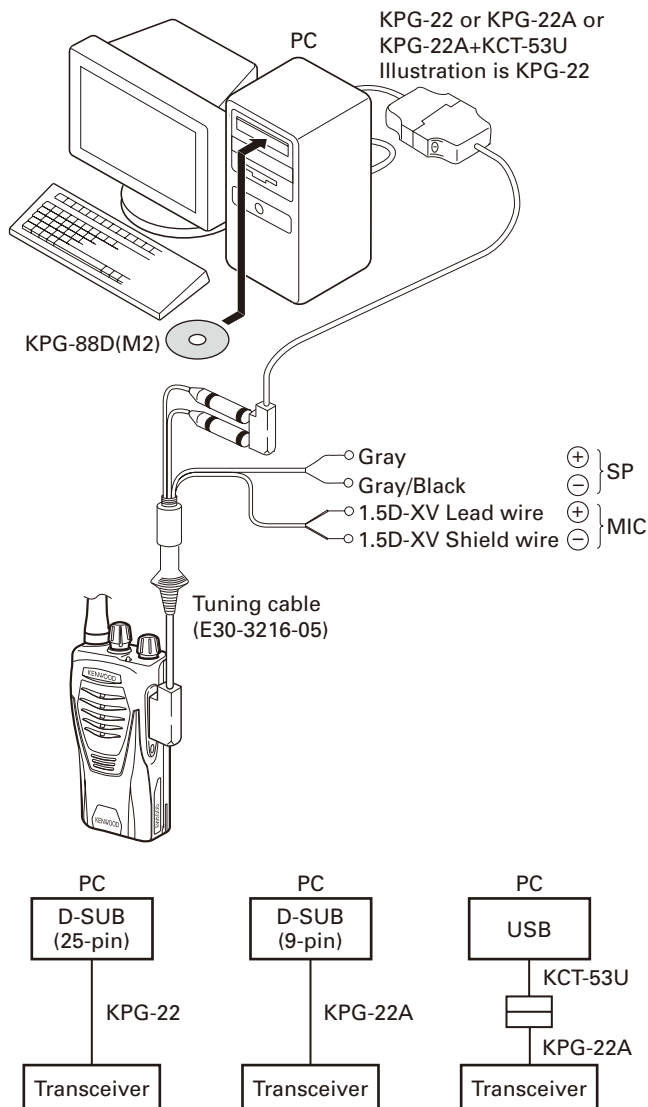


Fig. 1

5. Clone Mode

5-1. Outline

"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.

5-2. 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 Clone mode.

5-3. Operation

- To switch the clone target/s to Clone mode, press and hold the [PTT] and [Side2] keys while turning the transceiver power ON.
- Wait for 2 seconds. The LED will light orange and the transceiver will announce "Clone".
- Select a channel table number using Lock (increment channel table) and Scan(decrement channel table) keys.
- To switch the clone source to Clone mode, press and hold the [PTT] and [Side2] keys while turning the transceiver power ON.
- Wait for 2 seconds. The LED will light orange and the transceiver will announce "Clone".
- Select the same channel table number as the clone target/s.
- 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. If data transmission fails while cloning, an "error" tone will sound from the target unit.
- If the cloning fails, no data will be available in the target unit when it is returned to User mode.
- When the cloning is successful, the target unit's "Scan" function will return to their default values (Scan = OFF).

Notes:

- The dealer can clone data to two or more transceivers by repeating the above procedures.
- If the transceivers Clone Mode is configured as "Disabled", the transceiver cannot enter Clone mode.
- The table shown below will cover the frequency tables used for wireless cloning.
- Clone mode cannot be entered in battery low state.
- 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 successfully, it will return to User Mode.
- If the target unit is not cloned successfully, the led will remain Orange.

REALIGNMENT

- The source Unit and target Unit must be of the same model type and destination in order for Clone to operate.
- Clone mode cannot be accessed if "Super Lock" is activated.
- Electronic interface may cause a failure in data transfer during Wireless Clone, such as when waveforms or electromagnetics are being performed at the workbench.
- Clone mode can be used ONLY by the authorized service personnel.
- The Clone mode setting must be configured as "Disable" before being delivered to the end-user.
- To clone, replace the antenna from both the source transceiver and the target transceiver with a dummy load.
- The transmit output power is automatically set to Low in Clone mode.

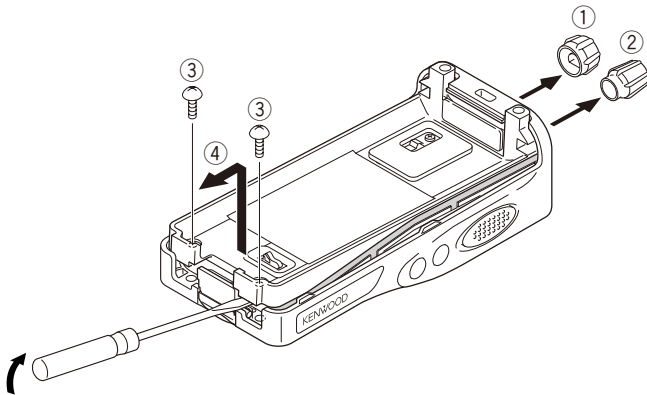
Clone Frequency Table

Table number	Frequency (MHz)
1	463.9750
2	464.1250
3	464.1750
4	464.3250
5	464.3750

DISASSEMBLY FOR REPAIR

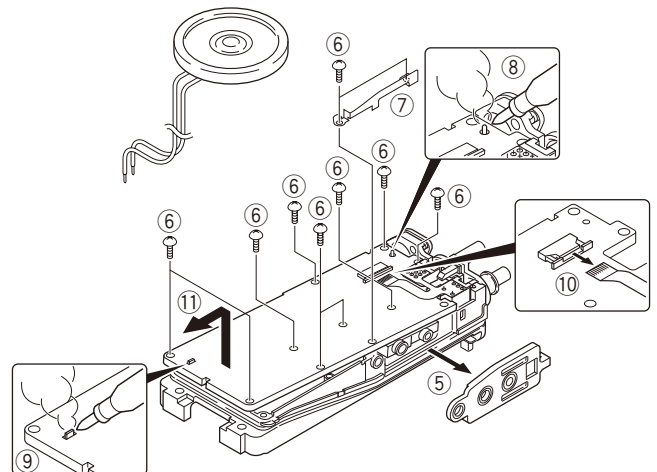
■ Removing the case assembly from the chassis

1. Remove the volume knob ① and channel knob ②.
2. Remove the two screws ③.
3. Lift and remove the chassis from the case assembly ④.
(Use a flat-blade screwdriver to easily lift the chassis.)



■ Removing the TX-RX unit from the chassis

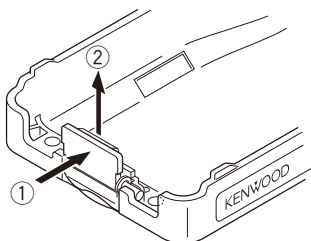
1. Remove the packing ⑤ from the SP/MIC jack of the TX-RX unit.
 2. Remove the eleven screws ⑥ fixing the TX-RX unit.
 3. Remove the fixing bracket ⑦ of the SP/MIC.
 4. Remove the solder of the antenna terminal with a soldering iron ⑧.
 5. Remove the solder of the positive terminal with a soldering iron ⑨.
- Note:** You can remove the TX-RX unit from the chassis without removing the solder at the positive terminal. However, in this case, you can not attach the packing (G53-1605-03) that is on the positive terminal to the chassis in assembling. So, it is advisable to remove the solder on the positive terminal first.
6. Remove the FPC from the flat cable connector ⑩.
 7. Lift and remove the TX-RX unit from the chassis ⑪.



DISASSEMBLY FOR REPAIR

■ Removing the battery release lever from the case assembly

1. Press the upper part of the lever toward the inside of the case assembly. One side of the shaft will be removed ①.
2. Lift and remove the battery release lever from the case assembly ②.



■ Attaching the battery release lever to the case assembly

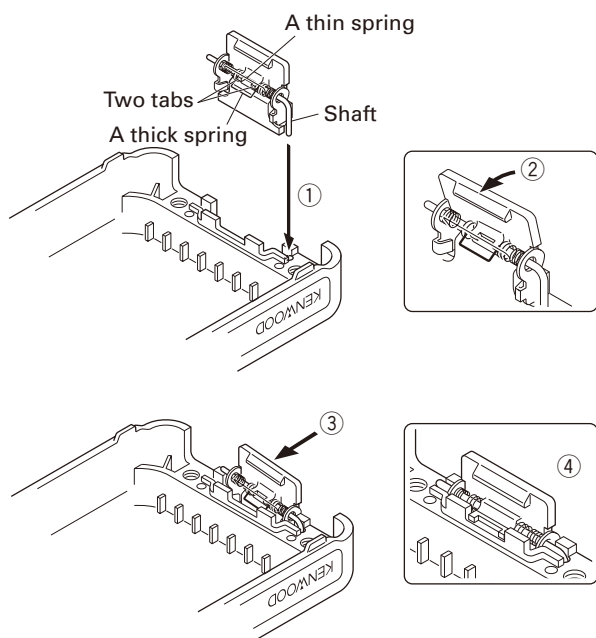
1. Insert one side of the shaft into the hole at the lever fitting section on the case assembly ①.

Caution: The thin spring (G01-4543-14) should be positioned above the two tabs of the lever.

2. Tilt the battery release lever slightly forward ②, so that the thick spring (G01-4542-04) is positioned below the case surface.
3. With the thick spring positioned below the case surface, attach the other side of the shaft to the case assembly by pressing the battery release lever ③ until it snaps into place ④.

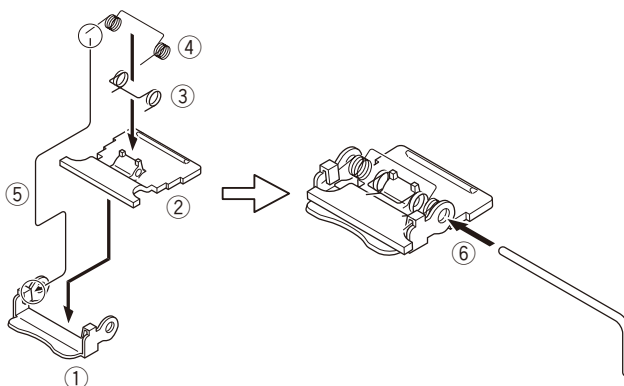
Caution: Be careful not to tilt the battery release lever too forward.

If the battery release lever is pushed in this state where the two tabs come below the case surface, there is a possibility of damaging the two tabs.



■ Assembling the battery release lever

1. Place the lever ② onto the stopper ①.
2. Place the thick spring ③ onto the lever.
3. Hook the right and left ends of the thin spring ④ onto the tabs of the stopper, then place the thin spring onto the lever ⑤.
4. Slide the shaft through the hole of the stopper and lever ⑥.

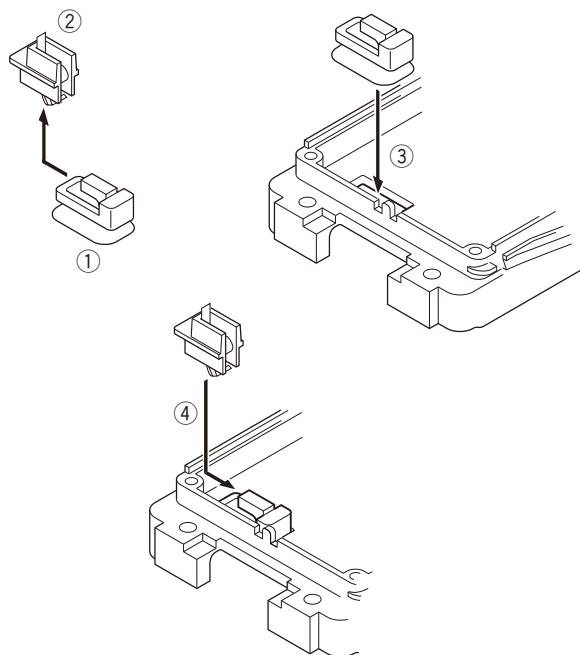


■ Cautions for assembly

1. Attaching the positive terminal to the chassis

Always attach the positive terminal to the chassis, using the following procedures, before mounting the TX-RX unit onto the chassis.

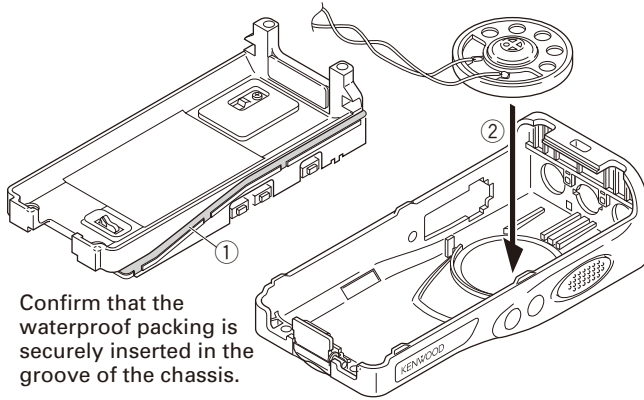
1. Remove the holder assembly ② from the packing ① of the positive terminal.
2. Mount the packing of the positive terminal into the chassis hole ③.
3. Mount the holder assembly into the packing of the positive terminal ④.



DISASSEMBLY FOR REPAIR

2. Mounting the chassis to the case assembly

1. Confirm that the waterproof packing attached to the circumference of the chassis is securely inserted in the groove of the chassis ①.
2. Attach the speaker to the speaker recess of the case assembly ②. Make sure the speaker is securely inserted.



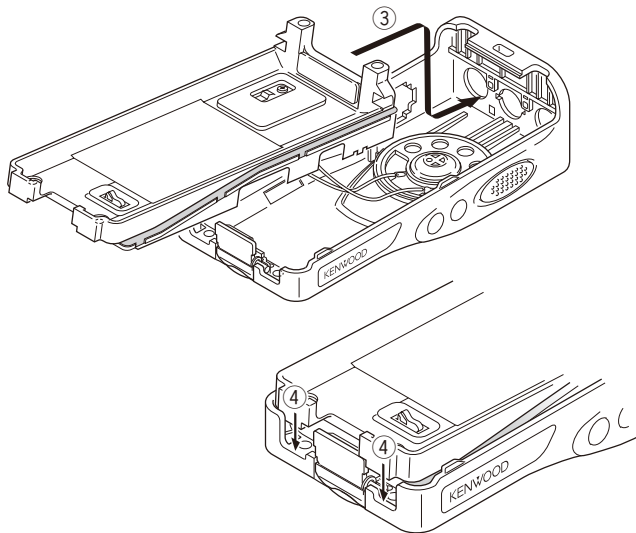
Confirm that the waterproof packing is securely inserted in the groove of the chassis.

3. Insert the upper part of the chassis into the case assembly ③.

Caution: Take care that the speaker lead wire is not caught by the microphone element.

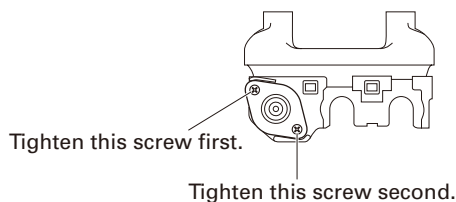
4. Press the chassis ④ and the case assembly together to attach them.

Caution: If the packing of the SP/MIC does not come to the correct position after attaching the chassis to the case assembly, reposition the packing with your fingers.



3. Attaching the antenna receptacle to the chassis

Screw the antenna receptacle to the chassis in the order shown in the drawing so that the antenna receptacle comes to the center of the case hole.

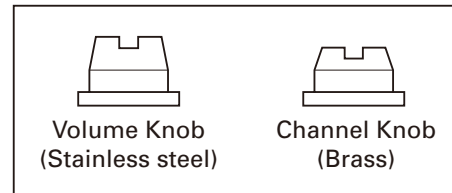


4. The nuts of the volume knob and channel knob

Note that the shapes, colors and heights of nuts of the volume knob and channel knob are different from one another. (The nut of volume knob is stainless steel, and the nut of channel knob is brass)

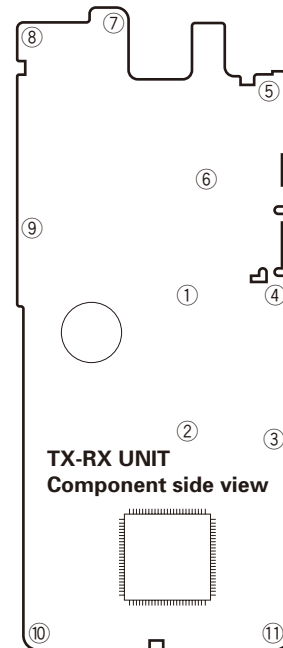
Use the following jig when removing the nuts of the volume knob and channel knob.

- Jig (Part No. : W05-1012-00)



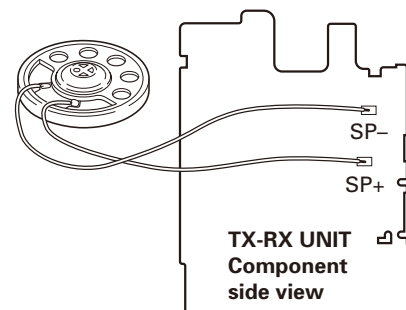
5. Screw sequence for mounting the TX-RX unit to the chassis

Attach the TX-RX unit to the chassis using the screws in the order shown in the drawing below.



6. Connecting the speaker wires to the TX-RX unit

Note: To connect the speaker wires, you must solder it to the location of the TX-RX unit as illustrated below.



CIRCUIT DESCRIPTION

1. Frequency Configuration

The receiver utilizes double conversion. The first IF is 38.85MHz and the second IF is 450kHz. The first local oscillator signal is supplied from the PLL circuit.

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

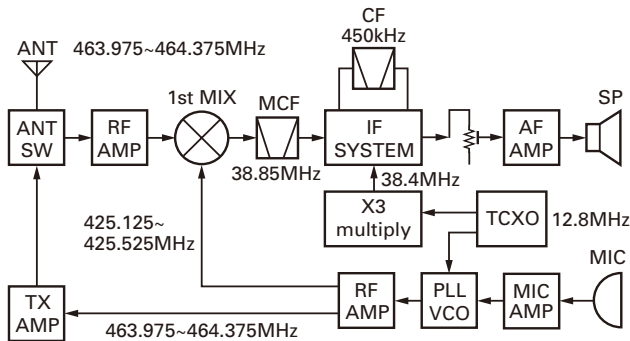


Fig. 1 Frequency configuration

2. Receiver

The frequency configuration of the receiver is shown in Fig. 2.

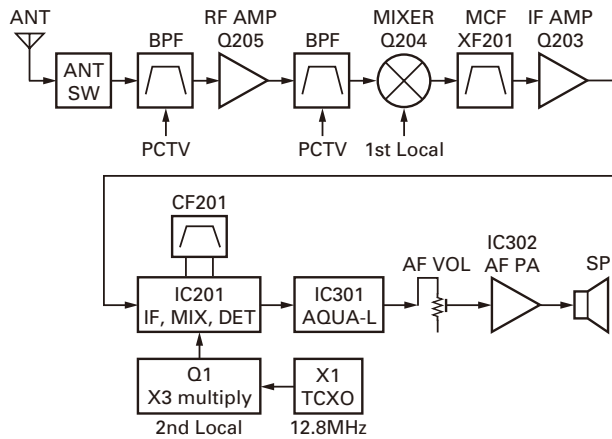


Fig. 2 Receiver section

■ Front End (RF AMP)

The signal coming from the antenna passes through the transmit/receive switching diode circuit, (D103, D104, D106 and D122) passes through a BPF (L229 and L228), and is amplified by the RF amplifier (Q205).

The resulting signal passes through a BPF (L214, L212 and L211) and goes to the mixer (Q204). These BPFs are adjusted by variable capacitors (D203, D204, D205, D206 and D210). The input voltage to the variable capacitor is regulated by voltage output from the micro control unit (MCU) (IC405).

■ First Mixer

The signal from the front end is mixed with the first local oscillator signal generated in the PLL circuit by Q3 to produce a first IF frequency of 38.85MHz.

The resulting signal passes through the XF201 MCF to cut the adjacent spurious and provide the optimum characteristics, such as adjacent frequency selectivity.

■ IF Amplifier Circuit

The first IF signal is passed through a four-pole monolithic crystal filter (XF201) to remove the adjacent channel signal.

The filtered first IF signal is amplified by the first IF amplifier (Q203) and then applied to the IF system IC (IC201). 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 38.4MHz of the second local oscillator output (Q1) and produces the second IF signal of 450kHz.

The second IF signal is passed through the ceramic filter (CF201) to remove the adjacent channel signal. The filtered second IF signal is amplified by the limiting amplifier and demodulated by the quadrature detector with the ceramic discriminator (CD201). The demodulated signal is routed to the audio circuit.

■ Audio Amplifier Circuit

The demodulated signal from IC201 goes to AF amplifier through IC301.

The signal then goes through an AF volume control, and is routed to an audio power amplifier (IC302) where it is amplified and output to the speaker.

■ Squelch

Part of the AF signal from the IC enters the FM IC (IC201) again, and the noise component is amplified and rectified by a filter and an amplifier to produce a DC voltage corresponding to the noise level.

The DC signal from the FM IC goes to the analog port of the MCU (IC405). IC405 determines whether to output sounds from the speaker by checking whether the input voltage is higher or lower than the preset value.

To output sounds from the speaker, IC405 sends a high signal to the SP MUTE line and turns IC302 on through Q303, Q304, Q305, Q306 and Q316. (See Fig. 3)

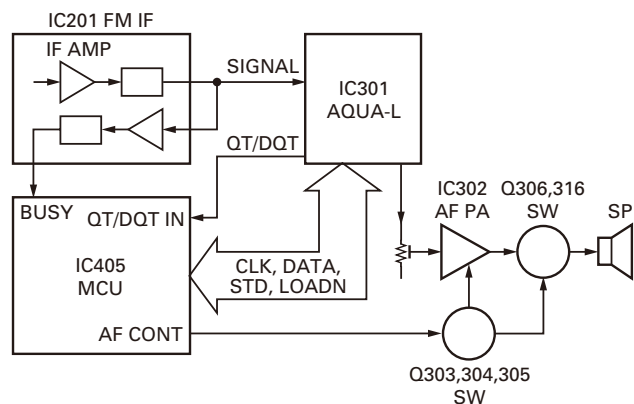


Fig. 3 AF amplifier and squelch

CIRCUIT DESCRIPTION

Receive Signaling

• QT/DQT

The output signal from FM IC (IC201) enters the MCU (IC405) through IC301. IC405 determines whether the QT or DQT matches the preset value, and controls the SP MUTE and the speaker output sounds according to the squelch results.

3. PLL Frequency Synthesizer

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

■ PLL

The frequency step of the PLL circuit is 5 or 6.25kHz.

A 12.8MHz reference oscillator signal is divided at IC1 by a fixed counter to produce oscillator (VCO) output signal which is buffer amplified by Q2 then divided in IC1 by a programmable counter. The divided signal is compared in phase with the 5 or 6.25kHz reference signal from the phase comparator in IC1. The output signal from the phase comparator is filtered through a low-pass filter and passed to the VCO to control the oscillator frequency. (See Fig. 4)

■ VCO

The operating frequency is generated by Q4 in transmit mode and Q3 in receive mode. The oscillator frequency is controlled by applying the VCO control voltage, obtained from the phase comparator, to the varactor diodes (D2, D4, D6 and D7 in transmit mode and D3, D5, D8 and D9 in receive mode). The RX pin is set high in receive mode causing Q5 turn on.

The TX pin is set high in transmit mode. The outputs from Q3 and Q4 are amplified by Q6 and sent to the RF amplifiers.

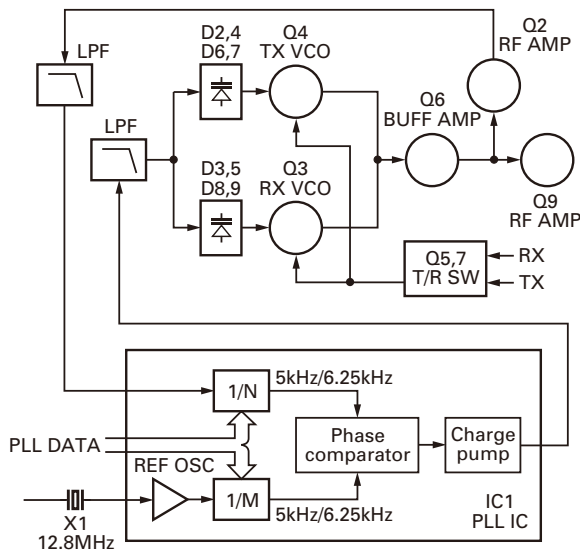


Fig. 4 PLL circuit

■ Unlock Detector

If a pulse signal appears at the LD pin of IC1, an unlock condition occurs, and the DC voltage obtained from C4, R5, and D1 causes the voltage applied to the MCU (IC405) to go low. When the MCU detects this condition, the transmitter is disabled, ignoring the push-to-talk switch input signal.

4. Transmitter System

■ Microphone Amplifier

The signal from the microphone passes through IC301.

The signal passes through the Audio processor (IC301) for the maximum deviation adjustment, and goes to the VCO modulation input.

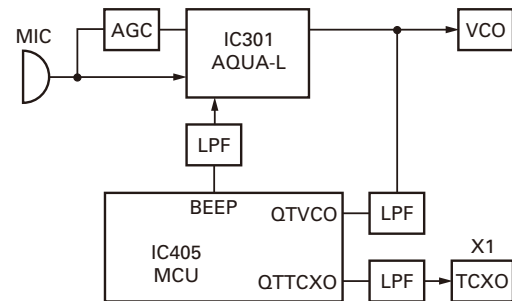


Fig. 5 Microphone amplifier

■ Drive and Final Amplifier

The signal from the T/R switch (D101) is amplified by the pre-drive (Q101) to 50mW.

The output of the drive amplifier is amplified by the RF power amplifier (Q102 and Q103) to 2W (1W when the power is low). The RF power amplifier consists of two MOS FET stages. The output of the RF power amplifier is then passed through the harmonic filter (LPF) and antenna switch (D103 and D122) and applied to the antenna terminal.

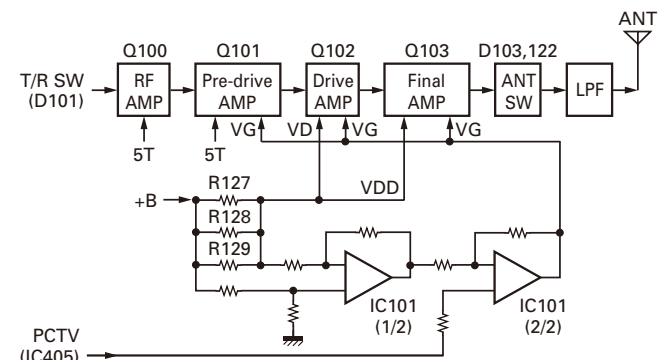


Fig. 6 Drive and final amplifier and APC circuit

■ APC Circuit

The APC circuit always monitors the current flowing through the RF power amplifier (Q102 and Q103) and keeps a constant current. The voltage drop at R127, R128 and R129 is caused by the current flowing through the RF power amplifier and this voltage is applied to the differential amplifier IC101 (1/2).

CIRCUIT DESCRIPTION

IC101 (2/2) compares the output voltage of IC101 (1/2) with the reference voltage from MCU (IC405). The output of IC101 (2/2) controls the VG of the RF power amplifier, Drive amplifier and Pre-Drive amplifier to make both voltages the same.

The change of power high/low is carried out by the change of the reference voltage.

■ Encode Signaling

• QT/DQT

QT,DQT data of the QTTCXO Line is output from pin 28 of the MCU (IC405). The signal passes through a low-pass CR filter and goes to the TCXO (X1).

The QT,DQT data of the QTVCO Line is output from pin 24 of the MCU. The signal passes through a low pass CR filter, mixes with the audio signal, and goes to the VCO modulation input. TX deviation is adjusted by the MCU.

5. Power Supply

There are four 5V power supplies 5M, 5C, 5R, and 5T. 5M for MCU (IC405) is always output while the power is on.

5M is always output, but turns off when the power is turned off to prevent malfunction of the MCU.

5C is a common 5V and is output when SAVE is not set to OFF.

5R is 5V for reception and output during reception.

5T is 5V for transmission and output during transmission.

6. Control Circuit

The control circuit consists of a MCU (IC405) and its peripheral circuits. It controls the TX-RX unit. IC405 mainly performs the following:

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

■ Frequency Shift Circuit

The MCU (IC405) operates at a clock of 7.3728MHz. This oscillator has a circuit that shifts the frequency by BEAT SHIFT SW (Q407, Q408).

A beat sound may be able to be evaded from generation if "Beat Shift" is set to ON when it is generated in the internal spurious transmission modulated sound of a transceiver.

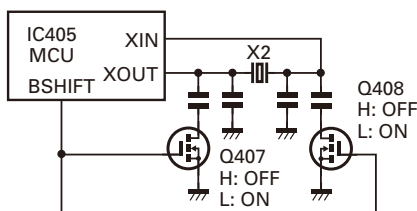


Fig. 7 Frequency shift circuit

■ Memory Circuit

Memory circuit consists of the MCU (IC405) and an EEPROM (IC406). An EEPROM has a capacity of 64k bits that contains the transceiver control program for the MCU and data such as transceiver channels and operating features.

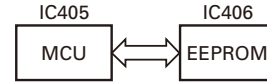


Fig. 8 Memory circuit

■ Low Battery Warning

The battery voltage is checked by the MCU (IC405).

The transceiver generates a warning tone when it falls below the warning voltage shown in the table.

- (1) The red LED blinks when the battery voltage falls below the voltage (1) shown in the table during transmission.

Note:

The transceiver checks the battery voltage during reception even when, in the FPU, the Battery Warning status function is set to "On TX" (default setting).

However, the LED does not blink during reception. During transmission, the LED blinks to generate the warning tone of a low battery voltage.

- (2) The transceiver immediately stops transmission when the battery voltage falls below the voltage (2) shown in the table. A message tone beeps while the PTT switch is released.

	Ni-Cd Battery
(1)	6.2V
(2)	5.9V

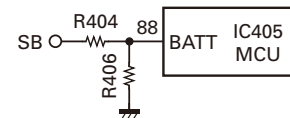


Fig. 9 Low battery warning

7. Control System

Keys and channel selector circuit.

The signal from keys and channel selector input to MCU (IC405) directly as shown in fig. 10.

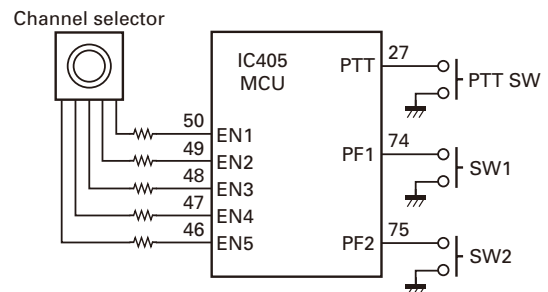


Fig. 10 Control system

SEMICONDUCTOR DATA

Micro Control Unit: 30622MAP490GU (TX-RX unit IC405)

Pin No.	Pin Name	I/O	Function
1	PCTV	O	APC/BPF control data output
2	BEEP	O	BEEP Output
3	NC	-	NC
4	EEPDAT	I/O	EEPROM data input/output
5	EEPCLK	O	EEPROM clock output
6	BYTE	-	GND
7	GND	-	GND
8	BSHIFT	O	Beat shift switch
9	NC	-	NC
10	RESET	I	CPU reset
11	XOUT	O	CPU clock (7.3728MHz)
12	VSS	-	GND
13	XIN	I	CPU clock (7.3728MHz)
14,15	VCC	-	+5V
16	INT	I	Battery voltage monitor input
17	TCLK/DTRDO	I	Base band IC data input
18	RDF/FD	I	Base band IC data input
19	SCLK	O	Base band IC clock output
20	D I/O	I/O	Base band IC data input/output
21	TDATA/DTRCLK	O	Base band IC data output
22	DIR	O	Base band IC data output
23	STD	I	Base band IC data input
24	QT VCO	O	QT/DQT output
25	DTRLOADN	O	Base band IC data output
26	1/2 OSC	O	3.6864MHz (7.3728MHz/2)
27	PTT	I	PTT switch input
28	QT TCXO	O	QT/DQT output
29	TXD	O	Serial data (FPU/FLASH)
30	RXD	I	Serial data (FPU/FLASH)
31	GND	-	GND
32	APCSW	O	APC switch
33,34	NC	-	NC
35	DCSW	O	APC voltage discharge switch
36	-	-	Not used
37	RX_SW	O	RX VCO switch
38	TX_SW	O	TX VCO switch
39	GND	-	GND
40	PLL_UL	I	PLL unlock detect input
41	PLL_STB	O	PLL strobe output
42	PLL_DAT	O	PLL data output
43	PLL_CLK	O	PLL clock output

Pin No.	Pin Name	I/O	Function
44	VCC	-	+5V
45	-	-	Not used
46	EN5	I	Channel selectable input
47	EN4	I	Channel selectable input
48	EN3	I	Channel selectable input
49	EN2	I	Channel selectable input
50	EN1	I	Channel selectable input
51	OPTDET	I	Headset input detect
52	AF_CONT	O	Speaker mute
53	Calling Alert SW	O	Calling alert switch
54	-	-	Not used
55~59	NC	-	NC
60	VCC	-	+5V
61	NC	-	NC
62	VSS	-	GND
63,64	GND	-	GND
65~71	NC	-	NC
72	LEDTX	O	Red LED lights control output
73	LEDRX	O	Green LED lights control output
74	PF1	I	Lock key input
75	PF2	I	Scan key input
76	SIM1	-	GND
77	SIM2	-	GND
78,79	NC	-	NC
80	5T_C	O	5T control output
81	5R_C	O	5R control output
82	5C_C	O	5C control output
83~87	NC	-	NC
88	BATT	I	Battery voltage input
89	RSSI	I	Received Signal Strength Indicator input
90	BUSY	I	Busy level input
91	VOX	I	VOX level input
92	QT/DQT_IN	I	QT/DQT input
93	TH_DET	I	Thermistor input
94	AVSS	-	GND
95	NC	-	NC
96	VREF	-	+5V
97	AVCC	-	+5V
98	NC	-	NC
99	MIC_Mute	O	MIC mute
100	NC	-	NC

COMPONENTS DESCRIPTION

TX-RX Unit (X57-6900-21)

Ref. No.	Part Name	Description
IC1	IC	PLL system
IC101	IC	Comparator (APC)
IC201	IC	FM IF system
IC301	IC	Audio processor
IC302	IC	AF AMP
IC401,402	IC	Voltage Regulator/ 5V
IC403	IC	Voltage detector/ Reset
IC404	IC	Voltage detector/ Int
IC405	IC	Micro control unit
IC406	IC	EEPROM
Q1	Transistor	Tripler
Q2	Transistor	PLL IC f_in AMP
Q3	FET	VCO/ RX
Q4	FET	VCO/ TX
Q5	Transistor	DC switch/ TX VCO
Q6	Transistor	RF Buffer AMP
Q7	Transistor	DC switch/ RX VCO
Q8	Transistor	Ripple filter
Q9,100	Transistor	RF AMP
Q101	FET	Pre-drive AMP
Q102	FET	TX Drive AMP
Q103	FET	TX Final AMP
Q104	Transistor	APC switch
Q105	FET	APC switch
Q107	Transistor	APC switch
Q108	FET	APC switch
Q109	Transistor	APC switch
Q203	Transistor	IF AMP
Q204	FET	Mixer
Q205	FET	RF AMP
Q301	Transistor	TX DEV adjustment
Q302	Transistor	MIC AGC
Q303	Transistor	DC switch/ SP Mute
Q304	Transistor	DC switch

Ref. No.	Part Name	Description
Q305	Transistor	DC switch/ SP Mute
Q306	FET	SP Mute switch
Q316	FET	SP Mute switch
Q317,318	FET	Audio switch
Q401	Transistor	LED switch/ Red
Q402	Transistor	LED switch/ Green
Q403	FET	5T switch
Q404	FET	5R switch
Q405	Transistor	5C switch
Q407,408	FET	Beat Shift switch
D1	Diode	Rectification
D2	Variable Capacitance Diode	Frequency control/ TX VCO
D3	Variable Capacitance Diode	Frequency control/ RX VCO
D4	Variable Capacitance Diode	Frequency control/ TX VCO
D5	Variable Capacitance Diode	Frequency control/ RX VCO
D6,7	Variable Capacitance Diode	Frequency control/ TX VCO
D8,9	Variable Capacitance Diode	Frequency control/ RX VCO
D10	Variable Capacitance Diode	Modulator
D11	Diode	Current steering
D101	Diode	TX/RX RF switch
D102	Zener Diode	APC protect
D103,104	Diode	ANT switch
D106	Diode	ANT switch
D122	Diode	ANT switch
D202	Diode	TX/RX RF switch
D203~206	Variable Capacitance Diode	RF BPF tuning
D210	Variable Capacitance Diode	RF BPF tuning
D301,302	Diode	Detector
D303	Diode	Isolation
D401	Diode	Reverse current protection
D402	Diode	Reverse Protection
D403	LED	LED/ Red
D404	LED	LED/ Green
D405	Zener Diode	Limiter

TERMINAL FUNCTION

CN401

Pin No.	Name	I/O	Function
1	B	I	B (Battery Voltage)
2	SB	O	Switched B
3	SP1	I	Audio input
4	SP2	O	Audio output
5	GND	-	GND

Pin No.	Name	I/O	Function
6	EN1	I	Channel selector pulse input
7	EN2	I	Channel selector pulse input
8	GND	-	GND
9	EN3	I	Channel selector pulse input
10	EN4	I	Channel selector pulse input
11	EN5	I	Channel selector pulse input

PARTS LIST

* New Parts. Δ indicates safety critical components.

Parts without **Parts No.** are not supplied.

Les articles non mentionnés dans le **Parts No.** ne sont pas fournis.

Teile ohne **Parts No.** werden nicht geliefert.

L : Scandinavia

Y : PX (Far East, Hawaii)

Y : AAFES (Europe)

K : USA

T : England

X : Australia

P : Canada

E : Europe

M : Other Areas

TK-361SA (Y50-5920-21)

TX-RX UNIT (X57-6900-21)

Ref. No.	Address	New parts	Parts No.	Description	Destination
TK-361SA					
1	1A		A02-3944-13	PLASTIC CABINET (CABINET ASSY)	
2	1A	*	A02-4043-03	PLASTIC CABINET ASSY (8CH)	
3	3A		A10-4094-43	CHASSIS	
4	1B		A21-1645-23	DRESSING PANEL (CABINET ASSY)	
6	1C		B09-0680-03	CAP (SP/MIC) ACCESSORY	
7	2B		B11-1817-04	ILLUMINATION GUIDE	
8	1B		B43-1190-04	BADGE (CABINET ASSY)	
9	1C	*	B62-2096-00	INSTRUCTION MANUAL	
11	1A		D10-0649-03	LEVER (CABINET ASSY)	
12	1A		D21-0863-04	SHAFT (CABINET ASSY)	
13	1A		D32-0441-13	STOPPER (CABINET ASSY)	
15	2A		E04-0465-05	RF COAXIAL RECEPTACLE (SMA)	
16	3B		E23-1253-04	TERMINA L(BATT-)	
17	2B		E37-1175-05	PROCESSED LEAD WIRE (SP+)	
18	2B		E37-1176-05	PROCESSED LEAD WIRE (SP-)	
20	3A		F20-3353-14	INSULATING SHEET (CHASSIS BATT+)	
22	2A		G01-4542-04	COIL SPRING (CABINET ASSY)	
23	1A		G01-4543-14	COIL SPRING (CABINET ASSY)	
24	2B		G10-1330-04	FIBROUS SHEET (AUDIO IC)	
25	2A		G11-4283-04	RUBBER SHEET (FINAL FET)	
26	2A		G11-4313-04	SHEET (MIC ELEMENT)	
27	3A		G13-2033-04	CUSHION (BATT-)	
28	3B		G13-2034-14	CUSHION (BATT-)	
29	3A		G13-2038-24	CUSHION (CHASSIS-CERAMIC FILTER)	
30	2A		G13-2039-14	CUSHION (PCB-CERAMIC FILTER)	
31	3B		G13-2045-04	CUSHION (CHASSIS)	
32	2B		G13-2076-04	CUSHION (SPEAKER)	
33	2B		G13-2088-04	CUSHION (CHASSIS,VR,CH)	
34	3A		G53-1604-03	PACKING (CHASSIS)	
35	3A		G53-1605-03	PACKING (BATT+)	
36	2B		G53-1606-13	PACKING (VOL/CH/LED)	
37	1B		G53-1607-03	PACKING (SP/MIC)	
38	2B		G53-1608-03	PACKING (SPEAKER)	
39	2A		G53-1609-14	PACKING (MIC ELEMENT)	
40	2B		G53-1610-04	PACKING (SMA)	
42	2C		H12-3179-05	PACKING FIXTURE	
43	3D	*	H52-2246-02	ITEM CARTON CASE	
45	1C		J19-5472-03	HOLDER (SP/MIC) ACCESSORY	
46	2A		J19-5473-03	HOLDER ASSY (BATT+)	
47	2B		J21-8478-04	MOUNTING HARDWARE	
48	2B		J21-8525-03	MOUNTING HARDWARE	
49	2C		J29-0734-05	BELT HOOK ACCESSORY	
50	2B		J82-0092-05	FPC	
52	1A		K29-9308-23	BUTTON KNOB (CABINET ASSY)	
53	1B		K29-9309-03	KNOB (VOLUME)	
54	1B		K29-9318-03	KNOB (CHANNEL)	
55	1A		K29-9364-03	BUTTON KNOB (CABINET ASSY)	
A	2B		N14-0819-04	CIRCULAR NUT (VOLUME)	
B	2B		N14-0832-04	CIRCULAR NUT (CHANNEL)	
C	2A,2B		N30-2604-48	PAN HEAD MACHINE SCREW (SMA)	
D	3A		N30-2606-48	PAN HEAD MACHINE SCREW (CHASSIS)	

Ref. No.	Address	New parts	Parts No.	Description	Destination
E	2A,2B		N83-2005-48	PAN HEAD TAPTITE SCREW (PCB)	
57	1C		N99-2046-05	SCREW SET ACCESSORY	
59	2B		R31-0661-05	VARIABLE RESISTOR	
61	2B		S60-0435-05	ROTARY SWITCH	
63	1B		T07-0760-25	SPEAKER	
64	1C		T90-1039-25	WHIP ANTENNA ACCESSORY	
66	2D	*	W08-0969-35	CHARGER ACCESSORY	
67	1D		W08-0971-35	AC ADAPTER ACCESSORY	
68	2D	*	W09-1001-15	BATTERY ASSY ACCESSORY	
TX-RX UNIT (X57-6900-21)					
D403			B30-2156-05	LED (RED)	
D404			B30-2157-05	LED (YELLOW)	
C1			CK73HB1H332K	CHIP C 3300PF	K
C2			CK73HB1C682K	CHIP C 6800PF	K
C3			CK73GB1A105K	CHIP C 1.0UF	K
C4			CK73HB1C103K	CHIP C 0.010UF	K
C5			CK73HB1H102K	CHIP C 1000PF	K
C6			CK73HB1A104K	CHIP C 0.10UF	K
C7,8			CC73HCH1H101J	CHIP C 100PF	J
C9			CC73HCH1H100C	CHIP C 10PF	C
C10			CS77CP0J100M	CHIP TNTL 10UF	6.3WV
C11			CC73HCH1H101J	CHIP C 100PF	J
C12			CK73HB1H102K	CHIP C 1000PF	K
C13			CK73HB1A104K	CHIP C 0.10UF	K
C14			CK73HB1C103K	CHIP C 0.010UF	K
C15			CC73HCH1H100C	CHIP C 10PF	C
C16			CK73HB1H102K	CHIP C 1000PF	K
C17			CC73HCH1H470J	CHIP C 47PF	J
C18			CC73HCH1H180J	CHIP C 18PF	J
C19			CK73HB1A104K	CHIP C 0.10UF	K
C21			CS77CP0J100M	CHIP TNTL 10UF	6.3WV
C22			CS77AA1VR33M	CHIP TNTL 0.33UF	35WV
C24			CK73HB1H102K	CHIP C 1000PF	K
C25			CC73HCH1H020B	CHIP C 2.0PF	B
C26			CC73HCH1H300J	CHIP C 30PF	J
C27			CS77CA1C3R3M	CHIP TNTL 3.3UF	16WV
C29,30			CK73HB1H471K	CHIP C 470PF	K
C32			CS77CA1V0R1M	CHIP TNTL 0.1UF	35WV
C33,34			CK73HB1H102K	CHIP C 1000PF	K
C35			CC73HCH1H270J	CHIP C 27PF	J
C38			CC73HCH1H050B	CHIP C 5.0PF	B
C39			CK73GB1H332K	CHIP C 3300PF	K
C40			CC73HCH1H030B	CHIP C 3.0PF	B
C41			CK73GB1H682K	CHIP C 6800PF	K
C42			CC73HCH1H050B	CHIP C 5.0PF	B
C43			CC73HCH1H100C	CHIP C 10PF	C
C44			CK73HB1H471K	CHIP C 470PF	K
C45			CK73GB1A105K	CHIP C 1.0UF	K
C47			CC73HCH1H101J	CHIP C 100PF	J
C48			CK73HB1H471K	CHIP C 470PF	K

PARTS LIST

TX-RX UNIT (X57-6900-21)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C49			CC73HCH1H101J	CHIP C 100PF J		C159			CC73GCH1H020C	CHIP C 2.0PF C	
C50			CC73HCH1H100C	CHIP C 10PF C		C160			CC73GCH1H020B	CHIP C 2.0PF B	
C52			CC73HCH1H070B	CHIP C 7.0PF B		C161			CC73GCH1H050B	CHIP C 5.0PF B	
C54			CC73HCH1H060B	CHIP C 6.0PF B		C163			CC73GCH1H030B	CHIP C 3.0PF B	
C55			CC73HCH1H120J	CHIP C 12PF J		C164			CC73GCH1H050B	CHIP C 5.0PF B	
C58			CC73HCH1H060B	CHIP C 6.0PF B		C166			CC73GCH1HR75B	CHIP C 0.75PF B	
C59			CC73HCH1H1R5B	CHIP C 1.5PF B		C168			CC73GCH1H010B	CHIP C 1.0PF B	
C60			CC73HCH1H010B	CHIP C 1.0PF B		C169			CC73GCH1H060B	CHIP C 6.0PF B	
C61			CC73HCH1H030B	CHIP C 3.0PF B		C190			CK73GB1A105K	CHIP C 1.0UF K	
C62			CC73HCH1H020B	CHIP C 2.0PF B		C191			CK73GB1H103K	CHIP C 0.010UF K	
C63			CC73HCH1H101J	CHIP C 100PF J		C201			CK73GB1A224K	CHIP C 0.22UF K	
C64			CC73HCH1H050B	CHIP C 5.0PF B		C205			CK73HB1H102K	CHIP C 1000PF K	
C65,66			CC73HCH1H070B	CHIP C 7.0PF B		C207			CK73HB1H182K	CHIP C 1800PF K	
C67			CC73HCH1H050B	CHIP C 5.0PF B		C208			CK73HB1H471K	CHIP C 470PF K	
C68-70			CK73HB1H471K	CHIP C 470PF K		C209			CS77CPOJ100M	CHIP TNL 10UF 6.3WV	
C71,72			CK73HB1A104K	CHIP C 0.10UF K		C210			CK73HB1H471K	CHIP C 470PF K	
C73,74			CC73HCH1H0R5B	CHIP C 0.5PF B		C211			CK73HB1C103K	CHIP C 0.010UF K	
C75,76			CK73HB1H102K	CHIP C 1000PF K		C213			CK73HB1A104K	CHIP C 0.10UF K	
C77			CK73HB1H471K	CHIP C 470PF K		C214			CC73HCH1H680J	CHIP C 68PF J	
C78			CC73HCH1H330J	CHIP C 33PF J		C215			CK73HB1H102K	CHIP C 1000PF K	
C79			CS77CPOJ100M	CHIP TNL 10UF 6.3WV		C216			CK73GB1C104K	CHIP C 0.10UF K	
C80			CK73HB1H471K	CHIP C 470PF K		C217			CK73HB1A104K	CHIP C 0.10UF K	
C83			CC73HCH1H150J	CHIP C 15PF J		C218			CK73GB1C104K	CHIP C 0.10UF K	
C84-86			CK73HB1H102K	CHIP C 1000PF K		C219			CC73HCH1H330J	CHIP C 33PF J	
C87			CC73HCH1H100C	CHIP C 10PF C		C220			CK73HB1H102K	CHIP C 1000PF K	
C90			CK73HB1H102K	CHIP C 1000PF K		C221			CK73GB1C104K	CHIP C 0.10UF K	
C100			CK73HB1H471K	CHIP C 470PF K		C222			CK73HB1H102K	CHIP C 1000PF K	
C101			CK73GB1H471K	CHIP C 470PF K		C224,225			CK73HB1C103K	CHIP C 0.010UF K	
C102			CC73GCH1H120J	CHIP C 12PF J		C228			CC73GCH1H120J	CHIP C 12PF J	
C106			CK73HB1H471K	CHIP C 470PF K		C230			CK73HB1C103K	CHIP C 0.010UF K	
C107			CC73GCH1H060B	CHIP C 6.0PF B		C231			CK73GB1H103K	CHIP C 0.010UF K	
C108			CK73HB1H471K	CHIP C 470PF K		C232			CK73HB1C103K	CHIP C 0.010UF K	
C110,111			CK73GB1H471K	CHIP C 470PF K		C233			CC73GCH1H060B	CHIP C 6.0PF B	
C112			CC73GCH1H070D	CHIP C 7.0PF D		C234			CK73HB1H102K	CHIP C 1000PF K	
C113			CK73GB1C104K	CHIP C 0.10UF K		C236			CC73GCH1H180J	CHIP C 18PF J	
C116			CC73GCH1H120J	CHIP C 12PF J		C237			CK73HB1H102K	CHIP C 1000PF K	
C119			CK73GB1H471K	CHIP C 470PF K		C238			CK73GB1C104K	CHIP C 0.10UF K	
C122,123			CC73GCH1H330J	CHIP C 33PF J		C239			CK73GB1H102K	CHIP C 1000PF K	
C124			CC73HCH1H100C	CHIP C 10PF C		C240			CC73GCH1H3R5B	CHIP C 3.5PF B	
C126			CS77CA1C010M	CHIP TNL 1.0UF 16WV		C241			CK73GB1H471K	CHIP C 470PF K	
C128			CK73HB1H471K	CHIP C 470PF K		C244			CC73GCH1H2R5B	CHIP C 2.5PF B	
C129			CK73GB1H471K	CHIP C 470PF K		C245			CC73GCH1H220J	CHIP C 22PF J	
C130			CK73HB1H471K	CHIP C 470PF K		C246			CC73GCH1H020B	CHIP C 2.0PF B	
C132			CC73GCH1H200J	CHIP C 20PF J		C247			CK73HB1H471K	CHIP C 470PF K	
C133			CK73GB1H471K	CHIP C 470PF K		C248			CC73GCH1H020B	CHIP C 2.0PF B	
C134			CK73GB1H103K	CHIP C 0.010UF K		C249			CC73GCH1H4R5B	CHIP C 4.5PF B	
C135			CK73GB1C104K	CHIP C 0.10UF K		C250			CC73GCH1H220J	CHIP C 22PF J	
C136			CK73GB1A105K	CHIP C 1.0UF K		C251			CK73HB1H471K	CHIP C 470PF K	
C138			CK73GB1H102K	CHIP C 1000PF K		C252			CC73GCH1H010B	CHIP C 1.0PF B	
C140			CC73GCH1H101J	CHIP C 100PF J		C253			CC73GCH1H1R5B	CHIP C 1.5PF B	
C145			CC73GCH1H180J	CHIP C 18PF J		C254			CK73HB1H471K	CHIP C 470PF K	
C146			CK73GB1H102K	CHIP C 1000PF K		C255			CC73GCH1H220J	CHIP C 22PF J	
C148			CK73GB1H102K	CHIP C 1000PF K		C256			CS77CPOJ4R7M	CHIP TNL 4.7UF 6.3WV	
C149			CC73GCH1H070B	CHIP C 7.0PF B		C257			CC73GCH1H040B	CHIP C 4.0PF B	
C151			CC73GCH1H030B	CHIP C 3.0PF B		C258			CK73HB1H471K	CHIP C 470PF K	
C152			CC73GCH1H200J	CHIP C 20PF J		C259			CK73GB1H471K	CHIP C 470PF K	
C154			CK73GB1H471K	CHIP C 470PF K		C262,263			CK73HB1H471K	CHIP C 470PF K	
C156			CC73GCH1H040B	CHIP C 4.0PF B		C265			CK73HB1H471K	CHIP C 470PF K	
C157			CC73GCH1H2R5B	CHIP C 2.5PF B		C266			CK73GB1H471K	CHIP C 470PF K	
C158			CC73GCH1H101J	CHIP C 100PF J		C267			CC73GCH1H2R5B	CHIP C 2.5PF B	

PARTS LIST

TX-RX UNIT (X57-6900-21)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C268			CC73GCH1H220J	CHIP C 22PF J		C411-413			CK73HB1H102K	CHIP C 1000PF K	
C269			CC73GCH1H020B	CHIP C 2.0PF B		C414,415			CK73HB1H471K	CHIP C 470PF K	
C270,271			CK73HB1H471K	CHIP C 470PF K		C417			CK73GB1A105K	CHIP C 1.0UF K	
C272			CC73GCH1H020B	CHIP C 2.0PF B		C418,419			CK73HB1H102K	CHIP C 1000PF K	
C273			CC73GCH1H220J	CHIP C 22PF J		C421			CK73GB1A105K	CHIP C 1.0UF K	
C275			CC73GCH1H2R5B	CHIP C 2.5PF B		C425			CK73HB1H471K	CHIP C 470PF K	
C276			CC73GCH1H040B	CHIP C 4.0PF B		C426,427			CK73GB1A105K	CHIP C 1.0UF K	
C290			CC73GCH1H020B	CHIP C 2.0PF B		C428,429			CK73HB1H102K	CHIP C 1000PF K	
C291			CC73GCH1H060B	CHIP C 6.0PF B		C430			CK73GB1H103K	CHIP C 0.010UF K	
C292			CK73HB1H102K	CHIP C 1000PF K		C431			CK73HB1C103K	CHIP C 0.010UF K	
C301			CK73HB1H392K	CHIP C 3900PF K		C432			CC73HCH1H050B	CHIP C 5.0PF B	
C302			CK73HB1H271K	CHIP C 270PF K		C433,434			CC73HCH1H1R5B	CHIP C 1.5PF B	
C304			CK73GB1A224K	CHIP C 0.22UF K		C435			CC73HCH1H050B	CHIP C 5.0PF B	
C306			CS77CPOJ4R7M	CHIP TNL 4.7UF 6.3WV		C440			CC73GCH1H040B	CHIP C 4.0PF B	
C307,308			CK73HB1A104K	CHIP C 0.10UF K		C443			CK73GB1A474K	CHIP C 0.47UF K	
C309			CC73GCH1H820J	CHIP C 82PF J		C450			CK73HB1H471K	CHIP C 470PF K	
C310			CK73HB1A683K	CHIP C 0.068UF K		C902			CK73GB1A105K	CHIP C 1.0UF K	
C311			CK73GB1A105K	CHIP C 1.0UF K		C904			CC73GCH1H200J	CHIP C 20PF J	
C312			CC73GCH1H120J	CHIP C 12PF J		C905			CC73GCH1H060B	CHIP C 6.0PF B	
C313			CC73GCH1H121J	CHIP C 120PF J		TC1,2			C05-0384-05	TRIMMER CAPACITOR (10PF)	
C314			CK73HB1A104K	CHIP C 0.10UF K		CN201			E23-1278-05	TERMINAL	
C315			CK73GB1A105K	CHIP C 1.0UF K		CN401			E40-6573-05	FLAT CABLE CONNECTOR	
C316			CK73GB1C104K	CHIP C 0.10UF K		J301			E11-0707-05	SP/MIC JACK (2.5/3.5)	
C317			CK73HB1A104K	CHIP C 0.10UF K		F401			F53-0324-05	FUSE (2.5A)	
C318			CS77CPOJ4R7M	CHIP TNL 4.7UF 6.3WV		101	2B		G11-4427-04	SHEET (SP JACK-PCB)	
C319			CC73GCH1H271J	CHIP C 270PF J		102	2A		J30-1282-14	SPACER	
C320			CK73HB1C103K	CHIP C 0.010UF K		CD201			L79-1582-05	TUNING COIL	
C321			CK73GB1A105K	CHIP C 1.0UF K		CF201	2A		L72-0959-05	CERAMIC FILTER	
C322			CK73HB1C153K	CHIP C 0.015UF K		L1			L40-4791-86	SMALL FIXED INDUCTOR (4.7UH)	
C323			CC73GCH1H820J	CHIP C 82PF J		L3			L40-5681-86	SMALL FIXED INDUCTOR (0.56UH)	
C324			CC73HCH1H820J	CHIP C 82PF J		L5			L40-5681-86	SMALL FIXED INDUCTOR (0.56UH)	
C325			CK73HB1A104K	CHIP C 0.10UF K		L6,7			L92-0138-05	CHIP FERRITE	
C326			CK73HB1H102K	CHIP C 1000PF K		L8,9			L41-1875-06	SMALL FIXED INDUCTOR (18NH)	
C327			CC73HCH1H101J	CHIP C 100PF J		L10,11			L41-1085-06	SMALL FIXED INDUCTOR (100NH)	
C328			CK73HB1H391K	CHIP C 390PF K		L12			L92-0138-05	CHIP FERRITE	
C329,330			CK73GB1A105K	CHIP C 1.0UF K		L13,14			L41-1085-06	SMALL FIXED INDUCTOR (100NH)	
C331			CK73HB1A104K	CHIP C 0.10UF K		L16,17			L40-2778-67	SMALL FIXED INDUCTOR (27NH)	
C332			CK73HB1H471K	CHIP C 470PF K		L18,19			L41-2285-03	SMALL FIXED INDUCTOR (220NH)	
C333,334			CK73GB1C104K	CHIP C 0.10UF K		L20,21			L40-3391-86	SMALL FIXED INDUCTOR (3.3UH)	
C335			CC73GCH1H221J	CHIP C 220PF J		L22			L92-0138-05	CHIP FERRITE	
C336			CK73FB1C474K	CHIP C 0.47UF K		L23			L41-2275-06	SMALL FIXED INDUCTOR (22NH)	
C338			CC73GCH1H101J	CHIP C 100PF J		L24			L92-0470-05	CHIP FERRITE	
C339			CS77AA0J100M	CHIP TNL 10UF 6.3WV		L25			L41-2275-06	SMALL FIXED INDUCTOR (22NH)	
C340			CK73GB1C104K	CHIP C 0.10UF K		L100,101			L41-1575-06	SMALL FIXED INDUCTOR (15NH)	
C341			CK73GB1C473K	CHIP C 0.047UF K		L102			L92-0138-05	CHIP FERRITE	
C342			CS77AA0J100M	CHIP TNL 10UF 6.3WV		L103			L40-8265-92	SMALL FIXED INDUCTOR (8.2NH)	
C343			CK73GB1C473J	CHIP C 0.047UF J		L105			L40-1575-54	SMALL FIXED INDUCTOR (15NH)	
C344			CC73GCH1H221J	CHIP C 220PF J		L106			L92-0149-05	CHIP FERRITE	
C345			CS77CC0J101M	CHIP TNL 100UF 6.3WV		L107			L40-1263-92	SMALL FIXED INDUCTOR (1.2NH)	
C346			CK73GB1H102K	CHIP C 1000PF K		L109			L92-0149-05	CHIP FERRITE	
C348			CK73HB1H471K	CHIP C 470PF K		L110			L40-2285-54	SMALL FIXED INDUCTOR (220NH)	
C351,352			CK73HB1C103K	CHIP C 0.010UF K		L111			L41-1092-44	SMALL FIXED INDUCTOR (1UH)	
C354			CK73HB1A104K	CHIP C 0.10UF K		L201			L40-1091-86	SMALL FIXED INDUCTOR (1.0UH)	
C355			CK73GB1C104K	CHIP C 0.10UF K		L202			L92-0138-05	CHIP FERRITE	
C401			CC73GCH1H471J	CHIP C 470PF J		L203			L41-5685-39	SMALL FIXED INDUCTOR (0.56UH)	
C402			CK73HB1H102K	CHIP C 1000PF K		L204			L40-2785-92	SMALL FIXED INDUCTOR (270NH)	
C403			CK73GB1C104K	CHIP C 0.10UF K		L211,212			L41-8268-14	SMALL FIXED INDUCTOR (8.2NH)	
C405			CC73GCH1H101J	CHIP C 100PF J							
C407			CK73HB1H102K	CHIP C 1000PF K							
C409,410			CK73GB1A105K	CHIP C 1.0UF K							

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

PARTS LIST

TX-RX UNIT (X57-6900-21)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
L214			L41-8268-14	SMALL FIXED INDUCTOR (8.2NH)		R48			RK73HB1J331J	CHIP R 330 J 1/16W	
L215			L41-2285-03	SMALL FIXED INDUCTOR (220NH)		R49			RK73HB1J222J	CHIP R 2.2K J 1/16W	
L220			L34-4602-05	AIR-CORE COIL		R50			RK73HB1J472J	CHIP R 4.7K J 1/16W	
L223			L34-4572-05	AIR-CORE COIL		R100			RK73HB1J472J	CHIP R 4.7K J 1/16W	
L224-226			L34-4564-05	AIR-CORE COIL		R103			RK73GB2A473J	CHIP R 47K J 1/10W	
L228,229			L41-8268-14	SMALL FIXED INDUCTOR (8.2NH)		R105			RK73GB2A331J	CHIP R 330 J 1/10W	
L230			L41-3978-03	SMALL FIXED INDUCTOR (39NH)		R106			RK73GB2A220J	CHIP R 22 J 1/10W	
L250			L41-1875-06	SMALL FIXED INDUCTOR (18NH)		R107			RK73HB1J101J	CHIP R 100 J 1/16W	
L290			L41-3078-17	SMALL FIXED INDUCTOR (30NH)		R109			RK73HB1J103J	CHIP R 10K J 1/16W	
L301			L92-0140-05	CHIP FERRITE		R110			RK73GB2A331J	CHIP R 330 J 1/10W	
L302			L92-0149-05	CHIP FERRITE		R112			RK73GB2A000J	CHIP R 0.0 J 1/10W	
L401			L92-0149-05	CHIP FERRITE		R114			RK73GB2A473J	CHIP R 47K J 1/10W	
L402-404			L92-0138-05	CHIP FERRITE		R115			RK73GB2A822J	CHIP R 8.2K J 1/10W	
L410			L92-0138-05	CHIP FERRITE		R116			RK73GB2A220J	CHIP R 22 J 1/10W	
L411			L41-1875-06	SMALL FIXED INDUCTOR (18NH)		R121			RK73GB2A220J	CHIP R 22 J 1/10W	
L412			L40-8265-92	SMALL FIXED INDUCTOR (8.2NH)		R124			RK73GB2A333J	CHIP R 33K J 1/10W	
X1			L77-1931-05	TCXO (12.8MHZ)		R126			RK73GB2A222J	CHIP R 2.2K J 1/10W	
X2			L78-1414-05	RESONATOR (7.37MHZ)		R127-129			RK73EB2ER39K	CHIP R 0.39 K 1/4W	
XF201			L71-0549-15	MCF (38.85MHZ)		R130-135			RK73GH2A154D	CHIP R 150K D 1/10W	
						R137			RK73FB2B000J	CHIP R 0.0 J 1/8W	
CP404			RK75HA1J473J	CHIP-COM 47K J 1/16W		R138			RK73GB2A105J	CHIP R 1.0M J 1/10W	
CP405			RK75HA1J102J	CHIP-COM 1.0K J 1/16W		R139			RK73GB2A473J	CHIP R 47K J 1/10W	
R1			RK73HB1J104J	CHIP R 100K J 1/16W		R140			RK73GB2A563J	CHIP R 56K J 1/10W	
R2			RK73HB1J103J	CHIP R 10K J 1/16W		R141			RK73GB2A104J	CHIP R 100K J 1/10W	
R3			RK73HB1J333J	CHIP R 33K J 1/16W		R142			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R4			RK73HB1J563J	CHIP R 56K J 1/16W		R143			RK73GB2A104J	CHIP R 100K J 1/10W	
R5,6			RK73HB1J104J	CHIP R 100K J 1/16W		R145			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R7			RK73HB1J101J	CHIP R 100 J 1/16W		R147			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R8-11			RK73HB1J000J	CHIP R 0.0 J 1/16W		R150-152			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R12			RK73HB1J222J	CHIP R 2.2K J 1/16W		R190			RK73GB2A101J	CHIP R 100 J 1/10W	
R13			RK73GB2A000J	CHIP R 0.0 J 1/10W		R191,192			RK73GB2A271J	CHIP R 270 J 1/10W	
R14			RK73HB1J334J	CHIP R 330K J 1/16W		R193,194			RK73GB2A473J	CHIP R 47K J 1/10W	
R15			RK73GB2A221J	CHIP R 220 J 1/10W		R203			RK73HB1J184J	CHIP R 180K J 1/16W	
R16			RK73GB2A561J	CHIP R 560 J 1/10W		R206			RK73GB2A100J	CHIP R 10 J 1/10W	
R17			RK73HB1J101J	CHIP R 100 J 1/16W		R207			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R18			RK73GB2A181J	CHIP R 180 J 1/10W		R208			RK73HB1J823J	CHIP R 82K J 1/16W	
R19			RK73GB2A122J	CHIP R 1.2K J 1/10W		R209			RK73HB1J272J	CHIP R 2.7K J 1/16W	
R20			RK73HB1J100J	CHIP R 10 J 1/16W		R210			RK73HB1J332J	CHIP R 3.3K J 1/16W	
R21			RK73GB2A681J	CHIP R 680 J 1/10W		R212			RK73HB1J184J	CHIP R 180K J 1/16W	
R22			RK73GB2A000J	CHIP R 0.0 J 1/10W		R213			RK73HB1J392J	CHIP R 3.9K J 1/16W	
R23			RK73GB2A103J	CHIP R 10K J 1/10W		R215			RK73HB1J101J	CHIP R 100 J 1/16W	
R25			RK73HB1J223J	CHIP R 22K J 1/16W		R216			RK73HB1J124J	CHIP R 120K J 1/16W	
R26			RK73HB1J103J	CHIP R 10K J 1/16W		R217			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R27			RK73HB1J220J	CHIP R 22 J 1/16W		R218			RK73HB1J471J	CHIP R 470 J 1/16W	
R29			RK73GB2A473J	CHIP R 47K J 1/10W		R219			RK73GB2A101J	CHIP R 100 J 1/10W	
R30			RK73HB1J823J	CHIP R 82K J 1/16W		R226,227			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R31			RK73HB1J474J	CHIP R 470K J 1/16W		R228			RK73GB2A151J	CHIP R 150 J 1/10W	
R32			RK73HB1J102J	CHIP R 1.0K J 1/16W		R233			RK73HB1J104J	CHIP R 100K J 1/16W	
R33			RK73HB1J154J	CHIP R 150K J 1/16W		R236			RK73HB1J563J	CHIP R 56K J 1/16W	
R34			RK73HB1J105J	CHIP R 1.0M J 1/16W		R238			RK73HB1J104J	CHIP R 100K J 1/16W	
R35,36			RK73HB1J274J	CHIP R 270K J 1/16W		R239			RK73HB1J563J	CHIP R 56K J 1/16W	
R37			RK73HB1J101J	CHIP R 100 J 1/16W		R240			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R38			RK73HB1J181J	CHIP R 180 J 1/16W		R241			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R39			RK73HB1J151J	CHIP R 150 J 1/16W		R243,244			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R40			RK73HB1J101J	CHIP R 100 J 1/16W		R248			RK73GB2A221J	CHIP R 220 J 1/10W	
R41			RK73HB1J154J	CHIP R 150K J 1/16W		R249			RK73GB2A220J	CHIP R 22 J 1/10W	
R42			RK73HB1J472J	CHIP R 4.7K J 1/16W		R251			RK73HB1J104J	CHIP R 100K J 1/16W	
R43			RK73HB1J101J	CHIP R 100 J 1/16W		R253			RK73HB1J104J	CHIP R 100K J 1/16W	
R46			RK73HB1J103J	CHIP R 10K J 1/16W		R254			RK73HB1J683J	CHIP R 68K J 1/16W	
R47			RK73HB1J220J	CHIP R 22 J 1/16W		R255			RK73GB2A000J	CHIP R 0.0 J 1/10W	

PARTS LIST

TX-RX UNIT (X57-6900-21)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R256,257			RK73HB1J105J	CHIP R 1.0M J 1/16W		R424,425			RK73HB1J473J	CHIP R 47K J 1/16W	
R258			RK73FB2B000J	CHIP R 0.0 J 1/8W		R426			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R299			RK73HB1J000J	CHIP R 0.0 J 1/16W		R435			RK73HB1J473J	CHIP R 47K J 1/16W	
R301			RK73HB1J103J	CHIP R 10K J 1/16W		R436			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R304			RK73HB1J273J	CHIP R 27K J 1/16W		R437,438			RK73HB1J473J	CHIP R 47K J 1/16W	
R305			RK73HB1J104J	CHIP R 100K J 1/16W		R445,446			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R306			RK73HB1J102J	CHIP R 1.0K J 1/16W		R447			RK73HB1J123J	CHIP R 12K J 1/16W	
R307,308			RK73HB1J000J	CHIP R 0.0 J 1/16W		R453			RK73HB1J223J	CHIP R 22K J 1/16W	
R310			RK73GB2A394J	CHIP R 390K J 1/10W		R456,457			RK73HB1J473J	CHIP R 47K J 1/16W	
R311			RK73HB1J123J	CHIP R 12K J 1/16W		R901			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R312			RK73GB2A334J	CHIP R 330K J 1/10W		R903			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R313			RK73GB2A104J	CHIP R 100K J 1/10W		VR1			R32-0736-05	SEMI FIXED VARIABLE RESISTOR (68K)	
R314			RK73GB2A103J	CHIP R 10K J 1/10W		S401-403			S70-0414-05	TACT SWITCH	
R315			RK73GB2A334J	CHIP R 330K J 1/10W		MIC301	2A		T91-0651-15	MIC ELEMENT	
R316			RK73GB2A124J	CHIP R 120K J 1/10W		D1			MA2S111-F	DIODE	
R317			RK73GB2A474J	CHIP R 470K J 1/10W		D2-9			HVC376B	VARIABLE CAPACITANCE DIODE	
R318			RK73GB2A122J	CHIP R 1.2K J 1/10W		D10			1SV278F	VARIABLE CAPACITANCE DIODE	
R319			RK73HB1J563J	CHIP R 56K J 1/16W		D11			MA2S111-F	DIODE	
R320			RK73HB1J332J	CHIP R 3.3K J 1/16W		D101			HSC277	DIODE	
R321			RK73HB1J224J	CHIP R 220K J 1/16W		D102			HZU5CLL	ZENER DIODE	
R322			RK73HB1J184J	CHIP R 180K J 1/16W		D103,104			HVC131	DIODE	
R323			RK73HB1J563J	CHIP R 56K J 1/16W		D106			HVC131	DIODE	
R324,325			RK73GB2A104J	CHIP R 100K J 1/10W		D122			HVC131	DIODE	
R326			RK73GB2A000J	CHIP R 0.0 J 1/10W		D202			HSC277	DIODE	
R327			RK73GB2A184J	CHIP R 180K J 1/10W		D203-206			HVC355B	VARIABLE CAPACITANCE DIODE	
R328			RK73GB2A103J	CHIP R 10K J 1/10W		D210			HVC355B	VARIABLE CAPACITANCE DIODE	
R329			RK73GB2A823J	CHIP R 82K J 1/10W		D301,302			RB706F-40	DIODE	
R330			RK73HB1J332J	CHIP R 3.3K J 1/16W		D303			DAN222	DIODE	
R331			RK73GB2A154J	CHIP R 150K J 1/10W		D401			RB521S-30	DIODE	
R332			RK73GB2A153J	CHIP R 15K J 1/10W		D402			GN1G	DIODE	
R334			RK73GB2A473J	CHIP R 47K J 1/10W		D405			KDZ3.3V	ZENER DIODE	
R335			RK73GB2A222J	CHIP R 2.2K J 1/10W		IC1			MB15A02PFV2E1	MOS-IC	
R336			RK73GB2A102J	CHIP R 1.0K J 1/10W		IC101			TA75W01FUF	MOS-IC	
R337			RK73GB2A151J	CHIP R 150 J 1/10W		IC201			TA31136FNG	MOS-IC	
R338			RK73HB1J222J	CHIP R 2.2K J 1/16W		IC301			AQUA-L	MOS-IC	
R339			RK73GB2A471J	CHIP R 470 J 1/10W		IC302			TA7368FG	MOS-IC	
R340			RK73GB2A182J	CHIP R 1.8K J 1/10W		IC302,402			XC6204B502MR	MOS-IC	
R341			RK73GB2A103J	CHIP R 10K J 1/10W		IC403			BD4840FVE	MOS-IC	
R342			RK73GB2A100J	CHIP R 10 J 1/10W		IC404			BD4845FVE	MOS-IC	
R343			RK73GB2A474J	CHIP R 470K J 1/10W		IC405		*	30622MAP490GU	MICROCONTROL UNIT	
R344			RK73GB2A102J	CHIP R 1.0K J 1/10W		IC406			BR24L08F-W	ROM IC	
R345,346			RK73GB2A101J	CHIP R 100 J 1/10W		Q1			KTC4082	TRANSISTOR	
R347			RK73GB2A104J	CHIP R 100K J 1/10W		Q2			2SC5108(Y)F	TRANSISTOR	
R348			RK73GB2A563J	CHIP R 56K J 1/10W		Q3,4			2SK508NV(K52)	FET	
R349			RK73GB2A333J	CHIP R 33K J 1/10W		Q5			RT1P430U	TRANSISTOR	
R350			RK73HB1J000J	CHIP R 0.0 J 1/16W		Q6			2SC5108(Y)F	TRANSISTOR	
R354,355			RK73HB1J103J	CHIP R 10K J 1/16W		Q7			RT1P430U	TRANSISTOR	
R357			RK73HB1J000J	CHIP R 0.0 J 1/16W		Q8			2SC5383-T111	TRANSISTOR	
R360			RK73HB1J000J	CHIP R 0.0 J 1/16W		Q9			2SC4619(P,Q)	TRANSISTOR	
R388			RK73HB1J000J	CHIP R 0.0 J 1/16W		Q100			2SC4619(P,Q)	TRANSISTOR	
R403			RK73GB2A101J	CHIP R 100 J 1/10W		Q101			2SK3077F	FET	
R404			RK73HH1J474D	CHIP R 470K D 1/16W		Q102			2SK2596-E	FET	
R405			RK73GB2A334J	CHIP R 330K J 1/10W		Q103			2SK3476-F	FET	
R406			RK73HH1J474D	CHIP R 470K D 1/16W		Q104			RT1N141U	TRANSISTOR	
R407			RK73HB1J334J	CHIP R 330K J 1/16W		Q105			2SK879(Y)F	FET	
R408-412			RK73HB1J473J	CHIP R 47K J 1/16W		Q107			RT1N141U	TRANSISTOR	
R413,414			RK73GB2A331J	CHIP R 330 J 1/10W		Q108			2SK1824-A	FET	
R417-420			RK73HB1J473J	CHIP R 47K J 1/16W		Q109			RT1P441U	TRANSISTOR	
R421,422			RK73HB1J102J	CHIP R 1.0K J 1/16W							
R423			RK73HB1J000J	CHIP R 0.0 J 1/16W							

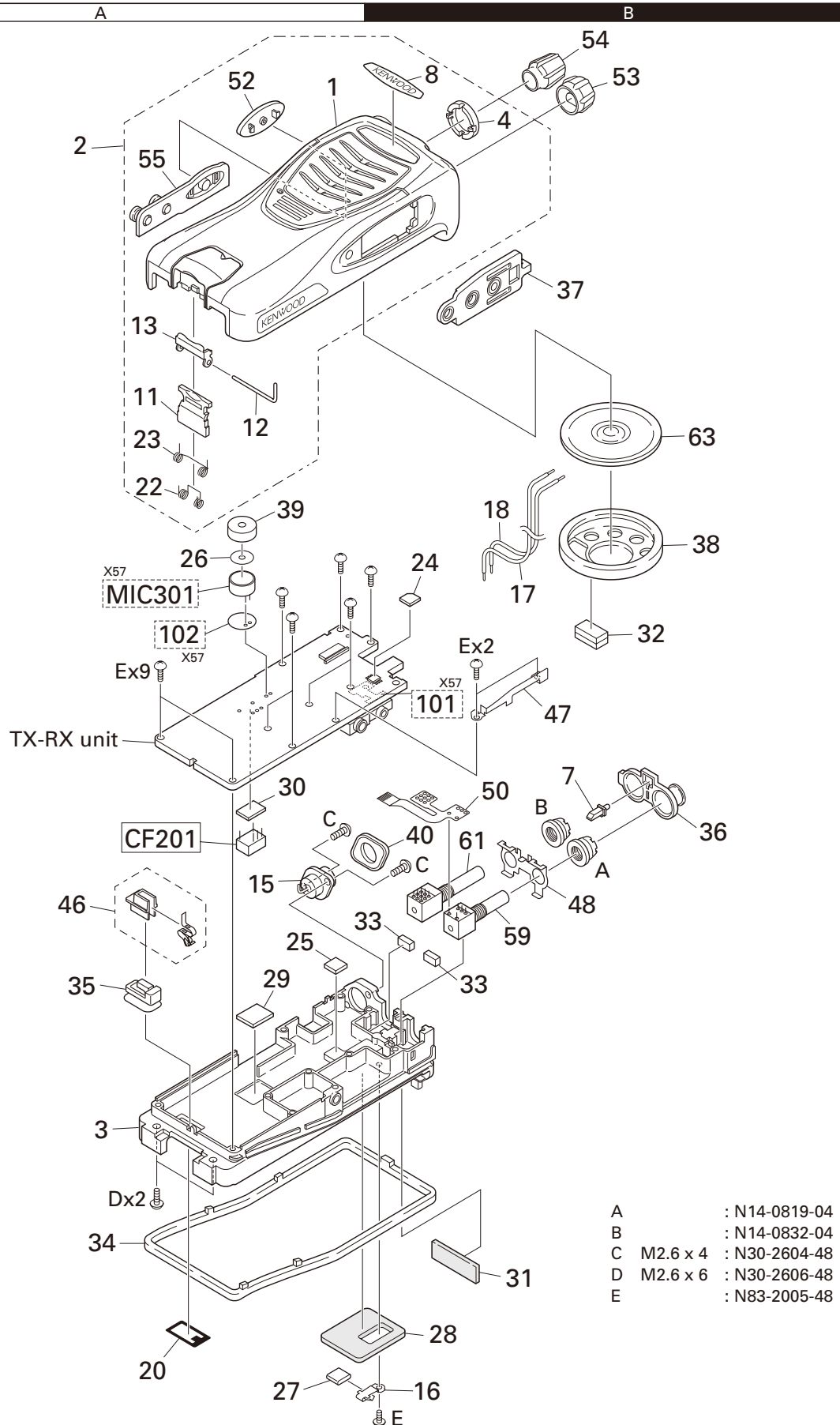
TK-361SA

PARTS LIST

TX-RX UNIT (X57-6900-21)

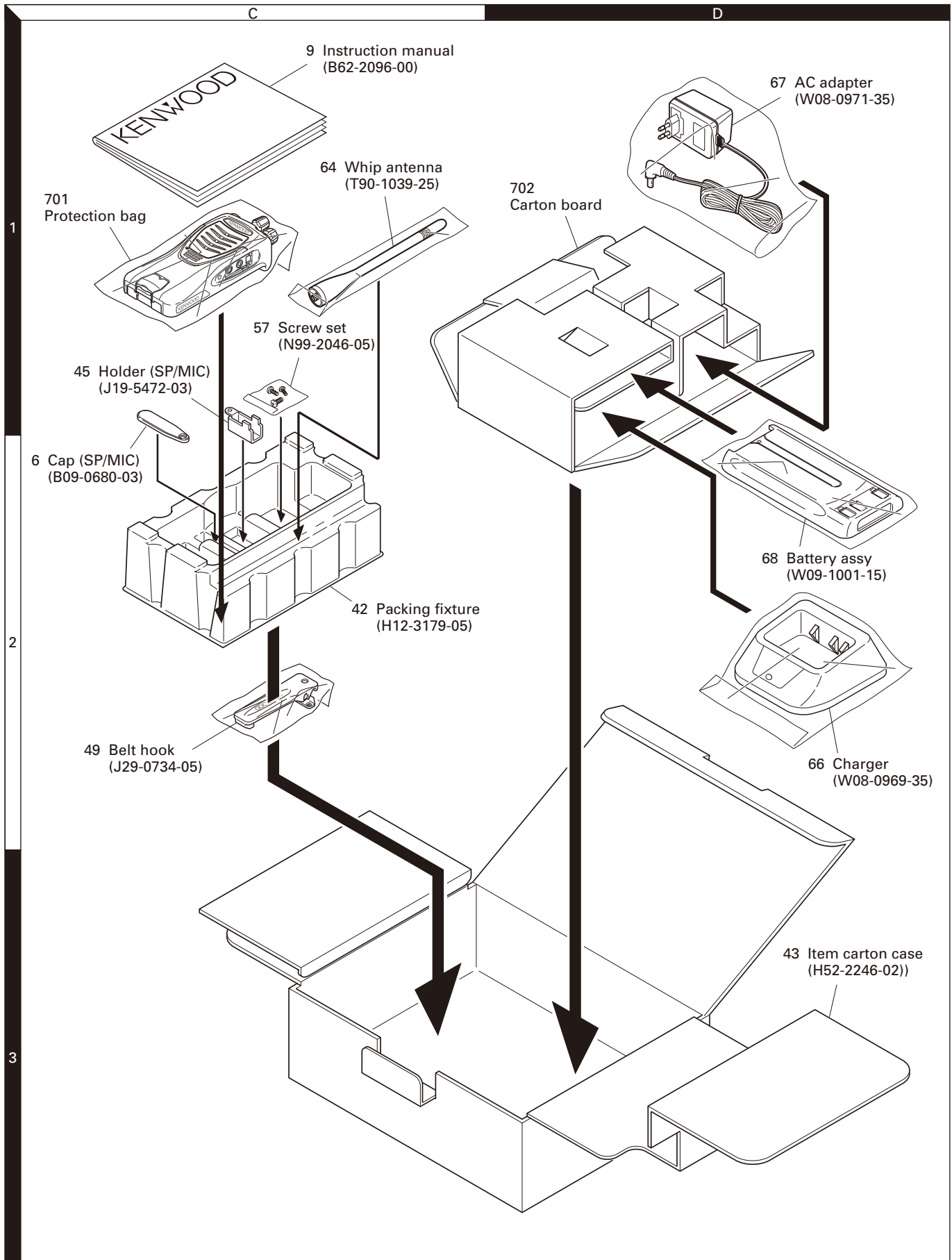
Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
Q203			KTC4080E-P	TRANSISTOR							
Q204,205			3SK318	FET							
Q301			RT1P141U	TRANSISTOR							
Q302			2SC4919	TRANSISTOR							
Q303			RT1N441U	TRANSISTOR							
Q304			2SA1362-F(GR)	TRANSISTOR							
Q305			RT1N441U	TRANSISTOR							
Q306			2SK3577-A	FET							
Q316			2SK3577-A	FET							
Q317,318			2SK1824-A	FET							
Q401,402			RT1N141U	TRANSISTOR							
Q403,404			CPH3317	FET							
Q405			RT1P237U-T111	TRANSISTOR							
Q407,408			2SK1830F	FET							
TH101			B57331V2104J	THERMISTOR							
TH203			B57331V2104J	THERMISTOR							

EXPLODED VIEW



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

PACKING



ADJUSTMENT

Test Equipment Required for Alignment

Test Equipment	Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range Modulation Output	450 to 470MHz Frequency modulation and external modulation -127dBm/0.1μV to greater than -47dBm/1mV
2. Power Meter	Input Impedance Operation Frequency Measurement Capability	50Ω 450 to 470MHz or more Vicinity of 10W
3. Deviation Meter	Frequency Range	450 to 470MHz
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. 8Ω Dummy Load		Approx. 8Ω, 3W
14. Regulated Power Supply		5V to 10V, approx. 3A Useful if ammeter equipped

The following parts are required for adjustment

1. Antenna connector adapter

The antenna connector of this radio uses an SMA terminal.

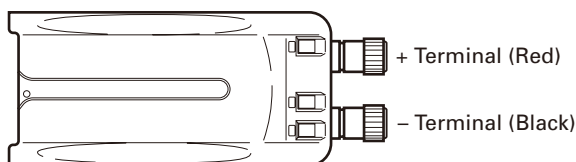
Use an antenna connector adapter [SMA(f) – BNC(f) or SMA(f) – N(f)] for adjustment. (The adapter is not provided as an option, so buy a commercially-available one.)

2. Repair Jig (Chassis)

Use jig (part No.: A10-4086-03) for repairing the TK-361SA. Place the TX-RX unit on the jig and fit it with screws.

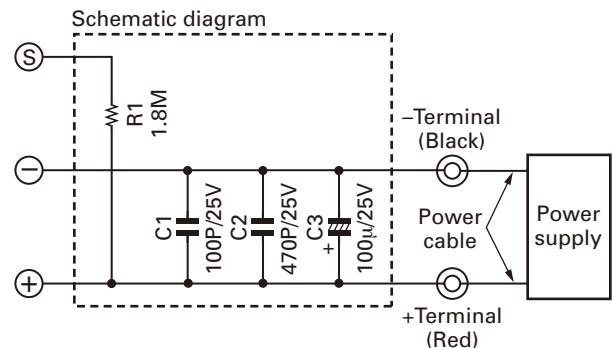
The jig facilitates the voltage check and protects the final amplifier FET when the voltage on the flow side of the TX-RX unit is checked during repairs.

3. Battery Jig (W05-1011-00)



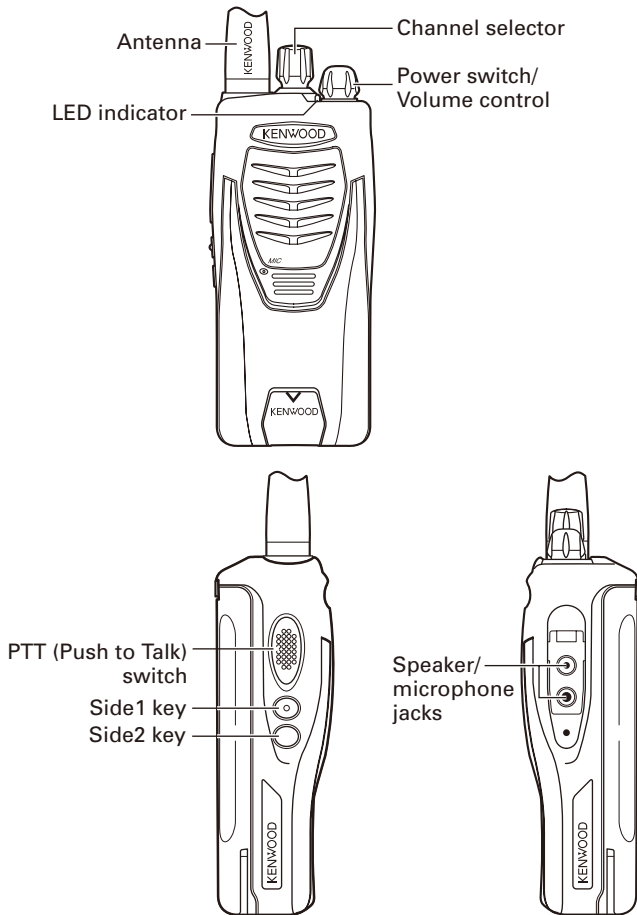
Connect the power cable properly between the battery jig installed in the transceiver and the power supply, and be sure output voltage and the power supply polarity prior to switching the power supply ON, otherwise over voltage and reverse connection may damage the transceiver, or the power supply or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



ADJUSTMENT

Controls



Preparations for tuning the transceiver

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

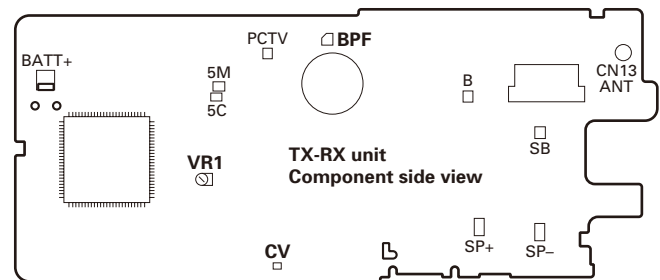
Whenever the transmitter is tuned, the unit must be connected to a suitable dummy load (i.e. power meter).

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

■ Adjustment Frequency (MHz)

Test CH	RX Frequency	TX Frequency
Low	450.050	450.100
Low'	455.050	455.100
Center	460.050	460.100
High'	465.050	465.100
High	469.950	469.900

Adjustment Points



VR1 : Frequency adjustment

BPF : Band-pass wave form test point

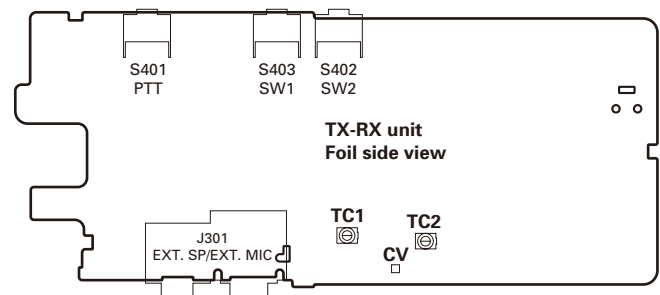
CV : VCO lock voltage adjustment terminal

Frequency and signaling

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)

Channel No.	RX Frequency	TX Frequency
1	460.050	460.100
2	450.050	450.100
3	469.950	469.900
4	460.000	460.000
5	460.200	460.200
6	460.400	460.400



TC1 : Transmit VCO lock voltage adjustment

TC2 : Receive VCO lock voltage adjustment

CV : VCO lock voltage adjustment terminal

■ Signaling


Signaling 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 250.3Hz	QT 250.3Hz
6	DQT D023N	DQT D023N
7	DQT D754I	DQT D754I

ADJUSTMENT

Common Section

Item	Condition	Measurement			Adjustment			Specifications / Remarks		
		Test-equipment	Unit	Terminal	Unit	Parts	Method			
1. Setting	1) BATT terminal voltage: 7.5V 2) SSG standard modulation MOD: 1kHz, DEV: 1.5kHz									
2. VCO lock voltage RX	1) CH: High	Power meter DVM	TX-RX	ANT	TX-RX	TC2	2.3V	±0.1V		
	2) CH: Low			CV				Check	0.6V or more	
3. VCO lock voltage TX	1) CH: High PTT: ON						TX-RX	TC1	2.3V	±0.1V
	2) CH: Low PTT: ON								Check	0.6V or more

Transmitter Section

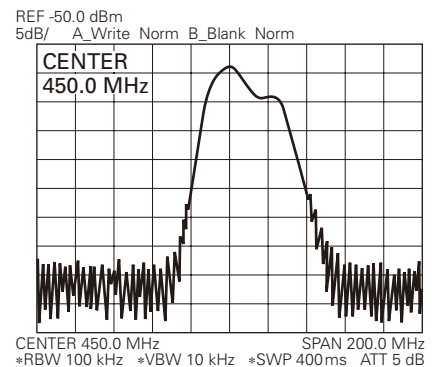
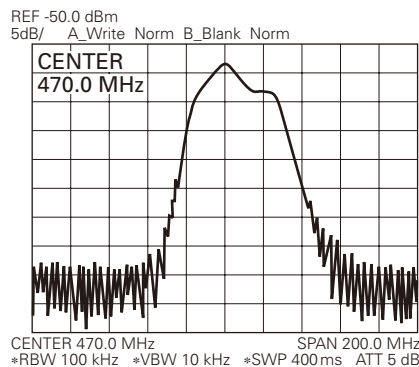
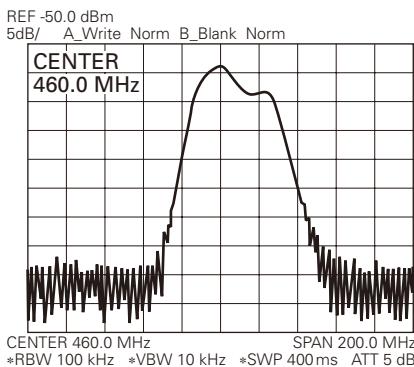
Item	Condition	Measurement			Adjustment			Specifications / Remarks			
		Test-equipment	Unit	Terminal	Unit	Parts	Method				
1. Frequency adjust	1) CH: High PTT: ON	f. counter	TX-RX	ANT	TX-RX	VR1	High frequency ± 50Hz				
2. RF High Power	1) Test CH: Low, Low', Center, High', High (5 points) BATT terminal voltage: 7.5V PTT: ON	Power meter Ammeter							Programming software: KPG-88D (M2)	2.0W	±0.1W Less than 1.2A
3. RF Low Power	1) Test CH: Low, Low', Center, High', High (5 points) BATT terminal voltage: 7.5V PTT: ON									1.0W	±0.1W Less than 1.0A
4. Max Deviation	1) Test CH: Low, Center, High (3 points) AG: 1kHz/150mV Deviation meter filter LPF: 15kHz HPF: OFF PTT: ON	Power meter Deviation meter Oscilloscope AG AF VTVM	TX-RX	ANT SP/MIC		2.2kHz (According to the larger +, -)	±50Hz				
5. VOX 1	1) Test CH: Center AG: 1kHz/45mV										
6. VOX 10	1) Test CH: Center AG: 1kHz/3.0mV										
7. DQT Balance	1) Test CH: Low, Center, High (3 points) Deviation meter filter LPF: 3kHz HPF: OFF PTT: ON			ANT			Make the demodulation wave into square waves				
8. QT Fine Deviation	1) Test CH: Low, Center, High (3 points) Deviation meter filter LPF: 3kHz HPF: OFF PTT: ON						0.40kHz	±40Hz			

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
9. DQT Fine Deviation	1) Test CH: Low, Center, High (3 points) Deviation meter filter LPF: 3kHz HPF: OFF PTT: ON	Power meter Deviation meter Oscilloscope AG AF VTVM	TX-RX	ANT		Programming software: KPG-88D (M2)	0.40kHz	±40Hz

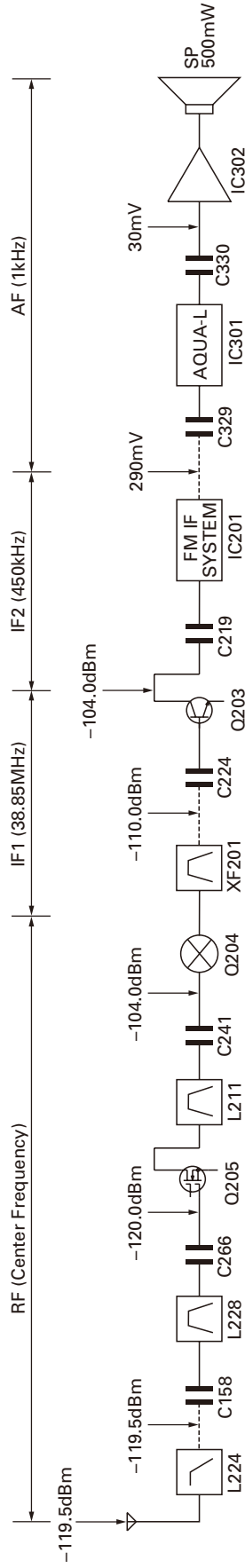
Receiver Section

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. BPF wave adjust	1) Center frequency Spectrum analyzer setting Center frequency: 460MHz Span: 200MHz RBW: 100kHz VBW: 10kHz ATT: 5dB 2) High-edge frequency Spectrum analyzer setting Center frequency: 470MHz 3) Low-edge frequency Spectrum analyzer setting Center frequency: 450MHz	Spectrum analyzer	TX-RX	ANT BPF		Programming software: KPG-88D (M2)	Adjust the waveform as shown to the below.	
2. Sensitivity	1) Test CH: Low, Center, High SSG output: -116dBm (0.35µV) SSG MOD: 1.5kHz	SSG DVM Oscilloscope	TX-RX	ANT SP/MIC			Check	12dB SINAD or more
3. Squelch (Open)	1) Test CH: Low, Center, High SSG output: -122dBm (0.18µV) SSG MOD: 1.5kHz	AF VTVM				Programming software: KPG-88D (M2)	Write	Squelch open
4. Squelch (Tight)	1) Test CH: Low, Center, High SSG output: -116dBm (0.35µV) SSG MOD: 1.5kHz							
5. Battery Warning Level	1) BATT terminal voltage: 5.9V	DVM	TX-RX	ANT BATT terminal			Write	BATT terminal voltage: 5.9V



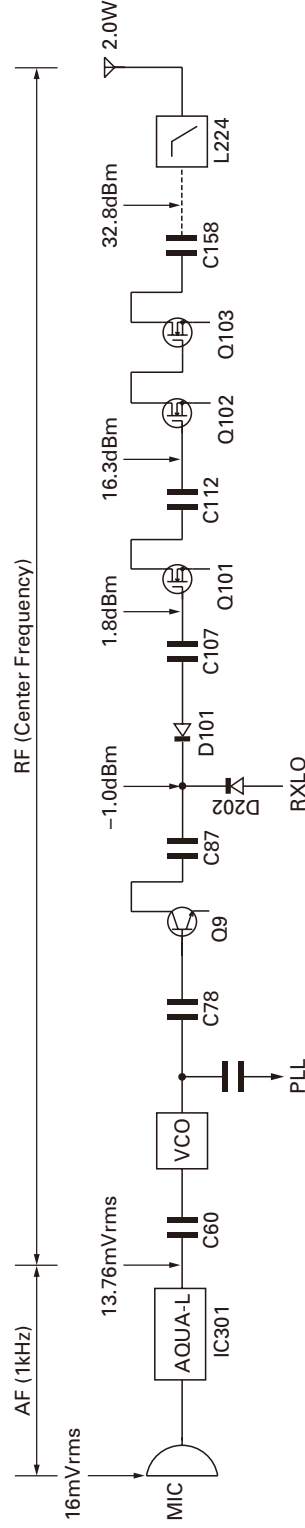
LEVEL DIAGRAM

Receiver Section



To make measurements in the AF section, connect the AC level meter. (ANT input: -53dBm, 1kHz FM, 1.5kHz DEV)
 In the RF section, use 1000pF coupling capacitor. (The display shows the SSG input value required to obtain 12dB SINAD without Local Level.)

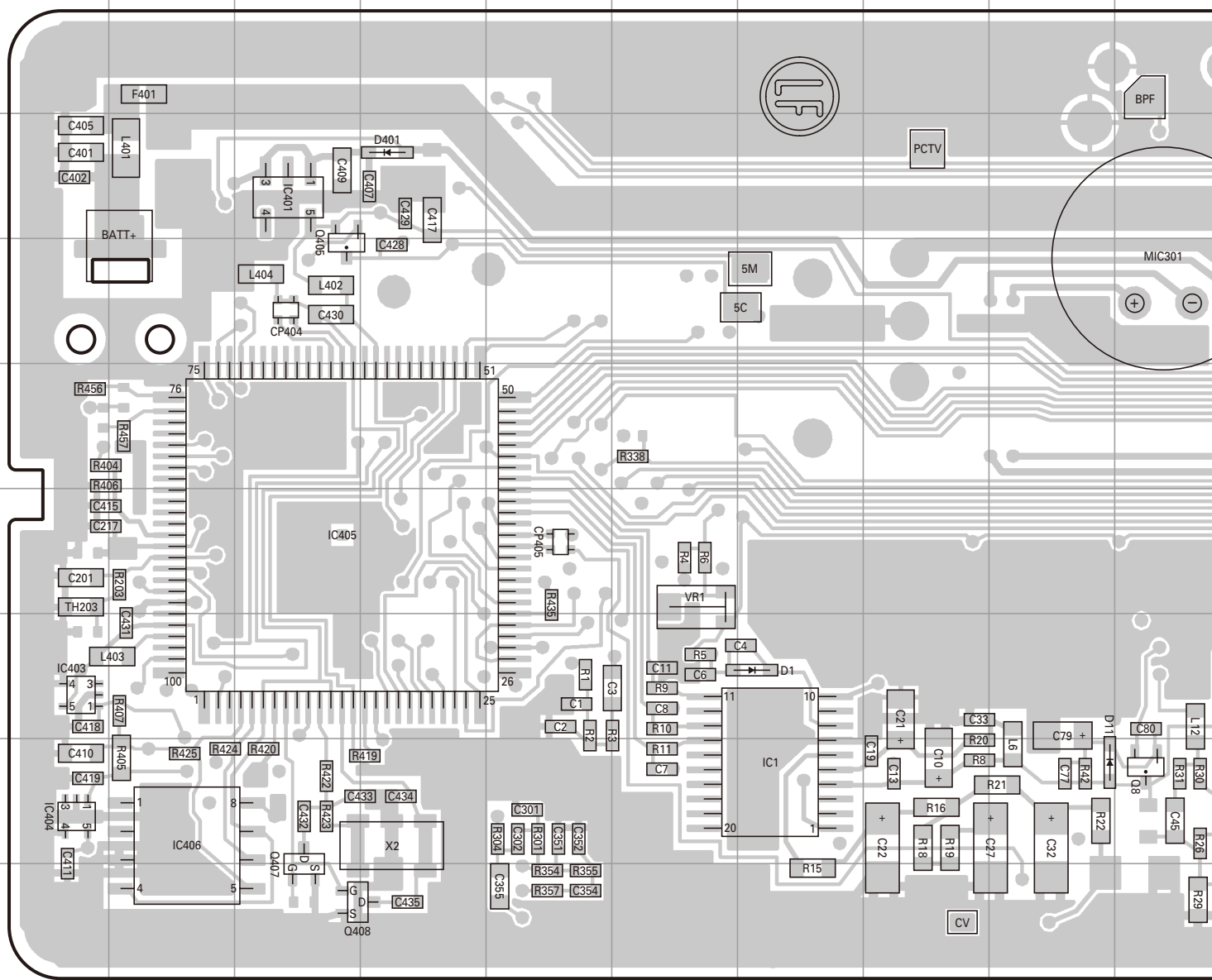
Transmitter Section



AG is set to the MIC Input becomes 1.5kHz DEV at 1.5kHz MOD.
 To make measurements in the AF section, connect the AC level meter.
 In the RF section, use 1000pF coupling capacitor.

TK-361SA PC BOARD

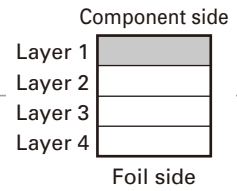
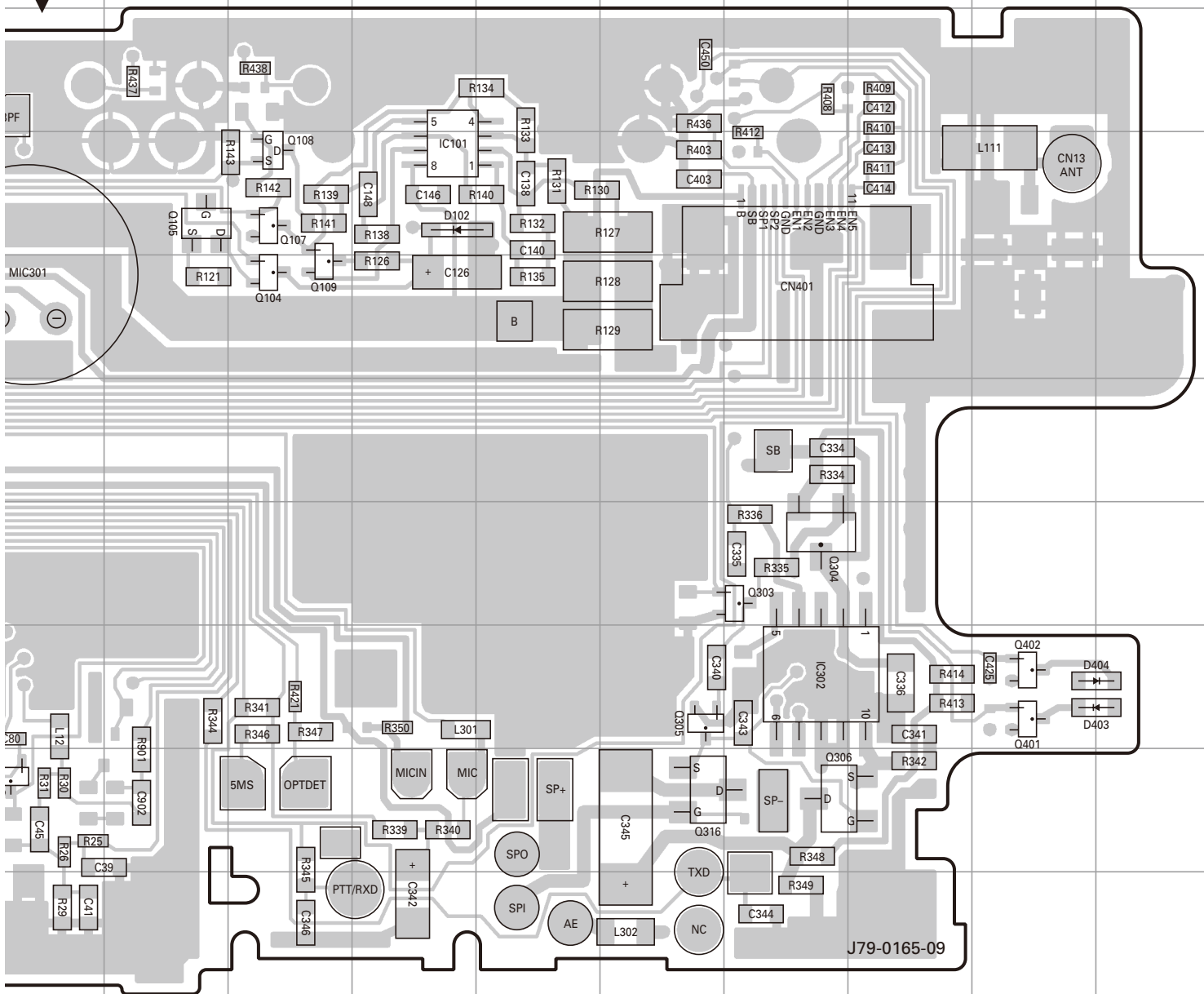
TX-RX UNIT (X57-6900-21) Component side view (J79-0165-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	9G	Q8	9J	Q305	8O	D1	8G
IC101	4M	Q104	5L	Q306	9P	D11	9I
IC302	8P	Q105	4K	Q316	9O	D102	4M
IC401	4C	Q107	4L	Q401	8R	D401	4D
IC403	8A	Q108	4L	Q402	R	D403	8R
IC404	9A	Q109	5L	Q405	5C	D404	8R
IC405	7C	Q303	7P	Q407	9C		
IC406	9B	Q304	7P	Q408	10C		

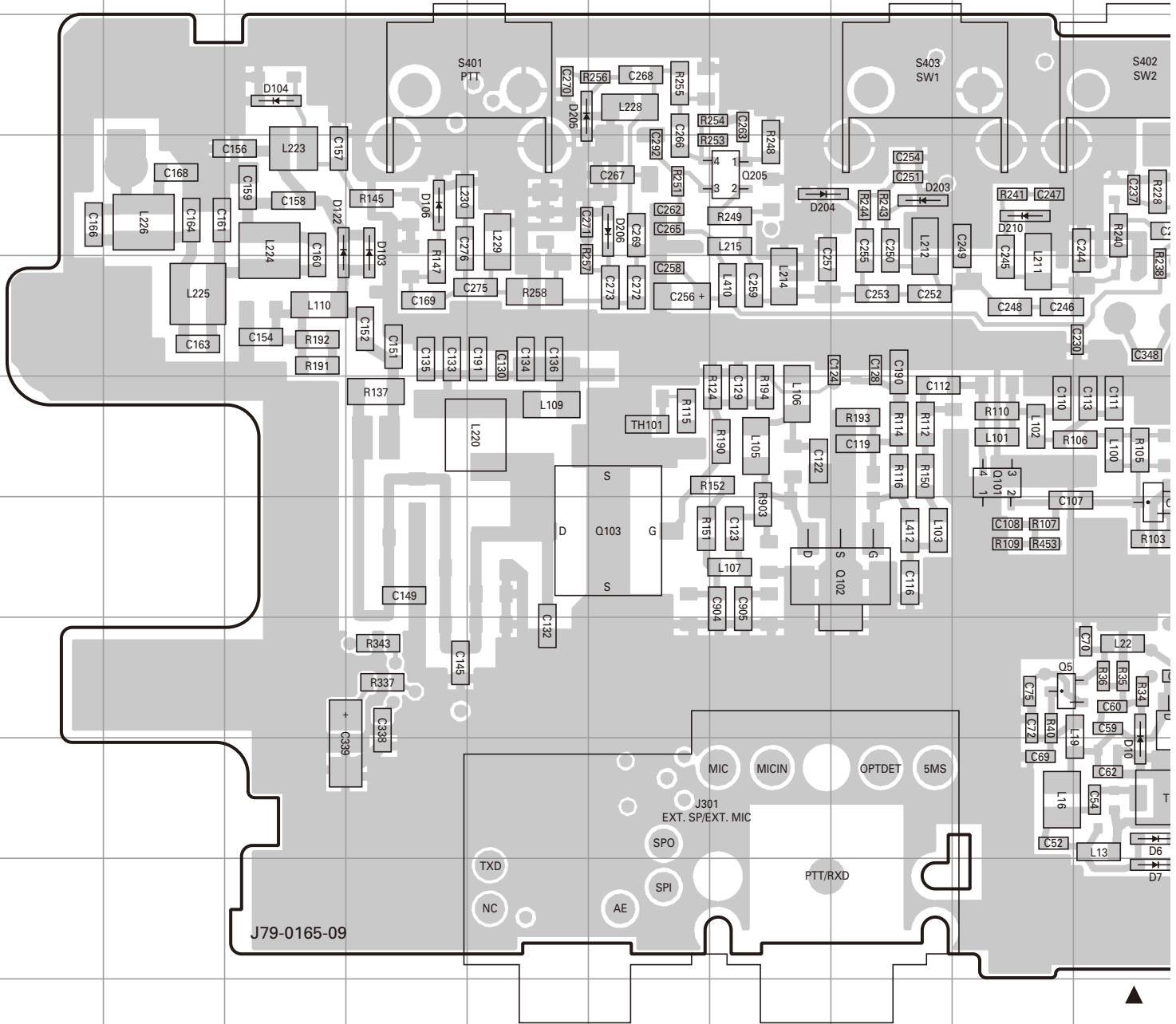
PC BOARD TK-361SA

TX-RX UNIT (X57-6900-21) Component side view (J79-0165-09)



TK-361SA PC BOARD

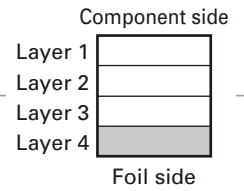
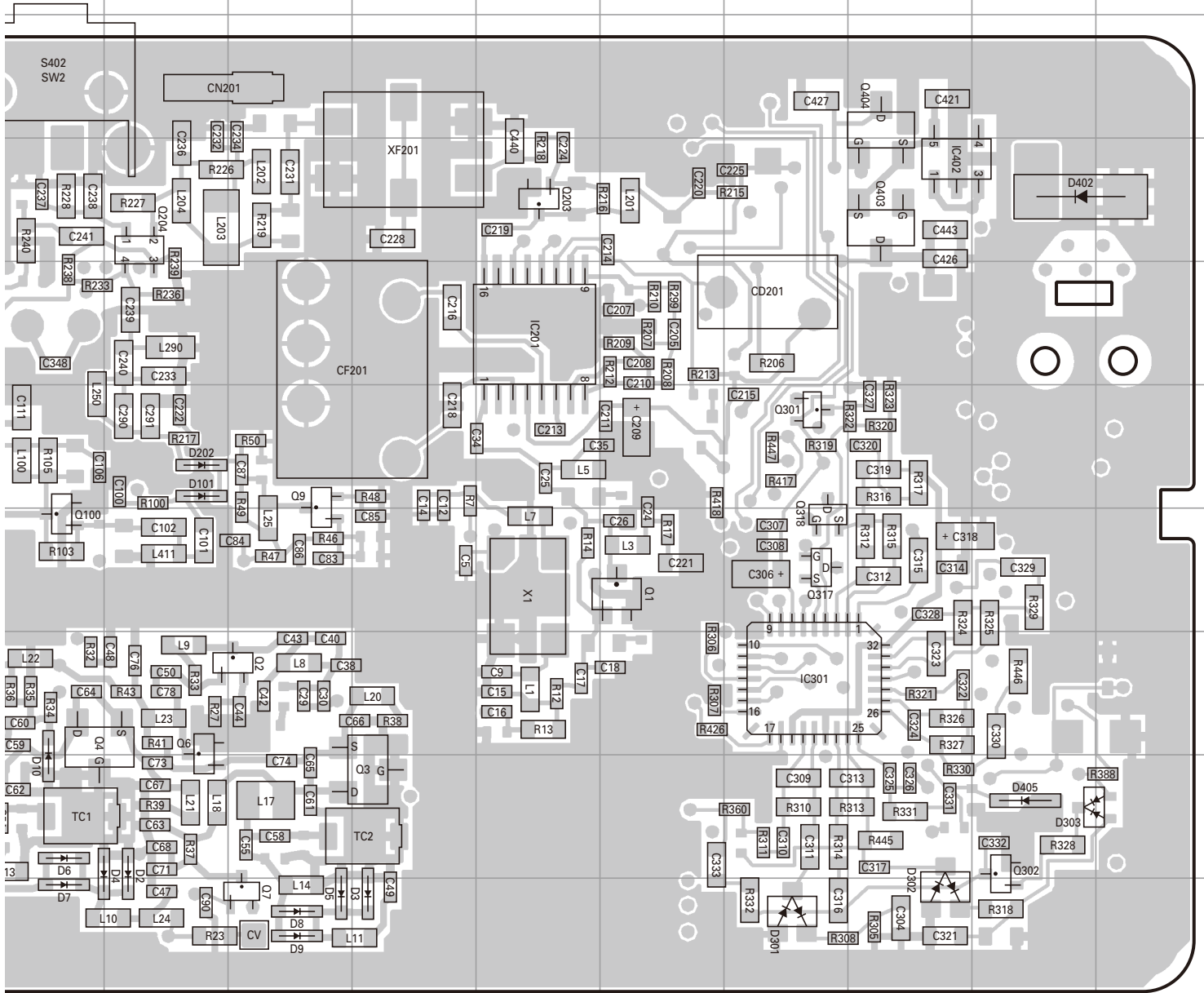
TX-RX UNIT (X57-6900-21) Foil side view (J79-0165-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC201	5N	Q7	10L	Q301	6P	D5	10L	D106	4D	D302	10Q
IC301	8P	Q9	6L	Q302	9R	D6	9J	D122	4C	D303	9R
IC402	4Q	Q100	7J	Q317	7P	D7	10J	D202	6K	D402	4R
Q1	7O	Q101	6I	Q318	7P	D8	10L	D203	4H	D405	9R
Q2	8L	Q102	7H	Q403	4Q	D9	10L	D204	4G		
Q3	9M	Q103	7F	Q404	3Q	D10	9J	D205	3E		
Q4	8J	Q203	4N	D2	9K	D101	6K	D206	4F		
Q5	8I	Q204	4K	D3	10M	D103	4D	D210	4I		
Q6	8K	Q205	4G	D4	9K	D104	3C	D301	10P		

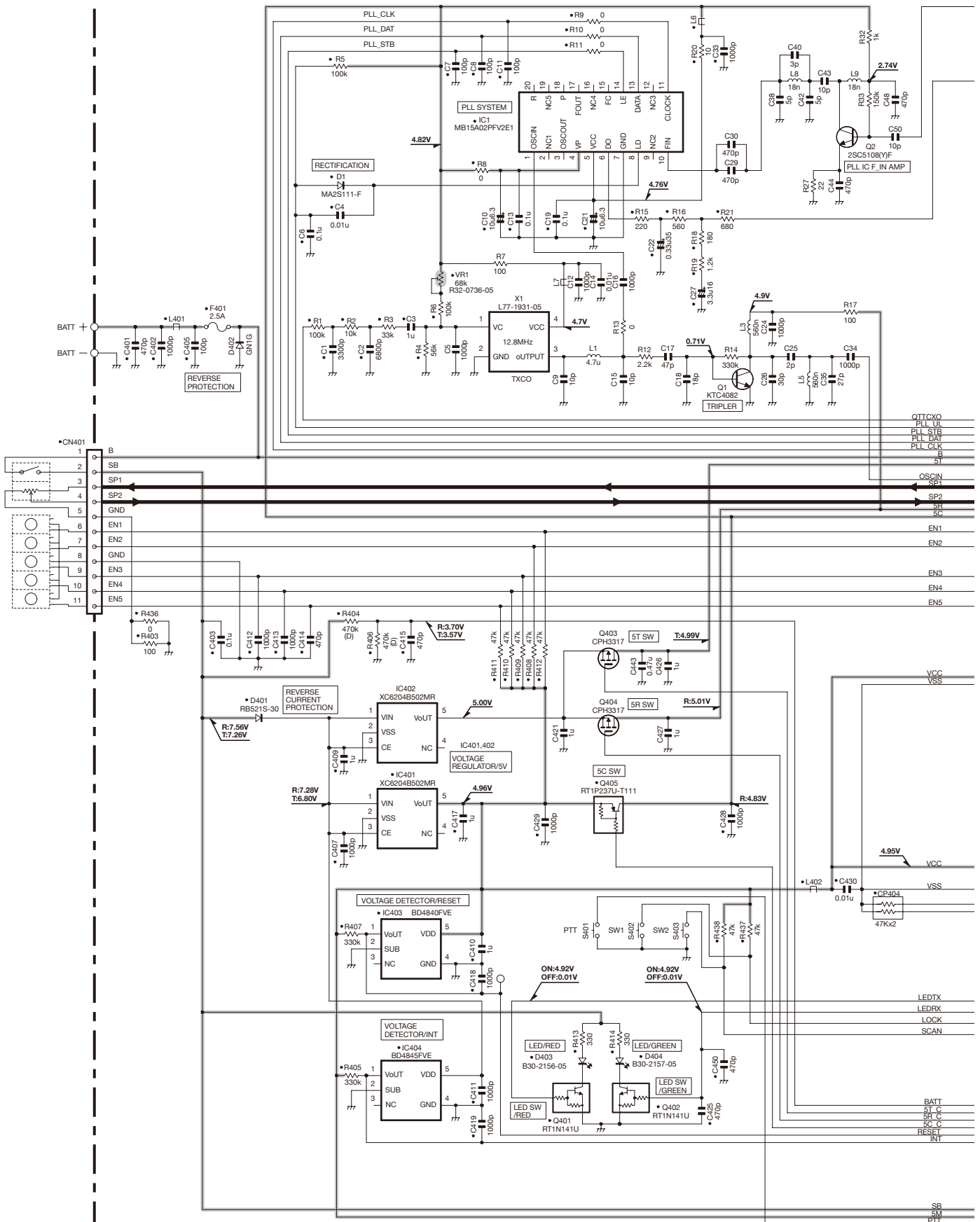
PC BOARD TK-361SA

TX-RX UNIT (X57-6900-21) Foil side view (J79-0165-09)



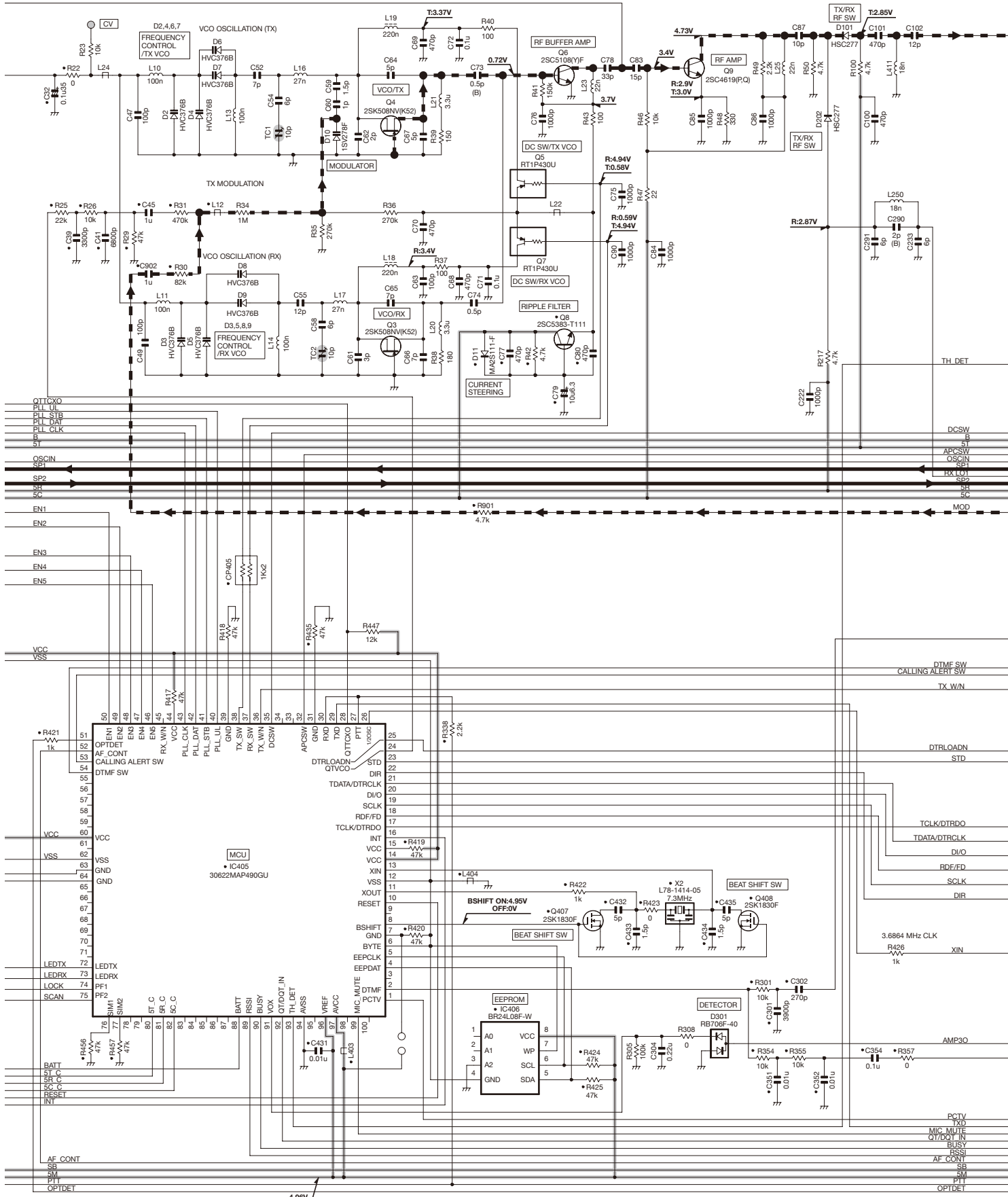
TK-361SA SCHEMATIC DIAGRAM

TX-RX UNIT (X57-6900-21)



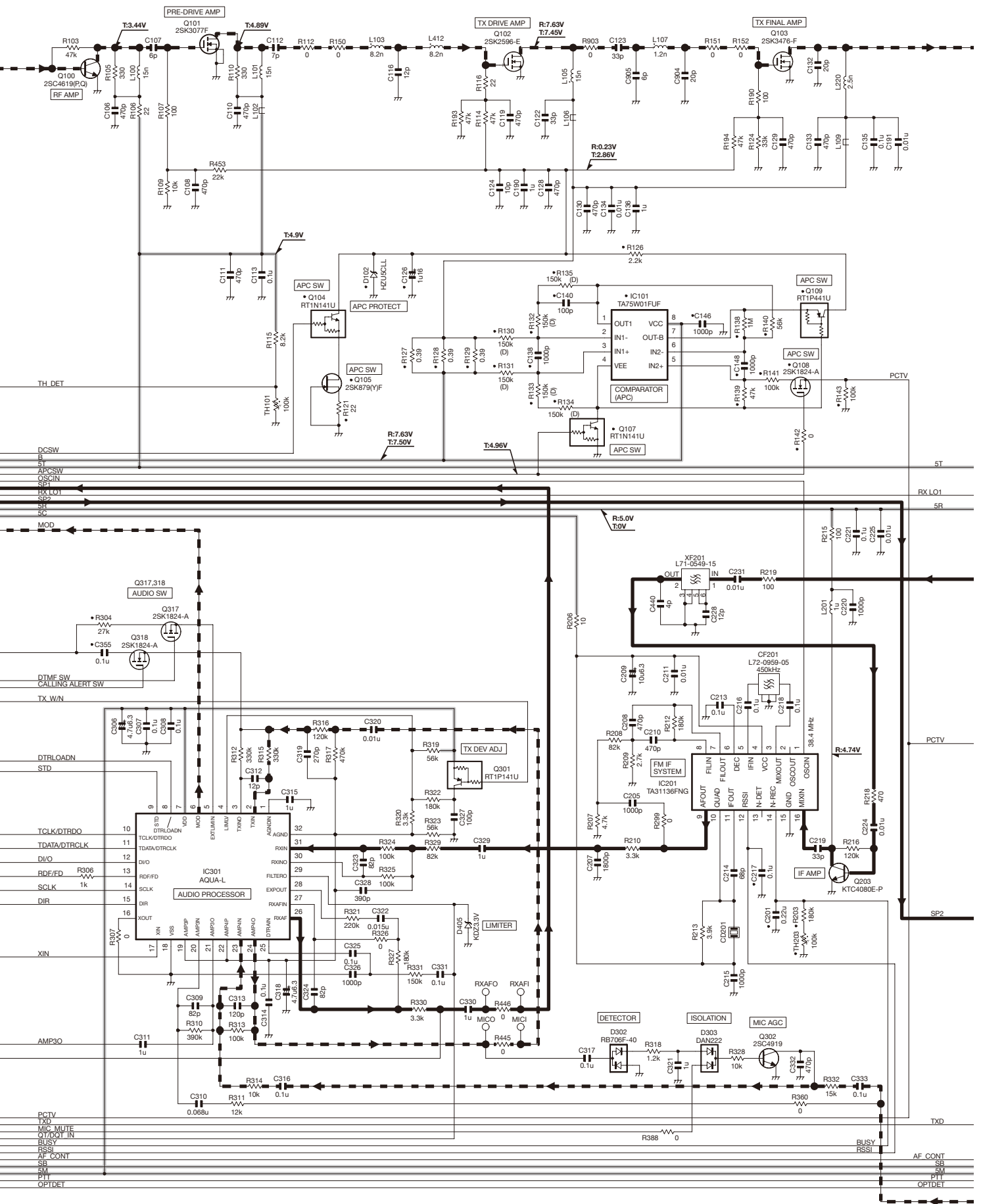
SCHEMATIC DIAGRAM TK-361SA

TX-RX UNIT (X57-6900-21)

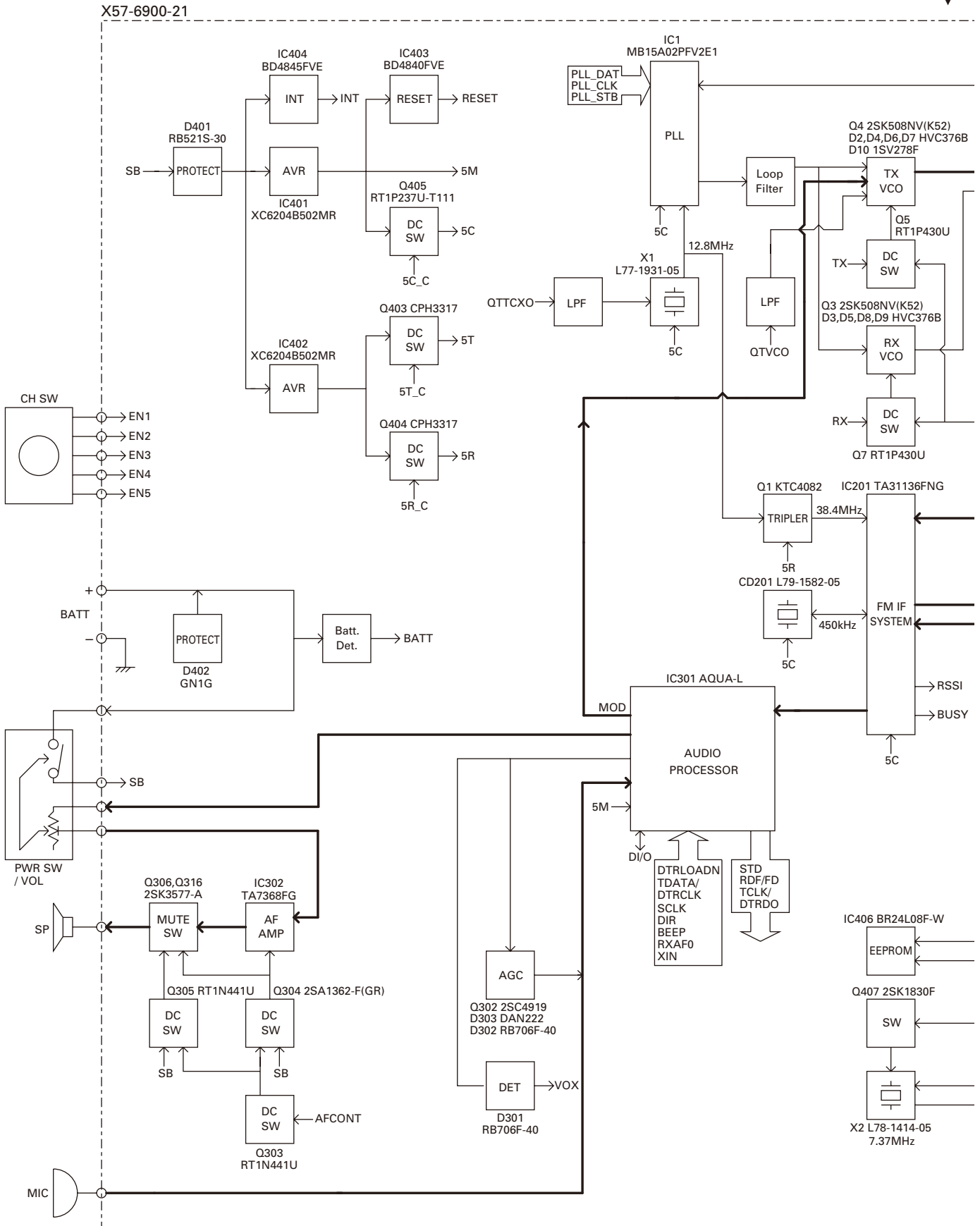


TK-361SA SCHEMATIC DIAGRAM

TX-RX UNIT (X57-6900-21)



BLOCK DIAGRAM



TK-361SA

OPTIONAL ACCESSORIES

KBH-10 (Belt Clip)

■ External View



KSC-31 (Rapid Charger)

■ External View



KNB-30A (Ni-Cd Battery Pack)

■ External View



■ Specifications

Charging current	850mA ±5%
Charging time	KNB-30A : Approx. 120 minutes
Dimensions (Charger only)	86.3W x 46.2H x 100.0D (mm)
	3-3/8W x 1-7/8H x 4D (inches)
Weight (Charger only)	Approx. 100g / 0.22 lbs

■ Specifications

Voltage	7.2V (1.2V x 6)
Battery capacity	1100mAh

SPECIFICATIONS

General

Frequency Range.....	463.975~464.375MHz
Number of Channels.....	8
Channel Spacing.....	12.5kHz
PLL Channel Stepping.....	5kHz, 6.25kHz
Operating Voltage.....	7.5 V DC \pm 20%
Battery Life (5-5-90 duty cycle with KNB-30A battery).....	Battery Saver off : Approx. 10 hours Battery Saver on and QT on : Approx. 13 hours Battery Saver on and QT off : Approx. 14 hours
Operating Temperature range.....	-30°C to +60°C (-22 °F to +140 °F)
Frequency Stability.....	\pm 2.5ppm (-30°C to +60°C)
Dimensions and Weight (Dimensions not including protrusions)	
Radio Only.....	54 W x 122 H x 21 D mm 160g
With KNB-30A (1100mAh battery).....	54 W x 122 H x 33 D mm 340g

Receiver (Measurements made per TIA/EIA-603)

Sensitivity	
EIA 12dB SINAD.....	0.25 μ V
Selectivity.....	65dB
Intermodulation.....	65dB
Spurious Response.....	60dB
Audio Power Output.....	500mW at 8 Ω less than 10% distortion

Transmitter (Measurements made per TIA/EIA-603)

RF Power Output.....	2W/1W
Spurious and Harmonics.....	65dB
Modulation.....	11K0F3E
FM Noise.....	40dB
Audio Distortion.....	Less than 5%

TK-361SA

Kenwood Corporation

2967-3, Ishikawa-machi, Hachioji-shi, Tokyo, 192-8525 Japan

Kenwood U.S.A. Corporation

P.O. BOX 22745, 2201 East Dominguez Street, Long Beach,
CA 90801-5745, U.S.A.

Kenwood Electronics Canada Inc.

6070 Kestrel Road, Mississauga, Ontario, Canada L5T 1S8

Kenwood Electronics Deutschland GmbH

Rembrücker Str. 15, 63150 Heusenstamm, Germany

Kenwood Electronics Belgium N.V.

Leuvensesteenweg 248 J, 1800 Vilvoorde, Belgium

Kenwood Electronics France S.A.

L'Etoile Paris Nord 2, 50 Allée des Impressionnistes,
Bp 58416 Villepinte, 95944 Roissy Ch De Gaulle Cedex

Kenwood Electronics UK Limited

KENWOOD House, Dwight Road, Watford, Herts.,
WD18 9EB United Kingdom

Kenwood Electronics Europe B.V.

Amsterdamseweg 37, 1422 AC Uithoorn, The Netherlands

Kenwood Electronics Italia S.p.A.

Via G. Sirtori, 7/9 20129 Milano, Italy

Kenwood Ibérica, S.A.

Bolivia, 239-08020 Barcelona, Spain

Kenwood Electronics Australia Pty. Ltd.

(A.C.N. 001 499 074)

16 Giffnock Avenue, Centrecourt Estate, North Ryde, N.S.W. 2113 Australia

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

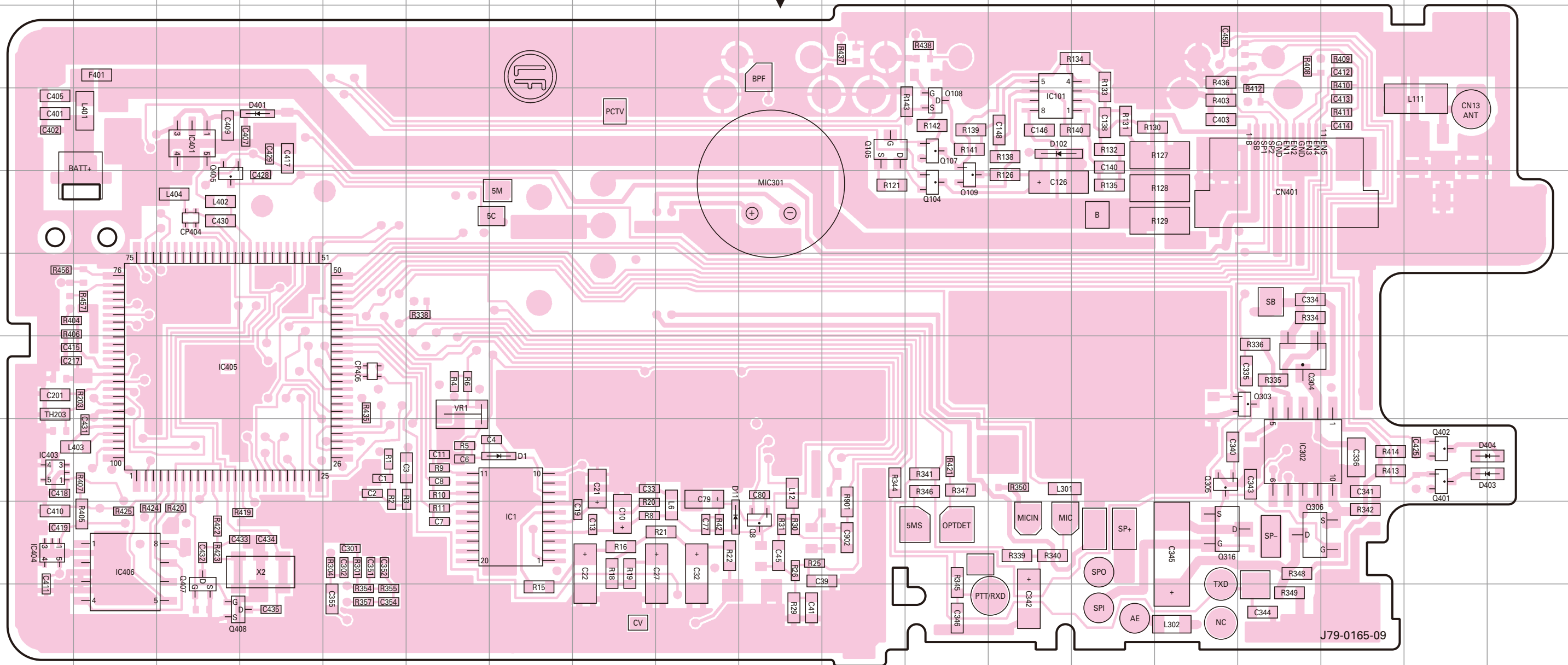
1 Ang Mo Kio Street 63, Singapore 569110

TK-361SA PC BOARD

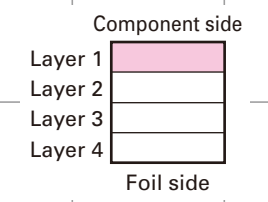
PC BOARD TK-361SA

TX-RX UNIT (X57-6900-21) Component side view (J79-0165-09)

TX-RX UNIT (X57-6900-21) Component side view (J79-0165-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	9G	Q8	9J	Q305	8O	D1	8G
IC101	4M	Q104	5L	Q306	9P	D11	9I
IC302	8P	Q105	4K	Q316	9O	D102	4M
IC401	4C	Q107	4L	Q401	8R	D401	4D
IC403	8A	Q108	4L	Q402	R	D403	8R
IC404	9A	Q109	5L	Q405	5C	D404	8R
IC405	7C	Q303	7P	Q407	9C		
IC406	9B	Q304	7P	Q408	10C		

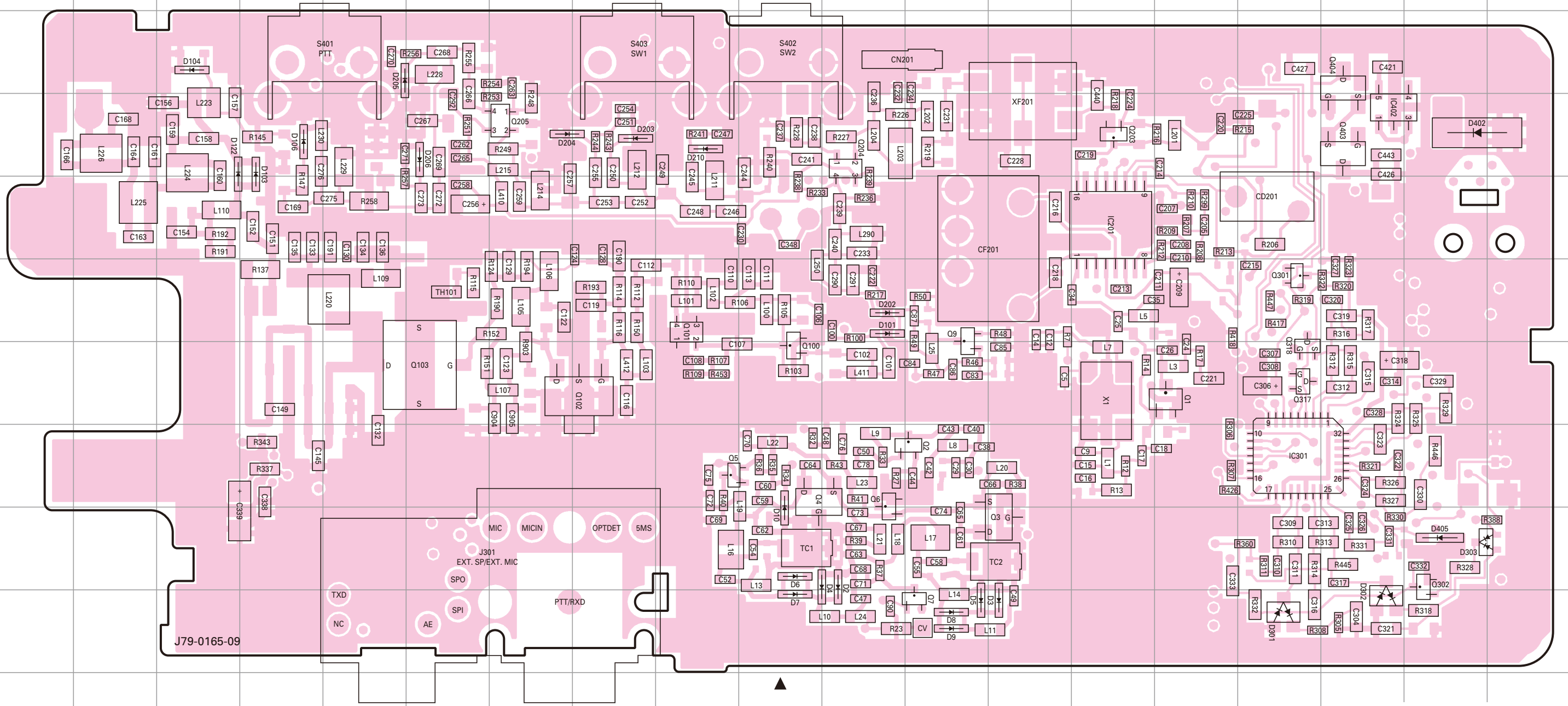


TK-361SA PC BOARD

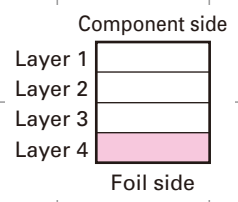
PC BOARD TK-361SA

TX-RX UNIT (X57-6900-21) Foil side view (J79-0165-09)

TX-RX UNIT (X57-6900-21) Foil side view (J79-0165-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC201	5N	Q7	10L	Q301	6P	D5	10L	D106	4D	D302	10Q
IC301	8P	Q9	6L	Q302	9R	D6	9J	D122	4C	D303	9R
IC402	4Q	Q100	7J	Q317	7P	D7	10J	D202	6K	D402	4R
Q1	7O	Q101	6I	Q318	7P	D8	10L	D203	4H	D405	9R
Q2	8L	Q102	7H	Q403	4Q	D9	10L	D204	4G		
Q3	9M	Q103	7F	Q404	3Q	D10	9J	D205	3E		
Q4	8J	Q203	4N	D2	9K	D101	6K	D206	4F		
Q5	8I	Q204	4K	D3	10M	D103	4D	D210	4I		
Q6	8K	Q205	4G	D4	9K	D104	3C	D301	10P		



X57-6900-21

