

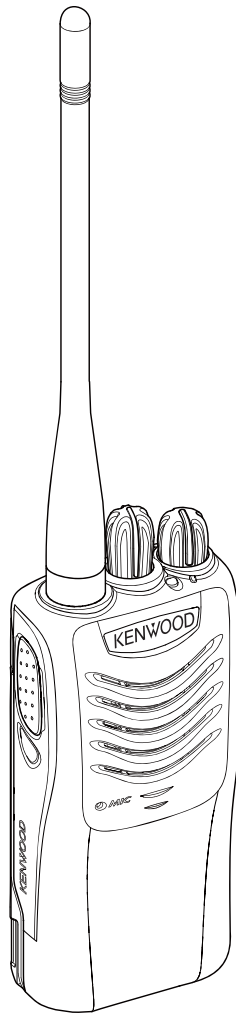
KENWOOD

SERVICE MANUAL

UHF FM TRANSCEIVER

TK-3000

K, M, M2, M3, M4, M6, M7, E, T2 versions



REVISED

This service manual has been revised due to the addition of TK-3000 type M3, M4, M6, M7, E, T2. This service manual is applies to products with B4901021 (K, M, M3, M7 types) / B4B01113 (M2, M4 types) / B5305070 (M6 type) / B4905881 (E, T2 types) or subsequent serial numbers.

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



This product uses Lead Free solder.

TK-3000

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Service Manual List

Title	Parts number	Type	Serial number	PCB number
TK-3000	B51-8939-00	K,M,M2	-	J79-0306-09
TK-3000	B51-8973-00	M6	-	J79-0306-19
TK-3000	B53-7006-00	E,T	-	J79-0306-29
TK-3000	B5B-7202-00 (This service manual)	K,M,M3,M7	From B4901021	J7C-0010-00
		M2,M4	From B4B01113	
		M6	From B5305070	
		E,T2	From B4905881	

GENERAL

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:

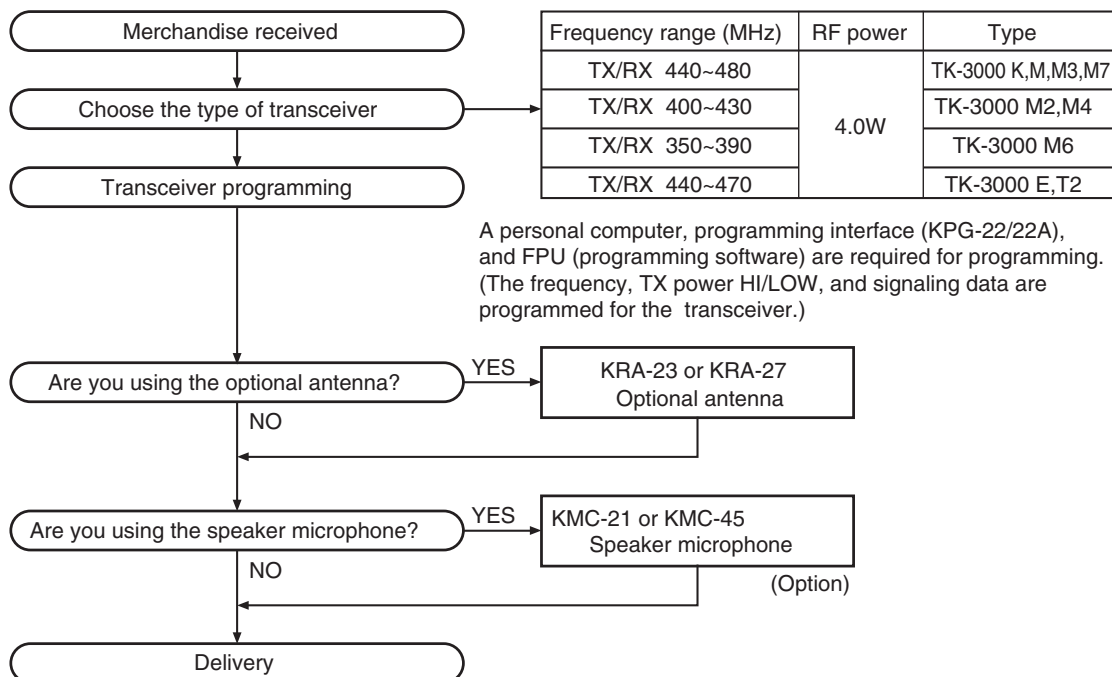
- DO NOT transmit until all RF connectors are verified secure and any open connectors are properly terminated.
- SHUT OFF and DO NOT operate this equipment near electrical blasting caps or in an explosive atmosphere.
- This equipment should be serviced by a qualified technician only.

SERVICE

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

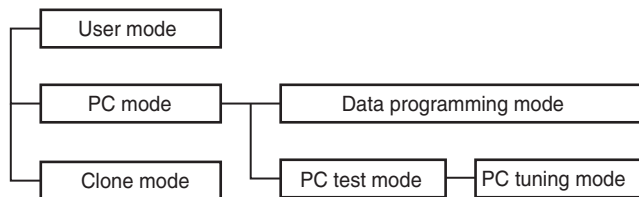
Model	Type	TX-RX unit	Frequency range	Remarks
TK-3000	K,M,M3,M7	X57-8103-00	440~480MHz	IF1: 38.85MHz LOC: 38.4MHz
	M2,M4	X57-8103-01	400~430MHz	
	M6	X57-8100-23	350~390MHz	
	E,T2	X57-8102-71	440~470MHz	

SYSTEM SET-UP



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 FPU.
Clone mode	Used to transfer programming data from one transceiver to another.

2. How to Enter Each Mode

Mode	Operation
User mode	Power ON
PC mode	Received commands from PC
Clone mode	[PTT]+[Side]+Power ON (Two seconds)

3. PC Mode

3-1. Preface

The transceiver is programmed by using a personal computer, a programming interface (KPG-22A/22U) and FPU-programming software (KPG-137D: ver. 2.20 or later).

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

3-2. Connection Procedure

1. Connect the transceiver to the personal computer with the interface cable.

Note:

- You must install the KPG-22 driver in the computer to use the USB programming interface cable (KPG-22U).
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 read from the transceiver, the red LED lights.
When data is written to by the transceiver, the green LED lights.

Note:

- The data stored in the personal computer must match Model Name and Model Type when it is written into EEPROM.
- Do not press the [PTT] key during data transmission or reception.

3-3. KPG-22A Description

(PC programming interface cable: Option)

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

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

3-4. KPG-22U Description

(USB programming interface cable: Option)

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

When using the KPG-22U, install the supplied CD-ROM (with driver software) in the computer. The KPG-22U driver runs under Windows XP, Vista, 7 or 8.

3-5. Programming Software KPG-137D Description

The KPG-137D is the programming software for the transceiver supplied on a CD-ROM. This software runs under windows XP, Vista, 7 or 8 on a PC. The software on this disk allows a user to program the transceiver via Programming interface cable (KPG-22A/22U).

Note:

- Use the FPU that matches the market when you first set the market code and model name/frequency data to the service unit. The unit set by mistake cannot be restored.
- Receive frequencies listed below may result in the interference of reception due to the harmonics of internal oscillators. Enter a frequency not listed in the table.

No.	FREQUENCY (MHz)			
	TK-3000 K,M,M3,M7	TK-3000 M2,M4	TK-3000 M6	TK-3000 E,T2 *1
1	441.59375	403.19375	364.79375	441.59375
2	441.59500	403.19500	364.79500	441.59500
3	441.60000	403.20000	364.80000	441.60000
4	441.60500	403.20500	364.80500	441.60500
5	441.60625	403.20625	364.80625	441.60625
6	460.79375	422.39375	383.99375	460.79375
7	460.79500	422.39500	383.99500	460.79500
8	460.80000	422.40000	384.00000	460.80000
9	460.80500	422.40500	384.00500	460.80500
10	460.80625	422.40625	384.00625	460.80625
11	479.99375	-	-	479.99375
12	479.99500	-	-	479.99500
13	480.00000	-	-	480.00000

*1: Guaranteed frequency range 440~470MHz

REALIGNMENT

3-6. Programming with PC

If data is transferred to the transceiver from a PC with the FPU, 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.

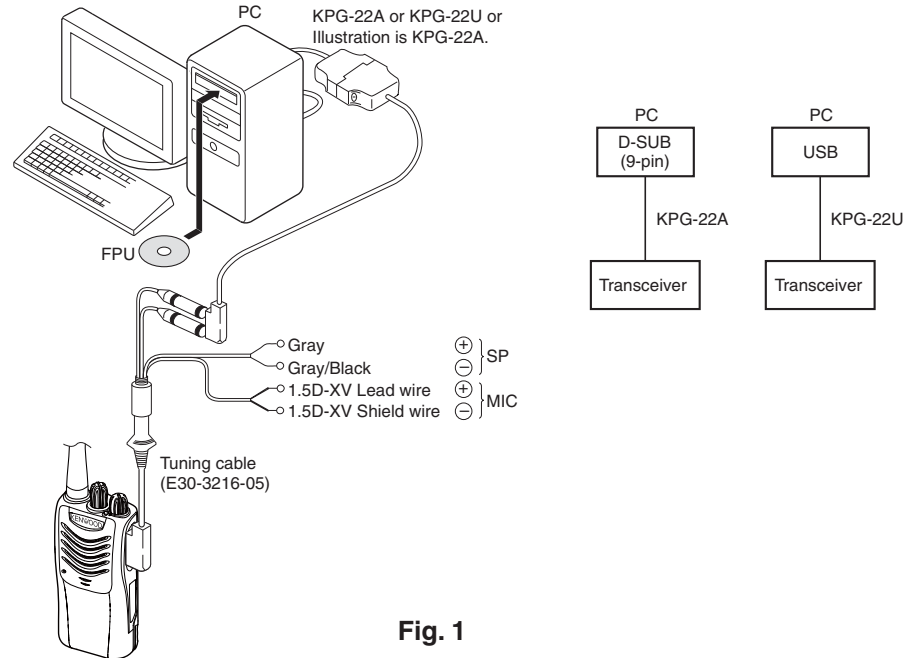


Fig. 1

4. Clone mode

Programming data can be transferred from one transceiver to another by connecting them via their SP/MIC connectors.

Cloning can be performed as described below (the transmit transceiver is the source and the receive transceiver is the target).

The following data cannot be cloned.

- Tuning data
- Model name data
- ESN data

1. Turn the source transceiver and target transceiver power OFF.
2. Turn the source transceiver power ON while pressing the [PTT] and [Side] keys, to enter clone mode.
3. Connect the cloning cable (part No. E30-3410-05) to the SP/MIC connectors on the source and target transceivers.
4. Turn the target transceiver power ON.
5. Press the [Side] key on the source transceiver. The data of the source is sent to the target. While the source is sending data, red LED will light. While the target is receiving the data, green LED will light. When cloning of data is completed, the source red LED turned off, and the target automatically operates in the User mode.
6. Additional targets can be continuously cloned. When the [Side] key on the source is pressed, the data of the source is sent to the target again. Repeat steps 3 to 5 to clone additional transceivers.

Note:

- The Model name and Market codes must be the same in order to clone the transceiver.
- If the transceivers clone mode is configured as "Disabled", the transceiver cannot enter clone mode.
- If the Read authorization password is set to the transceiver, the transceiver cannot enter to the clone mode.
- Cannot be cloned if the password (overwrite password) is programmed to the target.

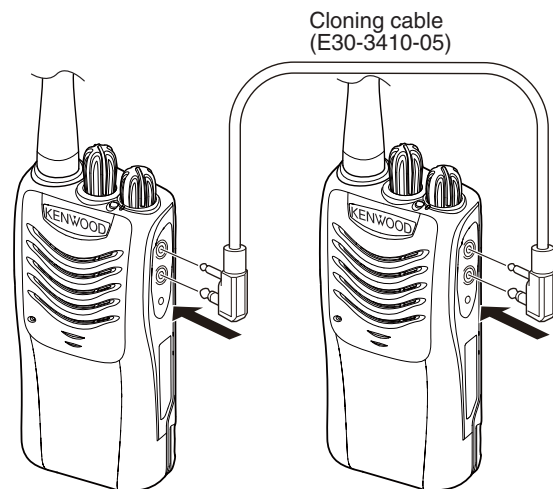
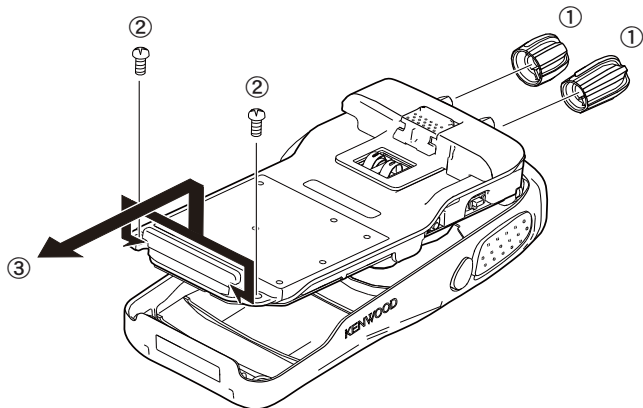


Fig. 2

DISASSEMBLY FOR REPAIR

1. Separating the Case Assembly from the Chassis

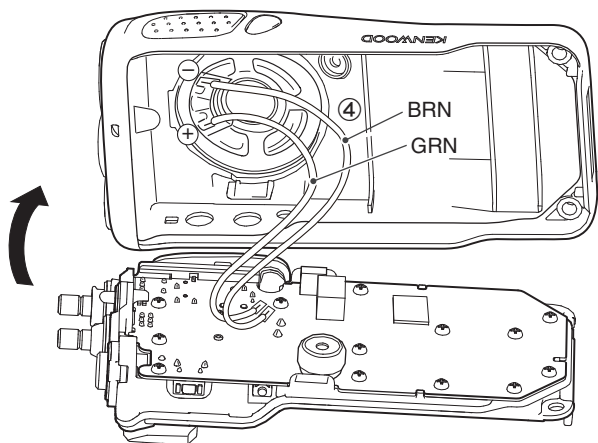
1. Remove the two knobs (1).
2. Remove the two screws (2).
3. Expand the right and left sides of the bottom of the case assembly, lift the chassis, and remove it from the case assembly (3).



4. Taking care not to cut the speaker lead (4), open the chassis and case assembly.

Note:

Solder the speaker wire back in its original position if you have removed it.

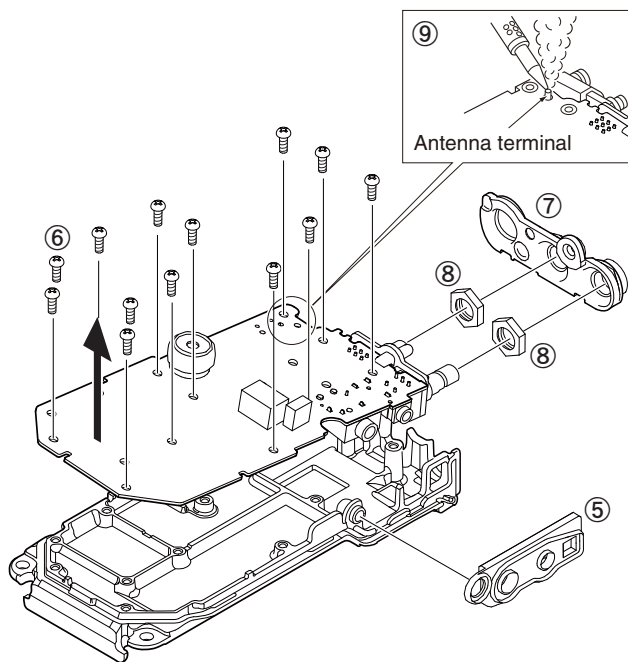


2. Removing the TX-RX unit from the Chassis

1. Remove the packing (5).
2. Remove the 13 screws (6).
3. Remove the packing (7) and two hexagon nuts (8).
4. Remove the solder from the antenna terminal using a soldering iron then lift the unit off (9).

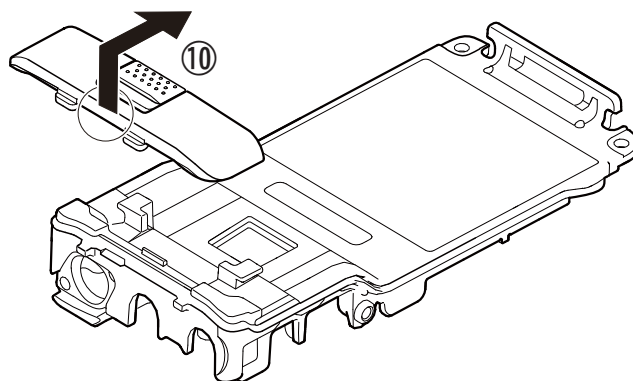
Note:

When reassembling the unit in the chassis, be sure to solder the antenna terminal.



3. Removing the Rear Panel

1. Raise the rear panel on the chassis (10).



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 is supplied from the PLL circuit.

The PLL circuit in the transmitter generates the necessary frequencies.

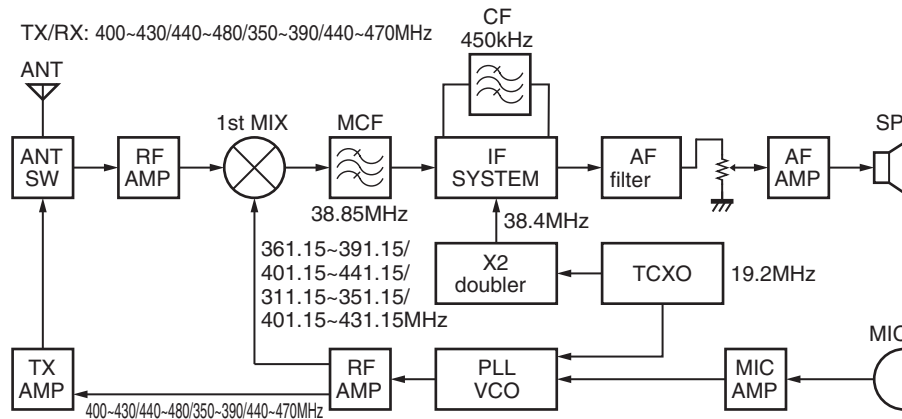


Fig. 1 Frequency configuration

2. Receiver System

The receiver system is shown in Figure 2.

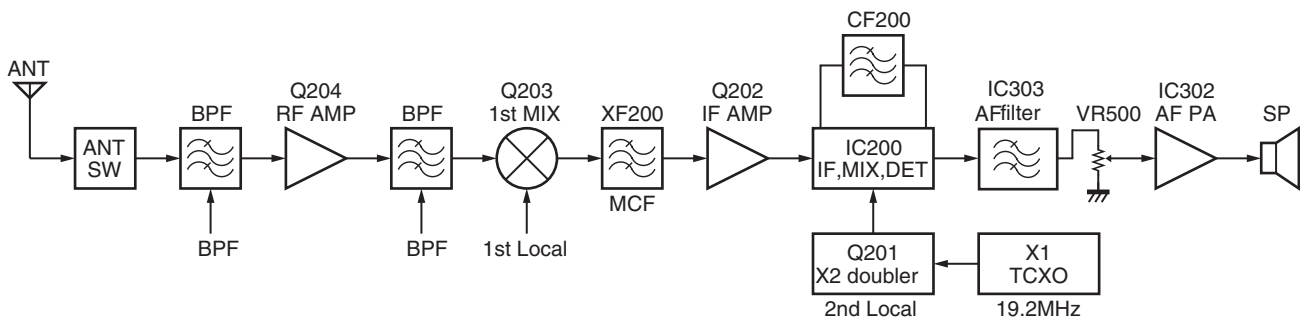


Fig. 2 Receiver system

2-1. Front End (RF Amplifier) Circuit

The signal coming from the antenna passes through the transmit/receive switching diode circuit (D101, D102, D103 and D105) and a BPF (L208 and L210), and is then amplified by the RF amplifier (Q204).

The resulting signal passes through a BPF (L215, L218 and L219) and goes to the mixer. These BPFs are adjusted by variable capacitors (D201, D202, and D204). The input voltage to the variable capacitor is a regulated voltage output from the DAC (IC300).

2-2. First Mixer

The signal from the front end is mixed with the first local oscillator signal generated in the PLL circuit by Q203 to produce a first IF frequency of 38.85 MHz.

The resulting signal passes through the XF200 MCF to cut the adjacent spurious and provide the optimum characteristics, such as adjacent frequency selectivity.

CIRCUIT DESCRIPTION

2-3. IF Amplifier Circuit

The first IF signal is passed through a four-pole monolithic crystal filter (XF200) to remove the adjacent channel signal.

The filtered first IF signal is amplified by the first IF amplifier (Q202) and then applied to the IF system IC (IC200).

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 (TCXO X1) and produces the second IF signal of 450kHz.

The second IF signal is passed through the ceramic filter (CF200) 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.

2-4. Audio Amplifier Circuit

The demodulated signal from IC200 is amplified by IC305, IC303 and goes to AF amplifier through IC302.

The signal then goes through an volume control (VR500), and is routed to an audio power amplifier (IC302) where it is amplified and output to the speaker.

To output sounds from the speaker, IC400 sends a high signal to the SPMUT line and turns IC400 on through Q300, Q301, Q302 and Q306.

3. Transmitter System

3-1. Microphone Amplifier Circuit

The signal from microphone amplified by IC301 and goes through mute switch (IC300).

IC304 is composed of high-pass filter, low-pass filter and pre-emphasis/IDC circuit.

The output signal from the DAC IC (IC300) goes to the VCO modulation input.

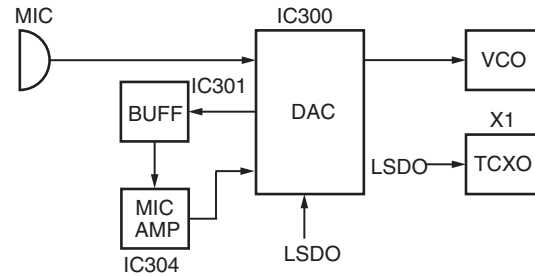


Fig. 3 Microphone amplifier circuit

3-2. Driver and Final Amplifier Circuit

The signal from the T/R switch (D100 is on) is amplified by the pre-drive amplifier (Q100) to 30mW.

The output of the pre-drive amplifier is amplified by the drive amplifier (Q101) and the RF final amplifier (Q102) to 4.0W (1W when the power is low).

The drive amplifier and the RF final amplifier consist of two MOS FET stages.

The output of the RF final amplifier is then passed through the harmonic filter (LPF) and antenna switch (D101 and D102) and is applied to the antenna terminal.

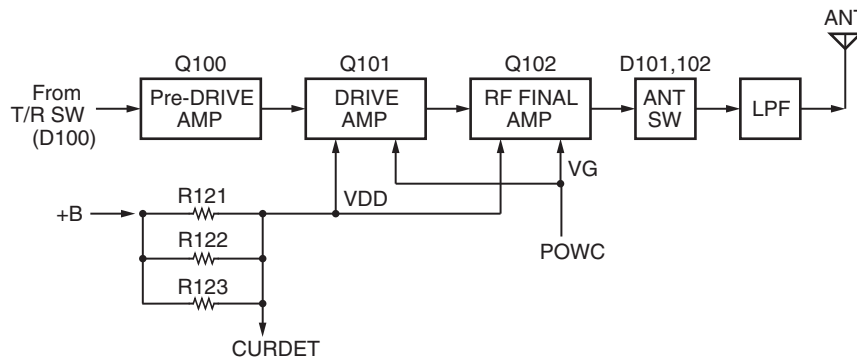


Fig. 4 Drive and final amplifier circuit

CIRCUIT DESCRIPTION

4. Frequency Synthesizer Circuit

4-1. Frequency Synthesizer

The frequency synthesizer consists of the TCXO (X1), VCO, PLL IC (IC1) and buffer amplifiers.

The TCXO generates 19.2MHz. The frequency stability is 2.5 ppm within the temperature range of -30 to $+60^{\circ}\text{C}$.

The frequency tuning and modulation of the TCXO are done to apply a voltage to pin 1 of the TCXO. The output of the TCXO is applied to pin 1 of the PLL IC.

The VCO consists of 1VCO and covers a triple range of the 350.00~390.00/400.00~430.00/440.00~470.00 (480.00) MHz and the 311.15~351.15/361.15~391.15/401.15~431.15 (441.15) MHz. The VCO generates 311.15~351.15/361.15~391.15/401.15~431.15 (441.15) MHz for providing to the first local signal in receive.

The PLL IC consists of a prescaler, reference divider, phase comparator, charge pump (The frequency step of the PLL circuit is 5 or 6.25 kHz).

PLL data is output from DATA (pin 19), CLOCK (pin 18) and PLDL (pin 20) of the MCU (IC400). The data are input to the PLL IC when the channel is changed or when transmission is changed to reception and vice versa. A PLL lock condition is always monitored by the pin 22 (PLUL) of the MCU. When the PLL is unlocked, the PLUL goes low.

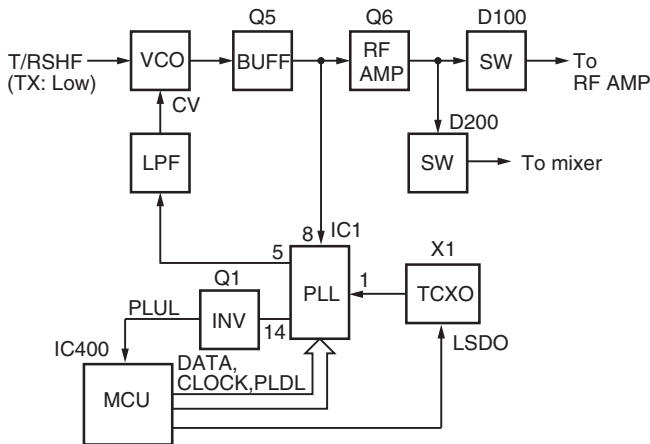


Fig. 5 PLL block diagram

5. Control Circuit

The control consists of the MCU (IC400) and its peripheral circuits. It controls the TX-RX unit. IC400 mainly performs the following;

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

Note:

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

Realign the transceiver after replacing the EEPROM.

6. Signaling Circuit

6-1. Encode

■ Low-speed data (QT, DQT)

Low-speed data is output from pin 49 (LSDO) of the MCU (IC400). The signal passes through a low-pass CR filter. The signal is mixed with the audio signal and goes to the VCO and TCXO (X1) modulation input after signal processing in the DAC IC (IC300).

■ High-speed data (DTMF)

High-speed data (HSD) is output from pin 50 (HSDO) of the MCU.

The signal passes through a low-pass CR filter. TX deviation making an adjustment by MCU is applied to the DAC IC (IC300). The signal is mixed with the audio signal and goes to the VCO and TCXO.

6-2. Decode

■ QT/DQT

The output signal from IF IC (IC200) enters the MCU (IC400) through IC300. IC400 determines whether the QT or DQT matches the preset value, and controls the SPMUT and the speaker output sounds according to the squelch results.

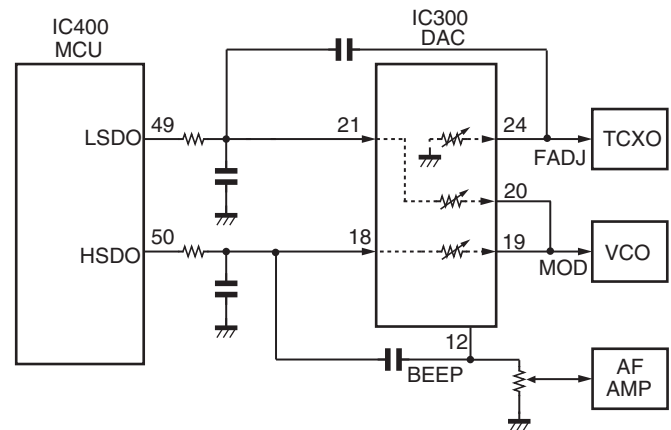


Fig. 6 Encode

7. Power Supply

There are five 5V power supplies for the MCU:

5M is always output while the power is on.

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

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

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

5MS is 5V for the SP/MIC connector and the DAC IC (IC300)

SEMICONDUCTOR DATA

MCU:F2136ACNKDRD (TX-RX unit: IC400)

Pin No.	Signal Name	I/O	Function
1	NC	O	NC
2	VREF	-	Reference voltage input
3	MODE	I	Mode select for MCU
4	NC	O	NC
5	NC	O	NC
6	RESET	I	Reset signal input
7	XOUT	O	Oscillation circuit
8	Vss	-	GND
9	XIN	I	Oscillation circuit
10	Vcc	-	Power supply
11	BSFT	O	Beat shift for MCU clock
12	NC	O	NC
13	NC	O	NC
14	NC	O	NC
15	E2WP	O	Write protect for EEPROM
16	E2DAT	I/O	Data input/output from EEPROM
17	E2CLK	O	Clock for EEPROM
18	CLOCK	O	Clock for PLL/DAC IC
19	DATA	O	Data for PLL/DAC IC
20	PLDL	O	Load enable for PLL IC
21	PLPS	O	Power saving for PLL IC
22	PLUL	I	Lock detect signal from PLL IC
23	NC	O	NC
24	EN4	I	Encoder input 4
25	EN3	I	Encoder input 3
26	EN2	I	Encoder input 2
27	EN1	I	Encoder input 1
28	NC	O	NC
29	OPTDET	I	2pin option detection
30	LEDR	O	LED (Red) control
31	LEDG	O	LED (Green) control
32	SPMUT	O	Power switch for AF amp
33	NC	O	NC
34	5TC	O	5T control
35	5CC	O	5C control (SAVE)
36	5MSC	O	5MS control
37	DACLD	O	Load enable for DAC IC
38	PTT	I	PTT key input
39	PFKEY	I	PF key input
40	INT	I	INT signal input
41	VDCSW	O	Voltage discharge switch
42	WID/NAR	O	Wide/Narrow control
43	RXD	I	Serial data input (FPU)
44	TXD	O	Serial data output (FPU)

Pin No.	Signal Name	I/O	Function
45	NC	O	NC
46	NC	O	NC
47	VOXIN	I	VOX level input
48	CVDET	I	VCO voltage detection
49	LSDO	O	Low speed data output
50	HSDO	O	DTMF/beep output
51	BATT	I	Battery voltage input
52	RSSI	I	RSSI input
53	SQL	I	Squelch input
54	LSDIN	I	LSD input
55	THDET	I	Thermistor input
56	CURDET	I	Current detection
57	T/RSHF	O	VCO Shift control
58	5VC	O	5V control
59	NC	O	NC
60	NC	O	NC
61	NC	O	NC
62	TYPE2	I	Destination selection 2
63	TYPE1	I	Destination selection 1
64	5RC	O	5R control

COMPONENTS DESCRIPTION

TX-RX unit (X57-810X-XX)

Ref. No.	Part Name	Description
IC1	IC	PLL system
IC200	IC	FM IF system
IC300	IC	DAC
IC301	IC	LSD buffer
IC302	IC	AF power AMP
IC303	IC	AF filter
IC304	IC	MIC AMP
IC305	IC	QT/DQT filter
IC400	IC	MCU
IC401	IC	EEPROM
IC500	IC	Voltage detector/RESET
IC501	IC	Voltage regulator/5V
IC503	IC	Voltage regulator/5V
Q1	Transistor	DC switch
Q2	Transistor	TX/RX RF switch
Q3	Transistor	Ripple filter
Q4	FET	VCO
Q5	Transistor	RF buffer AMP
Q6	Transistor	RF AMP
Q7	Transistor	Voltage regulator/3V
Q100	Transistor	Pre drive AMP
Q101	FET	Drive AMP
Q102	FET	Final AMP
Q103	Transistor	Voltage discharge switch
Q200	Transistor	W/N switch
Q201	Transistor	Doubler
Q202	Transistor	IF AMP
Q203	FET	Mixer
Q204	FET	RF AMP
Q300	Transistor	DC switch
Q301	Transistor	DC switch
Q302	FET	Mute switch
Q303	FET	DC switch
Q304	Transistor	DC switch
Q305	Transistor	W/N switch
Q306	FET	Mute switch
Q400	Transistor	Switch
Q401	Transistor	DC switch
Q402	Transistor	DC switch
Q500	FET	DC switch
Q501	FET	DC switch
Q502	Transistor	DC switch
D1	Diode	Current steering

Ref. No.	Part Name	Description
D2	Variable capacitance diode	Frequency control/ VCO
D3	Variable capacitance diode	Frequency control/ VCO
D4	Diode	TX/RX RF switch
D5	Variable capacitance diode	Frequency control/ VCO
D6	Variable capacitance diode	Modulator /TX VCO
D7	Diode	Ripple filter
D8	Diode	Current steering
D100	Diode	TX/RX RF switch
D101	Diode	ANT switch
D102	Diode	ANT switch
D103	Diode	ANT switch
D105	Diode	ANT switch
D200	Diode	TX/RX RF switch
D201	Variable capacitance diode	RX BPF tuning
D202	Variable capacitance diode	RX BPF tuning
D204	Variable capacitance diode	RX BPF tuning
D260	Variable capacitance diode	RX BPF tuning
D261	Variable capacitance diode	RX BPF tuning
D301	Diode	Current steering
D400	LED	LED/green
D401	LED	LED/red
D402	Diode	VCO speed up
D500	Diode	Protect
D501	Diode	Current steering

TK-3000

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

TK-3000

TX-RX UNIT (X57-810X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination
TK-3000					
1	1A		A02-4135-13	PLASTIC CABINET ASSY	
2	3A		A10-4150-41	CHASSIS	
3	3B		A82-0081-12	REAR PANEL	
4	2B		B11-1892-03	ILLUMINATION GUIDE	
6	3B		E04-0486-05	RF COAXIAL RECEPTACLE(SMA)	
7	2A		E23-1373-14	TERMINAL	
8	1B		E37-1539-05	PROCESSED LEAD WIRE(SP-BROWN)	
9	1B		E37-1540-05	PROCESSED LEAD WIRE(SP-GREEN)	
10	2A		E72-0437-03	TERMINAL BLOCK	
11	2B		F10-3186-04	SHIELDING CASE(CF200)	
12	3B		G01-4571-04	COIL SPRING	
13	2A		G11-4644-04	RUBBER SHEET	
14	3A		G13-2364-14	CUSHION(BATT-GRAY)	
15	3A		G13-2366-04	CUSHION(TERMINAL)	
16	2A		G53-1867-13	PACKING(CHASSIS)	
18	1B		G53-1868-12	PACKING(TOP)	
19	3B		G53-1869-13	PACKING(JACK)	
20	1A		G53-1871-14	PACKING(MIC)	
22	1B		K29-9487-03	KNOB(VOL)	
23	1B		K29-9488-03	KNOB(SELECTOR)	
24	1A		K29-9489-13	KNOB(PTT)	
25	1A		K29-9490-13	BUTTON KNOB(SIDE)	
26	3B		K29-9491-03	LEVER KNOB(BATTERY)	
A	2B		N09-2438-05	BINDING HEAD SCREW(ANT)	
B	3A		N30-2606-48	PAN HEAD MACHINE SCREW	
C	1A,2A		N83-2005-48	PAN HEAD TAPTITE SCREW	
28	1B		T07-0787-15	SPEAKER	
				ACCESSORY	
			B09-0744-03	CAP(SP/MIC) ACCESSORY	
			B62-2299-20	INSTRUCTION MANUAL ACCESSORY	K,M,M2,M3, M4,M6,M7
			B62-2300-20	INSTRUCTION MANUAL ACCESSORY	M,M2,M7
			B62-2301-20	INSTRUCTION MANUAL ACCESSORY	K
			B62-2418-00	INSTRUCTION MANUAL ACCESSORY	T2,E
			B62-2425-00	INSTRUCTION MANUAL ACCESSORY	T2,E
			B62-2426-00	INSTRUCTION MANUAL ACCESSORY	T2,E
			B62-2427-00	INSTRUCTION MANUAL ACCESSORY	T2,E
			B62-2428-00	INSTRUCTION MANUAL ACCESSORY	T2,E
			B62-2429-00	INSTRUCTION MANUAL ACCESSORY	T2,E
			B62-2430-00	INSTRUCTION MANUAL ACCESSORY	T2,E
			B62-2431-00	INSTRUCTION MANUAL ACCESSORY	T2,E
			J29-0756-05	BELT CLIP ACCESSORY	
			N35-3005-43	BINDING HEAD MACHINE SCREW ACCESSORY	
			T90-0798-75	HELICAL ANTENNA ACCESSORY (KRA-23)	T2
			T90-1096-05	WHIP ANTENNA ACCESSORY (440-480MHZ)	K,M,M3,M7,E
			T90-1097-05	WHIP ANTENNA ACCESSORY (400-430MHZ)	M2,M4
			T90-1098-05	HELICAL ANTENNA ACCESSORY (350MHZ)	M6
			W08-1246-25	AC ADAPTER ACCESSORY	M,M2,M6,M7,E
			W08-1247-25	AC ADAPTER ACCESSORY	K
			W08-1249-45	CHARGER ACCESSORY	
			W08-1251-25	AC ADAPTER ACCESSORY	T2
			W09-1073-25	BATTERY ASSY ACCESSORY	M,M2,M3,M4, M6,T2,E

Ref. No.	Address	New parts	Parts No.	Description	Destination
			W09-1081-05	BATTERY ASSY ACCESSORY	K,M7
			X57-8100-21	TX-RX UNIT(FOR SERVICE)	K,M,M3,M7
			X57-8100-22	TX-RX UNIT(FOR SERVICE)	M2,M4
			X57-8100-24	TX-RX UNIT(FOR SERVICE)	M6
			X57-8102-72	TX-RX UNIT(FOR SERVICE)	T2,E
TX-RX UNIT (X57-810X-XX) 3-00: K,M,M3,M7 3-01: M2,M4 0-23: M6 2-71: E,T2					
C1			CS77MA1ER47M	CHIP TNTL 0.47UF 25WV	
C2			CK73HBB1H102K	CHIP C 1000PF K	
C3			CK73HBB1A104K	CHIP C 0.1UF K	
C4			CS77MA1C100M	CHIP TNTL 10UF 16WV	
C5			CS77BA1E010M	CHIP TNTL 1.0UF 25WV	M2,M4
C7			CC73HCH1H180G	CHIP C 18PF G	K,M,M6,M3, M7,T2,E
C7			CC73HCH1H270G	CHIP C 27PF G	M2,M4
C8			CK73HBB1A104K	CHIP C 0.1UF K	
C9			CC73HCH1H040B	CHIP C 4.0PF B	M2,M6,M4
C9			CC73HCH1H2R5B	CHIP C 2.5PF B	K,M,M3, M7,T2,E
C10			CK73HB1A105K	CHIP C 1.0UF K	
C11			CK73HB1A105K	CHIP C 1.0UF K	
C12			CC73HCH1H300J	CHIP C 30PF J	K,M,M3, M7,T2,E
C12			CC73HCH1H390G	CHIP C 39PF G	M6
C12			CC73HCH1H560G	CHIP C 56PF G	M2,M4
C13			CS77BP0J010M	CHIP TNTL 1.0UF 6.3WV	
C14			CK73HB1C103K	CHIP C 0.010UF K	
C15			CK73HB1C103K	CHIP C 0.010UF K	
C16			CK73HBB1H102K	CHIP C 1000PF K	
C17			CC73HCH1H040B	CHIP C 4.0PF B	
C19			CK73HBB1H102K	CHIP C 1000PF K	
C20			CS77MA1A220M	CHIP TNTL 22UF 10WV	
C21			CC73GCH1H0R5B	CHIP C 0.5PF B	K,M,M3, M7,T2,E
C21			CC73GCH1HR75B	CHIP C 0.75PF B	M2,M6,M4
C22			CC73GCH1HR75B	CHIP C 0.75PF B	
C23			CK73HBB1H102K	CHIP C 1000PF K	
C24			CK73HBB1H102K	CHIP C 1000PF K	
C25			CC73HCH1H050B	CHIP C 5.0PF B	
C26			CK73HBB1H102K	CHIP C 1000PF K	
C27			CC73HCH1H220J	CHIP C 22PF J	
C28			CK73HBB1H102K	CHIP C 1000PF K	
C29			CC73GCH1H0R5B	CHIP C 0.5PF B	
C30			CK73HBB1H102K	CHIP C 1000PF K	
C31			CK73HB1C103K	CHIP C 0.010UF K	
C32			CK73HBB1H102K	CHIP C 1000PF K	
C33			CC73HCH1H330J	CHIP C 33PF J	
C34			CK73HBB1H102K	CHIP C 1000PF K	
C35			CC73HCH1H060B	CHIP C 6.0PF B	
C36			CC73HCH1H020B	CHIP C 2.0PF B	K,M,M2,M3, M4,M7,T2,E
C36			CC73HCH1H040B	CHIP C 4.0PF B	M6
C37			CC73HCH1H060B	CHIP C 6.0PF B	
C38			CC73HCH1H220J	CHIP C 22PF J	
C39			CC73HCH1H100B	CHIP C 10PF B	
C40			CK73HBB1H102K	CHIP C 1000PF K	
C41			CK73HBB1H102K	CHIP C 1000PF K	

PARTS LIST

TX-RX UNIT (X57-810X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C42			CC73HCH1H040B	CHIP C 4.0PF B		C150			CC73HCH1H120J	CHIP C 12PF J	
C43			CK73HBB1H102K	CHIP C 1000PF K		C153			CC73HCH1H390J	CHIP C 39PF J	
C51			CK73HB1A684K	CHIP C 0.68UF K	K,M,M6,M3, M7,T2,E	C158			CC73HCH1H271J	CHIP C 270PF J	
C54			CC73HCH1H040B	CHIP C 4.0PF B		C159			CC73HCH1H271J	CHIP C 270PF J	
C55			CC73HCH1H040B	CHIP C 4.0PF B	T2,E	C170			CC73GCH1H390J	CHIP C 39PF J	T2,E
C100			CC73HCH1H100B	CHIP C 10PF B		C171			CC73GCH1H390J	CHIP C 39PF J	M6
C101			CC73HCH1H271J	CHIP C 270PF J		C171			CC73GCH1H470J	CHIP C 47PF J	K,M,M2,M3, M4,M7
C102			CC73HCH1H220J	CHIP C 22PF J		C172			CC73GCH1H070B	CHIP C 7.0PF B	K,M,M2,M3, M4,M7,T2,E
C103			CC73HCH1H271J	CHIP C 270PF J		C173			CC73GCH1H470J	CHIP C 47PF J	M6
C104			CC73HCH1H271J	CHIP C 270PF J		C174			CC73GCH1H120J	CHIP C 12PF J	M6
C105			CK73HBB1A104K	CHIP C 0.1UF K		C174			CC73GCH1H150J	CHIP C 15PF J	M2,M4
C107			CC73HCH1H271J	CHIP C 270PF J		C174			CC73GCH1H330J	CHIP C 33PF J	K,M,M3, M7,T2,E
C108			CC73HCH1H060B	CHIP C 6.0PF B		C175			CC73GCH1H030B	CHIP C 3.0PF B	K,M,M3, M7,T2,E
C109			CC73HCH1H090B	CHIP C 9.0PF B		C175			CC73GCH1H330J	CHIP C 33PF J	M6
C110			CC73HCH1H271J	CHIP C 270PF J		C176			CC73GCH1H220J	CHIP C 22PF J	M2,M4
C111			CC73HCH1H271J	CHIP C 270PF J		C179			CC73GCH1H220J	CHIP C 22PF J	M6
C112			CC73HCH1H221J	CHIP C 220PF J		C181			CC73GCH1H020B	CHIP C 2.0PF B	K,M,M3, M7,T2,E
C113			CC73HCH1H271J	CHIP C 270PF J		C181			CC73GCH1H030B	CHIP C 3.0PF B	M2,M4
C114			CC73HCH1H271J	CHIP C 270PF J		C182			CC73GCH1H220J	CHIP C 22PF J	M6
C116			CK73HB1C103K	CHIP C 0.010UF K		C183			CC73GCH1H080B	CHIP C 8.0PF B	M6
C117			CK73FBB1A225K	CHIP C 2.2UF K		C184			CC73GCH1H060B	CHIP C 6.0PF B	K,M,M2,M3, M4,M7,T2,E
C119			CC73HCH1H271J	CHIP C 270PF J		C185			CC73GCH1H080B	CHIP C 8.0PF B	M6
C120			CC73HCH1H271J	CHIP C 270PF J		C186			CC73GCH1H060B	CHIP C 6.0PF B	K,M,M2,M3, M4,M7,T2,E
C124			CC73HCH1H271J	CHIP C 270PF J		C187			CC73GCH1H040B	CHIP C 4.0PF B	M2,M4
C127			CC73GCH1H181J	CHIP C 180PF J		C187			CC73GCH1H090B	CHIP C 9.0PF B	M6
C128			CC73GCH1H0R5B	CHIP C 0.5PF B	M6	C195			CC73HCH1H101J	CHIP C 100PF J	T2,E
C129			CC73HCH1H271J	CHIP C 270PF J		C200			CK73FB1A106K	CHIP C 10UF K	
C130			CC73GCH1H060B	CHIP C 6.0PF B	K,M,M2,M3, M4,M7,T2,E	C201			CK73HBB1H102K	CHIP C 1000PF K	
C130			CC73GCH1H090B	CHIP C 9.0PF B	M6	C202			CK73HB1C103K	CHIP C 0.010UF K	
C131			CC73GCH1H181J	CHIP C 180PF J	K,M,M2,M3, M4,M7,T2,E	C203			CC73HCH1H101J	CHIP C 100PF J	
C131			CC73GCH1H820J	CHIP C 82PF J	M6	C204			CK73HBB1E223K	CHIP C 0.022UF K	
C132			CC73GCH1H050B	CHIP C 5.0PF B	K,M,M3, M7,T2,E	C205			CK73HBB1A104K	CHIP C 0.1UF K	
C132			CC73GCH1H060B	CHIP C 6.0PF B	M2,M6,M4	C206			CK73HB1H391K	CHIP C 390PF K	
C133			CC73HCH1H060B	CHIP C 6.0PF B	K,M,M2,M3, M4,M7,T2,E	C207			CK73HB1H391K	CHIP C 390PF K	
C133			CC73HCH1H070B	CHIP C 7.0PF B	M6	C208			CK73HBB1A104K	CHIP C 0.1UF K	
C134			CC73HCH1H271J	CHIP C 270PF J		C209			CC73HCH1H180G	CHIP C 18PF G	M6
C135			CC73GCH1H020B	CHIP C 2.0PF B	K,M,M3, M7,T2,E	C209			CC73HCH1H180J	CHIP C 18PF J	K,M,M2,M3, M4,M7,T2,E
C135			CC73GCH1H2R5B	CHIP C 2.5PF B	M2,M4	C210			CK73HBB1A104K	CHIP C 0.1UF K	
C135			CC73GCH1H3R5B	CHIP C 3.5PF B	M6	C211			CK73HBB1C333K	CHIP C 0.033UF K	
C136			CC73GCH1H070B	CHIP C 7.0PF B	K,M,M3, M7,T2,E	C212			CK73HBB1A104K	CHIP C 0.1UF K	
C136			CC73GCH1H100B	CHIP C 10PF B	M2,M4	C213			CK73HBB1A104K	CHIP C 0.1UF K	
C136			CC73GCH1H150J	CHIP C 15PF J	M6	C214			CC73HCH1H270J	CHIP C 27PF J	
C137			CC73GCH1H020B	CHIP C 2.0PF B	K,M,M2,M3, M4,M7,T2,E	C215			CC73HCH1H270J	CHIP C 27PF J	
C137			CC73GCH1H3R5B	CHIP C 3.5PF B	M6	C216			CK73HB1C103K	CHIP C 0.010UF K	
C138			CC73GCH1H040B	CHIP C 4.0PF B	M2,M4	C217			CC73HCH1H100B	CHIP C 10PF B	
C138			CC73GCH1H080B	CHIP C 8.0PF B	M6	C218			CK73HB1C103K	CHIP C 0.010UF K	
C138			CC73GCH1H2R5B	CHIP C 2.5PF B	K,M,M3, M7,T2,E	C219			CC73HCH1H220J	CHIP C 22PF J	
C139			CK73FB1A475K	CHIP C 4.7UF K	M2,M4	C220			CK73HBB1H102K	CHIP C 1000PF K	
C139			CK73FBB1A225K	CHIP C 2.2UF K	K,M,M6,M3, M7,T2,E	C221			CK73HB1C103K	CHIP C 0.010UF K	
C145			CC73HCH1H271J	CHIP C 270PF J		C222			CC73HCH1H080D	CHIP C 8.0PF D	
C146			CC73HCH1H1R5B	CHIP C 1.5PF B		C223			CC73HCH1H080B	CHIP C 8.0PF B	
						C224			CK73HB1C103K	CHIP C 0.010UF K	
						C225			CC73HCH1H020B	CHIP C 2.0PF B	M2,M4

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TX-RX UNIT (X57-810X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C225			CC73HCH1H050B	CHIP C 5.0PF B	M6	C268			CC73HCH1H220J	CHIP C 22PF J	M2,M4,T2,E
C225			CC73HCH1H060B	CHIP C 6.0PF B	K,M,M3, M7,T2,E	C269			CC73HCH1H180G	CHIP C 18PF G	K,M,M6, M3,M7
C226			CK73HBB1H471K	CHIP C 470PF K		C269			CC73HCH1H220J	CHIP C 22PF J	M2,M4,T2,E
C227			CK73HB1C103K	CHIP C 0.010UF K		C270			CC73HCH1H020B	CHIP C 2.0PF B	M2,M4
C228			CC73HCH1H020B	CHIP C 2.0PF B	K,M,M2,M3, M4,M7,T2,E	C271			CC73HCH1H030B	CHIP C 3.0PF B	
C228			CC73HCH1H030B	CHIP C 3.0PF B	M6	C273			CK73HBB1H471K	CHIP C 470PF K	
C230			CC73HCH1H050B	CHIP C 5.0PF B	M2,M6,M4	C274			CK73HBB1H471K	CHIP C 470PF K	
C230			CC73HCH1H060B	CHIP C 6.0PF B	K,M,M3, M7,T2,E	C275			CK73HB1C103K	CHIP C 0.010UF K	
C231			CC73HCH1H100B	CHIP C 10PF B		C276			CK73HBB1H471K	CHIP C 470PF K	
C233			CC73HCH1H020B	CHIP C 2.0PF B	M2,M4	C277			CK73HBB1A104K	CHIP C 0.1UF K	K,M,M6,M3, M7,T2,E
C233			CC73HCH1H030B	CHIP C 3.0PF B	K,M,M6,M3, M7,T2,E	C300			CK73HBB1H102K	CHIP C 1000PF K	
C236			CC73HCH1H270G	CHIP C 27PF G		C301			CK73HBB1H102K	CHIP C 1000PF K	
C237			CC73HCH1H270G	CHIP C 27PF G		C302			C92-0953-05	ELECTRO 100U 6.3WV	
C238			CC73HCH1H040B	CHIP C 4.0PF B	T2,E	C303			CK73HBB1C473K	CHIP C 0.047UF K	
C238			CC73HCH1H050B	CHIP C 5.0PF B	K,M,M6, M3,M7	C304			CK73FB1A106K	CHIP C 10UF K	
C238			CC73HCH1H060B	CHIP C 6.0PF B	M2,M4	C305			CK73HB1C103K	CHIP C 0.010UF K	
C239			CC73HCH1H0R5B	CHIP C 0.5PF B		C306			CK73HB1A224K	CHIP C 0.22UF K	
C240			CC73HCH1H060B	CHIP C 6.0PF B	T2,E	C308			CK73GB1E105K	CHIP C 1.0UF K	
C240			CK73HBB1H471K	CHIP C 470PF K	K,M,M2,M6, M3,M4,M7	C309			CK73HBB1A104K	CHIP C 0.1UF K	
C241			CK73HB1A105K	CHIP C 1.0UF K		C310			CK73HBB1C473K	CHIP C 0.047UF K	
C242			CK73HBB1H471K	CHIP C 470PF K		C311			CK73HB1A105K	CHIP C 1.0UF K	
C243			CK73HBB1H471K	CHIP C 470PF K		C312			CK73HBB1C473K	CHIP C 0.047UF K	
C244			CK73HBB1H471K	CHIP C 470PF K		C313			CK73HBB1A104K	CHIP C 0.1UF K	
C245			CC73HCH1H010B	CHIP C 1.0PF B	K,M,M3, M7,T2,E	C314			CC73HCH1H101J	CHIP C 100PF J	
C245			CC73HCH1H040B	CHIP C 4.0PF B	M2,M4	C315			CK73FB1A106K	CHIP C 10UF K	
C245			CC73HCH1H0R5B	CHIP C 0.5PF B	M6	C316			CK73HBB1A104K	CHIP C 0.1UF K	
C246			CK73HBB1H471K	CHIP C 470PF K		C317			CK73HB1C103K	CHIP C 0.010UF K	
C247			CC73HCH1H010B	CHIP C 1.0PF B	K,M,M6,M3,M7	C318			CC73HCH1H221J	CHIP C 220PF J	
C247			CC73HCH1H0R5B	CHIP C 0.5PF B	T2,E	C319			CK73HB1C103K	CHIP C 0.010UF K	
C247			CC73HCH1HR75B	CHIP C 0.75PF B	M2,M4	C320			CK73GB1E104K	CHIP C 0.10UF K	
C248			CK73HBB1H471K	CHIP C 470PF K		C321			CK73HB1C103K	CHIP C 0.010UF K	
C250			CC73HCH1H271J	CHIP C 270PF J		C322			CC73HCH1H271J	CHIP C 270PF J	
C252			CC73HCH1H0R5B	CHIP C 0.5PF B	K,M,M6,M3, M7,T2,E	C323			CK73HBB1A104K	CHIP C 0.1UF K	
C252			CK73HBB1H471K	CHIP C 470PF K	M2,M4	C324			CK73HB1A184K	CHIP C 0.18UF K	
C253			CC73HCH1H180G	CHIP C 18PF G	K,M,M6, M3,M7	C325			CK73HBB1E153K	CHIP C 0.015UF K	
C253			CC73HCH1H270G	CHIP C 27PF G	T2,E	C326			CK73HB1H822K	CHIP C 8200PF K	
C254			CC73HCH1H010B	CHIP C 1.0PF B	T2,E	C328			CK73HB1A184K	CHIP C 0.18UF K	
C254			CC73HCH1H2R5B	CHIP C 2.5PF B	K,M,M6, M3,M7	C329			CK73HB1C273K	CHIP C 0.027UF K	K,M,M2,M6, M3,M4,M7
C255			CK73HBB1A104K	CHIP C 0.1UF K		C329			CK73HBB1C333K	CHIP C 0.033UF K	T2,E
C256			CK73HBB1H471K	CHIP C 470PF K	K,M,M6,M3, M7,T2,E	C330			CK73HB1H821K	CHIP C 820PF K	K,M,M2,M6, M3,M4,M7
C257			CC73HCH1H020B	CHIP C 2.0PF B	K,M,M2,M3, M4,M7,T2,E	C330			CK73HBB1H102K	CHIP C 1000PF K	T2,E
C257			CC73HCH1H030B	CHIP C 3.0PF B	M6	C332			CK73HB1C103K	CHIP C 0.010UF K	
C258			CK73HBB1H471K	CHIP C 470PF K		C333			CK73HBB1H102K	CHIP C 1000PF K	
C259			CK73HB1C103K	CHIP C 0.010UF K		C334			CK73HB1A184K	CHIP C 0.18UF K	
C262			CK73HBB1H471K	CHIP C 470PF K		C335			CK73HB1A184K	CHIP C 0.18UF K	
C263			CC73HCH1H180G	CHIP C 18PF G	M6	C336			CK73HB1C103K	CHIP C 0.010UF K	
C263			CC73HCH1H180J	CHIP C 18PF J	K,M,M2,M3, M4,M7,T2,E	C337			CK73HB1A184K	CHIP C 0.18UF K	
C268			CC73HCH1H180G	CHIP C 18PF G	K,M,M6, M3,M7	C338			CC73HCH1H331J	CHIP C 330PF J	
						C339			CK73HB1A563K	CHIP C 0.056UF K	T2,E
						C339			CK73HBB1A104K	CHIP C 0.1UF K	K,M,M2,M6, M3,M4,M7
						C340			CC73HCH1H390J	CHIP C 39PF J	
						C341			CK73HBB1H332K	CHIP C 3300PF K	
						C342			CK73HB1C103K	CHIP C 0.010UF K	
						C343			CK73HB1A184K	CHIP C 0.18UF K	
						C344			CK73HB1C273K	CHIP C 0.027UF K	

PARTS LIST

TX-RX UNIT (X57-810X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C345			CK73HBB1H102K	CHIP C 1000PF K		D3			BBY66-02V	VARIABLE CAPACITANCE DIODE	
C346			CK73HB1A184K	CHIP C 0.18UF K		D4			BA892-02V	DIODE	
C347			CK73GBB1A105K	CHIP C 1.0UF K		D5			BBY57-02V	VARIABLE CAPACITANCE DIODE	
C349			CK73HB1A154K	CHIP C 0.15UF K		D6			BBY57-02V	VARIABLE CAPACITANCE DIODE	
C350			CK73HBB1H102K	CHIP C 1000PF K		D7			DA2J101	DIODE	
C352			CK73HBB1H102K	CHIP C 1000PF K		D8			DA2J101	DIODE	
C353			CK73GB1E105K	CHIP C 1.0UF K		D100			1SS390	DIODE	
C354			CK73HB1A224K	CHIP C 0.22UF K		D101			RN262CS	DIODE	
C355			CK73HB1A105K	CHIP C 1.0UF K		D102			RN262CS	DIODE	
C357			CK73HBB1A104K	CHIP C 0.1UF K		D103			RN262CS	DIODE	
C358			CK73HBB1A104K	CHIP C 0.1UF K		D105			RN262CS	DIODE	
C360			CK73HBB1A104K	CHIP C 0.1UF K		D200			RN142S	DIODE	K,M,M6,M3, M7,T2,E
C361			CC73HCH1H101J	CHIP C 100PF J		D200			1SS390	DIODE	M2,M4
C385			CC73HCH1H101J	CHIP C 100PF J		D201			BBY57-02V	VARIABLE CAPACITANCE DIODE	
C386			CC73HCH1H101J	CHIP C 100PF J		D202			BBY57-02V	VARIABLE CAPACITANCE DIODE	
C397			CC73HCH1H271J	CHIP C 270PF J		D204			BBY57-02V	VARIABLE CAPACITANCE DIODE	K,M,M6,M3, M7,T2,E
C400			CK73HBB1A104K	CHIP C 0.1UF K		D260			BBY57-02V	VARIABLE CAPACITANCE DIODE	
C401			CK73HBB1H102K	CHIP C 1000PF K		D261			BBY57-02V	VARIABLE CAPACITANCE DIODE	
C402			CC73HCH1H120J	CHIP C 12PF J		D301			RB706F-40	DIODE	
C403			CC73HCH1H010B	CHIP C 1.0PF B		D380			EDZV6.8B	ZENER DIODE	
C404			CK73HBB1A104K	CHIP C 0.1UF K		D400			B30-1782-05	LED(GREEN)	
C405			CK73HBB1H102K	CHIP C 1000PF K		D401			B30-1779-05	LED(RED)	
C406			CC73HCH1H120J	CHIP C 12PF J		D402			DA2J101	DIODE	
C407			CK73HBB1H102K	CHIP C 1000PF K		D500			GN1G	DIODE	
C408			CK73HB1C103K	CHIP C 0.010UF K		D501			RB531SM-30	DIODE	
C409			CK73HBB1H102K	CHIP C 1000PF K		F101			F53-0287-05	FUSE(0.5A)	
C411			CK73HBB1H102K	CHIP C 1000PF K		F300			F53-0467-05	FUSE(0.315A)	
C412			CK73HBB1H102K	CHIP C 1000PF K		F500			FZA10BQ-3R15	FUSE(3.15A)	
C413			CK73HBB1H102K	CHIP C 1000PF K		101	2A		J30-1308-04	SPACER(MIC300)	
C414			CK73HBB1H102K	CHIP C 1000PF K		CF200	2A		L72-1046-05	CERAMIC FILTER	
C415			CK73HBB1H102K	CHIP C 1000PF K		CD200	2A		L79-1914-05	TUNING COIL	
C500			CC73HCH1H101J	CHIP C 100PF J		IC1			MB15E03SL-E1	MOS-IC	
C501			CK73HBB1H102K	CHIP C 1000PF K		IC200			TA31136FNG	MOS-IC	
C502			CK73HBB1H102K	CHIP C 1000PF K		IC300			R2A20178NP	MICROCONTROLLER IC	
C503			CK73FB1A475K	CHIP C 4.7UF K		IC301			BA2904FVM	MOS-IC	
C504			CK73HBB1H102K	CHIP C 1000PF K		IC302			TA7368FG	MOS-IC	
C505			CK73GB1E105K	CHIP C 1.0UF K		IC303			BA2904FVM	MOS-IC	
C506			CK73HBB1H102K	CHIP C 1000PF K		IC304			BA2904FVM	MOS-IC	
C507			CK73FB1A106K	CHIP C 10UF K		IC305			BA2904FVM	MOS-IC	
C511			CK73HBB1H102K	CHIP C 1000PF K		IC400			F2136ACNKDRD	MICROPROCESSOR IC	
C513			CK73GB1E105K	CHIP C 1.0UF K		IC401			BR24T16FVT-W	ROM IC	
C514			CK73GB1E105K	CHIP C 1.0UF K		IC500			BU4830F	MOS-IC	
C515			CC73HCH1H271J	CHIP C 270PF J		IC501			NJM2878F4-05	BIPOLAR IC	
C516			CC73HCH1H271J	CHIP C 270PF J		IC503			NJM2878F4-05	BIPOLAR IC	
C517			CK73FB1A475K	CHIP C 4.7UF K		L1			L41-2785-53	SMALL FIXED INDUCTOR(0.27UH)	
C522			CC73HCH1H271J	CHIP C 270PF J		L2			L41-4763-14	SMALL FIXED INDUCTOR(4.7NH)	K,M,M3, M7,T2,E
C523			CC73HCH1H271J	CHIP C 270PF J		L2			L41-5668-14	SMALL FIXED INDUCTOR(5.6NH)	M2,M4
C524			CC73HCH1H271J	CHIP C 270PF J		L2			LR79F0ED8N2G	SMALL FIXED INDUCTOR(8.2NH)	M6
C525			CC73HCH1H271J	CHIP C 270PF J		L3			LR79F0ED15NG	SMALL FIXED INDUCTOR(15NH)	K,M,M2,M3, M4,M7,T2,E
C525			CK73HBB1H102K	CHIP C 1000PF K	T2,E K,M,M2,M6, M3,M4,M7	L3			LR79F0ED22NG	SMALL FIXED INDUCTOR(22NH)	M6
J300	2B		E11-0484-05	3.5D PHONE JACK(3.5D/3P)		L4			L41-2785-53	SMALL FIXED INDUCTOR(0.27UH)	
J301	2B		E11-0717-05	2.5D PHONE JACK(2.5D/4P)		L5			L41-2785-53	SMALL FIXED INDUCTOR(0.27UH)	
CN101			E23-1167-05	TERMINAL	K,M,M2,M3, M4,M7,T2,E	L6			L41-2785-53	SMALL FIXED INDUCTOR(0.27UH)	
CN102			E23-1167-05	TERMINAL	T2,E M6	L7			LK73H0BD27NJ	SMALL FIXED INDUCTOR(27NH)	
CN103			E23-1167-05	TERMINAL	M6	L8			LK73H0BD15NJ	SMALL FIXED INDUCTOR(15NH)	
CN104			E23-1167-05	TERMINAL	T2,E						
D1			DA2J101	DIODE							
D2			BBY66-02V	VARIABLE CAPACITANCE DIODE							

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

PARTS LIST

TX-RX UNIT (X57-810X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
L9			LK73H0BD22NJ	SMALL FIXED INDUCTOR(22NH)	K,M,M3, M7,T2,E	Q102			RD07MUS2BT214	FET	
L9			LK73H0BD33NJ	SMALL FIXED INDUCTOR(33NH)	M2,M4	Q103			LTC014EEBFS8	TRANSISTOR	
L9			LK73H0BD47NJ	SMALL FIXED INDUCTOR(47NH)	M6	Q200			LTA023JEBFS8	TRANSISTOR	
L10			L41-2785-53	SMALL FIXED INDUCTOR(0.27UH)		Q201			LSCR523EBFS8	TRANSISTOR	
L12			L41-2785-53	SMALL FIXED INDUCTOR(0.27UH)		Q202			KTC4080E-P	TRANSISTOR	
L51			L41-4795-52	SMALL FIXED INDUCTOR(4.7UH)	T2,E	Q203			BF5020W	FET	
L100			LK73H0BD8N2J	SMALL FIXED INDUCTOR(8.2NH)		Q204			BF5020W	FET	
L101			LK73H0BD27NJ	SMALL FIXED INDUCTOR(27NH)		Q300			LTC044EEBFS8	TRANSISTOR	
L102			LK73H0BD12NJ	SMALL FIXED INDUCTOR(12NH)		Q301			LTC044EEBFS8	TRANSISTOR	
L103			L41-3375-53	SMALL FIXED INDUCTOR(33NH)		Q302			RTQ035N03	FET	
L104			L34-4572-05	AIR-CORE COIL		Q303			RW1E015RP	FET	
L105			L41-3363-53	SMALL FIXED INDUCTOR(3.3NH)	M6	Q304			LTA023JEBFS8	TRANSISTOR	
L108			L34-4571-05	AIR-CORE COIL	M2,M6,M4	Q305			LTC014YEBFS8	TRANSISTOR	
L109			LR79F0EDR22G	SMALL FIXED INDUCTOR(220NH)		Q306			RTQ035N03	FET	
L110			L34-4572-05	AIR-CORE COIL	K,M,M2,M3, M4,M7,T2,E	Q400			LSCR523EBFS8	TRANSISTOR	
L110			L34-4573-05	AIR-CORE COIL	M6	Q401			LTC014YEBFS8	TRANSISTOR	
L111			L34-4572-05	AIR-CORE COIL		Q402			LTC014YEBFS8	TRANSISTOR	
L112			L34-4572-05	AIR-CORE COIL		Q403			EM6M2	FET	
L116			LK73H0BDR10J	SMALL FIXED INDUCTOR(100NH)	K,M,M6,M3, M7,T2,E	Q500			RE1C001ZP	FET	
L204			L41-5685-39	SMALL FIXED INDUCTOR(0.56UH)		Q501			RE1C001ZP	FET	
L205			LK73H0BD15NJ	SMALL FIXED INDUCTOR(15NH)	K,M,M3,M7,T2,E	Q502			LTA023JEBFS8	TRANSISTOR	
L205			LK73H0BD18NJ	SMALL FIXED INDUCTOR(18NH)	M2,M6,M4	R1			RK73HB1J105J	CHIP R 1.0M J 1/16W	
L208			LR79F0ED15NG	SMALL FIXED INDUCTOR(15NH)	M6	R2			RK73HB1J103J	CHIP R 10K J 1/16W	
L208			LR79F0ED8N2G	SMALL FIXED INDUCTOR(8.2NH)	K,M,M2,M3, M4,M7,T2,E	R3			RK73HB1J222J	CHIP R 2.2K J 1/16W	
L210			LR79F0ED15NG	SMALL FIXED INDUCTOR(15NH)	M6	R5			RK73HB1J102J	CHIP R 1.0K J 1/16W	K,M,M6,M3, M7,T2,E
L210			LR79F0ED8N2G	SMALL FIXED INDUCTOR(8.2NH)	K,M,M2,M3, M4,M7,T2,E	R5			RK73HB1J821J	CHIP R 820 J 1/16W	M2,M4
L211			LK73G0BBR56K	SMALL FIXED INDUCTOR(560NH)		R7			RK73HB1J272J	CHIP R 2.7K J 1/16W	
L212			LK73G0BBR82K	SMALL FIXED INDUCTOR(820NH)		R9			RK73HB1J103J	CHIP R 10K J 1/16W	
L213			LK73G0BBR56K	SMALL FIXED INDUCTOR(260NH)		R11			RK73HB1J104J	CHIP R 100K J 1/16W	
L214			LK73H0BD33NJ	SMALL FIXED INDUCTOR(33NH)	M2,M4	R12			RK73HB1J152J	CHIP R 1.5K J 1/16W	
L214			LK73H0BD39NJ	SMALL FIXED INDUCTOR(39NH)	K,M,M6,M3, M7,T2,E	R13			RK73HB1J104J	CHIP R 100K J 1/16W	
L215			LR79F0ED15NG	SMALL FIXED INDUCTOR(15NH)	M6	R14			RK73HB1J103J	CHIP R 10K J 1/16W	
L215			LR79F0ED8N2G	SMALL FIXED INDUCTOR(8.2NH)	K,M,M3, M7,T2,E	R15			RK73HB1J104J	CHIP R 100K J 1/16W	
L216			L41-1885-53	SMALL FIXED INDUCTOR(0.18UH)		R16			RK73HB1J103J	CHIP R 10K J 1/16W	
L217			L41-2785-53	SMALL FIXED INDUCTOR(0.27UH)	M2,M4	R17			RK73HB1J103J	CHIP R 10K J 1/16W	
L217			L41-8275-53	SMALL FIXED INDUCTOR(82NH)	K,M,M6,M3, M7,T2,E	R18			RK73HB1J223J	CHIP R 22K J 1/16W	
L218			LR79F0ED15NG	SMALL FIXED INDUCTOR(15NH)	M6	R19			RK73HB1J103J	CHIP R 10K J 1/16W	
L218			LR79F0ED8N2G	SMALL FIXED INDUCTOR(8.2NH)	K,M,M2,M3, M4,M7,T2,E	R20			RK73HB1J103J	CHIP R 10K J 1/16W	
L219			LR79F0ED15NG	SMALL FIXED INDUCTOR(15NH)	M6	R21			RK73HB1J103J	CHIP R 10K J 1/16W	
L219			LR79F0ED8N2G	SMALL FIXED INDUCTOR(8.2NH)	K,M,M2,M3, M4,M7,T2,E	R22			RK73HB1J103J	CHIP R 10K J 1/16W	
L220			LK73G0BBR56K	SMALL FIXED INDUCTOR(560NH)		R25			RK73HB1J100J	CHIP R 10 J 1/16W	
L500			L92-0149-05	CHIP FERRITE		R26			RK73HB1J392J	CHIP R 3.9K J 1/16W	
Q1			LTC014EEBFS8	TRANSISTOR		R27			RK73HB1J221J	CHIP R 220 J 1/16W	
Q2			LTC014EEBFS8	TRANSISTOR		R28			RK73HB1J680J	CHIP R 68 J 1/16W	
Q3			LSCR523EBFS8	TRANSISTOR		R29			RK73HB1J472J	CHIP R 4.7K J 1/16W	
Q4			MCH3914(7)-H	FET		R30			RK73HB1J470J	CHIP R 47 J 1/16W	
Q5			2SC5108(Y)F	TRANSISTOR		R32			RK73HB1J102J	CHIP R 1.0K J 1/16W	
Q6			2SC4726(P,Q)	TRANSISTOR		R33			RK73HB1J473J	CHIP R 47K J 1/16W	
Q7			LSCR523EBFS8	TRANSISTOR		R34			RK73HB1J100J	CHIP R 10 J 1/16W	
Q100			BFR193F	TRANSISTOR		R37			RK73HB1J562J	CHIP R 5.6K J 1/16W	
Q101			RFM01U7P	FET		R38			RK73HB1J332J	CHIP R 3.3K J 1/16W	
						R39			RK73HB1J271J	CHIP R 270 J 1/16W	
						R40			RK73HB1J222J	CHIP R 2.2K J 1/16W	
						R41			RK73HB1J100J	CHIP R 10 J 1/16W	
						R42			RK73HB1J332J	CHIP R 3.3K J 1/16W	
						R43			RK73HB1J103J	CHIP R 10K J 1/16W	
						R44			RK73HB1J000J	CHIP R 0.0 J 1/16W	K,M,M2,M6, M3,M4,M7
						R45			RK73HB1J000J	CHIP R 0.0 J 1/16W	

PARTS LIST

TX-RX UNIT (X57-810X-XX)

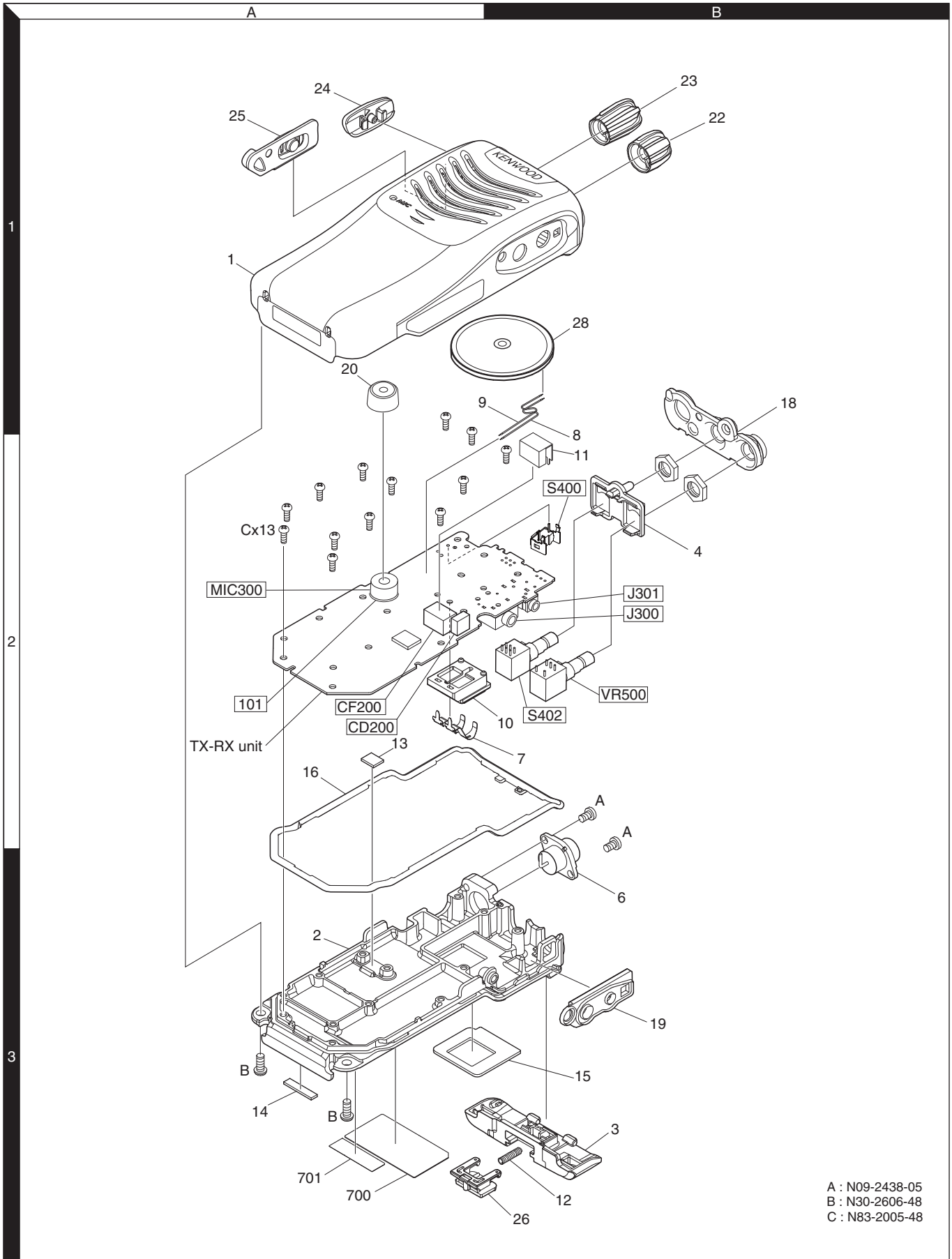
Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R50			RK73HB1J104J	CHIP R 100K J 1/16W		R221			RK73HB1J473J	CHIP R 47K J 1/16W	T2,E
R51			RK73HB1J333J	CHIP R 33K J 1/16W		R221			RK73HB1J823J	CHIP R 82K J 1/16W	K,M,M2,M6, M3,M4,M7
R100			RK73HB1J472J	CHIP R 4.7K J 1/16W	M2,M4	R222			RK73HB1J104J	CHIP R 100K J 1/16W	
R101			RK73HB1J102J	CHIP R 1.0K J 1/16W		R223			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R102			RK73HB1J222J	CHIP R 2.2K J 1/16W		R224			RK73HB1J473J	CHIP R 47K J 1/16W	T2,E
R103			RK73HB1J150J	CHIP R 15 J 1/16W		R224			RK73HB1J823J	CHIP R 82K J 1/16W	K,M,M2,M6, M3,M4,M7 M6
R104			RK73HB1J222J	CHIP R 2.2K J 1/16W		R225			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R105			RK73HB1J100J	CHIP R 10 J 1/16W		R225			RK73HB1J100J	CHIP R 10 J 1/16W	M2,M4,T2,E
R106			RK73HB1J473J	CHIP R 47K J 1/16W		R225			RK73HB1J4R7J	CHIP R 4.7 J 1/16W	K,M,M3,M7
R107			RK73HB1J270J	CHIP R 27 J 1/16W		R226			RK73HB1J474J	CHIP R 470K J 1/16W	
R108			RK73HB1J683J	CHIP R 68K J 1/16W		R227			RK73HB1J474J	CHIP R 470K J 1/16W	
R109			RK73HB1J470J	CHIP R 47 J 1/16W		R229			RK73HB1J474J	CHIP R 470K J 1/16W	K,M,M6,M3, M7,T2,E
R111			RK73HB1J683J	CHIP R 68K J 1/16W		R230			RK73HB1J330J	CHIP R 33 J 1/16W	
R112			RK73HB1J390J	CHIP R 39 J 1/16W		R231			RK73HB1J271J	CHIP R 270 J 1/16W	K,M,M2,M6, M3,M4,M7
R113			RK73HB1J473J	CHIP R 47K J 1/16W		R231			RK73HB1J331J	CHIP R 330 J 1/16W	T2,E
R114			RK73GB2A000J	CHIP R 0.0 J 1/10W	K,M,M2,M3, M4,M7,T2,E	R232			RK73HB1J104J	CHIP R 100K J 1/16W	
R116			RK73HB1J393J	CHIP R 39K J 1/16W		R233			RK73HB1J104J	CHIP R 100K J 1/16W	
R117			RK73HB1J271J	CHIP R 270 J 1/16W		R235			RK73HB1J000J	CHIP R 0.0 J 1/16W	K,M,M2,M6, M3,M4,M7
R119			RK73HB1J271J	CHIP R 270 J 1/16W		R235			RK73HB1J8R2J	CHIP R 8.2 J 1/16W	T2,E
R120			RK73HB1J331J	CHIP R 330 J 1/16W		R237			RK73HB1J474J	CHIP R 470K J 1/16W	
R121			RK73EB2ER39K	CHIP R 0.39 K 1/4W		R238			RK73HB1J474J	CHIP R 470K J 1/16W	
R122			RK73EB2ER39K	CHIP R 0.39 K 1/4W		R239			RK73HB1J101J	CHIP R 100 J 1/16W	T2,E
R123			RK73EB2ER39K	CHIP R 0.39 K 1/4W		R239			RK73HB1J221J	CHIP R 220 J 1/16W	K,M,M2,M6, M3,M4,M7
R136			RK73HB1J182J	CHIP R 1.8K J 1/16W		R240			RK73HB1J823J	CHIP R 82K J 1/16W	
R138			RK73GB2A000J	CHIP R 0.0 J 1/10W	K,M,M3, M7,T2,E	R241			RK73HB1J470J	CHIP R 47 J 1/16W	
R139			RK73GB2A000J	CHIP R 0.0 J 1/10W		R242			RK73HB1J470J	CHIP R 47 J 1/16W	
R155			RK73HB1J220J	CHIP R 22 J 1/16W	M2,M6,M4	R258			RK73HB1J102J	CHIP R 1.0K J 1/16W	T2,E
R155			RK73HB1J270J	CHIP R 27 J 1/16W	K,M,M3, M7,T2,E	R258			RK73HB1J182J	CHIP R 1.8K J 1/16W	K,M,M3,M7 M6
R156			RK73HB1J000J	CHIP R 0.0 J 1/16W		R258			RK73HB1J272J	CHIP R 2.7K J 1/16W	
R157			RK73HB1J000J	CHIP R 0.0 J 1/16W		R258			RK73HB1J392J	CHIP R 3.9K J 1/16W	M2,M4
R200			RK73HB1J103J	CHIP R 10K J 1/16W	M2,M4	R260			RK73HB1J823J	CHIP R 82K J 1/16W	K,M,M2,M6, M3,M4,M7
R200			RK73HB1J472J	CHIP R 4.7K J 1/16W	K,M,M6,M3, M7,T2,E	R262			RK73HB1J823J	CHIP R 82K J 1/16W	
R201			RK73HB1J470J	CHIP R 47 J 1/16W		R265			RK73HB1J394J	CHIP R 390K J 1/16W	
R202			RK73HB1J561J	CHIP R 560 J 1/16W		R267			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R203			RK73HB1J124J	CHIP R 120K J 1/16W	T2,E	R300			RK73HB1J152J	CHIP R 1.5K J 1/16W	
R203			RK73HB1J683J	CHIP R 68K J 1/16W	K,M,M2,M6, M3,M4,M7	R301			RK73HB1J101J	CHIP R 100 J 1/16W	
R204			RK73HB1J271J	CHIP R 270 J 1/16W		R302			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R205			RK73HB1J332J	CHIP R 3.3K J 1/16W		R303			RK73HB1J471J	CHIP R 470 J 1/16W	
R206			RK73HB1J684J	CHIP R 680K J 1/16W		R304			RK73HB1J473J	CHIP R 47K J 1/16W	
R207			RK73HB1J682J	CHIP R 6.8K J 1/16W		R305			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R208			RK73HB1J101J	CHIP R 100 J 1/16W		R306			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R209			RK73HB1J101J	CHIP R 100 J 1/16W	T2,E	R307			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R209			RK73HB1J470J	CHIP R 47 J 1/16W	K,M,M2,M6, M3,M4,M7	R308			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R210			RK73HB1J474J	CHIP R 470K J 1/16W		R309			RK73HB1J182J	CHIP R 1.8K J 1/16W	
R211			RK73HB1J122J	CHIP R 1.2K J 1/16W		R310			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R212			RK73HB1J184J	CHIP R 180K J 1/16W	K,M,M2,M6, M3,M4,M7 T2,E	R311			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R212			RK73HB1J394J	CHIP R 390K J 1/16W		R312			RK73HB1J222J	CHIP R 2.2K J 1/16W	
R213			RK73HB1J561J	CHIP R 560 J 1/16W		R313			RK73HB1J222J	CHIP R 2.2K J 1/16W	
R214			RK73HB1J561J	CHIP R 560 J 1/16W		R314			RK73HB1J392J	CHIP R 3.9K J 1/16W	
R215			RK73HB1J331J	CHIP R 330 J 1/16W		R315			RK73HB1J103J	CHIP R 10K J 1/16W	
R217			RK73HB1J152J	CHIP R 1.5K J 1/16W	K,M,M3,M7,T2,E	R317			RK73HB1J334J	CHIP R 330K J 1/16W	
R217			RK73HB1J222J	CHIP R 2.2K J 1/16W	M2,M6,M4	R318			RK73HB1J274J	CHIP R 270K J 1/16W	
R218			RK73HB1J102J	CHIP R 1.0K J 1/16W		R321			RK73HB1J474J	CHIP R 470K J 1/16W	
R220			RK73HB1J104J	CHIP R 100K J 1/16W		R322			RK73HB1J105J	CHIP R 1.0M J 1/16W	

PARTS LIST

TX-RX UNIT (X57-810X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R323			RK73HB1J562J	CHIP R 5.6K J 1/16W		R412			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R324			RK73HH1J473D	CHIP R 47K D 1/16W		R413			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R325			RK73HH1J473D	CHIP R 47K D 1/16W		R414			RK73HB1J474J	CHIP R 470K J 1/16W	
R326			RK73HB1J000J	CHIP R 0.0 J 1/16W		R438			RK73HB1J473J	CHIP R 47K J 1/16W	
R327			RK73HB1J824J	CHIP R 820K J 1/16W		R455			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R328			RK73HB1J684J	CHIP R 680K J 1/16W		R470			RK73HB1J000J	CHIP R 0.0 J 1/16W	M6
R329			RK73HB1J103J	CHIP R 10K J 1/16W		R471			RK73HB1J000J	CHIP R 0.0 J 1/16W	K,M,M3,M7
R330			RK73HB1J103J	CHIP R 10K J 1/16W		R472			RK73HB1J000J	CHIP R 0.0 J 1/16W	M2,M4
R331			RK73HB1J473J	CHIP R 47K J 1/16W		R475			RK73HB1J000J	CHIP R 0.0 J 1/16W	T2,E
R332			RK73HB1J272J	CHIP R 2.7K J 1/16W		R502			RK73HB1J334J	CHIP R 330K J 1/16W	
R334			RK73HB1J103J	CHIP R 10K J 1/16W		R505			RK73HB1J473J	CHIP R 47K J 1/16W	
R336			RK73HB1J473J	CHIP R 47K J 1/16W		R508			RK73HB1J473J	CHIP R 47K J 1/16W	
R337			RK73HB1J000J	CHIP R 0.0 J 1/16W		R509			RK73HB1J104J	CHIP R 100K J 1/16W	
R340			RK73HB1J103J	CHIP R 10K J 1/16W		R511			RK73HB1J334J	CHIP R 330K J 1/16W	
R342			RK73HB1J153J	CHIP R 15K J 1/16W		VR500	2B		R31-0684-15	VARIABLE RESISTOR(VOL)	
R344			RK73HB1J103J	CHIP R 10K J 1/16W		S400	2B		S70-0414-05	TACT SWITCH(PTT)	
R345			RK73HB1J561J	CHIP R 560 J 1/16W		S401			S70-0514-05	TACT SWITCH(SIDE)	
R347			RK73HB1J103J	CHIP R 10K J 1/16W		S402	2B		S6A-0002-00	ROTARY SWITCH(SELECTOR)	
R348			RK73HB1J183J	CHIP R 18K J 1/16W		MIC300	2A		T91-0674-05	MIC ELEMENT	
R350			RK73HB1J471J	CHIP R 470 J 1/16W		TH100			B57331V2104J	THERMISTOR	
R351			RK73HB1J561J	CHIP R 560 J 1/16W		TH260			B57331V2104J	THERMISTOR	
R352			RK73HB1J104J	CHIP R 100K J 1/16W		X1			L77-3074-05	TCXO (19.2 MHZ)	
R353			RK73HB1J102J	CHIP R 1.0K J 1/16W		X400			L77-2974-05	CRYSTAL RESONATOR(11.0592MHZ)	
R354			RK73HB1J334J	CHIP R 330K J 1/16W		XF200			L71-0669-05	MCF	
R355			RK73HB1J473J	CHIP R 47K J 1/16W							
R356			RK73HB1J183J	CHIP R 18K J 1/16W							
R357			RK73HB1J564J	CHIP R 560K J 1/16W							
R358			RK73HB1J473J	CHIP R 47K J 1/16W							
R360			RK73HB1J184J	CHIP R 180K J 1/16W							
R361			RK73HB1J561J	CHIP R 560 J 1/16W							
R363			RK73HB1J562J	CHIP R 5.6K J 1/16W							
R364			RK73HB1J471J	CHIP R 470 J 1/16W							
R366			RK73HB1J104J	CHIP R 100K J 1/16W							
R367			RK73HB1J473J	CHIP R 47K J 1/16W							
R369			RK73HB1J103J	CHIP R 10K J 1/16W							
R370			RK73HH1J473D	CHIP R 47K D 1/16W							
R371			RK73HB1J182J	CHIP R 1.8K J 1/16W							
R372			RK73HH1J473D	CHIP R 47K D 1/16W							
R374			RK73HH1J473D	CHIP R 47K D 1/16W							
R375			RK73HB1J103J	CHIP R 10K J 1/16W							
R376			RK73HH1J473D	CHIP R 47K D 1/16W							
R377			RK73HB1J393J	CHIP R 39K J 1/16W							
R378			RK73HB1J102J	CHIP R 1.0K J 1/16W							
R379			RK73HB1J104J	CHIP R 100K J 1/16W							
R386			RK73HB1J392J	CHIP R 3.9K J 1/16W							
R388			RK73HB1J182J	CHIP R 1.8K J 1/16W							
R389			RK73HB1J102J	CHIP R 1.0K J 1/16W							
R392			RK73HB1J102J	CHIP R 1.0K J 1/16W							
R393			RK73HB1J102J	CHIP R 1.0K J 1/16W							
R394			RK73HB1J000J	CHIP R 0.0 J 1/16W							
R396			RK73HB1J000J	CHIP R 0.0 J 1/16W							
R397			RK73HB1J473J	CHIP R 47K J 1/16W							
R400			RK73HB1J472J	CHIP R 4.7K J 1/16W							
R401			RK73HB1J102J	CHIP R 1.0K J 1/16W							
R406			RK73HB1J101J	CHIP R 100 J 1/16W							
R407			RK73HB1J473J	CHIP R 47K J 1/16W							
R408			RK73HB1J101J	CHIP R 100 J 1/16W							
R409			RK73GB2A271J	CHIP R 270 J 1/10W							
R410			RK73GB2A271J	CHIP R 270 J 1/10W							
R411			RK73HB1J472J	CHIP R 4.7K J 1/16W							

EXPLODED VIEW



A : N09-2438-05
 B : N30-2606-48
 C : N83-2005-48

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

ADJUSTMENT

Test Equipment Required for Alignment

Test Equipment	Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range Modulation Output	350 to 480MHz Frequency modulation and external modulation -127dBm/0.1μV to greater than -47dBm/1mV
2. RF Power Meter	Input Impedance Operation Frequency Measurement Range	50Ω 350 to 480MHz Vicinity of 10W
3. Deviation Meter	Frequency Range	350 to 480MHz
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. DC 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

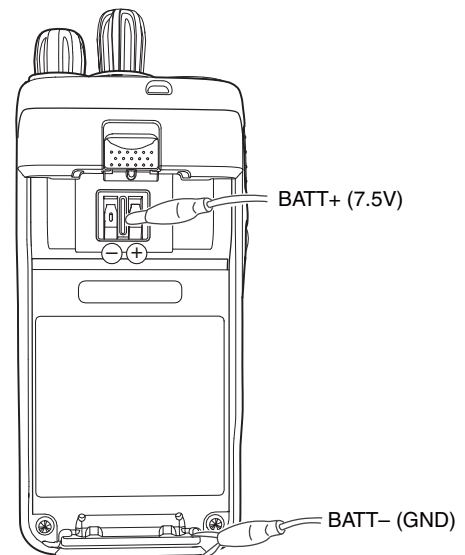
■ Antenna connector adapter

The antenna connector of this transceiver uses an SMA terminal.

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

■ DC Supply

BATT+, BATT- : External power supply terminal (Fasten it with an alligator clip.)



ADJUSTMENT

Frequency and Signaling

The transceiver 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.

■ Test Frequency (MHz)

CH	TK-3000 K,M,M3,M7	
	RX Frequency	TX Frequency
1	460.05000	460.10000
2	440.05000	440.10000
3	479.95000	479.90000
4	460.00000	460.00000
5	460.20000	460.20000
6	460.40000	460.40000
7~16	-	-

CH	TK-3000 M2,M4	
	RX Frequency	TX Frequency
1	415.05000	415.10000
2	400.05000	400.10000
3	429.95000	429.90000
4	415.00000	415.00000
5	415.20000	415.20000
6	415.40000	415.40000
7~16	-	-

CH	TK-3000 M6	
	RX Frequency	TX Frequency
1	370.05000	370.10000
2	350.05000	350.10000
3	389.95000	389.90000
4	370.00000	370.00000
5	370.20000	370.20000
6	370.40000	370.40000
7~16	-	-

CH	TK-3000 E,T2	
	RX Frequency	TX Frequency
1	460.05000	460.10000
2	440.05000	440.10000
3	479.95000	479.90000
4	460.00000	460.00000
5	460.20000	460.20000
6	460.40000	460.40000
7~16	-	-

■ Signaling

No.	RX (Decode)	TX (Encode)
1	None	None
2	None	100Hz Square Wave
3	QT 67.0Hz	QT 67.0Hz
4	QT 151.4Hz	QT 151.4Hz
5	QT 210.7Hz	QT 210.7Hz
6	QT 254.1Hz	QT 254.1Hz
7	DQT D023N	DQT D023N
8	DQT D754I	DQT D754I
9	None	DTMF (Code: 159D)
10	None	DTMF (Code: 9)

ADJUSTMENT

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)

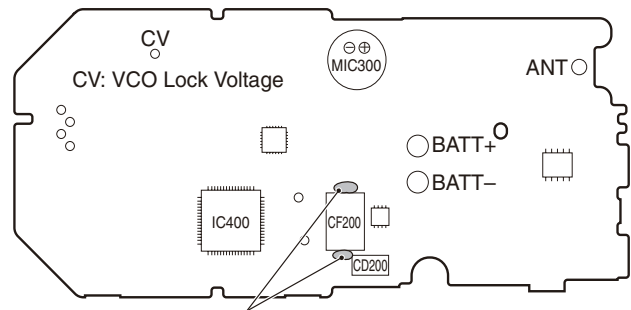
Tuning point	TK-3000 K,M,M3,M7,E,T2	
	RX	TX
Low	440.05000	440.3000
Center	460.65000	460.7000
High	479.95000	479.7000

Tuning point	TK-3000 M2,M4	
	RX	TX
Low	400.05000	400.3000
Center	415.65000	415.7000
High	429.95000	429.7000

Tuning point	TK-3000 M6	
	RX	TX
Low	350.05000	350.10000
Center	370.05000	370.10000
High	389.95000	389.90000

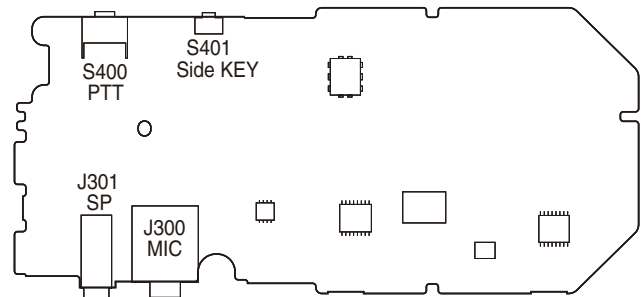
Adjustment Points

TX-RX UNIT Component side view



Note: When replacing CF200, apply bond to the point shown in the figure.

TX-RX UNIT Foil side view




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 [Wide] MOD: 1kHz, DEV: 3kHz [Narrow] MOD: 1kHz, DEV: 1.5kHz							
2. VCO Lock Voltage	1) Adj item: High		TX-RX	ANT (CV)		FPU	3.5V	±0.1V

Transmitter Section

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Frequency	1) Adj item: High Press [Transmit] button.	f. counter	TX-RX	ANT		FPU	479.700MHz:K,M,M3,M7,E,T2 429.700MHz:M2,M4 389.700MHz:M6	±50Hz
2. High Transmit Power and Protective Current *1	1) Adj item: Low, Center, High (3 points) BATT terminal voltage: 7.5V Press [Transmit] button.	Power meter Ammeter				FPU	4.0W	±0.1W 2.0A or less
3. Low Transmit Power	1) Adj item: Low, Center, High (3 points) BATT terminal voltage: 7.5V Press [Transmit] button.						1.0W	±0.1W 1.0A or less
4. DQT Balance [Wide]	1) Adj item: Low, Center, High (3 points) (Signaling Square Wave) Deviation meter filter LPF: 3kHz HPF: OFF Press [Transmit] button.	Power meter Deviation meter Oscilloscope AG AF VTVM	TX-RX	ANT SP/MIC connector		FPU	Make the modulation wave into square waves.	
5. Maximum Deviation [Wide]	1) Adj item: Center, Low, High (3 points) AG: 1kHz/150mV Deviation meter filter LPF: 15kHz HPF: OFF Press [Transmit] button.						4.0kHz (According to the lager +, -)	±100Hz
6. Battery Warning Level	1) BATT terminal voltage: 5.9V	DVM	TX-RX	BATT terminal		FPU	Write	BATT terminal voltage: 5.9V
7. Battery Detection Check (User mode)	1) BATT terminal voltage: 5.7V PTT: ON	Power meter		ANT			Check	LED blinks No transmit power
	2) BATT terminal voltage: 7.5V PTT: ON	DVM		BATT terminal				LED does not blink

• This transceiver is designed to make adjustments simple.

• It is not necessary to adjust the fixed values for the DTMF-DEV, DQT-DEV, QT-DEV, and MIC sensitivity.

• The TX-DEV Narrow setting uses the Wide calculated adjustment level value.

*1: Please do not adjust High Transmit power without connecting TX power meter or 50 ohm dummy load to the ANT terminal.

If TX power meter or 50 ohm dummy load is not connected when adjusting High TX power, it will cause unstable TX power or low TX power or unexpected symptom.

ADJUSTMENT

Receiver Section

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Squelch Level 5 Write [Wide]*	1) BPF Adj at Center (1 point) SSG output: -118dBm (0.28μV): K,M,M2,M3,M4,M6,M7 -116dBm (0.35μV): E,T2 SSG DEV: 3.0kHz	SSG DVM Oscilloscope AF VM	TX-RX	ANT SP/MIC connector		FPU	Write	
[Narrow]*	2) Adj item: Low, Center, High (3 points) SSG output: -121dBm (0.2μV): K,M,M2,M3,M4,M6,M7 -118dBm (0.28μV): E,T2 SSG DEV: 3.0kHz							
	3) Adj item: Low, Center, High (3 points) SSG output: -121dBm (0.2μV): K,M,M2,M3,M4,M6,M7 -118dBm (0.28μV): E,T2 SSG DEV: 1.5kHz							
2. Sensitivity Check [Wide]	1) Check item: Center (1 point) SSG output: -117dBm (0.32μV): K,M,M2,M3,M4,M6,M7 -115dBm (0.40μV): E,T2 SSG DEV: 3.0kHz						Check	12dB SINAD or more
[Narrow]	2) Check item: Low, High (2 points) SSG output: -116dBm (0.35μV): K,M,M2,M3,M4,M6,M7 -114dBm (0.44μV): E,T2 SSG DEV: 1.5kHz							

• The Squelch Level 9 setting uses the Squelch Level 5 calculated adjustment level value.
* After BPF Adj, squelch can be aligned.

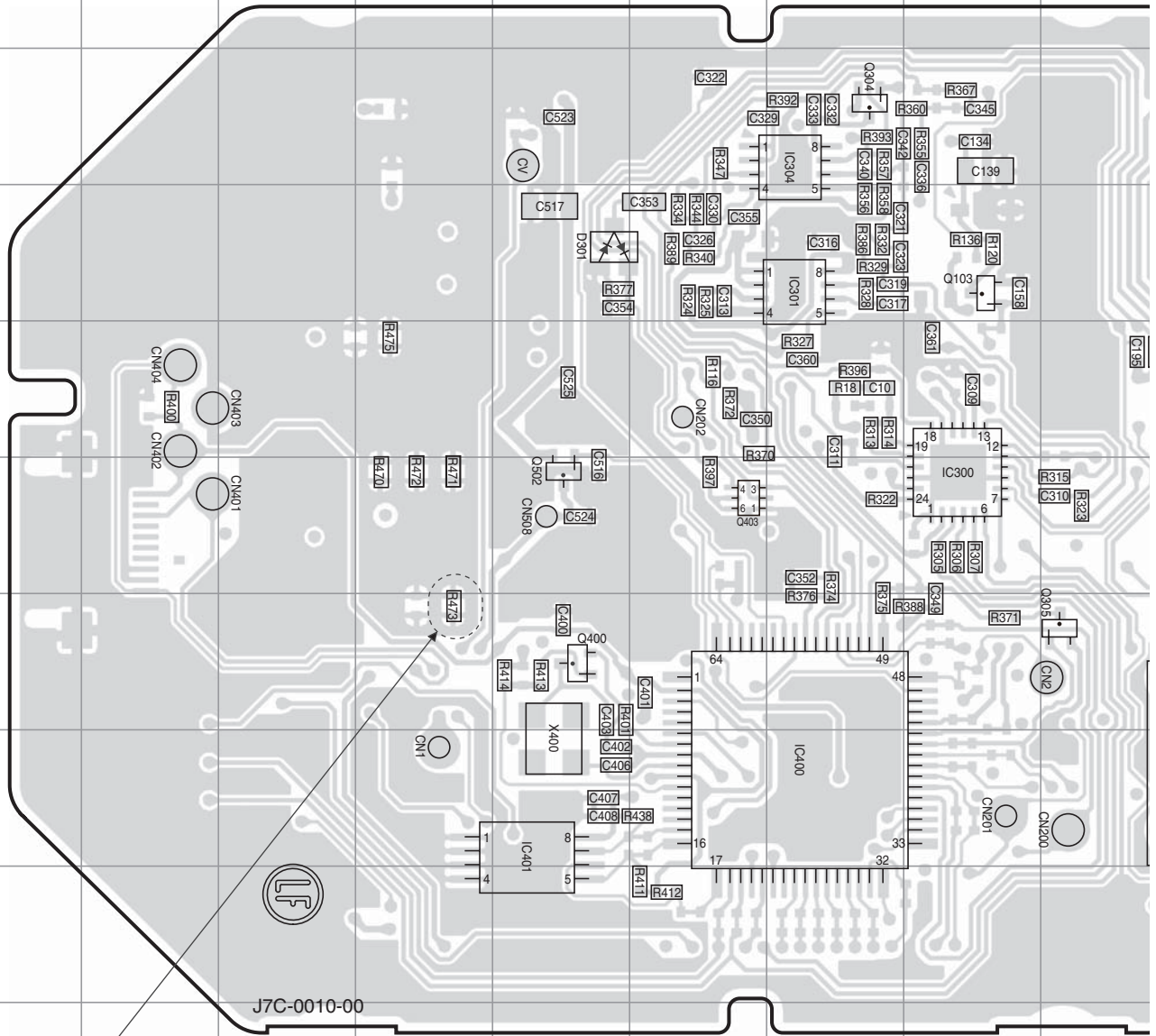
MEMO

TK-3000 PC BOARD

TX-RX UNIT (X57-810X-XX)

0-23: M6 2-71: E,T2 3-00:K,M,M3,M7 3-01:M2,M4

Component side view (J7C-0010-00)



Note : for service unit

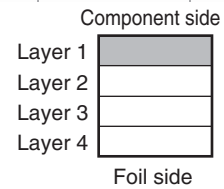
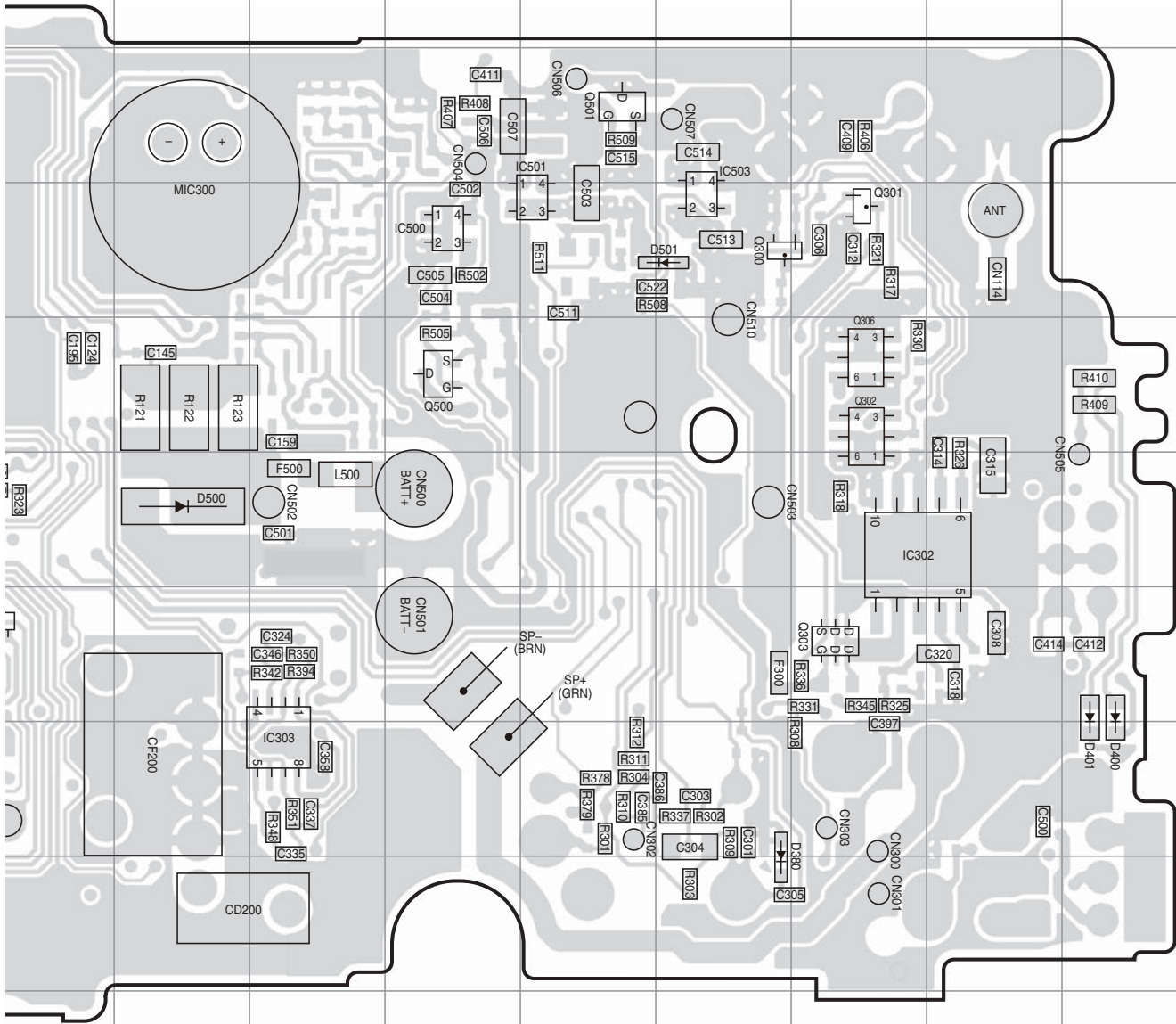
Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC300	6I	Q103	4I	Q500	5M
IC301	4H	Q300	4O	Q501	3N
IC302	6P	Q301	4P	Q502	6F
IC303	8L	Q302	5P	D301	4F
IC304	3H	Q303	7P	D380	9O
IC400	8H	Q304	3H	D400	8R
IC401	8F	Q305	7I	D401	8R
IC500	4M	Q306	5P	D500	6K
IC501	4M	Q400	7F	D501	4N
IC503	4O	Q403	6G		

PC BOARD TK-3000

TX-RX UNIT (X57-810X-XX)

0-23: M6 2-71: E,T2 3-00:K,M,M3,M7 3-01:M2,M4

Component side view (J7C-0010-00)

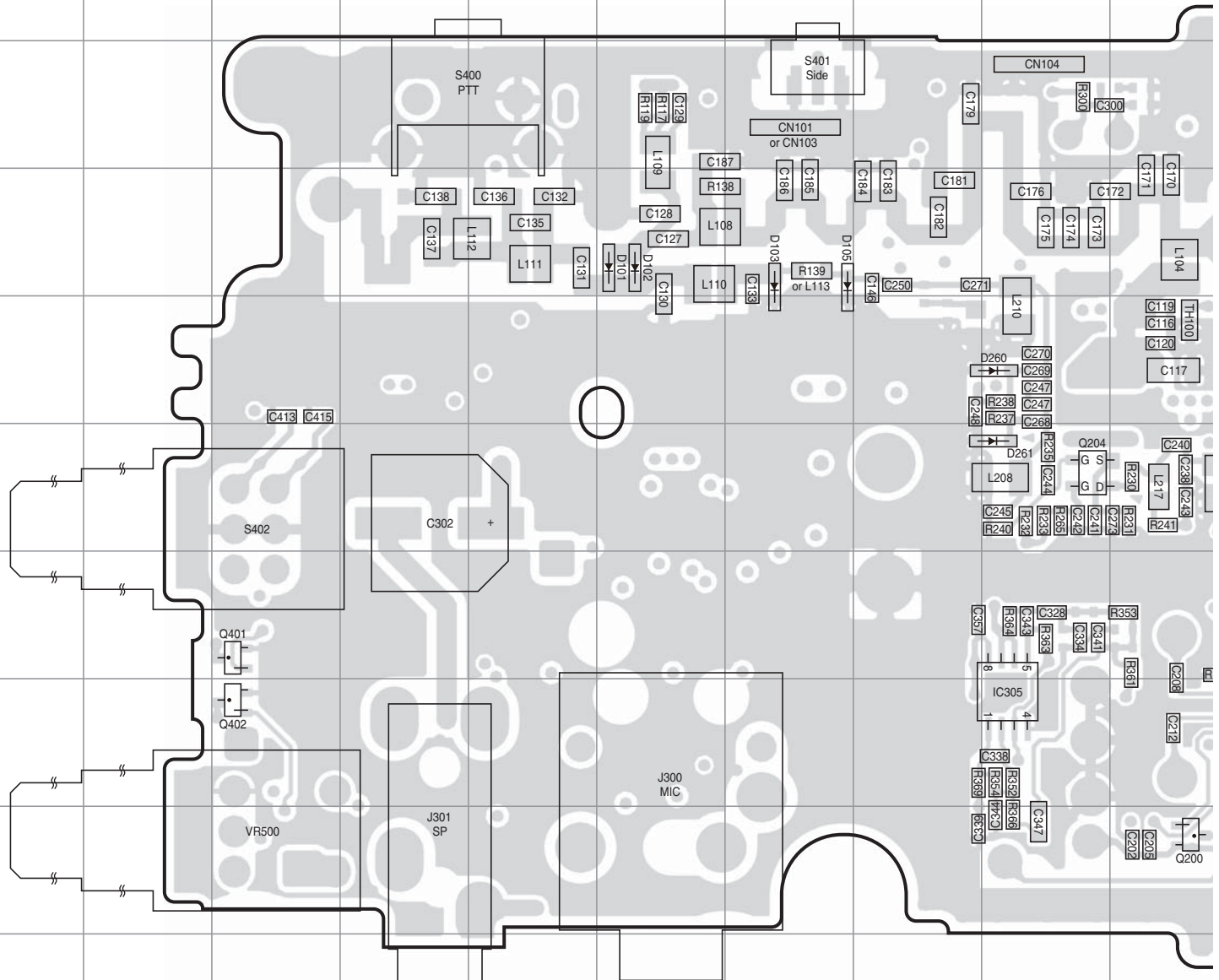


TK-3000 PC BOARD

TX-RX UNIT (X57-810X-XX)

0-23: M6 2-71: E,T2 3-00:K,M,M3,M7 3-01:M2,M4

Foil side view (J7C-0010-00)



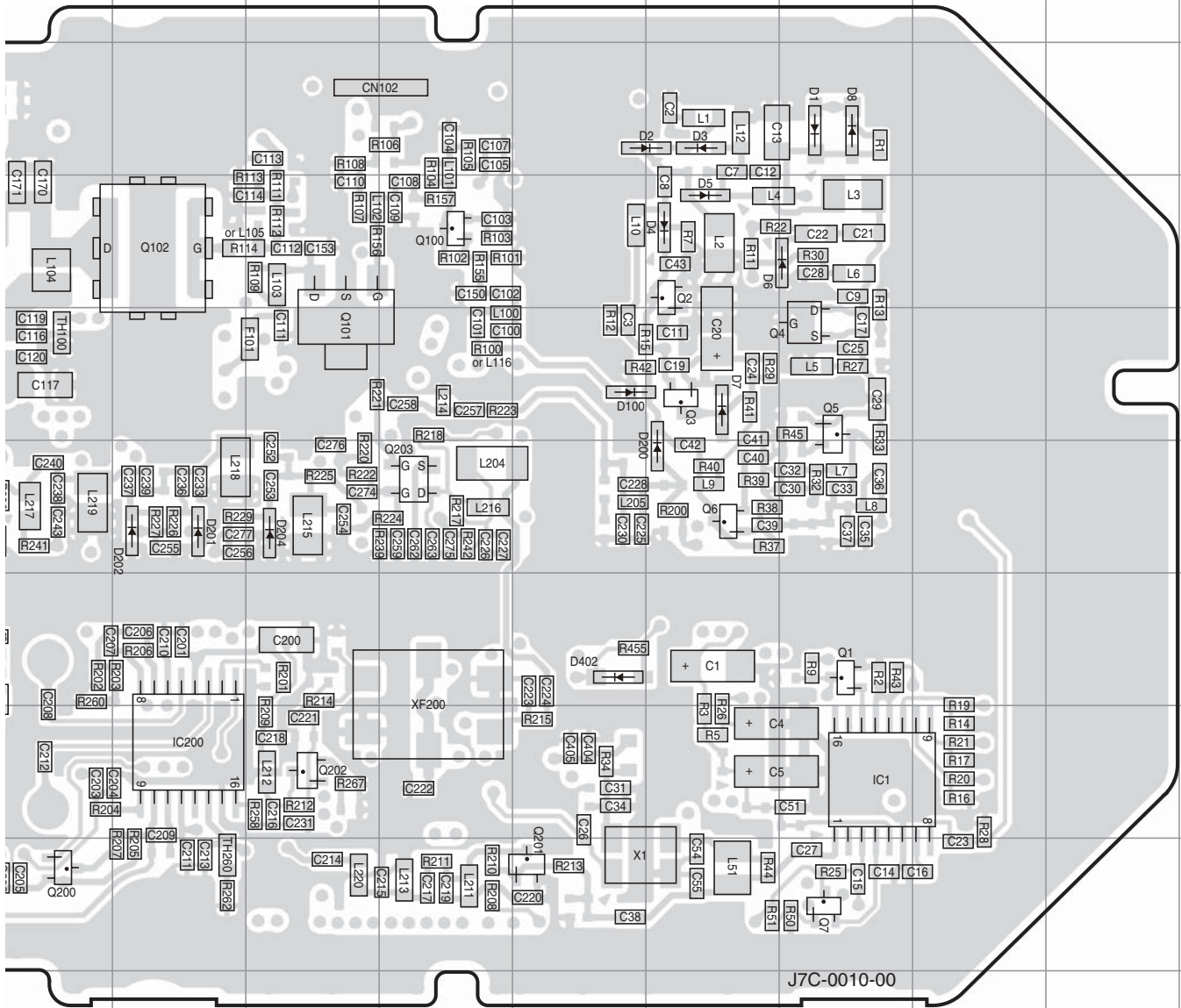
Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	8P	Q100	4M	D1	3P	D102	4F
IC200	8K	Q101	5L	D2	3O	D103	4G
IC305	8I	Q102	4K	D3	3O	D105	4G
Q1	4M	Q200	9J	D4	4O	D200	6O
Q2	4O	Q201	9N	D5	4O	D201	6K
Q3	5O	Q202	8L	D6	4O	D202	6K
Q4	5P	Q203	6M	D7	5O	D204	6L
Q5	5P	Q204	6I	D8	3P	D260	5I
Q6	6O	Q401	7C	D100	5N	D261	6I
Q7	9P	Q402	8C	D101	4F	D402	7N

PC BOARD TK-3000

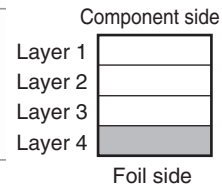
TX-RX UNIT (X57-810X-XX)

0-23: M6 2-71: E,T2 3-00:K,M,M3,M7 3-01:M2,M4

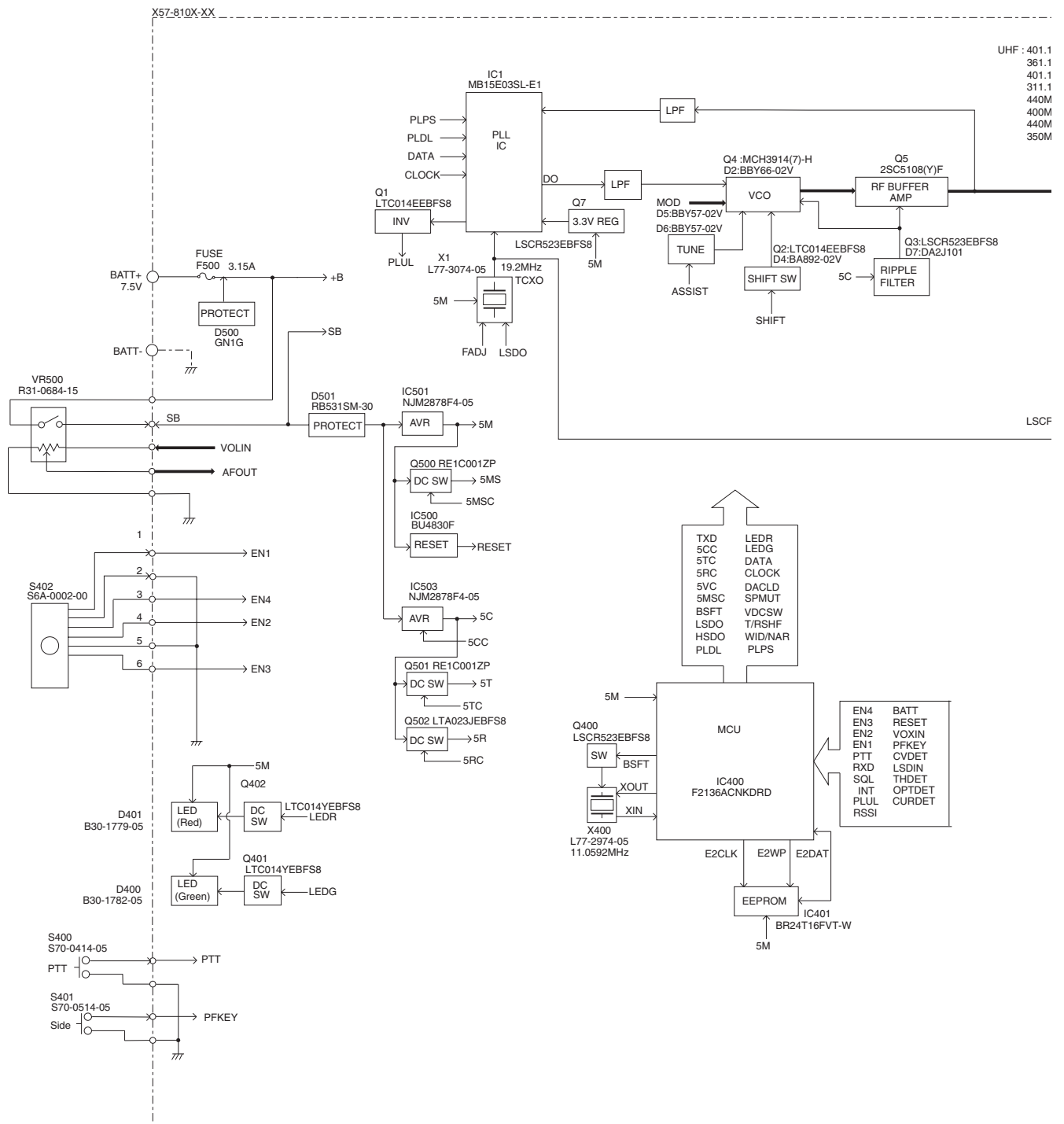
Foil side view (J7C-0010-00)



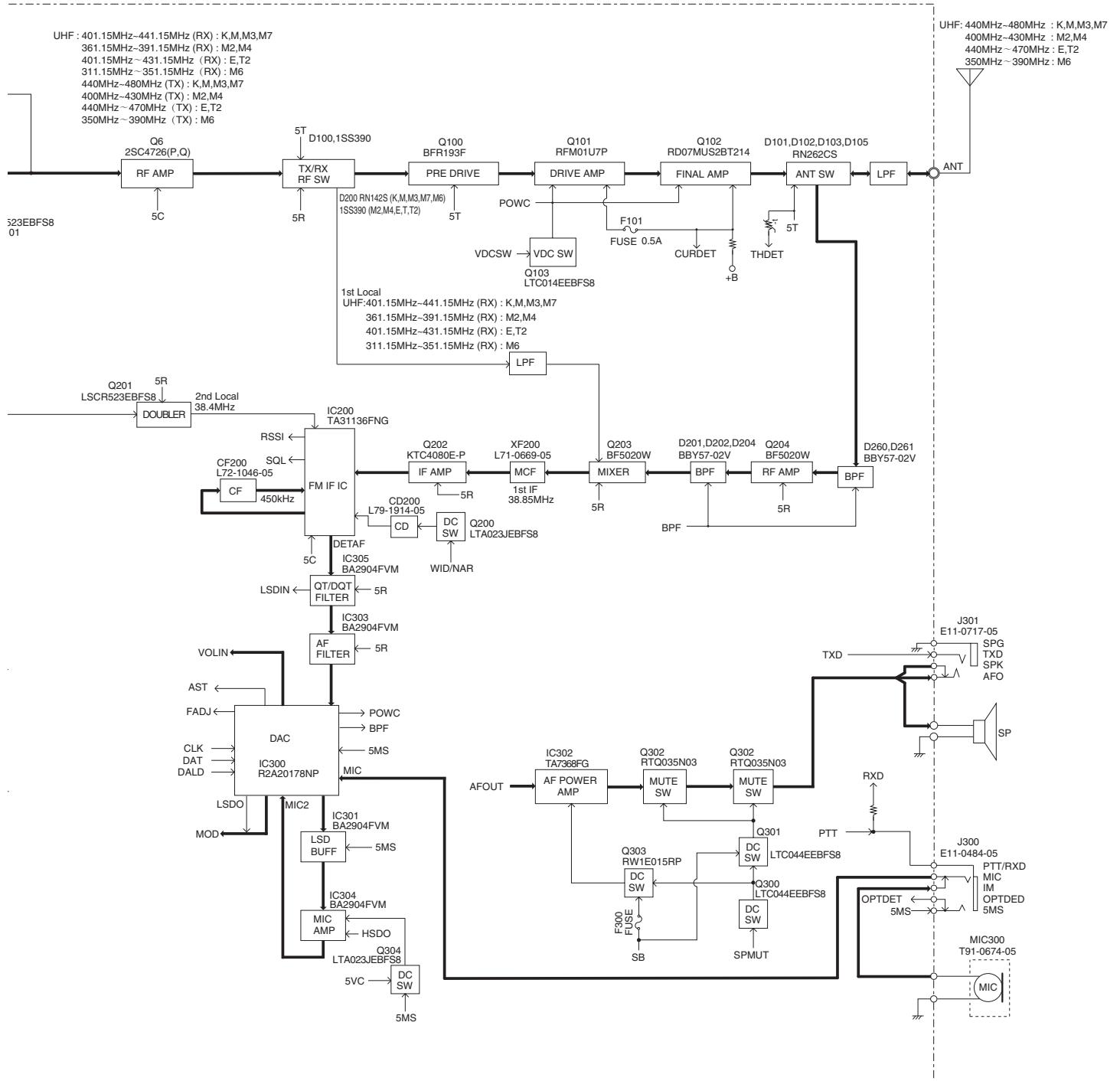
J7C-0010-00



BLOCK DIAGRAM

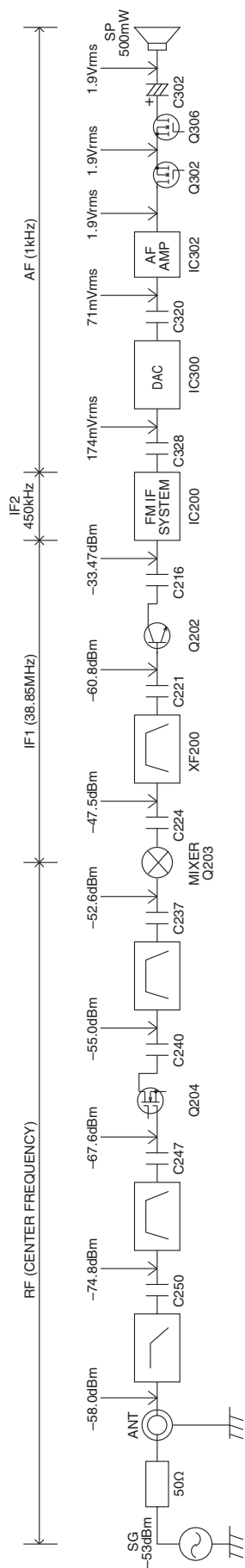


BLOCK DIAGRAM



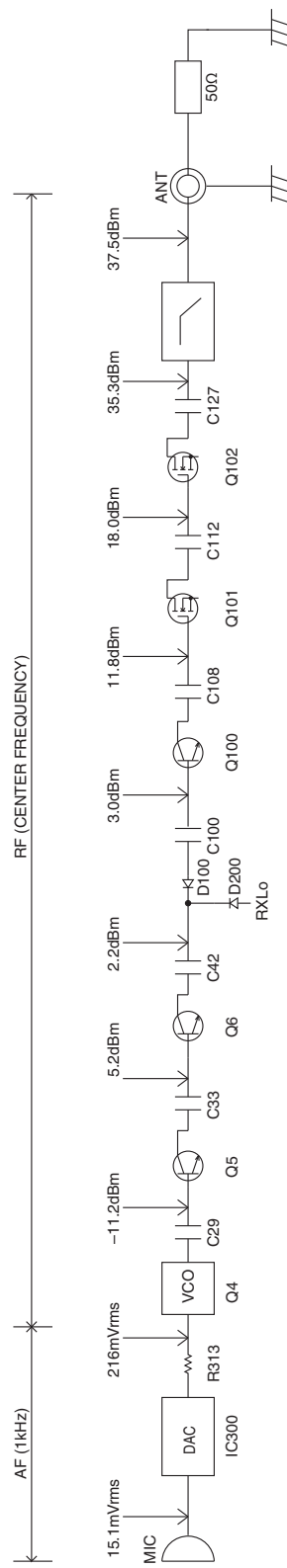
LEVEL DIAGRAM

Receiver Section



To make measurements in the AF section, connect the AC level meter.
 (ANT input: -53dBm, 1kHz FM, 1.5kHz Dev (Narrow).)
 In the RF section, use a high impedance probe. (ANT input: -53dBm, MOD off).

Transmitter Section



AG is set to the MIC input becomes 1.5kHz Dev, at 1kHz MOD. (Narrow)
 To make measurements in the AF section, connect the AC level meter.
 In the RF section, use a 1000pF coupling capacitor.

SPECIFICATIONS (K, M, M2, M3, M4, M6, M7 TYPE)

GENERAL

Frequency Range	440~480MHz (K, M, M7) 400~430MHz (M2, M4) 350~390MHz (M6)
Number of Channels	Max. 16
Channel Spacing	25kHz (Wide) / 12.5kHz (Narrow)
PLL Channel Stepping	5kHz, 6.25kHz
Operating Voltage	7.5 V DC±20%
Battery Life	More than 10 hours at 4 watts (5-5-90 duty cycle with KNB-63L battery)
Operating Temperature Range	-20°C to +60°C (-4°F to +140°F)
Frequency Stability	±2.5ppm
Channel Frequency Spread	40MHz (K, M, M6, M7) 30MHz (M2, M4)
Dimensions and Weight (Dimensions not including protrusions)	
Radio Only	54 (2.13) W x 113 (4.45) H x 14 (0.55) D mm (in), 130g (4.6oz)
With KNB-63L battery (1130mAh battery)	54 (2.13) W x 113 (4.45) H x 24.9 (0.98) D mm (in), 203g (7.2oz)

RECEIVER (Measurements made per TIA/EIA-603)

Sensitivity	
EIA 12dB SINAD	0.25μV (Wide) / 0.28μV (Narrow)
Selectivity	70dB (Wide) / 60dB (Narrow)
Intermodulation Distortion	65dB (Wide) / 60dB (Narrow)
Spurious Response	65dB
Audio Output	500mW at 8Ω

TRANSMITTER (Measurements made per TIA/EIA-603)

RF Output Power	4W/1W
Spurious Response	65dB
Modulation	16K0F3E (Wide) / 11K0F3E (Narrow)
FM Hum & Noise	45dB (Wide) / 40dB (Narrow)
Modulation Distortion	Less than 5%

Measurements made per TIA/EIA-603 and specifications shown are typical.

JVC KENWOOD Corporation reserves the right to change specifications without prior notice or obligation.

SPECIFICATIONS (E,T2 TYPE)

GENERAL

Frequency Range	440~470MHz
Number of Channels	Max. 16
Channel Spacing	25kHz (Wide) / 20kHz (Wide 4k) / 12.5kHz (Narrow)
Operating Voltage	7.5 V DC±20%
Battery Life	Applox 10 hours at 4 watts (5-5-90 duty cycle) With KNB-63L battery
Operating Temperature Range	-20°C to +60°C
Frequency Stability	±5.0ppm
Channel Frequency Spread	30MHz
Dimensions and Weight (Dimensions not including protrusions)	
Radio Only	54 W x 113 H x 14 D mm, 130g
With KNB-63L battery (1130mAh battery)	54 W x 113 H x 24.9 D mm, 203g

RECEIVER (Measurements mode per EN Standards)

Sensitivity	
EIA 12dB SINAD	0.28μV (Wide/Wide 4k) 0.35μV (Narrow)
EN 20dB SINAD	-3dBμV (0.35μV) (Wide/Wide 4k) -1dBμV (0.45μV) (Narrow)
Adjacent Channel Selectivity	70dB (Wide/Wide 4k) 60dB (Narrow)
Intermodulation	65dB
Spurious Response Rejection	70dB
Audio Distortion	Less than 5%
Audio Output	500mW/8Ω

TRANSMITTER (Measurements mode per EN Standards)

RF Output Power	4W/1W
Spurious Emission	-36dBm ≤ 1GHz -30dBm > 1GHz
FM Noise (EIA)	45dB (Wide) 43dB (Wide 4k) 40dB (Narrow)
Modulation Distortion	Less than 5%
Modulation	16K0F3E, 14K0F3E, 8K50F3E

Measurements made per EN standards or TIA/EIA 603 and specifications shown are typical.
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KENWOOD

JV KENWOOD Corporation
Communications Systems Business Operation

TK-3000 PC BOARD

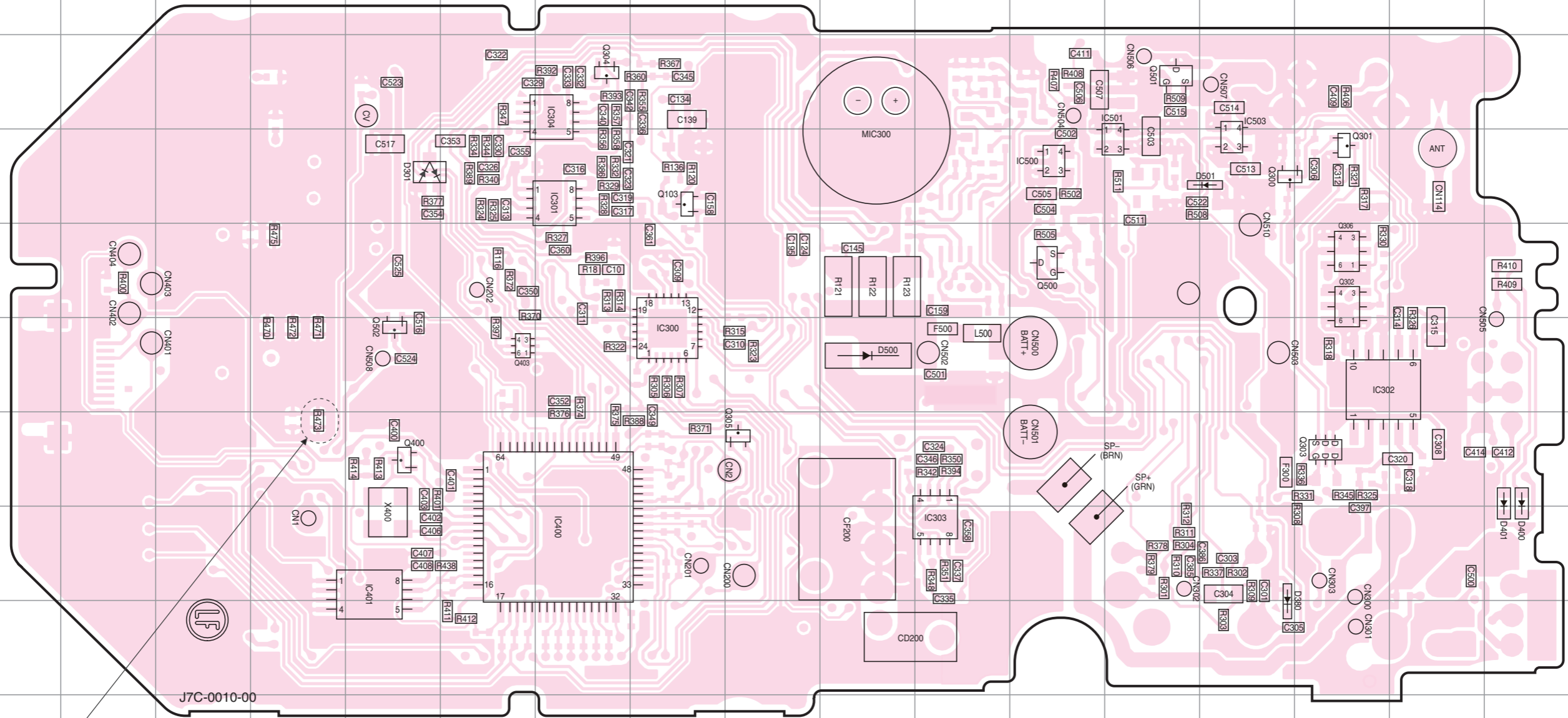
TX-RX UNIT (X57-810X-XX)

0-23: M6 2-71: E,T2 3-00:K,M,M3,M7 3-01:M2,M4
Component side view (J7C-0010-00)

PC BOARD TK-3000

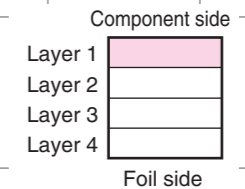
TX-RX UNIT (X57-810X-XX)

0-23: M6 2-71: E,T2 3-00:K,M,M3,M7 3-01:M2,M4
Component side view (J7C-0010-00)



Note : for service unit

Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC300	6I	Q103	4I	Q500	5M
IC301	4H	Q300	4O	Q501	3N
IC302	6P	Q301	4P	Q502	6F
IC303	8L	Q302	5P	D301	4F
IC304	3H	Q303	7P	D380	9O
IC400	8H	Q304	3H	D400	8R
IC401	8F	Q305	7I	D401	8R
IC500	4M	Q306	5P	D500	6K
IC501	4M	Q400	7F	D501	4N
IC503	4O	Q403	6G		

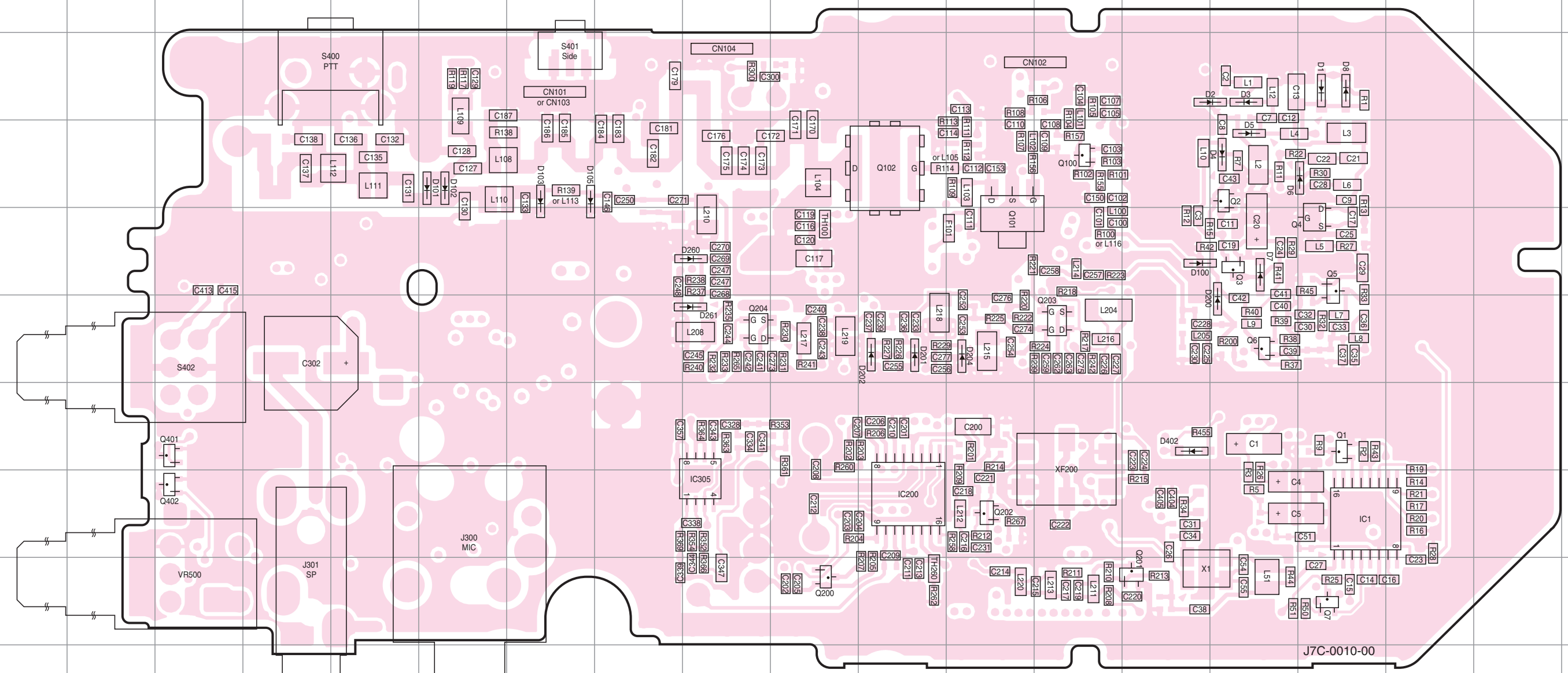


TK-3000 PC BOARD

PC BOARD TK-3000

TX-RX UNIT (X57-810X-XX)
 0-23: M6 2-71: E,T2 3-00:K,M,M3,M7 3-01:M2,M4
 Foil side view (J7C-0010-00)

TX-RX UNIT (X57-810X-XX)
 0-23: M6 2-71: E,T2 3-00:K,M,M3,M7 3-01:M2,M4
 Foil side view (J7C-0010-00)



J7C-0010-00

Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	8P	Q100	4M	D1	3P	D102	4F
IC200	8K	Q101	5L	D2	3O	D103	4G
IC305	8I	Q102	4K	D3	3O	D105	4G
Q1	4M	Q200	9J	D4	4O	D200	6O
Q2	4O	Q201	9N	D5	4O	D201	6K
Q3	5O	Q202	8L	D6	4O	D202	6K
Q4	5P	Q203	6M	D7	5O	D204	6L
Q5	5P	Q204	6I	D8	3P	D260	5I
Q6	6O	Q401	7C	D100	5N	D261	6I
Q7	9P	Q402	8C	D101	4F	D402	7N

