

# KENWOOD

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VHF FM TRANSCEIVER

# TK-2200L

## SERVICE MANUAL

# KENWOOD

Kenwood Corporation

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Refer to the TK-2200 service manual (B51-8694-00) for any information which has not been covered in this TK-2200L service manual.

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Photo is TK-2200L (K2 type).



This product uses Lead Free solder.

# TK-2200L

## 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.

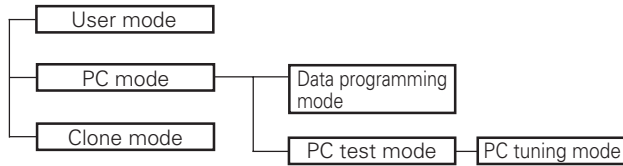
### TK-2200L (ProTalk)

Destination	Number of CH	Frequency No. / Frequency				Default CH setting	RF power output
K	2-channel	CH1	151.6250MHz	CH15	151.7750MHz	CH1: 154.5700MHz / QT 67.0Hz CH2: 154.6000MHz / QT 67.0Hz	2W
		CH2	151.9550MHz	CH16	151.8650MHz		
		CH3	154.5700MHz	CH17	151.8950MHz		
		CH4	154.6000MHz	CH18	151.9250MHz		
		CH5	151.7000MHz	CH19	152.7000MHz		
K2	8-channel	CH6	151.7600MHz	CH20	154.4900MHz	CH1: 154.5700MHz / QT 67.0Hz CH2: 154.6000MHz / QT 67.0Hz CH3: 151.7000MHz / QT 67.0Hz CH4: 151.7600MHz / QT 67.0Hz CH5: 151.8200MHz / QT 67.0Hz CH6: 151.8800MHz / QT 67.0Hz CH7: 151.9400MHz / QT 67.0Hz CH8: 151.5125MHz / QT 67.0Hz	2W
		*CH7	151.8200MHz	CH21	154.5150MHz		
		*CH8	151.8800MHz	CH22	154.5275MHz		
		*CH9	151.9400MHz	CH23	154.5400MHz		
		CH10	151.5125MHz	CH24	154.6000MHz		
		CH11	151.6550MHz	CH25	154.6550MHz		
		CH12	151.6850MHz	CH26	158.4000MHz		
		CH13	151.7150MHz	CH27	158.4075MHz		
		CH14	151.7450MHz				

\*Note : Due to FCC regulations, these frequencies transmit at only 1 watt

## REALIGNMENT

### 1. Modes

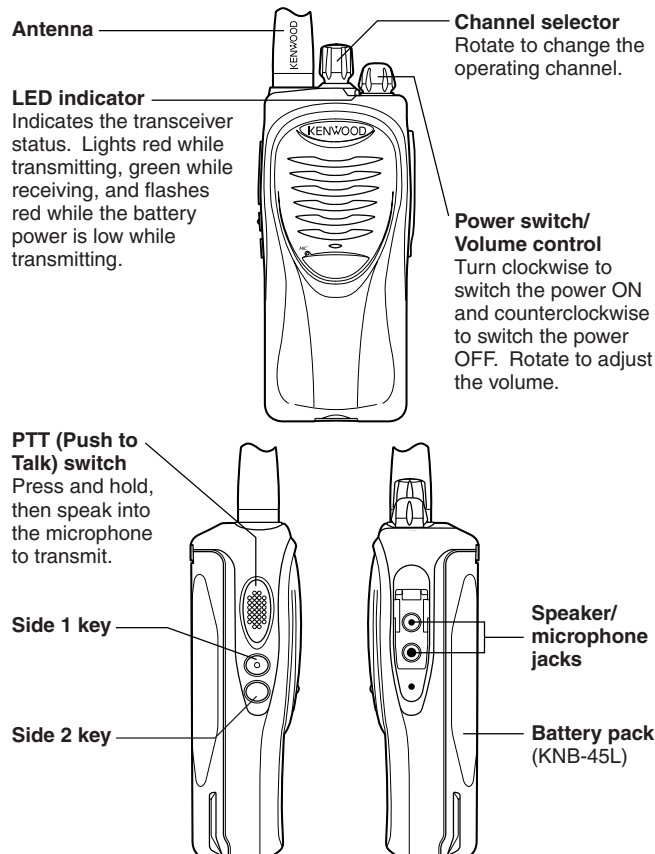


Mode	Function
User mode	For normal use.
PC mode	Used for communication between the transceiver and PC (IBM compatible).
Data programming mode	Used to read and write frequency data and other features to and from the transceiver.
PC test mode	Used to check the transceiver using the PC. This feature is 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]+[Side2]+Power ON (Two seconds)

### 3. Getting Acquainted



### 4. PC Mode

#### 4-1. Preface

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

The programming software can be used with an IBM PC or compatible. Figure 1 shows the setup of an IBM 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 computer must match the model type when it is written into the 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 KPG-88D description

KPG-88D is the programming software for the transceiver supplied on a CD-ROM. This software runs under Windows 98, ME, Windows 2000 or XP on an IBM-PC or compatible machine.

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

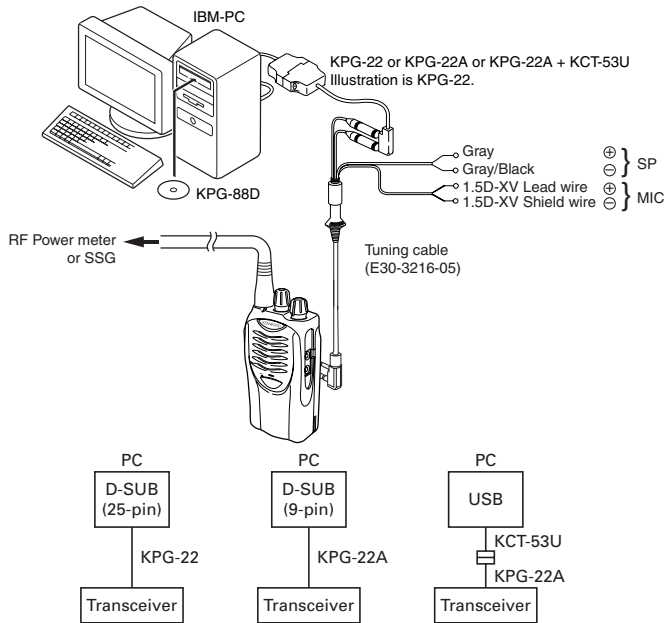


Fig. 1

## 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

1. To switch the clone target/s to Clone mode, press and hold the [PTT] and [Side2] keys while turning the transceiver power ON.
2. Wait for 2 seconds. The LED will light orange and the transceiver will announce "Clone".
3. Select a channel table number using Side1 (increment channel table) and Side2 (decrement channel table) keys.
4. To switch the clone source to Clone mode, press and hold the [PTT] and [Side2] keys while turning the transceiver power ON.
5. Wait for 2 seconds. The LED will light orange and the transceiver will announce "Clone".
6. Select the same channel table number as the clone target/s.
7. 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.

8. If the cloning fails, no data will be available in the Target unit when it is returned to User mode.
9. When the cloning is successful, the Target unit's "Scan" function will return to its default value (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.
- 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.
- 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)	Table Number	Frequency (MHz)
1	151.6250	15	151.7750
2	151.9550	16	151.8650
3	154.5700	17	151.8950
4	154.6000	18	151.9250
5	151.7000	19	152.7000
6	151.7600	20	154.4900
7	151.8200	21	154.5150
8	151.8800	22	154.5275
9	151.9400	23	154.5400
10	151.5125	24	154.6000
11	151.6550	25	154.6550
12	151.6850	26	158.4000
13	151.7150	27	158.4075
14	151.7450		

## CIRCUIT DESCRIPTION

### 1. Control Circuit

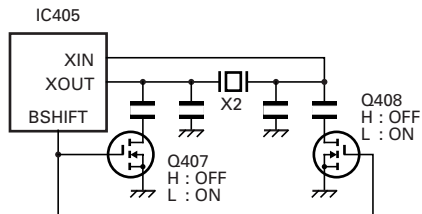
The control circuit consists of a microprocessor (IC405) and its peripheral circuits. It controls the TX-RX unit. IC405 mainly performs the following:

- (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.

#### 1) Frequency Shift Circuit

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

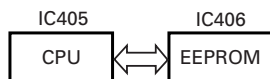
A beat sound may be able to be evaded from generation if "Beat Shift" is set to ON when it is generated in the internal spurious transmission modulated sound of a transceiver.



**Fig. 1 Frequency shift circuit**

#### 2) Memory Circuit

Memory circuit consists of the CPU (IC405) and an EEPROM (IC406). An EEPROM has a capacity of 8k bits that contains the transceiver control program for the CPU and data such as transceiver channels and operating features.



**Fig. 2 Memory circuit**

#### 3) Low Battery Warning

The battery voltage is checked using by the microprocessor. The transceiver generates a warning tone when the battery voltage falls below the warning voltage (2) shown in the table.

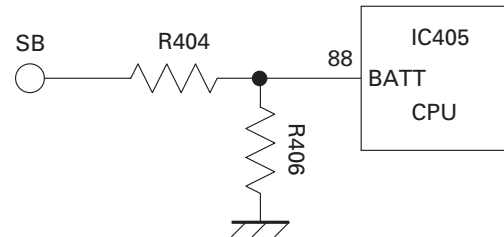
- (1) The red LED blinks when the battery voltage falls below the voltage (1) shown in the table during transmission.

**Note:**

During reception, transceiver constantly checks the battery level. When the battery level drops near to 5.9V, the red LED blinks and low battery warning tone is generated.

- (2) The transceiver immediately stops transmission when the battery voltage falls below the voltage (2) shown in the table. The warning tone sounds while the PTT switch is pressed.

	Ni-MH Battery	Li-ion Battery
(1)	6.2V	6.2V
(2)	5.9V	5.9V



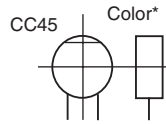
**Fig. 3 Low battery warning**

## PARTS LIST

### CAPACITORS

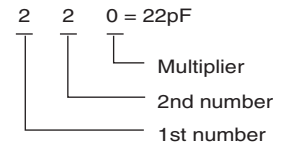
CC 45 TH 1H 220 J  
 1 2 3 4 5 6

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



#### Capacitor value

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



#### Temperature coefficient

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

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

Example : CC45TH = -470 ± 60ppm/°C

#### Tolerance (More than 10pF)

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

#### (Less than 10pF)

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

#### Voltage rating

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

#### Chip capacitors

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

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

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

(Chip)(B,F)

Refer to the table above.

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

#### Dimension (Chip capacitors)

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

### RESISTORS

#### Chip resistor (Carbon)

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

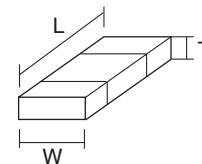
(Chip)(B,F)

#### Carbon resistor (Normal type)

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

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

#### Dimension



#### Dimension (Chip resistor)

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

#### Rating wattage

Code	Wattage	Code	Wattage	Code	Wattage
1J	1/16W	2C	1/6W	3A	1W
2A	1/10W	2E	1/4W	3D	2W
2B	1/8W	2H	1/2W		

## PARTS LIST

\* New Parts.  $\Delta$  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  
 Y: AAFES (Europe)      X: Australia      M: Other Areas

### TK-2200L (Y50-6190-XX) TX-RX UNIT (X57-6880-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
<b>TK-2200L</b>											
1	1A	*	A02-3983-03	PLASTIC CABINET ASSY(2CH)	K	B	2B		N14-0832-04	CIRCULAR NUT(CH KNOB)	
1	1A	*	A02-3984-03	PLASTIC CABINET ASSY(8CH)	K2	C	2A,2B		N30-2604-48	PAN HEAD MACHINE SCREW(SMA)	
2	3A	*	A10-4094-43	CHASSIS		D	3A		N30-2606-48	PAN HEAD MACHINE SCREW(CHASSIS)	
3	1B		A21-1645-23	DRESSING PANEL(8CH)	K2	E	2A,2B,3B		N83-2005-48	PAN HEAD TAPTITE SCREW(PCB)	
3	1B		A21-1646-13	DRESSING PANEL(2CH)	K	54	2C		N99-2046-05	SCREW SET ACCESSORY	
4	2C		B09-0680-03	CAP(SP/MIC) ACCESSORY		55	2B		R31-0661-05	VARIABLE RESISTOR(POWER SW/VOL)	
5	2B		B11-1817-04	ILLUMINATION GUIDE		56	2B		S60-0435-05	ROTARY SWITCH(8CH)	
6	1B		B43-1156-04	BADGE(KENWOOD)		57	1B	*	T07-0760-25	SPEAKER	
7	1A	*	B43-1603-04	BADGE(TK-2200L)		58	3D		T90-1036-05	HELICAL ANTENNA ACCESSORY	
8	1C	*	B62-1978-00	INSTRUCTION MANUAL		59	1C		W08-0988-05	CHARGER ACCESSORY	
9	1A		D10-0649-03	LEVER		60	1D		W08-0989-05	AC ADAPTER(AC120V) ACCESSORY	
10	1A		D21-0863-04	SHAFT		<b>TX-RX UNIT (X57-6880-XX) -12 :K -13 :K2</b>					
11	1A		D32-0441-03	STOPPER		D403			B30-2156-05	LED(RED)	
12	1B		D32-0443-04	STOPPER(2CH)	K	D404			B30-2157-05	LED(YELLOW)	
14	2A		E04-0465-05	RF COAXIAL RECEPTACLE(SMA)		C1			CK73HB1H332K	CHIP C 3300PF	K
15	3B		E23-1253-04	TERMINAL(BATT-)		C2			CK73HB1C682K	CHIP C 6800PF	K
16	2B		E37-1175-05	PROCESSED LEAD WIRE(BROWN:SP-)		C3			CK73GB1A105K	CHIP C 1.0UF	K
17	2B		E37-1176-05	PROCESSED LEAD WIRE(GREEN:SP-)		C4			CK73HB1C103K	CHIP C 0.010UF	K
18	3A		F20-3353-14	INSULATING SHEET(CHASSIS BATT+)		C5			CK73HB1H102K	CHIP C 1000PF	K
19	2A		G01-4542-04	COIL SPRING(LEVER)		C6			CK73HB1A104K	CHIP C 0.10UF	K
20	1A		G01-4543-04	COIL SPRING(STOPPER)		C7 ,8			CC73HCH1H101J	CHIP C 100PF	J
21	2B		G10-1330-04	FIBROUS SHEET(IC302:AUDIO IC)		C9			CC73HCH1H100C	CHIP C 10PF	C
22	3A		G11-4283-04	RUBBER SHEET(Q103:FINAL FET)		C10			CS77CPOJ100M	CHIP TNTL 10UF 6.3WV	
23	2A		G11-4313-04	SHEET(MIC ELEMENT)		C11			CC73HCH1H101J	CHIP C 100PF	J
24	3B		G13-2009-04	CUSHION(CHASSIS)		C12			CK73HB1H102K	CHIP C 1000PF	K
25	3A		G13-2033-04	CUSHION(TERMINAL BATT-)		C13			CK73HB1A104K	CHIP C 0.10UF	K
26	3B		G13-2034-14	CUSHION(TERMINAL BATT-)		C14			CK73HB1C103K	CHIP C 0.010UF	K
28	3A		G13-2038-24	CUSHION(CHASSIS-CERAMIC FILTER)		C15			CC73HCH1H100C	CHIP C 10PF	C
29	2A		G13-2039-14	CUSHION(PCB-CERAMIC FILTER)		C16			CK73HB1H102K	CHIP C 1000PF	K
30	2B		G13-2076-04	CUSHION(SP)		C17			CC73HCH1H470J	CHIP C 47PF	J
31	2B		G13-2088-04	CUSHION(CHASSIS VOL/CH)		C18			CC73HCH1H180J	CHIP C 18PF	J
32	3A		G53-1604-03	PACKING(CHASSIS)		C19			CK73HB1A104K	CHIP C 0.10UF	K
33	3A		G53-1605-03	PACKING(TERMINAL BATT+)		C21			CS77CPOJ100M	CHIP TNTL 10UF 6.3WV	
34	2B		G53-1606-13	PACKING(VOL/CH/LED)		C22			CS77AA1VR33M	CHIP TNTL 0.33UF 35WV	
35	1B		G53-1607-03	PACKING(SP/MIC)		C24			CK73HB1H102K	CHIP C 1000PF	K
36	2B		G53-1608-03	PACKING(SP)		C25			CC73HCH1H020B	CHIP C 2.0PF	B
37	2A		G53-1609-14	PACKING(MIC ELEMENT)		C26			CC73HCH1H300J	CHIP C 30PF	J
38	2B		G53-1610-04	PACKING(SMA)		C27			CS77CA1C3R3M	CHIP TNTL 3.3UF 16WV	
40	2C	*	H12-4221-05	PACKING FIXTURE		C29 ,30			CK73HB1H471K	CHIP C 470PF	K
42	1C		H25-0085-04	PROTECTION BAG (100/200/0.07)		C32			CS77CA1V0R1M	CHIP TNTL 0.1UF 35WV	
43	3D	*	H52-2180-02	ITEM CARTON CASE		C33 ,34			CK73HB1H102K	CHIP C 1000PF	K
44	2C		J19-5472-03	HOLDER(SP/MIC) ACCESSORY		C35			CC73HCH1H270J	CHIP C 27PF	J
45	2A		J19-5473-03	HOLDER ASSY(TERMINAL BATT+)		C38			CC73HCH1H060B	CHIP C 6.0PF	B
46	2B		J21-8478-04	HARDWARE FIXTURE(SP/MIC)		C39			CK73GB1H332K	CHIP C 3300PF	K
47	2B		J21-8525-03	MOUNTING HARDWARE(VOL/CH)		C40			CC73HCH1H040B	CHIP C 4.0PF	B
48	2D		J29-0734-05	BELT CLIP ACCESSORY		C41			CK73GB1H682K	CHIP C 6800PF	K
49	2B		J82-0092-05	FPC		C42			CC73HCH1H060B	CHIP C 6.0PF	B
50	1A		K29-9308-23	BUTTON KNOB(PTT)		C43			CC73HCH1H150J	CHIP C 15PF	J
51	1B		K29-9309-03	KNOB(VOL)		C44			CK73HB1H471K	CHIP C 470PF	K
52	1B		K29-9318-03	KNOB(CH)		C45			CK73GB1A105K	CHIP C 1.0UF	K
53	1A		K29-9364-03	BUTTON KNOB(SIDE1/SIDE2)		C47			CC73HCH1H101J	CHIP C 100PF	J
A	2B		N14-0819-04	CIRCULAR NUT(VOL KNOB)		C48			CK73HB1H471K	CHIP C 470PF	K
						C49			CC73HCH1H101J	CHIP C 100PF	J



# TK-2200L

## PARTS LIST

### TX-RX UNIT (X57-6880-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C50			CC73HCH1H100C	CHIP C 10PF C		C146			CK73GB1H102K	CHIP C 1000PF K	
C51			CK73HB1H102K	CHIP C 1000PF K		C147			CK73HB1H102K	CHIP C 1000PF K	
C52			CC73HCH1H181J	CHIP C 180PF J		C148			CK73GB1H102K	CHIP C 1000PF K	
C53			CC73HCH1H0R5B	CHIP C 0.5PF B		C149			CC73GCH1H240J	CHIP C 24PF J	
C54			CC73HCH1H060B	CHIP C 6.0PF B		C150			CC73GCH1H220J	CHIP C 22PF J	
C55			CC73HCH1H121J	CHIP C 120PF J		C151			CK73GB1H102K	CHIP C 1000PF K	
C57			CC73HCH1H1R5B	CHIP C 1.5PF B		C153,154			CC73GCH1H100C	CHIP C 10PF C	
C58			CC73HCH1H090B	CHIP C 9.0PF B		C155			CC73GCH1H180J	CHIP C 18PF J	
C59			CC73HCH1H1R5B	CHIP C 1.5PF B		C156			CC73GCH1H120J	CHIP C 12PF J	
C60			CC73HCH1H010B	CHIP C 1.0PF B		C157			CC73GCH1H150J	CHIP C 15PF J	
C61			CC73HCH1H040B	CHIP C 4.0PF B		C158			CC73GCH1H220J	CHIP C 22PF J	
C62			CC73HCH1H050B	CHIP C 5.0PF B		C159			CC73GCH1H070D	CHIP C 7.0PF D	
C63			CC73HCH1H101J	CHIP C 100PF J		C160			CC73GCH1H330J	CHIP C 33PF J	
C64			CC73HCH1H040B	CHIP C 4.0PF B		C201			CK73GB1A224K	CHIP C 0.22UF K	
C65-67			CC73HCH1H050B	CHIP C 5.0PF B		C205			CK73HB1H102K	CHIP C 1000PF K	
C68-70			CK73HB1H471K	CHIP C 470PF K		C207			CK73HB1H182K	CHIP C 1800PF K	
C71,72			CK73HB1A104K	CHIP C 0.10UF K		C208			CK73HB1H471K	CHIP C 470PF K	
C73,74			CC73HCH1H0R5B	CHIP C 0.5PF B		C209			CS77CPOJ100M	CHIP TNTL 10UF 6.3WV	
C75,76			CK73HB1H102K	CHIP C 1000PF K		C210			CK73HB1H471K	CHIP C 470PF K	
C77			CK73HB1H471K	CHIP C 470PF K		C211			CK73HB1C103K	CHIP C 0.010UF K	
C78			CC73HCH1H330J	CHIP C 33PF J		C213			CK73HB1A104K	CHIP C 0.10UF K	
C79			CS77CPOJ100M	CHIP TNTL 10UF 6.3WV		C214			CC73HCH1H680J	CHIP C 68PF J	
C80			CK73HB1H471K	CHIP C 470PF K		C215			CK73HB1H102K	CHIP C 1000PF K	
C81			CC73HCH1H150J	CHIP C 15PF J		C216			CK73GB1C104K	CHIP C 0.10UF K	
C82-86			CK73HB1H102K	CHIP C 1000PF K		C217			CK73HB1A104K	CHIP C 0.10UF K	
C87			CC73HCH1H100C	CHIP C 10PF C		C218			CK73GB1C104K	CHIP C 0.10UF K	
C90			CK73HB1H102K	CHIP C 1000PF K		C219			CC73HCH1H330J	CHIP C 33PF J	
C101			CK73HB1H102K	CHIP C 1000PF K		C220			CK73HB1H102K	CHIP C 1000PF K	
C104			CC73GCH1H390J	CHIP C 39PF J		C221			CK73GB1C104K	CHIP C 0.10UF K	
C105			CK73HB1H102K	CHIP C 1000PF K		C222			CK73HB1H102K	CHIP C 1000PF K	
C107			CK73HB1H102K	CHIP C 1000PF K		C224,225			CK73HB1C103K	CHIP C 0.010UF K	
C108			CC73GCH1H390J	CHIP C 39PF J		C227			CK73HB1H102K	CHIP C 1000PF K	
C109			CK73GB1C104K	CHIP C 0.10UF K		C228			CC73GCH1H100C	CHIP C 10PF C	
C110,111			CK73HB1H102K	CHIP C 1000PF K		C230			CC73HCH1H080B	CHIP C 8.0PF B	
C115			CK73HB1H102K	CHIP C 1000PF K		C231,232			CK73GB1H103K	CHIP C 0.010UF K	
C116			CC73GCH1H220J	CHIP C 22PF J		C233			CC73HCH1H020B	CHIP C 2.0PF B	
C117			CC73GCH1H100C	CHIP C 10PF C		C234			CK73HB1C103K	CHIP C 0.010UF K	
C118			CC73GCH1H101J	CHIP C 100PF J		C235			CC73HCH1H090B	CHIP C 9.0PF B	
C119			CC73GCH1H270J	CHIP C 27PF J		C236			CK73GB1H102K	CHIP C 1000PF K	
C120			CK73GB1H102K	CHIP C 1000PF K		C237			CC73HCH1H050B	CHIP C 5.0PF B	
C121			CC73GCH1H100C	CHIP C 10PF C		C238			CC73GCH1H120J	CHIP C 12PF J	
C123			CK73GB1A105K	CHIP C 1.0UF K		C239			CC73HCH1H060B	CHIP C 6.0PF B	
C124,125			CK73HB1H102K	CHIP C 1000PF K		C241			CK73HB1H102K	CHIP C 1000PF K	
C126			CS77AA1E010M	CHIP TNTL 1.0UF 25WV		C242			CK73GB1C104K	CHIP C 0.10UF K	
C128			CK73HB1H102K	CHIP C 1000PF K		C243			CK73HB1H102K	CHIP C 1000PF K	
C130			CC73GCH1H100C	CHIP C 10PF C		C244			CC73HCH1H040B	CHIP C 4.0PF B	
C132			CK73HB1H102K	CHIP C 1000PF K		C245			CK73HB1H471K	CHIP C 470PF K	
C133			CK73GB1H103K	CHIP C 0.010UF K		C247			CC73GCH1H040B	CHIP C 4.0PF B	
C134			CK73GB1C104K	CHIP C 0.10UF K		C248			CC73GCH1H270J	CHIP C 27PF J	
C135			CK73GB1A105K	CHIP C 1.0UF K		C249			CK73HB1H102K	CHIP C 1000PF K	
C136			CC73GCH1H270J	CHIP C 27PF J		C250			CC73GCH1H040B	CHIP C 4.0PF B	
C137			CK73GB1H103K	CHIP C 0.010UF K		C251			CS77CPOJ4R7M	CHIP TNTL 4.7UF 6.3WV	
C138			CK73GB1H102K	CHIP C 1000PF K		C252			CK73HB1H102K	CHIP C 1000PF K	
C139			CC73GCH1H680J	CHIP C 68PF J		C253			CC73GCH1H4R5B	CHIP C 4.5PF B	
C140			CC73GCH1H101J	CHIP C 100PF J		C254			CC73GCH1H270J	CHIP C 27PF J	
C141			CC73GCH1H200G	CHIP C 20PF G		C255			CC73GCH1H4R5B	CHIP C 4.5PF B	
C142			CC73GCH1H150J	CHIP C 15PF J		C256			CK73HB1H102K	CHIP C 1000PF K	
C143			CC73GCH1H100C	CHIP C 10PF C		C258			CK73HB1H102K	CHIP C 1000PF K	
C144			CC73GCH1H820J	CHIP C 82PF J		C260			CK73HB1H102K	CHIP C 1000PF K	

## PARTS LIST

TX-RX UNIT (X57-6880-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C262			CK73HB1H102K	CHIP C 1000PF K		C411			CK73HB1H102K	CHIP C 1000PF K	
C263			CC73GCH1H100C	CHIP C 10PF C		C415			CK73HB1H471K	CHIP C 470PF K	
C264			CC73GCH1H040B	CHIP C 4.0PF B		C417			CK73GB1A105K	CHIP C 1.0UF K	
						C418,419			CK73HB1H102K	CHIP C 1000PF K	
C265			CC73GCH1H330J	CHIP C 33PF J		C421			CK73GB1A105K	CHIP C 1.0UF K	
C266			CK73HB1H102K	CHIP C 1000PF K		C426,427			CK73GB1A105K	CHIP C 1.0UF K	
C267,268			CC73GCH1H030B	CHIP C 3.0PF B		C428,429			CK73HB1H102K	CHIP C 1000PF K	
C269			CC73GCH1H330J	CHIP C 33PF J		C430			CK73GB1H103K	CHIP C 0.010UF K	
C270			CC73GCH1H040B	CHIP C 4.0PF B		C431			CK73HB1C103K	CHIP C 0.010UF K	
C271			CC73GCH1H110J	CHIP C 11PF J		C432			CC73HCH1H050B	CHIP C 5.0PF B	
C280			CK73HB1H102K	CHIP C 1000PF K		C433,434			CC73HCH1H030B	CHIP C 3.0PF B	
C302			CK73HB1C103K	CHIP C 0.010UF K		C435			CC73HCH1H050B	CHIP C 5.0PF B	
C304			CK73GB1A224K	CHIP C 0.22UF K		C440			CC73GCH1H1R5B	CHIP C 1.5PF B	
C306			CS77CP0J4R7M	CHIP TNTL 4.7UF 6.3WV		C443			CK73GB1A474K	CHIP C 0.47UF K	
C307,308			CK73HB1A104K	CHIP C 0.10UF K		C901,902			CK73GB1A105K	CHIP C 1.0UF K	
C309			CC73GCH1H820J	CHIP C 82PF J		TC1 ,2			C05-0384-05	CERAMIC TRIMMER CAPACITOR(10PF)	
C310			CK73HB1A683K	CHIP C 0.068UF K		CN201			E23-1278-05	TERMINAL	
C311			CK73GB1A105K	CHIP C 1.0UF K		CN401			E40-6573-05	FLAT CABLE CONNECTOR	
C312			CC73GCH1H120J	CHIP C 12PF J		J301			E11-0707-05	PHONE JACK(2.5/3.5)	
C313			CC73GCH1H121J	CHIP C 120PF J		F401			F53-0324-05	FUSE(2.5A)	
C314			CK73HB1A104K	CHIP C 0.10UF K		101	2A		J30-1282-14	SPACER(MIC ELEMENT)	
C315			CK73GB1A105K	CHIP C 1.0UF K		CD201			L79-1582-05	TUNING COIL	
C316			CK73GB1C473K	CHIP C 0.047UF K		CF201	2A		L72-0973-05	CERAMIC FILTER	
C317			CK73HB1A104K	CHIP C 0.10UF K		L1			L40-4791-37	SMALL FIXED INDUCTOR(4.700UH)	
C318			CS77CP0J4R7M	CHIP TNTL 4.7UF 6.3WV		L3			L40-5681-86	SMALL FIXED INDUCTOR(0.56UH)	
C319			CC73GCH1H271J	CHIP C 270PF J		L5			L40-5681-86	SMALL FIXED INDUCTOR(0.56UH)	
C320			CK73HB1C103K	CHIP C 0.010UF K		L6 ,7			L92-0138-05	CHIP FERRITE	
C321			CK73GB1A105K	CHIP C 1.0UF K		L8			L41-1875-06	SMALL FIXED INDUCTOR(18NH)	
C322			CK73HB1C153K	CHIP C 0.015UF K		L9			L41-3375-06	SMALL FIXED INDUCTOR(33NH)	
C323			CC73GCH1H820J	CHIP C 82PF J		L10	*		L41-1885-06	SMALL FIXED INDUCTOR(180NH)	
C324			CC73HCH1H820J	CHIP C 82PF J		L11			L41-1085-06	SMALL FIXED INDUCTOR(100NH)	
C325			CK73HB1A104K	CHIP C 0.10UF K		L12			L92-0138-05	CHIP FERRITE	
C326			CK73HB1H102K	CHIP C 1000PF K		L13 ,14	*		L41-2285-06	SMALL FIXED INDUCTOR(220NH)	
C327			CC73HCH1H101J	CHIP C 100PF J		L16			L40-3978-67	SMALL FIXED INDUCTOR(39NH)	
C328			CK73HB1H391K	CHIP C 390PF K		L17			L40-2778-67	SMALL FIXED INDUCTOR(27NH)	
C329,330			CK73GB1A105K	CHIP C 1.0UF K		L18 ,19			L41-2285-03	SMALL FIXED INDUCTOR(220NH)	
C331			CK73HB1A104K	CHIP C 0.10UF K		L20 ,21			L40-3391-86	SMALL FIXED INDUCTOR(3.3UH)	
C332			CK73HB1H471K	CHIP C 470PF K		L22			L92-0138-05	CHIP FERRITE	
C333,334			CK73GB1C104K	CHIP C 0.10UF K		L23	*		L41-3975-06	SMALL FIXED INDUCTOR(39NH)	
C335			CC73GCH1H221J	CHIP C 220PF J		L24			L92-0470-05	CHIP FERRITE	
C336			CK73FB1C474K	CHIP C 0.47UF K		L25	*		L41-8275-06	SMALL FIXED INDUCTOR(82NH)	
C338			CC73GCH1H101J	CHIP C 100PF J		L50			L92-0138-05	CHIP FERRITE	
C339			CS77AA0J100M	CHIP TNTL 10UF 6.3WV		L102			L41-1085-06	SMALL FIXED INDUCTOR(100NH)	
C340			CK73GB1C104K	CHIP C 0.10UF K		L103			L92-0138-05	CHIP FERRITE	
C341			CK73GB1C473K	CHIP C 0.047UF K		L104			L40-2775-92	SMALL FIXED INDUCTOR(27NH)	
C342			CS77AA0J100M	CHIP TNTL 10UF 6.3WV		L105			L40-1585-54	SMALL FIXED INDUCTOR(150NH)	
C343			CK73GB1C473K	CHIP C 0.047UF K		L106			L92-0149-05	CHIP FERRITE	
C344			CC73GCH1H221J	CHIP C 220PF J		L107			L40-2775-54	SMALL FIXED INDUCTOR(27NH)	
C345			CS77CC0J101M	CHIP TNTL 100UF 6.3WV		L108			L92-0149-05	CHIP FERRITE	
C346			CK73GB1H102K	CHIP C 1000PF K		L109			L41-2295-39	SMALL FIXED INDUCTOR(2.2UH)	
C348			CK73HB1H471K	CHIP C 470PF K		L110			L40-5675-92	SMALL FIXED INDUCTOR(56NH)	
C351,352			CK73HB1C103K	CHIP C 0.010UF K		L111			L41-1092-44	SMALL FIXED INDUCTOR(1UH)	
C354			CK73HB1A104K	CHIP C 0.10UF K		L112			L34-4577-05	AIR-CORE COIL	
C355			CK73GB1C104K	CHIP C 0.10UF K		L113			L34-4563-05	AIR-CORE COIL	
C401			CC73GCH1H471J	CHIP C 470PF J							
C402			CK73HB1H102K	CHIP C 1000PF K							
C403			CK73GB1C104K	CHIP C 0.10UF K							
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 (X57-6880-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
L114,115			L34-4573-05	AIR-CORE COIL		R40			RK73HB1J101J	CHIP R	100 J 1/16W
L116			L34-4576-05	AIR-CORE COIL		R41			RK73HB1J154J	CHIP R	150K J 1/16W
L117			L34-4575-05	AIR-CORE COIL		R42			RK73HB1J472J	CHIP R	4.7K J 1/16W
L118			L34-4567-05	AIR-CORE COIL		R43			RK73HB1J101J	CHIP R	100 J 1/16W
L119			L34-4566-05	AIR-CORE COIL		R44			RK73HB1J102J	CHIP R	1.0K J 1/16W
L201			L40-1091-37	SMALL FIXED INDUCTOR(1.000UH)		R45 ,46			RK73HB1J332J	CHIP R	3.3K J 1/16W
L202		*	L41-3975-06	SMALL FIXED INDUCTOR(39NH)		R47			RK73HB1J470J	CHIP R	47 J 1/16W
L203			L92-0138-05	CHIP FERRITE		R48			RK73HB1J331J	CHIP R	330 J 1/16W
L204			L41-5685-39	SMALL FIXED INDUCTOR(0.56UH)		R49			RK73HB1J222J	CHIP R	2.2K J 1/16W
L205		*	L41-6875-06	SMALL FIXED INDUCTOR(68NH)		R50			RK73HB1J472J	CHIP R	4.7K J 1/16W
L206		*	L41-1885-06	SMALL FIXED INDUCTOR(180NH)		R51			RK73HB1J100J	CHIP R	10 J 1/16W
L207			L40-1585-92	SMALL FIXED INDUCTOR(150NH)		R101			RK73HB1J123J	CHIP R	12K J 1/16W
L209			L41-5678-14	SMALL FIXED INDUCTOR(56NH)		R103			RK73GB2A000J	CHIP R	0.0 J 1/10W
L210			L92-0138-05	CHIP FERRITE		R107			RK73GB2A561J	CHIP R	560 J 1/10W
L211			L41-5678-14	SMALL FIXED INDUCTOR(56NH)		R108			RK73GB2A152J	CHIP R	1.5K J 1/10W
L213			L41-5678-14	SMALL FIXED INDUCTOR(56NH)		R109			RK73GB2A150J	CHIP R	15 J 1/10W
L214			L41-4778-14	SMALL FIXED INDUCTOR(47NH)		R110,111			RK73GB2A331J	CHIP R	330 J 1/10W
L301			L92-0140-05	CHIP FERRITE		R112			RK73GB2A180J	CHIP R	18 J 1/10W
L302			L92-0149-05	CHIP FERRITE		R113			RK73GB2A331J	CHIP R	330 J 1/10W
L401			L92-0149-05	CHIP FERRITE		R114			RK73GB2A683J	CHIP R	68K J 1/10W
L402-404			L92-0138-05	CHIP FERRITE		R115			RK73GB2A822J	CHIP R	8.2K J 1/10W
X1			L77-1931-05	TCXO(12.8MHZ)		R116			RK73GB2A150J	CHIP R	15 J 1/10W
X2			L78-1414-05	RESONATOR(7.37MHZ)		R117			RK73GB2A224J	CHIP R	220K J 1/10W
XF201			L71-0619-05	MCF(38.85MHZ)		R119			RK73GB2A331J	CHIP R	330 J 1/10W
CP404			RK75HA1J473J	CHIP-COM 47K J 1/16W		R121			RK73GB2A561J	CHIP R	560 J 1/10W
CP405			RK75HA1J102J	CHIP-COM 1.0K J 1/16W		R122			RK73GB2A473J	CHIP R	47K J 1/10W
R1			RK73HB1J223J	CHIP R 22K J 1/16W		R123			RK73GB2A820J	CHIP R	82 J 1/10W
R2			RK73HB1J103J	CHIP R 10K J 1/16W		R124			RK73GB2A823J	CHIP R	82K J 1/10W
R3			RK73HB1J333J	CHIP R 33K J 1/16W		R126			RK73GB2A222J	CHIP R	2.2K J 1/10W
R4			RK73HB1J563J	CHIP R 56K J 1/16W		R127-129			RK73EB2ER39K	CHIP R	0.39 K 1/4W
R5 ,6			RK73HB1J104J	CHIP R 100K J 1/16W		R130-135			RK73GH2A154D	CHIP R	150K D 1/10W
R7			RK73HB1J101J	CHIP R 100 J 1/16W		R136,137			RK73GB2A271J	CHIP R	270 J 1/10W
R8 -11			RK73HB1J000J	CHIP R 0.0 J 1/16W		R138			RK73GB2A105J	CHIP R	1.0M J 1/10W
R12			RK73HB1J222J	CHIP R 2.2K J 1/16W		R139			RK73GB2A473J	CHIP R	47K J 1/10W
R13			RK73GB2A000J	CHIP R 0.0 J 1/10W		R140			RK73GB2A563J	CHIP R	56K J 1/10W
R14			RK73HB1J334J	CHIP R 330K J 1/16W		R141			RK73GB2A104J	CHIP R	100K J 1/10W
R15			RK73GB2A221J	CHIP R 220 J 1/10W		R142			RK73GB2A000J	CHIP R	0.0 J 1/10W
R16			RK73GB2A561J	CHIP R 560 J 1/10W		R143			RK73GB2A104J	CHIP R	100K J 1/10W
R17			RK73HB1J101J	CHIP R 100 J 1/16W		R144,145			RK73GB2A000J	CHIP R	0.0 J 1/10W
R18			RK73GB2A000J	CHIP R 0.0 J 1/10W		R203			RK73HB1J184J	CHIP R	180K J 1/16W
R19			RK73GB2A152J	CHIP R 1.5K J 1/10W		R206			RK73GB2A100J	CHIP R	10 J 1/10W
R20			RK73HB1J100J	CHIP R 10 J 1/16W		R207			RK73HB1J472J	CHIP R	4.7K J 1/16W
R21			RK73GB2A681J	CHIP R 680 J 1/10W		R208			RK73HB1J823J	CHIP R	82K J 1/16W
R22			RK73GB2A000J	CHIP R 0.0 J 1/10W		R209			RK73HB1J272J	CHIP R	2.7K J 1/16W
R23			RK73GB2A103J	CHIP R 10K J 1/10W		R210,211			RK73HB1J332J	CHIP R	3.3K J 1/16W
R25			RK73HB1J223J	CHIP R 22K J 1/16W		R212			RK73HB1J823J	CHIP R	82K J 1/16W
R26			RK73HB1J103J	CHIP R 10K J 1/16W		R213			RK73HB1J392J	CHIP R	3.9K J 1/16W
R27			RK73HB1J220J	CHIP R 22 J 1/16W		R215			RK73HB1J101J	CHIP R	100 J 1/16W
R30			RK73HB1J123J	CHIP R 12K J 1/16W		R216			RK73HB1J124J	CHIP R	120K J 1/16W
R31			RK73HB1J564J	CHIP R 560K J 1/16W		R217			RK73HB1J472J	CHIP R	4.7K J 1/16W
R32			RK73HB1J102J	CHIP R 1.0K J 1/16W		R218			RK73HB1J561J	CHIP R	560 J 1/16W
R33			RK73HB1J154J	CHIP R 150K J 1/16W		R219,220			RK73GB2A561J	CHIP R	560 J 1/10W
R34			RK73HB1J472J	CHIP R 4.7K J 1/16W		R221			RK73GB2A102J	CHIP R	1.0K J 1/10W
R35 ,36			RK73HB1J274J	CHIP R 270K J 1/16W		R222			RK73GB2A221J	CHIP R	220 J 1/10W
R37			RK73HB1J101J	CHIP R 100 J 1/16W		R223-226			RK73HB1J823J	CHIP R	82K J 1/16W
R38			RK73HB1J181J	CHIP R 180 J 1/16W		R227			RK73GB2A000J	CHIP R	0.0 J 1/10W
R39			RK73HB1J151J	CHIP R 150 J 1/16W		R228,229			RK73HB1J105J	CHIP R	1.0M J 1/16W
						R230			RK73GB2A222J	CHIP R	2.2K J 1/10W
						R231			RK73GB2A470J	CHIP R	47 J 1/10W

## PARTS LIST

TX-RX UNIT (X57-6880-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R233			RK73GB2A221J	CHIP R 220 J 1/10W		R405			RK73GB2A334J	CHIP R 330K J 1/10W	
R234			RK73GB2A104J	CHIP R 100K J 1/10W		R406			RK73HH1J474D	CHIP R 470K D 1/16W	
R237			RK73GB2A184J	CHIP R 180K J 1/10W		R407			RK73HB1J334J	CHIP R 330K J 1/16W	
R238			RK73GB2A104J	CHIP R 100K J 1/10W		R408-412			RK73HB1J473J	CHIP R 47K J 1/16W	
R239			RK73GB2A470J	CHIP R 47 J 1/10W		R413,414			RK73GB2A331J	CHIP R 330 J 1/10W	
R240			RK73GB2A000J	CHIP R 0.0 J 1/10W		R416-420			RK73HB1J473J	CHIP R 47K J 1/16W	K
R241,242			RK73HB1J105J	CHIP R 1.0M J 1/16W		R417-420			RK73HB1J473J	CHIP R 47K J 1/16W	K2
R243			RK73FB2B000J	CHIP R 0.0 J 1/8W		R421,422			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R291			RK73GB2A000J	CHIP R 0.0 J 1/10W		R423			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R299			RK73HB1J000J	CHIP R 0.0 J 1/16W		R424,425			RK73HB1J473J	CHIP R 47K J 1/16W	
R301			RK73HB1J473J	CHIP R 47K J 1/16W		R426			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R304			RK73HB1J564J	CHIP R 560K J 1/16W		R435			RK73HB1J473J	CHIP R 47K J 1/16W	
R305			RK73HB1J104J	CHIP R 100K J 1/16W		R436			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R306			RK73HB1J102J	CHIP R 1.0K J 1/16W		R437,438			RK73HB1J473J	CHIP R 47K J 1/16W	
R307,308			RK73HB1J000J	CHIP R 0.0 J 1/16W		R445,446			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R310			RK73GB2A394J	CHIP R 390K J 1/10W		R447			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R311			RK73HB1J123J	CHIP R 12K J 1/16W		R450			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R312			RK73GB2A334J	CHIP R 330K J 1/10W		R453,454			RK73HB1J473J	CHIP R 47K J 1/16W	K2
R313			RK73GB2A104J	CHIP R 100K J 1/10W		R454			RK73HB1J473J	CHIP R 47K J 1/16W	K
R314			RK73GB2A103J	CHIP R 10K J 1/10W		R901,902			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R315			RK73GB2A334J	CHIP R 330K J 1/10W		VR1			R32-0736-05	SEMI FIXED VARIABLE RESISTOR(68K)	
R316			RK73GB2A124J	CHIP R 120K J 1/10W		S401-403			S70-0414-05	TACT SWITCH	
R317			RK73GB2A474J	CHIP R 470K J 1/10W		MIC301	2A		T91-0651-15	MIC ELEMENT	
R318			RK73GB2A122J	CHIP R 1.2K J 1/10W		D1			MA2S111-F	DIODE	
R319			RK73HB1J563J	CHIP R 56K J 1/16W		D4 .5			1SV325F	VARIABLE CAPACITANCE DIODE	
R320			RK73HB1J332J	CHIP R 3.3K J 1/16W		D7			1SV325F	VARIABLE CAPACITANCE DIODE	
R321			RK73HB1J224J	CHIP R 220K J 1/16W		D9			1SV325F	VARIABLE CAPACITANCE DIODE	
R322			RK73HB1J184J	CHIP R 180K J 1/16W		D10			1SV278F	VARIABLE CAPACITANCE DIODE	
R323			RK73HB1J563J	CHIP R 56K J 1/16W		D11			MA2S111-F	DIODE	
R324,325			RK73GB2A104J	CHIP R 100K J 1/10W		D101			HSC277	DIODE	
R326			RK73GB2A000J	CHIP R 0.0 J 1/10W		D102			HZU5CLL	ZENER DIODE	
R327			RK73GB2A184J	CHIP R 180K J 1/10W		D103-106			HVC131	DIODE	
R328			RK73GB2A103J	CHIP R 10K J 1/10W		D202			HSC277	DIODE	
R329			RK73GB2A823J	CHIP R 82K J 1/10W		D203-206			1SV305F	VARIABLE CAPACITANCE DIODE	
R330			RK73HB1J332J	CHIP R 3.3K J 1/16W		D301,302			RB706F-40	DIODE	
R331			RK73GB2A393J	CHIP R 39K J 1/10W		D303			DAN222	DIODE	
R332			RK73GB2A153J	CHIP R 15K J 1/10W		D401			RB521S-30	DIODE	
R334			RK73GB2A473J	CHIP R 47K J 1/10W		D402			1SR154-400	DIODE	
R335			RK73GB2A222J	CHIP R 2.2K J 1/10W		D405			KDZ3.3V	ZENER DIODE	
R336			RK73GB2A102J	CHIP R 1.0K J 1/10W		IC1			MB15A02PFV2E1	MOS-IC	
R337			RK73GB2A151J	CHIP R 150 J 1/10W		IC2			UPB1509GV	BI-POLAR IC	
R338			RK73HB1J222J	CHIP R 2.2K J 1/16W		IC101			TA75W01FUJ	MOS-IC	
R339			RK73GB2A471J	CHIP R 470 J 1/10W		IC201			TA31136FNG	MOS-IC	
R340			RK73GB2A182J	CHIP R 1.8K J 1/10W		IC301			AQUA-L	MOS-IC	
R341			RK73GB2A103J	CHIP R 10K J 1/10W		IC302			TA7368FG	MOS-IC	
R342			RK73GB2A100J	CHIP R 10 J 1/10W		IC401,402			XC6204B502MR	MOS-IC	
R343			RK73GB2A474J	CHIP R 470K J 1/10W		IC403			BD4840FVE	MOS-IC	
R344			RK73GB2A102J	CHIP R 1.0K J 1/10W		IC404			BD4845FVE	MOS-IC	
R345,346			RK73GB2A101J	CHIP R 100 J 1/10W		IC405	*		30622MAPA49GU	MICROCONTROLLER IC	
R347			RK73GB2A104J	CHIP R 100K J 1/10W		IC406			BR24L08F-W	ROM IC	
R348			RK73GB2A563J	CHIP R 56K J 1/10W		Q1			KTC4082	TRANSISTOR	
R349			RK73GB2A333J	CHIP R 33K J 1/10W		Q2			2SC5108(Y)F	TRANSISTOR	
R350			RK73HB1J000J	CHIP R 0.0 J 1/16W		Q3 .4			2SK508NV(K52)	FET	
R354,355			RK73HB1J103J	CHIP R 10K J 1/16W		Q5			RT1P430U	TRANSISTOR	
R357			RK73HB1J000J	CHIP R 0.0 J 1/16W		Q6			2SC5108(Y)F	TRANSISTOR	
R360			RK73HB1J000J	CHIP R 0.0 J 1/16W		Q7			RT1P430U	TRANSISTOR	
R365			RK73HB1J473J	CHIP R 47K J 1/16W							
R388			RK73HB1J000J	CHIP R 0.0 J 1/16W							
R403			RK73GB2A101J	CHIP R 100 J 1/10W							
R404			RK73HH1J474D	CHIP R 470K D 1/16W							

# TK-2200L

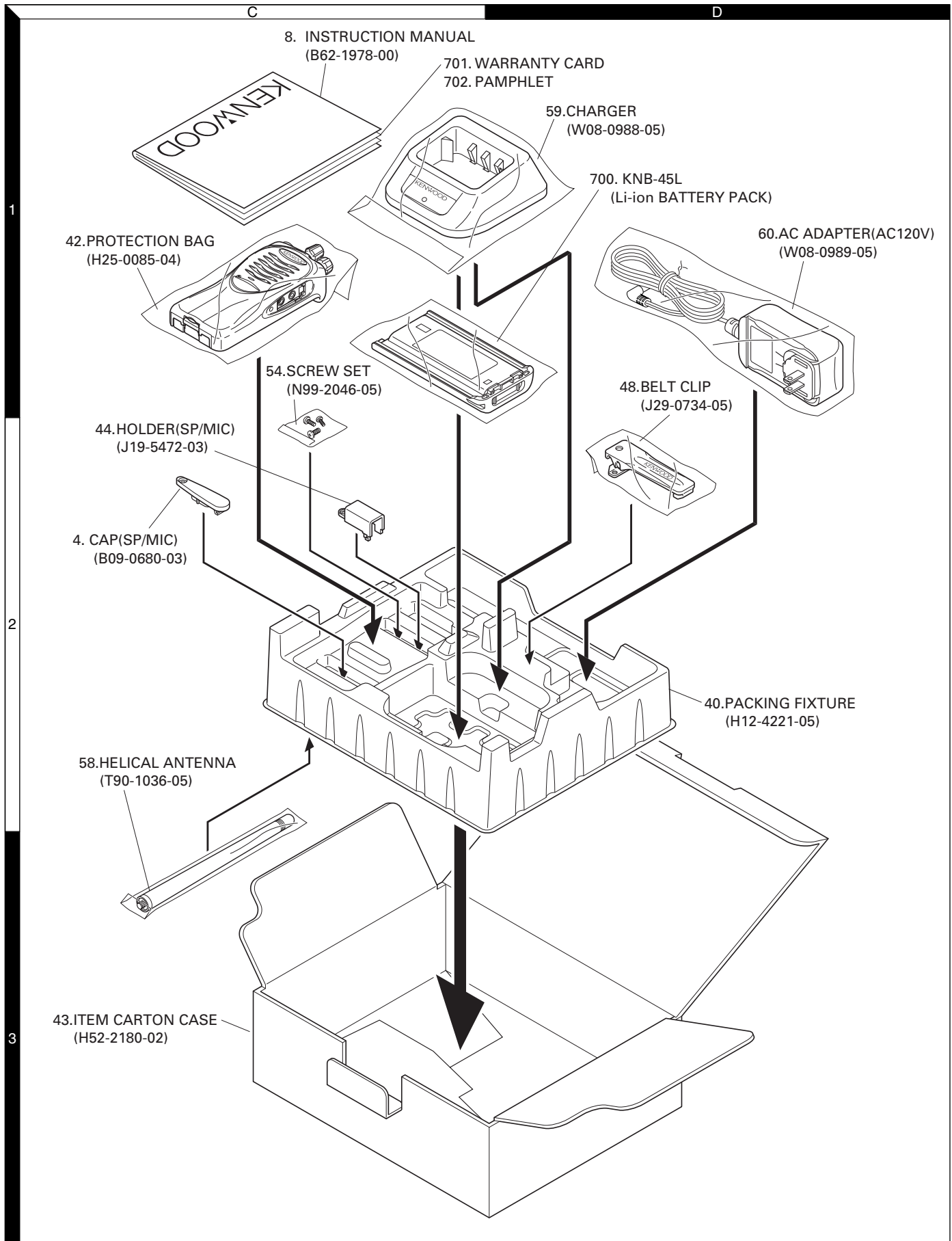
## PARTS LIST

### TX-RX UNIT (X57-6880-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
Q8			2SC5383-T111	TRANSISTOR							
Q9			2SC5108(Y)F	TRANSISTOR							
Q102			2SC4926YD	TRANSISTOR							
Q103			2SK2596	FET							
Q104			RT1N141U	TRANSISTOR							
Q105			2SK879(Y)F	FET							
Q106			2SK2595-E	FET							
Q107			RT1N141U	TRANSISTOR							
Q108			2SK1824-A	FET							
Q109			RT1P441U	TRANSISTOR							
Q202			RT1P441U	TRANSISTOR							
Q203			2SC4649(N,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							
Q901			2SK1824-A	FET							
TH101			B57331V2104J	THERMISTOR							
TH203			B57331V2104J	THERMISTOR							



## PACKING



## ADJUSTMENT

### Test Equipment Required for Alignment

Test Equipment	Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range Modulation Output	150 to 174MHz Frequency modulation and external modulation -127dBm/0.1μV to greater than -47dBm/1mV
2. Power Meter	Input Impedance Operation Frequency Measurement Range	50Ω 150 to 174MHz Vicinity of 10W
3. Deviation Meter	Frequency Range	150 to 174MHz
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 transceiver uses an SMA terminal.

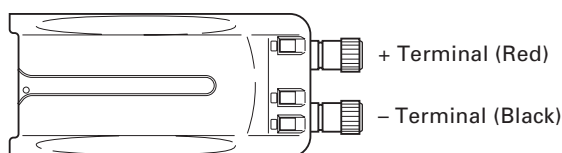
Use an antenna connector adapter [SMA(f) – BNC(f) or SMA(f) – N(f)] for adjustment. (The adapter is not provided as an option, so buy a commercially-available one.)

#### 2. Repair Jig (Chassis)

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

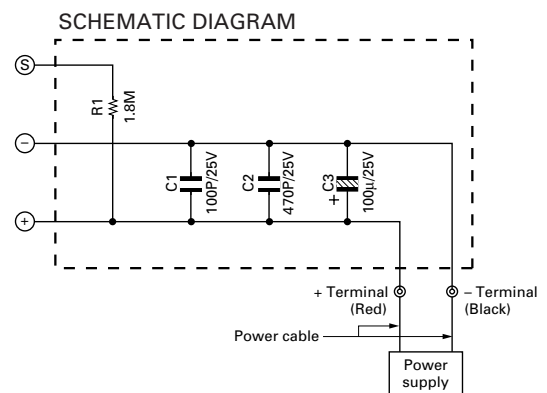
The jig facilitates the voltage check and protects the final amplifier FET when the voltage on the flow side of the TX-RX unit is checked during repairs.

#### 3. Battery Jig (W05-1011-00)



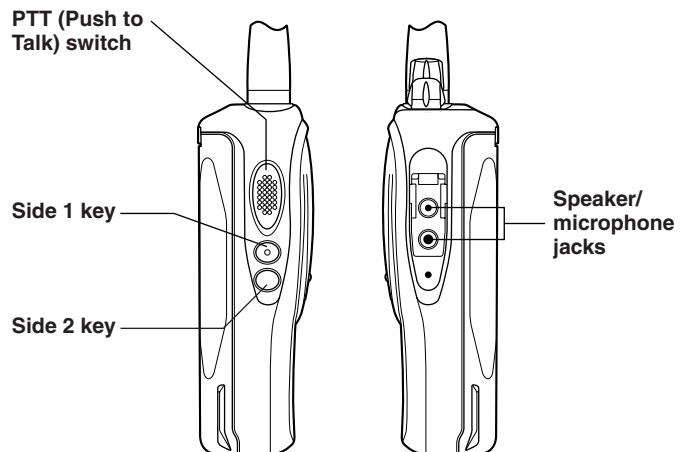
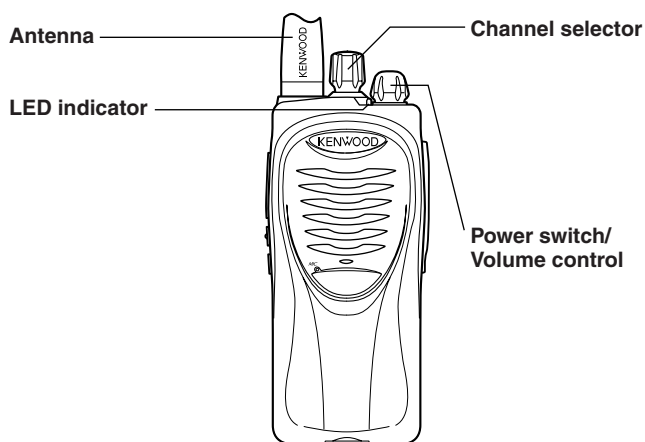
Connect the power cable properly between the battery jig installed in the transceiver and the power supply, and be sure output voltage and the power supply polarity prior to switching the power supply ON, otherwise over voltage and reverse connection may damage the transceiver, or the power supply or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

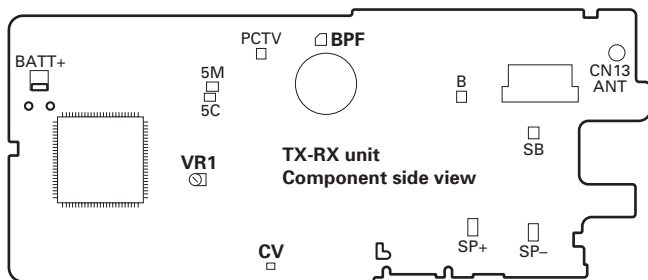




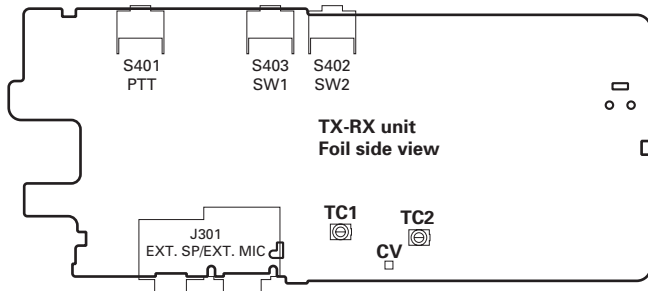
## ADJUSTMENT



### Adjustment points



VR1 : Frequency adjustment  
 BPF : Band-pass wave form test point  
 CV : VCO lock voltage adjustment terminal



TC1 : Transmit VCO lock voltage adjustment  
 TC2 : Receive VCO lock voltage adjustment  
 CV : VCO lock voltage adjustment terminal

### ■ Frequency and signaling

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

### Frequency (MHz)

Channel No.	RX Frequency	TX Frequency
1	162.050	162.100
2	150.050	150.100
3	173.950	173.900
4	162.000	162.000
5	162.200	162.200
6	162.400	162.400
7	156.550	156.600
8	168.550	168.600

### 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
8	DTMF 159D	DTMF 159D
9	None	DTMF tone 9

### • 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


TEST CH	RX	TX
Low	150.050MHz	150.100MHz
Low'	156.550MHz	156.600MHz
Center	162.050MHz	162.100MHz
High'	168.550MHz	168.600MHz
High	173.950MHz	173.900MHz

## ADJUSTMENT

## Common Section

Item	Condition	Measurement		Adjustment		Specifications/ Remark
		Test equipment	Terminal	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 RX	1) CH:High	Power meter	ANT	TC2	4.0V	±0.1V
	2) CH:Low	DVM	CV		Check	0.6V or more
3.VCO lock voltage TX	3) CH:High PTT:ON			TC1	4.2V	±0.1V
	4) CH:Low PTT:ON				Check	0.6V or more

## Transmitter Section

Item	Condition	Measurement		Adjustment		Specifications/ Remark
		Test equipment	Terminal	Parts	Method	
1.Frequency Adjust	1) CH:High 2) PTT:ON	Frequency counter	ANT	VR1	High frequency ±50Hz	<b>Note:</b> After replacing the TCXO (X1) align frequency.
2.High power Adjust	TEST CH:Low Low' Center High' High (5 points) BATT terminal voltage:7.5V PTT:ON	Power meter Ammeter		Programming Software:KPG-88D	2.0W	±0.1W 1.15 A or less
					1.0W	±0.1W 0.9 A or less
3.Low power Adjust	TEST CH:Low Low' Center High' High (5 points) BATT terminal voltage:7.5V PTT:ON					
4.DQT balance Adjust [Wide]	TEST CH:Center Low High (3 points) LPF:3kHz HPF:OFF PTT:ON	Power meter Deviation meter Oscilloscope AG AF VTVM			Make the demodulation wave into square waves.	
	[Narrow] TEST CH:Center PTT:ON					

## ADJUSTMENT

Item	Condition	Measurement		Adjustment		Specifications/ Remark
		Test equipment	Terminal	Parts	Method	
5. Max deviation Adjust [Wide]	TEST CH: Center Low High (3 points) AG:1kHz/150mV Deviation meter filter LPF:15kHz HPF:OFF PTT:ON	Power meter Deviation meter Oscilloscope AG AF VTVM	ANT SP/MIC connector	Programming Software:KPG-88D	4.2kHz (According to the larger +,-)	±80Hz
	[Narrow]				TEST CH:Center PTT:ON	
6. VOX 1 Writing	TEST CH:Center AG:1KHz/45mV					
7. QT deviation Adjust [Wide]	TEST CH: Center Low High (3 points) LPF:3kHz HPF:OFF PTT:ON		ANT	Programming Software:KPG-88D	0.80kHz	±40Hz
	[Narrow]	TEST CH: Center PTT:ON			0.40kHz	
8. DQT deviation Adjust [Wide]	TEST CH: Center Low High (3 points) LPF:3kHz HPF:OFF PTT:ON				0.75kHz	±40Hz
	[Narrow]	TEST CH:Center PTT:ON			0.40kHz	
9. DTMF deviation Adjust [Wide]	TEST CH:Center LPF:15kHz HPF:OFF PTT:ON				3.0kHz	±100Hz
	[Narrow]	TEST CH:Center PTT:ON			1.5kHz	
10. MSK deviation Adjust [Wide]	TEST CH: Center Low High (3 points) LPF:15kHz HPF:OFF PTT:ON				3.0kHz	±100Hz
	[Narrow]	TEST CH:Center PTT:ON			1.5kHz	

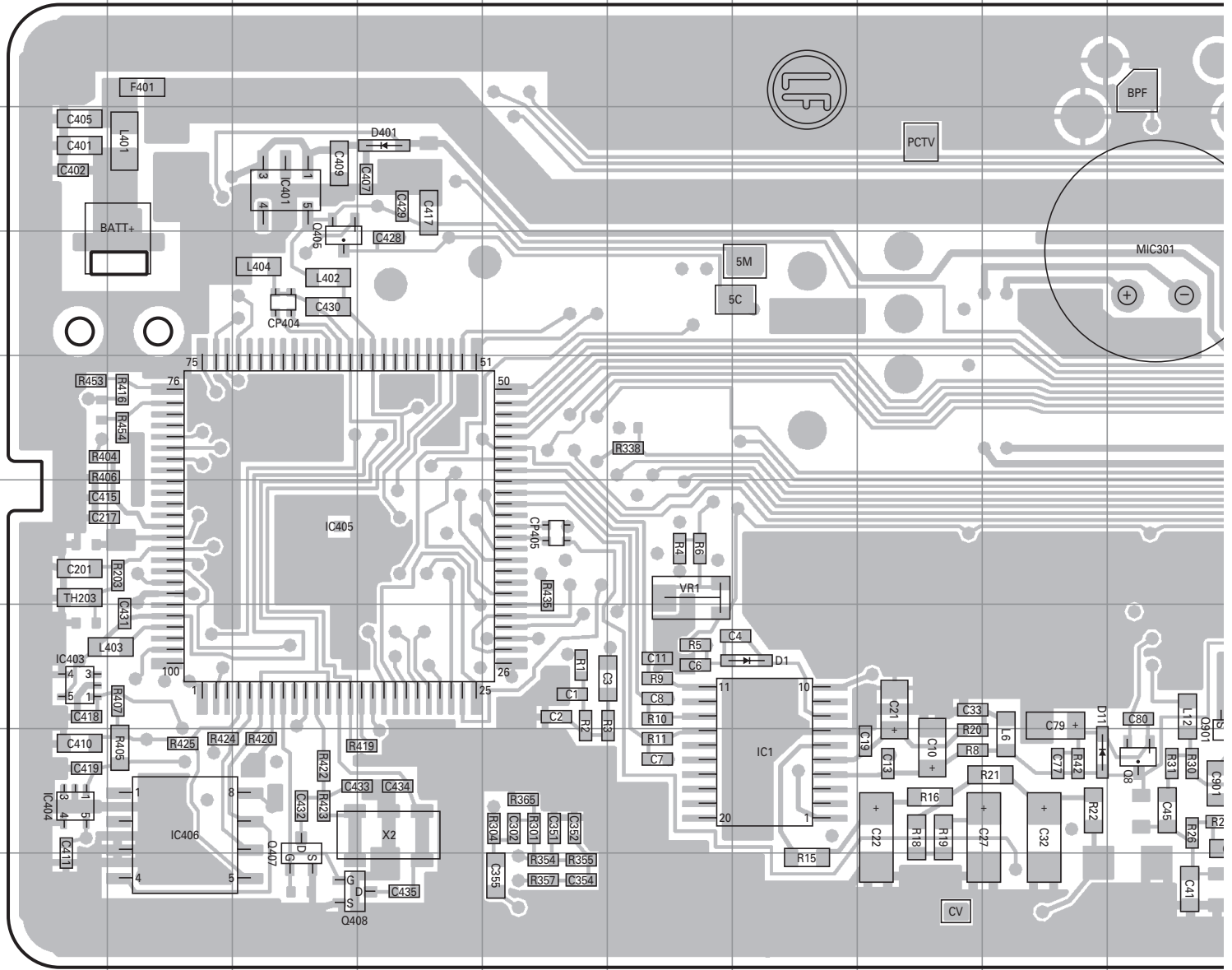
## ADJUSTMENT

### Receiver Section

Item	Condition	Measurement		Adjustment		Specifications/ Remark
		Test equipment	Terminal	Parts	Method	
1. BPF Wave Adjust	(1) Center frequency Spectrum analyzer setting Center-f : 162MHz Span : 100MHz RBW : 100kHz VBW : 10kHz ATT : 5dB (2) High-edge frequency Spectrum analyzer setting Center-f : 174MHz (3) Low-edge frequency Spectrum analyzer setting Center-f : 150MHz	Spectrum analyzer	ANT BPF	Programming Software: KPG-88D	Adjust the waveform as shown to the right.	
2. Sensitivity Check [Wide]	TEST CH: Low Center High SSG output: -117 dBm(0.3μV) SSG MOD: 3.0kHz	SSG DVM Oscilloscope AF VTVM	ANT		Check	12dB SINAD or more
[Narrow]	TEST CH: Center SSG output: -115 dBm(0.4μV) SSG MOD: 1.5kHz					
3. SQL1 (Threshold) Writing [Wide]	TEST CH: Center Low High SSG output: -123 dBm(0.16μV) SSG MOD: 3.0kHz			Programming Software: KPG-88D	Write	Squelch open
[Narrow]	TEST CH: Center SSG output: -122 dBm(0.18μV) SSG MOD: 1.5kHz					
4. SQL9 (Tight) Writing [Wide]	TEST CH: Center Low High SSG output: -117 dBm(0.3μV) SSG MOD: 3.0kHz					
[Narrow]	TEST CH: Center SSG output: -116 dBm(0.35μV) SSG MOD: 1.5kHz					
5. BATT detection Writing	BATT terminal voltage: 5.9V	DVM	ANT BATT terminal		Write	BATT terminal voltage: 5.9V

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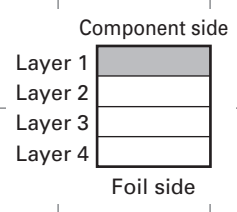
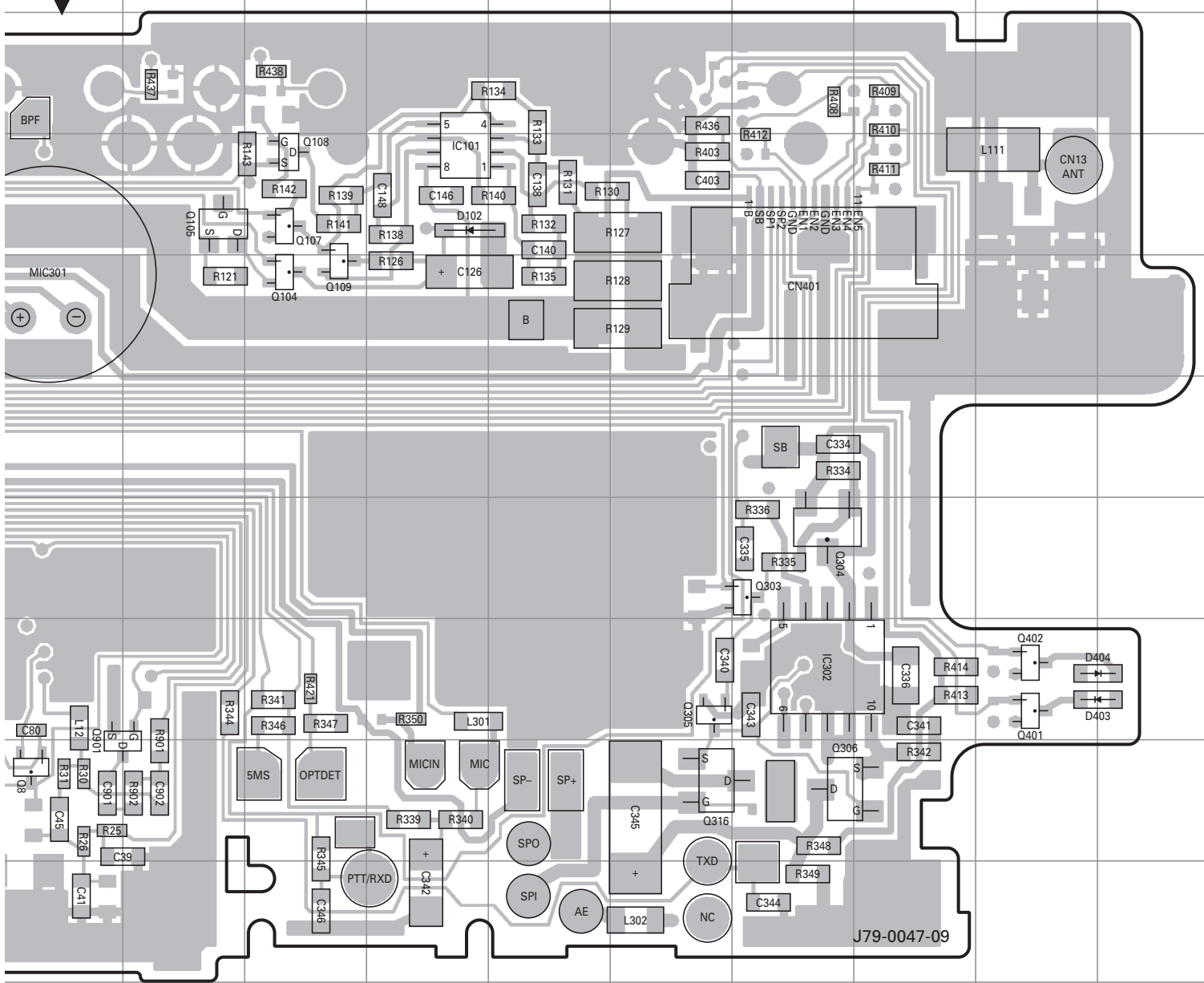
TX-RX UNIT (X57-6880-XX) -12 : K -13 : K2 Component side view (J79-0047-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	9G	Q8	9J	Q305	8O	Q901	9J
IC101	4M	Q104	5L	Q306	9P	D1	8G
IC302	8P	Q105	4K	Q316	9O	D11	9I
IC401	4C	Q107	4L	Q401	8R	D102	4M
IC403	8A	Q108	4L	Q402	8R	D401	4D
IC404	9A	Q109	5L	Q405	5C	D403	8R
IC405	7C	Q303	7P	Q407	9C	D404	8R
IC406	9B	Q304	7P	Q408	10C		

# PC BOARD TK-2200L

**TX-RX UNIT (X57-6880-XX) -12 : K -13 : K2 Component side view (J79-0047-09)**

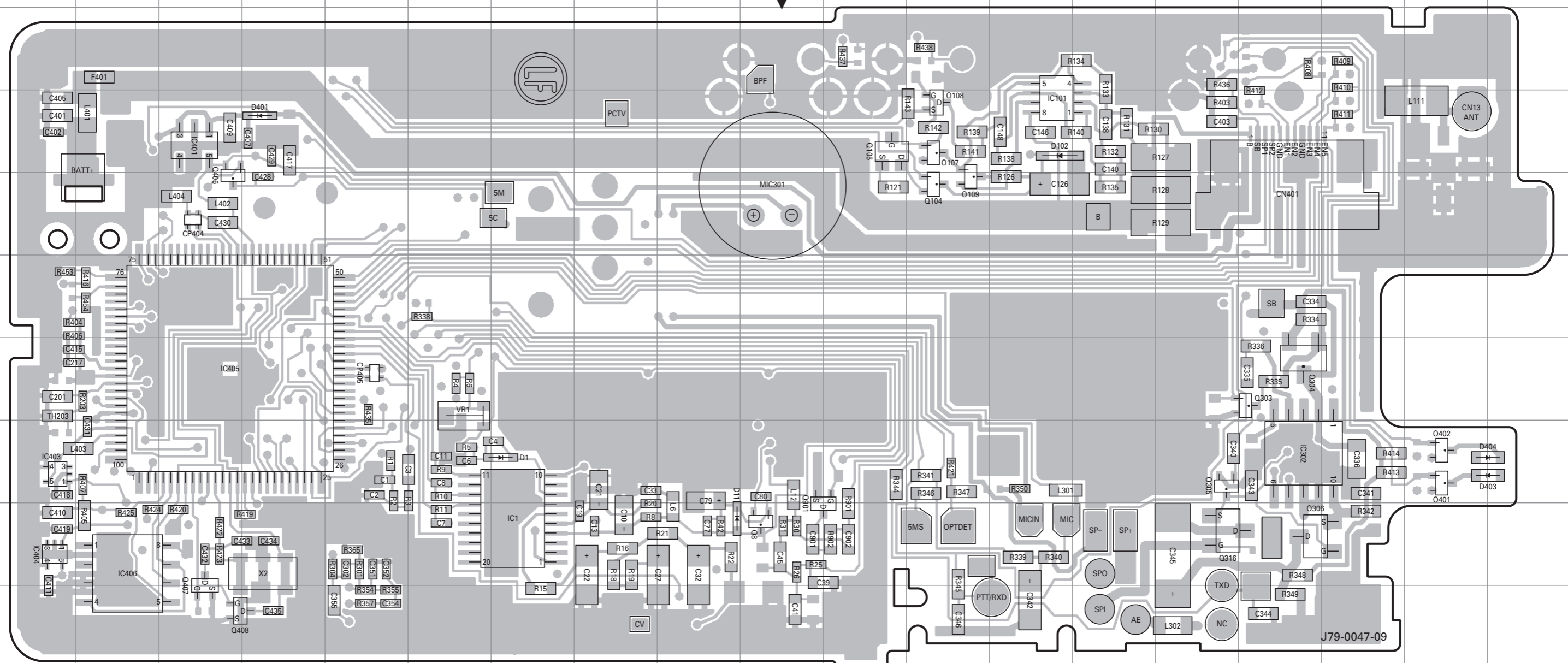


# TK-2200L PC BOARD

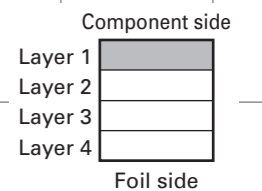
# PC BOARD TK-2200L

TX-RX UNIT (X57-6880-XX) -12 : K -13 : K2 Component side view (J79-0047-09)

TX-RX UNIT (X57-6880-XX) -12 : K -13 : K2 Component side view (J79-0047-09)

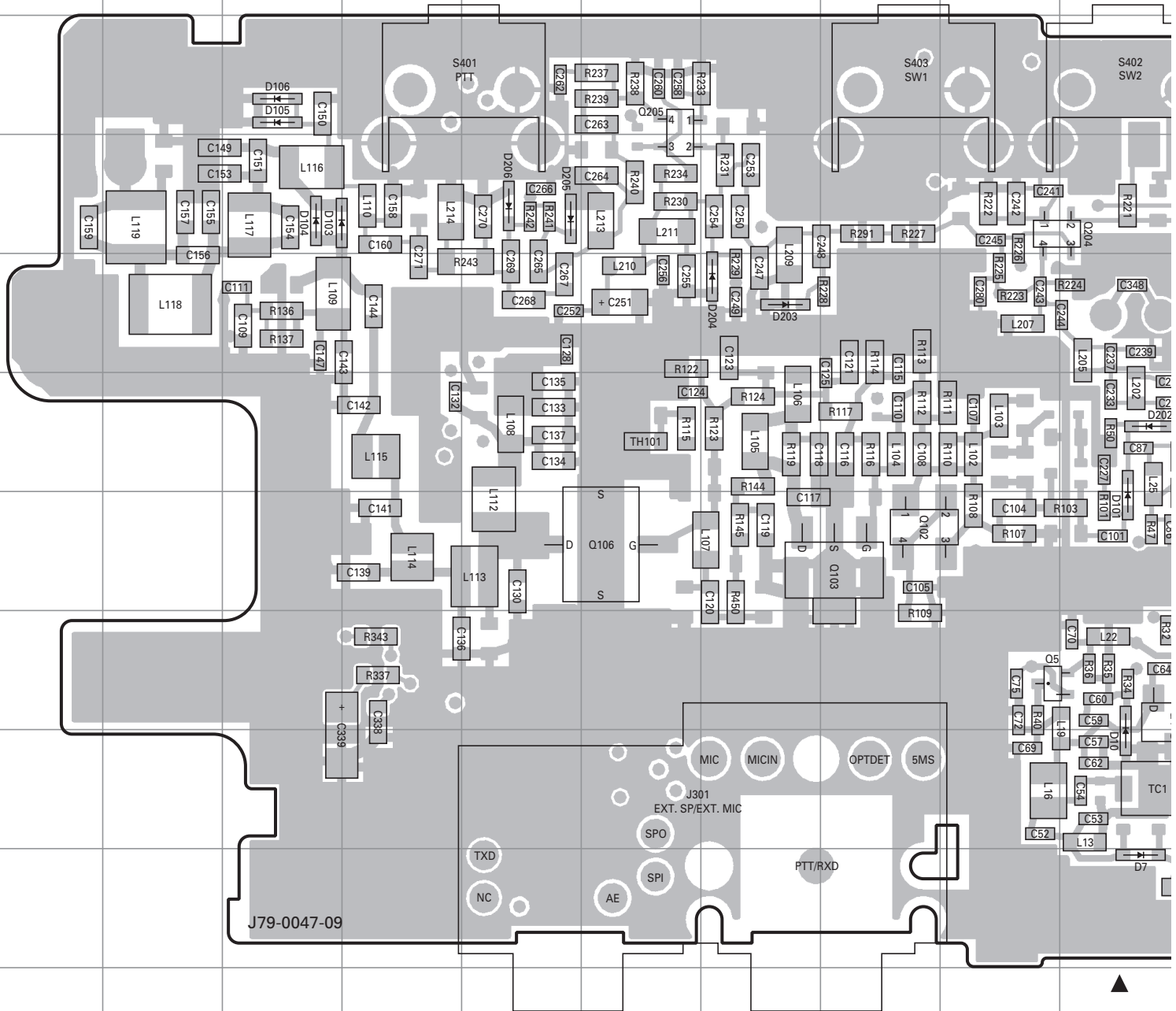


Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	9G	Q8	9J	Q305	8O	Q901	9J
IC101	4M	Q104	5L	Q306	9P	D1	8G
IC302	8P	Q105	4K	Q316	9O	D11	9I
IC401	4C	Q107	4L	Q401	8R	D102	4M
IC403	8A	Q108	4L	Q402	8R	D401	4D
IC404	9A	Q109	5L	Q405	5C	D403	8R
IC405	7C	Q303	7P	Q407	9C	D404	8R
IC406	9B	Q304	7P	Q408	10C		



# TK-2200L PC BOARD

TX-RX UNIT (X57-6880-XX) -12 : K -13 : K2 Foil side view (J79-0047-09)

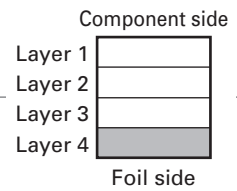
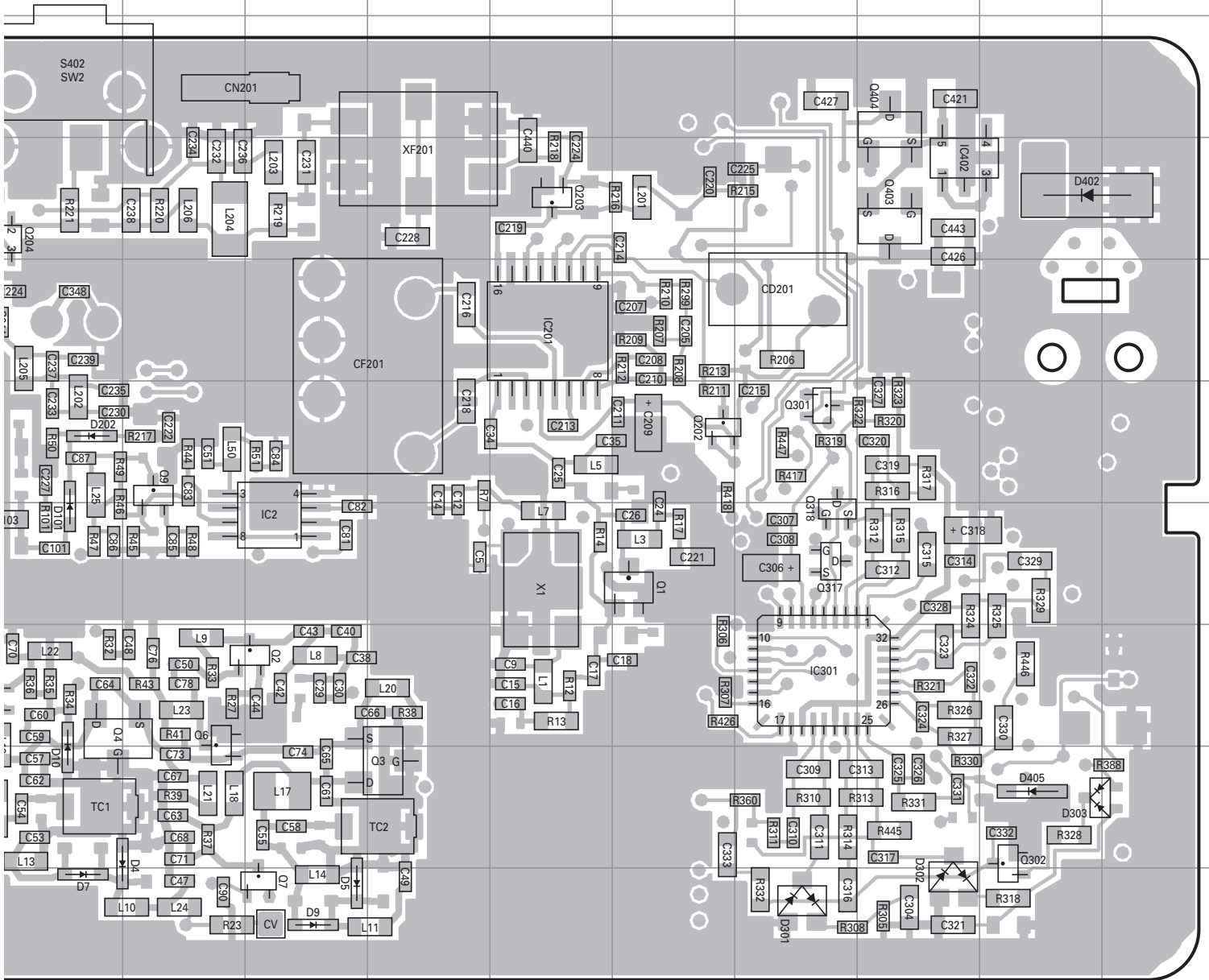


Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC2	7L	Q6	8K	Q205	3F	D7	10J	D203	5G
IC201	5N	Q7	10L	Q301	6P	D9	10L	D204	5G
IC301	8P	Q9	6K	Q302	9R	D10	9J	D205	4E
IC402	4Q	Q102	7H	Q317	7P	D101	7J	D206	4E
Q1	7O	Q103	7H	Q318	7P	D103	4C	D301	10P
Q2	8L	Q106	7F	Q403	4Q	D104	4C	D302	10Q
Q3	9M	Q202	6O	Q404	3Q	D105	3C	D303	9R
Q4	8J	Q203	4N	D4	9K	D106	3C	D402	4R
Q5	8I	Q204	4J	D5	10L	D202	6J	D405	9R



# PC BOARD TK-2200L

TX-RX UNIT (X57-6880-XX) -12 : K -13 : K2 Foil side view (J79-0047-09)

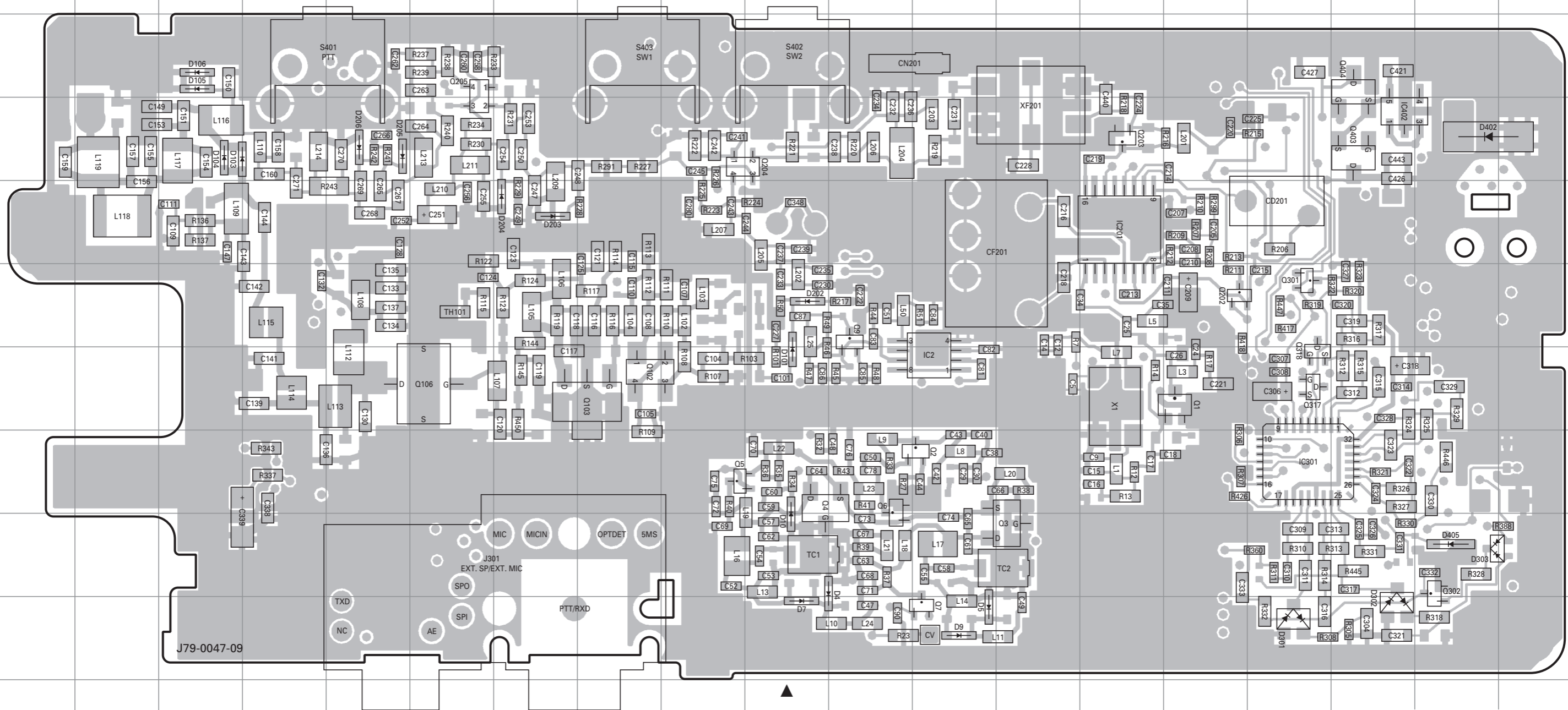


# TK-2200L PC BOARD

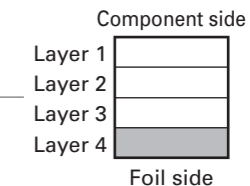
# PC BOARD TK-2200L

TX-RX UNIT (X57-6880-XX) -12 : K -13 : K2 Foil side view (J79-0047-09)

TX-RX UNIT (X57-6880-XX) -12 : K -13 : K2 Foil side view (J79-0047-09)

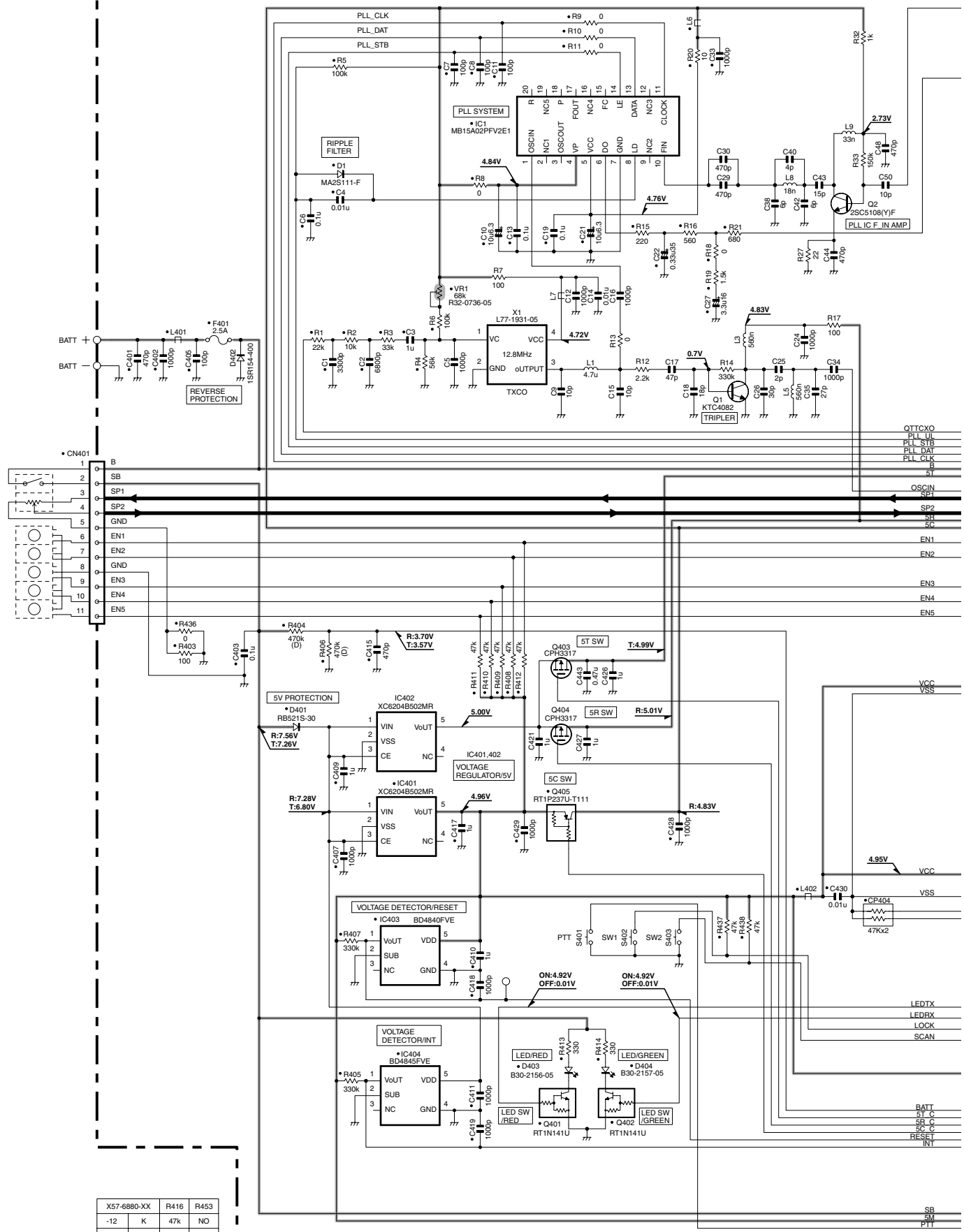


Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC2	7L	Q6	8K	Q205	3F	D7	10J	D203	5G
IC201	5N	Q7	10L	Q301	6P	D9	10L	D204	5G
IC301	8P	Q9	6K	Q302	9R	D10	9J	D205	4E
IC402	4Q	Q102	7H	Q317	7P	D101	7J	D206	4E
Q1	7O	Q103	7H	Q318	7P	D103	4C	D301	10P
Q2	8L	Q106	7F	Q403	4Q	D104	4C	D302	10Q
Q3	9M	Q202	6O	Q404	3Q	D105	3C	D303	9R
Q4	8J	Q203	4N	D4	9K	D106	3C	D402	4R
Q5	8I	Q204	4J	D5	10L	D202	6J	D405	9R



# TK-2200L SCHEMATIC DIAGRAM

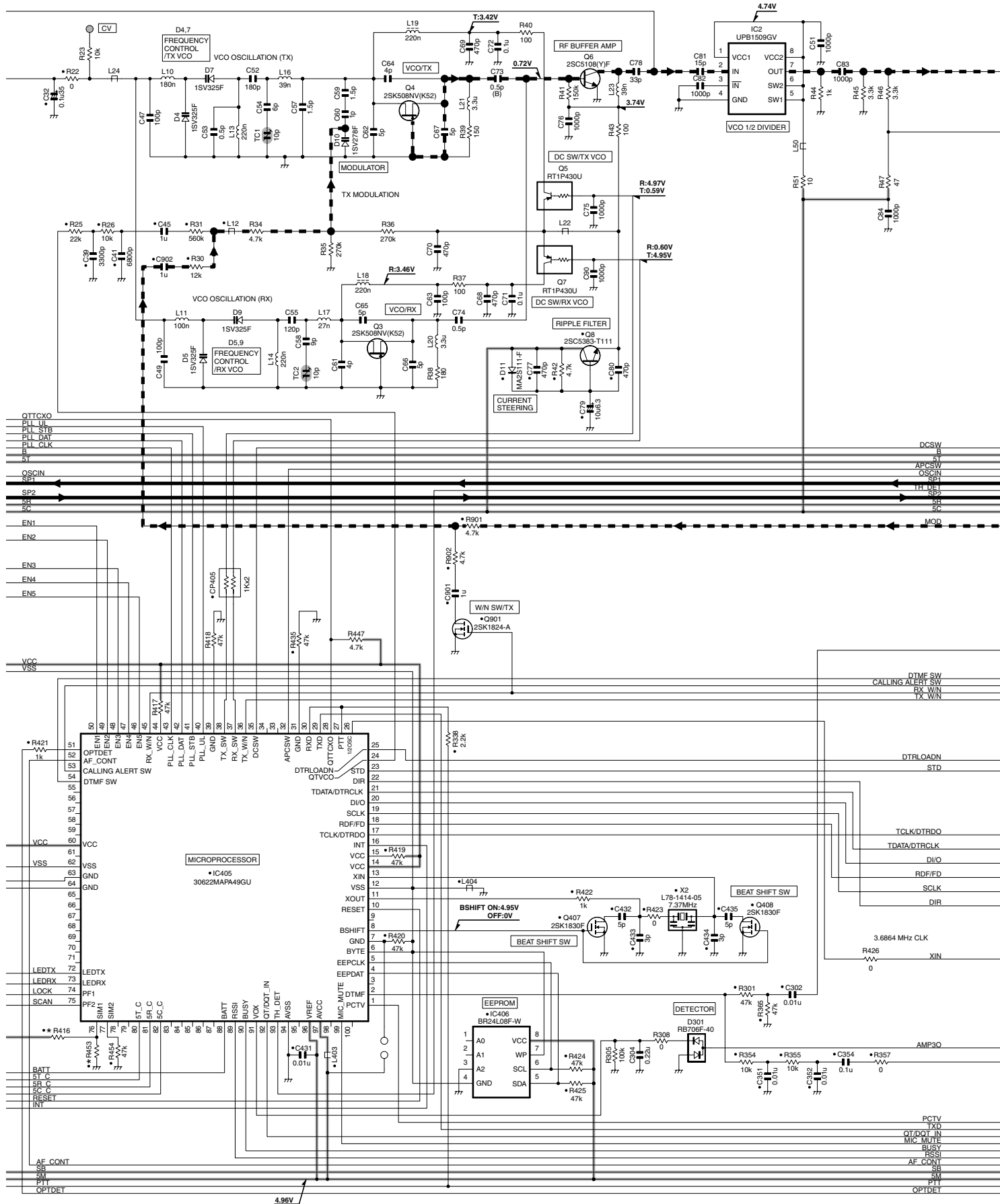
TX-RX UNIT (X57-6880-XX) -12:K -13:K2



X57-6880-XX	R416	R453
-12 K	47k	NO
-13 K2	NO	47k

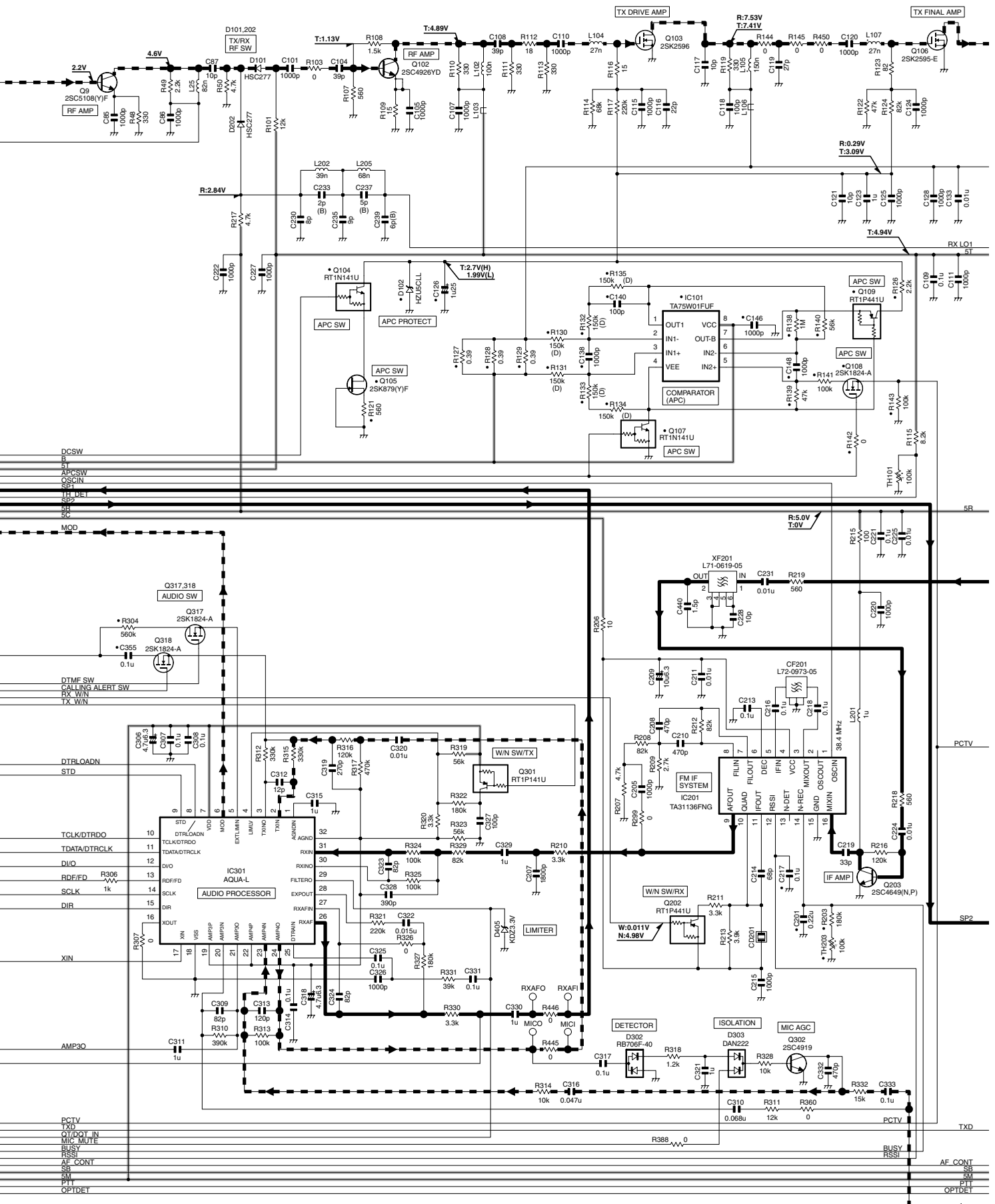
# SCHEMATIC DIAGRAM TK-2200L

TX-RX UNIT (X57-6880-XX) -12:K -13:K2



# TK-2200L SCHEMATIC DIAGRAM

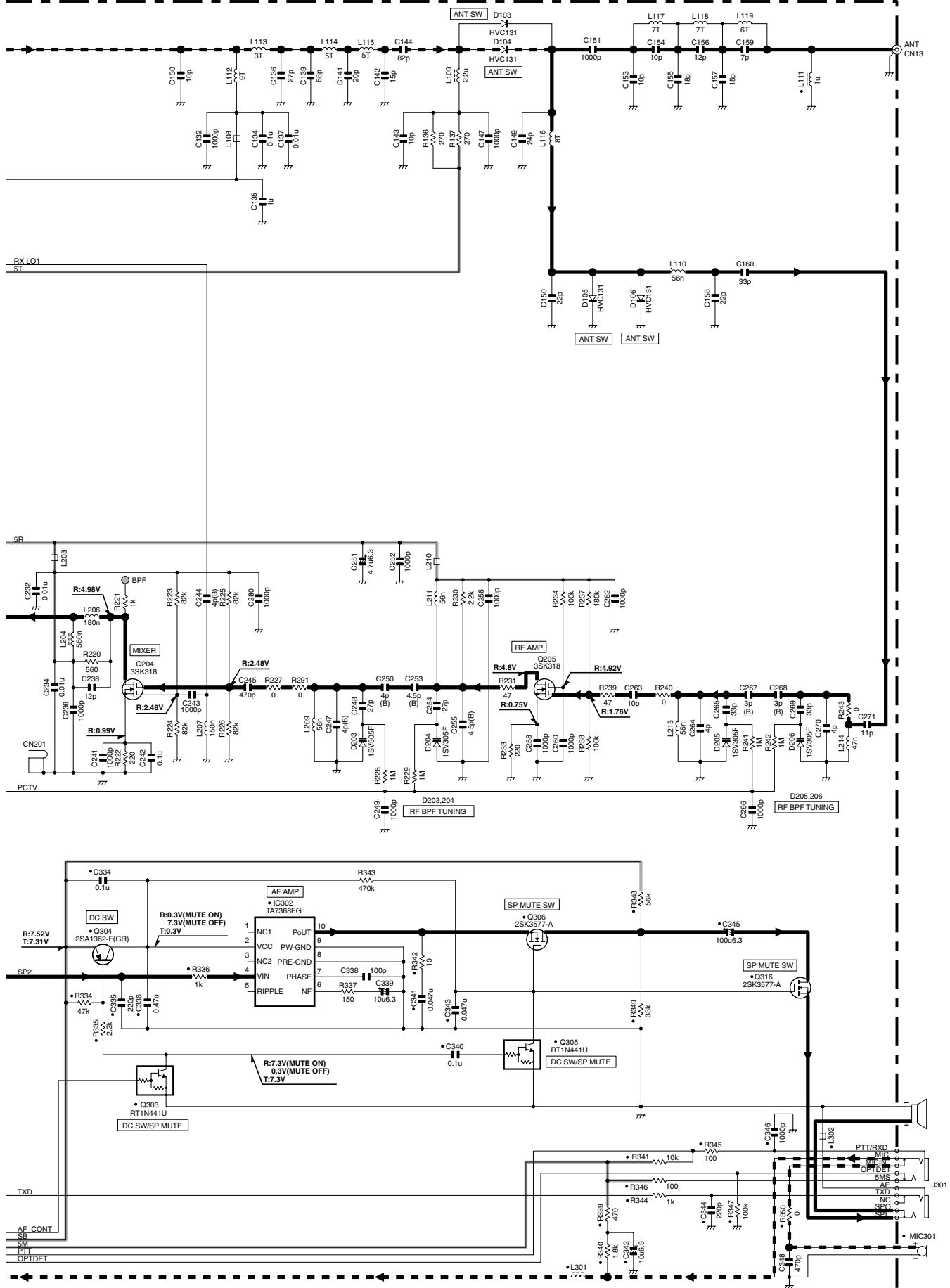
TX-RX UNIT (X57-6880-XX) -12:K -13:K2



# SCHEMATIC DIAGRAM TK-2200L

TX-RX UNIT (X57-6880-XX) -12:K -13:K2

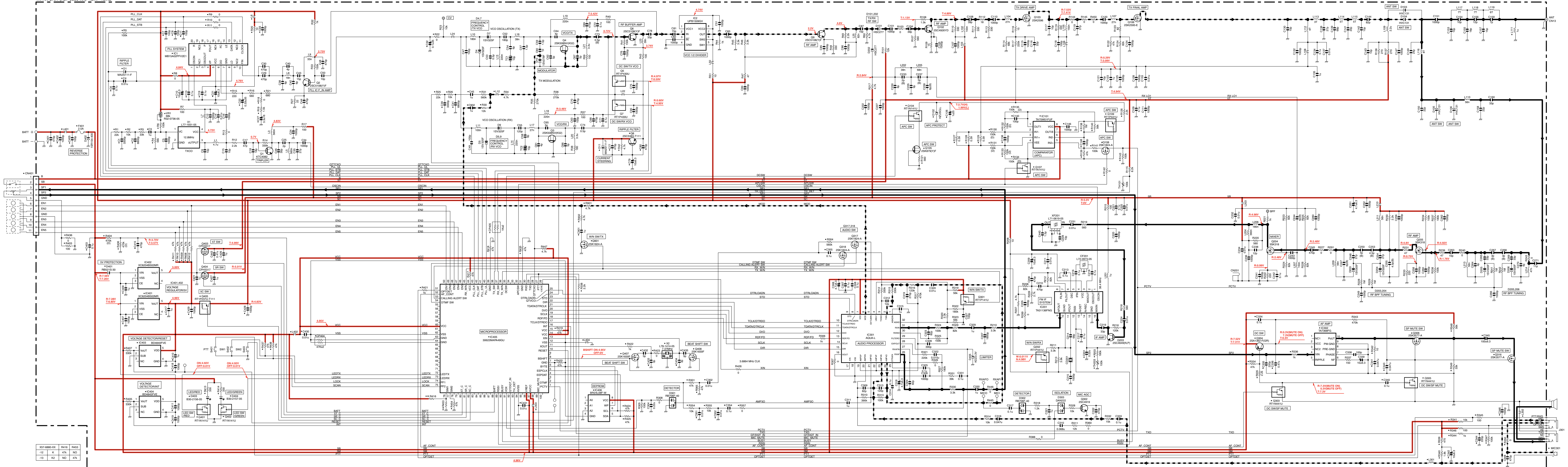
Note : The components marked with a dot (●) are parts of layer 1.



# TK-2200L SCHEMATIC DIAGRAM

TX-RX UNIT (X57-6880-XX) -12K -13K2

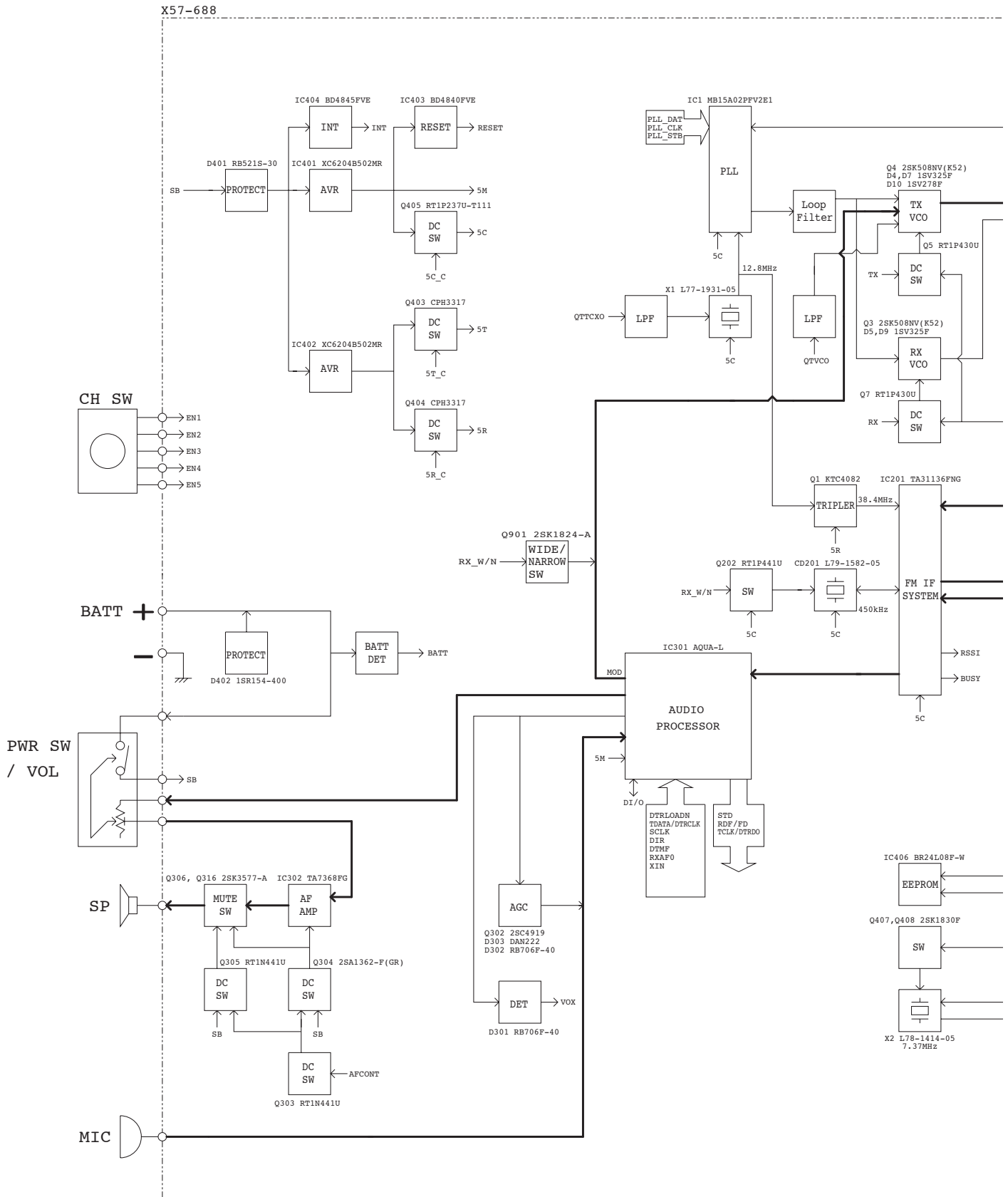
Note : The components marked with a dot (●) are parts of layer 1.



X57-6880-XX	R416	R463
-12 K	47K	ND
-13 K2	NO	47K

# TK-2200L

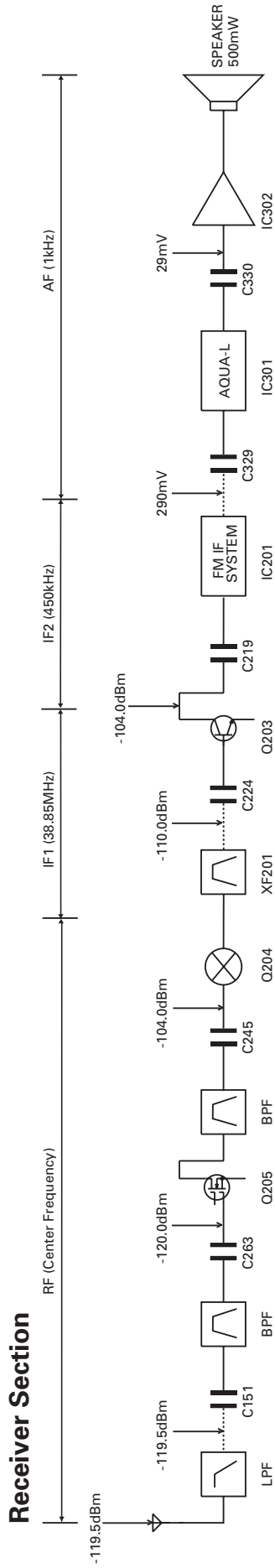
## BLOCK DIAGRAM



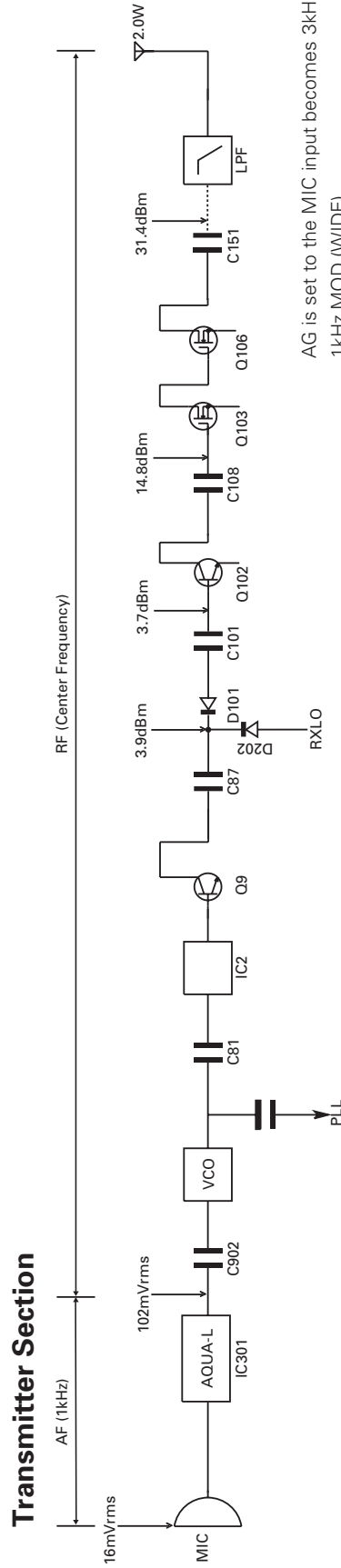




## LEVEL DIAGRAM



To make measurements in the AF section, connect the AC level meter. (ANT input: -53dBm, 1kHz FM, 3kHz DEV (WIDE))  
 In the RF section, use 1000pF coupling capacitor. (The display shows the SSG input value required to obtain 12dB SINAD without local level.)



AG is set to the MIC input becomes 3kHz DEV at 1kHz MOD.(WIDE)  
 To make measurements in the AF section, connect the AC level meter.  
 In the RF section, use 1000pF coupling capacitor.

## OPTIONAL ACCESSORIES

### KSC-35 (RAPID CHARGER)

#### ■ External View



#### ■ Specifications

Charging time ..... KNB-45L : Approx. 180 minutes  
 Dimensions (Charger only) .... 86.3W x 43.2H x 100.0D (mm)  
 3-3/8W x 1-45/64 x 4D (inches)  
 Weight (Charger only) ..... Approx. 90g / 0.2 lbs

### KNB-45L (Li-ion BATTERY PACK)

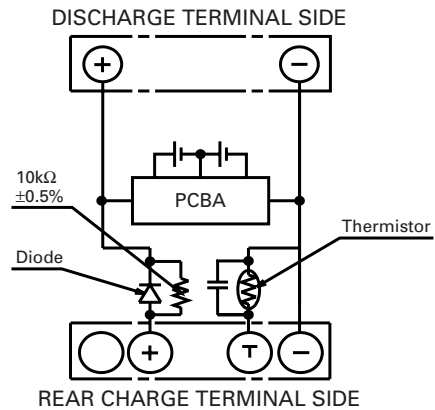
#### ■ External View



#### ■ Specifications

Voltage ..... 7.4V (3.7V x 2)  
 Battery capacity ... 2000mAh

#### ■ Schematic Diagram



# TK-2200L

## SPECIFICATIONS

### General

Frequency Range .....	150~174MHz
Number of Channels .....	2 (K) 8 (K2)
Channel Spacing .....	25kHz, 30kHz (Wide) 12.5kHz, 15kHz (Narrow)
PLL Channel Stepping .....	2.5kHz, 5kHz, 6.25kHz, 7.5kHz
Operating Voltage .....	7.5 V DC±20%
Battery Life (5-5-90 duty cycle)	
with KNB-29N battery .....	Approx. 14 hours (Battery Saver off)
with KNB-45L battery .....	Approx. 18 hours (Battery Saver on)
with KNB-29N battery .....	Approx. 17 hours (Battery Saver off)
with KNB-45L battery .....	Approx. 22 hours (Battery Saver on)
Operating Temperature Range .....	-30°C to +60°C (-22 °F to +140 °F)
Frequency Stability .....	±2.5ppm (-30°C to +60°C)
Channel Frequency Spread .....	24MHz
Dimensions and Weight	
(Dimensions not including protrusions)	
Radio Only .....	54 (2-1/8) W x 122 (4-13/16) H x 21.1 (13/16) D mm (inches)
With KNB-29N (1500mAh battery) .....	160g (0.35lbs)
With KNB-29N (1500mAh battery) .....	54 (2-1/8) W x 122 (4-13/16) H x 33 (1-5/16) D mm (inches)
With KNB-45L (2000mAh battery) .....	360g (0.79lbs)
With KNB-45L (2000mAh battery) .....	54 (2-1/8) W x 122 (4-13/16) H x 33 (1-5/16) D mm (inches)
With KNB-45L (2000mAh battery) .....	280g (0.62lbs)

### Receiver (Measurements made per TIA/EIA-603)

Sensitivity	
EIA 12dB SINAD .....	0.25µV (Wide)/0.28µV (Narrow)
Selectivity .....	70dB (Wide)/60dB (Narrow)
Intermodulation .....	65dB (Wide)/60dB (Narrow)
Spurious Response .....	65dB
Audio Power Output .....	500mW at 8Ω less than 10% distortion

### Transmitter (Measurements made per TIA/EIA-603)

RF Power Output .....	2W/1W
Spurious and Harmonics .....	65dB
Modulation .....	16K0F3E (Wide)/11K0F3E (Narrow)
FM Noise .....	45dB (Wide)/40dB (Narrow)
Audio Distortion .....	Less than 5%

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