

TK-3202/3206

SERVICE MANUAL



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SPECIFICATIONS	BACK COVER

TK-3206 :
Does not come with antenna.
Antenna is available as an option.

TK-3202/3206

GENERAL / SYSTEM SET-UP

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.

Unit		TX-RX Unit	Frequency range	Remarks
Model & destination				
TK-3202 TK-3206	K,M M	X57-6890-20	450~490MHz	IF1 : 38.85MHz LOC : 38.4MHz
TK-3206	M3	X57-6890-22	400~430MHz	
TK-3202	K2, M2	X57-6890-23	470~512MHz	

PERSONAL SAFETY

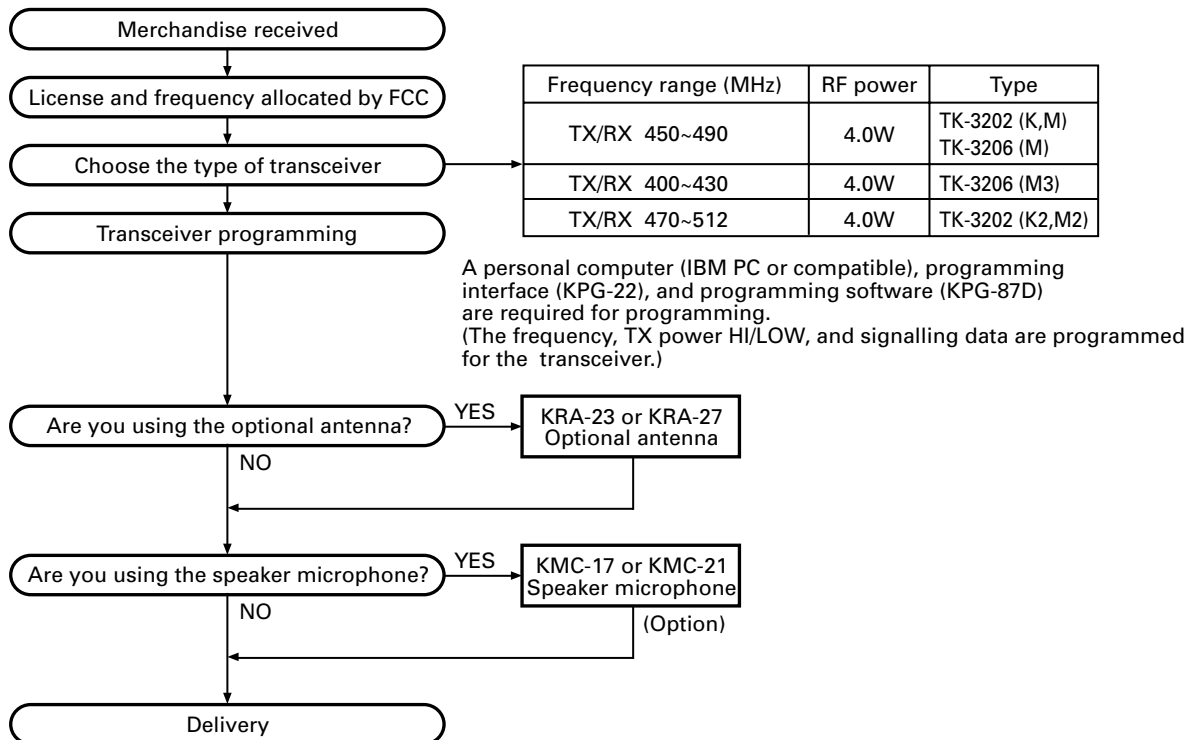
The following precautions are recommended for personal safety:

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

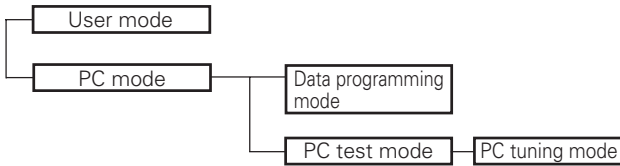
SYSTEM SET-UP



REALIGNMENT

REALIGNMENT

1. Modes



Mode	Function
User mode	For normal use.
PC mode	Used for communication between the radio and PC (IBM compatible).
Data programming mode	Used to read and write frequency data and other features to and from the radio.
PC test mode	Used to check the radio using the PC. This feature is included in the KPG-87D.

2. How to Enter Each Mode

Mode	Operation
User mode	Power ON
PC mode	Received commands from PC

3. PC Mode

3-1. Preface

The TK-3202/3206 transceiver is programmed using a personal computer, a programming interface (KPG-22) and programming software (KPG-87D).

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

3-2. Connection procedure

1. Connect the TK-3202/3206 to the personal computer with the interface cable.
2. When the POWER is switched on, user mode can be entered immediately. When the PC sends a command, the radio enters PC mode.

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

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

Notes:

- The data stored in the personal computer must match the model type when it is written into the EEPROM.
- Change the TK-3202/3206 to PC mode, then attach the interface cable.

3-3. KPG-22 description

(PC programming interface cable: Option)

The KPG-22 is required to interface the TK-3202/3206 with the computer. It has a circuit in its D-subconnector (25-pin) case that converts the RS-232C logic level to the TTL level.

The KPG-22 connects the SP/MIC connector of the TK-3202/3206 to the computer's RS-232C serial port.

3-4. Programming software description

KPG-87D is the programming software for TK-3202/3206 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 TK-3202/3206 and edited on the screen. The programmed or edited data can be printed out. It is also possible to tune the transceiver.

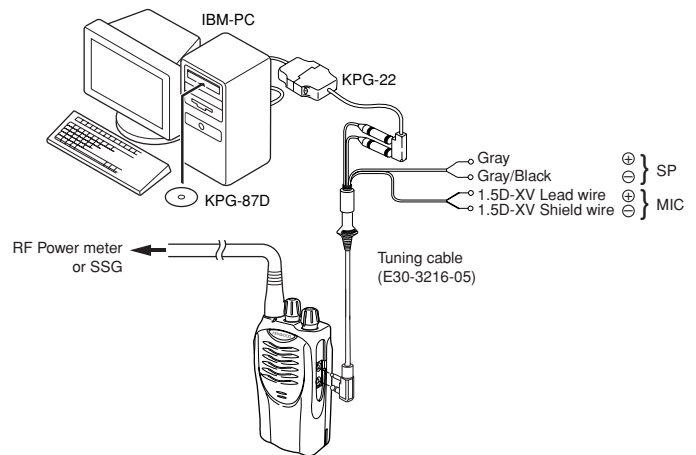


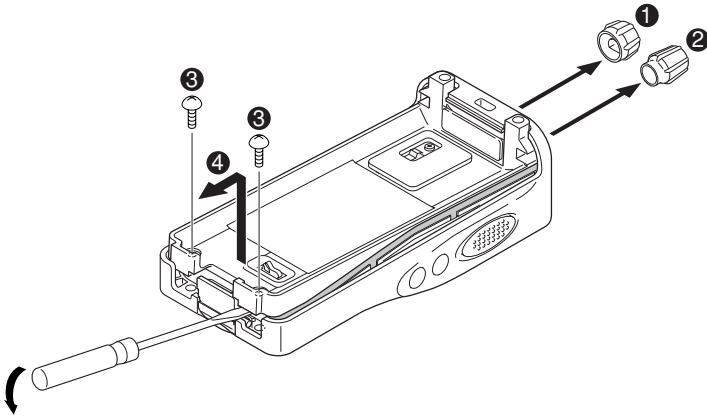
Fig. 1

TK-3202/3206

DISASSEMBLY FOR REPAIR

■ Removing the case assembly from the chassis.

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

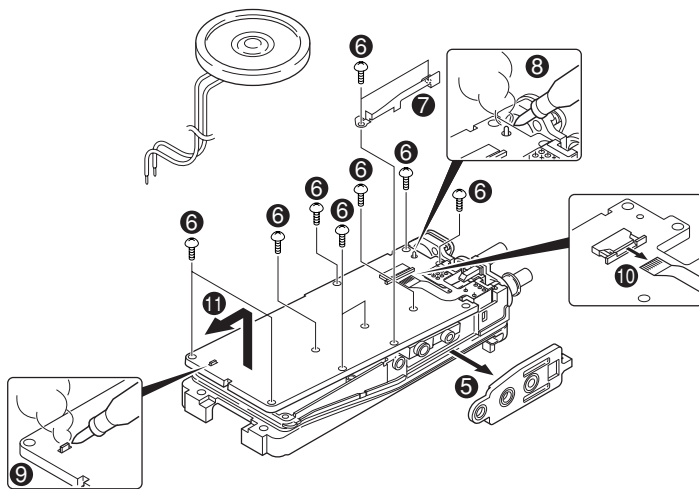


■ Removing the TX-RX unit from the chassis.

1. Remove the packing ⑤ from the SP / MIC jack of the TX-RX unit.
2. Remove the eleven screws ⑥ fixing the TX-RX unit.
3. Remove the fixing bracket ⑦ of the SP / MIC.
4. Remove the solder of the antenna terminal with a soldering iron ⑧.
5. Remove the solder of the positive terminal with a soldering iron ⑨.

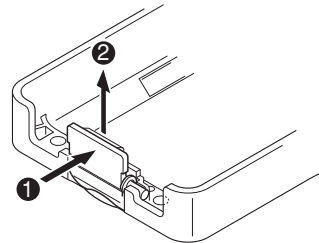
Note: You can remove the TX-RX unit from the chassis without removing the solder at the positive terminal. However, in this case, you can not attach the packing (G53-1605-03) that is on the positive terminal to the chassis in assembling. So, it is advisable to remove the solder on the positive terminal first.

6. Remove the FPC from the flat cable connector ⑩.
7. Lift and remove the TX-RX unit from the chassis ⑪.



■ Removing the battery release lever from the case assembly.

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

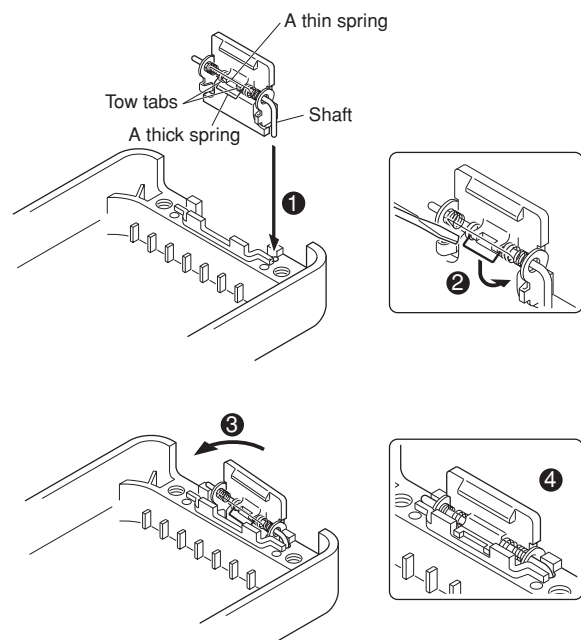


■ Attaching the battery release lever to the case assembly.

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

Caution : The thin spring (G01-4543-04) should be positioned above the two tabs of the lever.

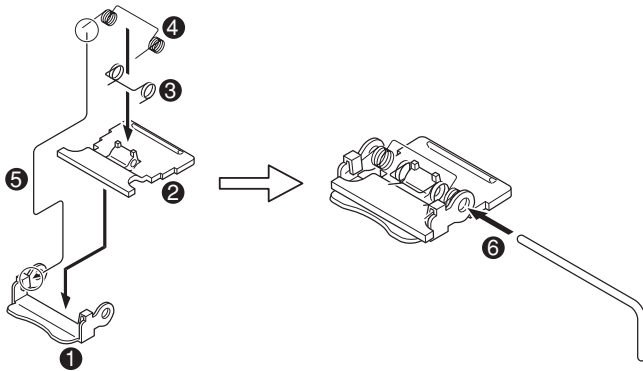
2. Press downward on the center of the thick spring (G01-4542-04) with a flat-blade screwdriver (the center of the thick spring should be positioned below the case surface) ②.
3. During step 2 above, press the battery release lever toward the inside of the case assembly ③, then attach the other side of the shaft to the case assembly ④.



DISASSEMBLY FOR REPAIR

■ Assembling the battery release lever

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

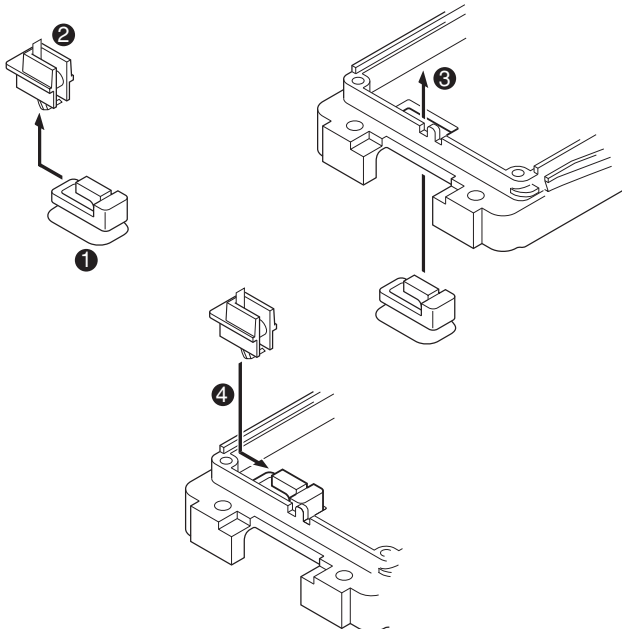


■ Cautions for assembly

1. Attaching the positive terminal to the chassis.

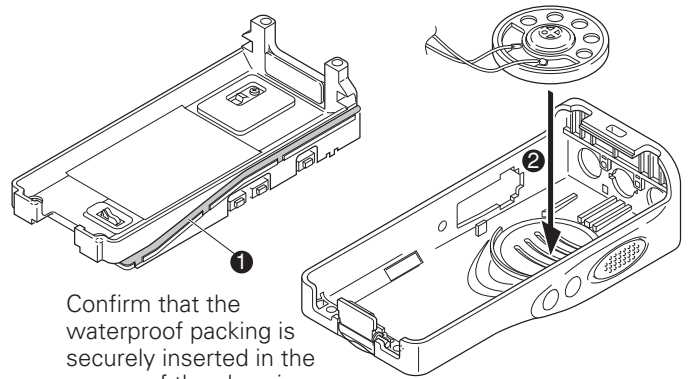
Always attach the positive terminal to the chassis, using the following procedures, before mounting the TX-RX unit onto the chassis.

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



2. Mounting the chassis to the case assembly.

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

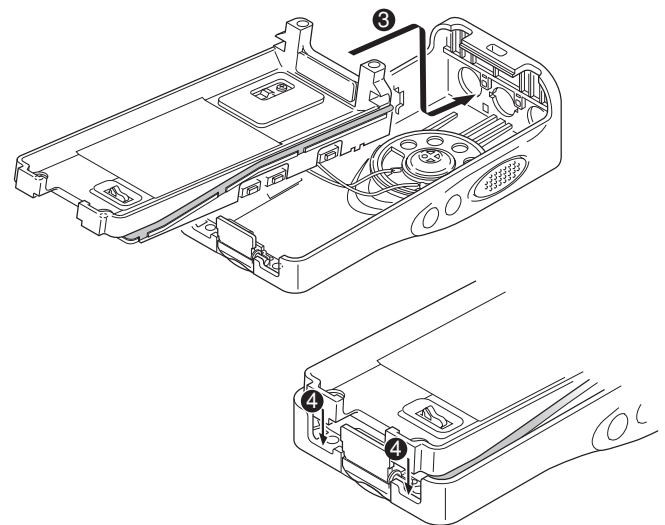


3. Insert the upper part of the chassis into the case assembly ③.

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

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

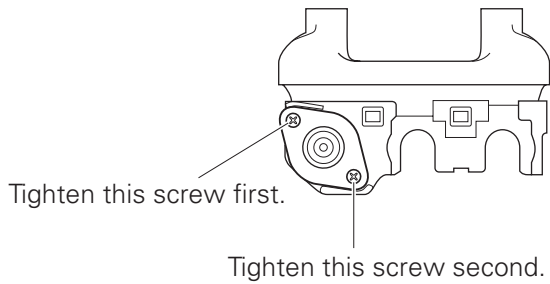
Caution: If the packing of the SP / MIC does not come to the correct position after attaching the chassis to the case assembly, reposition the packing with your fingers.



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3. Attaching the antenna receptacle to the chassis.

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

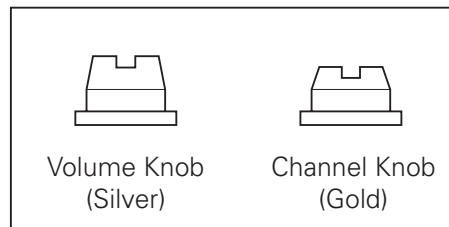


4. The nuts of the volume knob and channel knob

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

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

- Volume knob : Jig (Part No. : T-015)
- Channel knob : Jig (Part No. : T-016)



CIRCUIT DESCRIPTION

1. Frequency Configuration

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

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

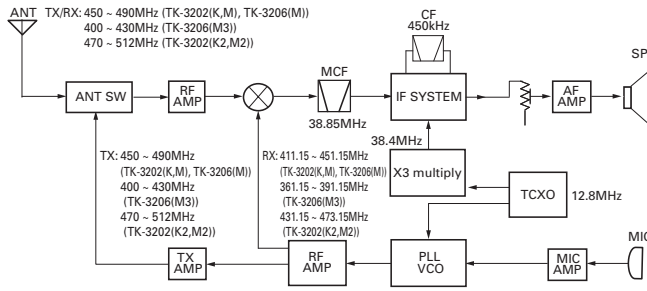


Fig. 1 Frequency configuration

2. Receiver

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

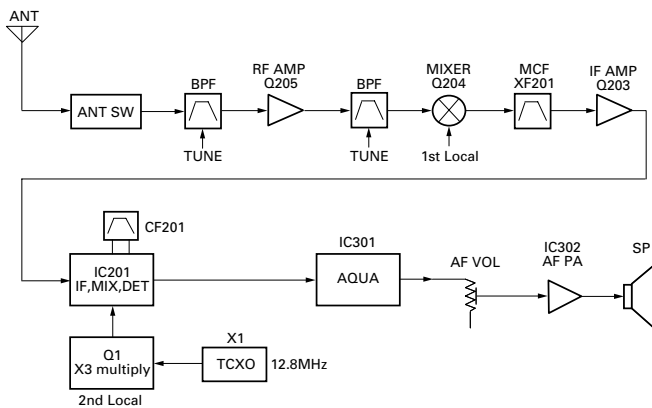


Fig. 2 Receiver section

1) Front End (RF AMP)

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

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

2) First Mixer

The signal from the front end is mixed with the first local oscillator signal generated in the PLL circuit by Q1 to produce a first IF frequency of 38.85 MHz.

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

3) IF Amplifier Circuit

The first IF signal is passed through a four-pole monolithic crystal filter (XF201) to remove the adjacent channel signal. The filtered first IF signal is amplified by the first IF amplifier (Q203) and then applied to the IF system IC (IC201). The IF system IC provides a second mixer, second local oscillator, limiting amplifier, quadrature detector and RSSI (Received Signal Strength Indicator). The second mixer mixes the first IF signal with the 38.4MHz of the second local oscillator output (TCXO X1) and produces the second IF signal of 450kHz.

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

4) Wide/Narrow Switching Circuit

Narrow and Wide settings can be made for each channel by switching the demodulation level.

The WIDE (low level) and NARROW (high level) data is output from IC405, pin 45.

When a WIDE (low level) data is received, Q202 turn on. When a NARROW (high level) data is received, Q202 turn off.

Q202 turns off/on with the Wide/Narrow data and the IC201 detector output level is switched to maintain a constant output level during wide or narrow signals.

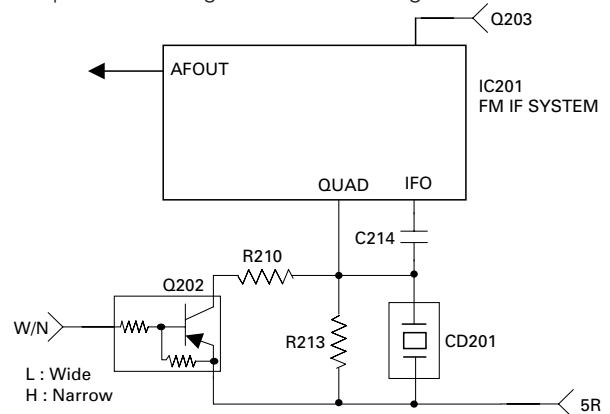


Fig. 3 Wide/Narrow switching circuit

5) Audio Amplifier Circuit

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

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

CIRCUIT DESCRIPTION

6) Squelch

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

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

To output sounds from the speaker, IC405 sends a high signal to the SP MUTE line and turns IC302 on through Q303, Q304, Q306 and Q316. (See Fig. 4)

7) Receive Signalling

(1) QT/DQT

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

(2) MSK (Fleet Sync)

Fleet Sync utilizes 1200bps and 2400bps MSK signal is output from pin 6 of IC301. And is routed to the VCO. When encoding MSK, the microphone input signal is muted.

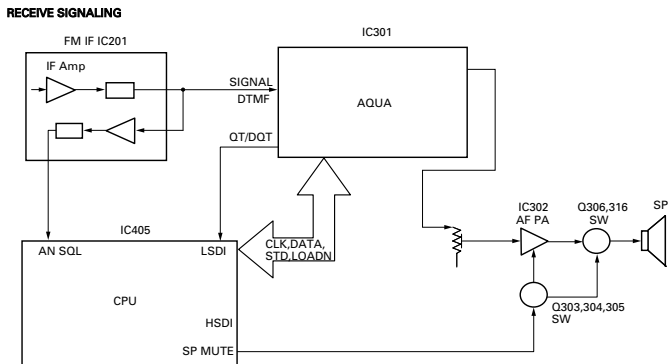


Fig. 4 AF amplifier and squelch

(3) DTMF

The DTMF input signal from the IF IC (IC201) goes to IC301, the DTMF decoder. The decoded information is then processed by the CPU.

3. PLL Frequency Synthesizer

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

1) PLL

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

A 12.8MHz reference an oscillator signal is divided at IC1 by a fixed counter to produce oscillator (VCO) output signal which is buffer amplified by Q2 then divided in IC1 by a programmable counter. The divided signal is compared in phase with the 5 or 6.25kHz reference signal from the phase

comparator in IC1. The output signal from the phase comparator is filtered through a low-pass filter and passed to the VCO to control the oscillator frequency. (See Fig. 5)

2) VCO

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

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

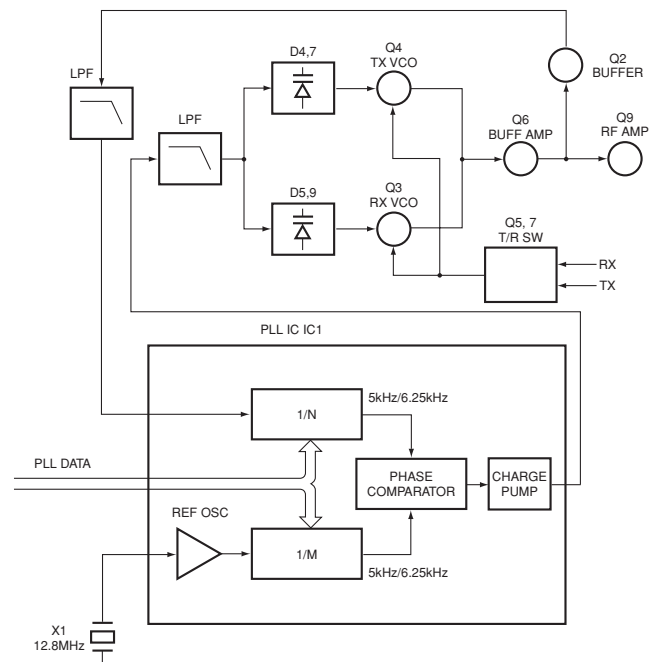


Fig. 5 PLL circuit

3) Unlock Detector

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

CIRCUIT DESCRIPTION

4. Transmitter System

1) Microphone Amplifier

The signal from the microphone passes through IC301. When encoding DTMF, it is turned OFF for muting the microphone input signal by IC301.

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

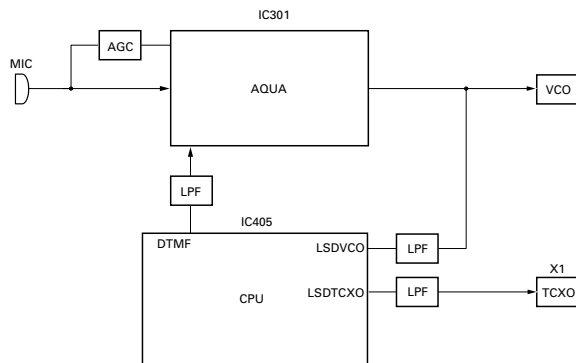


Fig. 6 Microphone amplifier

2) Drive and Final Amplifier

The signal from the T/R switch (D101 is on) is amplified by the pre-drive (Q101) and drive amplifier (Q102) to 50mW.

The output of the drive amplifier is amplified by the RF power amplifier (Q103) to 4.0W (1W when the power is low). The RF power amplifier consists of two MOS FET stages. The output of the RF power amplifier is then passed through the harmonic filter (LPF) and antenna switch (D103 and D122) and applied to the antenna terminal.

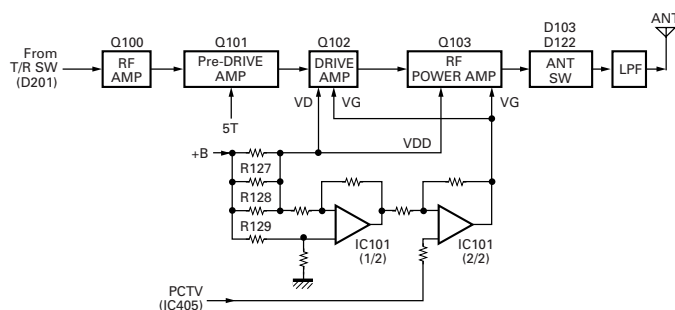


Fig. 7 Drive and final amplifier and APC circuit

3) APC Circuit

The APC circuit always monitors the current flowing through the RF power amplifier (Q103) and keeps a constant current. The voltage drop at R127, R128 and R129 is caused by the current flowing through the RF power amplifier and this voltage is applied to the differential amplifier IC101(1/2). IC101(2/2) compares the output voltage of IC101(1/2) with the reference voltage from IC405. The output of IC101(2/2) controls the VG of the RF power amplifier, Drive amplifier

and Pre-Drive amplifier to make both voltages the same. The change of power high/low is carried out by the change of the reference voltage.

4) Encode Signalling

(1) QT/DQT

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

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

(2) DTMF

High-speed data is output from pin 2 of the CPU. The signal passes through a low-pass CR filter, and provides a TX and SP out tone, and is then applied to the audio processor (IC301). The signal is mixed with the audio signal and goes to the VCO.

TX deviation is adjusted by the CPU.

(3) MSK (Fleet Sync)

The MSK input signal from the IF IC goes to pin 31 of IC 301. The signal is demodulated by MSK demodulator in IC 301. The demodulated data goes to the CPU for processing.

5. Power Supply

There are five 5V power supplies for the microprocessor: 5M,5MS,5C,5R, and 5T. 5M for microprocessor is always output while the power is on. 5M is always output, but turns off when the power is turned off to prevent malfunction of the microprocessor.

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

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

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

6. Control Circuit

The control circuit consists of a 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).

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CIRCUIT DESCRIPTION

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.

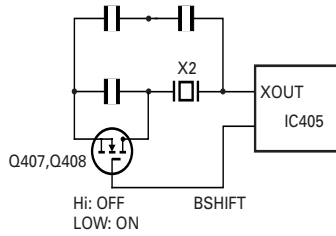


Fig. 8 Frequency shift circuit

2) Memory Circuit

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

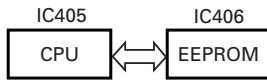


Fig. 9 Memory circuit

3) Low Battery Warning

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

- (1) The red LED blinks when the battery voltage falls below the voltage (1) shown in the table during transmission.
- (2) The red LED blinks when the battery voltage falls below the voltage (2) shown in the table during transmission.

Note:

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

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

- (3) The transceiver immediately stops transmission when the battery voltage falls below the voltage (3) shown in the table. A message tone beeps while the PTT switch is released.

	Ni-Cd Battery	Ni-MH Battery
(1)	6.2[V]	6.2[V]
(2)	6.8[V]	7.0[V]
(3)	5.9[V]	5.9[V]

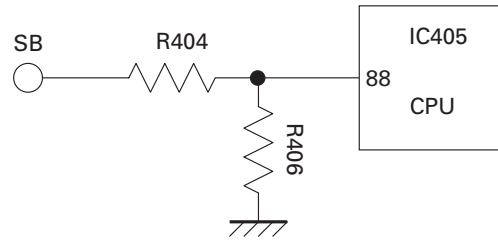


Fig. 10 Low battery warning

7. Control System

Keys and channel selector circuit.

The signal from keys and channel selector input to microprocessor directly as shown in fig. 10.

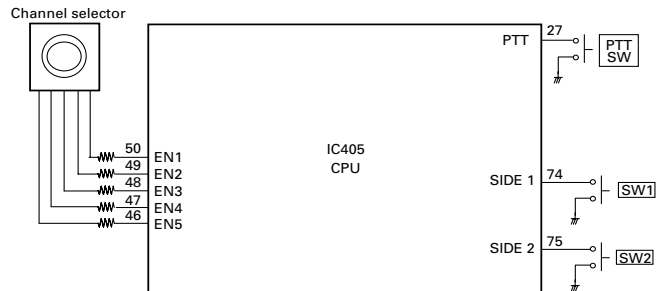


Fig. 11 Control system

TERMINAL FUNCTION**■ CN401**

Pin No.	Name	I/O	Function
1	B	I	B (Battery Voltage)
2	SB	O	Switched B
3	SP1	I	Audio input
4	SP2	O	Audio output
5	GND	-	GND
6	EN1	I	Encoder pulse input
7	EN2	I	Encoder pulse input
8	GND	-	GND
9	EN3	I	Encoder pulse input
10	EN4	I	Encoder pulse input
11	EN5	I	Encoder pulse input

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SEMICONDUCTOR DATA

Microprocessor : 30622MAA-B89GP (TX-RX UNIT : IC405)

■ Pin function

Pin No.	Port Name	I/O	Function
1	PCTV	O	APC/BPF control data output
2	DTMF	O	DTMF/ Beep output
3	MSK_Enable	O	MSK encoder switch
4	EEPDT	I/O	EEPROM data input/output
5	EEPCK	O	EEPROM clock output
6	BYTE	-	GND
7	CNVSS	-	GND for flash
8	BSHIFT	O	Beat shift switch
9	NC	-	NC
10	RESET	I	CPU reset
11	XOUT	O	CPU clock (7.3728MHz)
12	VSS	-	GND
13	XIN	I	CPU clock (7.3728MHz)
14	VCC	-	+5V
15	VCC	-	+5V
16	INT	I	Battery voltage monitor input
17	TCLK/DTRDO	I	Base band IC data input
18	RDF/FD	I	Base band IC data input
19	SCLK	O	Base band IC clock output
20	D I/O	I/O	Base band IC data input / output
21	TDATA/DTRCLK	O	Base band IC data output
22	DIR	O	Base band IC data output
23	STD	I	Base band IC data input
24	QT VCO	O	QT/DQT output
25	DTRLOADN	O	Base band IC data output
26	1/2 OSC	O	3.6864 MHz (7.3728 MHz/2)
27	PTT	I	PTT switch input
28	QT TCXO	O	QT/DQT output
29	TXD	O	Serial data (FPU/FLASH)
30	RXD	I	Serial data (FPU/FLASH)
31	GND	-	GND
32	APCSW	O	APC switch
33	NC	-	NC
34	NC	-	NC
35	DCSW	O	APC voltage discharge switch
36	TX_W/N	O	TX Wide/Narrow switch
37	RX_SW	O	RX VCO switch
38	TX_SW	O	TX VCO switch
39	GND	-	GND
40	PLL_UL	I	PLL unlock detect input
41	PLL_STB	O	PLL strobe output
42	PLL_DAT	O	PLL data output
43	PLL_CLK	O	PLL clock output
44	CEFLS	I/O	Chip enable for flash
45	RX_W/N	O	RX Wide/Narrow switch
46	EN5	I	Channel selector input
47	EN4	I	Channel selector input
48	EN3	I	Channel selector input
49	EN2	I	Channel selector input
50	EN1	I	Channel selector input
51	OPTDET	I	Headset input detect
52	AF_CONT	O	Speaker mute
53	NC	-	NC
54	NC	-	NC

Pin No.	Port Name	I/O	Function
55	NC	-	NC
56	NC	-	NC
57	NC	-	NC
58	NC	-	NC
59	NC	-	NC
60	VCC	-	+5V
61	NC	-	NC
62	VSS	-	GND
63	GND	-	GND
64	GND	-	GND
65	NC	-	NC
66	NC	-	NC
67	NC	-	NC
68	NC	-	NC
69	NC	-	NC
70	NC	-	NC
71	NC	-	NC
72	LEDTX	O	Red LED lights control output
73	LEDRX	O	Green LED lights control output
74	PF1	I	SIDE1 Key input
75	PF2	I	SIDE2 Key input
76	GND	-	GND
77	GND	-	GND
78	NC	-	NC
79	NC	-	NC
80	5T_C	O	5T control output
81	5R_C	O	5R control output
82	5C_C	O	5C control output
83	NC	-	NC
84	NC	-	NC
85	NC	-	NC
86	NC	-	NC
87	NC	-	NC
88	BATT	I	Battery voltage input
89	RSSI	I	Received Signal Strength Indicator input
90	BUSY	I	Busy level input
91	VOX	I	VOX level input
92	QT/DQT_IN	I	QT/DQT Input
93	TH_DET	I	Thermistor input
94	AVSS	-	GND
95	NC	-	NC
96	VREF	-	+5V
97	AVCC	-	+5V
98	NC	-	NC
99	MIC_Mute	O	MIC mute
100	NC	-	NC

COMPONENTS DESCRIPTION

TX-RX UNIT (X57-6890-XX)

Ref. No.	Use/Function	Operation/Condition
IC1	IC	PLL system
IC101	IC	Comparator (APC)
IC201	IC	FM IF system
IC301	IC	Audio processor
IC302	IC	AF AMP
IC401	IC	Voltage regulator/ 5V
IC402	IC	Voltage regulator/ 5V
IC403	IC	Voltage detector / Reset
IC404	IC	Voltage detector / INT
IC405	IC	Microprocessor
IC406	IC	EEPROM
Q1	Transistor	Tripler
Q2	Transistor	PLL IC f _{in} AMP
Q3	FET	VCO / RX
Q4	FET	VCO / TX
Q5	Transistor	DC switch / TX VCO
Q6	FET	RF Buffer AMP
Q7	Transistor	DC switch / RX VCO
Q8	Transistor	Ripple filter
Q9	Transistor	RF AMP
Q100	Transistor	RF AMP
Q101	FET	RF AMP
Q102	FET	TX Drive AMP
Q103	FET	TX Final AMP
Q104	Transistor	APC switch
Q105	FET	APC switch
Q107	Transistor	APC switch
Q108	FET	APC switch
Q109	Transistor	APC switch
Q202	Transistor	W/N switch / RX
Q203	Transistor	IF AMP
Q204	FET	Mixer
Q205	FET	RF AMP
Q301	Transistor	W/N switch / TX
Q302	Transistor	MIC. AGC
Q303	Transistor	DC switch / SP Mute
Q304	Transistor	DC switch
Q305	Transistor	DC switch / SP Mute
Q306	FET	SP Mute switch
Q316	FET	SP Mute switch
Q401	Transistor	LED switch / Red
Q402	Transistor	LED switch / Green
Q403	FET	5T switch
Q404	FET	5R switch
Q405	Transistor	5C switch
Q407	FET	Beat Shift switch
Q408	FET	Beat Shift switch
Q409	Transistor	Modulation Limiter
D1	Diode	Ripple Filter
D2	Variable capacitance diode	Frequency control / TX VCO
D3	Variable capacitance diode	Frequency control / RX VCO

Ref. No.	Use/Function	Operation/Condition
D4	Variable capacitance diode	Frequency control / TX VCO
D5	Variable capacitance diode	Frequency control / RX VCO
D6	Variable capacitance diode	Frequency control / TX VCO
D7	Variable capacitance diode	Frequency control / TX VCO
D8	Variable capacitance diode	Frequency control / RX VCO
D9	Variable capacitance diode	Frequency control / RX VCO
D10	Variable capacitance diode	Modulator
D11	Diode	Current steering
D101	Diode	TX/RX RF switch
D102	Zener diode	APC protect
D103	Diode	ANT switch
D104	Diode	ANT switch
D106	Diode	ANT switch
D122	Diode	ANT switch
D202	Diode	TX/RX RF switch
D203	Variable capacitance diode	RF BPF tuning
D204	Variable capacitance diode	RF BPF tuning
D205	Variable capacitance diode	RF BPF tuning
D206	Variable capacitance diode	RF BPF tuning
D210	Variable capacitance diode	RF BPF tuning
D301	Diode	Detector
D302	Diode	Detector
D303	Diode	Isolation
D401	Diode	5V Protection
D402	Diode	Reverse Protection
D403	LED	LED/ Red
D404	LED	LED/ Green

TK-3202/3206

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
 Y: AAFES (Europe) X: Australia M: Other Areas

TK-3202/3206 (Y50-579X-XX) TX-RX UNIT (X57-6890-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination
TK-3202/3206					
1	1A	*	A02-3851-03	CABINET ASSY(16CH)	BM,BM3
1	1A	*	A02-3852-03	CABINET ASSY(8CH)	AK,AK2
1	1A	*	A02-3852-03	CABINET ASSY(8CH)	AM,AM2
2	1A	*	A02-3858-03	CABINET	
3	3A	*	A10-4078-01	CHASSIS	
4		*	A21-1644-03	DRESSING PANEL(16CH)	BM,BM3
5		*	A21-1645-03	DRESSING PANEL(8CH)	AK,AK2
5		*	A21-1645-03	DRESSING PANEL(8CH)	AM,AM2
6	2C,2E	*	B09-0680-03	CAP(SP/MIC) ACCESSORY	
7	2B	*	B11-1817-04	ILLUMINATION GUIDE	
8	1B	*	B43-1156-04	BADGE	
9	1C	*	B62-1762-00	INSTRUCTION MANUAL	AK,AK2
9	1C	*	B62-1762-00	INSTRUCTION MANUAL	AM,AM2
10	1E	*	B62-1763-00	INSTRUCTION MANUAL	BM,BM3
11	1A	*	D10-0649-03	LEVER	
12	1A	*	D21-0863-04	SHAFT	
13	1A	*	D32-0441-03	STOPPER	
14	2A	*	E04-0451-05	RF COAXIAL RECEPTACLE(SMA)	
15	3B	*	E23-1253-04	TERMINAL(BATT-)	
16	2B	*	E37-0794-05	PROCESSED LEAD WIRE(SP+)	
17	2B	*	E37-0803-05	PROCESSED LEAD WIRE(SP-)	
18	3A	*	F20-3353-04	INSULATING SHEET(CHASSIS BATT+)	
19	1A	*	G01-4542-04	COIL SPRING(LEVER)	
20	2A	*	G01-4543-04	COIL SPRING(STOPPER)	
21	2B	*	G10-1330-04	FIBROUS SHEET(IC302:AUDIO IC)	
22	3A	*	G11-4283-04	RUBBER SHEET(Q103:FINAL FET)	
23	2A	*	G11-4313-04	SHEET(MIC)	
24	3B	*	G13-2009-04	CUSHION(TERMINAL BATT+)	
25	3A	*	G13-2033-04	CUSHION(TERMINAL BATT-)	
26	3B	*	G13-2034-14	CUSHION(CHASSIS)	
27	2B	*	G13-2037-04	CUSHION(CHASSIS VOL/CH)	
28	3A	*	G13-2038-04	CUSHION(CHASSIS-CERAMIC FILTER)	
29	2A	*	G13-2039-04	CUSHION(PCB-CERAMIC FILTER)	
30	3A	*	G53-1604-03	PACKING(CHASSIS)	
31	3A	*	G53-1605-03	PACKING(TERMINAL BATT+)	
32	2B	*	G53-1606-03	PACKING(VOL/CH/LED)	
33	1B	*	G53-1607-03	PACKING(SP/MIC)	
34	2B	*	G53-1608-03	PACKING(SP)	
35	2A	*	G53-1609-14	PACKING(MIC)	
36	2B	*	G53-1610-04	PACKING(SMA)	
37	2F	*	H12-3158-05	PACKING FIXTURE	
38	1D	*	H13-2109-03	CARTON BOARD	AK,AK2
38	1D	*	H13-2109-03	CARTON BOARD	AM,AM2
39		*	H25-0085-04	PROTECTION BAG (100/200/0.07)	
40	3D	*	H52-2056-02	ITEM CARTON CASE	AK,AK2
40	3D	*	H52-2056-02	ITEM CARTON CASE	AM,AM2
41	3F	*	H52-2057-02	ITEM CARTON CASE	BM,BM3
42	2C,2F	*	J19-5472-03	HOLDER(SP/MIC) ACCESSORY	
43	2A	*	J19-5473-03	HOLDER ASSY(TERMINAL BATT+)	
44	2B	*	J21-8477-04	HARDWARE FIXTURE(VOL/CH)	

Ref. No.	Address	New parts	Parts No.	Description	Destination
45	2B	*	J21-8478-04	HARDWARE FIXTURE(SP/MIC)	
46	2C,2F	*	J29-0713-05	BELT CLIP ACCESSORY	
47	2B	*	J82-0092-05	FPC	
48	1A	*	K29-9307-03	BUTTON KNOB(SIDE1/SIDE2)	
49	1A	*	K29-9308-03	BUTTON KNOB(PTT)	
50	1B	*	K29-9309-03	KNOB(VOL)	
51	1B	*	K29-9318-03	KNOB(CH)	
52	2A		L72-0973-05	CERAMIC FILTER(450KHZ)	
A	2B	*	N14-0808-04	CIRCULAR NUT(CH KNOB)	
B	2B	*	N14-0812-04	CIRCULAR NUT(VOL KNOB)	
C	2A		N30-2604-46	PAN HEAD MACHINE SCREW(SMA)	
D	2A		N30-2606-46	PAN HEAD MACHINE SCREW(CHASSIS)	
E	3A		N83-2005-46	PAN HEAD TAPTITE SCREW(PCB)	
F	2C,2F	*	N99-2043-05	SCREW SET ACCESSORY	
53	2B	*	R31-0653-05	VARIABLE RESISTOR(POWER SW/VOL)	
54	2B	*	S60-0427-05	ROTARY SWITCH(16CH)	BM,BM3
55	2B	*	S60-0428-15	ROTARY SWITCH(8CH)	AK,AK2
55	2B	*	S60-0428-15	ROTARY SWITCH(8CH)	AM,AM2
56	1B		T07-0369-05	SPEAKER	
57	1C		T90-1039-05	WHIP ANTENNA ACCESSORY	AK,AM
57	1C		T90-1040-05	WHIP ANTENNA ACCESSORY	AK2,AM2
58	2D	*	W08-0969-05	CHARGER ACCESSORY	AK,AK2
58	2D	*	W08-0969-05	CHARGER ACCESSORY	AM,AM2
59	1D	*	W08-0970-05	AC ADAPTER(AC120V) ACCESSORY	AK,AK2
59	1D	*	W08-0971-05	AC ADAPTER(AC230V) ACCESSORY	AM,AM2
TX-RX UNIT (X57-6890-XX) -20 :TK-3202 K,M TK-3206 M -22 :TK-3206 M3 -23 :TK-3202 K2,M2					
D403			B30-2156-05	LED(RED)	
D404			B30-2157-05	LED(YELLOW)	
C1			CK73HB1H332K	CHIP C 3300PF K	
C2			CK73HB1C682K	CHIP C 6800PF K	
C3			CK73GB1A105K	CHIP C 1.0UF K	
C4			CK73HB1C103K	CHIP C 0.010UF K	
C5			CK73HB1H102K	CHIP C 1000PF K	
C6			CK73HB1A104K	CHIP C 0.10UF K	
C7 ,8			CC73HCH1H101J	CHIP C 100PF J	
C9			CC73HCH1H100D	CHIP C 10PF D	
C10			C92-0713-05	CHIP-TAN 10UF 6.3WV	
C11			CC73HCH1H101J	CHIP C 100PF J	
C12			CK73HB1H102K	CHIP C 1000PF K	
C13			CK73HB1A104K	CHIP C 0.10UF K	
C14			CK73HB1C103K	CHIP C 0.010UF K	
C15			CC73HCH1H100D	CHIP C 10PF D	
C16			CK73HB1H102K	CHIP C 1000PF K	
C17			CC73HCH1H470J	CHIP C 47PF J	
C18			CC73HCH1H180J	CHIP C 18PF J	
C19			CK73HB1A104K	CHIP C 0.10UF K	
C21			C92-0713-05	CHIP-TAN 10UF 6.3WV	
C22			C92-0502-05	CHIP-TAN 0.33UF 35WV	
C24			CK73HB1H102K	CHIP C 1000PF K	

PARTS LIST

TX-RX UNIT (X57-6890-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C25			CC73HCH1H020B	CHIP C 2.0PF B		C67			CC73HCH1H050B	CHIP C 5.0PF B	AM,AM2
C26			CC73HCH1H300J	CHIP C 30PF J		C67			CC73HCH1H050B	CHIP C 5.0PF B	BM
C27			C92-0697-05	TANTALUM 3.3UF 16WV		C68 -70			CK73HB1H471K	CHIP C 470PF K	
C29 ,30			CK73HB1H471K	CHIP C 470PF K		C71 ,72			CK73HB1A104K	CHIP C 0.10UF K	
C32			C92-0001-05	CHIP C 0.1UF 35WV		C73 ,74			CC73HCH1H0R5B	CHIP C 0.5PF B	
C33 ,34			CK73HB1H102K	CHIP C 1000PF K		C75 ,76			CK73HB1H102K	CHIP C 1000PF K	
C35			CC73HCH1H270J	CHIP C 27PF J		C77			CK73HB1H471K	CHIP C 470PF K	
C38			CC73HCH1H050B	CHIP C 5.0PF B		C78			CC73HCH1H330J	CHIP C 33PF J	
C39			CK73GB1H332K	CHIP C 3300PF K		C79			C92-0713-05	CHIP-TAN 10UF 6.3WV	
C40			CC73HCH1H030B	CHIP C 3.0PF B		C80			CK73HB1H471K	CHIP C 470PF K	
C41			CK73GB1H682K	CHIP C 6800PF K		C83			CC73HCH1H150J	CHIP C 15PF J	
C42			CC73HCH1H050B	CHIP C 5.0PF B		C84 -86			CK73HB1H102K	CHIP C 1000PF K	
C43			CC73HCH1H100C	CHIP C 10PF C		C87			CC73HCH1H100D	CHIP C 10PF D	
C44			CK73HB1H471K	CHIP C 470PF K		C90			CK73HB1H102K	CHIP C 1000PF K	
C45			CK73GB1A105K	CHIP C 1.0UF K		C100			CK73HB1H471K	CHIP C 470PF K	
C46			CK73FB1C105K	CHIP C 1.0UF K		C101			CK73GB1H471K	CHIP C 470PF K	
C47			CC73HCH1H101J	CHIP C 100PF J		C102			CC73GCH1H120J	CHIP C 12PF J	
C48			CK73HB1H471K	CHIP C 470PF K		C106			CK73HB1H471K	CHIP C 470PF K	
C49			CC73HCH1H101J	CHIP C 100PF J		C107			CC73GCH1H060B	CHIP C 6.0PF B	AK,AK2
C50			CC73HCH1H100D	CHIP C 10PF D		C107			CC73GCH1H060B	CHIP C 6.0PF B	AM,AM2
C52			CC73HCH1H110J	CHIP C 11PF J	AK,AM	C107			CC73GCH1H060B	CHIP C 6.0PF B	BM
C52			CC73HCH1H110J	CHIP C 11PF J	BM,BM3	C107			CC73GCH1H070D	CHIP C 7.0PF D	BM3
C52			CC73HCH1H120J	CHIP C 12PF J	AK2,AM2	C108			CK73HB1H471K	CHIP C 470PF K	
C53			CC73HCH1H020B	CHIP C 2.0PF B	AK,AK2	C110,111			CK73GB1H471K	CHIP C 470PF K	
C53			CC73HCH1H020B	CHIP C 2.0PF B	AM,AM2	C112			CC73GCH1H070D	CHIP C 7.0PF D	
C53			CC73HCH1H020B	CHIP C 2.0PF B	BM	C113			CK73GB1C104K	CHIP C 0.10UF K	
C53			CC73HCH1H040B	CHIP C 4.0PF B	BM3	C116			CC73GCH1H030B	CHIP C 3.0PF B	BM3
C54			CC73HCH1H060B	CHIP C 6.0PF B	AK,AM,BM	C116			CC73GCH1H110J	CHIP C 11PF J	AK,AK2
C54			CC73HCH1H070B	CHIP C 7.0PF B	BM3	C116			CC73GCH1H110J	CHIP C 11PF J	AM,AM2
C54			CC73HCH1H090B	CHIP C 9.0PF B	AK2,AM2	C116			CC73GCH1H110J	CHIP C 11PF J	BM
C55			CC73HCH1H110J	CHIP C 11PF J	AK,AM,BM	C118			CC73GCH1H470J	CHIP C 47PF J	AK2,AM2
C55			CC73HCH1H120J	CHIP C 12PF J	AK2,AM2	C119			CK73GB1H471K	CHIP C 470PF K	
C55			CC73HCH1H120J	CHIP C 12PF J	BM3	C120			CC73GCH1H150G	CHIP C 15PF G	AK2,AM2
C56			CC73HCH1H020B	CHIP C 2.0PF B	AK,AM,BM	C121			CC73GCH1H060B	CHIP C 6.0PF B	AK2,AM2
C56			CC73HCH1H050B	CHIP C 5.0PF B	BM3	C121			CC73GCH1H120J	CHIP C 12PF J	BM3
C57			CC73HCH1H0R5B	CHIP C 0.5PF B	BM3	C122			CC73GCH1H330J	CHIP C 33PF J	
C58			CC73HCH1H060B	CHIP C 6.0PF B	AK,AM,BM	C123			CC73GCH1H330G	CHIP C 33PF G	
C58			CC73HCH1H070B	CHIP C 7.0PF B	BM3	C124			CC73HCH1H100D	CHIP C 10PF D	
C58			CC73HCH1H090B	CHIP C 9.0PF B	AK2,AM2	C125			CC73GCH1H060B	CHIP C 6.0PF B	AK,AM,BM
C59			CC73HCH1H1R5B	CHIP C 1.5PF B	AK2,AM2	C125			CC73GCH1H080B	CHIP C 8.0PF B	BM3
C59			CC73HCH1H1R5B	CHIP C 1.5PF B	BM3	C126			C92-0004-05	CHIP-TAN 1.0UF 16WV	
C59 ,60			CC73HCH1H010B	CHIP C 1.0PF B	AK,AM,BM	C127			CC73GCH1H200J	CHIP C 20PF J	AK,AM,BM
C60			CC73HCH1H010B	CHIP C 1.0PF B	AK2,AM2	C128			CK73HB1H471K	CHIP C 470PF K	
C60			CC73HCH1H010B	CHIP C 1.0PF B	BM3	C129			CK73GB1H471K	CHIP C 470PF K	
C61			CC73HCH1H030B	CHIP C 3.0PF B	AK,AM,BM	C130			CK73HB1H471K	CHIP C 470PF K	
C61			CC73HCH1H040B	CHIP C 4.0PF B	AK2,AM2	C132			CC73GCH1H200J	CHIP C 20PF J	AK,AM,BM
C61			CC73HCH1H040B	CHIP C 4.0PF B	BM3	C132			CC73GCH1H270J	CHIP C 27PF J	AK2,AM2
C62			CC73HCH1H020B	CHIP C 2.0PF B	AK,AK2	C132			CC73GCH1H390J	CHIP C 39PF J	BM3
C62			CC73HCH1H020B	CHIP C 2.0PF B	AM,AM2	C133			CK73GB1H471K	CHIP C 470PF K	
C62			CC73HCH1H020B	CHIP C 2.0PF B	BM	C134			CK73GB1H103K	CHIP C 0.010UF K	
C62			CC73HCH1H030B	CHIP C 3.0PF B	BM3	C135			CK73GB1C104K	CHIP C 0.10UF K	
C63			CC73HCH1H010J	CHIP C 100PF J		C136			CK73GB1A105K	CHIP C 1.0UF K	
C64			CC73HCH1H040B	CHIP C 4.0PF B	AK,AM,BM	C138			CK73GB1H102K	CHIP C 1000PF K	
C64			CC73HCH1H040B	CHIP C 4.0PF B	BM3	C140			CC73GCH1H101J	CHIP C 100PF J	
C64 ,65			CC73HCH1H050B	CHIP C 5.0PF B	AK2,AM2	C145			CC73GCH1H180J	CHIP C 18PF J	AK,AK2
C65 ,66			CC73HCH1H050B	CHIP C 5.0PF B	BM3	C145			CC73GCH1H180J	CHIP C 18PF J	AM,AM2
C65 ,66			CC73HCH1H060B	CHIP C 6.0PF B	AK,AM,BM	C145			CC73GCH1H180J	CHIP C 18PF J	BM
C66			CC73HCH1H060B	CHIP C 6.0PF B	AK2,AM2	C145			CC73GCH1H300J	CHIP C 30PF J	BM3
C67			CC73HCH1H040B	CHIP C 4.0PF B	BM3	C146			CK73GB1H102K	CHIP C 1000PF K	
C67			CC73HCH1H050B	CHIP C 5.0PF B	AK,AK2	C148			CK73GB1H102K	CHIP C 1000PF K	

AK : TK-3202K AK2 : TH-3202K2 AM : TK-3202M AM2 : TH-3202M2
 BM : TK-3206M BM3 : TH-3206M3

PARTS LIST

TX-RX UNIT (X57-6890-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C149			CC73GCH1H070B	CHIP C 7.0PF B	AK,AM,BM	C232			CK73HB1C103K	CHIP C 0.010UF K	
C149			CC73GCH1H070B	CHIP C 7.0PF B	BM3	C233			CC73GCH1H060B	CHIP C 6.0PF B	
C151			CC73GCH1H070B	CHIP C 7.0PF B	AK2,AM2	C234			CK73HB1H102K	CHIP C 1000PF K	
C151			CC73GCH1H070B	CHIP C 7.0PF B	BM3	C236			CC73GCH1H180J	CHIP C 18PF J	
C152			CC73GCH1H200J	CHIP C 20PF J	AK,AK2	C237			CK73HB1H102K	CHIP C 1000PF K	
C152			CC73GCH1H200J	CHIP C 20PF J	AM,AM2	C238			CK73GB1C104K	CHIP C 0.10UF K	
C152			CC73GCH1H200J	CHIP C 20PF J	BM	C239			CK73GB1H102K	CHIP C 1000PF K	
C152			CC73GCH1H300J	CHIP C 30PF J	BM3	C240			CC73GCH1H010B	CHIP C 1.0PF B	BM3
C154			CK73GB1H471K	CHIP C 470PF K		C240			CC73GCH1H3R5B	CHIP C 3.5PF B	AK,AK2
C156			CC73GCH1H030B	CHIP C 3.0PF B	BM3	C240			CC73GCH1H3R5B	CHIP C 3.5PF B	AM,AM2
C156			CC73GCH1H040B	CHIP C 4.0PF B	AK,AM,BM	C240			CC73GCH1H3R5B	CHIP C 3.5PF B	BM
C156			CC73GCH1H3R5B	CHIP C 3.5PF B	AK2,AM2	C241			CK73GB1H471K	CHIP C 470PF K	
C157			CC73GCH1H040B	CHIP C 4.0PF B	AK2,AM2	C244			CC73GCH1H030B	CHIP C 3.0PF B	AK,AM,BM
C157			CC73GCH1H040B	CHIP C 4.0PF B	BM3	C244			CC73GCH1H3R5B	CHIP C 3.5PF B	AK2,AM2
C157			CC73GCH1H2R5B	CHIP C 2.5PF B	AK,AM,BM	C245			CC73GCH1H180J	CHIP C 18PF J	AK2,AM2
C158			CC73GCH1H101J	CHIP C 100PF J		C245			CC73GCH1H220J	CHIP C 22PF J	AK,AM,BM
C159			CC73GCH1H020C	CHIP C 2.0PF C	AK,AM,BM	C246			CC73GCH1HR75B	CHIP C 0.75PF B	AK2,AM2
C159			CC73GCH1H020C	CHIP C 2.0PF C	BM3	C246			CC73GCH1H010B	CHIP C 1.0PF B	AK,AM,BM
C159			CC73GCH1H030B	CHIP C 3.0PF B	AK2,AM2	C247			CK73HB1H471K	CHIP C 470PF K	AK,AK2
C160			CC73GCH1H020B	CHIP C 2.0PF B	AK,AM,BM	C247			CK73HB1H471K	CHIP C 470PF K	AM,AM2
C160			CC73GCH1H020B	CHIP C 2.0PF B	BM3	C247			CK73HB1H471K	CHIP C 470PF K	BM
C160			CC73GCH1H1R5B	CHIP C 1.5PF B	AK2,AM2	C248			CC73GCH1H010B	CHIP C 1.0PF B	AK2,AM2
C161			CC73GCH1H050B	CHIP C 5.0PF B	AK,AM,BM	C248			CC73GCH1H020B	CHIP C 2.0PF B	AK,AM,BM
C161			CC73GCH1H050B	CHIP C 5.0PF B	BM3	C249			CC73GCH1H050B	CHIP C 5.0PF B	BM3
C161			CC73GCH1H060B	CHIP C 6.0PF B	AK2,AM2	C249			CC73GCH1H060B	CHIP C 6.0PF B	AK,AK2
C163			CC73GCH1H030B	CHIP C 3.0PF B		C249			CC73GCH1H060B	CHIP C 6.0PF B	AM,AM2
C164			CC73GCH1H050B	CHIP C 5.0PF B	AK,AM,BM	C249			CC73GCH1H060B	CHIP C 6.0PF B	BM
C164			CC73GCH1H050B	CHIP C 5.0PF B	BM3	C250			CC73GCH1H180J	CHIP C 18PF J	AK2,AM2
C164			CC73GCH1H060B	CHIP C 6.0PF B	AK2,AM2	C250			CC73GCH1H220J	CHIP C 22PF J	AK,AM,BM
C166			CC73GCH1HR75B	CHIP C 0.75PF B	AK,AM,BM	C250			CC73GCH1H220J	CHIP C 22PF J	BM3
C166			CC73GCH1HR75B	CHIP C 0.75PF B	BM3	C251			CK73HB1H471K	CHIP C 470PF K	
C166			CC73GCH1H1R5B	CHIP C 1.5PF B	AK2,AM2	C252			CC73GCH1HR75B	CHIP C 0.75PF B	AK2,AM2
C168			CC73GCH1H0R3B	CHIP C 0.3PF B	AK2,AM2	C252			CC73GCH1H1R5B	CHIP C 1.5PF B	BM3
C169			CC73GCH1H030B	CHIP C 3.0PF B	AK,AK2	C252,253			CC73GCH1H020B	CHIP C 2.0PF B	AK,AM,BM
C169			CC73GCH1H030B	CHIP C 3.0PF B	AM,AM2	C253			CC73GCH1H020B	CHIP C 2.0PF B	AK2,AM2
C169			CC73GCH1H030B	CHIP C 3.0PF B	BM	C253			CC73GCH1H020B	CHIP C 2.0PF B	BM3
C169			CC73GCH1H100C	CHIP C 10PF C	BM3	C254			CK73HB1H471K	CHIP C 470PF K	
C190			CK73GB1A105K	CHIP C 1.0UF K		C255			CC73GCH1H180J	CHIP C 18PF J	AK2,AM2
C191			CK73GB1H103K	CHIP C 0.010UF K		C255			CC73GCH1H220J	CHIP C 22PF J	AK,AM,BM
C201			CK73GB1A224K	CHIP C 0.22UF K		C255			CC73GCH1H220J	CHIP C 22PF J	BM3
C206			CK73HB1H102K	CHIP C 1000PF K		C256			C92-0714-05	CHIP-TAN 4.7UF 6.3WV	
C207			CK73HB1H182K	CHIP C 1800PF K		C257			CC73GCH1H060B	CHIP C 6.0PF B	AK2,AM2
C208			CK73HB1H471K	CHIP C 470PF K		C257			CC73GCH1H070B	CHIP C 7.0PF B	BM3
C209			C92-0713-05	CHIP-TAN 10UF 6.3WV		C257			CC73GCH1H4R5B	CHIP C 4.5PF B	AK,AM,BM
C210			CK73HB1H471K	CHIP C 470PF K		C258			CK73HB1H471K	CHIP C 470PF K	
C211			CK73HB1C103K	CHIP C 0.010UF K		C259			CK73GB1H471K	CHIP C 470PF K	
C213			CK73HB1A104K	CHIP C 0.10UF K		C262,263			CK73HB1H471K	CHIP C 470PF K	
C214			CC73HCH1H680J	CHIP C 68PF J		C265			CK73HB1H471K	CHIP C 470PF K	
C215			CK73HB1H102K	CHIP C 1000PF K		C266			CK73GB1H471K	CHIP C 470PF K	
C216			CK73GB1C104K	CHIP C 0.10UF K		C267			CC73GCH1H050B	CHIP C 5.0PF B	AK2,AM2
C217			CK73HB1A104K	CHIP C 0.10UF K		C267			CC73GCH1H060B	CHIP C 6.0PF B	BM3
C218			CK73GB1C104K	CHIP C 0.10UF K		C267			CC73GCH1H3R5B	CHIP C 3.5PF B	AK,AM,BM
C219			CC73HCH1H330J	CHIP C 33PF J		C268			CC73GCH1H180J	CHIP C 18PF J	AK2,AM2
C220			CK73HB1H102K	CHIP C 1000PF K		C268			CC73GCH1H220J	CHIP C 22PF J	AK,AM,BM
C221			CK73GB1C104K	CHIP C 0.10UF K		C268			CC73GCH1H220J	CHIP C 22PF J	BM3
C222			CK73HB1H102K	CHIP C 1000PF K		C269			CC73GCH1H020B	CHIP C 2.0PF B	AK,AM,BM
C224,225			CK73HB1C103K	CHIP C 0.010UF K		C269			CC73GCH1H020B	CHIP C 2.0PF B	BM3
C228			CC73GCH1H100C	CHIP C 10PF C		C269			CC73GCH1H2R5B	CHIP C 2.5PF B	AK2,AM2
C230			CK73HB1C103K	CHIP C 0.010UF K		C270,271			CK73HB1H471K	CHIP C 470PF K	
C231			CK73GB1H103K	CHIP C 0.010UF K		C272			CC73GCH1H020B	CHIP C 2.0PF B	

PARTS LIST

TX-RX UNIT (X57-6890-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C273			CC73GCH1H180J	CHIP C 18PF J	AK2,AM2	C403			CK73GB1C104K	CHIP C 0.10UF K	
C273			CC73GCH1H220J	CHIP C 22PF J	AK,AM,BM	C405			CC73GCH1H101J	CHIP C 100PF J	
C273			CC73GCH1H220J	CHIP C 22PF J	BM3	C407			CK73HB1H102K	CHIP C 1000PF K	
C274			CC73GCH1H020B	CHIP C 2.0PF B	AK2,AM2	C409,410			CK73GB1A105K	CHIP C 1.0UF K	
C274			CC73GCH1H040B	CHIP C 4.0PF B	BM3	C411			CK73HB1H102K	CHIP C 1000PF K	
C274,275			CC73GCH1H020B	CHIP C 2.0PF B	AK,AM,BM	C415			CK73HB1H471K	CHIP C 470PF K	
C275			CC73GCH1H020B	CHIP C 2.0PF B	BM3	C417			CK73GB1A105K	CHIP C 1.0UF K	
C275			CC73GCH1H090B	CHIP C 9.0PF B	AK2,AM2	C418,419			CK73HB1H102K	CHIP C 1000PF K	
C276			CC73GCH1H040B	CHIP C 4.0PF B	AK2,AM2	C421			CK73GB1A105K	CHIP C 1.0UF K	
C276			CC73GCH1H040B	CHIP C 4.0PF B	BM3	C426,427			CK73GB1A105K	CHIP C 1.0UF K	
C276			CC73GCH1H3R5B	CHIP C 3.5PF B	AK,AM,BM	C428,429			CK73HB1H102K	CHIP C 1000PF K	
C290			CC73GCH1H020B	CHIP C 2.0PF B		C430			CK73GB1H103K	CHIP C 0.010UF K	
C291			CC73GCH1H060B	CHIP C 6.0PF B		C431			CK73HB1C103K	CHIP C 0.010UF K	
C301			CK73HB1H392K	CHIP C 3900PF K	AK2,AM2	C432			CC73HCH1H050B	CHIP C 5.0PF B	
C301			CK73HB1H392K	CHIP C 3900PF K	BM3	C433,434			CC73HCH1H030B	CHIP C 3.0PF B	
C302			CK73HB1H271K	CHIP C 270PF K		C435			CC73HCH1H050B	CHIP C 5.0PF B	
C304			CK73GB1A224K	CHIP C 0.22UF K		C440			CC73GCH1H1R5B	CHIP C 1.5PF B	
C306			C92-0714-05	CHIP-TAN 4.7UF 6.3WV		C443			CK73GB1A474K	CHIP C 0.47UF K	
C307,308			CK73HB1A104K	CHIP C 0.10UF K		C444			CC73GCH1H020B	CHIP C 2.0PF B	BM3
C309			CC73GCH1H820J	CHIP C 82PF J		C445			CC73GCH1H180J	CHIP C 18PF J	AK2,AM2
C310			CK73HB1A683K	CHIP C 0.068UF K		TC1_2			C05-0384-05	CERAMIC TRIMMER CAP(10PF)	
C311			CK73GB1A105K	CHIP C 1.0UF K		CN201			E23-1081-05	TERMINAL	
C312			CC73GCH1H120J	CHIP C 12PF J		CN401		*	E40-6362-05	FLAT CABLE CONNECTOR	
C313			CC73GCH1H121J	CHIP C 120PF J		J301			E11-0457-05	PHONE JACK(2.5/3.5)	
C314			CK73HB1A104K	CHIP C 0.10UF K		F401			F53-0190-05	FUSE(2.5A)	
C315			CK73GB1A105K	CHIP C 1.0UF K		60	2A	*	J30-1282-04	SPACER(MIC)	
C316			CK73GB1C104K	CHIP C 0.10UF K		CD201			L79-1582-05	TUNING COIL	
C317			CK73HB1A104K	CHIP C 0.10UF K		L1			L40-4791-37	SMALL FIXED INDUCTOR(4.700UH)	
C318			C92-0714-05	CHIP-TAN 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	FERRITE CHIP	
C321			CK73GB1A105K	CHIP C 1.0UF K		L8_9			L40-1875-92	SMALL FIXED INDUCTOR(18NH)	
C322			CK73HB1C153K	CHIP C 0.015UF K		L10,11			L40-1085-92	SMALL FIXED INDUCTOR(100NH)	
C323			CC73GCH1H820J	CHIP C 82PF J		L12			L92-0138-05	FERRITE CHIP	
C324			CC73HCH1H820J	CHIP C 82PF J		L13,14			L40-1085-92	SMALL FIXED INDUCTOR(100NH)	
C325			CK73HB1A104K	CHIP C 0.10UF K		L16			L40-1878-67	SMALL FIXED INDUCTOR(18NH)	AK2,AM2
C326			CK73HB1H102K	CHIP C 1000PF K		L16			L40-2278-67	SMALL FIXED INDUCTOR(22NH)	AK,AM,BM
C327			CC73HCH1H101J	CHIP C 100PF J		L16			L40-2778-67	SMALL FIXED INDUCTOR(27NH)	BM3
C328			CK73HB1H391K	CHIP C 390PF K		L17			L40-2278-67	SMALL FIXED INDUCTOR(22NH)	AK2,AM2
C329,330			CK73GB1A105K	CHIP C 1.0UF K		L17			L40-2778-67	SMALL FIXED INDUCTOR(27NH)	AK,AM,BM
C331			CK73HB1A104K	CHIP C 0.10UF K		L17			L40-3378-67	SMALL FIXED INDUCTOR(33NH)	BM3
C332			CK73HB1H471K	CHIP C 470PF K		L18,19			L41-2285-03	SMALL FIXED INDUCTOR	
C333,334			CK73GB1C104K	CHIP C 0.10UF K		L20,21			L40-3391-86	SMALL FIXED INDUCTOR(3.3UH)	
C335			CC73GCH1H221J	CHIP C 220PF J		L22			L92-0138-05	FERRITE CHIP	
C336			CK73FB1C474K	CHIP C 0.47UF K		L23			L40-2275-92	SMALL FIXED INDUCTOR(22NH)	
C338			CC73GCH1H101J	CHIP C 100PF J		L24			L92-0141-05	FERRITE CHIP	
C339			C92-0560-05	CHIP-TAN 10UF 6.3WV		L25			L40-2275-92	SMALL FIXED INDUCTOR(22NH)	
C340			CK73GB1C104K	CHIP C 0.10UF K		L100			L40-3375-92	SMALL FIXED INDUCTOR(33NH)	BM3
C341			CK73GB1C473K	CHIP C 0.047UF K		L100,101			L40-1575-92	SMALL FIXED INDUCTOR(15NH)	AK,AK2
C342			C92-0560-05	CHIP-TAN 10UF 6.3WV		L100,101			L40-1575-92	SMALL FIXED INDUCTOR(15NH)	AM,AM2
C343			CK73GB1C473J	CHIP C 0.047UF J		L100,101			L40-1575-92	SMALL FIXED INDUCTOR(15NH)	BM
C344			CC73GCH1H221J	CHIP C 220PF J		L101			L40-2275-92	SMALL FIXED INDUCTOR(22NH)	BM3
C345			C92-0665-05	TANTAL 100UF 6.3WV		L102			L92-0138-05	FERRITE CHIP	
C346			CK73GB1H102K	CHIP C 1000PF K		L103,104			L40-8265-92	SMALL FIXED INDUCTOR(8.2NH)	
C348			CK73HB1H471K	CHIP C 470PF K		L105			L40-1575-54	SMALL FIXED INDUCTOR(15NH)	AK,AM,BM
C351,352			CK73HB1C103K	CHIP C 0.010UF K		L105			L40-1575-54	SMALL FIXED INDUCTOR(15NH)	BM3
C354			CK73HB1A104K	CHIP C 0.10UF K		L105			L40-2275-54	SMALL FIXED INDUCTOR(22NH)	AK2,AM2
C370			CK73HB1A104K	CHIP C 0.10UF K		L105					
C401			CC73GCH1H471J	CHIP C 470PF J							
C402			CK73HB1H102K	CHIP C 1000PF K							

AK : TK-3202K AK2 : TH-3202K2 AM : TK-3202M AM2 : TH-3202M2
 BM : TK-3206M BM3 : TH-3206M3

TK-3202/3206

PARTS LIST

TX-RX UNIT (X57-6890-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
L106			L92-0149-05	FERRITE CHIP		R17			RK73HB1J101J	CHIP R	100 J 1/16W
L107			L40-1263-92	SMALL FIXED INDUCTOR(1.2NH)	AK,AM,BM	R18			RK73GB1J181J	CHIP R	180 J 1/16W
L109			L92-0149-05	FERRITE CHIP		R19			RK73GB1J122J	CHIP R	1.2K J 1/16W
L110			L40-2285-54	SMALL FIXED INDUCTOR(220NH)		R20			RK73HB1J100J	CHIP R	10 J 1/16W
L111			L40-1092-81	SMALL FIXED INDUCTOR		R21			RK73GB1J681J	CHIP R	680 J 1/16W
L130			L40-1263-92	SMALL FIXED INDUCTOR(1.2NH)	AK2,AM2	R22			R92-1252-05	CHIP R	0 OHM J 1/16W
L201			L40-1091-37	SMALL FIXED INDUCTOR(1.000UH)		R23			RK73GB1J103J	CHIP R	10K J 1/16W
L202			L92-0138-05	FERRITE CHIP		R25			RK73HB1J223J	CHIP R	22K J 1/16W
L203			L40-5685-85	SMALL FIXED INDUCTOR(0.56UH)		R26			RK73HB1J103J	CHIP R	10K J 1/16W
L204			L40-2785-92	SMALL FIXED INDUCTOR(270NH)		R27			RK73HB1J220J	CHIP R	22 J 1/16W
L206			L40-2775-92	SMALL FIXED INDUCTOR(27NH)	AK2,AM2	R30			RK73HB1J333J	CHIP R	33K J 1/16W
L206			L40-3975-92	SMALL FIXED INDUCTOR(39NH)	BM3	R31			RK73HB1J474J	CHIP R	470K J 1/16W
L211,212			L41-8268-14	SMALL FIXED INDUCTOR	AK,AK2	R32			RK73HB1J102J	CHIP R	1.0K J 1/16W
L211,212			L41-8268-14	SMALL FIXED INDUCTOR	AM,AM2	R33			RK73HB1J154J	CHIP R	150K J 1/16W
L211,212			L41-8268-14	SMALL FIXED INDUCTOR	BM	R34			RK73HB1J474J	CHIP R	470K J 1/16W
L212			L41-8268-14	SMALL FIXED INDUCTOR	BM3	R35,36			RK73HB1J274J	CHIP R	270K J 1/16W
L214			L41-6868-14	SMALL FIXED INDUCTOR	AK2,AM2	R37			RK73HB1J101J	CHIP R	100 J 1/16W
L214			L41-8268-14	SMALL FIXED INDUCTOR	AK,AM,BM	R38			RK73HB1J181J	CHIP R	180 J 1/16W
L214			L41-8268-14	SMALL FIXED INDUCTOR	BM3	R39			RK73HB1J151J	CHIP R	150 J 1/16W
L215			L41-2285-03	SMALL FIXED INDUCTOR		R40			RK73HB1J101J	CHIP R	100 J 1/16W
L220			L34-4602-05	AIR-CORE COIL		R41			RK73HB1J154J	CHIP R	150K J 1/16W
L223			L34-4572-05	AIR-CORE COIL	AK,AK2	R42			RK73HB1J472J	CHIP R	4.7K J 1/16W
L223			L34-4572-05	AIR-CORE COIL	AM,AM2	R43			RK73HB1J101J	CHIP R	100 J 1/16W
L223			L34-4572-05	AIR-CORE COIL	BM	R46			RK73HB1J103J	CHIP R	10K J 1/16W
L224-226			L34-4564-05	AIR-CORE COIL		R47			RK73HB1J220J	CHIP R	22 J 1/16W
L228			L41-6868-14	SMALL FIXED INDUCTOR	AK2,AM2	R48			RK73HB1J331J	CHIP R	330 J 1/16W
L228,229			L41-8268-14	SMALL FIXED INDUCTOR	AK,AM,BM	R49			RK73HB1J222J	CHIP R	2.2K J 1/16W
L228,229			L41-8268-14	SMALL FIXED INDUCTOR	BM3	R50			RK73HB1J472J	CHIP R	4.7K J 1/16W
L229			L41-8268-14	SMALL FIXED INDUCTOR	AK2,AM2	R100			RK73HB1J472J	CHIP R	4.7K J 1/16W
L230			L41-4778-03	SMALL FIXED INDUCTOR	AK,AK2	R103			RK73GB1J473J	CHIP R	47K J 1/16W
L230			L41-4778-03	SMALL FIXED INDUCTOR	AM,AM2	R105			RK73GB1J331J	CHIP R	330 J 1/16W
L230			L41-4778-03	SMALL FIXED INDUCTOR	BM	R106			RK73GB1J220J	CHIP R	22 J 1/16W
L230			L41-5678-03	SMALL FIXED INDUCTOR	BM3	R107			RK73HB1J101J	CHIP R	100 J 1/16W
L250			L40-1875-92	SMALL FIXED INDUCTOR(18NH)		R110			RK73GB1J331J	CHIP R	330 J 1/16W
L290		*	L41-3078-17	SMALL FIXED INDUCTOR	AK,AM,BM	R111,112			R92-1252-05	CHIP R	0 OHM J 1/16W
L301			L92-0140-05	FERRITE CHIP		R114			RK73GB1J473J	CHIP R	47K J 1/16W
L302			L92-0149-05	FERRITE CHIP		R115			RK73GB1J103J	CHIP R	10K J 1/16W
L401			L92-0149-05	FERRITE CHIP		R116			RK73GB1J220J	CHIP R	22 J 1/16W
L402-404			L92-0138-05	FERRITE CHIP		R120			R92-1252-05	CHIP R	0 OHM J 1/16W
L410			L92-0138-05	FERRITE CHIP		R121			RK73GB1J220J	CHIP R	22 J 1/16W
L411			L40-1875-92	SMALL FIXED INDUCTOR(18NH)	BM3	R123			R92-0670-05	CHIP R	0 OHM
L412			L34-4564-05	AIR-CORE COIL		R123			R92-0670-05	CHIP R	0 OHM
X1			L77-1931-05	TCXO(12.8MHZ)		R124			RK73GB1J473J	CHIP R	47K J 1/16W
X2		*	L78-1411-05	RESONATOR(7.37MHZ)		R126			RK73GB1J222J	CHIP R	2.2K J 1/16W
XF201			L71-0619-05	MCF(38.85MHZ)		R127-129			RK73EB2ER39K	CHIP R	0.39 K 1/4W
CP404			RK75HA1J473J	CHIP-COM	47K J 1/16W	R130-135			RK73GH1J154D	CHIP R	150K D 1/16W
CP405			RK75HA1J102J	CHIP-COM	1.0K J 1/16W	R137			R92-0670-05	CHIP R	0 OHM
R1			RK73HB1J223J	CHIP R	22K J 1/16W	R138			RK73GB1J105J	CHIP R	1.0M J 1/16W
R2			RK73HB1J103J	CHIP R	10K J 1/16W	R139			RK73GB1J473J	CHIP R	47K J 1/16W
R3			RK73HB1J333J	CHIP R	33K J 1/16W	R140			RK73GB1J563J	CHIP R	56K J 1/16W
R4			RK73HB1J563J	CHIP R	56K J 1/16W	R141			RK73GB1J104J	CHIP R	100K J 1/16W
R5			RK73HB1J104J	CHIP R	100K J 1/16W	R142			R92-1252-05	CHIP R	0 OHM J 1/16W
R6			RK73HB1J823J	CHIP R	82K J 1/16W	R143			RK73GB1J104J	CHIP R	100K J 1/16W
R7			RK73HB1J101J	CHIP R	100 J 1/16W	R145			R92-1252-05	CHIP R	0 OHM J 1/16W
R8 -11			R92-1368-05	CHIP R	0 OHM	R147			R92-1252-05	CHIP R	0 OHM J 1/16W
R12			RK73HB1J222J	CHIP R	2.2K J 1/16W	R190			RK73GB1J101J	CHIP R	100 J 1/16W
R13			R92-1252-05	CHIP R	0 OHM J 1/16W	R191,192			RK73GB1J271J	CHIP R	270 J 1/16W
R14			RK73HB1J334J	CHIP R	330K J 1/16W	R193			RK73GB1J473J	CHIP R	47K J 1/16W
R15			RK73GB1J221J	CHIP R	220 J 1/16W	R193,194			RK73GB1J473J	CHIP R	47K J 1/16W
R16			RK73GB1J561J	CHIP R	560 J 1/16W	R193,194			RK73GB1J473J	CHIP R	47K J 1/16W

PARTS LIST

TX-RX UNIT (X57-6890-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R193,194			RK73GB1J473J	CHIP R 47K J 1/16W	BM	R332			RK73GB1J153J	CHIP R 15K J 1/16W	
R194			RK73GB1J223J	CHIP R 22K J 1/16W	BM3	R334			RK73GB1J473J	CHIP R 47K J 1/16W	
R203			RK73HB1J184J	CHIP R 180K J 1/16W		R335			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R206			RK73GB1J100J	CHIP R 10 J 1/16W		R336			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R207			RK73HB1J472J	CHIP R 4.7K J 1/16W		R337			RK73GB1J101J	CHIP R 100 J 1/16W	
R208			RK73HB1J823J	CHIP R 82K J 1/16W		R338			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R209			RK73HB1J227J	CHIP R 2.7K J 1/16W		R339			RK73GB1J471J	CHIP R 470 J 1/16W	
R210,211			RK73HB1J332J	CHIP R 3.3K J 1/16W		R340			RK73GB1J182J	CHIP R 1.8K J 1/16W	
R212			RK73HB1J823J	CHIP R 82K J 1/16W		R341			RK73GB1J103J	CHIP R 10K J 1/16W	
R213			RK73HB1J392J	CHIP R 3.9K J 1/16W		R342			RK73GB1J100J	CHIP R 10 J 1/16W	
R215			RK73HB1J101J	CHIP R 100 J 1/16W		R343			RK73GB1J474J	CHIP R 470K J 1/16W	
R216			RK73HB1J124J	CHIP R 120K J 1/16W		R344			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R217			RK73HB1J472J	CHIP R 4.7K J 1/16W		R345,346			RK73GB1J101J	CHIP R 100 J 1/16W	
R218			RK73HB1J561J	CHIP R 560 J 1/16W		R347			RK73GB1J104J	CHIP R 100K J 1/16W	
R219			RK73GB1J561J	CHIP R 560 J 1/16W		R348			RK73GB1J563J	CHIP R 56K J 1/16W	
R226,227			RK73GB1J102J	CHIP R 1.0K J 1/16W		R349			RK73GB1J333J	CHIP R 33K J 1/16W	
R228			RK73GB1J151J	CHIP R 150 J 1/16W		R350			R92-1368-05	CHIP R 0 OHM	
R233			RK73HB1J104J	CHIP R 100K J 1/16W		R354,355			RK73HB1J103J	CHIP R 10K J 1/16W	
R236			RK73HB1J563J	CHIP R 56K J 1/16W		R357			R92-1368-05	CHIP R 0 OHM	
R238			RK73HB1J104J	CHIP R 100K J 1/16W		R360			R92-1368-05	CHIP R 0 OHM	
R239			RK73HB1J563J	CHIP R 56K J 1/16W		R403			RK73GB1J101J	CHIP R 100 J 1/16W	
R240			R92-1252-05	CHIP R 0 OHM J 1/16W		R404			RK73HH1J474D	CHIP R 470K D 1/16W	
R241			RK73HB1J105J	CHIP R 1.0M J 1/16W	AK,AK2	R405			RK73GB1J334J	CHIP R 330K J 1/16W	
R241			RK73HB1J105J	CHIP R 1.0M J 1/16W	AM,AM2	R406			RK73HH1J474D	CHIP R 470K D 1/16W	
R241			RK73HB1J105J	CHIP R 1.0M J 1/16W	BM	R407			RK73HB1J334J	CHIP R 330K J 1/16W	
R243,244			RK73HB1J105J	CHIP R 1.0M J 1/16W		R408-412			RK73HB1J473J	CHIP R 47K J 1/16W	
R248			RK73GB1J221J	CHIP R 220 J 1/16W		R413,414			RK73GB1J331J	CHIP R 330 J 1/16W	
R249			RK73GB1J220J	CHIP R 22 J 1/16W		R415,416			RK73GB1J473J	CHIP R 47K J 1/16W	
R251			RK73HB1J104J	CHIP R 100K J 1/16W		R417-420			RK73HB1J473J	CHIP R 47K J 1/16W	
R253			RK73HB1J104J	CHIP R 100K J 1/16W		R421,422			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R254			RK73HB1J683J	CHIP R 68K J 1/16W		R423			R92-1368-05	CHIP R 0 OHM	
R255			R92-1252-05	CHIP R 0 OHM J 1/16W		R424,425			RK73HB1J473J	CHIP R 47K J 1/16W	
R256,257			RK73HB1J105J	CHIP R 1.0M J 1/16W		R426			R92-1368-05	CHIP R 0 OHM	
R258			R92-0670-05	CHIP R 0 OHM		R435			RK73HB1J473J	CHIP R 47K J 1/16W	
R301			RK73HB1J103J	CHIP R 10K J 1/16W		R436			R92-1252-05	CHIP R 0 OHM J 1/16W	
R304			RK73HB1J273J	CHIP R 27K J 1/16W		R437,438			RK73HB1J473J	CHIP R 47K J 1/16W	
R305			RK73HB1J104J	CHIP R 100K J 1/16W		R445,446			R92-1252-05	CHIP R 0 OHM J 1/16W	
R306			RK73HB1J102J	CHIP R 1.0K J 1/16W		R447			RK73HB1J123J	CHIP R 12K J 1/16W	
R307,308			R92-1368-05	CHIP R 0 OHM		R449,450			R92-1252-05	CHIP R 0 OHM J 1/16W	
R310			RK73GB1J394J	CHIP R 390K J 1/16W		R451			RK73HB1J102J	CHIP R 1.0K J 1/16W	BM3
R311			RK73HB1J123J	CHIP R 12K J 1/16W		R452			RK73HB1J103J	CHIP R 10K J 1/16W	
R312			RK73GB1J334J	CHIP R 330K J 1/16W		R453			RK73HB1J223J	CHIP R 22K J 1/16W	
R313			RK73GB1J104J	CHIP R 100K J 1/16W		R454			R92-1252-05	CHIP R 0 OHM J 1/16W	AK2,AM2
R314			RK73GB1J103J	CHIP R 10K J 1/16W		R455			RK73HB1J103J	CHIP R 10K J 1/16W	AK,AM,BM
R315			RK73GB1J334J	CHIP R 330K J 1/16W		VR1			R12-7491-05	TRIMMING POT.(68K)	
R316			RK73GB1J124J	CHIP R 120K J 1/16W		S401-403			S70-0414-05	TACT SWITCH	
R317			RK73GB1J474J	CHIP R 470K J 1/16W		MIC301			T91-0543-05	MIC ELEMENT	
R318			RK73GB1J122J	CHIP R 1.2K J 1/16W		D1			MA2S111	DIODE	
R319			RK73HB1J563J	CHIP R 56K J 1/16W		D2 -9			HVC376B	VARIABLE CAPACITANCE DIODE	
R320			RK73HB1J332J	CHIP R 3.3K J 1/16W		D10			1SV278	VARIABLE CAPACITANCE DIODE	
R321			RK73HB1J224J	CHIP R 220K J 1/16W		D11			MA2S111	DIODE	
R322			RK73HB1J184J	CHIP R 180K J 1/16W		D101			HSC277	DIODE	
R323			RK73HB1J563J	CHIP R 56K J 1/16W		D102			HZU5CLL	ZENER DIODE	
R324,325			RK73GB1J104J	CHIP R 100K J 1/16W		D103,104			HVC131	DIODE	
R326			R92-1252-05	CHIP R 0 OHM J 1/16W		D106			HVC131	DIODE	
R327			RK73GB1J184J	CHIP R 180K J 1/16W		D122			HVC131	DIODE	
R328			RK73GB1J103J	CHIP R 10K J 1/16W		D202			HSC277	DIODE	
R329			RK73GB1J823J	CHIP R 82K J 1/16W							
R330			RK73HB1J332J	CHIP R 3.3K J 1/16W							
R331			RK73GB1J154J	CHIP R 150K J 1/16W							

AK : TK-3202K AK2 : TH-3202K2 AM : TK-3202M AM2 : TH-3202M2
 BM : TK-3206M BM3 : TH-3206M3

TK-3202/3206

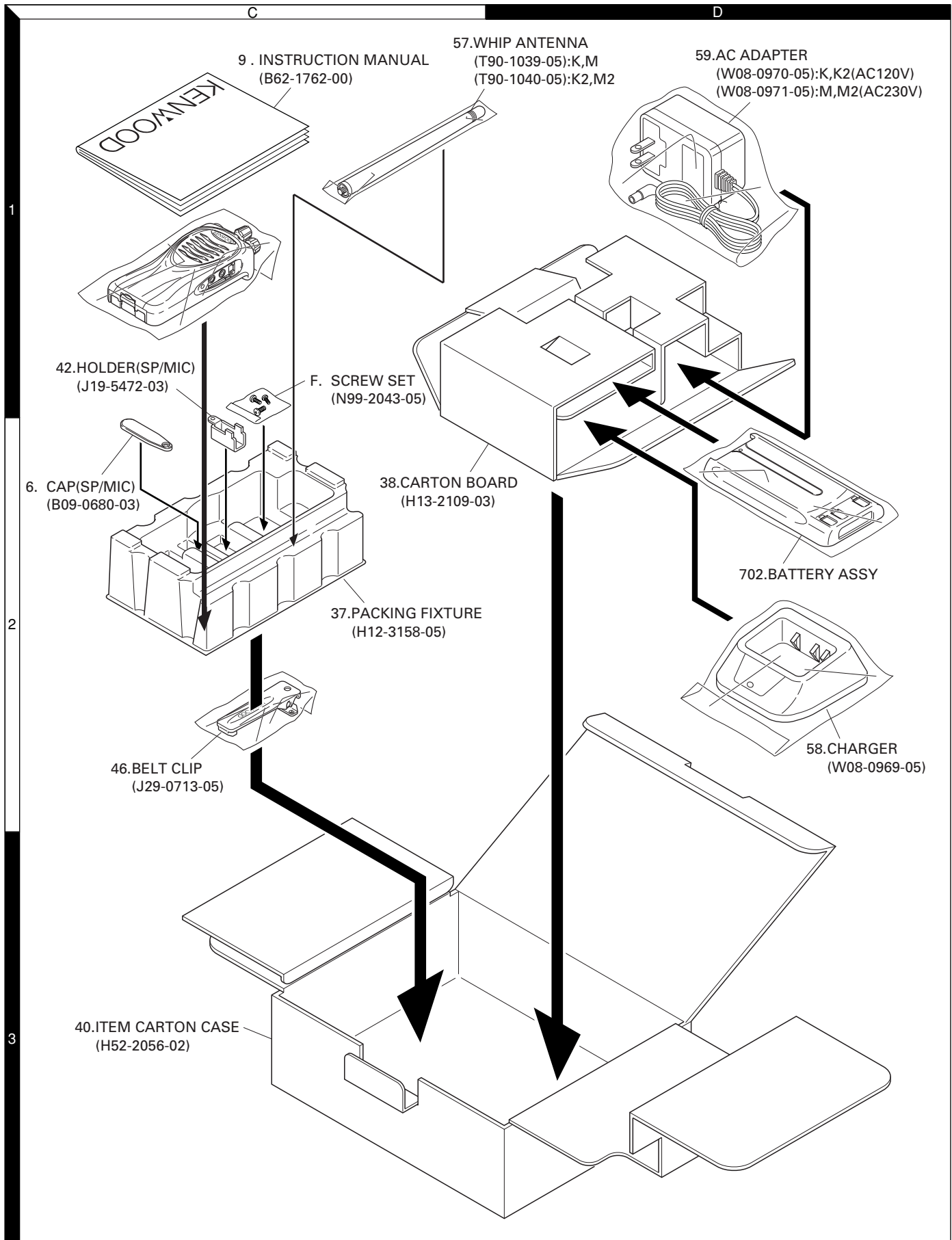
PARTS LIST

TX-RX UNIT (X57-6890-XX)

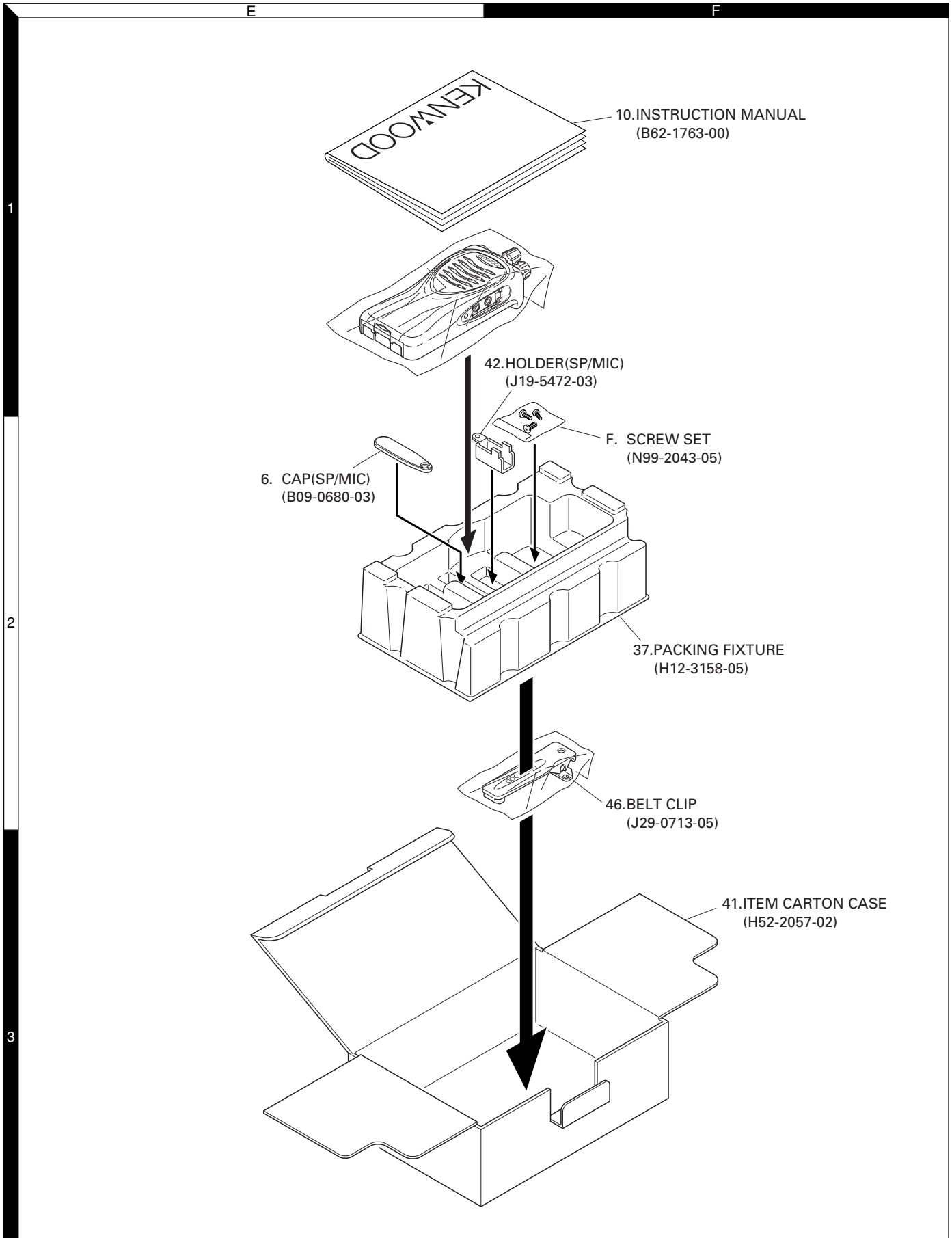
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D203-206			HVC355B	VARIABLE CAPACITANCE DIODE	AK,AK2 AM,AM2 BM						
D210			HVC355B	VARIABLE CAPACITANCE DIODE							
D210			HVC355B	VARIABLE CAPACITANCE DIODE							
D210			HVC355B	VARIABLE CAPACITANCE DIODE							
D301,302			RB706F-40	DIODE							
D303			DAN222	DIODE							
D401			RB521S-30	DIODE							
D402			1SR154-400	DIODE							
IC1			MB15A02	MOS IC							
IC101			TA75W01FU	MOS IC							
IC201			TA31136FN	MOS IC							
IC301			AQUA	MOS IC							
IC302			TA7368F	MOS IC							
IC401,402			XC6204B502MR	MOS IC							
IC403		*	BD4840FVE	MOS IC							
IC404		*	BD4845FVE	MOS IC							
IC405		*	30622MAA-B89GP	MPU							
IC406		*	BR24L08F-W	ROM IC							
Q1			KTC4082	TRANSISTOR							
Q2			2SC5108(Y)	TRANSISTOR							
Q3 ,4			2SK508NV(K52)	FET							
Q5			DTA143TE	DIGITAL TRANSISTOR							
Q6			2SC5108(Y)	TRANSISTOR							
Q7			DTA143TE	DIGITAL TRANSISTOR							
Q8			2SC4617(S)	TRANSISTOR							
Q9			2SC4619	TRANSISTOR							
Q100			2SC4619	TRANSISTOR							
Q101			2SK3077	FET							
Q102			2SK2596	FET							
Q103			2SK3476	FET							
Q104			DTC114EE	DIGITAL TRANSISTOR							
Q105			2SK879(Y)	FET							
Q107			DTC114EE	DIGITAL TRANSISTOR							
Q108			2SK1824	FET							
Q109			DTA144EE	DIGITAL TRANSISTOR							
Q202			DTA144EE	DIGITAL TRANSISTOR							
Q203			2SC4649(N,P)	TRANSISTOR							
Q204,205			3SK318	FET							
Q301			DTA114EE	DIGITAL TRANSISTOR							
Q302			2SC4919	TRANSISTOR							
Q303			DTC144EE	DIGITAL TRANSISTOR							
Q304			2SA1362(GR)	TRANSISTOR							
Q305			DTC144EE	DIGITAL TRANSISTOR							
Q306			CPH3413	FET							
Q316			CPH3413	FET							
Q401,402			DTC114EE	DIGITAL TRANSISTOR							
Q403,404			CPH3317	FET							
Q405			DTA123JE	DIGITAL TRANSISTOR							
Q407,408			2SK1830	FET							
Q409			DTC144EE	DIGITAL TRANSISTOR							
TH101			157-104-65001	THERMISTOR							
TH203			157-104-65001	THERMISTOR							

TK-3202/3206

PACKING (TK-3202)



PACKING (TK-3206)



ADJUSTMENT

Test Equipment Required for Alignment

Test Equipment		Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range Modulation Output	450 to 490MHz (TK-3202(K, M) TK-3206(M)) 400 to 430MHz (TK-3206(M3)) Frequency modulation and external modulation. -127dBm/0.1μV to greater than -47dBm/1mV	470 to 512MHz (TK-3202(K2, M2))
2. Power Meter	Input Impedance Operation Frequency Measurement Range	50Ω. 450 to 490MHz (TK-3202(K, M) TK-3206(M)) 400 to 430MHz (TK-3206(M3)) or more. Vicinity of 10W	470 to 512MHz (TK-3202(K2, M2))
3. Deviation Meter	Frequency Range	450 to 490MHz (TK-3202(K, M) TK-3206(M)) 400 to 430MHz (TK-3206(M3))	470 to 512MHz (TK-3202(K2, M2))
4. Digital Volt Meter (DVM)	Measuring Range Input Impedance	10mV to 10V DC High input impedance for minimum circuit loading.	
5. Oscilloscope		DC through 30MHz.	
6. High Sensitivity Frequency Counter	Frequency Range Frequency Stability	10Hz to 1000MHz. 0.2ppm or less.	
7. Ammeter		5A.	
8. AF Volt Meter (AF VTVM)	Frequency Range Voltage Range	50Hz to 10kHz. 1mV to 10V.	
9. Audio Generator (AG)	Frequency Range Output	50Hz to 5kHz or more. 0 to 1V.	
10. Distortion Meter	Capability Input Level	3% or less at 1kHz. 50mV to 10Vrms.	
11. Spectrum Analyzer	Measuring Range	DC to 1GHz or more	
12. Tracking Generator	Center frequency Output Voltage	50kHz to 600MHz 100mV or more	
13. 8Ω Dummy Load		Approx. 8Ω, 3W.	
14. Regulated Power Supply		5V to 10V, approx. 3A	Useful if ammeter equipped.

■ The following parts are required for adjustment

1. Antenna connector adapter

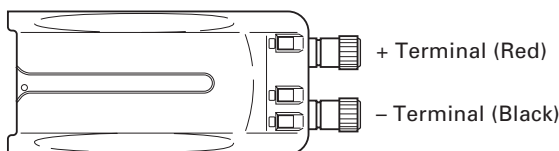
The antenna connector of this radio uses an SMA terminal. Use an antenna connector adapter [SMA(f) – BNC(f) or SMA(f) – N(f)] for adjustment. (The adapter is not provided as an option, so buy a commercially-available one.)

2. Repair Jig (Chassis)

Use jig (part No.: A10-4082-03) for repairing the TK-3202/3206. 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.

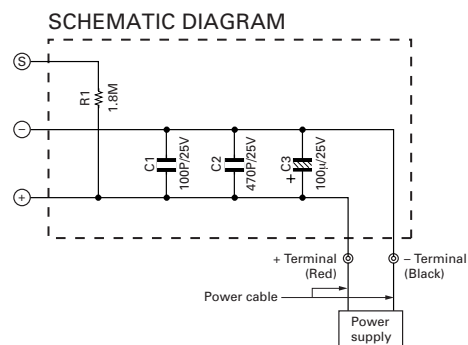
3. Battery Jig (W05-0909-00)



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.

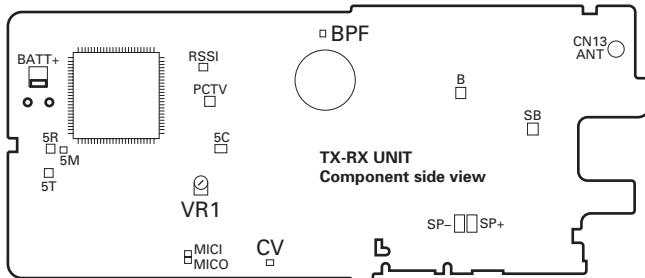
When using the battery jig in user mode, the transceiver assumes that a lithium-ion battery pack is attached to the transceiver. In adjustment mode, battery type detection is not performed. Refer to page 10 for details.

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.



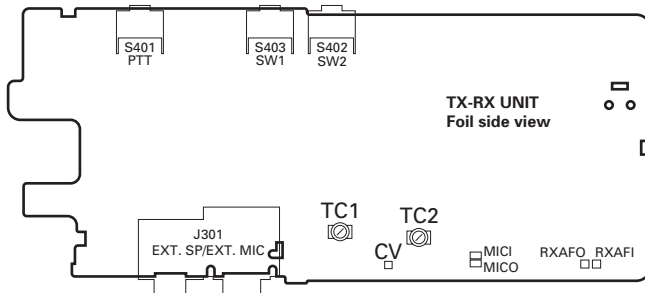
ADJUSTMENT

Adjustment points TX-RX unit (X57-689) Component side view



VR1 : Frequency adjustment
BPF : Band-pass wave form test point
CV : Lock voltage adjustment terminal.

Foil Side View



TC1 : Transmit lock voltage adjustment
TC2 : Receive lock voltage adjustment

Fig. 1 Adjustment points

■ Frequency and signalling

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

Frequency (MHz) K, M type (TK-3202) M type (TK-3206)

Channel No.	RX Frequency	TX Frequency
1	470.050	470.100
2	450.050	450.100
3	489.950	489.900
4	470.000	470.000
5	470.200	470.200
6	470.400	470.400
7~16	—	—

Frequency (MHz) K2, M2 type (TK-3202)

Channel No.	RX Frequency	TX Frequency
1	491.050	491.100
2	470.050	470.100
3	511.950	511.900
4	491.000	491.000
5	491.200	491.200
6	491.400	491.400
7~16	—	—

Frequency (MHz) M3 type (TK-3206)

Channel No.	RX Frequency	TX Frequency
1	415.050	415.100
2	400.050	400.100
3	429.950	429.900
4	415.000	415.000
5	415.200	415.200
6	415.400	415.400
7~16	—	—

Signalling

Signalling No.	RX	TX
1	None	None
2	None	100Hz Square Wave
3	QT 67.0Hz	QT 67.0Hz
4	QT 151.4Hz	QT 151.4Hz
5	QT 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	K, M type (TK-3202) M type (TK-3206)	
	RX Frequency	TX Frequency
Center	470.050MHz	470.100MHz
Low	450.050MHz	450.100MHz
High	489.950MHz	489.900MHz
Low'	460.050MHz	460.100MHz
High'	480.050MHz	480.100MHz

TEST CH	K2, M2 type (TK-3202)	
	RX Frequency	TX Frequency
Center	491.050MHz	491.100MHz
Low	470.050MHz	470.100MHz
High	511.950MHz	511.900MHz
Low'	480.550MHz	480.600MHz
High'	501.550MHz	501.600MHz

TEST CH	M3 type (TK-3206)	
	RX Frequency	TX Frequency
Center	415.050MHz	415.100MHz
Low	400.050MHz	400.100MHz
High	429.950MHz	429.900MHz
Low'	407.550MHz	407.600MHz
High'	422.550MHz	422.600MHz

TK-3202/3206

ADJUSTMENT


Common Section

Item	Condition	Measurement		Adjustment		Specifications/ Remark
		Test equipment	Terminal	Parts	Method	
1.Setting	1) BATT terminal vorage: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 DVM	ANT CV	TC2	3.4V (TK-3202 (K,M), TK-3206 (M)) 3.2V (TK-3202 (K2,M2)) 3.0V (TK-3206 (M3))	±0.1V
	2) CH:Low				Check	0.6V or more
3.VCO lock voltage TX	3) CH:High PTT:ON			TC1	3.1V (TK-3202 (K,M), TK-3206 (M)) 3.2V (TK-3202 (K2,M2)) 3.0V (TK-3206 (M3))	±0.1V
	4) CH:Low PTT:ON				Check	0.6V or more

Transmitter Section

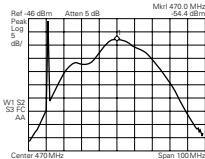
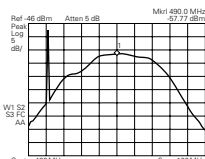
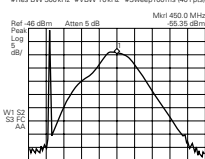
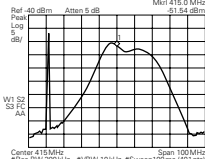
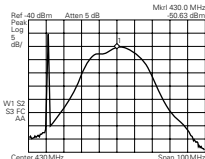
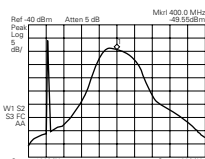
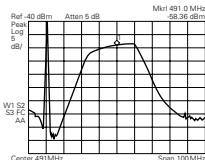
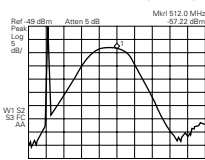
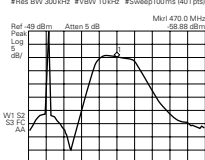
Item	Condition	Measurement		Adjustment		Specifications/ Remark	
		Test equipment	Terminal	Parts	Method		
1.Frequency Adjust	1) CH:High 2) PTT:ON	Frequency counter	ANT	VR1		High frequency ±50Hz	
2. High power Adjust	TEST CH: Low Low' Center High' High (5 points) BATT terminal voltage:7.5V PTT:ON	Power meter Ammeter		Programming Software:KPG-87D		4.0W ±0.1W 1.9 A or less	
3.Low power Adjust	TEST CH: Low Low' Center High' High (5 points) BATT terminal voltage:7.5V PTT:ON					1.0W ±0.1W 0.9 A or less	
4. Max deviation Adjust [Wide]	TEST CH: Center Low High (3 points) AG:1kHz/150mV Dev meter filter LPF:15kHz HPF:OFF PTT:ON	Power meter Deviation meter Oscilloscope AG AF VTVM	ANT SP/MIC connector			4.2kHz (According to the lager +,-)	±50Hz
	[Narrow]	TEST CH: Center PTT:ON				2.2kHz (According to the lager +,-)	±50Hz
5.VOX 1 Writing	TEST CH: Center AG:1kHz/45mV						

ADJUSTMENT

Item	Condition	Measurement		Adjustment		Specifications/ Remark
		Test equipment	Terminal	Parts	Method	
6. VOX 10 Writing	TEST CH:Center AG:1kHz/3.0mV	Power meter Deviation meter	ANT SP/MIC connector	Programming Software:KPG-87D		
7.DQT Balance Adjust [Wide]	TEST CH:Center Low High (3 points) LPF:3kHz HPF:OFF PTT:ON	Oscilloscope AG AF VTVM	ANT	Programming Software:KPG-82D	Make the demodulation wave into square waves	
[Narrow]	TEST CH:Center PTT:ON					
8.QT 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				0.38kHz	±40Hz
9.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				0.35kHz	±40Hz
10.DTMF Deviation Adjust [Wide]	TEST CH:Center LPF:15kHz HPF:OFF PTT:ON				3.0kHz	±100Hz
[Narrow]	TEST CH:Center PTT:ON				1.5kHz	±100Hz
11.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	±100Hz

ADJUSTMENT

Receiver Section

Item	Condition	Measurement		Adjustment		Specifications/ Remark
		Test equipment	Terminal	Parts	Method	
1. BPF Wave Adjust TK-3202 (K,M) TK-3206 (M)	(1)Center frequency Spectrum analyzer setting Center-f : 470MHz Spam : 100MHz RBW : 300kHz VBW : 10kHz ATT : 5dB (2)High-edge frequency Spectrum analyzer setting Center-f : 490MHz (3)Low frequency Spectrum analyzer setting Center-f : 450MHz	Spectrum analyzer	ANT BPF	Programming Software: KPG-87D		  
TK-3202 (K2,M2)	(1)Center frequency Spectrum analyzer setting Center-f : 415MHz Spam : 100MHz RBW : 300kHz VBW : 10kHz ATT : 5dB (2)High-edge frequency Spectrum analyzer setting Center-f : 430MHz (3)Low frequency Spectrum analyzer setting Center-f : 400MHz					  
TK-3206 (M3)	(1)Center frequency Spectrum analyzer setting Center-f : 491MHz Spam : 100MHz RBW : 300kHz VBW : 10kHz ATT : 5dB (2)High-edge frequency Spectrum analyzer setting Center-f : 512MHz (3)Low frequency Spectrum analyzer setting Center-f : 470MHz					  

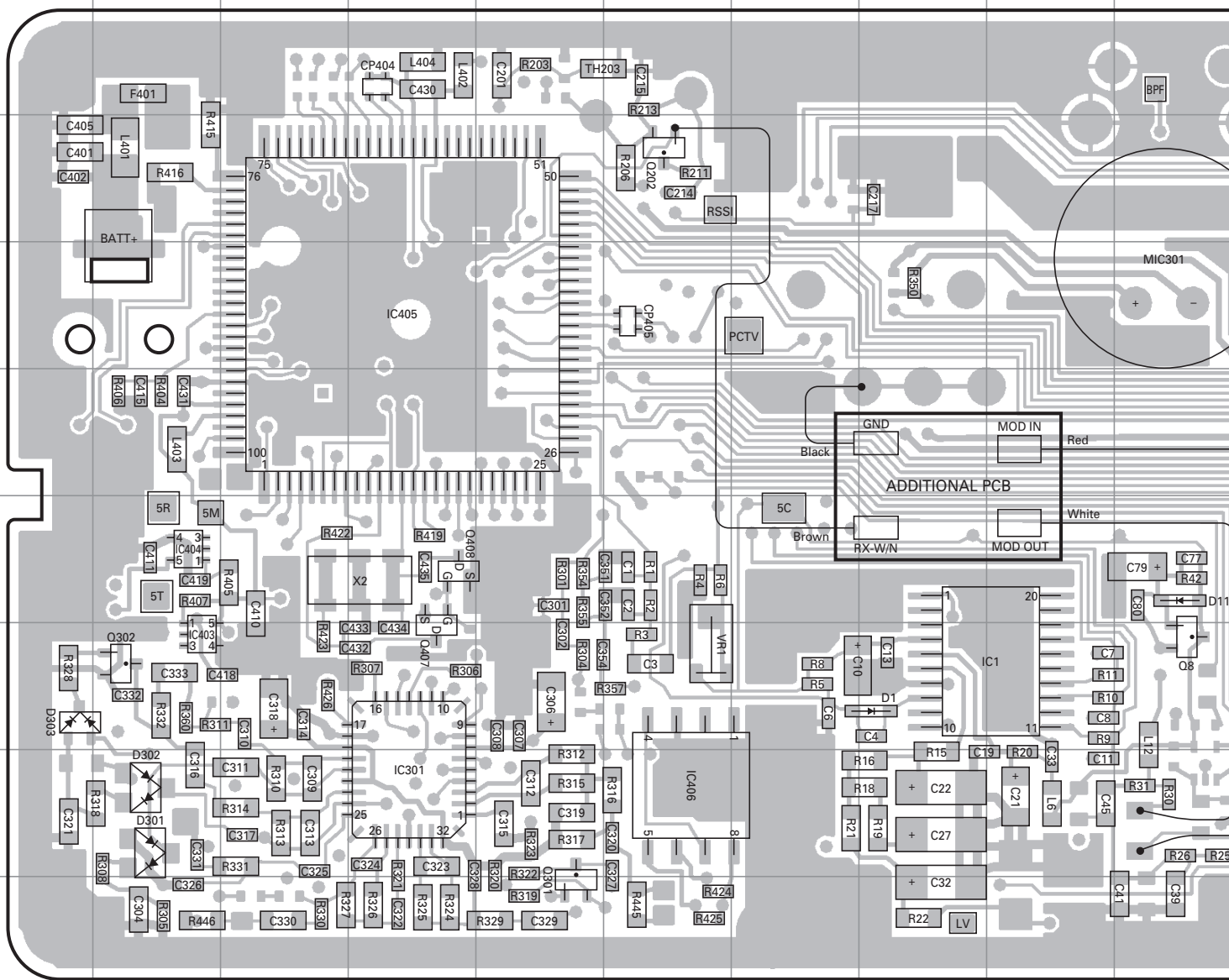
ADJUSTMENT

Item	Condition	Measurement		Adjustment		Specifications/ Remark
		Test equipment	Terminal	Parts	Method	
2.Sensitivity check [Wide]	TEST CH: Low Center High SSG output:-117 dBm(0.3 μ V) SSG MOD:3.0kHz	SSG DVM Oscilloscope AF VTVM	ANT		Check	12dB SINAD or more
	[Narrow]					
3.SQL1 (Threshold) writing [Wide]	TEST CH: Center Low High SSG output:-123 dBm(0.16 μ V) SSG MOD:3.0kHz			Programming Software: KPG-87D	Write	Squelch open
	[Narrow]					
4.SQL9 (Tight) writing [Wide]	TEST CH: Center Low High SSG output:-117 dBm(0.3 μ V) SSG MOD:3.0kHz					
	[Narrow]					
5.BATT Detection Writing	BATT terminal voltage:5.9V	DVM	ANT BATT terminal		Write	BATT terminal voltage:5.9V

TK-3202/3206 PC BOARD

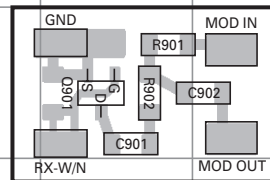
TX-RX UNIT (X57-6890-XX) Component side view (J72-0913-09)

-20 : K,M (TK-3202), M (TK-3206) -22 : M3 (TK-3206) -23 : K2,M2 (TK-3202)



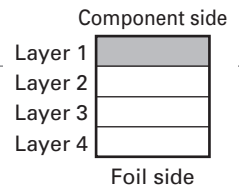
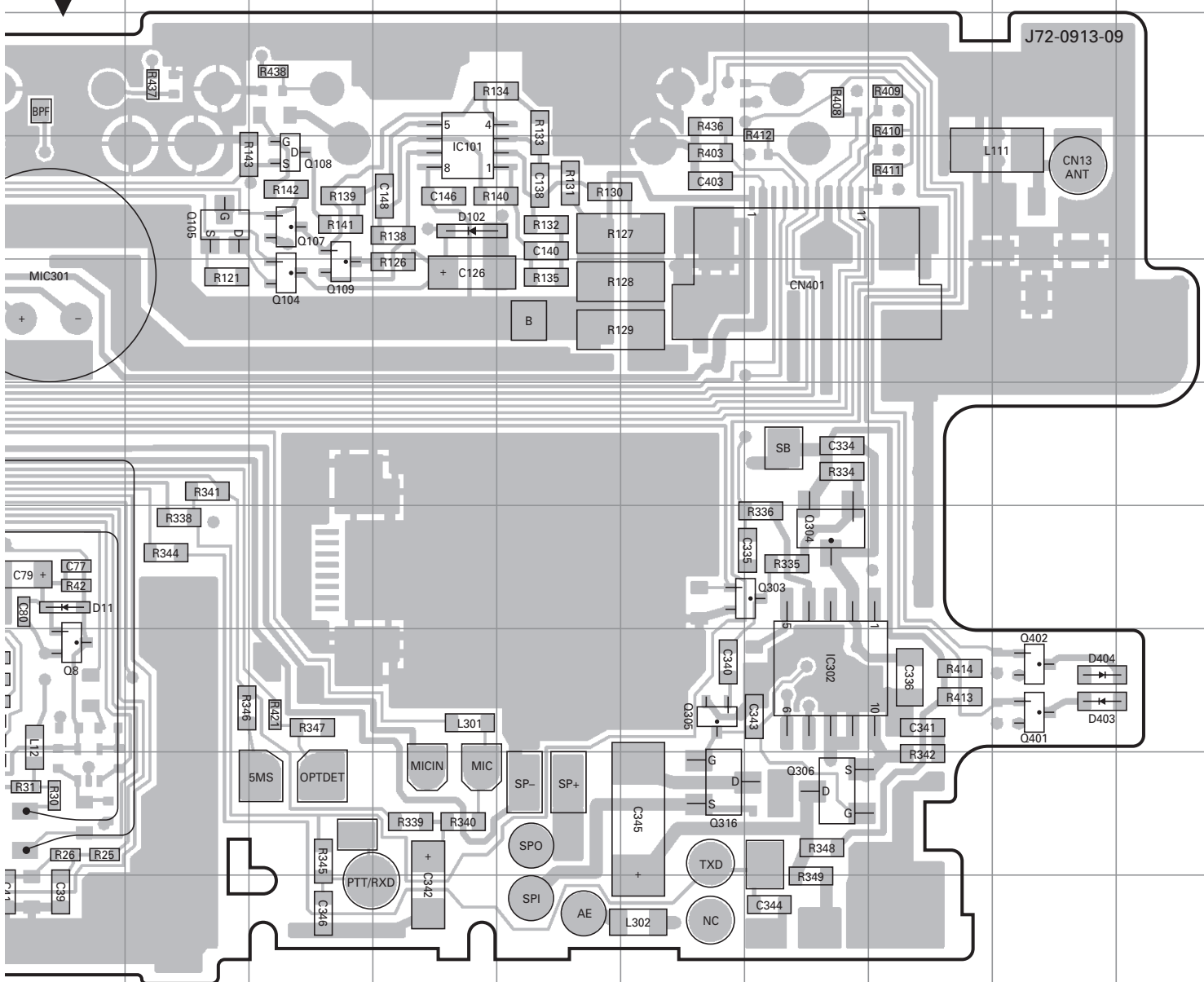
Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	8I	Q104	5L	Q304	7P	D11	7J
IC101	4M	Q105	4K	Q305	8O	D102	4M
IC301	9D	Q107	4L	Q306	9P	D301	9B
IC302	8P	Q108	4L	Q316	9O	D302	9B
IC403	8B	Q109	5L	Q401	8R	D303	8A
IC404	7B	Q202	4F	Q402	8R	D403	8R
IC405	5D	Q301	10E	Q407	8D	D404	8R
IC406	9F	Q302	8B	Q408	7D		
Q8	8J	Q303	7P	D1	8H		

ADDITIONAL PCB



PC BOARD TK-3202/3206

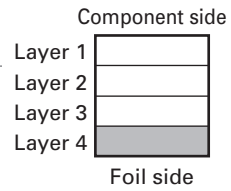
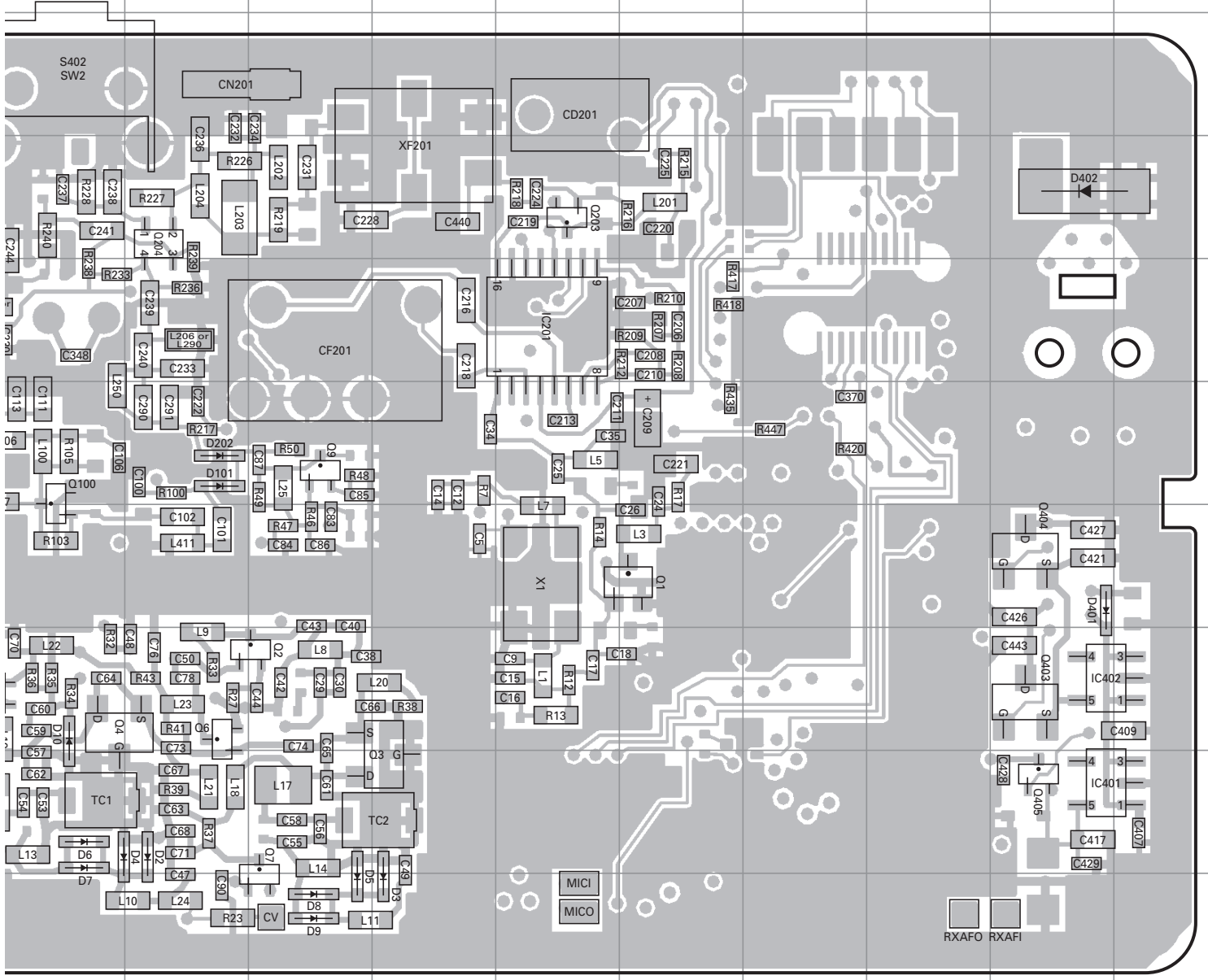
TX-RX UNIT (X57-6890-XX) Component side view (J72-0913-09)
-20 : K,M (TK-3202), M (TK-3206) -22 : M3 (TK-3206) -23 : K2,M2 (TK-3202)



PC BOARD TK-3202/3206

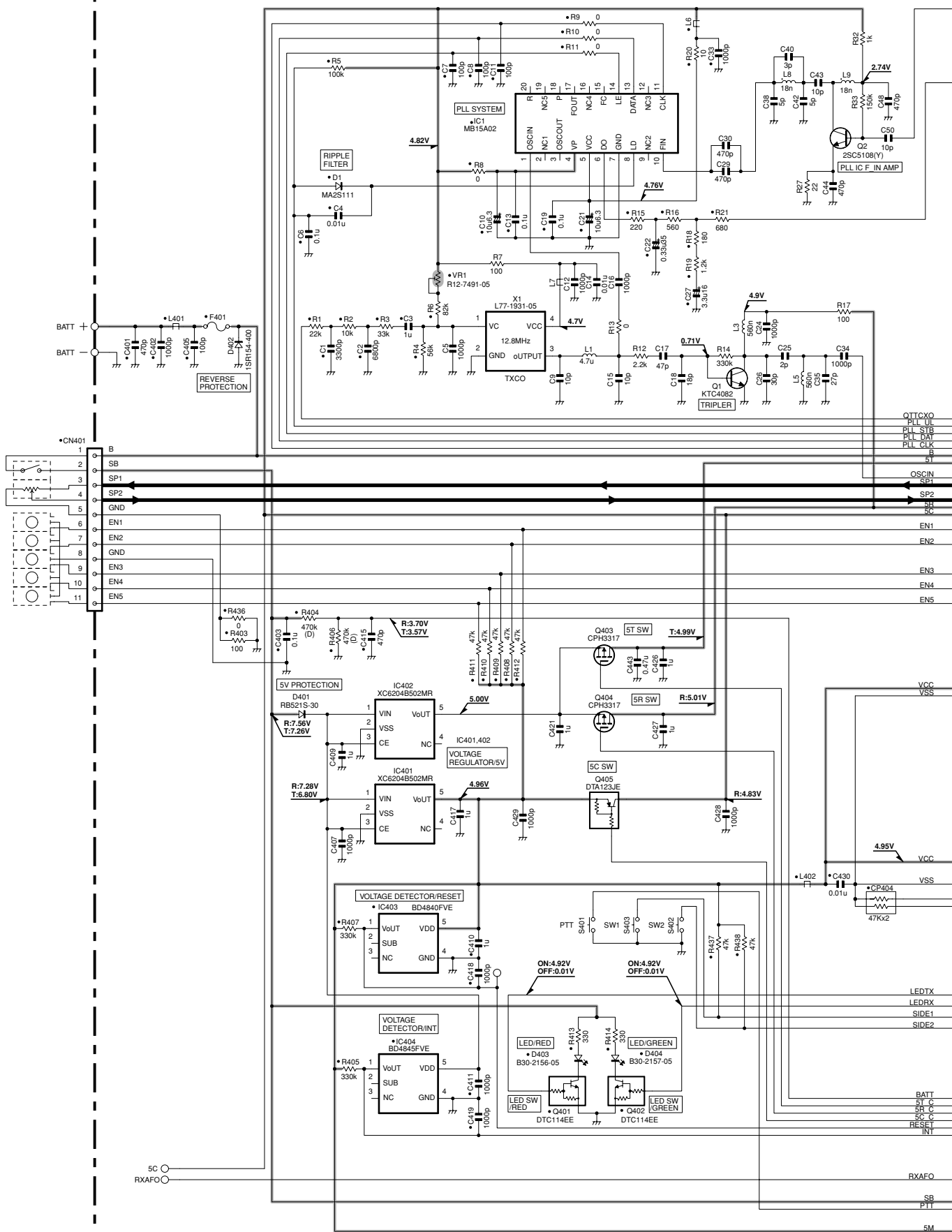
TX-RX UNIT (X57-6890-XX) Foil side view (J72-0913-09)

-20 : K,M (TK-3202), M (TK-3206) -22 : M3 (TK-3206) -23 : K2,M2 (TK-3202)



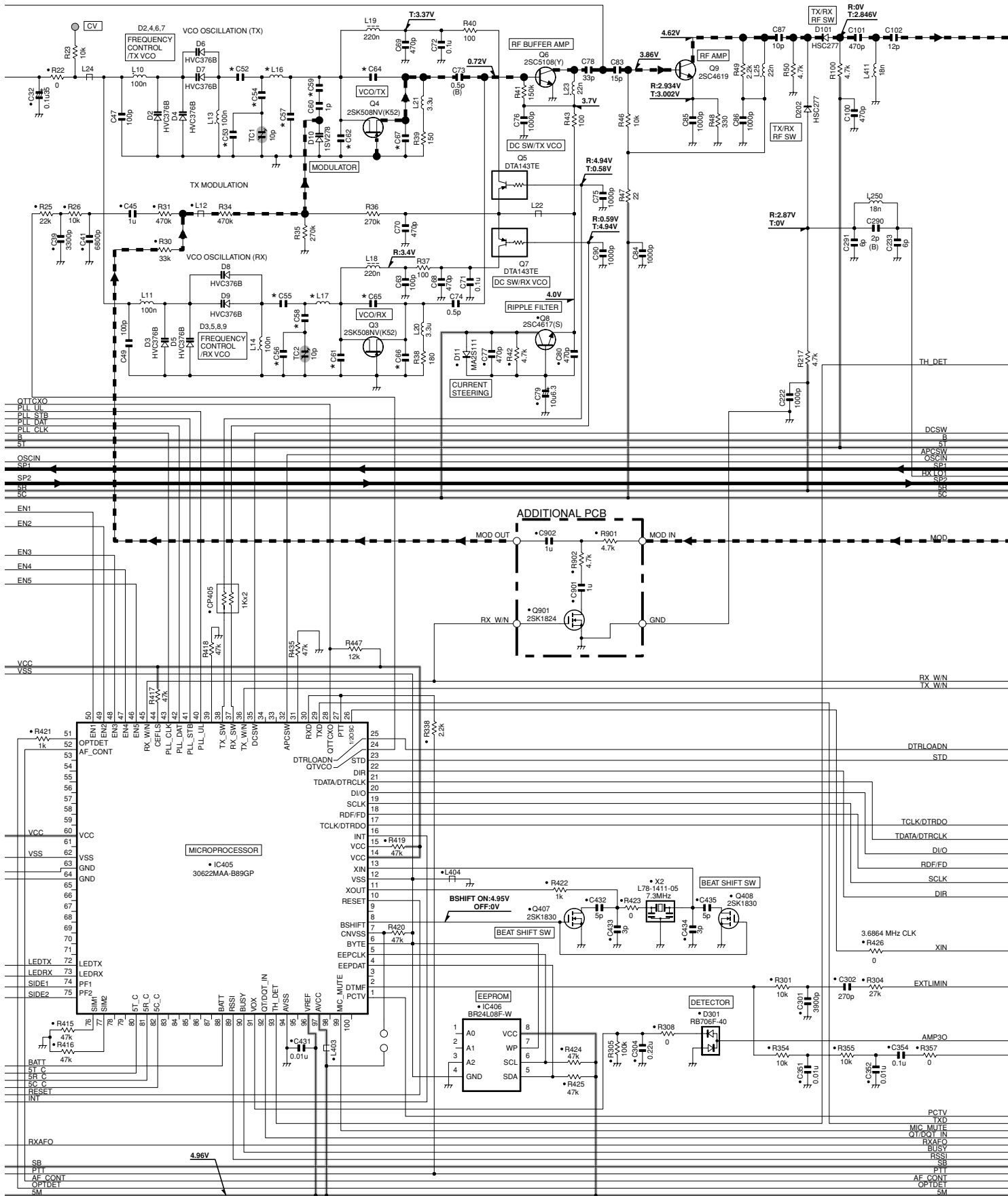
TK-3202/3206 SCHEMATIC DIAGRAM

TX-RX UNIT (X57-6890-XX)

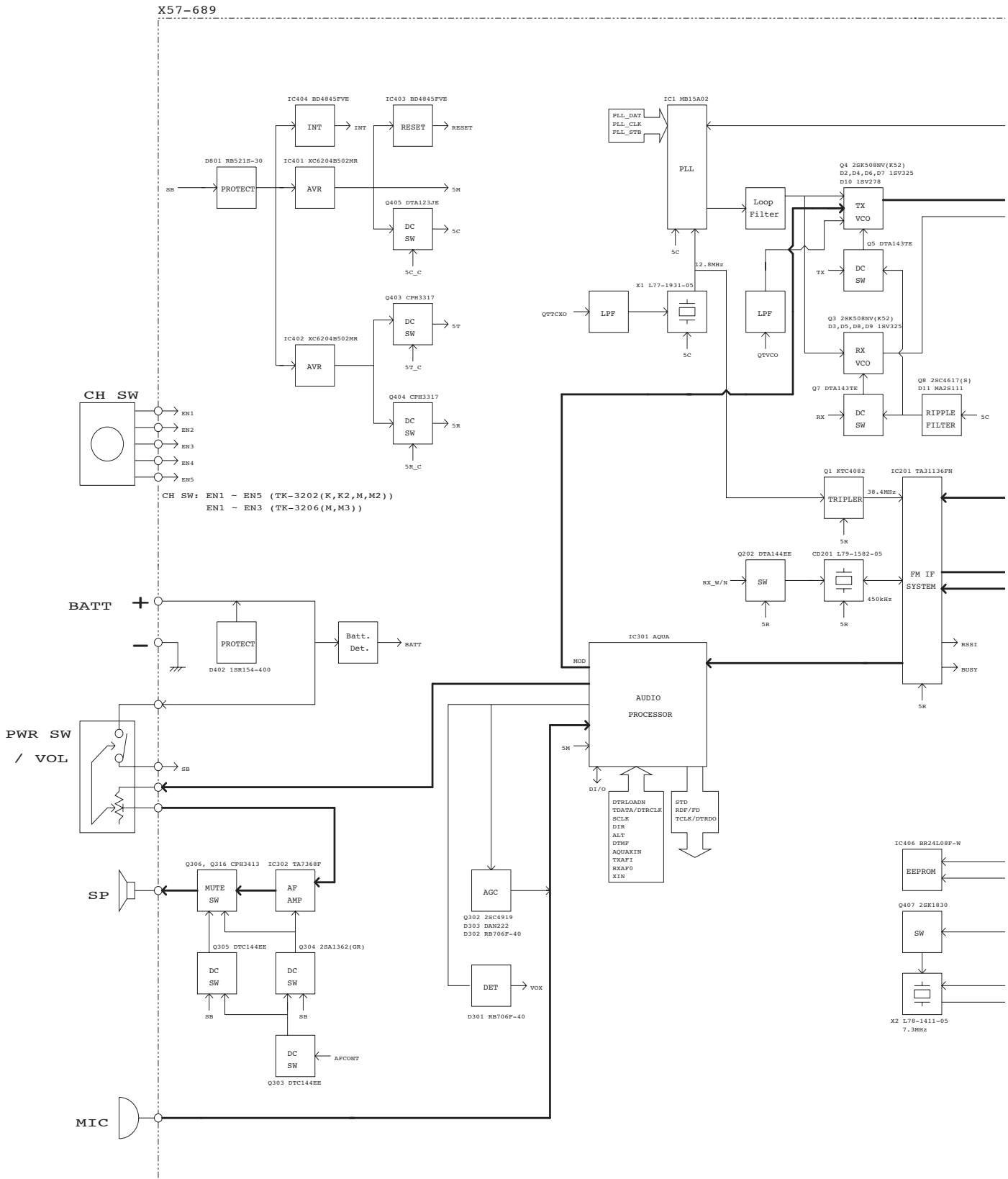


SCHEMATIC DIAGRAM TK-3202/3206

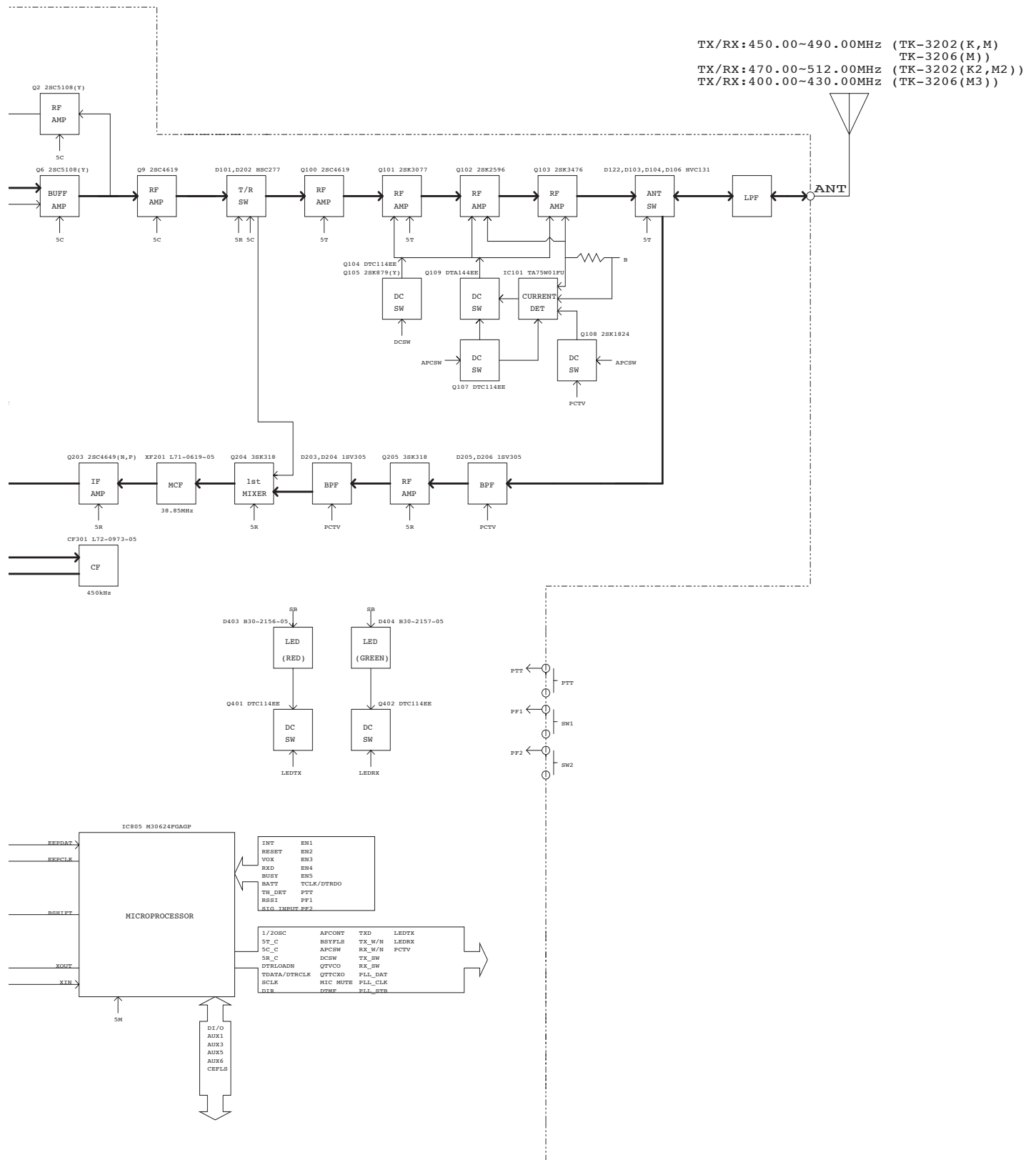
TX-RX UNIT (X57-689-XX)



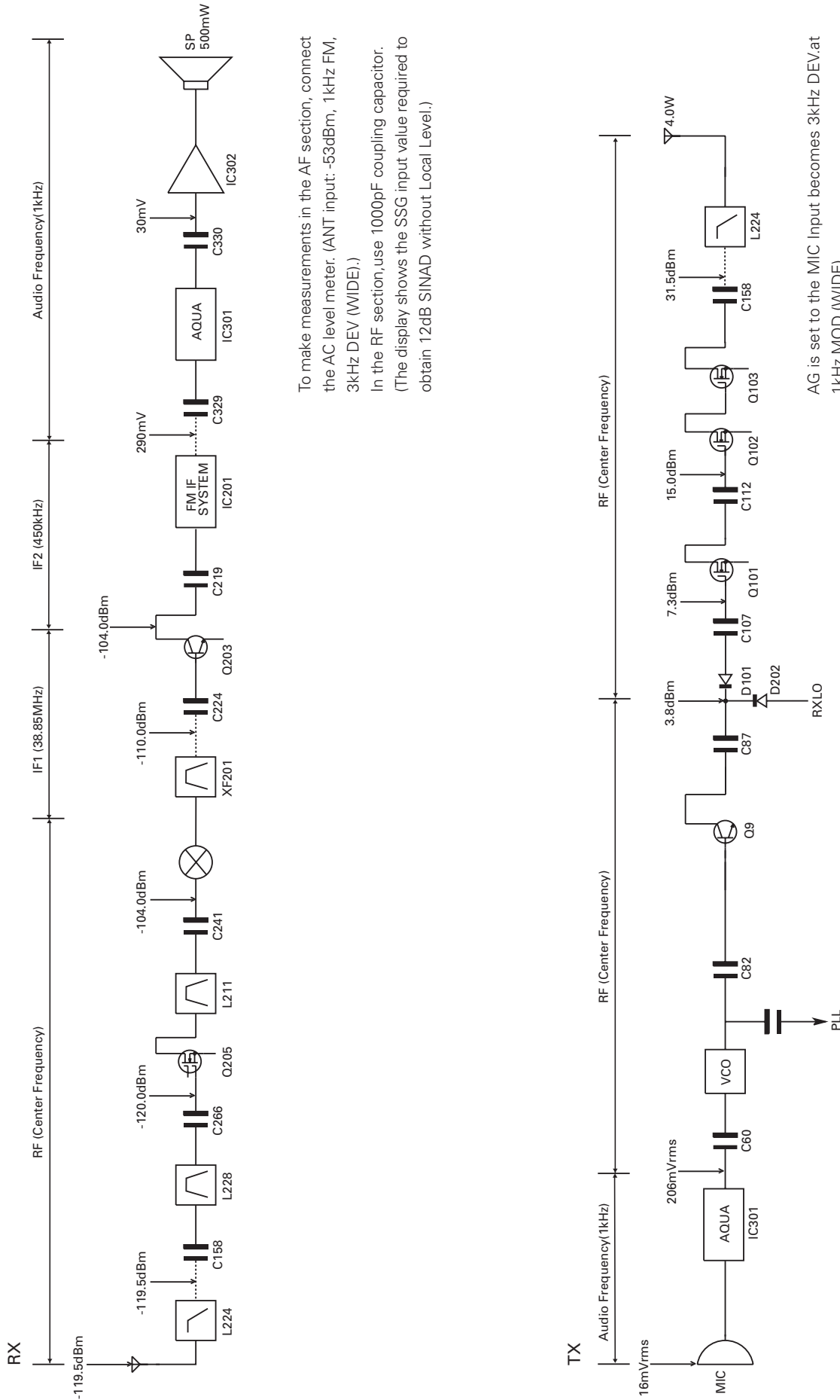
BLOCK DIAGRAM



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.

TK-3202/3206

SPECIFICATIONS

General

Frequency Range	450~490MHz (TK-3202(K,M) TK-3206(M)) 470~512MHz (TK-3202(K2,M2)) 400~430MHz (TK-3206(M3))
Number of channels	Max. 8 (TK-3202) Max. 16 (TK-3206)
Number of groups	Max. 16
Channel Spacing	25kHz (Wide) 12.5kHz (Narrow)
PLL Channel Stepping	5kHz, 6.25kHz
Operating Voltage	7.5 V DC \pm 20%
Battery Life	More than 14 hours at 4 watts (5-5-90 duty cycle with KNB-29N battery) More than 9 hours at 4 watts (5-5-90 duty cycle with KNB-30A battery)
Operating Temperature range	-30°C to +60°C (-22 °F to +140 °F)
Frequency Stability	\pm 2.5ppm (-30°C to +60°C)
Channel Frequency Spread	40MHz (TK-3202(K,M) TK-3206(M)) 42MHz (TK-3202(K2,M2)) 30MHz (TK-3206(M3))
Dimensions and Weight	
Radio Only	54 (2-1/8) W x 122 (4-13/16) H x 21.1 (13/16) D mm (inches) 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) 360g (0.79lbs)
With KNB-30A (1100mAh battery)	54 (2-1/8) W x 122 (4-13/16) H x 33 (1-5/16) D mm (inches) (Dimensions not including protrusions) 340g (0.75lbs)

Receiver (Measurements made per TIA/EIA-603)

Sensitivity	
EIA 12dB SINAD	0.25 μ V (Wide)/0.28 μ V (Narrow)
Selectivity	70dB (Wide)/60dB (Narrow)
Inter modulation	65dB (Wide)/60dB (Narrow)
Spurious response	60dB
Audio Power Output	500mW at 8 Ω less than 10% distortion

Transmitter (Measurements made per TIA/EIA-603)

RF Power Output	4W/1W
Spurious and Harmonics	65dB
Modulation	16K ϕ F3E (Wide)/11K ϕ F3E (Narrow)
FM Noise	45dB (Wide)/40dB (Narrow)
Audio Distortion	Less than 5%

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