

UHF FM TRANSCEIVER

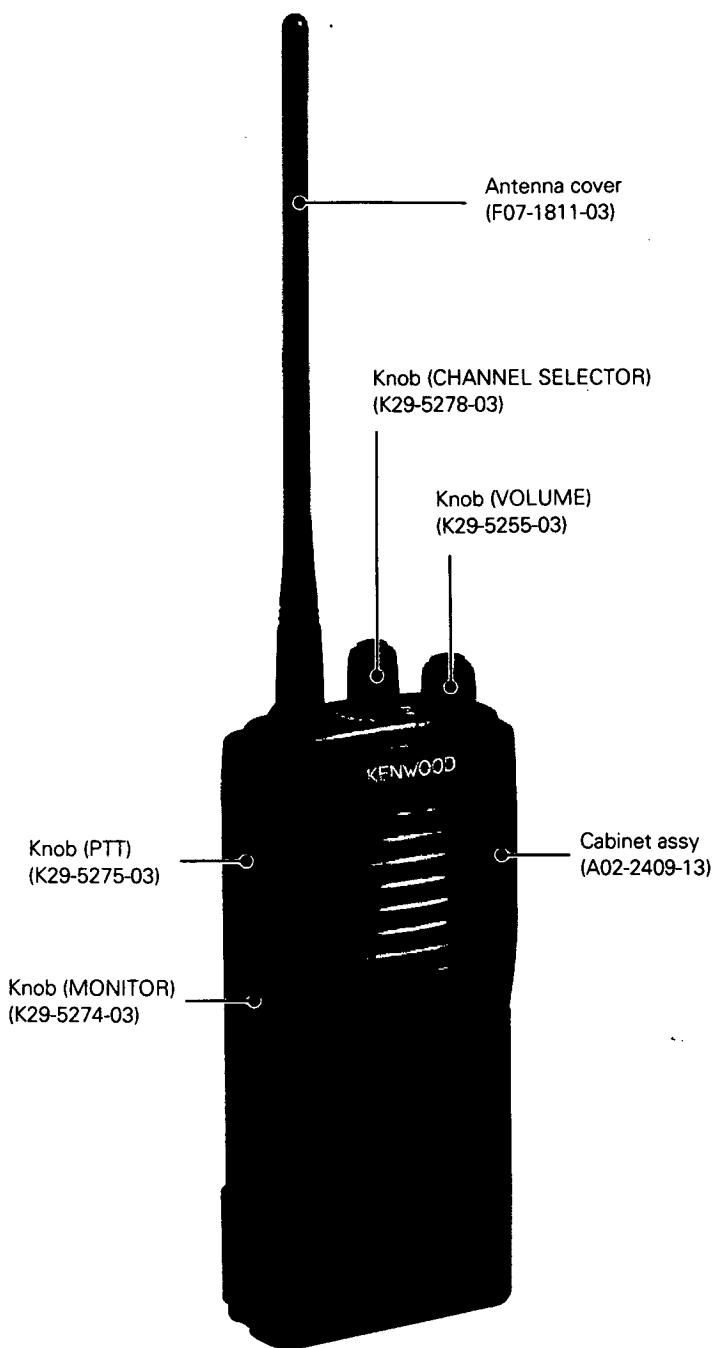
TK-3101

SERVICE MANUAL

T,E & E2 VERSIONS

KENWOOD

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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 data. 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.

PERSONNEL SAFETY

The following precautions are recommended for personnel 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.

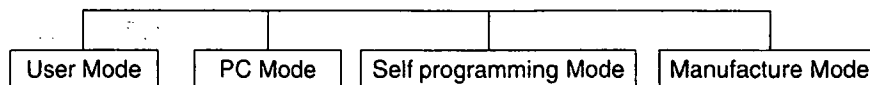
NOTE

WE CANNOT guarantee oscillator stability when using channel element manufactured by other than KENWOOD or its authorized agents.

Destination	CH number	Frequency	Signalling	RF power output
		Factory default setting		
T,E	1	446.00625MHz	94.8Hz	500mW ERP
	2	446.09375MHz	88.5Hz	
	3	446.03125MHz	103.5Hz	
	4	446.06875MHz	79.7Hz	
	5	446.04375MHz	118.8Hz	
	6	446.01875MHz	123.0Hz	
	7	446.08125MHz	127.3Hz	
	8	446.05625MHz	85.4Hz	
	9	446.00625MHz	107.2Hz	
	10	446.09375MHz	110.9Hz	
	11	446.03125MHz	114.8Hz	
	12	446.06875MHz	82.5Hz	
	13	446.04375MHz	132N	
	14	446.01875MHz	155N	
	15	446.05625MHz	134N	
E2	1	446.0125MHz	94.8Hz	500mW ERP
	2	446.0875MHz	88.5Hz	
	3	446.0375MHz	103.5Hz	
	4	446.0750MHz	79.7Hz	
	5	446.0250MHz	118.8Hz	
	6	446.0500MHz	123.0Hz	
	7	446.0625MHz	127.3Hz	
	8	446.0125MHz	85.4Hz	
	9	446.0875MHz	107.2Hz	
	10	446.0375MHz	110.9Hz	
	11	446.0750MHz	114.8Hz	
	12	446.0250MHz	82.5Hz	
	13	446.0500MHz	132N	
	14	446.0625MHz	155N	
	15	446.0375MHz	134N	

REALIGNMENT

1 Modes

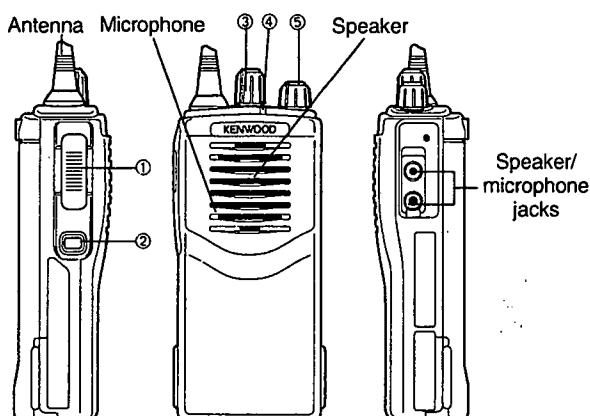


MODE	FUNCTION
User Mode	Use this mode for normal operation.
PC Mode	Use this mode, to make various settings by means of the FPU through the RS-232C port.
Self programming Mode	Use this mode for setting the channel contents.
Manufacture Mode	Use this mode, to realign the various settings through the RS-232C port during manufacture work.

2 How to enter each mode

MODE	FUNCTION
User Mode	Power ON
PC Mode	Connect to the IBM PC compatible machine and controled by the FPU.
Self programming Mode	[PTT] + [MONI] + Power ON

3 Getting acquainted



- ① **PTT (Push-To-Talk) switch**
Press this switch, then speak into the microphone to call a station. Release the switch to receive.
- ② **Monitor key**
Press and hold to monitor how busy the current channel is and to monitor signals being received that do not contain the matched QT/DQT code.
- ③ **Channel selector**
Rotate to select channels 1 ~ 15.
- ④ **LED indicator**
Lights red while transmitting, green while receiving a signal, and orange while in setup mode. Flashes red when the battery voltage is low while transmitting.
- ⑤ **Power switch/ Volume control**
Turn clockwise to switch the transceiver ON. Turn counterclockwise until a click sounds, to switch the transceiver OFF. Rotate to adjust the volume level.

TK-3101

REALIGNMENT

PC MODE

Preface

The transceiver is programmed by using a personal computer, programming interface (KPG-22) and programming software (KPG-54D).

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

Connenction procedure

1. Connect the TK-3101 to the personal computer with the interface cable.
2. When data transmitting from transceiver the red LED goes on. When data receiving to transceiver the green LED goes on.

Notes:

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

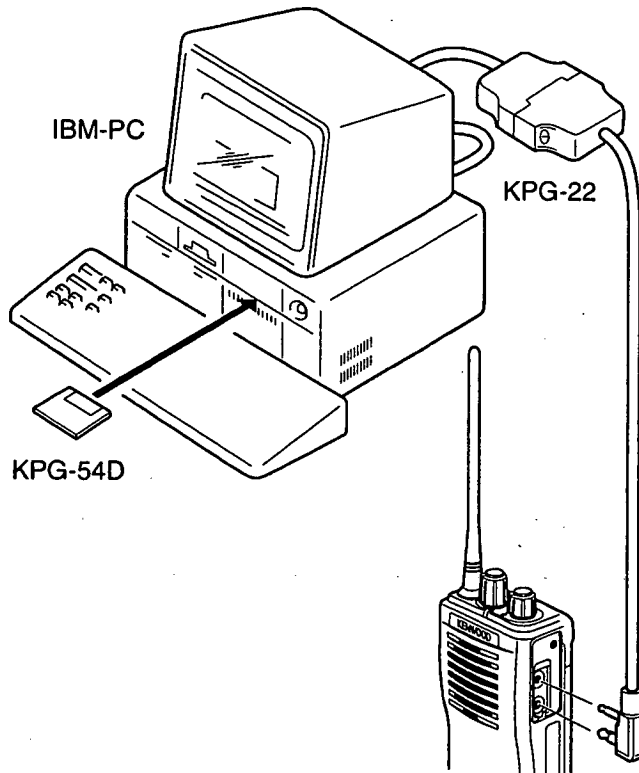


Fig. 1

• KPG-22 description

(P.C programming interface cable: Option)

The KPG-22 is required to interface the TK-3101 to 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 side panel jacks of the TK-3101 to the computers RS-232C serial port.

• Programming software description

The KPG-54D Programming Disk is supplied in 3-1/2" disk format. The Software on this disk allows a user to program TK-3101 radios via Programming interface cable (KPG-22).

• Programming with IBM PC

If data is transferred to the transceiver from an IBM PC with the KPG-54D, the destination data (basic radio information) for each set can be modified. Normally, it is not necessary to modify the destination data because their values are determined automatically when the frequency range (frequency type) is set.

The values should be modified only if necessary.

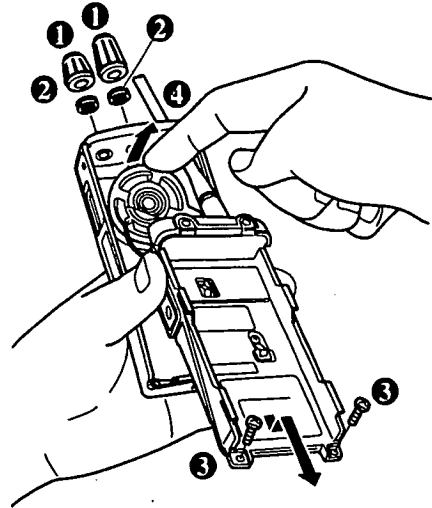
Data can be programmed into the EEPROM in RS-232C format via the SP MIC plug.

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

DISASSEMBLY FOR REPAIR

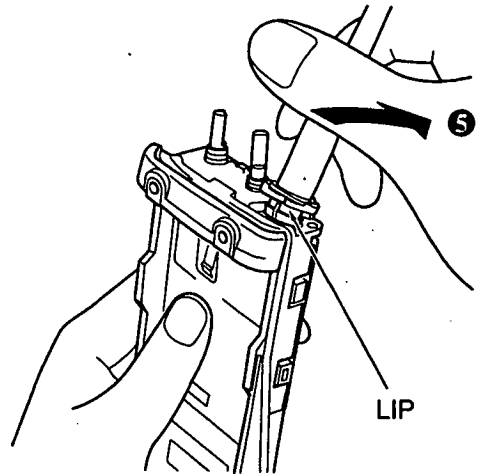
Separating the case assembly from the chassis.

1. Remove the two knobs ① and two round nuts ②.
2. Remove the two screws ③.
3. Firmly hold the front panel, then lift the bottom of the chassis slightly. Carefully pull the chassis out of the case, taking care not to damage the antenna cover or the speaker leads. To avoid breaking the speaker leads, when the speaker is in slight, lift it away from the case with your finger ④, then completely remove the chassis from the case.



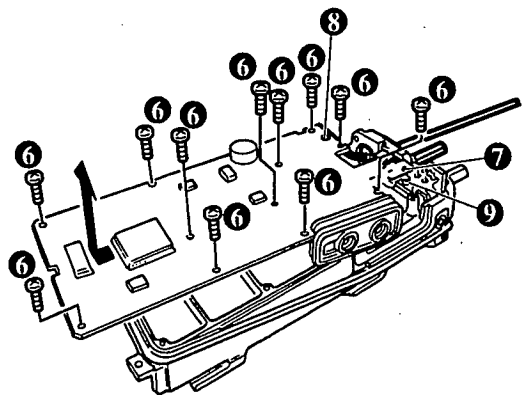
Removing the antenna cover from the chassis.

1. Holding the base of the antenna cover, bent it away from the unit as shown by the arrow ⑤ to remove it.



Separating the chassis from the unit.

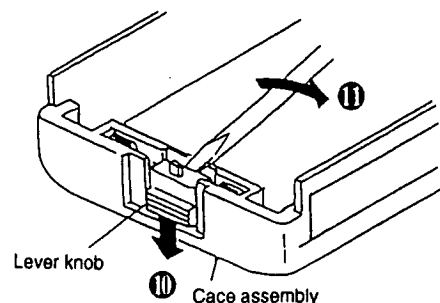
1. Remove the 11 screws ⑥ and disconnect the connector ⑦.
2. Remove the solder from the antenna wire ⑧.
3. Remove the screw from the switches ⑨ to remove the switches from the chassis.



Removing the lever

1. Raise the lever on the lower case ⑩, insert a small normal screwdriver into the clearance between the case and lever, open the case carefully ⑪ and lift the lever off.

Note : Do not force to separate the case from the lever.



CIRCUIT DESCRIPTION

1. Frequency configuration

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

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

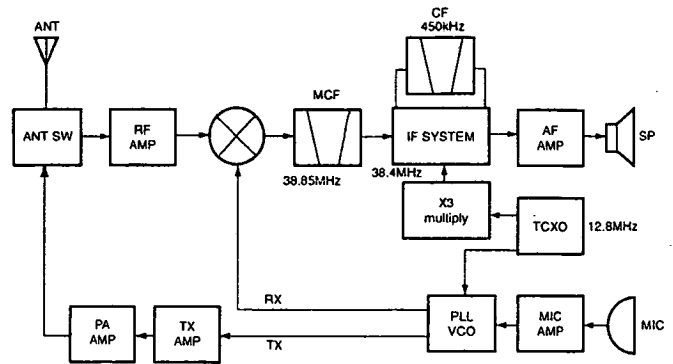


Fig. 1 Frequency configuration

2. Receiver

The receiver is double conversion superheterodyne, designed to operate in the frequency range of 446.0 to 446.1MHz. The frequency configuration is shown in Fig. 1.

1) Front - end RF amplifier

An incoming signal from the antenna is applied to an RF amplifier (Q203) after passing through a transmit/receive switch circuit (D102 is off) and a 3-pole LC filter. After the signal is amplified (Q203), the signal is filtered by a band pass filter (a 3-pole LC filter) to eliminate unwanted signals before it is passed to the first mixer. (See Fig.2)

2) First Mixer

The signal from the RF amplifier is heterodyned with the first local oscillator signal from the PLL frequency synthesizer circuit at the first mixer (Q202) to create a 38.85MHz first intermediate frequency (1st IF) signal. The first IF signal is then fed through two monolithic crystal filters (MCFs : XF200) to further remove spurious signals.

3) IF amplifier

The first IF signal is amplified by Q201, and then enters IC200 (FM processing IC). The signal is heterodyned again with a second local oscillator signal within IC200 to create a 450kHz second IF signal. The second IF signal is then fed through a 450kHz ceramic filter (CF200) to further eliminate unwanted signals before it is amplified and FM detected in IC200.

XF200:L71-0549-05

Item	Rating
Nominal center frequency	38.850MHz
Pass band width	±3.75kHz or more at 3dB
35dB stop band width	±15.0kHz or less
Ripple	1.5dB or less
Insertion loss	4.0dB or less
Guaranteed attenuation	80dB or more at fo-900kHz
Terminal impedance	560Ω / 5PF

CF200:L72-0971-05

Item	Rating
Nominal center frequency	450kHz
6dB band width	±4.5kHz or more
50dB band width	±10.0kHz or less
Ripple	2.0dB or less at fo ±4kHz
Insertion loss	6.0dB or less
Guaranteed attenuation	35.0dB or more at fo ±100Hz
Terminal impedance	2.0 kΩ

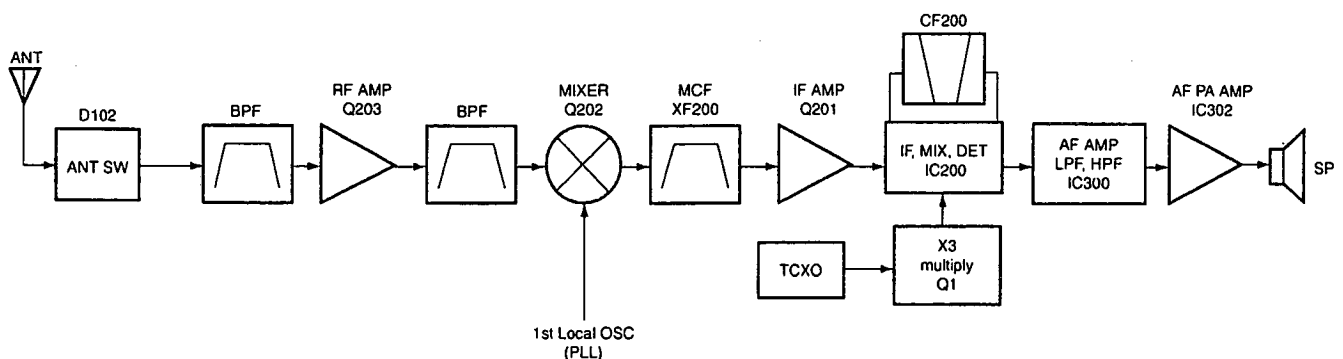


Fig. 2 Receiver section configuration

CIRCUIT DESCRIPTION

4) AF amplifier

The recovered AF signal obtained from IC200 is amplified by IC300 (1/4), filtered by the IC300 low-pass filter (2/4) and IC300 high-pass filter (3/4) and (4/4), and de-emphasized by R303 and C306. The processed AF signal passes through an AF volume control and is amplified to a sufficient level to drive a loud speaker by an audio power amplifier (IC302).

5) Squelch

Part of the AF signal from the IC enters the FM IC 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 (IC403). IC403 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, IC403 sends a high signal to the MUTE and AFCO lines and turns IC302 on through Q304, Q305, Q306 and Q307. (See Fig. 3)

6) Receive signaling

QT/DQT

300 Hz and higher audio frequencies of the output signal from IF IC are cut by a low-pass filter (IC301). The resulting signal enters the microprocessor (IC403). IC403 determines whether the QT or DQT matches the preset value, and controls the MUTE and AFCO and the speaker output sounds according to the squelch results.

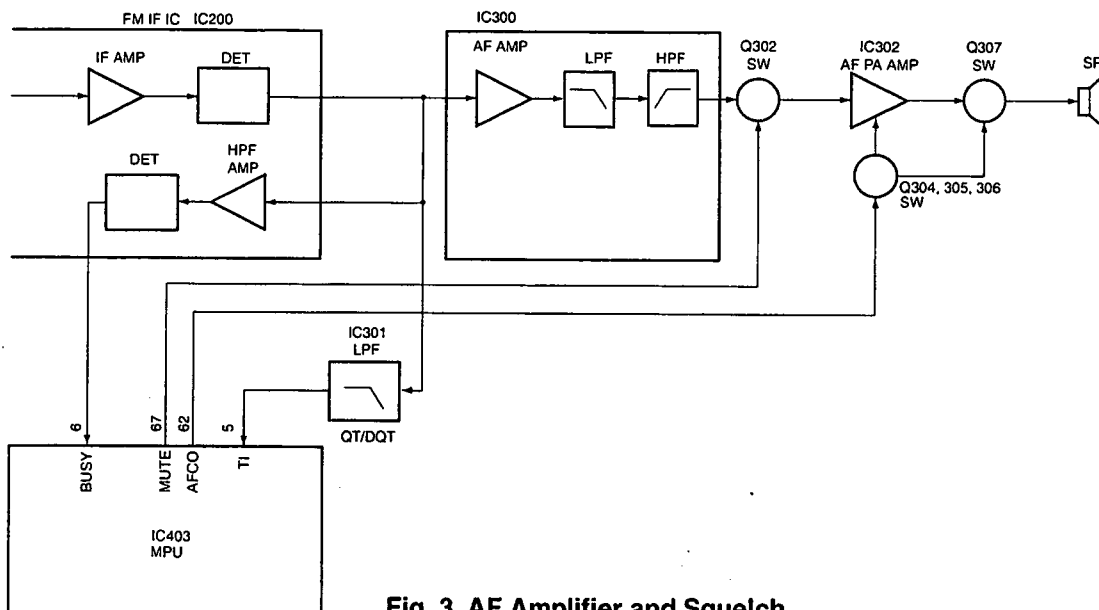


Fig. 3 AF Amplifier and Squelch

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 oscillator signal is divided at IC1 by a fixed counter to produce the 5 or 6.25kHz reference frequency. The voltage controlled oscillator (VCO) output signal is buffer amplified by Q6, then divided in IC1 by a dual-module programmable counter. The divided signal is compared in phase with the 5 or 6.25kHz reference signal in the phase comparator in IC1. The output signal from the phase comparator is filtered through a low-pass filter and passed to the VCO to control the oscillator frequency. (See Fig.4)

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 (D2 and D4 in transmit mode and D1 and D3 in receive mode). The T/R pin is set high in receive mode causing Q5 and Q7 to turn Q4 off, and Q3 on. The T/R pin is set low in transmit mode. The outputs from Q3 and Q4 are amplified by Q6 and sent to the buffer amplifiers.

CIRCUIT DESCRIPTION

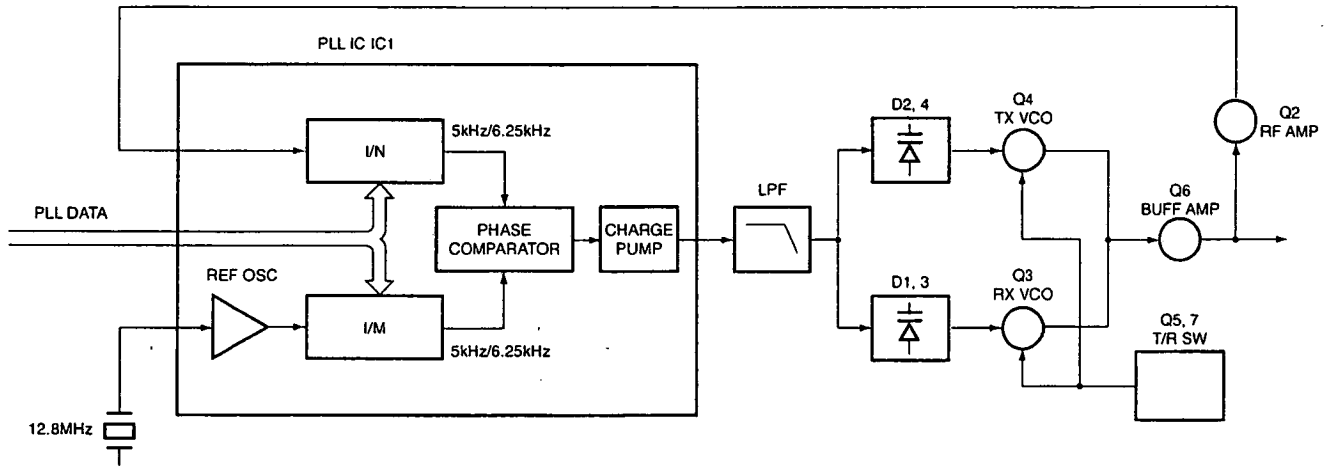


Fig. 4 PLL circuit

3) UNLOCK DETECTOR

If a pulse signal appears at the LD pin of IC1, an unlock condition occurs, and the DC voltage, obtained from D7, R6, and C1 causes the voltage applied to the UL pin of the microprocessor to go low. When the microprocessor detects this condition, the transmitter is disabled, ignoring the push-to-talk switch input signal. (See Fig.5)

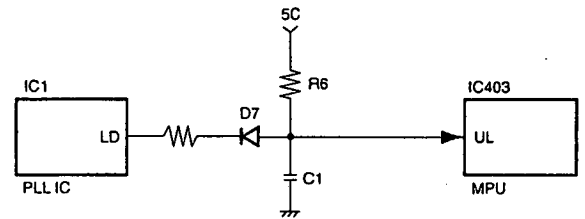


Fig. 5 Unlock detector circuit

4. Transmitter

1) Transmit audio

The modulation signal from the microphone is amplified by IC500 (1/2), passes through a preemphasis circuit, and amplified by the other IC500 (1/2) to perform IDC operation. The signal then passes through a low-pass filter (splatter filter) (Q501 and Q502) and cuts 3kHz and higher frequencies. The resulting signal goes to the VCO through the VCO modulation terminal for direct FM modulation. (See Fig. 6)

2) QT/DQT encoder

A necessary signal for QT/DQT encoding is generated by IC403 and FM-modulated to the PLL reference signal. Since the reference OSC does not modulate the loop characteristic frequency or higher, modulation is performed at the VCO side by adjusting the balance. (See Fig. 6)

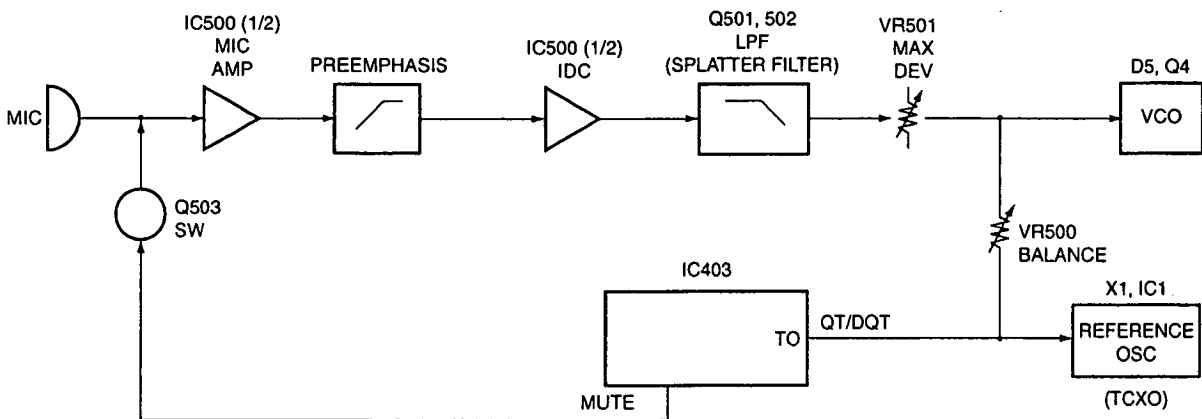


Fig. 6 Transmit audio QT/DQT

CIRCUIT DESCRIPTION

3) VCO and RF amplifier

The transmit signal obtained from the VCO buffer amplifier Q100, is amplified by Q101, Q102. This amplified signal is passed to the power amplifier, Q105 and Q107, which consists of a 2-stage FET amplifier and is capable of producing up to 500mW ERP of RF power. (See Fig.7)

4) ANT switch and LPF

The RF amplifier output signal is passed through a low-pass filter network and a transmit/receive switching circuit before it is passed to the antenna terminal. The transmit/receive switching circuit is comprised of D101 and D102. D102 is turned on (conductive) in transmit mode and off (isolated) in receive mode.

5) APC

The automatic power control (APC) circuit stabilizes the transmitter output power at a predetermined level by sensing the drain current of the final amplifier Field Effect Transistor (FET). The voltage comparator, IC100 (2/2), compares the voltage obtained from the above drain current with a reference voltage which is set using the microprocessor. An APC voltage proportional to the difference between the sensed voltage and the reference voltage appears at the output of IC100 (1/2). This output voltage controls the gate of the FET power amplifier, which keeps the transmitter output power constant. The transmitter output power can be varied by the microprocessor which in turn changes the reference voltage and hence, the output power.

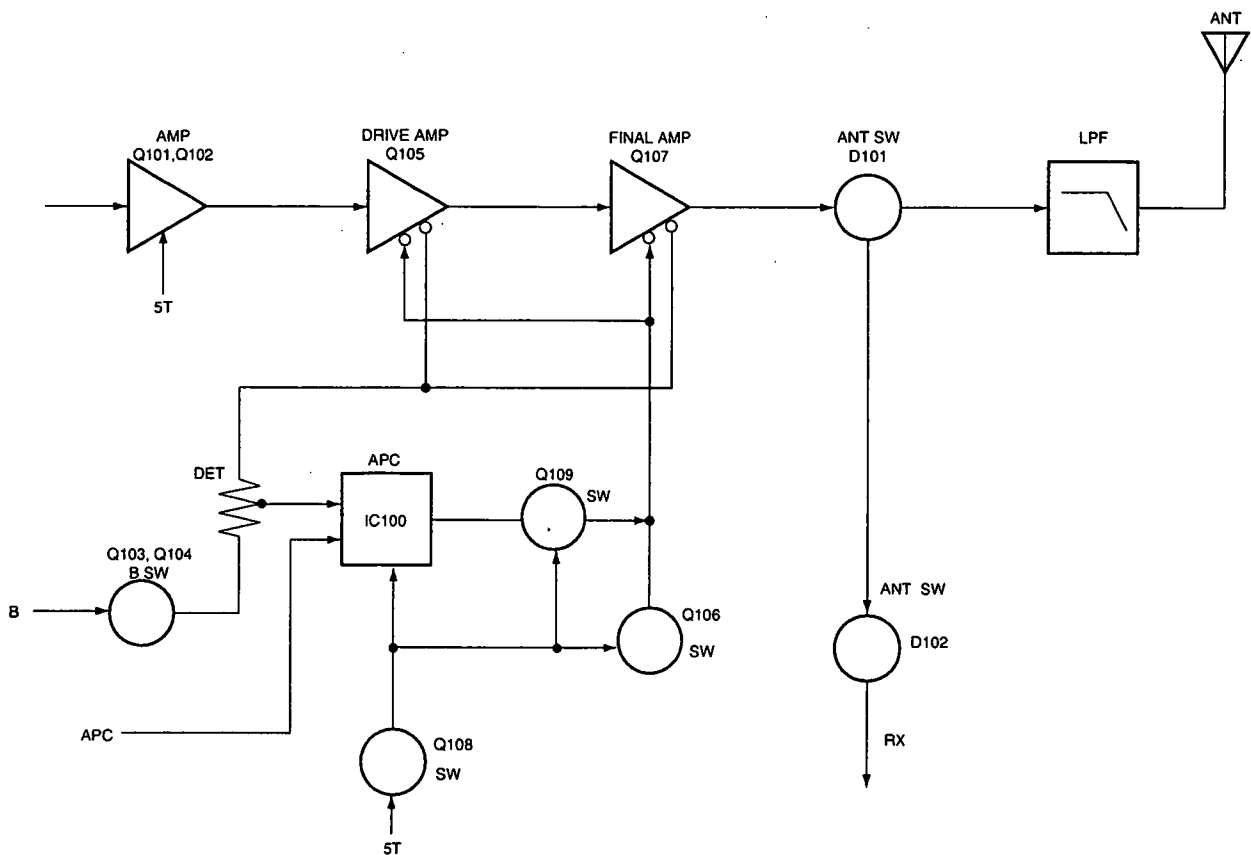


Fig. 7 APC system

5. Power supply

A 5V reference power [5M] supply for the control circuit is derived from an internal battery. This reference is used to provide a 5V supply in transmit mode [5T], a 5V supply in receive mode [5R], and a 5V supply common in both modes [5C] based on the control signal sent from the microprocessor.

6. Control system

The IC1 CPU operates at 7.37 MHz. This oscillator has a circuit that shifts the frequency according to the EEPROM data.

SEMICONDUCTOR DATA

Microprocessor: M38267M8L238GP (IC403)

Pin No.	I/O	Port Name	Function
1	-	VC1	NC
2	-	VC2	NC
3	I	NC	NC
4	I	TIBI	QT/DQT external circuit center point input
5	I	TI	QT/DQT signal input
6	I	BUSY	Busy input
7	I	BATT	Battery voltage detection
8	I	NC	NC
9	O	VCCN	frequency regulation output
10	O	APC	Auto power control D/A output
11	I	NC	NC
12	I	NC	NC
13	I	NC	NC
14	I	NC	NC
15	O	BEEP	Beep output
16	O	TO	QT/DQT output
17	I	NC	NC
18	I	PTT	[PTT] key input Connected to RXD
19	O	TXD	RX-232C output Connected to SP/MIC test(REM)
20	I	RXD	RX-232C input Connected to [PTT] line
21	I	NC	NC
22	I	SELF	Self program L : disable
23	I	MONI	[MONI] key input
24	I	NC	NC
25	I	NC	NC
26	I	NC	NC
27	I	NC	NC
28	I	ENC3	Encode input (channel select)
29	I	ENC2	Encode input (channel select)
30	I	ENC1	Encode input (channel select)
31	I	ENC0	Encode input (channel select)
32	I	INT0	Power detection control
33	I	RST	Reset input
34	I	NC	NC
35	O	NC	NC
36	I	XIN	7.3728MHz oscillator
37	O	XOUT	7.3728MHz oscillator
38	I	VSS	GND
39	O	SHIFT	Beat shift H : shift on
40	O	PABC	Final supply H : on
41	O	WNRC	Audio reference sencivity L : narrow
42	O	WNTC	MAX Dev. Control Narrow: H
43	I	NC	NC
44	I	NC	NC
45	I	NC	NC
46	I	NC	NC
47	I/O	SDA	EEPROM data line
48	O	SCL	EEPROM clock line
49	I	UL	PLL unlock detection pin L : unlock
50	I	NC	NC
51	I	NC	NC
52	I	NC	NC
53	I	NC	NC
54	I	NC	NC
55	O	DT	Common data output
56	O	CK	Common clock output
57	O	NC	NC
58	O	LE	PLL IC enable H : latches

Pin No.	I/O	Port Name	Function
59	O	VC1	NC
60	O	VC2	NC
61	O	5MC	Control of power supply (5M) for other than microcomputer and EEPROM L : Power supply ON
62	O	AFCO	AF amp power supply H : ON
63	O	RX	TX/RX VCO select H : RX
64	O	GLED	Green LED control H : Lit
65	O	RLED	RED LED control H : Lit
66	O	SAVE	Save control H : Save off
67	O	MUTE	Mute control H : Mic mute L : AF mute
68	O	5RC	Reception power supply control L : on
69	O	5TC	Transmission power supply control H : on
70	O	NC	NC
71	O	NC	NC
72	O	NC	NC
73	O	NC	NC
74	O	NC	NC
75	O	NC	NC
76	O	NC	NC
77	O	NC	NC
78	O	NC	NC
79	O	NC	NC
80	O	NC	NC
81	O	NC	NC
82	O	NC	NC
83	O	NC	NC
84	O	NC	NC
85	O	NC	NC
86	O	NC	NC
87	O	NC	NC
88	O	NC	NC
89	I	VCC	Microcomputer power supply, 5V input
90	I	VREF	A/D conversion reference voltage ; connected to Vcc
91	I	AVSS	A/D converter power supply ; connected to Vss
92	O	NC	NC
93	O	NC	NC
94	O	NC	NC
95	O	NC	NC
96	I	NC	NC
97	I	NC	NC
98	I	NC	NC
99	I	NC	NC
100	I	NC	NC

FET : 2SK2596(Q105)

Absolute Maximum Ratings (Ta=25°C)						
Item	V _{oss}	V _{gss}	I _b	P _{ch} *	T _{ch}	T _{stg}
Rating	17V	±10V	0.4A	3W	150°C	-45~+150°C
				*T _c =25°C		

FET : 2SK2595(Q107)

Absolute Maximum Ratings (Ta=25°C)						
Item	V _{os}	V _{gss}	I _b	P _{ch} *	T _{ch}	T _{stg}
Rating	17V	±10V	1.1A	20W	150°C	-45~+150°C
				*T _c =25°C		

DESCRIPTION OF COMPONENTS

Ref No.	Semiconductor	Description
IC1	IC	PHASE LOCKED LOOP SYSTEM
IC100	IC	AUTOMATIC POWERCONTROL
IC200	IC	IF SYSTEM
IC300	IC	AUDIO AMP ACTIVE FILTER
IC301	IC	ACTIVE FILTER
IC302	IC	AUDIO POWER AMP
IC400	IC	RESET SWITCH
IC401	IC	EEPROM
IC402	IC	VOLTAGE DETECT
IC403	IC	MICRO PROCESSOR
IC404	IC	VOLTAGE REGULATOR
IC500	IC	MIC AMP/LIMITER
Q1	TRANSISTOR	TRIPLER
Q2	TRANSISTOR	RF AMP
Q3	FET	VCO RX
Q4	TRANSISTOR	VCO TX
Q5	FET	DC SWITCH
Q6	TRANSISTOR	RF BUFFER AMP
Q7	TRANSISTOR	DC SWITCH
Q8	TRANSISTOR	RIPPLE FILTER
Q100	TRANSISTOR	RF AMP
Q101	TRANSISTOR	AMP
Q102	TRANSISTOR	TX PRE-DRIVE
Q103	FET	DC SWITCH
Q104	TRANSISTOR	DC SWITCH
Q105	FET	TX FINAL
Q106	FET	DC SWITCH
Q107	FET	TX DRIVE
Q108	TRANSISTOR	DC SWITCH
Q109	TRANSISTOR	DC SWITCH
Q200	TRANSISTOR	DC SWITCH
Q201	TRANSISTOR	IF AMP
Q202	FET	MIXER
Q203	FET	RF AMP
Q300	TRANSISTOR	ACTIVE FILTER
Q302	FET	AUDIO MUTE SWITCH
Q304	TRANSISTOR	DC SWITCH
Q305	TRANSISTOR	DC SWITCH
Q306	TRANSISTOR	DC SWITCH
Q307	FET	AUDIO MUTE SWITCH
Q400	TRANSISTOR	DC SWITCH
Q401	TRANSISTOR	DC SWITCH
Q402	TRANSISTOR	DC SWITCH
Q403	TRANSISTOR	BEAT SHIFT SWITCH
Q404	TRANSISTOR	DC SWITCH
Q405	FET	DC SWITCH
Q406	TRANSISTOR	DC SWITCH
Q407	TRANSISTOR	DC SWITCH
Q408	TRANSISTOR	DC SWITCH
Q501	TRANSISTOR	ACTIVE FILTER
Q502	TRANSISTOR	ACTIVE FILTER
Q503	TRANSISTOR	MIC MUTE/ AGC
Q504	TRANSISTOR	DC SWITCH

Ref No.	Semiconductor	Description
D1	VARIABLE CAPACITANCE DIODE	FREQ. CONTROL
D2	VARIABLE CAPACITANCE DIODE	FREQ. CONTROL
D3	VARIABLE CAPACITANCE DIODE	FREQ. CONTROL
D4	VARIABLE CAPACITANCE DIODE	FREQ. CONTROL
D5	VARIABLE CAPACITANCE DIODE	TX MODULATION
D6	DIODE	CURRENT STEERING
D7	DIODE	UNLOCK DETECT
D100	DIODE	RF SWITCH
D101	DIODE	ANTENNA SWITCH
D102	DIODE	ANTENNA SWITCH
D200	DIODE	RF SWITCH
D300	DIODE	LIMITER
D400	LED	TX
D401	LED	BUSY
D500	DIODE	AGC DETECT
D501	DIODE	MIC MUTE/AGC SWITCH
D502	DIODE	REVERSE PROTECTION

TK-3101

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.

TK-3101

TX-RX UNIT(X57-6010-50)

L : Scandinavia
Y : PX (Far East, Hawaii)
Y : AAFES (Europe)

K : USA
T : England
X : Australia
P : Canada
E : Europe
M : Other Areas

Ref. No.	Address	New parts	Parts No.	Description	Destination
TK-3101					
1	1A	*	A02-2409-13	CABINET ASSY	
2	3B		A82-0034-03	REAR PANEL	
3	-		B09-0351-03	CAP	ACSY
4	-	*	B62-1130-00	INSTRUCTION MANUAL	ACSY
	-	*	B72-1588-04	MODEL NAME PLATE	
5	3A		E23-1006-04	RELAY TERMINAL(BATT -)	
6	2B	*	F07-1811-03	ANTENNA COVER	
7	1A	*	G01-0881-04	COIL SPRING(BATT RELEASE)	
	-	*	G11-2583-04	SHEET	
8	2B		G13-1709-04	CUSHION(VOL)	
9	3B		G13-1718-04	CUSHION(CHASSIS-BATT)	
10	2B		G53-0791-03	PACKING(SP/MIC PLUG)	
11	2A		G53-0842-13	PACKING(SPEAKER)	
12	2A		G53-0860-04	PACKING(SIDE)	
13	2B	*	G53-0886-04	PACKING(ANT COVER)	
14	-	*	H12-3060-02	PACKING FIXTURE	
15	-	*	H12-3061-02	PACKING FIXTURE	
16	-	*	H25-2012-04	PROTECTION BAG (75/100/0.08)	
17	-	*	H25-2050-04	PROTECTION BAG (100/350)	
18	-	*	H52-1421-02	ITEM CARTON CASE	
19	1A		J19-1572-04	HOLDER(BATT RELEASE)	
20	2B		J19-5344-03	HOLDER(VOL/ENC)	
21	-		J21-4493-04	SP/MIC HOLDER	ACSY
22	3B		J29-0624-03	BELT HOOK	ACSY
	-		J82-0059-05	FPC	
23	1B		K29-5255-03	KNOB(VOL)	
24	1A		K29-5274-03	BUTTON KNOB(MONI)	
25	1A		K29-5275-03	BUTTON KNOB(PTT)	
26	1B		K29-5278-03	KNOB(ENC)	
27	1A		K29-5337-03	LEVER KNOB(BATT RELEASE)	
A	1B		N14-0581-04	CIRCULAR NUT(VOL/ENC)	
B	3A		N30-2606-46	PAN HEAD MACHINE SCREW	
C	3A		N79-2035-46	PAN HEAD TAPTITE SCREW	
D	2A		N83-2005-46	PAN HEAD TAPTITE SCREW	
E	-		N99-0396-05	SCREW SET	ACSY
	-		R31-0624-05	VARIABLE RESISTOR	
	-		S60-0410-05	ROTARY SWITCH	
SP	1A		T07-0369-05	SPEAKER	
ANT	2B	*	T90-0712-15	ANTENNA ELEMENT	
28	-		W08-0552-05	CHARGER	ACSY
29	-		W08-0574-05	AC ADAPTER	ACSY
30	-		W08-0576-05	AC ADAPTER	ACSY
31	-		W09-0939-05	BATTERY ASSY	ACSY
TX-RX UNIT(X57-6010-50)					
D400			B30-2156-05	LED(RED)	
D401			B30-2157-05	LED(YELLOW)	
C1			CK73GB1C104K	CHIP C	0.10UF K
C2,3			CC73GCH1H101J	CHIP C	100PF J
C4			CK73GB1C104K	CHIP C	0.10UF K
C5			C92-0507-05	CHIP-TAN	4.7UF 6.3WV
C6			CC73GCH1H101J	CHIP C	100PF J
C7			CK73GB1H471K	CHIP C	470PF K
C9			CC73GCH1H100D	CHIP C	10PF D
C10			CC73GCH1H470J	CHIP C	47PF J

Ref. No.	Address	New parts	Parts No.	Description	Destination
C12			C92-0001-05	CHIP C	0.1UF 35WV
C14			CC73GCH1H100D	CHIP C	10PF D
C15			C92-0004-05	CHIP-TAN	1.0UF 16WV
C16			CC73GCH1H680J	CHIP C	68PF J
C17			CK73GB1H331K	CHIP C	330PF K
C18			C92-0001-05	CHIP C	0.1UF 35WV
C19,20			CK73GB1H103K	CHIP C	0.010UF K
C23			C92-0560-05	CHIP-TAN	10UF 6.3WV
C24			CK73GB1H103K	CHIP C	0.010UF K
C25			CK73GB1H471K	CHIP C	470PF K
C26			CC73GCH1H121J	CHIP C	120PF J
C27			CK73GB1H471K	CHIP C	470PF K
C28			CC73GCH1H330J	CHIP C	33PF J
C29			CC73GCH1H020C	CHIP C	2.0PF C
C30			CK73GB1H102K	CHIP C	1000PF K
C31			CC73GCH1H101J	CHIP C	100PF J
C34			CC73GCH1H180J	CHIP C	18PF J
C35			CC73GCH1H060B	CHIP C	6.0PF B
C36			CC73GCH1H100D	CHIP C	10PF D
C37			CC73GCH1H330J	CHIP C	33PF J
C38			CC73GCH1H060B	CHIP C	6.0PF B
C39			CC73GCH1H070B	CHIP C	7.0PF B
C40			CC73GCH1H0R5B	CHIP C	0.5PF B
C41			CC73GCH1H050B	CHIP C	5.0PF B
C42			CC73GCH1H100D	CHIP C	10PF D
C43			CK73GB1H102K	CHIP C	1000PF K
C44			CC73GCH1H060B	CHIP C	6.0PF B
C45			CC73GCH1H100C	CHIP C	10PF C
C46			CK73GB1H471K	CHIP C	470PF K
C47			CC73GCH1H010B	CHIP C	1.0PF B
C48			CK73GB1H471K	CHIP C	470PF K
C49			CC73GCH1H0R5B	CHIP C	0.5PF B
C51			CC73GCH1H680J	CHIP C	68PF J
C52			CK73GB1H471K	CHIP C	470PF K
C53			CC73GCH1H060D	CHIP C	6.0PF D
C54			CC73GCH1H030B	CHIP C	3.0PF B
C55			CK73GB1H471K	CHIP C	470PF K
C56			C92-0507-05	CHIP-TAN	4.7UF 6.3WV
C100			CC73GCH1H220J	CHIP C	22PF J
C101-103			CK73GB1H471K	CHIP C	470PF K
C104			CK73GB1C104K	CHIP C	0.10UF K
C105			CC73GCH1H060D	CHIP C	6.0PF D
C106,107			CK73GB1H471K	CHIP C	470PF K
C108			CC73GCH1H070D	CHIP C	7.0PF D
C109,110			CK73GB1H471K	CHIP C	470PF K
C111			CC73GCH1H060D	CHIP C	6.0PF D
C112			CK73GB1H471K	CHIP C	470PF K
C113			CK73GB1C104K	CHIP C	0.10UF K
C114,115			CK73GB1H471K	CHIP C	470PF K
C116			CK73GB1H102K	CHIP C	1000PF K
C118			CC73GCH1H270J	CHIP C	27PF J
C119			CK73GB1H102K	CHIP C	1000PF K
C120,121			CK73GB1H471K	CHIP C	470PF K
C123			CK73GB1H102K	CHIP C	1000PF K
C125			CK73GB1H471K	CHIP C	470PF K

PARTS LIST

TX-RX UNIT(X57-6010-50)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C126			CK73FB1A105K	CHIP C 1.0UF K		C256			CK73GB1C104K	CHIP C 0.10UF K	
C127			C92-0565-05	CHIP-TAN 6.8UF 10WV		C258			CK73GB1C104K	CHIP C 0.10UF K	
C128			CK73GB1H103K	CHIP C 0.010UF K		C300			CK73GB1H822K	CHIP C 8200PF K	
C129			CK73GB1H471K	CHIP C 470PF K		C301			CK73GB1E183K	CHIP C 0.018UF K	
C130			CC73FCH1H220G	CHIP C 22PF G		C302.303			CK73GB1C104K	CHIP C 0.10UF K	
C131			CK73GB1C104K	CHIP C 0.10UF K		C304			C92-0560-05	CHIP-TAN 10UF 6.3WV	
C132			CK73GB1H471K	CHIP C 470PF K		C305			CK73GB1H103J	CHIP C 0.010UF J	
C134			CC73GCH1H101J	CHIP C 100PF J		C306			CK73GB1C473K	CHIP C 0.047UF K	
C135			CC73GCH1H010C	CHIP C 1.0PF C		C307			C92-0560-05	CHIP-TAN 10UF 6.3WV	
C136			CC73GCH1H070B	CHIP C 7.0PF B		C308			CK73GB1H562K	CHIP C 5600PF K	
C138			CC73GCH1H101J	CHIP C 100PF J		C309			CK73GB1H103J	CHIP C 0.010UF J	
C139			CK73GB1H471K	CHIP C 470PF K		C311			C92-0560-05	CHIP-TAN 10UF 6.3WV	
C141			CK73GB1H471K	CHIP C 470PF K		C312			CK73GB1H103J	CHIP C 0.010UF J	
C142			CC73GCH1H030B	CHIP C 3.0PF B		C313			CK73FB1A105K	CHIP C 1.0UF K	
C143			CK73GB1H471K	CHIP C 470PF K		C314			CK73GB1H102K	CHIP C 1000PF K	
C144			CC73GCH1H020B	CHIP C 2.0PF B		C316			CK73GB1H103J	CHIP C 0.010UF J	
C145			CK73GB1H471K	CHIP C 470PF K		C318			CK73GB1C333J	CHIP C 0.033UF J	
C147			CC73GCH1H010B	CHIP C 1.0PF B		C319			CK73GB1C473J	CHIP C 0.047UF J	
C149			CC73GCH1H010B	CHIP C 1.0PF B		C320.321			CK73GB1C333J	CHIP C 0.033UF J	
C150			CC73GCH1H050B	CHIP C 5.0PF B		C322			CK73FB1E104K	CHIP C 0.10UF K	
C151			CC73GCH1H1R5B	CHIP C 1.5PF B		C327			CK73GB1C104K	CHIP C 0.10UF K	
C153			CC73GCH1H030B	CHIP C 3.0PF B		C330			CC73GCH1H101J	CHIP C 100PF J	
C154			CC73GCH1H010B	CHIP C 1.0PF B		C331			CK73FB1C474K	CHIP C 0.47UF K	
C155			CC73GCH1H1R5B	CHIP C 1.5PF B		C332			C92-0560-05	CHIP-TAN 10UF 6.3WV	
C156			CK73GB1C104K	CHIP C 0.10UF K		C333			CK73GB1A474K	CHIP C 0.47UF K	
C157			CK73GB1H471K	CHIP C 470PF K		C334			CC73GCH1H221J	CHIP C 220PF J	
C200			C92-0560-05	CHIP-TAN 10UF 6.3WV		C335			CK73GB1C473K	CHIP C 0.047UF K	
C201			CK73GB1H103K	CHIP C 0.010UF K		C336			CK73GB1H103K	CHIP C 0.010UF K	
C202			CC73GCH1H100D	CHIP C 10PF D		C337			C92-0665-05	TANTAL 100UF 6.3WV	
C203			CK73GB1H471K	CHIP C 470PF K		C338			CC73GCH1H560J	CHIP C 56PF J	
C204			CK73GB1H472K	CHIP C 4700PF K		C400			CK73GB1C104K	CHIP C 0.10UF K	
C205,206			CC73GCH1H221J	CHIP C 220PF J		C402-404			CK73GB1H471K	CHIP C 470PF K	
C207			CK73GB1C104K	CHIP C 0.10UF K		C406			CK73GB1H471K	CHIP C 470PF K	
C208			CC73GCH1H270J	CHIP C 27PF J		C407			CK73GB1H102K	CHIP C 1000PF K	
C209			CK73GB1C104K	CHIP C 0.10UF K		C408			C92-0560-05	CHIP-TAN 10UF 6.3WV	
C210			CK73GB1H103K	CHIP C 0.010UF K		C409			CC73GCH1H030B	CHIP C 3.0PF B	
C211			CK73GB1C104K	CHIP C 0.10UF K		C410,411			CK73GB1H471K	CHIP C 470PF K	
C212			CC73GCH1H330J	CHIP C 33PF J		C412			CC73GCH1H100D	CHIP C 10PF D	
C213			CK73GB1C104K	CHIP C 0.10UF K		C413			CK73GB1H102K	CHIP C 1000PF K	
C214			CK73GB1H103K	CHIP C 0.010UF K		C414			CK73GB1H471K	CHIP C 470PF K	
C215			CC73GCH1H100D	CHIP C 10PF D		C415			CC73GCH1H100D	CHIP C 10PF D	
C217			CK73GB1H103K	CHIP C 0.010UF K		C416			CK73GB1H471K	CHIP C 470PF K	
C218			CK73GB1H471K	CHIP C 470PF K		C417			CK73EF1C105Z	CHIP C 1.0UF Z	
C219			CC73GCH1H150J	CHIP C 15PF J		C418			CK73GB1H103K	CHIP C 0.010UF K	
C220,221			CK73GB1H103K	CHIP C 0.010UF K		C420-422			CK73GB1H103K	CHIP C 0.010UF K	
C222			CC73GCH1H050B	CHIP C 5.0PF B		C423			CK73GB1H471K	CHIP C 470PF K	
C223			CC73GCH1H020C	CHIP C 2.0PF C		C424			CK73FB1A105K	CHIP C 1.0UF K	
C224			CK73GB1H471K	CHIP C 470PF K		C425			CK73GB1H103K	CHIP C 0.010UF K	
C226			CC73GCH1H0R5B	CHIP C 0.5PF B		C427			CK73GB1H471K	CHIP C 470PF K	
C227,228			CC73GCH1H080B	CHIP C 8.0PF B		C429,430			CK73FB1A105K	CHIP C 1.0UF K	
C229			CK73GB1H471K	CHIP C 470PF K		C500,501			CK73GB1C273K	CHIP C 0.027UF K	
C231,232			CK73GB1H471K	CHIP C 470PF K		C502			CK73GB1H392K	CHIP C 3900PF K	
C233,234			CC73GCH1H0R3B	CHIP C 0.3PF B		C503			CK73GB1C333K	CHIP C 0.033UF K	
C235,236			CC73GCH1H030B	CHIP C 3.0PF B		C504			C92-0507-05	CHIP-TAN 4.7UF 6.3WV	
C237			CK73GB1H471K	CHIP C 470PF K		C505			CK73FB1A105K	CHIP C 1.0UF K	
C238			CC73GCH1H0R5B	CHIP C 0.5PF B		C507			C92-0587-05	CHIP-TAN 2.2UF 4WV	
C239			CC73GCH1H4R5B	CHIP C 4.5PF B		C508			CK73GB1H103K	CHIP C 0.010UF K	
C240			CC73GCH1H300J	CHIP C 30PF J		C509			CK73GB1H332K	CHIP C 3300PF K	
C241			CC73GCH1H060B	CHIP C 6.0PF B		C510			CC73GCH1E821J	CHIP C 820PF J	
C246			CC73GCH1H030C	CHIP C 3.0PF C		C511			CK73GB1C473K	CHIP C 0.047UF K	

TK-3101

PARTS LIST

TX-RX UNIT(X57-6010-50)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C512			CK73GB1H332K	CHIP C 3300PF K		L110			L34-4547-05	AIR-CORE COIL	
C513			CC73GCH1E681J	CHIP C 680PF J		L112,113			L34-4547-05	AIR-CORE COIL	
C514			CK73GB1C473K	CHIP C 0.047UF K		L114			L34-4546-05	AIR-CORE COIL	
C515			CK73GB1H103K	CHIP C 0.010UF K		L118			L40-1092-81	SMALL FIXED INDUCTOR	
C516			CC73GCH1H100D	CHIP C 10PF D		L119			L40-2263-77	SMALL FIXED INDUCTOR(22NH)	
C517			CK73GB1H471K	CHIP C 470PF K		L200			L40-3385-85	SMALL FIXED INDUCTOR(0.33UH)	
C518			CK73GB1E223J	CHIP C 0.022UF J		L201			L40-5685-85	SMALL FIXED INDUCTOR(0.56UH)	
C519			C92-0507-05	CHIP-TAN 4.7UF 6.3WV		L202			L40-2275-77	SMALL FIXED INDUCTOR(22NH)	
C520			CK73GB1E223J	CHIP C 0.022UF J		L203,204			L34-4546-05	AIR-CORE COIL	
C521			CK73GB1H102K	CHIP C 1000PF K		L206			L40-3375-77	SMALL FIXED INDUCTOR(33NH)	
C522			CK73FB1E104K	CHIP C 0.10UF K		L207			L40-3975-77	SMALL FIXED INDUCTOR(39NH)	
C523			C92-0587-05	CHIP-TAN 2.2UF 4WV		L208-211			L34-4546-05	AIR-CORE COIL	
C524			CK73GB1C273K	CHIP C 0.027UF K		L212			L34-4585-05	COIL	
C525			CK73GB1C104K	CHIP C 0.10UF K		L212			L34-4554-05	COIL	
C526			CK73GB1H471K	CHIP C 470PF K		L214			L34-4546-05	AIR-CORE COIL	
C527			C92-0560-05	CHIP-TAN 10UF 6.3WV		L215			L40-5685-85	SMALL FIXED INDUCTOR(0.56UH)	
C528			CK73GB1H471K	CHIP C 470PF K		L400			L40-2281-86	SMALL FIXED INDUCTOR(0.22UH)	
C529			CK73FB1H471K	CHIP C 470PF K		L401			L92-0140-05	FERRITE CHIP	
C530,531			CC73GCH1H221J	CHIP C 220PF J		L402,403			L40-2281-86	SMALL FIXED INDUCTOR(0.22UH)	
C532			CK73GB1H471K	CHIP C 470PF K		L500			L92-0140-05	FERRITE CHIP	
TC1			C05-0383-05	CERAMIC TRIMMER CAP		L501,502			L92-0149-05	FERRITE CHIP	
TC2			C05-0384-05	CERAMIC TRIMMER CAP		X1			L77-1756-05	TCXO(12.8MHZ)	
TC201			C05-0384-05	CERAMIC TRIMMER CAP		X400			L77-1761-05	CRYSTAL RESONATOR(7.3728MHZ)	
TC202			C05-0369-05	CERAMIC TRIMMER CAP		XF200			L71-0549-05	MCF(38.85MHZ)	
TC203			C05-0371-05	CERAMIC TRIMMER CAP					N78-2640-46	PAN HEAD TAPTITE SCREW	
2B			E23-1005-04	RELAY TERMINAL(BATT +)		CP1			R90-0724-05	MULTI-COMP 1K X4	
CN400			E40-5998-05	PIN ASSY		R1_2			RK73GB1J102J	CHIP R 1.0K J 1/16W	
J500			E11-0457-05	PHONE JACK (2.5/3.5)		R3			RK73GB1J100J	CHIP R 10 J 1/16W	
F500			F53-0130-05	FUSE		R4			RK73GB1J102J	CHIP R 1.0K J 1/16W	
32			G53-0862-04	PACKING		R5			RK73GB1J561J	CHIP R 560 J 1/16W	
			J19-1571-04	HOLDER		R6			RK73GB1J154J	CHIP R 150K J 1/16W	
			J30-1249-04	SPACER		R7			RK73GB1J561J	CHIP R 560 J 1/16W	
CF200			L72-0971-05	CERAMIC FILTER		R8			RK73GB1J334J	CHIP R 330K J 1/16W	
L1			L92-0140-05	FERRITE CHIP		R9			RK73GB1J272J	CHIP R 2.7K J 1/16W	
L2			L40-1005-85	SMALL FIXED INDUCTOR(10UH)		R10			RK73GB1J222J	CHIP R 2.2K J 1/16W	
L4			L40-4781-86	SMALL FIXED INDUCTOR(0.47UH)		R11			RK73GB1J473J	CHIP R 47K J 1/16W	
L5			L40-5681-86	SMALL FIXED INDUCTOR(0.56UH)		R12			RK73GB1J274J	CHIP R 270K J 1/16W	
L6			L40-1875-77	SMALL FIXED INDUCTOR(18NH)		R13			R92-1252-05	CHIP R 0 OHM	
L7			L92-0140-05	FERRITE CHIP		R14			RK73GB1J101J	CHIP R 100 J 1/16W	
L8			L40-1085-77	SMALL FIXED INDUCTOR(100NH)		R15			RK73GB1J103J	CHIP R 10K J 1/16W	
L9			L40-3391-86	SMALL FIXED INDUCTOR(3.3UH)		R16			RK73GB1J473J	CHIP R 47K J 1/16W	
L10			L92-0140-05	FERRITE CHIP		R17			RK73GB1J103J	CHIP R 10K J 1/16W	
L11			L40-3391-86	SMALL FIXED INDUCTOR(3.3UH)		R18			RK73GB1J104J	CHIP R 100K J 1/16W	
L12			L40-1085-77	SMALL FIXED INDUCTOR(100NH)		R19			RK73GB1J101J	CHIP R 100 J 1/16W	
L13,14			L33-0744-05	SMALL FIXED INDUCTOR		R20			RK73GB1J102J	CHIP R 1.0K J 1/16W	
L15			L40-1085-77	SMALL FIXED INDUCTOR(100NH)		R21			RK73GB1J104J	CHIP R 100K J 1/16W	
L16,17			L40-2285-38	SMALL FIXED INDUCTOR(220NH)		R22			RK73GB1J473J	CHIP R 47K J 1/16W	
L18			L40-4775-77	SMALL FIXED INDUCTOR(47NH)		R23			RK73GB1J682J	CHIP R 6.8K J 1/16W	
L19			L92-0140-05	FERRITE CHIP		R24			RK73GB1J822J	CHIP R 8.2K J 1/16W	
L20			L40-3391-86	SMALL FIXED INDUCTOR(3.3UH)		R25,26			RK73GB1J101J	CHIP R 100 J 1/16W	
L21			L40-2275-77	SMALL FIXED INDUCTOR(22NH)		R27			RK73GB1J271J	CHIP R 270 J 1/16W	
L100			L40-2275-77	SMALL FIXED INDUCTOR(22NH)		R28			RK73GB1J220J	CHIP R 22 J 1/16W	
L101			L40-1875-77	SMALL FIXED INDUCTOR(18NH)		R29			R92-1252-05	CHIP R 0 OHM	
L102			L40-1575-77	SMALL FIXED INDUCTOR(15NH)		R30			RK73GB1J124J	CHIP R 120K J 1/16W	
L103			L92-0140-05	FERRITE CHIP		R31			RK73GB1J101J	CHIP R 100 J 1/16W	
L104			L40-1098-76	SMALL FIXED INDUCTOR(1UH)		R32			RK73GB1J472J	CHIP R 4.7K J 1/16W	
L105			L92-0149-05	FERRITE CHIP		R33			RK73GB1J102J	CHIP R 1.0K J 1/16W	
L106			L34-4551-05	AIR-CORE COIL		R34			RK73GB1J104J	CHIP R 100K J 1/16W	
L107			L92-0149-05	FERRITE CHIP		R100			RK73GB1J332J	CHIP R 3.3K J 1/16W	
L109			L40-2285-54	SMALL FIXED INDUCTOR(220NH)		R101			RK73GB1J562J	CHIP R 5.6K J 1/16W	

PARTS LIST

TX-RX UNIT(X57-6010-50)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R102			RK73GB1J271J	CHIP R 270 J 1/16W		R227			R92-1252-05	CHIP R 0 OHM	
R103			RK73GB1J332J	CHIP R 3.3K J 1/16W		R300			RK73GH1J913D	CHIP R 91K D 1/16W	
R104			RK73GB1J100J	CHIP R 10 J 1/16W		R301,302			RK73GB1J562J	CHIP R 5.6K J 1/16W	
R105,106			RK73GB1J332J	CHIP R 3.3K J 1/16W		R303			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R107			RK73GB1J473J	CHIP R 47K J 1/16W		R304			RK73GB1J105J	CHIP R 1.0M J 1/16W	
R108			RK73GB1J331J	CHIP R 330 J 1/16W		R305			RK73GB1J183J	CHIP R 18K J 1/16W	
R109			RK73GB1J220J	CHIP R 22 J 1/16W		R306			RK73GB1J124J	CHIP R 120K J 1/16W	
R110			RK73GB1J681J	CHIP R 680 J 1/16W		R307			R92-1252-05	CHIP R 0 OHM	
R111			RK73GB1J220J	CHIP R 22 J 1/16W		R308			RK73GB1J103J	CHIP R 10K J 1/16W	
R112			RK73GB1J152J	CHIP R 1.5K J 1/16W		R309			RK73GB1J474J	CHIP R 470K J 1/16W	
R113			RK73GB1J331J	CHIP R 330 J 1/16W		R310,311			R92-0670-05	CHIP R 0 OHM	
R115			RK73GB1J100J	CHIP R 10 J 1/16W		R312			RK73GB1J123J	CHIP R 12K J 1/16W	
R117			RK73GB1J124J	CHIP R 120K J 1/16W		R313			RK73GB1J104J	CHIP R 100K J 1/16W	
R118			RK73GB1J473J	CHIP R 47K J 1/16W		R314			RK73GH1J474D	CHIP R 470K D 1/16W	
R119			RK73GB1J332J	CHIP R 3.3K J 1/16W		R315			RK73GH1J394D	CHIP R 390K D 1/16W	
R120			R92-1252-05	CHIP R 0 OHM		R316			RK73GB1J274J	CHIP R 270K J 1/16W	
R121			RK73GB1J470J	CHIP R 47 J 1/16W		R317			RK73GH1J274D	CHIP R 270K D 1/16W	
R122			RK73GB1J681J	CHIP R 680 J 1/16W		R318			RK73GB1J184J	CHIP R 180K J 1/16W	
R123			R92-0670-05	CHIP R 0 OHM		R320			RK73GB1J473J	CHIP R 47K J 1/16W	
R124			RK73GB1J681J	CHIP R 680 J 1/16W		R321			RK73GB1J223J	CHIP R 22K J 1/16W	
R125,126			RK73GB1J473J	CHIP R 47K J 1/16W		R322			RK73GH1J224D	CHIP R 220K D 1/16W	
R127			R92-0670-05	CHIP R 0 OHM		R323			RK73GB1J104J	CHIP R 100K J 1/16W	
R128			RK73GB1J470J	CHIP R 47 J 1/16W		R324			RK73GB1J562J	CHIP R 5.6K J 1/16W	
R130-132			RK73EB2ER39K	CHIP R 0.39 K 1/4W		R325			RK73GB1J104J	CHIP R 100K J 1/16W	
R133-138			RK73GH1J154D	CHIP R 150K D 1/16W		R326			RK73GH1J562D	CHIP R 5.6K D 1/16W	
R139			RK73GB1J271J	CHIP R 270 J 1/16W		R327			R92-1252-05	CHIP R 0 OHM	
R140			RK73GB1J103J	CHIP R 10K J 1/16W		R328			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R141			RK73GB1J273J	CHIP R 27K J 1/16W		R330			RK73GB1J473J	CHIP R 47K J 1/16W	
R142			RK73GB1J105J	CHIP R 1.0M J 1/16W		R331			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R143			R92-1252-05	CHIP R 0 OHM		R332			RK73GB1J151J	CHIP R 150 J 1/16W	
R144			RK73GB1J222J	CHIP R 2.2K J 1/16W		R333			RK73GB1J474J	CHIP R 470K J 1/16W	
R145			RK73GB1J184J	CHIP R 180K J 1/16W		R334			RK73GB1J100J	CHIP R 10 J 1/16W	
R146			RK73GB1J104J	CHIP R 100K J 1/16W		R335			RK73GB1J563J	CHIP R 56K J 1/16W	
R147			R92-1252-05	CHIP R 0 OHM		R336			RK73GB1J333J	CHIP R 33K J 1/16W	
R148			RK73GB1J121J	CHIP R 120 J 1/16W		R338			RK73GB1J473J	CHIP R 47K J 1/16W	
R154			RK73GB1J271J	CHIP R 270 J 1/16W		R339			RK73GB1J822J	CHIP R 8.2K J 1/16W	
R200			RK73GB1J100J	CHIP R 10 J 1/16W		R340			RK73GH1J124D	CHIP R 120K D 1/16W	
R201			RK73GB1J392J	CHIP R 3.9K J 1/16W		R342			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R202			RK73GB1J184J	CHIP R 180K J 1/16W		R400			RK73GB1J334J	CHIP R 330K J 1/16W	
R203,204			RK73GB1J332J	CHIP R 3.3K J 1/16W		R401			RK73GB1J104J	CHIP R 100K J 1/16W	
R205			RK73GB1J153J	CHIP R 15K J 1/16W		R402			RK73GB1J221J	CHIP R 220 J 1/16W	
R206			RK73GB1J184J	CHIP R 180K J 1/16W		R403			RK73GB1J181J	CHIP R 180 J 1/16W	
R207			RK73GB1J104J	CHIP R 100K J 1/16W		R404			R92-1252-05	CHIP R 0 OHM	
R208			RK73GB1J684J	CHIP R 680K J 1/16W		R405			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R209			RK73GB1J272J	CHIP R 2.7K J 1/16W		R406			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R210,211			RK73GB1J471J	CHIP R 470 J 1/16W		R407			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R212			RK73GB1J470J	CHIP R 47 J 1/16W		R408			RK73GB1J104J	CHIP R 100K J 1/16W	
R213			RK73GB1J391J	CHIP R 390 J 1/16W		R409			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R214			RK73GB1J103J	CHIP R 10K J 1/16W		R410			RK73GB1J822J	CHIP R 8.2K J 1/16W	
R215			RK73GB1J220J	CHIP R 22 J 1/16W		R411			RK73GB1J224J	CHIP R 220K J 1/16W	
R216			RK73GB1J102J	CHIP R 1.0K J 1/16W		R412			RK73GB1J100J	CHIP R 10 J 1/16W	
R217			R92-1252-05	CHIP R 0 OHM		R413			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R218			RK73GB1J101J	CHIP R 100 J 1/16W		R414,415			RK73GB1J473J	CHIP R 47K J 1/16W	
R219			RK73GB1J332J	CHIP R 3.3K J 1/16W		R416			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R220			RK73GB1J221J	CHIP R 220 J 1/16W		R417			RK73GB1J100J	CHIP R 10 J 1/16W	
R221			RK73GB1J224J	CHIP R 220K J 1/16W		R418			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R222			RK73GB1J102J	CHIP R 1.0K J 1/16W		R419			R92-1252-05	CHIP R 0 OHM	
R223			RK73GB1J104J	CHIP R 100K J 1/16W		R420			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R224,225			R92-1252-05	CHIP R 0 OHM		R421			RK73GB1J473J	CHIP R 47K J 1/16W	
R226			RK73GB1J222J	CHIP R 2.2K J 1/16W		R422			RK73GB1J272J	CHIP R 2.7K J 1/16W	

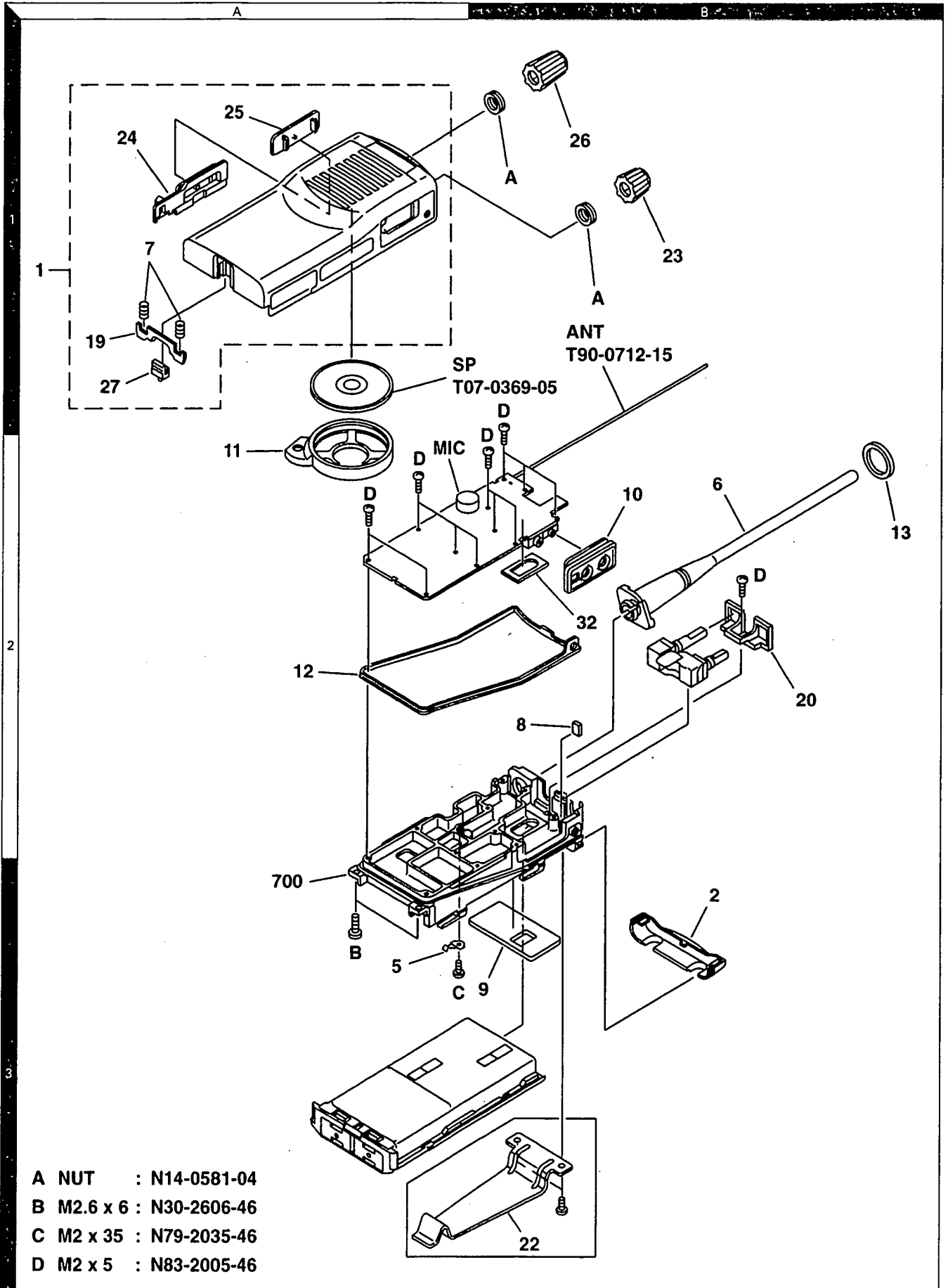
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PARTS LIST

TX-RX UNIT(X57-6010-50)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R423			RK73GB1J473J	CHIP R 47K J 1/16W		D102			HSC277	DIODE	
R424,425			RK73GB1J332J	CHIP R 3.3K J 1/16W		D200			HSC277	DIODE	
R426			RK73GB1J822J	CHIP R 8.2K J 1/16W		D300			DA221	DIODE	
R427			RK73GB1J102J	CHIP R 1.0K J 1/16W		D500			1SS372	DIODE	
R428			RK73GB1J272J	CHIP R 2.7K J 1/16W		D501			DAN222	DIODE	
R429			RK73GB1J821J	CHIP R 820 J 1/16W		D502			1SR154-400	DIODE	
R430			RK73GB1J101J	CHIP R 100 J 1/16W		IC1			MB15A02	IC	
R431			R92-1252-05	CHIP R 0 OHM		IC100			NJM2904V	IC(APC)	
R432			RK73GB1J103J	CHIP R 10K J 1/16W		IC200			TA31136FN	IC(FM IF DETECTOR)	
R433,434			RK73GB1J153J	CHIP R 15K J 1/16W		IC300			NJM2902V	IC	
R435			RK73GB1J103J	CHIP R 10K J 1/16W		IC301			NJM2904V	IC(APC)	
R500,501			RK73GB1J472J	CHIP R 4.7K J 1/16W		IC302			TA7368F	IC(AF POWER AMP)	
R502			RK73GB1J823J	CHIP R 82K J 1/16W		IC400			PST9140NR	IC(RESET SW)	
R503			RK73GB1J683J	CHIP R 68K J 1/16W		IC401			AT2408N10SI2.5	IC(8Kbit SERIAL EEPROM)	
R504			RK73GB1J333J	CHIP R 33K J 1/16W		IC402			RN5VL45C	IC(REGULATOR)	
R505			RK73GB1J124J	CHIP R 120K J 1/16W		IC403			M38267MBL238GP	IC(MPU)	
R506			RK73GB1J223J	CHIP R 22K J 1/16W		IC404			S-81350HG-KD	IC(VOLTAGE REGULATOR)	
R507			RK73GB1J153J	CHIP R 15K J 1/16W		IC500			NJM2100V	IC(AUDIO AMP)	
R508			RK73GB1J102J	CHIP R 1.0K J 1/16W		Q1			2SC4649(N,P)	TRANSISTOR	
R509			RK73GB1J124J	CHIP R 120K J 1/16W		Q2			2SC5108(Y)	TRANSISTOR	
R510			RK73GB1J332J	CHIP R 3.3K J 1/16W		Q3			2SK508NV(K52)	FET	
R511			RK73GB1J103J	CHIP R 10K J 1/16W		Q4			2SC4226(R24)	TRANSISTOR	
R512			RK73GB1J185J	CHIP R 1.8M J 1/16W		Q5			2SJ243	FET	
R513-515			RK73GB1J333J	CHIP R 33K J 1/16W		Q6			2SC5108(Y)	TRANSISTOR	
R516			RK73GB1J103J	CHIP R 10K J 1/16W		Q7			UMC4	TRANSISTOR	
R517			RK73GB1J185J	CHIP R 1.8M J 1/16W		Q8			2SC4617(S)	TRANSISTOR	
R518			RK73GB1J682J	CHIP R 6.8K J 1/16W		Q100,101			2SC5108(Y)	TRANSISTOR	
R519,520			RK73GB1J333J	CHIP R 33K J 1/16W		Q102			2SC4988	TRANSISTOR	
R521			R92-1252-05	CHIP R 0 OHM		Q103			2SK1824	FET	
R522			RK73GB1J182J	CHIP R 1.8K J 1/16W		Q104			FMM7717	TRANSISTOR	
R523			RK73GB1J682J	CHIP R 6.8K J 1/16W		Q105			2SK2596	FET	
R524			RK73GB1J513J	CHIP R 51K J 1/16W		Q106			2SK1824	FET	
R525			RK73GB1J152J	CHIP R 1.5K J 1/16W		Q107			2SK2595	FET	
R526			RK73GH1J163D	CHIP R 16K D 1/16W		Q108			DTC114EE	DIGITAL TRANSISTOR	
R527			RK73GH1J153D	CHIP R 15K D 1/16W		Q109			DTA144EE	DIGITAL TRANSISTOR	
R528			RK73GB1J754J	CHIP R 750K J 1/16W		Q200			DTA114EE	DIGITAL TRANSISTOR	
R529			RK73GB1J183J	CHIP R 18K J 1/16W		Q201			2SC4649(N,P)	TRANSISTOR	
R530			RK73GB1J101J	CHIP R 100 J 1/16W		Q202,203			3SK228	FET	
R531			R92-1252-05	CHIP R 0 OHM		Q300			2SC4617(S)	TRANSISTOR	
R532			RK73GB1J821J	CHIP R 820 J 1/16W		Q302			2SK1824	FET	
R533			RK73GB1J104J	CHIP R 100K J 1/16W		Q304			DTC144EE	DIGITAL TRANSISTOR	
R534			RK73GB1J182J	CHIP R 1.8K J 1/16W		Q305			2SA1362(GR)	TRANSISTOR	
R535			RK73GB1J471J	CHIP R 470 J 1/16W		Q306			DTC144EE	DIGITAL TRANSISTOR	
R536			RK73GB1J102J	CHIP R 1.0K J 1/16W		Q307			2SK1588	FET	
R537,538			RK73GB1J101J	CHIP R 100 J 1/16W		Q400,401			DTC114EE	DIGITAL TRANSISTOR	
R539			R92-1252-05	CHIP R 0 OHM		Q402			DTA114YE	DIGITAL TRANSISTOR	
R540			R92-0670-05	CHIP R 0 OHM		Q403			DTC144EE	DIGITAL TRANSISTOR	
R541			RK73GB1J472J	CHIP R 4.7K J 1/16W		Q404			UMG3N	TRANSISTOR	
R542			R92-1252-05	CHIP R 0 OHM		Q405			UPA672T	FET	
R548			R92-1252-05	CHIP R 0 OHM		Q406			FP210	TRANSISTOR	
VR1			R12-7491-05	TRIMMING POT.(68K)		Q407			UMG3N	TRANSISTOR	
VR500			R12-7491-05	TRIMMING POT.(68K)		Q408			DTA123JE	DIGITAL TRANSISTOR	
VR501			R12-7490-05	TRIMMING POT.(47K)		Q501,502			2SC4617(S)	TRANSISTOR	
S402,403			S70-0414-05	TACT SWITCH		Q503			2SC4919	TRANSISTOR	
MIC500			T91-0543-05	MIC ELEMENT		Q504			DTA143ZE	DIGITAL TRANSISTOR	
D1 -4			MA2S376	VARIABLE CAPACITANCE DIODE		TH500			157-302-65801	THERMISTOR	
D5			MA360	VARIABLE CAPACITANCE DIODE		TH501			157-503-65001	THERMISTOR	
D6 ,7			MA2S111	DIODE							
D100			HSC277	DIODE							
D101			HVU131	DIODE							

EXPLODED VIEW

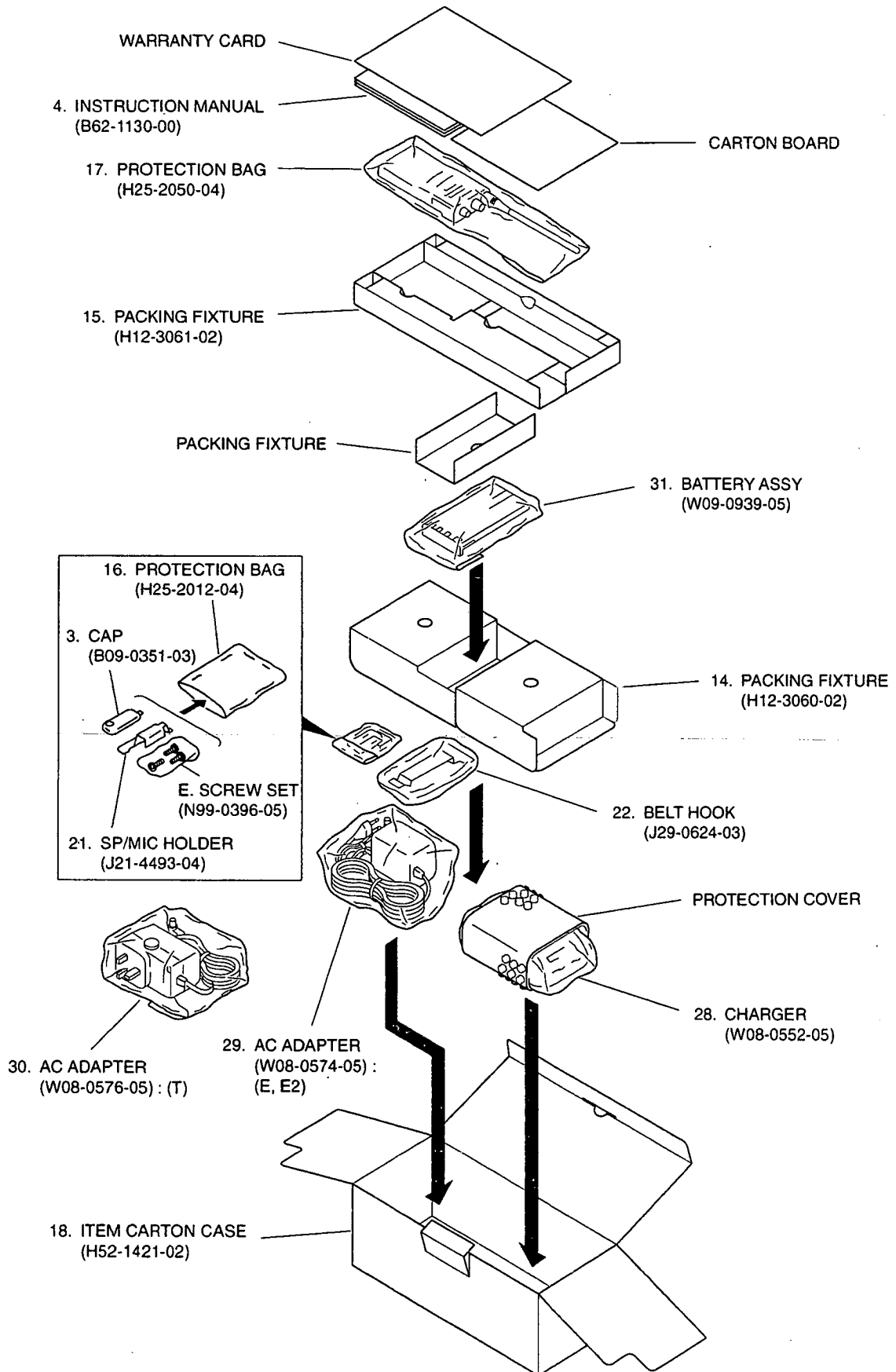


- A NUT : N14-0581-04
- B M2.6 x 6 : N30-2606-46
- C M2 x 35 : N79-2035-46
- D M2 x 5 : N83-2005-46

Parts with exploded numbers larger than 700 are not supplied.

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PACKING



ADJUSTMENT

Required Test Equipment

1. Stabilized Power supply

1. The supply voltage can be changed between 5V and 18V, and the current is 3A or more.
2. The standard voltage is 7.5V.

2. DC Ammeter

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

3. Frequency Counter (f. counter)

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

4. Power Meter

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

5. RF Voltmeter(RF V.M)

1. Measurable frequency : Up to 600MHz or so.

6. Linear Detector

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

7. Digital Voltmeter

1. Voltage range : FS=18V or so
2. Input resistance : 1MΩ or more

8. Oscilloscope

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

9. AF Voltmeter (AF V.M)

1. Measurable frequency : 50Hz to 1MHz
2. Maximum sensitivity : 1mV or more

10. Spectrum Analyzer

1. Measuring range : DC to 1GHz or more

11. Standard Signal Generator (SSG)

1. Maximum frequency : 600MHz or more
2. Output : -133dBm/0.05μV to 7dBm/501mV
3. Output impedance : 50Ω

12. Tracking Generator

1. Center frequency : 50kHz to 600MHz
2. Frequency deviation : ±35MHz
3. Output voltage : 100mV or more

13. Dummy Load

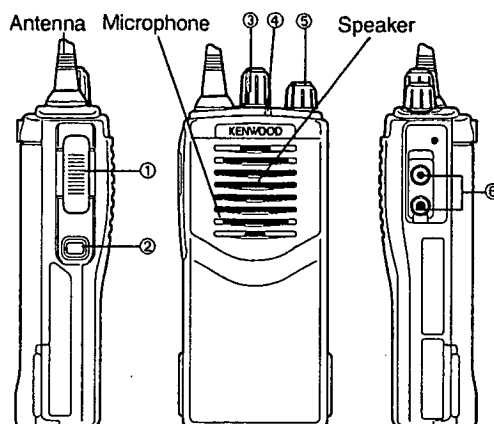
1. 8Ω, 3W or more

14. AF Generator(AG)

1. Frequency range : 100Hz to 100kHz
2. Output : 0.5mV to 1V

15. Distortion Meter

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

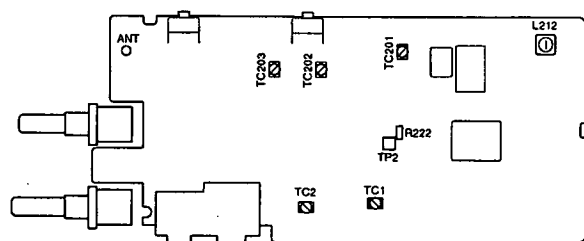


- | | |
|--------------------|-------------------------------|
| ① PTT switch | ④ LED indicator |
| ② Monitor key | ⑤ Power switch/Volume control |
| ③ Channel selector | ⑥ SP/MIC JACK |

- Use a non-conductive rod such as a Bakelite rod for adjustment (especially of trimmers and coils).
- To protect the SSG, do not send out signals while adjusting the receiving unit.
- The indicated SSG output levels are for maximum output.

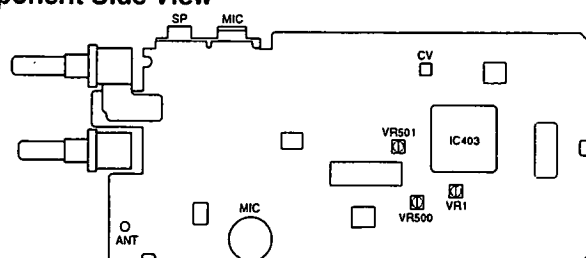
Adjustment points

Foil Side View



- | | | | |
|-------|----------------------------------|--------|---|
| L212: | AF level adjustment | TC201: | RF-Band-pass filter waveform adjustment |
| TC1: | Transmit lock voltage adjustment | TC202: | } filter waveform adjustment |
| TC2: | Receive lock voltage adjustment | TC203: | |
| | | TP2: | Band-pass filter test point |

Component Side View



- | | |
|--------|----------------------------------|
| ANT: | Antenna terminal |
| SP: | Speaker jack |
| MIC: | Microphone jack |
| CV: | Lock voltage adjustment terminal |
| VR500: | DQT waveform adjustment |
| VR501: | DEV adjustment |

Note : To fine tune the frequency when not using a computer, adjust VR1.

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ADJUSTMENT

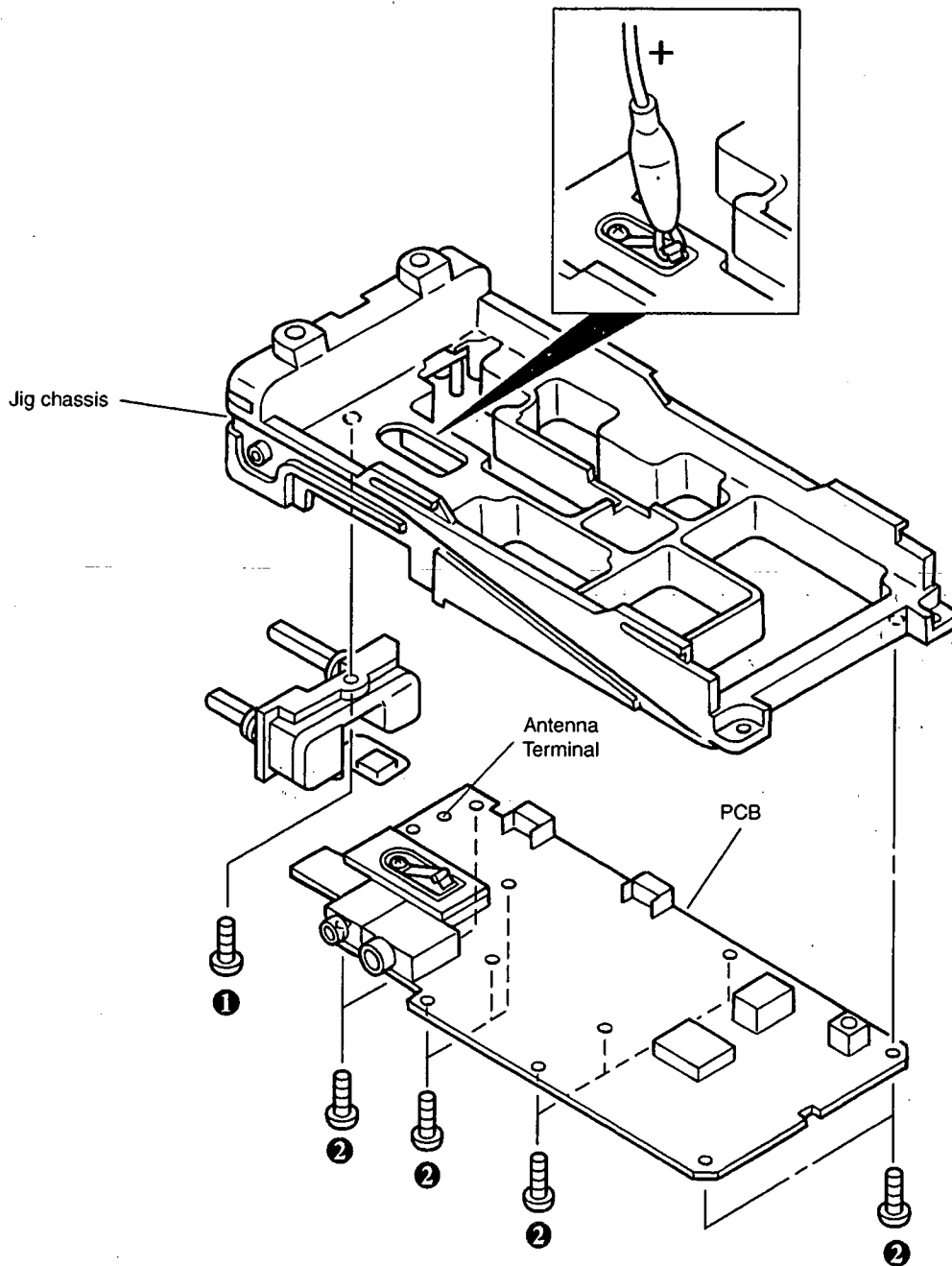
1. Jig chassis for adjustment. (part number W05-0740-00)

2. Use the jig chassis as follows.

1. Attach the switches to the jig chassis and secure it with its screw ①.
2. Attach the PCB to the jig chassis and secure it with its 11 screws ②.
3. Solder the antenna connector to the antenna terminal of the PCB.

Notes: Supply power from an external power supply.

(Relay terminal:+
Jig chassis:-)



ADJUSTMENT

Use the KPG-54D programming software for adjustment of the next item in PC MODE.

Squelch Level, Transmit frequency, DQT Balance, RF Power, QT Deviation, DQT Deviation, Battery Level

Common Section

Item	Condition	Measurement			Adjustment		Specifications/ Remarks
		Test- equipment	Unit	Terminal	Parts	Method	
1. Adjustment frequency			446.04375MHz : T,E		446.0500MHz : E2		
2. Setting							
3. VCO lock voltage	1) Transmit 2) Receive	Digital voltmeter		CV	TC1 TC2	3.0V 3.0V	±0.1V ±0.1V

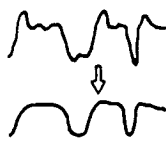
Receiver Section

Item	Condition	Measurement		Adjustment		Specifications/ Remarks
		Test equipment	Terminal	Parts	Method	
1. RF Band- pass filter	1) Tra generator output -40dBm Connect the spectrum analyzer to TP2 terminal.	Tra generator Spectrum analyzer	ANT TP2	TC201 TC202 TC203	Adjust the frequency so that it becomes the spectrum waveform shown in Fig.1.	
2. Sensitivity	1) SSG output: -116dBm (0.35μV) MOD: 1kHz DEV: ±1.5kHz	SSG Oscilloscope AF. V. M Distortion meter	ANT SP		Check	SINAD: 12dB or higher
3. AF level	1) SSG output: -53dBm (501μV)			L212	Adjust to the MAX AF level	
4. Squelch Level (PC MODE)	1) MONI: ON			PC key	Level 9 Adjust to close the squelch.	The squelch must be closed.
	2) Level 9 SSG output: -112dBm (0.562μV)				Level 3 Adjust to close the squelch.	The squelch must be closed.
	3) Level 3 SSG output: -125dBm (0.126μV)					

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ADJUSTMENT

Transmitter section

Item	Condition	Measurement		Adjustment		Specifications/ Remarks	
		Test equipment	Terminal	Parts	Method		
1. Transmit frequency (PC MODE)	1) PTT: ON	Frequency counter	ANT	PC key	Adjust to 446.04375MHz :T,E 446.0500MHz : E2	within ± 100 Hz	
2. DQT/QT Balance (PC MODE)	1) PTT: ON	Modulation analyzer or linear detector (LPF: 3kHz) Oscilloscope		VR500	Rectify the waveform to square wave		
3. Power (PC MODE)	1) Battery terminal: 7.5V PTT: ON	Power meter Ammeter			Adjust it to 1.0W	± 0.1 W	
4. MAX DEV	1) AG: 1kHz/120mV PTT: ON	Modulation analyzer or linear detector (LPF:15kHz) Oscilloscope	ANT MIC	VR501	Adjust it to ± 2.1 kHz (+, - Peak whichever is Maximum)	± 100 Hz	
5. MIC SENS	1) AG: 1kHz/12mV PTT: ON	Oscilloscope AG AF. V. M			Check (+, - Peak whichever is Maximum)	± 1.1 kHz~1.8kHz:	
6. QT DEV (PC MODE)	1) QT: 67Hz PTT: ON	Modulation analyzer or linear detector (LPF:3kHz) Oscilloscope	ANT	PC key	Adjust to ± 0.35 kHz	± 50 Hz	
7. DQT DEV (PC MODE)	1) PTT: ON	Modulation analyzer or linear detector (LPF:3kHz) Oscilloscope		PC key	Adjust it to ± 0.35 kHz	± 50 Hz	
8. Battery Level (PC MODE)	1) Battery terminal: 5.8V	Digital voltmeter	BATT	PC key	Adjust so that the LED flashes.	The LED must flash.	

Note: When you replace the TK-3101 EEPROM (IC401) with a new one, you can only program it by first copying the data from another TK-3101 to a PC, and then copying the data to the new EEPROM from the PC.

PC Mode frequency table

Freq. No.	T, E	E2
	Frequency (MHz)	Frequency (MHz)
1	446.00625MHz	446.0125MHz
2	446.01875MHz	446.0250MHz
3	446.03125MHz	446.0375MHz
4	446.04375MHz	446.0500MHz
5	446.05625MHz	446.0625MHz
6	446.06875MHz	446.0750MHz
7	446.08125MHz	446.0875MHz
8	446.09375MHz	N / A

BPF-Waveform

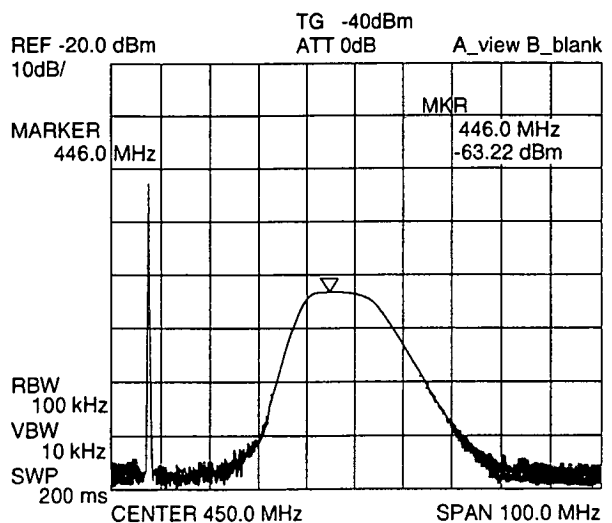
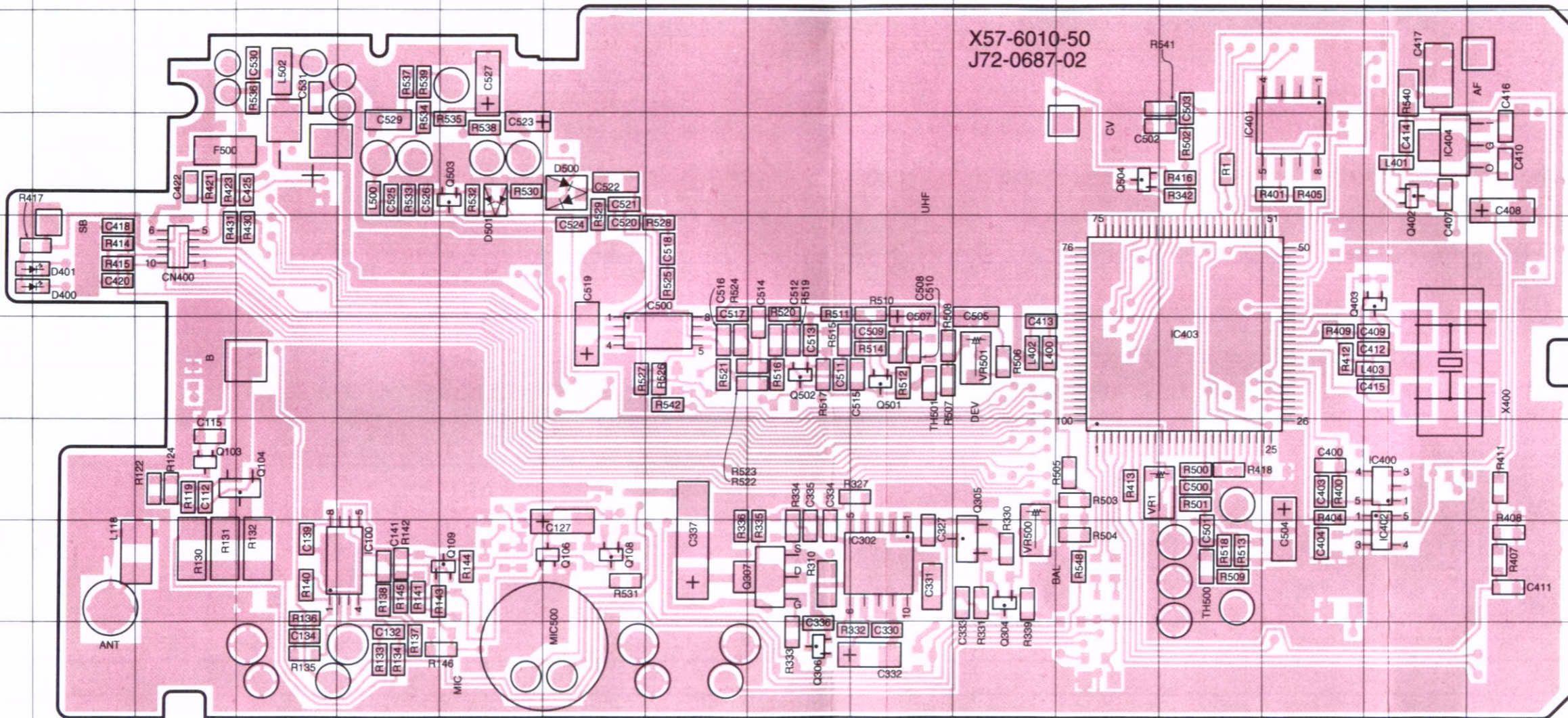


Fig. 1

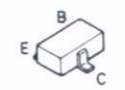
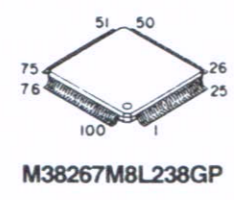
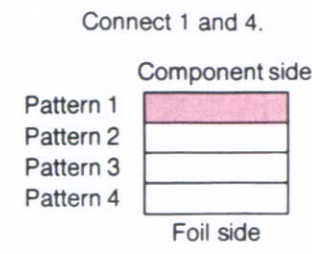
TK-3101 PC BOARD VIEWS

TX-RX UNIT (X57-6010-50) Component Side View

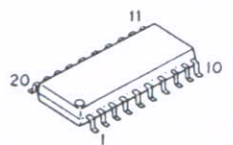
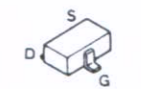
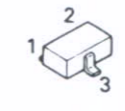
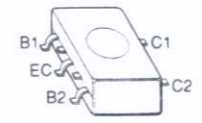
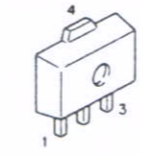
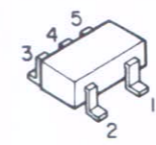


TX-RX UNIT (X57-6010-50)
(Component side)

Ref No.	Address
IC100	9E
IC302	9J
IC400	8O
IC401	5N
IC402	9O
IC403	7M
IC404	5O
IC500	7H
Q103	8C
Q104	8D
Q106	9G
Q108	9G
Q109	9F
Q304	9K
Q305	9K
Q306	10I
Q307	9I
Q402	5O
Q403	6O
Q501	7J
Q502	7I
Q503	5F
Q504	5L
D400	6B
D401	6B
D500	5G
D501	5F

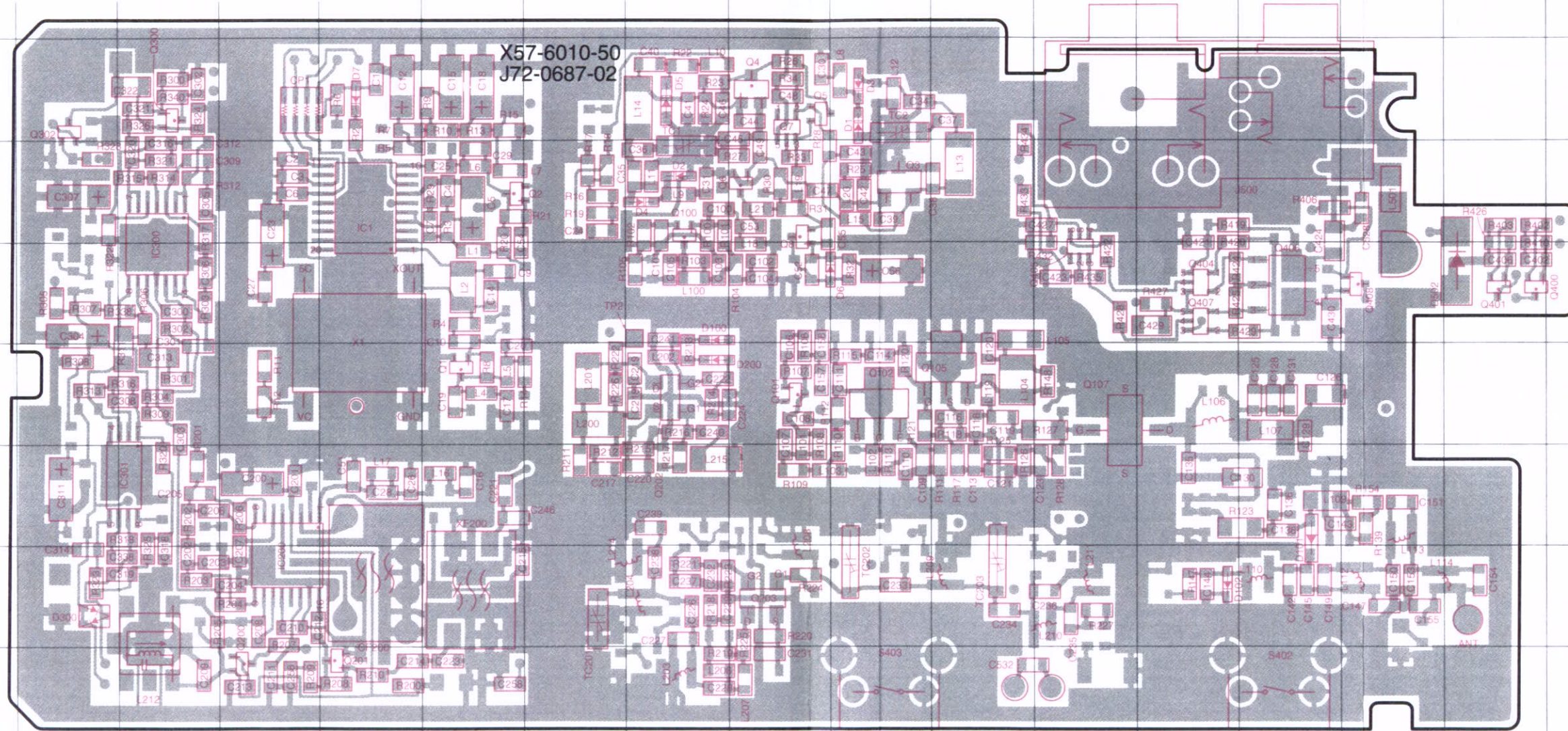


DTC144EE
FMMT717
2SA1362
2SC4226
2SC4617
2SC5108



PC BOARD VIEWS TK-3101

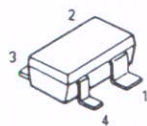
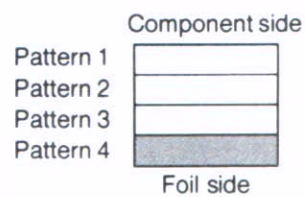
TX-RX UNIT (X57-6010-50) Foil Side View



TX-RX UNIT (X57-6010-50)
(Foil side)

Ref No.	Address
IC1	5E
IC200	9D
IC300	6C
IC301	8C
Q1	7F
Q2	5F
Q3	5J
Q4	4I
Q5	4I
Q6	5I
Q7	4I
Q8	5I
Q100	5H
Q101	7I
Q102	7J
Q105	7K
Q107	7L
Q200	10D
Q201	10E
Q202	7H
Q203	9I
Q300	4C
Q302	4B
Q400	6P
Q401	6P
Q404	6M
Q405	6L
Q406	6N
Q407	6M
Q408	6O
D1	4J
D2	5H
D3	4J
D4	5H
D5	4H
D6	6I
D7	4E
D100	6H
D101	8N
D102	9M
D200	7H
D300	9B
D502	6P

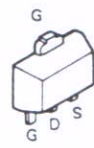
Connect 1 and 4.



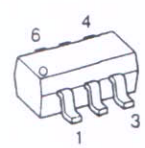
3SK228



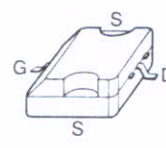
2SK1588



2SK2596



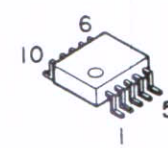
UPA672T



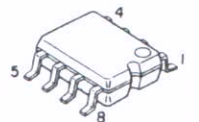
2SK2595



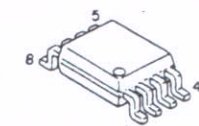
S-81350HG-KD



TA31136FN



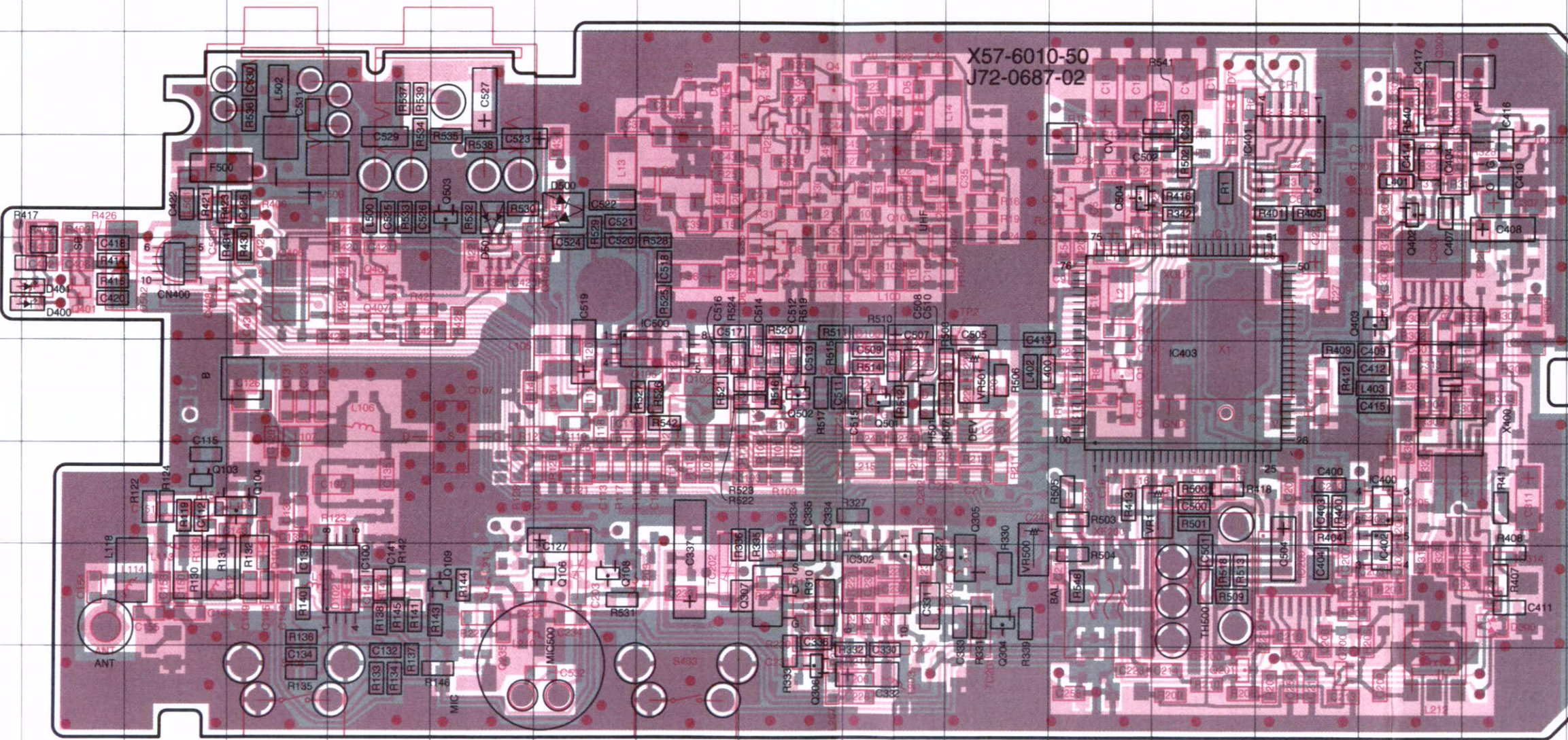
AT2408N10SI2.5



NJM2100V
NJM2904V

TK-3101 PC BOARD VIEWS

TX-RX UNIT (X57-6010-50) Component Side + Foil Side View



TX-RX UNIT (X57-6010-50)
(Component + Foil s:de)

Ref No.	Address
IC1	5M
IC100	9E
IC200	9N
IC300	6O
IC301	8O
IC302	9J
IC400	8O
IC401	5N
IC402	9O
IC403	7M
IC404	5O
IC500	7H
Q1	7L
Q2	5L
Q3	5H
Q4	4I
Q5	4I
Q6	5I
Q7	4I
Q8	6I
Q100	5J
Q101	7I
Q102	7H
Q103	8C
Q104	8D
Q105	7H
Q106	9G
Q107	7F
Q108	9G
Q109	9F
Q200	10N
Q201	10M
Q202	7J
Q203	9I
Q300	4O
Q302	4P
Q304	9K
Q305	9K
Q306	10I
Q307	9I
Q400	6B
Q401	6B
Q402	5O
Q403	6O
Q404	6E
Q405	6F
Q406	6D
Q407	6E
Q408	6C
Q501	7J
Q502	7I
Q503	5F
Q504	5L
D1	4H
D2	5J
D3	4H
D4	5J
D5	4J
D6	6I
D7	4M
D100	7J
D101	9D
D102	9E
D200	7J
D300	9P
D400	6B
D401	6B
D500	5G
D501	5F
D502	6B

● Connect 1 and 4.

Pattern 1
Pattern 2
Pattern 3
Pattern 4

Component side
Foil side

M38267M8L238GP

2SC4988

DTA114EE
DTA114YE
DTA123JE
DTA143ZE
DTA144EE
DTC114EE

DTC144EE
FMMT717
2SA1362
2SC4226
2SC4617
2SC5108

UMC4

2SK2596

FP210

UPA672T

DA221

S-81350HG-KD

2SK508NV

AT2408N10SI2.5

MB15A02

2SK2595

3SK228

2SK1588

TA7368F

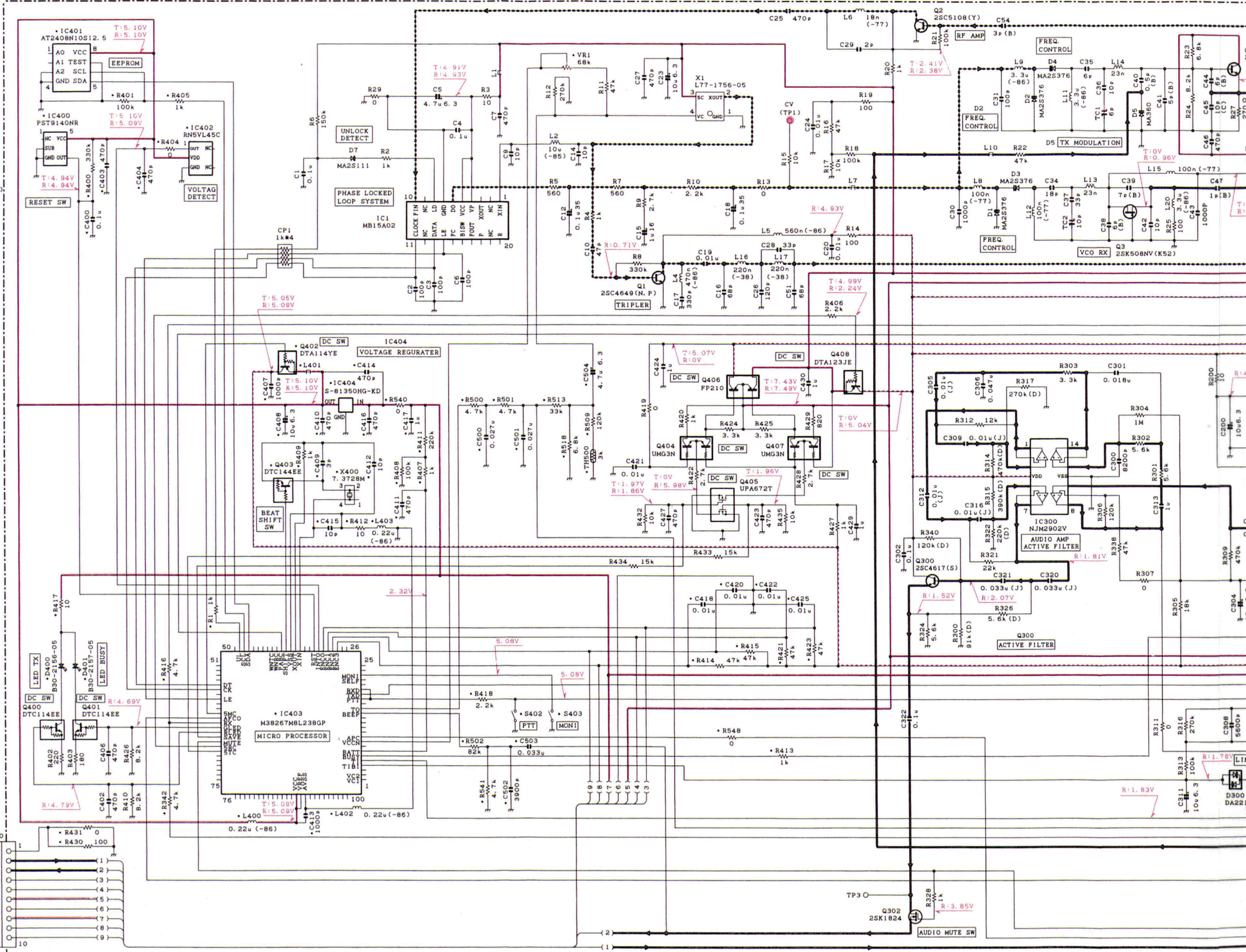
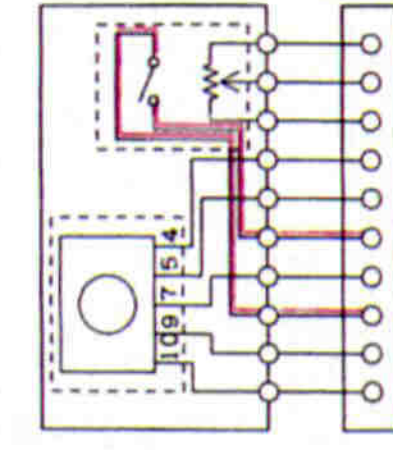
TX-RX UNIT (X57-6010-50)

- IC1 : MB15A02
- IC100 : NJM2904V
- IC200 : TA31136FN
- IC300 : NJM2902V
- IC301 : NJM2904V
- IC302 : TA7368F
- IC400 : PST9140NR
- IC401 : AT2408N10S12.5
- IC402 : RN5VL45C
- IC403 : M38267M8L238GP
- IC404 : S-81350HG-KD
- IC500 : NJM2100V

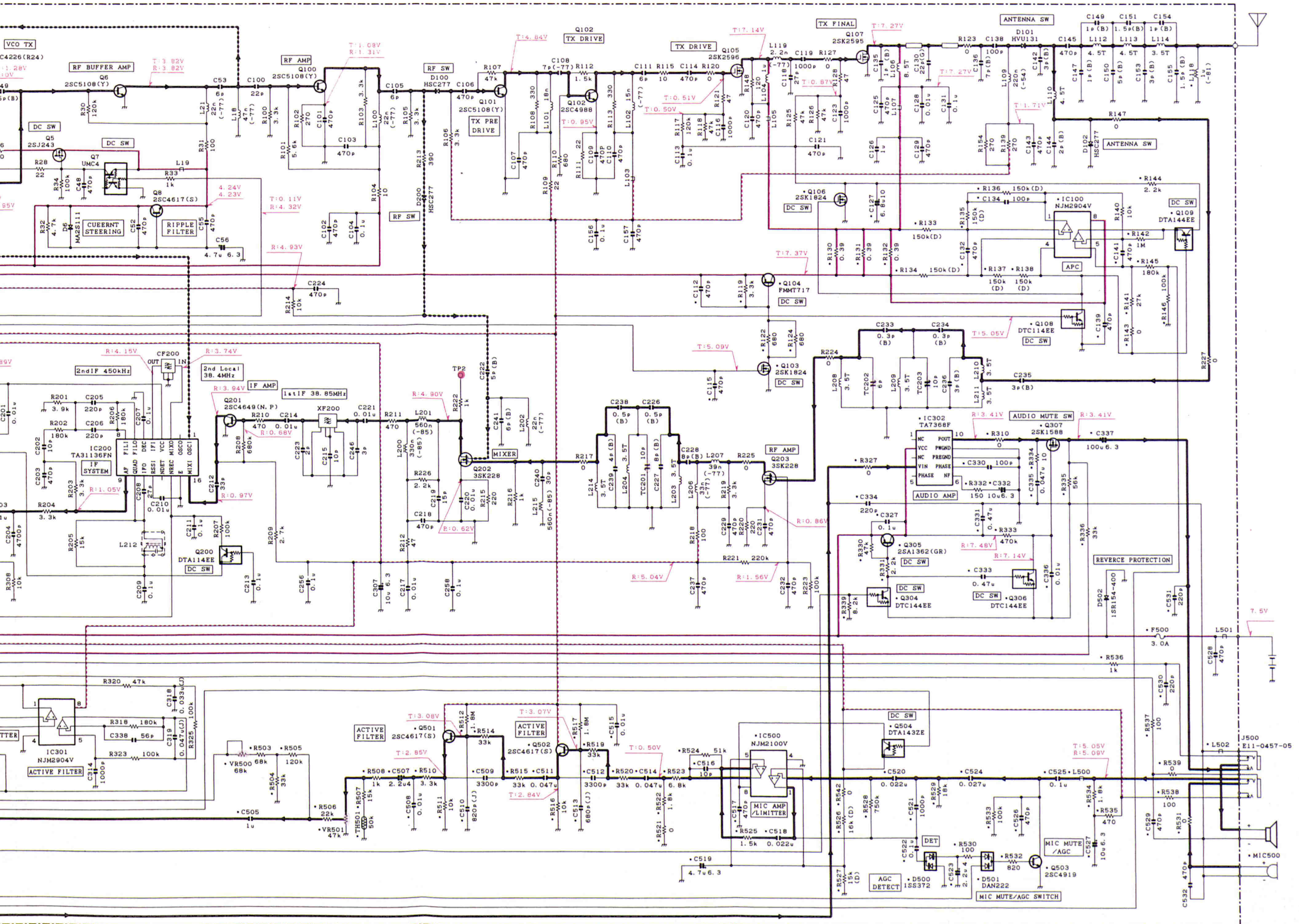
- Q1. 201 : 2SC4649(N.P)
- Q2. 6 : 2SC5108(Y)
- Q3 : 2SK508NV(K52)
- Q4 : 2SC4226(R24)
- Q5 : 2SJ243
- Q6. 100. 101 : 2SC5108(Y)
- Q7 : UMC4
- Q8. 300. 501. 502 : 2SC4617(S)
- Q102 : 2SC4988
- Q103. 106. 302 : 2SK1824
- Q104 : FM4717
- Q105 : 2SK2596
- Q107 : 2SK2595
- Q108. 400. 401 : DTC114EE
- Q109. 200 : DTA144EE
- Q200 : DTA114EE
- Q201 : 2SC4649(N.P)
- Q202. 203 : 3SK228
- Q304. 306. 403 : DTC144EE
- Q305 : 2SA1362(GR)
- Q307 : 2SK1588
- Q402 : DTA114YE
- Q404. 407 : UMG3N
- Q405 : UPA672T
- Q406 : FP210
- Q408 : DTA123JE
- Q501. 502 : 2SC4617(S)
- Q503 : 2SC4919
- Q504 : DTA143ZE

- D1-4 : MA2S376
- D5 : MA360
- D6. 7 : MA2S111
- D100 : HSC277
- D101 : HVU131
- D102. 200 : HSC277
- D300 : DA221
- D400 : B30-2156-05
- D401 : B30-2157-05
- D500 : 1SS372
- D501 : DAN222
- D502 : 1SR154-400

CHANNEL SWITCH
POWER SWITCH
AUDIO VOLUME



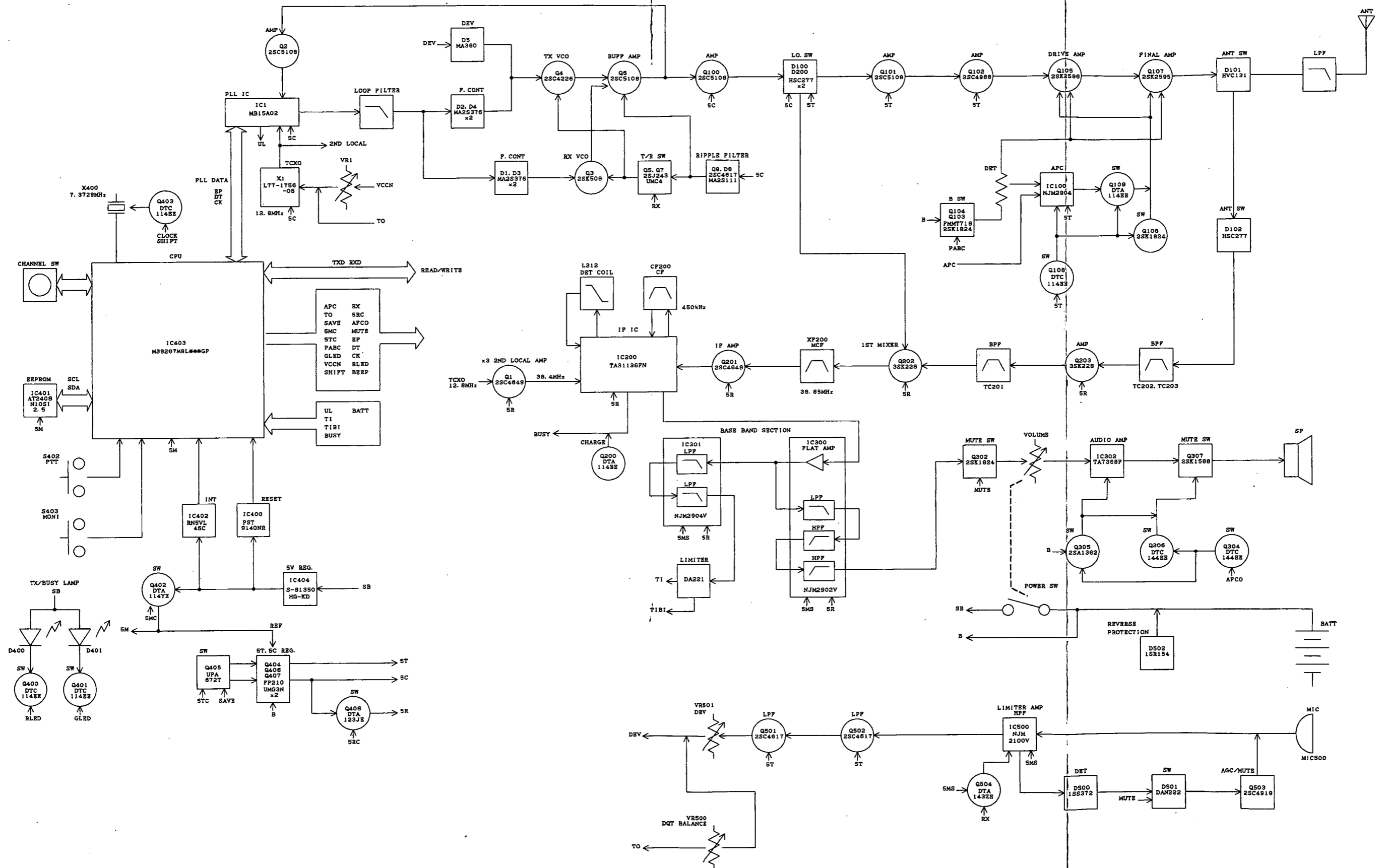
SCHEMATIC DIAGRAM TK-3101



Note : Component marked with a dot (•) are parts of pattern1.

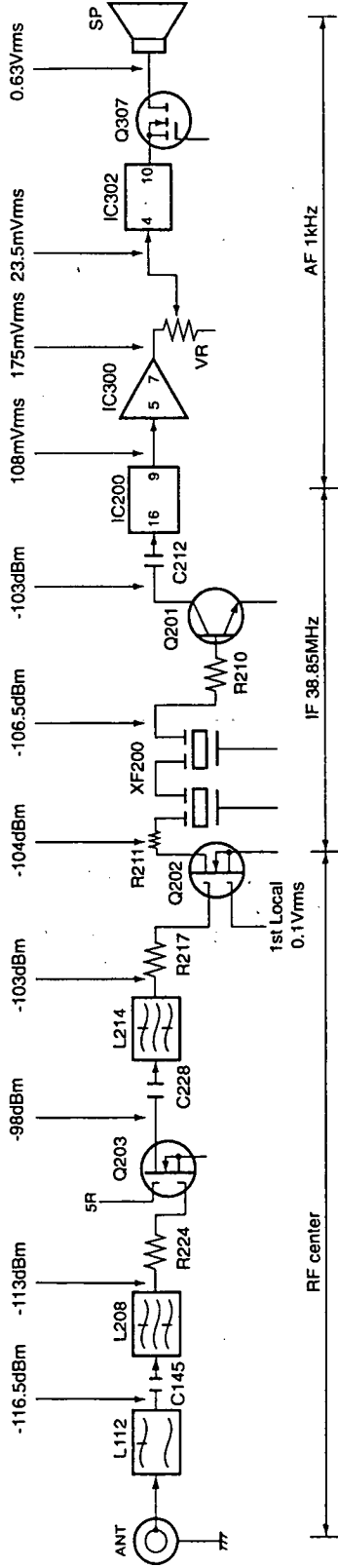
TK-3101 TK-3101

BLOCK DIAGRAM



LEVEL DIAGRAM

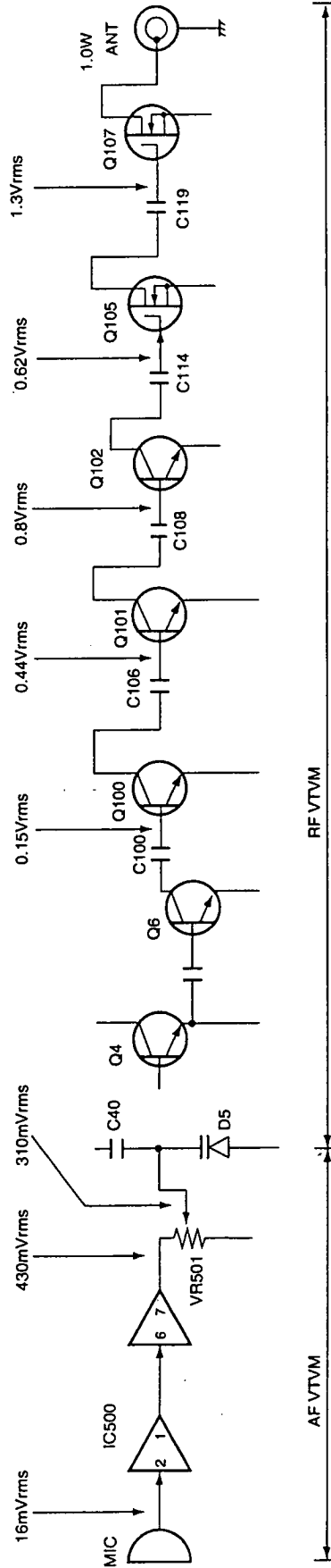
RX section



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

SG output level for obtaining 12dB / SINAD when injected to each point through a 470PF coupling capacitor. Measure the 1st Local level on a RF VTVM.

TX section



Measure the audio frequency on an AF VTVM and radio frequency on a RF VTVM at high impedance. Set the MIC input obtain a modulation factor of 60% with the transmit frequency at center and a modulation frequency of 1kHz.

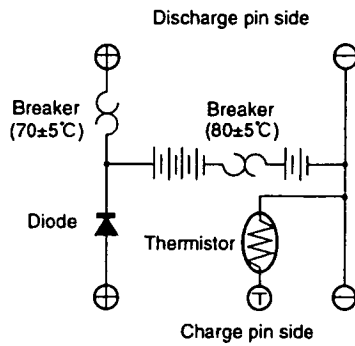
TK-3101

KNB-14/KNB-15A (Ni-Cd Battery)

KNB-14



CIRCUITDIAGRAM



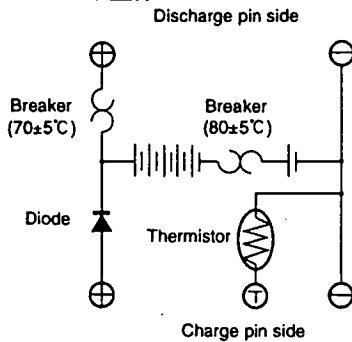
SPECIFICATIONS

Voltage : 7.2V(1.2Vx6)
Charging current : 600mAh
Dimensions : 60.8Wx110.8Hx17.3D(mm)
(projections included)
Charger and charging time:
KSC-15 (normal charger), approximately 8 hours
KSC-16 (rapid charger), approximately 1 hour
Weight : 165g

KNB-15A



CIRCUITDIAGRAM

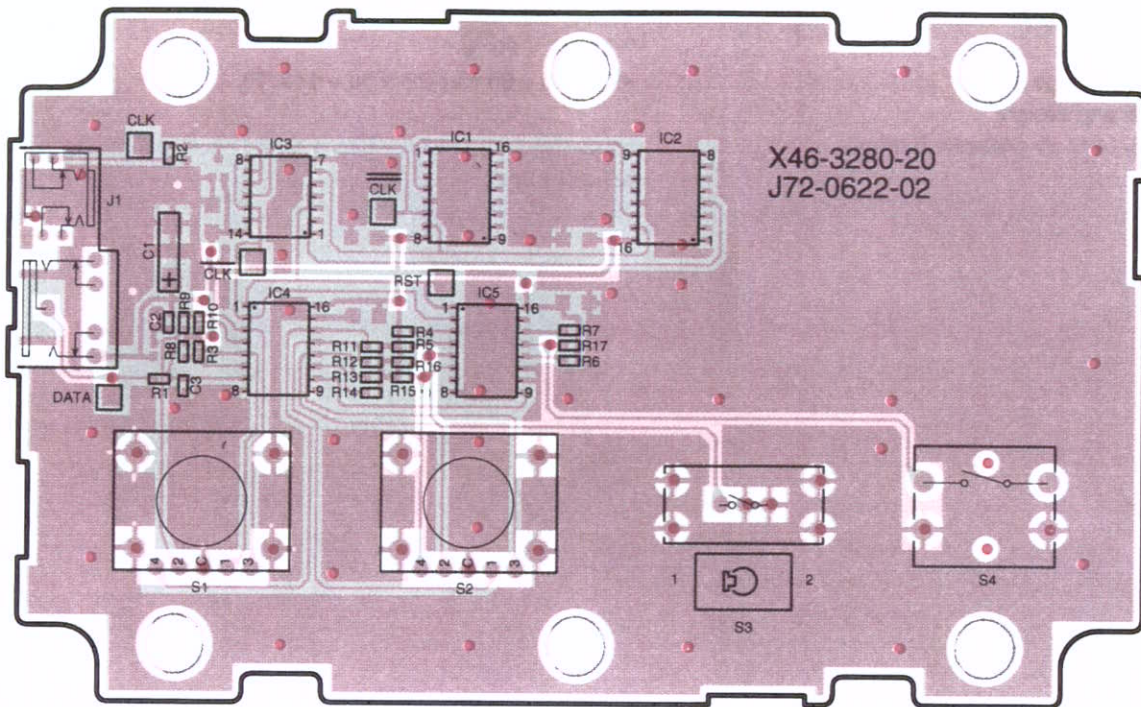


SPECIFICATIONS

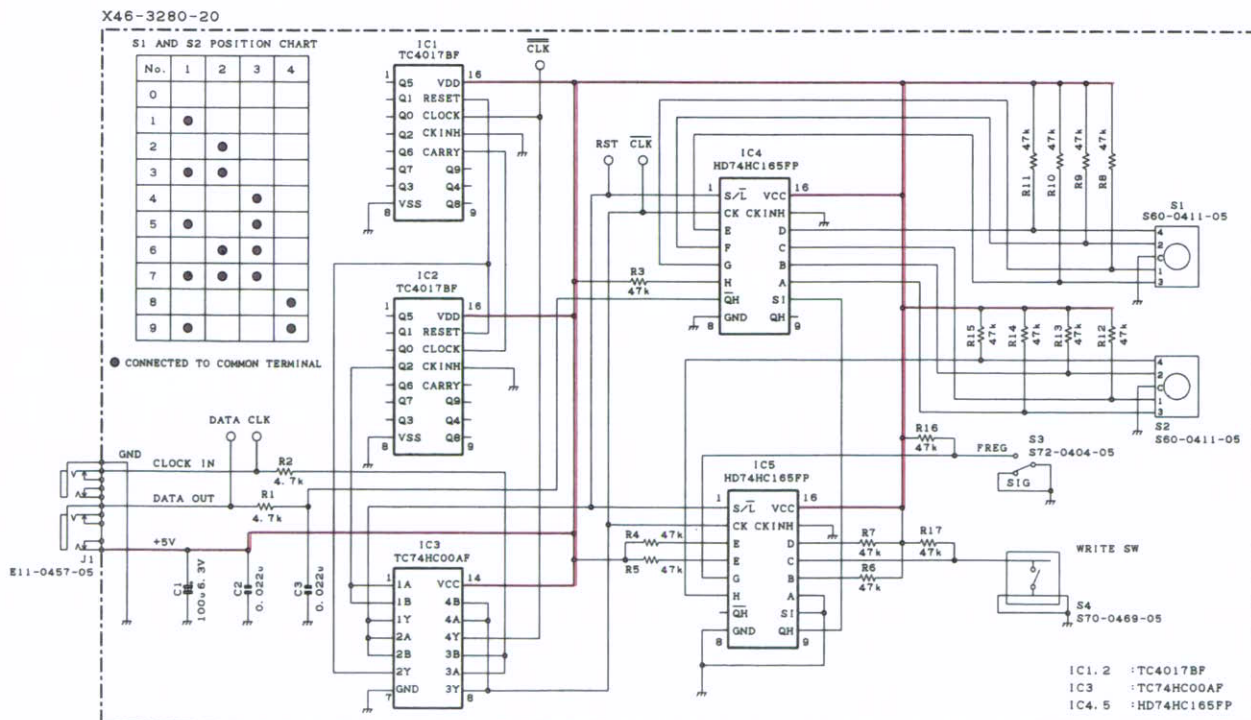
Voltage : 7.2V(1.2Vx6)
Charging current : 1100mAh
Dimensions : 60.8Wx110.8Hx20.3D(mm)
(projection included)
Charger and charging time:
KSC-15 (normal charger), approximately 8 hours
KSC-16 (rapid charger), approximately 2 hours
Weight : 210g

KPT-60 (CHANNEL & TONE PROGRAMMER)

DIGITAL UNIT (X46-3280-20) Component side view



DIGITAL UNIT (X46-3280-20)



TK-3101

SPECIFICATIONS

GENERAL

Frequency Range	446.0 to 446.1MHz
RF power output	500mW ERP
Number of channels	15CH
Operating Voltage	7.5 VDC \pm 20 %
Temperature Range	-30 °C to + 60 °C (-22 °F to + 140 °F)
Dimensions and Weight	
with KNB-14 (7.2V 600mAh battery)	58 (2-1/4) W X 125.5 (4-7/8) H X 32 (1-1/4) D mm (inches) 330g (11.6oz)

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