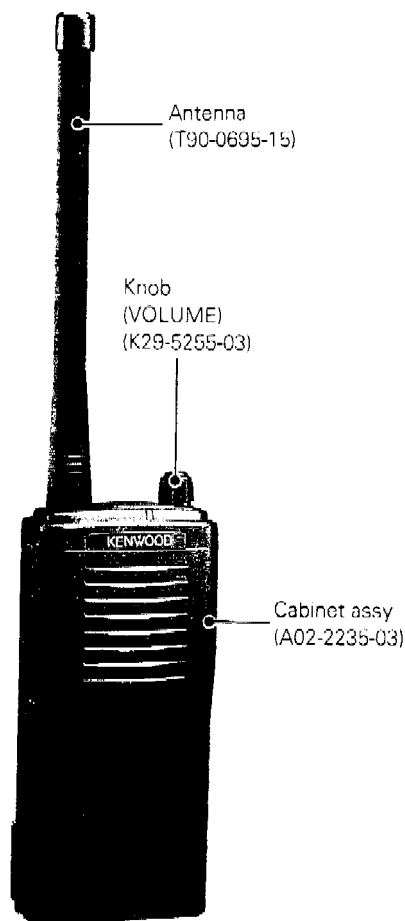
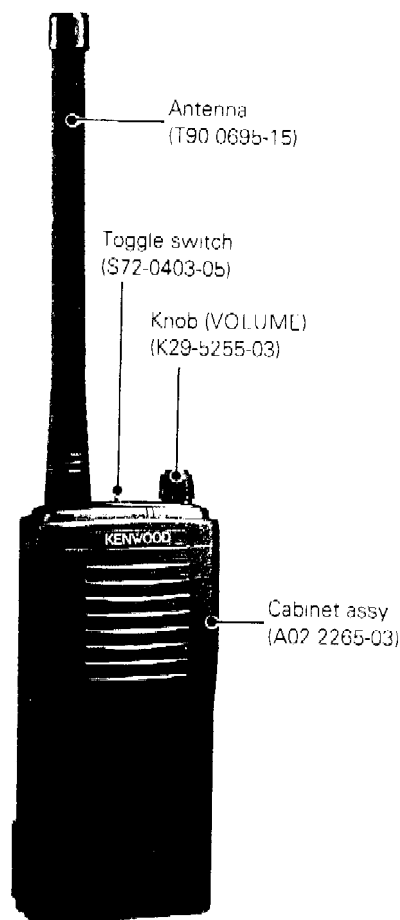




TK-2100 (1 channel)



TK-2100 (2 channel)

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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

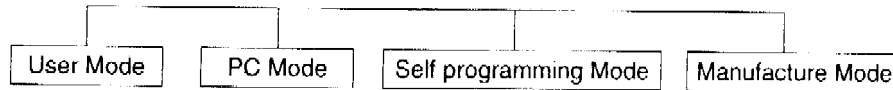
WE CANNOT guarantee oscillator stability when using channel element manufactured by other than KENWOOD or its authorized agents.

TK-2100

Destination	number of CH	Frequency No./Frequency	Color	Factory default CH setting	RF power output
K	1channel	1 151.6250MHz 2 151.9550MHz 3 154.5700MHz 4 154.6000MHz	Red Purple Blue Green	154.5700MHz/QT 67.0Hz Color : Blue	2W
K2	2 channel			CH1 : 154.5700MHz/QT 67.0Hz Color : Blue	
				CH2 : 154.6000MHz/QT 67.0Hz Color : Green	

REALIGNMENT

1 Modes

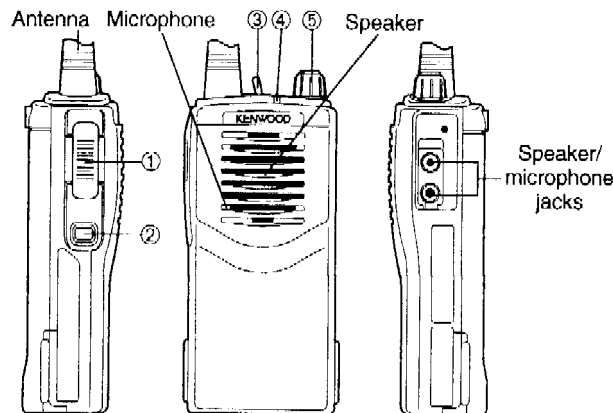


MODE	FUNCTION
User Mode	Use this mode for normal operation.
PC Mode	Use this mode, to make various settings by means of the FPU through the RS-232C port.
Self programming Mode	Use this mode for setting the channel contents.
Manufacture Mode	Use this mode, to realign the various settings through the RS-232C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

2 How to enter each mode

MODE	PROCEDURE
User Mode	Power ON
PC Mode	Connect to the IBM PC compatible machine and controlled 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 this key to turn the squelch OFF. You will hear background noise. Release the key to turn the squelch back ON.

③ Channel switch (2 channel model only)

Toggle this switch to select channel 1 or channel 2.

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 ON the transceiver. Turn counterclockwise until a click sounds, to switch OFF the transceiver. Rotate to adjust the volume level.

REALIGNMENT

PC MODE

Preface

The transceiver is programmed by using a personal computer, programming interface (KPG-22) and programming software (KPG-48D).

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-2100 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 E²PROM.
- Do not press the [PTT] key during data transmission or reception.

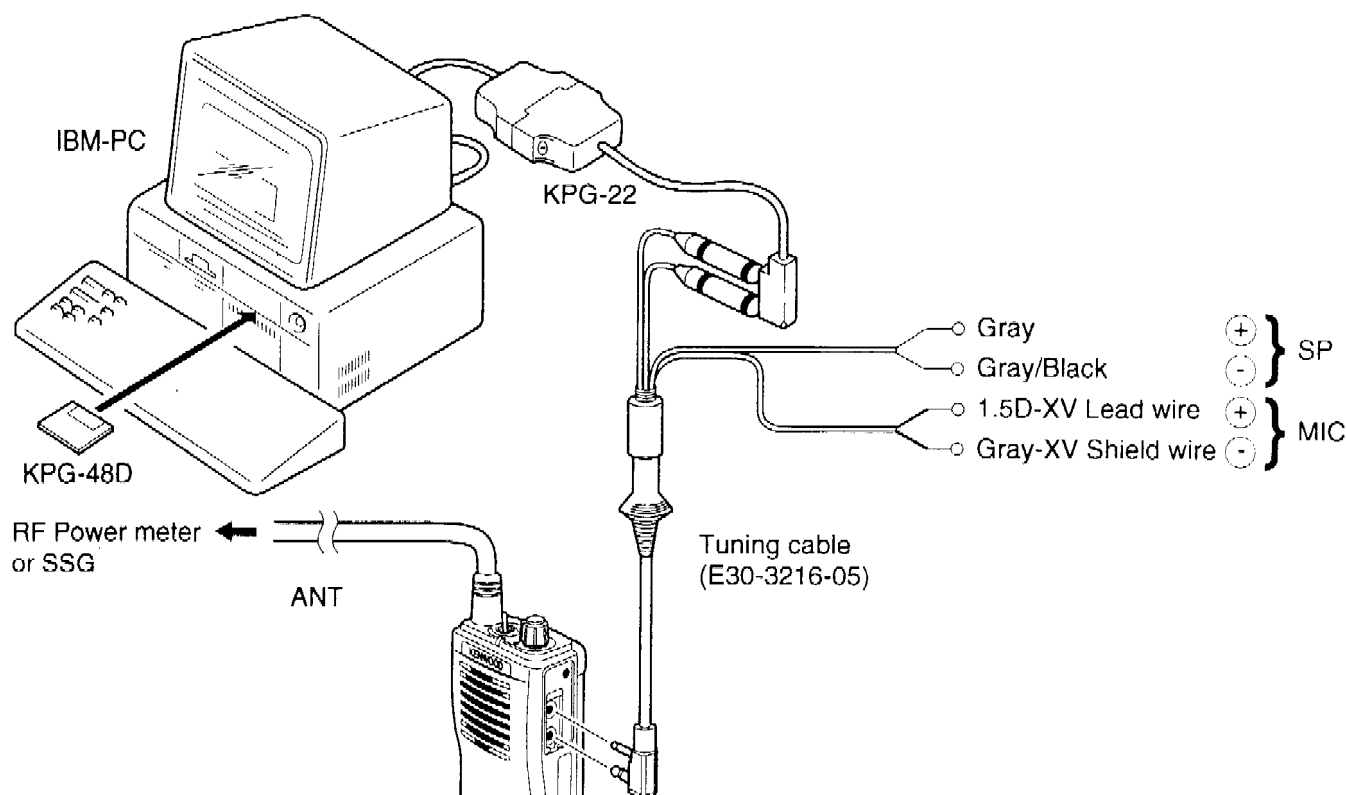


Fig 1

• KPG-22 description

(P.C programming interface cable: Option)

The KPG-22 is required to interface the TK-2100 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-2100 to the computers RS-232C serial port.

• Programming software description

The KPG-48D Programming Disk is supplied in 3-1/2" disk format. The Software on this disk allows a user to program TK-2100 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-48D, 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.

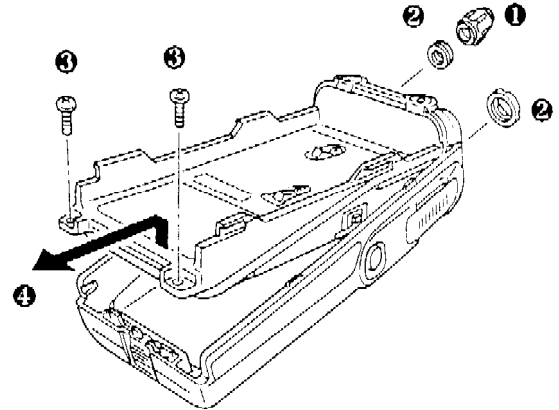
Data can be programmed into the E²PROM in RS-232C format via the SP MIC plug.

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

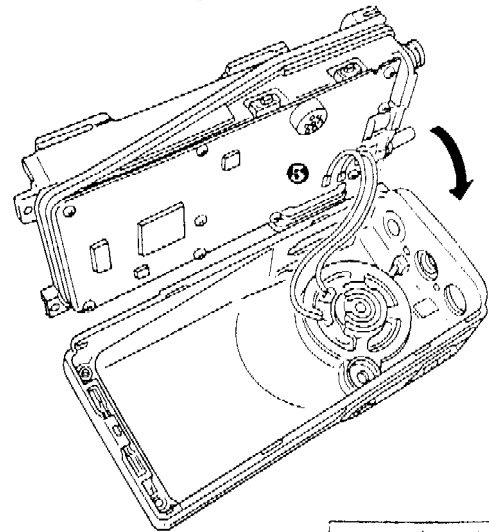
DISASSEMBLY FOR REPAIR

Separating the case assembly from the chassis

1. Remove the knob ① and two round nuts ②.
2. Remove the two screws ③.
3. Expand the right and left sides of the bottom of the case assembly, lift the chassis, and remove it from the case assembly ④.



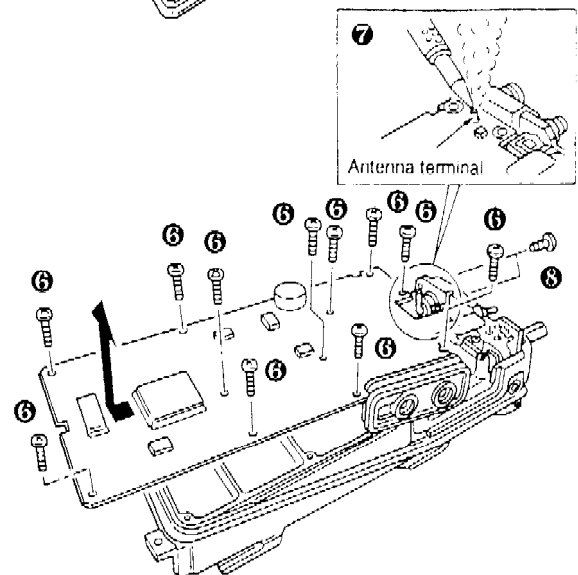
4. Taking care not to cut the speaker lead ⑤, open the chassis and case assembly.



Separating the chassis from the unit

1. Remove the eleven screws ⑥.
2. Remove the solder from the antenna terminal using a soldering iron and lift the unit off ⑦.
3. Remove the two screws ⑧ and remove the antenna connector.

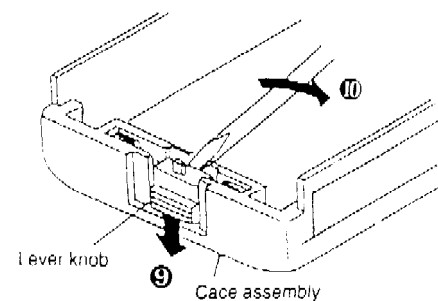
Note : When reassembling the unit in the chassis, be sure to solder the antenna terminal.



Removing the lever

1. Raise the lever on the lower case ⑨, insert a small normal screwdriver into the clearance between the case and lever, open the case carefully ⑩ 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.

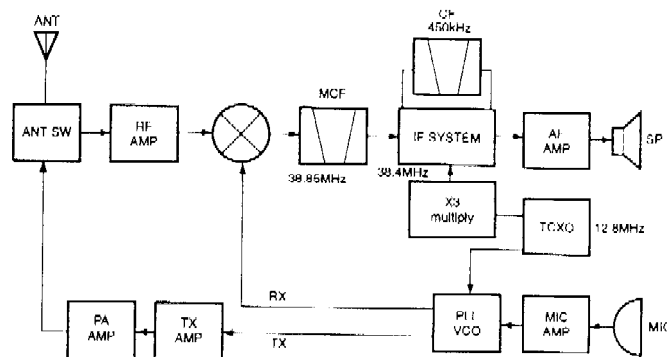


Fig 1 Frequency configuration

2. Receiver

The receiver is double conversion superheterodyne, designed to operate in the frequency range of 150 to 160MHz.

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 band pass filter (L207). After the signal is amplified (Q203), the signal is filtered through a band pass filter (L204 and L205) 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:L71-0522-05

Item	Rating
Nominal center frequency	38.850MHz
Pass band width	+5.0kHz or more at 3dB
40dB stop band width	+20.0kHz or less
Ripple	1.0dB or less
Insertion loss	4.0dB or less
Guaranteed attenuation	80dB or more at to 910kHz
Terminal impedance	610Ω / 3PF

CF200:L72-0958-05

Item	Rating
Nominal center frequency	450kHz
6dB band width	+6.0kHz or more
50dB band width	+12.5kHz or less
Ripple	2.0dB or less at fo ±4kHz
Insertion loss	6.0dB or less
Guaranteed attenuation	35.0dB or more at fo ±100kHz
Terminal impedance	2.0 kΩ

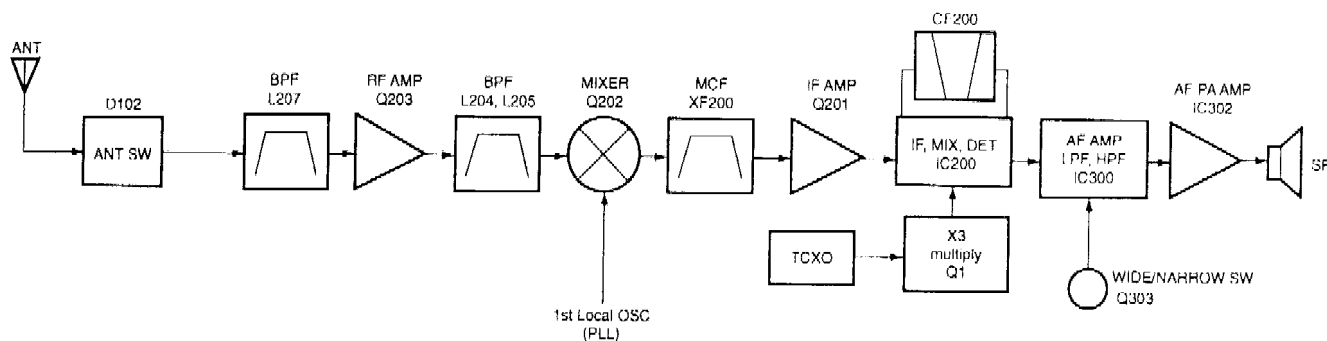


Fig 2 Receiver section configuration

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 AF signal is then passed through a WIDE/NARROW switch (Q303). The processed AF signal passes through an AF volume control and is amplified to a sufficient level to drive a loud speaker by an AF 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 Q302, 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.

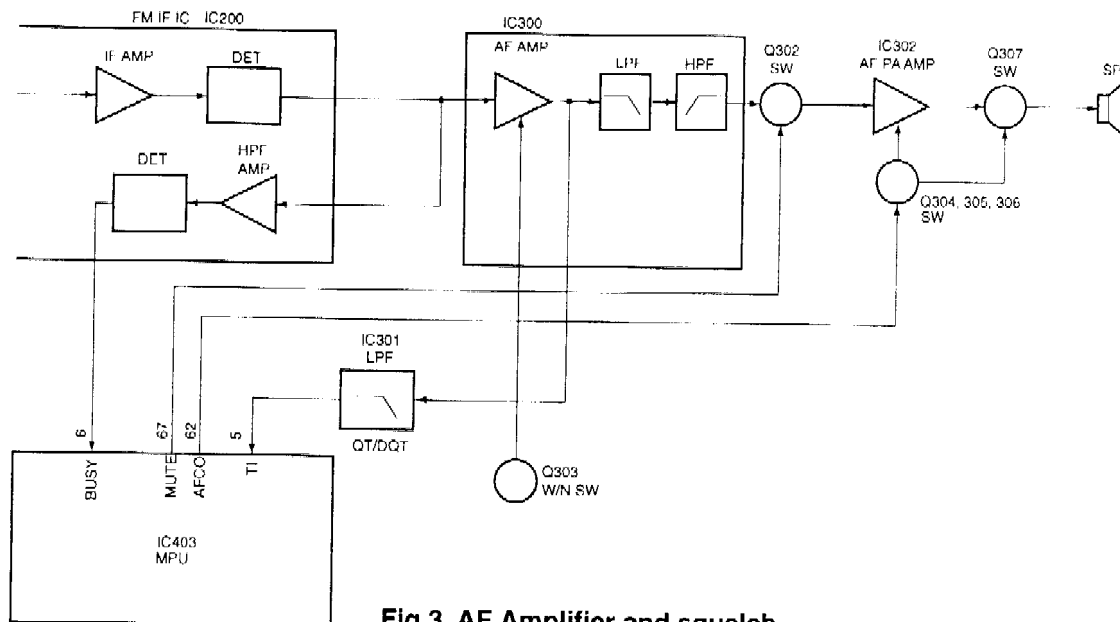


Fig 3 AF Amplifier and squelch

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 turn 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

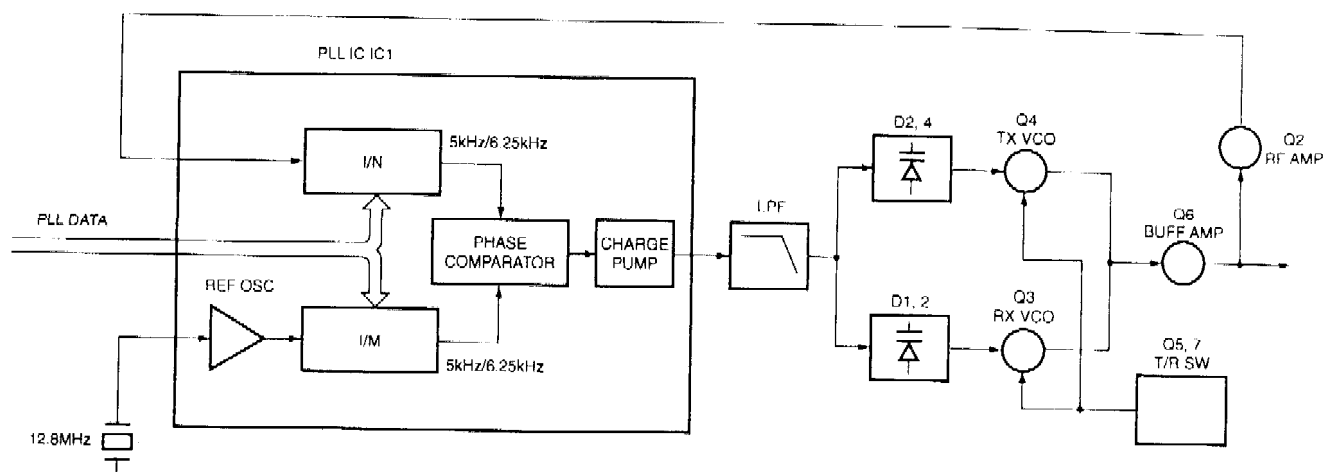


Fig 4 PLL circuit

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)

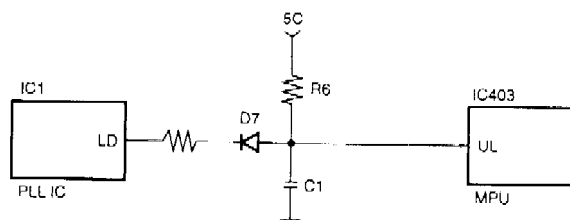


Fig 5 Unlock detector circuit

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)

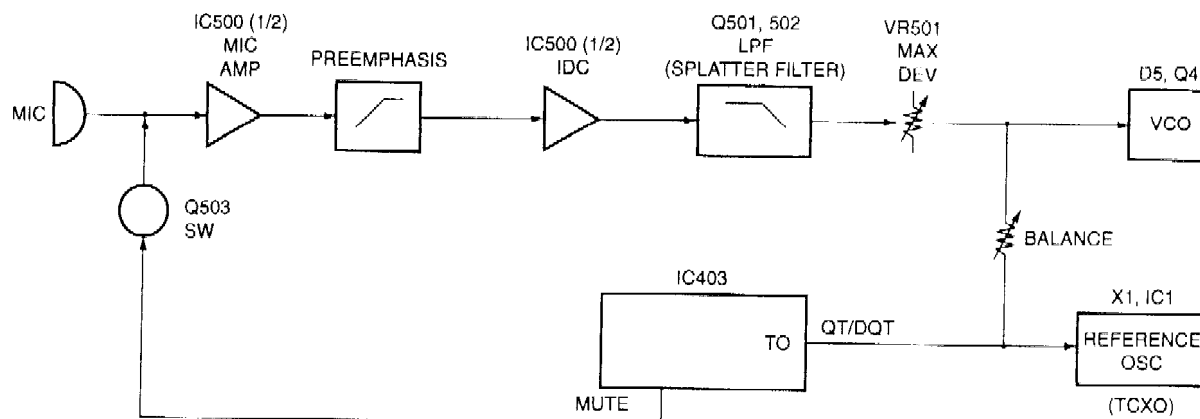


Fig 6 Transmit audio QT/DQT

CIRCUIT DESCRIPTION

3) VCO and RF amplifier

The transmit signal obtained from the VCO buffer amplifier Q100, is amplified by Q101. This amplified signal is passed to the power amplifier, Q102 and Q105, which consists of a 2-stage FET amplifier and is capable of producing up to 2W 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 collector 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.

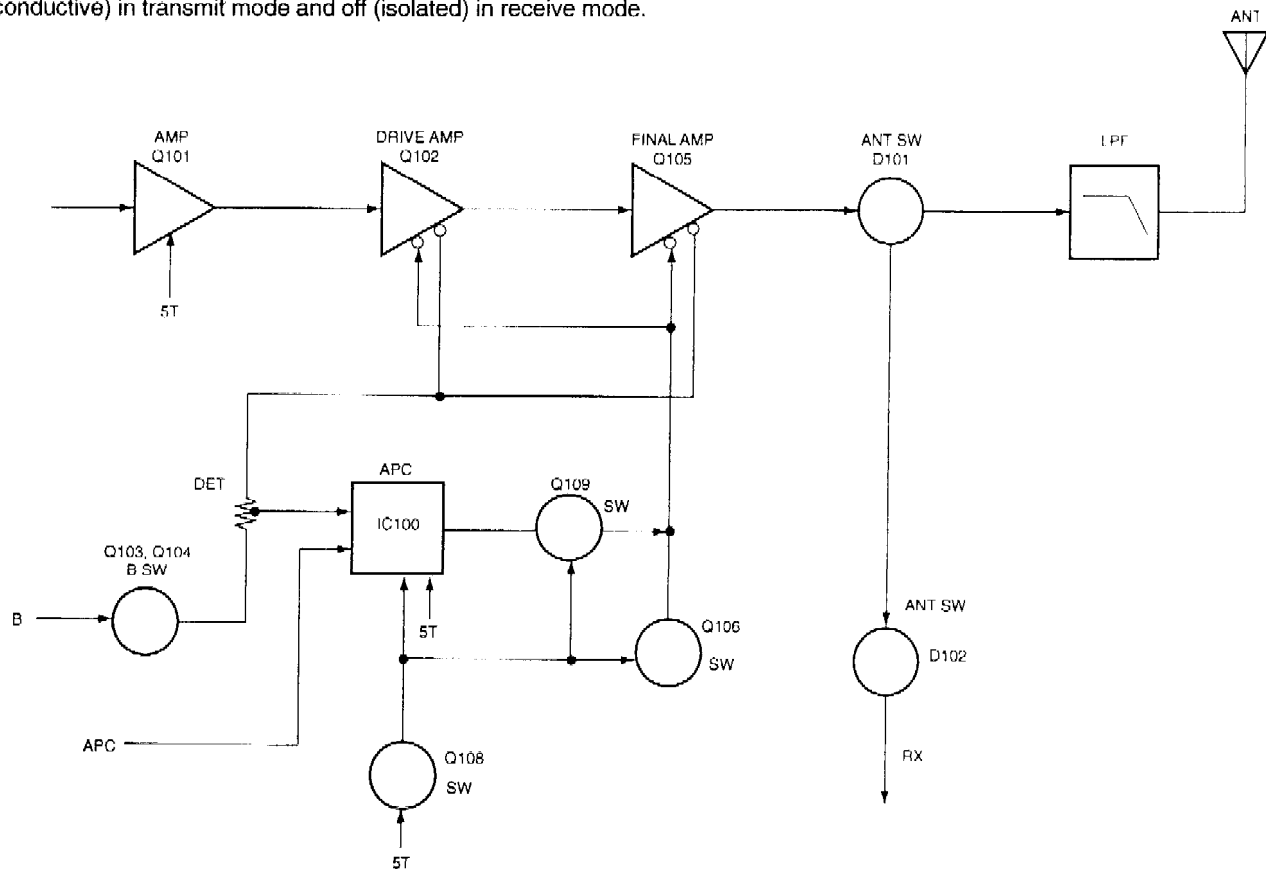


Fig 7 APC system

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 IC403 CPU operates at 7.37MHz. This oscillator has a circuit that shifts the frequency according to the EEPROM data.

SEMICONDUCTOR DATA

Microprocessor: M38267M8L221GP (IC403)

Pin No.	I/O	Port Name	Function
1	O	VC1	Variable capacity tune control
2	O	VC2	Variable capacity tune control
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	INTO	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 sensitivity 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	NC	NC
60	O	NC	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	GLD	Green LED control H : Lit
65	O	RLD	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(Q102)

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

FET : 2SK2595(Q105)

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

DESCRIPTION OF COMPONENTS

TK-2100

Ref No.	Semiconductor	Description
IC1	IC	PHASE LOCKED LOOP SYSTEM
IC100	IC	APC
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	VOLTAG DETECT
IC403	IC	MICRO PROCESSOR
IC404	IC	VOLTAG E REGURATER
IC500	IC	MIC AMP/LIMITER
Q1	TRANSISTOR	TRIPLER
Q2	TRANSISTOR	RF AMP
Q3	FET	VCO RX
Q4	FET	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	TX PRE-DRIVE
Q102	FET	TX DRIVE
Q103	FET	DC SWITCH
Q104	TRANSISTOR	DC SWITCH
Q105	FET	TX FINAL
Q106	FET	DC SWITCH
Q108	TRANSISTOR	DC SWITCH
Q109	TRANSISTOR	DC SWITCH
Q200	TRANSISTOR	DC SWITCH
Q201	TRANSISTOR	IF AMP
Q202	FET	MIXER
Q203	FET	MIXER RF AMP
Q300	TRANSISTOR	ACTIVE FILTER
Q302	FET	AUDIO MUTE SWITCH
Q303	TRANSISTOR	DC 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
Q500	FET	DC SWITCH
Q501	TRANSISTOR	ACTIVE FILTER
Q502	TRANSISTOR	ACTIVE FILTER
Q503	TRANSISTOR	MIC MUTE/ AGC
Q504	TRANSISTOR	DC SWITCH
D1	VARIABLE CAPACITANCE DIODE	FREQ. CONTROL
D2	VARIABLE CAPACITANCE DIODE	FREQ. CONTROL
D3	VARIABLE CAPACITANCE DIODE	FREQ. CONTROL

Ref No.	Semiconductor	Description
D4	VARIABLE CAPACITANCE DIODE	FREQ. CONTROL
D5	VARIABLE CAPACITANCE DIODE	TX MODULATION
D6	DIODE	CUEERNT STEERING
D7	DIODE	UNLOCKDETECT
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

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-2100

TX-RX UNIT(X57-5650-10)

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-2100					
1	1A	*	A02-2235-03	CABINET ASSY	K
1	1A	*	A02-2265-03	CABINET ASSY	K2
2	3B	*	A02-0034-03	REAR PANEL	
3	-	*	B09-0351-03	CAP (SP/MIC)	ACSY
4	-	*	B62-0950-00	INSTRUCTION MANUAL	ACSY
-	-	*	B72-1406-04	MODEL NAME PLATE	
6	2A	*	F04-0413-05	RT COAXIAL RECEPTACLE (SMA)	
7	3A	*	F23-1006-04	RELAY TERMINAL (BATT -)	
8	1A	*	G01-0881-04	COIL SPRING (BATT RELEASE)	
9	2A	*	G13-1709-04	CUSHION (VOL)	
10	2A	*	G53-0791-03	PACKING (PLUG)	
11	1A	*	G53-0842-03	PACKING (SP)	
12	2A	*	G53-0860-04	PACKING (SIDE)	
13	1B	*	G53-0863-04	PACKING (TOGGLE)	K2
14	-	*	H12-3037-02	PACKING FIXTURE	
15	-	*	H12-3055-02	PACKING FIXTURE	
16	-	*	H25-0085-04	PROTECTION BAG (100/200/0.07)	
17	-	*	H25-2012-04	PROTECTION BAG (75/100/0.08)	
18	-	*	H52-1197-02	ITEM CARTON CASE	
19	1A	*	J19-1572-04	HOLDER (BATT RELEASE)	
20	1B	*	J19-5343-03	HOLDER (VOL TOGGLE)	
21	-	*	J21-4493-04	SP/MIC HOLDER	ACSY
22	3A	*	J29-0624-03	BELT HOOK	ACSY
-	-	*	J82-0057-05	FPC (VOL)	K
-	-	*	J82-0058-05	FPC (VOL/TOGGLE)	K2
25	1A	*	K29-5068-03	LIVER KNOB (BATT RELEASE)	
26	2B	*	K29-5255-03	KNOB (VOL)	
27	1A	*	K29-5274-03	BUTTON KNOB (MONI)	
28	1A	*	K29-5275-03	BUTTON KNOB (P11)	
A	2A	*	N09-2319-05	BINDING HEAD SCREW (SMA)	
B	1B	*	N14-0581-04	CIRCULAR NUT (VOL)	
C	1B	*	N14-0582-04	CIRCULAR NUT (SMA)	
D	1B	*	N14-0583-04	CIRCULAR NUT (TOGGLE)	K2
E	3A	*	N30-2606-46	PAN HEAD MACHINE SCREW	
F	3A	*	N79-2035-46	PAN HEAD TAPTITE SCREW	
G	2A	*	N83-2005-46	PAN HEAD TAPTITE SCREW	
H	-	*	N99-0396-05	SCREW SET	ACSY
-	-	*	R31-0624-05	VARIABLE RESISTOR	
-	-	*	S72-0403-05	TOGGLE SWITCH	K2
SP	1A	*	T07-0369-05	SPEAKER	
ANT	-	*	T90-0695-15	HELICAL ANTENNA	ACSY
31	-	*	W08-0551-05	AC ADAPTER	ACSY
32	-	*	W08-0552-05	CHARGER	ACSY
33	-	*	W09-0882-05	BATTERY ASSY (KNU-14)	ACSY
TX-RX UNIT (X57-5650-10)					
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			CK73GB1H102K	CHIP C 1000PF	K
C8			CK73FB1C224K	CHIP C 0.22UF	K

Ref. No.	Address	New parts	Parts No.	Description	Destination
C9			CC73GCH1H100D	CHIP C 10PF	D
C10			CC73GCH1H470J	CHIP C 47PF	J
C12			CK73FB1C224K	CHIP C 0.22UF	K
C14			CC73GCH1H100D	CHIP C 10PF	D
C15			C92-0565-05	CHIP-TAN 6.8UF	10WV
C16			CC73GCH1H680J	CHIP C 68PF	J
C17			CK73GB1H331K	CHIP C 330PF	K
C18			C92-0504-05	CHIP-TAN 0.68UF	20WV
C19, 20			CK73GB1H103K	CHIP C 0.010UF	K
C23			C92-0560-05	CHIP-TAN 10UF	6.3WV
C24			CK73GB1H681K	CHIP C 680PF	K
C25			CK73GB1H471K	CHIP C 470PF	K
C26			CC73GCH1H121J	CHIP C 120PF	J
C27			CK73GB1H102K	CHIP C 1000PF	K
C28			CC73GCH1H330J	CHIP C 33PF	J
C29-31			CK73GB1H102K	CHIP C 1000PF	K
C32			CC73GCH1H470J	CHIP C 47PF	J
C33			CC73GCH1H270J	CHIP C 27PF	J
C34			CC73GCH1H75B	CHIP C 0.75PF	B
C35			CC73GCH1H050C	CHIP C 5.0PF	C
C36			CC73GCH1H150J	CHIP C 15PF	J
C37			CC73GCH1H090D	CHIP C 9.0PF	D
C38			CC73GCH1H200J	CHIP C 20PF	J
C39			CK73GB1H103K	CHIP C 0.010UF	K
C40, 41			CK73GB1H102K	CHIP C 1000PF	K
C42			CK73GB1H103K	CHIP C 0.010UF	K
C43, 44			CC73GCH1H0R5R	CHIP C 0.5PF	B
C45, 46			CK73GB1H102K	CHIP C 1000PF	K
C47			CC73GCH1H330J	CHIP C 33PF	J
C48			CC73GCH1H100D	CHIP C 10PF	D
C49			CK73GB1H102K	CHIP C 1000PF	K
C50			C92-0507-05	CHIP-TAN 4.7UF	6.3WV
C51			CC73GCH1H680J	CHIP C 68PF	J
C57			CC73GCH1H300J	CHIP C 30PF	J
C100			CC73GCH1H150J	CHIP C 15PF	J
C101, 102			CK73GB1H102K	CHIP C 1000PF	K
C103			CC73GCH1H220J	CHIP C 22PF	J
C104-107			CK73GB1H102K	CHIP C 1000PF	K
C108			CC73GCH1H120J	CHIP C 12PF	J
C109			CK73GB1H102K	CHIP C 1000PF	K
C110			CK73GB1C104K	CHIP C 0.10UF	K
C111, 112			CK73GB1H102K	CHIP C 1000PF	K
C113			CC73GCH1H330G	CHIP C 33PF	G
C114-116			CK73GB1H102K	CHIP C 1000PF	K
C117			CK73GB1H221K	CHIP C 220PF	K
C118-120			CK73GB1H102K	CHIP C 1000PF	K
C121			CK73EF1C105Z	CHIP C 1.0UF	Z
C122			CC73GCH1H560J	CHIP C 56PF	J
C123			CK73GB1H103K	CHIP C 0.010UF	K
C124			CK73GB1H102K	CHIP C 1000PF	K
C125			CK73GB1C104K	CHIP C 0.10UF	K
C126			CC73GCH1H330G	CHIP C 33PF	G
C127			C92-0565-05	CHIP-TAN 6.8UF	10WV
C128			CC73GCH1H050B	CHIP C 5.0PF	B
C129			CC73GCH1H030B	CHIP C 3.0PF	B

TK-2100 (1 channel) : K
TK-2100 (2 channel) : K2

PARTS LIST

TX-RX UNIT(X57-5650-10)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C131			CK73GB1H102K	CHIP C 1000PF K		C312		*	CK73GB1H103J	CHIP C 0.010UF J	
C132			CK73GB1H471K	CHIP C 470PF K		C313			CK73GB1A105K	CHIP C 1.0UF K	
C133			CK73GB1H102K	CHIP C 1000PF K		C314			CK73GB1H102K	CHIP C 1000PF K	
C134			CC73GCH1H101J	CHIP C 100PF J		C316		*	CK73GB1H103J	CHIP C 0.010UF J	
C135			CC73GCH1H270J	CHIP C 27PF J		C318			CK73GB1C333K	CHIP C 0.033UF K	
C136			CC73GCH1H680J	CHIP C 68PF J		C319			CK73GB1C473K	CHIP C 0.047UF K	
C137			CK73GB1H102K	CHIP C 1000PF K		C320,321			CK73GB1C333J	CHIP C 0.033UF J	
C138			CC73GCH1H100C	CHIP C 10PF C		C322			CK73GB1F104K	CHIP C 0.10UF K	
C139			CK73GB1H102K	CHIP C 1000PF K		C327			CK73GB1C104K	CHIP C 0.10UF K	
C140			CC73GCH1H100J	CHIP C 10PF D		C330			CC73GCH1H101J	CHIP C 100PF J	
C141			CK73GB1H471K	CHIP C 470PF K		C331			CK73GB1C474K	CHIP C 0.47UF K	
C142			CC73GCH1H220J	CHIP C 22PF J		C332			C92-0560-05	CHIP-TAN 10UF 6.3WV	
C144			CC73GCH1H090D	CHIP C 9.0PF D		C333			CK73GB1C104K	CHIP C 0.10UF K	
C145			CC73GCH1H150J	CHIP C 15PF J		C335			CK73GB1C473K	CHIP C 0.047UF K	
C146			CC73GCH1H200J	CHIP C 20PF J		C336			CK73GB1H103K	CHIP C 0.010UF K	
C147			CC73GCH1H100D	CHIP C 10PF D		C337			C92-0665-05	TANTAL 100UF 6.3WV	
C200			C92-0560-05	CHIP-TAN 10UF 6.3WV		C400			CK73GB1C104K	CHIP C 0.10UF K	
C201			CK73GB1H103K	CHIP C 0.010UF K		C402-404			CK73GB1H102K	CHIP C 1000PF K	
C202			CC73GCH1H100D	CHIP C 10PF D		C406,407			CK73GB1H102K	CHIP C 1000PF K	
C203			CK73GB1H471K	CHIP C 470PF K		C408			C92-0560-05	CHIP-TAN 10UF 6.3WV	
C204			CK73GB1H472K	CHIP C 4700PF K		C409			CC73GCH1H030C	CHIP C 3.0PF C	
C205,206			CC73GCH1H221J	CHIP C 220PF J		C410			CK73GB1H102K	CHIP C 1000PF K	
C207			CK73GB1C104K	CHIP C 0.10UF K		C411			CK73GB1H471K	CHIP C 470PF K	
C208			CC73GCH1H270J	CHIP C 27PF J		C412			CC73GCH1H100D	CHIP C 10PF D	
C209			CK73GB1C104K	CHIP C 0.10UF K		C413,414			CK73GB1H102K	CHIP C 1000PF K	
C210			CK73GB1H103K	CHIP C 0.010UF K		C415			CC73GCH1H100D	CHIP C 10PF D	
C211			CK73GB1C104K	CHIP C 0.10UF K		C416			CK73GB1H102K	CHIP C 1000PF K	
C212			CC73GCH1H150J	CHIP C 15PF J		C417			CK73GB1C105Z	CHIP C 1.0UF Z	
C213			CK73GB1C104K	CHIP C 0.10UF K		C418			CK73GB1H103K	CHIP C 0.010UF K	
C214			CK73GB1H103K	CHIP C 0.010UF K		C420-422			CK73GB1H103K	CHIP C 0.010UF K	
C215			CC73GCH1H100D	CHIP C 10PF D		C423			CK73GB1H102K	CHIP C 1000PF K	
C216			CC73GCH1H020C	CHIP C 2.0PF C		C424			CK73GB1A105K	CHIP C 1.0UF K	
C217			CK73GB1H103K	CHIP C 0.010UF K		C425			CK73GB1H103K	CHIP C 0.010UF K	
C218			CK73GB1H102K	CHIP C 1000PF K		C427			CK73GB1H102K	CHIP C 1000PF K	
C219			CC73GCH1H180J	CHIP C 18PF J		C429,430			CK73GB1A105K	CHIP C 1.0UF K	
C220			CK73GB1H102K	CHIP C 1000PF K		C500,501			CK73GB1C273K	CHIP C 0.027UF K	
C221			CK73GB1H103K	CHIP C 0.010UF K		C502			CK73GB1H392K	CHIP C 3900PF K	
C222,223			CC73GCH1H020B	CHIP C 2.0PF B		C503			CK73GB1C333K	CHIP C 0.033UF K	
C224			CC73GCH1H030C	CHIP C 3.0PF C		C504			C92-0507-05	CHIP-TAN 4.7UF 6.3WV	
C225			CC73GCH1H050C	CHIP C 5.0PF C		C505			CK73GB1A105K	CHIP C 1.0UF K	
C226,227			CK73GB1H102K	CHIP C 1000PF K		C506			CK73GB1H471K	CHIP C 470PF K	
C228			CC73GCH1H040B	CHIP C 4.0PF B		C507			C92-0587-05	CHIP-TAN 2.2UF 4WV	
C229			CK73GB1H102K	CHIP C 1000PF K		C508			CK73GB1H103K	CHIP C 0.010UF K	
C230			CC73GCH1H060B	CHIP C 6.0PF B		C509			CK73GB1H332K	CHIP C 3300PF K	
C231			CC73GCH1H050B	CHIP C 5.0PF B		C510		*	CC73GCH1E821J	CHIP C 820PF J	
C232		*	CC73GCH1H130G	CHIP C 13P G		C511			CK73GB1C473K	CHIP C 0.047UF K	
C233			CC73GCH1H060B	CHIP C 6.0PF B		C512			CK73GB1H332K	CHIP C 3300PF K	
C234			CC73GCH1H300J	CHIP C 30PF J		C513		*	CC73GCH1E681J	CHIP C 680PF J	
C235			CK73GB1C104K	CHIP C 0.10UF K		C514			CK73GB1C473K	CHIP C 0.047UF K	
C236			CK73GB1H102K	CHIP C 1000PF K		C515			CK73GB1H103K	CHIP C 0.010UF K	
C300			CK73GB1H822K	CHIP C 8200PF K		C516			CC73GCH1H100D	CHIP C 10PF D	
C301			CK73GB1E183K	CHIP C 0.018UF K		C517			CK73GB1H102K	CHIP C 1000PF K	
C302,303			CK73GB1C104K	CHIP C 0.10UF K		C518			CK73GB1E223K	CHIP C 0.022UF K	
C304			C92-0560-05	CHIP-TAN 10UF 6.3WV		C519			C92-0507-05	CHIP-TAN 4.7UF 6.3WV	
C305		*	CK73GB1H103J	CHIP C 0.010UF J		C520			CK73GB1E223K	CHIP C 0.022UF K	
C306			CK73GB1C473K	CHIP C 0.047UF K		C521			CK73GB1H102K	CHIP C 1000PF K	
C307			C92-0560-05	CHIP-TAN 10UF 6.3WV		C522			CK73GB1E104K	CHIP C 0.10UF K	
C308			CK73GB1H472K	CHIP C 4700PF K		C523			C92-0587-05	CHIP-TAN 2.2UF 4WV	
C309		*	CK73GB1H103J	CHIP C 0.010UF J		C524			CK73GB1C273K	CHIP C 0.027UF K	
C311			C92-0560-05	CHIP-TAN 10UF 6.3WV		C525			CK73GB1C104K	CHIP C 0.10UF K	

TK-2100 (1 channel) : K

TK-2100 (2 channel) : K2

PARTS LIST

TX-RX UNIT(X57-5650-10)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C526			CK73GB1H471K	CHIP C 470PF K		L402,403		*	L40-2281-86	SMALL FIXED INDUCTOR (0.22UH)	
C527			C92-0560-05	CHIP TAN 10UF 6.3WV		L500			L92-0140-05	FERRITE CHIP	
C528			CK73GB1H1102K	CHIP C 1000PF K		L501,502			L92-0149-05	FERRITE CHIP	
C529			CK73FB1H102K	CHIP C 1000PF K		X1		*	L77-1756-05	TCXO (12.8MHZ)	
C530,531			CK73GB1H21K	CHIP C 220PF K		X400		*	L77-1761-05	CRYSTAL RESONATOR (7.3/28MHZ)	
C532			CK73GB1H471K	CHIP C 470PF K		XF200		*	L71-0522-05	MCF (38.05MHZ)	
C533			CK73GB1C104K	CHIP C 0.10UF K		-			N78-2640-46	PAN HEAD TAPTITE SCREW	
TC1			C05-0384-05	CERAMIC TRIMMER CAP (10P)		CP1			R90-0/24-05	MULTI-COMP 1K X4	
TC2			C05-0383-05	CERAMIC TRIMMER CAP (6P)		R1.2			RK73GB1J102J	CHIP R 1.0K J 1/16W	
-			L23-1005-04	RELAY TERMINAL (BATI +)		R3			RK73GB1J100J	CHIP R 10 J 1/16W	
CN400		*	F40-5998-05	PIN ASSY		R4			RK73GB1J102J	CHIP R 1.0K J1/16W	
J500			E11-0457-05	PHONE JACK		R5			R92-1252-05	CHIP R 0 OHM	
F500			F53-0130-05	FUSE		R6			RK73GB1J154J	CHIP R 150K J1/16W	
34	2A	*	G53-0862-04	PACKING		R7			R92-1252-05	CHIP R 0 OHM	
-			J19-1571-04	HOLDER		R8			RK73GB1J334J	CHIP R 330K J 1/16W	
-		*	J30-1249-04	SPACER		R9			RK73GB1J681J	CHIP R 680 J 1/16W	
CF200		*	L72-0958-05	CERAMIC FILTER		R10			RK73GB1J151J	CHIP R 150 J 1/16W	
L1			L92-0140-05	FERRITE CHIP		R11			RK73GB1J473J	CHIP R 47K J 1/16W	
L2		*	L40-1005-85	SMALL FIXED INDUCTOR (10UH)		R12			RK73GB1J274J	CHIP R 270K J1/16W	
L4		*	L40-4781-86	SMALL FIXED INDUCTOR (0.47UH)		R13			RK73GB1J151J	CHIP R 150 J1/16W	
L5		*	L40-5681-86	SMALL FIXED INDUCTOR (0.56UH)		R14			RK73GB1J101J	CHIP R 100 J1/16W	
L6		*	L40-6891-86	SMALL FIXED INDUCTOR (6.8UH)		R15			RK73GB1J103J	CHIP R 10K J1/16W	
L7			L92-0140-05	FERRITE CHIP		R16			RK73GB1J683J	CHIP R 68K J1/16W	
L8,9		*	L40-6891-86	SMALL FIXED INDUCTOR (6.8UH)		R17			RK73GB1J104J	CHIP R 100K J1/16W	
L10			L33-0744-05	SMALL FIXED INDUCTOR		R18			RK73GB1J271J	CHIP R 270 J1/16W	
L11			L33-1267-05	SMALL FIXED INDUCTOR		R19			RK73GB1J473J	CHIP R 47K J1/16W	
L12		*	L40-1085-77	SMALL FIXED INDUCTOR (100NH)		R20			RK73GB1J102J	CHIP R 1.0K J1/16W	
L13		*	L40-4775-77	SMALL FIXED INDUCTOR (47NH)		R21			RK73GB1J104J	CHIP R 100K J1/16W	
L14		*	L92-0140-05	FERRITE CHIP		R22			RK73GB1J271J	CHIP R 270 J1/16W	
L15		*	L40-6891-86	SMALL FIXED INDUCTOR (6.8UH)		R23			RK73GB1J124J	CHIP R 120K J1/16W	
L16,17			L40-2285-38	SMALL FIXED INDUCTOR (220NH)		R24			RK73GB1J104J	CHIP R 100K J1/16W	
L22		*	L40-5681-86	SMALL FIXED INDUCTOR (0.56UH)		R25			RK73GB1J681J	CHIP R 680 J1/16W	
L100			L40-8275-77	SMALL FIXED INDUCTOR (82NH)		R26			RK73GB1J472J	CHIP R 4.7K J1/16W	
L101			L40-6875-77	SMALL FIXED INDUCTOR (68NH)		R27			RK73GB1J102J	CHIP R 1.0K J1/16W	
L102			L92-0140-05	FERRITE CHIP		R28,29			R92-1252-05	CHIP R 0 OHM	
L103		*	L40-3375-77	SMALL FIXED INDUCTOR (33NH)		R100			RK73GB1J332J	CHIP R 3.3K J1/16W	
L104			L40-1098-76	SMALL FIXED INDUCTOR (1UH)		R101			RK73GB1J123J	CHIP R 12K J1/16W	
L105			L92-0149-05	FERRITE CHIP		R102			RK73GB1J471J	CHIP R 470 J1/16W	
L106		*	L40-4763-77	SMALL FIXED INDUCTOR (4.7NH)		R103			RK73GB1J102J	CHIP R 1.0K J1/16W	
L107			L40-3375-54	SMALL FIXED INDUCTOR (33NH)		R104			RK73GB1J101J	CHIP R 100 J1/16W	
L108		*	L34-4551-05	AIR-CORE COIL		R105,106			RK73GB1J332J	CHIP R 3.3K J1/16W	
L109			L92-0149-05	FERRITE CHIP		R107			RK73GB1J392J	CHIP R 3.9K J1/16W	
L110		*	L34-4547-05	AIR-CORE COIL		R108			RK73GB1J152J	CHIP R 1.5K J1/16W	
L112			L40-1095-68	SMALL FIXED INDUCTOR (1UH)		R109			RK73GB1J100J	CHIP R 10 J1/16W	
L113		*	L34-4550-05	AIR-CORE COIL		R110,111			RK73GB1J102J	CHIP R 1.0K J1/16W	
L114		*	L34-4548-05	AIR-CORE COIL		R112			RK73GB1J100J	CHIP R 10 J1/16W	
L115			L34-4549-05	AIR-CORE COIL		R113			RK73GB1J102J	CHIP R 1.0K J1/16W	
L116			L33-0745-05	SMALL FIXED INDUCTOR		R114			RK73GB1J823J	CHIP R 82K J1/16W	
L117		*	L34-4548-05	AIR-CORE COIL		R115			RK73GB1J473J	CHIP R 47K J1/16W	
L118			L40-1092-81	SMALL FIXED INDUCTOR		R116,117			RK73GB1J470J	CHIP R 47 J1/16W	
L200		*	L40-5685-85	SMALL FIXED INDUCTOR (0.56UH)		R119			RK73GB1J102J	CHIP R 1.0K J1/16W	
L201		*	L40-8285-85	SMALL FIXED INDUCTOR (0.82UH)		R120			RK73GB1J223J	CHIP R 22K J1/16W	
L202			L40-2285-38	SMALL FIXED INDUCTOR (220NH)		R121			RK73GB1J473J	CHIP R 47K J1/16W	
L204,205			L34-4447-05	COIL		R122			RK73GB1J471J	CHIP R 470 J 1/16W	
L206			L40-7588-76	SMALL FIXED INDUCTOR (0.75UH)		R127			RK73FB2A151J	CHIP R 150 J1/10W	
L207			L34-4446-05	COIL		R129			R92-0670-05	CHIP R 0 OHM	
L208		*	L40-5685-85	SMALL FIXED INDUCTOR (0.56UH)		R130-132			RK73FB2FR39K	CHIP R 0.39 K 1/4W	
L212		*	L34-4554-05	COIL		R133-138		*	RK73GB1J154D	CHIP R 150K 01/16W	
L400		*	L40-2281-86	SMALL FIXED INDUCTOR (0.22UH)		R140			RK73GB1J103J	CHIP R 10K J1/16W	
L401			L92-0140-05	FERRITE CHIP		R141			RK73GB1J273J	CHIP R 27K J1/16W	

PARTS LIST

TX-RX UNIT(X57-5650-10)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R142			RK73GB1J105J	CHIP R 1.0M J 1/16W		R336			RK73GB1J333J	CHIP R 33K J 1/16W	
R143			R92-1252-05	CHIP R 0 OHM		R338			RK73GB1J473J	CHIP R 47K J 1/16W	
R144			RK73GB1J331J	CHIP R 330 J 1/16W		R339			RK73GB1J822J	CHIP R 82K J 1/16W	
R145			RK73GB1J184J	CHIP R 180K J 1/16W		R340			RK73GB1J124D	CHIP R 120K D 1/16W	
R146			RK73GB1J104J	CHIP R 100K J 1/16W		R400			RK73GB1J334J	CHIP R 330K J 1/16W	
R200			RK73GB1J100J	CHIP R 10 J 1/16W		R401			RK73GB1J104J	CHIP R 100K J 1/16W	
R201			RK73GB1J392J	CHIP R 3.9K J 1/16W		R402			RK73GB1J221J	CHIP R 220 J 1/16W	
R202			RK73GB1J184J	CHIP R 180K J 1/16W		R403			RK73GB1J181J	CHIP R 180 J 1/16W	
R203,204			RK73GB1J332J	CHIP R 3.3K J 1/16W		R404			R92-1252-05	CHIP R 0 OHM	
R205			RK73GB1J153J	CHIP R 15K J 1/16W		R405			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R206			RK73GB1J184J	CHIP R 180K J 1/16W		R406			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R207			RK73GB1J104J	CHIP R 100K J 1/16W		R407			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R208			RK73GB1J684J	CHIP R 680K J 1/16W		R408			RK73GB1J104J	CHIP R 100K J 1/16W	
R209			RK73GB1J272J	CHIP R 2.7K J 1/16W		R409			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R210,211			RK73GB1J471J	CHIP R 470 J 1/16W		R410			RK73GB1J822J	CHIP R 8.2K J 1/16W	
R212			RK73GB1J330J	CHIP R 33 J 1/16W		R411			RK73GB1J224J	CHIP R 220K J 1/16W	
R213			R92-0670-05	CHIP R 0 OHM		R412			RK73GB1J100J	CHIP R 10 J 1/16W	
R214			RK73GB1J103J	CHIP R 10K J 1/16W		R413			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R215			RK73GB1J120J	CHIP R 12 J 1/16W		R414,415			RK73GB1J473J	CHIP R 47K J 1/16W	
R216			RK73GB1J102J	CHIP R 1.0K J 1/16W		R416			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R217			RK73GB1J101J	CHIP R 100 J 1/16W		R417			RK73GB1J100J	CHIP R 10 J 1/16W	
R218			RK73GB1J470J	CHIP R 47 J 1/16W		R418			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R219			RK73GB1J471J	CHIP R 470 J 1/16W		R419			R92-1252-05	CHIP R 0 OHM	
R220			RK73GB1J222J	CHIP R 2.2K J 1/16W		R420			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R221			RK73GB1J150J	CHIP R 15 J 1/16W		R421			RK73GB1J473J	CHIP R 47K J 1/16W	
R222-224			R92-1252-05	CHIP R 0 OHM		R422			RK73GB1J272J	CHIP R 2.7K J 1/16W	
R225			RK73GB1J102J	CHIP R 1.0K J 1/16W		R423			RK73GB1J473J	CHIP R 47K J 1/16W	
R300			RK73GB1J913D	CHIP R 91K D 1/16W		R424,425			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R301,302			RK73GB1J562J	CHIP R 5.6K J 1/16W		R426			RK73GB1J822J	CHIP R 8.2K J 1/16W	
R303			RK73GB1J332J	CHIP R 3.3K J 1/16W		R427			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R304			RK73GB1J105J	CHIP R 1.0M J 1/16W		R428			RK73GB1J272J	CHIP R 2.7K J 1/16W	
R305			RK73GB1J183J	CHIP R 18K J 1/16W		R429			RK73GB1J821J	CHIP R 820 J 1/16W	
R306			RK73GB1J124J	CHIP R 120K J 1/16W		R430			RK73GB1J101J	CHIP R 100 J 1/16W	
R307			RK73GB1J473J	CHIP R 47K J 1/16W		R431			R92-1252-05	CHIP R 0 OHM	
R308			RK73GB1J103J	CHIP R 10K J 1/16W		R432			RK73GB1J103J	CHIP R 10K J 1/16W	
R309			RK73GB1J474J	CHIP R 470K J 1/16W		R433,434			RK73GB1J153J	CHIP R 15K J 1/16W	
R310,311			R92-0670-05	CHIP R 0 OHM		R435			RK73GB1J103J	CHIP R 10K J 1/16W	
R312			RK73GB1J123J	CHIP R 12K J 1/16W		R500,501			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R313			RK73GB1J104J	CHIP R 100K J 1/16W		R502			RK73GB1J823J	CHIP R 82K J 1/16W	
R314			RK73GB1J474D	CHIP R 470K D 1/16W		R503			RK73GB1J682J	CHIP R 6.8K J 1/16W	
R315			RK73GB1J394D	CHIP R 390K D 1/16W		R504			RK73GB1J223J	CHIP R 22K J 1/16W	
R316			RK73GB1J334J	CHIP R 330K J 1/16W		R505			RK73GB1J682J	CHIP R 6.8K J 1/16W	
R317			RK73GB1J274D	CHIP R 270K D 1/16W		R506			RK73GB1J821J	CHIP R 820 J 1/16W	
R318			RK73GB1J184J	CHIP R 180K J 1/16W		R507			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R320			RK73GB1J473J	CHIP R 47K J 1/16W		R508			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R321			RK73GB1J223J	CHIP R 22K J 1/16W		R509			RK73GB1J124J	CHIP R 120K J 1/16W	
R322			RK73GB1J224D	CHIP R 220K D 1/16W		R510			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R323			RK73GB1J104J	CHIP R 100K J 1/16W		R511			RK73GB1J103J	CHIP R 10K J 1/16W	
R324			RK73GB1J562J	CHIP R 5.6K J 1/16W		R512			RK73GB1J185J	CHIP R 1.8M J 1/16W	
R325			RK73GB1J104J	CHIP R 100K J 1/16W		R513			RK73GB1J103J	CHIP R 10K J 1/16W	
R326			RK73GB1J562D	CHIP R 5.6K D 1/16W		R514,515			RK73GB1J333J	CHIP R 33K J 1/16W	
R327			R92-1252-05	CHIP R 0 OHM		R516			RK73GB1J103J	CHIP R 10K J 1/16W	
R328			RK73GB1J102J	CHIP R 1.0K J 1/16W		R517			RK73GB1J185J	CHIP R 1.8M J 1/16W	
R329			R92-1252-05	CHIP R 0 OHM		R518			RK73GB1J154J	CHIP R 150K J 1/16W	
R330			RK73GB1J473J	CHIP R 47K J 1/16W		519,520			RK73GB1J333J	CHIP R 33K J 1/16W	
R331			RK73GB1J222J	CHIP R 2.2K J 1/16W		R521			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R332			RK73GB1J151J	CHIP R 150 J 1/16W		R522			RK73GB1J182J	CHIP R 1.8K J 1/16W	
R333			RK73GB1J474J	CHIP R 470K J 1/16W		R523			RK73GB1J682J	CHIP R 6.8K J 1/16W	
R334			RK73GB1J100J	CHIP R 10 J 1/16W		R524			RK73GB1J151J	CHIP R 51K J 1/16W	
R335			RK73GB1J563J	CHIP R 56K J 1/16W		R525			RK73GB1J152J	CHIP R 1.5K J 1/16W	

TK-2100 (1 channel) : K

TK-2100 (2 channel) : K2

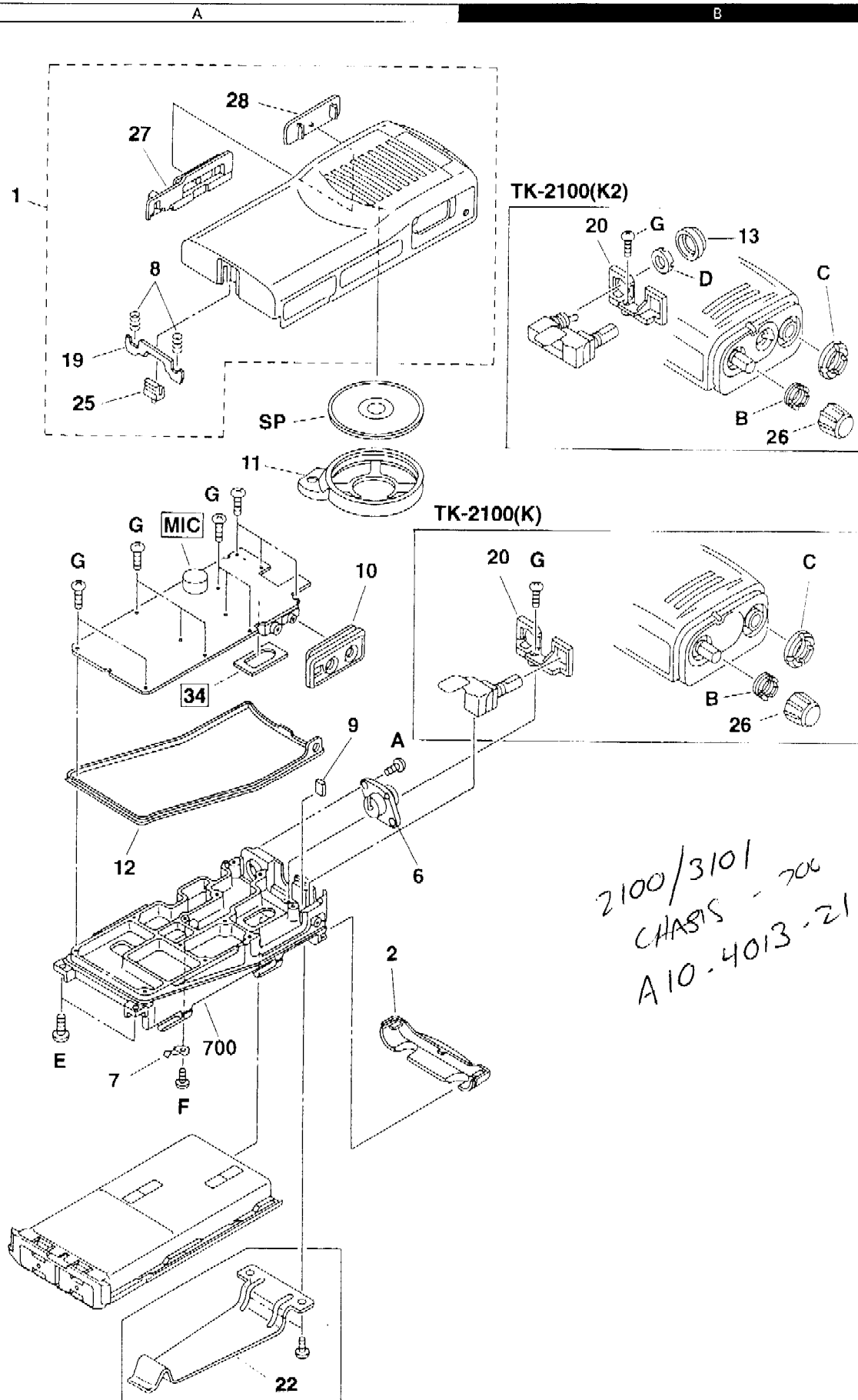
PARTS RIST

TX-RX UNIT(X57-5650-10)

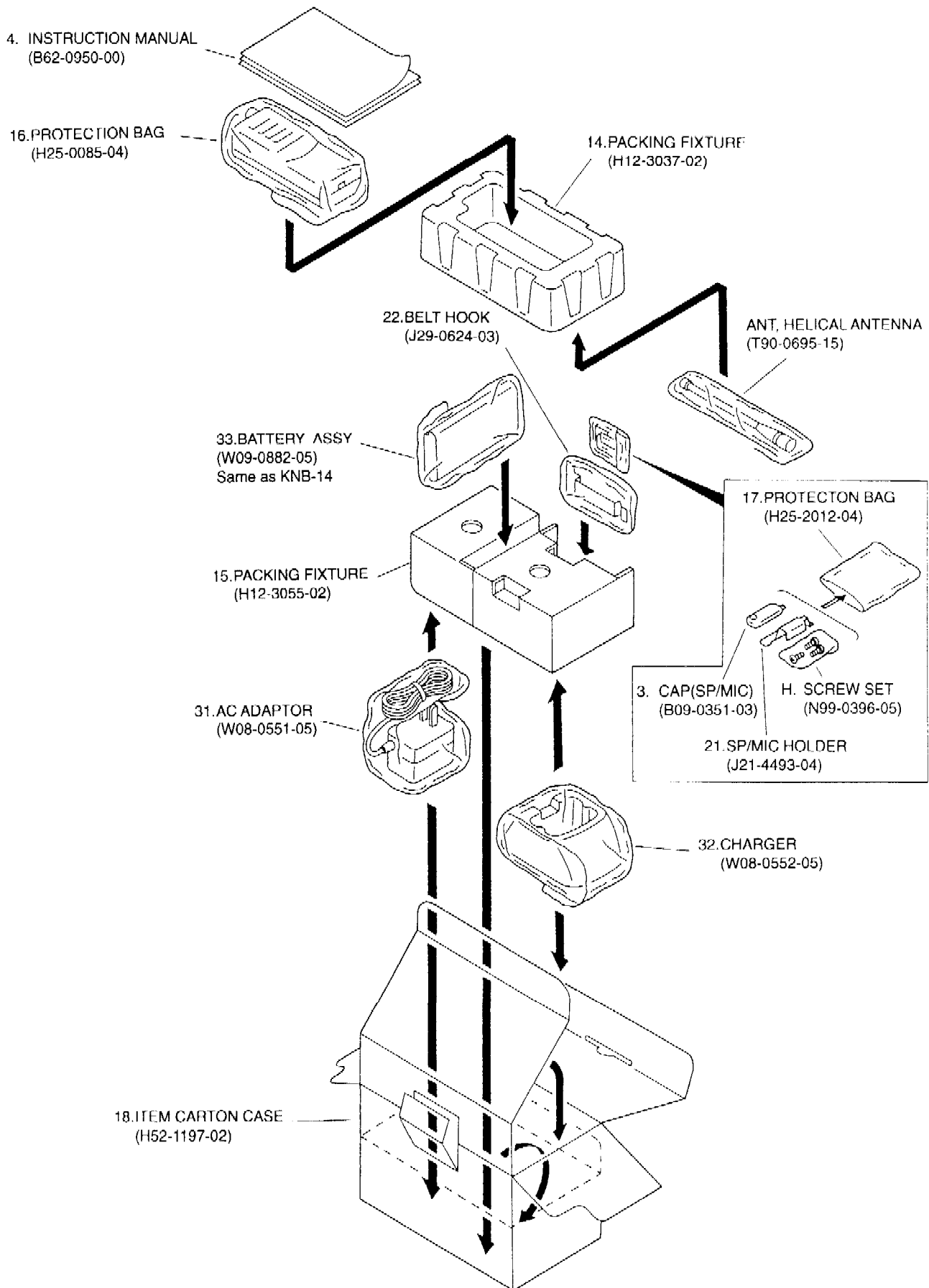
Ref. No.	Address	New parts	Parts No.	Description	Destination
R526		*	RK73GH1J153D	CHIP R 15K D 1/16W	
R527		*	RK73GH1J163D	CHIP R 16K 1/16W	
R528			RK73GB1J154J	CHIP R 750K J 1/16W	
R529			RK73GR1J183J	CHIP R 18K J 1/16W	
R530			RK73GB1J101J	CHIP R 100 J 1/16W	
R531			R92-1252-05	CHIP R 0 OHM	
R532			RK73GB1J821J	CHIP R 820 J 1/16W	
R533			RK73GB1J104J	CHIP R 100K J 1/16W	
R534			RK73GB1J182J	CHIP R 1.8K J 1/16W	
R535			RK73GB1J471J	CHIP R 470 J 1/16W	
R536			RK73GR1J102J	CHIP R 1.0K J 1/16W	
R537,538			RK73GB1J101J	CHIP R 100 J 1/16W	
R539			R92-1252-05	CHIP R 0 OHM	
R540			R92-0670-05	CHIP R 0 OHM	
R541			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R542			R92-1252-05	CHIP R 0 OHM	
VR1			R12-7491-05	TRIMMING POT. (68K)	
VR500			R12-7491-05	TRIMMING POT. (68K)	
VR501		*	R12-7487-05	TRIMMING POT. (15K)	
S402,403			S70-0414-05	TACT SWITCH	
MIC500	2A		T91-0543-05	MIC ELEMENT	
D1-4			1SV203	VARIABLE CAPACITANCE DIODE	
D5			1SV214	VARIABLE CAPACITANCE DIODE	
D6, 7			MA25111	DIODE	
D100		*	HSC277	DIODE	
D101		*	HVC131	DIODE	
D102		*	HSC277	DIODE	
D200		*	HSC277	DIODE	
D300			DA221	DIODE	
D500			1SS372	DIODE	
D501			DAN222	DIODE	
D502			1SR154-400	DIODE	
IC1			MB15A02	IC	
IC100			NJM2904V	IC (APC)	
IC200			TA31136FN	IC (FM IF DETECTOR)	
IC300			NJM2902V	IC	
IC301			NJM2904V	IC (APC)	
IC302			TA7368F	IC (AF POWER AMP)	
IC400			PST9140NR	IC (RESET SW)	
IC401			AT2408N10S12.5	IC (8kbit SERIAL EEPROM)	
IC402			RN5VL45C	IC (REGULATOR)	
IC403		*	M38267M8L221GP	IC (MPU)	
IC404			S-81350HG-KD	IC (VOLTAGE REGULATOR)	
IC500			NJM2100V	IC (AUDIO AMP)	
Q1			2SC4649 (N,P)	TRANSISTOR	
Q2			2SC5108 (Y)	TRANSISTOR	
Q3, 4			2SK1875 (V)	FET	
Q5			2SJ243	FET	
Q6			2SC5108 (Y)	TRANSISTOR	
Q7			UMC4	TRANSISTOR	
Q8			2SC4617 (S)	TRANSISTOR	
Q100			2SC5108 (Y)	TRANSISTOR	
Q101			2SC4988	TRANSISTOR	
Q102		*	2SK2596	FET	
Q103			2SK1824	FET	
Q104			HMM1718	TRANSISTOR	
Q105		*	2SK2596	FET	
Q106			2SK1824	FET	
Q108			DTC114EE	DIGITAL TRANSISTOR	
Q109			DTA144EE	DIGITAL TRANSISTOR	

Ref. No.	Address	New parts	Parts No.	Description	Destination
Q200			DTA114EE	DIGITAL TRANSISTOR	
Q201			2SC4649 (N,P)	TRANSISTOR	
Q202		*	3SK228	FET	
Q203			2SK1215 (E)	FET	
Q300			2SC4617 (S)	TRANSISTOR	
Q302			2SK1824	FET	
Q303			DTA144LE	DIGITAL TRANSISTOR	
Q304			DTC144EE	DIGITAL TRANSISTOR	
Q305			2SA1362 (GR)	TRANSISTOR	
Q306			DTC144EE	DIGITAL TRANSISTOR	
Q307			2SK1588	FET	
Q400,401			DTC114EE	DIGITAL TRANSISTOR	
Q402			DTA114YL	DIGITAL TRANSISTOR	
Q403			DTC144EE	DIGITAL TRANSISTOR	
Q404			UMG3N	TRANSISTOR	
Q405			UPA672T	FET	
Q406			MP5A02	TRANSISTOR	
Q407			UMG3N	TRANSISTOR	
Q408			DTA123JE	DIGITAL TRANSISTOR	
Q500			2SK1824	FET	
Q501,502			2SC4617 (S)	TRANSISTOR	
Q503			2SC4919	TRANSISTOR	
Q504			DTA143ZE	DIGITAL TRANSISTOR	
TH500			157-302-65801	THERMISTOR	
			Z92-0617-01	UNIT WIRING DIAGRAM	

EXPLODED VIEW



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 500MHz
2. Impedance : 50Ω, unbalanced
3. Measuring range : Full scale of 10W or so
4. A standard cable (5D2W 1m) must be used.

5. RF Voltmeter(RF V.M)

1. Measurable frequency : Up to 500MHz or so.

6. Linear Detector

1. Measurable frequency : Up to 500MHz 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 : 500MHz or more
2. Output : -133dBm/0.05μV to 7dBm/501mV
3. Output impedance : 50Ω

12. Tracking Generator

1. Center frequency : 50kHz to 500MHz
2. Frequency deviation : ±35MHz
3. Output voltage : 100mV or more

13. Dummy Load

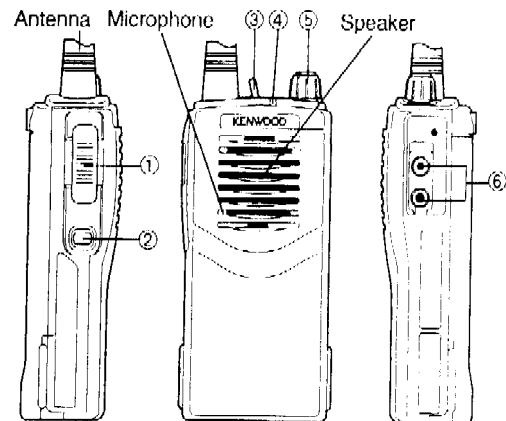
1. 8Ω, 3W or more

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

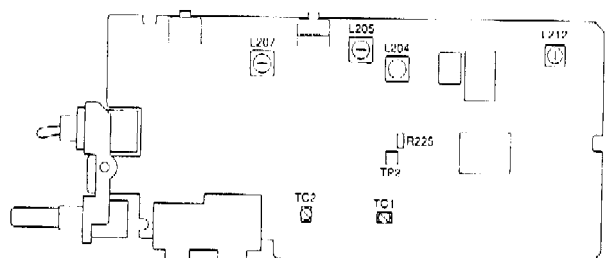


- | | |
|------------------|-----------------|
| ① PTT switch | ④ LED indicator |
| ② Monitor key | ⑤ Power switch |
| ③ Channel switch | ⑥ SP/MIC JAC |

- 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.

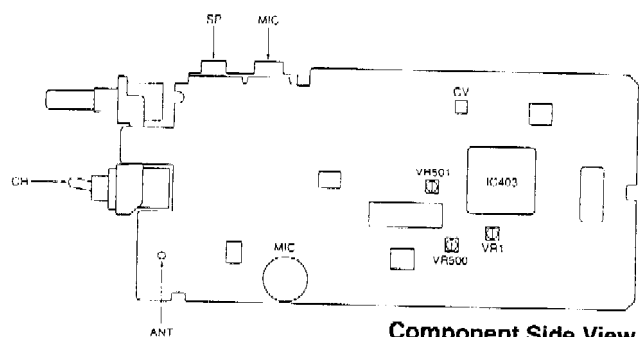
ADJUSTMENT

Adjustment point



Foil Side View

- L204: }
 L205: } Band-pass filter waveform adjustment
 L207: }
 L212: AF level adjustment
 TC1: Transmit lock voltage adjustment
 TC2: Receive lock voltage adjustment
 TP2: Band-pass filter test point



Component Side View

- ANT: Antenna connector
 CH: Channel selector
 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.

ADJUSTMENT FREQUENCY LIST

CH	TX f (MHz)	RX f (MHz)
Center	155.050	
Low	150.050	
Hi	159.950	

Remarks

- Connect the transceiver to the PC
- Send the channel data to the transceiver, then backup the data.
- Program the adjustment frequencies which are in the list, into the transceiver.

Note : Remember to reload the channel data you backed up after making the adjustments.

ADJUSTMENT

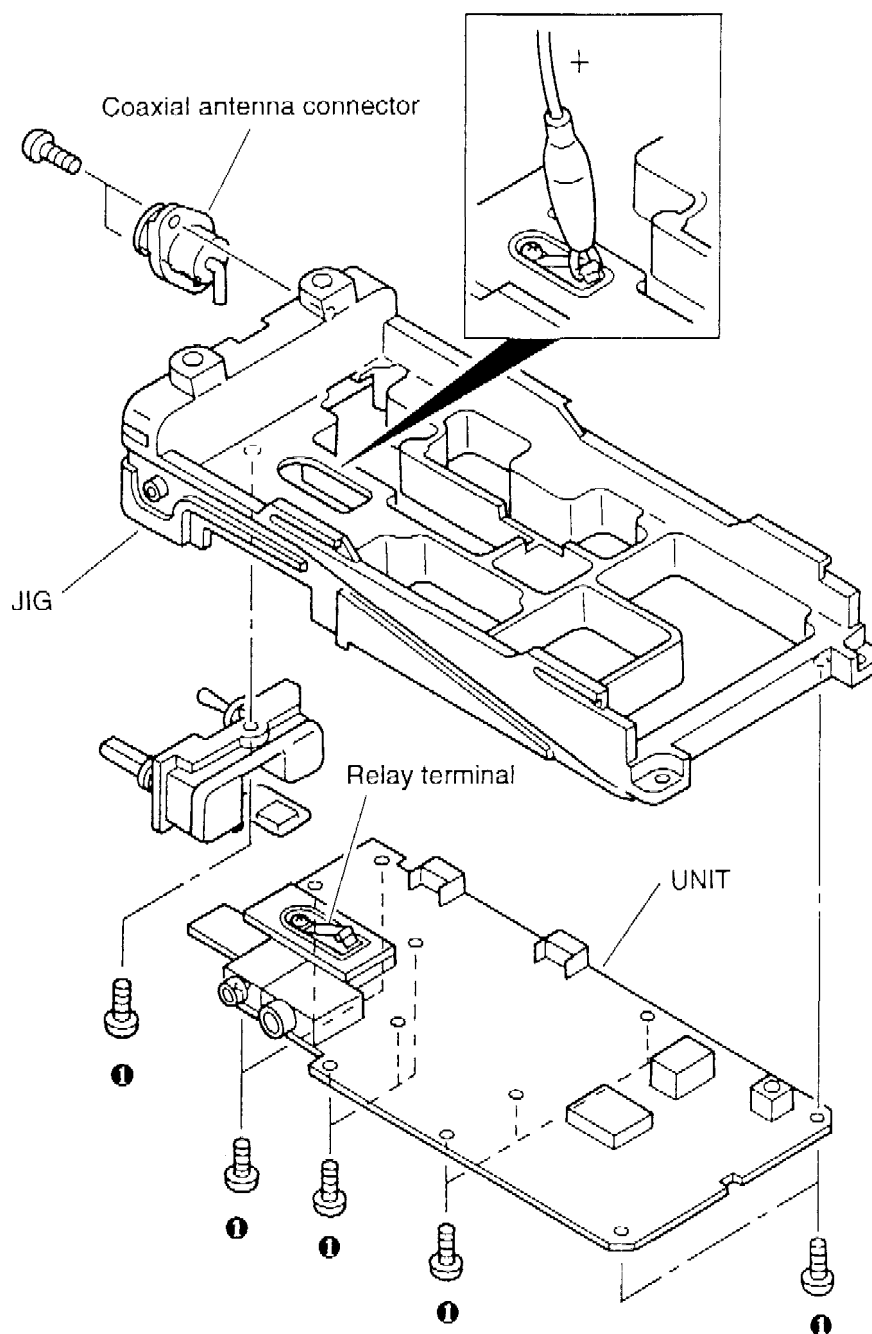
1. Jig (chassis) for adjustment (part number A10-1392-03)

2. Use the jig as follows:

1. Insert the coaxial antenna connector into the jig.
2. Place the unit on the jig and fix it with eleven screws.①
3. Solder the antenna terminal to the terminal of the unit.

Notes: Supply power from an external power supply.

(Relay terminal: +)
(jig (chassis): -)



ADJUSTMENT

Use the KPG-48D programming software for adjustment of the next item in PC MODE (see page 4).

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

Section common to the transmitter and receiver (VCO)

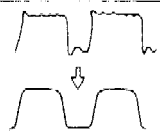
Item	Condition	Measurement		Adjustment		Specifications/ Remarks
		Test equipment	Terminal	Parts	Method	
1. Setting	1) Power supply voltage Battery terminal: 7.5V					
2. VCO lock voltage	1) CH: TX low	Digital voltmeter	CV	TC1	1.0V	±0.1V
	2) CH: RX low			TC2	1.0V	±0.1V
	3) CH: TX high				Check	Less than 3.5V
	4) CH: RX high					

Receiver Section

Item	Condition	Measurement		Adjustment		Specifications/ Remarks
		Test equipment	Terminal	Parts	Method	
1. Band-pass filter	1) CH: RX center 2) Tra generator output -40dBm Connect the spectrum analyzer to TP2 terminal.	Tra generator Spectrum analyzer	ANT TP2	L204 L206 L207	Adjust the frequency so that it becomes the spectrum waveform shown in Fig.1.	
2. Sensitivity	1) CH: RX center CH: RX LO CH: RX Hi SSG output: -116dBm (0.35μV) MOD: 1kHz DEV: ±3.0kHz (Wide) : ±1.5kHz (Narrow)	SSG Oscilloscope AF. V. M Distortion meter	ANT SP		Check	SINAD: 12dB or higher
3. AF level	1) CH: RX center SSG output: -53dBm (501μV)			L212	Adjust to the MAX AF level	
4. Squelch Level (PC MODE)	1) CH: RX center MONI: ON			PC key	Level 9 Adjust to close the squelch.	The squelch must be closed.
	2) Level 9 SSG output: -117dBm (0.36μV)					
	3) Level 3 SSG output: -125dBm (0.126μV)				Level 3 Adjust to close the squelch.	The squelch must be closed.

ADJUSTMENT

Transmitter section

Item	Condition	Measurement		Adjustment		Specifications/ Remarks
		Test equipment	Terminal	Parts	Method	
1. Transmit frequency (PC MODE)	1) CH: TX center PTT: ON	Frequency counter	ANT	PC key	Adjust to center frequency	within $\pm 100\text{Hz}$
2. DQT/QT Balance (PC MODE)	1) CH: TX center	Modulation analyzer or linear detector (LPF: 3kHz) Oscilloscope		VR500	Rectify the waveform to square wave	
3. Power (PC MODE)	1) CH: TX center Battery terminal: 7.5V PTT: ON	Power meter Ammeter			Adjust it to 2.2W	$\pm 0.1\text{W}$
4. MAX DEV	1) CH: TX center AG: 1kHz/120mV PTT: ON	Modulation analyzer or linear detector (LPF: 15kHz) Oscilloscope AG AF: V. M	ANT MIC	VR501	Adjust it to $\pm 4.3\text{kHz}$ (Wide) Narrow check (+, - Peak whichever is Maximum)	$\pm 100\text{Hz}$ $\pm 1.8\text{kHz} \sim 2.2\text{kHz}$
5. MIC SENS	1) CH: TX center AG: 1kHz/12mV				Check (+, - Peak whichever is Maximum)	$\pm 2.2\text{kHz} \sim 3.6\text{kHz}$: (Wide) $\pm 1.1\text{kHz} \sim 1.8\text{kHz}$: (Narrow)
6. QT DEV (PC MODE)	1) CH: TX center QT: 250.3Hz	Modulation analyzer or linear detector (LPF: 3kHz) Oscilloscope AG AF: V. M	ANT	PC key	Adjust it to $\pm 0.75\text{kHz}$ (Wide) Adjust it to $\pm 0.35\text{kHz}$ (Narrow)	$\pm 50\text{Hz}$ $\pm 50\text{Hz}$
7. DQT DEV (PC MODE)	1) CH: TX center			PC key	Adjust it to $\pm 0.65\text{kHz}$ (Wide) Adjust it to $\pm 0.35\text{kHz}$ (Narrow)	$\pm 50\text{Hz}$ $\pm 50\text{Hz}$
8. Battery Level (PC MODE)	1) Battery terminal: 5.7V	Digital voltmeter	BATT	PC key	Adjust so that the LED flashes.	The LED must flash.

ADJUSTMENT

BPF-Waveform

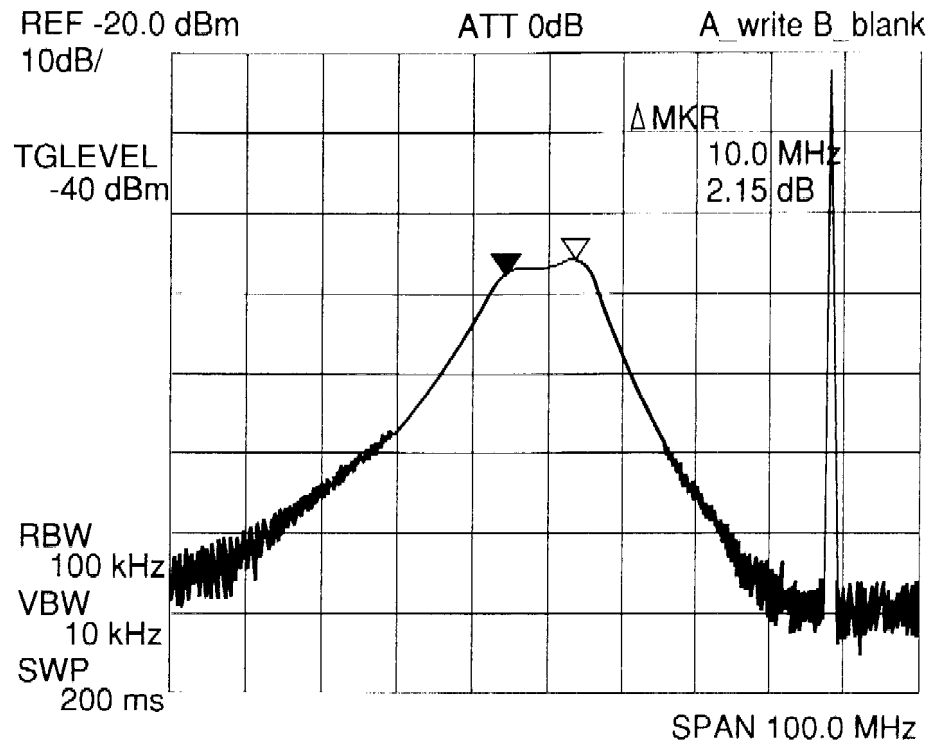
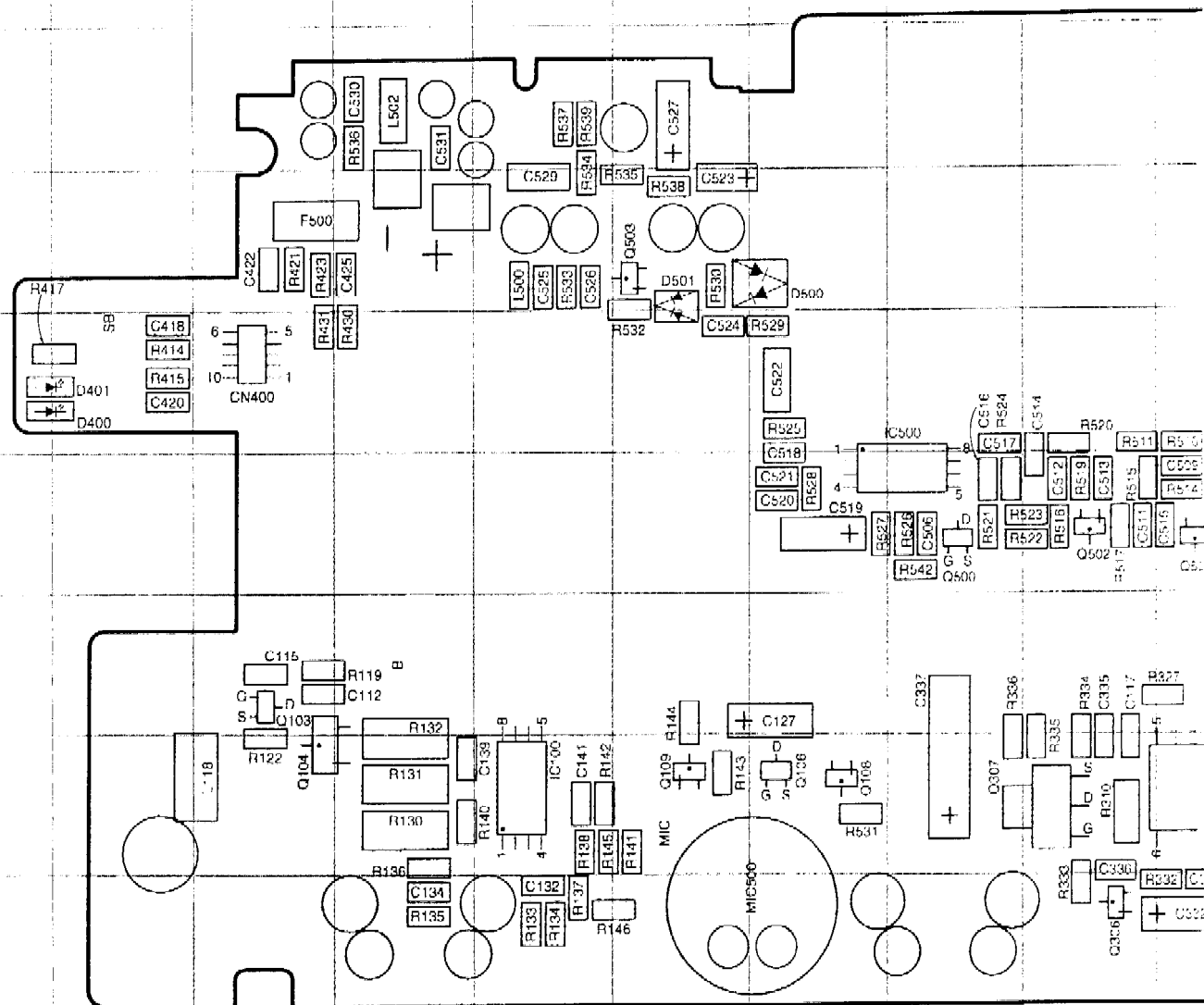


Fig 1

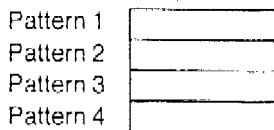
TK-2100 PC BOARD VIEWS

TX-RX UNIT (X57-5650-10) Component Side

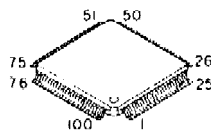


Connect 1 and 4.

Component side



Foil side



M38267M8L221GP

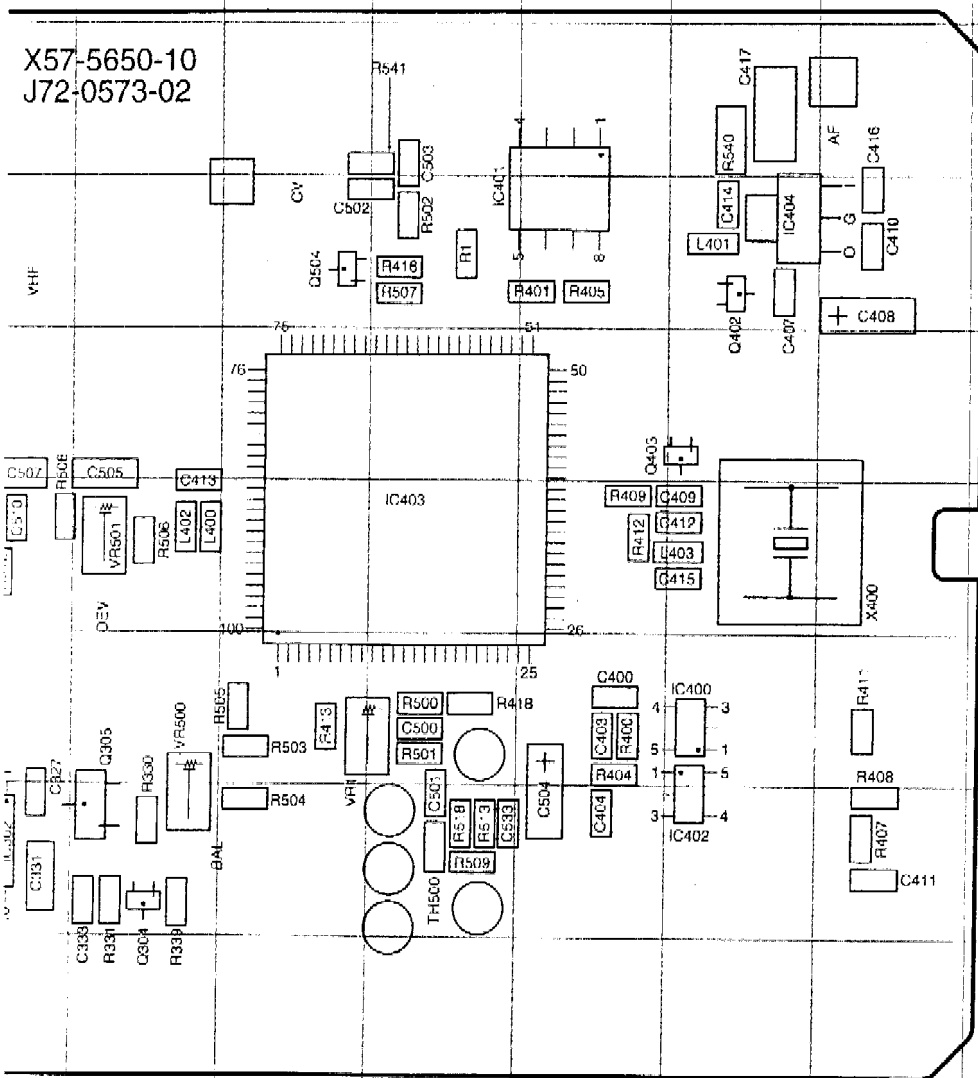


UMC.

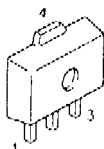
DTA114EE
DTA114YE
DTA123JE
DTA143ZE
DTA144EE
DTC114EE

DTC144EE
FMMT718
2SA1362
2SC4226
2SC4617
2SC5108

444

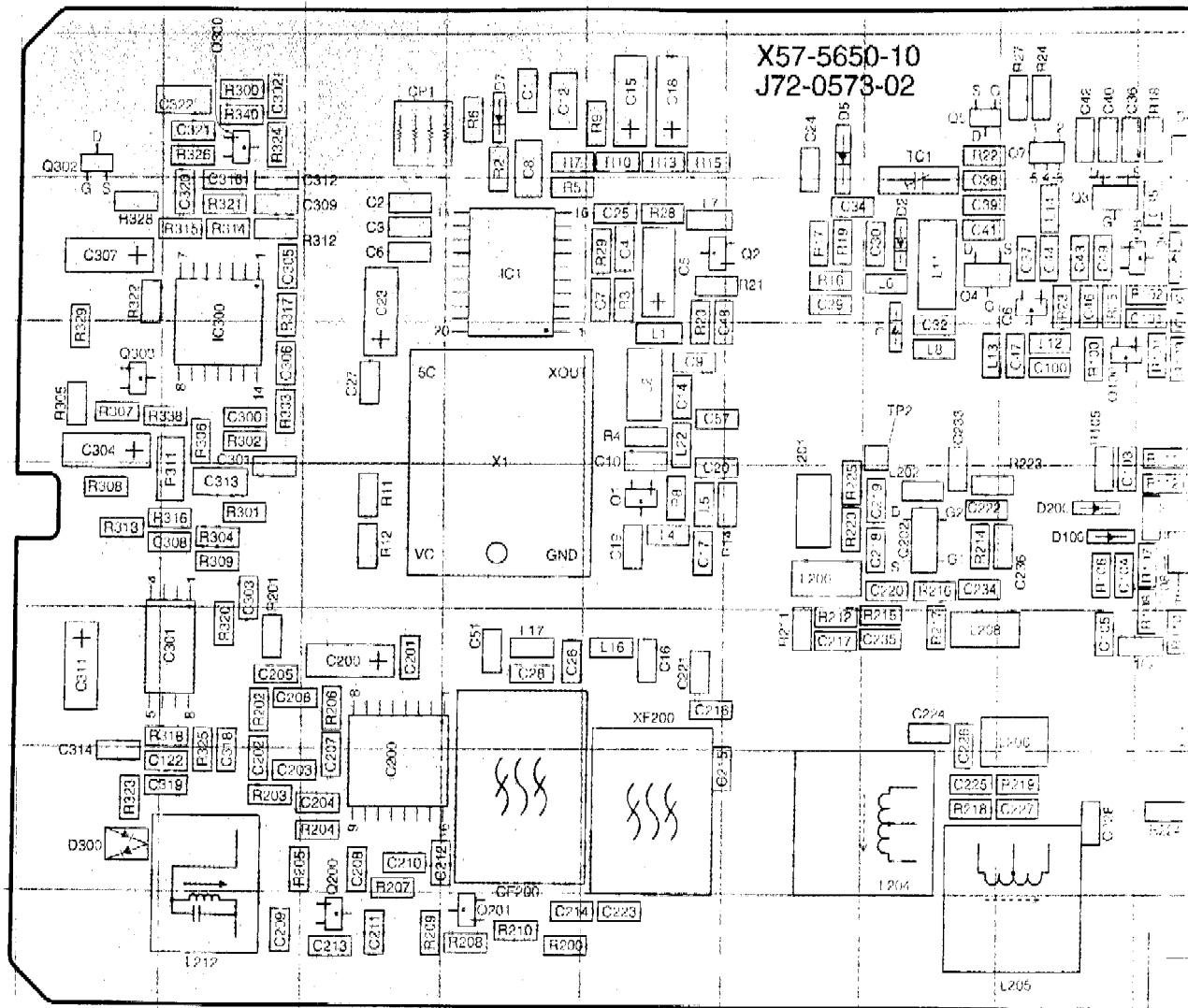


Ref No	Address
IC100	9F
IC302	9J
IC400	80
IC401	5N
IC402	90
IC403	7M
IC404	50
IC500	7H
Q103	8C
Q104	9C
Q106	9G
Q108	9G
Q109	9F
Q304	9K
Q305	9K
Q306	10I
Q307	9H
Q402	50
Q403	60
Q500	7H
Q501	7J
Q502	7I
Q503	5F
Q504	5L
D400	6B
D401	6B
D500	5G
D501	5F

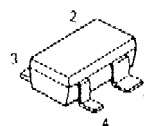
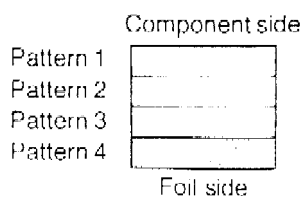


MB15A02

TX-RX UNIT (X57-5650-10) Foil Side View



Connect 1 and 4.



3SK228



2SK1588



2SK2596

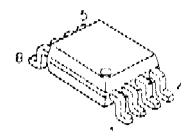
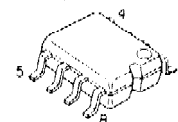
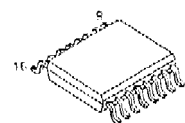
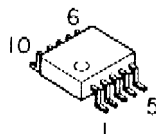
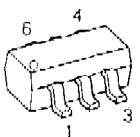
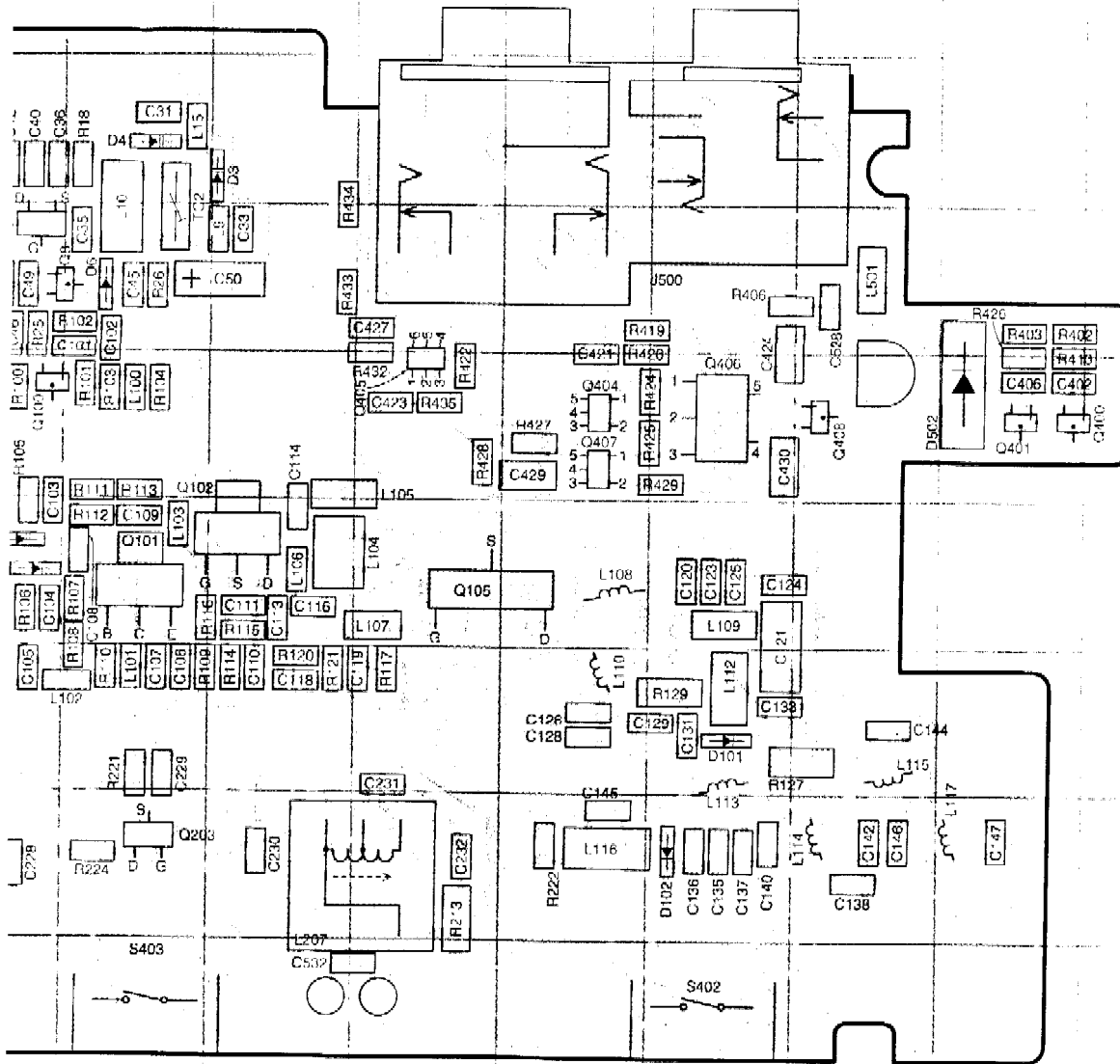


UPA

PC BOARD VIEWS TK-2100

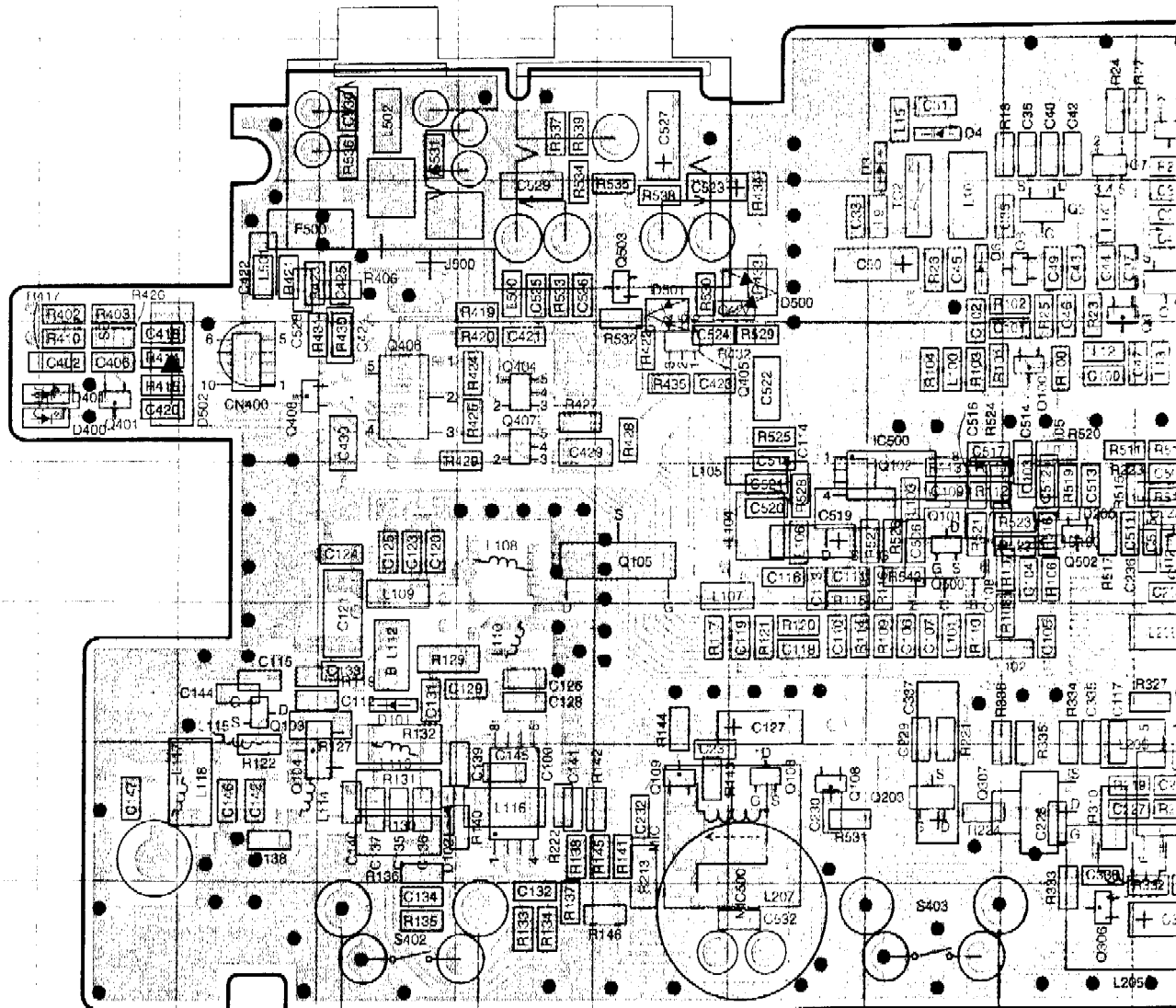
TX-RX UNIT (X57-5650-10:
(Foil side)

Ref No.	Address
IC1	5F
IC200	9D
IC300	6C
IC301	8C
Q1	7F
Q2	5G
Q3	5I
Q4	5I
Q5	4H
Q6	5I
Q7	4I
Q8	5I
Q100	6I
Q101	7J
Q102	7K
Q105	7L
Q200	10D
Q201	10F
Q202	7H
Q203	9J
Q300	4C
Q302	4B
Q303	6B
Q400	6P
Q401	6P
Q404	6M
Q405	6L
Q406	6N
Q407	6M
Q408	6N
D1	6H
D2	5H
D3	4K
D4	5J
D5	4C
D6	5J
D7	4E
D100	7I
D101	8N
D102	9N
D200	7I
D300	9B
D502	6O



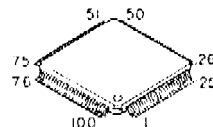
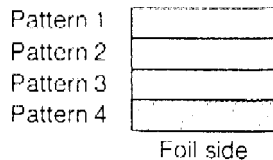
TK-2100 PC BOARD VIEWS

TX-RX UNIT (X57-5650-10) Component Side + Foil Side View

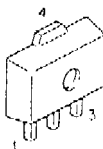


● Connect 1 and 4.

Component side



M38267M8L221GP

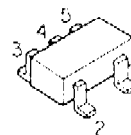


2SC4988



DTA114EE
DTA114YE
DTA123JE
DTA143ZE
DTA144EE
DTC114EE

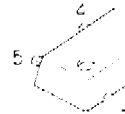
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2SC4617
2SC5108



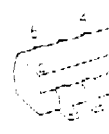
UMC4



2SK2596



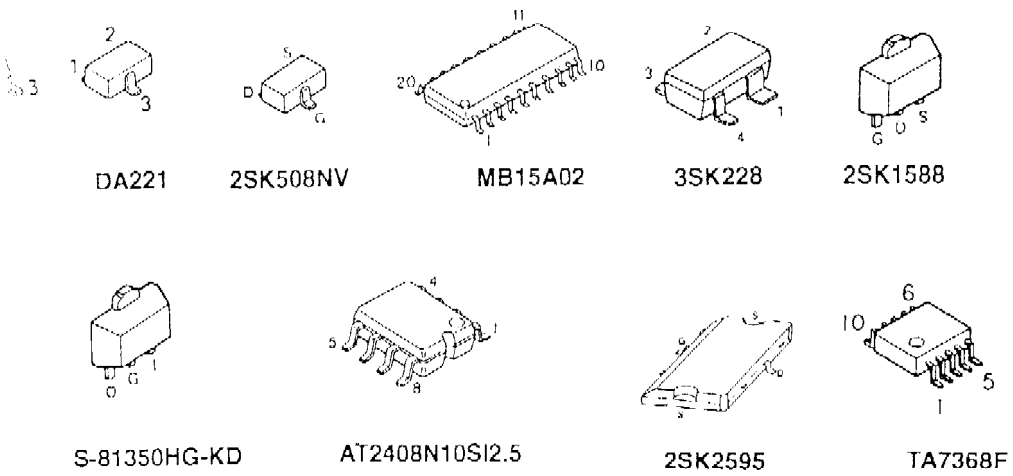
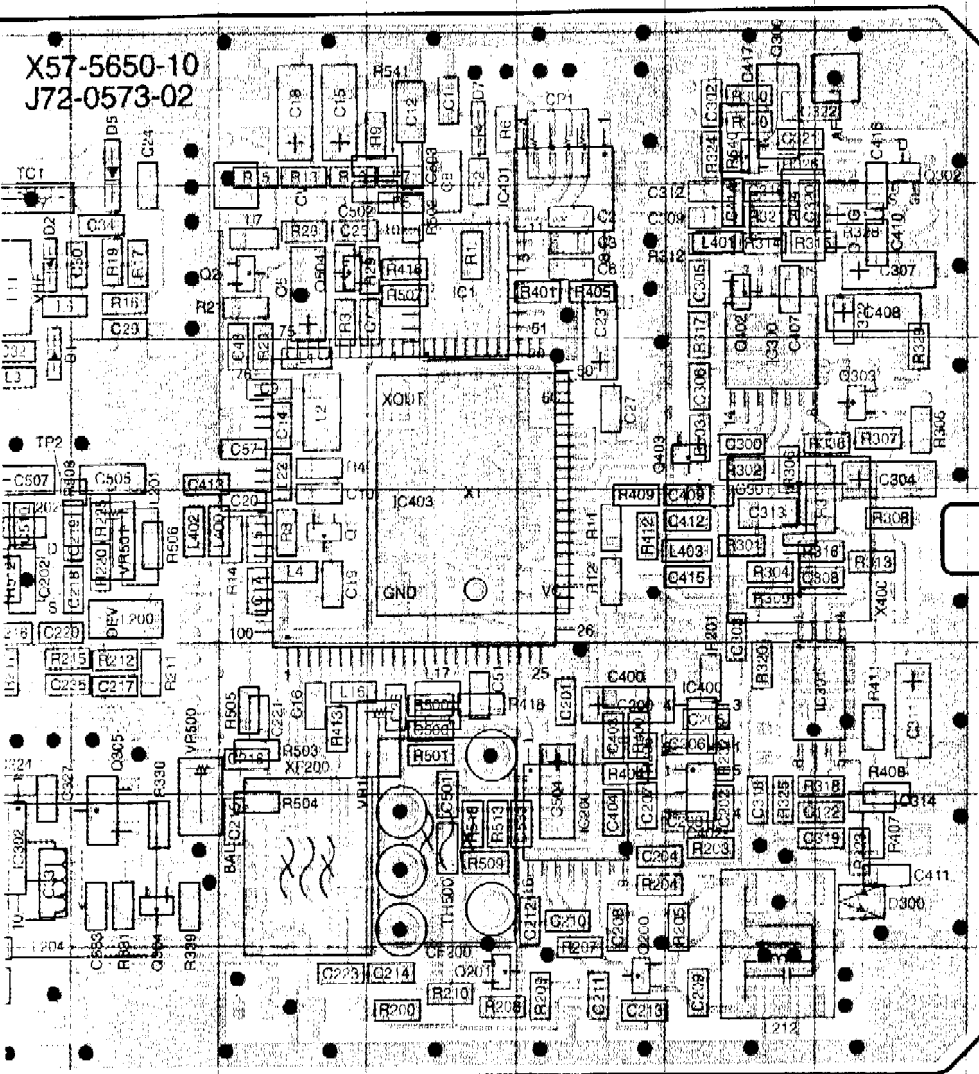
MP5A01

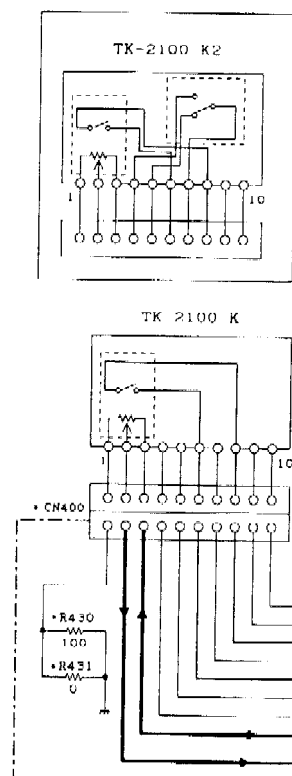


UPA67

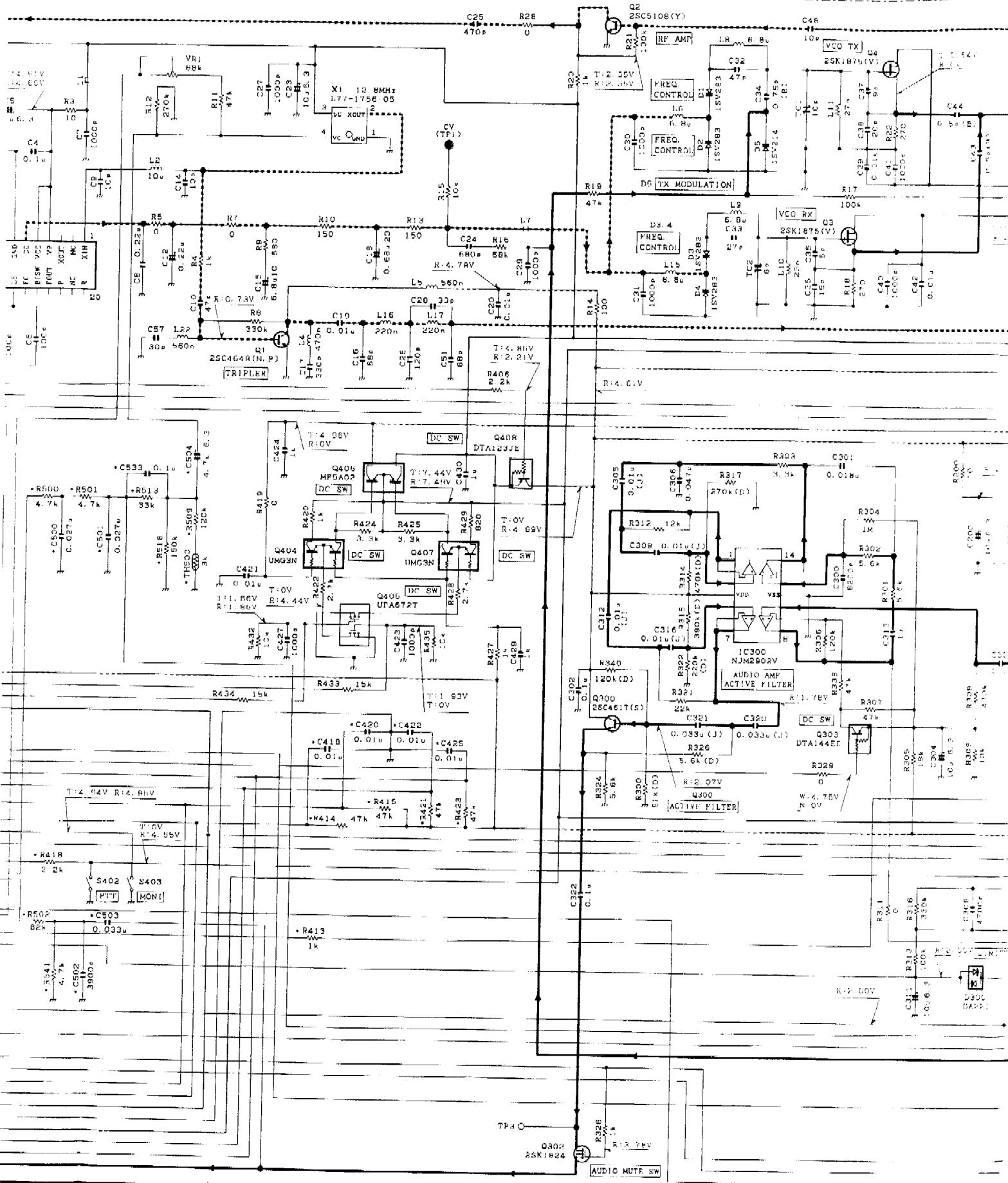
TX-RX UNIT (X57-5650-10)
(Component + Foil side)

Ref No	Address
IC1	5M
IC100	9I
IC200	9N
IC300	6O
IC301	8O
IC302	9J
IC400	8O
IC401	5N
IC402	9O
IC403	7M
IC404	5O
IC500	7H
Q1	7I
Q2	5L
Q3	5I
Q4	5I
Q5	4J
Q6	5I
Q7	4I
Q8	5I
Q100	6I
Q101	7H
Q102	7H
Q103	8C
Q104	9C
Q105	7F
Q106	9G
Q108	9G
Q109	9F
Q200	10N
Q201	10M
Q202	7J
Q203	9H
Q300	4O
Q302	4P
Q303	6P
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
Q500	7H
Q501	7J
Q502	7I
Q503	5F
Q504	5L
D1	6J
D2	5J
D3	4H
D4	4H
D5	4K
D6	5H
D7	4M
D100	7I
D101	8O
D102	9I
D200	7I
D300	9P
D400	6B
D401	6B
D500	5G
D501	5F
D502	6C

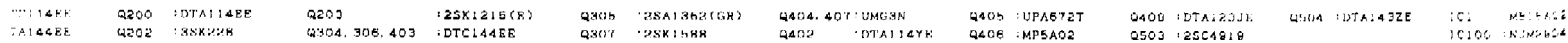




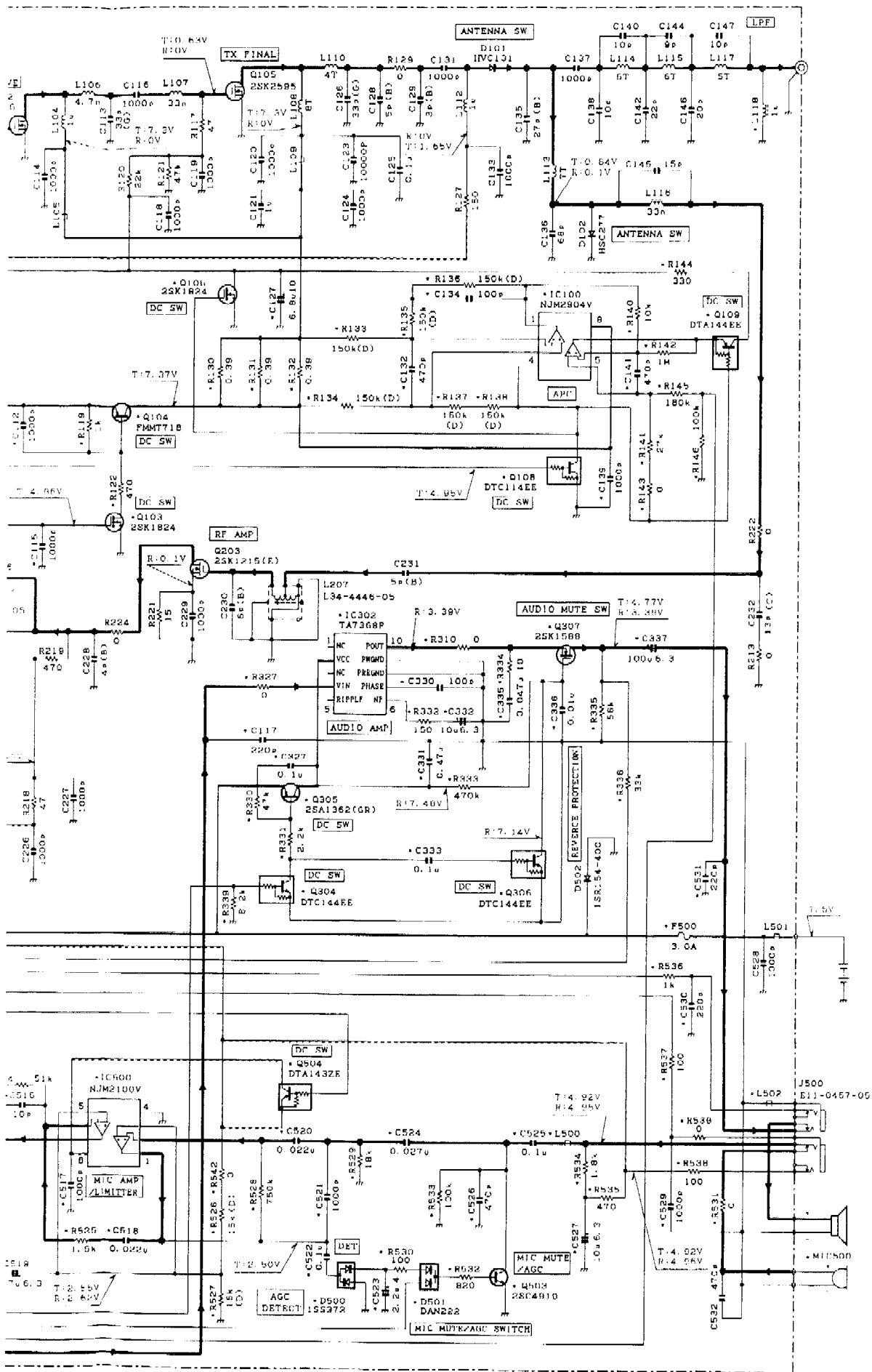
D1 4	11SV283	DG. 7	MA2511)	D101	HVC131	D300	DA221	D401	D30-2157-05	D501	DA222	Q. 20. 1
D5	11SV214	D100	HSC277	D102. 200	HSC277	D400	D30-2156-05	D500	1SS274	D502	1SR14 400	Q. 2. 1



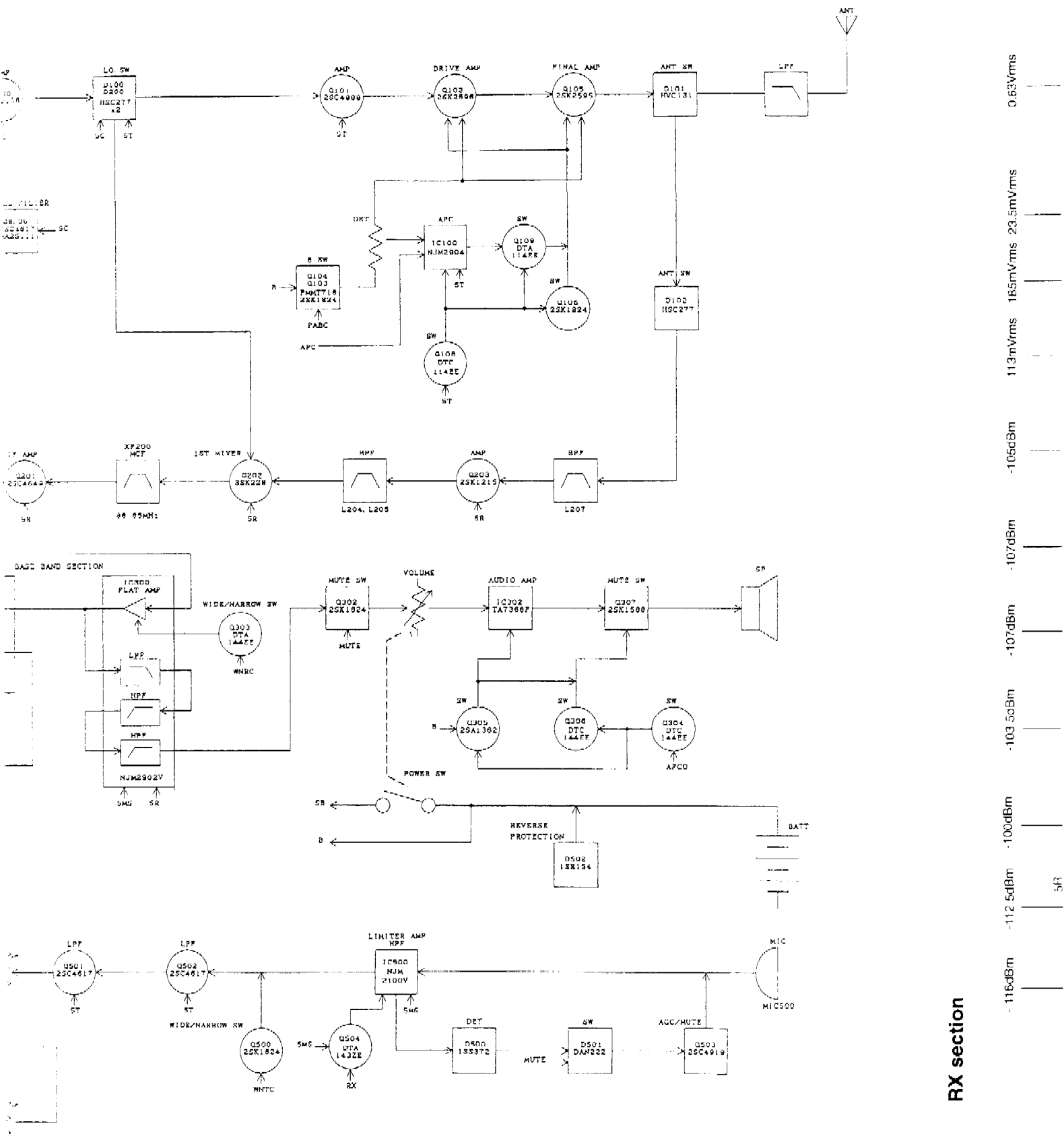
Q1, 201	2SC4649(N,P)	Q3, 4	2SK1875(V)	Q7	UMC4	Q100	2SC5108(Y)	Q102	2SKX86	Q104	FMM71H	Q106, 400, 401	DTC114AL
Q2, 6	2SC5108(Y)	Q5	2SKJ243	Q8, 300, 501, 502	2SC4617(S)	Q101	2SC4VHR	Q103, 106, 402, 500	2SK1874	Q105	2SK2595	Q109, 300	DTA144EE



SCHEMATIC DIAGRAM TK-2100

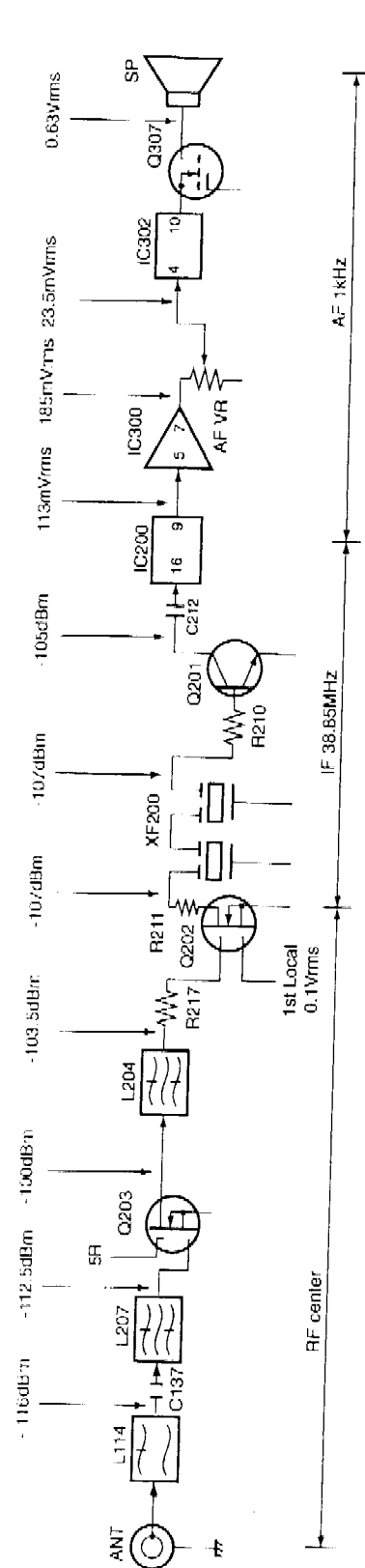


00	PNM15A02	IC200	TA31136FN	IC301	PNJM2904V	IC400	PST9140NR	IC402	RN5V145C	IC404	S-R1350HG-KD
	PNJM2904V	IC300	PNJM2902V	IC302	TA7366F	IC401	AT2408N10S12.5	IC403	M3825/MBL21GP	IC500	PNJM2100V



RX section

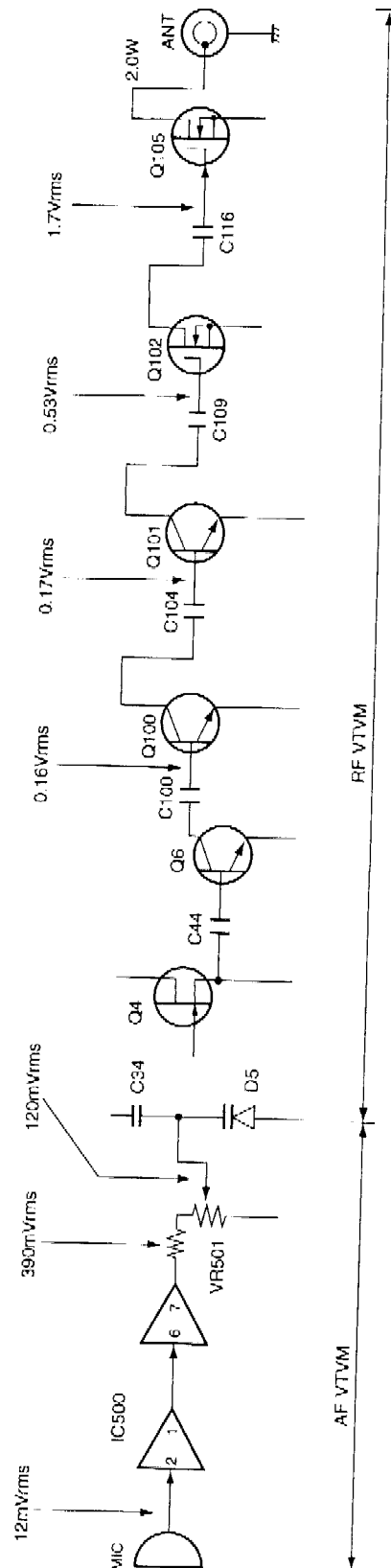
LEVEL DIAGRAM



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

Modulate the AF level with a frequency of 1kHz and deviation of 1.5kHz (Narrow), 3kHz (Wide). 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.

TX section



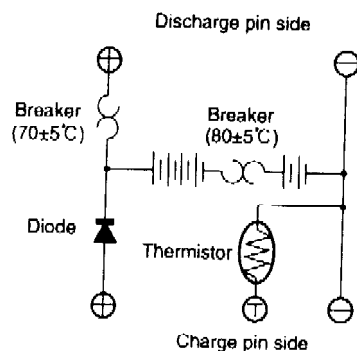
Measure the audio frequency on an AF VTVM and radio frequency on a RF VTVM at high impedance. Set the MIC input obtain a modulation factor of 60% with the transmit frequency at center and a modulation frequency of 1kHz.

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

KNB-14



CIRCUITDIAGRAM



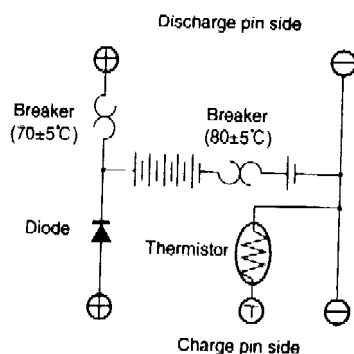
SPECIFICATIONS

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

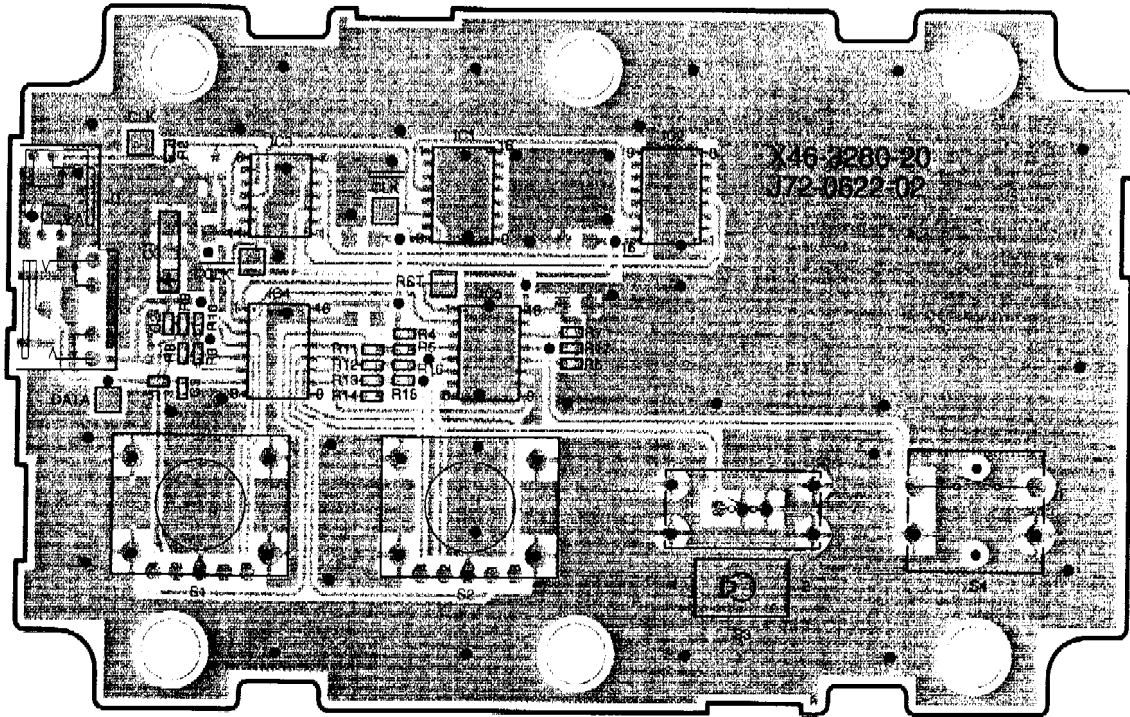


SPECIFICATIONS

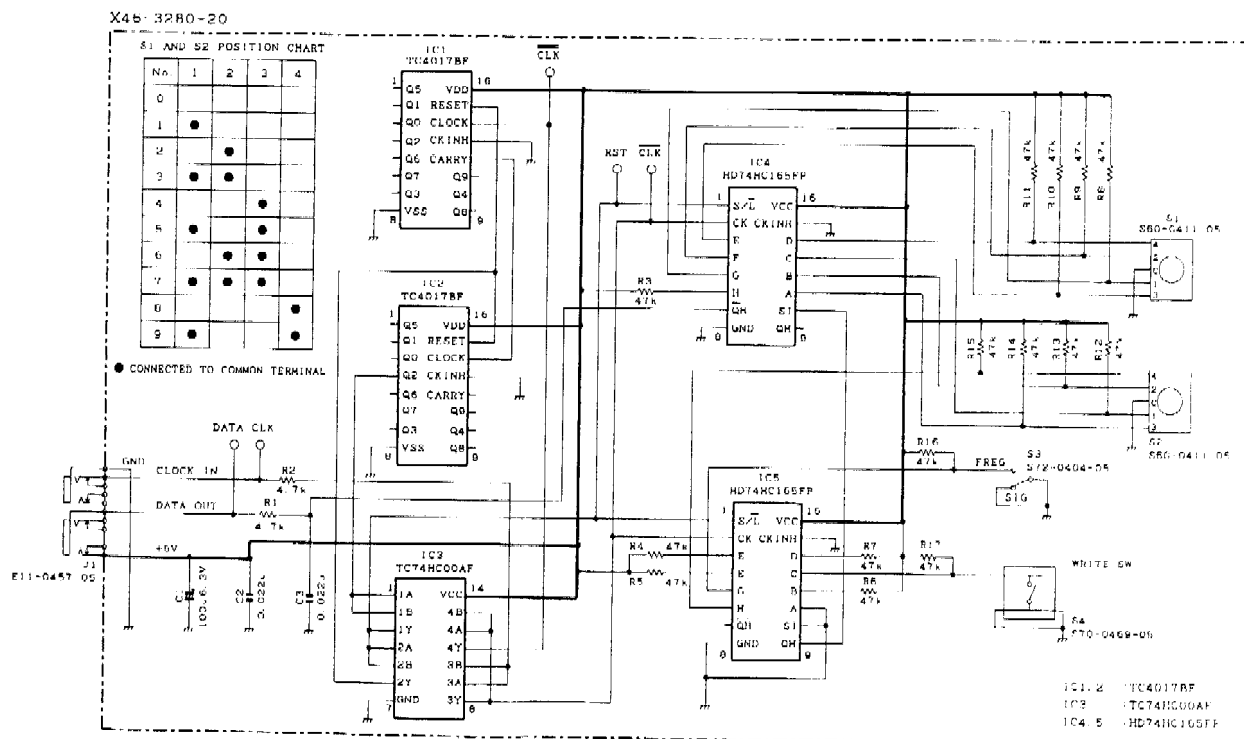
Voltage : 7.2V(1.2Vx6)
 Charging current : 1100mAh
 Dimensions : 60.8Wx110.8Hx20.3D(mm)
 (projection included)
 Charger and charging time:
 KSC-15 (normal charger), approximately 8 hours
 KSC-16 (rapid charger), approximately 2 hours
 Weight : 210g

KPT-60 (CHANNEL & TONE PROGRAMMER)

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



DIGITAL UNIT (X46-3280-20)



SPECIFICATIONS

GENERAL

Frequency Range	150 to 160 MHz
RF power output	2W
Number of channels	K : 1CH , K2 : 2CH
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 (2-5/16) W X 125.5 (4-15/16) H X 32 (1-1/4) D mm (inches) 330g (0.73lbs)

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