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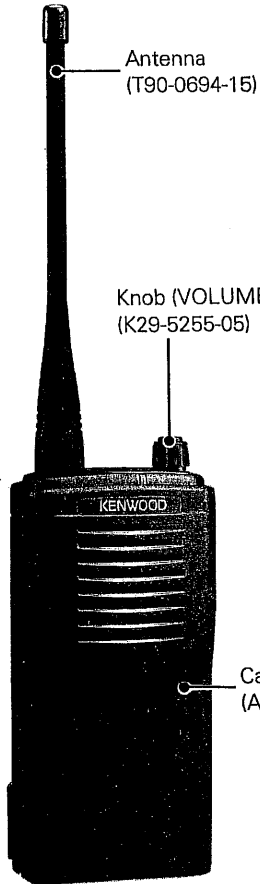
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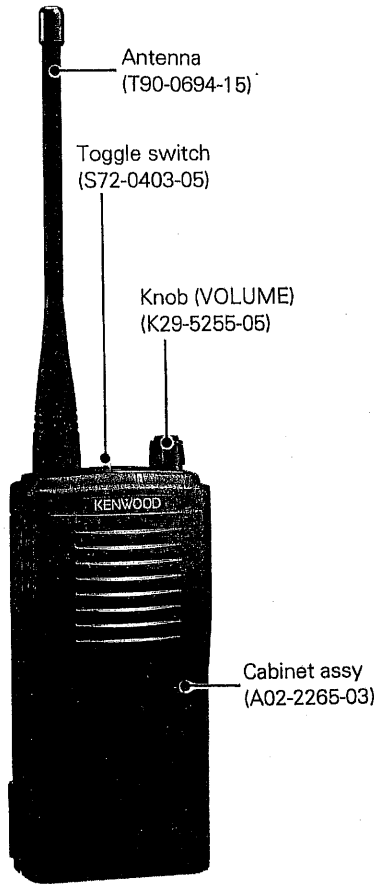
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TK-3100/3101

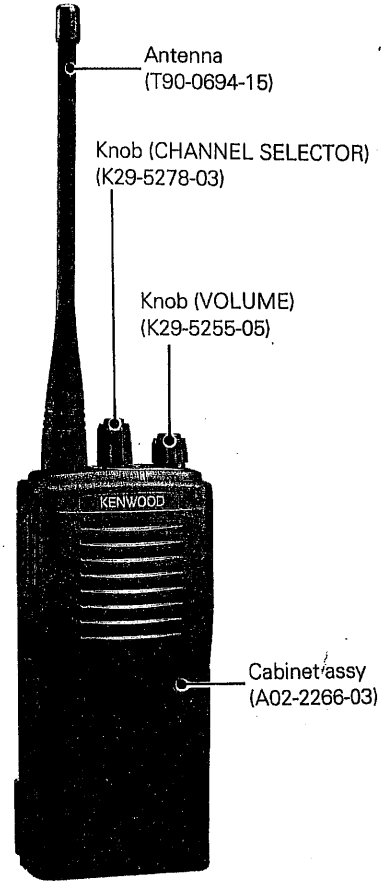
SERVICE MANUAL



TK-3100 (1 channel)



TK-3100 (2 channel)



TK-3101

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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-3100

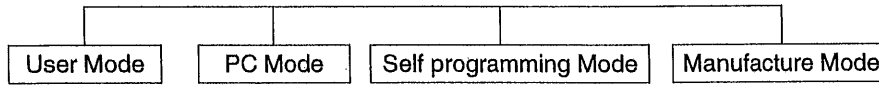
Destination	number of CH	Frequency No./Frequency	Color	Factory default CH setting	RF power output
K	1channel	1 464.5000MHz	Brown	464.5500MHz/QT 67.0Hz Color : yellow	2W
		2 464.5500MHz	Yellow		
		3 467.7625MHz	J		
		4 467.8125MHz	K		
K2	2 channel	5 467.8500MHz	Silver Star	CH1 : 464.5500MHz/QT 67.0Hz Color : Yellow	
		6 467.8750MHz	Gold Star		
		7 467.9000MHz	Red Star	CH2 : 467.9250MHz/QT 67.0Hz Color : Blue Star	
		8 467.9250MHz	Blue Star		

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Destination	number of CH	Frequency No./Frequency	Color	RF power output
K	15 channel	CH 1 : 462.5625MHz	White Black Orange	2W
		CH 2 : 462.5875MHz		
		CH 3 : 462.6125MHz		
		CH 4 : 462.6375MHz		
		CH 5 : 462.6625MHz		
		CH 6 : 462.6875MHz		
		CH 7 : 462.7125MHz		
		CH 8 : 462.5750MHz		
		CH 9 : 462.6250MHz		
		CH10 : 462.6750MHz		
		CH11 : 462.5500MHz		
		CH12 : 462.6000MHz		
		CH13 : 462.6500MHz		
		CH14 : 462.7000MHz		
		CH15 : 462.7250MHz		

REALIGNMENT

1 Modes



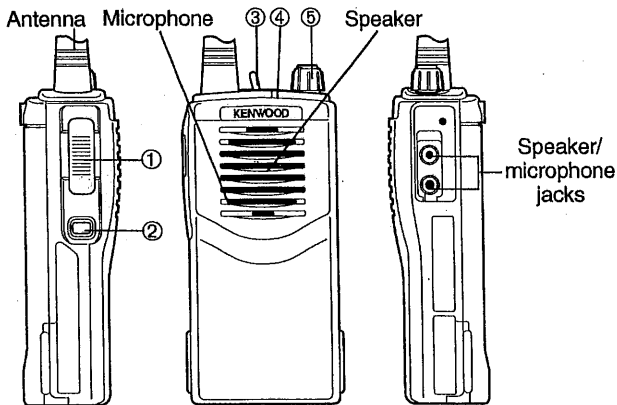
MODE	FUNCTION
User Mode	Use this mode for normal operation.
PC Mode	Use this mode, to make various settings by means of the FPU through the RS-232C port.
Self programming Mode	Use this mode for setting the channel contents.
Manufacture Mode	Use this mode, to realign the various settings through the RS-232C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

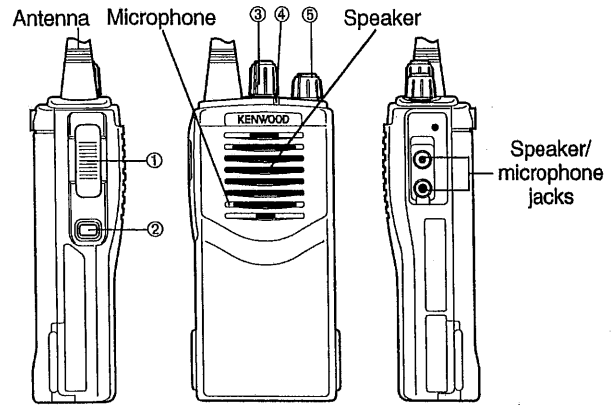
3 Getting acquainted

TK-3100



- 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.

TK-3101



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

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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.

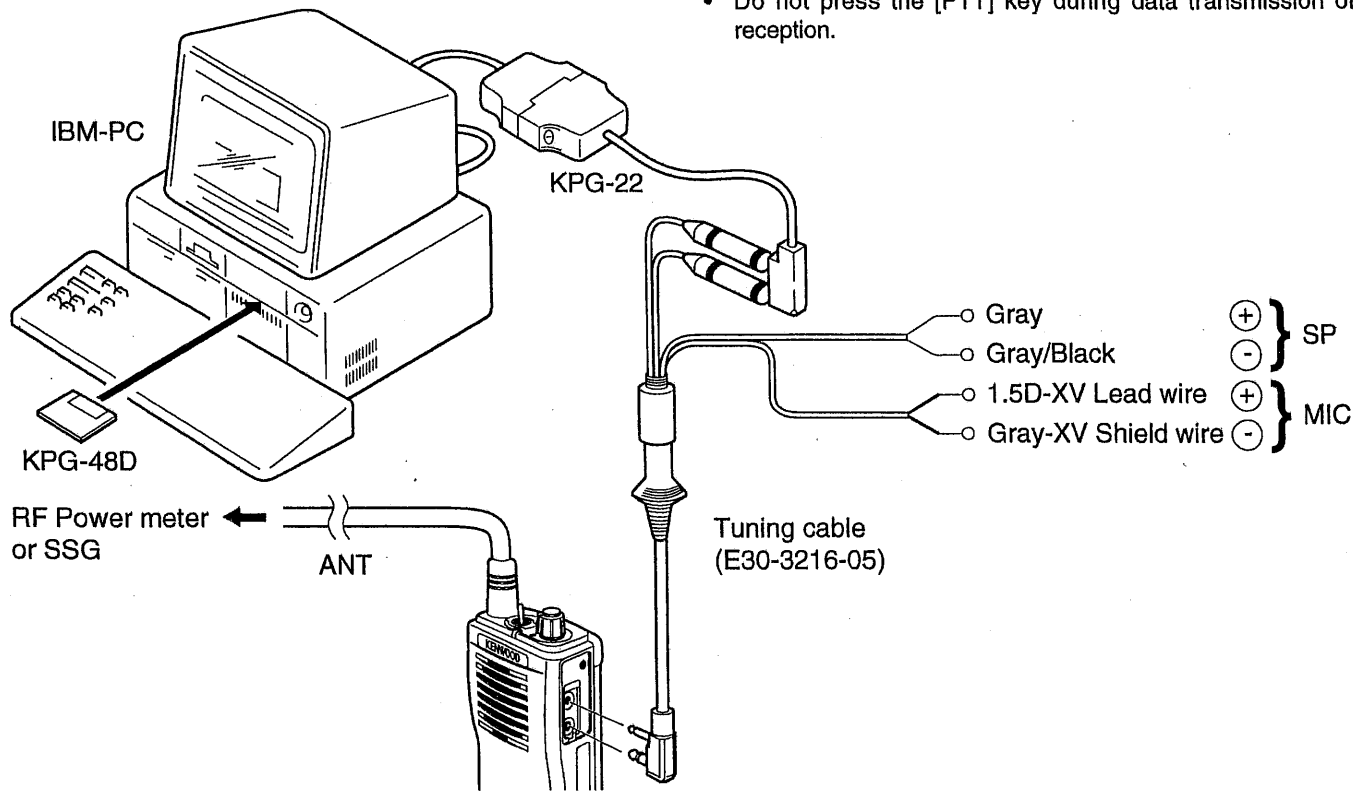


Fig 1

• KPG-22 description

(P.C programming interface cable: Option)

The KPG-22 is required to interface the TK-3100/3101 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-3100/3101 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-3100/3101 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-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.

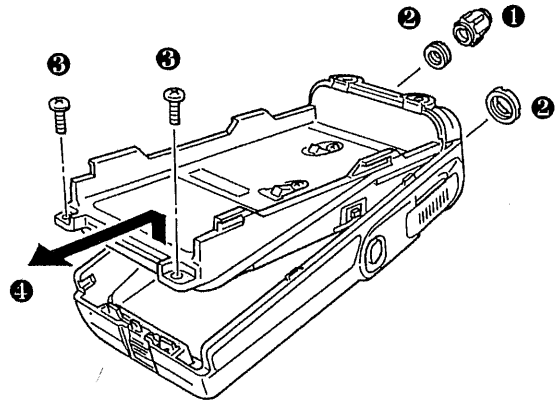
In this mode the PTT line operate as TXD and RXD data lines respectively.

TK-3100/3101

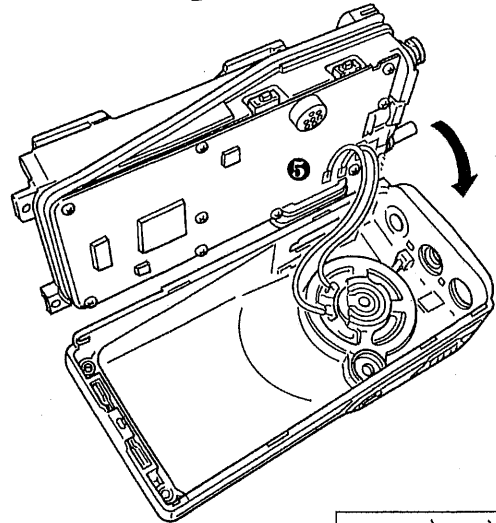
DISASSEMBLY FOR REPAIR

Separating the case assembly from the chassis

1. Remove the knob (TK-3100), (TK-3101:two knobs) 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.



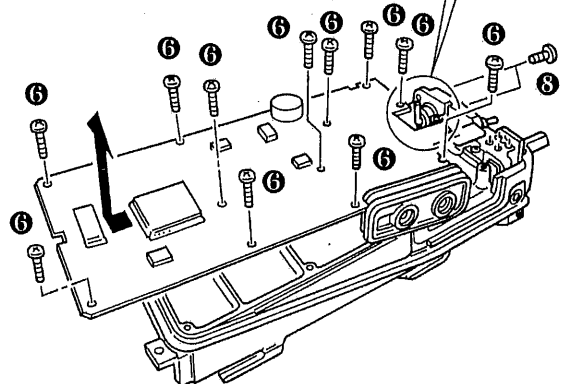
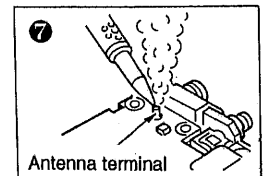
4. Taking care not to cut the speaker lead ⑤, open the chassis and case assembly.



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.

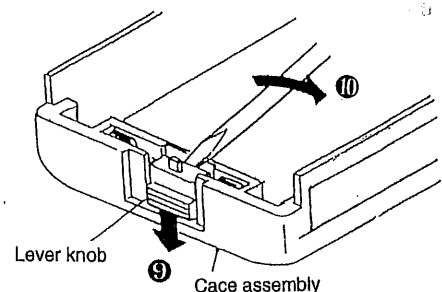
Note : When reassembling the unit in the chassis, be sure to solder the antenna terminal.



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.

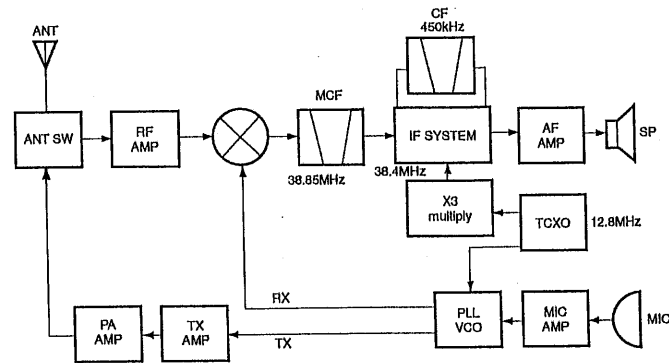


Fig 1 Frequency configuration

2. Receiver

The receiver is double conversion superheterodyne, designed to operate in the frequency range of 460 to 470MHz. 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 2-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:L71-0522-05

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 fo-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 ±100Hz
Terminal impedance	2.0 kΩ

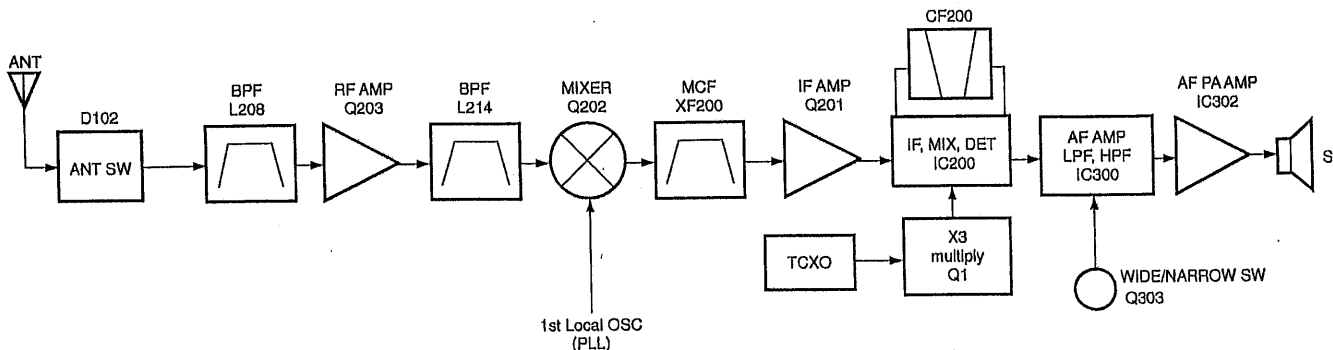


Fig 2 Receiver section configuration

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 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 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.

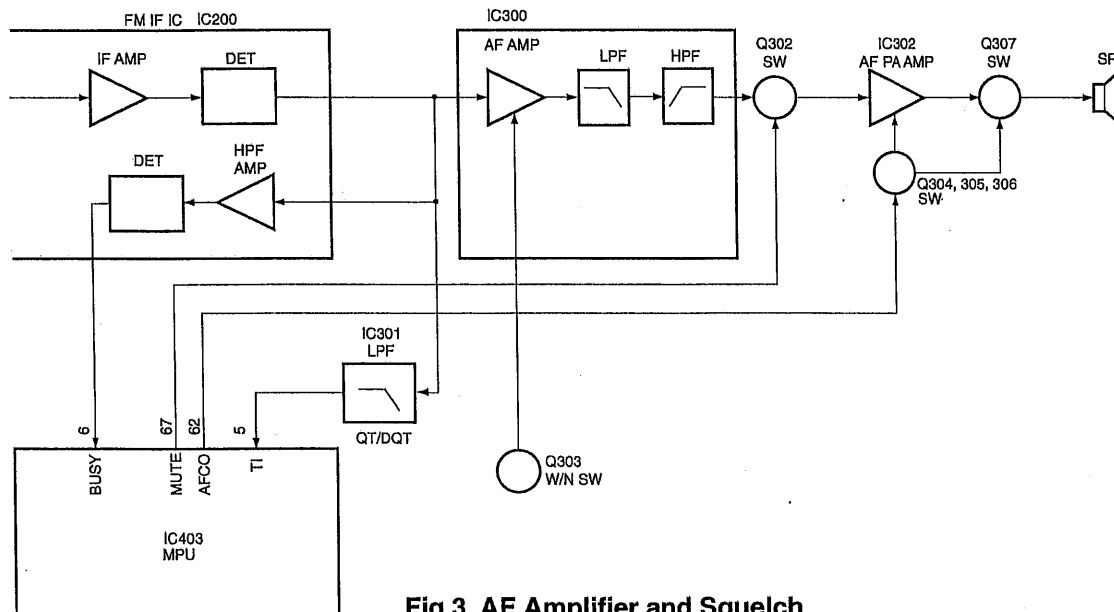


Fig 3 AF Amplifier and Squelch

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

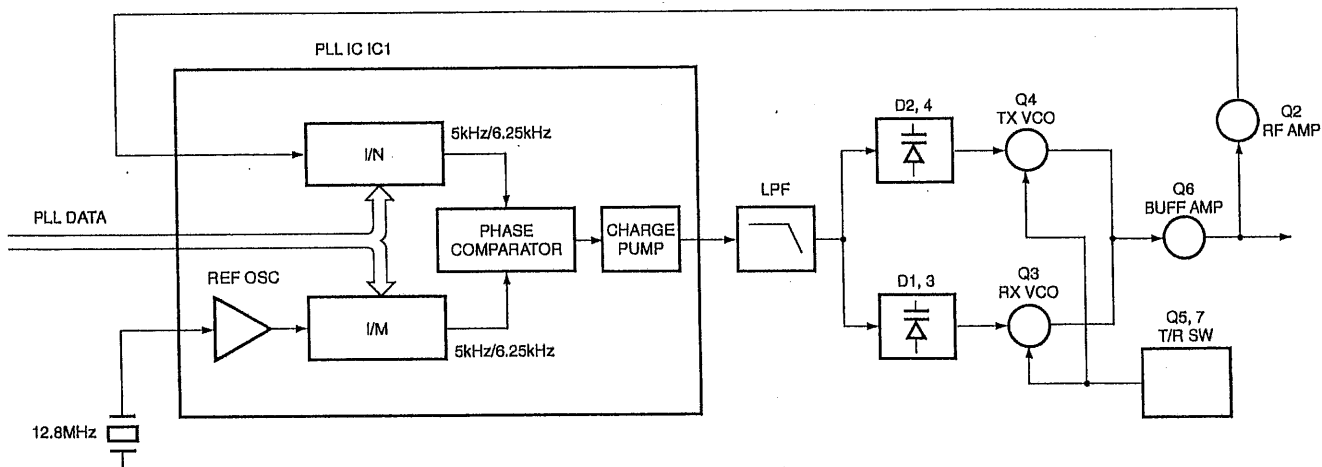


Fig 4 PLL circuit

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)

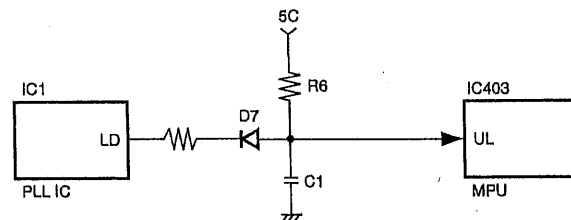


Fig 5 Unlock detector circuit

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)

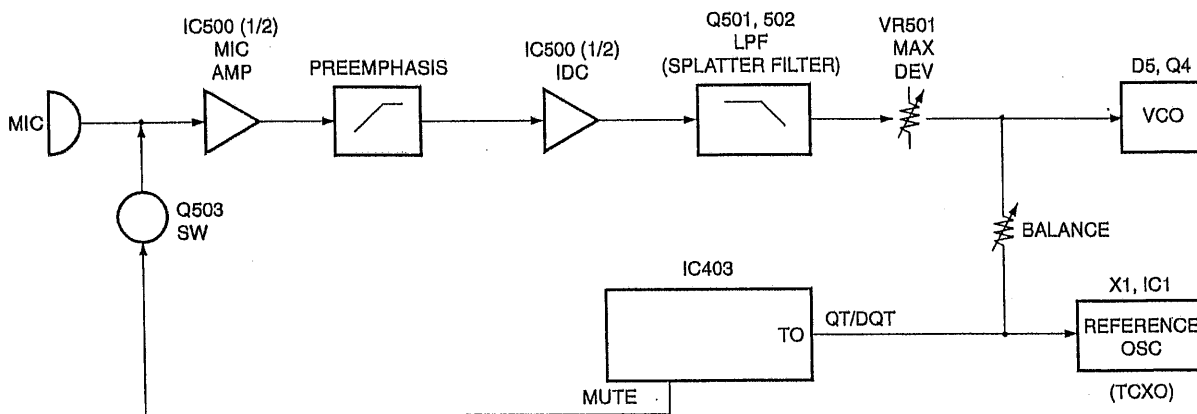


Fig 6 Transmit audio QT/DQT

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 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.

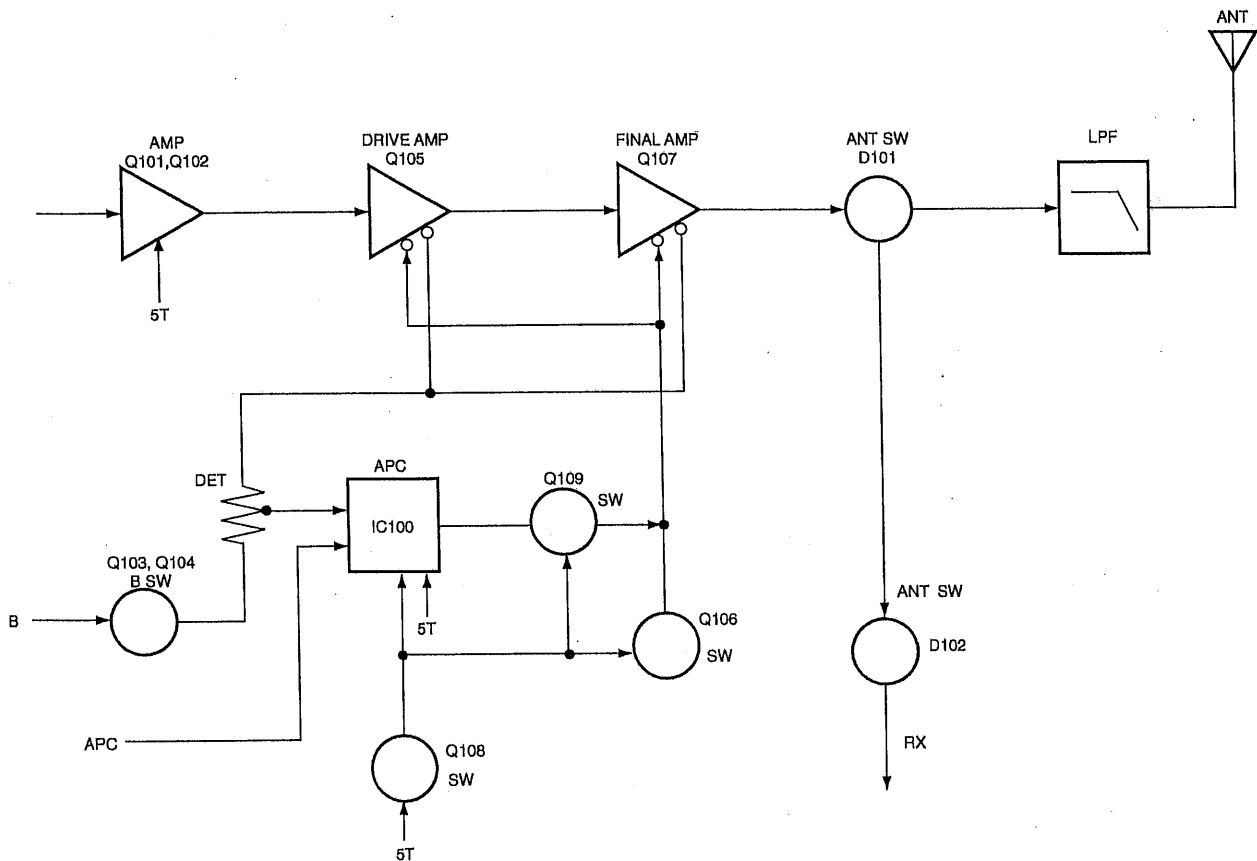


Fig 7 APC system

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

TK-3100/3101

SEMICONDUCTOR DATA

Microprocessor: M38267M8L221GP (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	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 sencitivity 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 _{ess}	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 _{ds}	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

TK-3100/3101

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 REGULATER
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
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 FILTE
Q502	TRANSISTOR	ACTIVE FILTER
Q503	TRANSISTOR	MIC MUTE/AGC
Q504	TRANSISTOR	DC SWITCH
D1	VARIABLE CAPACITANCE DIODE	FREQ. CONTROL

Ref No	Semiconductor	Description
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	CUEERNT 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-3100/3101

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.

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

K: USA
 T: England
 X: Australia

P: Canada
 E: Europe
 M: Other Areas

TX-RX UNIT(X57-5660-10)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
TK-3100/3101						D401			B30-2157-05	LED (YELLOW)	
1	1A	*	A02-2235-03	CABINET ASSY	K	C1			CK73GB1C104K	CHIP C 0.10UF	K
1	1A	*	A02-2265-03	CABINET ASSY	K2	C2, 3			CC73GCH1H101J	CHIP C 100PF	J
1	1A	*	A02-2266-03	CABINET ASSY	1	C4			CK73GB1C104K	CHIP C 0.10UF	K
2	3B	*	A82-0034-03	REAR PANEL		C5			C92-0507-05	CHIP-TAN 4.7UF	6.3WW
3	-		B09-0351-03	CAP (SP/MIC)	ACSY	C6			CC73GCH1H101J	CHIP C 100PF	J
4	-	*	B62-0950-00	INSTRUCTION MANUAL	ACSY	C7			CK73GB1H471K	CHIP C 470PF	K
4	-	*	B62-1075-00	INSTRUCTION MANUAL	ACSY	C9			CC73GCH1H100D	CHIP C 10PF	D
-	-	*	B72-1407-04	MODEL NAME PLATE		C10			CC73GCH1H470J	CHIP C 47PF	J
-	-	*	B72-1408-04	MODEL NAME PLATE		C12			C92-0001-05	CHIP-C 0.1UF	35WW
6	2A	*	E04-0413-05	RF COAXIAL RECEPTACLE (SMA)		C14			CC73GCH1H100D	CHIP C 10PF	D
7	3A	*	E23-1006-04	RELAY TERMINAL (BATT -)		C15			C92-0004-05	CHIP-TAN. 1.0UF	16WW
8*	1A	*	G01-0881-04	COIL SPRING (BATT RELEASE)		C16			CC73GCH1H680J	CHIP C 68PF	J
9	2A	*	G13-1709-04	CUSHION (VOL)		C17			CK73GB1H331K	CHIP C 330PF	K
10	2A	*	G53-0791-03	PACKING (PLUG)		C18			C92-0001-05	CHIP-C 0.1UF	35WW
11	1A	*	G53-0842-03	PACKING (SP)		C19, 20			CK73GB1H103K	CHIP C 0.010UF	K
12	2A	*	G53-0860-04	PACKING (SIDE)		C23			C92-0560-05	CHIP-TAN 10UF	6.3WW
13	1B	*	G53-0863-04	PACKING (TOGGLE)	K2	C24			CK73GB1H103K	CHIP C 0.010UF	K
14	-	*	H12-3037-02	PACKING FIXTURE		C25			CK73GB1H471K	CHIP C 470PF	K
15	-	*	H12-3055-02	PACKING FIXTURE		C26			CC73GCH1H121J	CHIP C 120PF	J
16	-	*	H25-0085-04	PROTECTION BAG (100/200/0.07)		C27			CK73GB1H471K	CHIP C 470PF	K
17	-	*	H25-2012-04	PROTECTION BAG (75/100/0.08)		C28			CC73GCH1H330J	CHIP C 33PF	J
18	-	*	H52-1197-02	ITEM CARTON CASE	K, K2	C29			CC73GCH1H020C	CHIP C 2.0PF	C
18	-	*	H52-1374-02	ITEM CARTON CASE	1	C30			CK73GB1H102K	CHIP C 1000PF	K
19	1A	*	J19-1572-04	HOLDER (BATT RELEASE)		C31			CC73GCH1H101J	CHIP C 100PF	J
20	1B	*	J19-5343-03	HOLDER (VOL, TOGGLE)	K, K2	C34			CC73GCH1H180J	CHIP C 18PF	J
21	2B	*	J19-5344-03	HOLDER (VOL, ENC)	1	C35			CC73GCH1H060D	CHIP C 6.0PF	D
22	-	*	J21-4493-04	SP/MIC HOLDER	ACSY	C36			CC73GCH1H050C	CHIP C 5.0PF	C
23	3A	*	J29-0624-03	BELT HOOK	ACSY	C37			CC73GCH1H330J	CHIP C 33PF	J
-	-	*	J82-0057-05	FPC (VOL)	K	C38			CC73GCH1H050C	CHIP C 5.0PF	C
-	-	*	J82-0058-05	FPC (VOL/TOGGLE)	K2	C39			CC73GCH1H080D	CHIP C 8.0PF	D
-	-	*	J82-0059-05	FPC (VOL/ENC)	1	C40			CC73GCH1H0R5B	CHIP C 0.5PF	B
27	1A	*	K29-5068-03	LEVER KNOB (BATT RELEASE)		C41			CC73GCH1H050C	CHIP C 5.0PF	C
28	1B	*	K29-5255-03	KNOB (VOL)		C42			CC73GCH1H100D	CHIP C 10PF	D
29	1A	*	K29-5274-03	BUTTON KNOB (MONI)		C43			CK73GB1H102K	CHIP C 1000PF	K
30	1A	*	K29-5275-03	BUTTON KNOB (PTT)		C44			CC73GCH1H060D	CHIP C 6.0PF	D
31	3B	*	K29-5278-03	KNOB (ENC)	1	C45			CC73GCH1H100D	CHIP C 10PF	D
A	2A	*	N09-2319-05	BINDING HEAD SCREW (SMA)		C46			CK73GB1H471K	CHIP C 470PF	K
B	1B	*	N14-0581-04	CIRCULAR NUT (VOL/ENC)		C47			CC73GCH1H010B	CHIP C 1.0PF	B
C	1B	*	N14-0582-04	CIRCULAR NUT (SMA)		C48			CK73GB1H471K	CHIP C 470PF	K
D	1B	*	N14-0583-04	CIRCULAR NUT (TOGGLE)	K2	C49			CC73GCH1H0R5B	CHIP C 0.5PF	B
E	3A		N30-2606-46	PAN HEAD MACHINE SCREW		C51			CC73GCH1H680J	CHIP C 68PF	J
F	3A		N79-2035-46	PAN HEAD TAPTITE SCREW		C52			CK73GB1H471K	CHIP C 470PF	K
G	2A		N83-2005-46	PAN HEAD TAPTITE SCREW		C53			CC73GCH1H060D	CHIP C 6.0PF	D
H	-	*	N99-0396-05	SCREW SET	ACSY	C54			CC73GCH1H030B	CHIP C 3.0PF	B
-	-	*	R31-0624-05	VARIABLE RESISTOR	29-17	C55			CK73GB1H471K	CHIP C 470PF	K
-	-	*	S60-0410-05	ROTARY SWITCH (15CH)	1	C56			C92-0507-05	CHIP-TAN 4.7UF	6.3WW
-	-	*	S72-0403-05	TOGGLE SWITCH	K2	C57			CC73GCH1H300J	CHIP C 30PF	J
SP	1A	*	T07-0369-05	SPEAKER		C100			CC73GCH1H220J	CHIP C 22PF	J
ANT	-	*	T90-0694-15	WHIP ANTENNA	ACSY	C101-103			CK73GB1H471K	CHIP C 470PF	K
33	-	*	W08-0551-05	AC ADAPTER	ACSY	C104			CK73GB1C104K	CHIP C 0.10UF	K
34	-	*	W08-0552-05	CHARGER	ACSY	C105			CC73GCH1H060D	CHIP C 6.0PF	D
35	-	*	W09-0882-05	BATTERY ASSY(KNB-14)	ACSY	C106, 107			CK73GB1H471K	CHIP C 470PF	K
TX-RX UNIT(X57-5660-10)						C108			CC73GCH1H070D	CHIP C 7.0PF	D
D400			B30-2156-05	LED (RED)		C109, 110			CK73GB1H471K	CHIP C 470PF	K
						C111			CC73GCH1H060D	CHIP C 6.0PF	D

TK-3100 (1 channel) : K
 TK-3100 (2 channel) : K2
 TK-3101 : 1

TK-3100/3101

PARTS LIST

TX-RX UNIT(X57-5660-10)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C112			CK73GB1H471K	CHIP C 470PF K		C230			CC73GCH1H060B	CHIP C 6.0PF B	
C113			CK73GB1C104K	CHIP C 0.10UF K		C231, 232			CK73GB1H471K	CHIP C 470PF K	
C114, 115			CK73GB1H471K	CHIP C 470PF K		C233, 234			CC73GCH1H0R3B	CHIP C 0.3PF B	
C116			CK73GB1H102K	CHIP C 1000PF K		C235			CC73GCH1H030B	CHIP C 3.0PF B	
C117			CK73GB1H221K	CHIP C 220PF K		C236			CC73GCH1H2R5B	CHIP C 2.5PF B	
C118		*	CC73GCH1H220G	CHIP C 22PF G		C237			CK73GB1H471K	CHIP C 470PF K	
C119			CK73GB1H102K	CHIP C 1000PF K		C238			CC73GCH1H0R5B	CHIP C 0.5PF B	
C120, 121			CK73GB1H471K	CHIP C 470PF K		C239			CC73GCH1H030B	CHIP C 3.0PF B	
C122			CC73GCH1H560J	CHIP C 56PF J		C240			CC73GCH1H300J	CHIP C 30PF J	
C123			CK73GB1H102K	CHIP C 1000PF K		C241			CC73GCH1H060B	CHIP C 6.0PF B	
C125			CK73GB1H471K	CHIP C 470PF K		C300			CK73GB1H822K	CHIP C 8200PF K	
C126			CK73FB1A105K	CHIP C 1.0UF K		C301			CK73GB1E183K	CHIP C 0.018UF K	
C127			C92-0565-05	CHIP-TAN 6.8UF 10WV		C302, 303			CK73GB1C104K	CHIP C 0.10UF K	
C128			CK73GB1H103K	CHIP C 0.010UF K		C304			C92-0560-05	CHIP-TAN 10UF 6.3WV	
C129			CK73GB1H471K	CHIP C 470PF K		C305		*	CK73GB1H103J	CHIP C 0.010UF J	
C130		*	CC73GCH1H220G	CHIP C 22PF G		C306			CK73GB1C473K	CHIP C 0.047UF K	
C131			CK73GB1C104K	CHIP C 0.10UF K		C307			C92-0560-05	CHIP-TAN 10UF 6.3WV	
C132			CK73GB1H471K	CHIP C 470PF K		C308			CK73GB1H472K	CHIP C 4700PF K	
C134			CC73GCH1H101J	CHIP C 100PF J		C309		*	CK73GB1H103J	CHIP C 0.010UF J	
C136			CC73GCH1H080B	CHIP C 8.0PF B		C311			C92-0560-05	CHIP-TAN 10UF 6.3WV	
C138, 139			CK73GB1H471K	CHIP C 470PF K		C312		*	CK73GB1H103J	CHIP C 0.010UF J	
C141			CK73GB1H471K	CHIP C 470PF K		C313			CK73FB1A105K	CHIP C 1.0UF K	
C142			CC73GCH1H040B	CHIP C 4.0PF B		C314			CK73GB1H102K	CHIP C 1000PF K	
C143			CK73GB1H471K	CHIP C 470PF K		C316		*	CK73GB1H103J	CHIP C 0.010UF J	
C144			CC73GCH1H020B	CHIP C 2.0PF B		C318			CK73GB1C333K	CHIP C 0.033UF K	
C145			CK73GB1H471K	CHIP C 470PF K		C319			CK73GB1C473K	CHIP C 0.047UF K	
C147			CC73GCH1H1R5B	CHIP C 1.5PF B		C320, 321			CK73GB1C333J	CHIP C 0.033UF J	
C149			CC73GCH1H010B	CHIP C 1.0PF B		C322			CK73FB1E104K	CHIP C 0.10UF K	
C150			CC73GCH1H070B	CHIP C 7.0PF B		C327			CK73GB1C104K	CHIP C 0.10UF K	
C151			CC73GCH1H010B	CHIP C 1.0PF B		C330			CC73GCH1H101J	CHIP C 100PF J	
C153			CC73GCH1H070B	CHIP C 7.0PF B		C331			CK73FB1C474K	CHIP C 0.47UF K	
C154			CC73GCH1H010B	CHIP C 1.0PF B		C332			C92-0560-05	CHIP-TAN 10UF 6.3WV	
C155			CC73GCH1H1R5B	CHIP C 1.5PF B		C333			CK73GB1C104K	CHIP C 0.10UF K	
C156			CK73GB1C104K	CHIP C 0.10UF K		C335			CK73GB1C473K	CHIP C 0.047UF K	
C157			CK73GB1H471K	CHIP C 470PF K		C336			CK73GB1H103K	CHIP C 0.010UF K	
C200			C92-0560-05	CHIP-TAN 10UF 6.3WV		C337			C92-0665-05	TANTAL 100UF 6.3WV	
C201			CK73GB1H103K	CHIP C 0.010UF K		C400			CK73GB1C104K	CHIP C 0.10UF K	
C202			CC73GCH1H100D	CHIP C 10PF D		C402-404			CK73GB1H471K	CHIP C 470PF K	
C203			CK73GB1H471K	CHIP C 470PF K		C406			CK73GB1H471K	CHIP C 470PF K	
C204			CK73GB1H472K	CHIP C 4700PF K		C407			CK73GB1H102K	CHIP C 1000PF K	
C205, 206			CC73GCH1H221J	CHIP C 220PF J		C408			C92-0560-05	CHIP-TAN 10UF 6.3WV	
C207			CK73GB1C104K	CHIP C 0.10UF K		C409			CC73GCH1H030B	CHIP C 3.0PF B	
C208			CC73GCH1H270J	CHIP C 27PF J		C410, 411			CK73GB1H471K	CHIP C 470PF K	
C209			CK73GB1C104K	CHIP C 0.10UF K		C412			CC73GCH1H100D	CHIP C 10PF D	
C210			CK73GB1H103K	CHIP C 0.010UF K		C413			CK73GB1H102K	CHIP C 1000PF K	
C211			CK73GB1C104K	CHIP C 0.10UF K		C414			CK73GB1H471K	CHIP C 470PF K	
C212			CC73GCH1H330J	CHIP C 33PF J		C415			CC73GCH1H100D	CHIP C 10PF D	
C213			CK73GB1C104K	CHIP C 0.10UF K		C416			CK73GB1H471K	CHIP C 470PF K	
C214			CK73GB1H103K	CHIP C 0.010UF K		C417			CK73EF1C105Z	CHIP C 1.0UF Z	
C215			CC73GCH1H130J	CHIP C 13PF J		C418			CK73GB1H103K	CHIP C 0.010UF K	
C217			CK73GB1H103K	CHIP C 0.010UF K		C420-422			CK73GB1H103K	CHIP C 0.010UF K	
C218			CK73GB1H471K	CHIP C 470PF K		C423			CK73GB1H471K	CHIP C 470PF K	
C219			CC73GCH1H150J	CHIP C 15PF J		C424			CK73FB1A105K	CHIP C 1.0UF K	
C220, 221			CK73GB1H103K	CHIP C 0.010UF K		C425			CK73GB1H103K	CHIP C 0.010UF K	
C222			CC73GCH1H050B	CHIP C 5.0PF B		C427			CK73GB1H471K	CHIP C 470PF K	
C223			CC73GCH1H020C	CHIP C 2.0PF C		C429, 430			CK73FB1A105K	CHIP C 1.0UF K	
C224			CK73GB1H471K	CHIP C 470PF K		C500, 501			CK73GB1C273K	CHIP C 0.027UF K	
C226			CC73GCH1H0R5B	CHIP C 0.5PF B		C502			CK73GB1H392K	CHIP C 3900PF K	
C227, 228			CC73GCH1H080B	CHIP C 8.0PF B		C503			CK73GB1C333K	CHIP C 0.033UF K	
C229			CK73GB1H471K	CHIP C 470PF K		C504			C92-0507-05	CHIP-TAN 4.7UF 6.3WV	

TK-3100 (1 channel) : K
 TK-3100 (2 channel) : K2
 TK-3101 : 1

TK-3100/3101

PARTS LIST

TX-RX UNIT(X57-5660-10)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C505			CK73FB1A105K	CHIP C 1.0UF K		L103			L92-0140-05	FERRITE CHIP	
C506			CK73GB1H471K	CHIP C 470PF K		L104			L40-1098-76	SMALL FIXED INDUCTOR (1UH)	
C507			C92-0587-05	CHIP-TAN 2.2UF 4WV		L105			L92-0149-05	FERRITE CHIP	
C508			CK73GB1H103K	CHIP C 0.010UF K		L106		*	L34-4551-05	AIR-CORE COIL	
C509			CK73GB1H332K	CHIP C 3300PF K		L107			L92-0149-05	FERRITE CHIP	
C510		*	CC73GCH1E821J	CHIP C 820PF J		L109			L40-1095-68	SMALL FIXED INDUCTOR (1UH)	
C511			CK73GB1C473K	CHIP C 0.047UF K		L110		*	L34-4547-05	AIR-CORE COIL	
C512			CK73GB1H332K	CHIP C 3300PF K		L112		*	L34-4546-05	AIR-CORE COIL	
C513		*	CC73GCH1E681J	CHIP C 680PF J		L113		*	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		L200		*	L40-3385-85	SMALL FIXED INDUCTOR (0.33UH)	
C517			CK73GB1H471K	CHIP C 470PF K		L201		*	L40-5685-85	SMALL FIXED INDUCTOR (0.56UH)	
C518			CK73GB1E223K	CHIP C 0.022UF K		L202			L40-2275-77	SMALL FIXED INDUCTOR (22NH)	
C519			C92-0507-05	CHIP-TAN 4.7UF 6.3WV		L203, 204		*	L34-4546-05	AIR-CORE COIL	
C520			CK73GB1E223K	CHIP C 0.022UF K		L206			L40-1875-77	SMALL FIXED INDUCTOR (18NH)	
C521			CK73GB1H102K	CHIP C 1000PF K		L207			L40-5675-77	SMALL FIXED INDUCTOR (56NH)	
C522			CK73FB1E104K	CHIP C 0.10UF K		L208-211		*	L34-4546-05	AIR-CORE COIL	
C523			C92-0587-05	CHIP-TAN 2.2UF 4WV		L212		*	L34-4554-05	COIL	
C524			CK73GB1C273K	CHIP C 0.027UF K		L214		*	L34-4546-05	AIR-CORE COIL	
C525			CK73GB1C104K	CHIP C 0.10UF K		L215		*	L40-5685-85	SMALL FIXED INDUCTOR (0.56UH)	
C526			CK73GB1H471K	CHIP C 470PF K		L400		*	L40-2281-86	SMALL FIXED INDUCTOR (0.22UH)	
C527			C92-0560-05	CHIP-TAN 10UF 6.3WV		L401			L92-0140-05	FERRITE CHIP	
C528			CK73GB1H471K	CHIP C 470PF K		L402, 403		*	L40-2281-86	SMALL FIXED INDUCTOR (0.22UH)	
C529			CK73FB1H471K	CHIP C 470PF K		L500			L92-0140-05	FERRITE CHIP	
C530, 531			CK73GB1H221K	CHIP C 220PF K		L501, 502			L92-0149-05	FERRITE CHIP	
C532			CK73GB1H471K	CHIP C 470PF K		X1		*	L77-1756-05	TCXO (12.8MHZ)	
TC1			C05-0383-05	CERAMIC TRIMMER CAP (6P)		X400			L77-1761-05	CRYSTAL RESONATOR (7.3728MHZ)	
TC2			C05-0384-05	CERAMIC TRIMMER CAP (10P)		XF200		*	L71-0522-05	MCF (38.85MHZ)	
TC202, 203			C05-0369-05	CERAMIC TRIMMER CAP					N78-2640-46	PAN HEAD TAPTITE SCREW	
-			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		R3			RK73GB1J100J	CHIP R 10 J 1/16W	
F500			F53-0130-05	FUSE		R4			RK73GB1J102J	CHIP R 1.0K J 1/16W	
36	2A	*	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		*	L72-0958-05	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 (0.47H)		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	
L22		*	L40-5681-86	SMALL FIXED INDUCTOR (0.56UH)		R28			RK73GB1J220J	CHIP R 22 J 1/16W	
L100			L40-2275-77	SMALL FIXED INDUCTOR (22NH)		R29			R92-1252-05	CHIP R 0 OHM	
L101			L40-1875-77	SMALL FIXED INDUCTOR (18NH)		R30			RK73GB1J124J	CHIP R 120K J 1/16W	
L102			L40-1575-77	SMALL FIXED INDUCTOR (15NH)		R31			RK73GB1J101J	CHIP R 100K J 1/16W	

TK-3100 (1 channel) : K
TK-3100 (2 channel) : K2
TK-3101 : 1

PARTS LIST

TX-RX UNIT(X57-5660-10)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R32			RK73GB1J472J	CHIP R 4.7K J 1/16W		R220			RK73GB1J221J	CHIP R 220 J 1/16W	
R33			RK73GB1J102J	CHIP R 1.0K J 1/16W		R221			RK73GB1J224J	CHIP R 220K J 1/16W	
R34			RK73GB1J104J	CHIP R 100K J 1/16W		R222			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R100			RK73GB1J332J	CHIP R 3.3K J 1/16W		R223			RK73GB1J104J	CHIP R 100K J 1/16W	
R101			RK73GB1J562J	CHIP R 5.6K J 1/16W		R224			R92-1252-05	CHIP R 0 OHM	
R102			RK73GB1J271J	CHIP R 270 J 1/16W		R225			RK73GB1J470J	CHIP R 47 J 1/16W	
R103			RK73GB1J332J	CHIP R 3.3K J 1/16W		R226			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R104			RK73GB1J100J	CHIP R 10 J 1/16W		R227			R92-1252-05	CHIP R 0 OHM	
R105, 106			RK73GB1J332J	CHIP R 3.3K J 1/16W		R300	*		RK73GH1J913D	CHIP R 91K D 1/16W	
R107			RK73GB1J473J	CHIP R 47K J 1/16W		R301, 302			RK73GB1J562J	CHIP R 5.6K J 1/16W	
R108			RK73GB1J102J	CHIP R 1.0K J 1/16W		R303			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R109			RK73GB1J220J	CHIP R 22 J 1/16W		R304			RK73GB1J105J	CHIP R 1.0M J 1/16W	
R110			RK73GB1J681J	CHIP R 680 J 1/16W		R305			RK73GB1J183J	CHIP R 18K J 1/16W	
R111			RK73GB1J220J	CHIP R 22 J 1/16W		R306			RK73GB1J124J	CHIP R 120K J 1/16W	
R112			RK73GB1J152J	CHIP R 1.5K J 1/16W		R307			RK73GB1J473J	CHIP R 47K J 1/16W	
R113			RK73GB1J331J	CHIP R 330 J 1/16W		R308			RK73GB1J103J	CHIP R 10K J 1/16W	
R114			RK73GB1J102J	CHIP R 1.0K J 1/16W		R309			RK73GB1J474J	CHIP R 470K J 1/16W	
R115			RK73GB1J100J	CHIP R 10 J 1/16W		R310, 311			R92-0670-05	CHIP R 0 OHM	
R116			RK73GB1J102J	CHIP R 1.0K 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			RK73GB1J102J	CHIP R 1.0K J 1/16W		R315	*		RK73GH1J394D	CHIP R 390K D 1/16W	
R120			R92-1252-05	CHIP R 0 OHM		R316			RK73GB1J334J	CHIP R 330K J 1/16W	
R121			RK73GB1J470J	CHIP R 47 J 1/16W		R317	*		RK73GH1J274D	CHIP R 270K D 1/16W	
R122			RK73GB1J471J	CHIP R 470 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			R92-1252-05	CHIP R 0 OHM		R321			RK73GB1J223J	CHIP R 22K J 1/16W	
R125			RK73GB1J223J	CHIP R 22K J 1/16W		R322	*		RK73GH1J224D	CHIP R 220K D 1/16W	
R126			RK73GB1J473J	CHIP R 47K J 1/16W		R323			RK73GB1J104J	CHIP R 100K J 1/16W	
R127			R92-0670-05	CHIP R 0 OHM		R324			RK73GB1J562J	CHIP R 5.6K J 1/16W	
R128			RK73GB1J470J	CHIP R 47 J 1/16W		R325			RK73GB1J104J	CHIP R 100K J 1/16W	
R130-132			RK73EB2ER39K	CHIP R 0.39 K 1/4W		R326	*		RK73GH1J562D	CHIP R 5.6K D 1/16W	
R133-138		*	RK73GH1J154D	CHIP R 150K D 1/16W		R327			R92-1252-05	CHIP R 0 OHM	
R139			RK73FB2A151J	CHIP R 150 J 1/10W		R328			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R140			RK73GB1J103J	CHIP R 10K J 1/16W		R329			R92-1252-05	CHIP R 0 OHM	
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	
R200			RK73GB1J100J	CHIP R 10 J 1/16W		R338			RK73GB1J473J	CHIP R 47K J 1/16W	
R201			RK73GB1J392J	CHIP R 3.9K J 1/16W		R339			RK73GB1J822J	CHIP R 8.2K J 1/16W	
R202			RK73GB1J184J	CHIP R 180K J 1/16W		R340			RK73GH1J124D	CHIP R 12K 1/16W	
R203, 204			RK73GB1J332J	CHIP R 3.3K J 1/16W		R342			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R205			RK73GB1J153J	CHIP R 15K J 1/16W		R400			RK73GB1J334J	CHIP R 330K J 1/16W	
R206			RK73GB1J184J	CHIP R 180K J 1/16W		R401			RK73GB1J104J	CHIP R 100K J 1/16W	
R207			RK73GB1J104J	CHIP R 100K J 1/16W		R402			RK73GB1J221J	CHIP R 220 J 1/16W	
R208			RK73GB1J684J	CHIP R 680K J 1/16W		R403			RK73GB1J181J	CHIP R 180 J 1/16W	
R209			RK73GB1J272J	CHIP R 2.7K J 1/16W		R404			R92-1252-05	CHIP R 0 OHM	
R210, 211			RK73GB1J471J	CHIP R 470 J 1/16W		R405			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R212			RK73GB1J470J	CHIP R 47 J 1/16W		R406			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R213			R92-1252-05	CHIP R 0 OHM		R407			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R214			RK73GB1J103J	CHIP R 10K J 1/16W		R408			RK73GB1J104J	CHIP R 100K J 1/16W	
R215			RK73GB1J221J	CHIP R 220 J 1/16W		R409			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R216			RK73GB1J102J	CHIP R 1.0K J 1/16W		R410			RK73GB1J822J	CHIP R 8.2K J 1/16W	
R217			R92-1252-05	CHIP R 0 OHM		R411			RK73GB1J224J	CHIP R 220K J 1/16W	
R218			RK73GB1J101J	CHIP R 100 J 1/16W		R412			RK73GB1J100J	CHIP R 10 J 1/16W	
R219			RK73GB1J332J	CHIP R 3.3K J 1/16W		R413			RK73GB1J102J	CHIP R 1.0K J 1/16W	

TK-3100 (1 channel) : K

TK-3100 (2 channel) : K2

TK-3101

: 1

TK-3100/3101

PARTS LIST

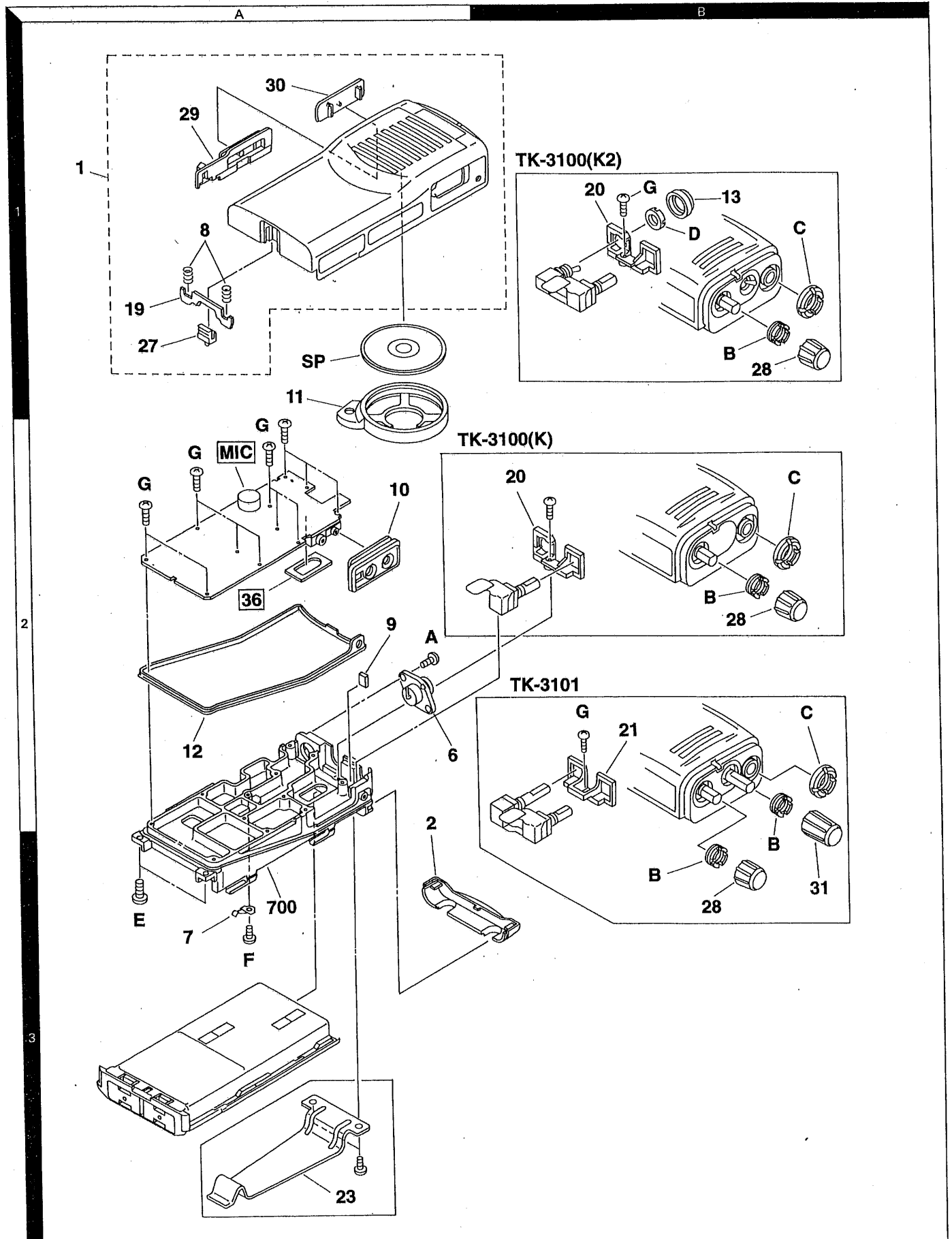
TX-RX UNIT(X57-5660-10)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R414, 415			RK73GB1J473J	CHIP R 47K J 1/16W		D5			MA360	VARIABLE CAPACITANCE DIODE	
R416			RK73GB1J472J	CHIP R 4.7K J 1/16W		D6, 7			MA2S111	DIODE	
R417			RK73GB1J100J	CHIP R 10 J 1/16W		D100		*	HSC277	DIODE	
R418			RK73GB1J222J	CHIP R 2.2K J 1/16W		D101		*	HVC131	DIODE	
R419			R92-1252-05	CHIP R 0 OHM		D102		*	HSC277	DIODE	
R420			RK73GB1J102J	CHIP R 1.0K J 1/16W		D200		*	HSC277	DIODE	
R421			RK73GB1J473J	CHIP R 47K J 1/16W		D300			DA221	DIODE	
R422			RK73GB1J272J	CHIP R 2.7K J 1/16W		D500			1SS372	DIODE	
R423			RK73GB1J473J	CHIP R 47K J 1/16W		D501			DAN222	DIODE	
R424, 425			RK73GB1J332J	CHIP R 3.3K J 1/16W		D502			1SR154-400	DIODE	
R426			RK73GB1J822J	CHIP R 8.2K J 1/16W		IC1			MB15A02	IC	
R427			RK73GB1J102J	CHIP R 1.0K J 1/16W		IC100			NJM2904V	IC (APC)	
R428			RK73GB1J272J	CHIP R 2.7K J 1/16W		IC200			TA31136FN	IC (FM IF DETECTOR)	
R429			RK73GB1J821J	CHIP R 820 J 1/16W		IC300			NJM2902V	IC	
R430			RK73GB1J101J	CHIP R 100 J 1/16W		IC301			NJM2904V	IC (APC)	
R431			R92-1252-05	CHIP R 0 OHM		IC302			TA7368F	IC (AF POWER AMP)	
R432			RK73GB1J103J	CHIP R 10K J 1/16W		IC400			PST9140NR	IC (RESET SW)	
R433, 434			RK73GB1J153J	CHIP R 15K J 1/16W		IC401			AT2408N10SI2.5	IC (8kbit SERIAL EEPROM)	
R435			RK73GB1J103J	CHIP R 10K J 1/16W		IC402			RN5VL45C	IC (REGULATOR)	
R500, 501			RK73GB1J472J	CHIP R 4.7K J 1/16W		IC403		*	M38267M8L2216P	IC (MPU)	
R502			RK73GB1J823J	CHIP R 82K J 1/16W		IC404			S-81350HG-KD	IC (VOLTAGE REGULATOR)	
R503			RK73GB1J123J	CHIP R 12K J 1/16W		IC500			NJM2100V	IC (AUDIO AMP)	
R504			RK73GB1J333J	CHIP R 33K J 1/16W		Q1			2SC4649 (N, P)	TRANSISTOR	
R505			RK73GB1J124J	CHIP R 120K J 1/16W		Q2			2SC5108 (Y)	TRANSISTOR	
R506			RK73GB1J223J	CHIP R 22K J 1/16W		Q3			2SK508NV (K52)	FET	
R507			RK73GB1J153J	CHIP R 15K J 1/16W		Q4			2SC4226 (R24)	TRANSISTOR	
R508			RK73GB1J102J	CHIP R 1.0K J 1/16W		Q5			2SJ243	FET	
R509			RK73GB1J124J	CHIP R 120K J 1/16W		Q6			2SC5108 (Y)	TRANSISTOR	
R510			RK73GB1J332J	CHIP R 3.3K J 1/16W		Q7			UMC4	TRANSISTOR	
R511			RK73GB1J103J	CHIP R 10K J 1/16W		Q8			2SC4617 (S)	TRANSISTOR	
R512			RK73GB1J185J	CHIP R 1.8M J 1/16W		Q100, 101			2SC5108 (Y)	TRANSISTOR	
R513-515			RK73GB1J333J	CHIP R 33K J 1/16W		Q102			2SC4988	TRANSISTOR	
R516			RK73GB1J103J	CHIP R 10K J 1/16W		Q103			2SK1824	FET	
R517			RK73GB1J185J	CHIP R 1.8M J 1/16W		Q104		*	FMMT718	TRANSISTOR	
R518			RK73GB1J682J	CHIP R 6.8K J 1/16W		Q105			2SK2596	FET	
R519, 520			RK73GB1J333J	CHIP R 33K J 1/16W		Q106			2SK1824	FET	
R521			RK73GB1J332J	CHIP R 3.3K J 1/16W		Q107		*	2SK2595	FET	
R522			RK73GB1J182J	CHIP R 1.8K J 1/16W		Q108			DTC114EE	DIGITAL TRANSISTOR	
R523			RK73GB1J682J	CHIP R 6.8K J 1/16W		Q109			DTA144EE	DIGITAL TRANSISTOR	
R524			RK73GB1J151J	CHIP R 51K J 1/16W		Q200			DTA114EE	DIGITAL TRANSISTOR	
R525			RK73GB1J152J	CHIP R 1.5K J 1/16W		Q201			2SC4649 (N, P)	TRANSISTOR	
R526		*	RK73GH1J163D	CHIP R 16K D 1/16W		Q202, 203		*	3SK228	FET	
R527		*	RK73GH1J153D	CHIP R 15K D 1/16W		Q300			2SC4617 (S)	TRANSISTOR	
R528			RK73GB1J754J	CHIP R 750K J 1/16W		Q302			2SK1824	FET	
R529			RK73GB1J183J	CHIP R 18K J 1/16W		Q303			DTA144EE	DIGITAL TRANSISTOR	
R530			RK73GB1J101J	CHIP R 100 J 1/16W		Q304			DTC144EE	DIGITAL TRANSISTOR	
R531			R92-1252-05	CHIP R 0 OHM		Q305			2SA1362 (GR)	TRANSISTOR	
R532			RK73GB1J821J	CHIP R 820 J 1/16W		Q306			DTC144EE	DIGITAL TRANSISTOR	
R533			RK73GB1J104J	CHIP R 100K J 1/16W		Q307			2SK1588	FET	
R534			RK73GB1J182J	CHIP R 1.8K J 1/16W		Q400, 401			DTC114EE	DIGITAL TRANSISTOR	
R535			RK73GB1J471J	CHIP R 470 J 1/16W		Q402			DTA114YE	DIGITAL TRANSISTOR	
R536			RK73GB1J102J	CHIP R 1.0K J 1/16W		Q403			DTC144EE	DIGITAL TRANSISTOR	
R537, 538			RK73GB1J101J	CHIP R 100 J 1/16W		Q404			UMG3N	TRANSISTOR	
R539			R92-1252-05	CHIP R 0 OHM		Q405			UPA672T	FET	
R540			R92-0670-05	CHIP R 0 OHM		Q406			MP5A02	TRANSISTOR	
R541			RK73GB1J472J	CHIP R 4.7K J 1/16W		Q407			UMG3N	TRANSISTOR	
R542			R92-1252-05	CHIP R 0 OHM		Q408			DTA123JE	DIGITAL TRANSISTOR	
VR1			R12-7491-05	TRIMMING POT. (68K)		Q500			2SK1824	FET	
VR500			R12-7491-05	TRIMMING POT. (68K)		Q501, 502			2SC4617 (S)	TRANSISTOR	
VR501			R12-7490-05	TRIMMING POT. (47K)		Q503			2SC4919	TRANSISTOR	
S402, 403			S70-0414-05	TACT SWITCH		Q504			DTA143ZE	DIGITAL TRANSISTOR	
MIC500	2A		T91-0543-05	MIC ELEMENT		TH500			157-302-65801	THERMISTOR	
D1-4			MA2S376	VARIABLE CAPACITANCE DIODE		TH501			157-503-65001	THERMISTOR	

TK-3100 (1 channel) : K
TK-3100 (2 channel) : K2
TK-3101 : 1

TK-3100/3101

EXPLODED VIEW



Parts with exploded numbers larger than 700 are not supplied.

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PACKING

4. INSTRUCTION MANUAL
(B62-0950-00) : TK-3100
(B62-1075-00) : TK-3101

16. PROTECTION BAG
(H25-0085-04)

14. PACKING FIXTURE
(H12-3037-02)

23. BELT HOOK
(J29-0624-03)

ANT, WHIP ANTENNA
(T90-0694-15)

35. BATTERY ASSY
(W09-0882-05)

17. PROTECTON BAG
(H25-2012-04)

15. PACKING FIXTURE
(H12-3055-02)

3. CAP (SP/MIC)
(B09-0351-03)

H. SCREW SET
(N99-0396-05)

33. AC ADAPTOR
(W08-0551-05)

22. SP/MIC HOLDER
(J21-4493-04)

34. CHARGER
(W08-0552-05)

18. ITEM CARTON CASE
(H52-1197-02)

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 10W 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

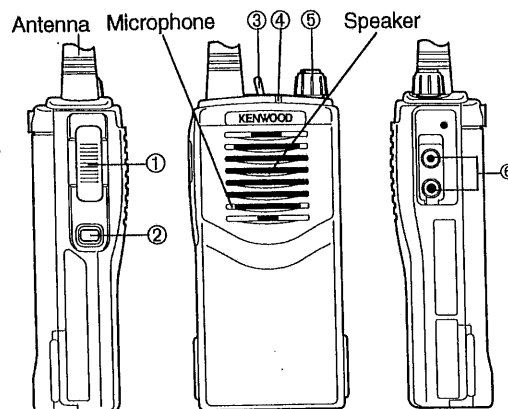
14. AF Generator(AG)

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

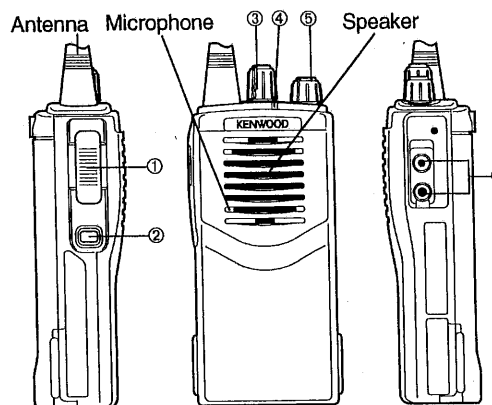
TK-3100



- ① PTT switch
- ② Monitor key
- ③ Channel switch

- ④ LED indicator
- ⑤ Power switch/ Volume control
- ⑥ SP/MIC JACK

TK-3101



- ① PTT switch
- ② Monitor key
- ③ Channel selector

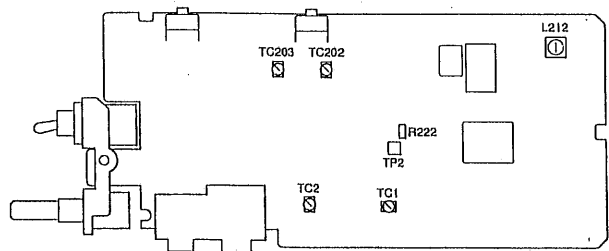
- ④ LED indicator
- ⑤ Power switch/ Volume control
- ⑥ SP/MIC JACK

- 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.

TK-3100/3101

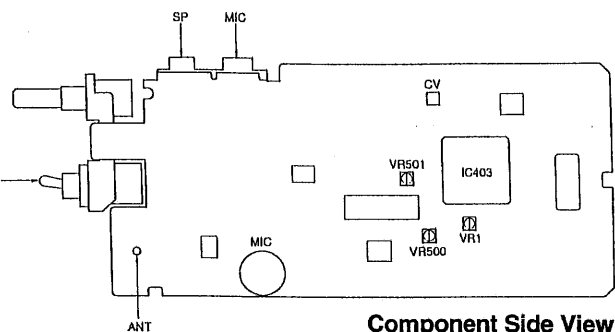
ADJUSTMENT

Adjustment point



Foil Side View

- L212: AF level adjustment
- TC1: Transmit lock voltage adjustment
- TC2: Receive lock voltage adjustment
- TC202: RF-Band-pass filter waveform
- TC203: } 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	465.050	
Low	460.050	
Hi	469.950	

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

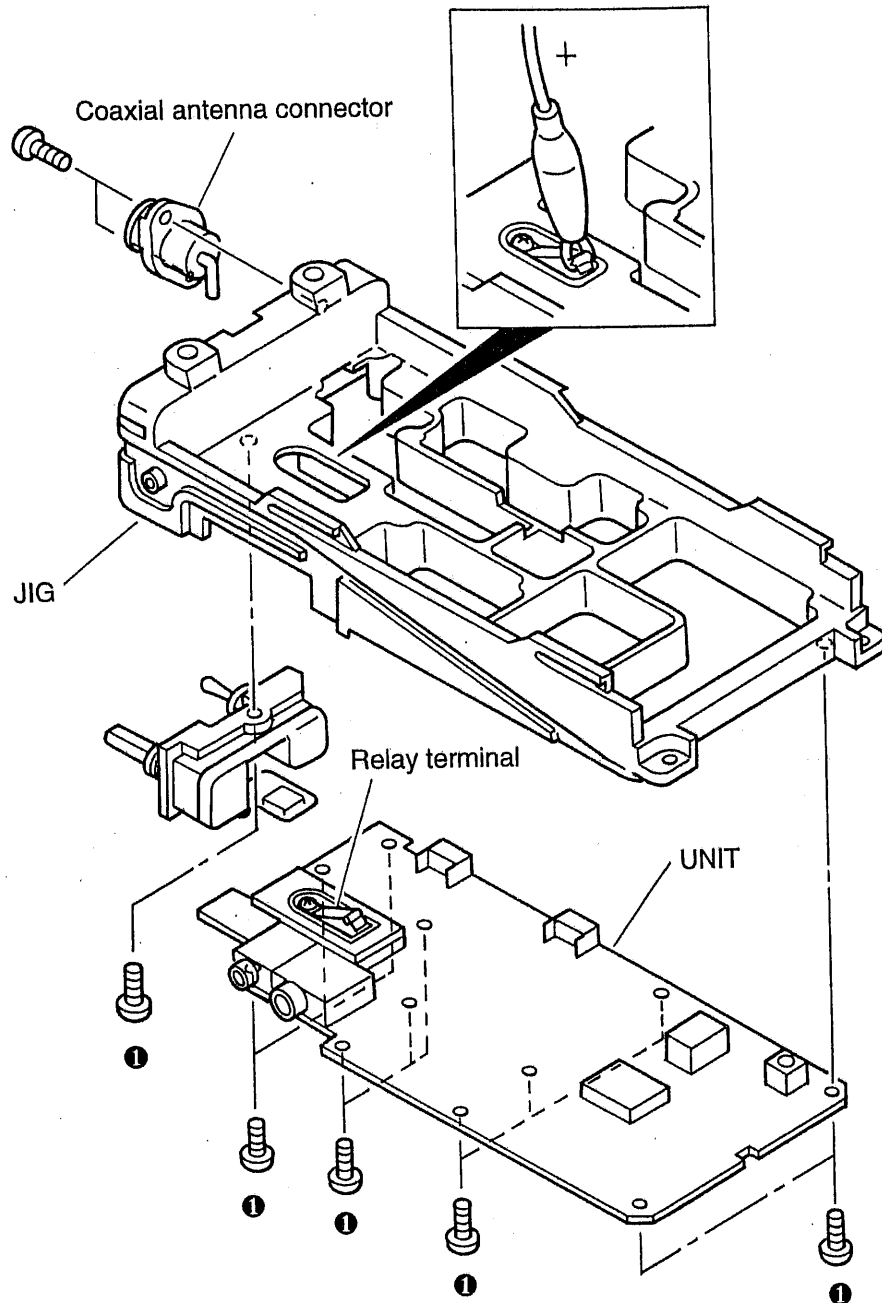
1. Jig (chassis) for adjustment (part number A10-1392-03)

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)

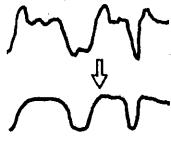
Item	Condition	Measurement		Adjustment		Specifications/ Remarks
		Test equipment	Terminal	Parts	Method	
1. Setting	1) Power supply voltage Battery terminal: 7.5V					
2. VCO lock voltage	1) CH: TX high	Digital voltmeter	CV	TC1	3.0V	±0.1V
	2) CH: RX high			TC2	3.5V	±0.1V
	3) CH: TX low				Check	1.0V or more
	4) CH: RX low					

Receiver Section

Item	Condition	Measurement		Adjustment		Specifications/ Remarks
		Test equipment	Terminal	Parts	Method	
1. RF 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	TC202 TC203	Adjust the frequency so that it becomes the spectrum waveform shown in Fig.1.	
2. Sensitivity	1) CH: RX center CH: RX Low CH: RX High 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				Level 3 Adjust to close the squelch.	The squelch must be closed.
	3) Level 3 SSG output: -125dBm (0.126μV)					

ADJUSTMENT

Transmitter section

Item	Condition	Measurement		Adjustment		Specifications/ Remarks	
		Test equipment	Terminal	Parts	Method		
1. Transmit frequency (PC MODE)	1) TX: CH center PTT: ON	Frequency counter	ANT	PC key	Adjust to center frequency	within $\pm 100\text{Hz}$	
2. DQT/QT Balance (PC MODE)	1) TX: CH center	Modulation analyzer or linear detector (LPF: 3kHz) Oscilloscope		VR500	Rectify the waveform to square wave		
3. Power (PC MODE)	1) TX: CH center Battery terminal: 7.5V PTT: ON	Power meter Ammeter				Adjust it to 2.2W	$\pm 0.1\text{W}$
4. MAX DEV	1) TX: CH center AG: 1kHz/120mV PTT: ON	Modulation analyzer or linear detector (LPF: 15kHz) Oscilloscope	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) TX: CH center AG: 1kHz/12mV	AG AF. V. M			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) HPF: 50kHz Oscilloscope AG AF. V. M	ANT	PC key	Adjust it to $\pm 0.75\text{kHz}$ (Wide) Adjustment to $\pm 0.35\text{kHz}$ (Narrow)	$\pm 50\text{Hz}$	
7. DQT DEV (PC MODE)	1) DQT: 023N center	Modulation analyzer or linear detector (LPF: 3kHz) Oscilloscope			PC key	Adjust it to $\pm 0.65\text{kHz}$ (Wide) Adjust it to $\pm 0.35\text{kHz}$ (Narrow)	$\pm 50\text{Hz}$
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.	

TK-3100/3101

ADJUSTMENT

BPF-Waveform

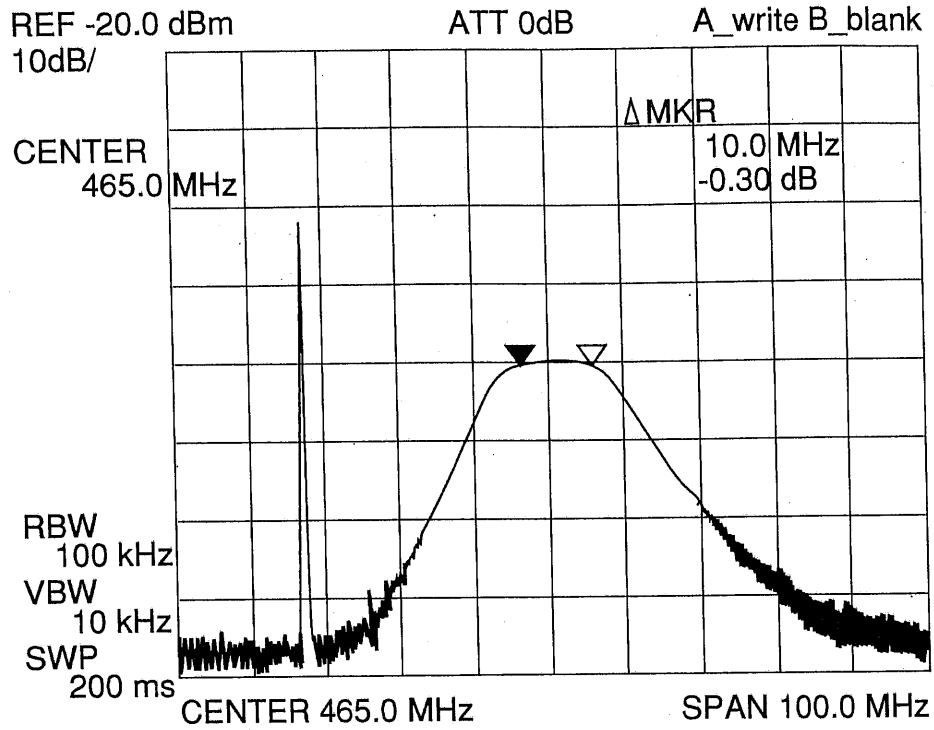
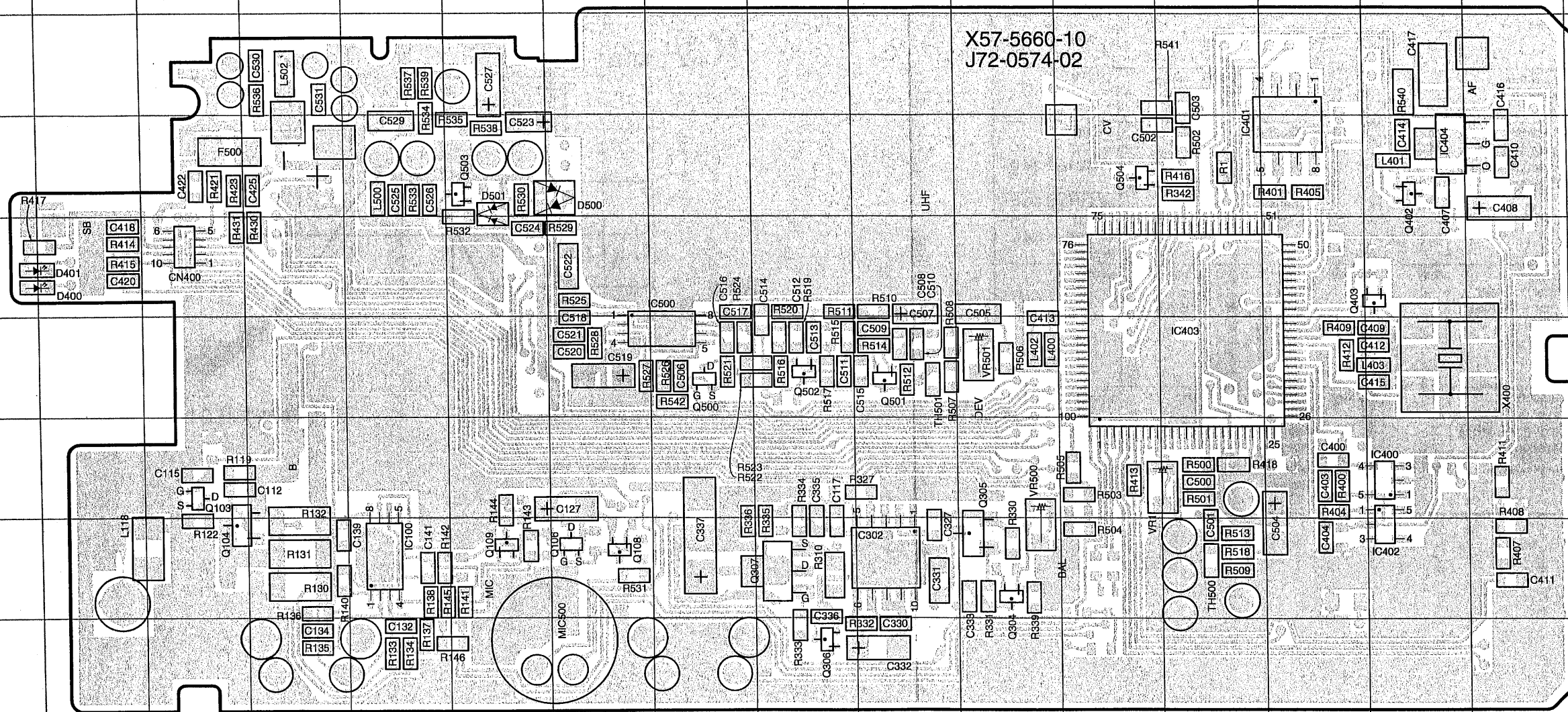


Fig 1

TK-3100/3101 PC BOARD VIEWS

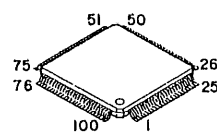
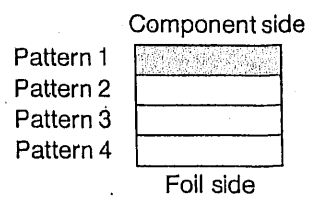
TX-RX UNIT (X57-5660-10) Component Side View



TX-RX UNIT (X57-5660-10)
(Component side)

Ref No.	Address
IC100	9E
IC302	9J
IC400	8O
IC401	4M
IC402	9O
IC403	7M
IC404	5O
IC500	6H
Q103	8C
Q104	9C
Q106	9G
Q108	9G
Q109	9F
Q304	9K
Q305	9K
Q306	10I
Q307	9I
Q402	5O
Q403	6N
Q500	7H
Q501	7J
Q502	7I
Q503	5F
Q504	5L
D400	6B
D401	6B
D500	5G
D501	5F

Connect 1 and 4.

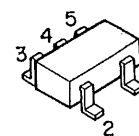


M38267M8L221GP

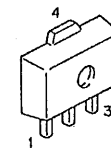


DTA114EE
DTA114YE
DTA123JE
DTA143ZE
DTA144EE
DTC114EE

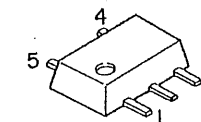
DTC144EE
FMMT718
2SA1362
2SC4226
2SC4617
2SC5108



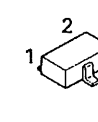
UMC4



2SC4988



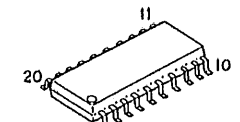
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DA221



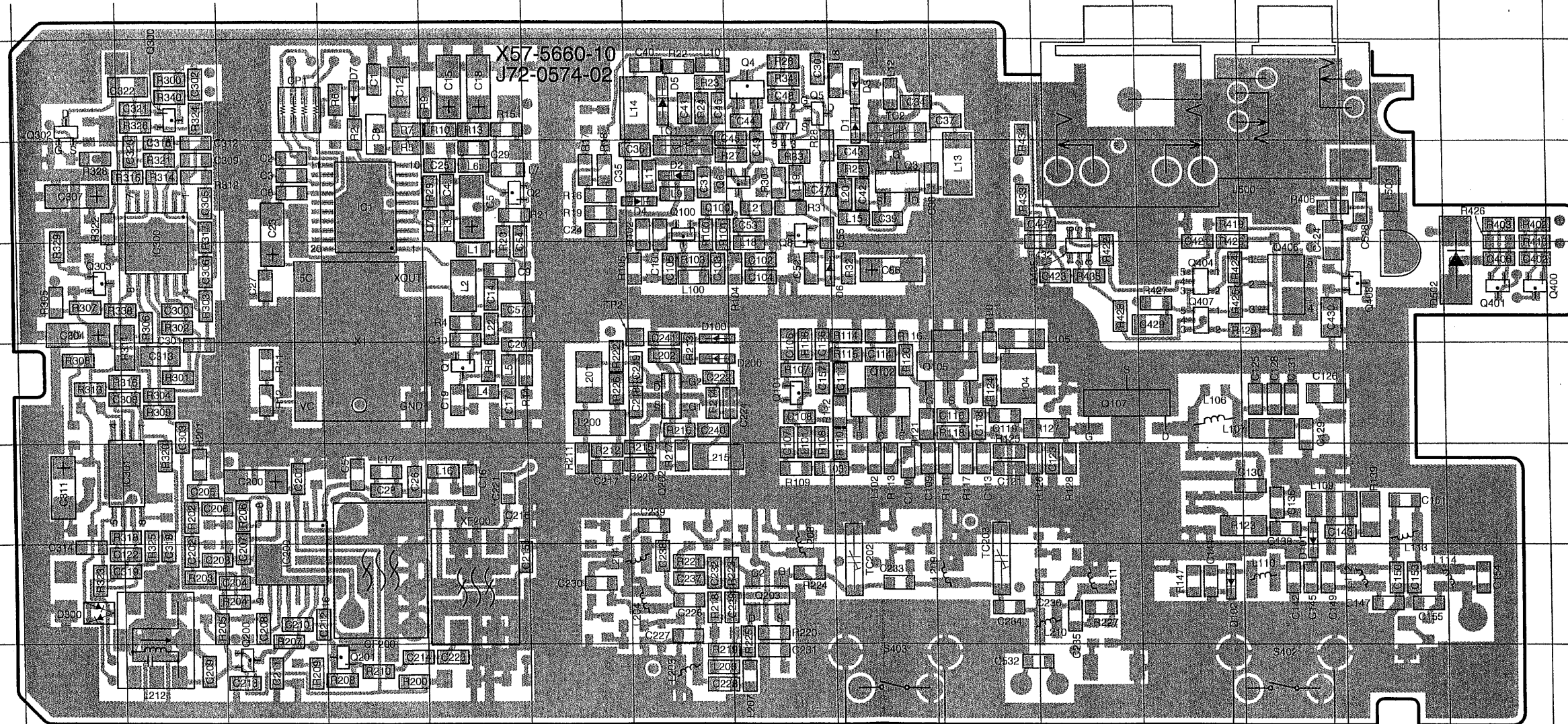
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MB15A02

PC BOARD VIEWS TK-3100/3101

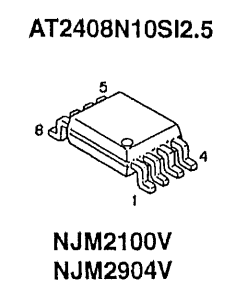
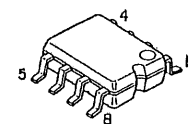
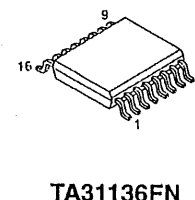
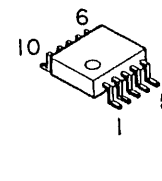
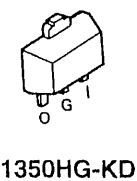
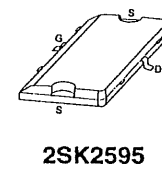
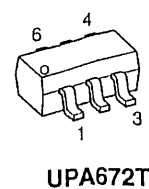
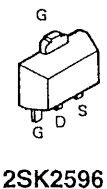
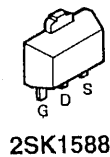
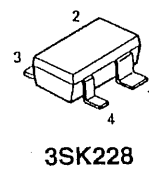
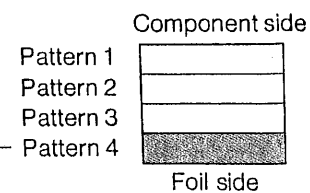
TX-RX UNIT (X57-5660-10) Foil Side View



**TX-RX UNIT (X57-5660-10)
(Foil side)**

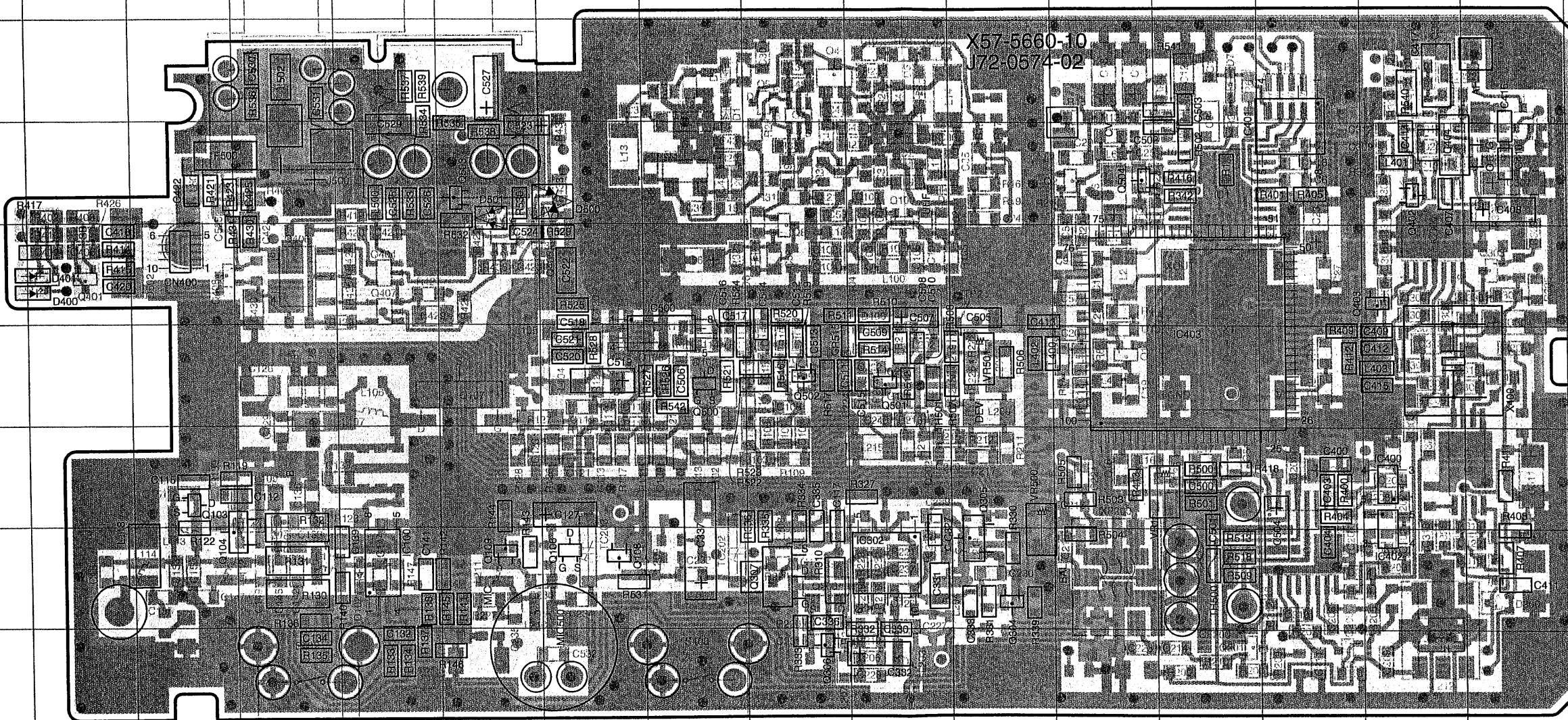
Ref No.	Address
IC1	5E
IC200	9D
IC300	6C
IC301	8C
Q1	7F
Q2	5G
Q3	5J
Q4	4I
Q5	4I
Q6	5I
Q7	4I
Q8	5I
Q100	5H
Q101	7I
Q102	7J
Q105	7K
Q107	7L
Q200	10D
Q201	10E
Q202	7H
Q203	9I
Q300	4C
Q302	4B
Q303	6B
Q400	6P
Q401	6P
Q404	6M
Q405	6L
Q406	6N
Q407	6M
Q408	6O
D1	4J
D2	5H
D3	4J
D4	5H
D5	4H
D6	6I
D7	4E
D100	6H
D101	8N
D102	9M
D200	7H
D300	9B
D502	6P

Connect 1 and 4.



TK-3100/3101 PC BOARD VIEWS

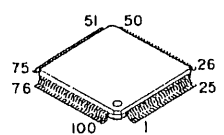
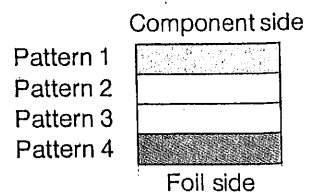
TX-RX UNIT (X57-5660-10) Component Side + Foil Side View



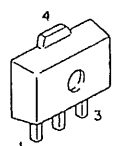
TX-RX UNIT (X57-5660-10)
(Component + Foil side)

Ref No.	Address
IC1	5M
IC100	9E
IC200	9N
IC300	6O
IC301	8O
IC302	9J
IC400	8O
IC401	4M
IC402	9O
IC403	7M
IC404	5O
IC500	6H
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	9C
Q105	7H
Q106	9G
Q107	7F
Q108	9G
Q109	9F
Q200	10N
Q201	10M
Q202	7J
Q203	9I
Q300	4O
Q302	4P
Q303	6P
Q304	9K
Q305	8K
Q306	10I
Q307	9I
Q400	6B
Q401	6B
Q402	5O
Q403	6N
Q404	6E
Q405	6F
Q406	6D
Q407	6E
Q408	6C
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Q501	7J
Q502	7I
Q503	5F
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D2	5J
D3	4H
D4	5J
D5	4J
D6	6I
D7	4M
D100	6J
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D500	5G
D501	5F
D502	6C

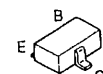
⊙ Connect 1 and 4.



M38267M8L221GP

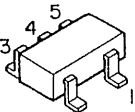


2SC4988



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DTA114YE
DTA123JE
DTA143ZE
DTA144EE
DTC114EE

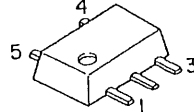
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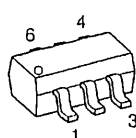
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2SK2596



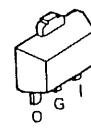
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UPA672T



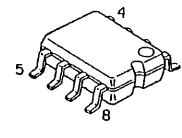
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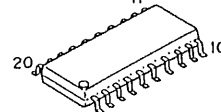
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30



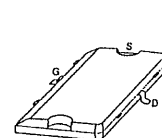
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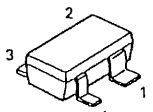
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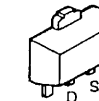
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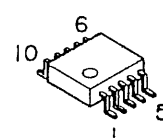
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3SK228

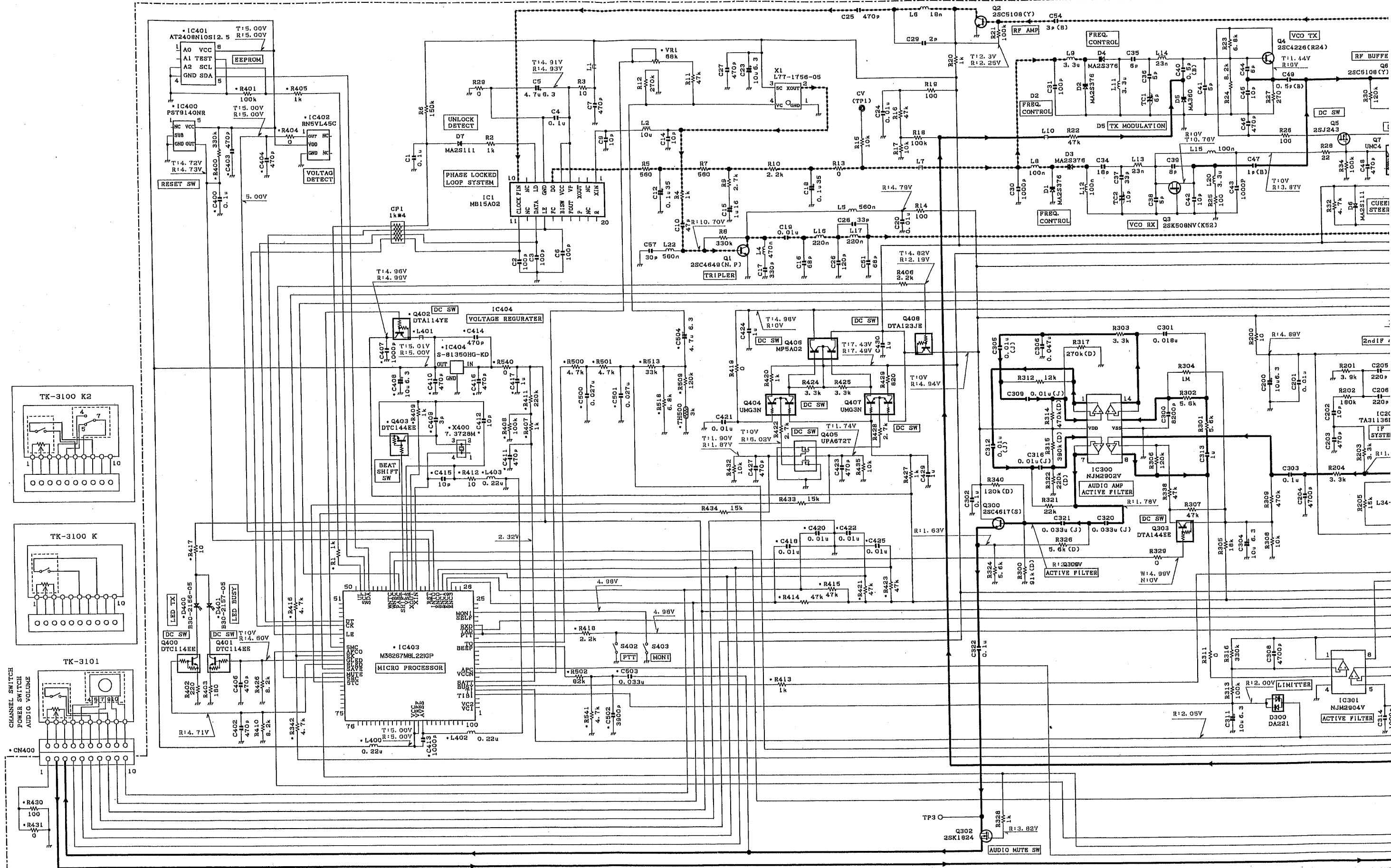


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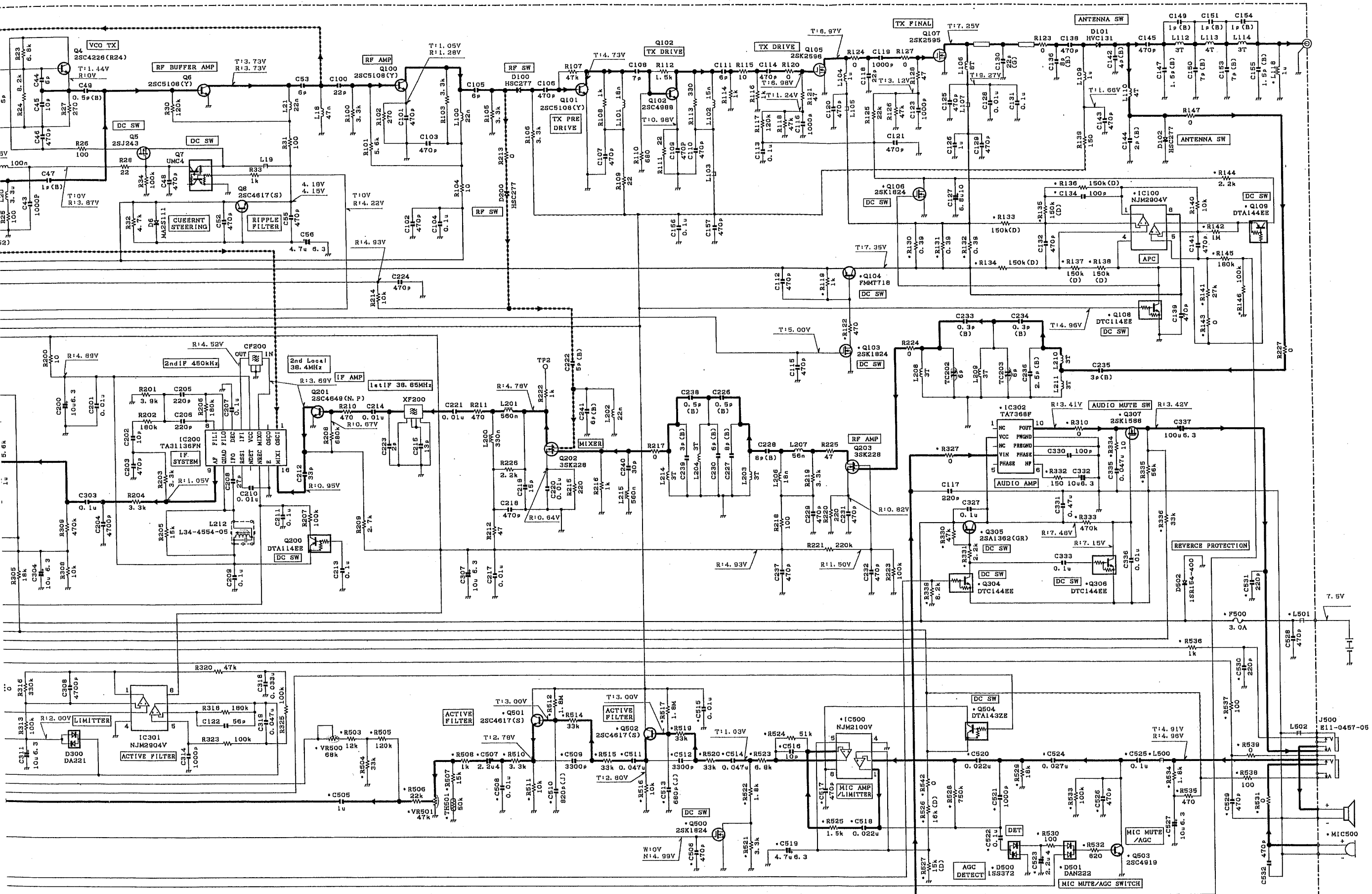
TA7368F

TX-RX UNIT (X57-5660-10)



D1-4	MA2S376	D6.7	MA2S111	D101	HVC131	D300	DA221	D401	B30-2157-05	D501	DAN222	Q1.201	2SC4649(N,P)	Q3	2SK508NV(K52)	Q5	2SJ243	Q7	300.501.502	2SC4617(S)	Q102	2SC4988	Q104	FMM718	Q107	2SK2595	Q109.200.303	DTA144EE	Q201	DTA144EE	Q202.203	DTA144EE
D5	MA360	D100	HSC277	D102.200	HSC277	D400	B30-2156-05	D500	1SS372	D502	1SR154-400	Q2.6	2SC5108(Y)	Q4	2SC4226(R24)	Q6.100.101	2SC5108(Y)	Q8.300.501.502	2SC4617(S)	Q103.106.302.500	2SK1824	Q105	2SK2596	Q108.400.401	DTC114EE	Q200	DTA114EE	Q202.203	DTA114EE			

SCHEMATIC DIAGRAM TK-3100/3101

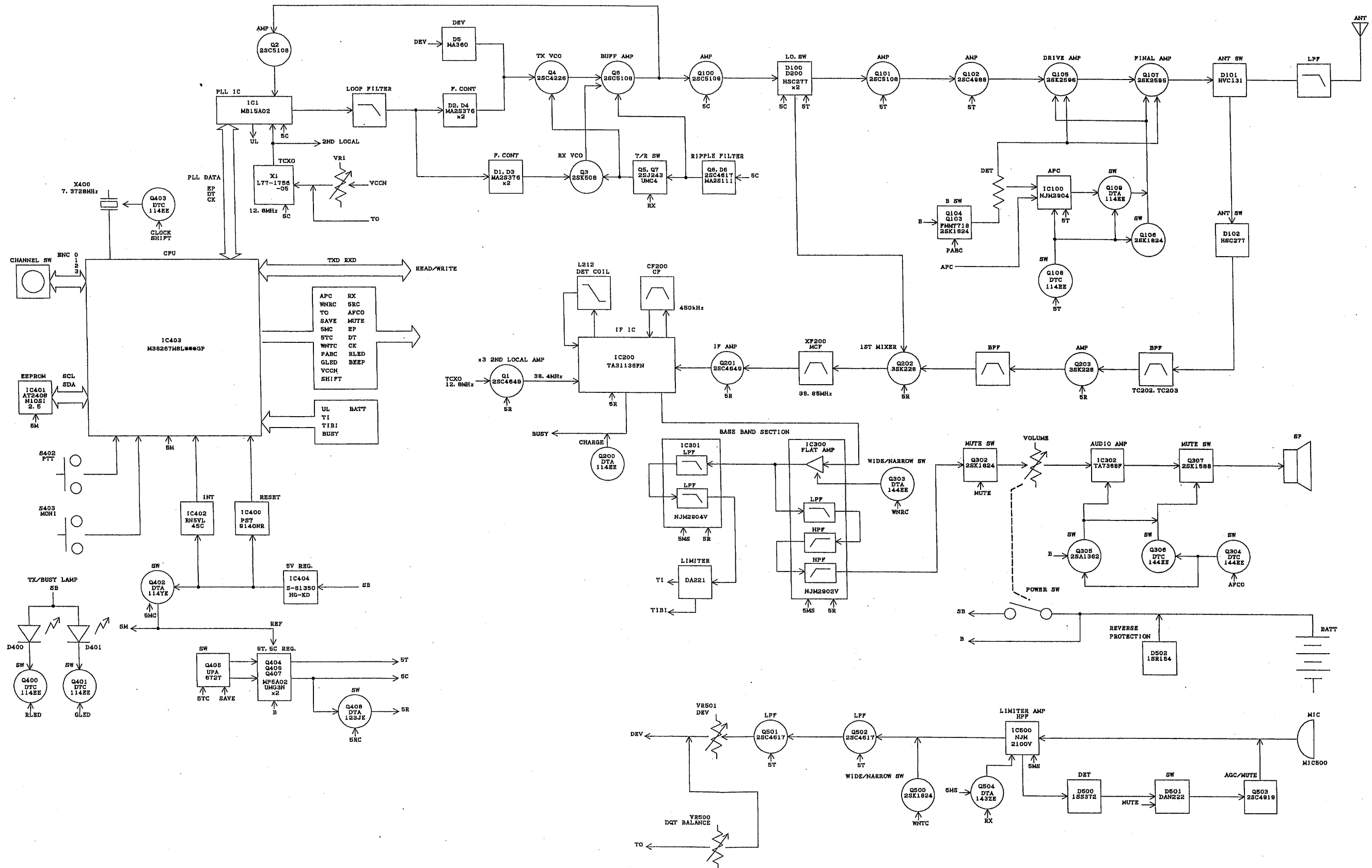


Q109	200, 303:DTA144EE	Q201	2SC4649(N,P)	Q304, 306, 403:DTC144EE	Q307:2SK1588	Q404, 407:UMG3N	Q406:MP5A02	Q501, 502:2SC4617(S)	Q504:DTA143ZE	IC1	MB15A02	IC200	TA31136FN	IC301	NJM2904V	IC400	PST9140NR	IC402	RN6V145C	IC404	S-81350HG-KD
14EE	Q200	DTA114EE	Q202, 203:3SK228	Q305	2SA1362(GR)	Q402:DTA114YE	Q408:DTA123JE	Q503	2SC4919	IC100	NJM2904V	IC300	NJM2902V	IC302	TA7368F	IC401	AT2408N10S12.5	IC403	M38267M/L221GP	IC500	NJM2100V

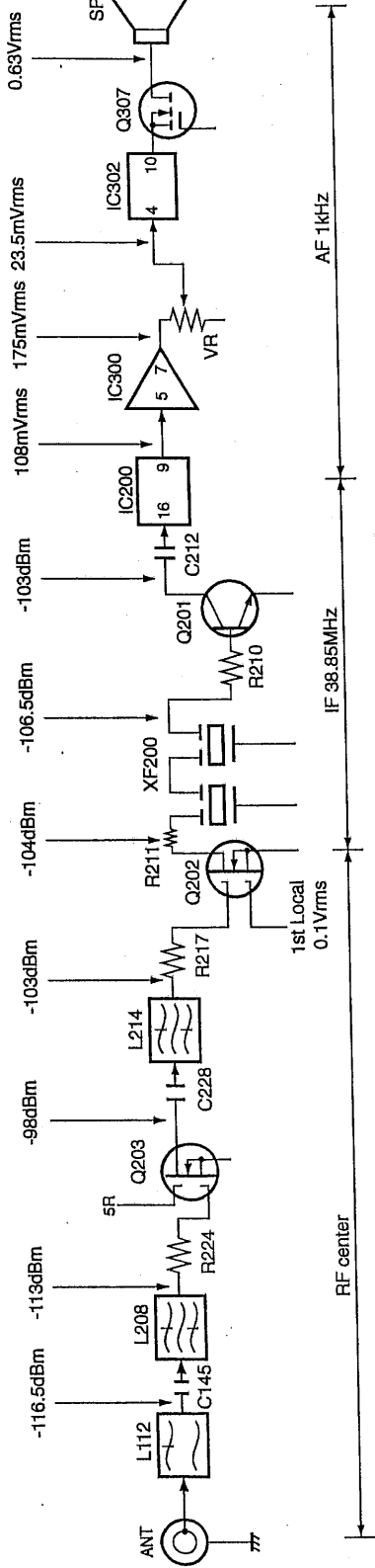
Note : Component marked with a dot (•) are parts of pattern1.

TK-3100/3101 TK-3100/3101

BLOCK DIAGRAM



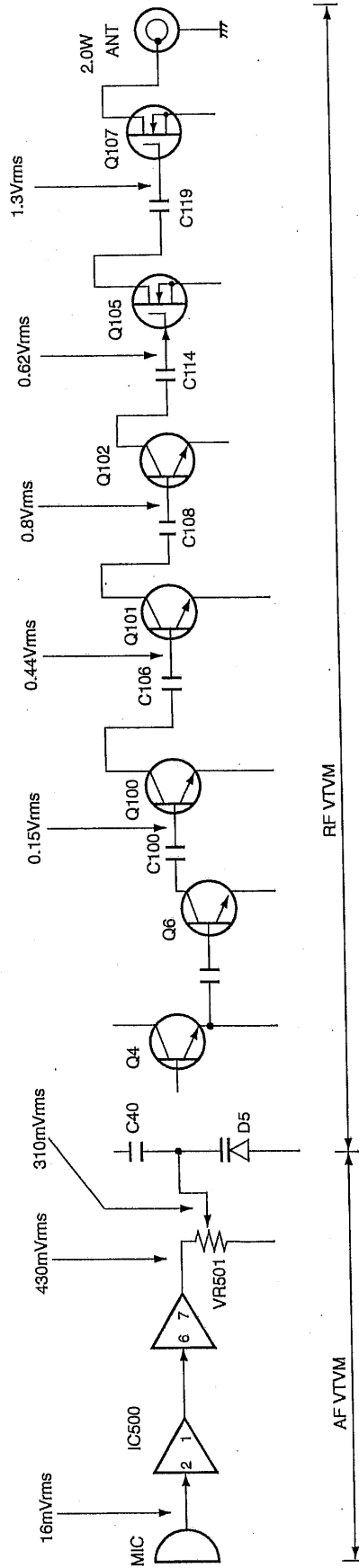
RX section



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.

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



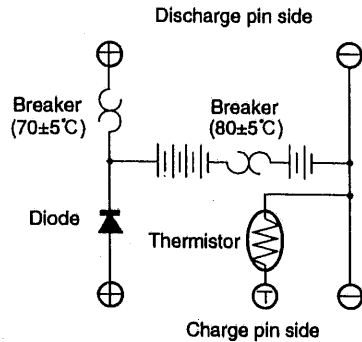
Measure the audio frequency on an AF VTVM and radio frequency on a RF VTVM at high impedance. Set the MIC input obtain a modulation factor of 60% with the transmit frequency at center and a modulation frequency of 1kHz.

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

KNB-14



CIRCUITDIAGRAM



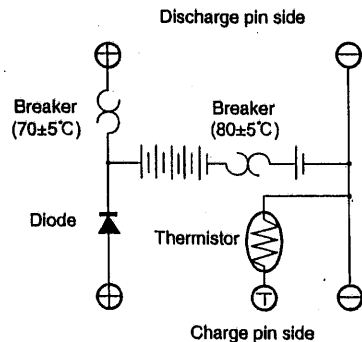
SPECIFICATIONS

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



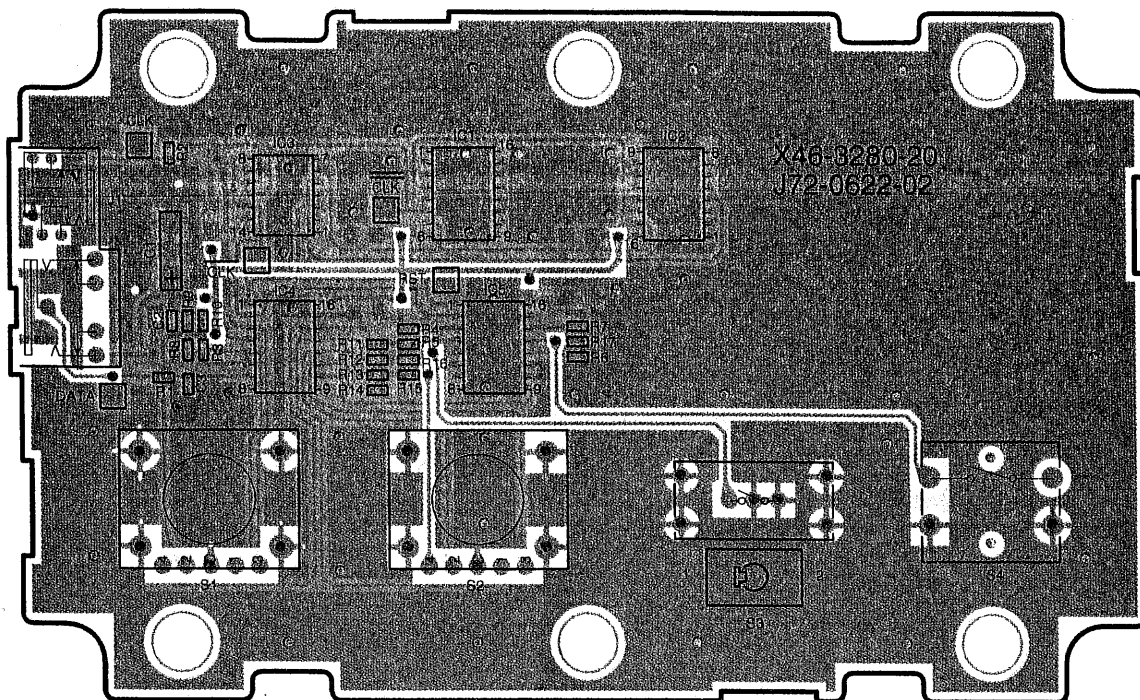
SPECIFICATIONS

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

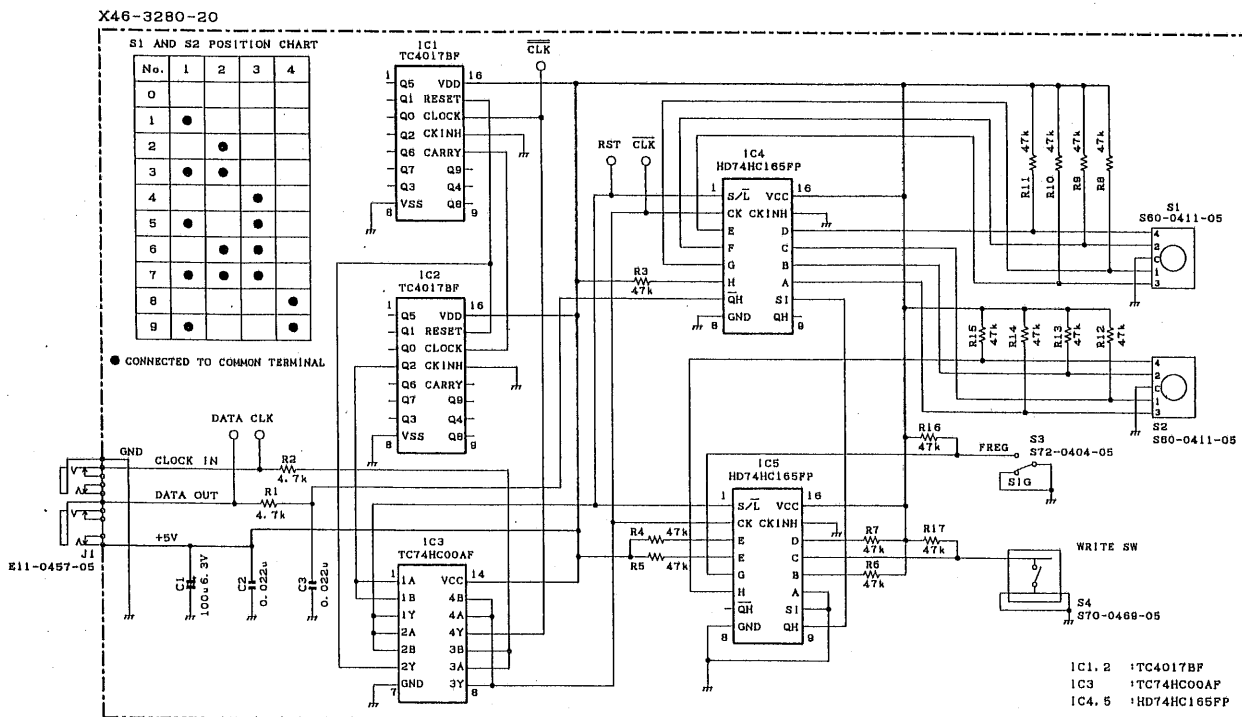
TK-3100/3101

KPT-60 (CHANNEL & TONE PROGRAMMER)

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



DIGITAL UNIT (X46-3280-20)



TK-3100/3101

SPECIFICATIONS

GENERAL

Frequency Range 460 to 470MHz
RF power output 2W
Number of channels TK-3100 K: 1CH K2: 2CH, TK-3101 K: 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 (2-5/16) W X 125.5 (4-15/16) H X 32 (1-1/4) D mm (inches)
330g (0.73lbs)

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