UHF FM TRANSCEIVER

TK-3140

SERVICE MANUAL

SUPPLEMENT

KENWOOD

B51-8621-00 (S) 1422

This TK-3140 service manual contains a number of sections which differ from the service manual (B51-8603-00) for the TK-3140.
For items other than those in this TK-3140 service manual please refer to the service manual (B51-8603-00) for the TK-3140.

Does not come with antenna.
Antenna is available as an option.

CONTENTS

GENERAL / SYSTEM SET-UP

INTRODUCTION

SCOPE OF THIS MANUAL

This manual is intended for use by experienced technicians familiar with similar types of commercial grade communications equipment. It contains all required service information for the equipment and is current as of the publication date. Changes which may occur after publication are covered by either Service Bulletins or Manual Revisions. These are issued as required.

ORDERING REPLACEMENT PARTS

When ordering replacement parts or equipment information, the full part identification number should be included. This applies to all parts : components, kits, or chassis. If the part number is not known, include the chassis or kit number of which it is a part, and a sufficient description of the required component for proper identification.

PERSONNEL SAFETY

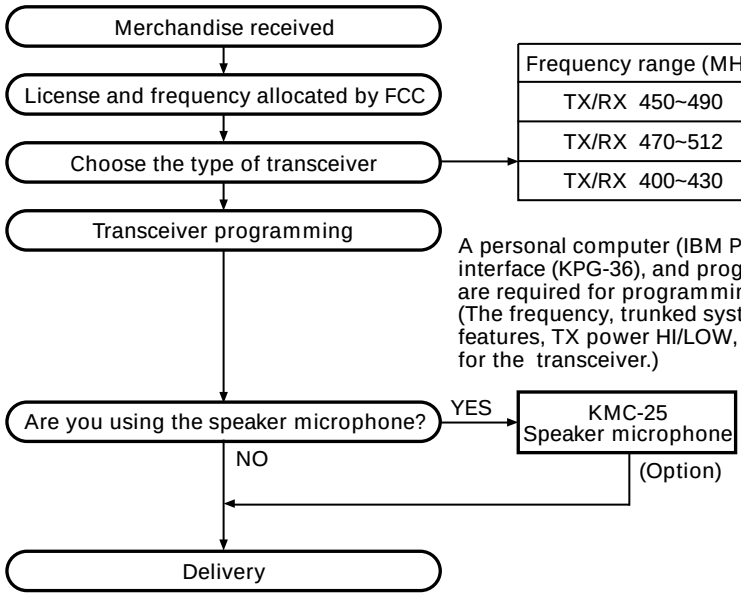
The following precautions are recommended for personnel safety:

- 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.

SYSTEM SET-UP



Frequency range (MHz)	RF power	Type
TX/RX 450~490	4.0W	TK-3140 K
TX/RX 470~512	4.0W	TK-3140 K2
TX/RX 400~430	4.0W	TK-3140 K3

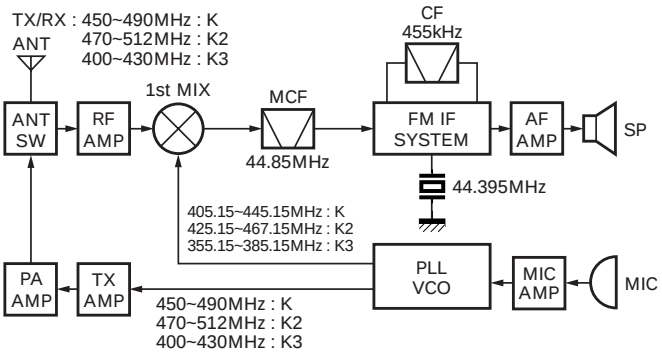
A personal computer (IBM PC or compatible), programming interface (KPG-36), and programming software (KPG-74D) are required for programming.
(The frequency, trunked system features, conventional system features, TX power HI/LOW, and signalling data are programmed for the transceiver.)

Frequency Configuration

The receiver is a double-conversion superheterodyne with a first intermediate frequency (IF) of 44.85MHz and a second IF of 455kHz. Incoming signals from the antenna are mixed with the local signal from the PLL to produce the first IF of 44.85MHz.

This is then mixed with the 44.395MHz second local oscillator output to produce the 455kHz second IF. This is detected to give the demodulated signal.

The transmit signal frequency is generated by the PLL VCO, and modulated by the signal from the microphone. It is then amplified and sent to the antenna.



SEMICONDUCTOR DATA

Microprocesser : 30620M8A-XXXGP (TX-RX UNIT : IC309)

■ Pin function

Pin No.	Port Name	I/O	Function
1	LSDO	O	Low speed data output. (QT/DQT/LTR)
2	HSDO	O	High speed data output. (DTMF)
3	HSDI	I	High speed data input. (2Tone)
4	DSTB	O	D/A converter data strobe output.
5	5RC	O	RX power control. H: TX L: RX
6	BYTE	-	+5V.
7	CNV_{SS}	-	GND.
8	AFDAT	O	MODEM MSK encode data output.
9	AFRDT	I	MODEM MSK decode data input.
10	RESET	-	CPU reset.
11	XOUT	-	CPU clock.
12	VSS	-	GND.
13	XIN	-	CPU clock.
14	V_{CC}	-	+5V
15	-	-	NC
16	DTSTD	I	DTMF decoder data detect input.
17	AFTRD	I	MODEM MSK encode data output timing Pulse input.
18	AFRTM	I	MODEM MSK decode data Input timing pulse input.
19	EEPDAT	I/O	EEPROM data input/output.
20	BEEP	O	Beep output.
21	SKEY	I	[S] Key input.
22	AKEY	I	[A] Key input.
23	BKEY	I	[B] Key input.
24	CKEY	I	[C] Key input.
25	AUX	I	[AUX] Key input.
26	PTT	I	[PTT] Key input.
27	MONI (SW1)	I	[MON] Key input.
28	LAMP (SW2)	I	[LAMP] Key input.
29	AUXTXD	O	External serial interface (COM1) TDX1.
30	UL	I	PLL unlock detect input.
31	DTMDAT	I	DTMF decoder data input.
32	DTCLK	O	DTMF decoder clock output.
33	TXD	O	Serial interface (COM0) TXD0 (to MIC connector).
34	RXD	I	Serial interface (COM0) RXD0 (to MIC connector).
35	DAT	O	Common data output.
36	CLK	O	Common clock output.
37	RDY	-	Can not used.
38	ALE	-	Can not used.
39	HOLD	-	Can not used.
40	HLDA	-	Can not used.
41	BLCK	-	Can not used.
42	RD	O	Flash memory RD bus.
43	BHE	-	Can not used.
44	WR	O	Flash memory WR bus.
45	SAVE	O	Battery save output.
46	SELF	I	Self programming mode enable input.
47	CS/MODE	O	LCD driver chip select output.
48	CS0	O	Flash memory chip enable.
49	A19	-	Can not used.
50~59	A18~A9	-	Flash memory address bus.

Pin No.	Port Name	I/O	Function
60	V_{CC}	-	+5V
61	A8	O	Flash memory address bus.
62	VSS	-	GND.
63~70	A7~A0	O	Flash memory address bus.
71	INT	I	Voltage detector input.
72	EP	O	PLL IC Data Strobe output.
73	DP	O	PLL IC Data output.
74	CP	O	PLL IC Clock output.
75~78	EN4~1	I	Rotary SW input 4~1.
79~86	D7~D0	I	Flash memory data bus.
87	PF	I	SP-Mic PF switch input.
88	VOL	I	Volume level input.
89	BATT2	I	Battery distinction input.
90	BATT1	I	Battery voltage
91	ASQL	I	Squelch level input.
92	TEMP	I	Thermistor input.
93	RSSI	I	Received signal strength indicator input (RSSI).
94	AVSS	-	GND.
95	LSDI	I	Low speed data input (QT/DQT/LTR).
96	VREF	-	+5V
97	AVCC	-	+5V
98	SFTSTB1	O	Shift register data strobe output.
99	OE	O	Shift register output enable output.
100	AFSTB	O	MODEM data strobe output.

PARTS LIST

∗ New Parts. ⚠indicates safety critical components.
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

L: Scandinavia **K**: USA **P**: Canada
Y: PX (Far East, Hawaii) **T**: England **E**: Europe
Y: AAFES (Europe) **X**: Australia **M**: Other Areas

TK-3140 (Y50-5640-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination
TK-3140					
1	1B		A02-3653-04	CABINET ASSY	
2	3A		A10-4060-04	CHASSIS	
3	3B		B01-0688-03	ESCUTCHEON(BELT HOOK)	
	-		B09-0625-03	CAP ACCESSORY	
5	2B		B10-2700-02	FRONT GLASS	
6	1A		B38-0859-05	LCD ASSY	
	-		B62-1476-20	INSTRUCTION MANUAL ACCESSORY	
8	3A	∗	B72-1966-04	MODEL NAME PLATE	K2
8	3A	∗	B72-1967-04	MODEL NAME PLATE	K3
8	3A	∗	B72-2064-14	MODEL NAME PLATE	K
9	3B		E04-0436-05	RF COAXIAL RECEPTACLE(SMA)	
10	3A		E23-1188-04	TERMINAL(ANTENNA)	
11	3B		E23-1189-04	TERMINAL(BATT-)	
12	3A		E37-0978-05	LEAD WIRE WITH CONNECTOR(SW2)	
13	3A		E37-1007-05	LEAD WIRE WITH CONNECTOR(PTT)	
14	3B		E58-0440-05	SQUARE SOCKET	
15	3A		E72-0413-03	BATT TERMINAL BLOCK	
16	2A		F10-2415-04	SHIELDING PLATE(CPU)	
17	1A		F10-2416-03	SHIELDING PLATE(LCD)	
18	2A		F10-2444-04	SHIELDING PLATE	
19	3A,3B		F15-1006-04	SHADE	
20	1B		G10-1280-04	FIBROUS SHEET(SPEAKER)	
21	3A		G11-4046-04	SHEET(PTT)	
22	2A		G11-4050-04	SHEET(TCXO)	
23	1A		G11-4089-04	SHEET(LCD)	
24	3A		G11-4090-04	SHEET(FINAL FET)	
25	1A		G11-4174-04	SHEET(LCD)	
26	3B		G11-4186-14	SHEET	
27	3B	∗	G11-4187-04	SHEET(CHASSIS)	
28	1A,2A	∗	G11-4188-04	SHEET	
29	1B	∗	G11-4189-04	SHEET(CABINET)	
30	1A	∗	G11-4190-04	SHEET(CABINET)	
31	3A		G13-1885-04	CUSHION(ANT,SUB PCB)	
32	3B		G53-1539-02	PACKING(TOP)	
33	2B		G53-1540-02	PACKING(4 KEYS)	
34	3A		G53-1547-04	PACKING(BATT TERMINAL)	
	-		H52-1816-02	ITEM CARTON CASE	
36	2A		J19-5430-03	HOLDER(VOL/ENC)	
37	2A		J21-8423-04	HARDWARE FIXTURE(SUB PCB)	
38	2A		J21-8424-04	HARDWARE FIXTURE(CHASSIS)	
39	3B	∗	J21-8443-04	HARDWARE FIXTURE(PACKING)	
	-		J29-0688-05	BELT HOOK ACCESSORY	
41	1B		J30-1269-04	SPACER(VOL)	
42	2B		J82-0078-05	FPC(VOL/ENC)	
43	3B		J82-0079-05	FPC(UNIVERSAL)	
44	1A		K29-9131-03	KNOB(PTT)	
45	1A		K29-9132-03	KEY TOP(SW1,SW2)	
46	1B		K29-9133-03	KNOB(VOL)	
47	1B		K29-9134-03	KNOB(ENC)	

TX-RX UNIT (X57-6410-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination
	-		N08-0548-04	DRESSED SCREW ACCESSORY	
B	3B		N14-0569-04	CIRCULAR NUT	
C	3B		N30-2604-46	PAN HEAD MACHINE SCREW	
D	3A		N30-2608-46	PAN HEAD MACHINE SCREW	
E	3B		N30-3006-45	PAN HEAD MACHINE SCREW	
F	3B		N79-2035-46	PAN HEAD TAPTITE SCREW	
G	1A,2A		N83-2005-46	PAN HEAD TAPTITE SCREW	
48	2B		R31-0617-05	VARIABLE RESISTOR	
49	2B		S60-0415-05	ROTARY SWITCH	
SP	2B		T07-0732-05	SPEAKER ASSY	
50	2B		T91-0630-05	MIC ELEMENT ASSY	
TX-RX UNIT (X57-6410-XX) -10:TK-3140 K -11:TK-3140 K2 -12:TK-3140 K3					
D309			B30-2156-05	LED(RED)	
D310			B30-2157-05	LED(YELLOW)	
C1			CK73HB1H471K	CHIP C 470PF K	
C2			CK73HB1H102K	CHIP C 1000PF K	
C4			CC73HCH1H100D	CHIP C 10PF D	
C5			CK73HB1H471K	CHIP C 470PF K	
C8			CK73HB1H102K	CHIP C 1000PF K	
C9			CC73HCH1H100D	CHIP C 10PF D	
C10			CK73HB1H471K	CHIP C 470PF K	
C11			C92-0713-05	CHIP-TAN 10UF 6.3WV	
C12-14			CK73HB1H471K	CHIP C 470PF K	
C16			C92-0004-05	CHIP-TAN 1.0UF 16WV	K2,K3
C16			C92-0521-05	CHIP-TAN 0.47UF 20WV	K
C17,18			CK73HB1A104K	CHIP C 0.10UF K	
C19			CK73HB1H102K	CHIP C 1000PF K	
C20			CC73HCH1H050C	CHIP C 5.0PF C	
C22			CC73HCH1H030C	CHIP C 3.0PF C	
C23			CC73HCH1H050C	CHIP C 5.0PF C	
C24			C92-0001-05	CHIP-C 0.1UF 35WV	K
C25			CC73HCH1H100D	CHIP C 10PF D	
C27			CK73HB1H471K	CHIP C 470PF K	
C28			CC73HCH1H101J	CHIP C 100PF J	
C29			CK73HB1H102K	CHIP C 1000PF K	
C30			CC73HCH1H100D	CHIP C 10PF D	
C31			CC73HCH1H090D	CHIP C 9.0PF D	K2
C31			CC73HCH1H110J	CHIP C 11PF J	K
C31			CC73HCH1H120J	CHIP C 12PF J	K3
C32			CC73HCH1H040C	CHIP C 4.0PF C	K2
C32			CC73HCH1H060D	CHIP C 6.0PF D	K,K3
C33			CC73HCH1H100D	CHIP C 10PF D	K2
C33			CC73HCH1H110J	CHIP C 11PF J	K
C33			CC73HCH1H180J	CHIP C 18PF J	K3
C34			CC73HCH1H040C	CHIP C 4.0PF C	K2
C34			CC73HCH1H060D	CHIP C 6.0PF D	K,K3
C36			CC73GCH1H030B	CHIP C 3.0PF B	K2,K3
C36			CC73GCH1H040B	CHIP C 4.0PF B	K
C37			CC73GCH1H010B	CHIP C 1.0PF B	
C38			CC73GCH1H040B	CHIP C 4.0PF B	K2

K : TK-3140 K K3 : TK-3140 K3
K2 : TK-3140 K2

PARTS LIST

TX-RX UNIT (X57-6410-XX)

Ref. No.	Address	New parts	Parts No.	Description			Destination
C38			CC73GCH1H050B	CHIP C	5.0PF	B	K,K3
C39			CK73HB1H471K	CHIP C	470PF	K	
C40			CC73GCH1H020B	CHIP C	2.0PF	B	
C41			CC73GCH1H060B	CHIP C	6.0PF	B	
C42			CC73GCH1H030B	CHIP C	3.0PF	B	K2
C42			CC73GCH1H040B	CHIP C	4.0PF	B	K,K3
C43			CC73GCH1H0R5B	CHIP C	0.5PF	B	
C44			CC73GCH1H050B	CHIP C	5.0PF	B	
C45			CK73HB1H471K	CHIP C	470PF	K	
C46			CC73HCH1H101J	CHIP C	100PF	J	
C47			CC73GCH1H0R5B	CHIP C	0.5PF	B	
C48,49			CK73HB1H102K	CHIP C	1000PF	K	
C50			C92-0712-05	CHIP-TAN	22UF	6.3WV	
C51			CC73HCH1H070D	CHIP C	7.0PF	D	
C52			CK73HB1H102K	CHIP C	1000PF	K	
C53			CC73HCH1H330J	CHIP C	33PF	J	
C54-56			CK73HB1H471K	CHIP C	470PF	K	
C57			CC73HCH1H070D	CHIP C	7.0PF	D	
C58			CC73GCH1H010B	CHIP C	1.0PF	B	
C60			CK73HB1H102K	CHIP C	1000PF	K	
C64			CK73HB1H471K	CHIP C	470PF	K	
C65			CC73HCH1H020C	CHIP C	2.0PF	C	K3
C65,66			CC73HCH1H010C	CHIP C	1.0PF	C	K2
C65,66			CC73HCH1H020C	CHIP C	2.0PF	C	K
C66			CC73HCH1H010C	CHIP C	1.0PF	C	K3
C67			C92-0001-05	CHIP-C	0.1UF	35WV	
C68			C92-0714-05	CHIP-TAN	4.7UF	6.3WV	
C100-102			CK73HB1H471K	CHIP C	470PF	K	
C103			CC73HCH1H070D	CHIP C	7.0PF	D	K,K2
C103			CC73HCH1H090D	CHIP C	9.0PF	D	K3
C104,105			CK73HB1H471K	CHIP C	470PF	K	
C106			CC73HCH1H060D	CHIP C	6.0PF	D	
C108			CK73HB1A104K	CHIP C	0.10UF	K	
C109			CC73HCH1H050C	CHIP C	5.0PF	C	K,K2
C109			CC73HCH1H080D	CHIP C	8.0PF	D	K3
C110			CC73HCH1H130J	CHIP C	13PF	J	
C111			CK73HB1H471K	CHIP C	470PF	K	
C115			CK73HB1H471K	CHIP C	470PF	K	
C116			CC73HCH1H330J	CHIP C	33PF	J	
C119			CC73GCH1H300G	CHIP C	30PF	G	K
C119			CC73GCH1H330G	CHIP C	33PF	G	K2
C119			CC73GCH1H390J	CHIP C	39PF	J	K3
C122			CK73HB1H471K	CHIP C	470PF	K	
C123			C92-0565-05	CHIP-TAN	6.8UF	10WV	
C124			CK73GB0J105K	CHIP C	1.0UF	K	
C125			CK73HB1H102K	CHIP C	1000PF	K	
C126,127			CK73HB1H471K	CHIP C	470PF	K	
C128			CC73HCH1H101J	CHIP C	100PF	J	
C129,130			CK73HB1H471K	CHIP C	470PF	K	
C131			CC73GCH1H270G	CHIP C	27PF	G	K,K3
C131			CC73GCH1H300G	CHIP C	30PF	G	K2
C132			CK73HB1C103K	CHIP C	0.010UF	K	
C133		*	CK73GB1A105K	CHIP C	1.0UF	K	
C134			CK73HB1A104K	CHIP C	0.10UF	K	
C135			CC73GCH1H080B	CHIP C	8.0PF	B	K2
C135			CC73GCH1H200G	CHIP C	20PF	G	K,K3

Ref. No.	Address	New parts	Parts No.	Description			Destination
C136			CK73HB1H471K	CHIP C	470PF	K	
C137			CK73HB1C103K	CHIP C	0.010UF	K	
C139			CK73HB1H471K	CHIP C	470PF	K	
C143			CC73GCH1H070B	CHIP C	7.0PF	B	K2
C143			CC73GCH1H100C	CHIP C	10PF	C	K
C143			CC73GCH1H150G	CHIP C	15PF	G	K3
C144			CC73GCH1H060B	CHIP C	6.0PF	B	K2
C144			CC73GCH1H070B	CHIP C	7.0PF	B	K
C144			CC73GCH1H080B	CHIP C	8.0PF	B	K3
C146			CC73GCH1H270J	CHIP C	27PF	J	K,K3
C146			CC73GCH1H390J	CHIP C	39PF	J	K2
C147			CK73HB1H471K	CHIP C	470PF	K	
C148			CC73HCH1H050C	CHIP C	5.0PF	C	
C149			CC73HCH1H101J	CHIP C	100PF	J	K
C149			CK73HB1H471K	CHIP C	470PF	K	K2,K3
C150			CC73HCH1H020C	CHIP C	2.0PF	C	K
C150			CC73HCH1H040C	CHIP C	4.0PF	C	K2
C150			CC73HCH1H070D	CHIP C	7.0PF	D	K3
C151			CC73HCH1H010C	CHIP C	1.0PF	C	K3
C151			CC73HCH1H1R5C	CHIP C	1.5PF	C	K,K2
C152			CC73HCH1H040C	CHIP C	4.0PF	C	K
C152			CC73HCH1H060D	CHIP C	6.0PF	D	K2,K3
C153			CC73HCH1H020C	CHIP C	2.0PF	C	K,K3
C153			CC73HCH1H1R5B	CHIP C	1.5PF	B	K2
C154			CC73HCH1H100D	CHIP C	10PF	D	K2
C154			CC73HCH1H150J	CHIP C	15PF	J	K,K3
C155			CC73HCH1H050C	CHIP C	5.0PF	C	K
C155			CC73HCH1H070D	CHIP C	7.0PF	D	K2
C155			CC73HCH1H080D	CHIP C	8.0PF	D	K3
C156			CC73HCH1H010C	CHIP C	1.0PF	C	K2
C156			CC73HCH1H020C	CHIP C	2.0PF	C	K,K3
C157			CC73HCH1H010C	CHIP C	1.0PF	C	K
C157			CC73HCH1H020C	CHIP C	2.0PF	C	K2
C157			CC73HCH1H040C	CHIP C	4.0PF	C	K3
C158			CC73HCH1H0R5C	CHIP C	0.5PF	C	K3
C158			CC73HCH1H030C	CHIP C	3.0PF	C	K,K2
C160			CK73HB1H102K	CHIP C	1000PF	K	
C164			CC73GCH1H101J	CHIP C	100PF	J	K3
C164			CC73GCH1H330G	CHIP C	33PF	G	K
C164			CC73GCH1H680J	CHIP C	68PF	J	K2
C200			CK73GB1A224K	CHIP C	0.22UF	K	
C201			CK73HB1A104K	CHIP C	0.10UF	K	
C202			CK73HB1H221K	CHIP C	220PF	K	
C203-205			CK73HB1A104K	CHIP C	0.10UF	K	
C206			CK73HB1C103K	CHIP C	0.010UF	K	
C207			CK73HB1H471K	CHIP C	470PF	K	
C208,209			CK73HB1H221K	CHIP C	220PF	K	
C210			CK73HB1A104K	CHIP C	0.10UF	K	
C211			CK73HB1H102K	CHIP C	1000PF	K	
C212			CC73HCH1H220J	CHIP C	22PF	J	
C213			CC73HCH1H100D	CHIP C	10PF	D	
C214			CK73HB1A104K	CHIP C	0.10UF	K	
C215			C92-0773-05	CHIP-TAN	15UF	6.3WV	
C216			CK73HB1A104K	CHIP C	0.10UF	K	
C217			CK73HB1H221K	CHIP C	220PF	K	
C218			CK73HB1A104K	CHIP C	0.10UF	K	

K : TK-3140 K **K3 : TK-3140 K3**
K2 : TK-3140 K2

PARTS LIST

TX-RX UNIT (X57-6410-XX)

Ref. No.	Address	New parts	Parts No.	Description			Destination
C219			CK73HB1A333K	CHIP C	0.033UF	K	
C220			CK73HB1A104K	CHIP C	0.10UF	K	
C221			CC73HCH1H680J	CHIP C	68PF	J	
C222			CK73HB1A104K	CHIP C	0.10UF	K	
C223			CK73HB1C103K	CHIP C	0.010UF	K	
C224			C92-0713-05	CHIP-TAN	10UF	6.3WV	
C225			CK73HB1C103K	CHIP C	0.010UF	K	
C227			CK73HB1A104K	CHIP C	0.10UF	K	
C228,229			CK73HB1C103K	CHIP C	0.010UF	K	
C230			CC73HCH1H100D	CHIP C	10PF	D	
C231			CK73HB1C103K	CHIP C	0.010UF	K	
C232			CK73HB1H471K	CHIP C	470PF	K	
C233			CK73HB1C103K	CHIP C	0.010UF	K	
C234			CK73HB1H471K	CHIP C	470PF	K	
C235			CC73HCH1H040C	CHIP C	4.0PF	C	K2
C235			CC73HCH1H060D	CHIP C	6.0PF	D	K,K3
C236			CC73HCH1H010C	CHIP C	1.0PF	C	K2
C236			CC73HCH1H020C	CHIP C	2.0PF	C	K,K3
C237			CC73HCH1H150J	CHIP C	15PF	J	
C238			CC73HCH1H070D	CHIP C	7.0PF	D	K2
C238			CC73HCH1H100D	CHIP C	10PF	D	K
C238			CC73HCH1H110J	CHIP C	11PF	J	K3
C239			CK73HB1H471K	CHIP C	470PF	K	
C240			CC73HCH1HR75C	CHIP C	0.75PF	C	K
C240			CC73HCH1H010C	CHIP C	1.0PF	C	K3
C240			CC73HCH1H020C	CHIP C	2.0PF	C	K2
C241			CC73HCH1H040C	CHIP C	4.0PF	C	K2
C241			CC73HCH1H070D	CHIP C	7.0PF	D	K,K3
C242			CK73HB1A104K	CHIP C	0.10UF	K	
C243			CK73HB1H102K	CHIP C	1000PF	K	
C244			CC73GCH1H030B	CHIP C	3.0PF	B	K2
C244			CC73GCH1H050B	CHIP C	5.0PF	B	K
C244			CC73GCH1H090B	CHIP C	9.0PF	B	K3
C245			CK73HB1H471K	CHIP C	470PF	K	
C248			CC73HCH1H330J	CHIP C	33PF	J	
C249			CC73HCH1H020C	CHIP C	2.0PF	C	K2,K3
C249			CC73HCH1H030C	CHIP C	3.0PF	C	K
C250			CK73HB1H471K	CHIP C	470PF	K	
C251			CC73GCH1H020B	CHIP C	2.0PF	B	
C252			CC73HCH1H330J	CHIP C	33PF	J	
C253			CK73HB1A104K	CHIP C	0.10UF	K	
C255			CK73HB1A104K	CHIP C	0.10UF	K	
C256			CC73HCH1H330J	CHIP C	33PF	J	
C257-260			CK73HB1H471K	CHIP C	470PF	K	
C261			CC73GCH1H120G	CHIP C	12PF	G	K3
C261			CK73GB1H471K	CHIP C	470PF	K	K,K2
C263			CC73HCH1H180J	CHIP C	18PF	J	K3
C263			CC73HCH1H330J	CHIP C	33PF	J	K,K2
C264			CK73HB1H471K	CHIP C	470PF	K	
C266			CK73HB1H471K	CHIP C	470PF	K	
C267			CC73GCH1H030B	CHIP C	3.0PF	B	K,K3
C267			CC73GCH1H2R5B	CHIP C	2.5PF	B	K2
C268			CC73HCH1H330J	CHIP C	33PF	J	
C269			CC73GCH1H030B	CHIP C	3.0PF	B	K
C269			CC73GCH1H050B	CHIP C	5.0PF	B	K3
C269			CC73GCH1H2R5B	CHIP C	2.5PF	B	K2

Ref. No.	Address	New parts	Parts No.	Description			Destination
C270			CC73HCH1H020C	CHIP C	2.0PF	C	K2,K3
C270			CC73HCH1H030C	CHIP C	3.0PF	C	K
C274			CC73GCH1H030B	CHIP C	3.0PF	B	K
C274			CC73GCH1H3R5B	CHIP C	3.5PF	B	K2
C275			CC73HCH1H101J	CHIP C	100PF	J	
C276			CK73HB1H471K	CHIP C	470PF	K	
C277			CC73GCH1H030B	CHIP C	3.0PF	B	K2
C277			CC73GCH1H2R5B	CHIP C	2.5PF	B	K3
C277			CC73GCH1H3R5B	CHIP C	3.5PF	B	K
C278-280			CK73HB1A104K	CHIP C	0.10UF	K	
C281			CK73HB1H471K	CHIP C	470PF	K	
C282			CK73HB1H102K	CHIP C	1000PF	K	
C283,284			CK73HB1A104K	CHIP C	0.10UF	K	
C285			CC73GCH1H0R5B	CHIP C	0.5PF	B	K
C285			CC73GCH1H020B	CHIP C	2.0PF	B	K2
C286			CC73GCH1H050B	CHIP C	5.0PF	B	K,K3
C286			CC73GCH1H4R5B	CHIP C	4.5PF	B	K2
C288			CK73HB1H471K	CHIP C	470PF	K	
C289			CC73GCH1H010B	CHIP C	1.0PF	B	K3
C289			CC73GCH1H020B	CHIP C	2.0PF	B	K,K2
C290			CC73GCH1H050B	CHIP C	5.0PF	B	K3
C290			CC73GCH1H3R5B	CHIP C	3.5PF	B	K,K2
C292			CC73HCH1H020C	CHIP C	2.0PF	C	K2
C292			CC73HCH1H030C	CHIP C	3.0PF	C	K
C292			CC73HCH1H1R5B	CHIP C	1.5PF	B	K3
C293			CC73GCH1H010B	CHIP C	1.0PF	B	K2
C293			CC73GCH1H020B	CHIP C	2.0PF	B	K,K3
C294			CK73GB1H471K	CHIP C	470PF	K	
C295			CK73HB1H471K	CHIP C	470PF	K	
C298			CK73HB1H471K	CHIP C	470PF	K	
C300			C92-0713-05	CHIP-TAN	10UF	6.3WV	
C301			CK73HB1H471K	CHIP C	470PF	K	
C302			CK73HB1A104K	CHIP C	0.10UF	K	
C303			CK73HB1A473K	CHIP C	0.047UF	K	
C304			CC73HCH1H330J	CHIP C	33PF	J	
C305			CK73HB1C103K	CHIP C	0.010UF	K	
C306-308			CK73HB1A104K	CHIP C	0.10UF	K	
C309			CC73HCH1H101J	CHIP C	100PF	J	
C310			CK73HB1C103K	CHIP C	0.010UF	K	
C311			CC73HCH1H101J	CHIP C	100PF	J	
C312			C92-0713-05	CHIP-TAN	10UF	6.3WV	
C313			CC73HCH1H101J	CHIP C	100PF	J	
C314			CK73HB1H471K	CHIP C	470PF	K	
C315			C92-0713-05	CHIP-TAN	10UF	6.3WV	
C316			CK73HB1A333K	CHIP C	0.033UF	K	
C318			CK73HB1H221K	CHIP C	220PF	K	
C319			CC73HCH1H121J	CHIP C	120PF	J	
C320			CK73HB1A104K	CHIP C	0.10UF	K	
C321			CK73HB1H271K	CHIP C	270PF	K	
C322			CK73HB1C103K	CHIP C	0.010UF	K	
C323			CK73HB1H222K	CHIP C	2200PF	K	
C324			CK73HB1A104K	CHIP C	0.10UF	K	
C325			CK73HB1C123K	CHIP C	0.012UF	K	
C327			CK73GB1H103K	CHIP C	0.010UF	K	
C328			CK73GB1C683K	CHIP C	0.068UF	K	
C329			CK73GB0J105K	CHIP C	1.0UF	K	

K : TK-3140 K **K3 : TK-3140 K3**
K2 : TK-3140 K2

PARTS LIST

TX-RX UNIT (X57-6410-XX)

Ref. No.	Address	New parts	Parts No.	Description			Destination
C330			CK73HB1A104K	CHIP C	0.10UF	K	
C331			CK73HB1C223K	CHIP C	0.022UF	K	
C332-335			CK73HB1C103K	CHIP C	0.010UF	K	
C336,337			CC73HCH1H270J	CHIP C	27PF	J	
C338			CC73HCH1H160J	CHIP C	16PF	J	
C339-342			CK73HB1C103K	CHIP C	0.010UF	K	
C344			C92-0713-05	CHIP-TAN	10UF	6.3WV	
C345			CK73GB1A474K	CHIP C	0.47UF	K	
C346,347			CC73HCH1H470J	CHIP C	47PF	J	
C348			CK73GB1A474K	CHIP C	0.47UF	K	
C349			CK73HB1C153K	CHIP C	0.015UF	K	
C350			C92-0647-05	CHIP-TAN	3.3UF	6.3WV	
C351			CC73HCH1H470J	CHIP C	47PF	J	
C352-354			CK73HB1A104K	CHIP C	0.10UF	K	
C355			C92-0628-05	CHIP-TAN	10UF	10WV	
C356			CC73HCH1H470J	CHIP C	47PF	J	
C357,358			C92-0712-05	CHIP-TAN	22UF	6.3WV	
C359			CC73HCH1H470J	CHIP C	47PF	J	
C362			CC73HCH1H470J	CHIP C	47PF	J	
C364			CC73HCH1H470J	CHIP C	47PF	J	
C369			CC73HCH1H101J	CHIP C	100PF	J	
C371			CC73HCH1H470J	CHIP C	47PF	J	
C375			CC73HCH1H470J	CHIP C	47PF	J	
C382			CK73HB1A104K	CHIP C	0.10UF	K	
C383,384			CC73HCH1H470J	CHIP C	47PF	J	
C386			CC73HCH1H470J	CHIP C	47PF	J	
C388			CK73HB1H102K	CHIP C	1000PF	K	
C389			CC73HCH1H470J	CHIP C	47PF	J	
C390			CK73HB1A104K	CHIP C	0.10UF	K	
C391,392			CK73HB1C103K	CHIP C	0.010UF	K	
C394-398			CK73HB1A104K	CHIP C	0.10UF	K	
C399			CK73HB1C103K	CHIP C	0.010UF	K	
C400			CK73HB1H471K	CHIP C	470PF	K	
C402-405			CK73HB1H102K	CHIP C	1000PF	K	
C408			CK73HB1H102K	CHIP C	1000PF	K	
C410			CK73FB1A475K	CHIP C	4.7UF	K	
C411		*	CK73GB1A105K	CHIP C	1.0UF	K	
C413			C92-0713-05	CHIP-TAN	10UFR	6.3WV	
C415			CC73HCH1H101J	CHIP C	100PF	J	
C416			C92-0713-05	CHIP-TAN	10UF	6.3WV	
C417			CK73GB0J105K	CHIP C	1.0UF	K	
C419			CK73HB1H102K	CHIP C	1000PF	K	
C420			CC73HCH1H101J	CHIP C	100PF	J	
C421		*	CK73GB1A105K	CHIP C	1.0UF	K	
C422			CK73FB1C105K	CHIP C	1.0UF	K	K
C423			C92-0713-05	CHIP-TAN	10UF	6.3WV	
C424			CC73HCH1H101J	CHIP C	100PF	J	
C425			CK73HB1A104K	CHIP C	0.10UF	K	
C426			CC73HCH1H101J	CHIP C	100PF	J	
C500			CK73GB1H122K	CHIP C	1200PF	K	
C501,502			CK73HB1A104K	CHIP C	0.10UF	K	
C503,504			CK73HB1C103K	CHIP C	0.010UF	K	
C506			CK73HB1A104K	CHIP C	0.10UF	K	
C507			CK73HB1C103K	CHIP C	0.010UF	K	
C508			CK73HB1A104K	CHIP C	0.10UF	K	
C509-511			CK73GB1H562J	CHIP C	5600PF	J	

Ref. No.	Address	New parts	Parts No.	Description			Destination
C512-514			CK73GB1H272J	CHIP C	2700PF	J	
C515			CC73HCH1H030C	CHIP C	3.0PF	C	
C516			CC73HCH1H151J	CHIP C	150PF	J	
C517			CK73HB1A104K	CHIP C	0.10UF	K	
C518			CK73HB1A333K	CHIP C	0.033UF	K	
C519			CC73HCH1H030C	CHIP C	3.0PF	C	
C520			CK73GB1H152J	CHIP C	1500PF	J	
C521			C92-0713-05	CHIP-TAN	10UF	6.3WV	
C522			CK73HB1A104K	CHIP C	0.10UF	K	
C523,524			CK73HB1H102K	CHIP C	1000PF	K	
C525			CK73HB1A104K	CHIP C	0.10UF	K	
C526			CK73GB1H562J	CHIP C	5600PF	J	
C527,528			CK73HB1A104K	CHIP C	0.10UF	K	
C529			CK73GB1H562J	CHIP C	5600PF	J	
C530			CK73FB0J475K	CHIP C	4.7UF	K	
C531			CK73HB1C153K	CHIP C	0.015UF	K	
C532			CK73HB1H561K	CHIP C	560PF	K	
C533			CK73HB1H102K	CHIP C	1000PF	K	
C534			CC73HCH1H560J	CHIP C	56PF	J	
C535			CK73HB1A104K	CHIP C	0.10UF	K	
C536,537			CK73FB0J475K	CHIP C	4.7UF	K	
C538			CK73HB1H471K	CHIP C	470PF	K	
C539,540			CK73HB1H102K	CHIP C	1000PF	K	
C541			CK73GB1C563K	CHIP C	0.056UF	K	
C542,543			CK73HB1H102K	CHIP C	1000PF	K	
C554-557			CK73HB1H102K	CHIP C	1000PF	K	
C700			CC73GCH1H020B	CHIP C	2.0PF	B	K3
C710			CC73GCH1H2R5B	CHIP C	2.5PF	B	K
C720			C92-0714-05	CHIP-TAN	4.7UF	6.3WV	
C730		*	CS77SJ0J2R2M	CHIP-TAN	2.2UF	6.3WV	
C730			C92-0800-05	CHIP-TAN	2.2UF	6.3WV	K
C731			CC73HCH1H101J	CHIP C	100PF	J	
C740			CK73HB1A104K	CHIP C	0.10UF	K	
C741		*	C92-0802-05	TANTALUM CAPACITOR			K2,K3
TC1,2			C05-0384-05	CERAMIC TRIMMER CAP(10PF)			
CN300			E40-6178-05	PIN ASSY SOCKET			
CN301,302			E40-5856-05	FLAT CABLE CONNECTOR			
CN303-306			E40-5929-05	PIN ASSY			
CN400			E40-5856-05	FLAT CABLE CONNECTOR			
CN500			E40-6179-05	PIN ASSY			
F400			F53-0190-05	FUSE			
CD200			L79-1779-05	TUNING COIL			
CF200			L72-0995-05	CERAMIC FILTER			
CF201			L72-0996-05	CERAMIC FILTER			
L1			L40-4795-85	SMALL FIXED INDUCTOR(4.7UH)			
L3,4			L92-0163-05	BEADS CORE			
L5			L40-1275-92	SMALL FIXED INDUCTOR(12NH)			
L6			L40-1875-92	SMALL FIXED INDUCTOR(18NH)			
L7			L92-0163-05	BEADS CORE			
L8			L40-1085-92	SMALL FIXED INDUCTOR(100NH)			
L9			L92-0163-05	BEADS CORE			
L10-12			L40-1085-92	SMALL FIXED INDUCTOR(100NH)			
L15			L40-2278-67	SMALL FIXED INDUCTOR(22NH)			K,K2
L15			L40-2778-67	SMALL FIXED INDUCTOR(27NH)			K3
L16			L40-2778-67	SMALL FIXED INDUCTOR(27NH)			K,K2
L16			L40-3378-67	SMALL FIXED INDUCTOR(33NH)			K3

K : TK-3140 K **K3 : TK-3140 K3**
K2 : TK-3140 K2

PARTS LIST

TX-RX UNIT (X57-6410-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination
L17,18			L41-2285-03	SMALL FIXED INDUCTOR	
L19,20			L40-3391-86	SMALL FIXED INDUCTOR(3.3UH)	
L21			L40-1875-92	SMALL FIXED INDUCTOR(18NH)	K2
L21			L40-2275-92	SMALL FIXED INDUCTOR(22NH)	K
L21			L40-2775-92	SMALL FIXED INDUCTOR(27NH)	K3
L22			L92-0163-05	BEADS CORE	
L23			L40-2275-92	SMALL FIXED INDUCTOR(22NH)	
L100			L40-1875-92	SMALL FIXED INDUCTOR(18NH)	
L101			L40-2275-92	SMALL FIXED INDUCTOR(22NH)	
L102			L92-0162-05	BEADS CORE	
L103			L40-1575-54	SMALL FIXED INDUCTOR(15NH)	
L104			L92-0149-05	FERRITE CHIP	
L106			L34-4602-05	AIR-CORE COIL	
L107			L92-0149-05	FERRITE CHIP	
L108			L40-2285-54	SMALL FIXED INDUCTOR(220NH)	
L109			L34-4572-05	AIR-CORE COIL	
L110-112			L34-4564-05	AIR-CORE COIL	
L113			L40-1092-81	SMALL FIXED INDUCTOR	
L114,115			L40-8265-57	SMALL FIXED INDUCTOR(8.2NH)	
L116			L40-1263-92	SMALL FIXED INDUCTOR(1.2NH)	K
L116			L40-1563-92	SMALL FIXED INDUCTOR(1.5NH)	K3
L201			L40-1091-86	SMALL FIXED INDUCTOR(1.0UH)	
L202			L40-5681-86	SMALL FIXED INDUCTOR(0.56UH)	
L203			L92-0163-05	BEADS CORE	
L204			L40-1095-85	SMALL FIXED INDUCTOR(1.0UH)	
L205			L40-1875-57	SMALL FIXED INDUCTOR(18.0NH)	K
L205,206			L40-1875-57	SMALL FIXED INDUCTOR(18.0NH)	K2,K3
L206			L40-2275-57	SMALL FIXED INDUCTOR(22.0NH)	K
L207			L40-2775-92	SMALL FIXED INDUCTOR(27NH)	
L209-211		*	L41-1078-14	SMALL FIXED INDUCTOR	K3
L209-211			L41-8268-14	SMALL FIXED INDUCTOR	K,K2
L212			L92-0163-05	BEADS CORE	
L213			L41-2285-03	SMALL FIXED INDUCTOR	
L215			L41-1278-14	SMALL FIXED INDUCTOR	K3
L215			L41-8268-14	SMALL FIXED INDUCTOR	K,K2
L217		*	L41-1078-14	SMALL FIXED INDUCTOR	K3
L217		*	L41-6868-14	SMALL FIXED INDUCTOR	K2
L217			L41-8268-14	SMALL FIXED INDUCTOR	K
L219		*	L41-3978-03	SMALL FIXED INDUCTOR	K2
L219			L41-4778-03	SMALL FIXED INDUCTOR	K
L300-313			L92-0163-05	BEADS CORE	
L314-317			L92-0408-05	FERRITE CHIP	
L320			L92-0163-05	BEADS CORE	
L400			L92-0149-05	FERRITE CHIP	
L500			L92-0163-05	BEADS CORE	
L710		*	L41-3369-16	SMALL FIXED INDUCTOR	K3
L730			L92-0163-05	BEADS CORE	
X1			L77-1871-05	TCXO (16.8MHZ)	
X200			L77-1760-15	CRYSTAL RESONATOR(44.395MHZ)	
X300			L77-1810-05	CRYSTAL RESONATOR(9.8304MHZ)	
X500			L77-1708-05	CRYSTAL RESONATOR(3.579545MHZ)	
XF200			L71-0530-05	MCF (44.85MHZ)	
CP1,2			RK75HA1J102J	CHIP-COM 1.0K J 1/16W	
CP300-313			RK75HA1J102J	CHIP-COM 1.0K J 1/16W	
CP314			RK75HA1J473J	CHIP-COM 47K J 1/16W	
CP315			RK75HA1J102J	CHIP-COM 1.0K J 1/16W	
CP316			RK75HA1J473J	CHIP-COM 47K J 1/16W	
CP317-320			RK75HA1J102J	CHIP-COM 1.0K J 1/16W	
CP322			RK75HA1J102J	CHIP-COM 1.0K J 1/16W	
CP323,324			RK75HA1J473J	CHIP-COM 47K J 1/16W	
CP326,327			RK75HA1J473J	CHIP-COM 47K J 1/16W	
CP400,401			RK75HA1J473J	CHIP-COM 47K J 1/16W	
CP500,501			RK75HA1J472J	CHIP-COM 4.7K J 1/16W	
R1			RK73HB1J101J	CHIP R 100 J 1/16W	
R3			RK73HB1J151J	CHIP R 150 J 1/16W	
R4			RK73HB1J183J	CHIP R 18K J 1/16W	K
R4			RK73HB1J273J	CHIP R 27K J 1/16W	K2
R4			RK73HB1J333J	CHIP R 33K J 1/16W	K3
R5			RK73HB1J153J	CHIP R 15K J 1/16W	K
R5			RK73HB1J822J	CHIP R 8.2K J 1/16W	K2,K3
R6			RK73HB1J560J	CHIP R 56 J 1/16W	
R7			RK73HB1J222J	CHIP R 2.2K J 1/16W	K
R7			RK73HB1J681J	CHIP R 680 J 1/16W	K2
R7,8			RK73HB1J102J	CHIP R 1.0K J 1/16W	K3
R8			RK73HB1J102J	CHIP R 1.0K J 1/16W	K,K2
R9			R92-1368-05	CHIP R 0 OHM	
R10			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R11			RK73HB1J154J	CHIP R 150K J 1/16W	
R13-15			RK73HB1J473J	CHIP R 47K J 1/16W	
R16			RK73HB1J181J	CHIP R 180 J 1/16W	
R17			RK73HB1J101J	CHIP R 100 J 1/16W	
R18			RK73HB1J151J	CHIP R 150 J 1/16W	
R19			RK73HB1J101J	CHIP R 100 J 1/16W	
R20			RK73HB1J104J	CHIP R 100K J 1/16W	
R21			RK73HB1J154J	CHIP R 150K J 1/16W	
R22			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R23			RK73HB1J101J	CHIP R 100 J 1/16W	
R24			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R25			RK73HB1J682J	CHIP R 6.8K J 1/16W	
R26			RK73HB1J103J	CHIP R 10K J 1/16W	
R27			RK73HB1J331J	CHIP R 330 J 1/16W	
R28			RK73HH1J333D	CHIP R 33K D 1/16W	
R29			RK73HH1J104D	CHIP R 100K D 1/16W	
R31			RK73HB1J470J	CHIP R 47 J 1/16W	
R32-35			R92-1368-05	CHIP R 0 OHM	
R100,101			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R102			RK73HB1J473J	CHIP R 47K J 1/16W	
R103			RK73HB1J331J	CHIP R 330 J 1/16W	
R104			RK73HB1J220J	CHIP R 22 J 1/16W	
R105			RK73HB1J681J	CHIP R 680 J 1/16W	
R106			RK73HB1J152J	CHIP R 1.5K J 1/16W	
R107			RK73HB1J100J	CHIP R 10 J 1/16W	
R108,109			RK73HB1J331J	CHIP R 330 J 1/16W	
R111			RK73HB1J180J	CHIP R 18 J 1/16W	
R112			RK73HB1J331J	CHIP R 330 J 1/16W	
R114			RK73HB1J104J	CHIP R 100K J 1/16W	K3
R114			RK73HB1J124J	CHIP R 120K J 1/16W	K,K2
R115			RK73HB1J473J	CHIP R 47K J 1/16W	K,K3
R115			RK73HB1J683J	CHIP R 68K J 1/16W	K2
R116			RK73HB1J220J	CHIP R 22 J 1/16W	
R119,120			RK73EB2ER39K	CHIP R 0.39 K 1/4W	
R121			RK73HB1J273J	CHIP R 27K J 1/16W	K3

K : TK-3140 K **K3 : TK-3140 K3**
K2 : TK-3140 K2

PARTS LIST

TX-RX UNIT (X57-6410-XX)

Ref. No.	Address	New parts	Parts No.	Description				Destination
R121			RK73HB1J473J	CHIP R	47K	J	1/16W	K,K2
R122			R92-0670-05	CHIP R	0 OHM			
R123			RK73EB2ER39K	CHIP R	0.39	K	1/4W	
R124			R92-1368-05	CHIP R	0 OHM			
R125			RK73GB1J101J	CHIP R	100	J	1/16W	
R126			RK73HB1J473J	CHIP R	47K	J	1/16W	K,K3
R126			RK73HB1J823J	CHIP R	82K	J	1/16W	K2
R127-129			RK73HH1J154D	CHIP R	150K	D	1/16W	
R131-133			RK73HH1J154D	CHIP R	150K	D	1/16W	
R134			RK73HB1J103J	CHIP R	10K	J	1/16W	
R136			RK73HB1J473J	CHIP R	47K	J	1/16W	
R138			R92-1368-05	CHIP R	0 OHM			
R139			RK73HH1J105D	CHIP R	1M	D	1/16W	
R140			RK73HB1J102J	CHIP R	1.0K	J	1/16W	
R142,143			RK73HB1J104J	CHIP R	100K	J	1/16W	
R144			R92-0670-05	CHIP R	0 OHM			K,K2
R145,146			RK73HB1J271J	CHIP R	270	J	1/16W	
R147			R92-1252-05	CHIP R	0 OHM	J	1/16W	
R149			R92-1368-05	CHIP R	0 OHM			
R151,152			R92-1368-05	CHIP R	0 OHM			
R200			RK73HB1J224J	CHIP R	220K	J	1/16W	
R201			RK73HB1J104J	CHIP R	100K	J	1/16W	
R202			RK73HB1J153J	CHIP R	15K	J	1/16W	
R203			RK73HH1J224D	CHIP R	220K	D	1/16W	
R204			RK73HH1J824D	CHIP R	820K	D	1/16W	
R205			RK73HB1J334J	CHIP R	330K	J	1/16W	
R206			RK73HB1J333J	CHIP R	33K	J	1/16W	
R207			RK73HB1J154J	CHIP R	150K	J	1/16W	
R208			RK73HB1J472J	CHIP R	4.7K	J	1/16W	
R209			RK73HB1J103J	CHIP R	10K	J	1/16W	
R210			RK73HB1J123J	CHIP R	12K	J	1/16W	
R211			RK73HB1J223J	CHIP R	22K	J	1/16W	
R212			RK73HB1J472J	CHIP R	4.7K	J	1/16W	
R213			RK73HB1J123J	CHIP R	12K	J	1/16W	
R214			RK73HB1J334J	CHIP R	330K	J	1/16W	
R215			RK73HB1J332J	CHIP R	3.3K	J	1/16W	
R216			RK73HB1J472J	CHIP R	4.7K	J	1/16W	
R217			RK73HB1J334J	CHIP R	330K	J	1/16W	
R218			RK73HB1J123J	CHIP R	12K	J	1/16W	
R219			RK73HB1J224J	CHIP R	220K	J	1/16W	
R220			RK73HB1J332J	CHIP R	3.3K	J	1/16W	
R221		*	RK73HH1J332D	CHIP R	3.3K	D	1/16W	
R222			RK73HB1J220J	CHIP R	22	J	1/16W	
R223			RK73HB1J184J	CHIP R	180K	J	1/16W	
R226			RK73HB1J221J	CHIP R	220	J	1/16W	
R227,228			RK73HB1J331J	CHIP R	330	J	1/16W	
R229			RK73HB1J472J	CHIP R	4.7K	J	1/16W	
R230			R92-1368-05	CHIP R	0 OHM			
R231			R92-1252-05	CHIP R	0 OHM	J	1/16W	
R232			RK73HB1J102J	CHIP R	1.0K	J	1/16W	
R233			RK73HB1J151J	CHIP R	150	J	1/16W	
R234			RK73HB1J104J	CHIP R	100K	J	1/16W	
R235			RK73HB1J563J	CHIP R	56K	J	1/16W	
R236			RK73HB1J104J	CHIP R	100K	J	1/16W	
R237			RK73HB1J563J	CHIP R	56K	J	1/16W	
R238			R92-1368-05	CHIP R	0 OHM			

Ref. No.	Address	New parts	Parts No.	Description				Destination
R239-241			RK73HB1J105J	CHIP R	1.0M	J	1/16W	
R243			RK73HB1J221J	CHIP R	220	J	1/16W	
R244			RK73HB1J104J	CHIP R	100K	J	1/16W	
R246			RK73HB1J104J	CHIP R	100K	J	1/16W	
R247			RK73HB1J683J	CHIP R	68K	J	1/16W	
R248,249			RK73HB1J105J	CHIP R	1.0M	J	1/16W	
R250			RK73HB1J102J	CHIP R	1.0K	J	1/16W	
R252			RK73HB1J470J	CHIP R	47	J	1/16W	
R253			R92-1252-05	CHIP R	0 OHM	J	1/16W	
R254			RK73HB1J470J	CHIP R	47	J	1/16W	
R255			RK73HH1J272D	CHIP R	2.7K	D	1/16W	
R256			RK73HB1J473J	CHIP R	47K	J	1/16W	
R259			RK73HB1J473J	CHIP R	47K	J	1/16W	
R260			RK73HB1J223J	CHIP R	22K	J	1/16W	
R264			RK73HB1J181J	CHIP R	180	J	1/16W	
R265			RK73HB1J334J	CHIP R	330K	J	1/16W	
R266			RK73HB1J272J	CHIP R	2.7K	J	1/16W	
R267			RK73HB1J334J	CHIP R	330K	J	1/16W	
R268			RK73HB1J221J	CHIP R	220	J	1/16W	
R270			R92-0670-05	CHIP R	0 OHM			
R273			R92-1368-05	CHIP R	0 OHM			
R276			R92-1368-05	CHIP R	0 OHM			
R300			RK73HB1J154J	CHIP R	150K	J	1/16W	
R301			RK73HB1J104J	CHIP R	100K	J	1/16W	
R302			RK73HB1J393J	CHIP R	39K	J	1/16W	
R303			RK73HB1J474J	CHIP R	470K	J	1/16W	
R304			RK73HB1J394J	CHIP R	390K	J	1/16W	
R305			RK73HB1J153J	CHIP R	15K	J	1/16W	
R307			RK73HB1J103J	CHIP R	10K	J	1/16W	
R308			RK73HB1J472J	CHIP R	4.7K	J	1/16W	
R309			R92-1368-05	CHIP R	0 OHM			
R310			RK73HB1J473J	CHIP R	47K	J	1/16W	
R311			RK73HB1J154J	CHIP R	150K	J	1/16W	
R312			RK73HB1J104J	CHIP R	100K	J	1/16W	
R313			RK73HB1J103J	CHIP R	10K	J	1/16W	
R314			RK73HB1J474J	CHIP R	470K	J	1/16W	
R315			RK73HB1J472J	CHIP R	4.7K	J	1/16W	
R316			RK73HB1J104J	CHIP R	100K	J	1/16W	
R317			RK73HB1J184J	CHIP R	180K	J	1/16W	
R318			RK73HB1J104J	CHIP R	100K	J	1/16W	
R319			RK73HB1J473J	CHIP R	47K	J	1/16W	
R320			RK73HB1J563J	CHIP R	56K	J	1/16W	
R321			RK73HB1J823J	CHIP R	82K	J	1/16W	
R322			RK73HB1J154J	CHIP R	150K	J	1/16W	
R323			RK73HB1J823J	CHIP R	82K	J	1/16W	
R324,325			RK73HB1J334J	CHIP R	330K	J	1/16W	
R326			R92-1368-05	CHIP R	0 OHM			
R327			RK73HB1J473J	CHIP R	47K	J	1/16W	
R328			RK73HB1J104J	CHIP R	100K	J	1/16W	
R329			RK73HB1J274J	CHIP R	270K	J	1/16W	
R330			RK73HB1J184J	CHIP R	180K	J	1/16W	
R331			RK73HB1J124J	CHIP R	120K	J	1/16W	
R332			RK73HB1J474J	CHIP R	470K	J	1/16W	
R333			RK73HB1J473J	CHIP R	47K	J	1/16W	
R334			RK73HB1J184J	CHIP R	180K	J	1/16W	
R336-338			RK73HB1J223J	CHIP R	22K	J	1/16W	

K : TK-3140 K **K3 : TK-3140 K3**
K2 : TK-3140 K2

PARTS LIST

TX-RX UNIT (X57-6410-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination
R339-341			RK73HB1J103J	CHIP R 10K J 1/16W	
R342			RK73HB1J223J	CHIP R 22K J 1/16W	
R343			RK73HB1J103J	CHIP R 10K J 1/16W	
R344,345			R92-1368-05	CHIP R 0 OHM	
R346			RK73HB1J473J	CHIP R 47K J 1/16W	
R347			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R348			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R349,350			RK73HB1J473J	CHIP R 47K J 1/16W	
R351			R92-1368-05	CHIP R 0 OHM	
R352,353			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R354			R92-1368-05	CHIP R 0 OHM	
R356			RK73HB1J473J	CHIP R 47K J 1/16W	
R357			RK73HB1J471J	CHIP R 470 J 1/16W	
R358			R92-1368-05	CHIP R 0 OHM	
R359			RK73HB1J153J	CHIP R 15K J 1/16W	
R360			RK73HB1J182J	CHIP R 1.8K J 1/16W	
R361			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R362			RK73HB1J473J	CHIP R 47K J 1/16W	
R363			RK73HB1J124J	CHIP R 120K J 1/16W	
R364			RK73HB1J104J	CHIP R 100K J 1/16W	
R365			RK73HB1J473J	CHIP R 47K J 1/16W	
R366			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R367			RK73HB1J103J	CHIP R 10K J 1/16W	
R368			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R369			RK73HB1J563J	CHIP R 56K J 1/16W	
R370			RK73HB1J104J	CHIP R 100K J 1/16W	
R371			RK73HB1J272J	CHIP R 2.7K J 1/16W	
R372			R92-1368-05	CHIP R 0 OHM	
R373			RK73HB1J124J	CHIP R 120K J 1/16W	
R374			RK73HB1J104J	CHIP R 100K J 1/16W	
R376			RK73HB1J103J	CHIP R 10K J 1/16W	
R377			RK73HB1J104J	CHIP R 100K J 1/16W	
R378			RK73HB1J101J	CHIP R 100 J 1/16W	
R379			RK73HB1J821J	CHIP R 820 J 1/16W	
R380,381			RK73HB1J101J	CHIP R 100 J 1/16W	
R382			RK73HB1J103J	CHIP R 10K J 1/16W	
R383			RK73HB1J101J	CHIP R 100 J 1/16W	
R384			RK73HB1J331J	CHIP R 330 J 1/16W	
R385			RK73HB1J470J	CHIP R 47 J 1/16W	
R386			RK73HB1J331J	CHIP R 330 J 1/16W	
R388			RK73HB1J474J	CHIP R 470K J 1/16W	
R389			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R390			RK73HB1J821J	CHIP R 820 J 1/16W	
R391,392			RK73HB1J331J	CHIP R 330 J 1/16W	
R393			R92-1368-05	CHIP R 0 OHM	
R397,398			R92-1368-05	CHIP R 0 OHM	
R400			RK73HB1J103J	CHIP R 10K J 1/16W	
R401,402			RK73HH1J474D	CHIP R 470K D 1/16W	
R403			RK73HB1J334J	CHIP R 330K J 1/16W	
R404			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R405			R92-1252-05	CHIP R 0 OHM J 1/16W	
R406			RK73HB1J103J	CHIP R 10K J 1/16W	
R407			RK73HB1J224J	CHIP R 220K J 1/16W	
R408			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R409			RK73HB1J473J	CHIP R 47K J 1/16W	
R410,411			R92-1368-05	CHIP R 0 OHM	

Ref. No.	Address	New parts	Parts No.	Description	Destination
R413			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R414			RK73HB1J103J	CHIP R 10K J 1/16W	
R500			R92-1368-05	CHIP R 0 OHM	
R501			RK73HH1J913D	CHIP R 91K D 1/16W	
R502			RK73HH1J683D	CHIP R 68K D 1/16W	
R503			RK73HH1J333D	CHIP R 33K D 1/16W	
R504			RK73HH1J913D	CHIP R 91K D 1/16W	
R505			RK73HB1J564J	CHIP R 560K J 1/16W	
R506			R92-1368-05	CHIP R 0 OHM	
R507			RK73HH1J274D	CHIP R 270K D 1/16W	
R508			RK73HH1J913D	CHIP R 91K D 1/16W	
R509			R92-1368-05	CHIP R 0 OHM	
R510			RK73HH1J682D	CHIP R 6.8K D 1/16W	
R511			RK73GB1J155J	CHIP R 1.5M J 1/16W	
R512			RK73HH1J683D	CHIP R 68K D 1/16W	
R513			RK73HB1J474J	CHIP R 470K J 1/16W	
R514			RK73HH1J682D	CHIP R 6.8K D 1/16W	
R515			RK73HB1J101J	CHIP R 100 J 1/16W	
R516			RK73HB1J184J	CHIP R 180K J 1/16W	
R517			RK73HB1J103J	CHIP R 10K J 1/16W	
R518			RK73HB1J223J	CHIP R 22K J 1/16W	
R519			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R520			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R521			RK73HB1J394J	CHIP R 390K J 1/16W	
R522			RK73HB1J333J	CHIP R 33K J 1/16W	
R523			RK73HB1J470J	CHIP R 47 J 1/16W	
R524			RK73HB1J224J	CHIP R 220K J 1/16W	
R525			RK73HB1J184J	CHIP R 180K J 1/16W	
R526			RK73HB1J394J	CHIP R 390K J 1/16W	
R527			RK73HB1J224J	CHIP R 220K J 1/16W	
R528			RK73HB1J220J	CHIP R 22 J 1/16W	
R529			RK73HB1J473J	CHIP R 47K J 1/16W	
R530			RK73HB1J474J	CHIP R 470K J 1/16W	
R531			RK73HB1J184J	CHIP R 180K J 1/16W	
R532,533			RK73HB1J104J	CHIP R 100K J 1/16W	
R537			R92-1368-05	CHIP R 0 OHM	
R603-611			RK73HB1J471J	CHIP R 470 J 1/16W	
R612,613			R92-1368-05	CHIP R 0 OHM	
R614,615			RK73HB1J473J	CHIP R 47K J 1/16W	
R617,618			RK73HB1J473J	CHIP R 47K J 1/16W	
R619			R92-1368-05	CHIP R 0 OHM	
R620			RK73HB1J473J	CHIP R 47K J 1/16W	
R621			R92-1368-05	CHIP R 0 OHM	
R623			R92-1368-05	CHIP R 0 OHM	
R701			R92-1368-05	CHIP R 0 OHM	K2,K3
R710			R92-1252-05	CHIP R 0 OHM J 1/16W	K2
R740			RK73HB1J473J	CHIP R 47K J 1/16W	
S600-602			S70-0457-05	TACT SWITCH	
D1-4			HVC376B	VARIABLE CAPACITANCE DIODE	
D5			1SV278	VARIABLE CAPACITANCE DIODE	
D6			MA2S111	DIODE	
D7-10			HVC376B	VARIABLE CAPACITANCE DIODE	
D100,101			HSC277	DIODE	
D102-105			HVC131	DIODE	
D106			HZU5CLL	ZENER DIODE	

K : TK-3140 K **K3 : TK-3140 K3**
K2 : TK-3140 K2

PARTS LIST

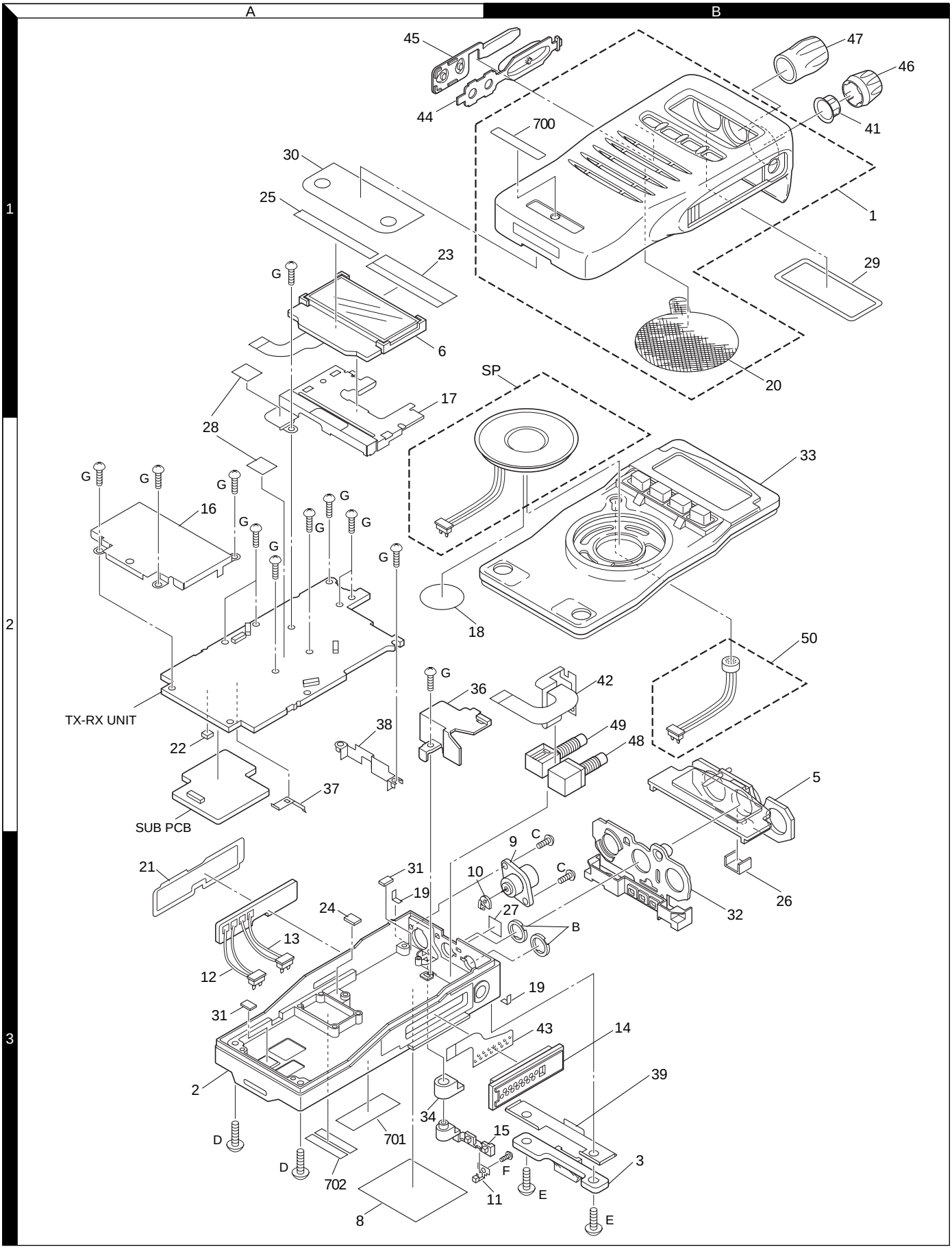
TX-RX UNIT (X57-6410-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination
D200			HVC131	DIODE	
D201			RB706F-40	DIODE	
D202,203			DAN235E	DIODE	
D204-208			HVC369B	VARIABLE CAPACITANCE DIODE	
D209			MA2S111	DIODE	
D300			RB706F-40	DIODE	
D301			1SS373	DIODE	
D302			DA221	DIODE	
D303,304			015AZ6.8	ZENER DIODE	
D305			015AZ2.4-X	ZENER DIODE	
D306			DA221	DIODE	
D307			015AZ6.8	ZENER DIODE	
D308			NNCD6.8G	ZENER DIODE	
D402			1SR154-400	DIODE	
D403			MA2S111	DIODE	
D405			RB521S-30	DIODE	
D501			RB706F-40	DIODE	
IC1			SA7025DK	MOS IC	
IC100			TA75W01FU	MOS IC	
IC200			TA31136FN	MOS IC	
IC201			TC75W51FU	MOS IC	
IC300			TC75W51FU	MOS IC	
IC301			LC73872M	MOS IC	
IC302,303			TC75W51FU	MOS IC	
IC304			TC75S51F	MOS IC	
IC305,306			TC75W51FU	MOS IC	
IC307			M62364FP	MOS IC	
IC308			AT29C020-90TI	ROM IC	
IC308			W29C020C90	SRAM IC	
IC309			30620M8A-2N3GP	MPU	
IC310			AT2416N10SI2.5	ROM IC	
IC311,312			BU4094BCFV	MOS IC	
IC313			TDA7053AT	BI-POLAR IC	
IC400			XC61CN4202NR	MOS IC	
IC401		*	XC6204B502MR	MOS IC	
IC402			XC62GR5012PR	MOS IC	
IC403		*	XC6204B502MR	MOS IC	
IC404			XC61CN5002NR	MOS IC	
IC500			TC35453F	MOS IC	
IC501			TC75W51FU	MOS IC	
Q1			2SC5108(Y)	TRANSISTOR	
Q2,3			2SK508NV(K52)	FET	
Q4			2SJ347	FET	
Q5			2SC5108(Y)	TRANSISTOR	
Q6			RN47A4	TRANSISTOR	
Q7			2SC4617(S)	TRANSISTOR	
Q8			2SC5108(Y)	TRANSISTOR	
Q100			2SC5108(Y)	TRANSISTOR	
Q101			2SC5192	TRANSISTOR	
Q103			2SK2596	FET	
Q104,105			DTC114EE	DIGITAL TRANSISTOR	
Q106			2SK3476	FET	
Q107			2SK1824	FET	
Q108			DTA144EE	DIGITAL TRANSISTOR	
Q201			DTC144EE	DIGITAL TRANSISTOR	
Q202			RN47A4	TRANSISTOR	

Ref. No.	Address	New parts	Parts No.	Description	Destination
Q203			2SK1824	FET	
Q204			2SK1830	FET	
Q205			2SC4649(N,P)	TRANSISTOR	
Q206,207			3SK318	FET	
Q208			2SC4617(S)	TRANSISTOR	
Q300			2SC4649(N,P)	TRANSISTOR	
Q301			2SJ347	FET	
Q302			2SC4617(S)	TRANSISTOR	
Q303			2SB1132(Q,R)	TRANSISTOR	
Q304			2SC4617(S)	TRANSISTOR	
Q305			UPA672T	FET	
Q306			2SC4617(S)	TRANSISTOR	
Q307			UPA672T	FET	
Q308			2SK1824	FET	
Q309,310			2SC4617(S)	TRANSISTOR	
Q311			2SA1362(Y)	TRANSISTOR	
Q400			2SJ347	FET	
Q401			2SK1830	FET	
Q403			DTC144EE	DIGITAL TRANSISTOR	
Q404			2SJ347	FET	
Q405			KTA2015(Y)	TRANSISTOR	
Q406			2SJ347	FET	
Q500			DTC144EE	DIGITAL TRANSISTOR	
Q501			UPA672T	FET	
Q502			2SK1830	FET	
TH1			ERTJ0EV104H	THERMISTOR	
TH200			ERTJ0EV104H	THERMISTOR	
TH300			TN10-3S154JT	THERMISTOR	

K : TK-3140 K **K3 : TK-3140 K3**
K2 : TK-3140 K2

EXPLODED VIEW



Parts with the exploded numbers larger than 700 are not supplied.

ADJUSTMENT

Test Mode

■ Test mode operating features

This transceiver has a test mode. ***To enter test mode, press [A] key and turn power on. Hold [A] key until test channel No. and test signalling No. appears on LCD.*** Test mode can be inhibited by programming. To exit test mode, switch the power on again. The following functions are available in test mode.

- **Controls**

Controls	"FCN" appears	"FCN" not appears
[PTT]	Used when making a transmission.	Used when making a transmission.
[AUX]	Unused	Unused
[MON] (SW1)	Monitor ON and OFF.	Monitor ON and OFF.
[LAMP] (SW2)	Lights the lamp for five seconds. Lighting is extended for a further five seconds by pressing any key while the lamp is lit.	Changes wide and narrow.
[S]	Sets to the Tuning mode.	Sets to the Tuning mode.
[A]	Function OFF	Function ON.
[B]	Compander function ON and OFF.	RF power HIGH and LOW.
[C]	Beat shift ON and OFF	Changes signalling.
[O] to [9], and [#],[∗]	Used as the DTMF keypad. If a key is pressed during transmission, the DTMF corresponding to the key that was pressed is sent. (keypad model)	Used as the DTMF keypad. If a key is pressed during transmission, the DTMF corresponding to the key that was pressed is sent. (keypad model)
[ENCODER]	Changes channel.	Changes channel.

Note: If a [S],[A],[B],[C] key is pressed during transmission, the DTMF corresponding to the key that was pressed is sent.

- **LCD indicator**

"SCN" Unused
"✆" Lights at Compander ON.
"LO" Lights at RF Power Low.
"P" Unused
"MON" Lights at moniter ON.
"SVC" Unused
"✉" Unused

- **LED indicator**

Red LED Lights during transmission. Blinks at the low battery voltage warning.
Green LED Lights when there is a carrier.

- **Sub LCD indicator**

"FCN" appears at Function ON.
"n" appears at Narrow ON.

■ Frequency and signalling

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

Frequency (MHz)

Channel No.	K	
	RX (MHz)	TX (MHz)
1	470. 05	470. 10
2	450. 05	450. 10
3	489. 95	489. 90
4	470. 00	470. 00
5	470. 20	470. 20
6	470. 40	470. 40
7~16	——	——

Channel No.	K2	
	RX (MHz)	TX (MHz)
1	491. 05	491. 10
2	470. 05	470. 10
3	511. 95	511. 90
4	491. 00	491. 00
5	491. 20	491. 20
6	491. 40	491. 40
7~16	——	——

Channel No.	K3	
	RX (MHz)	TX (MHz)
1	415. 05	415. 10
2	400. 05	400. 10
3	429. 95	429. 90
4	415. 00	415. 00
5	415. 20	415. 20
6	415. 40	415. 40
7~16	——	——

ADJUSTMENT

Signalling

Signalling No.	RX	TX
1	None	None
2	None	100Hz square
3	LTR data	LTR data
4	QT 67.0Hz	QT 67.0Hz
5	QT 151.4Hz	QT 151.4Hz
6	QT 210.7Hz	QT 210.7Hz
7	QT 250.3Hz	QT 250.3Hz
8	DQT D023N	DQT D023N
9	DQT D754I	DQT D754I
10	DTMF DEC, (159D)	DTMF ENC, (159D)
11	None	DTMF tone 9
12	2 tone 321.7/928.1Hz	None
13	Single tone 1200Hz	Single tone 1200Hz
14	None	MSK
15	MSK code	MSK code

- **Preparations for tuning the transceiver**

Before attempting to tune the transceiver, connect the unit to a suitable power supply.

Whenever the transmitter is turned, the unit must be connected to a suitable dummy load (i.e. power meter).

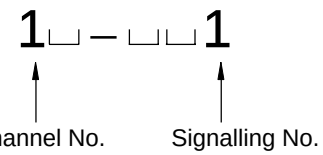
The speaker output connector must be terminated with a 16Ω dummy load and connected to an AC voltmeter and an audio distortion meter or a SINAD measurement meter at all times during tuning.

- **Transceiver tuning**

(To place transceiver in tuning mode)

Channel appears on LCD. Set channel according to tuning requirements.

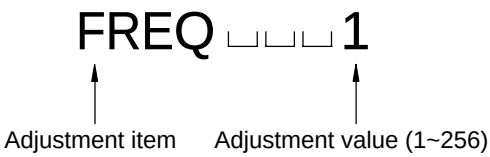
LCD display (Test mode)



Press [S], now in tuning mode. Use [◄ B] button to write tuning data through tuning modes, and channel selector knob to adjust tuning requirements (1 to 256 appears on LCD).

Use [C ►] button to select the adjustment item through tuning modes. Use [A] button to adjust 3 or 5 point tuning, and use [LAMP] button to switch between Wide/Narrow.

LCD display (Tuning mode)



Panel Tuning Mode frequency table

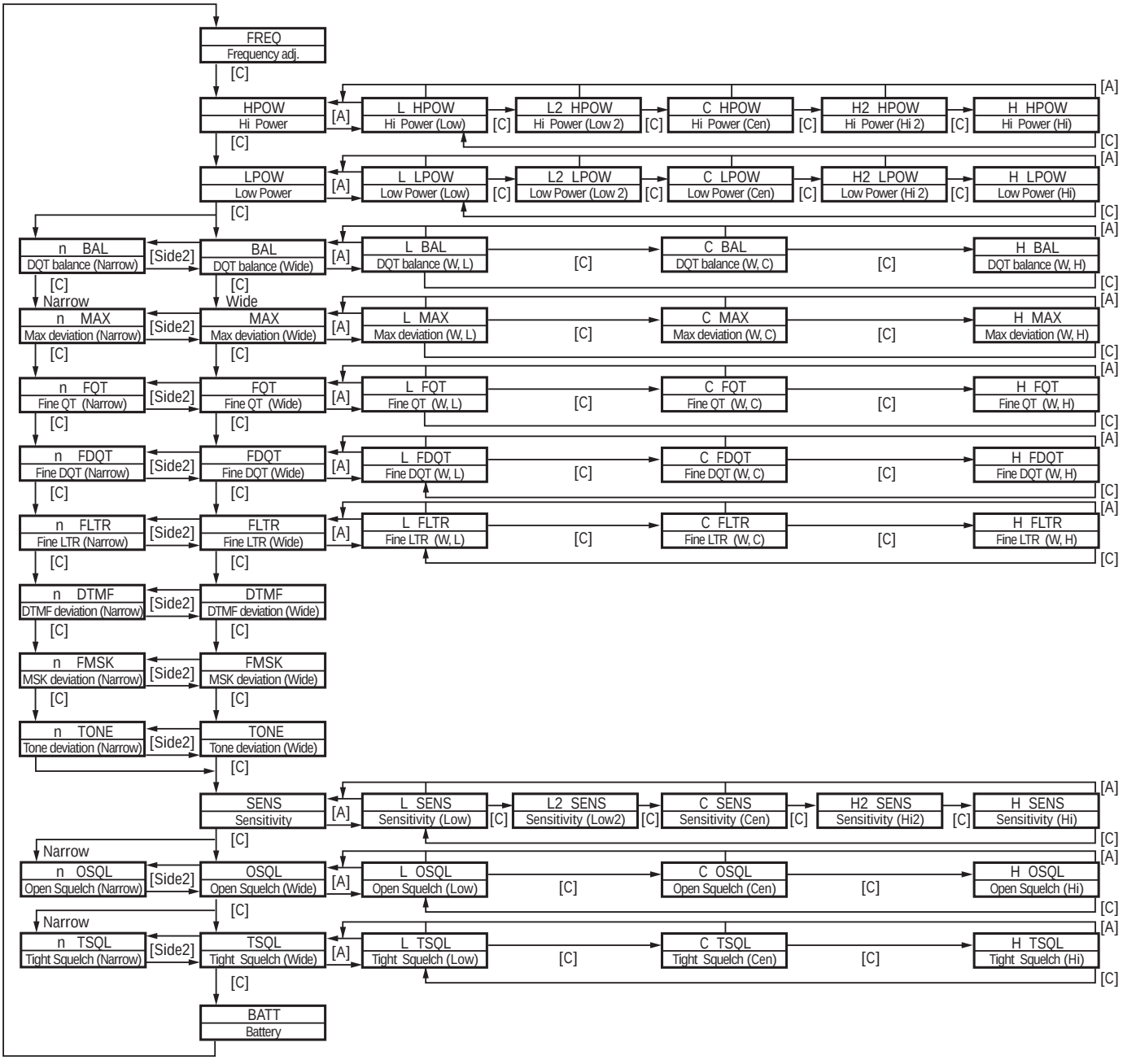
	K	
TEST Ch	RX frequency (MHz)	TX frequency (MHz)
L	440.05	440.10
L2	450.05	450.10
C	470.05	470.10
H2	480.05	480.10
H	489.95	489.90

	K2	
TEST Ch	RX frequency (MHz)	TX frequency (MHz)
L	470.05	470.10
L2	480.05	480.10
C	490.05	490.10
H2	510.05	510.10
H	519.95	519.90

	K3	
TEST Ch	RX frequency (MHz)	TX frequency (MHz)
L	400.05	400.10
L2	415.05	415.10
C	430.05	430.10
H2	440.05	440.10
H	449.95	449.90

ADJUSTMENT

■ **Panel Tuning Mode flow chart**



ADJUSTMENT

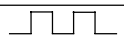
Common Section

Item	Condition	Measurement			Adjustment			Specifications/ Remark
		Test equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting	1) BATT terminal voltage:7.5V 2) SSG Standard modulation [Wide] MOD:1kHz, DEV:3kHz [Narrow] MOD:1kHz, DEV:1.5kHz							
2. VCO lock voltage	**[Panel Test Mode]** 1) CH-Sig:2-1	Power meter	Panel	ANT	TX-RX	TC2	4.1V:K 4.2V:K2,K3	±0.1V
RX	2) CH-Sig:3-1	DVM	TX-RX	CV			Check	0.6V or more
TX	3) CH-Sig:2-1 PTT:ON					TC1	4.1V:K 4.2V:K2,K3	±0.1V
	4) CH-Sig:3-1 PTT:ON						Check	0.6V or more

Transmitter Section

Item	Condition	Measurement			Adjustment			Specifications/ Remark
		Test equipment	Unit	Terminal	Unit	Parts	Method	
1. Frequency Adjust	1) Adj item [FREQ] Adjust [***] PTT:ON	Power meter Am meter	Panel	ANT	Panel	Encoder knob	Center frequency ± 100Hz	
2. Hight Power Adjust	1) Adj item [HPOW] Adjust [***]					Encoder knob	4.0W	±0.1W 1.9A or less
	2) Adj item [L HPOW] → [L2 HPOW] → [C HPOW] → [H2 HPOW] → [H HPOW] Adjust [***] PTT:ON	Note: For K2 and K3 type; The output power 4.0W ±0.1W cannot be obtained by adjusting [H HPOW] value, set the same value as [H2 HPOW].						
3. Hight Power Check	**[Panel Test Mode]** 1) CH-Sig:1-1 PTT:ON						Check	3.7~4.3W 1.9A or less
	2) CH-Sig:2-1 PTT:ON							
	3) CH-Sig:3-1 PTT:ON							
4. Low Power Adjust	1) Adj item [LPOW] Adjust [***]				Panel	Encoder knob	1.0W	±0.05W 1.0A or less
	2) Adj item [L LPOW] → [L2 LPOW] → [C LPOW] → [H2 LPOW] → [H LPOW] Adjust [***] PTT:ON							
5. Low Power Check	**[Panel Test Mode]** 1) CH-Sig:1-1 Set low power (Push [B]) PTT:ON						Check	0.5~1.5W 1.2A or less
	2) CH-Sig:2-1 PTT:ON							
	3) CH-Sig:3-1 PTT:ON							

ADJUSTMENT

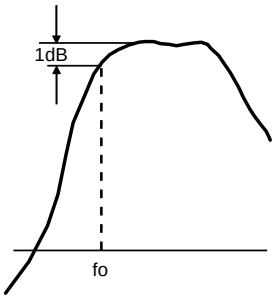
Item	Condition	Measurement			Adjustment			Specifications/ Remark
		Test equipment	Unit	Terminal	Unit	Parts	Method	
6. DQT Balance Adjust [Wide]	1) Adj item [BAL] Adjust [***] LPF:3kHz HPF:OFF 2) Adj item [L BAL] → [C BAL] → [H BAL] Adjust [***] PTT:ON	Power meter Dev meter Oscilloscope AG AF VTVM	Panel	ANT Universal connector	Panel	Encoder knob	Make the demodulation waves into square waves.	
[Narrow]	3) Adj item [n BAL] Adjust [***] PTT:ON							
7. Max DEV Adjust [Wide]	1) Adj item [MAX] Adjust [***] AG:1kHz / 150mV Dev meter filter LPF:15kHz HPF:OFF 2) Adj item [L MAX] → [C MAX] → [H MAX] Adjust [***] PTT:ON						3.8kHz (According to the larger +,-)	±50Hz
[Narrow]	1) Adj item [n MAX] Adjust [***] PTT:ON						1.75kHz (According to the larger+,-)	
8. MIC Sensitivity Check	**[Panel Test Mode]** 1) CH-Sig:1-1 AG:1kHz / Wide:15mV Narrow:16mV LPF:15kHz PTT:ON						Check	Wide:2.4~3.6kHz Narrow:1.0~2.2kHz
9. QT Deviation Adjust [Wide]	1) Adj item [FQT] Adjust [***] LPF:3kHz HPF:OFF 2) Adj item [L FQT] → [C FQT] → [H FQT] Adjust [***] PTT:ON	Power meter Dev meter Oscilloscope AG AF VTVM	Panel	ANT Universal connector	Panel	Encoder knob	Wide:0.75kHz Narrow:0.35kHz	±50Hz
[Narrow]	3) Adj item [n FQT] Adjust [***] PTT:ON							
10. DQT Devition Adjust [Wide]	1) Adj item [FDQT] Adjust [***] LPF:3kHz HPF:OFF 2) Adj item [L FDQT] → [C FDQT] → [H FDQT] Adjust [***] PTT:ON							
[Narrow]	3) Adj item [n FDQT] Adjust [***] PTT:ON							

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/ Remark
		Test equipment	Unit	Terminal	Unit	Parts	Method	
11.LTR Deviation Adjust	1) Adj item [FLTR] Adjust [***] LPF:3kHz HPF:OFF	Power meter Dev meter Oscilloscope AG AF VTVM	Panel	ANT Universal connector	Panel	Encoder knov	1.0kHz	±0.1kHz
[Wide]	2) Adj item [L FLTR] → [C FLTR] → [H FLTR] Adjust [***] PTT:ON							
[Narrow]	3) Adj item [n FLTR] Adjust [***] PTT:ON						0.75kHz	±50Hz
12.DTMF Deviation Adjust [Wide]	1) Adj item [DTMF] Adjust [***] LPF:15kHz HPF:OFF PTT:ON						Wide:2.5kHz Narrow:1.25kHz	±0.1kHz
[Narrow]	2) Adj item [n DTMF] Adjust [***] PTT:ON							
13.MSK Deviation Adjust [Wide]	1) Adj item [FMSK] Adjust [***] LPF:15kHz HPF:OFF PTT:ON						Wide:1.0kHz Narrow:0.75kHz	±0.1kHz
[Narrow]	2) Adj item [n FMSK] Adjust [***] PTT:ON							
14.TONE Deviation Adjust [Wide]	1) Adj item [TONE] Adjust [***] LPF:15kHz HPF:OFF PTT:ON						Wide:3.0kHz Narrow:1.5kHz	±0.1kHz
[Narrow]	2) Adj item [n TONE] Adjust [***] PTT:ON							
15.BATT Detection Writing	1) Adj item [BATT] Adjust [***] PTT:ON	Power meter DVM	Panel	ANT BATT terminal	Panel	Encoder knob	After pressing the PTT switch, confirm that one predeter-mined numeric in the range 1 to 256 appears and then press [B] key. That numeric will be stored in memory.	BATT terminal voltage:6.2V
16.BATT Detection Check	**[Panel Test Mode]** 1) CH-Sig:1-1 BATT terminal voltage: NiCd, NiMH:6.5V Li-ion:6.8V PTT:ON						Check	No blinking of LED
	2) BATT terminal voltage: NiCd, NiMH:5.7V Li-ion:6.0V PTT:ON							Blinking of LED

ADJUSTMENT

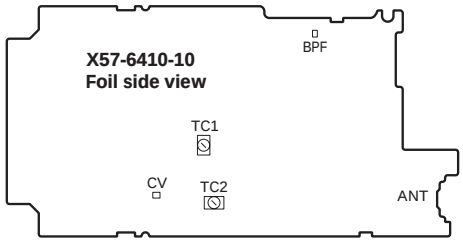
Receiver Section

Item	Condition	Measurement			Adjustment			Specifications/ Remark
		Test equipment	Unit	Terminal	Unit	Parts	Method	
1. Sensitivity Adjust (BPF characteristic)	1) Adj item [SENS] Adjust [***] 2) Low-edge frequency Adj item [L SENS]→[L2 SENS]→ [C SENS]→[H2 SENS]→ [H SENS] Spe-Ana setting Center·f : 450MHz(K) Span : 100MHz RBW : 100kHz VBW : 1kHz REF level : -50dBm ATT : 0dB Tra-G setting Input level:-30dBm	Tracking generator Specturm analyzer	Panel TX-RX	ANT BPF Need couple capacitor (1000PF)	Panel	Encoder knob	**Adjustment** Turn a knob and make “fo” level 1dB above from peak level. **Caution** Adjustment “SENS” value 60  fo=f L, f L2, f C, f H2, f H Adjust point frequency Refer to the Panel Tuning Mode frequency table on page 14.	
2. Sensitivity Check	**[Panel Test Mode]** 1) CH-Sig:1-1 SSG OUT Wide:-117dBm (MOD:1kHz / ±3kHz) Narrow:-116dBm (MOD:1kHz / ±1.5kHz)	SSG AF VTVM Oscilloscope	Panel	ANT Universal connector			Check	12dB SINAD or more
3. Squelch Adjust (Open)	1) Adj item [O SQL] Adjust [***] 2) Adj item [L OSQL] → [C OSQL] → [H OSQL] Adjust [***] SSG OUT: 12dB SINAD level					Encoder knob squelch.	Adjust to point of opening	
	3) Adj item [n OSQL] Adjust [***] SSG OUT: 12dB SINAD level							
4. Squelch Check (Open)	**[Panel Test Mode]** 1) CH-Sig:1-1 SSG OUT: 12dB SINAD level						Check	Squelch must be opened.
	2) SSG OUT:OFF							Squelch must be closed.

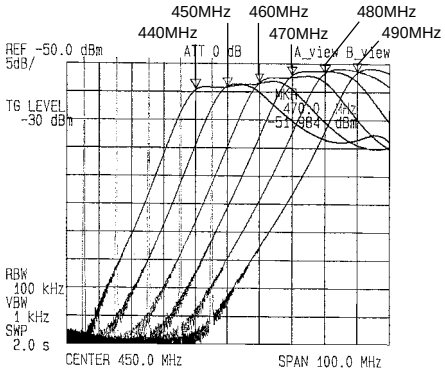
ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/ Remark
		Test equipment	Unit	Terminal	Unit	Parts	Method	
5. Squelch Adjust	1) Adj item [T SQL] Adjust [***] 2) Adj item [L TSQL] → [C TSQL] → [H TSQL] Adjust [***] SSG OUT: 12dB SINAD level+5dB	SSG AF VTVM Oscilloscope	Panel	ANT Universal connector		Encoder knob	Adjust to point of opening squelch.	
	3) Adj item [n TSQL] Adjust [***] SSG OUT: 12dB SINAD level+5dB							
6. Squelch Check (Tight)	**[Panel Test Mode]** 1) CH-Sig:1-1 SSG OUT: 12dB SINAD level+8dB						Check	Squelch must be opened.
	2) SSG OUT:OFF							Squelch must be closed.

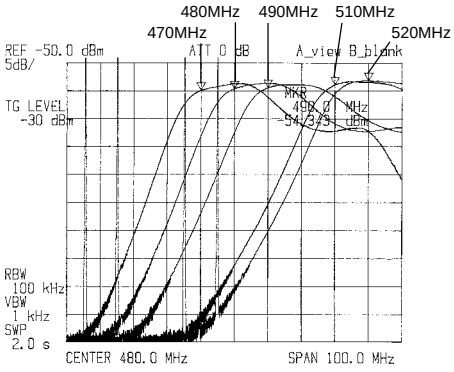
Adjustment points
TX-RX unit (X57-6410-10)
component side view



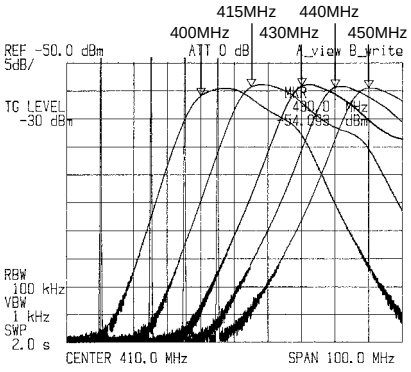
Band Pass Filter Characteristic (K)



Band Pass Filter Characteristic (K2)



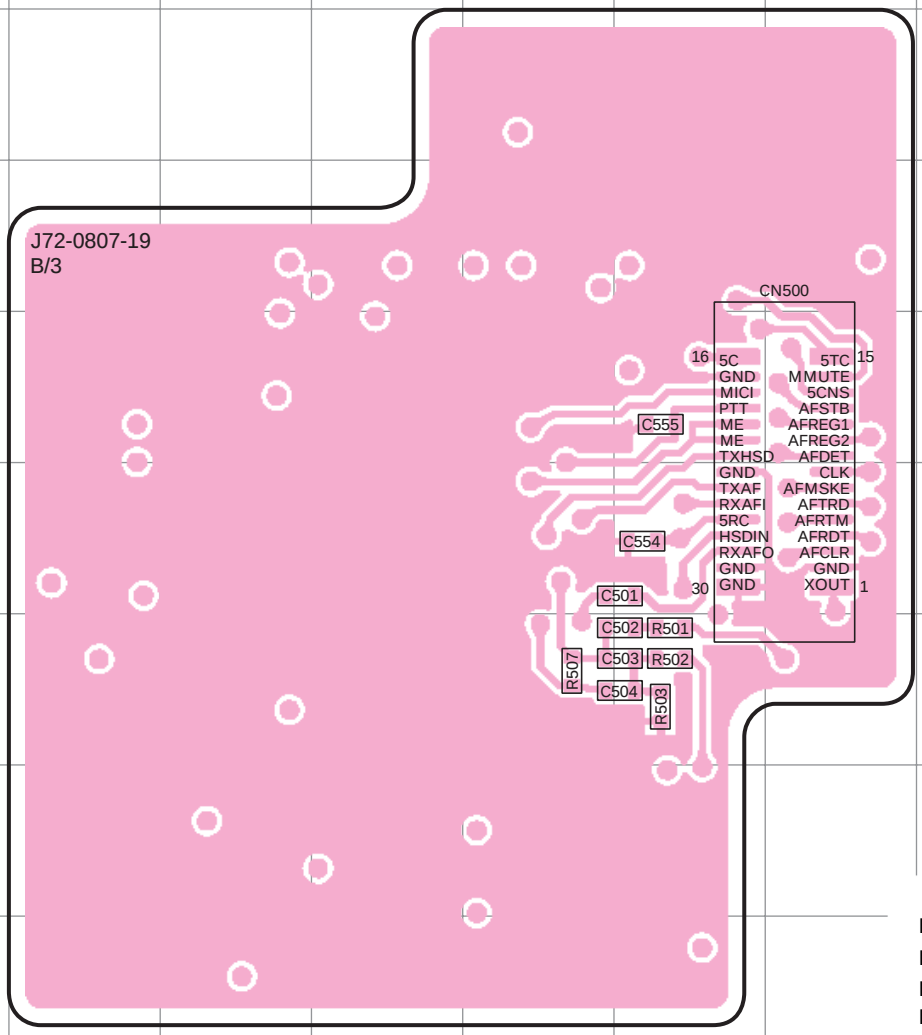
Band Pass Filter Characteristic (K3)

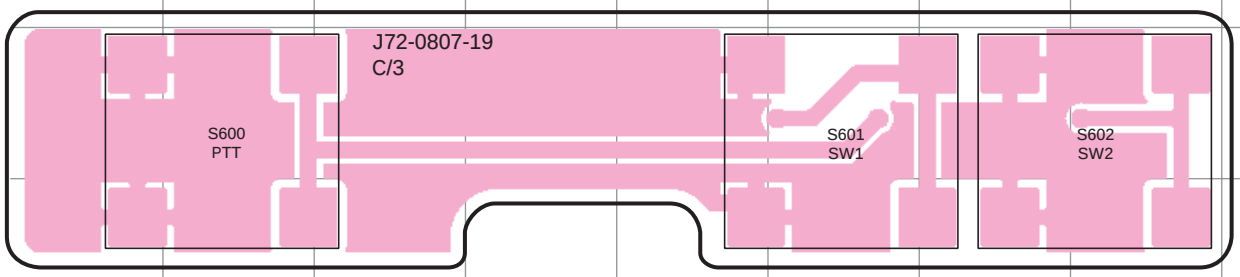


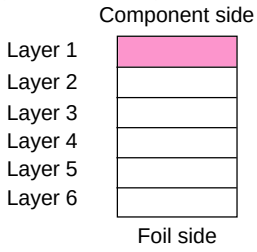
PC BOARD VIEW

TK-3140

TX-RX UNIT (X57-6410-XX) Component Side View (J72-0807-19)
-10:TK-3140 K, -11:TK-3140 K2, -12:TK-3140 K3







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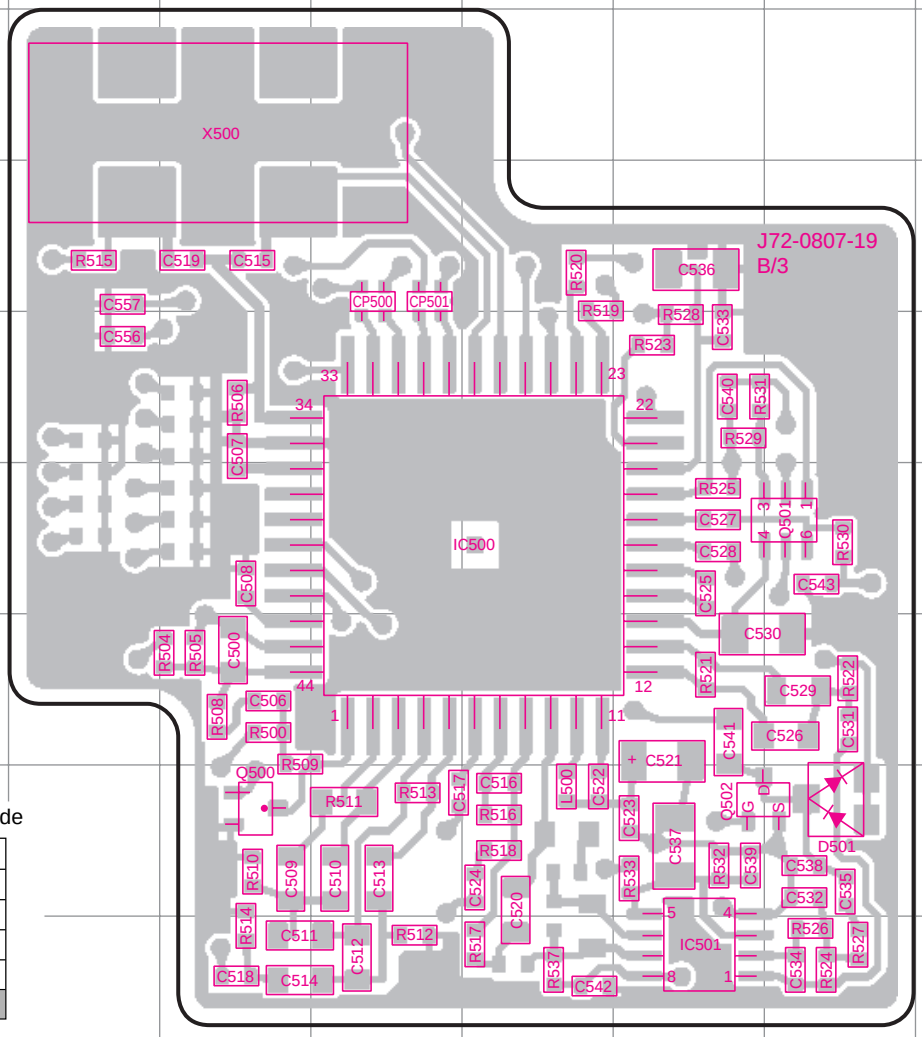
PC BOARD VIEW

TX-RX UNIT (X57-6410-XX) Foil Side View (J72-0807-19)
-10:TK-3140 K, -11:TK-3140 K2, -12:TK-3140 K3

TX-RX UNIT
(X57-6410-XX)

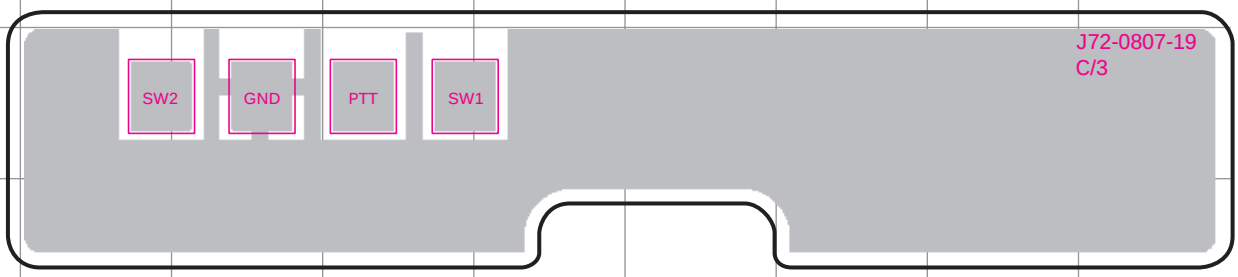
Ref. No.	Address
IC500	6F
IC501	9G
Q500	8D
Q501	6H
Q502	8G
D501	8H



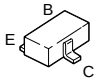
Component side

Layer 1	
Layer 2	
Layer 3	
Layer 4	
Layer 5	
Layer 6	

Foil side

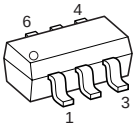


DTC144EE

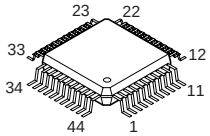


2SK1830

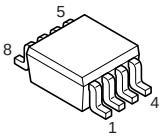
UPA672T



TC35453F



TC75W51FU



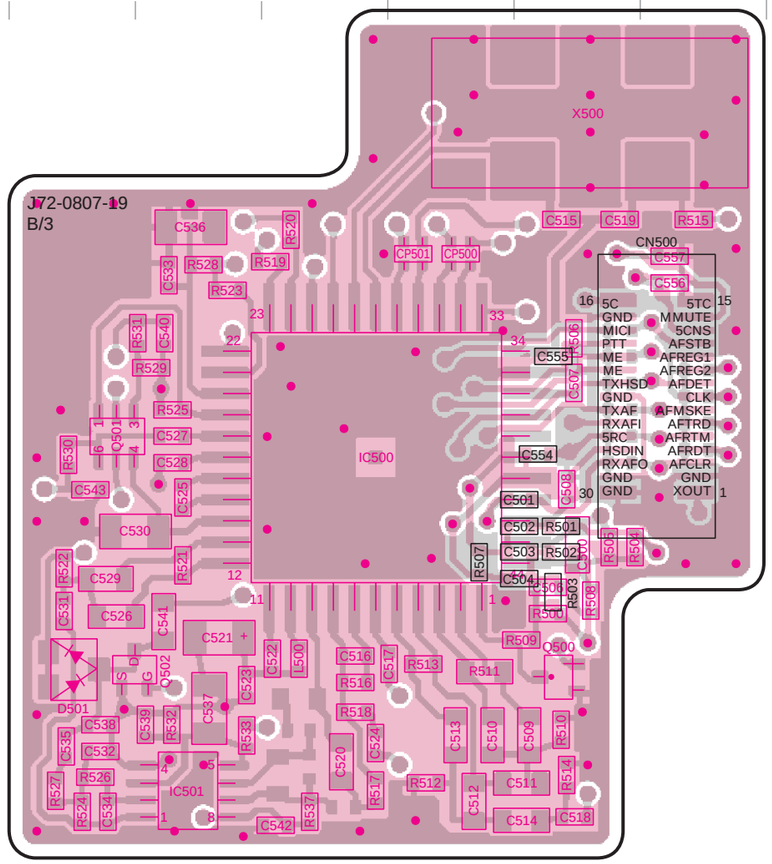
PC BOARD VIEW

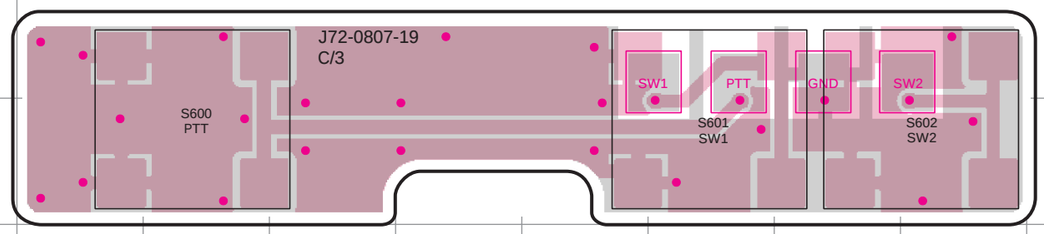
TK-3140

TX-RX UNIT (X57-6410-XX) Component Side View + Foil Side View (J72-0807-19)
-10:TK-3140 K, -11:TK-3140 K2, -12:TK-3140 K3

TX-RX UNIT
(X57-6410-XX)

Ref. No.	Address
IC500	5I
IC501	8H
Q500	7K
Q501	5G
Q502	7H
D501	7G

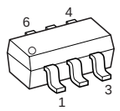




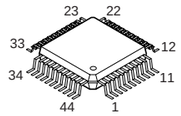
DTC144EE

2SK1830

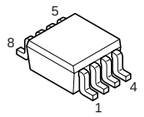
UPA672T



TC35453F



TC75W51FU



● Connect 1 and 6.

Component side

Layer 1
Layer 2
Layer 3
Layer 4
Layer 5
Layer 6

Foil side

TK-3140

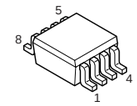
PC BOARD VIEW

TX-RX UNIT (X57-6410-XX) (A/3) Component Side View (J72-0807-19)
-10:TK-3140 K, -11:TK-3140 K2, -12:TK-3140 K3

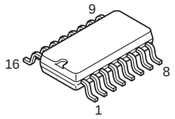
TX-RX UNIT (A/3)
(X57-6410-XX)

Ref. No.	Address
IC100	7H
IC302	8M
IC303	4M
IC308	5O
IC309	7O
IC310	10P
IC311	3N
IC312	3P
IC313	4F
IC400	5I
IC401	6E
IC402	10F
IC403	6H
Q104	8I
Q105	7I
Q107	7I
Q108	6H
Q300	10N
Q301	5I
Q302	6G
Q303	6F
Q304	10K
Q305	4I
Q306	10E
Q307	4H
Q308	4E
Q309	9E
Q310	9L
Q311	9L
Q400	6E
Q401	5I
Q403	10F
Q404	10F
Q405	9G
Q406	6H
D106	7I
D301	7F
D302	3J
D303	4I
D304	5L
D305	6G
D306	4J
D307	5H
D308	4I
D402	10E
D405	7E

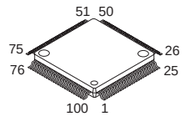
TA75W01FU
TC75W51FU

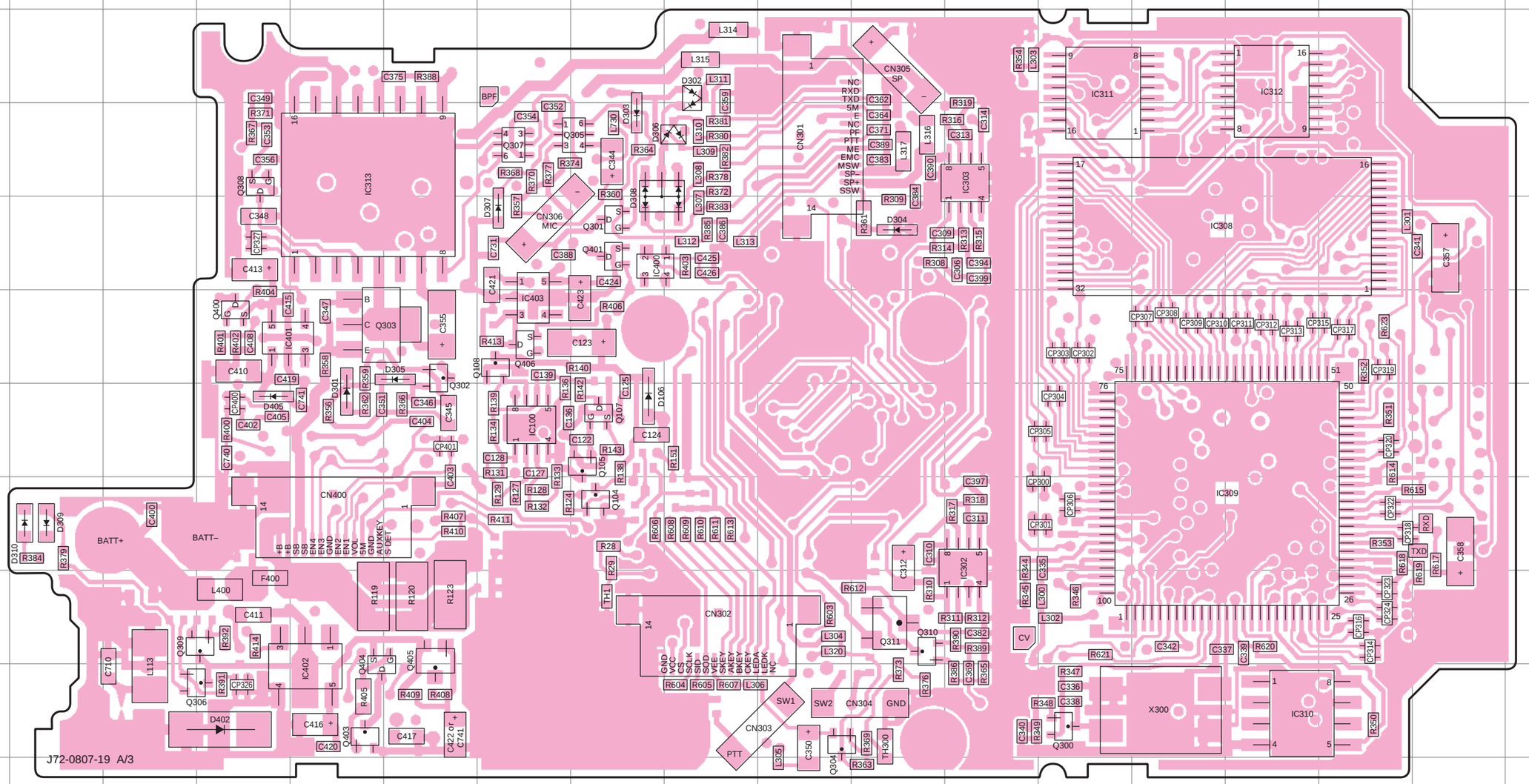


TDA7053AT



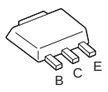
30620M8A-2N3GP



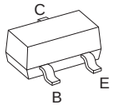


DTA144EE
DTC114EE
DTC144EE
2SA1362(Y)
2SC4617(S)

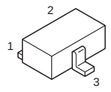
2SB1132(Q,R)



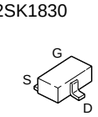
2SC4649(N,P)



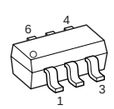
DA221



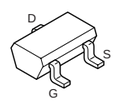
2SJ347
2SK1830



UPA672T



2SK1824



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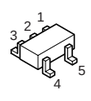
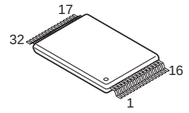
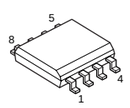


W29C020C90



AT2416N10SI2.5



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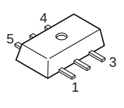
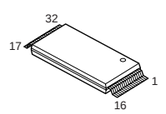
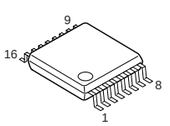


AT29C020-90TI



BU4094BCFV



Component side

Layer 1	
Layer 2	
Layer 3	
Layer 4	
Layer 5	
Layer 6	

Foil side

PC BOARD VIEW

TK-3140

TX-RX UNIT (X57-6410-XX) (A/3) Foil Side View (J72-0807-19)
-10:TK-3140 K, -11:TK-3140 K2, -12:TK-3140 K3

DTC144EE
2SC4617(S)
2SC5108(Y)

TX-RX UNIT (A/3)
(X57-6410-XX)

Ref. No.	Address
IC1	8F
IC200	4H
IC201	6E
IC300	7D
IC301	9C
IC304	8E
IC305	5C
IC306	10E
IC307	4D
IC404	7O
Q1	7G
Q2	9I
Q3	8I
Q4	9J
Q5	8J
Q6	9J
Q7	10J
Q8	7J
Q100	6L
Q101	6L
Q103	7K
Q106	10L
Q201	5D
Q202	5I
Q203	5G
Q204	5H
Q205	4I
Q206	4L
Q207	6N
Q208	6D
D1	7H
D2	10I
D3	7H
D4	10H
D5	7I
D6	9J
D7	8H
D8	7H
D9	10I
D10	10H
D100	5J
D101	5K
D102	9N
D103	9O
D104	9O
D105	8O
D200	8D
D201	7E
D202	5E
D203	5E
D204	4N
D205	5N
D206	5M
D207	7M
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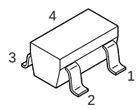
D209	5G
D300	7D
D403	6O

2SC5192



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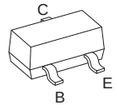
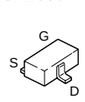


RN47A4

2SK508NV(K52)

2SJ347
2SK1830



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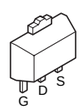
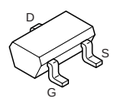
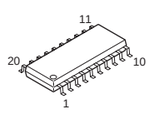


2SK1824

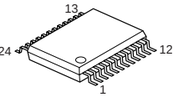


TC75S51F

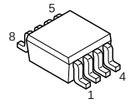
SA7025DK



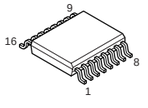
M62364FP



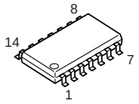
TC75W51FU



TA31136FN



LC73872M



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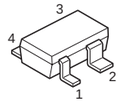
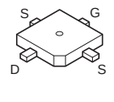
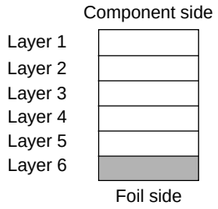


2SK3476





TK-3140

PC BOARD VIEW

TX-RX UNIT (X57-6410-XX) (A/3) Component Side View + Foil Side View (J72-0807-19)
-10:TK-3140 K, -11:TK-3140 K2, -12:TK-3140 K3

TX-RX UNIT (A/3)
(X57-6410-XX)

Ref. No.	Address
IC1	8N
IC100	7H
IC200	4L
IC201	6O
IC300	7P
IC301	9Q
IC302	8M
IC303	4M
IC304	8O
IC305	5Q
IC306	10O
IC307	4P
IC308	5O
IC309	7O
IC310	10P
IC311	3N
IC312	3P
IC313	4F
IC400	5I
IC401	6E
IC402	10F
IC403	6H
IC404	7F
Q1	7M
Q2	9K
Q3	8K
Q4	9J
Q5	8J
Q6	9J
Q7	10J
Q8	7J
Q100	7H
Q101	6H
Q103	7I
Q104	8I
Q105	7I
Q106	10H
Q107	7I
Q108	6H
Q201	5P
Q202	5K
Q203	5M
Q204	5L
Q205	4K
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Q208	6P
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Q306	10E
Q307	4H
Q308	4E
Q309	9E
Q310	9L
Q311	9L
Q400	6E
Q401	5I
Q403	10F
Q404	10F
Q405	9G
Q406	6H
D1	7L
D2	10K
D3	7L
D4	10L
D5	7K
D6	9J
D7	8L

Ref. No.	Address
D8	6L
D9	10K
D10	10L
D100	5J
D101	5I
D102	9F
D103	9F
D104	9E
D105	8E
D106	7I
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D201	7O
D202	5O
D203	5O
D204	4F
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D206	5G
D207	7G
D208	8G
D209	5M
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D302	3J
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D306	4J
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D308	4I
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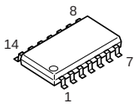
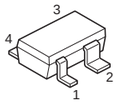
D403	6E
D405	7E

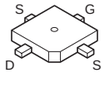
LC73872M



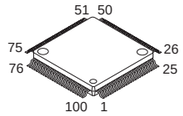
XC61CN5002NR

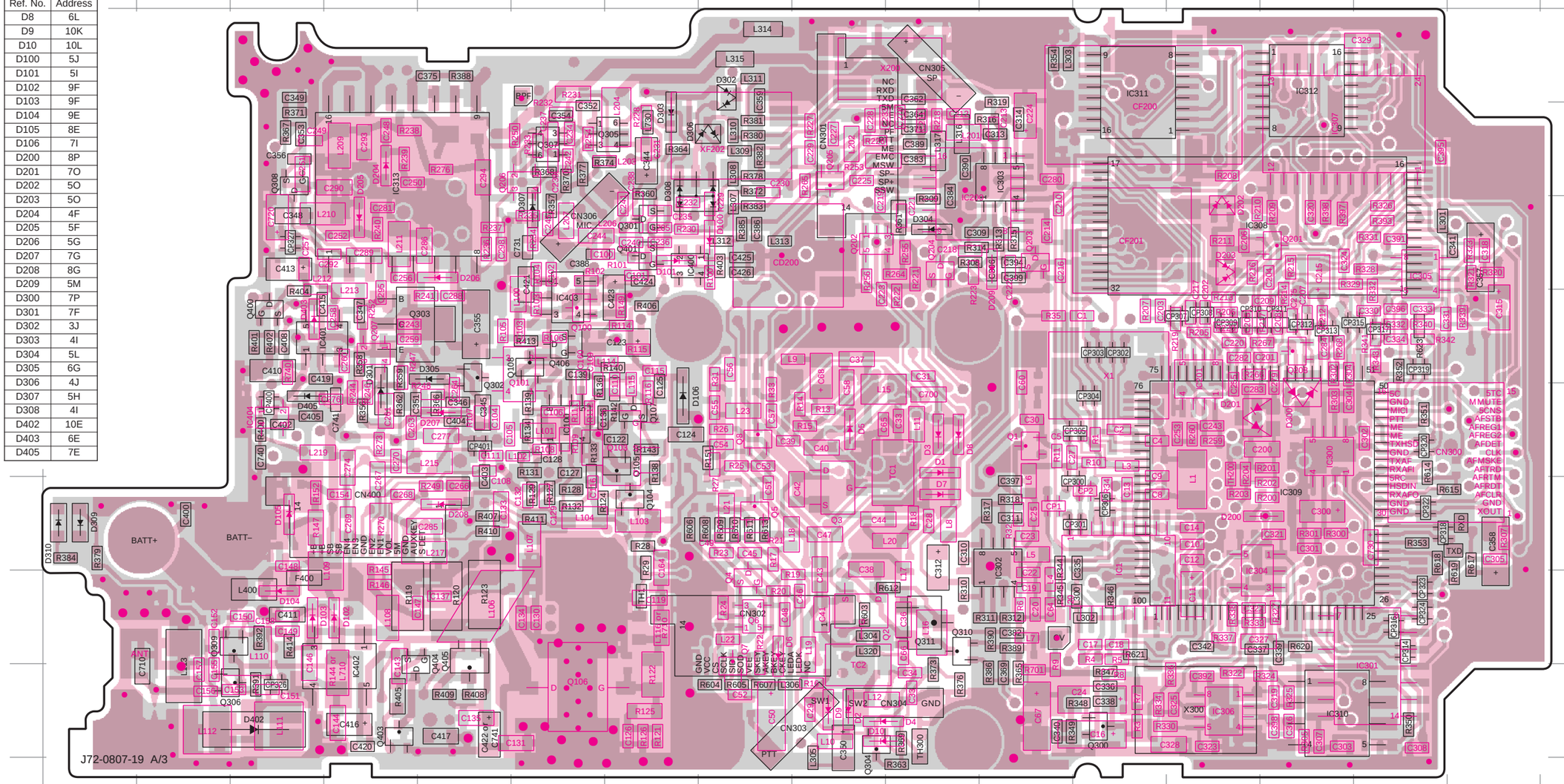


2SK3476



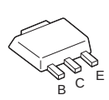
30620M8A-2N3GP





DTA144EE
DTC114EE
DTC144EE
2SA1362(Y)
2SC4617(S)
2SC5108(Y)

2SB1132(Q,R)



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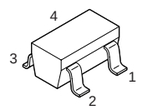

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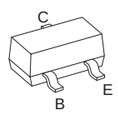
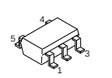
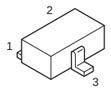


RN47A4

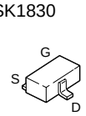


DA221

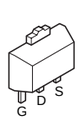


2SK508NV(K52)

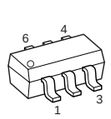
2SJ347
2SK1830



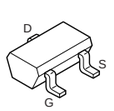
2SK2596



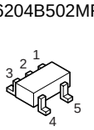
UPA672T



2SK1824



TC75S51F
XC6204B502MR



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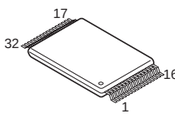
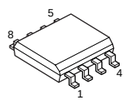


AT2416N10SI2.5



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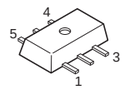

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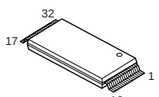

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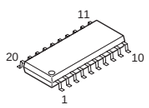

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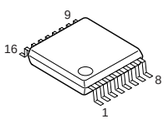

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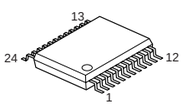

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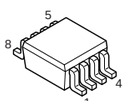
TC75W51FU



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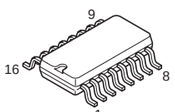

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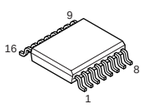


● Connect 1 and 6.

Component side

Layer 1
Layer 2
Layer 3
Layer 4
Layer 5
Layer 6

Foil side

SCHEMATIC DIAGRAM TK-3140

X57-6410-XX

		C16	C24	C31	C32	C33	C34	C36	C38	C42	C65	C66	C103	C109	C119	C131	C135	C143	C144	C146	C149	C150	C151	C152	C153	C154	C155	C156	C157	C158	C164	C235	C236	C238
-10	K	0.47u	0.1u	11p	6p	11p	6p	4p(B)	5p(B)	4p(B)	2p	2p	7p	5p	30p(G)	27p(G)	20p(G)	10p(C)	7p(B)	27p	100p	2p	1.5p	4p	2p	15p	5p	2p	1p	3p	33p(G)	6p	2p	10p
-11	K2	1u	NO	9p	4p	10p	4p	3p(B)	4p(B)	3p(B)	1p	1p	7p	5p	33p(G)	30p(G)	8p(B)	7p(B)	6p(B)	39p	470p	4p	1.5p	6p	1.5p(B)	10p	7p	1p	2p	3p	68p	4p	1p	7p
-12	K3	1u	NO	12p	6p	18p	6p	3p(B)	5p(B)	4p(B)	2p	1p	9p	8p	39p	27p(G)	20p(G)	15p(G)	8p(B)	27p	470p	7p	1p	6p	2p	15p	8p	2p	4p	0.5p	100p	6p	2p	11p

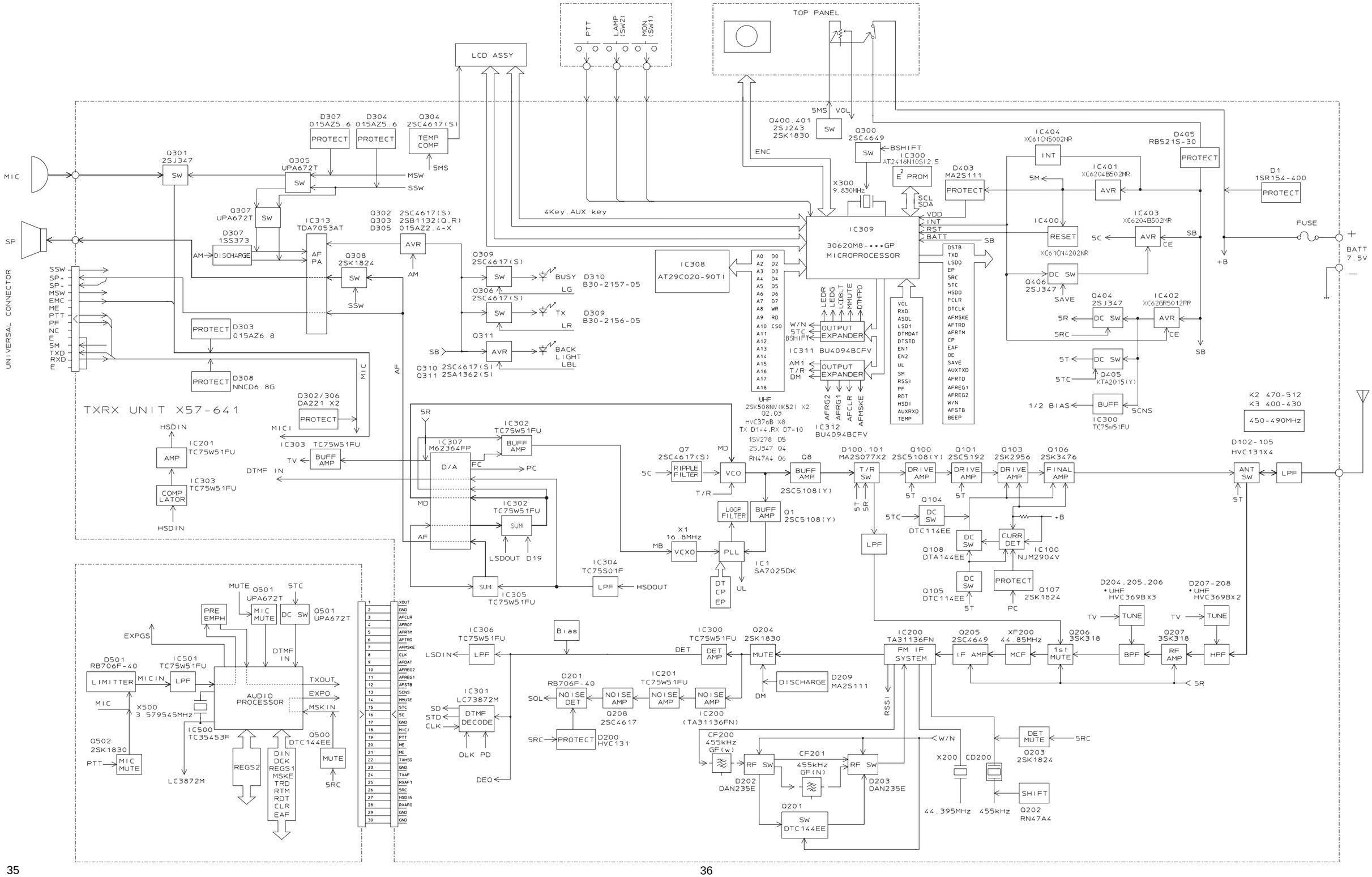
		C240	C241	C244	C249	C261	C263	C267	C269	C270	C274	C277	C285	C286	C289	C290	C292	C293	C422	C700	C710	C741
-10	K	0.75p	7p	5p(B)	3p	470p	33p	3p(B)	3p(B)	3p	3p(B)	3.5p(B)	0.5p(B)	5p(B)	2p(B)	3.5p(B)	3p	2p(B)	1u	NO	2.5p(B)	NO
-11	K2	2p	4p	3p(B)	2p	470p	33p	2.5p(B)	2.5p(B)	2p	3.5p(B)	3p(B)	2p(B)	4.5p(B)	2p(B)	3.5p(B)	2p	1p(B)	NO	NO	NO	6.8u6.3
-12	K3	1p	7p	9p(B)	2p	12p(G)	18p	3p(B)	5p(B)	2p	NO	2.5p(B)	NO	6p(B)	1p(B)	5p(B)	1.5p(B)	2.5p(B)	NO	2p(B)	NO	6.8u6.3

		R4	R5	R7	R114	R115	R121	R126	R144	R701	R710	L15	L16	L21	L116	L206	L209	L210	L211	L215	L217	L219	L710
-10	K	18k	15k	2.2k	120k	47k	47k	47k	0	NO	NO	22n	27n	22n	1.2n	22n	8.2n	8.2n	8.2n	8.2n	8.2n	47n	NO
-11	K2	27k	8.2k	680	120k	68k	47k	82k	0	0	0	22n	27n	18n	NO	18n	8.2n	8.2n	8.2n	8.2n	6.8n	39n	NO
-12	K3	33k	8.2k	1k	100k	47k	27k	47k	NO	0	NO	27n	33n	27n	1.5n	18n	10n	10n	10n	12n	10n	NO	3.3n

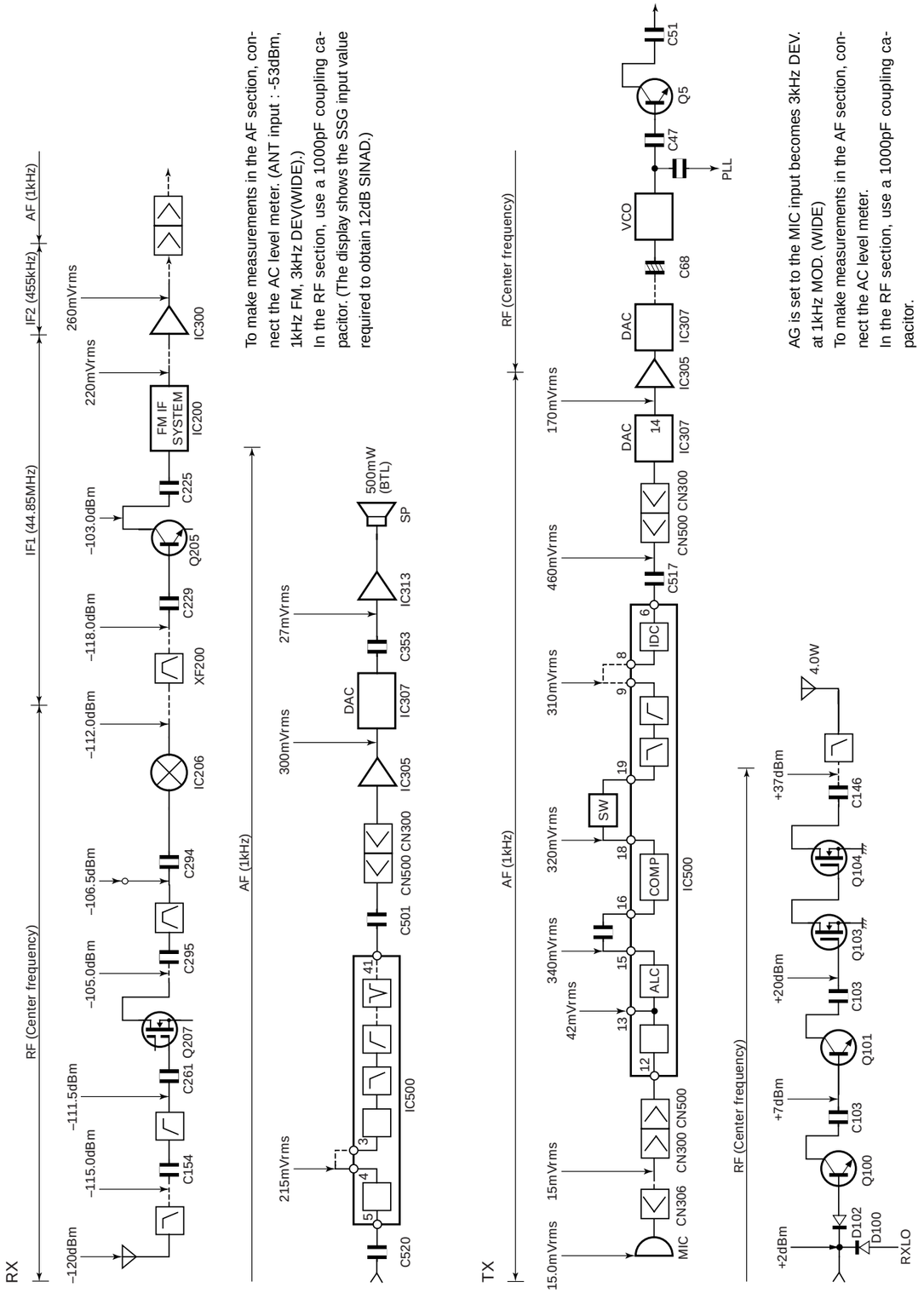
D1-4,7-10 :HVC376B
D5 :1SV278
D6,209,403 :MA2S111
D100,101 :HSC277
D102-105,200 :HVC131
D106 :HZU5CLL
D201,300,501 :RB706F-40
D202,203 :DAN235E
D204-208 :HVC369B
D301 :1SS373
D302,306 :DA221
D303,304,307 :015AZ6.8
D305 :015AZ2.4-X
D308 :NNCD6.8G
D309 :B30-2156-05
D310 :B30-2157-05
D402 :1SR154-400
D405 :RB521S-30
Q1,5,8,100 :2SC5108(Y)
Q2,3 :2SK508NV(K52)
Q4,301,400,404,406 :2SJ347
Q6,202 :RN47A4
Q7,208,302,304,306,309,310 :2SC4617(S)
Q101 :2SC5192
Q103 :2SK2596
Q104,105 :DTC114EE
Q106 :2SK3476
Q107,203,308 :2SK1824
Q108 :DTA144EE
Q201,403,500 :DTC144EE
Q204,401,502 :2SK1830
Q205,300 :2SC4649(N,P)
Q206,207 :3SK318
Q303 :2SB1132(Q,R)
Q305,307,501 :UPA672T
Q311 :2A1362(Y)
Q405 :KTA2015(Y)
IC1 :SA7025DK
IC100 :TA75W01FU
IC200 :TA31136FN
IC201,300,302,303,305,306,501 :TC75W51FU
IC301 :LC73872M
IC304 :TC75S51F
IC307 :M62364FP
IC308 :AT29C020-90TI or W29C020C90
IC309 :30620M8A-2N3GP
IC310 :AT2416N10SI2.5
IC311,312 :BU4094BCFV
IC313 :TDA7053AT
IC400 :XC61CN4202NR
IC401,403 :XC6204B502MR
IC402 :XC62GR5012PR
IC404 :XC61CN5002NR
IC500 :TC35453F

Note) Component marked with a dot (●) are Parts of layer 1.

BLOCK DIAGRAM



LEVEL DIAGRAM



TK-3140

KBP-5 / KRA-23

KBP-5 BATTERY CASE

AA alkaline battery x 6

KRA-23 UHF Helical Antenna

M : 440-490MHz
M2 : 470-520MHz
M3 : 400-450MHz

SPECIFICATIONS

General

Frequency Range	
RX, TX	K : 450 to 490MHz K2 : 470 to 512MHz K3 : 400 to 430MHz
Systems	Trunked Mode : Maximum 32
Groups	Maximum 250
Channels	Trunked Mode : Maximum 600
	Conventional Mode : Maximum 250
Channel Spacing (Wide/Narrow)	25/12.5kHz
PLL Channel Stepping	5.0, 6.25kHz
Operating Voltage	DC 7.5V ±20%
Battery Life	About 9 hours at 5-5-90 duty cycle with KNB-24L battery
	About 8 hours at 5-5-90 duty cycle with KNB-25A battery
	About 12 hours at 5-5-90 duty cycle with KNB-26N battery
Temprature Range	–30˚C to +60˚C (-22˚F to + 140˚F)
Dimension and Weight	
With KNB-24L (1400mAh battery)	4.13” (105mm) H x 2.21” (56mm) W x 1.16” (29.5mm) D x 0.66lbs (300g)

Receiver (Measurements made per TIA/EIA-603)

RF Input Impedance	50Ω
Sensitivity	
12dB SINAD (Wide/Narrow)	0.25µV/0.28µV
Selectivity (Wide/Narrow)	70dB/65dB
Intermodulation (Wide/Narrow)	70dB/62dB
Spurious	70dB
Frequency Stability	±0.00025% (-30˚C to +60˚C)
Channel Spread	K : 40MHz, K2 : 42MHz, K3 : 30MHz
Audio Power Output	500mW at 16Ω less than 5% distortion

Transmitter (Measurements made per TIA/EIA-603)

RF Power Output	
Hi	4W
Low	1W
RF Output Impedance	50Ω
Spurious	70dB
Modulation (Wide/Narrow)	16K0F3E/11K0F3E
FM Noise (Wide/Narrow)	45dB/40dB
Audio Distortion	Less than 3%
Frequency Stability	±0.00025% (-30˚C to +60˚C)
Channel Spread	K : 40MHz, K2 : 42MHz, K3 : 30MHz

TK-3140

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