

# TK-380

## SERVICE MANUAL

### SUPPLEMENT

This TK-380 (E2) service manual contains a number of sections which differ from the service manual (B51-8522-00) for the TK-380 (E,E3). For items other than those in this TK-380 (E2) service manual please refer to the service manual (B51-8522-00) for the TK-380 (E,E3).



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### CAUTION

When using an external power connector, please use with maximum final module protection of 9V.

## 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 this publication date. Changes which may occur after publication are covered by either Service Bulletins or Manual Revisions, which 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, and 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 secure and any open connectors are properly terminated.

- SHUT OFF this equipment when near electrical blasting caps or while in an explosive atmosphere.
- This equipment should be serviced by only qualified technicians.

#### SERVICE

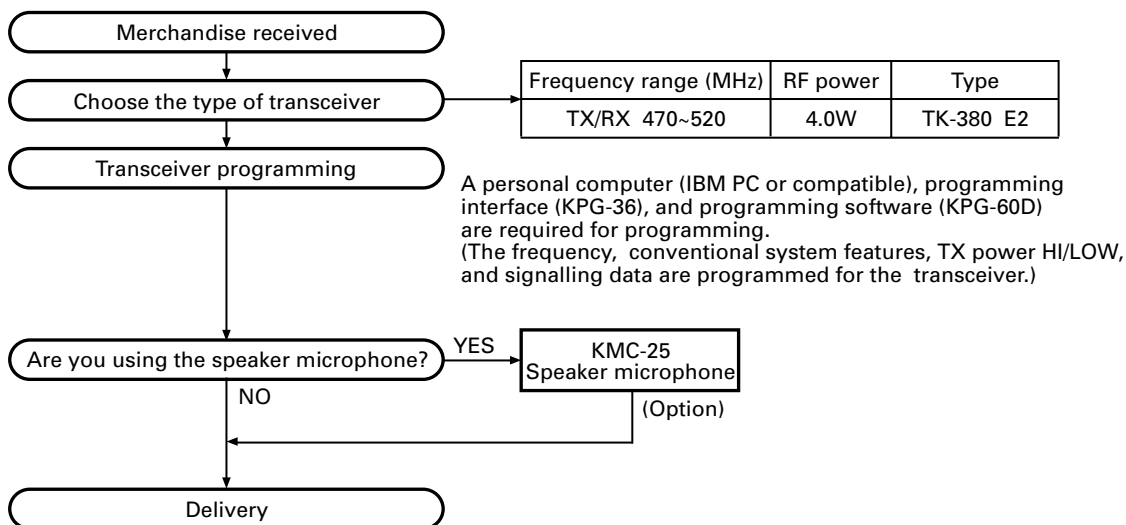
This radio is designed for easy servicing. Refer to the schematic diagrams, printed circuit board views, and alignment procedures contained within.

#### NOTE

The terms "Wide" and "Semi wide" used in this service manual correspond to "Wide 5K" and "Wide 4K" respectively that appear in the menu and help texts of the KPG-60D (Field Programming Unit).

Unit		TX-RX unit	Display unit	Frequency range	Remarks	Charger	Battery
Model & destination							
TK-380	E2	X57-6202-71	X54-3210-12	470~520MHz	1st IF : 44.85MHz LOC : 44.395MHz	Option	Option

### SYSTEM SET-UP



## CIRCUIT DESCRIPTION

### 1. Overview

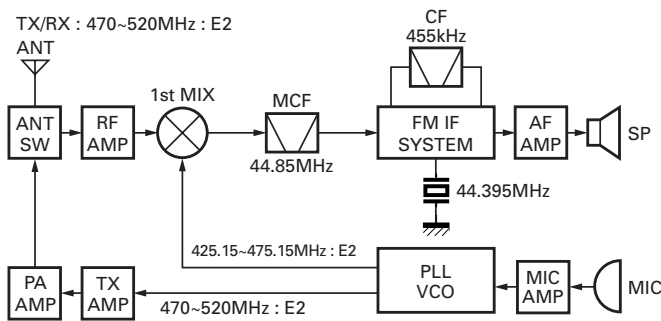
This transceiver is UHF/FM portable transceiver designed to operate in the frequency range of 470 to 520MHz (E2).

### 2. Circuit Configuration by Frequency

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.



**Fig. 1 Frequency configuration**

### 5. Frequency Synthesizer Unit

#### 5-1. Frequency synthesizer

The frequency synthesizer consists of the VCXO (X1), VCO (A1), PLL IC(IC14) and buffer amplifiers.

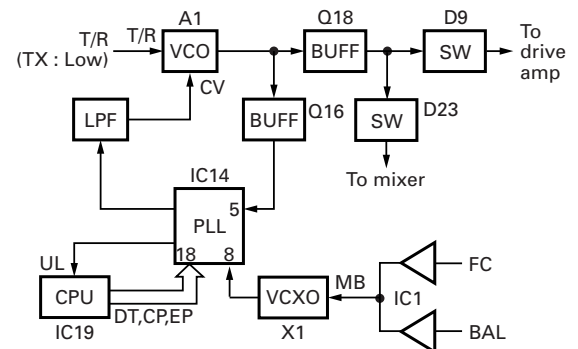
The VCXO generates 16.8MHz. The frequency stability is 1.5ppm within the temperature range of -30 to +60°C. The frequency tuning and modulation of the VCXO are done to apply a voltage to pin 1 of the VCXO. The output of the VCXO is applied to pin 8 of the PLL IC.

The TK-380's VCO consists of 2VCO and covers a dual range of the 425.15~475.15MHz (E2) and the 470~520MHz. The VCO generates 425.15~475.15MHz (E2) for providing to the first local signal in receive. In TX, the pin 3 of the VCO goes low and the VCO generates 470~520MHz.

The output of the VCO is amplified by the buffer amplifier (Q16) and routed to the pin 5 of the PLL IC. Also the output of the VCO is amplified by the buffer amplifier (Q18) and routed to the next stage according to T/R switch (D9, D23).

The PLL IC consists of a prescaler, fractional divider, reference divider, phase comparator, charge pump. This PLL IC is fractional-N type synthesizer and performs in the 40, 50 or 60kHz reference signal which is eighth of the channel step (5, 6.25 or 7.5kHz). The input signal from the pins 5 and 8 of the PLL IC is divided down to the 40, 50 or 60kHz and compared at phase comparator. The pulsed output signal of the phase comparator is applied to the charge pump and transformed into DC signal in the loop filter (LPF). The DC signal is applied to the pin 1 of the VCO and locked to keep the VCO frequency constant.

PLL data is output from DT (pin 75), CP (pin 19) and EP (pin 47) of the microprocessor (IC19). The data are input to the PLL IC when the channel is changed or when transmission is changed to reception and vice versa. A PLL lock condition is always monitored by the pin 31 (UL) of the microprocessor. When the PLL is unlocked, the UL goes low.



**Fig. 9 PLL block diagram**

# TK-380

## PARTS LIST

\* New Parts.  $\Delta$  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-380 DISPLAY UNIT (X54-3210-12)

Ref. No.	Address	New parts	Parts No.	Description	Destination
<b>TK-380</b>					
1	1A		A02-2055-53	CABINET ASSY(16KEYS)	
2	3B		A62-0535-04	PANEL ASSY	
3	2C		B09-0363-03	CAP(SP/MIC) ACSY	
4	2A		B38-0834-05	LCD ASSY	
5	1B		B43-1106-14	BADGE(CABINET ASSY)	
6	2C	*	B62-1611-00	INSTRUCTION MANUAL	
7	3B	*	B72-2069-04	MODEL NAME PLATE	
8	3B		E04-0416-05	RF COAXIAL RECEPTACLE(SMA)	
9	2B		E23-1104-04	TERMINAL(ANT)	
10	3A,3B		E23-1166-04	RELAY TERMINAL	
11	2B		E37-0672-05	FLAT CABLE(CONT-TXRX)	
12	3A		E37-0673-05	LEAD WIRE WITH CONNECTOR(PTT)	
13	1B		E37-0674-15	LEAD WIRE WITH CONNECTOR(SP)	
14	3B		E58-0440-05	SQUARE SOCKET(SP/MIC)	
15	3B		E72-0412-13	TERMINAL BLOCK	
16	2B		F10-2272-03	SHIELDING CASE(DBM)	
17	2A		F10-2310-03	SHIELDING PLATE(LCD)	
18	2A		F10-2340-03	SHIELDING CASE(VCO)	
19	3B		F10-2353-14	SHIELDING PLATE(P-MODULE)	
20	2B		F10-2360-03	SHIELDING CASE(FRONT END)	
21	2B		F10-2373-14	SHIELDING CASE(FE/DBM/VCO)	
22	3B		F20-1181-04	INSULATING SHEET(CHASSIS)	
23	2B		F20-3303-04	INSULATING SHEET(MIC/GND)	
24	1A		G01-0881-04	COIL SPRING(CABINET ASSY)	
25	1B		G09-0418-05	KNOB SPRING(VOL,ENC)	
26	1B		G10-0799-04	FIBROUS SHEET(SP)	
27	3A		G11-2544-04	SHEET(CHASSIS)	
28	3A		G11-2590-04	SHEET(PTT)	
29	2A		G13-1731-04	CUSHION(LCD)	
30	2A		G13-1736-04	CUSHION(VCO SHIELDING CASE)	
31	3B		G13-1762-04	CUSHION(VOL/CHASSIS)	
32	3A		G13-1794-04	CUSHION(MCF)	
33	3A,3B		G13-1834-04	CUSHION(TERMINAL)	
34	3B		G53-0811-03	PACKING(TOP)	
35	1B		G53-0896-02	PACKING(16KEYS)	
36	3A		G53-1510-04	PACKING(BATT+)	
37	3B		G53-1520-24	PACKING(TERMINAL)	
38	2D		H12-3014-02	PACKING FIXTURE	
39	1D		H13-1072-04	CARTON BOARD	
40	3D	*	H52-1891-02	ITEM CARTON CASE	
41	1A		J19-1572-04	HOLDER(CABINET ASSY)	
42	2B		J21-8398-03	HARDWARE FIXTURE(P-MODULE)	
43	2C		J29-0658-05	HOOK ACSY	
44	3B		J82-0045-05	FPC(VOL,ENC)	
45	3B		J82-0066-05	FPC(SQUARE SOCKET)	
46	1A		K29-5157-03	KNOB(PTT)	
47	1A		K29-5158-03	KEY TOP(PTT)	
48	1A		K29-5165-03	LEVER KNOB(CABINET ASSY)	
49	1B		K29-5231-03	KNOB(VOL)	
50	1B		K29-5232-03	KNOB(ENC)	

Ref. No.	Address	New parts	Parts No.	Description	Destination
A	3B		N14-0569-04	CIRCULAR NUT(VOL,ENC)	
B	3B		N30-2604-46	PAN HEAD MACHINE SCREW(ANT)	
C	3A		N30-2610-46	PAN HEAD MACHINE SCREW(CASE)	
D	2B		N67-2606-46	PAN HEAD SEMS SCREW W(P-MODULE)	
E	3A,3B		N79-2025-46	PAN HEAD TAPTITE SCREW(TERMINAL)	
F	2A,2B		N83-2005-46	PAN HEAD TAPTITE SCREW(UNIT)	
51	2C		N99-2004-05	SCREW SET ACSY	
52	3B		R31-0617-05	VARIABLE RESISTOR(POWER SW/VOL)	
S300	2B		S70-0414-05	TACT SWITCH	
53	1B		T07-0714-05	SPEAKER	
54	2D		T90-0683-05	WHIP ANTENNA ACSY	
MIC300	2B		T91-0579-05	MIC ELEMENT	
55	3B		W02-1814-05	ENCODER	
<b>DISPLAY UNIT (X54-3210-12)</b>					
D301			B30-2019-05	LED(RE/GR)	
D305-310			B30-2171-05	LED	
C301			CC73GCH1H470J	CHIP C 47PF J	
C302			C92-0560-05	CHIP-TAN 10UF 6.3WV	
C304			CK73FB1C474K	CHIP C 0.47UF K	
C305			CC73GCH1H101J	CHIP C 100PF J	
C307			CK73GB1C104K	CHIP C 0.10UF K	
C308			CC73GCH1H101J	CHIP C 100PF J	
C309			CK73FB1C474K	CHIP C 0.47UF K	
C310			CK73GB1C104K	CHIP C 0.10UF K	
C311			CC73GCH1H470J	CHIP C 47PF J	
C312			CK73GB1C104K	CHIP C 0.10UF K	
C313			C92-0628-05	CHIP-TAN 10UF 10WV	
C314			C92-0647-05	CHIP-TAN 3.3UF 4WV	
C315			CC73GCH1H101J	CHIP C 100PF J	
C316,317			CC73GCH1H470J	CHIP C 47PF J	
C318			CC73GCH1H101J	CHIP C 100PF J	
C321-333			CC73GCH1H470J	CHIP C 47PF J	
C335-339			CC73GCH1H470J	CHIP C 47PF J	
C340			CK73GB1E153K	CHIP C 0.015UF K	
C341-344			CC73GCH1H470J	CHIP C 47PF J	
CN300			E40-5891-05	FLAT CABLE CONNECTOR(24P)	
CN301			E40-5892-05	FLAT CABLE CONNECTOR(14P)	
CN302			E40-5662-05	PIN ASSY SOCKET(2P:SP)	
CN303			E40-5887-05	PIN ASSY(4P:PTT)	
CN304			E40-5823-05	FLAT CABLE CONNECTOR(10P:LCD)	
L300,301			L92-0141-05	FERRITE CHIP	
L302,303			L92-0138-05	FERRITE CHIP	
L304,305			L92-0141-05	FERRITE CHIP	
L306,307			L92-0138-05	FERRITE CHIP	
L308,309			L92-0141-05	FERRITE CHIP	
CP300,301			R90-0723-05	MULTI-COMP 47K X2	
CP302,303			R90-0724-05	MULTI-COMP 1K X4	
R300			RK73GB1J103J	CHIP R 10K J 1/16W	
R301			RK73FB2A101J	CHIP R 100 J 1/10W	
R302			RK73GB1J470J	CHIP R 47 J 1/16W	

## PARTS LIST

DISPLAY UNIT (X54-3210-12)

TX-RX UNIT (X57-6202-71)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R303			RK73GB1J471J	CHIP R 470 J 1/16W		C12			CK73GB1E103K	CHIP C 0.010UF K	
R304			RK73GB1J182J	CHIP R 1.8K J 1/16W		C13			CC73GCH1H101J	CHIP C 100PF J	
R305			RK73GB1J104J	CHIP R 100K J 1/16W		C14			C92-0628-05	CHIP-TAN 10UF 10WV	
R306			R92-1252-05	CHIP R 0 OHM		C15			C92-0592-05	CHIP-TAN 4.7UF 6.3WV	
R307			RK73GB1J821J	CHIP R 820 J 1/16W		C16			CK73GB1H471K	CHIP C 470PF K	
R308			RK73GB1J153J	CHIP R 15K J 1/16W		C17			C92-0650-05	TANTAL 10UF 6.3WV	
R309			R92-1252-05	CHIP R 0 OHM		C18			CK73FB1C334K	CHIP C 0.33UF K	
R310			RK73GB1J331J	CHIP R 330 J 1/16W		C19			C92-0628-05	CHIP-TAN 10UF 10WV	
R311			RK73GB1J102J	CHIP R 1.0K J 1/16W		C20			CK73GB1C104K	CHIP C 0.10UF K	
R312			RK73GB1J104J	CHIP R 100K J 1/16W		C21			C92-0592-05	CHIP-TAN 4.7UF 6.3WV	
R313,314			RK73GB1J102J	CHIP R 1.0K J 1/16W		C22			CK73GB1H331K	CHIP C 330PF K	
R315			RK73GB1J104J	CHIP R 100K J 1/16W		C23			C92-0592-05	CHIP-TAN 4.7UF 6.3WV	
R316			RK73GB1J473J	CHIP R 47K J 1/16W		C24,25			CK73GB1H471K	CHIP C 470PF K	
R317			RK73GB1J472J	CHIP R 4.7K J 1/16W		C26			CK73GB1E223K	CHIP C 0.022UF K	
R318			RK73GB1J104J	CHIP R 100K J 1/16W		C27-29			CK73GB1H471K	CHIP C 470PF K	
R319-321			RK73GB1J820J	CHIP R 82 J 1/16W		C30			CK73GB1H102K	CHIP C 1000PF K	
R324,325			RK73GB1J102J	CHIP R 1.0K J 1/16W		C31			CK73GB1C104K	CHIP C 0.10UF K	
R326			RK73GB1J124J	CHIP R 120K J 1/16W		C32			CK73FB1A105K	CHIP C 1.0UF K	
R327			RK73GB1J563J	CHIP R 56K J 1/16W		C33,34			CK73GB1H471K	CHIP C 470PF K	
R328			RK73GB1J124J	CHIP R 120K J 1/16W		C35			CK73GB1E103K	CHIP C 0.010UF K	
R331			RK73GB1J103J	CHIP R 10K J 1/16W		C36			CK73GB1C104K	CHIP C 0.10UF K	
R332			RK73GB1J272J	CHIP R 2.7K J 1/16W		C37			CK73GB1H471K	CHIP C 470PF K	
R333			RK73GB1J103J	CHIP R 10K J 1/16W		C38			CK73GB1H102K	CHIP C 1000PF K	
R336			R92-1252-05	CHIP R 0 OHM		C39,40			CK73GB1C104K	CHIP C 0.10UF K	
R337			RK73GB1J472J	CHIP R 4.7K J 1/16W		C41			C92-0713-05	CHIP-TAN 10UF 6.3WV	
R338-341			RK73GB1J101J	CHIP R 100 J 1/16W		C42			CK73GB1H102K	CHIP C 1000PF K	
S301-303			S70-0457-05	TACT SWITCH(PTT)		C43			CK73GB1C333K	CHIP C 0.033UF K	
D300			NNCD6.8G	ZENER DIODE		C44			CK73GB1H471K	CHIP C 470PF K	
D302			1S3373	DIODE		C45			CC73GCH1H100D	CHIP C 10PF D	
D303			015AZ2.4-X	ZENER DIODE		C46			CC73GCH1H121J	CHIP C 120PF J	
D304			MA2S111	DIODE		C47			CK73GB1C104K	CHIP C 0.10UF K	
D315			IMN10	DIODE		C48			CK73GB1H471K	CHIP C 470PF K	
D316,317			MA2S111	DIODE		C49			CK73GB1C104K	CHIP C 0.10UF K	
D318			IMN10	DIODE		C50			CC73GCH1H100D	CHIP C 10PF D	
D319-321			015AZ6.8	ZENER DIODE		C51			CK73GB1E103K	CHIP C 0.010UF K	
IC300			TDA7053AT	IC(AUDIO AMP)		C52			CC73GCH1H271J	CHIP C 270PF J	
IC301			TC74HC4017AF	IC(COUNTER)		C53			CK73GB1H102K	CHIP C 1000PF K	
Q300			2SJ243	FET		C54			CK73GB1E103K	CHIP C 0.010UF K	
Q301			UPA672T	FET		C55			CK73GB1C104K	CHIP C 0.10UF K	
Q302-304			2SC4617(S)	TRANSISTOR		C56			C92-0662-05	CHIP-TAN 15UF 6.3WV	
Q305			2SB798(DL,DK)	TRANSISTOR		C57			CK73GB1H102K	CHIP C 1000PF K	
Q306			2SC4617(S)	TRANSISTOR		C58			CK73GB1H471K	CHIP C 470PF K	
Q307			2SB1132(Q,R)	TRANSISTOR		C59			CK73GB1H222K	CHIP C 2200PF K	
Q308			UPA672T	FET		C60			CK73GB1C273K	CHIP C 0.027UF K	
Q309			2SC4617(S)	TRANSISTOR		C61			CK73GB1C104K	CHIP C 0.10UF K	
Q310			2SK1824	FET		C62			CK73GB1E123K	CHIP C 0.012UF K	
TH300			TN10-3S154JT	THERMISTOR		C63			CK73GB1H122K	CHIP C 1200PF K	
<b>TX-RX UNIT (X57-6202-71)</b>						C64			CK73GB1H102K	CHIP C 1000PF K	
C1			CK73GB1H471K	CHIP C 470PF K		C65,66			CC73GCH1H121J	CHIP C 120PF J	
C2,3			CK73GB1E103K	CHIP C 0.010UF K		C67			CK73GB1C104K	CHIP C 0.10UF K	
C4-6			CK73GB1H471K	CHIP C 470PF K		C68,69			CK73GB1E103K	CHIP C 0.010UF K	
C7,8			CK73GB1E103K	CHIP C 0.010UF K		C70			CK73GB1C104K	CHIP C 0.10UF K	
C9			CK73GB1C104K	CHIP C 0.10UF K		C71			CC73GCH1H220J	CHIP C 22PF J	
C10			CK73GB1E103K	CHIP C 0.010UF K		C72			CK73GB1C683K	CHIP C 0.068UF K	
C11			CK73GB1H471K	CHIP C 470PF K		C73			CC73GCH1H100D	CHIP C 10PF D	
						C74			CK73GB1C104K	CHIP C 0.10UF K	

## PARTS LIST

TX-RX UNIT (X57-6202-71)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C75			CK73GB1E103K	CHIP C 0.010UF K		C141			C92-0592-05	CHIP-TAN 4.7UF 6.3WV	
C76			CK73GB1C104K	CHIP C 0.10UF K		C142			CK73GB1H471K	CHIP C 470PF K	
C77			C92-0773-05	CHIP-TAN 15UF 6.3WV		C143			CC73GCH1H100D	CHIP C 10PF D	
C78			CK73GB1H562J	CHIP C 5600PF J		C144			C92-0714-05	CHIP-TAN 4.7UF 6.3WV	
C79			C92-0713-05	CHIP-TAN 10UF 6.3WV		C145			CK73FB1H563K	CHIP C 0.056UF K	
C80			CC73HCH1H101J	CHIP C 100PF J		C146,147			CK73GB1H102K	CHIP C 1000PF K	
C81			CK73GB1H471K	CHIP C 470PF K		C149			CK73GB1H471K	CHIP C 470PF K	
C82			CK73GB1C333K	CHIP C 0.033UF K		C150			CC73GCH1H050B	CHIP C 5.0PF B	
C84			CK73GB1H562J	CHIP C 5600PF J		C152			CC73GCH1H050B	CHIP C 5.0PF B	
C85			CK73GB1H471K	CHIP C 470PF K		C155-157			CK73GB1H471K	CHIP C 470PF K	
C86			CK73GB1H562J	CHIP C 5600PF J		C159			CK73HB1C103K	CHIP C 0.010UF K	
C87			CK73GB1C333K	CHIP C 0.033UF K		C160			CK73GB1C104K	CHIP C 0.10UF K	
C88			CK73GB1C104K	CHIP C 0.10UF K		C161			CC73GCH1H040B	CHIP C 4.0PF B	
C89			CC73GCH1H820J	CHIP C 82PF J		C162			CK73GB1H471K	CHIP C 470PF K	
C90			CC73GCH1H470J	CHIP C 47PF J		C165			CK73GB1E103K	CHIP C 0.010UF K	
C91			CK73GB1H471K	CHIP C 470PF K		C166			CK73HB1C103K	CHIP C 0.010UF K	
C92			C92-0773-05	CHIP-TAN 15UF 6.3WV		C167			CC73GCH1H2R5B	CHIP C 2.5PF B	
C93			CK73GB1H272J	CHIP C 2700PF J		C168			CC73GCH1H070B	CHIP C 7.0PF B	
C95			CK73GB1H471K	CHIP C 470PF K		C169			CK73GB1E103K	CHIP C 0.010UF K	
C96			CC73GCH1H330J	CHIP C 33PF J		C170			CK73HB1C103K	CHIP C 0.010UF K	
C97			CC73GCH1H030B	CHIP C 3.0PF B		C171			CC73GCH1H090B	CHIP C 9.0PF B	
C98,99			CK73GB1H272J	CHIP C 2700PF J		C172			CC73GCH1H050B	CHIP C 5.0PF B	
C100			CK73GB1C104K	CHIP C 0.10UF K		C173			CK73GB1H471K	CHIP C 470PF K	
C101			C92-0656-05	CHIP-TAN 2.2UF 6.3WV		C174			CK73GB1C104K	CHIP C 0.10UF K	
C102			CK73GB1C104K	CHIP C 0.10UF K		C175			CK73GB1H472K	CHIP C 4700PF K	
C103			CC73GCH1H151J	CHIP C 150PF J		C176-180			CK73GB1H471K	CHIP C 470PF K	
C104			CK73GB1H152J	CHIP C 1500PF J		C181			CK73GB1E103K	CHIP C 0.010UF K	
C105			CK73GB1H102K	CHIP C 1000PF K		C182			CC73GCH1H060B	CHIP C 6.0PF B	
C106			CK73GB1E103K	CHIP C 0.010UF K		C183			CC73GCH1H270J	CHIP C 27PF J	
C107			CC73GCH1H030B	CHIP C 3.0PF B		C184			CC73GCH1H680J	CHIP C 68PF J	
C108			C92-0650-05	TANTAL 10UF 6.3WV		C185			CK73GB1H471K	CHIP C 470PF K	
C109			C92-0714-05	CHIP-TAN 4.7UF 6.3WV		C186			CC73GCH1H270J	CHIP C 27PF J	
C110			CK73GB1C104K	CHIP C 0.10UF K		C188,189			CK73GB1H471K	CHIP C 470PF K	
C111			CK73GB1H471K	CHIP C 470PF K		C190			CK73HB1C103K	CHIP C 0.010UF K	
C112			C92-0713-05	CHIP-TAN 10UF 6.3WV		C191,192			CK73GB1H471K	CHIP C 470PF K	
C113,114			CK73GB1C104K	CHIP C 0.10UF K		C193			CC73GCH1H100D	CHIP C 10PF D	
C117,118			CK73GB1C104K	CHIP C 0.10UF K		C194			CC73GCH1H040B	CHIP C 4.0PF B	
C119			CC73GCH1H181J	CHIP C 180PF J		C195			CK73HB1H471K	CHIP C 470PF K	
C120			CK73GB1C473K	CHIP C 0.047UF K		C196			CC73GCH1H040B	CHIP C 4.0PF B	
C121,122			CK73GB1C104K	CHIP C 0.10UF K		C197			CK73FB1C474K	CHIP C 0.47UF K	
C123			CK73GB1E103K	CHIP C 0.010UF K		C198			CC73GCH1H1R5B	CHIP C 1.5PF B	
C124,125			CK73GB1C104K	CHIP C 0.10UF K		C199			CC73GCH1H101J	CHIP C 100PF J	
C126			C92-1366-05	CHIP-TAN 0.47UF 35WV		C200			C92-0565-05	CHIP-TAN 6.8UF 10WV	
C127			C92-0714-05	CHIP-TAN 4.7UF 6.3WV		C202			CK73GB1H471K	CHIP C 470PF K	
C128			CK73GB1C104K	CHIP C 0.10UF K		C203			CC73GCH1H050B	CHIP C 5.0PF B	
C129			CK73GB1H562J	CHIP C 5600PF J		C204			CC73GCH1H1R5B	CHIP C 1.5PF B	
C130			CK73GB1H102K	CHIP C 1000PF K		C205			CC73GCH1H101J	CHIP C 100PF J	
C131			CK73GB1H562J	CHIP C 5600PF J		C207			CC73GCH1H1R5B	CHIP C 1.5PF B	
C133			CC73GCH1H050B	CHIP C 5.0PF B		C208			CK73GB1E103K	CHIP C 0.010UF K	
C134			CK73GB1E153K	CHIP C 0.015UF K		C209			CK73GB1H471K	CHIP C 470PF K	
C135			CK73GB1E103K	CHIP C 0.010UF K		C210			CC73GCH1H3R5B	CHIP C 3.5PF B	
C136			C92-0001-05	CHIP-C 0.1UF 35WV		C211			CK73FB1C474K	CHIP C 0.47UF K	
C137			CK73GB1E103K	CHIP C 0.010UF K		C213			CC73GCH1H101J	CHIP C 100PF J	
C138			CC73GCH1H030B	CHIP C 3.0PF B		C214,215			CC73GCH1H060B	CHIP C 6.0PF B	
C139			CK73GB1H471K	CHIP C 470PF K		C216,217			CC73GCH1H040B	CHIP C 4.0PF B	
C140			CC73GCH1H050B	CHIP C 5.0PF B		C218			CC73GCH1H120J	CHIP C 12PF J	

## PARTS LIST

TX-RX UNIT (X57-6202-71)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C219			CC73GCH1H4R5B	CHIP C 4.5PF B		L4			L40-1091-37	SMALL FIXED INDUCTOR(1.0UH)	
C220			CC73GCH1H050B	CHIP C 5.0PF B		L5,6			L92-0138-05	FERRITE CHIP	
C221			CK73GB1H471K	CHIP C 470PF K		L9			L40-1271-36	SMALL FIXED INDUCTOR(12NH)	
C222			CC73GCH1H4R5B	CHIP C 4.5PF B		L10			L40-3971-36	SMALL FIXED INDUCTOR(39NH)	
C223			CC73GCH1H030B	CHIP C 3.0PF B		L11,12			L92-0138-05	FERRITE CHIP	
C224			CC73GCH1H010B	CHIP C 1.0PF B		L13			L40-2271-36	SMALL FIXED INDUCTOR(22NH)	
C225			CC73GCH1H010J	CHIP C 100PF J		L14			L40-1081-36	SMALL FIXED INDUCTOR(100NH)	
C226			CK73GB1H471K	CHIP C 470PF K		L15			L40-1571-36	SMALL FIXED INDUCTOR(15NH)	
C227			CC73GCH1H010B	CHIP C 1.0PF B		L17			L40-1571-36	SMALL FIXED INDUCTOR(15NH)	
C230			CC73GCH1H0R5B	CHIP C 0.5PF B		L18			L39-1272-05	TOROIDAL COIL	
C231			CK73GB1H471K	CHIP C 470PF K		L19			L92-0138-05	FERRITE CHIP	
C232			CC73GCH1H470J	CHIP C 47PF J		L20			L40-1571-36	SMALL FIXED INDUCTOR(15NH)	
C233			CK73GB1H471K	CHIP C 470PF K		L21,22			L39-1272-05	TOROIDAL COIL	
C234			CC73GCH1H080B	CHIP C 8.0PF B		L24			L92-0138-05	FERRITE CHIP	
C236			CC73GCH1H470J	CHIP C 47PF J		L25			L40-2771-36	SMALL FIXED INDUCTOR(27NH)	
C237			CC73GCH1H010B	CHIP C 1.0PF B		L26			L92-0138-05	FERRITE CHIP	
C238			CK73GB1E103K	CHIP C 0.010UF K		L27			L40-3378-67	SMALL FIXED INDUCTOR(33NH)	
C239			CK73GB1H471K	CHIP C 470PF K		L28			L92-0138-05	FERRITE CHIP	
C241			CC73GCH1H090B	CHIP C 9.0PF B		L29			L40-1278-67	SMALL FIXED INDUCTOR(12NH)	
C242,243			CK73GB1H471K	CHIP C 470PF K		L30			L92-0149-05	FERRITE CHIP	
C245			CC73GCH1H3R5B	CHIP C 3.5PF B		L31			L40-1578-67	SMALL FIXED INDUCTOR(15NH)	
C247			CK73GB1H471K	CHIP C 470PF K		L32			L34-4564-05	AIR-CORE COIL(4T)	
C248			CC73GCH1H010B	CHIP C 1.0PF B		L33			L40-2278-67	SMALL FIXED INDUCTOR(22NH)	
C249-253			CK73GB1H471K	CHIP C 470PF K		L34			L40-3378-67	SMALL FIXED INDUCTOR(33NH)	
C254			CC73GCH1H060B	CHIP C 6.0PF B		L35			L40-1085-34	SMALL FIXED INDUCTOR(100NH)	
C255			CC73GCH1H020B	CHIP C 2.0PF B		L36			L40-3378-67	SMALL FIXED INDUCTOR(33NH)	
C256			CC73GCH1H050B	CHIP C 5.0PF B		L37			L34-4564-05	AIR-CORE COIL(4T)	
C257,258			CK73GB1H471K	CHIP C 470PF K		L38			L40-2278-67	SMALL FIXED INDUCTOR(22NH)	
C259			CC73GCH1H010J	CHIP C 100PF J		L39			L40-1871-36	SMALL FIXED INDUCTOR(18NH)	
C261,262			CK73HB1C103K	CHIP C 0.010UF K		L40			L34-4564-05	AIR-CORE COIL(4T)	
C263			CK73GB1H103K	CHIP C 0.010UF K		L41			L40-1071-36	SMALL FIXED INDUCTOR(10NH)	
C264			CC73GCH1H150J	CHIP C 15PF J		L42,43			L34-4564-05	AIR-CORE COIL(4T)	
C265			CK73GB1H103K	CHIP C 0.010UF K		L44			L40-1878-67	SMALL FIXED INDUCTOR(18NH)	
C269			CC73GCH1H030B	CHIP C 3.0PF B		L45			L40-1092-81	SMALL FIXED INDUCTOR	
C276			CC73GCH1H070B	CHIP C 7.0PF B		L46			L40-6878-67	SMALL FIXED INDUCTOR(68NH)	
C401			CK73GB1C104K	CHIP C 0.10UF K		L47			L40-2278-67	SMALL FIXED INDUCTOR(22NH)	
C402			CK73GB1H561K	CHIP C 560PF K		L48-52			L34-4564-05	AIR-CORE COIL(4T)	
C403			CC73GCH1H470J	CHIP C 47PF J		L53			L92-0138-05	FERRITE CHIP	
C404			CC73GCH1H101J	CHIP C 100PF J		L54			L40-1871-36	SMALL FIXED INDUCTOR(18NH)	
C405			C92-0602-05	CHIP-TAN 1.0UF 10WV		L55,56			L40-2271-36	SMALL FIXED INDUCTOR(22NH)	
C407			C92-0714-05	CHIP-TAN 4.7UF 6.3WV		L457,458			L34-4567-05	AIR-CORE COIL(7T)	
C408			CK73HB1A104K	CHIP C 0.10UF K		X1			L77-1789-05	TCXO(16.8MHZ)	
						X2			L77-1760-15	CRYSTAL RESONATOR(44.395MHZ)	
CN1			E40-5823-05	FLAT CABLE CONNECTOR(10P)		X3			L77-1708-05	CRYSTAL RESONATOR(3.579545MHZ)	
CN2			E40-9517-05	PIN ASSY SOCKET(4P)		X4			L78-0462-05	RESONATOR(9.8304MHZ)	
CN3			E40-5890-05	FLAT CABLE CONNECTOR(24P)							
CN4			E23-0342-05	TEST TERMINAL		XF1			L71-0572-05	MCF(44.85MHZ)	
CN5-12			E23-1081-05	TERMINAL							
F1			F53-0130-05	FUSE(3A)		CP1			R90-0724-05	MULTI-COMP 1K X4	
F1			F53-0217-05	FUSE(3A)		CP2			R90-0718-05	MULTI-COMP 4.7K X4	
						CP4,5			R90-0743-05	MULTIPLE RESISTOR 47K X2	
						CP6-21			R90-0741-05	MULTIPLE RESISTOR 1K X2	
CD1			L79-1072-05	TUNING COIL		CP22-24			R90-0743-05	MULTIPLE RESISTOR 47K X2	
CF1			L72-0962-05	CERAMIC FILTER(455KHZ)		R1			RK73GB1J103J	CHIP R 10K J 1/16W	
CF2			L72-0963-05	CERAMIC FILTER(455KHZ)		R2			RK73GB1J473J	CHIP R 47K J 1/16W	
L1			L92-0149-05	FERRITE CHIP		R3			RK73GB1J154J	CHIP R 150K J 1/16W	
L2			L92-0138-05	FERRITE CHIP		R4			RK73GB1J104J	CHIP R 100K J 1/16W	
L3			L40-4791-37	SMALL FIXED INDUCTOR(4.7UH)		R5			RK73HB1J392J	CHIP R 3.9K J 1/16W	

## PARTS LIST

## TX-RX UNIT (X57-6202-71)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R6,7			RK73GB1J104J	CHIP R 100K J 1/16W		R68			RK73GB1J223J	CHIP R 22K J 1/16W	
R8			RK73HB1J272J	CHIP R 2.7K J 1/16W		R69			R92-1252-05	CHIP R 0 OHM	
R9			RK73HB1J474J	CHIP R 470K J 1/16W		R70			RN73GH1J682D	CHIP R 6.8K D 1/16W	
R10			RK73HB1J392J	CHIP R 3.9K J 1/16W		R71			RK73GB1J183J	CHIP R 18K J 1/16W	
R11			RK73GB1J104J	CHIP R 100K J 1/16W		R72			RK73GB1J155J	CHIP R 1.5M J 1/16W	
R12			RK73GB1J184J	CHIP R 180K J 1/16W		R73			RK73GB1J393J	CHIP R 39K J 1/16W	
R13			RK73GB1J104J	CHIP R 100K J 1/16W		R74			RK73GB1J183J	CHIP R 18K J 1/16W	
R14			R92-1252-05	CHIP R 0 OHM		R75			RN73GH1J683D	CHIP R 68K D 1/16W	
R15			RK73GB1J104J	CHIP R 100K J 1/16W		R76			RK73GB1J474J	CHIP R 470K J 1/16W	
R16,17			RK73GB1J473J	CHIP R 47K J 1/16W		R78			RN73GH1J682D	CHIP R 6.8K D 1/16W	
R18			RK73GB1J154J	CHIP R 150K J 1/16W		R79			RK73GB1J101J	CHIP R 100 J 1/16W	
R19			RK73GB1J104J	CHIP R 100K J 1/16W		R80			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R20			RK73HB1J104J	CHIP R 100K J 1/16W		R81			RK73GB1J220J	CHIP R 22 J 1/16W	
R21			RK73GB1J563J	CHIP R 56K J 1/16W		R83			RK73GB1J184J	CHIP R 180K J 1/16W	
R22,23			RK73GB1J823J	CHIP R 82K J 1/16W		R85			RK73GB1J103J	CHIP R 10K J 1/16W	
R24			RK73GB1J473J	CHIP R 47K J 1/16W		R86			RK73GB1J223J	CHIP R 22K J 1/16W	
R25			RK73HB1J103J	CHIP R 10K J 1/16W		R89			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R26			RK73GB1J473J	CHIP R 47K J 1/16W		R90			RK73GB1J153J	CHIP R 15K J 1/16W	
R27			RK73GB1J332J	CHIP R 3.3K J 1/16W		R91			RK73GB1J473J	CHIP R 47K J 1/16W	
R28			RK73GB1J474J	CHIP R 470K J 1/16W		R93			RK73GB1J822J	CHIP R 8.2K J 1/16W	
R29			RK73GB1J184J	CHIP R 180K J 1/16W		R94			RK73GB1J333J	CHIP R 33K J 1/16W	
R30			RK73GB1J474J	CHIP R 470K J 1/16W		R95			RK73GB1J394J	CHIP R 390K J 1/16W	
R31			RK73GB1J102J	CHIP R 1.0K J 1/16W		R96			RK73HB1J222J	CHIP R 2.2K J 1/16W	
R32			RK73GB1J104J	CHIP R 100K J 1/16W		R97			RK73GB1J151J	CHIP R 150 J 1/16W	
R33			RK73GB1J184J	CHIP R 180K J 1/16W		R100			R92-1252-05	CHIP R 0 OHM	
R34			RK73GB1J683J	CHIP R 68K J 1/16W		R101			RK73GB1J560J	CHIP R 56 J 1/16W	
R35			RK73GB1J220J	CHIP R 22 J 1/16W		R102			RK73GB1J333J	CHIP R 33K J 1/16W	
R36			RK73GB1J154J	CHIP R 150K J 1/16W		R104			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R37			R92-1252-05	CHIP R 0 OHM		R106			RK73GB1J470J	CHIP R 47 J 1/16W	
R38			RK73GB1J101J	CHIP R 100 J 1/16W		R107			RK73GB1J473J	CHIP R 47K J 1/16W	
R39			RK73GB1J472J	CHIP R 4.7K J 1/16W		R109			R92-1252-05	CHIP R 0 OHM	
R40,41			RK73GB1J334J	CHIP R 330K J 1/16W		R110			RK73GB1J220J	CHIP R 22 J 1/16W	
R42,43			RK73GB1J223J	CHIP R 22K J 1/16W		R114			R92-1252-05	CHIP R 0 OHM	
R44			RK73GB1J473J	CHIP R 47K J 1/16W		R115			RK73GB1J184J	CHIP R 180K J 1/16W	
R45			RK73GB1J472J	CHIP R 4.7K J 1/16W		R116			RK73GB1J103J	CHIP R 10K J 1/16W	
R46,47			RK73GB1J223J	CHIP R 22K J 1/16W		R117			RK73GB1J184J	CHIP R 180K J 1/16W	
R48			R92-1252-05	CHIP R 0 OHM		R118			RK73GB1J221J	CHIP R 220 J 1/16W	
R49			RK73GB1J473J	CHIP R 47K J 1/16W		R119			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R50			RN73GH1J913D	CHIP R 91K D 1/16W		R120			RK73GB1J104J	CHIP R 100K J 1/16W	
R51			RN73GH1J683D	CHIP R 68K D 1/16W		R121			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R52			RN73GH1J913D	CHIP R 91K D 1/16W		R122			RK73GB1J221J	CHIP R 220 J 1/16W	
R53			RK73GB1J473J	CHIP R 47K J 1/16W		R125			RK73GB1J124J	CHIP R 120K J 1/16W	
R54			RK73GB1J472J	CHIP R 4.7K J 1/16W		R126			RK73GB1J470J	CHIP R 47 J 1/16W	
R55			RN73GH1J333D	CHIP R 33K D 1/16W		R127			RK73GB1J103J	CHIP R 10K J 1/16W	
R56			RK73GB1J472J	CHIP R 4.7K J 1/16W		R128			R92-1252-05	CHIP R 0 OHM	
R57			RK73GB1J183J	CHIP R 18K J 1/16W		R129			RK73HB1J104J	CHIP R 100K J 1/16W	
R58			RK73GB1J184J	CHIP R 180K J 1/16W		R130			R92-1252-05	CHIP R 0 OHM	
R59			RK73GB1J564J	CHIP R 560K J 1/16W		R131			RK73GB1J470J	CHIP R 47 J 1/16W	
R60			RK73GB1J123J	CHIP R 12K J 1/16W		R132			RK73GB1J684J	CHIP R 680K J 1/16W	
R61			RK73GB1J103J	CHIP R 10K J 1/16W		R133,134			R92-1368-05	CHIP R 0 OHM	
R62			RN73GH1J913D	CHIP R 91K D 1/16W		R135			RK73GB1J272J	CHIP R 2.7K J 1/16W	
R63			RK73GB1J394J	CHIP R 390K J 1/16W		R136			RK73GB1J122J	CHIP R 1.2K J 1/16W	
R64			RK73GB1J153J	CHIP R 15K J 1/16W		R137			RK73GB1J103J	CHIP R 10K J 1/16W	
R65			RK73GB1J103J	CHIP R 10K J 1/16W		R138			RK73HB1J103J	CHIP R 10K J 1/16W	
R66			R92-1252-05	CHIP R 0 OHM		R140,141			RK73HB1J473J	CHIP R 47K J 1/16W	
R67			RN73GH1J274D	CHIP R 270K D 1/16W		R142,143			RK73HB1J102J	CHIP R 1.0K J 1/16W	



## PARTS LIST

TX-RX UNIT (X57-6202-71)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R144			R92-1252-05	CHIP R 0 OHM		R296			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R145-152			RK73HB1J102J	CHIP R 1.0K J 1/16W		R297,298			RK73HB1J473J	CHIP R 47K J 1/16W	
R154			RK73GB1J183J	CHIP R 18K J 1/16W		R299			RK73GB1J101J	CHIP R 100 J 1/16W	
R156			RK73GB1J102J	CHIP R 1.0K J 1/16W		R401			RK73GB1J224J	CHIP R 220K J 1/16W	
R160			RK73GB1J682J	CHIP R 6.8K J 1/16W		R402			RK73GB1J334J	CHIP R 330K J 1/16W	
R162			RK73GB1J103J	CHIP R 10K J 1/16W		R403			RK73GB1J394J	CHIP R 390K J 1/16W	
R163			RK73HB1J103J	CHIP R 10K J 1/16W		R404,405			RK73GB1J104J	CHIP R 100K J 1/16W	
R166			RK73GB1J223J	CHIP R 22K J 1/16W		R406,407			RK73GB1J331J	CHIP R 330 J 1/16W	
R167			R92-1252-05	CHIP R 0 OHM		R408			RK73HB1J473J	CHIP R 47K J 1/16W	
R168			RK73GB1J680J	CHIP R 68 J 1/16W		R410			RK73GB1J183J	CHIP R 18K J 1/16W	
R177			RK73GB1J101J	CHIP R 100 J 1/16W		R411			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R180			RK73GB1J473J	CHIP R 47K J 1/16W		R412			RK73GB1J394J	CHIP R 390K J 1/16W	
R184			RK73GB1J102J	CHIP R 1.0K J 1/16W		R413			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R185			RK73GB1J220J	CHIP R 22 J 1/16W		R414			RK73HB1J331J	CHIP R 330 J 1/16W	
R189			RK73HB1J473J	CHIP R 47K J 1/16W		R415			RK73HB1J184J	CHIP R 180K J 1/16W	
R190			RK73GB1J472J	CHIP R 4.7K J 1/16W		R416,417			RK73GB1J474J	CHIP R 470K J 1/16W	
R195			RK73GB1J222J	CHIP R 2.2K J 1/16W		D1			1SR154-400	DIODE	
R199			RK73HB1J102J	CHIP R 1.0K J 1/16W		D2,3			MA2S111	DIODE	
R202			RK73GB1J271J	CHIP R 270 J 1/16W		D4			RB706F-40	DIODE	
R210			RK73GB1J561J	CHIP R 560 J 1/16W		D5			DAN222	DIODE	
R216			RK73GB1J152J	CHIP R 1.5K J 1/16W		D6			MA2S111	DIODE	
R218			RK73HB1J473J	CHIP R 47K J 1/16W		D7			DAN222	DIODE	
R219			RK73GB1J330J	CHIP R 33 J 1/16W		D8			RB706F-40	DIODE	
R221			RK73HB1J102J	CHIP R 1.0K J 1/16W		D9			MA2S077	DIODE	
R241			RK73GB1J331J	CHIP R 330 J 1/16W		D10			HZU5ALL	DIODE	
R242			R92-1252-05	CHIP R 0 OHM		D11			MA742	DIODE	
R244			RK73GB1J180J	CHIP R 18 J 1/16W		D12			HVC131	DIODE	
R245			RK73EB2ER39K	CHIP R 0.39 K 1/4W		D14,15			HVC131	DIODE	
R247			RK73EB2ER39K	CHIP R 0.39 K 1/4W		D16			HSM88AS	DIODE	
R248			R92-1252-05	CHIP R 0 OHM		D17,18			DA221	DIODE	
R249			RK73EB2ER39K	CHIP R 0.39 K 1/4W		D20			HVC375B	VARIABLE CAPACITANCE DIODE	
R250			R92-1252-05	CHIP R 0 OHM		D22			HVC375B	VARIABLE CAPACITANCE DIODE	
R251-253			RN73GH1J154D	CHIP R 150K D 1/16W		D23			1SS373	DIODE	
R254			RK73GB1J221J	CHIP R 220 J 1/16W		D24,25			MA2S077	DIODE	
R255-257			RN73GH1J154D	CHIP R 150K D 1/16W		D401			HVC131	DIODE	
R258			RK73GB1J221J	CHIP R 220 J 1/16W		D402			MA2S111	DIODE	
R259,260			R92-1252-05	CHIP R 0 OHM		IC1,2			TC75W51FU	IC(BUFFER AMP)	
R261			RK73GB1J103J	CHIP R 10K J 1/16W		IC3			RN5VL42C	IC(VOLTAGE DETECTOR)	
R262			RK73GB1J470J	CHIP R 47 J 1/16W		IC4			TC75W51FU	IC(BUFFER AMP)	
R263,264			RK73GB1J104J	CHIP R 100K J 1/16W		IC5			S-81350HG-KD	IC(VOLTAGE REGULATOR/5M)	
R265			RK73GB1J473J	CHIP R 47K J 1/16W		IC6			NJU7201U50	IC(VOLTAGE REGULATOR/5V)	
R266			R92-1252-05	CHIP R 0 OHM		IC7			TC75W51FU	IC(BUFFER AMP)	
R267			RK73GB1J181J	CHIP R 180 J 1/16W		IC8			M62364FP	IC(D/A CONVERTER)	
R268			RK73GB1J105J	CHIP R 1.0M J 1/16W		IC9			TK11250BM	IC(VOLTAGE REGULATOR/5C)	
R269			RK73GB1J682J	CHIP R 6.8K J 1/16W		IC10			TC75S51F	IC(ACTIVE FILTER)	
R270			R92-1252-05	CHIP R 0 OHM		IC11			TC75W51FU	IC(ACTIVE FILTER)	
R271			RK73GB1J332J	CHIP R 3.3K J 1/16W		IC12			TA31136FN	IC(FM IF)	
R272			R92-1252-05	CHIP R 0 OHM		IC13			TC35453F	IC(AUDIO PROCESSOR)	
R273			RK73GB1J223J	CHIP R 22K J 1/16W		IC14			SA7025DK	IC(PLL SYSTEM)	
R276			R92-1252-05	CHIP R 0 OHM		IC16			LC73872M	IC(DTMF DECODER)	
R277			RK73GB1J223J	CHIP R 22K J 1/16W		IC17			AT29C020-90TI	IC(FLASH MEMORY)	
R279,280			R92-1252-05	CHIP R 0 OHM		IC17			W29C020C90	IC(FLASH MEMORY)	
R282			RK73GB1J223J	CHIP R 22K J 1/16W		IC18			GN2011(Q)	IC(ACTIVE DBM)	
R283			RK73GB1J472J	CHIP R 4.7K J 1/16W		IC19			30620M8A-2K9GP	IC(CPU)	
R284			RK73GB1J221J	CHIP R 220 J 1/16W		IC20			AT2416N10SI2.5	IC(EEPROM)	
R285			R92-1252-05	CHIP R 0 OHM		IC21,22			BU4094BCFV	IC(SHIFT REGISTER)	

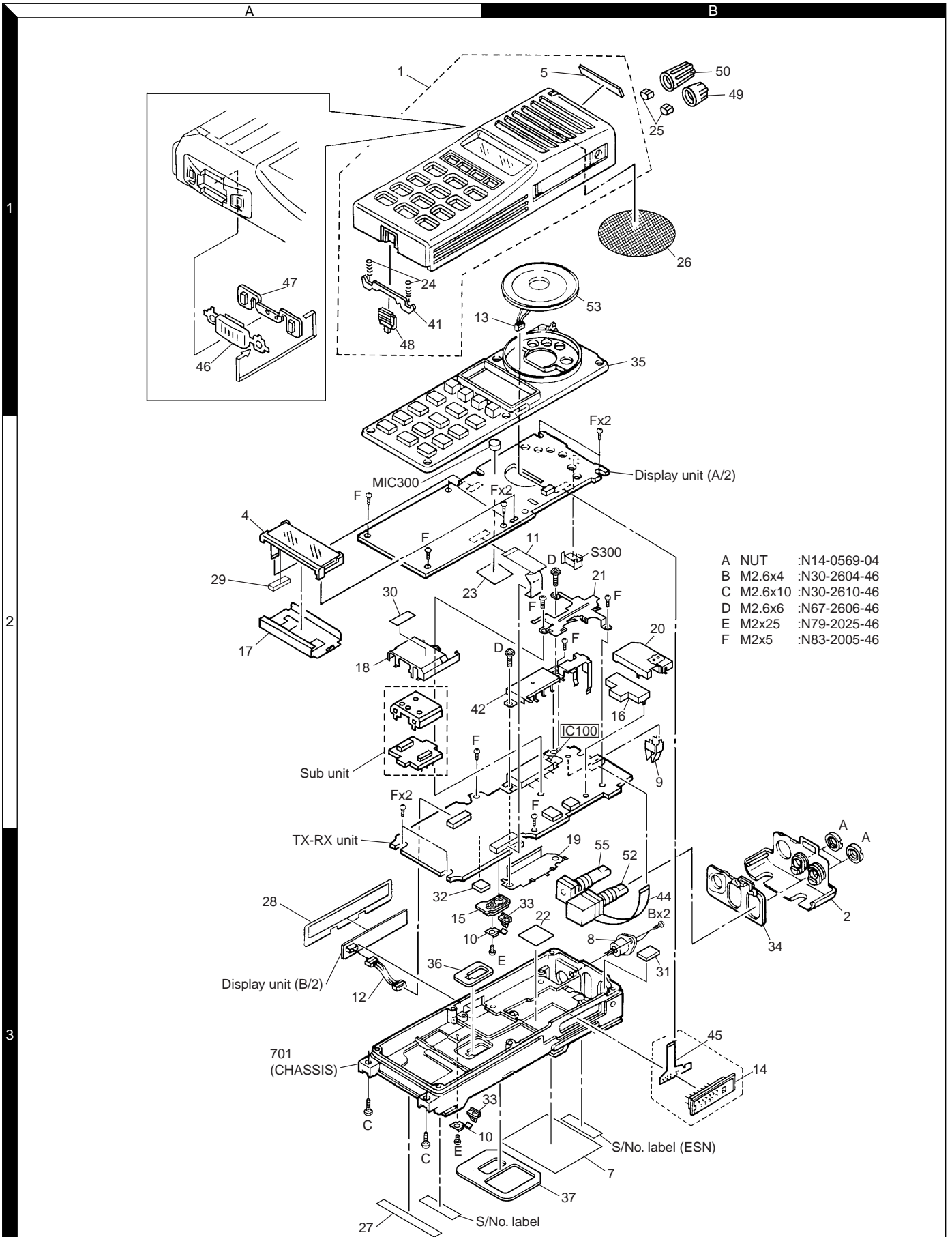
## PARTS LIST

TX-RX UNIT (X57-6202-71)

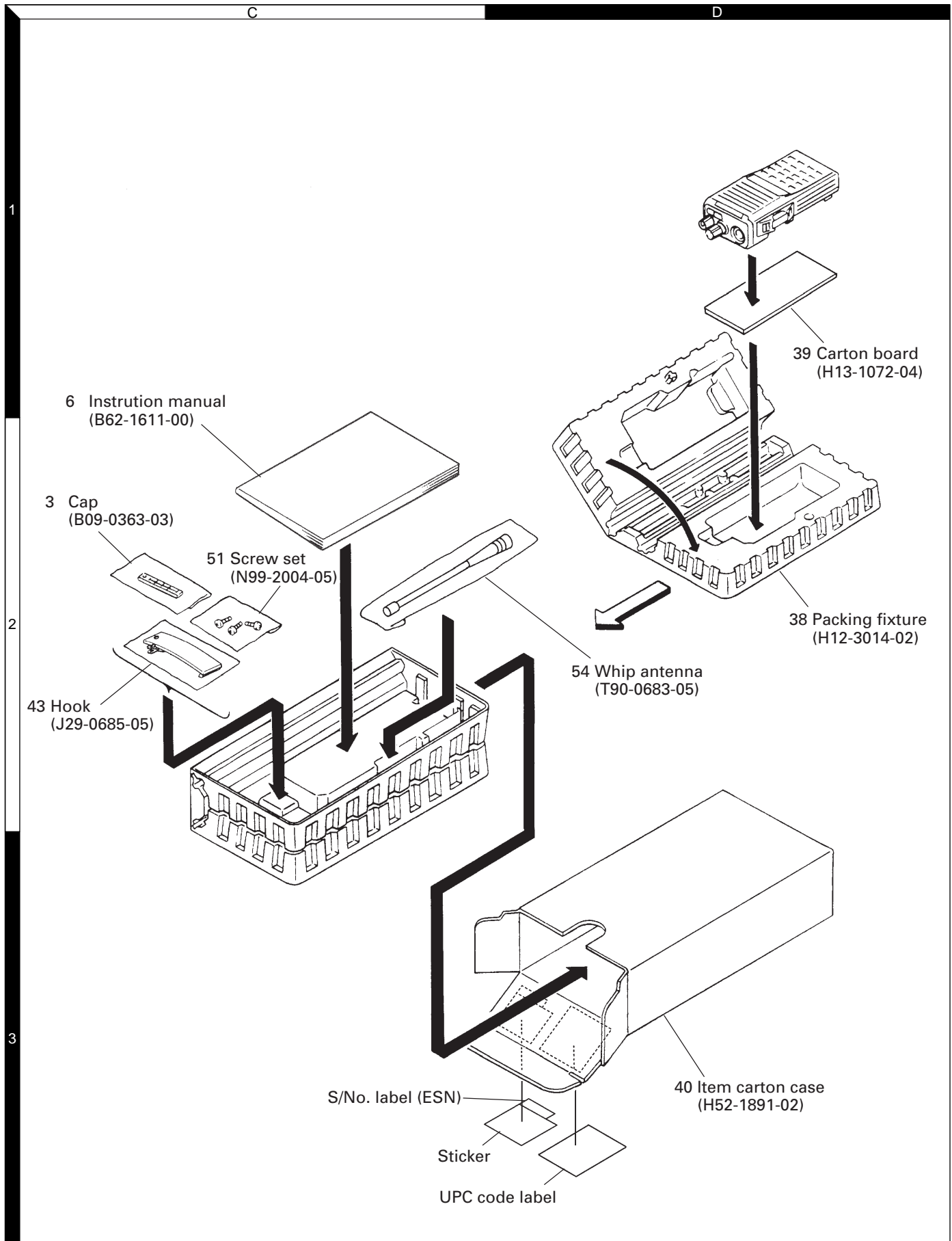
SUB UNIT (X58-4590-31)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
IC23			NJM2904V	IC(APC)		L58,59			L40-1085-44	SMALL FIXED INDUCTOR(100.0NH)	
IC24			TC7S66FU	IC(ANALOG SWITCH)		L60,61			L40-3391-37	SMALL FIXED INDUCTOR(3.3UH)	
IC25			TC75W51FU	IC(ACTIVE FILTER)		L62			L92-0138-05	FERRITE CHIP	
IC100	2B		M68732SHA	IC(POWER MODULE)		L63			L40-1275-44	SMALL FIXED INDUCTOR(12.0NH)	
Q1			DTC144EE	DIGITAL TRANSISTOR							
Q2			2SJ243	FET		R50			RK73HB1J473J	CHIP R 47K J 1/16W	
Q3			2SA1745(6,7)	TRANSISTOR		R51			RK73HB1J103J	CHIP R 10K J 1/16W	
Q4			2SC4617(S)	TRANSISTOR		R52			RK73HB1J473J	CHIP R 47K J 1/16W	
Q5			2SJ243	FET		R53,54			RK73HB1J101J	CHIP R 100 J 1/16W	
Q6			DTA144EE	DIGITAL TRANSISTOR		R55			RK73HB1J104J	CHIP R 100K J 1/16W	
Q7			DTC144EE	DIGITAL TRANSISTOR		R56			RK73HB1J181J	CHIP R 180 J 1/16W	
Q8			2SC4617(S)	TRANSISTOR		R57			RK73HB1J221J	CHIP R 220 J 1/16W	
Q9,10			DTC144EE	DIGITAL TRANSISTOR		R58			RK73HB1J224J	CHIP R 220K J 1/16W	
Q11			2SK1824	FET		R59			RK73HB1J101J	CHIP R 100 J 1/16W	
Q12			2SC5108(Y)	TRANSISTOR		D50-57			HVC350B	VARIABLE CAPACITANCE DIODE	
Q13-15			2SK1824	FET		D58			HVC351	VARIABLE CAPACITANCE DIODE	
Q16-18			2SC5108(Y)	TRANSISTOR		Q50			2SK508NV(K52)	FET	
Q19			2SC4619	TRANSISTOR		Q51			2SJ243	FET	
Q20			2SC4988	TRANSISTOR		Q52			2SK508NV(K52)	FET	
Q21,22			DTC114EE	DIGITAL TRANSISTOR		Q53			UMC4	TRANSISTOR	
Q23			2SK1824	FET		Q54			2SC5108(Y)	TRANSISTOR	
Q24			3SK239A	FET							
Q25			DTA144EE	DIGITAL TRANSISTOR							
Q26			2SK1824	FET							
TH1			157-302-65801	THERMISTOR							
TH401			157-104-65001	THERMISTOR							
<b>A1:SUB UNIT (VCO) (X58-4590-31)</b>											
The A1 is replaceable as a unit assembly so individual parts are not kept in stock.											
C50			CC73HCH1H470J	CHIP C 47PF J							
C51			CC73HCH1H080B	CHIP C 8.0PF B							
C53			CC73HCH1H0R5B	CHIP C 0.5PF B							
C54			CC73HCH1H020B	CHIP C 2.0PF B							
C55,56			CC73HCH1H060B	CHIP C 6.0PF B							
C57			CK73HB1H102K	CHIP C 1000PF K							
C58			CC73HCH1H0R5B	CHIP C 0.5PF B							
C59			CK73HB1H471K	CHIP C 470PF K							
C60			CC73HCH1H060B	CHIP C 6.0PF B							
C61,62			CK73HB1H102K	CHIP C 1000PF K							
C63			CK73HB1H471K	CHIP C 470PF K							
C64			CC73HCH1H101J	CHIP C 100PF J							
C65			CK73HB1H102K	CHIP C 1000PF K							
C66			CC73HCH1H220J	CHIP C 22PF J							
C67			CC73HCH1H060B	CHIP C 6.0PF B							
C68			CC73HCH1H030B	CHIP C 3.0PF B							
C69			CC73HCH1H080B	CHIP C 8.0PF B							
C70			CC73HCH1H100B	CHIP C 10PF B							
C71			CC73HCH1H0R5B	CHIP C 0.5PF B							
C72,73			CC73HCH1H010B	CHIP C 1.0PF B							
C74			CC73HCH1H040B	CHIP C 4.0PF B							
TC50,51			C05-0384-05	CERAMIC TRIMMER CAP(10PF)							
CN50,51			E40-5622-05	PIN ASSY(3P)							
L50-53			L40-3391-37	SMALL FIXED INDUCTOR(3.3UH)							
L56			L34-4572-05	AIR-CORE COIL							
L57			L34-4573-05	AIR-CORE COIL							

## EXPLODED VIEW



## PACKING



# ADJUSTMENT

## Test Equipment Required for Alignment

Test Equipment	Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range Modulation Output	420 to 520MHz Frequency modulation and external modulation. -127dBm/0.1μV to greater than -47dBm/1mV
2. Power Meter	Input Impedance Operation Frequency Measurement Range	50Ω. 420 to 520MHz or more. Vicinity of 10W
3. Deviation Meter	Frequency Range	420 to 520MHz.
4. Digital Volt Meter (DVM)	Measuring Range Input Impedance	10mV to 10V DC High input impedance for minimum circuit loading.
5. Oscilloscope		DC through 30MHz.
6. High Sensitivity Frequency Counter	Frequency Range Frequency Stability	10Hz to 1000MHz. 0.2ppm or less.
7. Ammeter		5A.
8. AF Volt Meter (AF VTVM)	Frequency Range Voltage Range	50Hz to 10kHz. 1mV to 10V.
9. Audio Generator (AG)	Frequency Range Output	50Hz to 5kHz or more. 0 to 1V.
10. Distortion Meter	Capability Input Level	3% or less at 1kHz. 50mV to 10Vrms.
11. Spectrum Analyzer	Measuring Range	DC to 1GHz or more
12. Tracking Generator	Center frequency Output Voltage	50kHz to 600MHz 100mV or more
13. 16Ω Dummy Load		Approx. 16Ω, 3W.
14. Regulated Power Supply		5V to 10V, approx. 5A Useful if ammeter equipped.

### ■ The following parts are required for adjustment

#### 1. Antenna connector adapter

The antenna connector of this radio uses an SMA terminal.

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

#### Note

When the antenna connector adapter touches the knob, draw out the knob to mount the connector.

#### 2. Universal connector

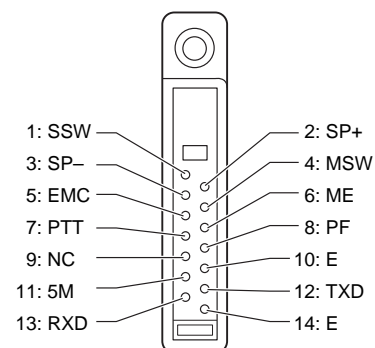
Use the interface cable (KPG-36) for PC tuning or the lead wire with plug (E30-3287-18) and screw (N08-0535-08) for panel tuning. Connect the plug to the universal connector of the radio and tighten the screw.

The lead wire with plug (E30-3287-18) and screw (N08-0535-08) terminals are as follows. Numbers are universal connector terminal numbers.

#### Caution

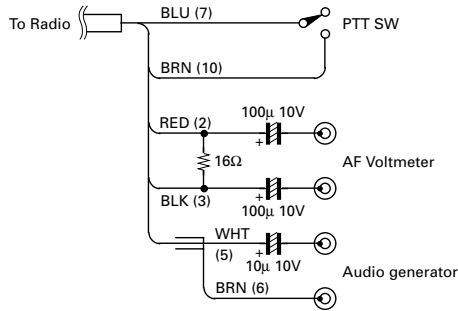
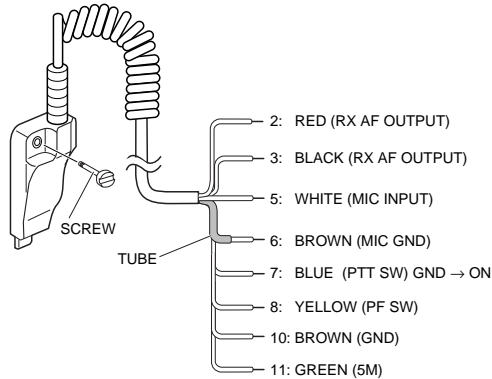
1. When connecting the plug to the universal connector of the radio, a short circuit may occur. To prevent this, be sure to turn the radio POWER switch off.
2. Since the RX AF output is a BTL output, there is a DC component. Isolate this with a capacitor or transformer as shown in the figure.
3. Do not connect an instrument between red or black and GND.

#### • Universal connector



## ADJUSTMENT

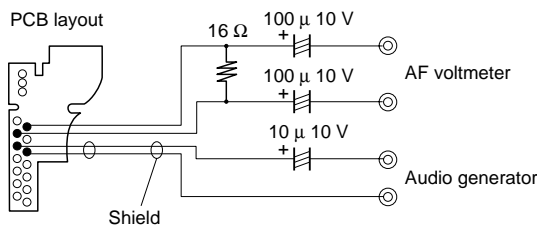
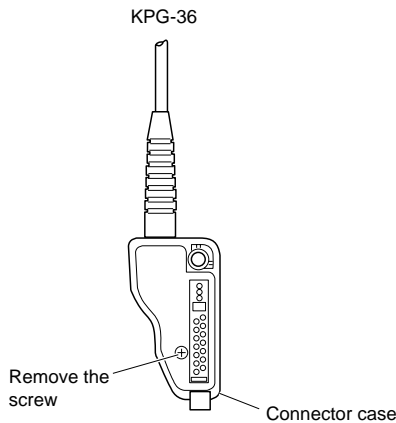
### • Panel tuning



### • PC tuning

Connect the wires to the PCB in the connector case of interface cable.

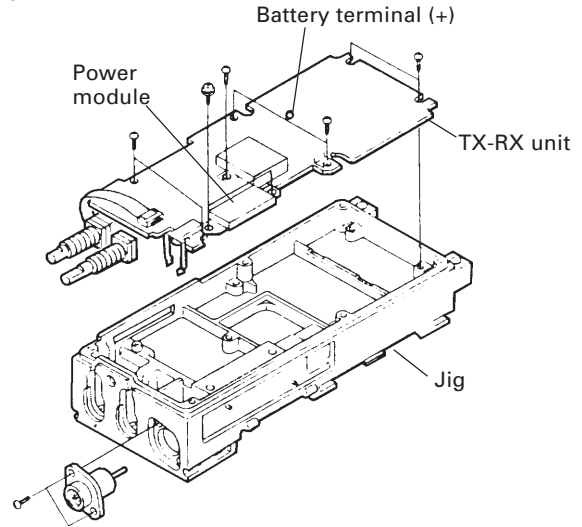
For output the wires out of the connector case, need to process the connector case.



### Repair Jig (Chassis)

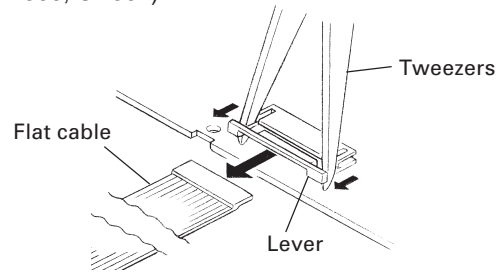
Use jig (part No.: W05-0825-00) for repairing the TK-380. Place the TX-RX unit on the jig and fit it with 7 screws.

The jig facilitates the voltage check and protects the module when the voltage on the flow side of the TX-RX unit is checked during repairs.

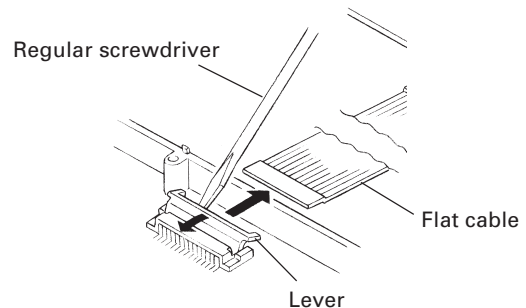


### How to Remove the Flat Cable

1. Gently draw out both sides of the connector lever uniformly in the direction of the arrow with tweezers. (CN300, CN301)



2. Gently rise up the connector lever in the direction of the arrow with a fine regular screwdriver or tweezers. (CN1, CN3, CN304)



# ADJUSTMENT

## Test Mode

### ■ Test mode operating features



This transceiver has a test mode. **To enter test mode, press [B] key and turn power on. Hold [B] 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	"SFT" appears	"SFT" not appears
[PTT]	Used when making a transmission.	Used when making a transmission.
[AUX]	Unused	Unused
[MON]	Shift OFF.	Monitor ON and OFF.
[CALL]	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, semi wide and narrow.
[A]	FFSK 1200bps and 2400bps	Sets to the Tuning mode.
[B]	Shift OFF	Shift ON.
[C]	Compander function ON and OFF.	RF power HIGH and LOW.
[D]	Beat shift ON and OFF	Changes signalling.
[0] to [9], and [#],[*]	Shift OFF	Used as the DTMF keypad. If a key is pressed during transmission, the DTMF corresponding to the key that was pressed is sent.
[ENCODER]	Changes channel.	Changes channel.

**Note:** If a [A],[B],[C],[D] 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 monitor ON.
"SVC"	Unused
" 	Lights at FFSK 2400bps.

#### • 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

"SFT"                      Appears at Shift 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) (E2 Type)

Channel No.	RX frequency	TX frequency
1	495.05000	495.10000
2	470.05000	470.10000
3	519.95000	519.90000
4	490.00000	490.00000
5	490.20000	490.20000
6	490.40000	490.40000
7 ~ 16	—	—

## ADJUSTMENT

### Signalling

Signalling No.	RX	TX
1	None	None
2	None	100Hz Square wave
3	QT 67.0Hz	QT 67.0Hz
4	QT 151.4Hz	QT 151.4Hz
5	QT 210.7Hz	QT 210.7Hz
6	QT 250.3Hz	QT 250.3Hz
7	DQT 023N	DQT 023N
8	DQT 754I	DQT 754I
9	DTMF DEC.(159D)	DTMF ENC.(159D)
10	None	DTMF tone 9
11	2Tone (321.7/928.1Hz)	None
12	Single Tone 1200Hz	Single Tone 1200Hz
13	5Tone DEC.(EIA #12345)	5Tone ENC.(EIA #12345)
14	None	FFSK(1:1 Pattern)
15	FFSK Code	FFSK Code

### Panel Tuning Mode (E2 Type)

TEST Ch	RX frequency (MHz)	TX frequency (MHz)
L	470.05000	470.10000
L2	478.05000	478.10000
C	495.05000	495.10000
H2	511.95000	511.90000
H	519.95000	519.90000

- **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).

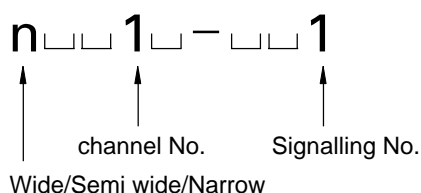
The speaker output connector must be terminated with a 16Ω dummy load and connected to an AC voltmeter and an audio distortion meter or a SINAD measurement meter at all times during tuning.

- **Transceiver tuning**

(To place transceiver in tuning mode)

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

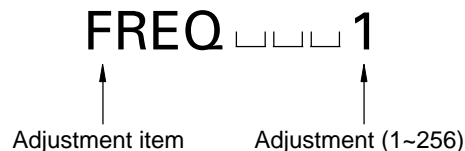
### LCD display (Test mode)



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

Use [D ▶] button to select the adjustment item through tuning modes. Use [B] button to adjust 3 or 5 point tuning, and use [CALL] button to switch between Wide/Semi wide/Narrow.

### LCD display (Tuning mode)

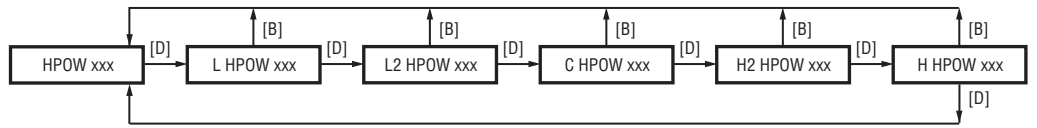




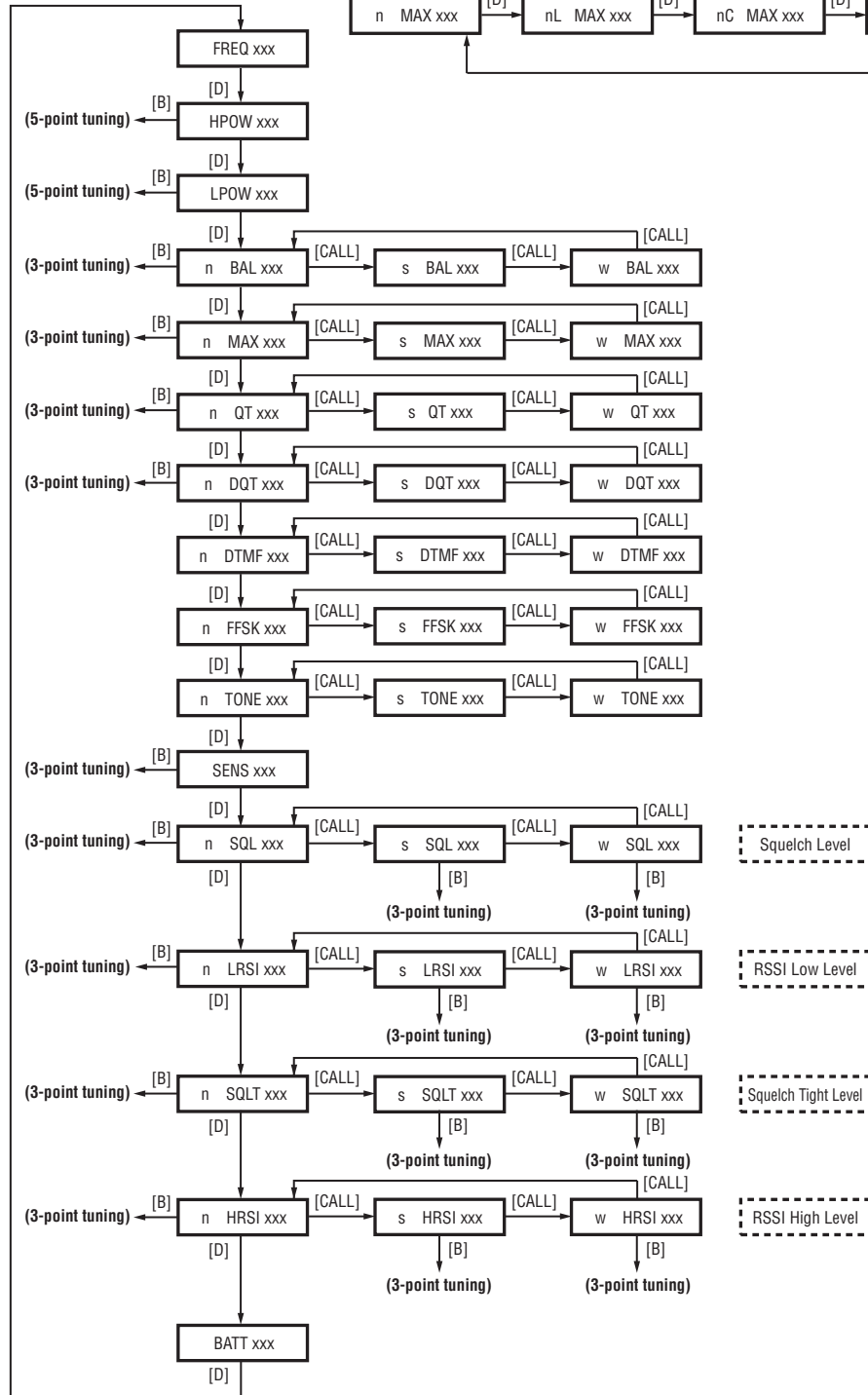
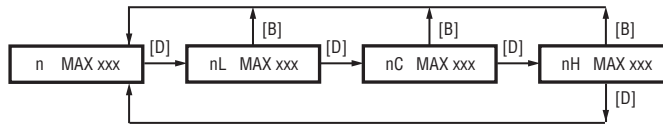
## ADJUSTMENT

### ■ Tuning mode

#### 5-point tuning ex. RF Power High



#### 3-point tuning ex. Max Deviation (Narrow)



## 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 [Semi wide] MOD:1kHz, DEV:2.4kHz [Narrow] MOD:1kHz, DEV:1.5kHz							
2. VCO lock voltage RX TX	<b>[Panel Test Mode]</b>	Power meter DVM	Panel TX-RX	ANT CV (CN14)			Check	0.8V or more
	1) CH-Sig:2-1							4.4V or less
	2) CH-Sig:3-1							0.8V or more
	3) CH-Sig:2-1 PTT:ON							4.4V or less
	4) CH-Sig:3-1 PTT:ON							

### Transmitter Section [Panel Tuning Mode except when Panel TEST Mode is specified.]

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 (Note:)After replacing the TCXO (X1), align using KPG-60D.	
2. Max Power Check	1) Adj item [HPOW] Adjust [256] 2) Adj item [L HPOW] → [L2 HPOW] → [C HPOW] → [H2 HPOW] → [H HPOW] Adjust [256] PTT:ON						Check 4.3W or more	
3. Hight Power Adjust	1) Adj item [HPOW] Adjust [***] 2) Adj item [L HPOW] → [L2 HPOW] → [C HPOW] → [H2 HPOW] → [H HPOW] Adjust [***] PTT:ON					Encoder knob	4.0W ±0.1W 2.2A or less	
4. Hight Power Check	<b>[Panel Test Mode]</b>						Check 3.8~4.2W 2.3A or less	
	1) CH-Sig:1-1 PTT:ON							
	2) CH-Sig:2-1 PTT:ON							
5. Low Power Adjust	1) Adj item [LPOW] Adjust [***] 2) Adj item [L LPOW] → [L2 LPOW] → [C LPOW] → [H2 LPOW] → [H LPOW] Adjust [***] PTT:ON				Panel	Encoder knob	0.8W ±0.1W 1.0A or less	
	3) CH-Sig:3-1 PTT:ON						Check 0.5~1.5W 1.2A or less	
6. Low Power Check	<b>[Panel Test Mode]</b>							
	1) CH-Sig:1-1 Set low power (Push [C]) PTT:ON							
	2) CH-Sig:2-1 PTT:ON							
	3) CH-Sig:3-1 PTT:ON							

## ADJUSTMENT

## Transmitter Section [Panel Tuning Mode except when Panel TEST Mode is specified.]

Item	Condition	Measurement			Adjustment			Specifications/ Remark
		Test equipment	Unit	Terminal	Unit	Parts	Method	
7. DQT Balance Adjust [Narrow]	1) Adj item [n BAL] Adjust [***] LPF:3kHz HPF:OFF	Power meter Dev meter Oscilloscope AG AF VTVM	Panel	ANT universal connector	Panel	Encoder knob	Make the demodulation waves into square waves.	
	2) Adj item [nL BAL] → [nC BAL] → [nH BAL] Adjust [***] PTT:ON							
	[Semi wide] 3) Adj item [s BAL] Adjust [***] PTT:ON							
[Wide]	4) Adj item [w BAL] Adjust [***] PTT:ON							
8. Max DEV Adjust [Narrow]	1) Adj item [n MAX] Adjust [***] AG:1kHz / 80mV Dev meter filter LPF:15kHz HPF:OFF						1.85kHz (According to the larger +,-)	±50Hz
	2) Adj item [nL MAX] → [nC MAX] → [nH MAX] Adjust [***] PTT:ON							
	[Semi wide] 3) Adj item [s MAX] Adjust [***] PTT:ON						3.4kHz (According to the larger +,-)	±50Hz
[Wide]	4) Adj item [w MAX] Adjust [***] PTT:ON						4.20kHz (According to the larger+,-)	±50Hz
9. MIC Sensitivity Check	<b>[Panel Test Mode]</b> 1) CH-Sig: 1-1 AG:1kHz / 8mV LPF:15kHz PTT:ON						Check	1.2~2.0kHz
10.QT Deviation Adjust [Narrow]	1) Adj item [n QT] Adjust [***] LPF:3kHz HPF:OFF		Panel	ANT universal connector	Panel	Encoder knob	0.35kHz	±50Hz
	2) Adj item [nL QT] → [nC QT] → [nH QT] Adjust [***] PTT:ON							
	[Semi wide] 3) Adj item [s QT] Adjust [***] PTT:ON						0.60kHz	±50Hz
[Wide]	4) Adj item [w QT] Adjust [***] PTT:ON						0.75kHz	±50Hz

## ADJUSTMENT

Transmitter Section [Panel Tuning Mode except when Panel TEST Mode is specified.]

Item	Condition	Measurement			Adjustment			Specifications/ Remark
		Test equipment	Unit	Terminal	Unit	Parts	Method	
11.DQT Deviation Adjust [Narrow]	1) Adj item [n DQT] Adjust [***] LPF:3kHz HPF:OFF	Power meter Dev meter Oscilloscope AG AF VTVM	Panel	ANT universal connector	Panel	Encoder knob	0.35kHz	±50Hz
	2) Adj item [nL DQT] → [nC DQT] → [nH DQT] Adjust [***] PTT:ON							
	[Semi wide] 3) Adj item [s DQT] Adjust [***] PTT:ON						0.60kHz	±50Hz
	[Wide] 4) Adj item [w DQT] Adjust [***] PTT:ON						0.75kHz	±50Hz
12.DTMF Deviation Adjust [Narrow]	1) Adj item [n DTMF] Adjust [***] LPF:15kHz HPF:OFF PTT:ON						1.4kHz	±0.1kHz
	[Semi wide] 2) Adj item [s DTMF] Adjust [***] PTT:ON						2.4kHz	±0.1kHz
	[Wide] 3) Adj item [w DTMF] Adjust [***] PTT:ON						3.0kHz	±0.1kHz
13.FFSK Deviation Adjust [Narrow]	1) Adj item [n FFSK] Adjust [***] LPF:15kHz HPF:OFF PTT:ON						1.4kHz	±0.1kHz
	[Semi wide] 2) Adj item [s FFSK] Adjust [***] PTT:ON						2.4kHz	±0.1kHz
	[Wide] 3) Adj item [w FFSK] Adjust [***] PTT:ON						3.0kHz	±0.1kHz
14.TONE Deviation Adjust [Narrow]	1) Adj item [n TONE] Adjust [***] LPF:15kHz HPF:OFF PTT:ON						1.4kHz	±0.1kHz
	[Semi wide] 2) Adj item [s TONE] Adjust [***] PTT:ON						2.4kHz	±0.1kHz
	[Wide] 3) Adj item [w TONE] Adjust [***] PTT:ON						3.0kHz	±0.1Hz

## ADJUSTMENT

## Transmitter Section [Panel Tuning Mode except when Panel TEST Mode is specified.]

Item	Condition	Measurement			Adjustment			Specifications/ Remark
		Test equipment	Unit	Terminal	Unit	Parts	Method	
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 [C] key. That numeric will be stored in memory.	BATT terminal voltage:6.2V
16.BATT Detection Check	<b>[Panel Test Mode]</b> 1) CH-Sig:1-1 BATT terminal voltage:6.5V PTT:ON						Check	No blinking of LED
	2) BATT terminal voltage:5.7V PTT:ON							Blinking of LED

## ADJUSTMENT

Receiver Section [Panel Tuning Mode except when Panel TEST Mode is specified.]

Item	Condition	Measurement			Adjustment			Specifications/ Remark
		Test equipment	Unit	Terminal	Unit	Parts	Method	
1. Sensitivity Adjust (BPF characteristic)	1) Adj item [SENS] Adjust [***] (E2)	Tracking generator	Panel	ANT	Panel	Encoder knob	<b>Adjustment Low-edge-f</b> Turn the en- coder knob to adjust the sensitivity as shown left.(L)	
	2) Low-edge frequency Adj item [L SENS] Spe-Ana setting Center-f : 495MHz Span : 200MHz RBW : 300kHz VBW : 10kHz REF level : -10dBm ATT : 0dB Tra-G setting Input level:-30dBm	Spectrum analyzer	TX-RX	TP (CN13) Need couple capacitor (1000PF)			<b>Adjustment Center-f</b> Turn the en- coder knob to adjust the sensitivity as shown left.(C)	
	3) Center frequency Adj item [C SENS]						<b>Adjustment High-edge-f</b> Turn the en- coder knob to adjust the sensitivity as shown left.(H)	
	4) High-edge frequency Adj item [H SENS]							
		<p>REF -10.0 dBm #ATTEN 0 dB MKR 520.0 MHz -19.88 dBm</p> <p>PEAK LOG 10 dB/</p> <p>CENTER 495.0 MHz</p> <p>VA VB VC FC CORR</p> <p>CENTER 495.0 MHz #RES BW 300 kHz #VBW 10 kHz SPAN 200.0 MHz SWP 200 msec</p> <p><b>Band Pass Filter Characteristic (E2)</b></p>						
2. Sensitivity Check	<b>[Panel Test Mode]</b> 1) CH-Sig:1-1 SSG OUT Wide:-117dBm (0.316μV) (MOD:1kHz / ±3kHz) Narrow:-116dBm (0.355μV) (MOD:1kHz / ±1.5kHz)	SSG AF VTVM Oscilloscope	Panel	ANT Universal connector			Check	12dB SINAD or more
3. Squelch (Preset) Adjust [Narrow]	1) Adj item [n SQL] Adjust [***] SSG OUT: 12dB SINAD level					Encoder knob	Adjust to point of opening squelch.	
	2) Adj item [nL SQL] → [nC SQL] → [nH SQL] Adjust [***]							
	[Semi Wide]	3) Adj item [s SQL] Adjust [***] 12dB SINAD level						
		4) Adj item [sL SQL] → [sC SQL] → [sH SQL] Adjust [***]						
	[Wide]	5) Adj item [w SQL] Adjust [***] 12dB SINAD level						
		6) Adj item [wL SQL] → [wC SQL] → [wH SQL] Adjust [***]						

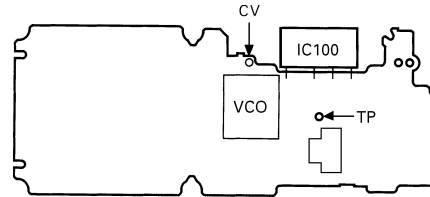
## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/ Remark	
		Test equipment	Unit	Terminal	Unit	Parts	Method		
4. RSSI (Low) Adjust [Narrow]	1) Adj item [n LRSI] Adjust [***] SSG OUT: 12dB SINAD level	SSG AF VTVM Oscilloscope	Panel	ANT Universal connector			After input signal from SSG,press [D] key. That numeric will be stored in memory.		
	2) Adj item [nL LRSI] → [nC LRSI] → [nH LRSI] Adjust [***]								
	[Semi Wide] 3) Adj item [s LRSI] Adjust [***] 12dB SINAD level								
	4) Adj item [sL LRSI] → [sC LRSI] → [sH LRSI] Adjust [***]								
	[Wide] 5) Adj item [w LRSI] Adjust [***] 12dB SINAD level								
	6) Adj item [wL LRSI] → [wC LRSI] → [wH LRSI] Adjust [***]								
5. Squelch (Preset) Check	<b>[Panel Test Mode]</b> 1) CH-Sig:1-1 SSG OUT: 12dB SINAD level						Check	Squelch must be opened.	
	2) SSG OUT:OFF							Squelch must be closed.	
6. Squelch (Tight) Adjust [Narrow]	1) Adj item [n SQLT] Adjust [***] SSG OUT: 12dB SINAD LEVEL +4dB						Encoder knob	Adjust to point of opening squelch.	
	2) Adj item [nL SQLT] → [nC SQLT] → [nH SQLT] Adjust [***]								
	[Semi Wide] 3) Adj item [sL SQLT] → [sC SQLT] → [sH SQLT] Adjust [***]								
	[Wide] 4) Adj item [wL SQLT] → [wC SQLT] → [wH SQLT] Adjust [***]								
7. RSSI (High) Adjust [Narrow]	1) Adj item [n HRSI] Adjust [***] SSG OUT: -70dBm (70.7μV)							After input signal from SSG,press [D] key. That numeric will be stored in memory.	
	2) Adj item [nL HRSI] → [nC HRSI] → [nH HRSI] Adjust [***]								
	[Semi Wide] 3) Adj item [sL HRSI] → [sC HRSI] → [sH HRSI] Adjust [***]								
	[Wide] 4) Adj item [wL HRSI] → [wC HRSI] → [wH HRSI] Adjust [***]								

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/ Remark
		Test equipment	Unit	Terminal	Unit	Parts	Method	
8. Squelch (Tight) Check	<b>[Panel Test Mode]</b> 1) CH-Sig:1-1 SSG OUT: 12dB SINAD LEVEL +4dB	SSG AF VTVM Oscilloscope	Panel	ANT Universal connector			Check	Squelch must be opened.
	2) SSG OUT: OFF							Squelch must be opened.

**Adjustment points**  
TX-RX unit (X57-6202-71)  
component side view

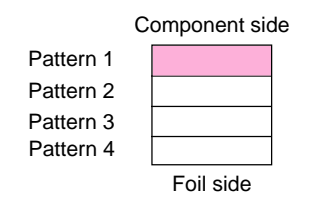
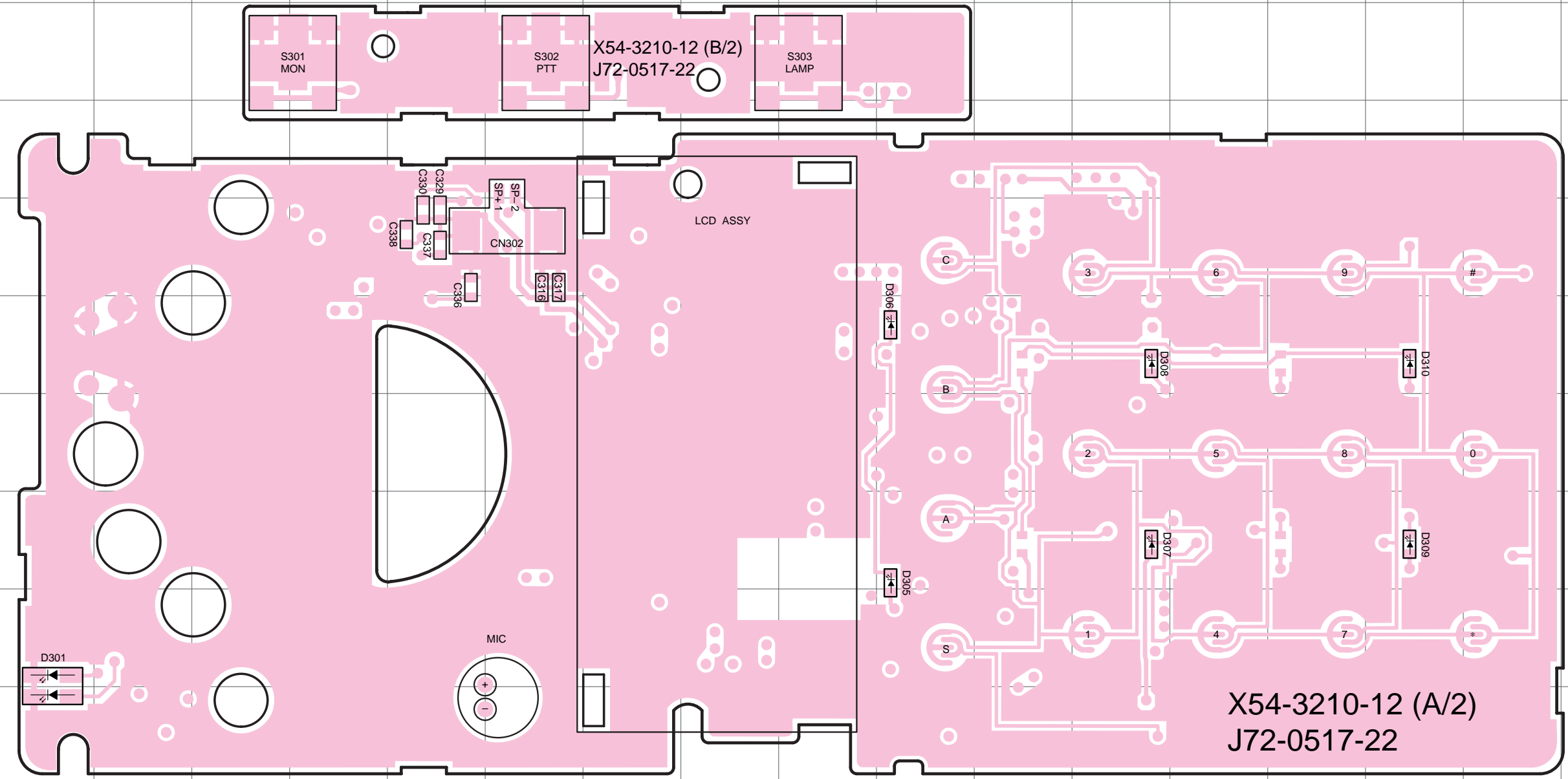




DISPLAY UNIT (X54-3210-12) Component Side View

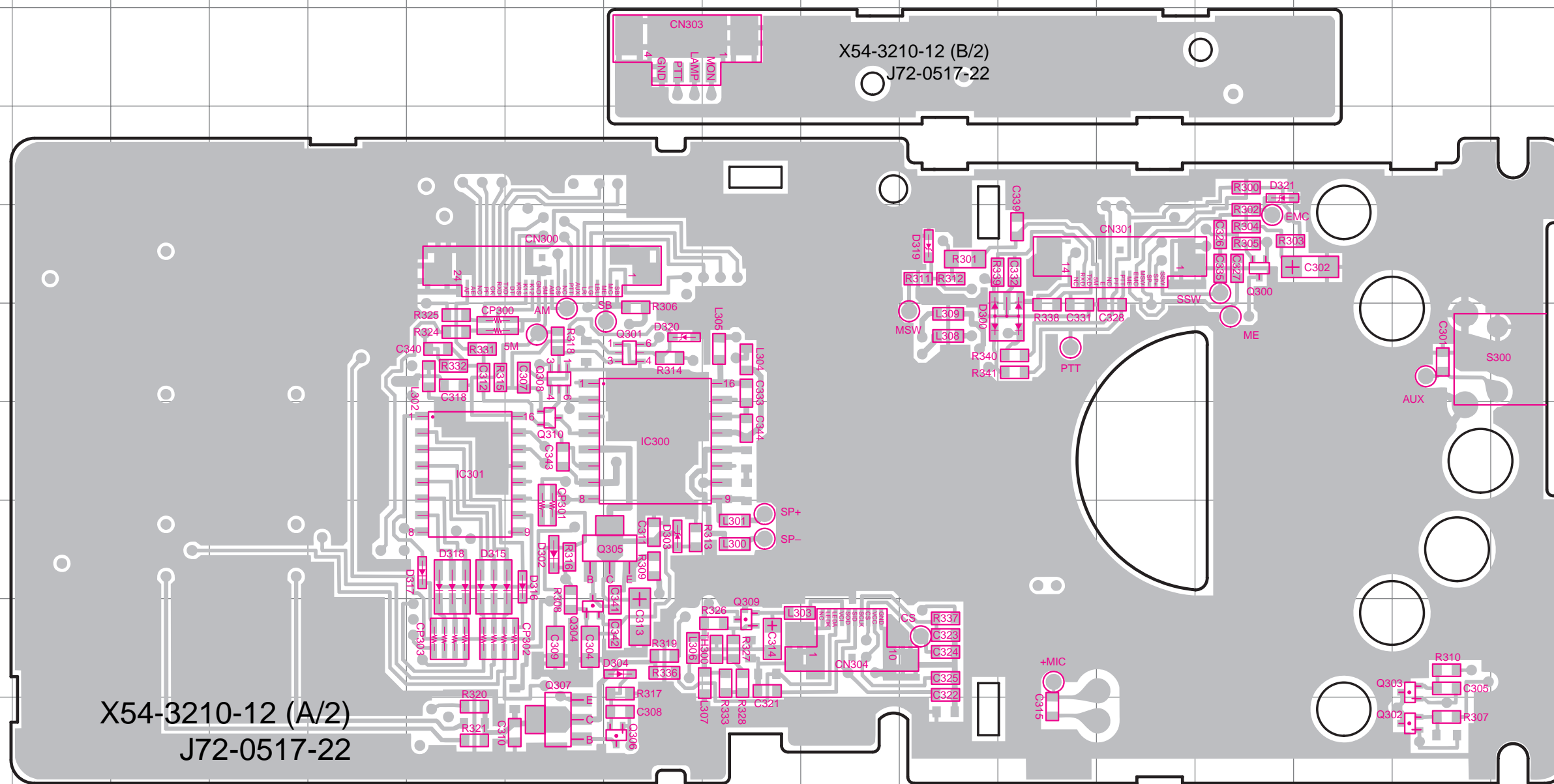
DISPLAY UNIT (X54-3210-12)

Ref. No.	Address
D301	9C
D305	8L
D306	6L
D307	8N
D308	6N
D309	8Q
D310	6Q



# TK-380 PC BOARD VIEW

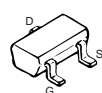
DISPLAY UNIT (X54-3210-12) Foil Side View



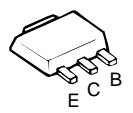
DISPLAY UNIT (X54-3210-12)

Ref. No.	Address
D300	6L
D302	8G
D303	8H
D304	9H
D315	8F
D316	8G
D317	8F
D318	8F
D319	5K
D320	6H
D321	4N
IC300	7H
IC301	7F
Q300	5N
Q301	6H
Q302	10P
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Q306	10H
Q307	10G
Q308	6G
Q309	9I
Q310	7G

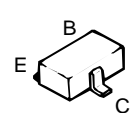
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2SK1824



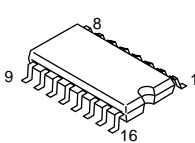
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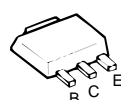
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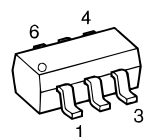
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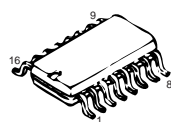
2SB1132



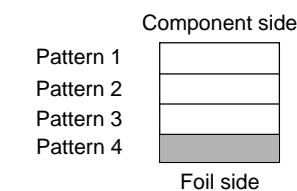
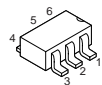
UPA672T



TDA7053AT



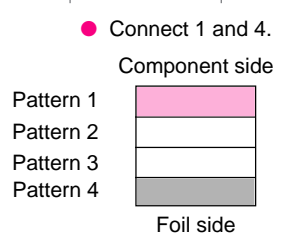
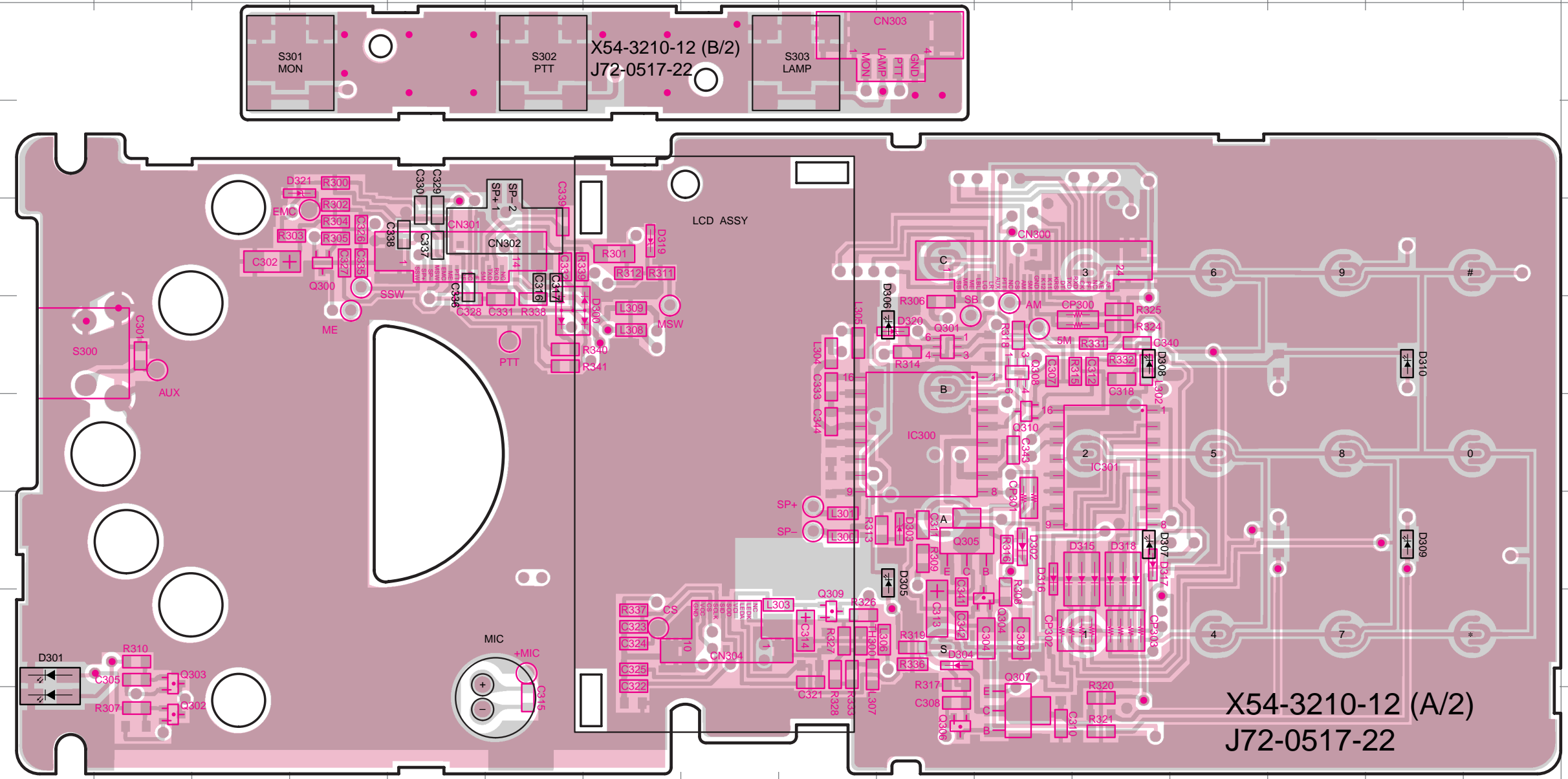
IMN10



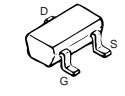
DISPLAY UNIT (X54-3210-12) Component Side + Foil Side View

DISPLAY UNIT (X54-3210-12)

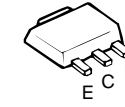
Ref. No.	Address
D300	6H
D301	9C
D302	8M
D303	8L
D304	9L
D305	8L
D306	6L
D307	8N
D308	6N
D309	8Q
D310	6Q
D315	8N
D316	8M
D317	8N
D318	8N
D319	5I
D320	6L
D321	4F
IC300	7L
IC301	7N
Q300	5F
Q301	6L
Q302	10D
Q303	9D
Q304	9M
Q305	8L
Q306	10L
Q307	10M
Q308	6M
Q309	9K
Q310	7M



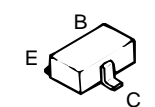
2SJ243  
2SK1824



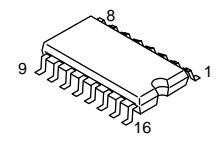
2SB798



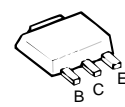
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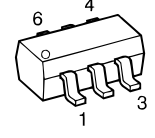
TC74HC4017AF



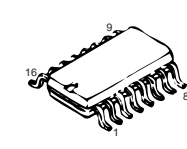
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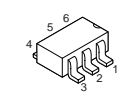
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TDA7053AT

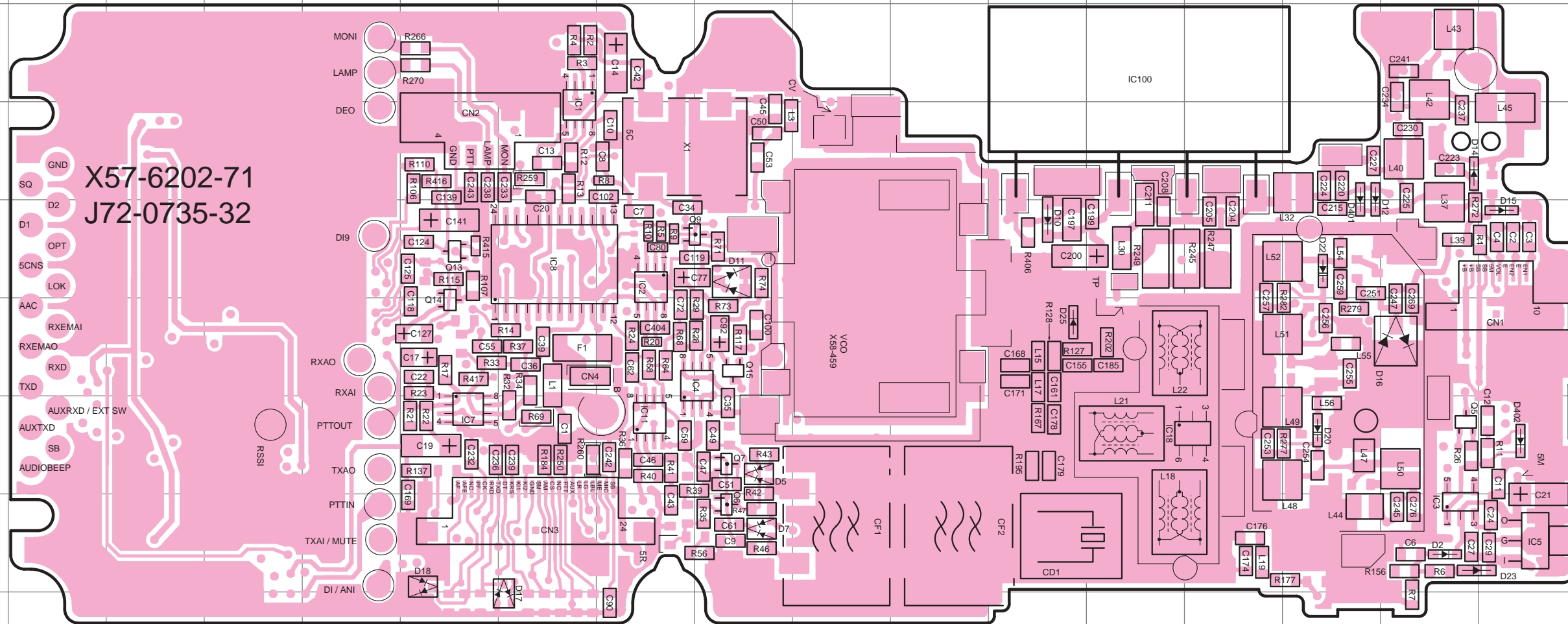


IMN10



# TK-380 PC BOARD VIEW

## TX-RX UNIT (X57-6202-71) Component Side View



### TX-RX UNIT (X57-6202-71)

Ref. No.	Address
D2	8P
D5	7I
D7	8I
D10	5L
D11	5I
D12	4O
D14	4P
D15	5Q
D16	6P
D17	8F
D18	8F
D20	7O
D22	5O
D23	8P
D25	6L
D401	4O
D402	7Q
IC1	4G
IC2	5H
IC3	8P
IC4	6I
IC5	8Q
IC7	7F
IC8	5G
IC11	7H
IC5	7N
Q5	7P
Q6	8I
Q7	7I
Q9	5H
Q13	5F
Q14	5F
Q15	6I

DTA144EE  
DTC144EE



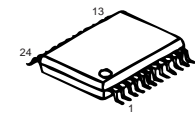
2SJ243  
2SK1824



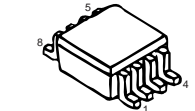
S-81350HG-KD



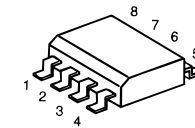
M62364FP



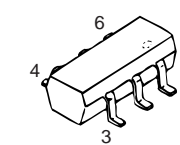
TC75W51FU



RN5VL42C



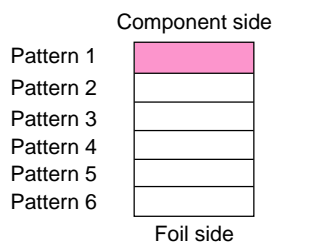
GN2011



DA221  
HSM88AS



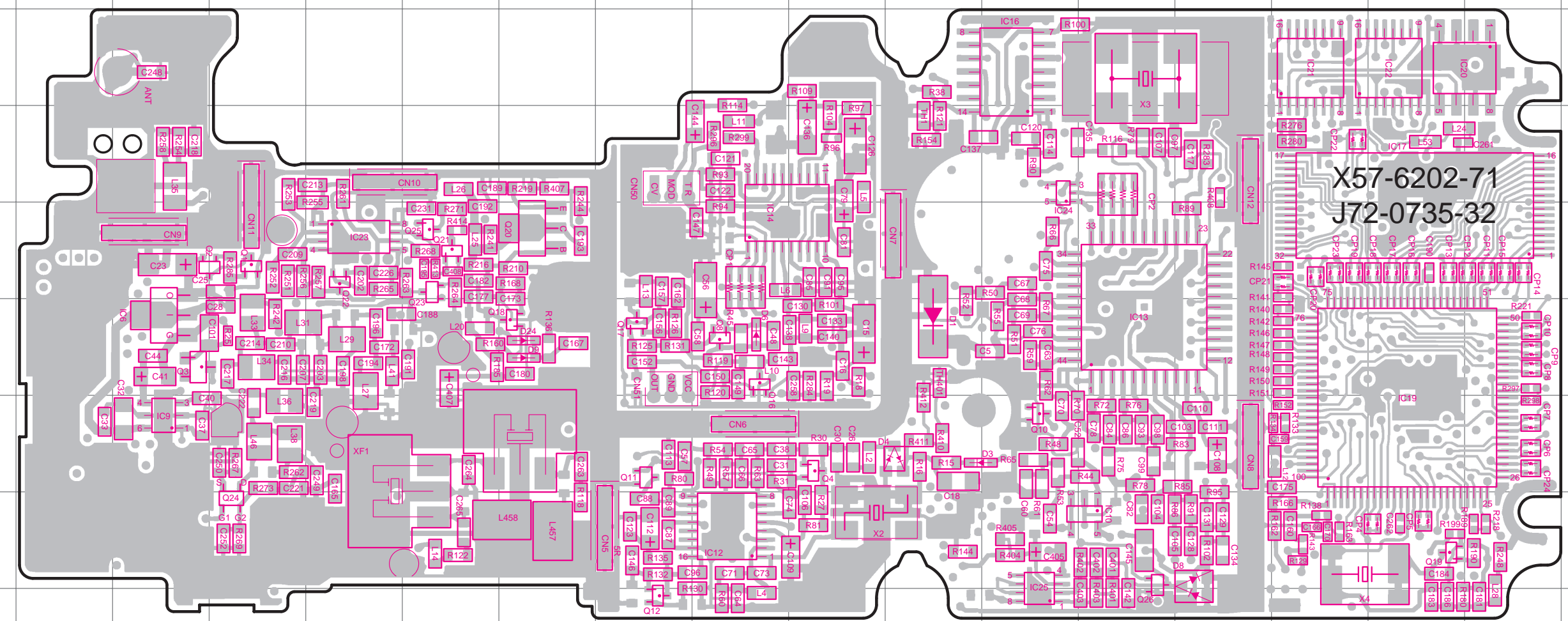
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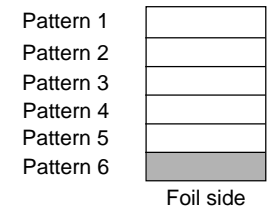
## TX-RX UNIT (X57-6202-71) Foil Side View

### TX-RX UNIT (X57-6202-71)

Ref. No.	Address
D1	6L
D3	7L
D4	7L
D6	6J
D8	8O
D9	6H
D24	6H
IC6	6D
IC9	7D
IC10	8N
IC12	8J
IC13	6N
IC14	5J
IC16	3M
IC17	4Q
IC19	7Q
IC20	3Q
IC21	3P
IC22	3Q
IC23	5F
IC24	4M
IC25	8M
Q1	5E
Q2	5D
Q3	6D
Q4	7K
Q8	6J
Q10	7M
Q11	7I
Q12	9I
Q16	6J
Q17	6I
Q18	6H
Q19	8Q
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Q21	5G
Q22	5F
Q23	5G
Q24	8E
Q25	5G
Q26	8N



### Component side

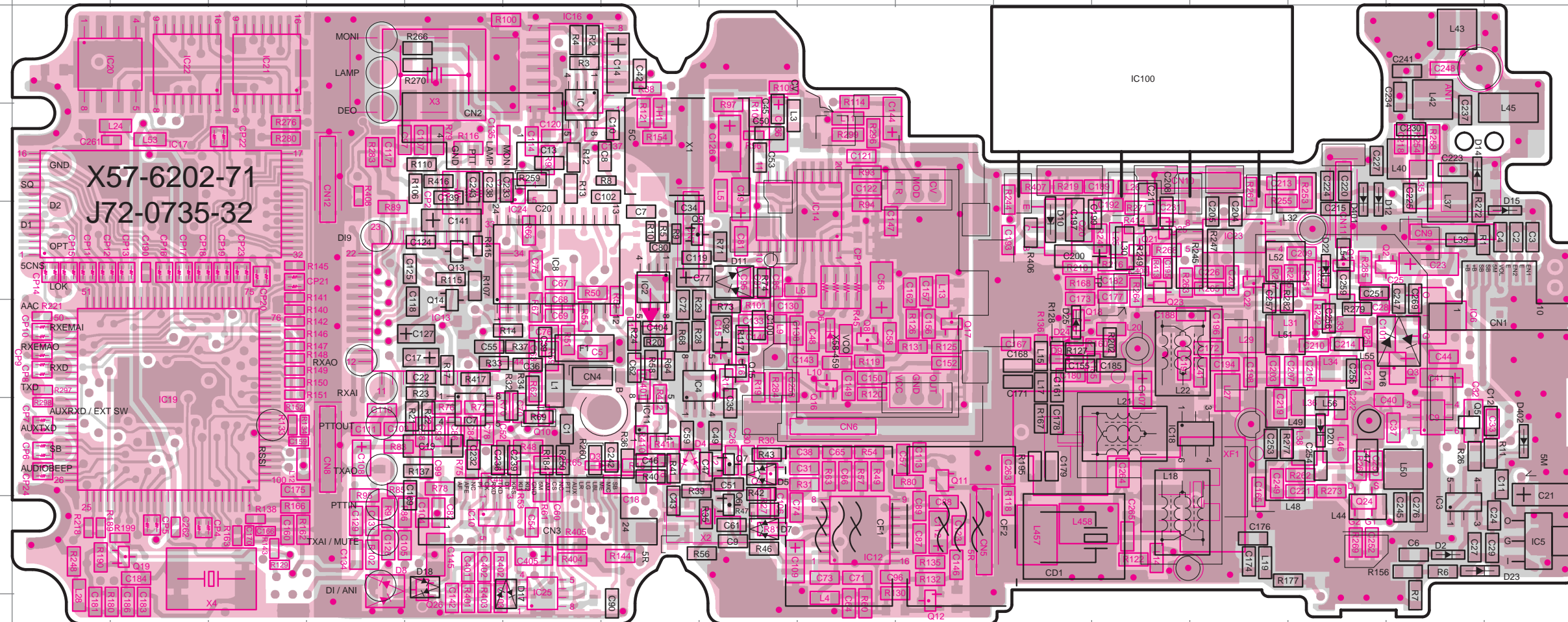


### Foil side

<p>DTA144EE DTC114EE DTC144EE 2SA1745 2SC4617 2SC4619 2SC5108</p>	<p>2SJ243 2SK1824</p>	<p>TC35453F</p>	<p>BU4094BCFV</p>	<p>TA31136FN</p>	<p>AT29C020-90TI</p>
<p>2SC4988</p>	<p>TC7S66FU TC7S51F</p>	<p>SA7025DK</p>	<p>NJM2904V</p>	<p>30620M8A-2K9GP</p>	<p>TC75W51FU</p>
<p>3SK239A</p>	<p>TK11250BM</p>	<p>NJU7201U50</p>	<p>LC73872M</p>	<p>AT2416N10SI2.5</p>	<p>W29C020C90</p>

# TK-380 PC BOARD VIEW

TX-RX UNIT (X57-6202-71) Component Side + Foil Side View



TX-RX UNIT (X57-6202-71)

Ref. No.	Address
D1	6H
D2	8P
D3	7H
D4	7H
D5	7I
D6	6J
D7	8I
D8	8E
D9	6L
D10	5L
D11	5I
D12	4O
D14	4P
D15	5Q
D16	6P
D17	8F
D18	8F
D20	7O
D22	5O
D23	8P
D24	6L
D25	6L
D401	4O
D402	7Q
IC1	4G
IC2	5H
IC3	8P
IC4	6I
IC5	8Q
IC6	6P
IC7	7F
IC8	5G
IC9	7P
IC10	8F
IC11	7H
IC12	8J
IC13	6F
IC14	5J
IC16	3G
IC17	4C
IC18	7N
IC19	7C
IC20	3C
IC21	3D
IC22	3C
IC23	5N
IC24	4G
IC25	8G
Q1	5O
Q2	5P
Q3	6P
Q4	7I
Q5	7P
Q6	8I
Q7	7I
Q8	6J
Q9	5I
Q10	7G
Q11	7K
Q12	9K
Q13	5F
Q14	5F
Q15	6I
Q16	6J
Q18	6L
Q19	8C
Q20	5L
Q21	5M
Q22	5N
Q23	5M
Q24	8O
Q25	5M
Q26	8F

DTA144EE  
DTC114EE  
DTC144EE  
2SA1745  
2SC4617  
2SC4619  
2SC5108

2SJ243  
2SK1824

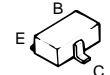
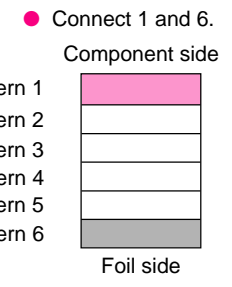
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SA7025DK

NJM2904V

RN5VL42C

DA221  
HSM88AS



TC7S66FU  
TC7S551F

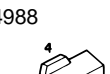
AT29C020-90T1

NJU7201U50

M62364FP

LC73872M

MA742



S-81350HG-KD

TC35453F

BU4094BCFV

TC75W51FU

GN2011

W29C020C90

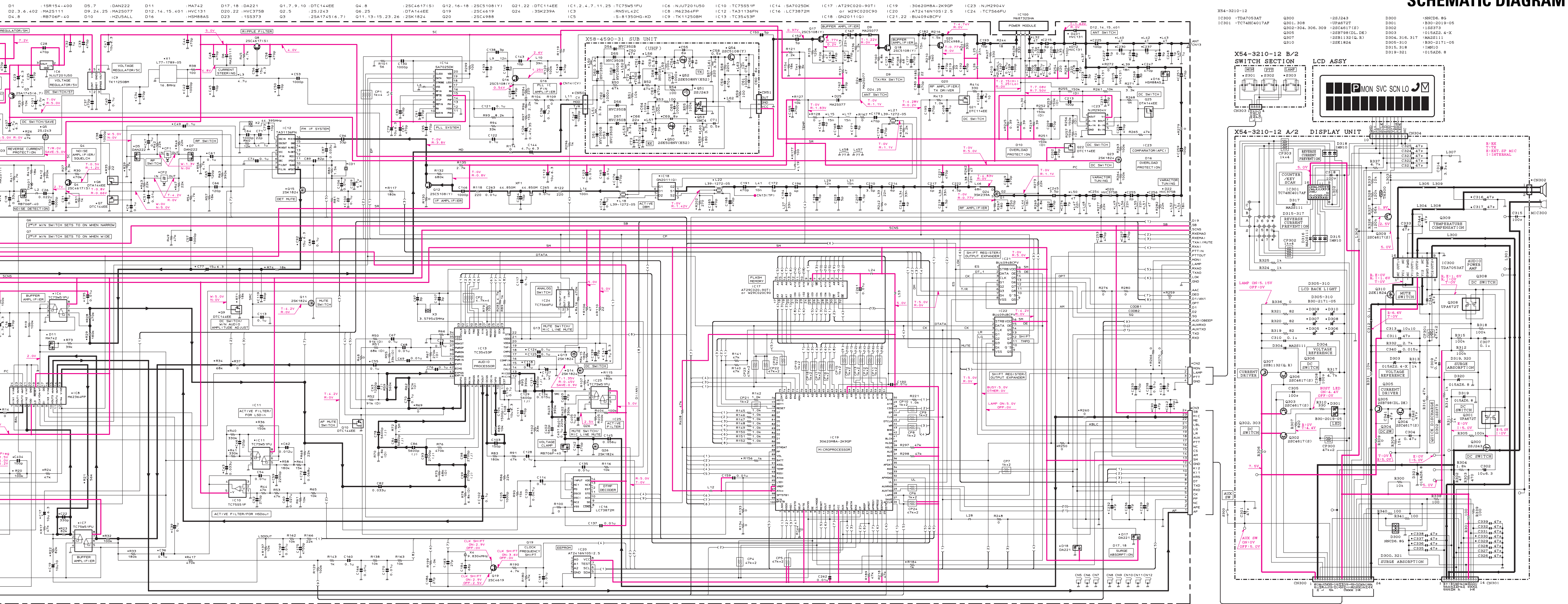
# SCHEMATIC DIAGRAM TK-380

## X57-6202-71 TX-RX UNIT

## X58-4590-31 SUB UNIT

## X54-3210-12 B/2 SWITCH SECTION

## X54-3210-12 A/2 DISPLAY UNIT



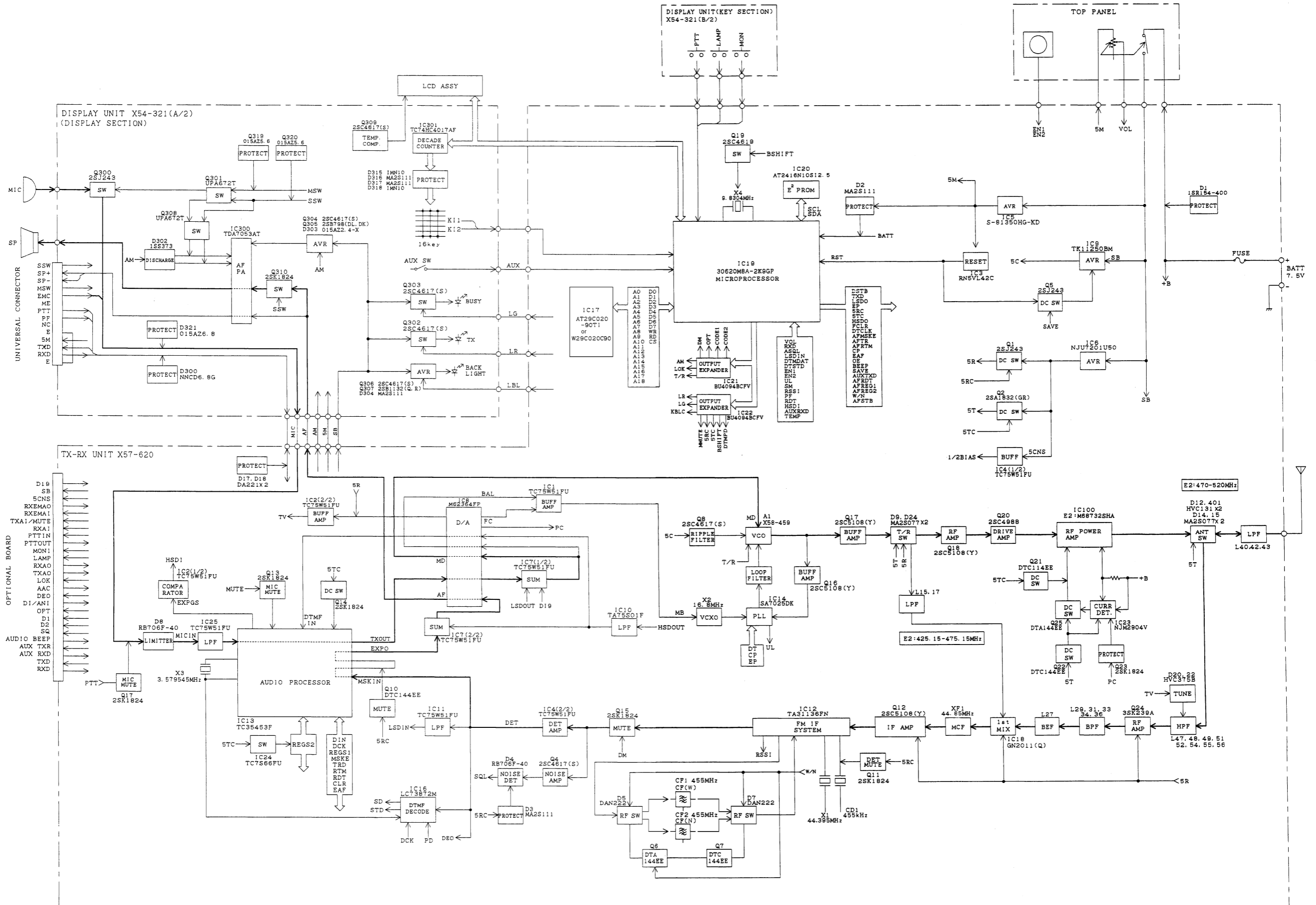
D1	1SR154-400	D5	DAN222	D11	MA742	D17	DA221	O1	7.9-10	IC1	25C4617(S)	Q12	16-18	25C5108(Y)	Q21	22	DTC114EE	IC2	1-2, 4, 7, 11, 25	TC7S55FU	IC6	NJU720U50	IC10	TC7555F	IC14	SA7025DK	IC17	AT29C020-90T1	IC19	30620MA-2K9GP	IC23	NJM2904V
D2	3.6-402	D9	24.25	MA25077	D12	14, 15, 401	HVC131	D20	22	35K239A	Q19	25C4619	Q24	24	35K239A	IC3	1	IC7	GN2011(Q)	IC11	5-8195HG-KD	IC15	5-8195HG-KD	IC18	GN2011(Q)	IC21	22	BU4094BCFV	IC24	TC7566FU		
D4	8	D8	10	HZUSALL	D16		15S373	Q3		25A1745(6.7)	Q11	13-15, 23, 26	25K1824	Q20		25C4988																

X54-3210-12	IC300	IC301	IC302	IC303	IC304	IC305	IC306	IC307	IC308	IC309	IC310	IC311	IC312	IC313	IC314	IC315	IC316	IC317	IC318	IC319	IC320	IC321	IC322	IC323	IC324	IC325	IC326	IC327	IC328	IC329	IC330	IC331	IC332	IC333	IC334	IC335	IC336	IC337	IC338	IC339	IC340	IC341	IC342	IC343	IC344	IC345	IC346	IC347	IC348	IC349	IC350	IC351	IC352	IC353	IC354	IC355	IC356	IC357	IC358	IC359	IC360	IC361	IC362	IC363	IC364	IC365	IC366	IC367	IC368	IC369	IC370	IC371	IC372	IC373	IC374	IC375	IC376	IC377	IC378	IC379	IC380	IC381	IC382	IC383	IC384	IC385	IC386	IC387	IC388	IC389	IC390	IC391	IC392	IC393	IC394	IC395	IC396	IC397	IC398	IC399	IC400	IC401	IC402	IC403	IC404	IC405	IC406	IC407	IC408	IC409	IC410	IC411	IC412	IC413	IC414	IC415	IC416	IC417	IC418	IC419	IC420	IC421	IC422	IC423	IC424	IC425	IC426	IC427	IC428	IC429	IC430	IC431	IC432	IC433	IC434	IC435	IC436	IC437	IC438	IC439	IC440	IC441	IC442	IC443	IC444	IC445	IC446	IC447	IC448	IC449	IC450	IC451	IC452	IC453	IC454	IC455	IC456	IC457	IC458	IC459	IC460	IC461	IC462	IC463	IC464	IC465	IC466	IC467	IC468	IC469	IC470	IC471	IC472	IC473	IC474	IC475	IC476	IC477	IC478	IC479	IC480	IC481	IC482	IC483	IC484	IC485	IC486	IC487	IC488	IC489	IC490	IC491	IC492	IC493	IC494	IC495	IC496	IC497	IC498	IC499	IC500	IC501	IC502	IC503	IC504	IC505	IC506	IC507	IC508	IC509	IC510	IC511	IC512	IC513	IC514	IC515	IC516	IC517	IC518	IC519	IC520	IC521	IC522	IC523	IC524	IC525	IC526	IC527	IC528	IC529	IC530	IC531	IC532	IC533	IC534	IC535	IC536	IC537	IC538	IC539	IC540	IC541	IC542	IC543	IC544	IC545	IC546	IC547	IC548	IC549	IC550	IC551	IC552	IC553	IC554	IC555	IC556	IC557	IC558	IC559	IC560	IC561	IC562	IC563	IC564	IC565	IC566	IC567	IC568	IC569	IC570	IC571	IC572	IC573	IC574	IC575	IC576	IC577	IC578	IC579	IC580	IC581	IC582	IC583	IC584	IC585	IC586	IC587	IC588	IC589	IC590	IC591	IC592	IC593	IC594	IC595	IC596	IC597	IC598	IC599	IC600	IC601	IC602	IC603	IC604	IC605	IC606	IC607	IC608	IC609	IC610	IC611	IC612	IC613	IC614	IC615	IC616	IC617	IC618	IC619	IC620	IC621	IC622	IC623	IC624	IC625	IC626	IC627	IC628	IC629	IC630	IC631	IC632	IC633	IC634	IC635	IC636	IC637	IC638	IC639	IC640	IC641	IC642	IC643	IC644	IC645	IC646	IC647	IC648	IC649	IC650	IC651	IC652	IC653	IC654	IC655	IC656	IC657	IC658	IC659	IC660	IC661	IC662	IC663	IC664	IC665	IC666	IC667	IC668	IC669	IC670	IC671	IC672	IC673	IC674	IC675	IC676	IC677	IC678	IC679	IC680	IC681	IC682	IC683	IC684	IC685	IC686	IC687	IC688	IC689	IC690	IC691	IC692	IC693	IC694	IC695	IC696	IC697	IC698	IC699	IC700	IC701	IC702	IC703	IC704	IC705	IC706	IC707	IC708	IC709	IC710	IC711	IC712	IC713	IC714	IC715	IC716	IC717	IC718	IC719	IC720	IC721	IC722	IC723	IC724	IC725	IC726	IC727	IC728	IC729	IC730	IC731	IC732	IC733	IC734	IC735	IC736	IC737	IC738	IC739	IC740	IC741	IC742	IC743	IC744	IC745	IC746	IC747	IC748	IC749	IC750	IC751	IC752	IC753	IC754	IC755	IC756	IC757	IC758	IC759	IC760	IC761	IC762	IC763	IC764	IC765	IC766	IC767	IC768	IC769	IC770	IC771	IC772	IC773	IC774	IC775	IC776	IC777	IC778	IC779	IC780	IC781	IC782	IC783	IC784	IC785	IC786	IC787	IC788	IC789	IC790	IC791	IC792	IC793	IC794	IC795	IC796	IC797	IC798	IC799	IC800	IC801	IC802	IC803	IC804	IC805	IC806	IC807	IC808	IC809	IC810	IC811	IC812	IC813	IC814	IC815	IC816	IC817	IC818	IC819	IC820	IC821	IC822	IC823	IC824	IC825	IC826	IC827	IC828	IC829	IC830	IC831	IC832	IC833	IC834	IC835	IC836	IC837	IC838	IC839	IC840	IC841	IC842	IC843	IC844	IC845	IC846	IC847	IC848	IC849	IC850	IC851	IC852	IC853	IC854	IC855	IC856	IC857	IC858	IC859	IC860	IC861	IC862	IC863	IC864	IC865	IC866	IC867	IC868	IC869	IC870	IC871	IC872	IC873	IC874	IC875	IC876	IC877	IC878	IC879	IC880	IC881	IC882	IC883	IC884	IC885	IC886	IC887	IC888	IC889	IC890	IC891	IC892	IC893	IC894	IC895	IC896	IC897	IC898	IC899	IC900	IC901	IC902	IC903	IC904	IC905	IC906	IC907	IC908	IC909	IC910	IC911	IC912	IC913	IC914	IC915	IC916	IC917	IC918	IC919	IC920	IC921	IC922	IC923	IC924	IC925	IC926	IC927	IC928	IC929	IC930	IC931	IC932	IC933	IC934	IC935	IC936	IC937	IC938	IC939	IC940	IC941	IC942	IC943	IC944	IC945	IC946	IC947	IC948	IC949	IC950	IC951	IC952	IC953	IC954	IC955	IC956	IC957	IC958	IC959	IC960	IC961	IC962	IC963	IC964	IC965	IC966	IC967	IC968	IC969	IC970	IC971	IC972	IC973	IC974	IC975	IC976	IC977	IC978	IC979	IC980	IC981	IC982	IC983	IC984	IC985	IC986	IC987	IC988	IC989	IC990	IC991	IC992	IC993	IC994	IC995	IC996	IC997	IC998	IC999	IC1000
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Note) ● Ref. No. : Parts of pattern 1.

# TK-380 TK-380

## BLOCK DIAGRAM

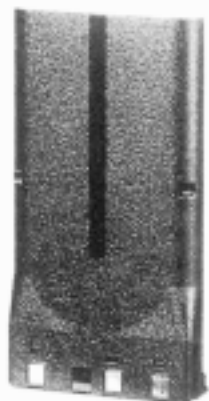




# TK-380

## KNB-16A/17A (Ni-Cd BATTERY) / KNB-21N/22N (Ni-MH BATTERY)

**KNB-16A**  
External View



**KNB-17A**  
External View



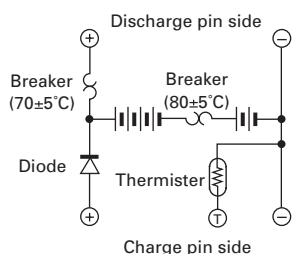
**KNB-21N**  
External View



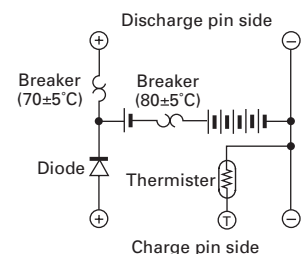
**KNB-22N**  
External View



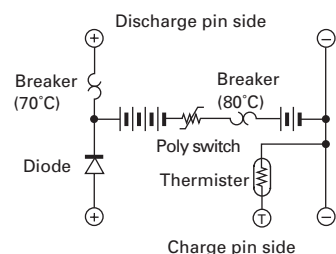
**KNB-16A**  
Circuit Diagram



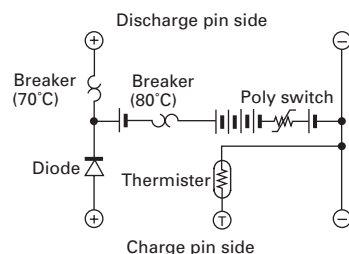
**KNB-17A**  
Circuit Diagram



**KNB-21N**  
Circuit Diagram



**KNB-22N**  
Circuit Diagram



### KNB-16A Specifications

Voltage ..... 7.2V (1.2V x 6)  
 Charging current ..... 1100mAh  
 Dimensions (mm) ..... 58 W x 110.8 H x 17.2 D  
 (Projections included)  
 Charger and charging time  
 KSC-19 (Normal Charger) ..... Approx. 8 hours  
 KSC-20 (Rapid Charger) ..... Approx. 1 hour  
 Weight ..... 180g

### KNB-17A Specifications

Voltage ..... 7.2V (1.2V x 6)  
 Charging current ..... 1500mAh  
 Dimensions (mm) ..... 58.0 W x 110.8 H x 20.0 D  
 (Projections included)  
 Charger and charging time  
 KSC-19 (Normal Charger) ..... Approx. 8 hours  
 KSC-20 (Rapid Charger) ..... Approx. 1.3 hour  
 Weight ..... 220g

### KNB-21N Specifications

Voltage ..... 7.2V (1.2V x 6)  
 Charging current ..... 1600mAh  
 Dimensions (mm) ..... 63.8 W x 110.8 H x 17.2 D  
 (Projections included)  
 Charger and charging time  
 KSC-24 (Rapid Charger) ..... Approx. 80 minutes  
 Weight ..... 210g

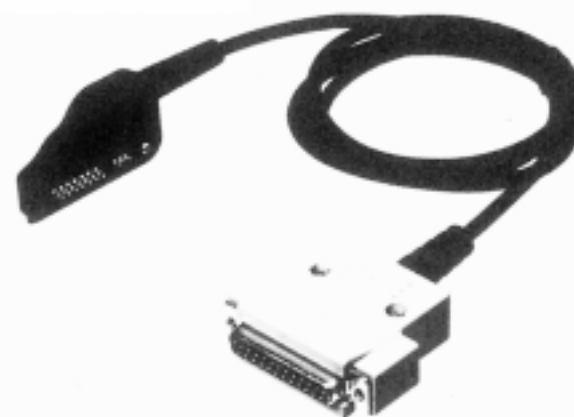
### KNB-22N Specifications

Voltage ..... 7.2V (1.2V x 6)  
 Charging current ..... 2100mAh  
 Dimensions (mm) ..... 63.8 W x 110.8 H x 20.2 D  
 (Projections included)  
 Charger and charging time  
 KSC-24 (Rapid Charger) ..... Approx. 110 minutes  
 Weight ..... 250g

# TK-380

## KPG-36 (PROGRAMMING INTERFACE CABLE) / KSC-19 (CHARGER) / KRA-15 (UHF WHIP ANTENNA) / KSC-20 / KSC-24 (RAPID CHARGER)

**KPG-36** External View



**KSC-20** External View



**KSC-19** External View



**KSC-24** External View



### KSC-19 Charging

**KNB-16A**  
 Voltage ..... 7.2V  
 Battery capacity ..... 1100mAh  
 Charging time ..... Approx. 8 hours  
**KNB-17A**  
 Voltage ..... 7.2V  
 Battery capacity ..... 1500mAh  
 Charging time ..... Approx. 8 hours

**KRA-15** External View



### KSC-24 Specifications

Charging current ..... 1100mA±150mA  
 Charging time ..... KNB-16A : Approx. 60 minutes  
 KNB-17A : Approx. 80 minutes  
 KNB-21N : Approx. 80 minutes  
 KNB-22N : Approx. 110 minutes  
 Source voltage ..... Approx. 15V  
 Usable temperature range ..... 0°C~40°C  
 Dimensions (Body only) ..... 105 W x 55 H x 135 D (mm)  
 Weight (Body only) ..... Approx. 180g



## SPECIFICATIONS

**General**

Frequency Range	
RX, TX .....	E2 : 470 to 520MHz
Groups .....	Maximum 250
Channels .....	Maximum 250 (Case of 1 Group)
Channel Spacing (Wide/Semi wide/Narrow) .....	25kHz/20kHz/12.5kHz (PLL channel stepping 5kHz, 6.25kHz)
Battery Voltage .....	DC 7.5V $\pm$ 20%
Battery Life (5-5-90 duty cycle) .....	More than 8 hours at 4W with KNB-16A battery More than 10 hours at 4W with KNB-17A battery More than 10.5 hours at 4W with KNB-21N battery More than 13 hours at 4W with KNB-22N battery
Temperature Range .....	-30°C to +60°C (-22°F to + 140°F)
Dimension and Weight	
With KNB-16A (1100mAh battery) .....	5.33" (135mm) H x 2.29" (58mm) W x 1.34" (34mm) D    1.01lbs (460g)
	(Dimensions not including protrusions, weight includes antenna and belt hook)

**Receiver** (Measurements made per TIA/EIA-603, ETS)

RF Input Impedance .....	50 $\Omega$
Sensitivity	
12dB SINAD (Wide/Narrow) .....	0.25 $\mu$ V/0.28 $\mu$ V (EIA)
20dB SINAD (Wide/Narrow) .....	-4dB $\mu$ V/-2dB $\mu$ V (ETS)
Selectivity (Wide/Narrow) .....	70dB/62dB (EIA), 72dB/62dB (ETS)
Intermodulation (Wide/Narrow) .....	70dB/62dB (EIA), 65dB/65dB (ETS)
Spurious Response Rejection (Except for IF 1/2) .....	70dB
Frequency Stability .....	$\pm$ 0.00025% (-30°C to +60°C)
Channel Spread .....	50MHz : E2
Audio Power Output .....	500mW at 16 $\Omega$ less than 5% distortion

**Transmitter** (Measurements made per TIA/EIA-603, ETS)

RF Power Output	
Hi .....	4W
Low .....	1W
RF Output Impedance .....	50 $\Omega$
Spurious .....	-36dBm $\leq$ 1GHz, -30dBm $>$ 1GHz
Modulation (Wide/Semi wide/Narrow) .....	16K0F3E, 14K0F2D/14K0F3E, 12K0F2D/8K50F3E, 7K50F2D
FM Noise (Wide/Narrow) .....	-45dB/-40dB (EIA)
Audio Distortion .....	Less than 3% at 1kHz (EIA)
Frequency Stability .....	$\pm$ 0.00025% (-30°C to +60°C)
Channel Spread .....	50MHz : E2

**NOTE**

The terms "Wide" and "Semi wide" used in this service manual correspond to "Wide 5K" and "Wide 4K" respectively that appear in the menu and help texts of the KPG-60D (Field Programming Unit).

**KENWOOD CORPORATION**

14-6, Dogenzaka 1-chome, Shibuya-ku, Tokyo 150-8501, Japan

**KENWOOD SERVICE CORPORATION**

P.O. BOX 22745, 2201 East Dominguez Street, Long Beach, CA 90801-5745, U.S.A.

**KENWOOD ELECTRONICS CANADA INC.**

6070 Kestrel Road, Mississauga, Ontario, Canada L5T 1S8

**KENWOOD ELECTRONICS DEUTSCHLAND GMBH**

Rembrücker Str. 15, 63150 Heusenstamm, Germany

**KENWOOD ELECTRONICS BELGIUM N.V.**

Leuvensesteenweg 248 J, 1800 Vilvoorde, Belgium

**KENWOOD ELECTRONICS FRANCE S.A.**

13, Boulevard Ney, 75018 Paris, France

**KENWOOD ELECTRONICS U.K. LIMITED**

KENWOOD House, Dwight Road, Watford, Herts., WD1 8EB United Kingdom

**KENWOOD ELECTRONICS EUROPE B.V.**

Amsterdamseweg 37, 1422 AC Uithoorn, The Netherlands

**KENWOOD ELECTRONICS ITALIA S.p.A.**

Via G. Sirtori, 7/9 20129 Milano, Italy

**KENWOOD IBERICA S.A.**

Bolivia, 239-08020 Barcelona, Spain

**KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.**

(A.C.N. 001 499 074)

16 Giffnock Avenue, Centrecourt Estate, North Ryde, N.S.W. 2113, Australia

**KENWOOD ELECTRONICS (HONG KONG) LTD.**

Unit 3712-3724, Level 37, Tower one Metroplaza, 223 Hing Fong Road, Kwai Fong, N.T., Hong Kong

**KENWOOD ELECTRONICS TECHNOLOGIES(S) PTE LTD.**

Sales Marketing Division

1 Ang Mo Kio Street 63, Singapore 569110

