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This manual is issued for a supplementary narrow channel spacing. For further information, please refer to the service manual (B51-8298-00).

GENERAL

INTRODUCTION

SCOPE OF THIS MANUAL

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

ORDERING REPLACEMENT PARTS

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

PERSONNEL SAFETY

The following precautions are recommended for personnel safety :

- DO NOT transmit until all RF connectors are verified secure and any open connectors are properly terminated.
- SHUT OFF and DO NOT operate this equipment near electrical blasting caps or in an explosive atmosphere.
- All equipment should be properly grounded before power-up for safe operation.
- This equipment should be serviced by a qualified technician only.

SERVICE

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

NOTE

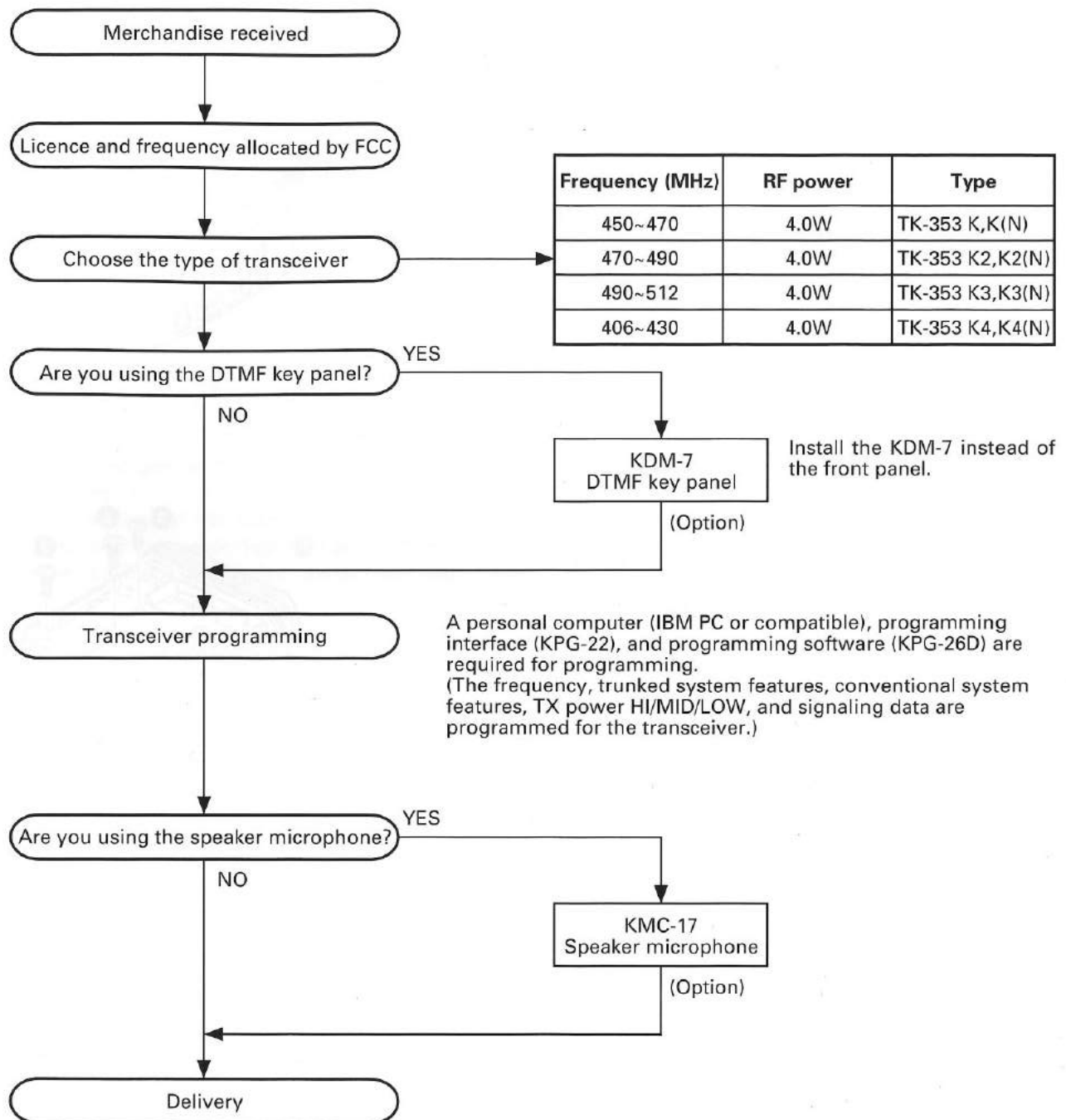
WE CANNOT guarantee oscillator stability when using channel element manufactured by other than KENWOOD or its authorized agents.

Version	Frequency range	Remarks	QT/DQT	Battery	Charger
K, K(N) (TYPE 1)	450~470MHz	IF1 45.05MHz LOC 44.595MHz	○	OP	OP
K2, K2(N) (TYPE 2)	470~490MHz	IF1 45.05MHz LOC 44.595MHz	○	OP	OP
K3, K3(N) (TYPE 3)	490~512MHz	IF1 45.05MHz LOC 44.595MHz	○	OP	OP
K4, K4(N) (TYPE 4)	406~430MHz	IF1 45.05MHz LOC 44.595MHz	○	OP	OP

FCC COMPLIANCE AND TYPE NUMBERS

Type acceptance number	Frequency range	Compliance
ALHTK-350-1	450~470MHz	Parts 22, 90
ALHTK-350-2	470~490MHz	Parts 22, 90
ALHTK-350-3	490~512MHz	Parts 22, 90
ALHTK-350-4	406~430MHz	Parts 90
ALHTK-350N-1	450~470MHz	Parts 22, 74, 90.210, 95
ALHTK-350N-2	470~490MHz	Parts 22, 90.210
ALHTK-350N-3	490~512MHz	Parts 22, 90.210
ALHTK-350N-4	406~430MHz	Parts 90.210

SYSTEM SET-UP

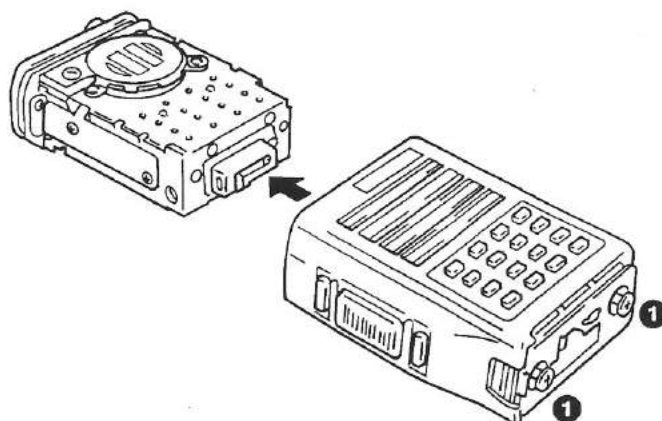


DISASSEMBLY FOR REPAIR

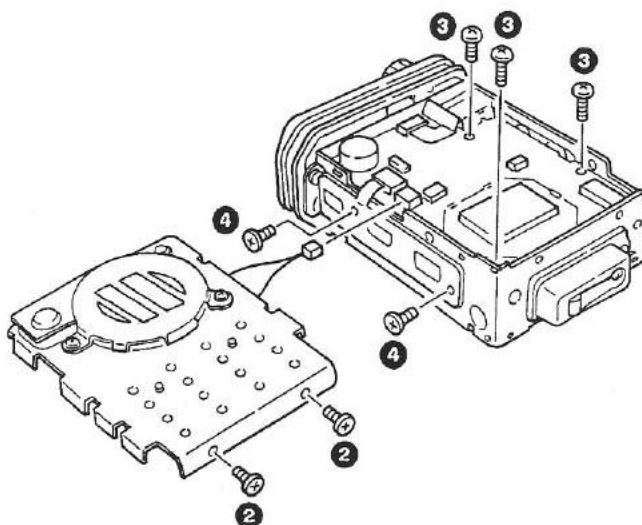
1. Loosen the two screws (1) and remove the frame assembly from the case.

Note :

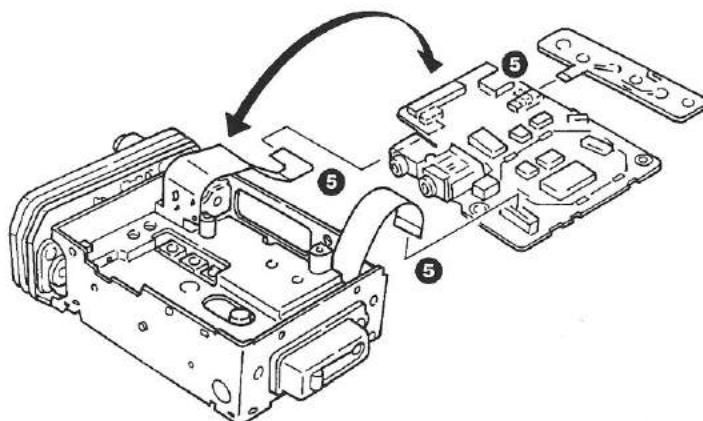
The case is stiff because of internal waterproofing. To avoid marring the set when pulling it out, use a screwdriver covered with a piece of cloth to depress the + side of the main unit battery connector and remove the case.



2. Remove the two shield plate screws (2), the speaker connector, the three control printed circuit board screws (3) and the two side switch FPC screws (4).



3. Flip over the control printed circuit board and remove the three connectors (5).



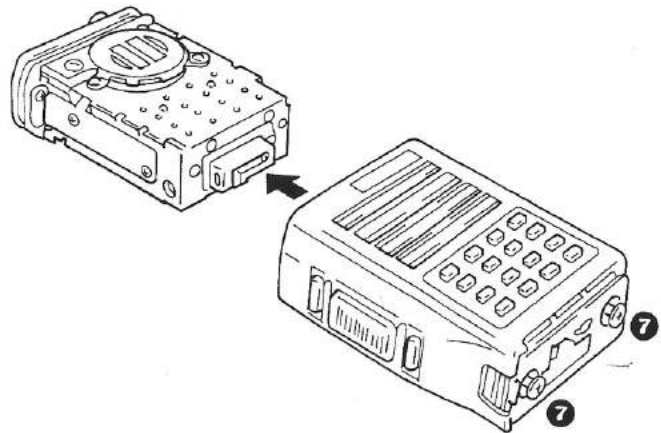
INSTALLATION

Keypad attachment method

5. Loosen the two screws (7) on the underside of the frame assembly and remove the frame assembly from the case.

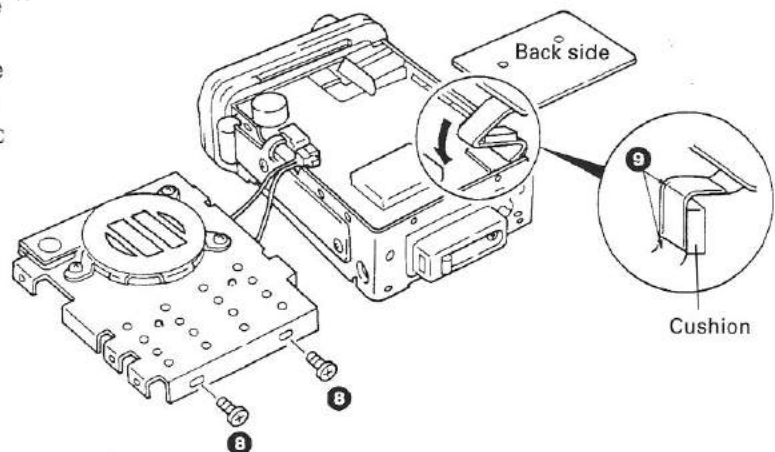
Note :

The case is stiff because of internal waterproofing. To avoid marring the set when pulling it out, use a screwdriver covered with a piece of cloth to depress the + side of the main unit battery connector and remove the case.

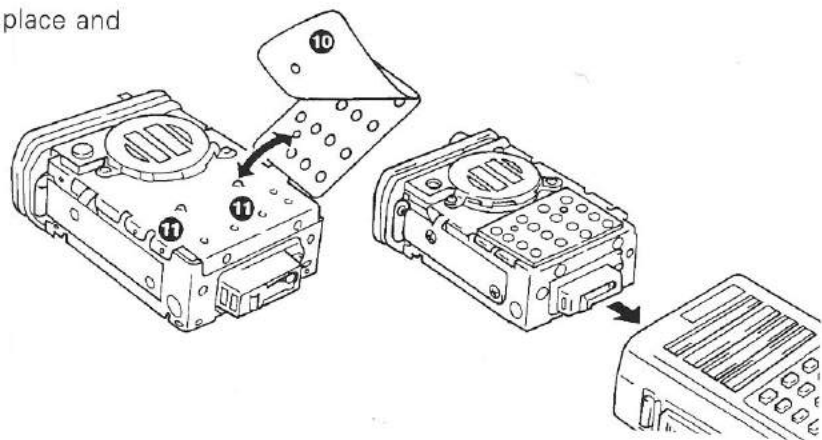


6. Remove the two screws (8) and remove the shield plate.

Insert the keypad flat cable into the connector (CN204), cushion is inserted (9) and with the pad bent back out of the way, press it into place.



7. While pressing on the flat cable of the keypad, bend it under the shield plate, "sandwich" it there, replace the shield plate and tighten the screws. Peel off the keypad adhesive's backing material (10), align the projections atop the shield plate with the holes (11) in the keypad, press it firmly into place and return the frame assembly to the case.



REALIGNMENT

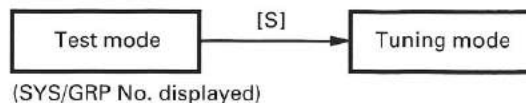
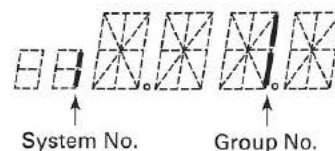
3. Test Mode

In the test mode, the dealer initializes EEPROM data, and tuning the transceiver and sets functions and channel data.

• Procedure

1. Press LAMP, A together and turn power on. Hold LAMP and A until "1-1" appears on LCD.

Test mode display



• KEY description

SYSTEM KNOB	Varies system settings. If no frequency data has been preset, the frequency listed in Table 1 is written as the default value.
B/C KEY	Changes group. Used to select the signaling encode/decode data or squelch adjustment.
A KEY	Switches power levels between Hi→Med→Low. The "LO" indicator appears during the low power state.
S KEY	Enables the turning mode.
MON KEY	Turns the Monitor on and off.
PTT	Transmits while depressed.
LAMP KEY	Turns lamp display light (lamp) on and off.

Frequency table for using on test mode (Unit : MHz)

Destination System No.	K, K(N) (TYPE 1)		K2, K2(N) (TYPE 2)		K3, K3(N) (TYPE 3)		K, K4(N) (TYPE 4)	
	TX freq	RX freq	TX freq	RX freq	TX freq	RX freq	TX freq	RX freq
1	460.000	460.100	480.000	480.100	500.000	500.100	418.000	418.100
2	450.000	450.100	470.000	470.100	490.000	490.100	406.000	406.100
3	469.9875	469.975	489.9875	489.975	511.9875	511.975	429.9875	429.975
4	460.000		480.000		500.000		418.000	
5	460.200		480.200		500.200		418.200	
6	460.400		480.400		500.400		418.400	

Table 1

Group No. list

GROUP No.	SIGNALING
1	None
2	100Hz square wave
3	LTR data (Area = 0, Goto = 12, Home = 12, ID = 47, Free = 31)
4	QT (67.0Hz)
5	QT (151.4Hz)
6	QT (210.7Hz)
7	DQT (D023N)
8	DQT (D754N)
9	DTMF decoder (Code = 159D, Alert = YES, Transpond = NO)
A	DTMF single tone (1633Hz)
B	DTMF encode tone (7)

By simply transmitting, and the DTMF single tone and encoded tone are encoded.

CIRCUIT DESCRIPTION

1. OVERVIEW

The TK-353/(N) is a UHF/FM hand-held transceiver designed to operate in the frequency range of 450 to 470MHz. The unit consists of a receiver, a transmitter, a phase-locked loop (PLL) frequency synthesizer, power supply circuits a control unit, a display unit.

2. CIRCUIT CONFIGURATION BY FREQUENCY

The receiver is a double-conversion superhetrodyne with a first intermediate frequency (IF) of 45.05MHz 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 45.05MHz.

This is then mixed with the 44.595MHz second local oscillator output to produce the 455Hz 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.

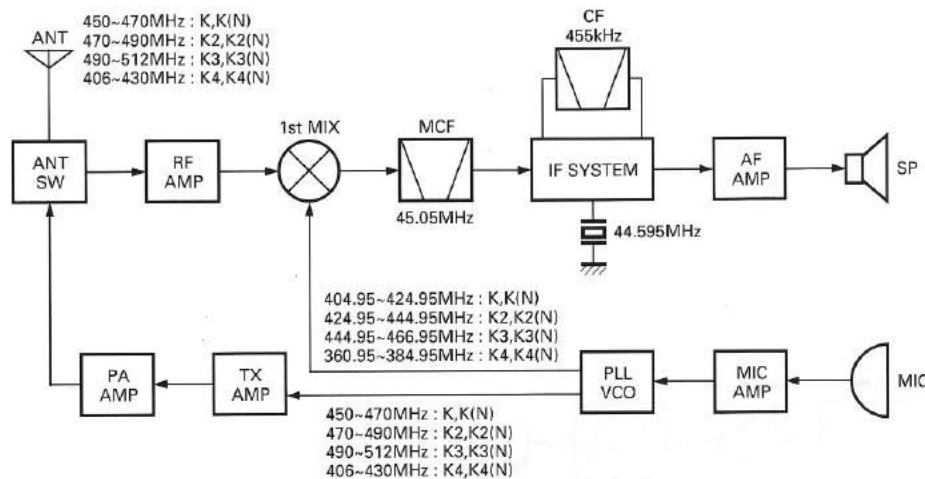


Fig. 1 Frequency configuration

3. RECEIVER SYSTEM

The receiver is double conversion superhetrodyne, designed to operate in the frequency range of 450 to 470MHz (K,K(N)), 470~490MHz (K2,K2(N)), 490~512MHz (K3,K3(N)) and 406~430MHz (K4,K4(N)).

3.1 Front-end RF amplifier

An incoming signal from the antenna is applied to an RF amplifier (Q17) after passing through a transmit/receive switch circuit (D5 and D6 are off) and a 2-pole helical filter (L18). After the signal is amplified, the signal is filtered by a 3-pole helical filter (L12) to eliminate unwanted signals before it is passed to the first mixer.

3.2 First mixer

The signal from the RF amplifier is heterodyned with the first local oscillator signal from the PLL frequency synthesizer circuit at the first mixer (Q14) to become a 45.05MHz first intermediate frequency (1st IF) signal. The first IF signal is fed through two monolithic crystal filters (MCFs : XF1) to further remove spurious signals.

Item	Rating
Nominal center frequency	45.05MHz
Pass band width	± 7.5 kHz or more at 3dB
Attenuation band width	± 22 kHz or less at 2.5dB
Ripple	1.0dB or less
Insertion loss	4dB or less
Guaranteed attenuation	80dB or more within ± 910 kHz (Spurious : 40dB or more)
Terminating impedance	800 Ω /2pF

MCF (L71-0409-15) : TX-RX unit XF1 (K,K2,K3,K4)

Item	Rating
Nominal center frequency	45.05MHz
Pass band width	± 3.75 kHz or more at 3dB
Attenuation band width	± 14 kHz or less at 40dB
Ripple	1.0dB or less
Insertion loss	4dB or less
Guaranteed attenuation	80dB or more within ± 1000 kHz (Spurious : 40dB or more)
Terminating impedance	290 Ω /7pF

MCF (L71-0461-05) : TX-RX unit XF1
(K(N),K2(N),K3(N),K4(N))

CIRCUIT DESCRIPTION

3.3 IF amplifier

The first IF signal is amplified by Q10, and then entered IC2 (FM processing IC). The signal is heterodyned again with a second local oscillator signal within IC2 to become a 455kHz second IF signal. The second IF signal is fed through a 455kHz ceramic filter to further eliminate unwanted signals before it is amplified and FM detected in IC2.

Item	Rating
Nominal center frequency	455kHz
6dB band width	$\pm 7.5\text{kHz}$ or more
40dB band width	$\pm 15.0\text{kHz}$ or more
Ripple	1.5dB or less (455kHz $\pm$ 5kHz)
Guaranteed attenuation	27dB or more within $f_0 \pm 100\text{kHz}$
Insertion loss	6dB or less
Terminal impedance	1.5k Ω

Ceramic filter (L72-0932-05) :
TX-RX unit CF1, 2 (K,K2,K3,K4)

Item	Rating
Nominal center frequency	455kHz
6dB band width	$\pm 4.5\text{kHz}$ or more
40dB band width	$\pm 12.5\text{kHz}$ or more
Ripple	1.0dB or less (455kHz $\pm$ 3kHz)
Guaranteed attenuation	25dB or more within $f_0 \pm 100\text{kHz}$
Insertion loss	6dB or less
Terminal impedance	1.5k Ω

Ceramic filter (L72-0934-05) :
TX-RX unit CF1, 2 (K,(N)K2(N),K3(N),K4(N))

3.4 Audio amplifier

The recovered audio signal obtained from IC2 is amplified by IC208 (1/2)(control board), low-pass filtered by IC205 (2/2), high-pass filtered by IC205 (1/2) and band-eliminate filtered by IC211 (1/2). The audio signal is then passed through an audio frequency switch (Q204) and de-emphasized by IC211 (2/2). The processed audio signal passes through an audio volume control and is amplified to a sufficient level to drive a loud speaker by an audio power amplifier (IC222).

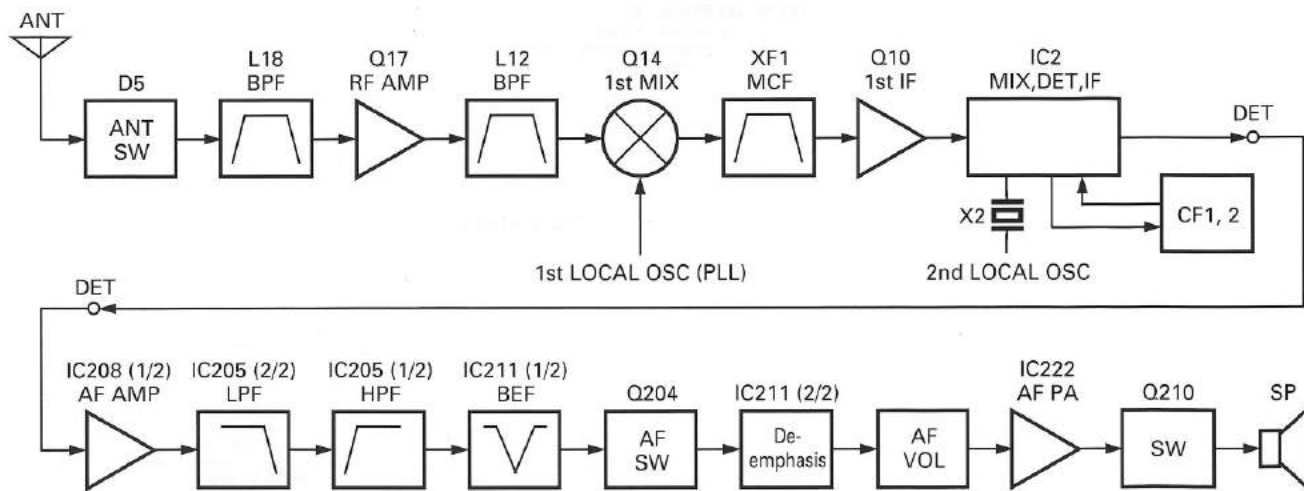


Fig. 2 Receiving system

3.5 Squelch and mute

The output signal from the squelch circuit, which consists of IC208 (2/2) and Q203, is applied to the microprocessor. The microprocessor passes information to the shift register (IC213) and it controls the mute control lines (AF MUTE and AC) according to the input signal (noise pulse) and the microprocessor task condition.

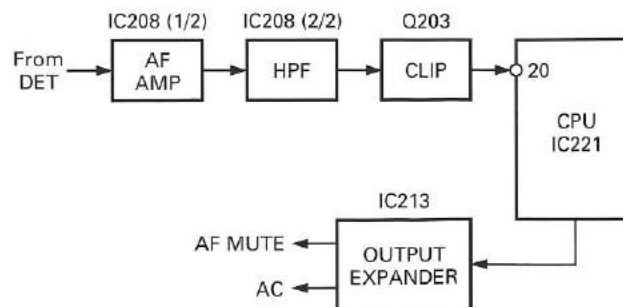


Fig. 3 Squelch and Mute

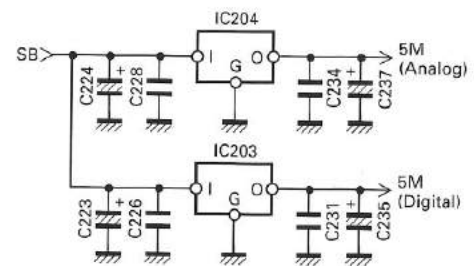
CIRCUIT DESCRIPTION / SEMICONDUCTOR DATA

6. POWER SUPPLY CIRCUIT

6.1 Power switching

A 5V reference voltage is derived from an external power supply or internal battery by IC1. This reference is used to provide a 5V supply in transmit mode [5T], and a 5V supply in receive mode [5R] and a 5V supply common in both modes [5C] and [5SV] based on the control signal sent from the microprocessor or shift register. IC203 and IC204 in the control unit provide a 5V supply for the control and display circuits.

Power supply



TX-RX section

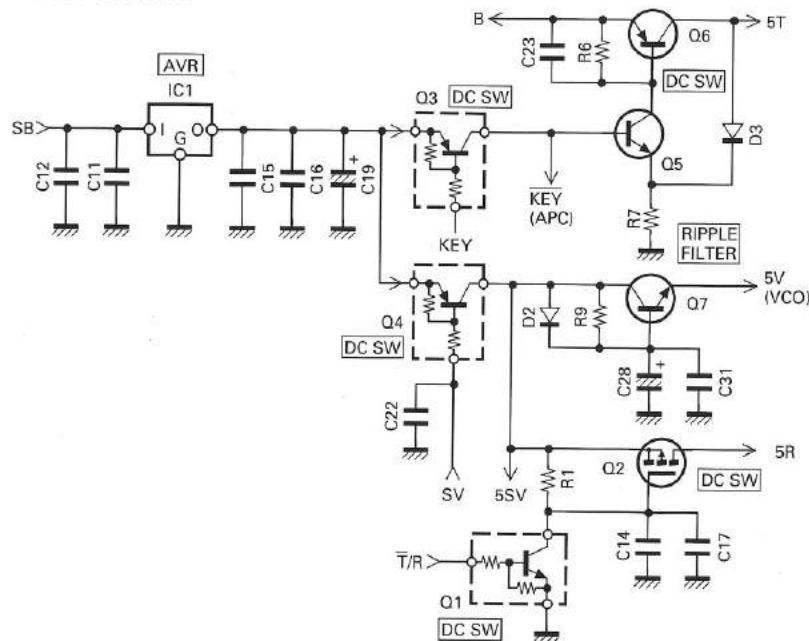
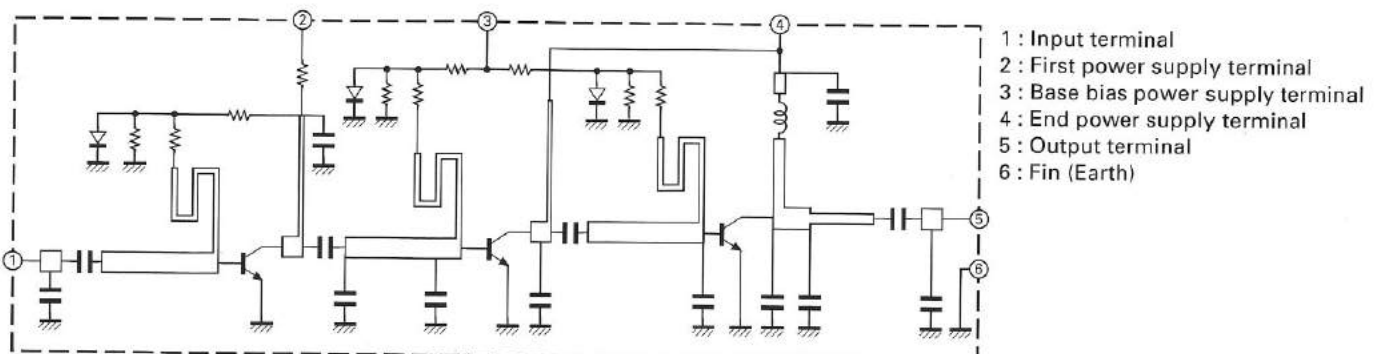


Fig. 7 Power supply circuit (Power switching, battery saver)

Power Module : M57786MB K,K(N)
 M57786NB K2,K2(N)
 M57786HB K3,K3(N)
 M57786LB K4,K4(N)

• Equivalent circuit diagram



TK-353/(N)

PARTS LSIT

* New Parts.  indicates safety critical components.

Parts without **Parts No.** are not supplied.

Les articles non mentionnés dans le **Parts No.** ne sont pas fournis.

Teile ohne **Parts No.** werden nicht geliefert.

L : Scandinavia

Y : PX (Far East, Hawaii)

Y : AAFES (Europe)

K : USA

T : England

X : Australia

P : Canada

E : Europe

M : Other Areas

TK-353/(N)

TX-RX UNIT (X57-4450-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination
TK-353/(N)					
1	2C		A02-1829-11	PLASTIC CABINET	
2	3B		A13-1611-12	FRAME	
4	1D		A21-1544-03	DRESSING PANEL ACCESSORIES	
6	2D		A40-0635-13	BOTTOM PLATE	
7	3A		A62-0409-04	PANEL ASSY	
9	2C		B09-0344-03	CAP ACCESSORIES	
10	3C		B09-0359-03	CAP ACCESSORIES	
11	3C		B42-3394-14	STANDARD LABEL	
12	2C		B43-1100-04	KENWOOD BADGE	
13			B46-0470-00	WARRANTY CARD ACCESSORIES	
14			B62-0522-10	INSTRUCTION MANUAL (EN,SP,FR)	
15	3D		B72-0882-14	MODEL NAME PLATE	K
15	3D		B72-0883-04	MODEL NAME PLATE	K2
15	3D		B72-0884-04	MODEL NAME PLATE	K3
15	3D		B72-0885-14	MODEL NAME PLATE	K4
15	3D	*	B72-1078-04	MODEL NAME PLATE	KN
15	3D	*	B72-1079-04	MODEL NAME PLATE	K2N
15	3D	*	B72-1080-04	MODEL NAME PLATE	K3N
15	3D	*	B72-1087-04	MODEL NAME PLATE	K4N
16	3B		E04-0192-05	RF COAXIAL CABLE RECEPTACLE	
17	2B,2D		E23-0474-14	BATTERY TERMINAL OUTSIDE	
18	2B		E23-0966-04	BATTERY TERMINAL INSIDE	
19	2B		E23-0998-04	GROUND TERMINAL POWER MODULE	
20	2B		E37-0435-05	FLAT CABLE TX-RX CN1-CN201	
21	1B		E37-0437-05	LEAD WIRE WITH CONNECTOR SP	
-			E30-3074-05	TRUNK CABLE FOR SERVICE REPAIR	
-			E30-3216-05	TRUNK CABLE FOR SERVICE REPAIR	
-			E37-0556-05	LEAD WIRE WITH CONNECTOR	
25	2B		F10-2112-12	SHIELDING COVER TX-RX	
26	3B		F10-2165-13	SHIELDING PLATE TX-RX	
27	1B		F10-2114-03	SHIELDING PLATE CONTROLE	
28	2B		F10-2115-04	SHIELDING PLATE POWER MODULE	
30	2D		G01-0867-04	COIL SPRING RELEASE	
32	2B,2D		G11-0617-04	CUSHION BATTERY TERMINAL	
-			G11-0735-04	SHEET SPEAKER	
33	2B		G53-0742-14	PACKING HOLDER	
34	2A		G53-0766-03	PACKING SPEAKER/MIC	
35	3A		G53-0767-04	PACKING PANEL	
36			H52-0694-02	ITEM CARTON CASE	
37			H12-1470-02	PACKING FIXTURE	
38			H25-0029-04	PROTECTION BAG 60X110	
39			H25-0085-04	PROTECTION BAG 100X20	
40	2B		J19-1525-04	HOLDER BATTERY TERMINAL	
43	1B		J21-4461-13	HARDWARE FIXTURE SPEAKER	
44	2C		J21-4462-04	HARDWARE FIXTURE ACCESSORIES	
45	1C		J21-4463-04	HARDWARE FIXTURE ACCESSORIES	
46	2C		J21-4464-24	HARDWARE FIXTURE PTT	
47	2D		J21-4474-04	HARDWARE FIXTURE PTT	
50	3D		J29-0816-23	BELT HOOK ACCESSORIES	
52	1B		J39-0804-14	SPACER MIC	
54	3A		J69-0321-05	RING CH,VOL	
55	2D		J69-0330-05	RING BOTTOM PLATE	

Ref. No.	Address	New parts	Parts No.	Description	Destination
56	3A		J69-0331-05	RING ANTENNA	
58	3B		J82-0032-35	FLAT CABLE PTT-CN202	
59	2A		J82-0033-05	FLAT CABLE VOL,CH-CN205,CN451	
61	1D		J99-0337-04	ADHESIVE TAPE ACCESSORIES	
65	2D		K29-4800-04	KNOB RELEASE	
66	2D		K29-4917-02	KNOB PTT	
67	3A		K29-4918-03	KNOB VOLUME	
68	3A		K29-4919-03	KNOB KEY TOP	
69	3A		K29-4920-03	KNOB CHANNEL SELECTOR	
A	3B		N09-1492-05	PAN HEAD SCREW M2.6X3.5 BLACK	
B	2B,3B		N09-2053-05	SEMS SCREW M2X3.5	
C	2D		N09-2185-05	BINDING HEAD SCREW M2.6X8	
D	3A		N14-0545-04	CIRCULAR NUT CH,VOL	
E	3A		N14-0560-04	CIRCULAR NUT ANTENNA	
F	3B		N14-0562-04	CIRCULAR NUT CH,VOL (BOTTOM)	
G	2D		N17-1026-80	TOOTHED LOCK WASHER	
H	1B,3B		N39-2020-46	PAN HEAD MACHINE SCREW	
J	3B		N78-2080-46	PAN HEAD TAPTITE SCREW	
K	1B,2B		N09-2251-05	FLAT HEAD TAPTITE SCREW	
L	2B,3B		N88-2005-46	FLAT HEAD TAPTITE SCREW	
M	2C,3D		N99-0387-05	SCREW SET ACCESSORIES	
VR1	2A		R05-3471-05	POTENTIOMETER 10KA	
80			T90-0380-05	WHIP ANTENNA 450-520MHz ACC	K,K2,K3
80			T90-0448-05	WHIP ANTENNA 400-450MHz ACC	K4
SP201	1B		T07-0336-05	LOUDSPEAKER (FULLRANGE)	
EN1	2A		W02-1814-05	ENCODER CHANNEL SELECTOR	

TX-RX UNIT (X57-4450-XX)

-14 : K -15 : K2 -16 : K3 -17 : K4
-22 : K(N) -23 : K2(N) -24 : K3(N) -25 : K4(N)

101	3A		B11-1107-04	REFLECTOR LCD	
D451			B30-2019-05	LED RED/GREEN	
D452			B30-2047-05	LED BACK LIGHT	
LCD1	3A		B38-0750-05	DISPLAY ASSY LCD	
C1			CK73GCH1H101J	CHIP C 100PF J	
C3-7			CK73GB1H102K	CHIP C 1000PF K	
C8,9			CK73GCH1H101J	CHIP C 100PF J	
C10			CK73GB1H471K	CHIP C 470PF K	
C11			CK73GB1H103K	CHIP C 0.010UF K	
C12			CK73GB1H471K	CHIP C 470PF K	
C13			C92-0513-05	CHIP-TAN 3.3UF 6.3WV	
C14,15			CK73GB1H103K	CHIP C 0.010UF K	
C16			C92-0543-05	CHIP-TAN 3.3UF 10WV	
C17,18			CK73GB1H471K	CHIP C 470PF K	
C19			C92-0519-05	CHIP-TAN 1.0UF 25WV	
C20			CK73GB1H102K	CHIP C 1000PF K	
C21			C92-0543-05	CHIP-TAN 3.3UF 10WV	
C22,23			CK73GB1H103K	CHIP C 0.010UF K	
C24			CK73GB1C393K	CHIP C 0.039UF K	
C25			CK73GB1C104K	CHIP C 0.10UF K	
C26,27			CK73GCH1H220J	CHIP C 22PF J	
C28			C92-0507-05	CHIP-TAN 4.7UF 6.3WV	
C29			CK73GB1H102K	CHIP C 1000PF K	

TK-353 : Wide

TK-353(N) : Narrow

K,K2,K3,K4 : Wide/Narrow

K-K4 : Wide

N-N4 : Narrow

PARTS LIST

TX-RX UNIT (X57-4450-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C30			CC73GCH1H101J	CHIP C 100PF J		C83			C92-0578-05	CHIP-ELE 22UF 16WV	
C31			CK73GB1H103K	CHIP C 0.010UF K		C84 -87			CK73GB1H102K	CHIP C 1000PF K	
C32,33			CC73GCH1H180J	CHIP C 18PF J		C89			C92-0538-05	CHIP-TAN 10UF 10WV	
C34			CK73GB1H471K	CHIP C 470PF K		C90			CC73GCH1H030C	CHIP C 3.0PF C	K,K2
C35			CK73GB1C104K	CHIP C 0.10UF K		C90			CC73GCH1H040C	CHIP C 4.0PF C	K3,K4
C36			C92-0001-05	CHIP-TAN 0.10UF 35WV		C91			C92-0578-05	CHIP-ELE 22UF 16WV	
C37			C92-0513-05	CHIP-TAN 3.3UF 6.3WV		C92 -94			CK73GB1H102K	CHIP C 1000PF K	
C38			C92-0543-05	CHIP-TAN 3.3UF 10WV		C95			CK73GB1H471K	CHIP C 470PF K	
C39			CK73GB1H103K	CHIP C 0.010UF K		C96			CK73GB1H103K	CHIP C 0.010UF K	
C40			C92-0002-05	CHIP-TAN 0.22UF 35WV		C97			CK73GB1H102K	CHIP C 1000PF K	
C41,42			CK73GB1H102K	CHIP C 1000PF K		C98			CC73FCH1H030C	CHIP C 3.0PF C	K3
C43			CK73GB1H103K	CHIP C 0.010UF K		C98			CC73FCH1H060D	CHIP C 6.0PF D	K2
C44			C92-0004-05	CHIP-TAN 1.0UF 16WV		C98			CC73FCH1H070D	CHIP C 7.0PF D	K4
C45			CK73GB1H471K	CHIP C 470PF K		C98			CC73FCH1H080D	CHIP C 8.0PF D	K
C46			CC73GCH1H180J	CHIP C 18PF J		C99			CK73GB1C104K	CHIP C 0.10UF K	
C47			CC73GCH1H100D	CHIP C 10PF D		C100			CC73FCH1H020C	CHIP C 2.0PF C	K4
C48			CK73GB1H102K	CHIP C 1000PF K		C100			CC73FCH1H0R5C	CHIP C 0.5PF C	K3
C49			CK73GB1H103K	CHIP C 0.010UF K	K,K4	C100			CC73FCH1H1R5C	CHIP C 1.5PF C	K
C50			CK73GB1H102K	CHIP C 1000PF K		C101			CK73GB1H102K	CHIP C 1000PF K	
C51			CC73GCH1H101J	CHIP C 100PF J		C102			CC73GCH1H180J	CHIP C 18PF J	K,K2,K3
C52			CK73GB1H471K	CHIP C 470PF K		C102			CC73GCH1H220J	CHIP C 22PF J	K4
C53			CK73GB1C104K	CHIP C 0.10UF K	K2,K3	C103			CC73FCH1H080D	CHIP C 8.0PF D	K3
C53			CK73GB1H102K	CHIP C 1000PF K	K,K4	C103			CC73FCH1H100D	CHIP C 10PF D	K
C54			C92-0513-05	CHIP-TAN 3.3UF 6.3WV		C103			CC73FCH1H120J	CHIP C 12PF J	K4
C55			CK73GB1H102K	CHIP C 1000PF K		C103			CC73FCH1H150J	CHIP C 15PF J	K2
C56			CC73GCH1H040C	CHIP C 4.0PF C	K2,K3	C104			CC73FCH1H020C	CHIP C 2.0PF C	K4
C56			CC73GCH1H050C	CHIP C 5.0PF C	K	C104			CC73FCH1H030C	CHIP C 3.0PF C	K2
C56			CC73GCH1H090D	CHIP C 9.0PF D	K4	C104			CC73FCH1H1R5C	CHIP C 1.5PF C	K,K3
C57			CK73GB1H103K	CHIP C 0.010UF K		C105			CK73GB1H103K	CHIP C 0.010UF K	
C58			CC73GCH1H030C	CHIP C 3.0PF C	K3	C106			CK73GB1H102K	CHIP C 1000PF K	
C58			CC73GCH1H040C	CHIP C 4.0PF C	K	C107			CC73FCH1H080D	CHIP C 8.0PF D	K3
C58			CC73GCH1H050C	CHIP C 5.0PF C	K2	C107			CC73FCH1H100D	CHIP C 10PF D	K
C58			CC73GCH1H080D	CHIP C 8.0PF D	K4	C107			CC73FCH1H120J	CHIP C 12PF J	K2,K4
C59			CC73GCH1H080D	CHIP C 6.0PF D	K-K4	C108			CC73FCH1H010C	CHIP C 1.0PF C	K,K4
C59			CC73GCH1H120J	CHIP C 12PF J	N-N4	C108			CC73FCH1H020C	CHIP C 2.0PF C	K3
C60			CK73GB1H471K	CHIP C 470PF K		C108			CC73FCH1H0R5C	CHIP C 0.5PF C	K2
C61			CK73GB1H103K	CHIP C 0.010UF K		C109			C92-0502-05	CHIP-TAN 0.33UF 35WV	K2,K3,K4
C62			CC73GCH1H220J	CHIP C 22PF J		C109			C92-0511-05	CHIP-TAN 0.15UF 35WV	K
C63			CK73GB1H103K	CHIP C 0.010UF K		C110,111			CK73GB1H102K	CHIP C 1000PF K	
C64 -66			CK73GB1H471K	CHIP C 470PF K		C112			CC73FCH1H030C	CHIP C 3.0PF C	K3
C67			CK73GB1H103K	CHIP C 0.010UF K		C112			CC73FCH1H070D	CHIP C 7.0PF D	K
C68			CC73GCH1H120J	CHIP C 12PF J	N-N4	C112			CC73FCH1H080D	CHIP C 8.0PF D	K2,K4
C68			CC73GCH1H150J	CHIP C 15PF J	K-K4	C113			CC73GCH1H470J	CHIP C 47PF J	K,K4
C69			CC73GCH1H050C	CHIP C 5.0PF C	K,K2,K3	C114			CK73GB1H102K	CHIP C 1000PF K	
C69			CC73GCH1H090D	CHIP C 9.0PF D	K4	C115			CC73FCH1H040C	CHIP C 4.0PF C	K2,K3
C70			CK73GB1H103K	CHIP C 0.010UF K		C115			CC73FCH1H050C	CHIP C 5.0PF C	K
C71 -73			CC73GCH1H101J	CHIP C 100PF J		C115			CC73FCH1H070D	CHIP C 7.0PF D	K4
C74,75			CK73GB1H471K	CHIP C 470PF K		C116			CK73GB1H102K	CHIP C 1000PF K	
C76			CK73GB1H103K	CHIP C 0.010UF K		C117			CK73FCH1H102K	CHIP C 1000PF K	
C77			CK73GB1H471K	CHIP C 470PF K		C118			CC73GCH1H080D	CHIP C 8.0PF D	K2,K3
C78			CC73GCH1H020C	CHIP C 2.0PF C	K2	C118			CC73GCH1H100D	CHIP C 10PF D	K
C78			CC73GCH1H030C	CHIP C 3.0PF C	K,K4	C118			CC73GCH1H150J	CHIP C 15PF J	K4
C78			CC73GCH1H1R5C	CHIP C 1.5PF C	K3	C119			CC73GCH1H101J	CHIP C 100PF J	K,K2,K4
C79			CC73GCH1H040C	CHIP C 4.0PF C		C119			CC73GCH1H470J	CHIP C 47PF J	K3
C80			CC73GCH1H020C	CHIP C 2.0PF C	K3	C121			CC73GCH1H020C	CHIP C 2.0PF C	K2,K3
C80			CC73GCH1H030C	CHIP C 3.0PF C	K,K2	C121			CC73GCH1H030C	CHIP C 3.0PF C	K4
C80			CC73GCH1H040C	CHIP C 4.0PF C	K4	C121			CC73GCH1H1R5C	CHIP C 1.5PF C	K
C81			CK73GB1H102K	CHIP C 1000PF K		C122,123			CC73GCH1H070D	CHIP C 7.0PF D	
C82			C92-0001-05	CHIP-TAN 0.10UF 35WV	K2,K3,K4	C124			CK73GB1H103K	CHIP C 0.010UF K	
C82			C92-0004-05	CHIP-TAN 1.0UF 16WV	K	C125			CK73GB1H102K	CHIP C 1000PF K	

TK-353 : Wide
TK-353(N) : NarrowK,K2,K3,K4 : Wide/Narrow
K-K4 : Wide
N-N4 : Narrow

PARTS LSIT

TX-RX UNIT (X57-4450-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C126			CK73GB1H103K	CHIP C 0.010UF K		C267			CK73GB1H102K	CHIP C 1000PF K	
C128			CK73GB1C104K	CHIP C 0.10UF K		C268			CC73FCH1H751J	CHIP C 750PF J	
C129			CK73GB1H103K	CHIP C 0.010UF K		C269			CK73HB1H102K	CHIP C 1000PF K	
C130			CK73GB1H102K	CHIP C 1000PF K		C270			CK73GB1C104K	CHIP C 0.10UF K	
C131			CC73GCH1H070D	CHIP C 7.0PF D	N-N4	C271,272			CK73GB1H103K	CHIP C 0.010UF K	
C132			CC73GCH1H120J	CHIP C 12PF J	N-N4	C273			C92-0543-05	CHIP-TAN 3.3UF 10WV	
C133			CC73GCH1H070D	CHIP C 7.0PF D	N-N4	C274			CC73GCH1H101J	CHIP C 100PF J	
C134			CC73GCH1H040C	CHIP C 4.0PF C	K2,K3	C275			CC73GCH1H181J	CHIP C 180PF J	
C134			CC73GCH1H050C	CHIP C 5.0PF C	K	C276			CK73GB1H332K	CHIP C 3300PF K	
C134			CC73GCH1H070D	CHIP C 7.0PF D	K4	C277			CK73HB1C103K	CHIP C 0.010UF K	
C201			CK73GB1H102K	CHIP C 1000PF K		C278-280			CK73HB1H221K	CHIP C 220PF K	
C202			CC73GCH1H101J	CHIP C 100PF J		C281			CC73HCH1E101J	CHIP C 100PF J	
C203,204			CK73GB1H102K	CHIP C 1000PF K		C282-291			CK73HB1H221K	CHIP C 220PF K	
C205			CC73GCH1H101J	CHIP C 100PF J		C292			CK73GB1H221K	CHIP C 220PF K	
C206,207			CK73GB1H102K	CHIP C 1000PF K		C293,294			CK73HB1H221K	CHIP C 220PF K	
C208			CC73GCH1H101J	CHIP C 100PF J		C300,301			CK73HB1H221K	CHIP C 220PF K	
C209			CK73GB1H102K	CHIP C 1000PF K		C302			CK73GB1H103K	CHIP C 0.010UF K	
C210-216			CC73GCH1H101J	CHIP C 100PF J		C303			CK73FF1C334Z	CHIP C 0.33UF Z	
C217			CK73GB1H102K	CHIP C 1000PF K		C304-311			CK73HB1H221K	CHIP C 220PF K	
C218			CK73GB1H103K	CHIP C 0.010UF K		C312			CK73GB1H221K	CHIP C 220PF K	
C219,220			CK73GB1H102K	CHIP C 1000PF K		C313-315			CK73HB1H221K	CHIP C 220PF K	
C221			CK73GB1H472K	CHIP C 4700PF K		C316,317			CK73HB1H471K	CHIP C 470PF K	
C222			CK73GB1H103K	CHIP C 0.010UF K		C318,319			CK73HB1H221K	CHIP C 220PF K	
C223,224			C92-0519-05	CHIP-TAN 1.0UF 25WV		C323			C92-0519-05	CHIP-TAN 1.0UF 25WV	
C225			C92-0543-05	CHIP-TAN 3.3UF 10WV		C324-326			CK73HB1H221K	CHIP C 220PF K	
C226			CK73GB1H103K	CHIP C 0.010UF K		C327			C92-0519-05	CHIP-TAN 1.0UF 25WV	
C227			CK73GB1H102K	CHIP C 1000PF K		C328			CC73GCH1H101J	CHIP C 100PF J	
C228,229			CK73GB1H103K	CHIP C 0.010UF K		C329			C92-0514-05	CHIP-TAN 2.2UF 10WV	
C231			CK73GB1H103K	CHIP C 0.010UF K		C331			CK73HB1C103K	CHIP C 0.010UF K	
C233			CK73GB1E223K	CHIP C 0.022UF K		C332			CK73GB1C473K	CHIP C 0.047UF K	
C234			CK73GB1H103K	CHIP C 0.010UF K		C333			CK73GB1H102K	CHIP C 1000PF K	
C235			C92-0543-05	CHIP-TAN 3.3UF 10WV		C334			C92-0002-05	CHIP-TAN 0.22UF 35WV	
C236			CK73GB1H682K	CHIP C 6800PF K		C335			CC73HCH1H680J	CHIP C 68PF J	
C237			C92-0543-05	CHIP-TAN 3.3UF 10WV		C337,338			CC73HCH1H330J	CHIP C 33PF J	
C238			C92-0536-05	CHIP-TAN 10UF 10WV		C339			CK73GB1H472K	CHIP C 4700PF K	
C239			CK73GB1E223K	CHIP C 0.022UF K		C340			C92-0546-05	CHIP-TAN 68UF 6.3WV	
C240			CC73GCH1H470J	CHIP C 47PF J		C342			CK73GB1H103K	CHIP C 0.010UF K	
C241			CK73GB1H103K	CHIP C 0.010UF K		C343			CK73GB1H102K	CHIP C 1000PF K	
C242			C92-0543-05	CHIP-TAN 3.3UF 10WV		C344			CC73GCH1H101J	CHIP C 100PF J	
C243-245			CK73GB1H103K	CHIP C 0.010UF K		C345			CK73GB1H102K	CHIP C 1000PF K	
C246			CK73GB1H102K	CHIP C 1000PF K		C347-350			CK73GB1H102K	CHIP C 1000PF K	
C247			CK73GB1H103K	CHIP C 0.010UF K		C352			CK73GB1C104K	CHIP C 0.10UF K	
C248			CK73GB1C473K	CHIP C 0.047UF K		C354			C92-0543-05	CHIP-TAN 3.3UF 10WV	
C249			C92-0543-05	CHIP-TAN 3.3UF 10WV		C355			CK73HB1E472K	CHIP C 4700PF K	
C251			CC73GCH1H270J	CHIP C 27PF J		C357			CK73GB1C104K	CHIP C 0.10UF K	
C252			CK73GB1H103K	CHIP C 0.010UF K		C358			CC73GCH1H100D	CHIP C 10PF D	
C253			CC73GCH1H100D	CHIP C 10PF D		C359			CK73FB1A105K	CHIP C 1.0UF K	
C254			CK73GB1E223K	CHIP C 0.022UF K		C360			CK73FB1E104K	CHIP C 0.10UF K	
C255			CK73GB1H103K	CHIP C 0.010UF K		C361			CK73GB1C104K	CHIP C 0.10UF K	
C256			CK73GB1C273K	CHIP C 0.027UF K		C363			C92-0566-05	CHIP-TAN 10UF 6.3WV	
C257			CK73FB1A105K	CHIP C 1.0UF K		C364,365			CK73GB1H471K	CHIP C 470PF K	
C258			C92-0543-05	CHIP-TAN 3.3UF 10WV		C452-454			CC73GCH1H101J	CHIP C 100PF J	
C259			CK73GB1H561K	CHIP C 560PF K		C455			CK73GB1H103K	CHIP C 0.010UF K	
C260			CK73GB1C393K	CHIP C 0.039UF K		C456			CK73GB1E223K	CHIP C 0.022UF K	
C261			CK73GB1H102K	CHIP C 1000PF K		111	3A		E29-1125-04	INTER CONNECTOR	
C262			CK73GB1H103K	CHIP C 0.010UF K		CN1			E40-5717-05	FLAT CABLE CONNECTOR	
C263			CK73GB1H332K	CHIP C 3300PF K		CN201			E40-5719-05	FLAT CABLE CONNECTOR	
C264			CK73GB1H103K	CHIP C 0.010UF K		CN202			E40-5660-05	FLAT CABLE CONNECTOR	
C265			C92-0519-05	CHIP-TAN 1.0UF 25WV		CN204			E40-5657-05	FLAT CABLE CONNECTOR	
C266			CK73GB1H122K	CHIP C 1200PF K							

PARTS LIST

TX-RX UNIT (X57-4450-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
CN205			E40-5614-05	FLAT CABLE CONNECTOR		R1			RK73GB1J104J	CHIP R 100K J 1/16W	
CN206			E40-5662-05	PIN CONNECTOR		R2			RK73GB1J224J	CHIP R 220K J 1/16W	
CN451			E40-5718-05	FLAT CABLE CONNECTOR		R3			RK73GB1J224J	CHIP R 220K J 1/16W	K-K4
J1			E03-0170-05	DC JACK		R3			RK73GB1J244J	CHIP R 240K J 1/16W	N-N4
J201			E11-0457-05	PHONE JACK		R4			RK73GB1J330J	CHIP R 33 J 1/16W	
F1			F53-0104-05	FUSE 4A/125V		R5			RK73GB1J152J	CHIP R 1.5K J 1/16W	
116			J21-4458-14	HARDWARE FIXTURE LCD		R6			RK73GB1J473J	CHIP R 47K J 1/16W	
			J30-1212-04	SPACER		R7			RK73GB1J472J	CHIP R 4.7K J 1/16W	
CD1			L79-1065-05	TUNING COIL		R8			RK73GB1J473J	CHIP R 47K J 1/16W	
CF1,2			L72-0932-05	CERAMIC FILTER 455kHz	K-K4	R9			RK73GB1J472J	CHIP R 4.7K J 1/16W	
CF1,2			L72-0934-05	CERAMIC FILTER 455kHz	N-N4	R13			RK73GB1J102J	CHIP R 1.0K J 1/16W	
L1			L40-1001-37	SMALL FIXED INDUCTOR 10H		R14			RK73GB1J220J	CHIP R 22 J 1/16W	
L2			L40-1095-34	SMALL FIXED INDUCTOR 10H		R15			RK73GB1J221J	CHIP R 220 J 1/16W	
L4			L40-2271-35	SMALL FIXED INDUCTOR 22nH		R16			RK73GB1J102J	CHIP R 1.0K J 1/16W	K,K2
L5			L40-2271-36	SMALL FIXED INDUCTOR 22nH		R16			RK73GB1J821J	CHIP R 820 J 1/16W	K3,K4
L6			L40-2271-35	SMALL FIXED INDUCTOR 22nH		R17			RK73GB1J221J	CHIP R 220 J 1/16W	
L7			L40-2781-37	SMALL FIXED INDUCTOR 0.27UH	K-K4	R18			RK73GB1J102J	CHIP R 1.0K J 1/16W	
L7			L40-6881-37	SMALL FIXED INDUCTOR 0.68UH	N-N4	R20			RK73GB1J221J	CHIP R 220 J 1/16W	
L8			L40-2781-37	SMALL FIXED INDUCTOR 0.27UH	N-N4	R21			RK73GB1J151J	CHIP R 150 J 1/16W	
L8			L40-6881-37	SMALL FIXED INDUCTOR 0.68UH	K-K4	R22,23			RK73GB1J101J	CHIP R 100 J 1/16W	
L9			L40-1571-48	SMALL FIXED INDUCTOR 15nH	K2,K4	R24			RK73GB1J330J	CHIP R 33 J 1/16W	
L9			L40-1871-35	SMALL FIXED INDUCTOR 18nH	K,K3	R25			RK73GB1J104J	CHIP R 100K J 1/16W	
L10,11			L40-2271-35	SMALL FIXED INDUCTOR 22nH		R26			RK73GB1J272J	CHIP R 2.7K J 1/16W	
L12			L79-1073-05	FILTER 460MHz	K	R27			RK73GB1J333J	CHIP R 33K J 1/16W	
L12			L79-1147-05	FILTER 500MHz	K3	R28			RK73GB1J124J	CHIP R 120K J 1/16W	K2,K3,K4
L12			L79-1149-05	FILTER 480MHz	K2	R28			RK73GB1J184J	CHIP R 180K J 1/16W	K
L12			L79-1151-05	FILTER 413MHz	K4	R29			RK73GB1J184J	CHIP R 180K J 1/16W	
L13			L40-1871-35	SMALL FIXED INDUCTOR 18nH	K,K2	R30			RK73GB1J330J	CHIP R 33 J 1/16W	
L13			L40-2271-35	SMALL FIXED INDUCTOR 22nH	K3,K4	R31			RK73GB1J684J	CHIP R 680K J 1/16W	
L14			L33-0762-05	CHOKE COIL 3T		R32			RK73GB1J271J	CHIP R 270 J 1/16W	N-N4
L15			L33-0761-05	CHOKE COIL 2T	K2	R32			RK73GB1J681J	CHIP R 680 J 1/16W	K-K4
L15			L33-0762-05	CHOKE COIL 3T	K,K3,K4	R33			RK73GB1J101J	CHIP R 100 J 1/16W	K4
L16			L33-0761-05	CHOKE COIL 2T	K3	R33			RK73GB1J470J	CHIP R 47 J 1/16W	K
L16			L33-0762-05	CHOKE COIL 3T	K,K2,K4	R33			RK73GB1J560J	CHIP R 56 J 1/16W	K2
L17			L40-1295-34	SMALL FIXED INDUCTOR 1.2UH		R33			RK73GB1J680J	CHIP R 68 J 1/16W	K3
L18			L79-1074-05	FILTER 460MHz	K	R34			RK73GB1J181J	CHIP R 180 J 1/16W	N-N4
L18			L79-1146-05	FILTER 480MHz	K2	R34			RK73GB1J331J	CHIP R 330 J 1/16W	K-K4
L18			L79-1148-05	FILTER 413MHz	K4	R35			RK73GB1J472J	CHIP R 4.7K J 1/16W	K3
L18			L79-1150-05	FILTER 500MHz	K3	R35			RK73GB1J562J	CHIP R 5.6K J 1/16W	K,K2,K4
L19			L33-0762-05	CHOKE COIL 3T		R36-39			RK73GB1J332J	CHIP R 3.3K J 1/16W	
L20			L40-1571-48	SMALL FIXED INDUCTOR 15nH	K,K2,K3	R40			RK73GB1J560J	CHIP R 56 J 1/16W	
L20			L40-2271-48	SMALL FIXED INDUCTOR 22nH	K4	R41			RK73GB1J100J	CHIP R 10 J 1/16W	
L21			L92-0136-05	FERRITE TIP		R42			RK73GB1J101J	CHIP R 100 J 1/16W	
L22			L92-0137-05	FERRITE TIP		R43			RK73GB1J123J	CHIP R 12K J 1/16W	K4
L23			L40-1571-36	SMALL FIXED INDUCTOR 15nH	K,K2,K3	R43			RK73GB1J472J	CHIP R 4.7K J 1/16W	K
L23			L40-1871-36	SMALL FIXED INDUCTOR 18nH	K4	R43			RK73GB1J682J	CHIP R 6.8K J 1/16W	K2
L24			L40-1571-36	SMALL FIXED INDUCTOR 15nH	K,K2,K3	R44			RK73GB1J822J	CHIP R 8.2K J 1/16W	K3
L24			L40-1871-36	SMALL FIXED INDUCTOR 18nH	K4	R44			RK73GB1J153J	CHIP R 15K J 1/16W	
L201			L40-1005-48	SMALL FIXED INDUCTOR 10UH		R45			RK73GB1J471J	CHIP R 470 J 1/16W	
L202			L40-1005-34	SMALL FIXED INDUCTOR 10UH		R46			RK73GB1J100J	CHIP R 10 J 1/16W	K3
X1			L77-1563-15	CRYSTAL RESONATOR 12.8MHz	N-N4	R46			RK73GB1J330J	CHIP R 33 J 1/16W	K4
X1			L77-1583-15	CRYSTAL RESONATOR 12.8MHz	K-K4	R46			RK73GB1J470J	CHIP R 47 J 1/16W	K2
X2			L77-1527-15	CRYSTAL RESONATOR 44.595MHz		R47			RK73GB1J560J	CHIP R 56 J 1/16W	K
X201			L78-0332-15	RESONATOR 3.59MHz		R47			RK73GB1J100J	CHIP R 10 J 1/16W	K,K3
X202			L78-0331-05	RESONATOR 12MHz		R47			RK73GB1J101J	CHIP R 100 J 1/16W	K4
X451			L78-0336-05	RESONATOR 4.19MHz		R47			RK73GB1J470J	CHIP R 47 J 1/16W	K2
XF1			L71-0409-15	CRYSTAL FILTER 45.050MHz	K-K4	R49			RK73GB1J333J	CHIP R 33K J 1/16W	
XF1			L71-0461-05	CRYSTAL FILTER 45.050MHz	N-N4	R50			RK73GB1J100J	CHIP R 10 J 1/16W	N4
						R50			RK73GB1J330J	CHIP R 33 J 1/16W	K-K4,N-N3
						R51			RK73GB1J473J	CHIP R 47K J 1/16W	

TK-353 : Wide

TK-353(N) : Narrow

K,K2,K3,K4 : Wide/Narrow

K-K4 : Wide

N-N4 : Narrow

PARTS LSIT

TX-RX UNIT (X57-4450-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R52			RK73GB1J100J	CHIP R 10 J 1/16W		R258			RK73GB1J104J	CHIP R 100K J 1/16W	
R53			RK73GB1J102J	CHIP R 1.0K J 1/16W		R259			RK73HB1J473J	CHIP R 47K J 1/16W	
R54			R92-1218-05	CHIP R 0.1 J 1/2W		R260			RK73GB1J104J	CHIP R 100K J 1/16W	
R55			RK73GB1J331J	CHIP R 330 J 1/16W		R261			R92-1252-05	CHIP R 0 OHM	
R56			RK73GB1J222J	CHIP R 2.2K J 1/16W		R263			RK73GB1J563J	CHIP R 56K J 1/16W	
R57			RK73GB1J822J	CHIP R 8.2K J 1/16W		R264			RK73GB1J104J	CHIP R 100K J 1/16W	
R58			RK73GB1J104J	CHIP R 100K J 1/16W		R265			RK73GB1J223J	CHIP R 22K J 1/16W	
R59			RK73GB1J470J	CHIP R 47 J 1/16W		R266			RK73GB1J473J	CHIP R 47K J 1/16W	
R60			RK73GB1J104J	CHIP R 100K J 1/16W		R266			RK73GB1J683J	CHIP R 68K J 1/16W	
R61			RK73GB1J154J	CHIP R 150K J 1/16W		R267			RK73GB1J101J	CHIP R 100 J 1/16W	
R62,63			RK73GB1J104J	CHIP R 100K J 1/16W		R268			RK73GB1J823J	CHIP R 82K J 1/16W	
R64			RK73GB1J224J	CHIP R 220K J 1/16W		R269			RK73GB1J330J	CHIP R 33 J 1/16W	
R65			RK73GB1J104J	CHIP R 100K J 1/16W		R270			RK73GB1J103J	CHIP R 10K J 1/16W	
R66			RK73FB2A181J	CHIP R 180 J 1/10W		R271			RK73GB1J330J	CHIP R 33 J 1/16W	
R68			RK73FB2A181J	CHIP R 180 J 1/10W		R272			RK73HB1J473J	CHIP R 47K J 1/16W	
R69			RK73GB1J101J	CHIP R 100 J 1/16W		R273			RK73GB1J103J	CHIP R 10K J 1/16W	
R70			RK73GB1J330J	CHIP R 33 J 1/16W		R274			RK73GB1J101J	CHIP R 100 J 1/16W	
R72			RK73HB1J102J	CHIP R 1.0K J 1/16W		R275			RK73GB1J474J	CHIP R 470K J 1/16W	
R201-210			RK73GB1J102J	CHIP R 1.0K J 1/16W		R276,277			RK73GB1J103J	CHIP R 10K J 1/16W	
R211			RK73GB1J471J	CHIP R 470 J 1/16W		R278			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R212,213			RK73GB1J223J	CHIP R 22K J 1/16W		R279			RK73GB1J683J	CHIP R 68K J 1/16W	
R215			RK73GB1J102J	CHIP R 1.0K J 1/16W		R280			R92-1252-05	CHIP R 0 OHM	
R216			RK73GB1J183J	CHIP R 18K J 1/16W		R281			RK73GB1J683J	CHIP R 68K J 1/16W	
R218			RK73GB1J103J	CHIP R 10K J 1/16W		R282			RK73HB1J330J	CHIP R 33 J 1/16W	
R219			RK73GB1J102J	CHIP R 1.0K J 1/16W		R283			RK73HB1J473J	CHIP R 47K J 1/16W	
R220			RK73GB1J124J	CHIP R 120K J 1/16W		R284-292			RK73HB1J101J	CHIP R 100 J 1/16W	
R221			RK73GB1J104J	CHIP R 100K J 1/16W		R293			R92-1368-05	CHIP R 0 OHM	
R222			RK73GB1J224J	CHIP R 220K J 1/16W		R294-296			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R223			RK73GB1J104J	CHIP R 100K J 1/16W		R297			RK73GB1J473J	CHIP R 47K J 1/16W	
R224			RK73GB1J563J	CHIP R 56K J 1/16W		R298			R92-1368-05	CHIP R 0 OHM	
R225			RK73GB1J153J	CHIP R 15K J 1/16W		R299-302			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R226			RK73GB1J123J	CHIP R 12K J 1/16W		R303			RK73GB1J473J	CHIP R 47K J 1/16W	
R227			RK73GB1J103J	CHIP R 10K J 1/16W		R304			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R228			RK73GB1J823J	CHIP R 82K J 1/16W		R305-309			RK73HB1J101J	CHIP R 100 J 1/16W	
R229			RK73GB1J473J	CHIP R 47K J 1/16W		R310			RK73HB1J473J	CHIP R 47K J 1/16W	
R230			RK73GB1J473J	CHIP R 47K J 1/16W	N-N4	R311			RK73GB1J473J	CHIP R 47K J 1/16W	
R230			RK73GB1J683J	CHIP R 68K J 1/16W	K-K4	R312			RK73GB1J104J	CHIP R 100K J 1/16W	
R231			RK73GB1J224J	CHIP R 220K J 1/16W		R313-315			RK73HB1J101J	CHIP R 100 J 1/16W	
R232			RK73GB1J154J	CHIP R 150K J 1/16W		R316			RK73GB1J101J	CHIP R 100 J 1/16W	
R233			RK73GB1J273J	CHIP R 27K J 1/16W		R317			RK73GB1J473J	CHIP R 47K J 1/16W	
R234			RK73GB1J563J	CHIP R 56K J 1/16W		R318			RK73HB1J104J	CHIP R 100K J 1/16W	
R235			R92-0670-05	CHIP R 0 OHM		R319			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R236			RK73GB1J471J	CHIP R 470 J 1/16W		R320-323			RK73HB1J473J	CHIP R 47K J 1/16W	
R237			RK73GB1J223J	CHIP R 22K J 1/16W		R324			RK73GB1J100J	CHIP R 10 J 1/16W	
R239			RK73GB1J154J	CHIP R 150K J 1/16W		R326,327			RK73HB1J473J	CHIP R 47K J 1/16W	
R240			RK73GB1J104J	CHIP R 100K J 1/16W		R328			RK73GB1J223J	CHIP R 22K J 1/16W	
R241			RK73GB1J152J	CHIP R 1.5K J 1/16W		R329			RK73HB1J473J	CHIP R 47K J 1/16W	
R242			RK73GB1J104J	CHIP R 100K J 1/16W		R330			RK73HB1J104J	CHIP R 100K J 1/16W	
R243			RK73GB1J223J	CHIP R 22K J 1/16W		R331			RK73GB1J474J	CHIP R 470K J 1/16W	
R244			RK73GB1J824J	CHIP R 820K J 1/16W		R332			R92-1252-05	CHIP R 0 OHM	
R245			RK73GB1J684J	CHIP R 680K J 1/16W		R334			RK73GB1J333J	CHIP R 33K J 1/16W	
R246			RK73GB1J223J	CHIP R 22K J 1/16W		R335			RK73GB1J393J	CHIP R 39K J 1/16W	
R247			RK73GB1J824J	CHIP R 820K J 1/16W		R336			RK73GB1J103J	CHIP R 10K J 1/16W	
R248			RK73GB1J153J	CHIP R 15K J 1/16W		R337,338			RK73GB1J473J	CHIP R 47K J 1/16W	
R249			RK73GB1J822J	CHIP R 8.2K J 1/16W		R340			RK73GB1J473J	CHIP R 47K J 1/16W	
R250			RK73GB1J153J	CHIP R 15K J 1/16W		R341			R92-1368-05	CHIP R 0 OHM	
R251			RK73GB1J473J	CHIP R 47K J 1/16W		R342			RK73GB1J103J	CHIP R 10K J 1/16W	
R252,253			RK73GB1J103J	CHIP R 10K J 1/16W		R343			R92-1368-05	CHIP R 0 OHM	
R254-256			RK73GB1J104J	CHIP R 100K J 1/16W		R344			RK73GB1J473J	CHIP R 47K J 1/16W	
R257			RK73GB1J154J	CHIP R 150K J 1/16W		R346			RK73GB1J101J	CHIP R 100 J 1/16W	

TK-353 : Wide
TK-353(N) : NarrowK,K2,K3,K4 : Wide/Narrow
K-K4 : Wide
N-N4 : Narrow

PARTS LIST

TX-RX UNIT (X57-4450-XX)
VCO (X58-4140-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R347			RK73EB2ER39K	CHIP R 0.39 K 1/4W		IC222			TA7368F	IC (AF POWER AMP)	
R348			RK73GB1J103J	CHIP R 10K J 1/16W		IC223			TA75W558FU	IC (OP AMP X2)	
R349-351			RK73GB1J104J	CHIP R 100K J 1/16W		IC451			UPD75308BGK739	IC (4bit MICROPROCESSOR)	
R353			RK73GB1J123J	CHIP R 12K J 1/16W		IC452			S-8054ALB-LM	IC (VOLTAGE DETECTOR)	
R354			RK73GB1J153J	CHIP R 15K J 1/16W		Q1			DTC144EE	DIGITAL TRANSISTOR	
R356			RK73HB1J103J	CHIP R 10K J 1/16W		Q2			2SJ243	FET	
R357			RK73GB1J103J	CHIP R 10K J 1/16W		Q3			DTA114EE	DIGITAL TRANSISTOR	
R358			RK73GB1J104J	CHIP R 100K J 1/16W		Q4			DTA123EE	DIGITAL TRANSISTOR	
R360			R92-0670-05	CHIP R 0 OHM		Q5			2SC4617(S)	TRANSISTOR	
R361			RK73GB1J472J	CHIP R 4.7K J 1/16W		Q6			2SB1119(S)	TRANSISTOR	
R362			RK73GB1J473J	CHIP R 47K J 1/16W		Q7			2SC4617(S)	TRANSISTOR	
R363			RK73GB1J824J	CHIP R 820K J 1/16W		Q8			DTC143EE	DIGITAL TRANSISTOR	
R364			RK73GB1J223J	CHIP R 22K J 1/16W		Q9			2SA1832(GR)	TRANSISTOR	
R365			RK73GB1J474J	CHIP R 470K J 1/16W		Q10			2SC4215(Y)	TRANSISTOR	
R452			RK73GB1J100J	CHIP R 10 J 1/16W		Q11			2SC5090	TRANSISTOR	
R455			RK73GB1J271J	CHIP R 270 J 1/16W		Q12			2SC5066(O)	TRANSISTOR	
R457			RK73GB1J471J	CHIP R 470 J 1/16W		Q13			2SC4226(R24)	TRANSISTOR	K,K2,K4
R459			RK73GB1J100J	CHIP R 10 J 1/16W		Q13			2SC5090	TRANSISTOR	K3
R462-466			RK73GB1J102J	CHIP R 1.0K J 1/16W		Q14			SGM2014M	FET	
R467			RK73GB1J561J	CHIP R 560 J 1/16W		Q15			2SC4703	TRANSISTOR	
R468-471			RK73GB1J102J	CHIP R 1.0K J 1/16W		Q16			2SB1119(S)	TRANSISTOR	
R472			RK73GB1J103J	CHIP R 10K J 1/16W		Q17			2SC4094(R37)	TRANSISTOR	K,K2,K4
R473			RK73GB1J473J	CHIP R 47K J 1/16W		Q17			2SC4095(R47)	TRANSISTOR	K3
MIC201			T91-0547-05	MICROPHONE ELEMENT		Q19			DTC144EE	DIGITAL TRANSISTOR	
D1			D1F20	DIODE		Q20			2SC4617(S)	TRANSISTOR	
D2,3			1SS368	DIODE		Q201			2SJ243	FET	
D4			HSM88AS	DIODE		Q202			2SK1824	FET	
D5,6			M1809	DIODE		Q203			DTC144EE	DIGITAL TRANSISTOR	
D7			HSM88AS	DIODE		Q204			2SA1586(Y,GR)	TRANSISTOR	
D202-204			DA221	DIODE		Q205-207			DTC144EE	DIGITAL TRANSISTOR	
IC1			NJU7201U50	IC (VOLTAGE REGULATOR)		Q208			2SA1362(GR)	TRANSISTOR	
IC2			MC3372V	IC (FM IF)		Q210			2SK1588	FET	
IC3			LMX1511TMX	IC (PLL FREQUENCY SYNTHESIZER)		Q211			DTA144EE	DIGITAL TRANSISTOR	
IC4			NJM1458M	IC (OP AMP X2)		Q212			2SK879(Y)	FET	
IC5			M57786HB	IC (POWER MODULE/490-512MHz 5W)	K3	TH1			TN103S472JT	TERMISTER	
IC5			M57786LB	IC (POWER MODULE/400-430MHz 5W)	K4	TH201			157-302-53008	TERMISTER	
IC5			M57786MB	IC (POWER MODULE/440-480MHz 5W)	K	A1			X58-4140-10	SUB UNIT PLL	K
IC5			M57786NB	IC (POWER MODULE/470-490MHz 5W)	K2	A1			X58-4140-11	SUB UNIT PLL	K2
IC201			TA75W01FU	IC (OP AMP X2)		A1			X58-4140-12	SUB UNIT PLL	K3
IC202			TC7S66FU	IC (ANALOG SWITCH)		A1			X58-4140-13	SUB UNIT PLL	K4
IC203,204			NJU7201U50	IC (VOLTAGE REGULATOR)		VCO (X58-4140-XX)					
IC205			TA75W01FU	IC (OP AMP X2)		-10 : K,K(N) -11 : K2,K2(N) -12 : K3,K3(N) -13 : K4K4(N)					
IC206			M62363FP	IC (8bit D/A CONVERTER)		C602			CC73HCH1H040C	CHIP C 4.0PF C	K3
IC207			TA75W558FU	IC (OP AMP X2)		C602			CC73HCH1H050C	CHIP C 5.0PF C	K2
IC208			MC33172D	IC (OP AMP X2)		C602			CC73HCH1H060D	CHIP C 6.0PF D	K
IC209			TC74VHC573FS	IC (8bit D TYPE LATCH)		C602			CC73HCH1H070D	CHIP C 7.0PF D	K4
IC210,211			TA75W01FU	IC (OP AMP X2)		C603			CC73HCH1H050C	CHIP C 5.0PF C	K2
IC212			HN58C257T-20	IC (32768X8bit EEPROM)		C603			CC73HCH1H060D	CHIP C 6.0PF D	K
IC213			BU40948CFV	IC (8bit SHIFT/STOREREGISTER)		C603			CC73HCH1H070D	CHIP C 7.0PF D	K3
IC213			XRU4094BCFV	IC (8bit SHIFT/STOREREGISTER)		C603			CC73HCH1H090D	CHIP C 9.0PF D	K4
IC214			TA75W01FU	IC (OP AMP X2)		C604			CC73HCH1H060D	CHIP C 6.0PF D	K,K2,K3
IC215			TC7S32FU	IC (2INPUT OR GATE)		C604			CC73HCH1H070D	CHIP C 7.0PF D	K4
IC216			TA75W01FU	IC (OP AMP X2)		C605			CC73HCH1H060D	CHIP C 6.0PF D	K2,K3
IC217			TC7S04FU	IC (INVERTER)		C605			CC73HCH1H080D	CHIP C 8.0PF D	K,K4
IC218			TC35305F	IC (DTMF RECEIVER)		C606			CC73HCH1H050C	CHIP C 5.0PF C	K,K2,K3
IC219			PCD3312CT	IC (DTMF/MODEM/MUSICEL TONE)		C606			CC73HCH1H060D	CHIP C 6.0PF D	K4
IC220			BR24C01AF	IC (128X8bit EEPROM)		C607			CC73HCH1H050C	CHIP C 5.0PF C	K,K3
IC220			XL24C01AF	IC (128X8bit EEPROM)		C607			CC73HCH1H060D	CHIP C 6.0PF D	K2,K4
IC221			78312AGF3553BE	IC (MICROPROCESSOR)							

TK-353 : Wide
TK-353(N) : Narrow
K,K2,K3,K4 : Wide/Narrow
K-K4 : Wide
N-N4 : Narrow

PARTS LSIT

VCO (X58-4140-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C608			CC73HCH1H0R5C	CHIP C 0.5PF C							
C609			CK73HB1C103K	CHIP C 0.010UF K							
C610			CC73HCH1H030C	CHIP C 3.0PF C	K2,K3,K4						
C610			CC73HCH1H040C	CHIP C 4.0PF C	K						
C611			CC73HCH1H010C	CHIP C 1.0PF C	K,K3,K4						
C611			CC73HCH1H1R5C	CHIP C 1.5PF C	K2						
C612			CC73HCH1H080D	CHIP C 6.0PF D							
C613			CC73HCH1H100D	CHIP C 10PF D							
C614			CC73HCH1H080D	CHIP C 6.0PF D	K						
C614			CC73HCH1H070D	CHIP C 7.0PF D	K2,K3						
C614			CC73HCH1H100D	CHIP C 10PF D	K4						
C615			CC73HCH1H090D	CHIP C 9.0PF D	K3						
C615			CC73HCH1H100D	CHIP C 10PF D	K,K2,K4						
C616-618			CK73HB1H102K	CHIP C 1000PF K							
C619			CC73HCH1H050C	CHIP C 5.0PF C	K2						
C619			CC73HCH1H060D	CHIP C 6.0PF D	K,K3,K4						
C620			CK73HB1H471K	CHIP C 470PF K							
C621			C92-0513-05	CHIP-TAN 3.3UF 6.3WV							
C622			CK73HB1C103K	CHIP C 0.010UF K							
TC601,602			C05-0384-05	TRIM CAP 10PF							
CN601-606			E23-0983-05	PIN TERMINAL							
			F10-2117-14	SHIELDING PLATE							
L601-604			L40-3391-37	SMALL FIXED INDUCTOR 3.3UH							
L605			L33-0744-05	CHOKE COIL 23nH	K,K2,K3						
L605			L33-1267-05	CHOKE COIL 27nH	K4						
L606			L33-0744-05	CHOKE COIL 23nH	K3						
L606			L33-0745-05	CHOKE COIL 27nH	K4						
L606			L33-1267-05	CHOKE COIL 27nH	K,K2						
L607			L40-2271-36	SMALL FIXED INDUCTOR 22nH	K,K3						
L607			L40-2771-36	SMALL FIXED INDUCTOR 27nH	K2,K4						
R601,602			RK73HB1J104J	CHIP R 100K J 1/16W							
R603			RK73HB1J103J	CHIP R 10K J 1/16W							
R604			RK73HB1J682J	CHIP R 6.8K J 1/16W							
R605			RK73HB1J822J	CHIP R 8.2K J 1/16W							
R606			RK73HB1J332J	CHIP R 3.3K J 1/16W							
R607			RK73HB1J682J	CHIP R 6.8K J 1/16W							
R608			RK73HB1J822J	CHIP R 8.2K J 1/16W							
R609,610			RK73HB1J271J	CHIP R 270 J 1/16W							
R611			RK73HB1J472J	CHIP R 4.7K J 1/16W							
D601-604			HVU350	VARI-CAP DIODE							
D605			MA360	VARI-CAP DIODE							
Q601			UMG2	DIGITAL TRANSISTOR							
Q602			DTC144EE	DIGITAL TRANSISTOR							
Q603			2SC5090	TRANSISTOR							
Q604,605			2SC4226(R24)	TRANSISTOR							

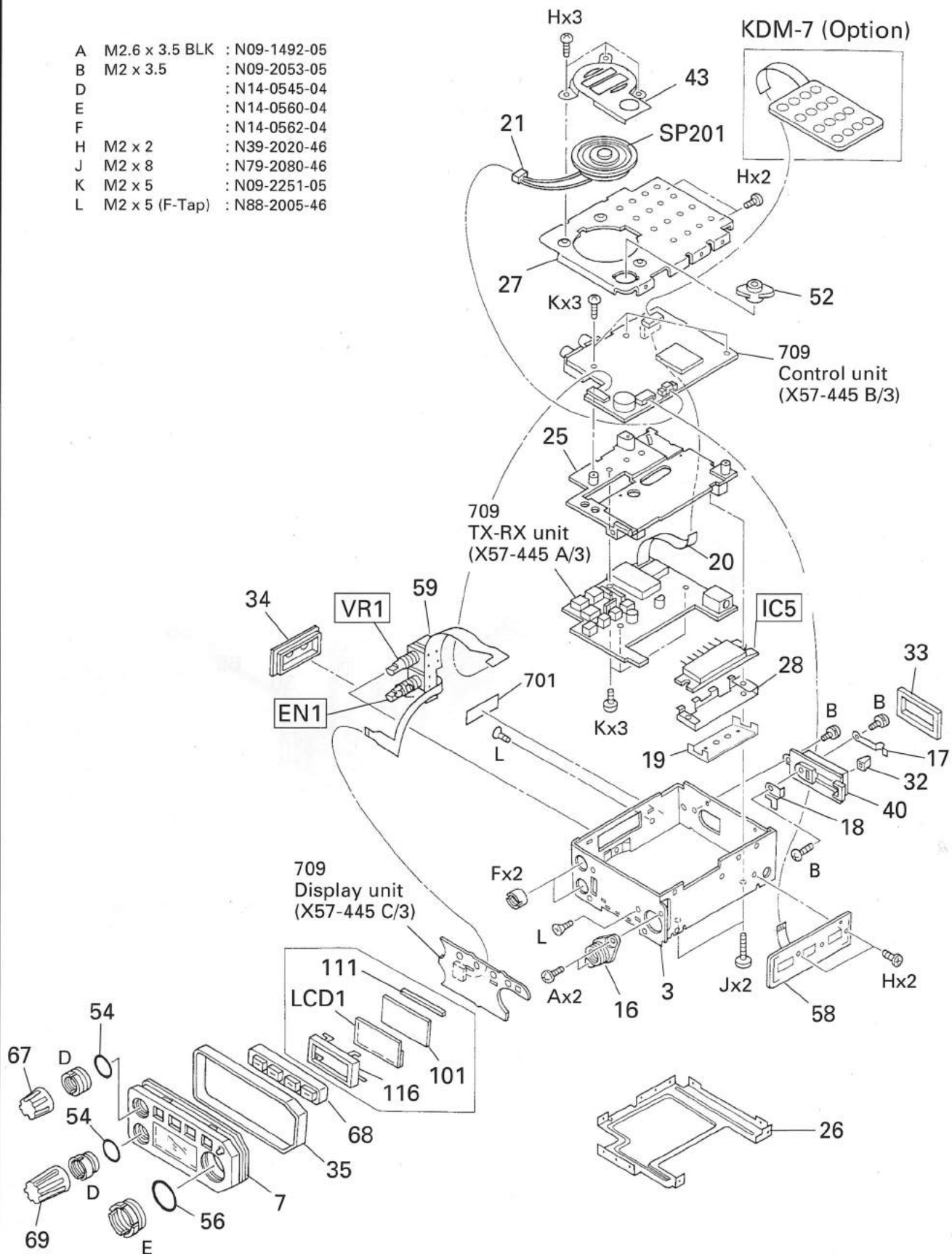
EXPLODED VIEW

A	M2.6 x 3.5 BLK	: N09-1492-05
B	M2 x 3.5	: N09-2053-05
D		: N14-0545-04
E		: N14-0560-04
F		: N14-0562-04
H	M2 x 2	: N39-2020-46
J	M2 x 8	: N79-2080-46
K	M2 x 5	: N09-2251-05
L	M2 x 5 (F-Tap)	: N88-2005-46

1

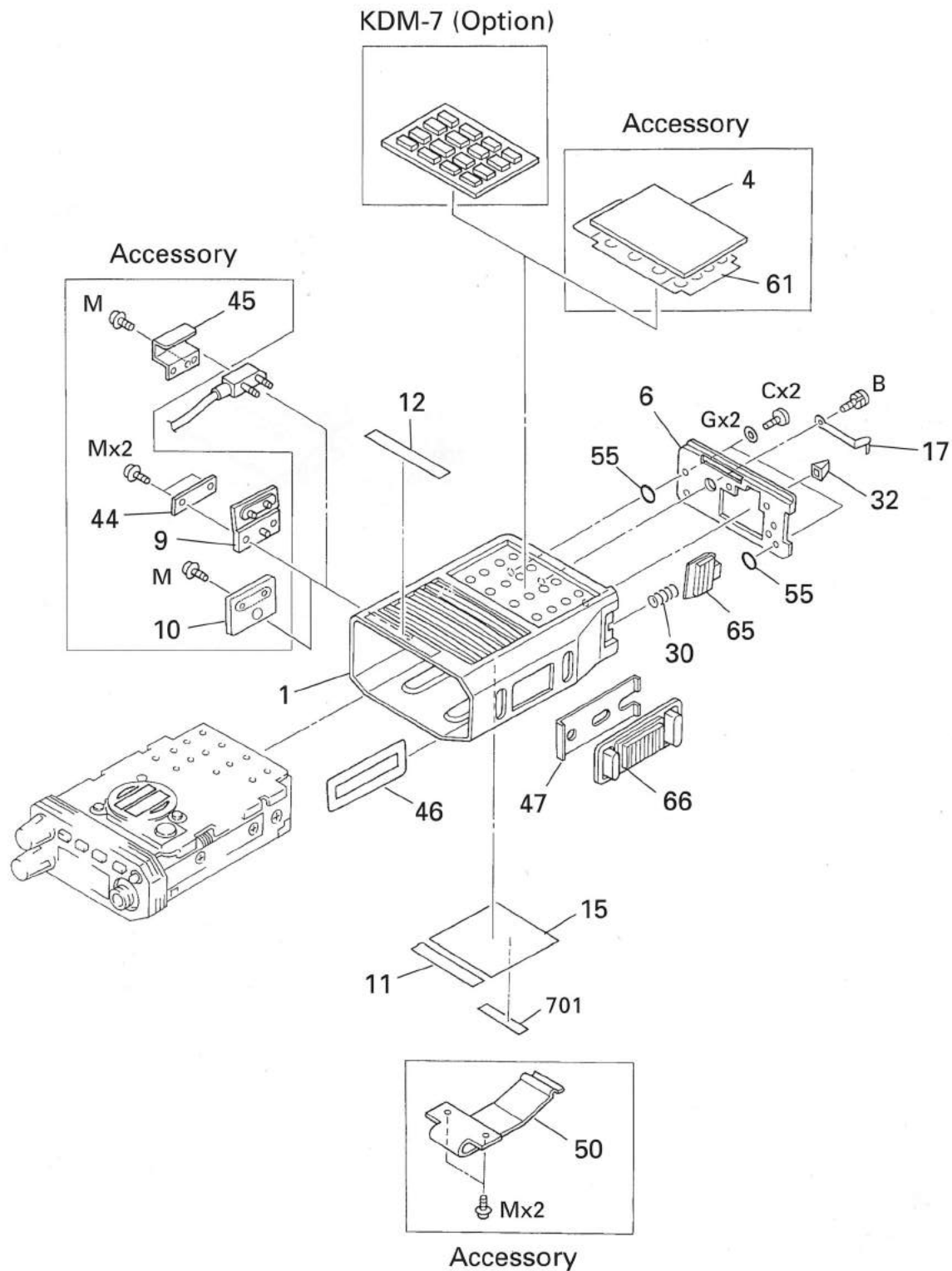
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3

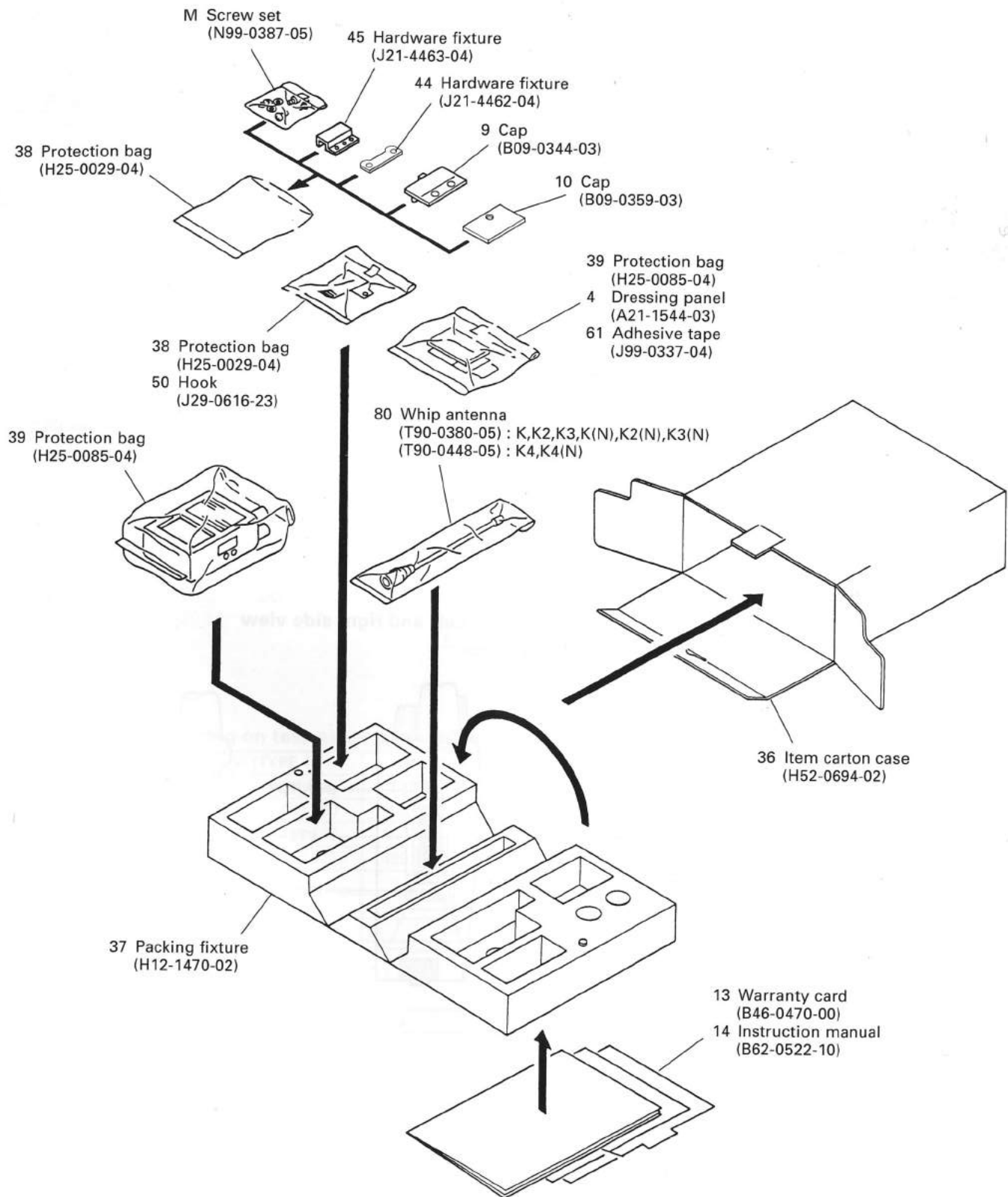


EXPLODED VIEW

B M2 x 3.5 : N09-2053-05
 C M2.6 x 8 : N09-2185-05
 G ϕ 2.6 (TW) : N17-1026-60
 M Serew set : N99-0387-05



PACKING



ADJUSTMENT

Required Test Equipment

1. Stabilized power supply

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

2. DC ammeter

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

3. Frequency counter (f. counter)

- 1) Frequency of up to 1GHz or so can be measured.
- 2) The sensitivity can be changed to 250MHz or below, and measurements are highly stable and accurate (0.2ppm or so).

4. Power meter

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

5. RF VTVM (RF V.M)

- 1) Measurable frequency : Up to 500MHz or so

6. Linear detector

- 1) Measurable frequency : Up to 500MHz
- 2) Characteristics are flat, and CN is 60dB or more.

7. Digital voltmeter

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

8. Oscilloscope

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

9. AF voltmeter (AF VTVM)

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

10. Spectrum analyzer

- 1) Measurable range : DC to 1GHz or more

11. Standard signal generator (SSG)

- 1) Maximum frequency : 500MHz or more
- 2) Output : -20dB/0.1μV to 120dB/1V
- 3) Output impedance : 50Ω

12. Tracking generator

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

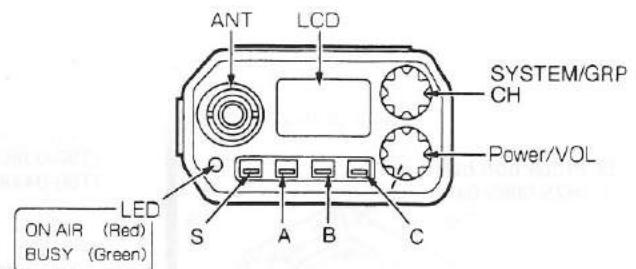
13. Dummy load

- 1) 8Ω, 3W or more

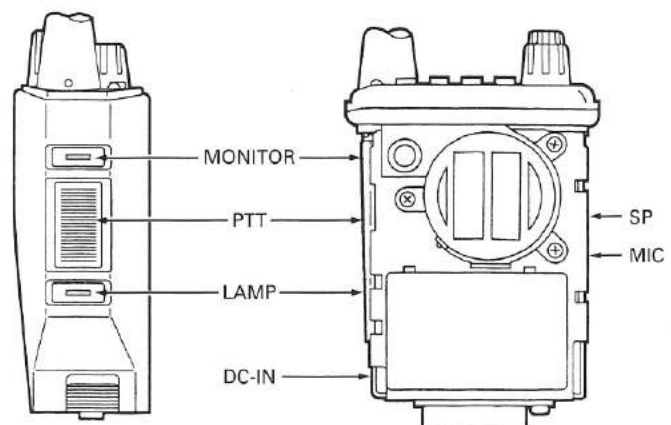
- Use a non-conductive rod such as a Bakelite rod for adjustment (Especially of trimmers and coils).
- To protect the SSG, do not send out signals while adjusting the receiving unit.
- The indicated SSG output levels are for maximum output.

Version	Frequency range	Remark	
K, K(N) (TYPE 1)	450~470MHz	IF1	45.05MHz
		LOC	44.595MHz
K2, K2(N) (TYPE 2)	470~490MHz	IF1	45.05MHz
		LOC	44.595MHz
K3, K3(N) (TYPE 3)	490~512MHz	IF1	45.05MHz
		LOC	44.595MHz
K4, K4(N) (TYPE 4)	406~430MHz	IF1	45.05MHz
		LOC	44.595MHz

Panel side view



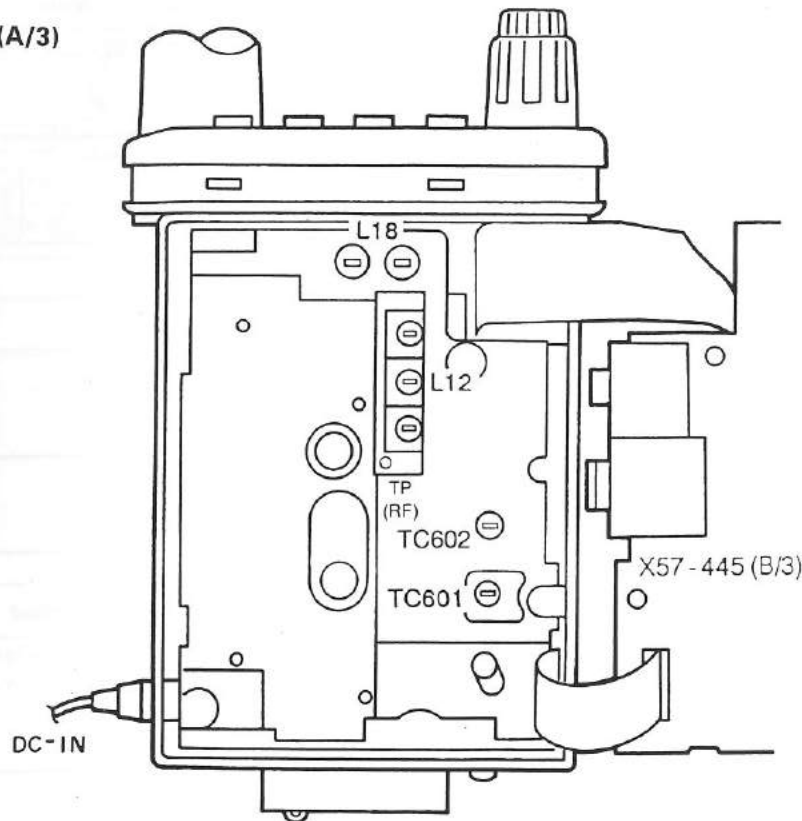
Left and right side view



ADJUSTMENT

Adjustment Points

TX-RX unit (X57-4450-XX) (A/3)
Component side view



Tuning Mode

Frequency table for using on test mode (Unit : MHz)

Destination System No.	K, K(N) (TYPE 1)		K2, K2(N) (TYPE 2)		K3, K3(N) (TYPE 3)		K, K4(N) (TYPE 4)	
	TX freq	RX freq	TX freq	RX freq	TX freq	RX freq	TX freq	RX freq
1	460.000	460.100	480.000	480.100	500.000	500.100	418.000	418.100
2	450.000	450.100	470.000	470.100	490.000	490.100	406.000	406.100
3	469.9875	469.975	489.9875	489.975	511.9875	511.975	429.9875	429.975
4	460.000		480.000		500.000		418.000	
5	460.200		480.200		500.200		418.200	
6	460.400		480.400		500.400		418.400	

Table 1

Group No. list

GROUP No.	SIGNALING
1	None
2	100Hz square wave
3	LTR data (Area = 0, Goto = 12, Home = 12, ID = 47, Free = 31)
4	QT (67.0Hz)
5	QT (151.4Hz)
6	QT (210.7Hz)
7	DQT (D023N)
8	DQT (D754N)
9	DTMF decoder (Code = 159D, Alert = YES, Transpond = NO)
A	DTMF single tone (1633Hz)
B	DTMF encode tone (7)

By simply transmitting, and the DTMF single tone and encoded tone are encoded.

ADJUSTMENT

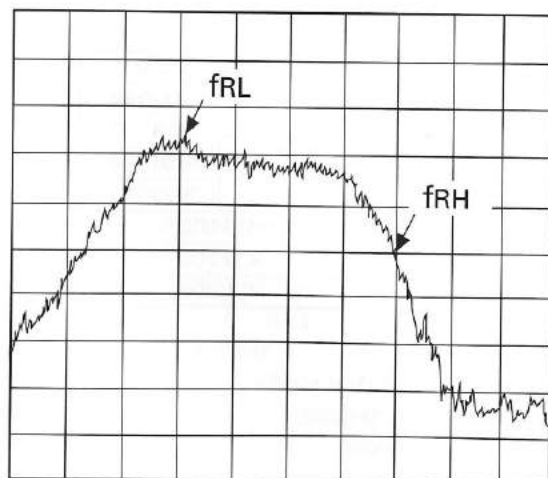
VCO

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. TX lock voltage check	1) CH : Channel with highest TX freq' (f _{TH}).	DVM	VCO	LV	VCO	TC601	3.5V	±0.05V
2. TX lock voltage check	2) CH : Channel with lowest TX freq' (f _{TL}).						Check	1.1~2.1V TYPE 1, 2 0.9~1.7V TYPE 3, 4
3. RX lock voltage check	1) CH : Channel with highest RX freq' (f _{RH}).				VCO	TC602	3.5V	±0.05V
4. RX lock voltage check	2) CH : Channel with lowest RX freq' (f _{RL}).						Check	0.6~1.7V TYPE 1, 2, 4 0.8~1.9V TYPE 3

Helical

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
5. Helical adjustment check	1) CH : Channel with RX center freq' (f _{RM}). Connect the spectrum analyzer to TP (RF).	Tracking G. Spectrum analyzer	TX-RX (A/3)	ANT TP (RF)	TX-RX (A/3)	L12 L18	Adjust wave form to figure at below.	

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



CENTER 460.000MHz :TYPE 1
 480.000MHz :TYPE 2
 501.000MHz :TYPE 3
 418.000MHz :TYPE 4

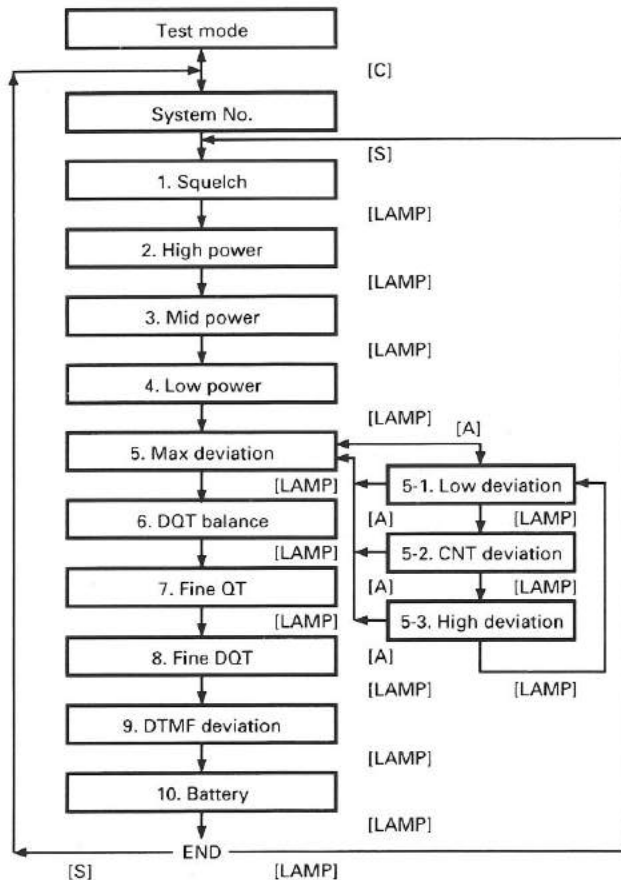
SPAN 50MHz
 MARKER 450MHz
 TG LEVEL -20dBm

ADJUSTMENT

• Procedure

- 1) Press LAMP, A together and turn power on. Hold LAMP and A until "SEL" appears on LCD.
- 2) When the [C] key is pressed, the tuning mode is entered.

• Tuning mode



1) Preparations for tuning the transceiver

Before attempting to tune the transceiver, connect the unit to a suitable power supply (without case).

Use the optional DC cable(PG-2W).

Maximum input voltage is 9V DC.

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 an 8ohm dummy load and connected to an AC voltmeter and an audio distortion meter or a SINAD measurement meter at all times during tuning.

2) Transceiver tuning

- 2)-1 To place transceiver in tuning mode

Press "C", and channel appears on LCD. Set channel according to tuning requirements.

LCD display

Channel No.



System No. Group No.

Press "SCN", now in tuning mode. Use "LAMP" button to toggle through tuning modes, and channel selector knob to adjust tuning requirements (1 to 256 appears on LCD).

Tuning mode



Adjustment item
(STEP 1~10)

Adjustment
(1~256)

SSG DEV : $\pm 3\text{kHz}$ (Wide) / $\pm 1.5\text{kHz}$ (Narrow)

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. AF level check	1) System No. : 1 Group No. : 1 SSG ATT : -53dBm	Spectrum analyzer SSG		SP/MIC ANT DC-IN			Check	0.63V $\pm$ 0.3V
2. AF distortion check	1) System No. : 1 Group No. : 1 SSG ATT : -53dBm	Oscilloscope AF VTVM					Check	5% or less
3. Large input S/N check	1) System No. : 1 Group No. : 1 SSG ATT : -53dBm							45dBm or more Wide 39dBm or more Narrow
4. Squelch adjustment	1) System No. : 1 Group No. : 1 SSG ATT : -123dBm					SYSTEM/ GRP	Adjust to point of closing squelch.	
5. Squelch check	1) System No. : 1 Group No. : 1 SSG ATT : -127dBm						Check	Close squelch

ADJUSTMENT

SSG DEV : $\pm 3\text{kHz}$ (Wide) / $\pm 1.5\text{kHz}$ (Narrow)

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
6. Receiver sensitivity check	1) System No. : 1 Group No. : 1 SSG ATT : -118dBm	Spectrum analyzer SSG Oscilloscope AF VTVM		SP/MIC ANT DC-IN			Check	SINAD 12dB or more
	2) System No. : 2 Group No. : 1 SSG ATT : -116dBm							
	3) System No. : 3 Group No. : 1 SSG ATT : -118dBm							
7. MAX power check	1) System No. : 1 Group No. : 1 BATT terminal voltage : 7.5V PTT : ON	Power meter Deviation meter Oscilloscope					Check	4W or more
8. TX high power adjustment	1) System No. : 1 Group No. : 1 PTT : ON					SYSTEM/GRP	3.8W	±0.1W
9. Consumption current check	1) System No. : 1 Group No. : 1 PTT : ON						Check	1.8A or less
10. TX high power check	1) System No. : 2 Group No. : 1 PTT : ON						Check	3.0~5.0W
	2) System No. : 3 Group No. : 1 PTT : ON							
11. TX low power adjustment	1) System No. : 1 Group No. : 1 PTT : ON					SYSTEM/GRP	1.0W	±0.1W
12. TX low power check	1) System No. : 2 Group No. : 1 PTT : ON						Check	0.5~1.5W
	2) System No. : 3 Group No. : 1 PTT : ON							
13. MAX DEV adjustment	1) System No. : 1 Group No. : 1 AG : 1kHz/150mV PTT : ON					SYSTEM/GRP	3.8kHz Wide 1.7kHz Narrow	±50Hz
	2) Press A knob, shift to low deviation and adjust MAX DEV at each of the LOW, CNT and HIGH points.							
14. MIC sensitivity check	1) AG : 1kHz/15mV PTT : ON					Check	2.2~3.6kHz Wide 0.75~1.7kHz Narrow	
15. DQT BAL adjustment	1) System No. : 1 Group No. : 2 AG : OFF PTT : ON					SYSTEM/GRP	Makes demodulation waves into square waves.	

ADJUSTMENT

kHz (Narrow)

SSG DEV : $\pm 3\text{kHz}$ (Wide) / $\pm 1.5\text{kHz}$ (Narrow)

Remarks	Item	Condition	Measurement			Adjustment			Specifications/Remarks
			Test-equipment	Unit	Terminal	Unit	Parts	Method	
	16. QT DEV adjustment	1) System No. : 1 Group No. : 5 AG : OFF PTT : ON	Power meter Deviation meter Oscilloscope		SP/MIC ANT DC-IN		SYSTEM/ GRP	0.75kHz Wide 0.375kHz Narrow (Larger to +, -)	$\pm 20\text{Hz}$
	17. DQT DEV adjustment	1) System No. : 1 Group No. : 7 AG : OFF PTT : ON							
	18. LTR adjustment	1) System No. : 1 Group No. : 3 PTT : ON						1.0kHz Wide 0.75kHz Narrow (Larger to +, -)	$\pm 0.1\text{kHz}$
	19. DTMF DEV adjustment	1) System No. : 1 Group No. : 10 AG : OFF PTT : ON							
	20. Transmission S/N check	1) CH : 1 Signaling No. : 1 PTT : ON						Check	42dB or more Wide 36dB or more Narrow
	21. BATT detection writing	1) CH : 1 Signaling No. : 1 PTT : ON						After pressing the PTT switch, confirm that one predetermined numeric in the range 1 to 256 appears and then press the [RESET] key. That numeric will be stored in memory.	BATT terminal voltage : 6.0V
	22. BATT detection check	1) CH : 1 Signaling No. : 1 BATT terminal voltage : 5.7V PTT : ON						For checking, press the [x10] key and select CH 1 on the display.	Cannot transmit. LED (PTT) blinks.

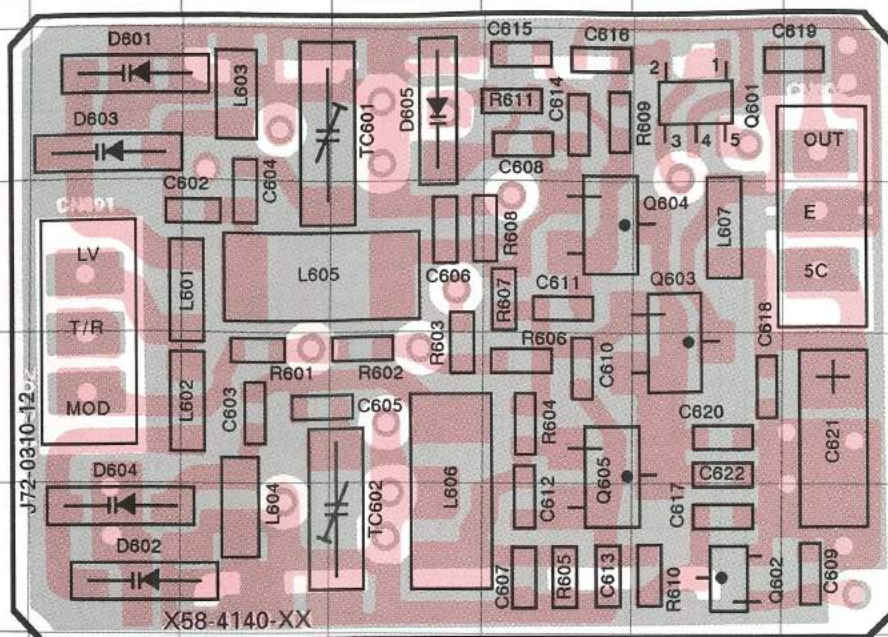
PC BOARD VIEWS TK-353/(N)

VCO UNIT (X58-4140-XX) Component side view

0-10 : K,K(N) 0-11 : K2,K2(N) 0-12 : K3,K3(N) 0-13 : K4,K4(N)

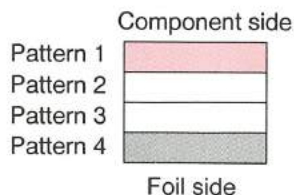
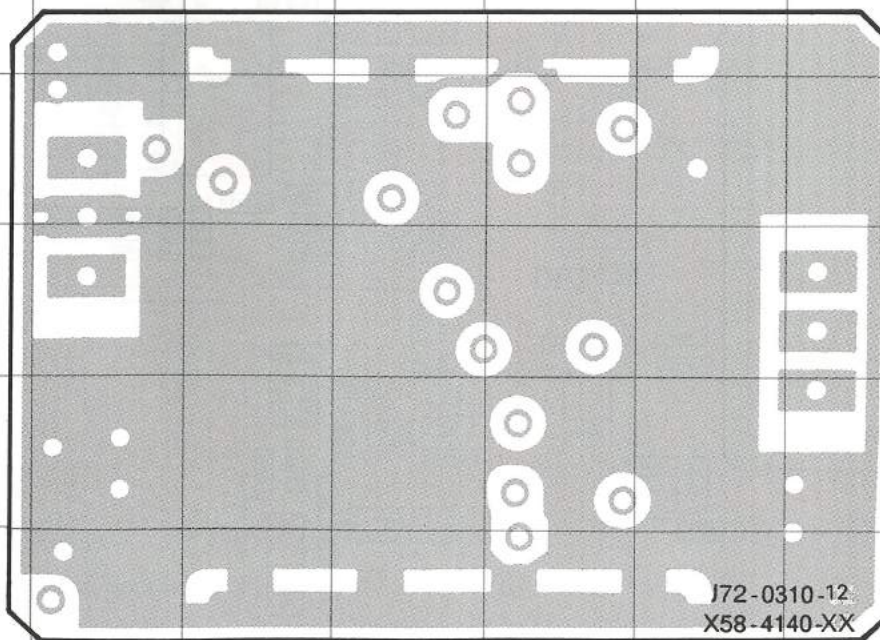
VCO UNIT (X58-4140-XX)
(Component side)

Ref. No	Address
Q601	3G
Q602	6G
Q603	5G
Q604	4G
Q605	6G
D601	3C
D602	6C
D603	3C
D604	6C
D605	3E



VCO UNIT (X58-4140-XX) Foil side view

0-10 : K,K(N) 0-11 : K2,K2(N) 0-12 : K3,K3(N) 0-13 : K4,K4(N)



TK-353/(N) PC BOARD VIEWS

0-14 : K 0-15 : K2 0-16 : K3 0-17 : K4

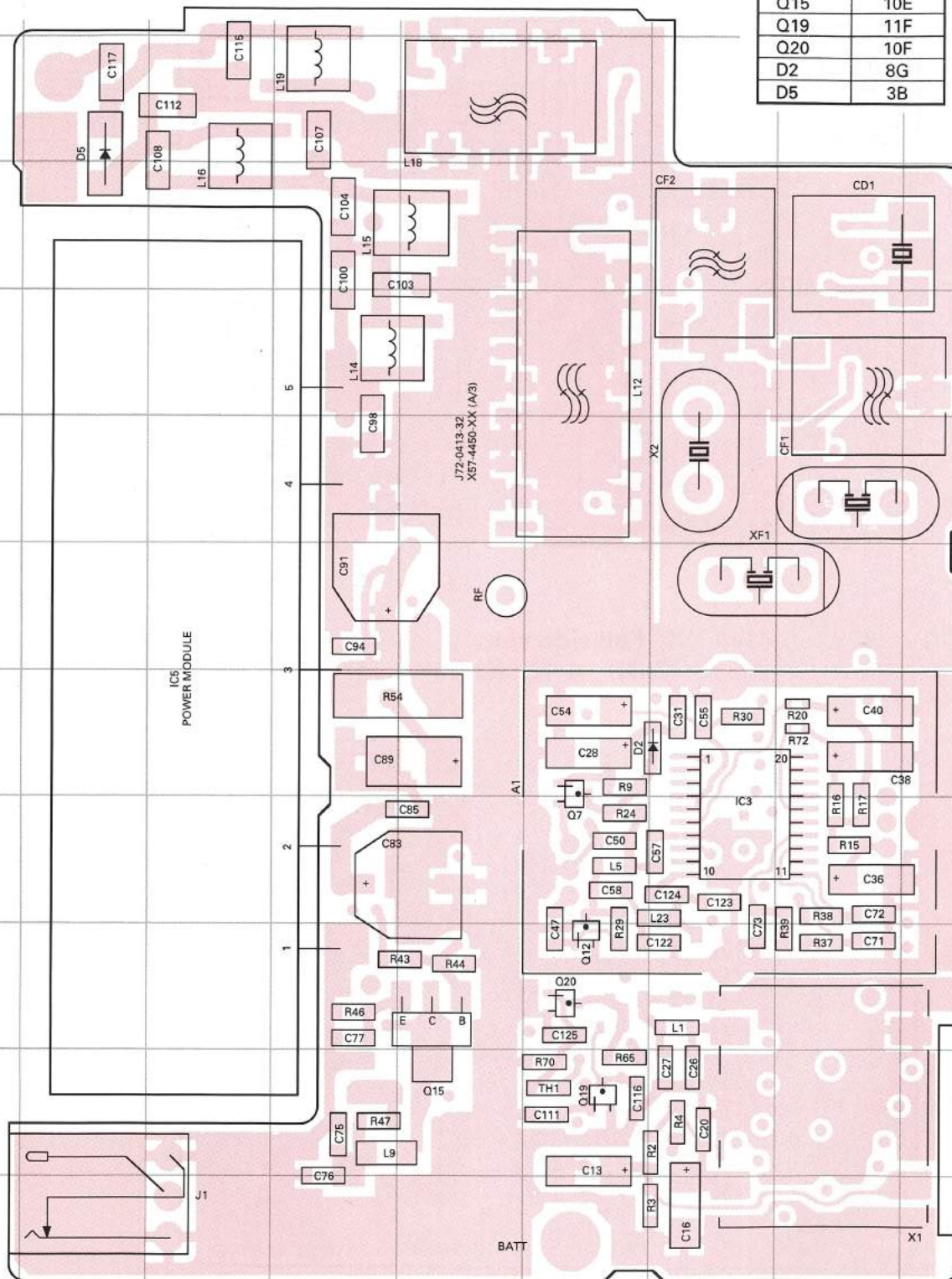
0-22 : K(N) 0-23 : K2(N) 0-24 : K3(N) 0-25 : K4(N)

TX-RX UNIT (X57-4450-XX) (A/3)
(Component side)

Ref. No	Address
IC3	9G
IC5	8C
Q7	8F
Q12	10F
Q15	10E
Q19	11F
Q20	10F
D2	8G
D5	3B

TX-RX UNIT (X)
(Foil side)

Ref. No	Ado
IC1	
IC2	
IC4	1
Q1	8
Q2	8
Q3	9
Q4	8
Q5	9
Q6	1
Q8	9
Q9	1



Component side

Pattern 1
Pattern 2
Pattern 3
Pattern 4

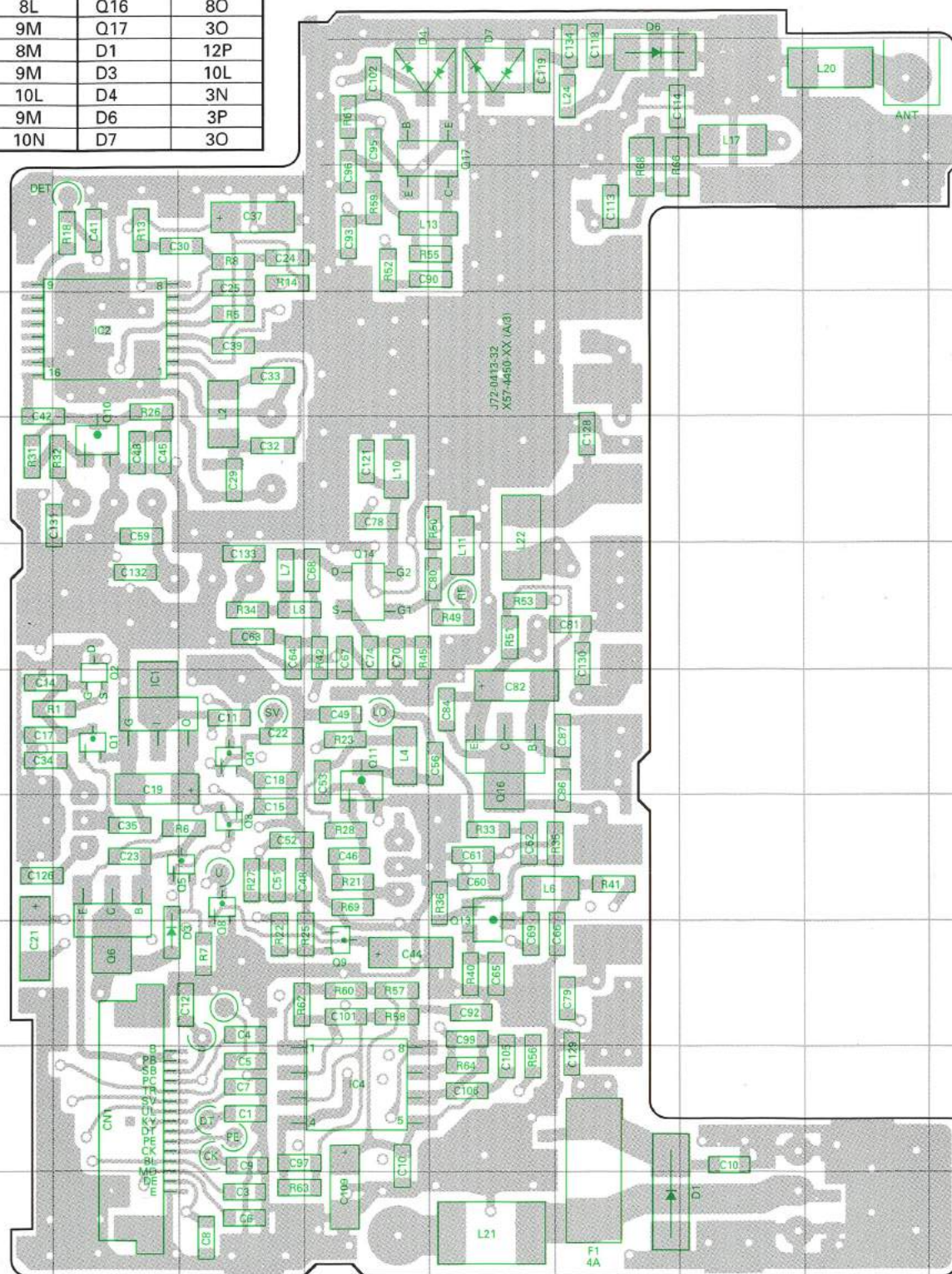
Foil side

2SC4617
2SC4226
2SC4215
2SC5090
DTC144EE
2SA1832
2SC5066



Ref. No	Address	Ref. No	Address
IC1	8L	Q10	6L
IC2	5L	Q11	8N
IC4	11N	Q13	9O
Q1	8L	Q14	7N
Q2	8L	Q16	8O
Q3	9M	Q17	3O
Q4	8M	D1	12P
Q5	9M	D3	10L
Q6	10L	D4	3N
Q8	9M	D6	3P
Q9	10N	D7	3O

TX-RX UNIT (X57-4450-XX) (A/3) Foil side view
0-14 : K 0-15 : K2 0-16 : K3 0-17 : K4
0-22 : K(N) 0-23 : K2(N) 0-24 : K3(N) 0-25 : K4(N)

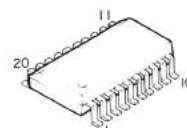


2SB119

MB1512PFV-G-BND

Pattern 1	
Pattern 2	
Pattern 3	
Pattern 4	

Foil side



$\mathbf{K4(N)}$

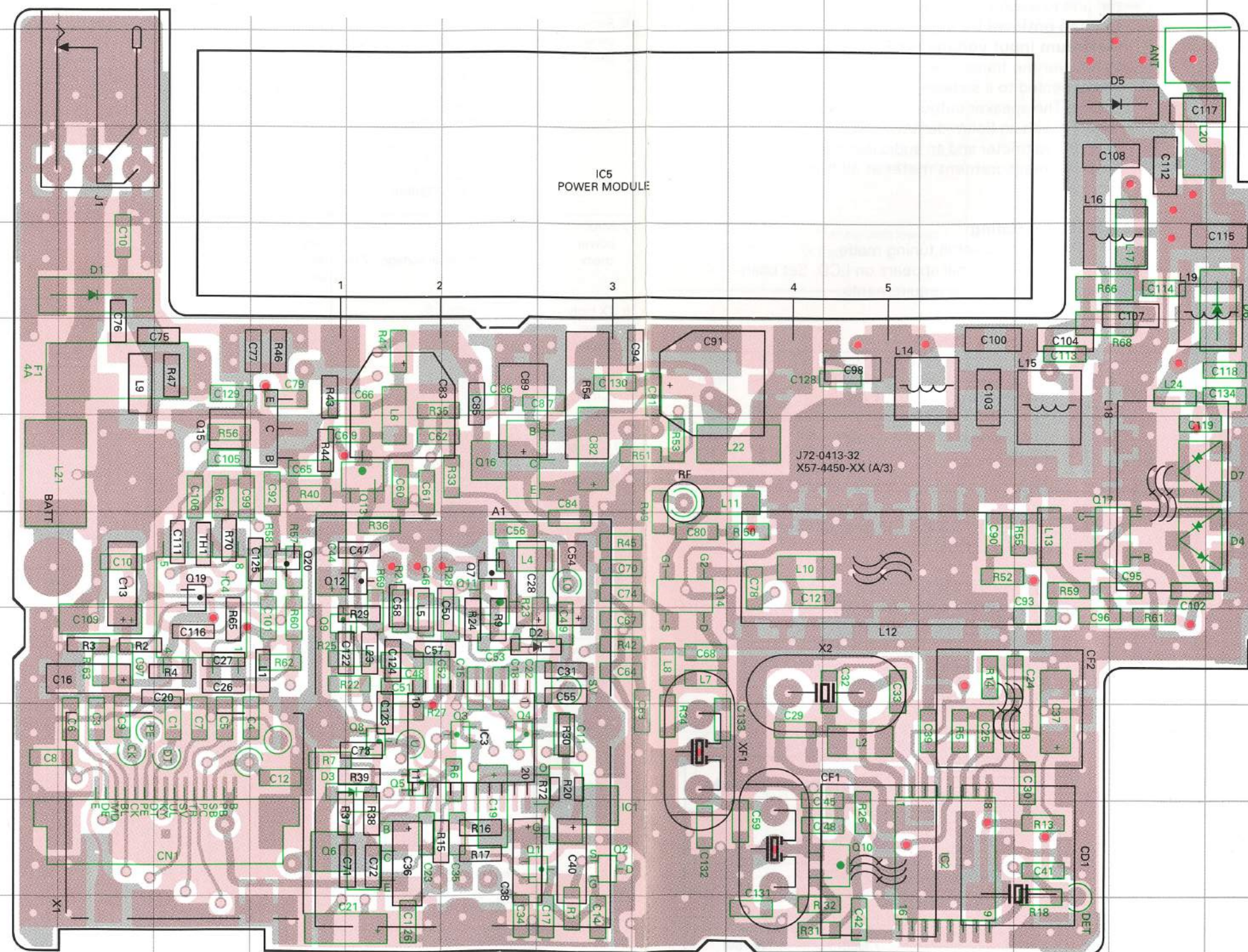
TX-RX UNIT (X57-4450-XX) (A/3) Component side + Foil side view

0-14 : K 0-15 : K2 0-16 : K3 0-17 : K4

0-22 : K(N) 0-23 : K2(N) 0-24 : K3(N) 0-25 : K4(N)

TX-RX UNIT (X57-4450-XX) (A/3)
(Component side + Foil side)

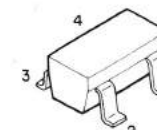
Ref. No	Address
IC1	11AC
IC2	11AG
IC3	10AB
IC4	9Y
IC5	4AC
Q1	11AC
Q2	11AC
Q3	10AB
Q4	10AB
Q5	10AA
Q6	11AA
Q7	8AB
Q8	10AA
Q9	9Z
Q10	11AF
Q11	8AB
Q12	8AA
Q13	7AA
Q14	8AD
Q15	7Z
Q16	7AB
Q17	8AI
Q19	8Y
Q20	8Z
D1	5X
D2	9AC
D3	10AA
D4	8AI
D5	3AI
D6	5AJ
D7	7AI



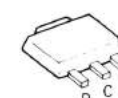
HSM88AS



2SC4094



2SC4703



Component side

Pattern 1
Pattern 2
Pattern 3
Pattern 4

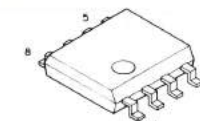
Foil side

- Connect 1 and 4

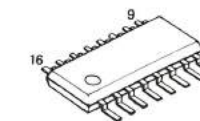


2SJ243

NJM1458M



MC3372V



0-22 : K(N) 0-23 : K2(N) 0-24 : K3(N) 0-25 : K4(N)

Component side

Ref. No	Address	Ref. No	Address
IC202	7F	Q204	4F
IC203	3D	Q205	6I
IC205	6F	Q206	5I
IC208	6D	Q207	6H
IC211	4F	Q208	5H
IC214	4E	Q210	9H
IC221	9D	Q211	6F
IC222	7G	Q212	5F
Q203	5D		

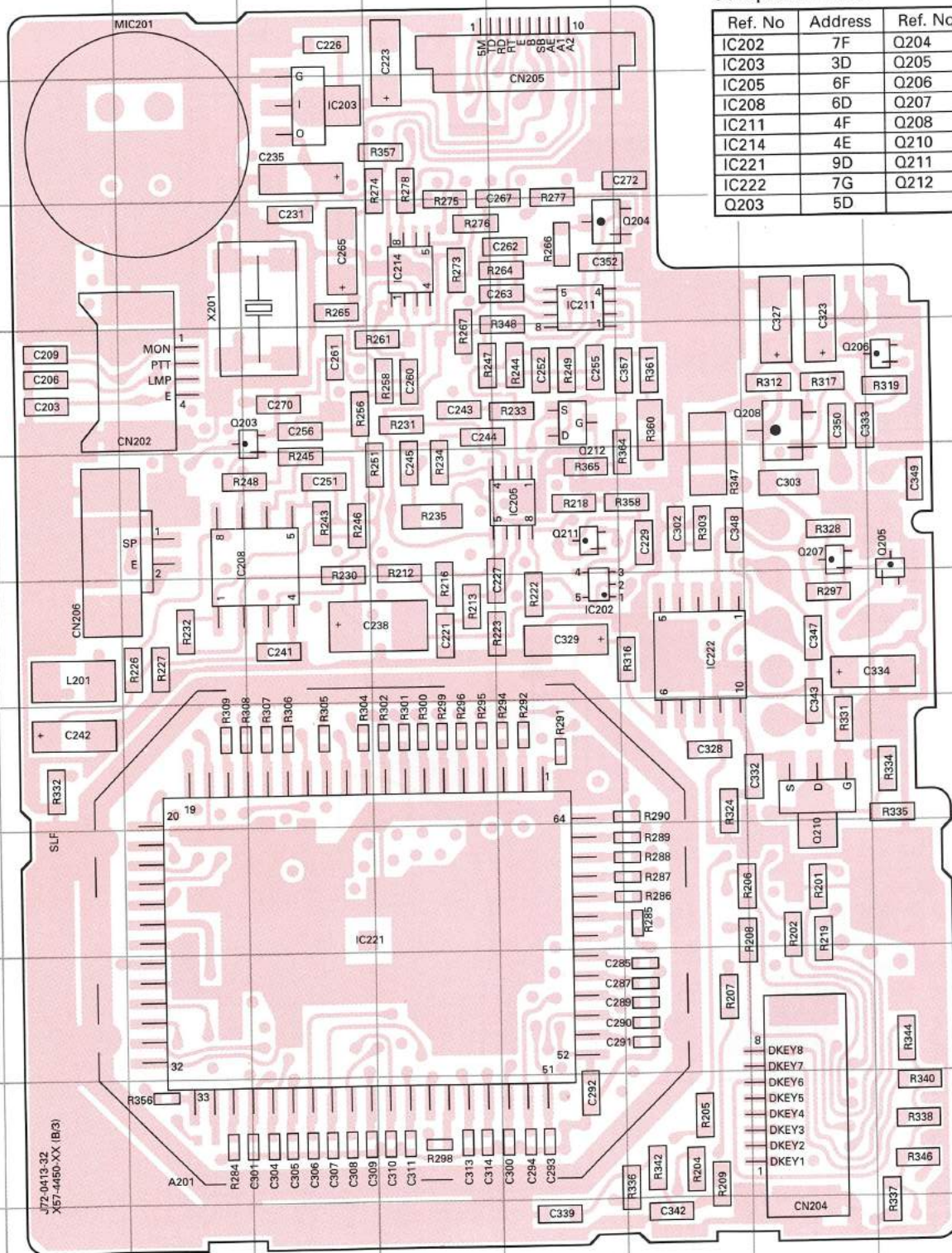


Diagram illustrating the structure of a four-layer laminate:

- Pattern 1 (Top layer, shaded pink)
- Pattern 2 (Second layer, white)
- Pattern 3 (Third layer, white)
- Pattern 4 (Bottom layer, shaded pink)

The top surface is labeled "Component side" and the bottom surface is labeled "Foil side".

2SA1362
2SA1586
2SC4215
DTA144EE
DTC144EE



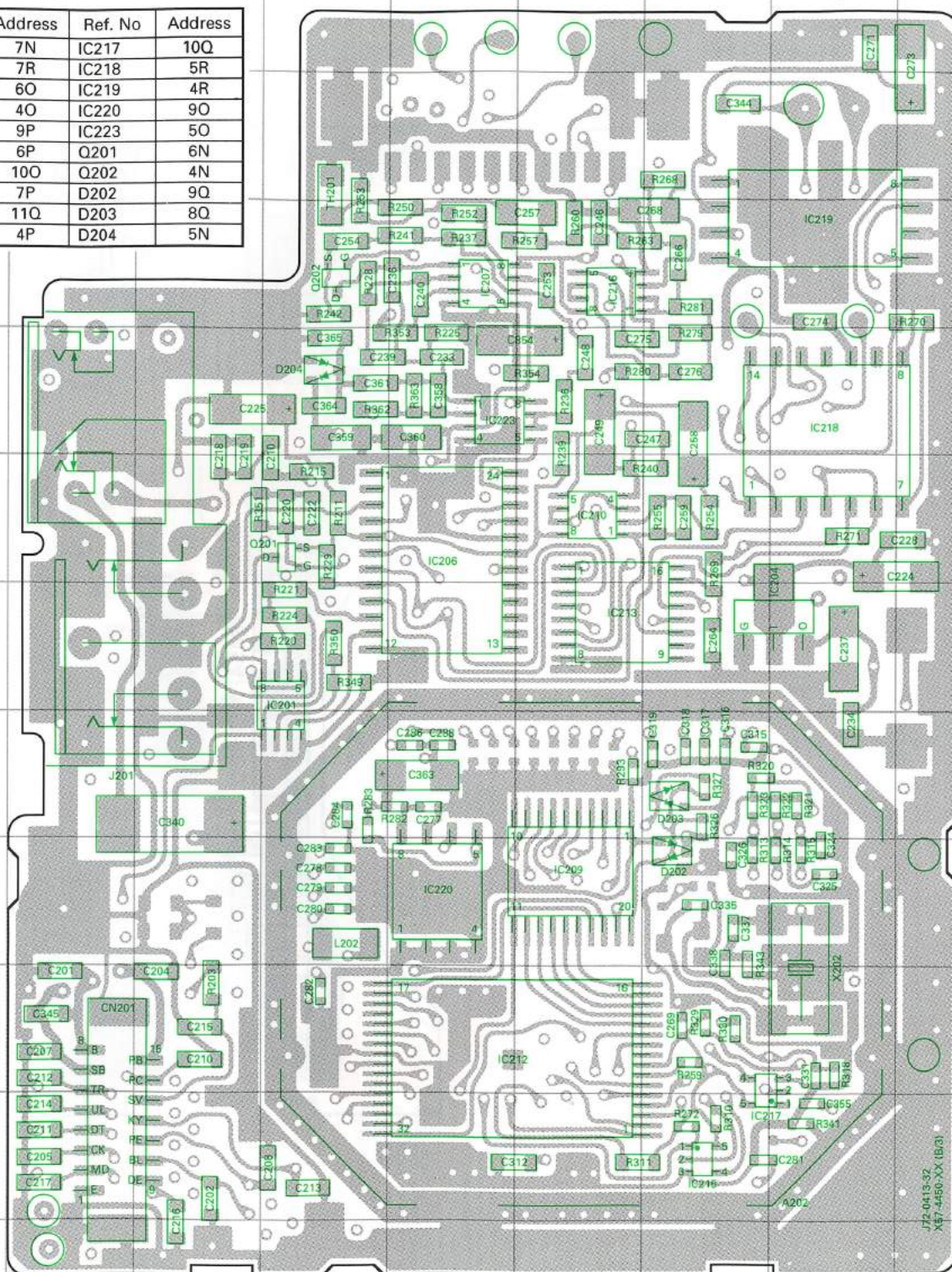
2SK1824
2SJ243



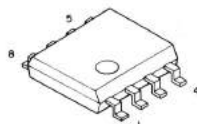
Address
4F
6I
5I
6H
5H
9H
6F
5F

Ref. No	Address	Ref. No	Address
IC201	7N	IC217	10Q
IC204	7R	IC218	5R
IC206	6O	IC219	4R
IC207	4O	IC220	9O
IC209	9P	IC223	5O
IC210	6P	Q201	6N
IC212	10O	Q202	4N
IC213	7P	D202	9Q
IC215	11Q	D203	8Q
IC216	4P	D204	5N

0-22 : K(N) 0-23 : K2(N) 0-24 : K3(N) 0-25 : K4(N)



Component side



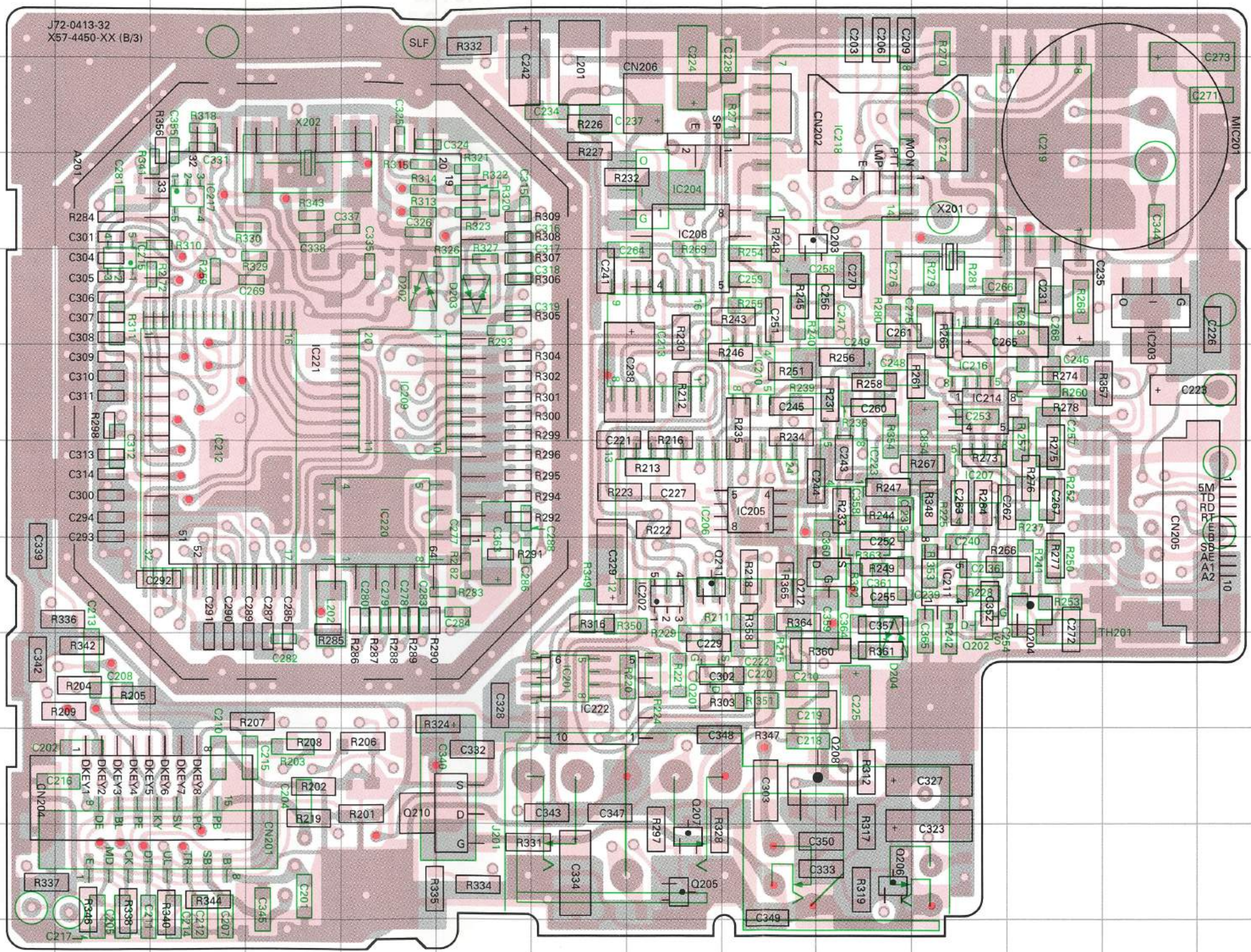
Pattern 1	
Pattern 2	
Pattern 3	
Pattern 4	

Foil side

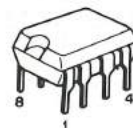
TX-RX UNIT (X57-4450-XX) (B/3) Component side + Foil side view
0-14 : K 0-15 : K2 0-16 : K3 0-17 : K4
0-22 : K(N) 0-23 : K2(N) 0-24 : K3(N) 0-25 : K4(N)

TX-RX UNIT(X57-4450-XX)(B/3)
Component side + Foil side

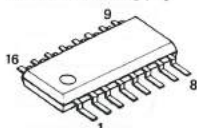
Ref. No	Address
IC201	9AB
IC202	8AC
IC203	5AH
IC204	4AC
IC205	7AD
IC206	7AC
IC207	7AF
IC208	4AC
IC209	6Z
IC210	6AD
IC211	8AF
IC212	7X
IC213	6AC
IC214	6AF
IC215	5W
IC216	6AF
IC217	4X
IC218	3AE
IC219	3AG
IC220	7Z
IC221	6Y
IC222	9AB
IC223	7AE
Q201	9AC
Q202	8AF
Q203	4AE
Q204	8AG
Q205	11AC
Q206	11AE
Q207	11AC
Q208	10AE
Q210	10AA
Q211	8AC
Q212	8AE
D202	5Z
D203	5AA
D204	9AE



PCD3312CT



BU4094BCFV
MC3372V
XRU4094BCFV



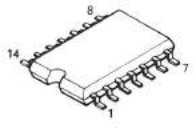
Component side

Pattern 1
Pattern 2
Pattern 3
Pattern 4

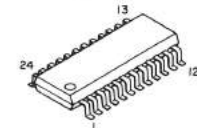
Foil side

Connect 1 and 4

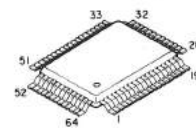
TC35305F



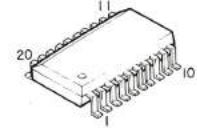
M62363FP



78312AGF3553BE



TC74VHC573FS



TK-353/(N) PC BOARD VIEWS

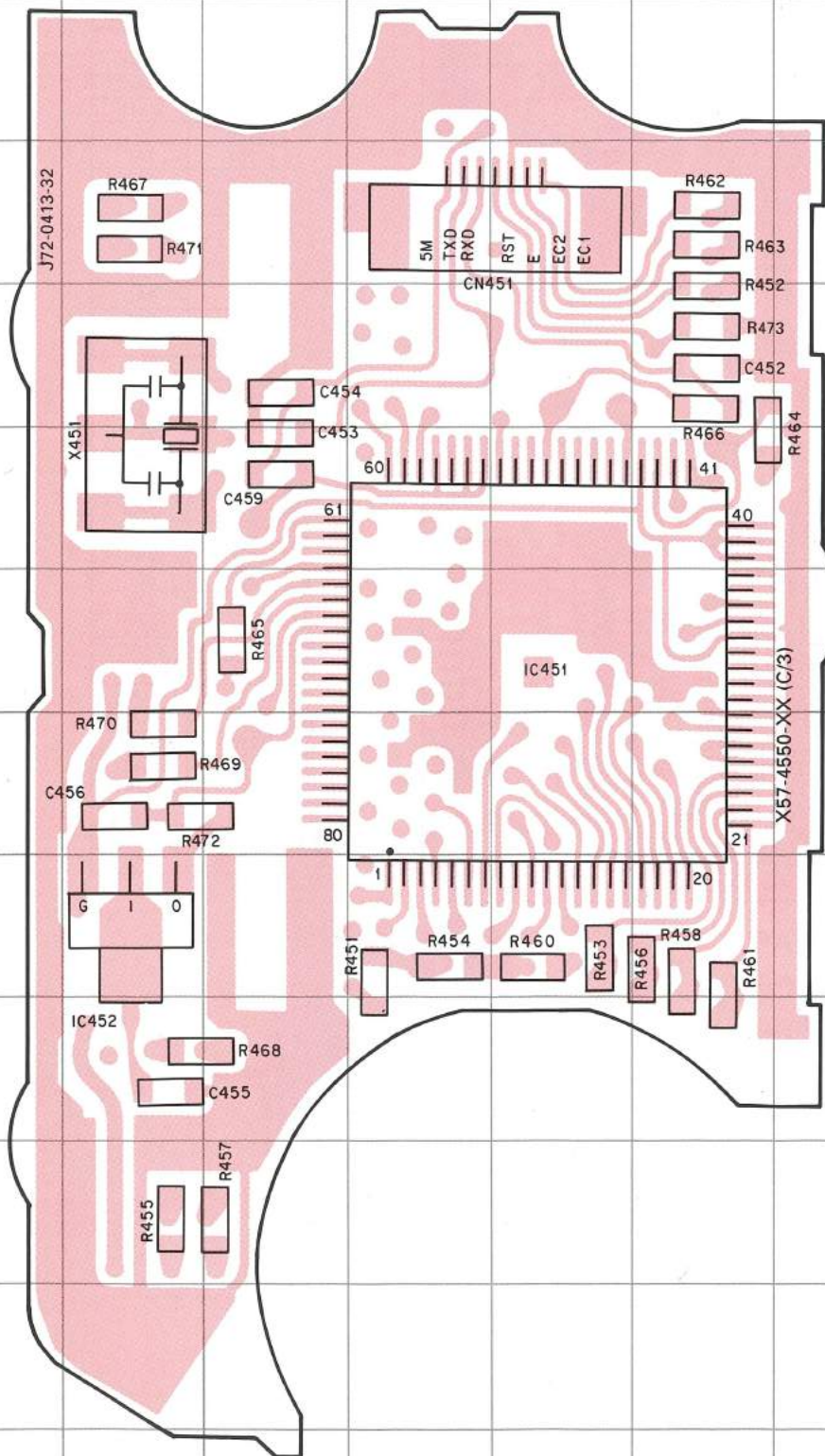
TX-RX UNIT(X57-4450-XX) (C/3) (Component side)

Ref. No	Address
IC451	7F
IC452	9C

TX-RX UNIT (X57-4450-XX) (C/3) Component side view

0-14 : K 0-15 : K2 0-16 : K3 0-17 : K4

0-22 : K(N) 0-23 : K2(N) 0-24 : K3(N) 0-25 : K4(N)



Component side



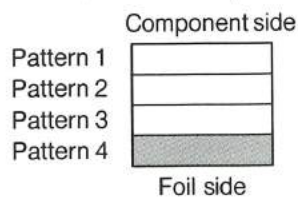
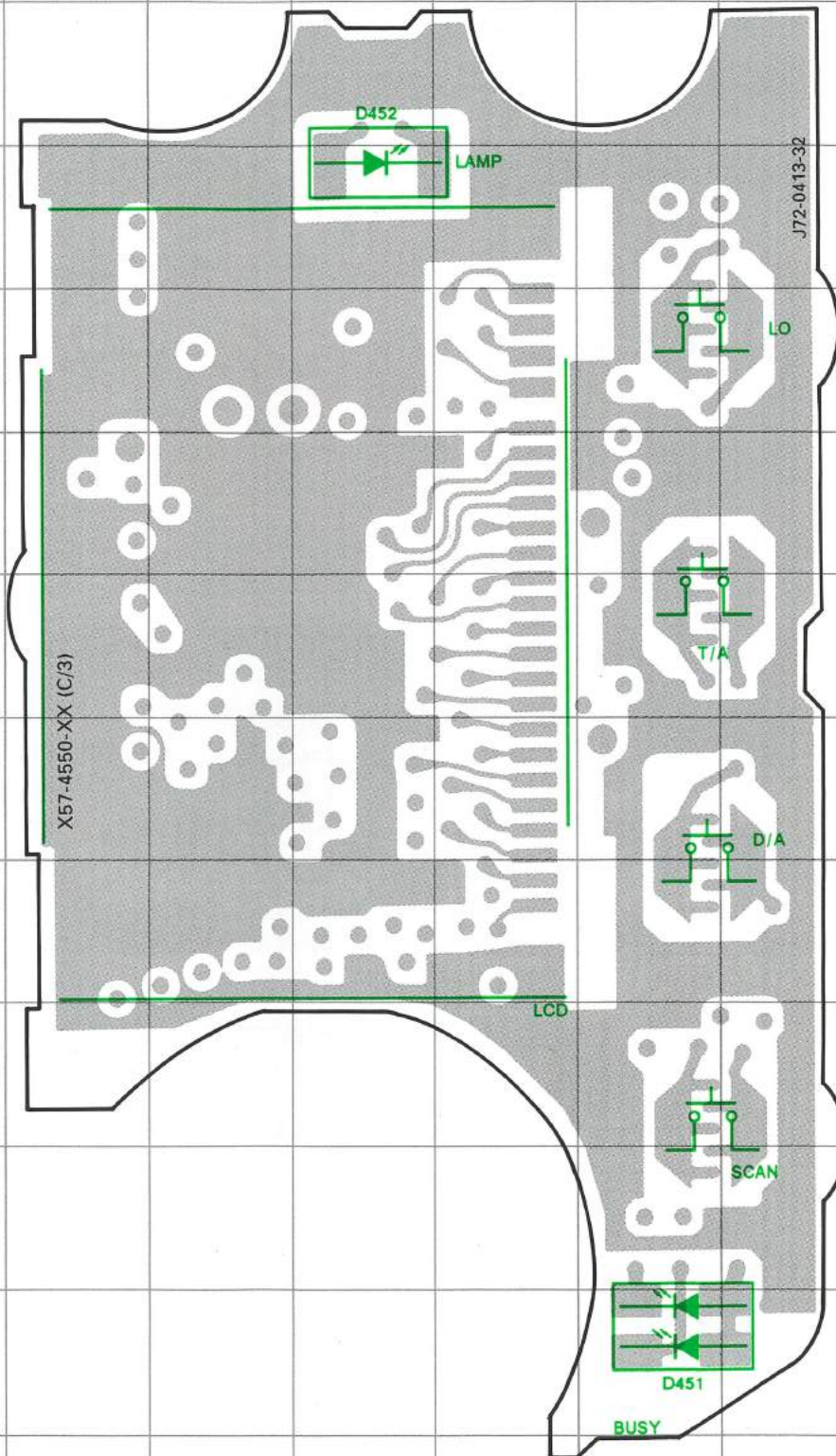
TX-RX UNIT (X57-4450-XX) (C/3) Foil side view

0-14 : K 0-15 : K2 0-16 : K3 0-17 : K4

0-22 : K(N) 0-23 : K2(N) 0-24 : K3(N) 0-25 : K4(N)

TX-RX UNIT(X57-4450-XX) (C/3) (Foil side)

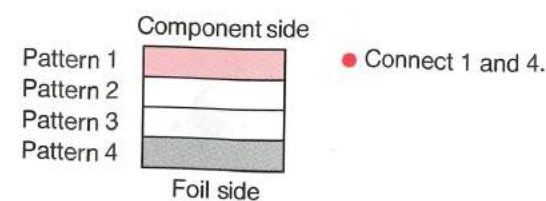
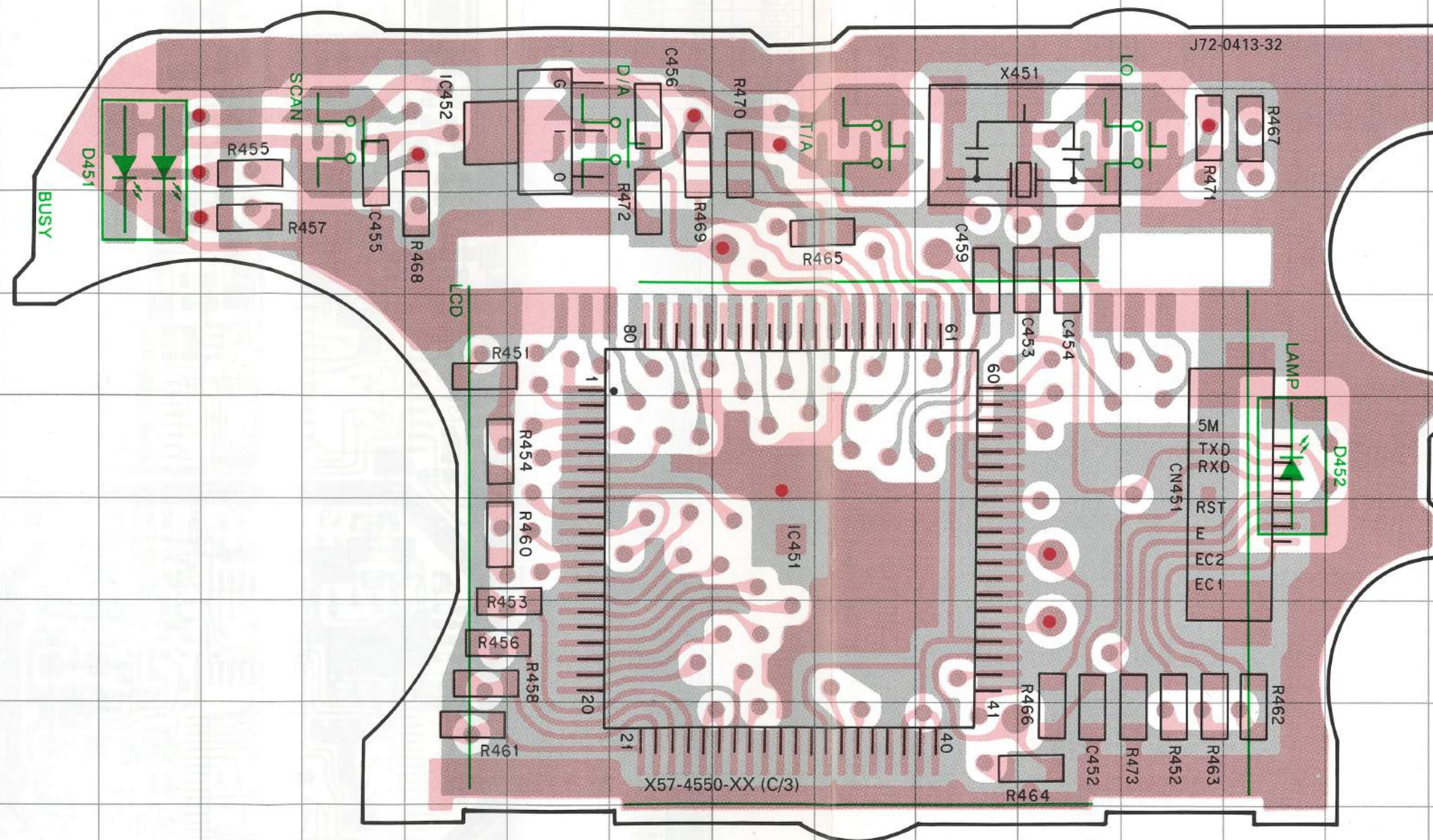
Ref. No	Address
D451	12Q
D452	40



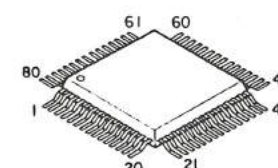
TX-RX UNIT (X57-4450-XX) (C/3) Component side + Foil side view
0-14 : K 0-15 : K2 0-16 : K3 0-17 : K4
0-22 : K(N) 0-23 : K2(N) 0-24 : K3(N) 0-25 : K4(N)

TX-RX UNIT(X57-4450-XX)(C/3)
 (Component side) + (Foil side)

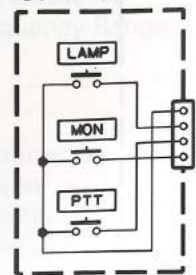
Ref. No	Address
IC451	8AC
IC452	4AA
D451	4W
D452	7AH



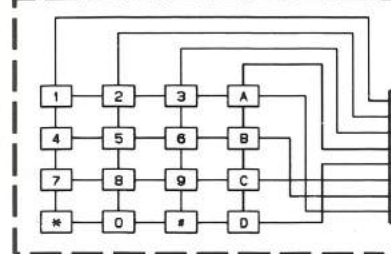
UPD75308BGK739



SIDE SW

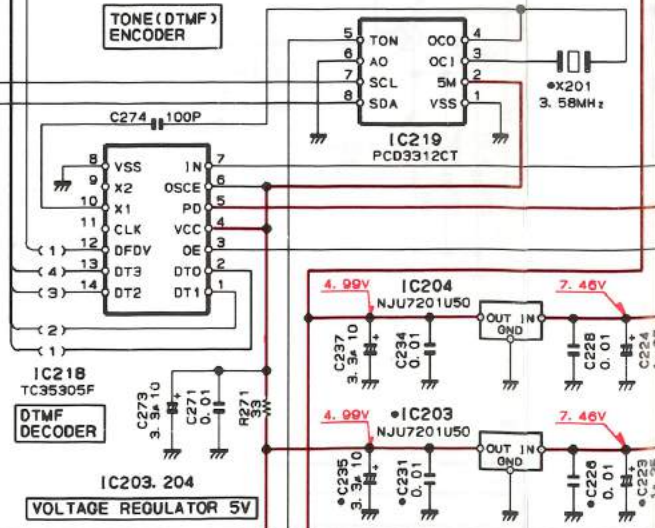
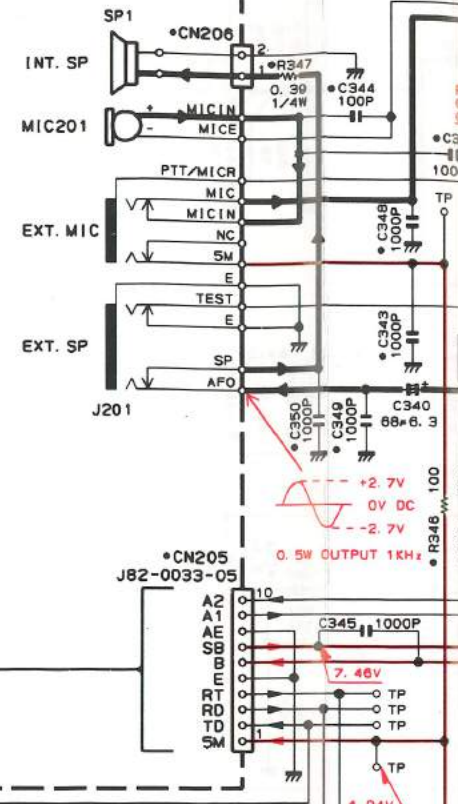
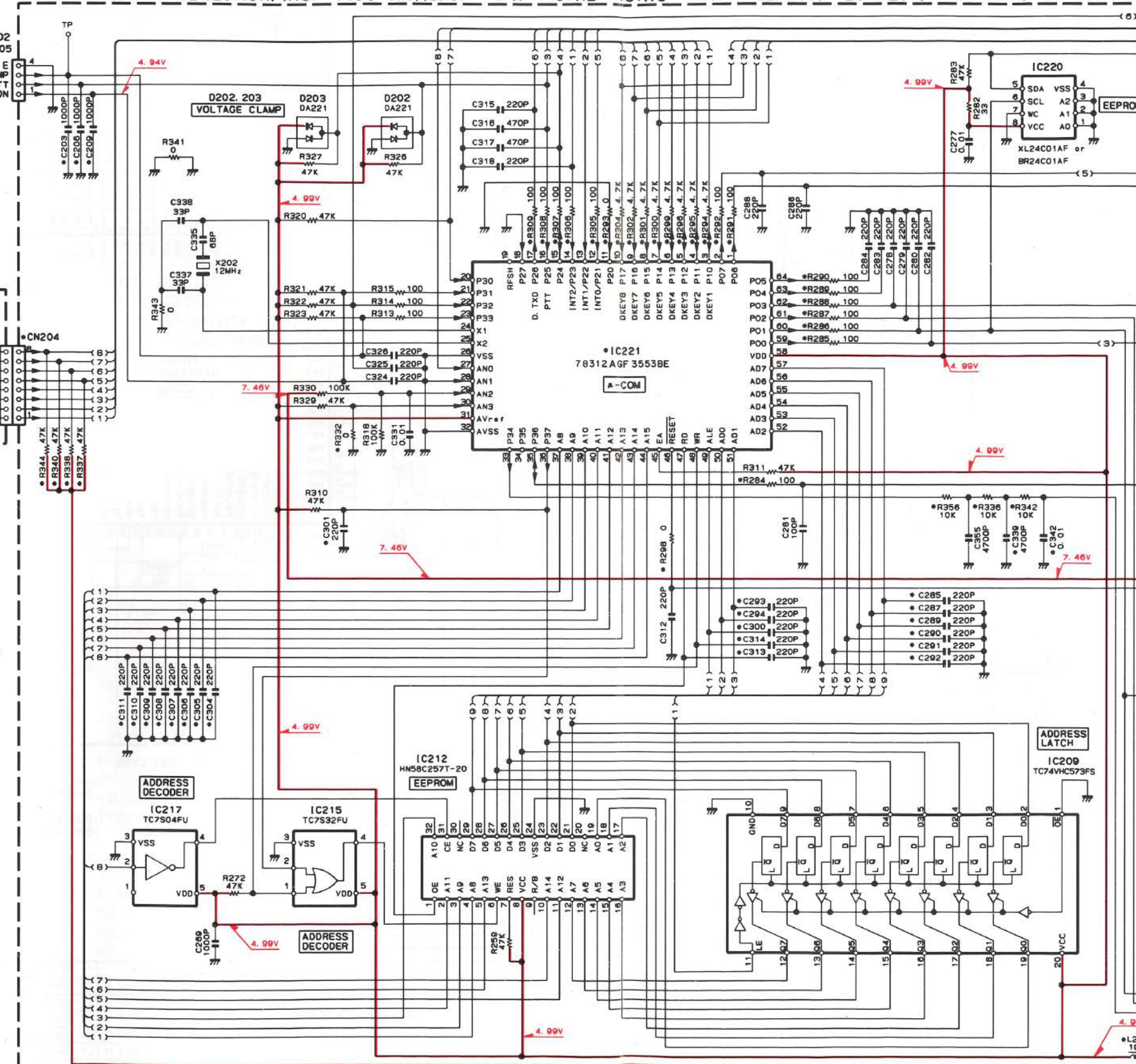


DTMF KEY PAD(OPTION)



- IC201, 205. : TA75W01FU
- 210, 211.
- 214, 216.
- IC202 : TC7S66FU
- IC203, 204 : NJU7201U50
- IC206 : M62363FP
- IC207 : TA75W558FU
- IC208 : MC331720
- IC209 : TC74VHC573FS
- IC212 : HN58C257T-20
- IC213 : XRU4094BCFV or BU4094BCFV
- IC215 : TC7S32FU
- IC217 : TC7S04FU
- IC218 : TC35305F
- IC219 : PC03312CT
- IC220 : XL24C01AF or BR24C01AF
- IC221 : 78312AGF3553BE
- IC222 : TA7368F
- IC223 : TA75W558FU
- Q201 : 2SJ243
- Q202 : 2SK1824
- Q203, 205~207 : DTC144EE
- Q204 : 2SA1586(Y. GR)
- Q208 : 2SA1362(GR)
- Q210 : 2SK1588
- Q211 : DTA144EE
- Q212 : TN103S472JT
- D202~204 : DA221

TX-RX UNIT (CONTROL SECTION) (X57-4450-XX)(B/3) -14:K -15:K2 -16:K3 -17:K4 -22:K(N) -23:K2(N) -24:K3(N) -25:K4(N)



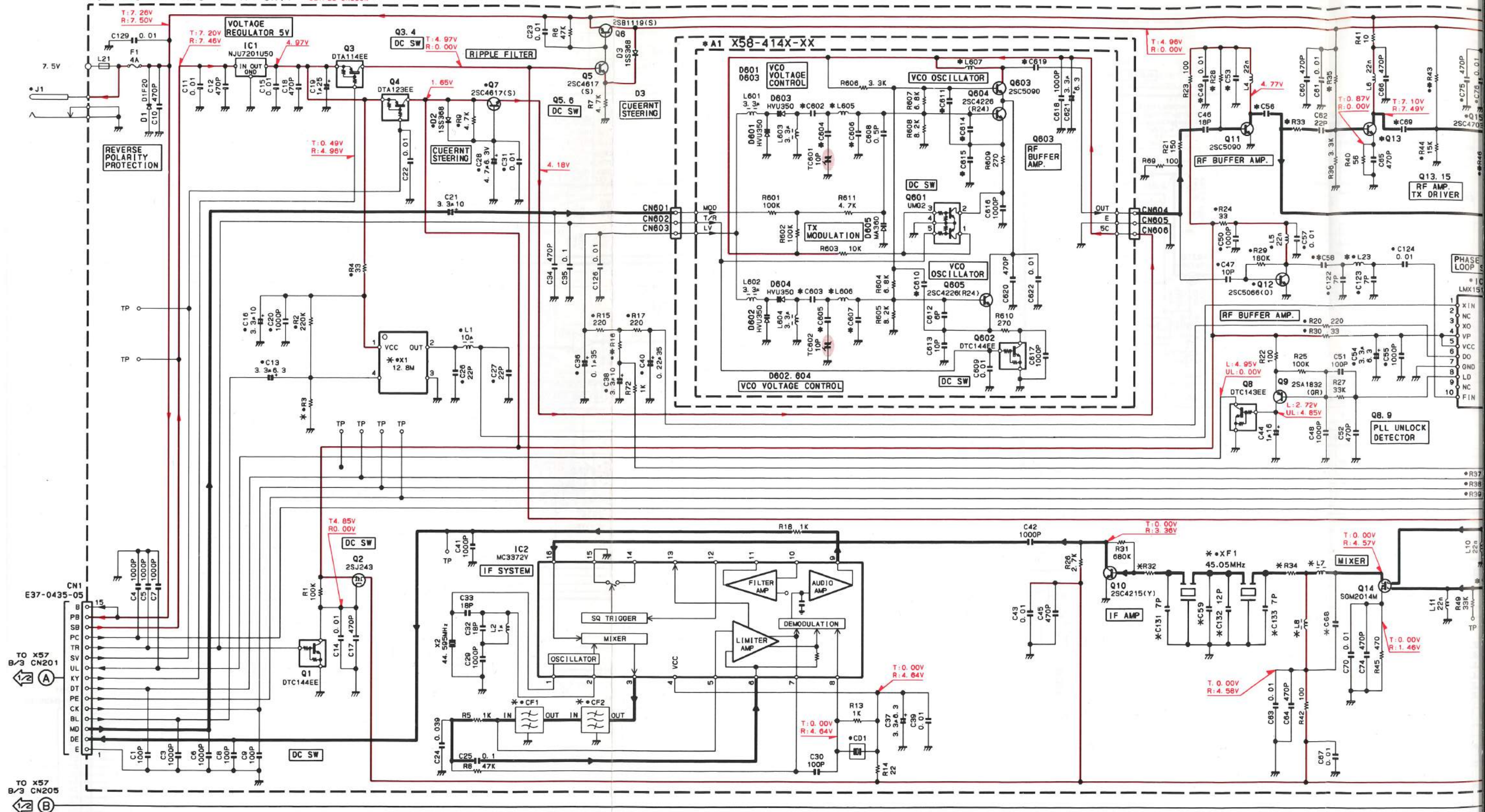
SCHEMATIC DIAGRAM | K-353/(N)



TK-353/(N) SCHEMATIC DIAGRAM

X57-445X-XX A/3 TX-RX UNIT

L: PLL LOCK
UL: PLL UNLOCK



X58-414X-XX

Q601 : UM02
Q602 : DTC144EE
Q603 : 2SC5090
Q604, 605 : 2SC4226(R24)

A1 : VCO UNIT (X58-414X-XX)

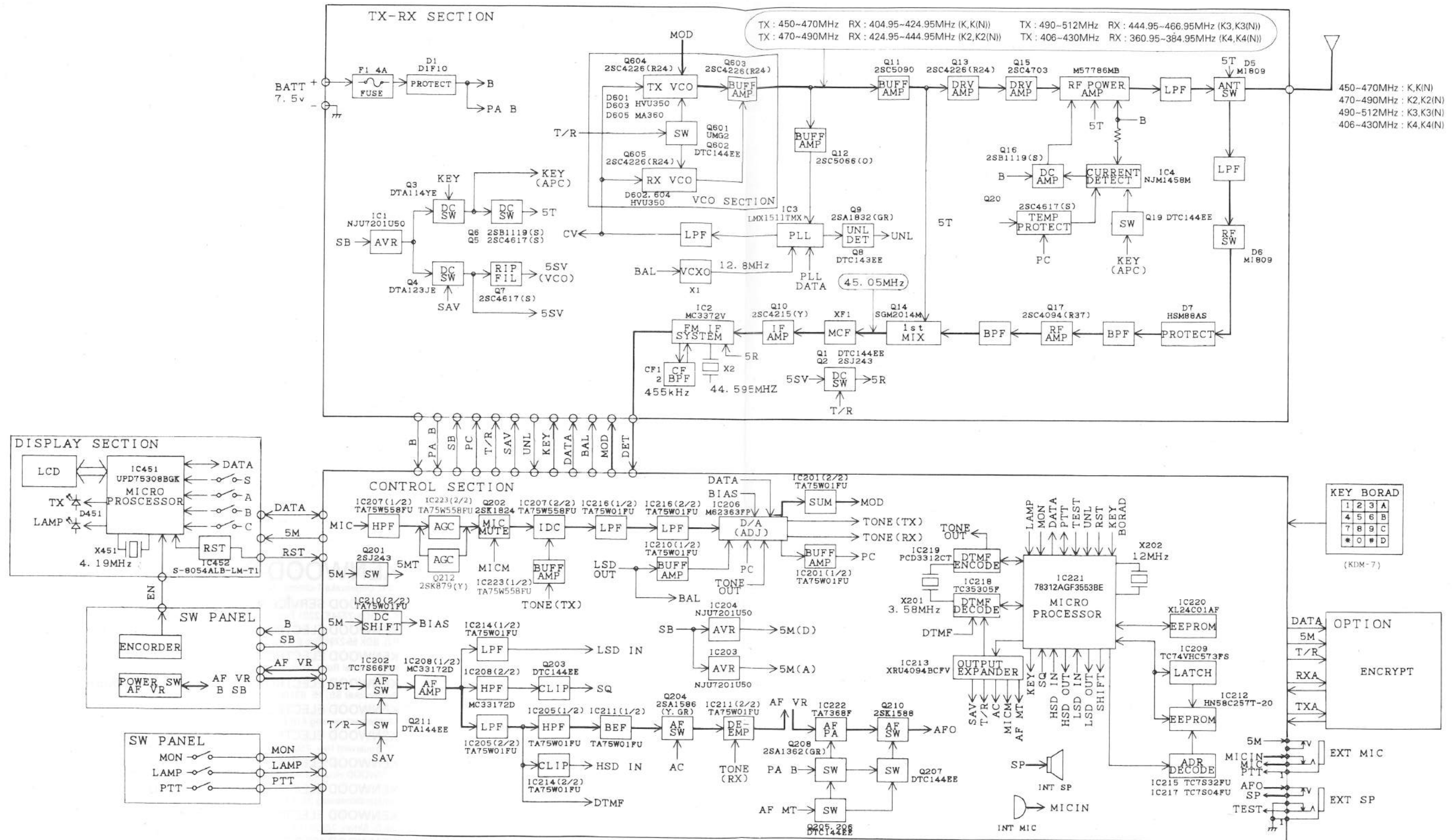
	Ref No.	C602	C603	C604	C605	C606	C607	C610	C611	C614	C615	C619	L605	L606	L607
K,K(N)	0-10	6P	6P	6P	8P	5P	5P	4P	1P	6P	10P	6P	23n	27n	22n
K2,K2(N)	0-11	5P	5P	6P	6P	5P	6P	3P	1.5P	7P	10P	5P	23n	27n	27n
K3,K3(N)	0-12	4P	7P	6P	6P	5P	5P	3P	1P	7P	9P	6P	23n	23n	22n
K4,K4(N)	0-13	7P	9P	7P	8P	6P	6P	3P	1P	10P	10P	6P	27n	27n	27n

TX-RX UNIT (X57-445X-XX) (A/3)

	Ref No.	C49	C53	C56	C58	C59	C68	C69	C78	C80	C82	C90	C98	C100	C102	C103	C104	C107	C108	C109
K	0-14	YES	1000P	5P	4P	6P	15P	5P	3P	3P	1 16V	3P	8P	1.5P	18P	10P	1.5P	10P	1P	0.15
K2	0-15	NO	0.1μ	4P	5P	6P	15P	5P	2P	3P	0.1 35V	3P	6P	NO	18P	15P	3P	12P	0.5P	0.33
K3	0-16	NO	0.1μ	4P	3P	6P	15P	5P	1.5P	2P	0.1 35V	4P	3P	0.5P	18P	8P	1.5P	8P	2P	0.33
K4	0-17	YES	1000P	9P	8P	15P	9P	3P	4P	6P	0.1 35V	4P	7P	2P	22P	12P	2P	12P	1P	0.33
K(N)	0-22	YES	1000P	5P	4P	12P	12P	5P	3P	3P	1 16V	3P	8P	1.5P	18P	10P	1.5P	10P	1P	0.15
K2(N)	0-23	NO	0.1μ	4P	5P	12P	12P	5P	2P	3P	0.1 35V	3P	6P	NO	18P	15P	3P	12P	0.5P	0.33
K3(N)	0-24	NO	0.1μ	4P	3P	12P	12P	5P	1.5P	2P	0.1 35V	4P	3P	0.5P	18P	8P	1.5P	8P	2P	0.33
K4(N)	0-25	YES	1000P	9P	8P	12P	12P	9P	3P	4P	0.1 35V	4P	7P	2P	22P	12P	2P	12P	1P	0.33

TK-353/(N) TK-353/(N)

BLOCK DIAGRAM



SPECIFICATIONS

GENERAL

Frequency Range	Type 1 (450~470MHz) : Wide, Narrow Type 2 (470~490MHz) : Wide Type 3 (490~512MHz) : Wide Type 4 (406~430MHz) : Wide
Systems	Up to 16
Groups	Up to 10
Number of Channels	Up to 160
Channel Spacing	25kHz (Wide), 12.5kHz (Narrow)
Operating Voltage	7.5VDC $\pm$ 20%
Battery Life	More than 8 hours at 4W (5-5-90 duty cycle with KNB-12A battery)
Temperature Life	-30°C to +60°C (-22°F +140°F)
Dimensions and Weight	
With KNB-12A (7.2V 1100mA battery)	57.5 (2-17/64)W x 155 (6-7/64)H x 30.5 (1-13/64)D mm (in.) 500g (1.11 lbs.)
FCC ID/Compliance	ALHTK-350-1/ALHTK-350N-1 (450~470MHz) ALHTK-350-2/ALHTK-350N-2 (470~490MHz) ALHTK-350-3/ALHTK-350N-3 (490~512MHz) ALHTK-350-4/ALHTK-350N-4 (406~430MHz)

RECEIVER (Measurements made per EIA standard EIA-316-B)

Sensitivity	
EIA 12dB SINAD	0.25 μ V
20dB Quieting	0.35 μ V
Modulation Acceptance	$\pm$ 7kHz (Wide), $\pm$ 3.5kHz (Narrow)
Selectivity	-68dB (Wide), -60dB (Narrow)
Intermodulation	-65dB (Wide), -60dB (Narrow)
Spurious	-70dB (except 1/2 IF)
Image Rejection	-70dB
Audio Power Output	500mW at less than 5% distortion
Frequency Stability	$\pm$ 0.0005% (Wide), $\pm$ 0.00025% (Narrow) from -30°C to +60°C
Channel Frequency Spread	TYPE 1,2 : 20MHz TYPE 3 : 22MHz TYPE 4 : 24MHz

TRANSMITTER (Measurements made per EIA standard EIA-316-B)

RF Power Output	4W/2W/1W
Spurious and Harmonics	-70dB
Modulation	F3E, $\pm$ 5kHz (Wide), $\pm$ 2.5kHz (Narrow) for 100% at 1000Hz
FM Noise	-45dB (Wide), -40dB (Narrow)
Microphone Impedance	High impedance (Wide), 2k Ω (Narrow)
Audio Distortion	5% (Wide), 3% (Narrow)
Frequency Stability	$\pm$ 0.0005% (Wide), $\pm$ 0.00025% (Narrow) from -30°C to +60°C
Channel Frequency Spread	TYPE 1,2 : 20MHz TYPE 3 : 22MHz TYPE 4 : 24MHz

FREQUENCY TYPE

TYPE 1	K, K(N)
TYPE 2	K2, K2(N)
TYPE 3	K3, K3(N)
TYPE 4	K4, K4(N)

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