

KENWOOD

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This service manual (B51-8766-00) applies to products with 80200001 or subsequent serial numbers. Refer to the TK-290-11B service manual (B51-8520-00) for any information which has not been covered in this manual.



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CAUTION

When using an external power connector, please use with maximum final module protection of 10V.

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 date. Changes which may occur after publication are covered by either Service Bulletins or Manual Revisions. These are issued as required.

ORDERING REPLACEMENT PARTS

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

PERSONNEL SAFETY

The following precautions are recommended for personnel safety :

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

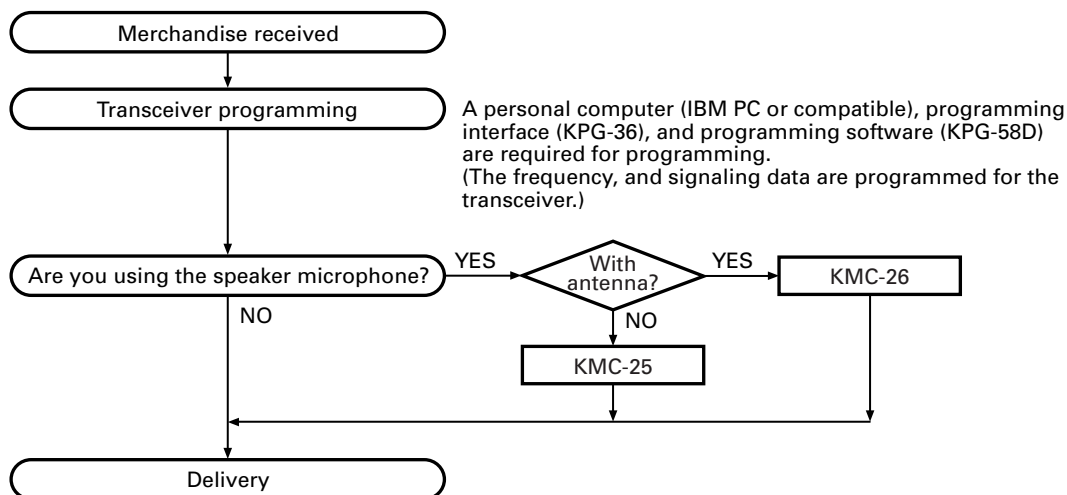
SERVICE

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

SERVICE MANUAL LIST

Title	Part No.	FINAL UNIT PCB No.	CONTROL UNIT PCB No.	TX-RX UNIT PCB No.
TK-290-11B	B51-8520-00	J72-0654-12	J72-0705-02	J72-0723-02
TK-290-11B SUPPLEMENT	B51-8766-00 This service manual	J79-0071-09	J79-0073-09	J79-0070-09

SYSTEM SET-UP



Note:

If sensitivity suppression occurs due to interference with the operating frequency, change the microprocessor clock setting by checking the Beat Shift-Lower Band or Beat Shift-Upper Band box in the special screen of the KPG-58D. 156MHz±156kHz, 168MHz±168kHz (CH No. 14~23)

CIRCUIT DESCRIPTION

1. PLL Frequency Synthesizer

The frequency synthesizer consists of the VCXO (X1), VCO (L800), PLL IC (IC5) and buffer amplifiers. The VCXO generates a 16.8MHz signal. The frequency stability is within $\pm 2.0\text{ppm}$ (temperature range of -30 to $+60^\circ\text{C}$).

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 9 of the PLL IC.

The VCO of the TK-290 covers the 38MHz spread, setting frequencies in r1, r2 (receive) and t1, t2 (transmit) with a bias voltage applied to the $-V$ terminal of the VCO.

A zero (0) volt bias is applied at frequencies lower than r1, t1. Frequencies r1, t1 through r2, t2 are biased with -3 volts. Frequencies higher than r2, t2 are biased with -6 volts, and at 174MHz to 178MHz are biased with -9 volts.

The relation of VCO frequency versus PLL lock voltage is shown in Figure 2.

The output of the VCO is amplified by the buffer amplifier (Q14) and doubled by Q3, and is then routed to pin 6 of the PLL IC. The output of the VCO is also amplified by the buffer amplifier (Q5) and is routed to the next stage according to the T/R switch (D602, D603).

The PLL IC consists of a prescaler, fractional divider, reference divider, phase comparator and charge pump. This PLL IC is a fractional-N type synthesizer and performs in the 80 or 100kHz reference signal which is one eighth of the channel step (2.5 or 3.125 kHz). The input signal from pin 6 of the PLL IC is divided down to 80 or 100kHz and compared at the phase comparator. The pulsed output signal of the phase comparator is applied to the charge pump and transformed into a DC signal in the loop filter (LPF). The DC signal is applied to pin 4 of the VCO and is locked to keep the VCO frequency constant.

PLL data is output from DT (pin 85), CLK (pin 84) and LE (pin 93) of the microprocessor (IC406). The data is 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 pin 30 (UL) of the microprocessor. When the PLL is unlocked, the UL goes low.

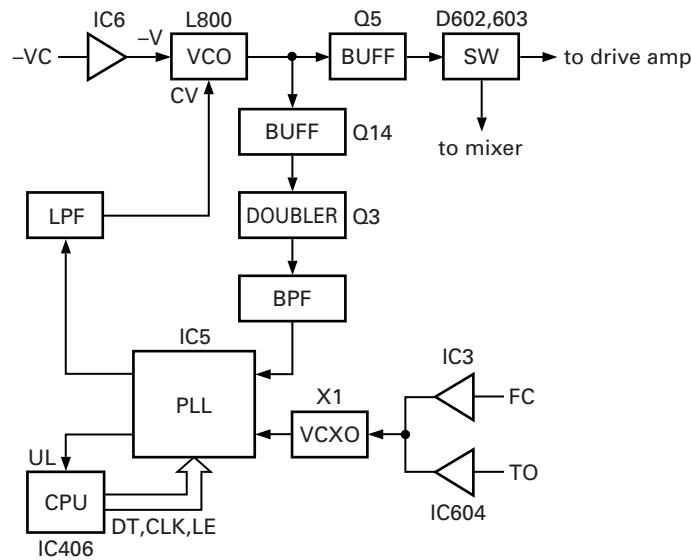


Fig. 1 PLL block diagram

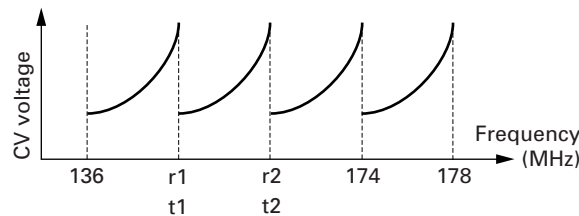


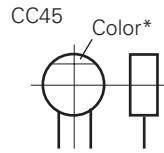
Fig. 2 CV voltage vs frequency

PARTS LIST

CAPACITORS

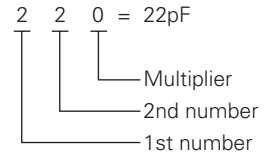
$\frac{C}{1} \frac{C}{2} \frac{45}{3} \frac{TH}{4} \frac{1H}{5} \frac{220}{6} \frac{J}{6}$

- 1 = Type ... ceramic, electrolytic, etc.
- 2 = Shape ... round, square, etc.
- 3 = Temp. coefficient
- 4 = Voltage rating
- 5 = Value
- 6 = Tolerance



• Capacitor value

- 010 = 1pF
- 100 = 10pF
- 101 = 100pF
- 102 = 1000pF = 0.001μF
- 103 = 0.01μF



• Temperature coefficient

1st Word	C	L	P	R	S	T	U
Color*	Black	Red	Orange	Yellow	Green	Blue	Violet
ppm/°C	0	-80	-150	-220	-330	-470	-750

2nd Word	G	H	J	K	L
ppm/°C	±30	±60	±120	±250	±500

Example : CC45TH = -470±60ppm/°C

• Tolerance (More than 10pF)

Code	C	D	G	J	K	M	X	Z	P	No code
(%)	±0.25	±0.5	±2	±5	±10	±20	+40 -20	+80 -20	+100 -0	More than 10μF : -10~+50 Less than 4.7μF : -10~+75

(Less than 10pF)

Code	B	C	D	F	G
(pF)	±0.1	±0.25	±0.5	±1	±2

• Voltage rating

2nd word \ 1st word	A	B	C	D	E	F	G	H	J	K	V
0	1.0	1.25	1.6	2.0	2.5	3.15	4.0	5.0	6.3	8.0	-
1	10	12.5	16	20	25	31.5	40	50	63	80	35
2	100	125	160	200	250	315	400	500	630	800	-
3	1000	1250	1600	2000	2500	2150	4000	5000	6300	8000	-

• Chip capacitors

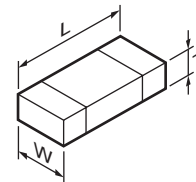
(EX) $\frac{C}{1} \frac{C}{2} \frac{73}{3} \frac{F}{4} \frac{SL}{5} \frac{1H}{6} \frac{000}{7} \frac{J}{7}$
(Chip) (CH, RH, UJ, SL)

(EX) $\frac{C}{1} \frac{K}{2} \frac{73}{3} \frac{F}{4} \frac{F}{5} \frac{1H}{6} \frac{000}{7} \frac{Z}{7}$
(Chip) (B, F)

Refer to the table above.

- 1 = Type
- 2 = Shape
- 3 = Dimension
- 4 = Temp. coefficient
- 5 = Voltage rating
- 6 = Value
- 7 = Tolerance

• Dimension



Chip capacitor

Code	L	W	T
Empty	5.6±0.5	5.0±0.5	Less than 2.0
A	4.5±0.5	3.2±0.4	Less than 2.0
B	4.5±0.5	2.0±0.3	Less than 2.0
C	4.5±0.5	1.25±0.2	Less than 1.25
D	3.2±0.4	2.5±0.3	Less than 1.5
E	3.2±0.2	1.6±0.2	Less than 1.25
F	2.0±0.3	1.25±0.2	Less than 1.25
G	1.6±0.2	0.8±0.2	Less than 1.0
H	1.0±0.05	0.5±0.05	0.5±0.05

Chip resistor

Code	L	W	T
E	3.2±0.2	1.6±0.2	1.0
F	2.0±0.3	1.25±0.2	1.0
G	1.6±0.2	0.8±0.2	0.5±0.1
H	1.0±0.05	0.5±0.05	0.35±0.05

RESISTORS

• Chip resistor (Carbon)

(EX) $\frac{R}{1} \frac{D}{2} \frac{73}{3} \frac{E}{4} \frac{B}{5} \frac{2B}{6} \frac{000}{7} \frac{J}{7}$
(Chip) (B, F)

• Carbon resistor (Normal type)

(EX) $\frac{R}{1} \frac{D}{2} \frac{14}{3} \frac{B}{4} \frac{B}{5} \frac{2C}{6} \frac{000}{7} \frac{J}{7}$

- 1 = Type
- 2 = Shape
- 3 = Dimension
- 4 = Temp. coefficient
- 5 = Rating wattage
- 6 = Value
- 7 = Tolerance

• Rating wattage

Code	Wattage	Code	Wattage	Code	Wattage
1J	1/16W	2C	1/6W	3A	1W
2A	1/10W	2E	1/4W	3D	2W
2B	1/8W	2H	1/2W		

PARTS LIST

* New Parts. Δ indicates safety critical components.

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

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

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

L : Scandinavia

Y : PX (Far East, Hawaii)

Y : AAFES (Europe)

K : USA

T : England

X : Australia

P : Canada

E : Europe

M : Other Areas

TK-290-11B (Y50-5322-70)

FINAL UNIT (X45-3592-71)

CONTROL UNIT (X53-3932-71)

Ref. No.	Address	New parts	Parts No.	Description	Destination
TK-290-11B					
1	1A		A02-3865-23	PLASTIC CABINET ASSY	
2	2B	*	A22-2515-45	SUB PANEL	
3	2B	*	A62-1100-03	PANEL ASSY	
5	-		B09-0363-03	CAP ACCESSORY	
6	1B		B11-1183-14	ILLUMINATION GUIDE (LCD)	
7	1B		B38-0786-05	LCD	
8	1A		B43-1111-14	BADGE	
9	-		B59-1667-00	SUB-INSTRUCTION MANUAL	
10	-	*	B62-1260-10	INSTRUCTION MANUAL	
12	2B		E23-1102-14	TERMINAL (CONT UNIT)	
13	3A		E23-1163-04	BATTTERMINAL	
14	1B		E29-1165-05	INTER CONNECTOR (LCD)	
15	-		E30-3325-05	CLONING CABLE	
16	2B		E37-0722-05	ANT COAXIAL CABLE	
17	2A	*	E37-1339-05	FLAT CABLE (TX/RX-CONT)	
18	1B	*	E37-1350-05	PROCESSED LEAD WIRE (TOGGLE SW)	
19	1B	*	E37-1351-05	LEAD WIRE WITH CONNECTOR (SP)	
20	3B	*	E58-0528-05	UNIVERSAL CONNECTOR	
21	2A	*	E72-0411-04	TERMINAL BLOCK (BATT +)	
23	3B		F10-2344-04	SHIELDING CASE	
25	2A		G01-0891-04	COIL SPRING (BATT RELEASE)	
26	2A		G13-1678-04	CUSHION (TX/RX)	
27	-		G13-1688-14	CUSHION (CAP)	
28	2A,3A	*	G13-1800-04	CUSHION (BATT TERMINAL)	
29	2B		G53-0822-04	PACKING (CHASSIS)	
30	1B		G53-0823-04	PACKING (SP)	
31	1A		G53-0874-03	PACKING (FRONT CABINET)	
32	3A	*	G53-1511-04	PACKING (BATT-)	
33	3A		G53-1621-04	PACKING	
35	-		H12-3018-02	PACKING FIXTURE	
36	-		H52-1543-02	ITEM CARTON CASE	
38	2A		J19-5330-14	HOLDER (BATT RELEASE)	
39	1B		J21-8328-14	MOUNTING HARDWARE (LCD)	
40	2A	*	J21-8329-24	MOUNTING HARDWARE (CONT UNIT)	
41	1A		J21-8426-04	MOUNTING HARDWARE (PTT)	
42	1A		J21-8446-04	MOUNTING HARDWARE (PTT)	
43	2B		J21-8473-04	MOUNTING HARDWARE	
44	2B		J21-8474-04	MOUNTING HARDWARE	
45	-		J29-0652-35	CLIP ACCESSORY	
46	2B		J82-0049-15	FPC (VOLUME/SELECTOR)	
47	3A		J82-0052-25	FPC (UNIVERSAL CONNECTOR)	
48	1A	*	J82-0115-05	FPC (PTT)	
49	2B		J99-0346-24	ADHESIVE SHEET (TOGGLE SW)	
51	2B		K29-5282-14	KNOB ASSY (SELECTOR)	
52	2B		K29-5283-14	KNOB ASSY (VOLUME)	
53	1A	*	K29-5423-24	KNOB ASSY (SIDE KEY)	
54	2A		K29-9250-03	LEVER KNOB (BATT RELEASE)	
55	2B		K29-9315-02	KEY TOP	
56	1A		K29-9316-03	KEY TOP (SIDE KEY)	
A	2B	*	N14-0835-04	CIRCULAR NUT (VOLME/SELECTOR)	

Ref. No.	Address	New parts	Parts No.	Description	Destination
B	2B	*	N14-0836-04	CIRCULAR NUT (ANTENNA)	
C	3A		N30-2608-43	PAN HEAD MACHINE SCREW	
D	2B,3B		N67-2606-48	PAN HEAD SEMS SCREW	
E	1A,2B	*	N78-2030-48	PAN HEAD TAPTITE SCREW	
F	3A		N79-2035-48	PAN HEAD TAPTITE SCREW	
G	2A,1B,3B	*	N83-2004-48	PAN HEAD TAPTITE SCREW	
H	2A	*	N83-2005-43	PAN HEAD TAPTITE SCREW	
58	-		N99-2004-15	SCREW SET ACCESSORY	
60	2B	*	R31-0631-15	VARIABLE RESISTOR	
62	2B		S60-0415-05	CHANNEL SELECTOR	
63	1B	*	S72-0411-05	TOGGLE SWITCH	
65	1B		T07-0349-15	SPEAKER	
66	-	*	T90-0680-15	HELICAL ANTENNA ACCESSORY	
67	2A		T91-0575-05	MIC ELEMENT	
69	-		W01-0441-05	UNIVERSAL PLUG KIT	
FINAL UNIT (X45-3592-71)					
C802			CC73GCH1H030C	CHIP C 3.0PF C	
C803			CC73GCH1H101J	CHIP C 100PF J	
C804			CK73GB1C104K	CHIP C 0.10UF K	
C805			CC73GCH1H101J	CHIP C 100PF J	
C806			CK73GB1C104K	CHIP C 0.10UF K	
L801		*	L33-0763-15	SMALL FIXED INDUCTOR	
IC801	3B	*	RA07M1317M101	RF POWER MODULE	
CONTROL UNIT (X53-3932-71)					
D102,103			B30-2231-05	LED (Y)	
D104			B30-2019-05	LED (RE/GR)	
C1-5			CK73GB1H471K	CHIP C 470PF K	
C6,7			CK73GB1H102K	CHIP C 1000PF K	
C8			CK73FB1C474K	CHIP C 0.47UF K	
C10,11			CK73GB1H102K	CHIP C 1000PF K	
C12			CK73FB1C474K	CHIP C 0.47UF K	
C14			CK73FB1C104KTD	CHIP C 0.10UF K	
C15			CK73GB1H471K	CHIP C 470PF K	
C16		*	CS77AC1A101M	CHIP-TAN 100UF 10WV	
C19			CK73FB1C474K	CHIP C 0.47UF K	
C22			CK73GB1H471K	CHIP C 470PF K	
C27-29			CK73GB1C104K	CHIP C 0.10UF K	
C30			CK73FB1C474K	CHIP C 0.47UF K	
C31			CK73GB1E223K	CHIP C 0.022UF K	
C32			CK73FB1C474K	CHIP C 0.47UF K	
C33,34			CK73GB1H471K	CHIP C 470PF K	
C35			CK73GB1H102K	CHIP C 1000PF K	
C37			CC73GCH1H101J	CHIP C 100PF J	
C38			CK73GB1H102K	CHIP C 1000PF K	
C39			CK73GB1H471K	CHIP C 470PF K	
C41			CK73GB1H102K	CHIP C 1000PF K	

If a part reference number is listed in a shaded box, that part does not come with the PCB.

PARTS LIST

CONTROL UNIT (X53-3932-71)

TX-RX UNIT (X57-6132-70)

Ref. No.	Address	New parts	Parts No.	Description	Destination
C43			CK73GB1H471K	CHIP C 470PF K	
C45,46			CK73GB1H471K	CHIP C 470PF K	
C47-49			CC73GCH1H101J	CHIP C 100PF J	
C103			CK73GB1H102K	CHIP C 1000PF K	
C104,105			CC73GCH1H101J	CHIP C 100PF J	
C106		*	CS77BP1A010M	CHIP-TAN 1.0UF 10WV	
CN1		*	E40-6674-05	FLAT CABLE CONNECTOR	
CN3		*	E40-6467-05	FLAT CABLE CONNECTOR	
CN4		*	E41-2539-05	PIN ASSY	
CN101		*	E40-6590-05	FLAT CABLE CONNECTOR	
CN501,502			E04-0403-05	PIN SOCKET	
L1-4			L92-0470-05	CHIP FERRITE	
L6			L92-0149-05	CHIP FERRITE	
L7,8		*	L92-0469-05	CHIP FERRITE	
L9			L92-0138-05	CHIP FERRITE	
L101			L92-0138-05	CHIP FERRITE	
CP1			RK74GA1J473J	CHIP-COM 47K J 1/16W	
R1			RK73GB2A273J	CHIP R 27K J 1/10W	
R2			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R3			RK73GB2A470J	CHIP R 47 J 1/10W	
R4,5			RK73GB2A473J	CHIP R 47K J 1/10W	
R6-8			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R9,10			RK73GB2A562J	CHIP R 5.6K J 1/10W	
R11			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R12			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R13			RK73GB2A473J	CHIP R 47K J 1/10W	
R14			RK73GB2A104J	CHIP R 100K J 1/10W	
R15			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R17,18			RK73GB2A473J	CHIP R 47K J 1/10W	
R22,23			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R26-28			RK73GB2A103J	CHIP R 10K J 1/10W	
R29,30			RK73GB2A223J	CHIP R 22K J 1/10W	
R32			RK73GB2A680J	CHIP R 68 J 1/10W	
R33			RK73GB2A223J	CHIP R 22K J 1/10W	
R34			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R35			RK73GB2A103J	CHIP R 10K J 1/10W	
R36			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R43,44			RK73GB2A473J	CHIP R 47K J 1/10W	
R45-49			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R56			RK73GB2A153J	CHIP R 15K J 1/10W	
R57			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R59			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R60			RK73GB2A101J	CHIP R 100 J 1/10W	
R63,64			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R101			RK73GB2A104J	CHIP R 100K J 1/10W	
R102-104			RK73GB2A103J	CHIP R 10K J 1/10W	
R105			RK73GB2A471J	CHIP R 470 J 1/10W	
R106			RK73GB2A274J	CHIP R 270K J 1/10W	
R107			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R108			RK73GB2A100J	CHIP R 10 J 1/10W	
R502			RK73GB2A102J	CHIP R 1.0K J 1/10W	
D2			UDZS3.9B	ZENER DIODE	
D12,13			MA2S111-F	DIODE	
D15			MA2S111-F	DIODE	
D16			IMN10	DIODE	
D19,20			MA2S111-F	DIODE	
D101			1SS373F	DIODE	
IC1			TDA7053AT	BI-POLAR IC	
IC2			BU4094BCFV	MOS-IC	

Ref. No.	Address	New parts	Parts No.	Description	Destination
IC3			NJM2904V-ZB	MOS-IC	
IC4-6			TC7SH08FU-F	MOS-IC	
IC10		*	TC7W04FU-F	MOS-IC	
IC101			LC75824W	MOS-IC	
Q5			2SC4617(S)	TRANSISTOR	
Q6		*	2SB798AZ(DLDK	TRANSISTOR	
Q7,8			2SK1824-A	FET	
Q14			UMC4N	TRANSISTOR	
Q15			2SK1824-A	FET	
TX-RX UNIT (X57-6132-70)					
C1			CS77AA0J100M	CHIP-TAN 10UF 6.3WV	
C2			CK73HB1A104K	CHIP C 0.10UF K	
C5			CK73GB1H102K	CHIP C 1000PF K	
C6			CS77AA0J100M	CHIP-TAN 100UF 6.3WV	
C8-10			CK73GB1H102K	CHIP C 1000PF K	
C11			C92-0588-05	CHIP-TAN 1.5UF 16WV	
C13			CK73HB1H102K	CHIP C 1000PF K	
C14,15			C92-0588-05	CHIP-TAN 1.5UF 16WV	
C16			CK73HB1A104K	CHIP C 0.10UF K	
C17			CK73HB1H102K	CHIP C 1000PF K	
C18			C92-0588-05	CHIP-TAN 1.5UF 16WV	
C20			CK73GB1C104K	CHIP C 0.10UF K	
C21			CC73HCH1H560J	CHIP C 56PF J	
C23			CC73GCH1H101J	CHIP C 100PF J	
C24			C92-0588-05	CHIP-TAN 1.5UF 16WV	
C25			CC73GCH1H180J	CHIP C 18PF J	
C26			CC73GCH1H270J	CHIP C 27PF J	
C27			CK73GB1C104K	CHIP C 0.10UF K	
C28			CK73GB1C333K	CHIP C 0.033UF K	
C29			CC73GCH1H130G	CHIP C 13PF G	
C30			CC73GCH1H270J	CHIP C 27PF J	
C31			CK73GB1H471K	CHIP C 470PF K	
C32			CS77CA1VR22M	CHIP-TAN 0.22UF 35WV	
C33			CC73GCH1H150G	CHIP C 15PF G	
C34			CC73GCH1H331J	CHIP C 330PF J	
C35			CC73GCH1H130G	CHIP C 13PF G	
C36			CC73GCH1H100D	CHIP C 10PF D	
C37			CK73GB1H471K	CHIP C 470PF K	
C38			CC73GCH1H060B	CHIP C 6.0PF B	
C39			CK73GB1H102K	CHIP C 1000PF K	
C40			CS77AA0J100M	CHIP-TAN 10UF 6.3WV	
C41			CK73GB1H471K	CHIP C 470PF K	
C42			CC73GCH1H150G	CHIP C 15PF G	
C43			CS77AA0J4R7M	CHIP-TAN 4.7UF 6.3WV	
C44			CC73GCH1H680J	CHIP C 68PF J	
C45			CC73GCH1H150G	CHIP C 15PF G	
C46			CK73GB1H102K	CHIP C 1000PF K	
C47			CK73GB1H471K	CHIP C 470PF K	
C48			CK73GB1H102K	CHIP C 1000PF K	
C49,50			CK73GB1H471K	CHIP C 470PF K	
C52			CK73GB1H102K	CHIP C 1000PF K	
C53-57			CK73GB1H471K	CHIP C 470PF K	
C58			CC73GCH1H101J	CHIP C 100PF J	
C59			CC73GCH1H680J	CHIP C 68PF J	
C60-62			CK73GB1H471K	CHIP C 470PF K	
C63			CC73GCH1H101J	CHIP C 100PF J	
C64			CK73GB1H471K	CHIP C 470PF K	

PARTS LIST

TX-RX UNIT (X57-6132-70)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C66,67			CK73GB1H471K	CHIP C 470PF K		C240			CC73GCH1H060D	CHIP C 6.0PF D	
C69			CC73GCH1H070D	CHIP C 7.0PF D		C242			CK73GF1A105Z	CHIP C 1.0UF Z	
C70			CC73GCH1H101J	CHIP C 100PF J		C300			CK73GB1H472K	CHIP C 4700PF K	
C71			CK73FB1C474K	CHIP C 0.47UF K		C301,302			CC73GCH1H221J	CHIP C 220PF J	
C73			C92-0588-05	CHIP-TAN 1.5UF 16WV		C303			CK73GB1C104K	CHIP C 0.10UF K	
C76			CC73GCH1H101J	CHIP C 100PF J		C304			CK73GB1H102K	CHIP C 1000PF K	
C78			CK73GB1H103K	CHIP C 0.010UF K		C305			CK73GB1H103K	CHIP C 0.010UF K	
C79			CK73FB1C474K	CHIP C 0.47UF K		C306-308			CK73GB1H102K	CHIP C 1000PF K	
C81			CK73GB1H102K	CHIP C 1000PF K		C309	*		CS77BP1A010M	CHIP-TAN 1.0UF 10WV	
C82			CC73GCH1H680J	CHIP C 68PF J		C310,311			CK73GB1C104K	CHIP C 0.10UF K	
C83			CC73GCH1H200J	CHIP C 20PF J		C312			CK73GB1C333K	CHIP C 0.033UF K	
C84,85			CK73GB1H102K	CHIP C 1000PF K		C313,314			CC73GCH1H220J	CHIP C 22PF J	
C86			CC73GCH1H220J	CHIP C 22PF J		C315			CK73GB1H102K	CHIP C 1000PF K	
C87			CC73GCH1H680J	CHIP C 68PF J		C316			CC73GCH1H820J	CHIP C 82PF J	
C88			CC73GCH1H120J	CHIP C 12PF J		C317			CK73GB1H102K	CHIP C 1000PF K	
C89			CC73GCH1H090D	CHIP C 9.0PF D		C318			CK73GB1C104K	CHIP C 0.10UF K	
C90			CC73GCH1H270J	CHIP C 27PF J		C319			CK73GB1H103K	CHIP C 0.010UF K	
C91			CC73GCH1H100D	CHIP C 10PF D		C320			CS77AA0J100M	CHIP-TAN 10UF 6.3WV	
C92			CC73GCH1H120J	CHIP C 12PF J		C321			CK73GB1C104K	CHIP C 0.10UF K	
C93			CC73GCH1H100D	CHIP C 10PF D		C323			CS77AA0J100M	CHIP-TAN 10UF 6.3WV	
C95			CK73GB1H103K	CHIP C 0.010UF K		C327			CK73GB1H103K	CHIP C 0.010UF K	
C97			CC73HCH1H080B	CHIP C 8.0PF B		C331,332			CK73GB1H103K	CHIP C 0.010UF K	
C98			CK73GB1C683K	CHIP C 0.068UF K		C333			CK73HB1H102K	CHIP C 1000PF K	
C99			CK73GB1H102K	CHIP C 1000PF K		C334			CK73HB1A104K	CHIP C 0.10UF K	
C100			CS77AA0J100M	CHIP-TAN 10UF 6.3WV		C335			CK73HB1H102K	CHIP C 1000PF K	
C101			CK73FB1C105K	CHIP C 1.0UF K		C336			CK73GB1A224K	CHIP C 0.22UF K	
C102			CC73GCH1H150G	CHIP C 15PF G		C337			CK73FB1C334K	CHIP C 0.33UF K	
C103			CK73GB1H102K	CHIP C 1000PF K		C400,401			CC73GCH1H101J	CHIP C 100PF J	
C105			CK73HB1H102K	CHIP C 1000PF K		C403-411			CC73GCH1H101J	CHIP C 100PF J	
C106			CK73HB1A104K	CHIP C 0.10UF K		C413			CK73GB1H471K	CHIP C 470PF K	
C107			CK73GB1H103K	CHIP C 0.010UF K		C414			CK73GB1H103K	CHIP C 0.010UF K	
C108			CK73GB1H102K	CHIP C 1000PF K		C415			CK73FB1C105K	CHIP C 1.0UF K	
C109			CK73HB1C103K	CHIP C 0.010UF K		C416,417			CK73GB1H471K	CHIP C 470PF K	
C110			CK73GB1H102K	CHIP C 1000PF K		C419			CS77AB20J470M	CHIP-TAN 47UF 6.3WV	
C111			CK73HB1H102K	CHIP C 1000PF K		C420			C92-0702-05	CHIP ELE 47UF 6.3WV	
C112			CK73HB1A104K	CHIP C 0.10UF K		C421			CK73GB1H471K	CHIP C 470PF K	
C113-115			CC73HCH1H101J	CHIP C 100PF J		C422			CK73FB1C105K	CHIP C 1.0UF K	
C117-119			CK73HB1H102K	CHIP C 1000PF K		C423,424			CK73GB1H471K	CHIP C 470PF K	
C120			CK73HB1C103K	CHIP C 0.010UF K		C425			CK73GB1H103K	CHIP C 0.010UF K	
C202			CC73GCH1H060D	CHIP C 6.0PF D		C426			CK73GB1H471K	CHIP C 470PF K	
C204			CK73GB1H102K	CHIP C 1000PF K		C427			CK73GB1H103K	CHIP C 0.010UF K	
C205			CC73GCH1H030C	CHIP C 3.0PF C		C428			CS77CA1C010M	CHIP-TAN 1.0UF 16WV	
C206,207			CK73GB1H102K	CHIP C 1000PF K		C429			CK73GB1H102K	CHIP C 1000PF K	
C209,210			CK73GB1H102K	CHIP C 1000PF K		C430			CK73FB1C105K	CHIP C 1.0UF K	
C212,213			CK73GB1H102K	CHIP C 1000PF K		C431			CK73GB1H471K	CHIP C 470PF K	
C214			CC73GCH1H060D	CHIP C 6.0PF D		C432			CK73FB1C105K	CHIP C 1.0UF K	
C215			CC73GCH1H030C	CHIP C 3.0PF C		C433			C92-0698-05	CHIP ELE 47UF 16WV	
C216			CC73GCH1H010C	CHIP C 1.0PF C		C434,435			CK73GB1H471K	CHIP C 470PF K	
C217			CK73GB1H102K	CHIP C 1000PF K		C436			CK73FB1C105K	CHIP C 1.0UF K	
C219			CC73GCH1H060D	CHIP C 6.0PF D		C437			CK73GB1H472K	CHIP C 4700PF K	
C222			CC73GCH1H151J	CHIP C 150PF J		C438			CK73GB1H103K	CHIP C 0.010UF K	
C223			CC73GCH1H070D	CHIP C 7.0PF D		C439			CK73GB1E103K	CHIP C 0.010UF K	
C224			CK73GB1H471K	CHIP C 470PF K		C440			CK73GB1C273K	CHIP C 0.027UF K	
C225			CC73GCH1H151J	CHIP C 150PF J		C441,442			CK73GB1H102K	CHIP C 1000PF K	
C226-228			CK73GB1H471K	CHIP C 470PF K		C443			CK73GB1H222K	CHIP C 2200PF K	
C229,230			CK73GB1C104K	CHIP C 0.10UF K		C444			CC73GCH1H070D	CHIP C 7.0PF D	
C232			CC73GCH1H151J	CHIP C 150PF J		C445,446			CK73GB1H222K	CHIP C 2200PF K	
C233			CK73GF1A105Z	CHIP C 1.0UF Z		C447,448			CC73GCH1H180J	CHIP C 18PF J	
C234			CK73GB1H102K	CHIP C 1000PF K		C449			CK73GB1H103K	CHIP C 0.010UF K	
C237,238			CK73GB1H102K	CHIP C 1000PF K		C450			CS77CP0J100M	CHIP-TAN 10UF 6.3WV	

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Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C451,452			CK73GB1H102K	CHIP C 1000PF K		C671			CK73HB1H222K	CHIP C 2200PF K	
C454			CC73GCH1H101J	CHIP C 100PF J		C672			CC73HCH1E221J	CHIP C 220PF J	
C456-477			CC73GCH1H101J	CHIP C 100PF J		C673			CK73HB1H681K	CHIP C 680PF K	
C478			CK73GB1C104K	CHIP C 0.10UF K		C674			CK73GB1A224K	CHIP C 0.22UF K	
C479			CC73GCH1H271J	CHIP C 270PF J		C675			CK73HB1C103K	CHIP C 0.010UF K	
C480			CC73GCH1H221J	CHIP C 220PF J		C678			CK73HB1A104K	CHIP C 0.10UF K	
C481			CK73FB1C105K	CHIP C 1.0UF K		C679			CK73GB1C104K	CHIP C 0.10UF K	
C482			CK73GB1C104K	CHIP C 0.10UF K		C681			CK73GB1E103K	CHIP C 0.010UF K	
C483			CK73GB1H102K	CHIP C 1000PF K		C682			CK73GB1C104K	CHIP C 0.10UF K	
C484			CS77AAQJ100M	CHIP-TAN 10UF 6.3WV		CN400	*		E40-6589-05	FLAT CABLE CONNECTOR	
C485			CK73GB1H102K	CHIP C 1000PF K		CN401	*		E40-6674-05	FLAT CABLE CONNECTOR	
C487			CK73GB1C104K	CHIP C 0.10UF K		CN403			E40-6453-05	FLAT CABLE CONNECTOR	
C488			CS77AA1A6R8M	CHIP-TAN 6.8UF 10WV		CN404,405			E23-1293-05	TEST TERMINAL	
C600			CK73GB1C473K	CHIP C 0.047UF K		F400	*		F53-0325-05	FUSE	
C601			CS77CA1ER47M	CHIP-TAN 0.47UF 16WV		CD300			L79-1072-05	CERAMIC DISCRI	
C602			CK73GB1C104K	CHIP C 0.10UF K		CF300,301			L72-0916-05	CERAMIC FILTER	
C603			CK73GB1C683K	CHIP C 0.068UF K		L1			L92-0138-05	CHIP FERRITE	
C604			CK73GB1H103K	CHIP C 0.010UF K		L2			L40-2775-92	SMALL FIXED INDUCTOR (27NH)	
C606			CK73GB1H222K	CHIP C 2200PF K		L3			L40-2775-57	SMALL FIXED INDUCTOR (27.0NH)	
C607			CC73GCH1H101J	CHIP C 100PF J		L5			L40-3981-37	SMALL FIXED INDUCTOR (0.390UH)	
C608			CK73GB1H103K	CHIP C 0.010UF K		L6			L40-1885-92	SMALL FIXED INDUCTOR (180NH)	
C609			CC73GCH1H121J	CHIP C 120PF J		L7			L40-1085-92	SMALL FIXED INDUCTOR (100NH)	
C610			CK73GB1H103K	CHIP C 0.010UF K		L8	*		L40-5675-72	SMALL FIXED INDUCTOR (56NH)	
C611			CK73GB1E123K	CHIP C 0.012UF K		L9			L40-1085-92	SMALL FIXED INDUCTOR (100NH)	
C612			CS77CP0J4R7M	CHIP-TAN 4.7UF 6.3WV		L10,11			L92-0149-05	CHIP FERRITE	
C613			CK73GB1H103K	CHIP C 0.010UF K		L12	*		L33-0763-15	SMALL FIXED INDUCTOR	
C619			CC73GCH1H331J	CHIP C 330PF J		L13			L41-1095-33	SMALL FIXED INDUCTOR (1.0UH)	
C621			CK73GB1C104K	CHIP C 0.10UF K		L14	*		L33-0765-15	SMALL FIXED INDUCTOR	
C626			CK73GB1C104K	CHIP C 0.10UF K		L15,16	*		L33-1226-15	SMALL FIXED INDUCTOR	
C627			CK73GB1H122J	CHIP C 1200PF J		L17			L41-1092-44	SMALL FIXED INDUCTOR (1UH)	
C628-630			CK73GB1H103K	CHIP C 0.010UF K		L18			L40-4791-86	SMALL FIXED INDUCTOR (4.7UH)	
C631,632			CK73GB1C104K	CHIP C 0.10UF K		L19			L40-4775-92	SMALL FIXED INDUCTOR (47NH)	
C633			CK73GB1H103K	CHIP C 0.010UF K		L20			L92-0140-05	CHIP FERRITE	
C634,635			CK73GB1H562J	CHIP C 5600PF J		L22	*		L40-8275-72	SMALL FIXED INDUCTOR (82NH)	
C636			CK73GB1C333K	CHIP C 0.033UF K		L23			L92-0138-05	CHIP FERRITE	
C637			CK73GB1H562J	CHIP C 5600PF J		L24			L40-1278-67	SMALL FIXED INDUCTOR (12NH)	
C638			CK73GB1H272J	CHIP C 2700PF J		L25			L40-3378-67	SMALL FIXED INDUCTOR (33NH)	
C639			CC73GCH1H090D	CHIP C 9.0PF D		L26			L40-1278-67	SMALL FIXED INDUCTOR (12NH)	
C640,641			CK73GB1H272J	CHIP C 2700PF J		L201	*		L34-4820-05	COIL	
C642			CC73HCH1H151J	CHIP C 150PF J		L202	*		L34-4821-05	COIL	
C643			CK73HB1H122K	CHIP C 1200PF K		L204	*		L41-6885-33	SMALL FIXED INDUCTOR (0.68UH)	
C644			CK73HB1H102K	CHIP C 1000PF K		L205	*		L34-4821-05	COIL	
C645			CC73GCH1H090D	CHIP C 9.0PF D		L206	*		L34-4820-05	COIL	
C646			CS77CP0J100M	CHIP-TAN 10UF 6.3WV		L207	*		L40-8275-72	SMALL FIXED INDUCTOR (82NH)	
C647			CK73HB1A104K	CHIP C 0.10UF K		L208	*		L40-5675-72	SMALL FIXED INDUCTOR (56NH)	
C648			CC73HCH1H101J	CHIP C 100PF J		L209,210	*		L40-8275-72	SMALL FIXED INDUCTOR (82NH)	
C650,651			CK73HB1A104K	CHIP C 0.10UF K		L211,212			L39-1272-15	TOROIDAL COIL	
C652			CS77CP0J4R7M	CHIP-TAN 4.7UF 6.3WV		L213			L92-0138-05	CHIP FERRITE	
C655			CC73HCH1H101J	CHIP C 100PF J		L214			L39-1272-15	TOROIDAL COIL	
C656			CK73FB1H563K	CHIP C 0.056UF K		L215	*		L40-8275-72	SMALL FIXED INDUCTOR (82NH)	
C657			CS77CP0J4R7M	CHIP-TAN 4.7UF 6.3WV		L300			L41-1095-33	SMALL FIXED INDUCTOR (1.0UH)	
C659			CK73GB1C104K	CHIP C 0.10UF K		L301			L40-3391-37	SMALL FIXED INDUCTOR (3.300UH)	
C660			CS77AAQJ100M	CHIP-TAN 10UF 6.3WV		L400			L92-0136-05	CHIP FERRITE	
C661			CK73GB1C104K	CHIP C 0.10UF K		L401			L92-0138-05	CHIP FERRITE	
C663			CK73HB1H102K	CHIP C 1000PF K		L404			L40-1001-37	SMALL FIXED INDUCTOR (10.00UH)	
C664			CK73HB1A104K	CHIP C 0.10UF K		L800	*		L78-0487-15	VCO	
C665			CK73GB1C333K	CHIP C 0.033UF K		L905			L92-0138-05	CHIP FERRITE	
C668			CK73GB1H102K	CHIP C 1000PF K		X1			L77-1969-05	TCXO (16.8MHZ)	
C669			CC73GCH1H101J	CHIP C 100PF J		X300			L77-1742-05	CRYSTAL RESONATOR (45.305MHZ)	
C670			CK73HB1A104K	CHIP C 0.10UF K							

PARTS LIST

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Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
X400			L77-1863-05	CRYSTAL RESONATOR (12.0MHZ)		R67			RK73GB2A102J	CHIP R 1.0K J 1/10W	
X600			L77-1708-05	CRYSTAL RESONATOR (3.579545MHZ)		R68			RK73HB1J101J	CHIP R 100 J 1/16W	
XF301			L71-0588-05	MCF (44.85MHZ)		R69-71			RK73GB2A561J	CHIP R 560 J 1/10W	
CP419-436			R90-0741-05	MULTIPLE RESISTOR		R73			RK73GB2A223J	CHIP R 22K J 1/10W	
R4			RK73GB2A000J	CHIP R 0.0 J 1/10W		R75			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R5			RK73GB2A104J	CHIP R 100K J 1/10W		R76			RK73GB2A101J	CHIP R 100 J 1/10W	
R6		*	RK73GH2A473D	CHIP R 47K D 1/10W		R77			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R7			RK73GB2A104J	CHIP R 100K J 1/10W		R78			RK73HB1J101J	CHIP R 100 J 1/16W	
R8			RK73GB2A683J	CHIP R 68K J 1/10W		R79			RK73GB2A104J	CHIP R 100K J 1/10W	
R9			RK73HB1J221J	CHIP R 220 J 1/16W		R80			RK73GB2A221J	CHIP R 220 J 1/10W	
R10			RK73HB1J100J	CHIP R 10 J 1/16W		R82,83			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R11			RK73HB1J220J	CHIP R 22 J 1/16W		R85,86			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R12			RK73GB2A100J	CHIP R 10 J 1/10W		R88			RK73GB2A274J	CHIP R 270K J 1/10W	
R13			RK73GB2A104J	CHIP R 100K J 1/10W		R89			RK73GB2A270J	CHIP R 27 J 1/10W	
R14			RK73GB2A184J	CHIP R 180K J 1/10W		R90,91			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R15			RK73GB2A561J	CHIP R 560 J 1/10W		R200			RK73GB2A473J	CHIP R 47K J 1/10W	
R16			RK73GB2A000J	CHIP R 0.0 J 1/10W		R201			RK73GB2A104J	CHIP R 100K J 1/10W	
R17			RK73GB2A394J	CHIP R 390K J 1/10W		R202,203			RK73GB2A103J	CHIP R 10K J 1/10W	
R18			RK73GB2A152J	CHIP R 1.5K J 1/10W		R204			RK73GB2A121J	CHIP R 120 J 1/10W	
R19		*	RK73GH2A513D	CHIP R 51K D 1/10W		R205			RK73GB2A104J	CHIP R 100K J 1/10W	
R20,21			RK73HB1J103J	CHIP R 10K J 1/16W		R206			RK73GB2A473J	CHIP R 47K J 1/10W	
R22,23			RK73HB1J473J	CHIP R 47K J 1/16W		R207			RK73GB2A100J	CHIP R 10 J 1/10W	
R24			RK73GB2A101J	CHIP R 100 J 1/10W		R208			RK73GB2A821J	CHIP R 820 J 1/10W	
R25			RK73GB2A124J	CHIP R 120K J 1/10W		R209			RK73GB2A100J	CHIP R 10 J 1/10W	
R26			RK73HB1J221J	CHIP R 220 J 1/16W		R210,211			RK73GB2A104J	CHIP R 100K J 1/10W	
R27			RK73GB2A472J	CHIP R 4.7K J 1/10W		R212			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R28			RK73GB2A223J	CHIP R 22K J 1/10W		R213			RK73GB2A271J	CHIP R 270 J 1/10W	
R29			RK73GB2A104J	CHIP R 100K J 1/10W		R214			RK73GB2A101J	CHIP R 100 J 1/10W	
R30			RK73HB1J220J	CHIP R 22 J 1/16W		R215,216			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R31			RK73GB2A471J	CHIP R 470 J 1/10W		R219			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R32			RK73GB2A122J	CHIP R 1.2K J 1/10W		R222			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R33			RK73GB2A103J	CHIP R 10K J 1/10W		R226			RK73GB2A100J	CHIP R 10 J 1/10W	
R34			RK73GB2A223J	CHIP R 22K J 1/10W		R301			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R35			RK73EB2ER39K	CHIP R 0.39 K 1/4W		R303			RK73GB2A274J	CHIP R 270K J 1/10W	
R36			RK73GB2A000J	CHIP R 0.0 J 1/10W		R304			RK73HB1J182J	CHIP R 1.8K J 1/16W	
R37			RK73EB2ER39K	CHIP R 0.39 K 1/4W		R305			RK73GB2A183J	CHIP R 18K J 1/10W	
R38			RK73GB2A222J	CHIP R 2.2K J 1/10W		R306			RK73GB2A271J	CHIP R 270 J 1/10W	
R39			RK73EB2ER39K	CHIP R 0.39 K 1/4W		R307			RK73GB2A223J	CHIP R 22K J 1/10W	
R40			RK73GB2A822J	CHIP R 8.2K J 1/10W		R308-310			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R41,42			RN73GH1J154D	CHIP R 150K D 1/16W		R313			RK73GB2A331J	CHIP R 330 J 1/10W	
R43			RK73GB2A180J	CHIP R 18 J 1/10W		R318			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R44,45			RN73GH1J154D	CHIP R 150K D 1/16W		R319			RK73GB2A123J	CHIP R 12K J 1/10W	
R46			RK73GB2A101J	CHIP R 100 J 1/10W		R320			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R47,48			RN73GH1J154D	CHIP R 150K D 1/16W		R321			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R49			RK73GB2A101J	CHIP R 100 J 1/10W		R329			RK73GB2A104J	CHIP R 100K J 1/10W	
R50			RK73GB2A470J	CHIP R 47 J 1/10W		R330			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R51			RK73GB2A000J	CHIP R 0.0 J 1/10W		R331			RK73GB2A104J	CHIP R 100K J 1/10W	
R52			RK73GB2A103J	CHIP R 10K J 1/10W		R332			RK73GB2A224J	CHIP R 220K J 1/10W	
R53			RK73GB2A560J	CHIP R 56 J 1/10W		R333			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R54,55			RK73GB2A152J	CHIP R 1.5K J 1/10W		R334			RK73GB2A100J	CHIP R 10 J 1/10W	
R56			RK73GB2A473J	CHIP R 47K J 1/10W		R335			RK73GB2A681J	CHIP R 680 J 1/10W	
R57			RK73GB2A104J	CHIP R 100K J 1/10W		R336			RK73HB1J334J	CHIP R 330K J 1/16W	
R58			RK73GB2A105J	CHIP R 1.0M J 1/10W		R337			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R59			RK73GB2A104J	CHIP R 100K J 1/10W		R339			RK73GB2A473J	CHIP R 47K J 1/10W	
R60			RK73GB2A221J	CHIP R 220 J 1/10W		R341			RK73GB2A473J	CHIP R 47K J 1/10W	
R61			RK73GB2A000J	CHIP R 0.0 J 1/10W		R400			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R63			RK73HB1J103J	CHIP R 10K J 1/16W		R401			RK73GB2A272J	CHIP R 2.7K J 1/10W	
R65			RK73GB2A392J	CHIP R 3.9K J 1/10W		R402			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R66			RK73HB1J101J	CHIP R 100 J 1/16W		R403			RK73GB2A473J	CHIP R 47K J 1/10W	
						R404			RK73GB2A182J	CHIP R 1.8K J 1/10W	

PARTS LIST

TX-RX UNIT (X57-6132-70)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R405			RK73GB2A332J	CHIP R 3.3K J 1/10W		R493			RK73GB2A100J	CHIP R 10 J 1/10W	
R406			RK73GB2A100J	CHIP R 10 J 1/10W		R494			RK73GB2A473J	CHIP R 47K J 1/10W	
R407			RK73GB2A102J	CHIP R 1.0K J 1/10W		R495			RK73GB2A471J	CHIP R 470 J 1/10W	
R408			RK73GB2A104J	CHIP R 100K J 1/10W		R601			RK73GB2A153J	CHIP R 15K J 1/10W	
R409			RK73GB2A102J	CHIP R 1.0K J 1/10W		R602			RK73GB2A223J	CHIP R 22K J 1/10W	
R410			RK73GB2A272J	CHIP R 2.7K J 1/10W		R603			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R411			RK73GB2A821J	CHIP R 820 J 1/10W		R605,606			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R412			RK73GB2A182J	CHIP R 1.8K J 1/10W		R607			RK73GB2A153J	CHIP R 15K J 1/10W	
R413			RK73GB2A473J	CHIP R 47K J 1/10W		R608			RK73GB2A103J	CHIP R 10K J 1/10W	
R414			RK73GB2A000J	CHIP R 0.0 J 1/10W		R609			RK73GB2A154J	CHIP R 150K J 1/10W	
R415			RK73GB2A471J	CHIP R 470 J 1/10W		R610			RK73GB2A563J	CHIP R 56K J 1/10W	
R416			RK73GB2A104J	CHIP R 100K J 1/10W		R611			RK73GB2A184J	CHIP R 180K J 1/10W	
R418,419			RK73GB2A104J	CHIP R 100K J 1/10W		R612			RK73GB2A334J	CHIP R 330K J 1/10W	
R420			RK73GB2A103J	CHIP R 10K J 1/10W		R614			RK73GB2A184J	CHIP R 180K J 1/10W	
R421			RK73GB2A223J	CHIP R 22K J 1/10W		R615,616			RK73GB2A103J	CHIP R 10K J 1/10W	
R422			RK73GB2A103J	CHIP R 10K J 1/10W		R617			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R423			RK73GB2A473J	CHIP R 47K J 1/10W		R618			RK73GB2A683J	CHIP R 68K J 1/10W	
R424			RK73GB2A103J	CHIP R 10K J 1/10W		R619			RK73GB2A101J	CHIP R 100 J 1/10W	
R425			RK73GB2A102J	CHIP R 1.0K J 1/10W		R621			RK73GB2A103J	CHIP R 10K J 1/10W	
R426,427			RK73GB2A103J	CHIP R 10K J 1/10W		R622			RK73GB2A223J	CHIP R 22K J 1/10W	
R428			RK73GB2A472J	CHIP R 4.7K J 1/10W		R623			RK73GB2A334J	CHIP R 330K J 1/10W	
R429			RK73GB2A103J	CHIP R 10K J 1/10W		R624			RK73GB2A333J	CHIP R 33K J 1/10W	
R430			RK73GB2A473J	CHIP R 47K J 1/10W		R626			RK73GB2A104J	CHIP R 100K J 1/10W	
R431			RK73GB2A102J	CHIP R 1.0K J 1/10W		R628			RK73GB2A334J	CHIP R 330K J 1/10W	
R432,433			RK73GB2A473J	CHIP R 47K J 1/10W		R629			RK73GB2A223J	CHIP R 22K J 1/10W	
R434			RK73GB2A103J	CHIP R 10K J 1/10W		R631	*		RK73GB2A204J	CHIP R 200K J 1/10W	
R435,436			RK73GB2A102J	CHIP R 1.0K J 1/10W		R633			RK73GB2A154J	CHIP R 150K J 1/10W	
R437			RK73GB2A473J	CHIP R 47K J 1/10W		R634			RK73GB2A153J	CHIP R 15K J 1/10W	
R438-441			RK73GB2A102J	CHIP R 1.0K J 1/10W		R635			RK73GB2A393J	CHIP R 39K J 1/10W	
R442			RK73GB2A152J	CHIP R 1.5K J 1/10W		R639			RN73GH1J913D	CHIP R 91K D 1/16W	
R443			RK73GB2A821J	CHIP R 820 J 1/10W		R640			RN73GH1J683D	CHIP R 68K D 1/16W	
R444			RK73FB2B000J	CHIP R 0.0 J 1/8W		R641			RN73GH1J913D	CHIP R 91K D 1/16W	
R445			RK73GB2A000J	CHIP R 0.0 J 1/10W		R642			RN73GH1J333D	CHIP R 33K D 1/16W	
R446			RK73GB2A472J	CHIP R 4.7K J 1/10W		R643			RK73GB2A564J	CHIP R 560K J 1/10W	
R447			RK73GB2A473J	CHIP R 47K J 1/10W		R645			RN73GH1J274D	CHIP R 270K D 1/16W	
R448			RK73GB2A102J	CHIP R 1.0K J 1/10W		R647			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R449-451			RK73GB2A473J	CHIP R 47K J 1/10W		R648			RN73GH1J913D	CHIP R 91K D 1/16W	
R452-455			RK73GB2A104J	CHIP R 100K J 1/10W		R649			RN73HH1J682D	CHIP R 6.8K D 1/16W	
R456-459			RK73GB2A473J	CHIP R 47K J 1/10W		R651			RK73GB2A155J	CHIP R 1.5M J 1/10W	
R460-462			RK73GB2A000J	CHIP R 0.0 J 1/10W		R652			RK73HB1J473J	CHIP R 47K J 1/16W	
R464			RK73GB2A473J	CHIP R 47K J 1/10W		R653			RK73HB1J184J	CHIP R 180K J 1/16W	
R466			RK73GB2A000J	CHIP R 0.0 J 1/10W		R654			RN73HH1J683D	CHIP R 68K D 1/16W	
R467,468			RK73GB2A473J	CHIP R 47K J 1/10W		R655			RK73HB1J474J	CHIP R 470K J 1/16W	
R469			RK73GB2A102J	CHIP R 1.0K J 1/10W		R656			RN73HH1J682D	CHIP R 6.8K D 1/16W	
R470-472			RK73GB2A000J	CHIP R 0.0 J 1/10W		R657			RK73GB2A101J	CHIP R 100 J 1/10W	
R474			RK73GB2A103J	CHIP R 10K J 1/10W		R658			RK73HB1J224J	CHIP R 220K J 1/16W	
R475-477			RK73GB2A101J	CHIP R 100 J 1/10W		R659			RK73HB1J103J	CHIP R 10K J 1/16W	
R478			RK73GB2A471J	CHIP R 470 J 1/10W		R660			RK73HB1J223J	CHIP R 22K J 1/16W	
R479			RK73GB2A473J	CHIP R 47K J 1/10W		R661			RK73HB1J393J	CHIP R 39K J 1/16W	
R480			RK73GB2A472J	CHIP R 4.7K J 1/10W		R662			RK73HB1J470J	CHIP R 47 J 1/16W	
R481			RK73GB2A000J	CHIP R 0.0 J 1/10W		R663			RK73HB1J220J	CHIP R 22 J 1/16W	
R482			RK73GB2A102J	CHIP R 1.0K J 1/10W		R665,666			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R483			RK73GB2A473J	CHIP R 47K J 1/10W		R668			RK73GB2A334J	CHIP R 330K J 1/10W	
R484			RK73GB2A102J	CHIP R 1.0K J 1/10W		R669			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R485,486			RK73GB2A473J	CHIP R 47K J 1/10W		R670-673			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R487			RK73GB2A102J	CHIP R 1.0K J 1/10W		R674			RK73HB1J104J	CHIP R 100K J 1/16W	
R488			RK73HB1J000J	CHIP R 0.0 J 1/16W		R675			RK73HB1J473J	CHIP R 47K J 1/16W	
R489			RK73GB2A103J	CHIP R 10K J 1/10W		R677			RK73GB2A333J	CHIP R 33K J 1/10W	
R490			RK73GB2A104J	CHIP R 100K J 1/10W		R679			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R491			RK73GB2A000J	CHIP R 0.0 J 1/10W		R680-683			RK73HB1J104J	CHIP R 100K J 1/16W	

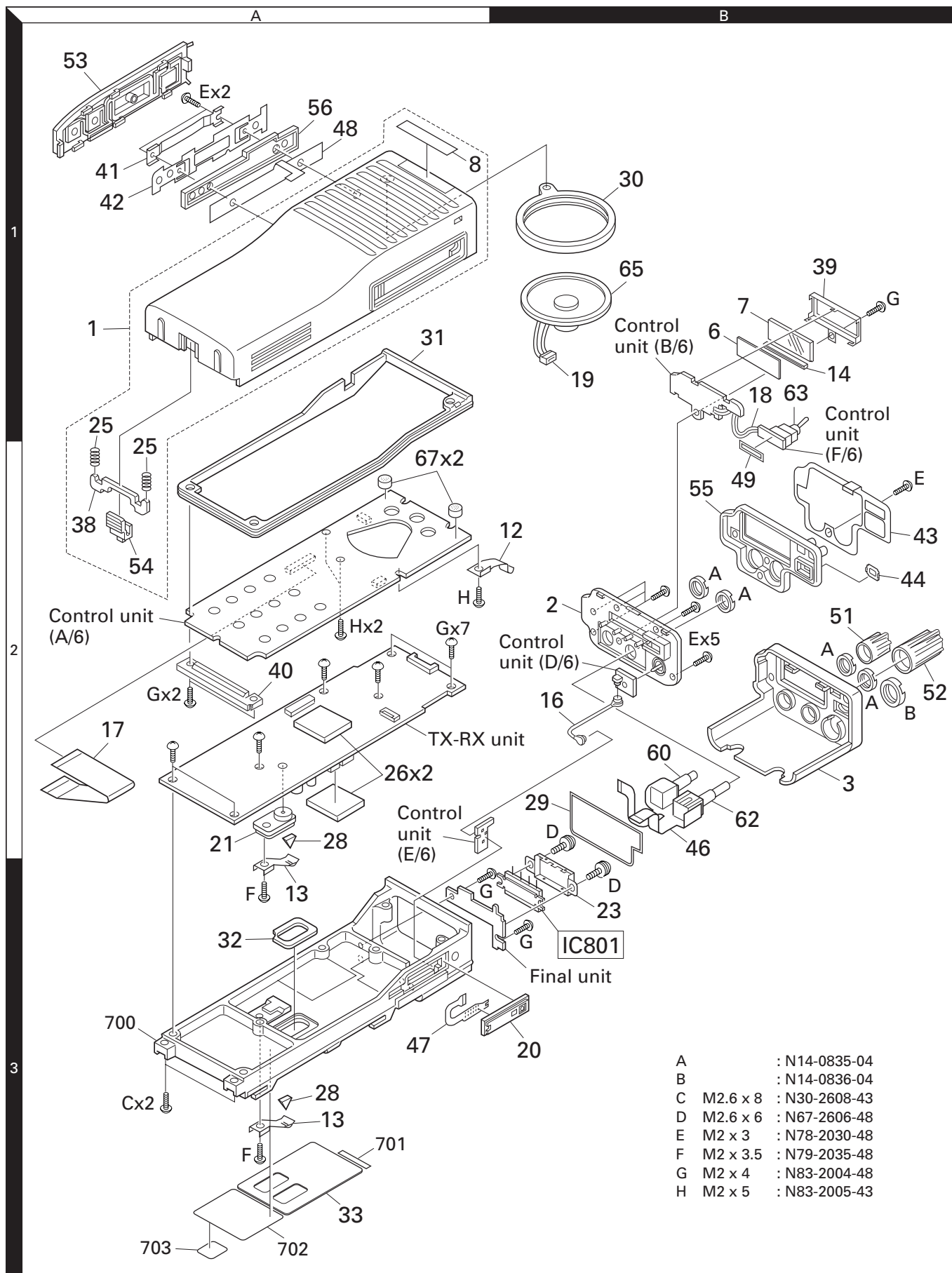
PARTS LIST

TX-RX UNIT (X57-6132-70)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R684			RK73HB1J473J	CHIP R 47K J 1/16W		Q5			2SC4649(N,P)	TRANSISTOR	
R685			RK73HB1J394J	CHIP R 390K J 1/16W		Q6		*	2SC5110-F(O)	TRANSISTOR	
R686			RK73HB1J000J	CHIP R 0.0 J 1/16W		Q7			DTC114EE	DIGITAL TRANSISTOR	
R687			RK73HB1J223J	CHIP R 22K J 1/16W		Q8		*	2SC4988-E	TRANSISTOR	
R688			RK73HB1J000J	CHIP R 0.0 J 1/16W		Q9			DTA144EE	DIGITAL TRANSISTOR	
R689			RK73GB2A103J	CHIP R 10K J 1/10W		Q10			DTC144EE	DIGITAL TRANSISTOR	
R690			RK73GB2A271J	CHIP R 270 J 1/10W		Q13			2SK1824-A	FET	
R691			RK73GB2A103J	CHIP R 10K J 1/10W		Q14			2SC5108(Y)F	TRANSISTOR	
R922			RK73GB2A103J	CHIP R 10K J 1/10W		Q200		*	3SK274*J-F	FET	
R923,924			RK73HB1J000J	CHIP R 0.0 J 1/16W		Q301			2SC4617(S)	TRANSISTOR	
D4			MA2S111-F	DIODE		Q302		*	2SK1215-E(E)	FET	
D5		*	1SS360-F	DIODE		Q400			UMG3N	TRANSISTOR	
D6			MA2S111-F	DIODE		Q401		*	UPA572T-A	FET	
D7			1SS388F	DIODE		Q402			FP210	TRANSISTOR	
D8			DA221	DIODE		Q403			2SJ243-A	FET	
D9			HZU4CLL	ZENER DIODE		Q404			DTC144EE	DIGITAL TRANSISTOR	
D10			MA4PH633	DIODE		Q405			UMG3N	TRANSISTOR	
D11			MA77	DIODE		Q406			DTA123JE	DIGITAL TRANSISTOR	
D12,13		*	MA2S077-F	DIODE		Q407		*	2SC4215-F(Y)	TRANSISTOR	
D200			HSM88AS-E	DIODE		Q408-410			2SC4617(S)	TRANSISTOR	
D201-208		*	1SV273-F	VARIABLE CAPACITANCE DIODE		Q411			2SB1132(Q,R)	TRANSISTOR	
D300			MA3J742	DIODE		Q412			2SK1824-A	FET	
D400			1SR154-400	DIODE		Q413			HN1L02FU(F)	FET	
D401			MA2S111-F	DIODE		Q414			2SK1824-A	FET	
D402,403		*	NNCD6.8G-A	ZENER DIODE		Q415		*	2SJ517-E	FET	
D404			1SS301F	DIODE		Q601,602			2SK1824-A	FET	
D408			1SS301F	DIODE		TH301			157-104-65001	THERMISTOR	
D409			MA2S111-F	DIODE							
D601			MA3J742	DIODE							
D602,603		*	MA2S077-F	DIODE							
IC2			LMC7101BIM5	MOS-IC							
IC3		*	M62354GPDF0J	MOS-IC							
IC4		*	MAX865EUA+T	MOS-IC							
IC5			LMX2352TMX/NP	ANALOGUE IC							
IC6			LMC7101BIM5	MOS-IC							
IC7		*	NJM2904V-ZB	MOS-IC							
IC200			GN2011(Q)	MOS-IC							
IC300			TA31136FNG	MOS-IC							
IC301			TC7S66FUF	MOS-IC							
IC400			BU4094BCFV	MOS-IC							
IC401,402			TK11250CMCL-G	BI-POLAR IC							
IC403-405			BU4094BCFV	MOS-IC							
IC406		*	784214AGC150A	MICROPROCESSOR IC							
IC409			PST9132NR	MOS-IC							
IC412			AT24C08A10SU18	ROM IC							
IC413			TC75W51FUF	MOS-IC							
IC414			AT29C02090TU	ROM IC							
IC415		*	TC7S02F-F	MOS-IC							
IC600			LC73872M	MOS-IC							
IC601			TC75W51FUF	MOS-IC							
IC602			TA75W01FUF	MOS-IC							
IC603			M62364FP-F	MOS-IC							
IC604,605			TC75W51FUF	MOS-IC							
IC607		*	TC35453FG	MOS-IC							
IC608,609		*	TC7W53FU-F	HYBRID IC							
IC610			TC75W51FUF	MOS-IC							
Q1			DTA114EE	DIGITAL TRANSISTOR							
Q2		*	2SJ144-GR(F)	FET							
Q3			2SC5108(Y)F	TRANSISTOR							
Q4			2SC4617(S)	TRANSISTOR							

TK-290-11B

EXPLODED VIEW



12 Parts with the exploded numbers larger than 700 are not supplied.
 If a part reference number is listed in a box on the exploded view of the PCB, that part does not come with the PCB. These parts must be ordered separately.

ADJUSTMENT

Test Equipment Required for Alignment

No.	Test Equipment	Major Specifications	
1	Standard Signal Generator (SSG)	Frequency Range	Maximum 600MHz or more.
		Modulation	Frequency modulation and external modulation.
		Output	-133dBm/0.05μV to 7dBm/501mV
2	Power Meter	Input Impedance	50Ω.
		Operation Frequency	Up to 600MHz.
		Measurement Range	Full scale of 10W or so.
3	Deviation Meter	Frequency Range	100 to 200MHz.
4	Digital Volt Meter (DVM)	Measuring Range	FS=18V or so.
		Accuracy	High input impedance for minimum circuit loading.
5	Oscilloscope		DC through 30MHz.
6	High Sensitivity Frequency Counter	Frequency Range	Up to 1GHz or so.
		Frequency Stability	0.2ppm or less.
7	Ammeter		5A.
8	AF Volt Meter (AF VTVM)	Frequency Range	50Hz to 1MHz.
		Voltage Range	1mV to 10V.
9	Audio Generator (AG)	Frequency Range	100Hz to 100kHz or more.
		Output	0 to 1V.
10	Distortion Meter	Capability	3% or less at 1kHz.
		Input Level	50mV to 10Vrms.
11	16Ω Dummy Load		Approx. 16Ω, 5W.
12	Regulated Power Supply		5V to 10V, approx. 5A Useful if ammeter equipped.
13	Spectrum Analyzer	Measuring Range	DC to 1GHz or more.
14	Tracking Generator	Center Frequency	50kHz to 600MHz.
		Frequency Deviation	±35MHz.
		Output Voltage	100mV or more.

■ 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

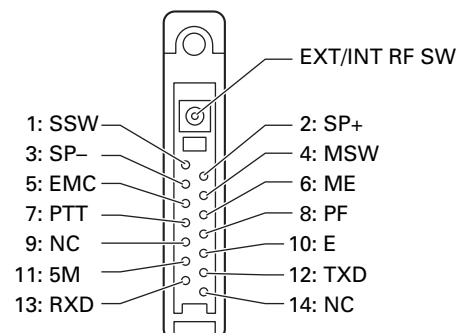
Use the interface cable (KPG-36) for PC tuning or the lead wire with plug (E30-3287-28) and screw (N08-0535-08) for panel tuning. Connect the plug to the universal connector of the radio and tighten the screw.

The lead wire with plug (E30-3287-28) and screw (N08-0535-08) terminals are as follows. Numbers are universal connector terminal numbers.

Caution

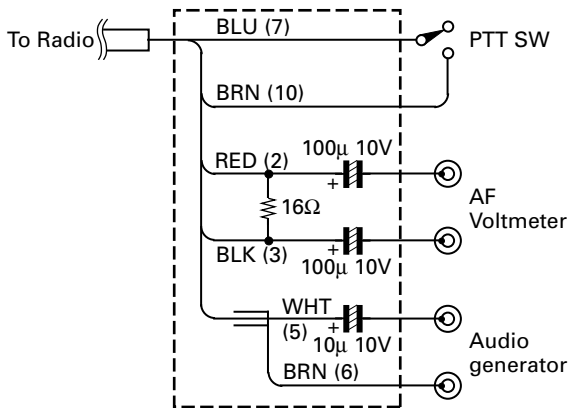
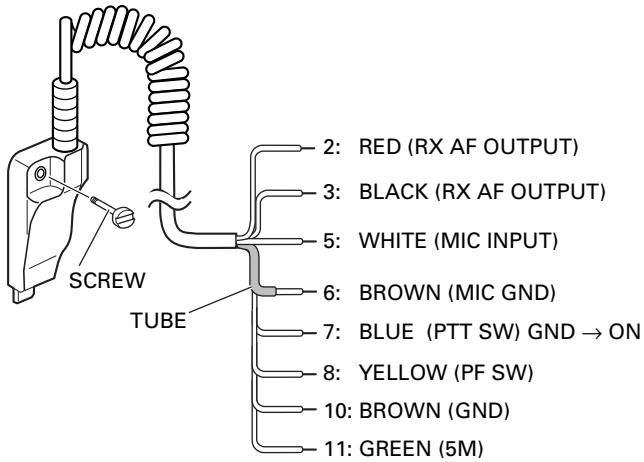
1. When connecting the plug to the universal connector of the radio, a short circuit may occur. To prevent this, be sure to turn the radio POWER switch off.
2. Since the RX AF output is a BTL output, there is a DC component. Isolate this with a capacitor or transformer as shown in the figure.
3. Do not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

• Universal connector



ADJUSTMENT

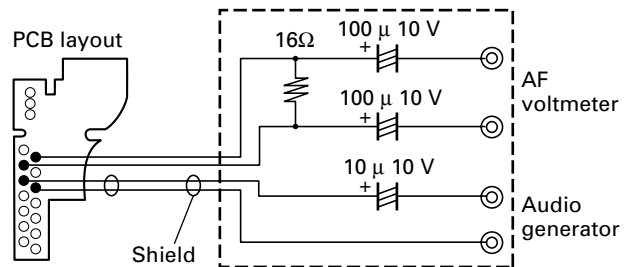
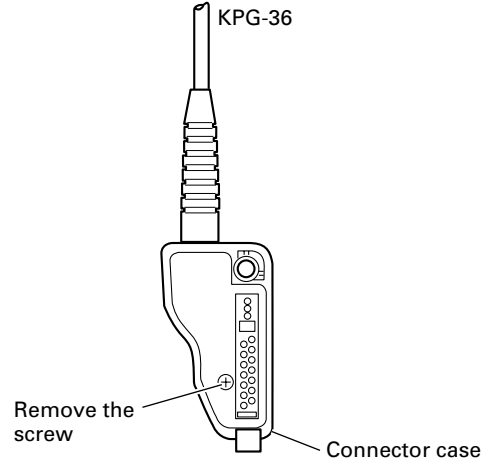
• Panel tuning



• PC tuning

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

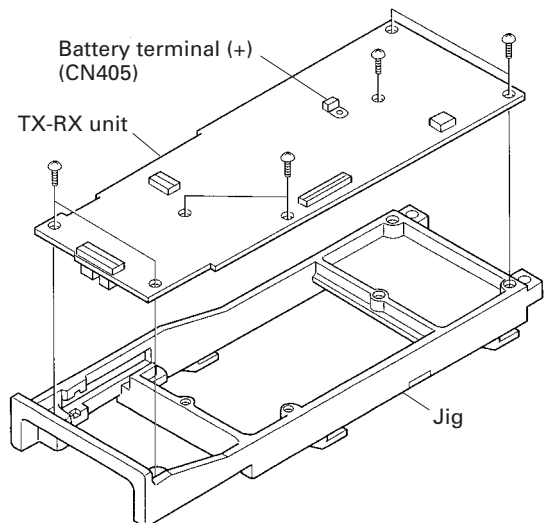
For output the wires out of the connector case, need to process the connector case.



Repair Jig (Chassis)

Use jig (part No.: A10-1399-03) for repairing the transceiver. Place the TX-RX unit on the jig and fit it with 7 screws.

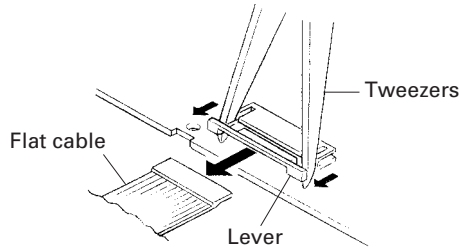
Note: Supply power from an external power supply (Battery terminal : +, jig (chassis) : -)



ADJUSTMENT

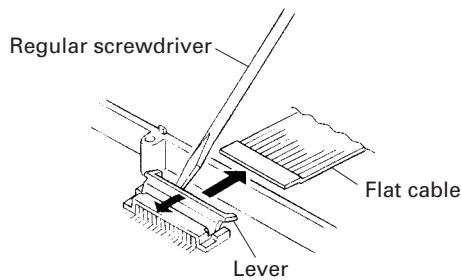
How to Remove the Flat Cable

1. Gently draw out both sides of the connector lever uniformly in the direction of the arrow with tweezers. (CN101, CN400)



2. Gently rise up the connector lever in the direction of the arrow with a fine regular screwdriver or tweezers. (CN1, CN3, CN401, CN403)

Note: Gently push both sides of the connector lever, when put in the flat cable.

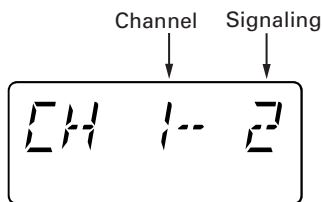


Panel Test Mode

This mode is used for making transceiver connection tests and clearing the memory.

To set Panel test mode, turn on the power with [Tone 2] and [PTT] are still held down and then first release [PTT]. This mode cannot be set when disabled with the FPU.

In Panel test mode, when channel or signaling is selected, the signaling that was most recently used is displayed.



Key operations in Panel test mode are as follows.

- [Selector switch] : Use to select the test channel.
- [PTT] : For transmit.
- [SW A] : For down signaling.
- [SW B] : For up signalling.
- [Tone 1] : For setting Panel tuning mode.
- [Tone 2] : For switching power between Hi/Low.
Enter the LCD all lamp mode if held down for 1 second.
- [Monitor] : For monitoring.
- [Toggle] : No function.

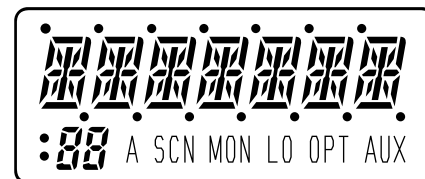
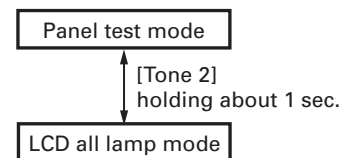
Frequency (MHz)

CH	RX	TX
1	155.100 (Center)	155.000 (Center)
2	136.100 (Low)	136.000 (Low)
3	173.900 (Hi)	173.975 (Hi)
4	155.000	155.000
5	155.200	155.200
6	155.400	155.400

Signaling

No.	Encode tone	Decode tone
1	None	None
2	QT 67.0Hz	QT 67.0Hz
3	QT 250.3Hz	QT 250.3Hz
4	DQT 023N	DQT 023N
5	None	None
6	DTMF (9)	DTMF (159)
7	MSK PN pattern	None
8	100Hz square wave	None
9	Tone 1 1750Hz	None
10	Tone 2 2135Hz	None

• LCD all lamp mode



• Clear function

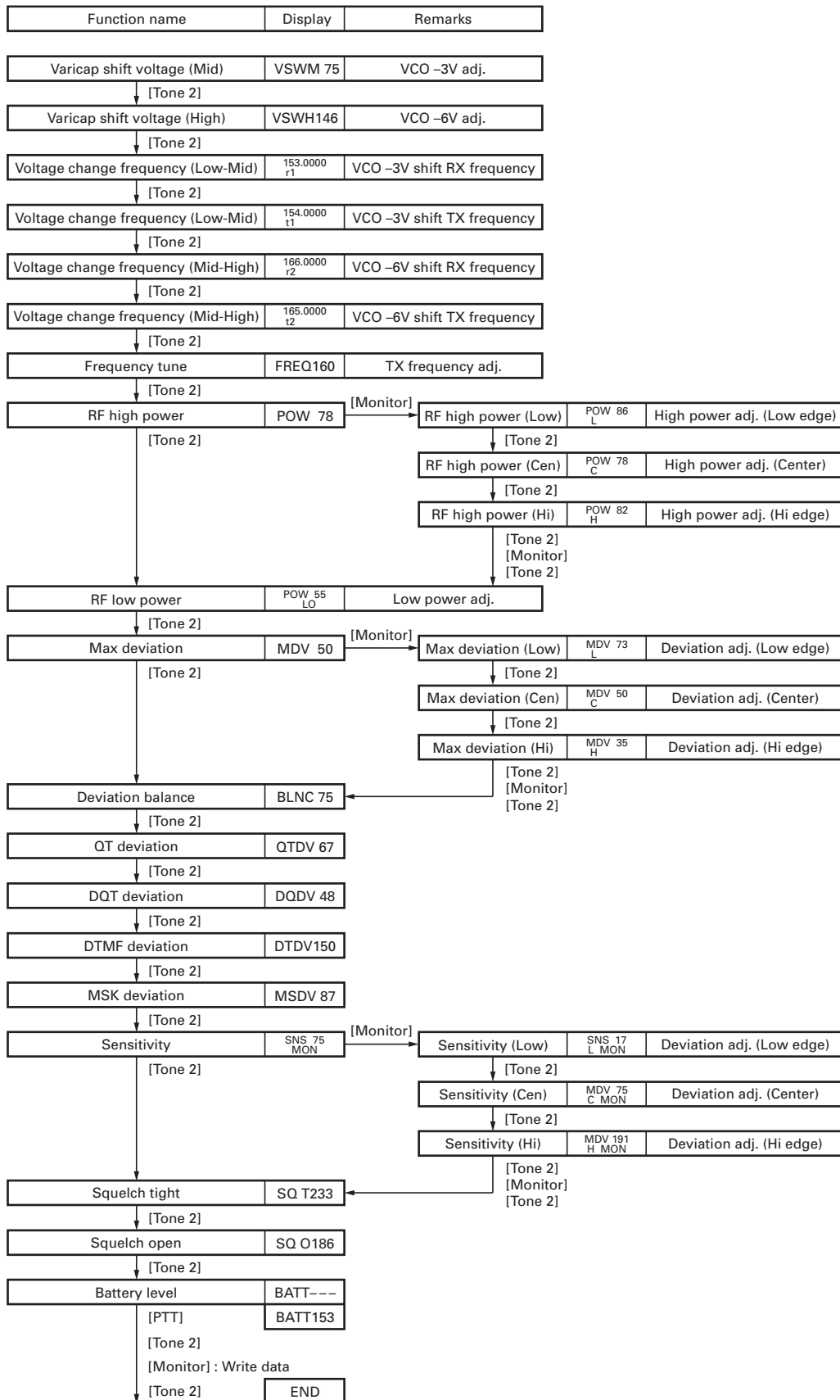
Pressing [PTT] while holding down [Monitor] in Panel test mode, triggers the clear function which clears all transceiver data settings.

ADJUSTMENT

• Panel tuning mode

Press [Tone 1] in Panel test mode to set Panel tuning mode.

Note: Different sample displays are shown.



ADJUSTMENT

Common Section

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Varicap shift voltage Mid	1) Set panel tuning mode Push Tone 2 to select VSWM **	DC VTVM	TX-RX	TP2	Panel	SW A/ SW B	-3V	±0.1V
High	2) Push Tone 2 to select VSWH***						-6V	±0.1V
2. Voltage change frequency Low-Mid RX	1) Set panel tuning mode Push Tone 2 to select *** . **** r1			TP1			4.15V	±0.05V
TX	2) Push Tone 2 to select *** . **** t1						4.15V	±0.05V
Mid-Hi RX	3) Push Tone 2 to select *** . **** r2						4.15V	±0.05V
TX	4) Push Tone 2 to select *** . **** t2						4.15V	±0.05V

Transmitter Section

Caution: When adjusting transmit power and sensitivity, connect the cable to the SMA antenna connector on the top panel. At this time, use the antenna-less type jig connector (E30-3287-28) in the universal connector.

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Frequency adjustment	1) Set panel test mode CH No. : 1 Signaling No. : 1 Select FRQ *** in panel tuning mode PTT : ON	Power meter f. counter	Panel	ANT	Panel	SW A/ SW B	155.000MHz	±50Hz
2. Maximum power check	1) Set panel test mode CH No. : 3 Signaling No. : 1 BATT terminal voltage : 7.5V Select POW 255 in panel tuning mode PTT : ON	Power meter Ammeter	Panel	ANT			Check	5.0W or more

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
3. TX high power adjustment	1) Set panel test mode CH No. : 3 Signaling No. : 1 Select POW *** in tuning mode Push Monitor to 3 point adjustment mode Select POW *** L PTT : ON	Power meter Ammeter	Panel	ANT	Panel	SW A/ SW B	4.50W	±0.1W 2.3A or less
	2) Push Tone 2 to select POW *** C PTT : ON							
	3) Push Tone 2 to select POW *** H PTT : ON							
4. TX high power check	1) Set panel test mode CH No. : 1 Signaling No. : 1 PTT : ON						Check	3.7W~5.2W 2.3A or less
	2) CH No. : 2 Signaling No. : 1 PTT : ON							
	3) CH No. : 3 Signaling No. : 1 PTT : ON							
5. TX low power adjustment	1) Set panel test mode CH No. : 3 Signaling No. : 1 Select POW *** LO PTT : ON				Panel	SW A/ SW B	1.0W	±0.1W 1.2A or less
6. TX low power check	1) Set panel test mode CH No. : 1 Signaling No. : 1 Set low power (Push Tone 2) PTT : ON						Check	0.5W~1.5W 1.2A or less
	2) CH No. : 2 Signaling No. : 1 Set low power (Push Tone 2) PTT : ON							
	3) CH No. : 3 Signaling No. : 1 Set low power (Push Tone 2) PTT : ON							

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
7. Maximum deviation adjustment	1) Set panel test mode CH No. : 3 Signaling No. : 1 Select MDV *** in panel tuning mode Push Monitor to 3 point adjustment mode Select MDV *** L AG : 1kHz/100mV Deviation meter filter setting LPF : 15kHz HPF : OFF PTT : ON	Power meter Deviation meter Oscilloscope	Panel	ANT	Panel	SW A/ SW B	3.2kHz (According to the larger +, -)	±0.05kHz
	2) Push Tone 2 to select MDV *** C PTT : ON	AG AF VTVM	Side	Universal				
	3) Push Tone 2 to select MDV *** H PTT : ON							
8. DQT balance adjustment	1) Set panel test mode CH No. : 3 Signaling No. : 1 Select BLNC*** in panel tuning mode Deviation meter filter setting LPF : 3kHz HPF : OFF PTT : ON						Make the demodulation waves into square waves.	
9. MIC sensitivity check	1) Set panel test mode CH No. : 3 Signaling No. : 1 AG : 1kHz/10mV Deviation meter filter setting LPF : 15kHz HPF : OFF PTT : ON						Check	1.4kHz~2.9kHz
10. QT deviation adjustment	1) Set panel tuning mode CH No. : 3 Signaling No. : 1 MIC input : OFF Select QTDV*** in panel tuning mode Deviation meter filter setting LPF : 3kHz HPF : 50Hz De-emphasis : 750μs PTT : ON				Panel	SW A/ SW B	0.6kHz	±0.05kHz

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
11. DQT deviation adjustment	1) Set panel test mode CH No. : 3 Signaling No. : 1 Select DQDV*** in panel tuning mode Deviation meter filter setting LPF : 3kHz HPF : OFF PTT : ON	Power meter Deviation meter Oscilloscope	Panel	ANT	Panel	SW A/ SW B	0.6kHz	±0.05kHz
12. DTMF deviation adjustment	1) Set panel test mode CH No. : 3 Signaling No. : 1 Select DTDV*** in tuning mode Deviation meter filter setting LPF : 15kHz HPF : OFF PTT : ON	AG AF VTVM	Side	Universal			2.4kHz	±0.2kHz
13. MSK deviation adjustment	1) Set panel test mode CH No. : 3 Signaling No. : 1 Select MSDV*** in panel tuning mode Deviation meter filter setting LPF : 15kHz HPF : OFF PTT : ON						2.4kHz	±0.2kHz
14. Transmission S/N check	1) Set panel test mode CH No. : 3 Signaling No. : 1 Deviation meter filter setting LPF : 300Hz HPF : 3kHz De-emphasis : 750μs PTT : ON						Check	42dB or more
15. BATT detection writing	1) Set panel test mode CH No. : 3 Signaling No. : 1 Select BATT*** in panel tuning mode PTT : ON	Power meter DC VTVM	Panel Bottom	ANT BATT terminal	Side	Monitor	Write the voltage level	6.2V
16. BATT detection check	1) Set panel test mode CH No. : 3 Signaling No. : 1 BATT terminal voltage : 5.3V PTT : ON						Check	Cannot transmit LED (TX) blinks
	2) BATT terminal voltage : 6.5V PTT : ON							Transmit

ADJUSTMENT

Receiver Section

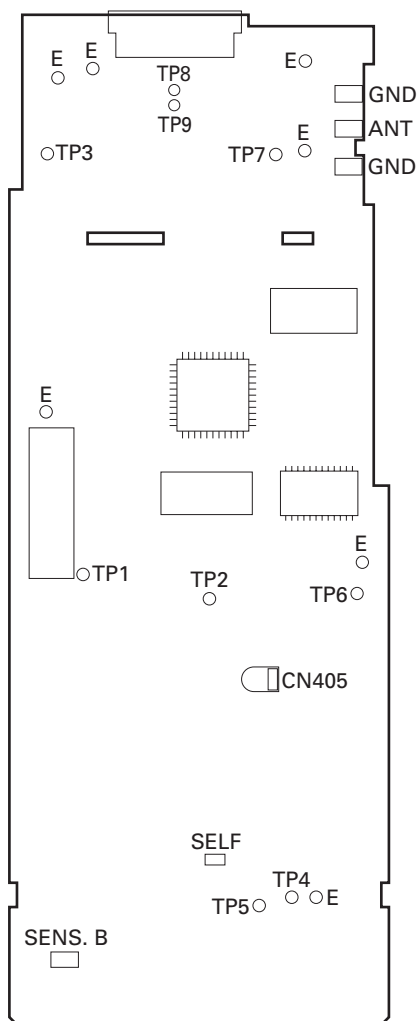
Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. AF level check	1) Set panel test mode CH No. : 3 Signaling No. : 1 SSG freq. : Each freq. output : -53dBm/501 μ V MOD. : 1kHz DEV. : 2.4kHz	SOG	Panel	ANT			Check	0.55V \pm 0.3V (VOL. 2) 5% or less
2. Hum and noise ratio check	1) Set panel test mode CH No. : 3 Signaling No. : 1 SSG output : -53dBm/501 μ V							37dB or more
3. BPF coil Use this adjustment procedure after replacing any of the BPF coils	1) Set panel test mode CH No. : 1 Connect the spectrum analyzer to TP3. Signaling No. : 1 Push Monitor to 3 point adjustment mode Select SNS 75 MON	Tracking generator Spectrum analyzer	Panel TX-RX	ANT TP3	TX-RX	L201 L202 L205 L206	Adjust the BPF coil so that the waveform is peaked. The frequency with the peak waveform does not have to be the center frequency. After finished peaking the waveform, perform a 3 point adjustment and set for maximum sensitivity.	
4. Sensitivity adjustment and check	1) Set panel test mode CH No. : 3 Signaling No. : 1 Select SNS *** in panel tuning mode Push Monitor to 3 point adjustment mode Select SNS *** L MON SSG freq. : Low output : -116dBm/0.35 μ V 2) Push Tone 2 to select SNS *** C MON SSG freq. : Center 3) Push Tone 2 to select SNS *** H MON SSG freq. : Hi	SOG AF VTVM Oscilloscope Distortion meter Audio analyzer	Panel Side	ANT Universal	Panel	SW A/ SW B	Adjust for maximum SINAD	12dB SINAD or more
5. Tight squelch adjustment	1) Set panel test mode CH No. : 3 Signaling No. : 1 Select SQ T*** in panel tuning mode SSG output : 3dB above to 12dB SINAD level.						Adjust to point of opening squelch	

ADJUSTMENT

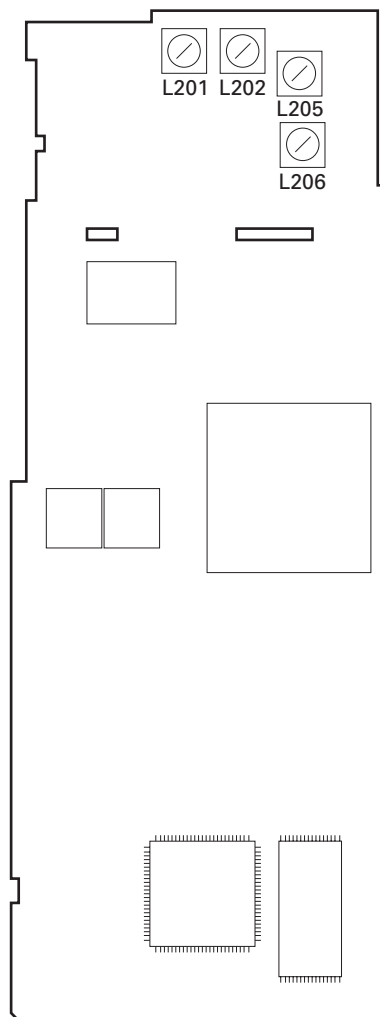
Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
6. Squelch adjustment	1) Set panel test mode CH No. : 3 Signaling No. : 1 Select SQ O*** in panel tuning mode SSG output : 3dB below to 12dB SINAD level	SSG	Panel	ANT	Panel	SW A/ SW B	Adjust to point of opening squelch	
7. Squelch check	1) Set panel test mode CH No. : 3 Signaling No. : 1 SSG output : -118dBm/0.28μV						Check	Squelch must be opened
	2) SSG output : -127dBm/0.1μV							Squelch must be closed

Adjustment Points

■ Component side view

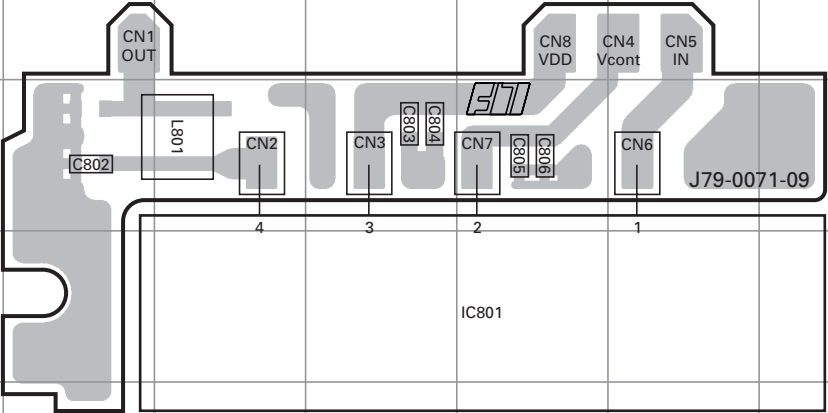


■ Foil side view

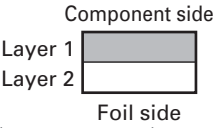


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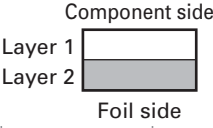
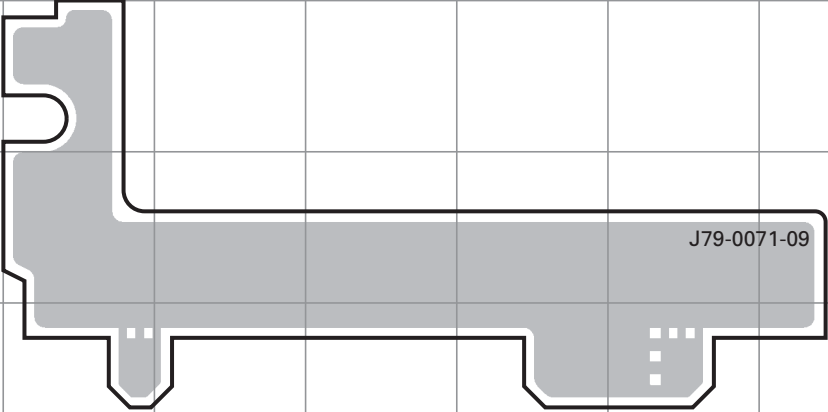
**FINAL UNIT (X45-3592-71)
Component side view (J79-0071-09)**



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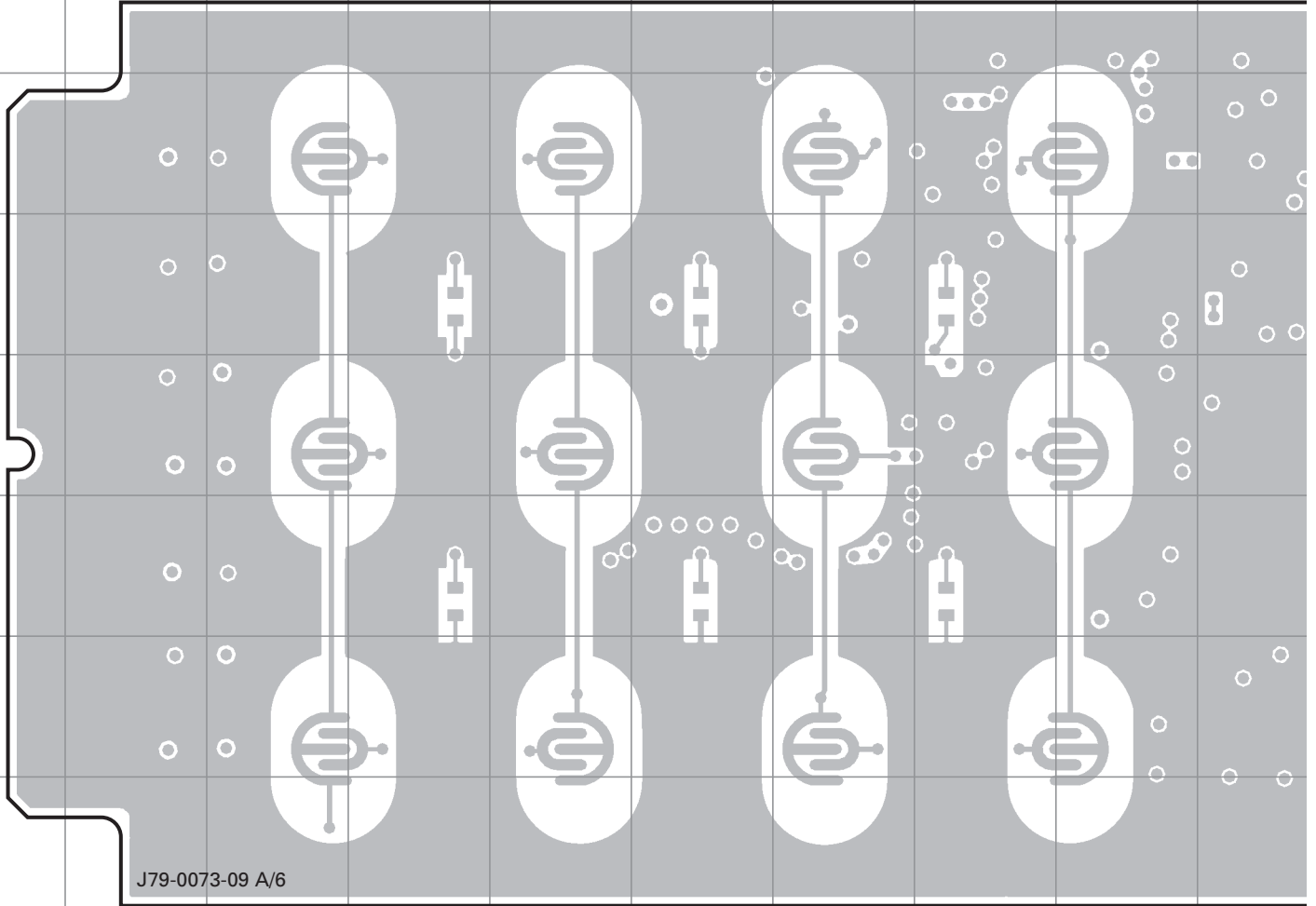


**FINAL UNIT (X45-3592-71)
Foil side view (J79-0071-09)**

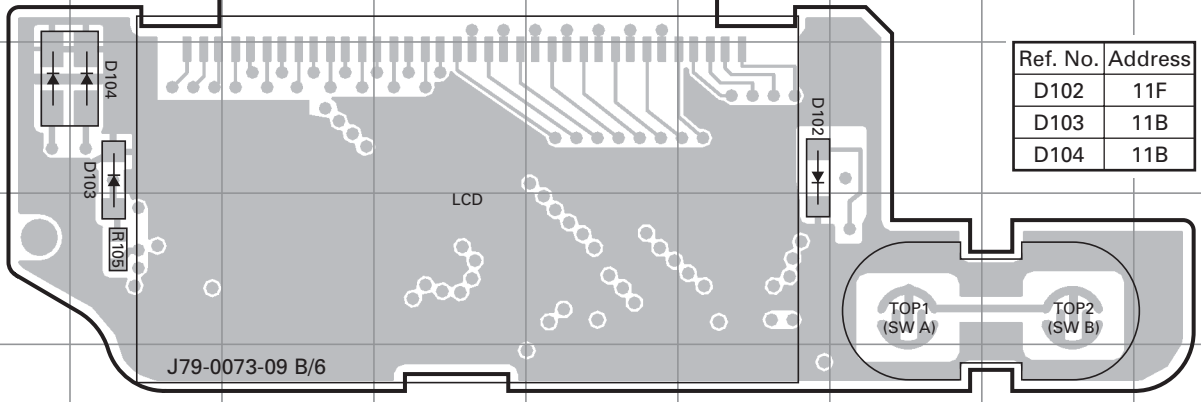


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CONTROL UNIT (X53-3932-71) (A/6) Component side view (J79-0073-09)



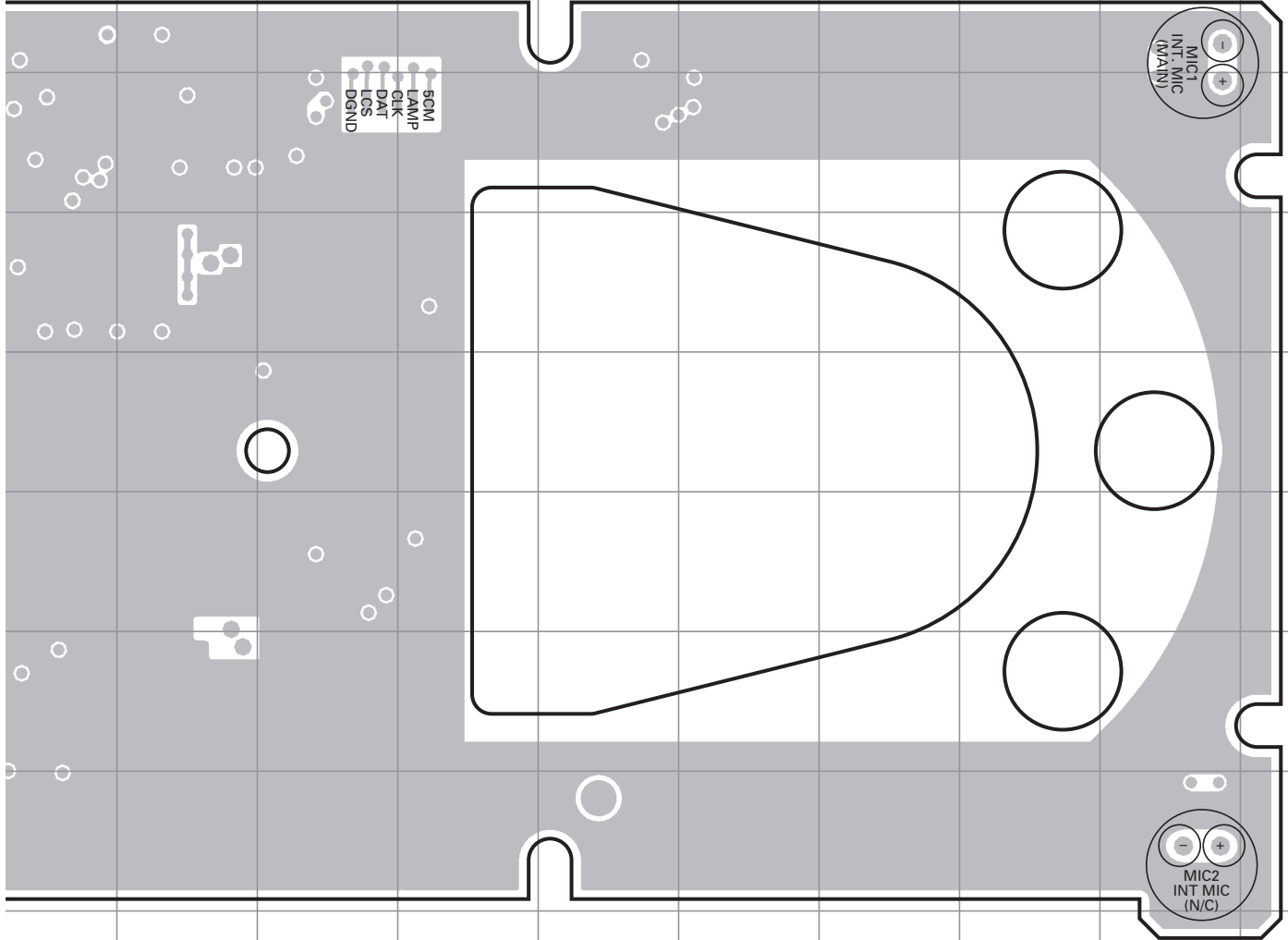
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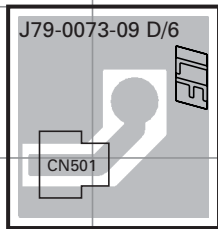
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D103	11B
D104	11B

PC BOARD TK-290-11B

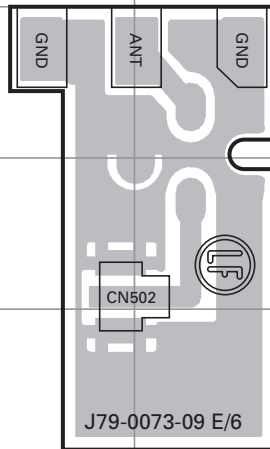
CONTROL UNIT (X53-3932-71) (A/6) Component side view (J79-0073-09)



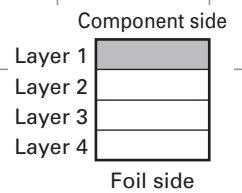
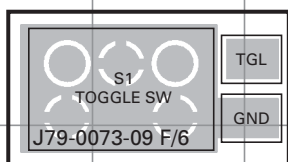
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(E/6)



(F/6)

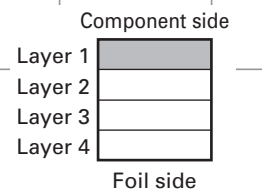
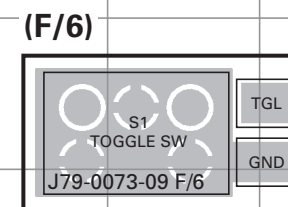
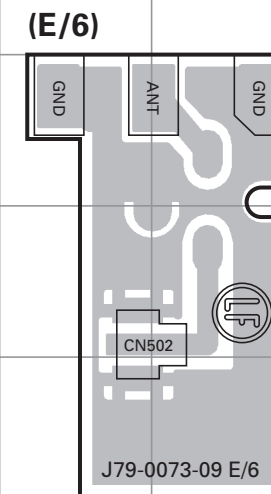
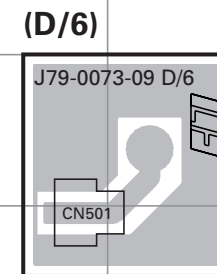
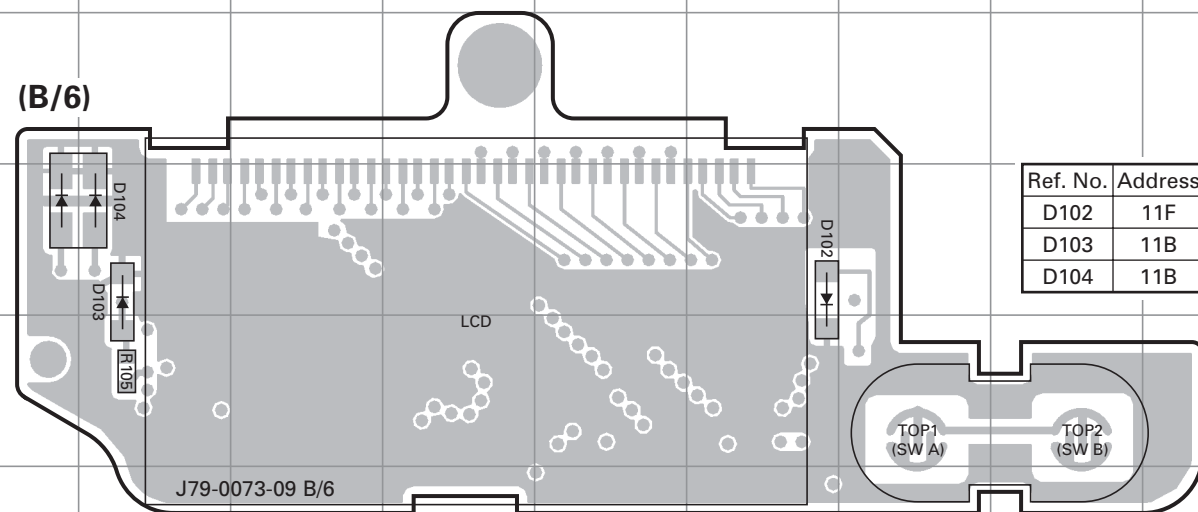
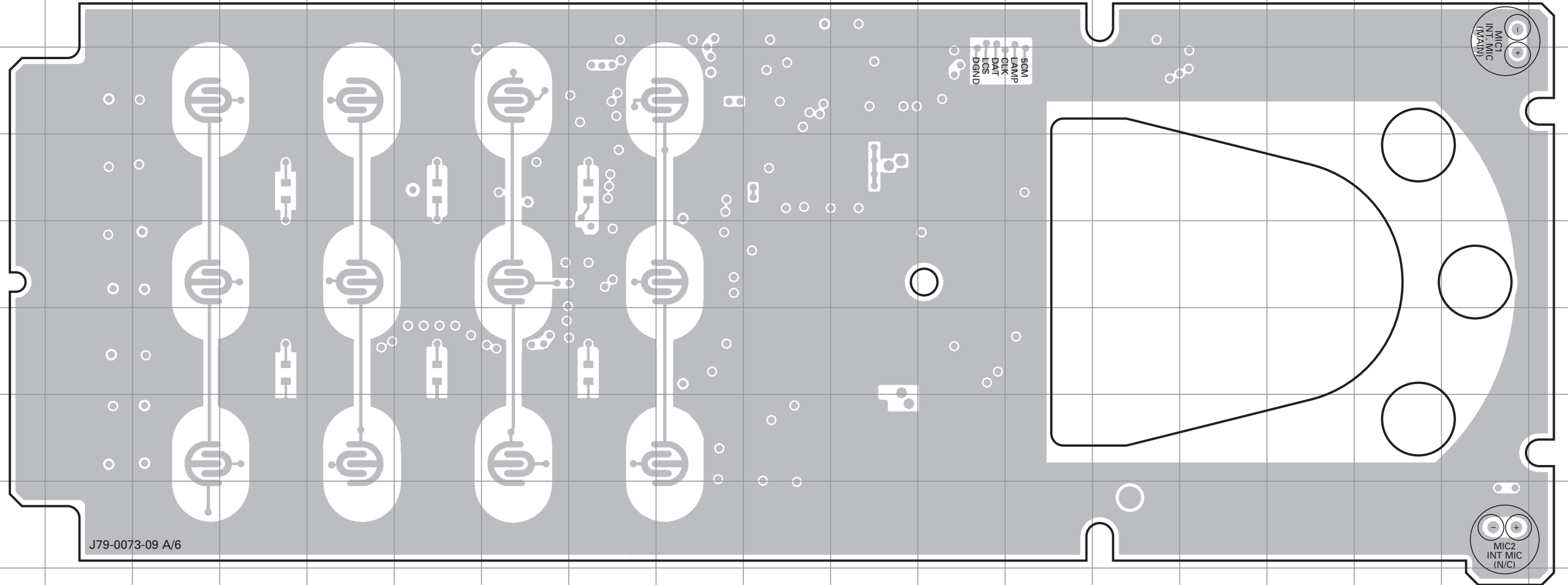


TK-290-11B PC BOARD

PC BOARD TK-290-11B

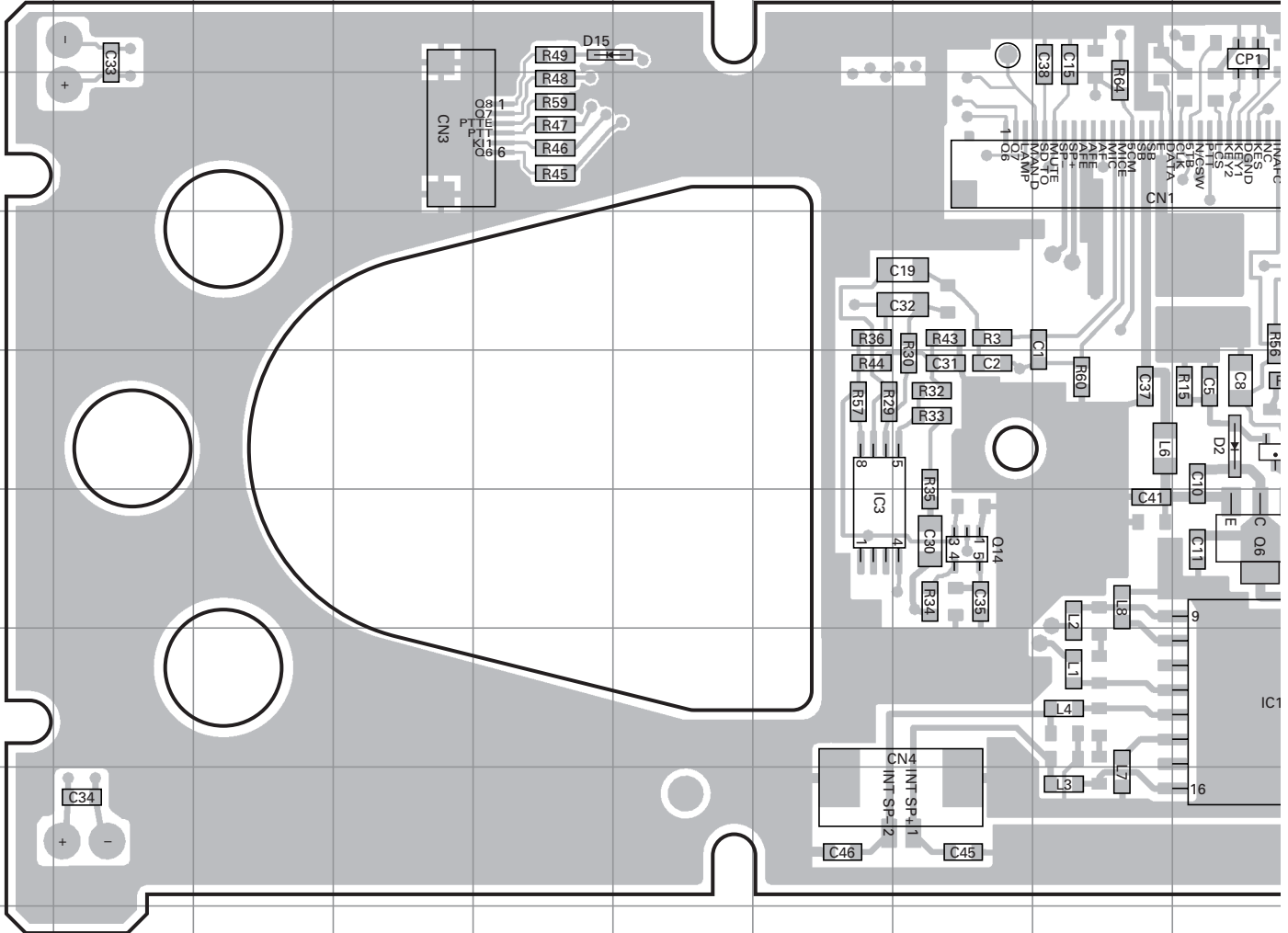
CONTROL UNIT (X53-3932-71) (A/6) Component side view (J79-0073-09) ▼

CONTROL UNIT (X53-3932-71) (A/6) Component side view (J79-0073-09)

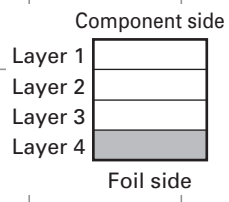
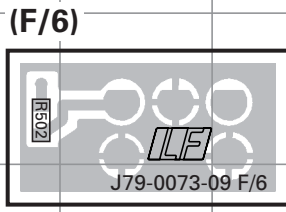
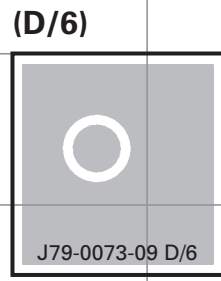
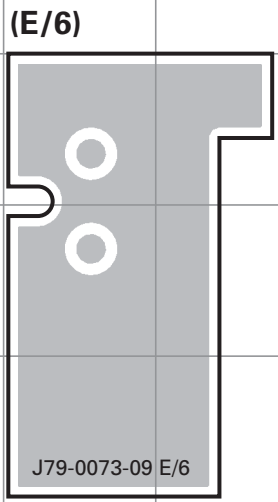


TK-290-11B PC BOARD

CONTROL UNIT (X53-3932-71) (A/6) Foil side view (J79-0073-09)

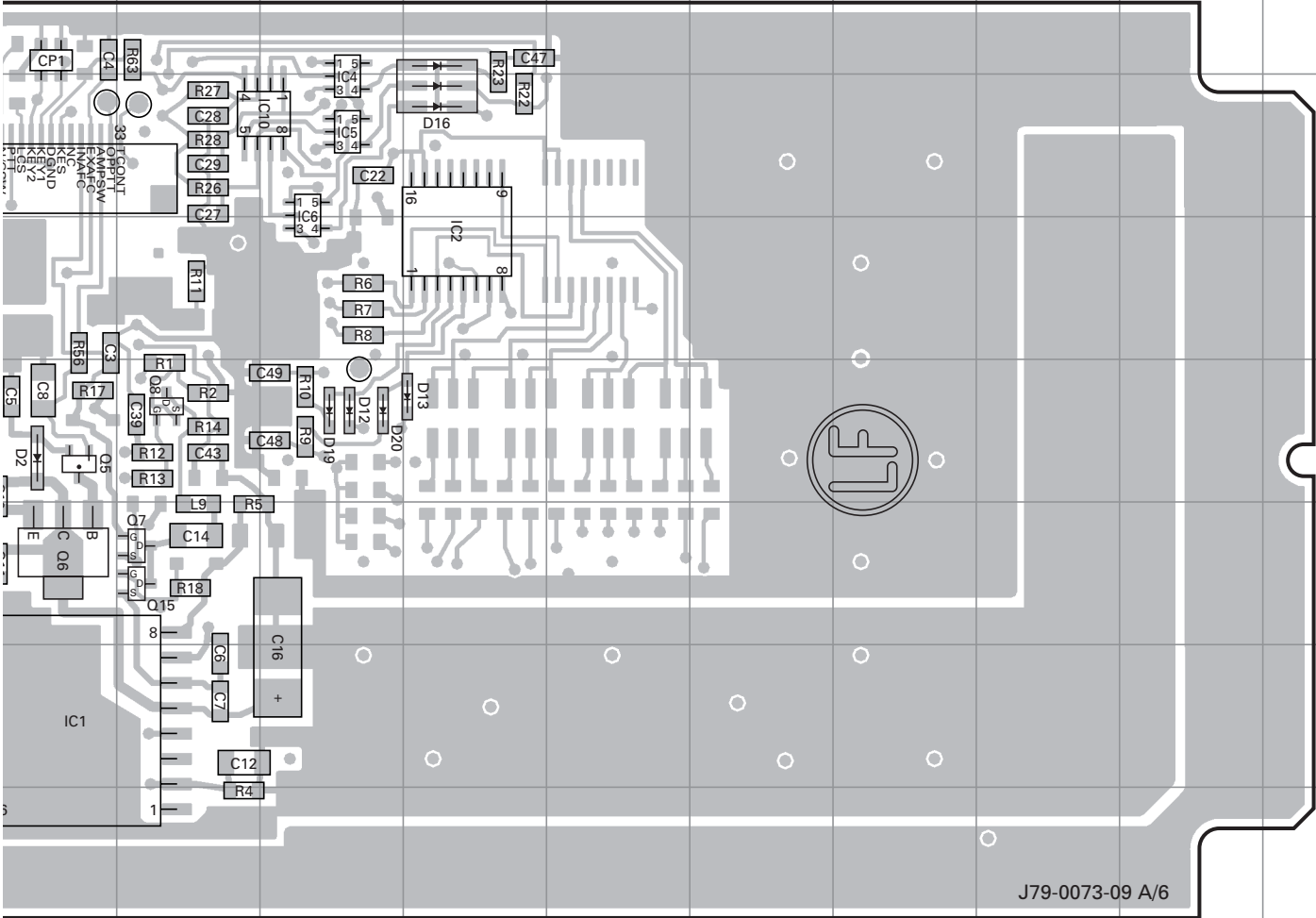


Ref. No.	Address	Ref. No.	Address
IC1	7J	Q8	5K
IC2	4M	Q14	6H
IC3	6G	Q15	6K
IC4	3L	D2	5J
IC5	3L	D12	5L
IC6	3L	D13	5M
IC10	3L	D15	2E
Q5	5J	D16	3M
Q6	6J	D19	5L
Q7	6K	D20	5L



PC BOARD TK-290-11B

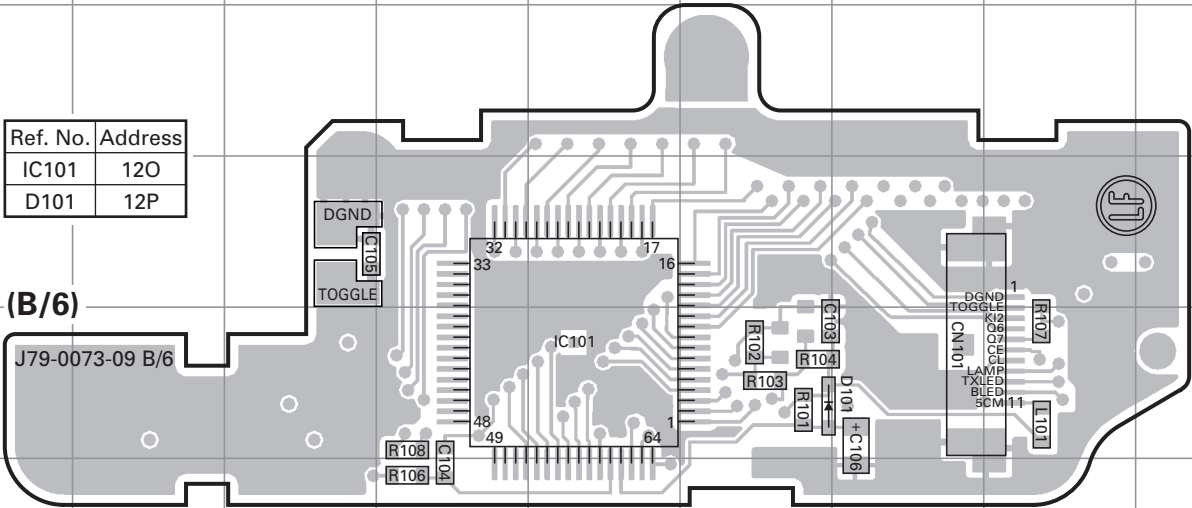
CONTROL UNIT (X53-3932-71) (A/6) Foil side view (J79-0073-09)



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IC101	12O
D101	12P

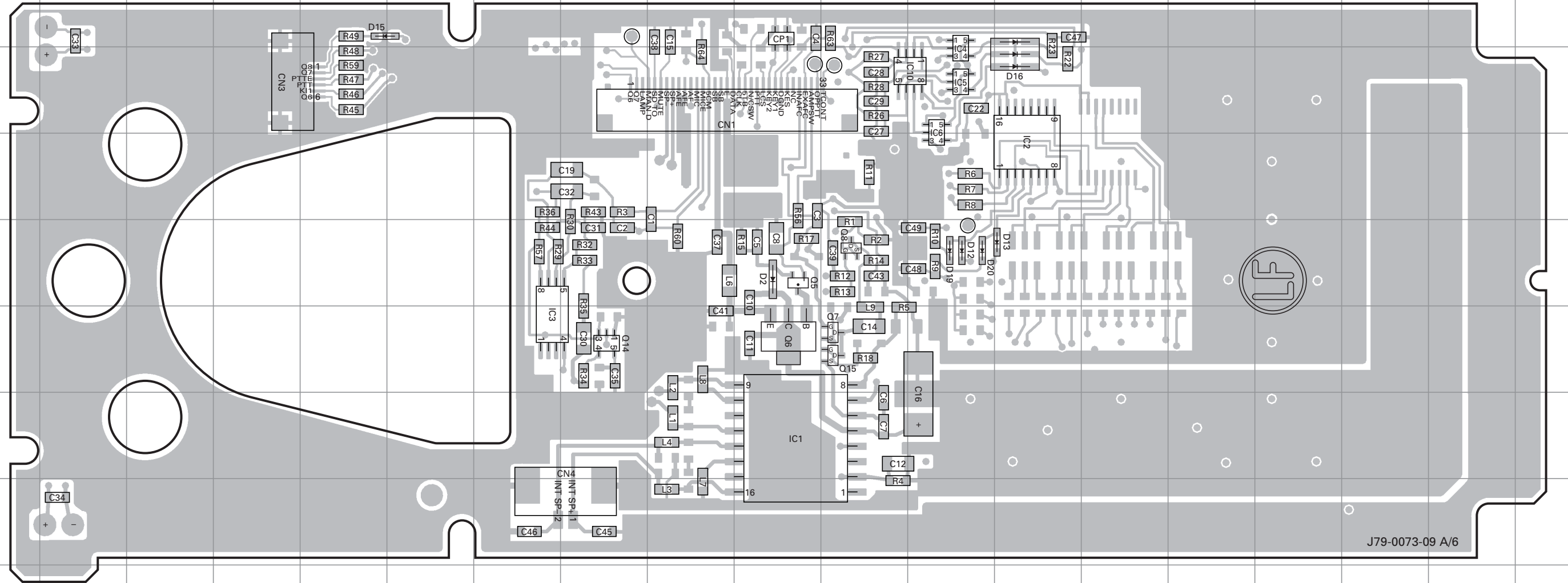
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J79-0073-09 B/6



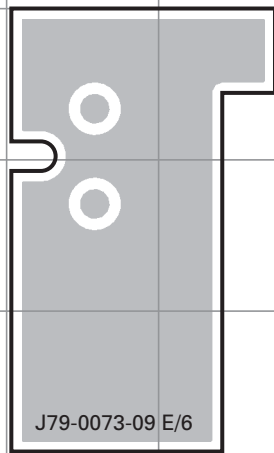
CONTROL UNIT (X53-3932-71) (A/6) Foil side view (J79-0073-09)

CONTROL UNIT (X53-3932-71) (A/6) Foil side view (J79-0073-09)

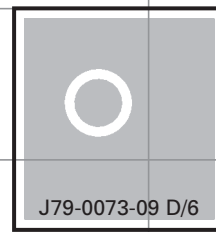


Ref. No.	Address	Ref. No.	Address
IC1	7J	Q8	5K
IC2	4M	Q14	6H
IC3	6G	Q15	6K
IC4	3L	D2	5J
IC5	3L	D12	5L
IC6	3L	D13	5M
IC10	3L	D15	2E
Q5	5J	D16	3M
Q6	6J	D19	5L
Q7	6K	D20	5L

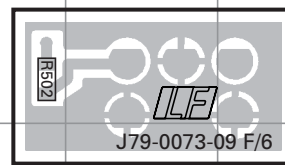
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(D/6)

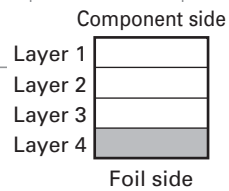
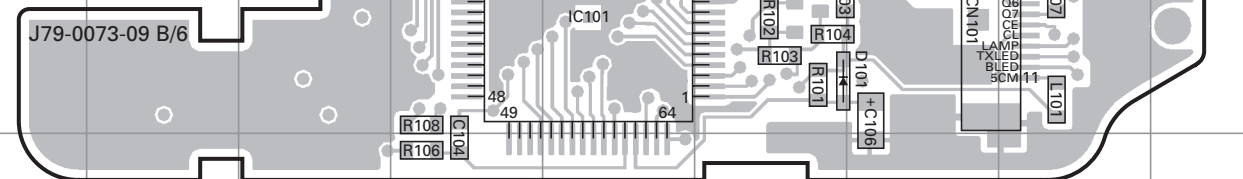


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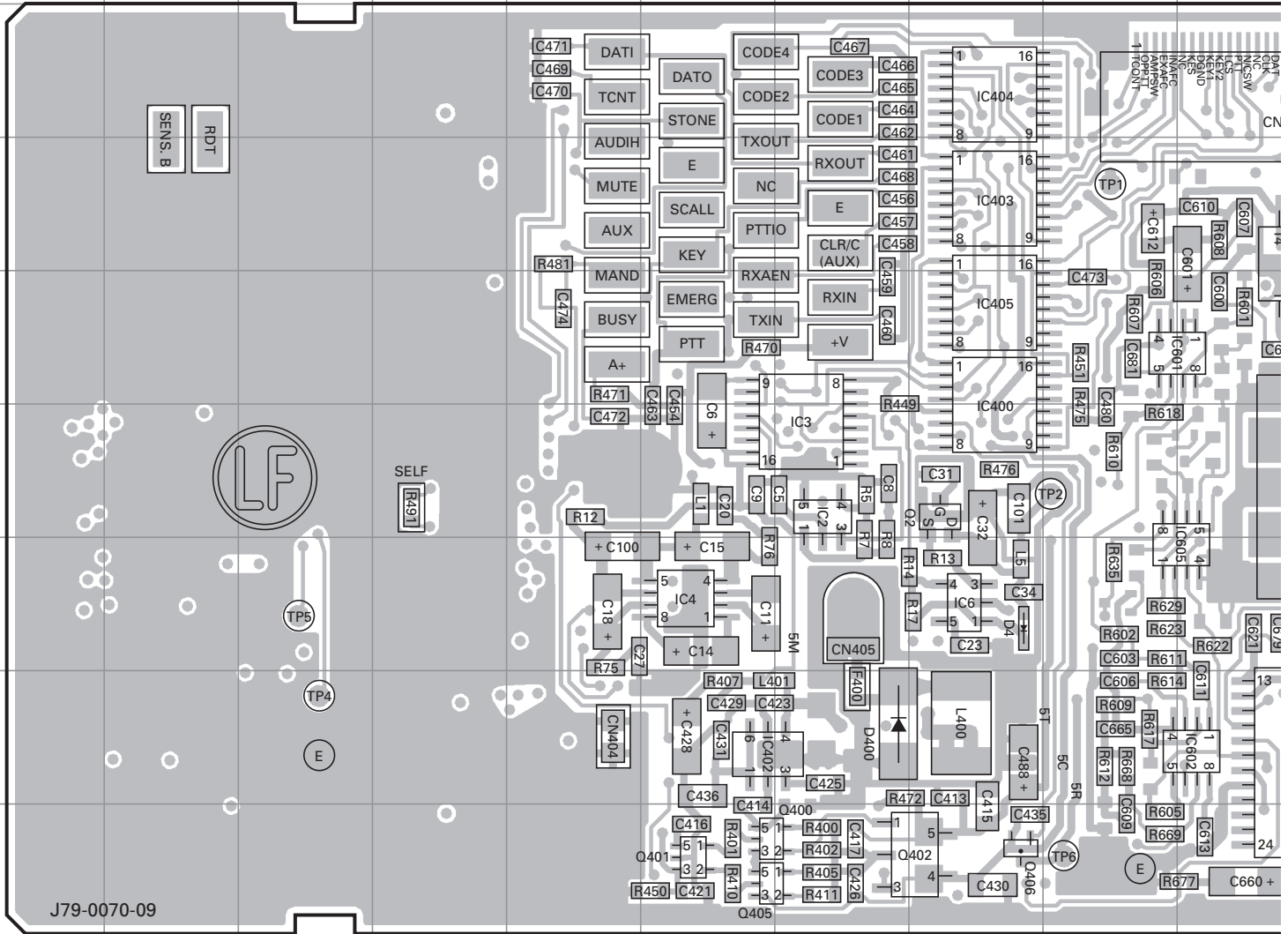
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(B/6)



TK-290-11B PC BOARD

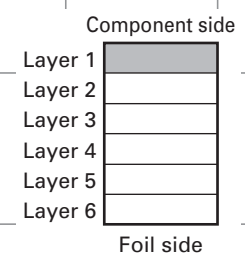
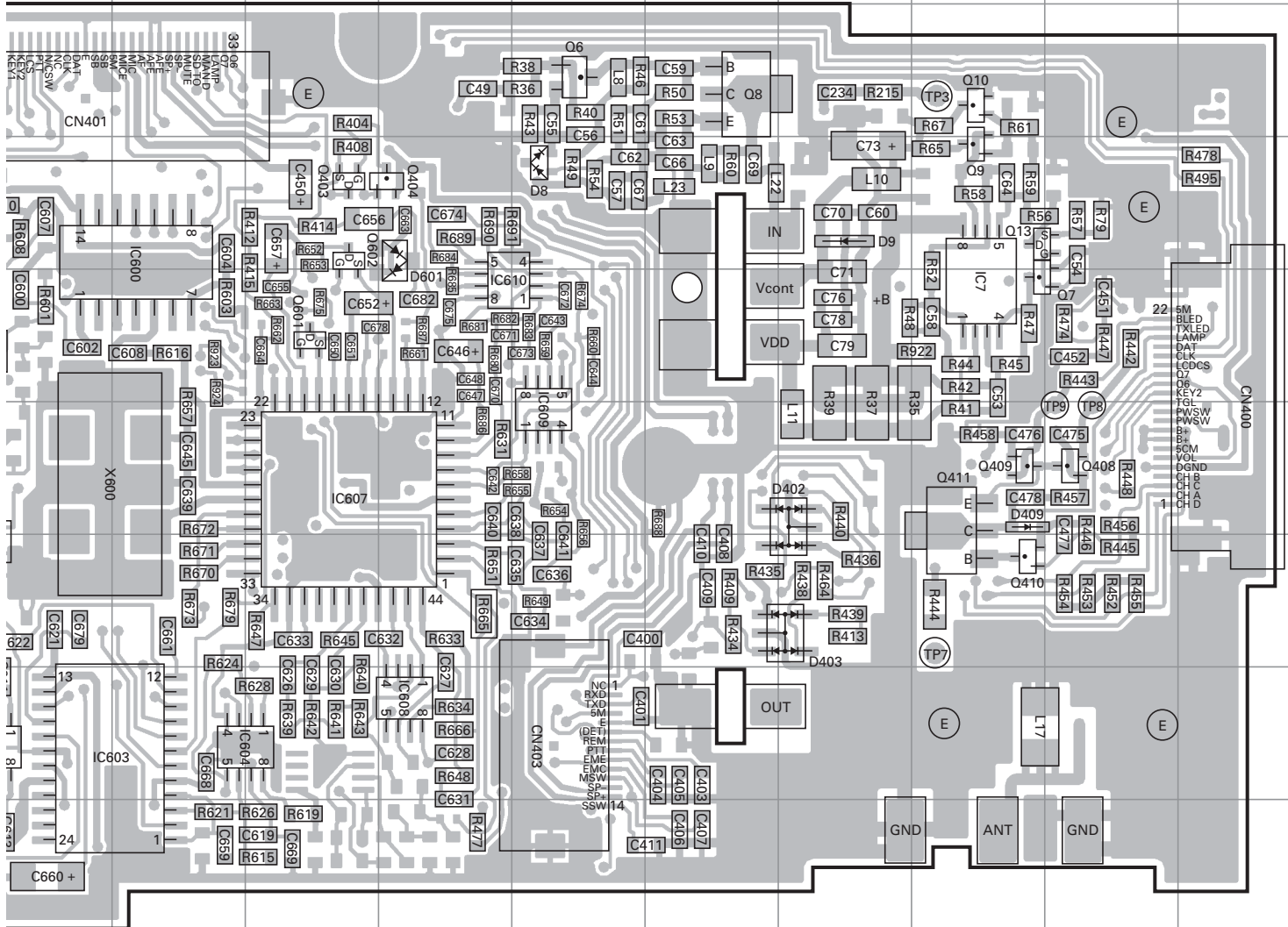
TX-RX UNIT (X57-6132-70) Component side view (J79-0070-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC2	6G	IC600	4K	Q2	6H	Q403	4L	D4	7H
IC3	6G	IC601	5I	Q6	3N	Q404	4M	D8	4N
IC4	7F	IC602	8J	Q7	5Q	Q405	9F	D9	4P
IC6	7H	IC603	8J	Q8	3O	Q406	9H	D400	8G
IC7	5Q	IC604	8K	Q9	4Q	Q408	6R	D402	6P
IC400	6H	IC605	7J	Q10	3Q	Q409	6Q	D403	7P
IC402	8F	IC607	6L	Q13	4Q	Q410	7Q	D409	6Q
IC403	4H	IC608	8M	Q400	9F	Q411	6Q	D601	4M
IC404	3H	IC609	6N	Q401	9F	Q601	5L		
IC405	5H	IC610	5M	Q402	9H	Q602	4L		

PC BOARD TK-290-11B

TX-RX UNIT (X57-6132-70) Component side view (J79-0070-09)

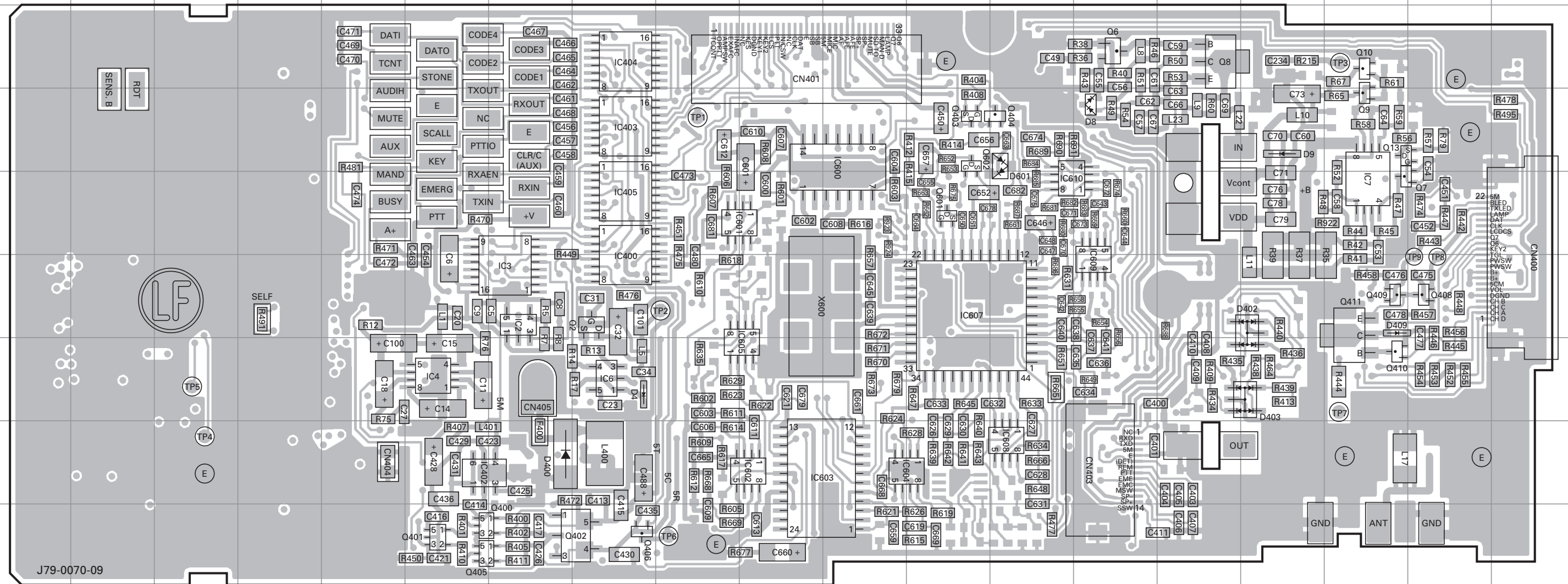


TK-290-11B PC BOARD

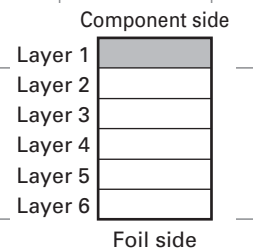
PC BOARD TK-290-11B

TX-RX UNIT (X57-6132-70) Component side view (J79-0070-09)

TX-RX UNIT (X57-6132-70) Component side view (J79-0070-09)

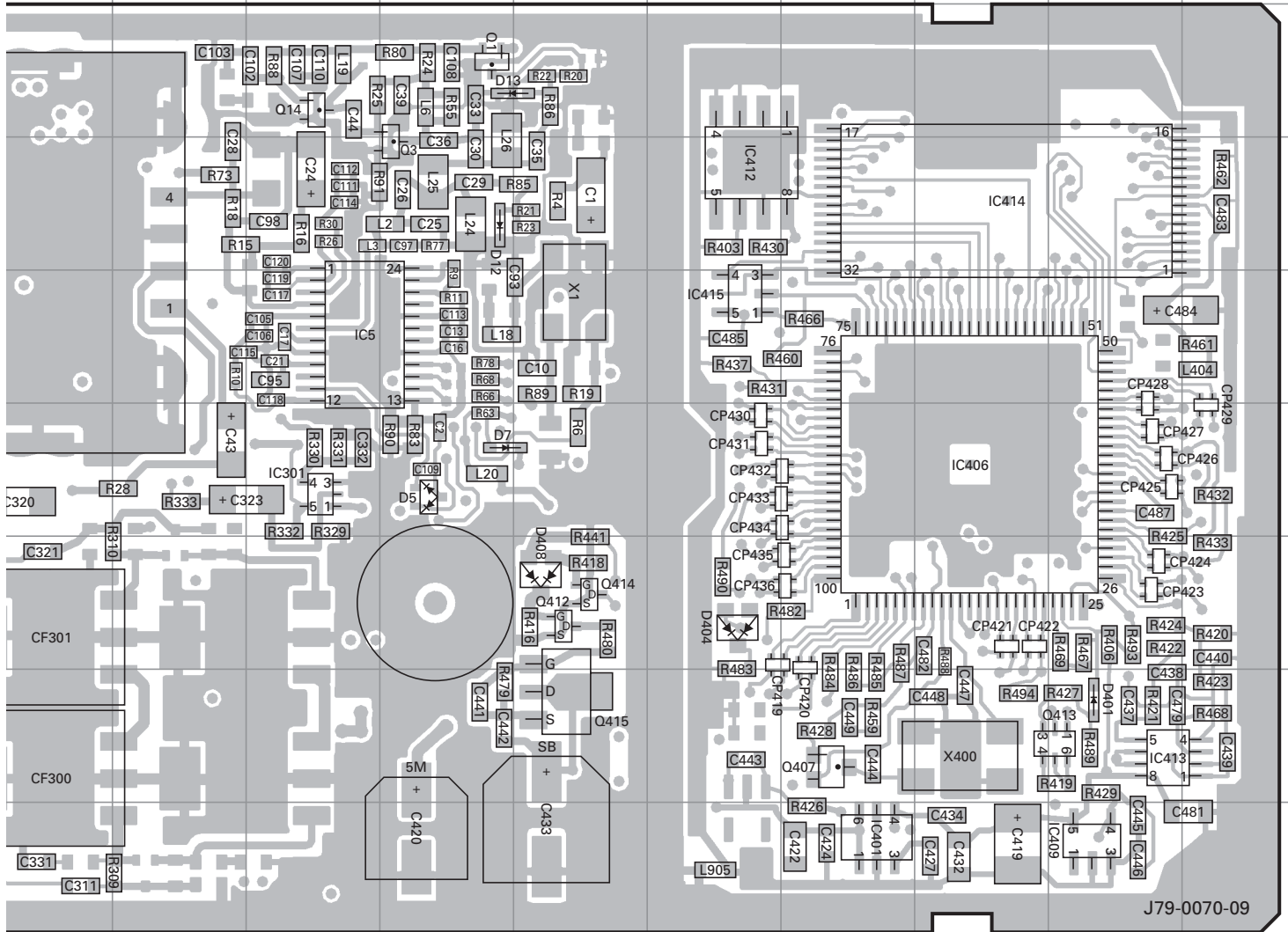


Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
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IC3	6G	IC601	5I	Q6	3N	Q404	4M	D8	4N
IC4	7F	IC602	8J	Q7	5Q	Q405	9F	D9	4P
IC6	7H	IC603	8J	Q8	3O	Q406	9H	D400	8G
IC7	5Q	IC604	8K	Q9	4Q	Q408	6R	D402	6P
IC400	6H	IC605	7J	Q10	3Q	Q409	6Q	D403	7P
IC402	8F	IC607	6L	Q13	4Q	Q410	7Q	D409	6Q
IC403	4H	IC608	8M	Q400	9F	Q411	6Q	D601	4M
IC404	3H	IC609	6N	Q401	9F	Q601	5L		
IC405	5H	IC610	5M	Q402	9H	Q602	4L		

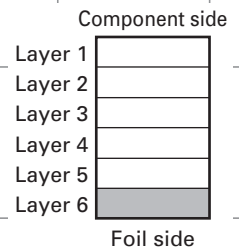


PC BOARD TK-290-11B

TX-RX UNIT (X57-6132-70) Foil side view (J79-0070-09)



J79-0070-09

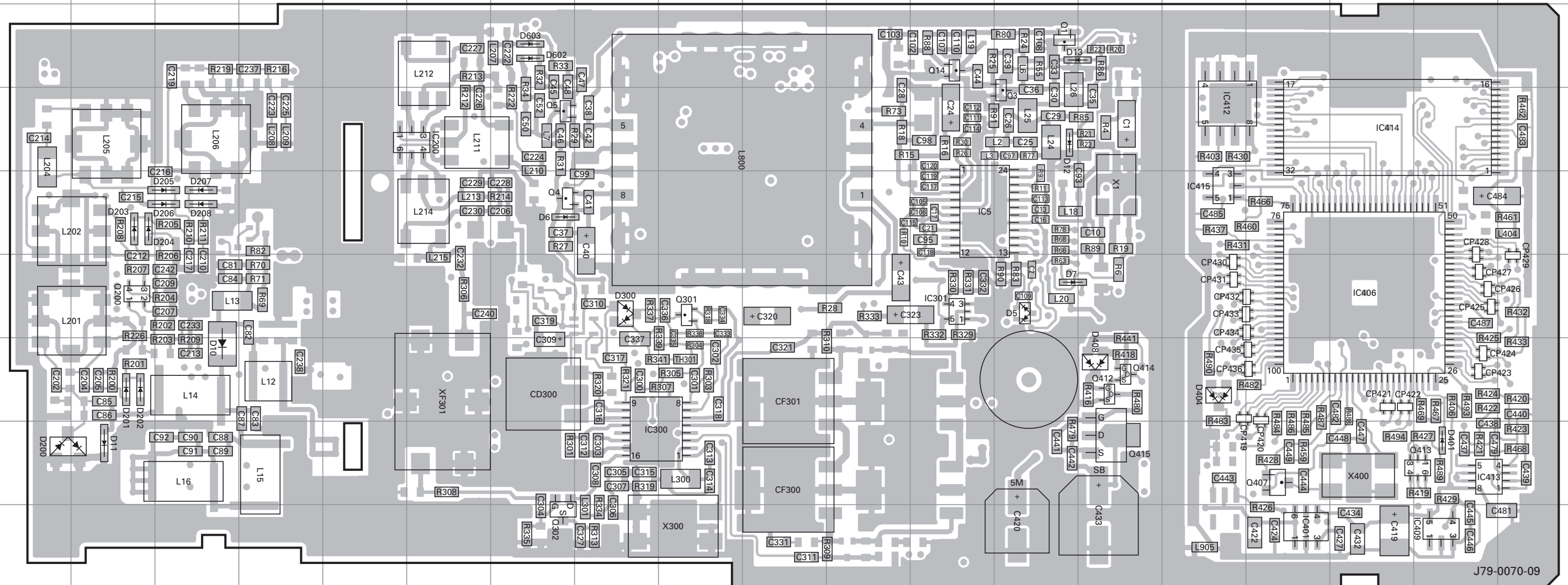


TK-290-11B PC BOARD

PC BOARD TK-290-11B

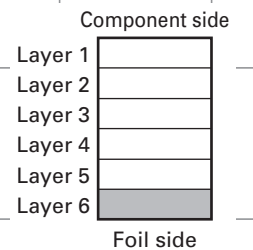
TX-RX UNIT (X57-6132-70) Foil side view (J79-0070-09)

TX-RX UNIT (X57-6132-70) Foil side view (J79-0070-09)



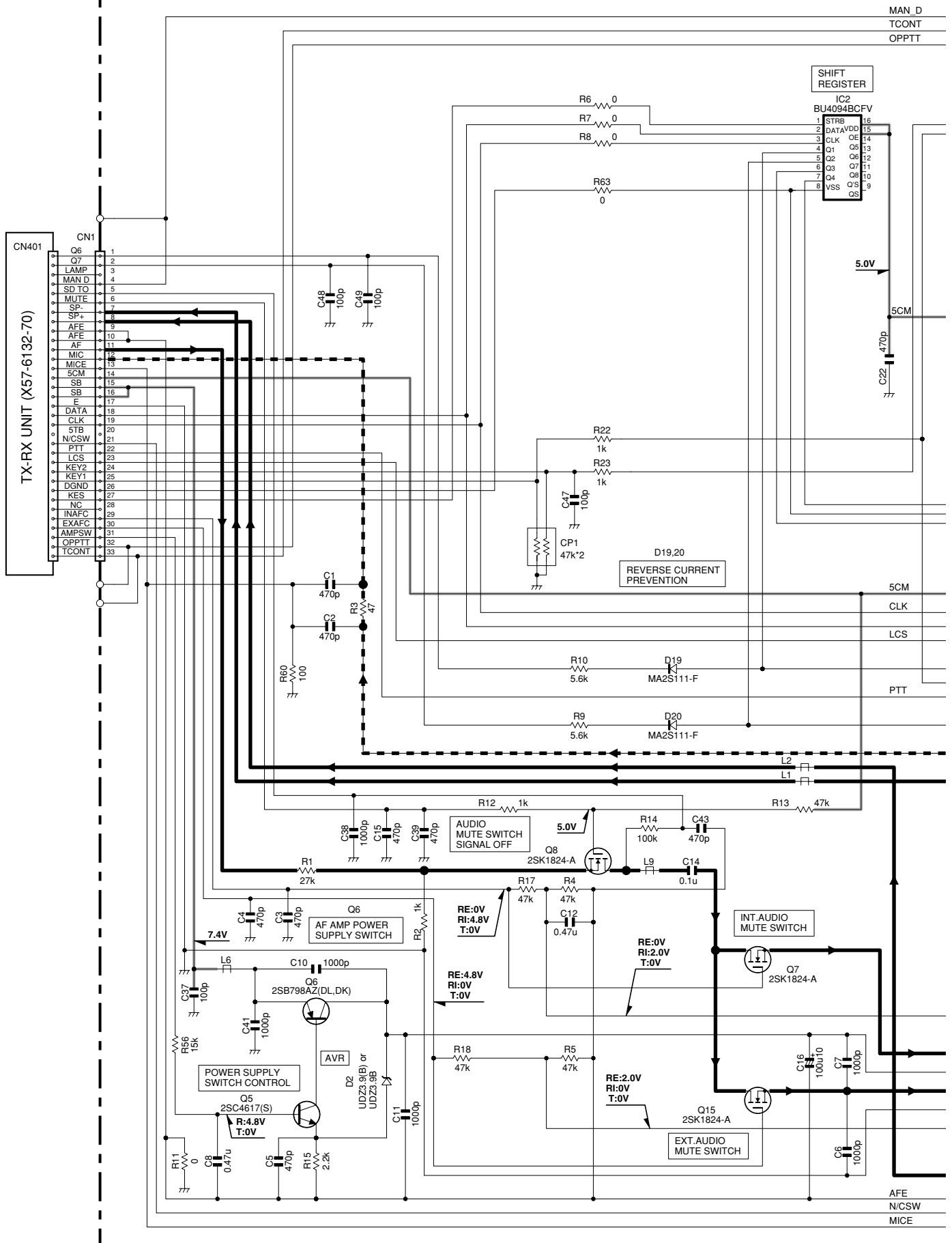
J79-0070-09

Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC5	5L	IC415	5O	Q412	7N	D13	3M	D300	6H
IC200	4F	Q1	3M	Q413	8R	D200	8A	D401	8R
IC300	8H	Q3	4M	Q414	7N	D201	7B	D404	7O
IC301	6L	Q4	5G	Q415	8N	D202	7B	D408	7N
IC401	9P	Q5	4G	D5	6M	D203	5B	D602	3G
IC406	6Q	Q14	3L	D6	5G	D204	5B	D603	3G
IC409	9R	Q200	6B	D7	6M	D205	5C		
IC412	4O	Q301	6I	D10	7C	D206	5C		
IC413	8R	Q302	9G	D11	8B	D207	5C		
IC414	4Q	Q407	8P	D12	4M	D208	5C		



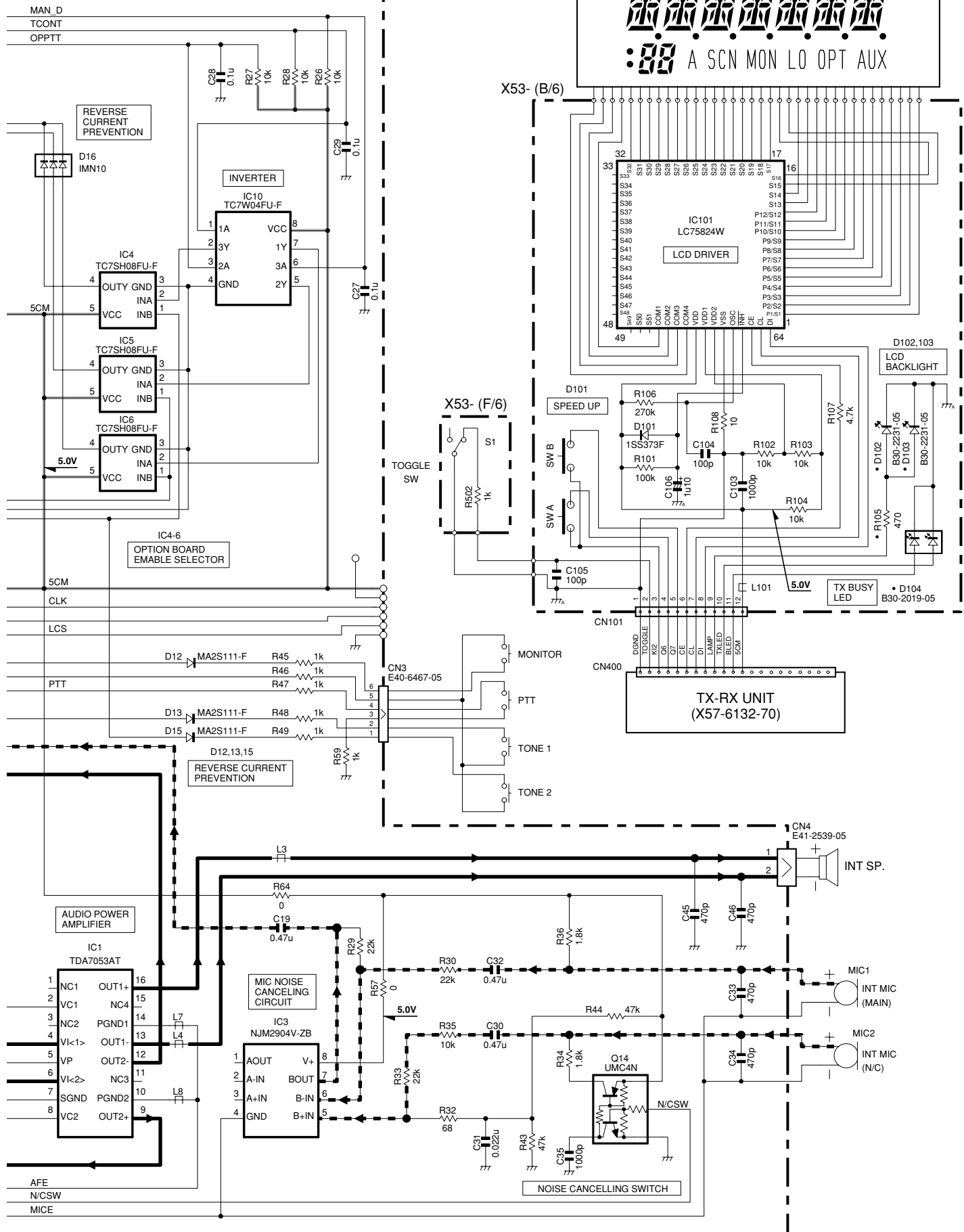
TK-290-11B SCHEMATIC DIAGRAM

CONTROL UNIT (X53-3932-71) (A/6)



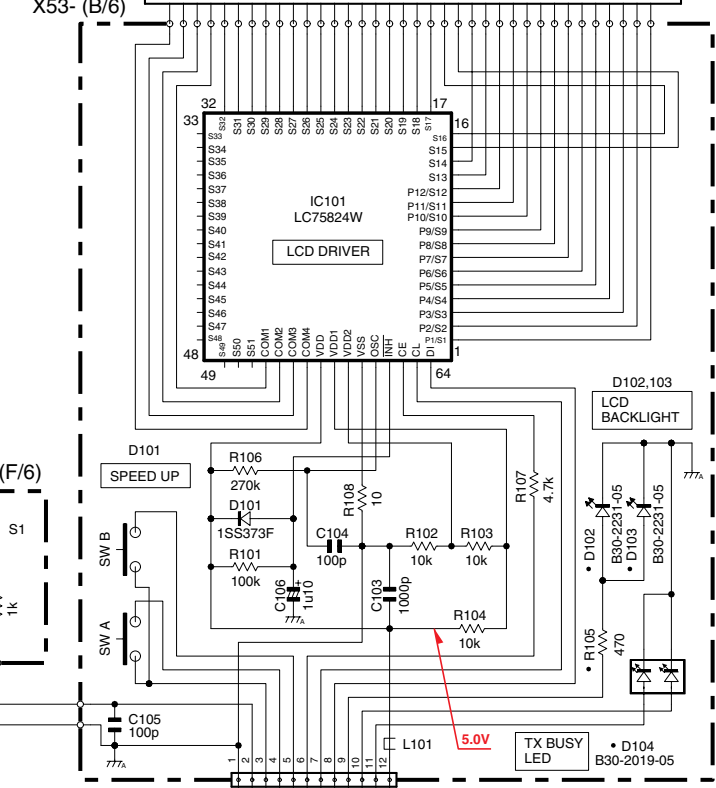
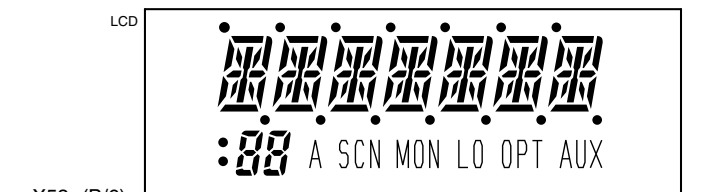
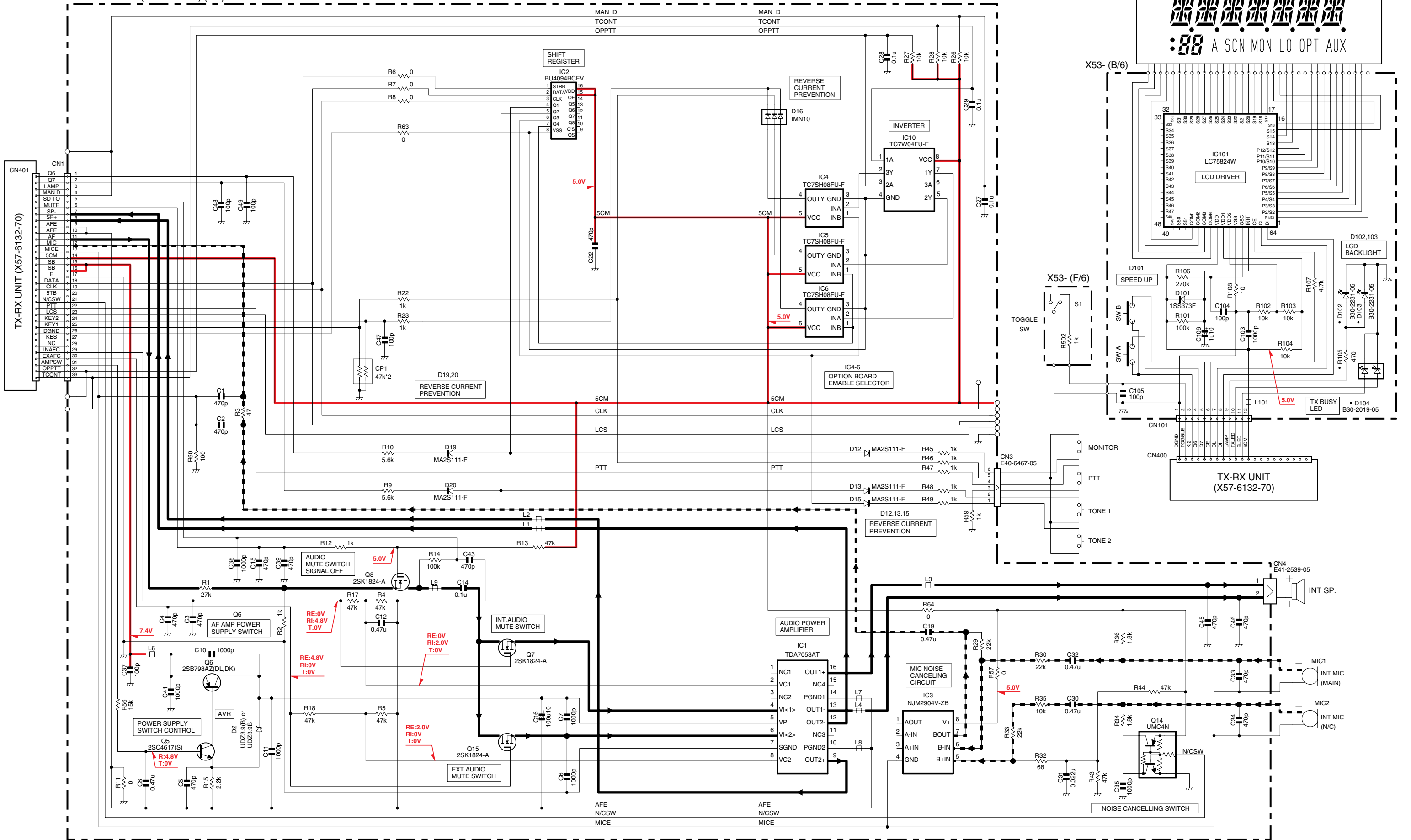
SCHEMATIC DIAGRAM TK-290-11B

CONTROL UNIT (X53-3932-71) (A/6)

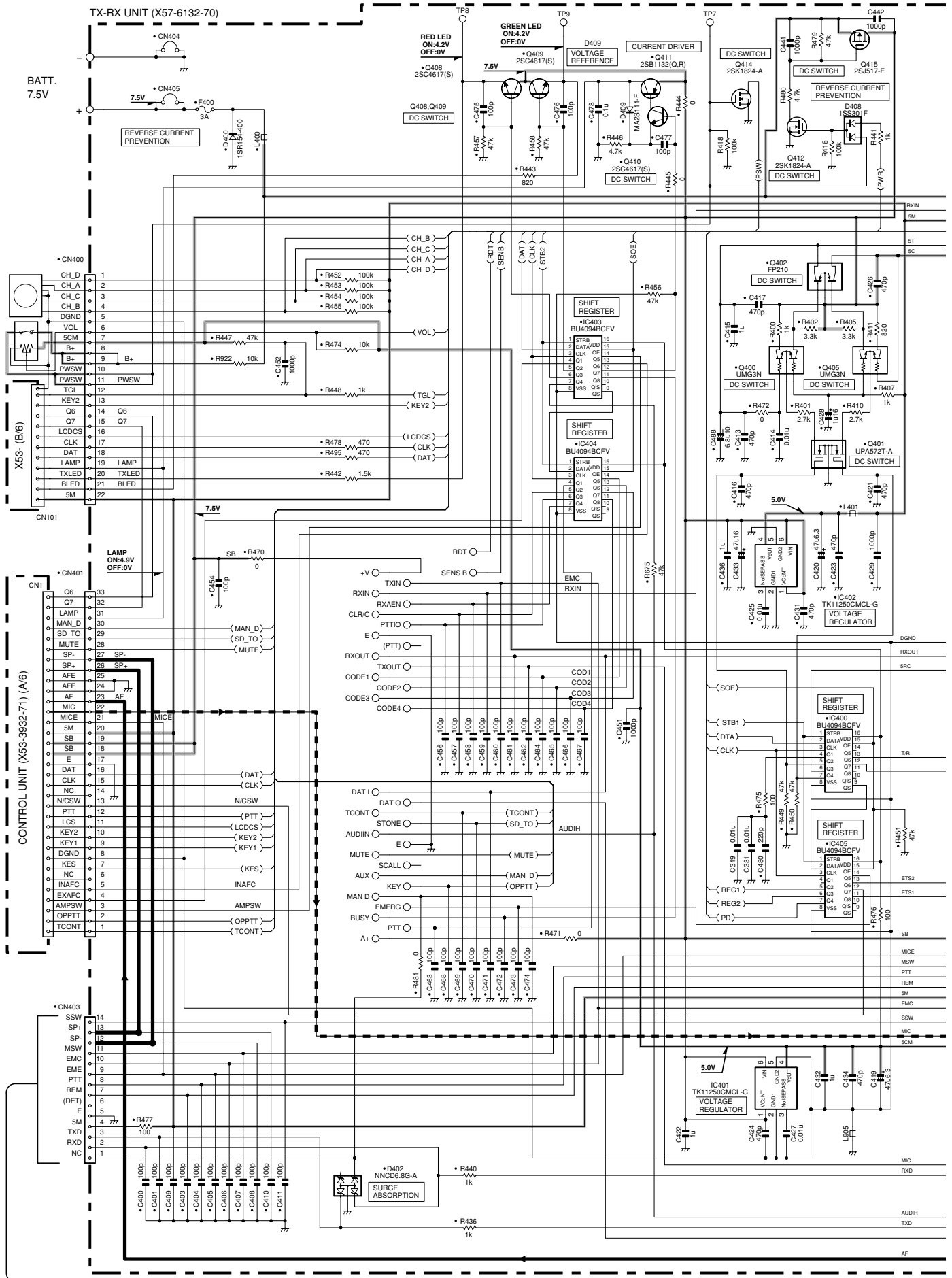


Note : The components marked with a dot (•) are parts of layer 1.

CONTROL UNIT (X53-3932-71) (A/6)

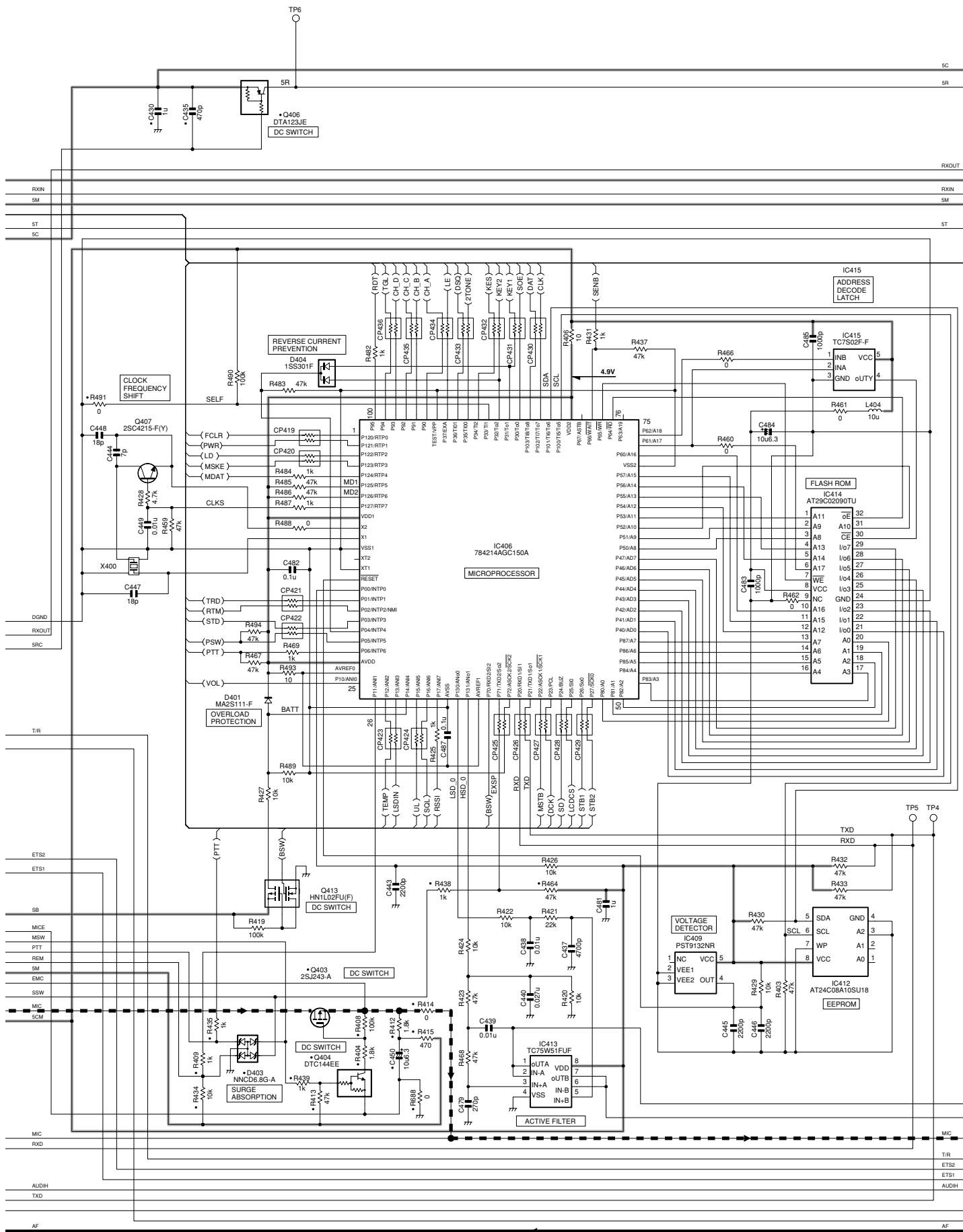


TK-290-11B SCHEMATIC DIAGRAM



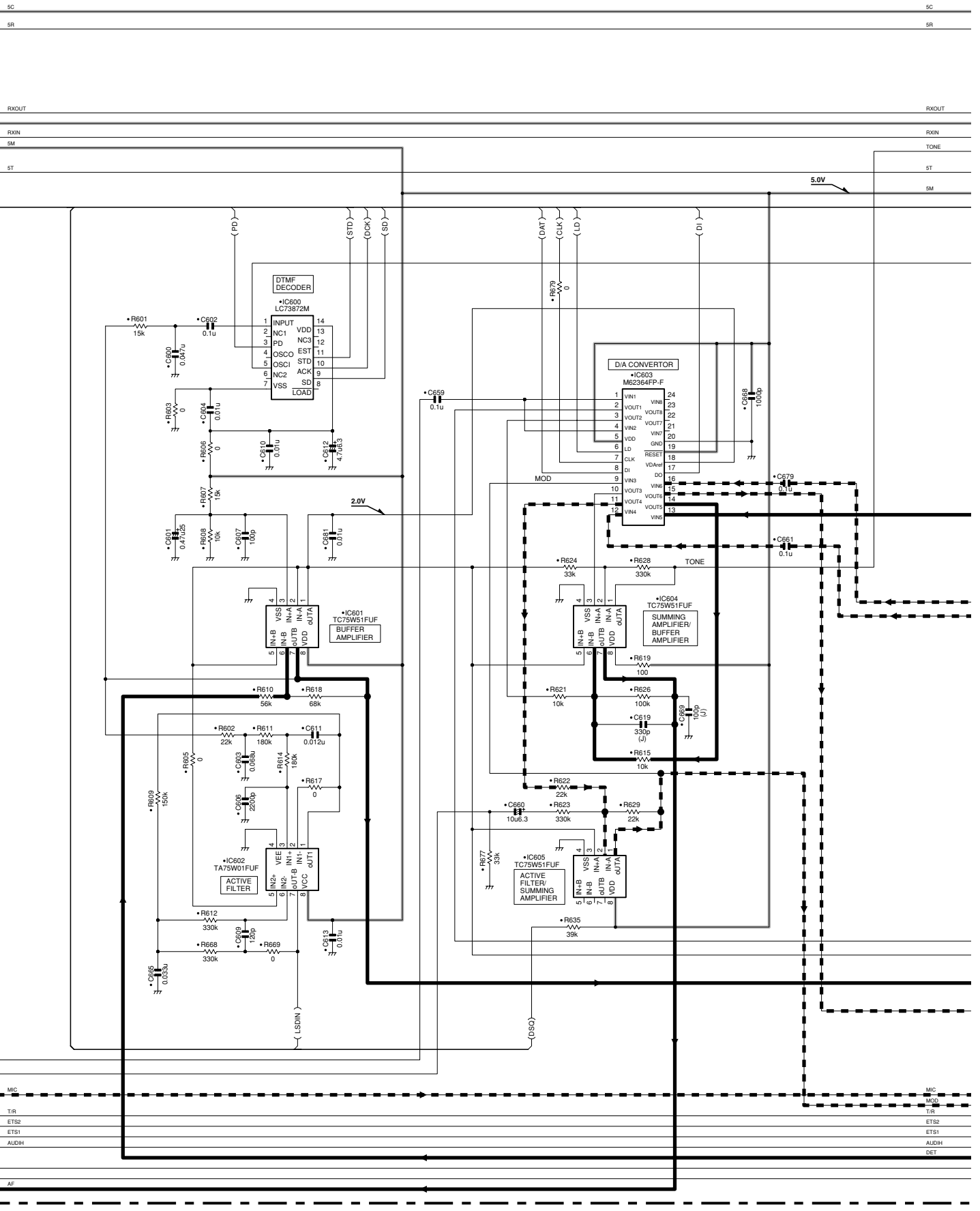
SCHEMATIC DIAGRAM TK-290-11B

TX-RX UNIT (X57-6132-70)



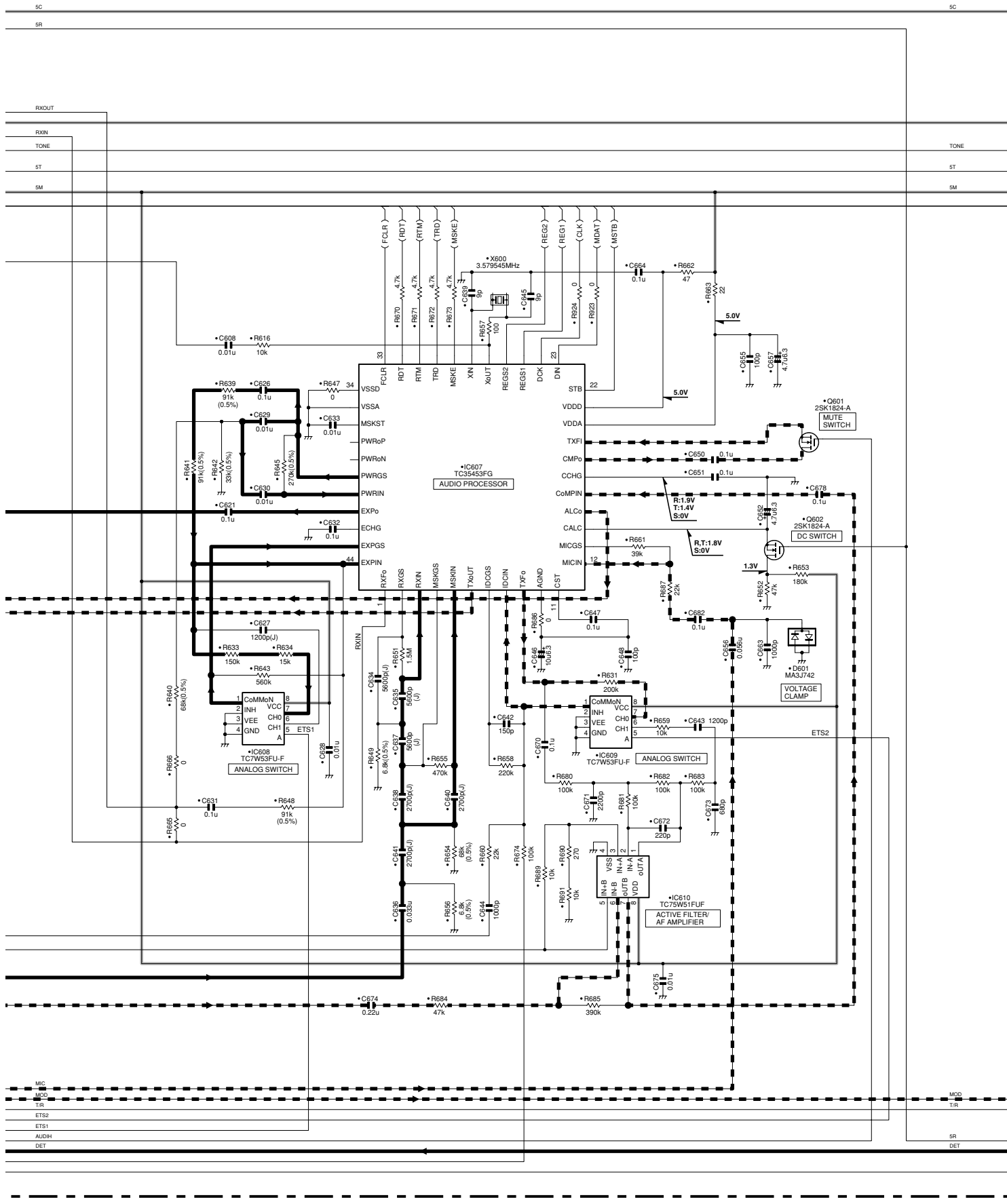
TK-290-11B SCHEMATIC DIAGRAM

TX-RX UNIT (X57-6132-70)



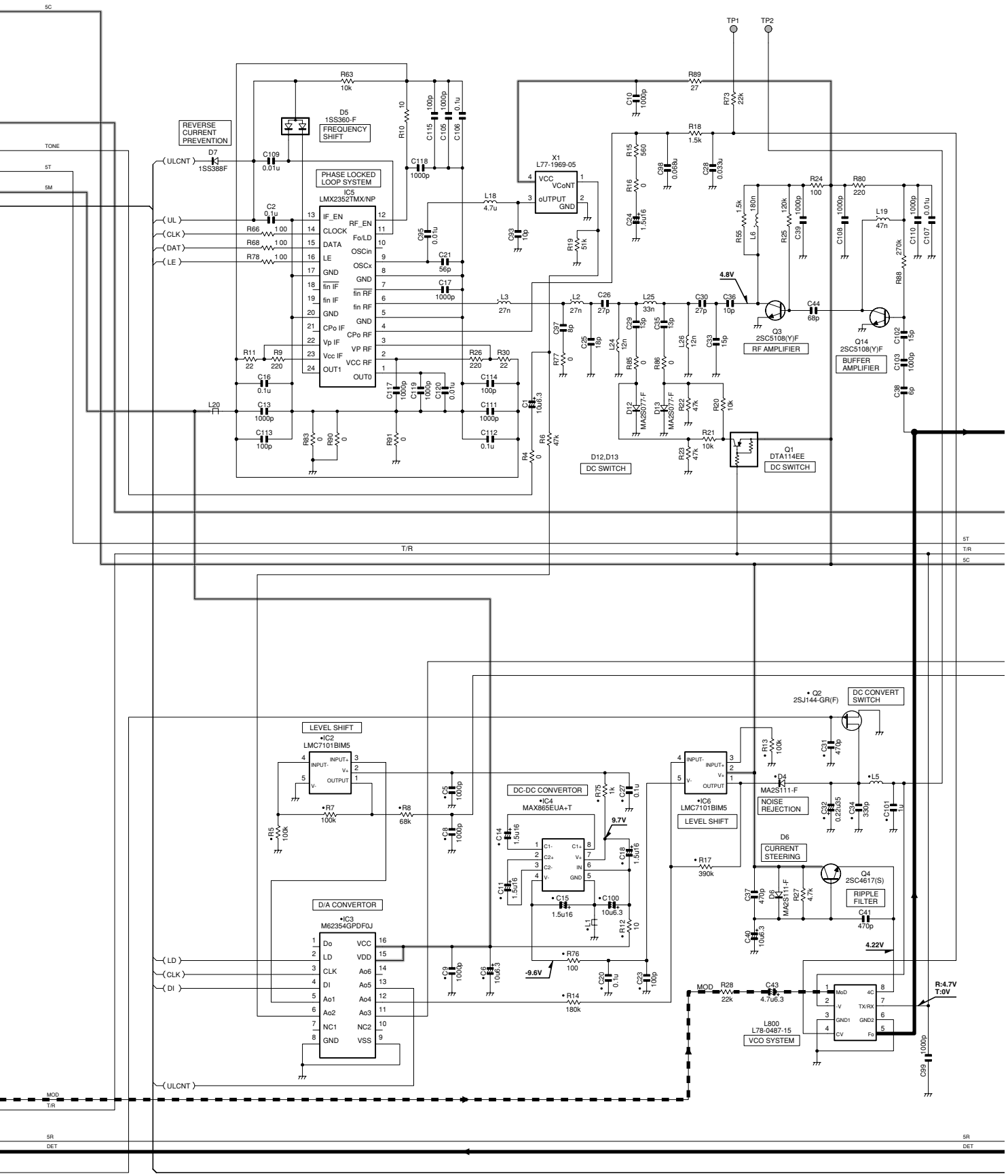
SCHEMATIC DIAGRAM TK-290-11B

TX-RX UNIT (X57-6132-70)



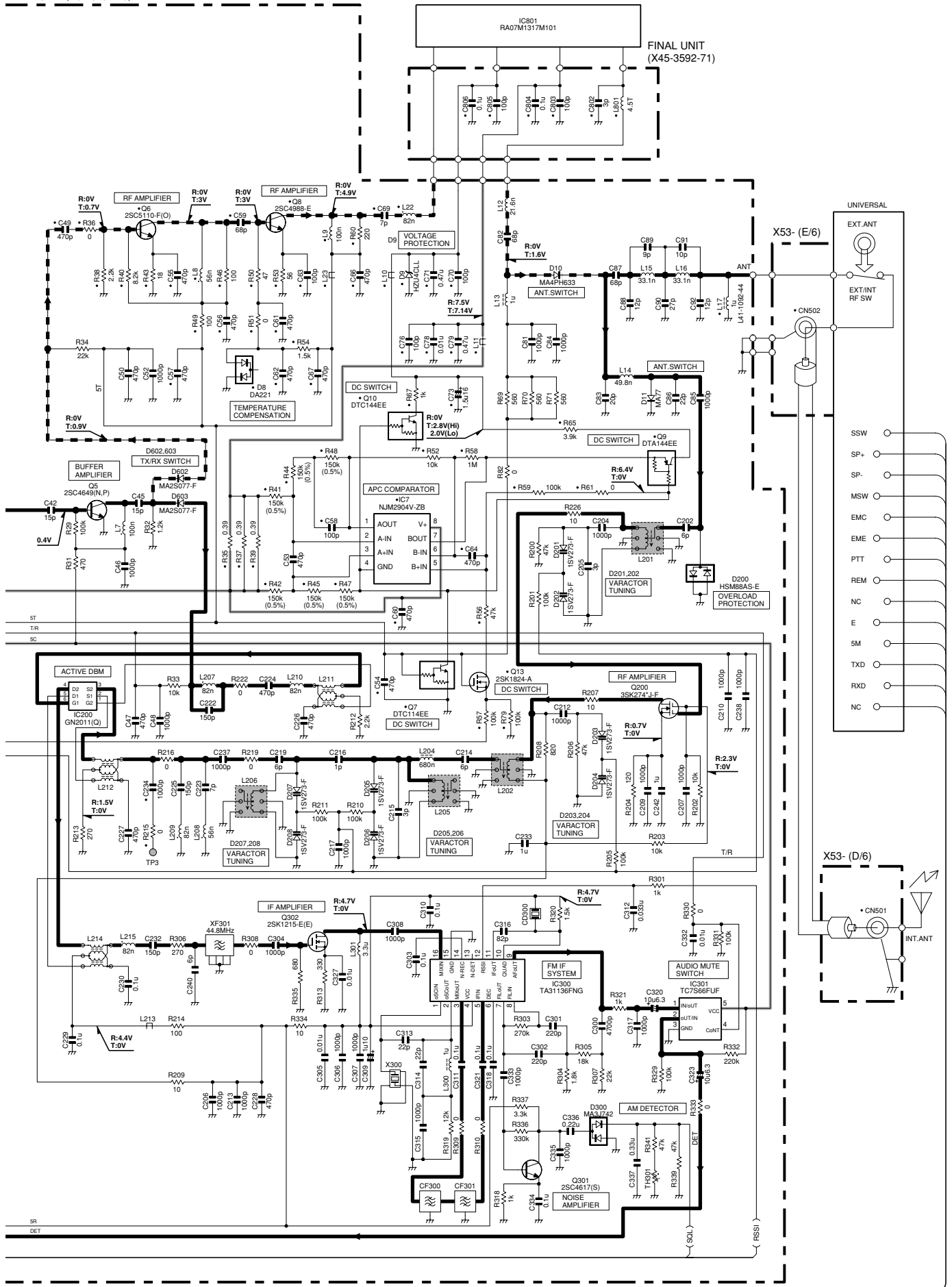
TK-290-11B SCHEMATIC DIAGRAM

TX-RX UNIT (X57-6132-70)

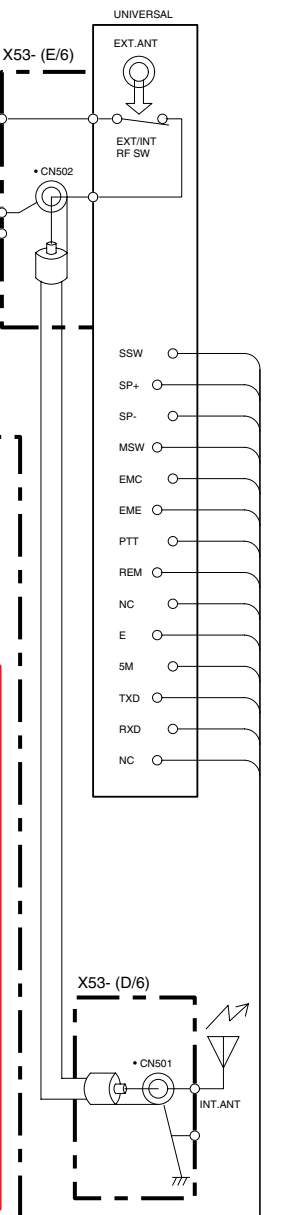
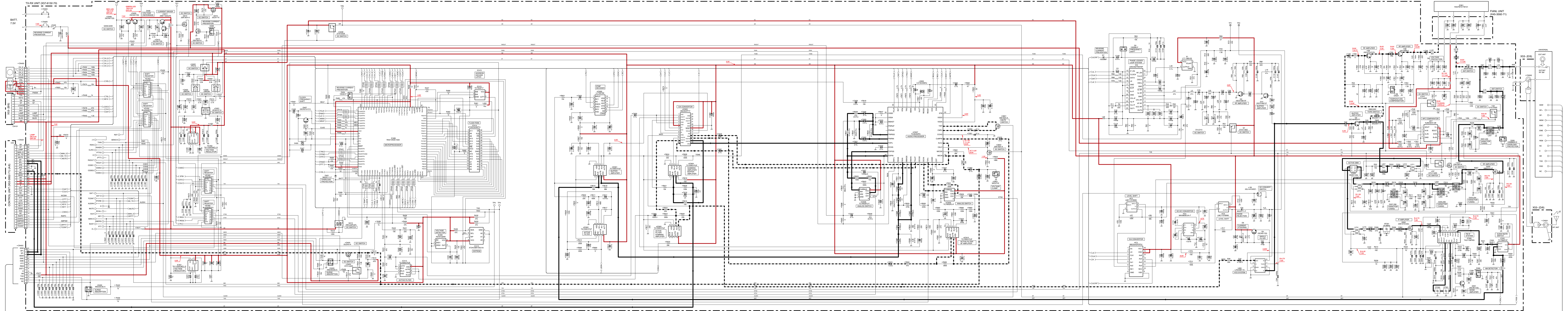


SCHEMATIC DIAGRAM TK-290-11B

TX-RX UNIT (X57-6132-70)

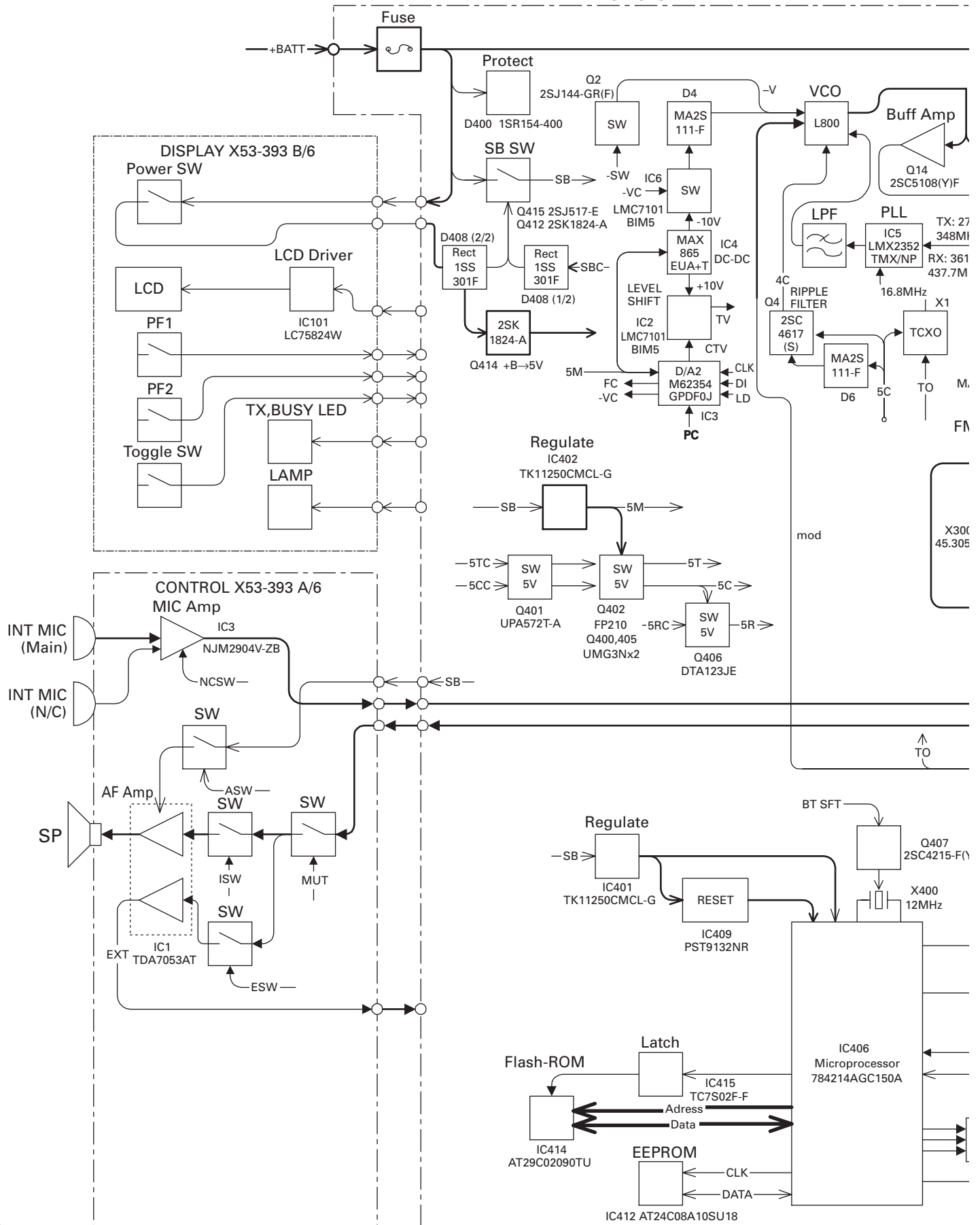


Note : The components marked with a dot (•) are parts of layer 1.

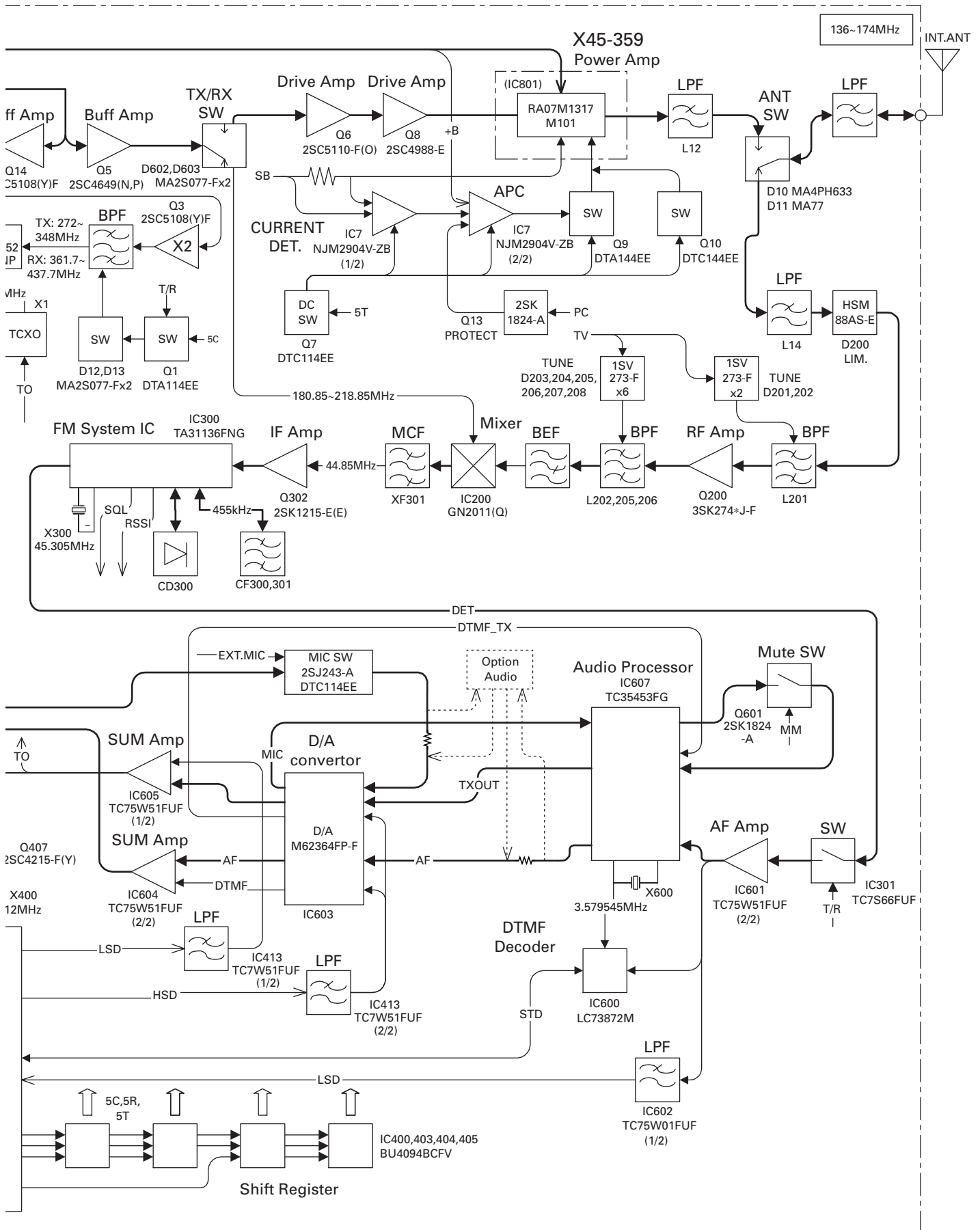


BLOCK DIAGRAM

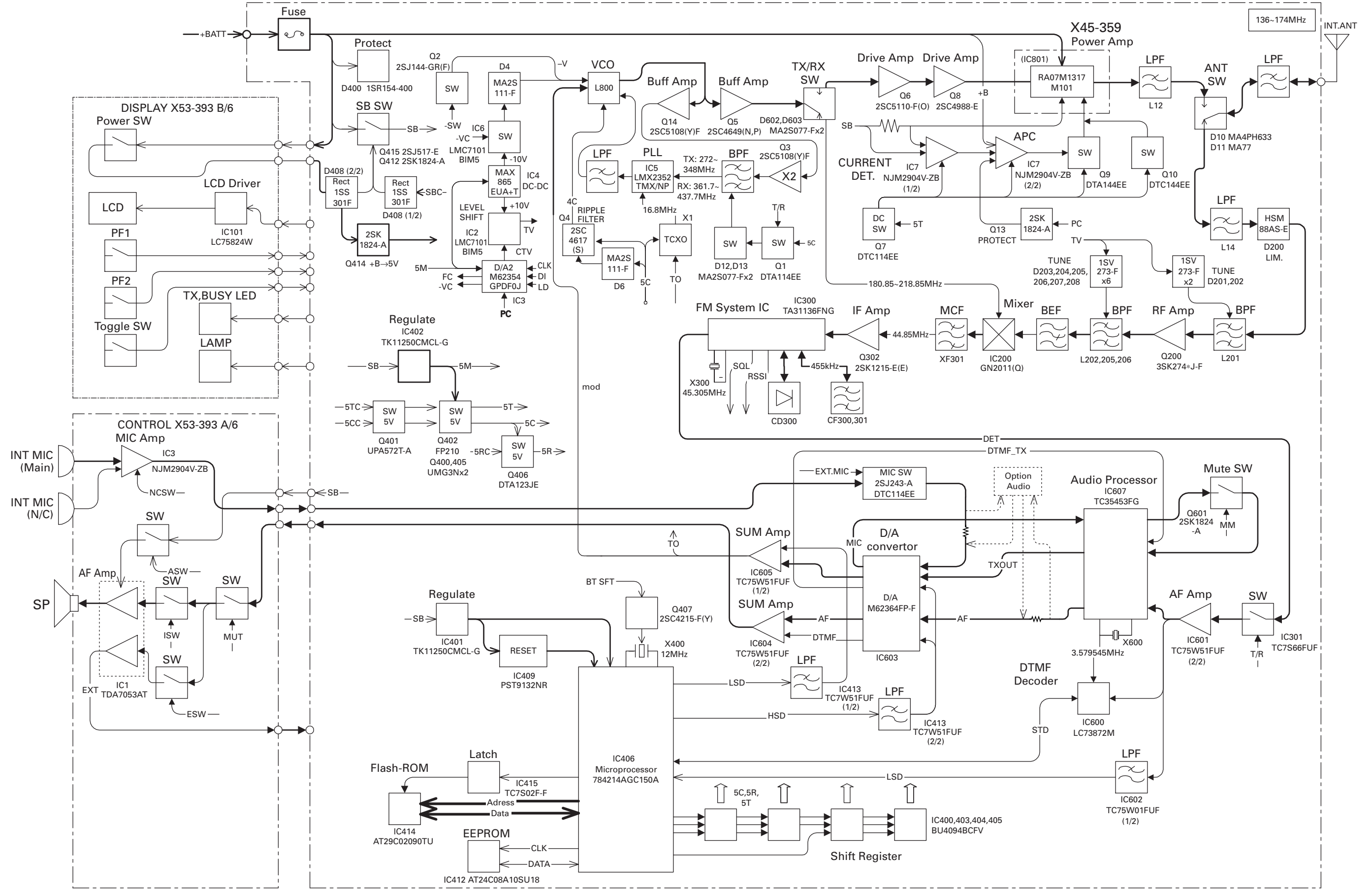
RF X57-613



BLOCK DIAGRAM

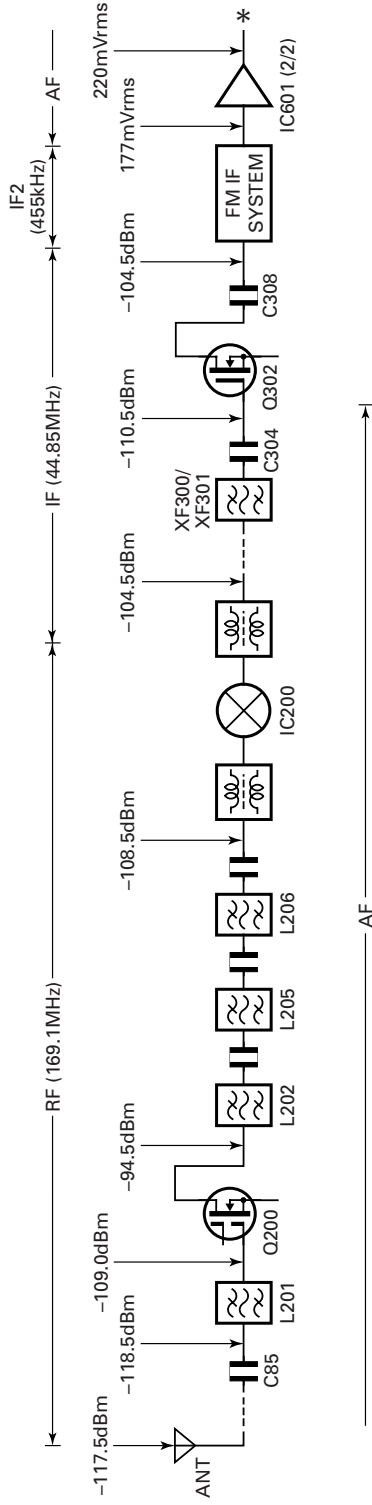


RF X57-613



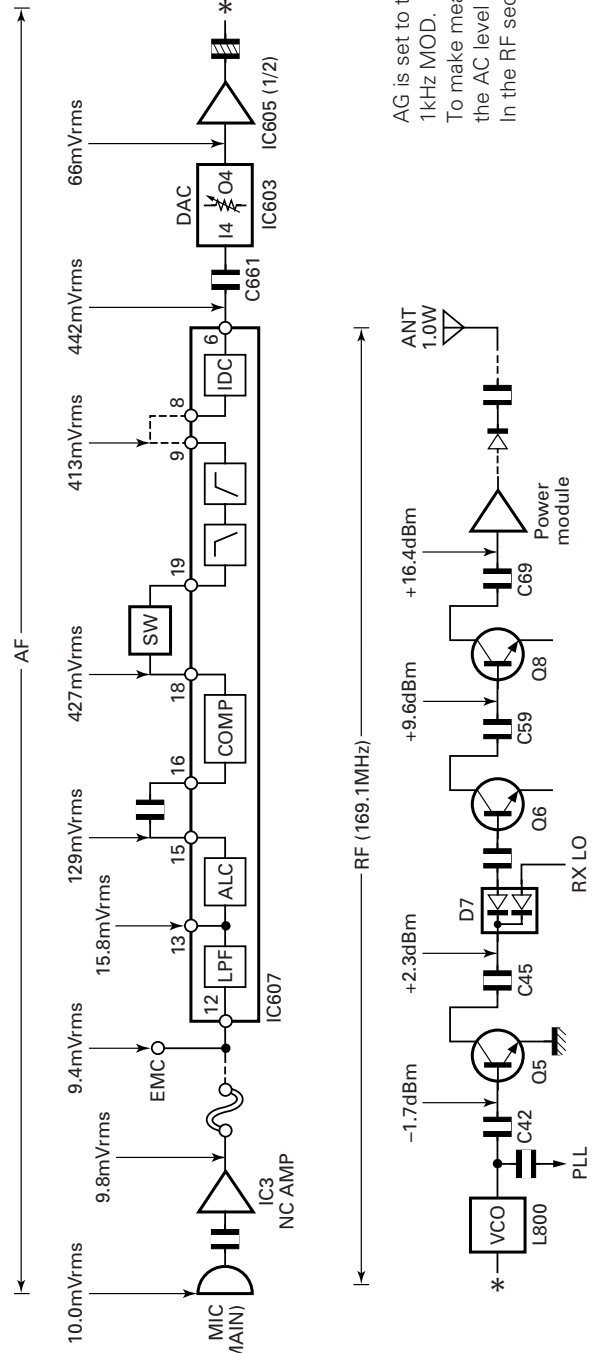
LEVEL DIAGRAM

Receiver Section



To make measurements in the AF section, connect the AC level meter. (ANT input : -53dBm, 1kHz FM, 2.4kHz DEV.)
In the RF section, use a 1000pF coupling capacitor. (The display shows the SSG input value required to obtain 12dB SINAD.)

Transmitter Section



AG is set to the MIC input becomes 2.4kHz DEV. at 1kHz MOD.
To make measurements in the AF section, connect the AC level meter.
In the RF section, use a 1000pF coupling capacitor.

TECHNICAL DATA

Output power	1W
Multiple channel mode	Channel 1~92 and 101~125, (TR-BOS)
Few channel mode	Programmable channels between 1 and 117
Weight	600g (including battery, antenna and belt clip)
ICT approval number	D810 143L
Battery life	More than 10 hours (5-5-90)
Protection rating	IP54
Dimensions (H x W x D)	155 x 58 x 38 mm
BOS approval	FuG 11b 06/99

All technical data can be used for orientation purposes only.

TK-290-11B

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