

REALISTIC[®]

20-146

Service Manual

PRO-2025 16-CHANNEL DIRECT ENTRY PROGRAMMABLE SCANNER

Catalog Number : 20-146

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SPECIFICATIONS

General

Frequency Coverage	: 29 ~ 50 MHz (VHF Low Band) 50 ~ 54 MHz (Ham Radio Band) 136 ~ 144 MHz (Government Band) 144 ~ 148 MHz (Ham Radio Band) 148 ~ 174 MHz (VHF High Band) 406 ~ 450 MHz (Ham Radio/Government Band) 450 ~ 470 MHz (UHF Low Band) 470 ~ 512 MHz (UHF High (TV) Band)
Channels	: 16 Channels (Scan 16 Frequencies at once)
Display	: Channel : 2 Digits LED (Red) Weather : LED (Red) Lock out : LED (Red)
Keys (Program)	: Total 1 set 12 Keys Numeric : "0" to "9" Enter : "E" Decimal : "."
(Operation)	: Total 6 Keys Scan : Starts scan. Manual : Direct channel access Lockout : Channel skip Review : Indicates frequencies of channel memory. Weather : (WX) Automatically scans all national weather service channels. Priority : Samples a designated frequency on CH1, every 2 seconds.
Controls/Switches	: Volume Control with power ON/OFF switch, Squelch Control.
External Jacks	: ANT. Jack Car ANT. Type EXT SP Jack : 3.5 ϕ IMP 4-ohm DC Power Jack : 5.5 ϕ
Speaker	: 4-ohm 2-watt
Power requirements	: 13.8 V DC ($\pm 10\%$)
Operating Temperature	: -20.2°F (-29°C) ~ 140°F (60°C)
Size (mm)	: W: 5-1/2" (140 mm) \times H: 1-3/4"(45 mm) \times D: 6-7/8"(175 mm)
Weight	: 1 lb. 12 ozs. (800 g)

Measurement Conditions

Power Source	: 13.8 V DC
Antenna Impedance	: 50-ohm
Test Temperature	: 77°F (25° C)
Modulation Frequency	: 1 kHz
Deviation	: ± 3 kHz dev. (FM)
Mean Signal Input Level	: 0.1 mV
Audio Output Load	: 4-ohm resistive load
Standard Ref. Audio Output	: 500 mW

Item	Unit	Nominal	Limit	
Sensitivity (20 dB S/N)				
VHF Low	30 MHz	μV	0.5	2.0
	40 MHz	μV	0.5	2.0
	50 MHz	μV	0.7	2.0
VHF High	140 MHz	μV	0.8	3.0
	155 MHz	μV	0.8	3.0
	170 MHz	μV	0.8	3.0
UHF	410 MHz	μV	1.0	4.0
	460 MHz	μV	1.0	4.0
	510 MHz	μV	1.0	4.0
Threshold Squelch (Manual)				
VHF Low	at 40 MHz	μV	0.3	0.8
VHF High	at 155 MHz	μV	0.5	1.2
UHF	at 460 MHz	μV	0.5	1.8
Tight Squelch (Manual) S/N				
VHF Low	at 40 MHz	dB	25	20
VHF High	at 155 MHz	dB	25	20
UHF	at 460 MHz	dB	25	20
Tight Squelch (Scan)		μV	3.0	10
Squelch Hysteresis (Tight)		dB	6	-----
Signal to Noise				
VHF Low	at 40 MHz	dB	50	30
VHF High	at 155 MHz	dB	46	30
UHF	at 460 MHz	dB	35	25
Residual Noise		mV	1.0	3
Audio Frequency Response -6 dB				
at 155 MHz	Low	Hz	250	100 ~ 400
	High	Hz	2400	1500 ~ 3000
Audio Output Power				
155 MHz at 10% THD		W	2.0	1.0
at Max. Output		W	2.2	1.5

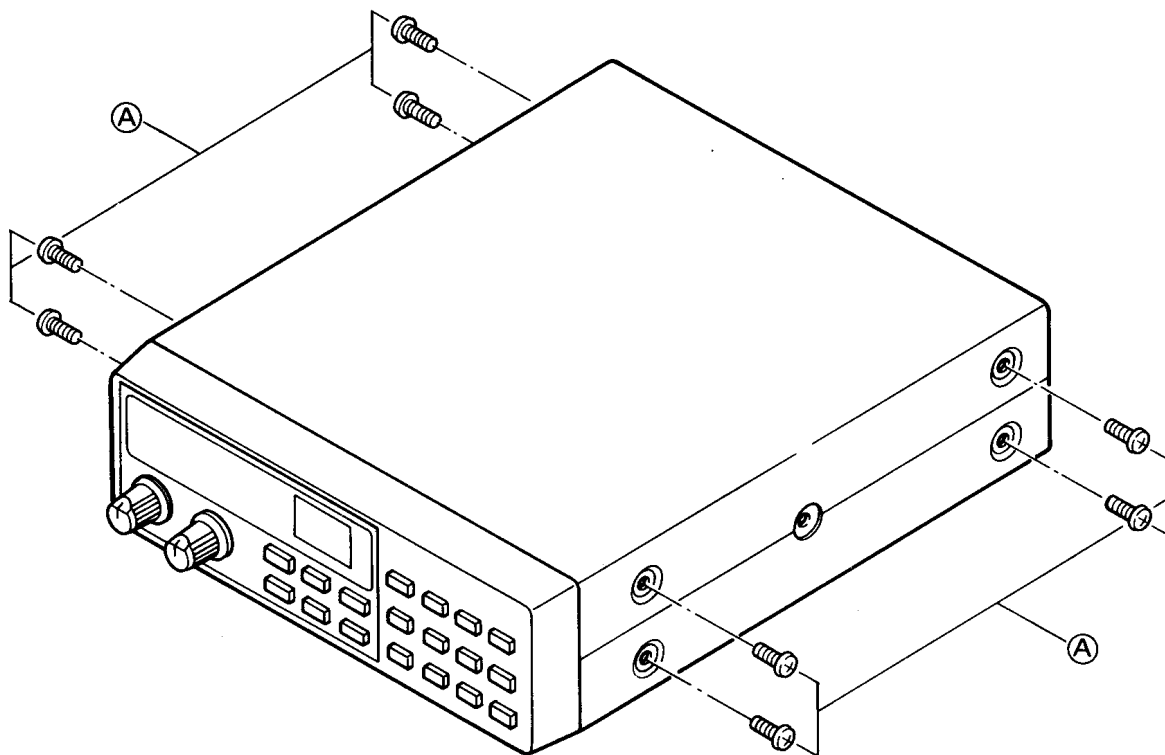
Item	Unit	Nominal	Limit
Distortion at 155 MHz, 1 mV Input	%	1.5	6
Modulation Acceptance at EIA RS-204-A	kHz	± 12	± 5
Selectivity (155 MHz)			
-6 dB	kHz	± 11	± 15
-50 dB	kHz	± 15	± 20
IF Rejection			
at 40 MHz	dB	60	50
at 155 MHz	dB	70	60
at 460 MHz	dB	80	70
Image Rejection (one signal)			
VHF Low	dB	25	10
VHF High	dB	15	5
Spurious Sensitivity (one signal)			
40 MHz (30 MHz ~ 300 MHz)	dB	40	30
155 MHz (70 MHz ~ 700 MHz)	dB	55	45
460 MHz (200 MHz ~ 1000 MHz)	dB	55	30
Except Image Frequency			
Adjust Channel Selectivity (two signal)			
40 MHz ± 25 kHz	dB	50	40
155 MHz ± 25 kHz	dB	45	35
460 MHz ± 25 kHz	dB	40	30
IMD 3 Signal (F1 = F0 ± 50 kHz, F2 = F0 ± 100 kHz)			
F0 = 40 MHz	dB	60	50
F0 = 155 MHz	dB	50	40
F0 = 460 MHz	dB	40	30
Scan Rate	CH/Sec.	12	-----
Scan Delay	Sec.	2	1 ~ 3
Current Drain			
(at full output)	mA DC	580	450 ~ 700
(at Squelched)	mA DC	180	140 ~ 220
(Keep alive)	mA DC	5	10
Memory Back-up Time	Day	-----	1

Note: Nominal specs represent the design specs. All units should be able to approximate these — some will exceed and some may drop slightly below these specs. Limit specs represent the absolute worst condition that still might be considered acceptable; in no case should a unit fail to meet limit specs.

DISASSEMBLY INSTRUCTIONS

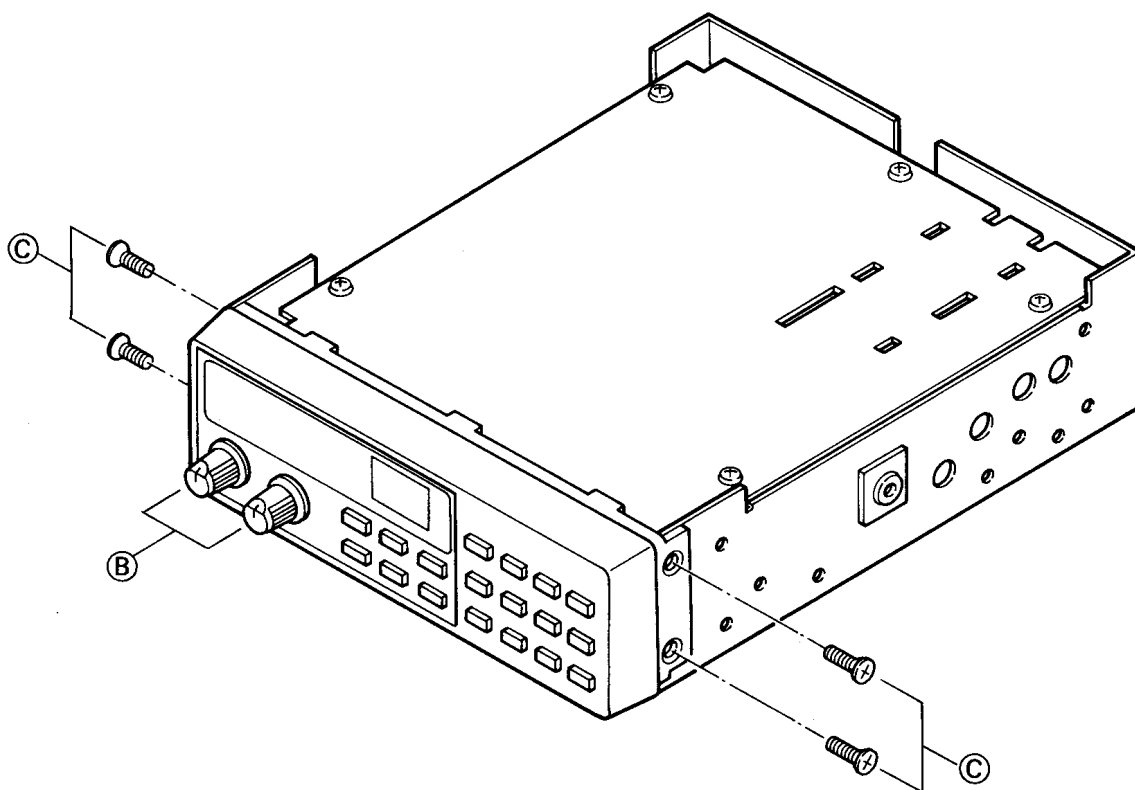
To Remove the Top Case and Bottom Case

Remove the eight screws (A) from each side of the the unit.

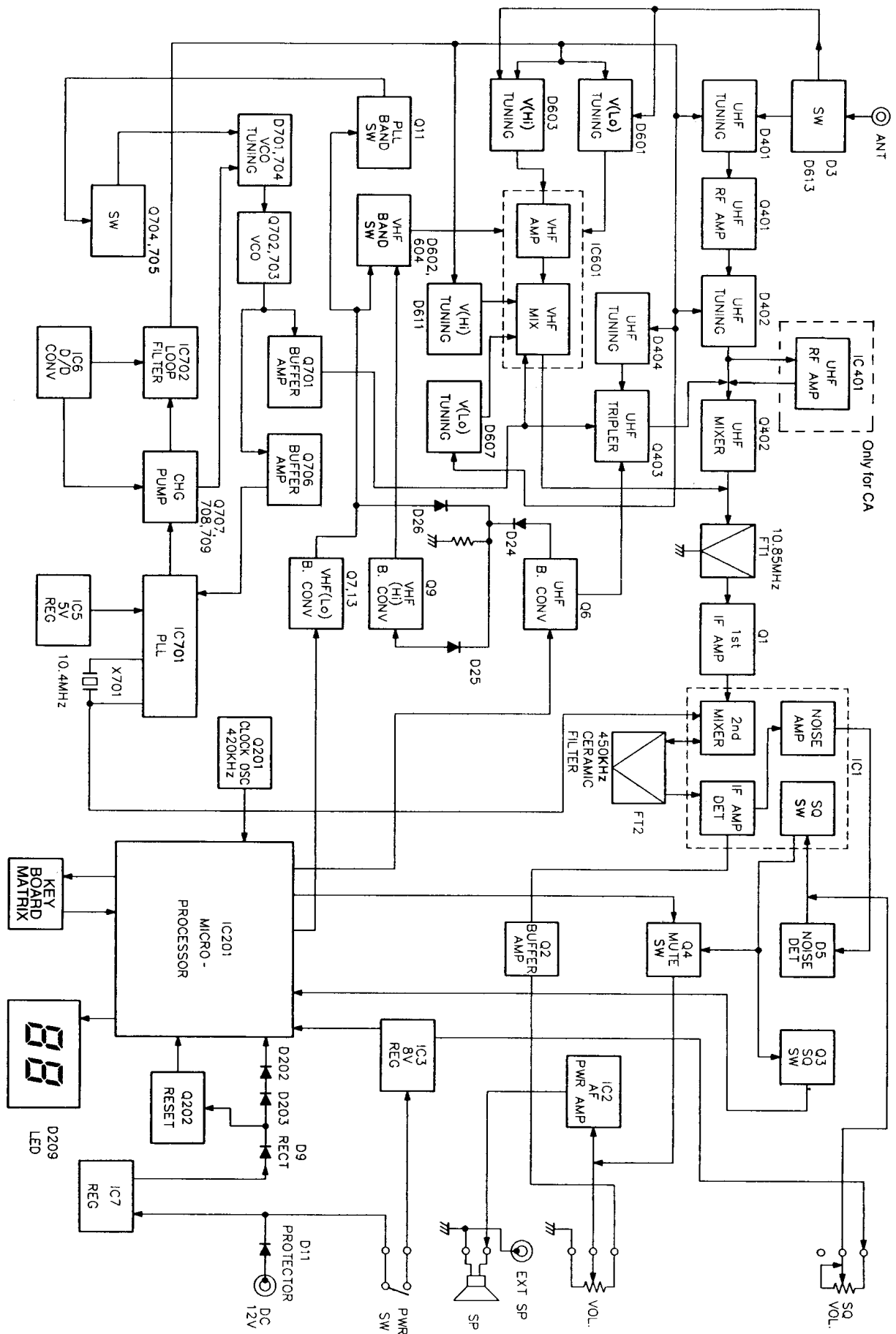


To Remove the Front Panel

Pull out the two knobs (B), and then nuts and washers behind the each knob from the front panel. Remove the four screws (C) from each side of chassis. Pull out the front panel from the unit.



BLOCK DIAGRAM



ALIGNMENT PROCEDURE

Preparation for Alignment

Change of the Test Mode:

Turn on the power switch while pressing 3 buttons **2**, **9**, and **SCAN**.

Confirm that test frequencies (Table 1) have been called to each memory channel.

Attention: Incorrect operation order or method often results in a display of the error indicator "Error" or an incorrect indication of frequency.

Table 1

Channel No.	Test Frequency	Channel No.	Test Frequency
CH 1	30.050 MHz	CH 9	511.9125 MHz
CH 2	40.840 MHz	CH 10	452.50 MHz
CH 3	49.900 MHz	CH 11	421.1 MHz
CH 4	138.150 MHz	CH 12	482.3625 MHz
CH 5	162.400 MHz	CH 13	157.800 MHz
CH 6	173.225 MHz	CH 14	66.4500 MHz
CH 7	406.8750 MHz	CH 15	76.8250 MHz
CH 8	453.2500 MHz	CH 16	87.4250 MHz

Table 2

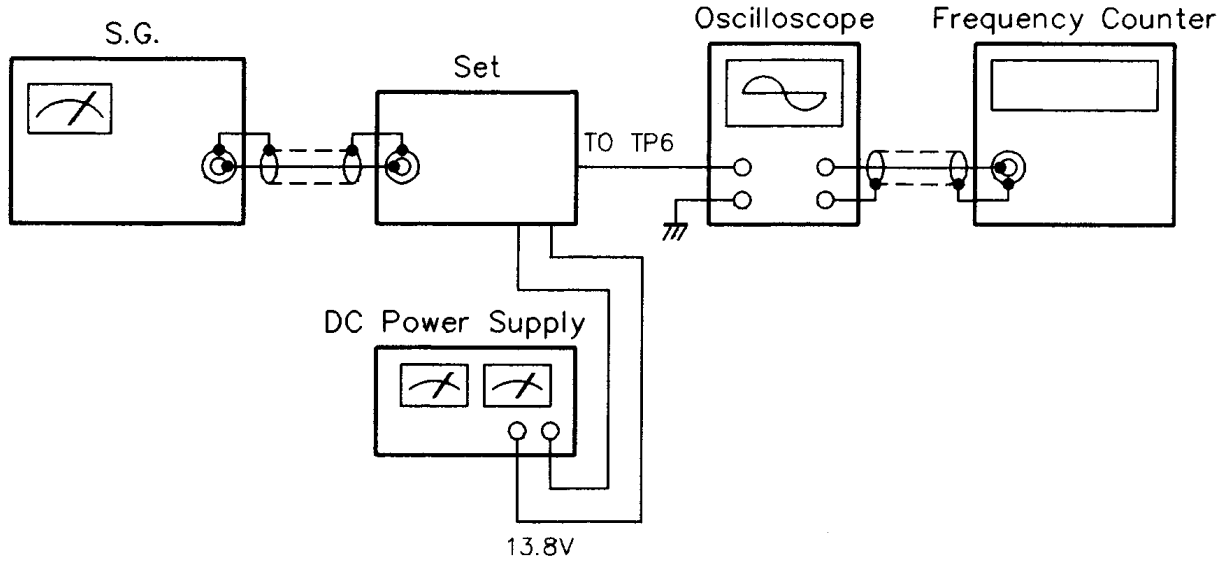
Channel No.	Test Frequency	Tone Voltage	
CH 1	30.050 MHz	1.2 V \pm 0.1 V	VHF (Low) Adjust
CH 2	40.840 MHz	5.5 V \pm 0.5 V	Confirm
CH 3	49.900 MHz	9.0 V \pm 0.5 V	Confirm
CH 4	138.150 MHz	4.2 V \pm 0.5 V	Confirm
CH 5	162.400 MHz	9.6 V \pm 0.5 V	Confirm
CH 6	173.225 MHz	11.5 V \pm 0.5 V	Confirm
CH 7	406.8750 MHz	5.5 V \pm 0.5 V	Confirm
CH 8	453.2500 MHz	8.9 V \pm 0.5 V	Confirm
CH 9	511.9125 MHz	12.5 V \pm 0.1 V	VHF (Hi)/UHF Adjust

Alignment of Clock

Test Equipment Required and Connections

- DC Power Supply: 13.8 V
- Signal Generator: S.G.

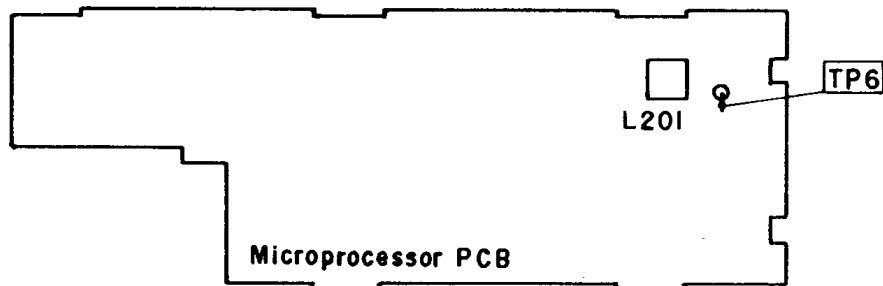
- Oscilloscope
- Frequency Counter



Alignment Procedure

Step	Preset to	Adjustment	Remarks
1	CH : 1	L 201	Adjust L 201 for 420 ± 2 kHz at TP 6.

Alignment Point Locations (Microprocessor PCB)

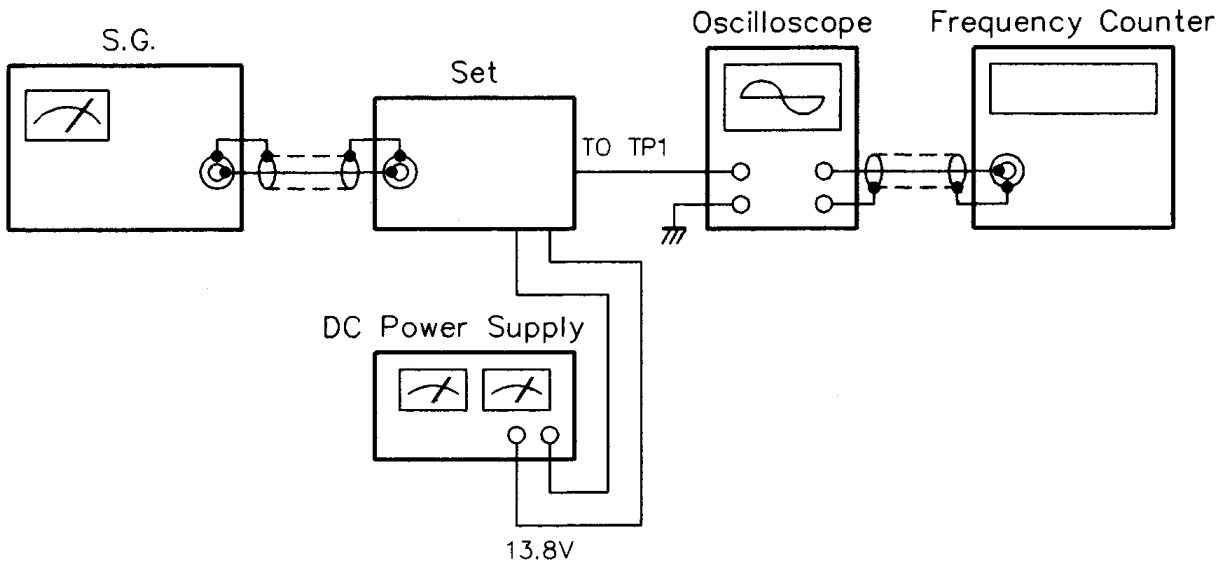


Alignment of PLL

Test Equipment Required and Connections

- DC Power Supply: 13.8 V
- Signal Generator: S.G.

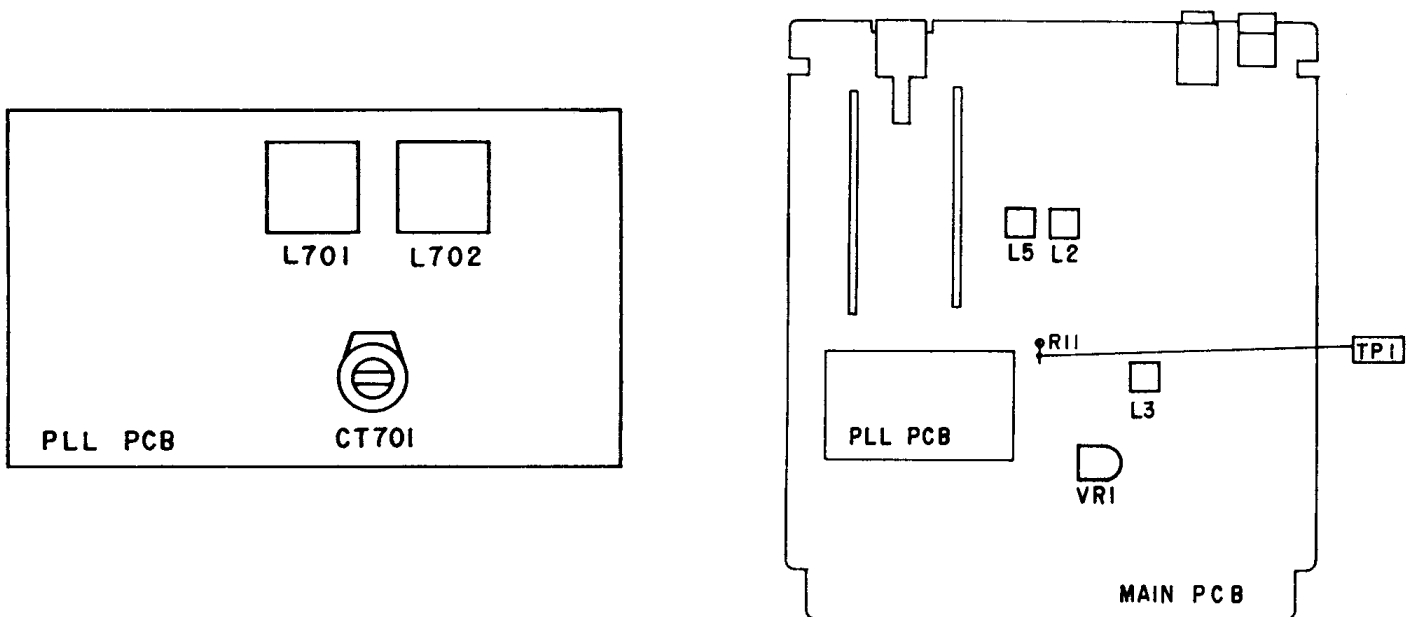
- Oscilloscope
- Frequency Counter



Alignment Procedure

Step	Preset to	Adjustment	Remarks
1	CH : 1	CT 701	Adjust CT 701 for 10.4000 ± 0.00001 MHz at TP 1.

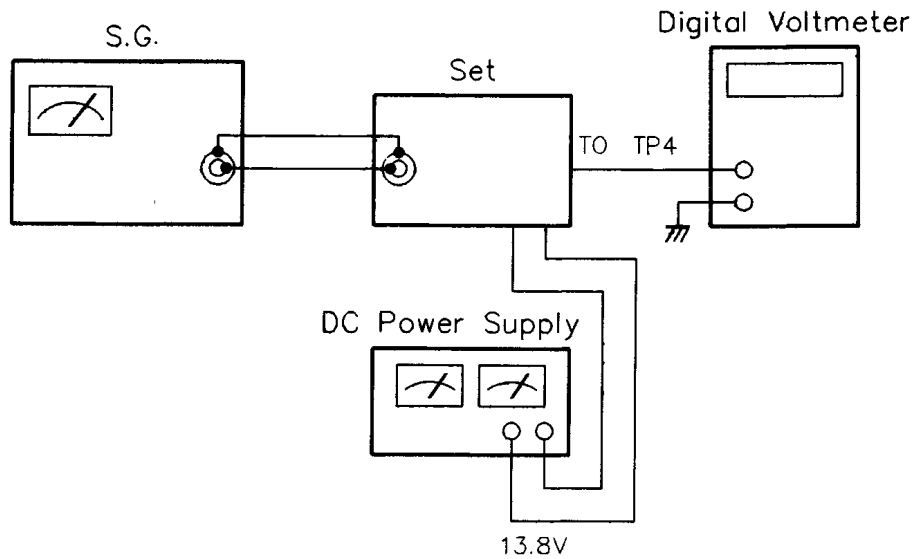
Alignment Point Locations (PLL and Main PCB)



Alignment of VCO

Test Equipment Required and Connections

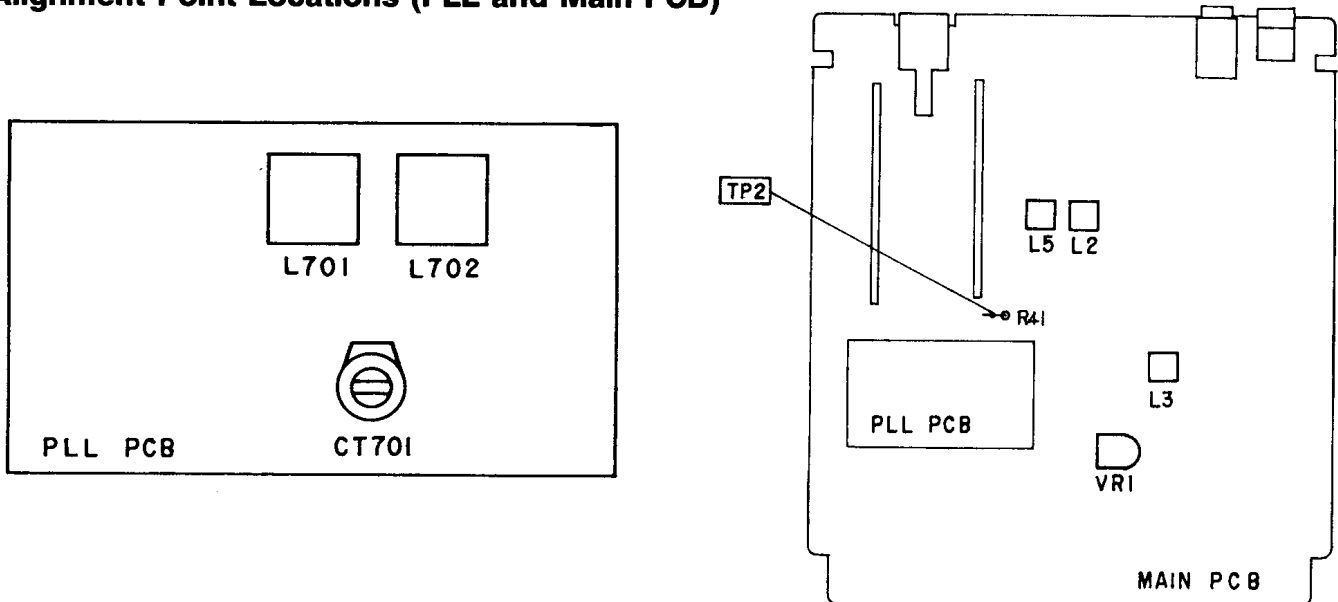
- DC Power Supply: 13.8 V
- Signal Generator: S.G.
- Digital Voltmeter



Alignment Procedure

Step	Preset to	Adjustment	Remarks
1	CH : 9	L 701	Adjust L 701 for 12.5 V \pm 0.1 V (DC) at TP 2.
2	CH : 1	L 702	Adjust L 702 for 1.2 V \pm 0.1 V (DC) at TP 2.
3	CH : 2 ~ 8	No	Confirm the VCO voltage by Table 2 for each channel (See page 7).

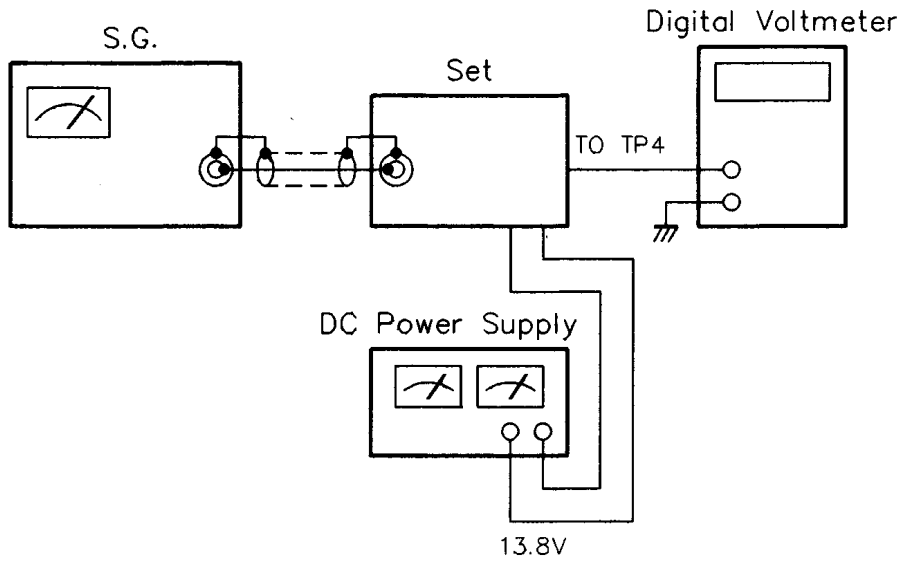
Alignment Point Locations (PLL and Main PCB)



Alignment of Discriminator

Test Equipment Required and Connections

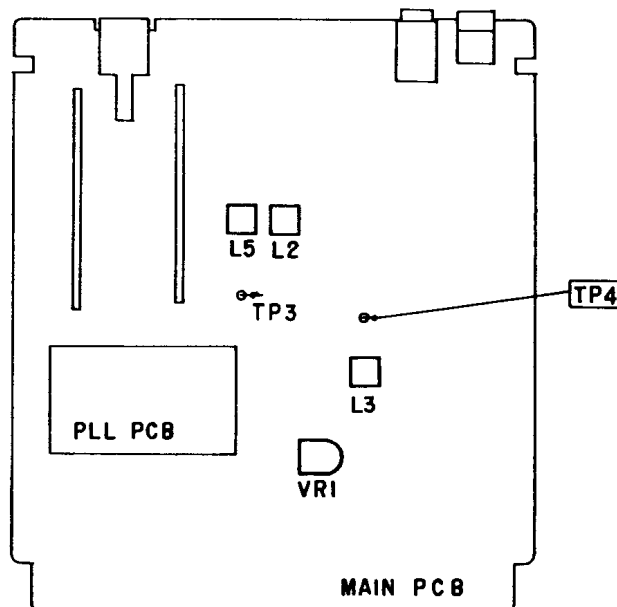
- DC Power Supply: 13.8 V
- Signal Generator: S.G.
- Digital Voltmeter



Alignment Procedure

Step	Preset to	Adjustment	Remarks
1	CH : 1 S.G. : 30.05 MHz 1 mV Input No modulation	L 3	Adjust L 3 for 3.6 V \pm 0.1 V (DC) at TP 4.

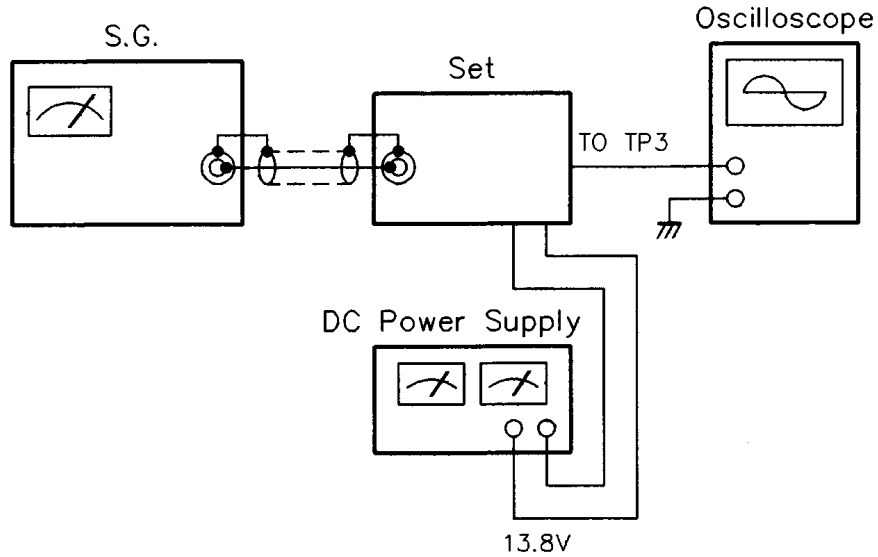
Alignment Point Locations (Main PCB)



Alignment of IF

Test Equipment Required and Connections

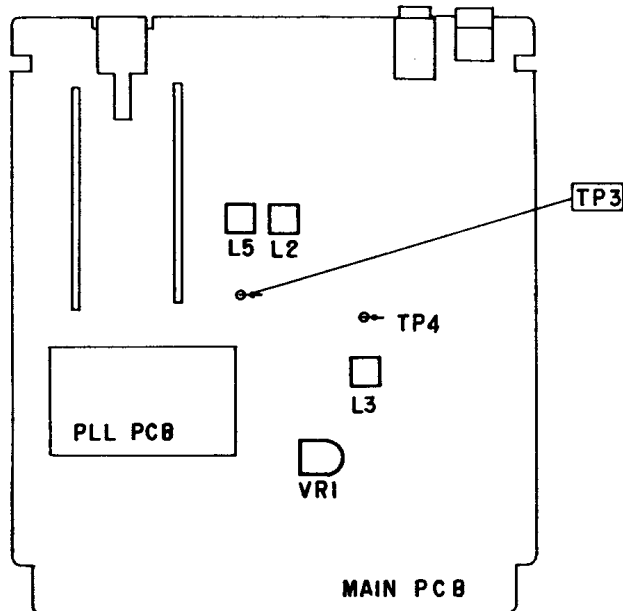
- DC Power Supply: 13.8 V
- Signal Generator: S.G.
- Oscilloscope



Alignment Procedure

Step	Preset to	Adjustment	Remarks
1	CH : 2 S.G. : 40.84 MHz FM 1 kHz, ± 3 kHz Dev. 500 μ V Input	L 2 and L 5	Adjust coils for maximum waveform (10.85 MHz) at TP 3.

Alignment Point Locations (Main PCB)

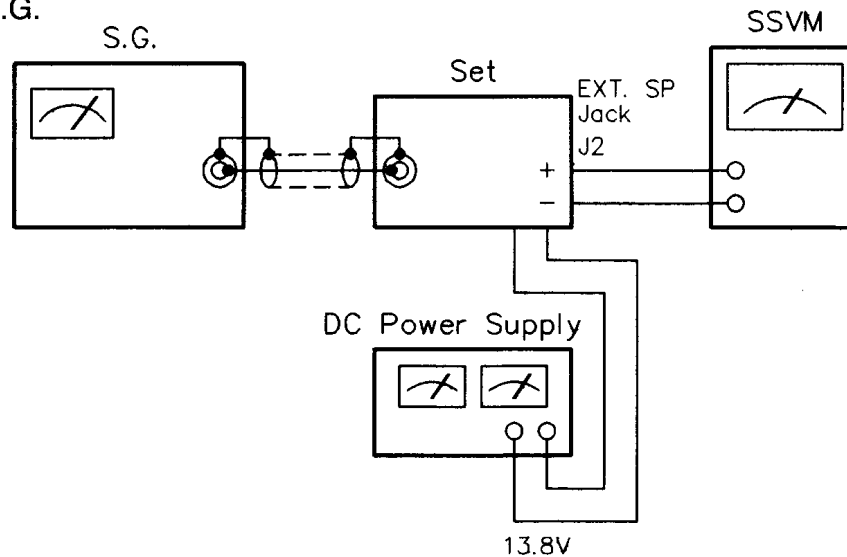


Alignment of Receiving (VHF Hi)

Test Equipment Required and Connections

- DC Power Supply: 13.8 V
- Signal Generator: S.G.

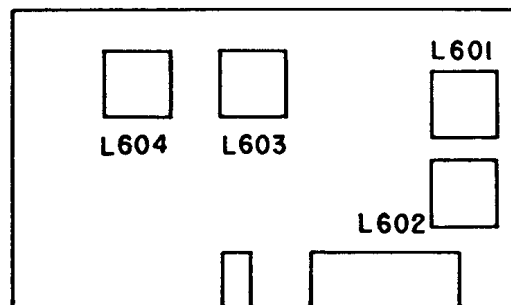
● SSVM



Alignment Procedure

Step	Preset to	Adjustment	Remarks
1	CH : 5 S.G. : 162.4 MHz FM 1 kHz ± 3 kHz Dev. 0.5 μ V Input Squelch : Open	L 602 and L 604	Adjust L 602 and L 604 for the best S/N.
2	CH : 4 ~ 6 S.G.: 1.5 μ V Input	—	Confirm that S/N ratio is more than 20 dB.

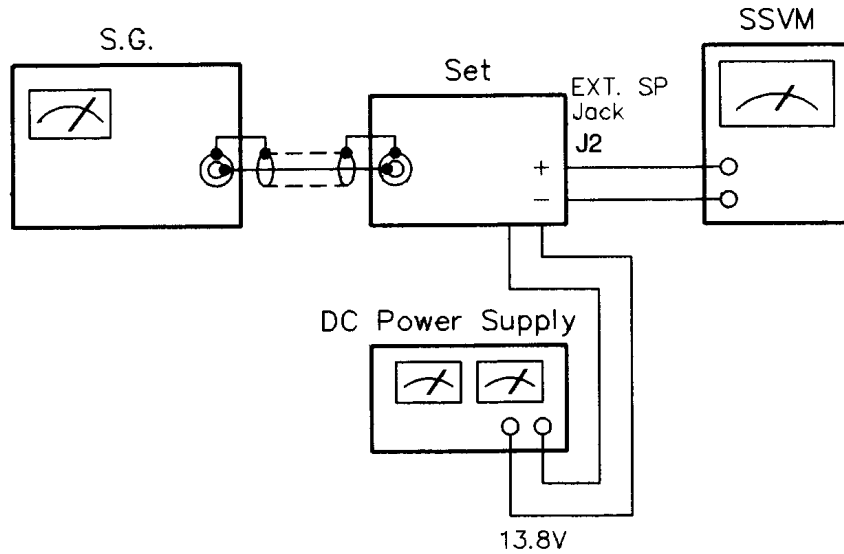
Alignment Point Locations (VHF PCB)



Alignment of Receiving (VHF Low)

Test Equipment Required and Connections

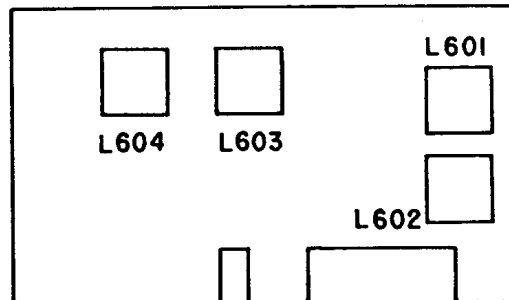
- DC Power Supply: 13.8 V
- Signal Generator: S.G.
- SSVM



Alignment Procedure

Step	Preset to	Adjustment	Remarks
1	CH : 1 S.G. : 40.84 MHz FM 1 kHz ± 3 kHz Dev. 0.4 μ V Input Squelch: Open	L 601 and L 603	Adjust L 601 and L 603 for the best S/N.
2	CH : 1 ~ 3 S.G.: 1.0 μ V Input	—	Confirm that S/N ratio is more than 20 dB.

Alignment Point Locations (VHF PCB)

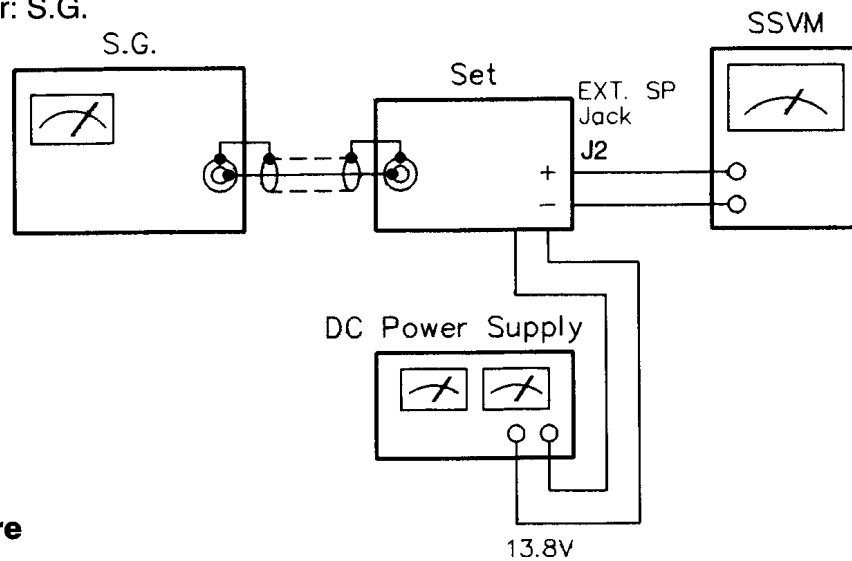


Alignment of Receiving UHF

Test Equipment Required and Connections

- DC Power Supply: 13.8 V
- Signal Generator: S.G.

● SSVM



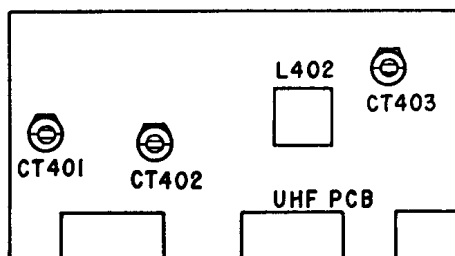
Alignment Procedure

Step	Preset to	Adjustment	Remarks
1	CH : 9 S.G. : 511.9125 MHz FM 1 kHz ± 3 kHz Dev. 0.8 μ V Input Squelch: Open	L402, CT 403 and CT 401	Adjust L402, CT 403 and CT 401 for the best S/N.
2	CH : 7	CT 402	Same as step 1.
3	CH : 7 ~ 9 S.G. : 2.0 μ V Input	—	Confirm that S/N ratio is more than 20 dB.

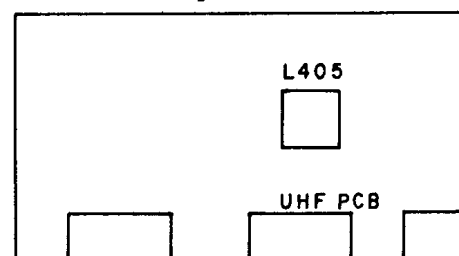
Alignment Procedure (Only for CA)

Step	Preset to	Adjustment	Remarks
1	CH : 8 S.G. : 453.25 MHz FM 1 kHz ± 3 kHz Dev. 0.5 μ V Input Squelch: Open	L405	Adjust L405 for the best S/N.
2	CH : 7 ~ 9 S.G. : 2.0 μ V Input	—	Confirm that S/N ratio is more than 20 dB.

Alignment Point Locations (UHF PCB)



Only for CA

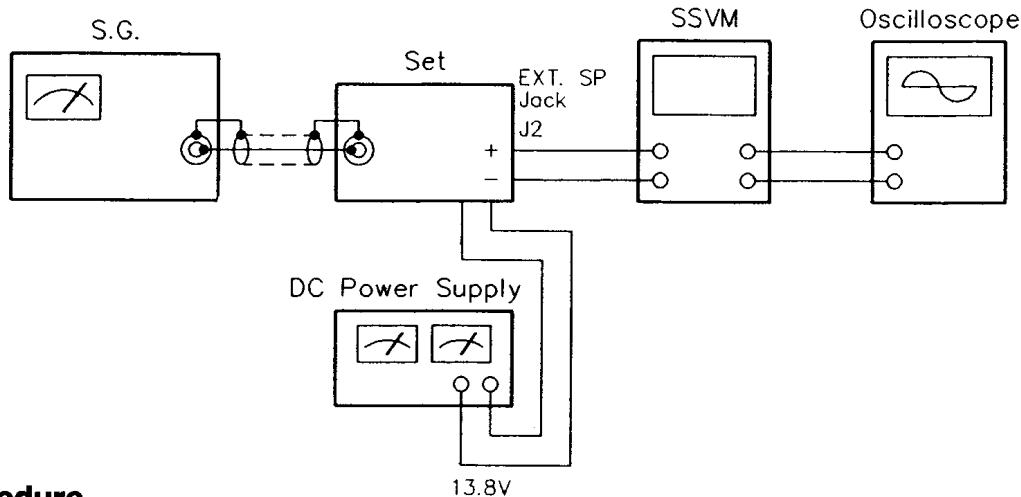


Alignment of Squelch

Test Equipment Required and Connections

- DC Power Supply: 13.8 V
- Signal Generator: S.G.

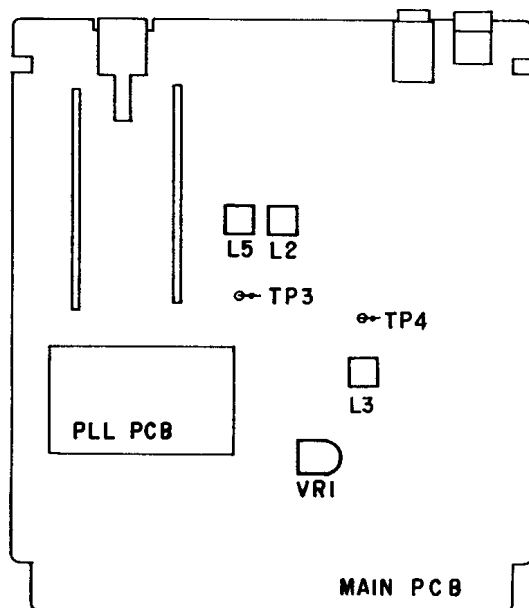
- SSVM
- Oscilloscope



Alignment Procedure

Step	Preset to	Adjustment	Remarks
1	CH : 2 S.G. : 40.84 MHz FM 1 kHz, ± 3 kHz Dev. 0.8 μ V Input	VR 1	Shift the squelch volume to fully clockwise. Adjust VR 1 so that squelch just breaks.
2	CH : 2 S.G. : 0.23 μ V Input	—	Confirm that squelch closes.
3	CH : 5 S.G. : 0.38 μ V Input	—	
4	CH : 8 S.G. : 0.39 μ V Input	—	

Alignment Point Locations (Main PCB)



TROUBLESHOOTING

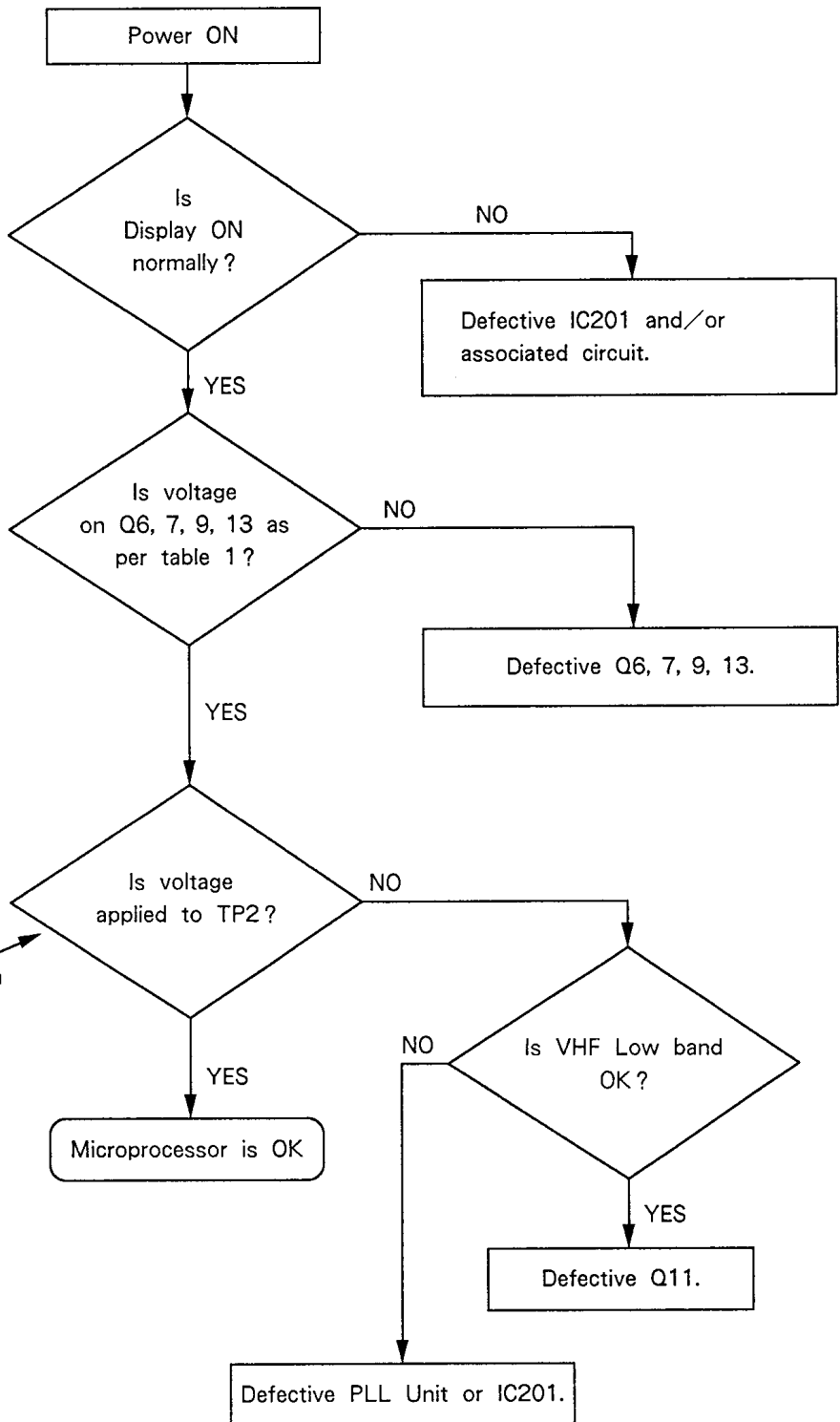
RECEPTION CHECK

Table-1

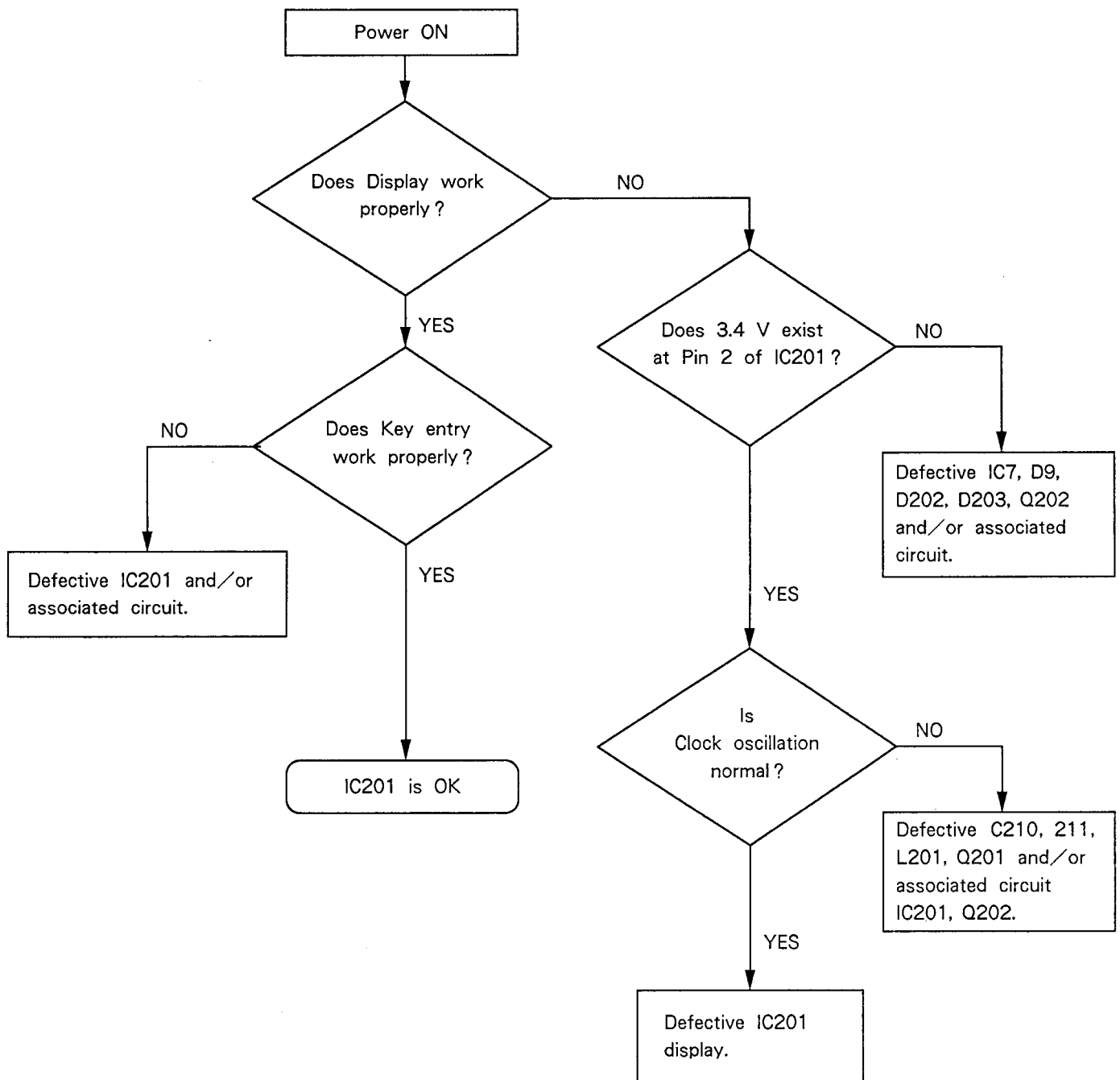
Collector Voltage \ Freq. Band	Q 6	Q 7	Q 9	Q 13
VHF Low	0	1	0	0
VHF High	0	0	1	1
UHF	1	0	0	1

Note : 1=8V
0=0V

See VCO Alignment Section
(Page 10).

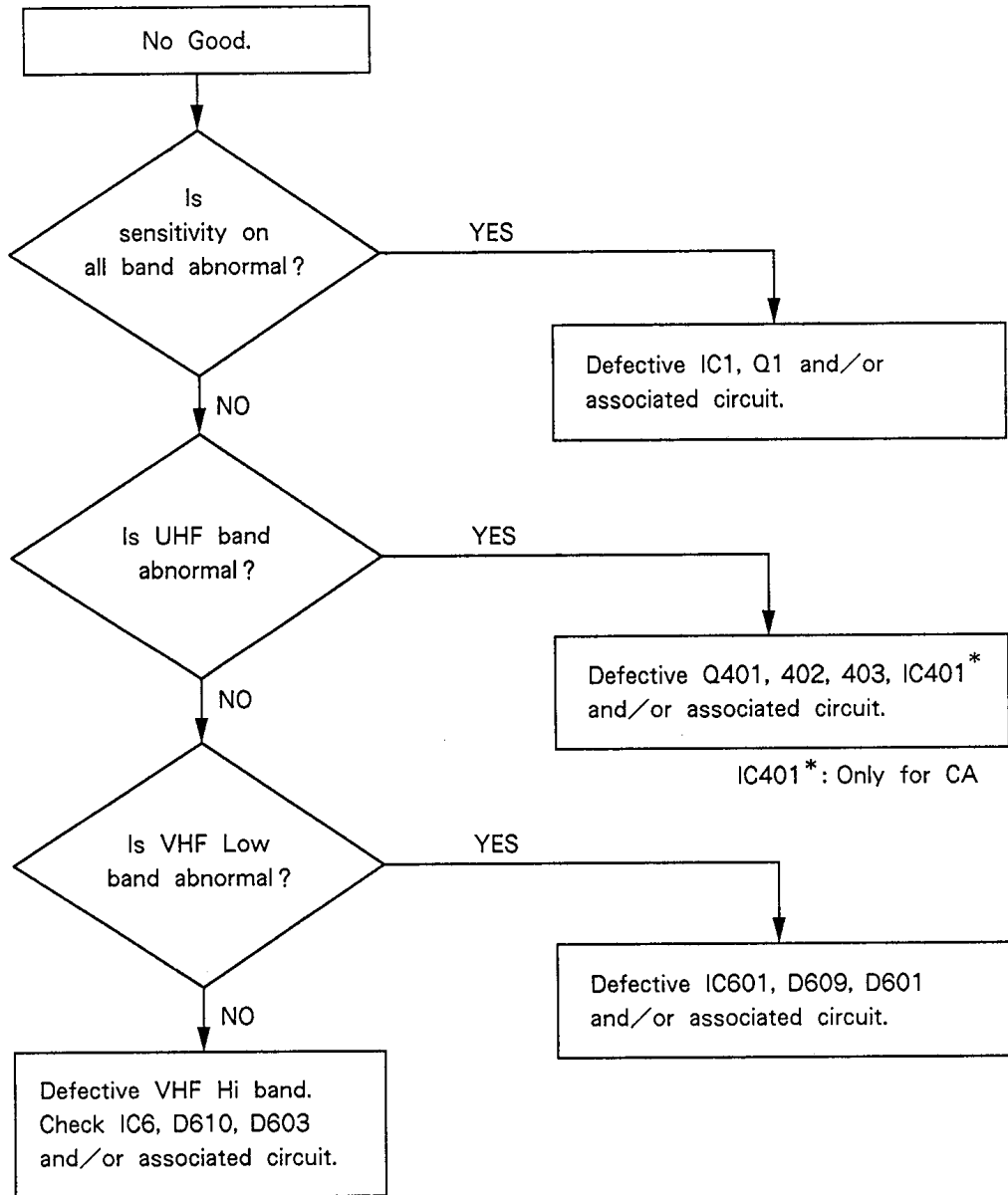


MICROPROCESSOR CHECK

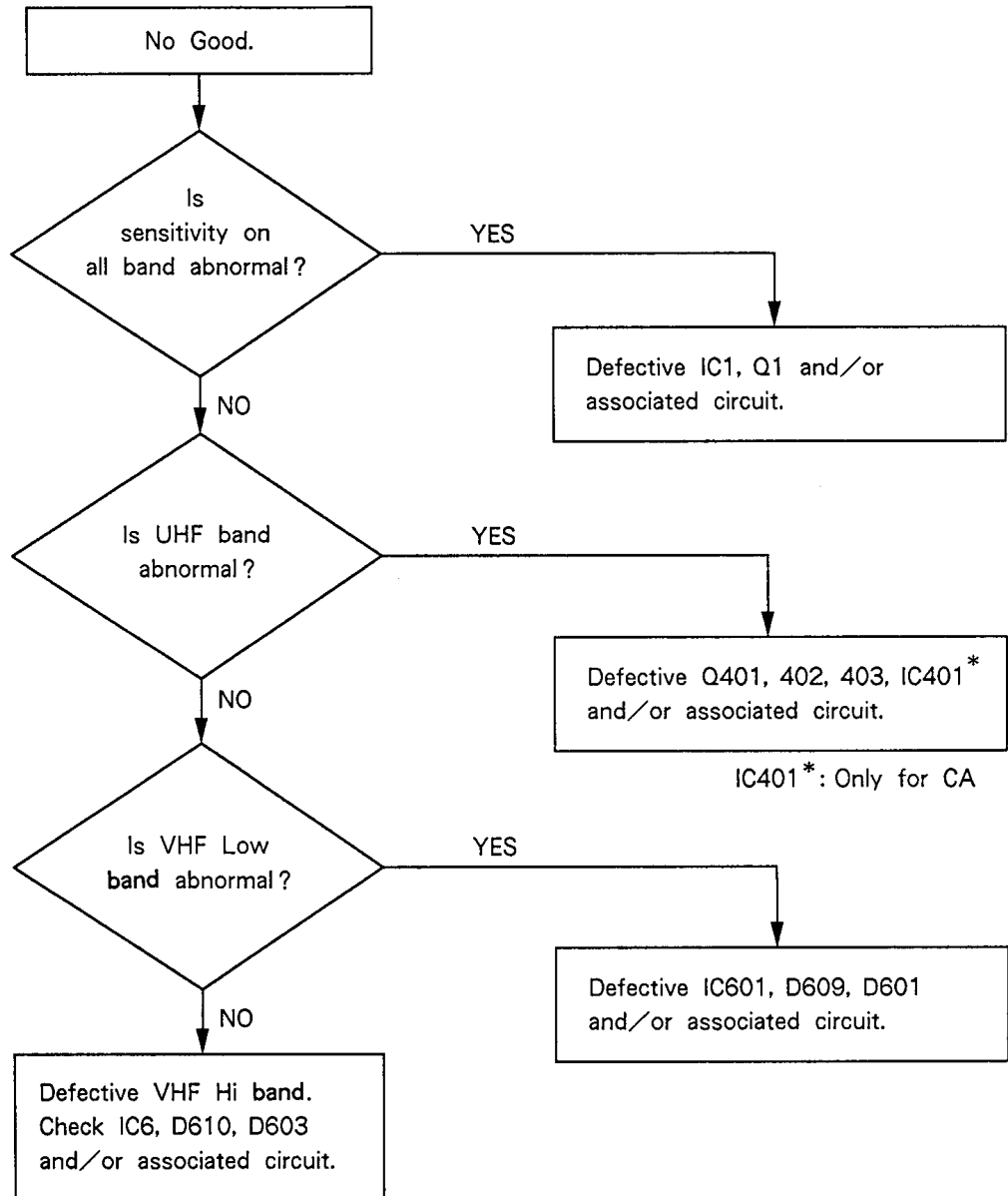


NOTE : While checking the above items, the microprocessor might "lock up".
If so, turn power switch OFF and then ON and restart to check.

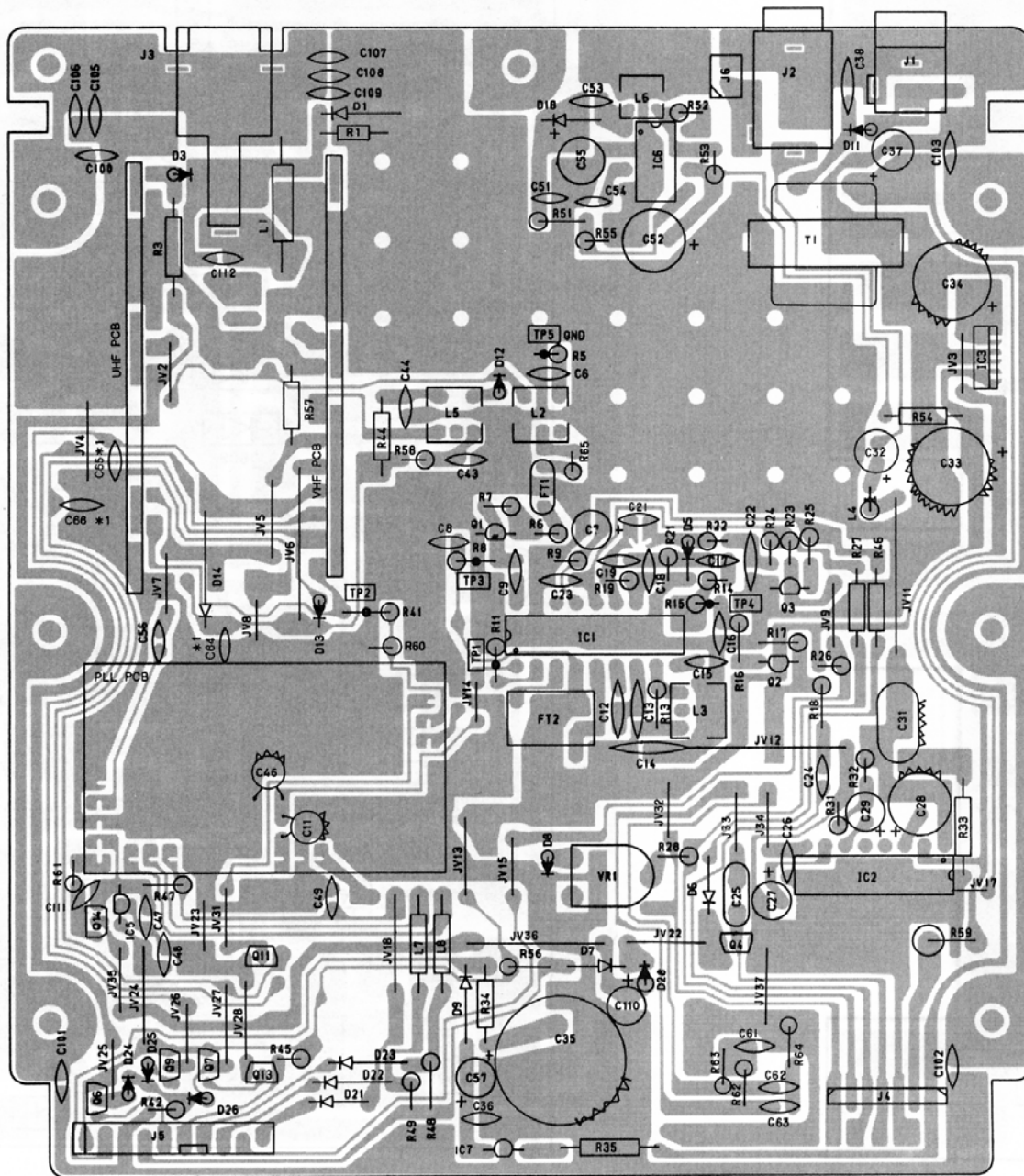
AUDIO SECTION



RF SECTION

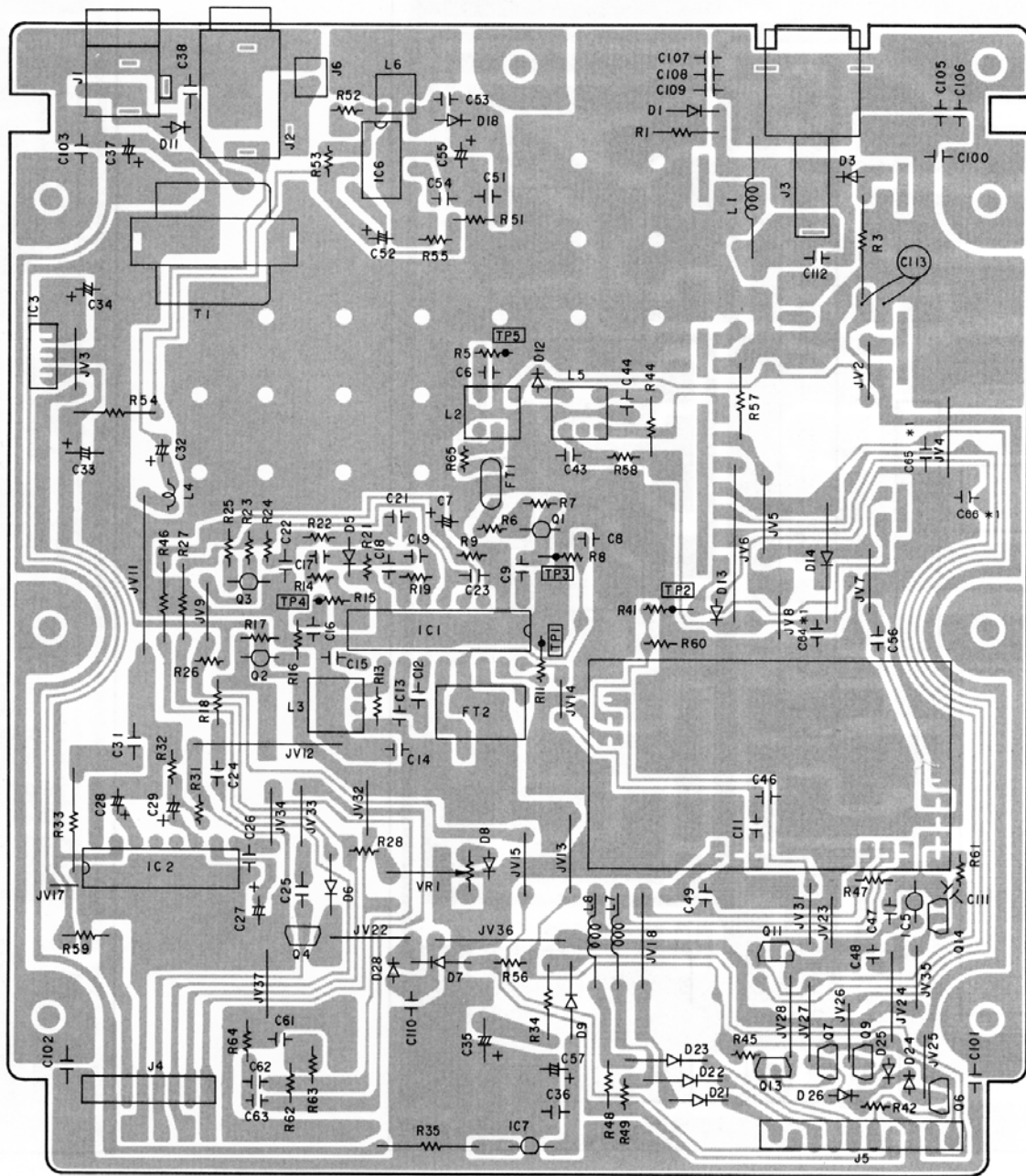


Main PCB (Top View)



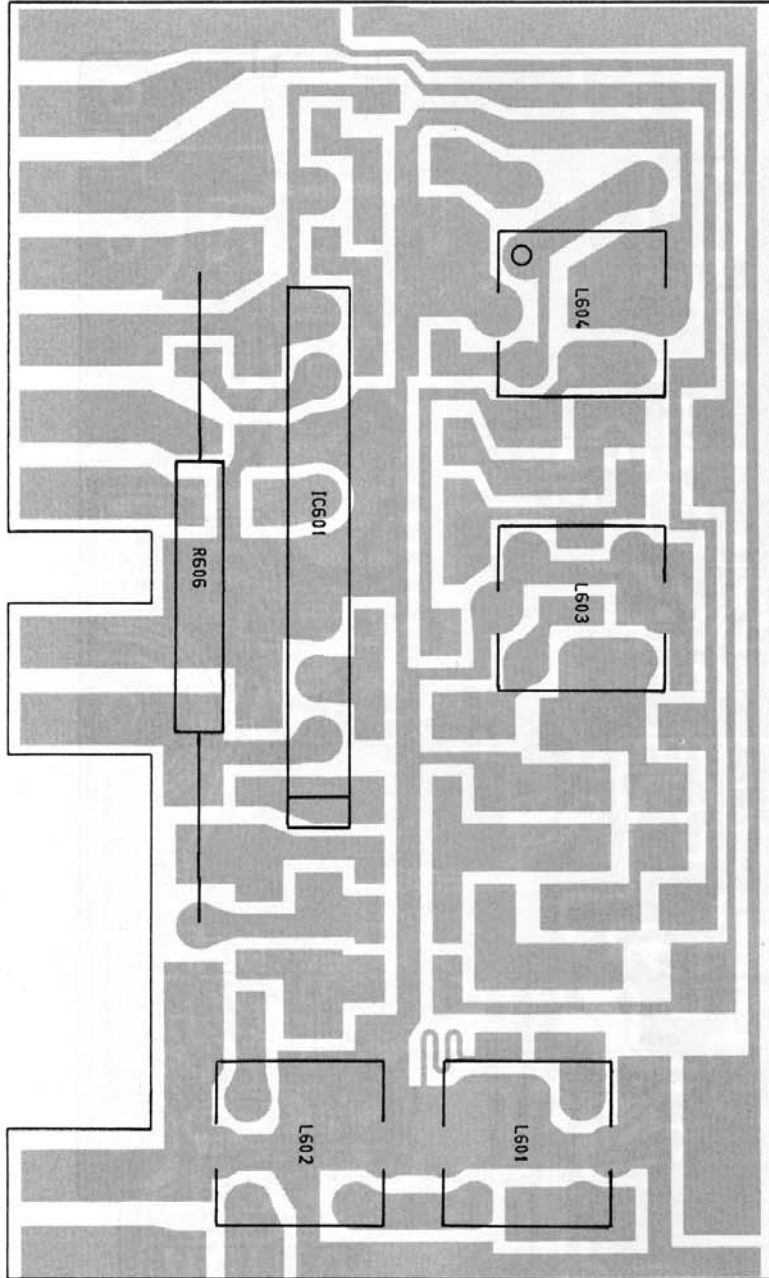
*1 : Only for CA

Main PCB (Bottom View)

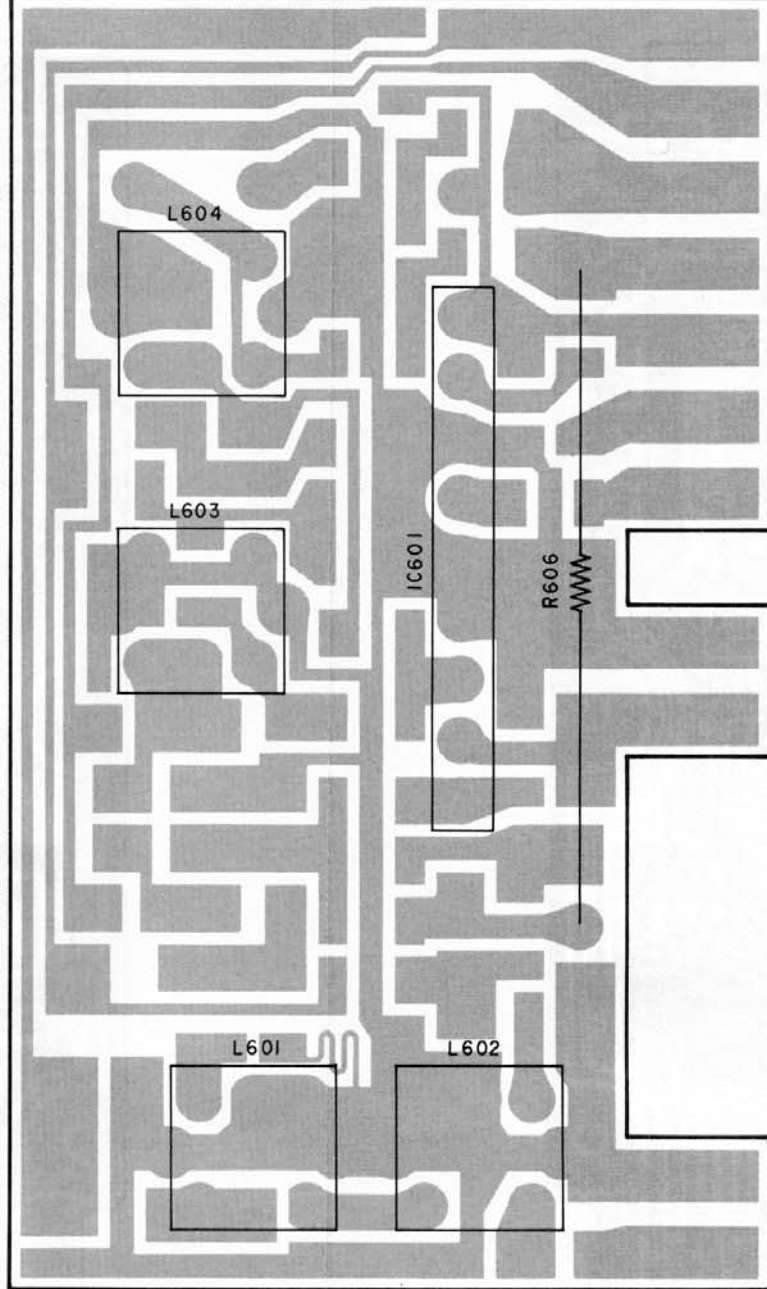


*1 : Only for CA

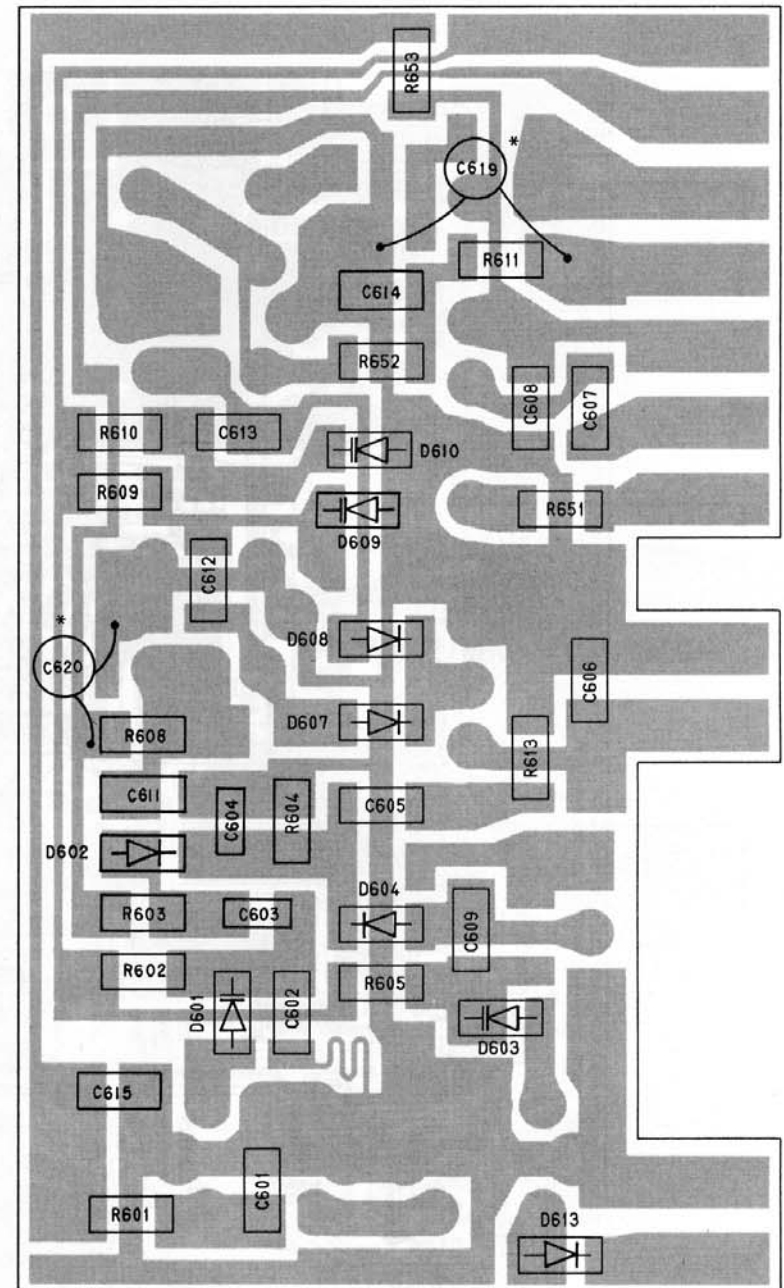
VHF PCB (Top View)



VHF PCB (Bottom View)

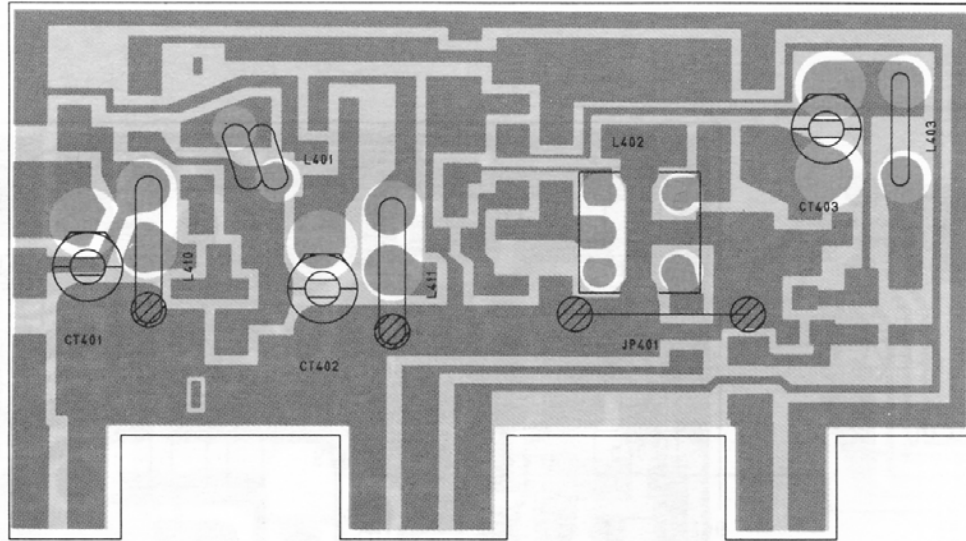


VHF PCB (Chip Parts Locations)

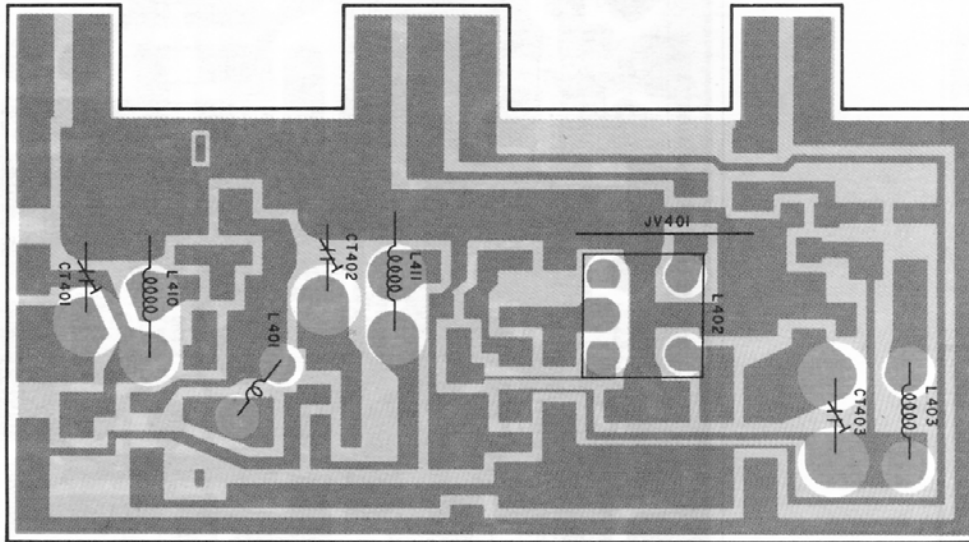


* : Only for CA

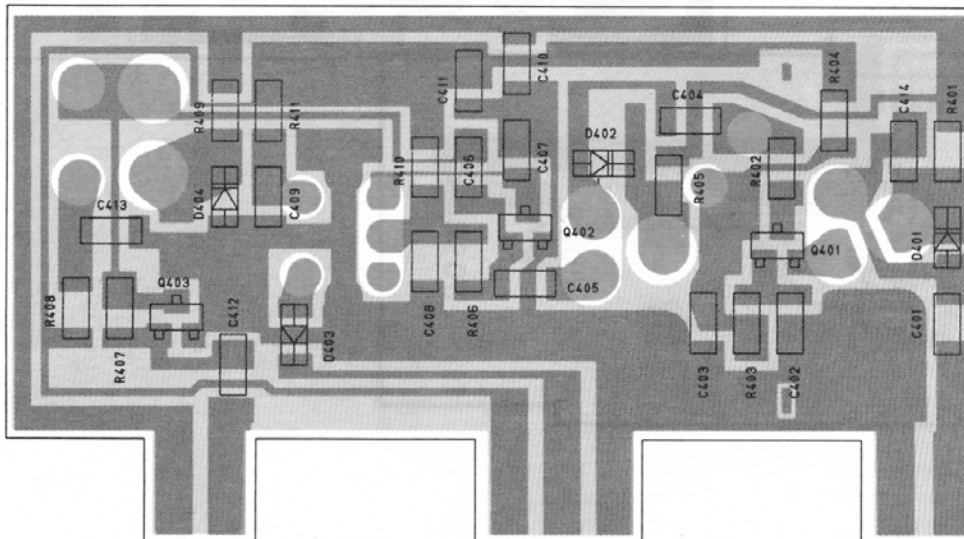
UHF PCB (Top View)



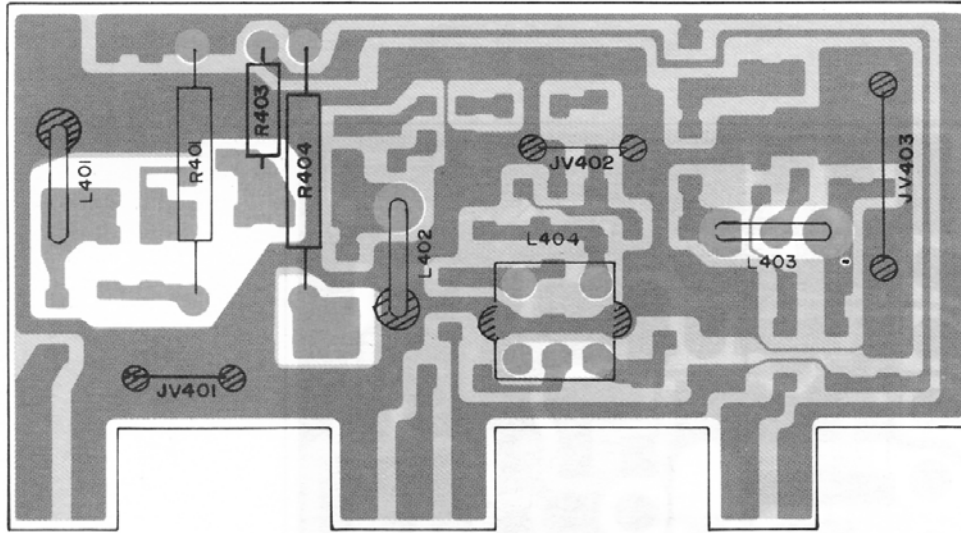
UHF PCB (Bottom View)



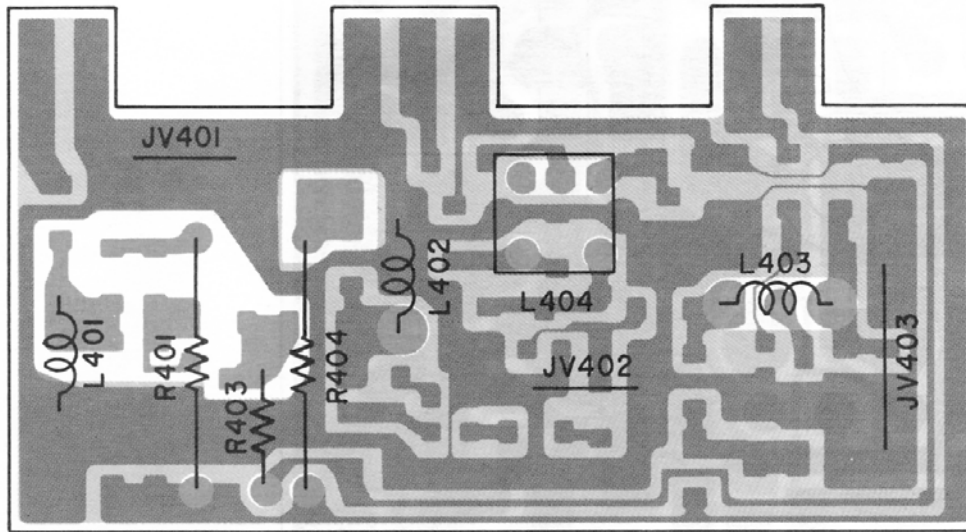
UHF PCB (Chip Parts Locations)



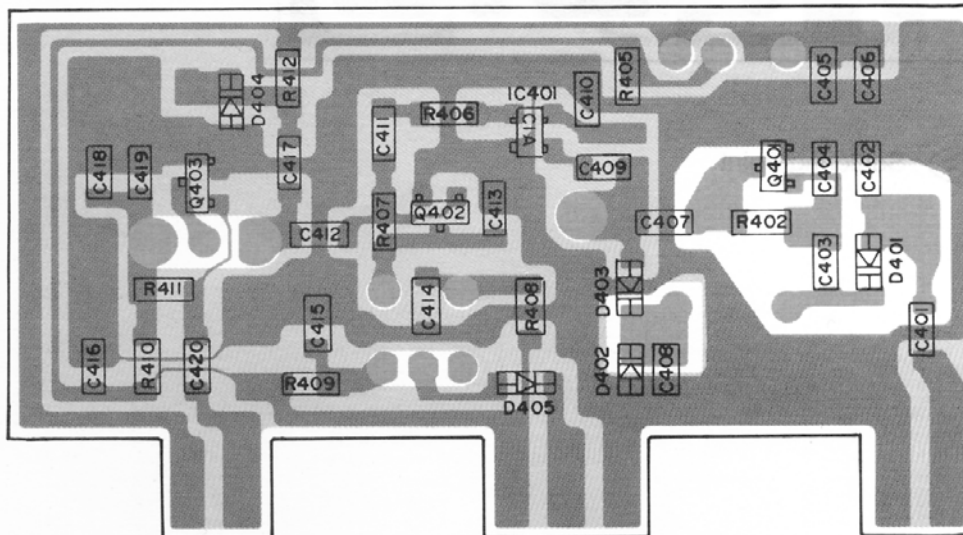
UHF PCB (Top View) Only for CA



UHF PCB (Bottom View) Only for CA



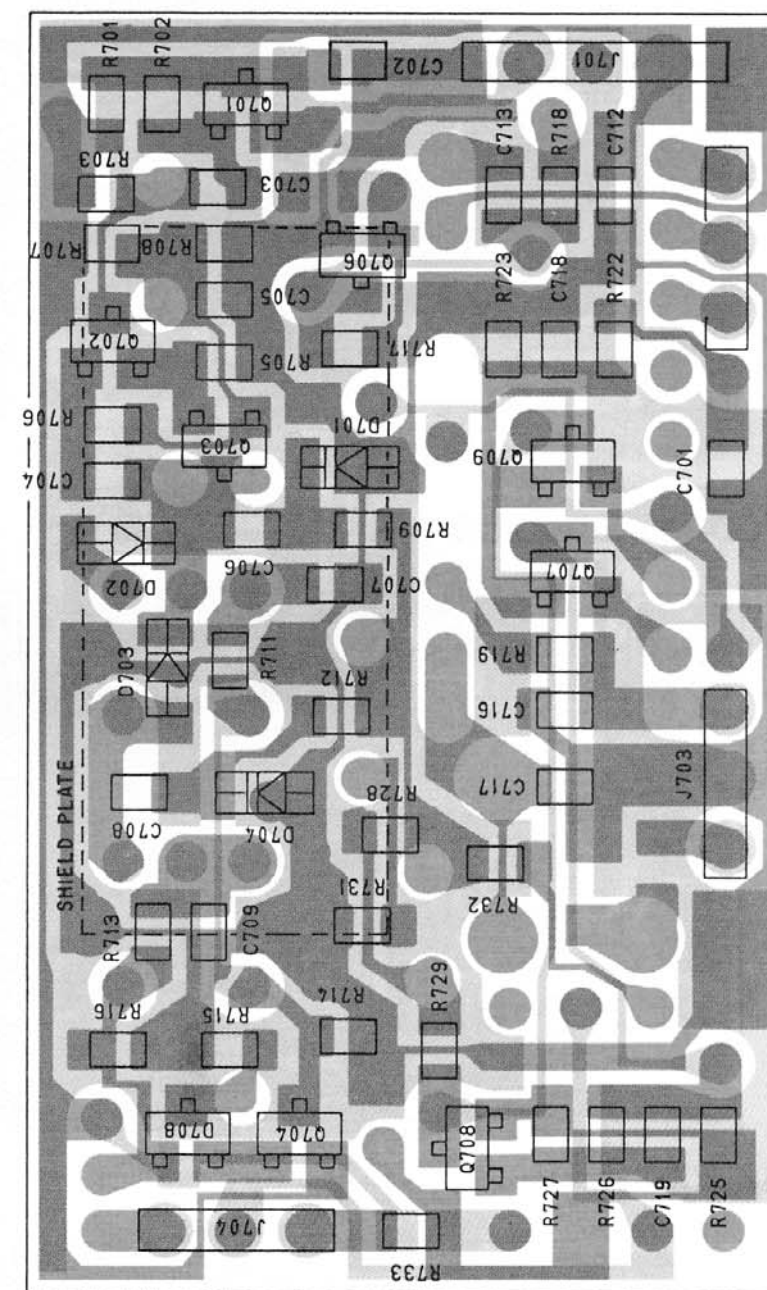
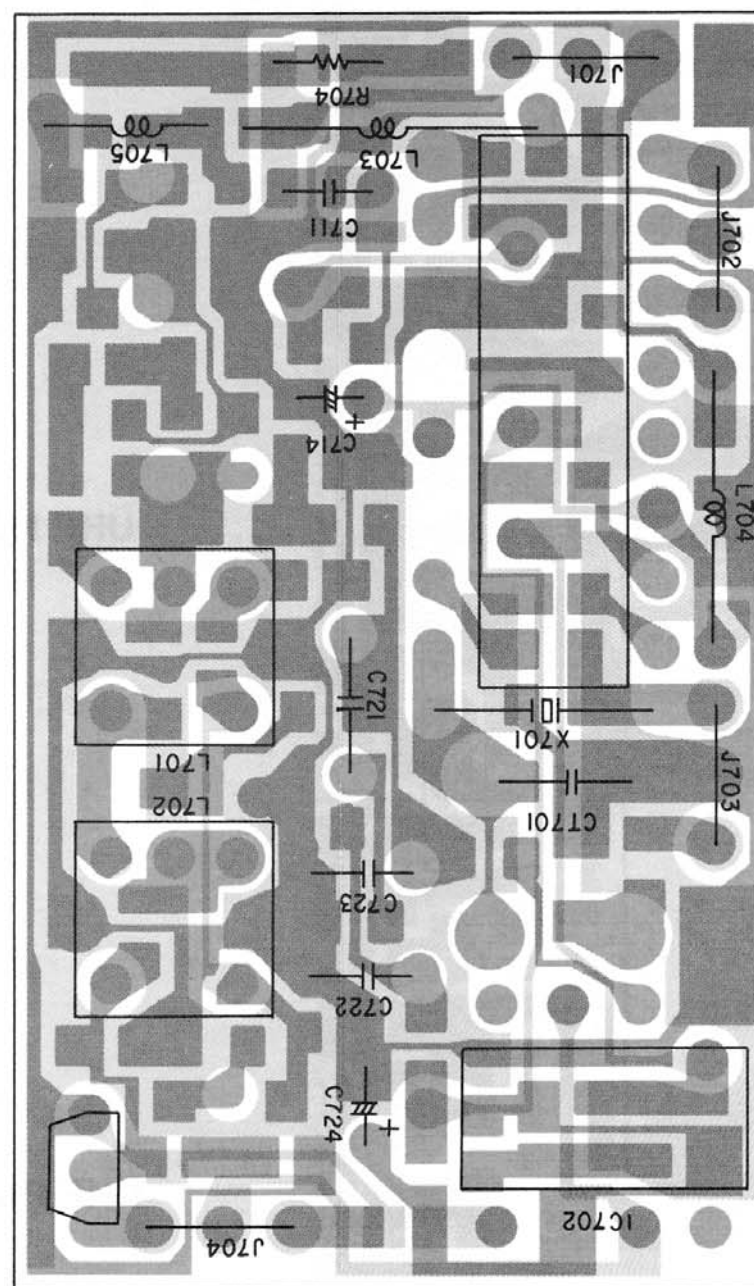
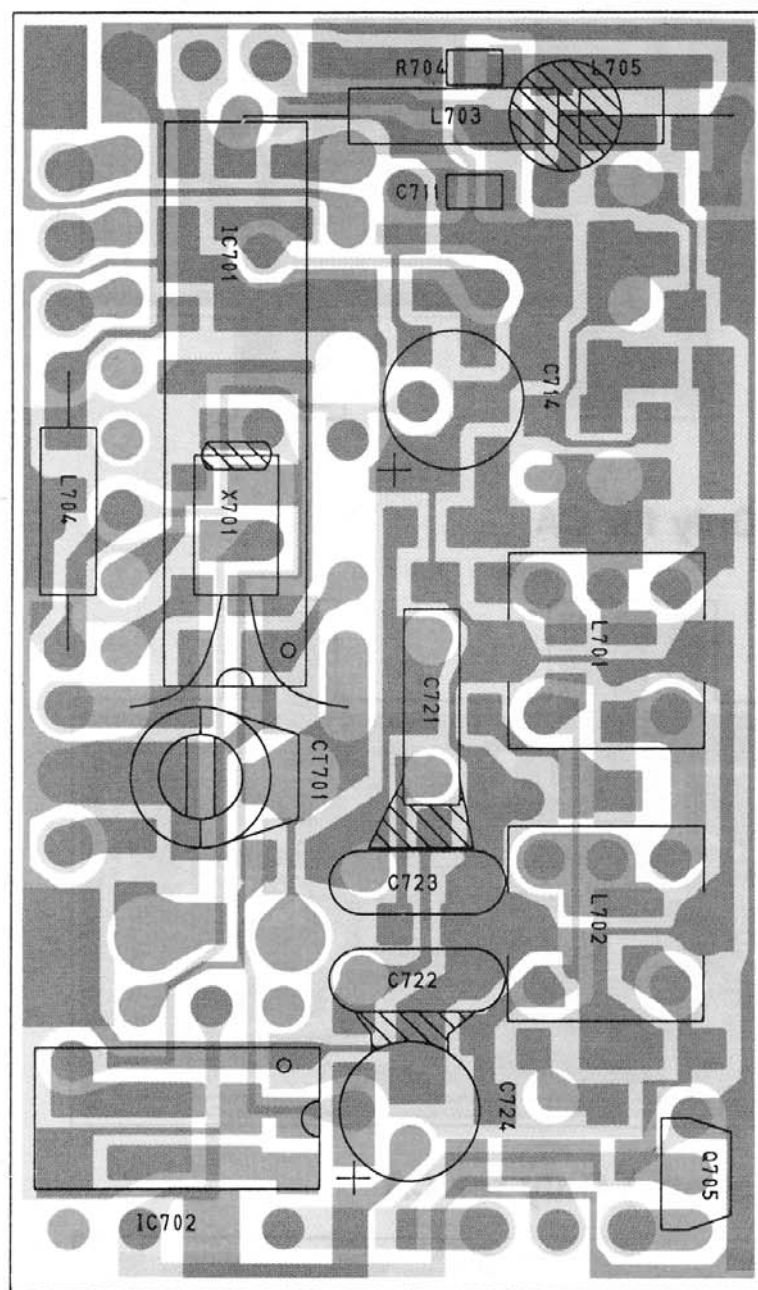
UHF PCB (Chip Parts Locations) Only for CA



PLL PCB (Top View)

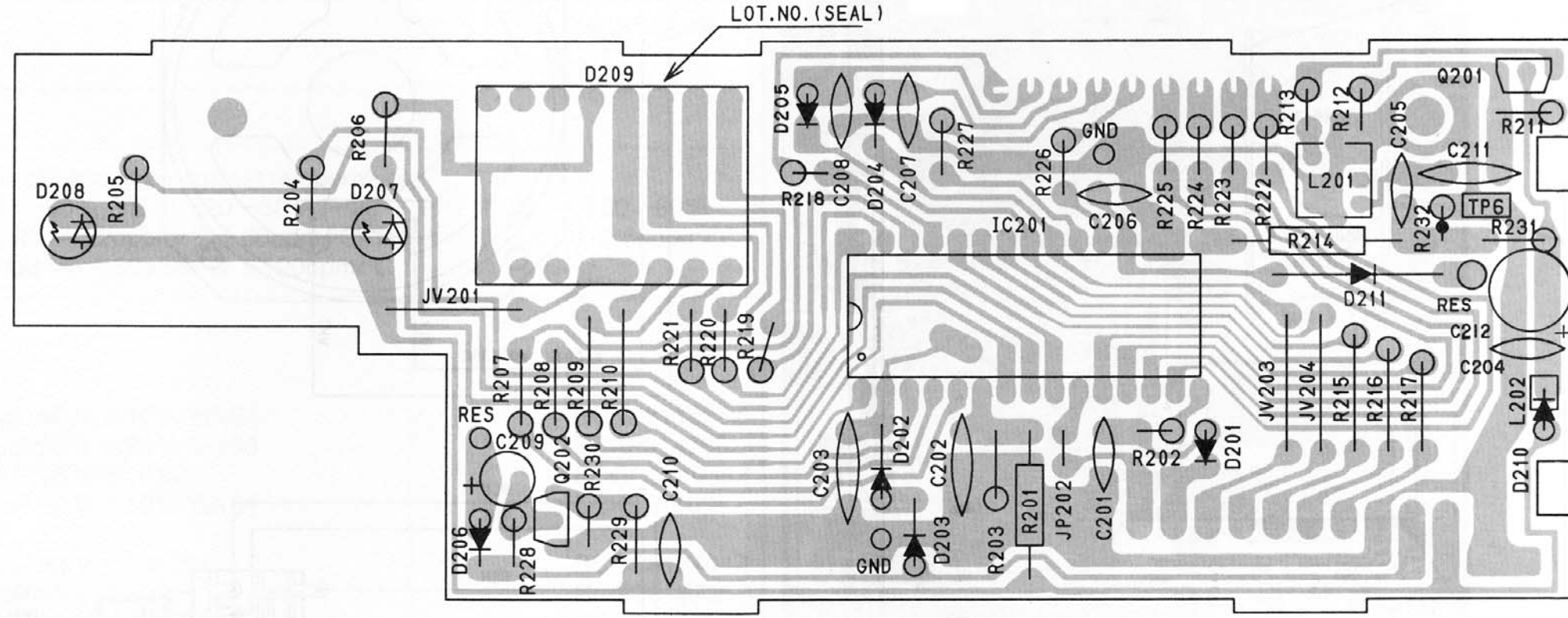
PLL PCB (Bottom View)

PLL PCB (Chip Parts Locations)

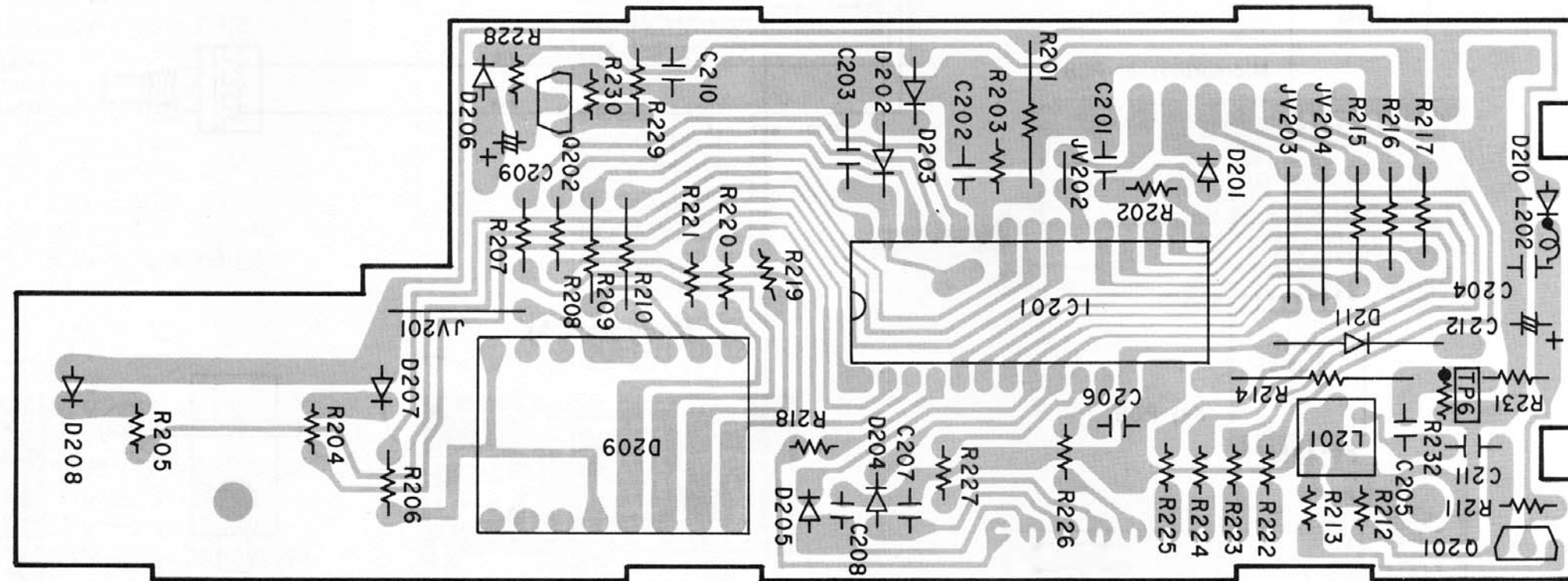


 : Soldering Point

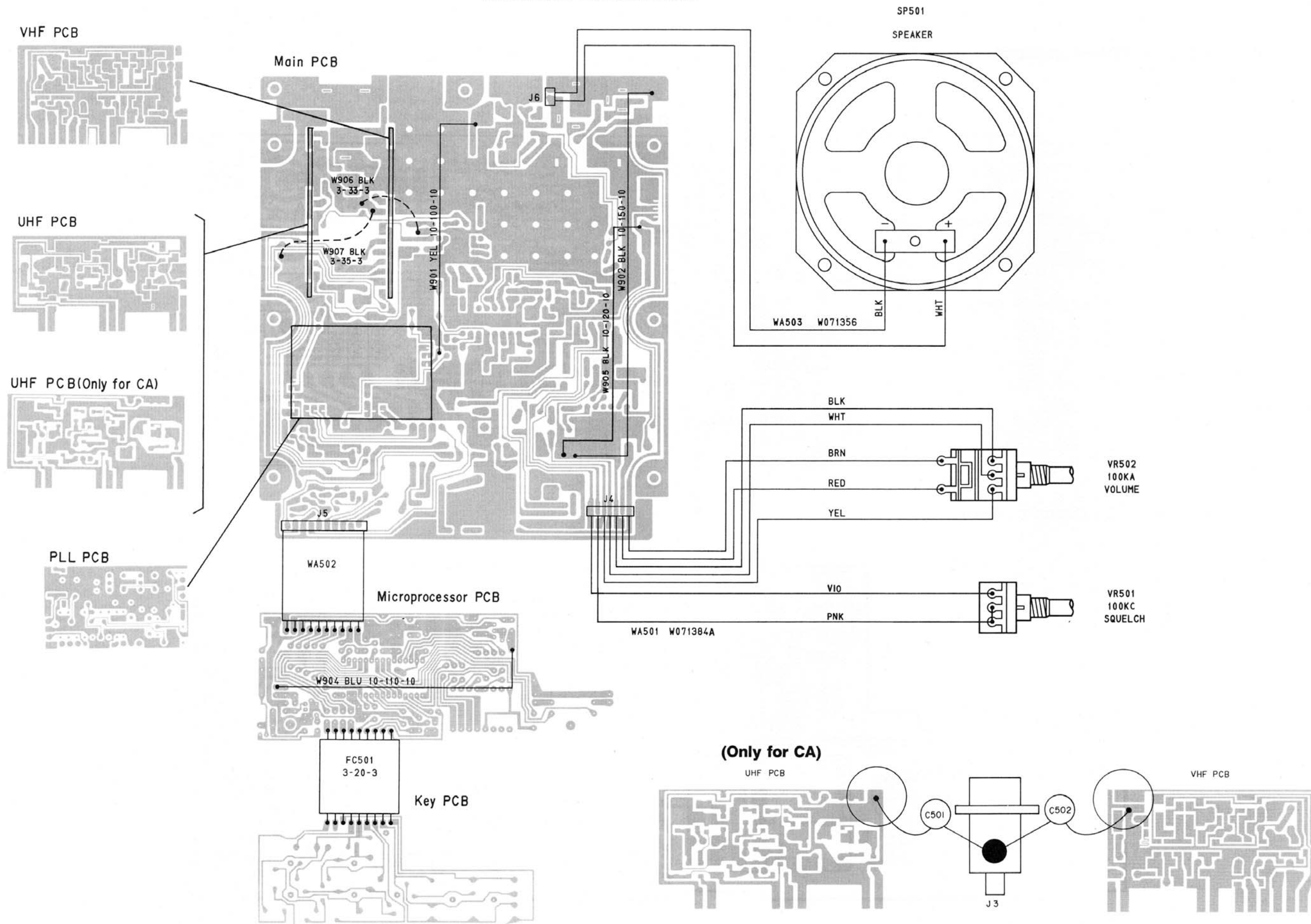
Microprocessor PCB (Top View)



Microprocessor PCB (Bottom View)



WIRING DIAGRAM



ELECTRICAL PARTS LIST

MAIN PCB ASS'Y

REF. NO.	DESCRIPTION	RS PART NO.	MFR'S PART NO.
	ASSEMBLY, PCB, MAIN Consists of the following:		AB214ZPBEA
CAPACITORS			
The following codes indicate variations of capacitors against temperatures; YA = ±5%, YB = ±10%, YD = +20 -30%, YE = +20 -50% (-25 ~ +85°C), ZF = +30 -80% (-10 ~ +70°C), CH = 0 ±60ppm/°C, RH = 220ppm/°C ±60ppm/°C, TH = -470ppm/°C ±60ppm/°C, SL = +350ppm/°C ~ -1000ppm/°C, UJ = -750ppm/°C ±120ppm/°C			
C001	— Not Used —		
C005			
C006	Ceramic 0.001 μF 50 V ±10% YB(B)		BCKB811025Z
C007	Electrolytic 0.47 μF 50 V ±20% C-130		BCAP814780Z
C008	Semi-Conductor (SR) 0.01 μF 25 V ±10%		BCGC511035Z
C009	Ceramic 0.001 μF 50 V ±10% YB(B)		BCKB811025Z
C010	— Not Used —		
C011	Ceramic 27 pF 50 V ±5% CH		BCCC812704Z
C012	Semi-Conductor (SR) 0.047 μF 25 V ±10%		BCGC514735Z
C013	Semi-Conductor (SR) 0.047 μF 25 V ±10%		BCGC514735Z
C014	Semi-Conductor (SR) 0.047 μF 25 V ±10%		BCGC514735Z
C015	Ceramic 220 pF 50 V ±10% YB(B)		BCKB812215Z
C016	Semi-Conductor (SR) 0.022 μF 25 V ±10%		BCGC512235Z
C017	Semi-Conductor (SR) 0.0047 μF 25 V ±10%		BCGC514725Z
C018	Ceramic 470 pF 50 V ±10% YB(B)		BCKB814715Z
C019	Ceramic 470 pF 50 V ±10% YB(B)		BCKB814715Z
C020	— Not Used —		
C021	Semi-Conductor (SR) 0.0012 μF 25 V ±10%		BCGC511225Z
C022	Semi-Conductor (SR) 0.1 μF 25 V ±10%		BCGC511045Z
C023	Semi-Conductor (SR) 0.01 μF 25 V ±10%		BCGC511035Z
C024	Semi-Conductor (SR) 0.0039 μF 25 V ±10%		BCGC513925Z
C025	Mylar* 0.01 μF 50 V ±5%		BCQM811034Z
C026	Ceramic 220 pF 50 V ±10% YB(B)		BCKB812215Z
C027	Electrolytic 10 μF 16 V		BCEL311000Z
C028	Electrolytic 220 μF 10 V		BCEL112210Z
C029	Electrolytic 1 μF 50 V		BCEL811090Z
C030	— Not Used —		
C031	Mylar 0.47 μF 50 V ±5% C-110		BCQB814744Z
C032	Electrolytic 47 μF 25 V		BCEL514700Z
C033	Electrolytic 1000 μF 10 V ±20% C-136		BCAT111026Z
C034	Electrolytic 1000 μF 16 V ±20% C-136		BCAT311026Z
C035	Electrolytic 3300 μF 6.3 V ±20% C-094		BCEU903326Z
C036	Ceramic 0.01 μF 50 V +80/-20% YF(F)		BCKG811030Z
C037	Electrolytic 4.7 μF 25 V		BCEL514790Z
C038	Semi-Conductor (SR) 0.047 μF 25 V ±10%		BCGC514735Z

Note: *Mylar is a registered trademark of E.I. Du Pont de Nemours and Company.

REF. NO.	DESCRIPTION	RS PART NO.	MFR'S PART NO.
C039	— Not Used —		
C042			
C043	Ceramic 0.001 μ F 50 V \pm 10% YB(B)		BCKB811025Z
C044	Ceramic 0.001 μ F 50 V \pm 10% YB(B)		BCKB811025Z
C045	— Not Used —		
C046	Ceramic 220 pF 50 V \pm 10% YB(B)		BCKB812215Z
C047	Ceramic 0.001 μ F 50 V \pm 10% YB(B)		BCKB811025Z
C048	Semi-Conductor (SR) 0.0047 μ F 25 V \pm 10%		BCGC514725Z
C049	Ceramic 100 pF 50 V \pm 5% SL		BCCG811014Z
C050	— Not Used —		
C051	Ceramic 0.001 μ F 50 V \pm 10% YB(B)		BCKB811025Z
C052	Electrolytic 470 μ F 16 V \pm 20% C-124		BCAX314716Z
C053	Ceramic 10 pF 50 V \pm 0.5% SL		BCCG811002Z
C054	Ceramic 220 pF 50 V \pm 10% YB(B)		BCKB812215Z
C055	Electrolytic 47 μ F 25 V		BCEL514700Z
C056	Ceramic 10 pF 50 V \pm 0.5% CH		BCCG811002Z
C057	Electrolytic 1 μ F 50 V		BCEL811090Z
C058	— Not Used —		
C060			
C061	Semi-Conductor (SR) 0.0047 μ F 25 V \pm 10%		BCGC514725Z
C062	Semi-Conductor (SR) 0.0022 μ F 25 V \pm 10%		BCGC512225Z
C063	Semi-Conductor (SR) 0.0022 μ F 25 V \pm 10%		BCGC512225Z
C064	Semi-Conductor (SR) 0.01 μ F 25 V \pm 10% Only for CA		BCGC511035Z
C065	Semi-Conductor (SR) 0.0047 μ F 25 V \pm 10% Only for CA		BCGC514725Z
C066	Ceramic 470 pF 50 V \pm 10% YB(B) Only for CA		BCKB814715Z
C067	— Not Used —		
C099			
C100	Semi-Conductor (SR) 0.01 μ F 25 V \pm 10%		BCGC511035Z
C101	Semi-Conductor (SR) 0.01 μ F 25 V \pm 10%		BCGC511035Z
C102	Semi-Conductor (SR) 0.01 μ F 25 V \pm 10%		BCGC511035Z
C103	Semi-Conductor (SR) 0.01 μ F 25 V \pm 10%		BCGC511035Z
C104	— Not Used —		
C105	Semi-Conductor (SR) 0.01 μ F 25 V \pm 10%		BCGC511035Z
C106	Ceramic 0.001 μ F 50 V \pm 10% YB(B)		BCKB811025Z
C107	Ceramic 100 pF 50 V \pm 5% SL		BCCG811014Z
C108	Ceramic 0.001 μ F 50 V \pm 10% YB(B)		BCKB811025Z
C109	Semi-Conductor (SR) 0.0047 μ F 25 V \pm 10%		BCGC514725Z
C110	Electrolytic 4.7 μ F 25 V		BCEL514790Z
C111	Ceramic 470 pF 50 V \pm 10% YB(B)		BCKB814715Z
C112	Ceramic 0.001 μ F 50 V \pm 10% YB(B)		BCKB811025Z
C113	Semi-Conductor (SR) 0.01 μ F 25 V \pm 10%		BCGC511035Z
DIODES			
D001	Silicon 1N4148,Uniden		BDAY0258001
D002	— Not Used —		
D003	Silicon 1SS85		BDAY0326001
D004	— Not Used —		

REF. NO.	DESCRIPTION	RS PART NO.	MFR'S PART NO.
D005	Silicon	1N4148,Uniden	BDAY0258001
D006	Silicon	1N4148,Uniden	BDAY0258001
D007	Silicon	1N4148,Uniden	BDAY0258001
D008	Silicon	1N4148,Uniden	BDAY0258001
D009	Silicon	1N4148,Uniden	BDAY0258001
D010	— Not Used —		
D011	Silicon	1N4003	BDAY0133001
D012	Silicon	1SS85	BDAY0326001
D013	Silicon	1N4148,Uniden	BDAY0258001
D014	Silicon	1N4148,Uniden	BDAY0258001
D015	— Not Used —		
D017	— Not Used —		
D018	Silicon	1N4148,Uniden	BDAY0258001
D019	— Not Used —		
D020	— Not Used —		
D021	Silicon	1N4148,Uniden	BDAY0258001
D022	Silicon	1N4148,Uniden	BDAY0258001
D023	Silicon	1N4148,Uniden	BDAY0258001
D024	Silicon	1N4148,Uniden	BDAY0258001
D025	Silicon	1N4148,Uniden	BDAY0258001
D026	Silicon	1N4148,Uniden	BDAY0258001
D027	— Not Used —		
D028	Silicon	1N4148,Uniden	BDAY0258001
JACKS			
J001	DC-DC Power	JK-135 HEC0470-01-230	BJKY0135001
J002	Earphone	JK-089 HSJ0615	BJKY0089001
J003	Antenna	JK-223 TI-P9(L)	BJKY0223001
J004		JK-324 53014-0710 7 pin	BJKY0324007
J005		JK-235 10 pin	BJKY0235010
J006	Speaker 2 pin	JK-276 5267-02A	BJKY0276002
COILS			
L001		LD-033	BLDY0033001
L002		LB-605 A119AC-18259N	BLBY0605001
L003		LB-538 A7TRCS-10651Z	BLBY0538001
L004		LD-087 BF04-3x5x1	BLDY0087001
L005		LB-606 A119AC-18292F	BLBY0606001
L006		LF-149 5PNR-2736Z	BLFY0149001
L007	Inductor Molded	LZ-051 1.2 μ H	BLZY0051129
L008	Inductor Molded	LZ-051 1.2 μ H	BLZY0051129
TRANSISTORS			
Q001	Silicon NPN	DB-295 2SC1674-L	BDBC1674111
Q002	Silicon NPN	DB-224 2SC945A-Q	BDBC0945507
Q003	Silicon NPN	DB-224 2SC945A-Q	BDBC0945507
Q004	Silicon NPN	DB-439 2SD1676	BDBD1676000

REF. NO.	DESCRIPTION	RS PART NO.	MFR'S PART NO.
Q006	Silicon NPN	DB-549 DTA143XS	BDBZ0549001
Q007	Silicon NPN	DB-549 DTA143XS	BDBZ0549001
Q008	— Not Used —		
Q009	Silicon NPN	DB-549 DTA143XS	BDBZ0549001
Q010	— Not Used —		
Q011	Silicon NPN	DB-555 DTC144ES	BDBZ0555001
Q012	— Not Used —		
Q013	Silicon NPN	DB-555 DTC144ES	BDBZ0555001
Q014	Silicon NPN	DB-549 DTA143XS	BDBZ0549001

RESISTORS

Note : All resistors are Carbon Formed Vertical type, 1/6 watt, $\pm 5\%$, unless otherwise specified.

R001	Carbon Axial Lead	10 k ohm 1/6 W $\pm 5\%$	BRFT611034Z
R002	— Not Used —		
R003	Carbon Axial Lead	10 k ohm 1/6 W $\pm 5\%$	BRFT611034Z
R004	— Not Used —		
R005	Carbon Axial Lead	1 k ohm 1/8 W $\pm 5\%$	BRFT181024Z
R006		3.3 k ohm	BRUB613324Z
R007		120 k ohm	BRUB611244Z
R008	Carbon Axial Lead	4.7 k ohm 1/8 W $\pm 5\%$	BRFT184724Z
R009		47 k ohm	BRUB614734Z
R010	— Not Used —		
R011	Carbon Axial Lead	15 k ohm 1/8 W $\pm 5\%$	BRFT181534Z
R012	— Not Used —		
R013		68 k ohm	BRUB616834Z
R014		1 k ohm	BRUB611024Z
R015	Carbon Axial Lead	6.8 k ohm 1/8 W $\pm 5\%$	BRFT186824Z
R016		330 k ohm	BRUB613344Z
R017		10 k ohm	BRUB611034Z
R018		10 k ohm	BRUB611034Z
R019		330 k ohm	BRUB613344Z
R020	— Not Used —		
R021		1k ohm	BRUB611024Z
R022		33 k ohm	BRUB613334Z
R023		560 k ohm	BRUB615644Z
R024		22 k ohm	BRUB612234Z
R025		10 k ohm	BRUB611034Z
R026		10 k ohm	BRUB611034Z
R027	Carbon Axial Lead	12 k ohm 1/6 W $\pm 5\%$	BRFT612324Z
R028		560 ohm	BRUB615614Z
R029	— Not Used —		
R030	— Not Used —		
R031		330 ohm	BRUB613314Z
R032		39 k ohm	BRUB613934Z
R033	Carbon Axial Lead	1 ohm 1/6 W $\pm 5\%$	BRFT611094Z
R034	Carbon Axial Lead	560 ohm 1/6 W $\pm 5\%$	BRFT615614Z
R035	Carbon Axial Lead	10 ohm 1/8 W $\pm 5\%$	BRFT181004Z
R036			
?	— Not Used —		
R040			

REF. NO.	DESCRIPTION	RS PART NO.	MFR'S PART NO.
R041	Carbon Axial Lead	15 k ohm 1/8 W ± 5%	BRFT181534Z
R042		10 k ohm	BRUB611034Z
R043	— Not Used —		
R044	Carbon Axial Lead	100 ohm 1/6 W ± 5%	BRFT611014Z
R045		4.7 k ohm	BRUB614724Z
R046	Carbon Axial Lead	22 k ohm 1/6 W ± 5%	BRFT612234Z
R047		100 k ohm	BRUB611044Z
R048		100 k ohm	BRUB611044Z
R049		100 k ohm	BRUB611044Z
R050	— Not Used —		
R051		43 k ohm	BRUB614334Z
R052		180 ohm	BRUB611814Z
R053		1 ohm	BRUB611094Z
R054	Carbon Axial Lead	22 ohm 1/6 W ± 5%	BRFT612204Z
R055		3.3k ohm	BRUB613324Z
R056		6.8 k ohm	BRUB616824Z
R057	Carbon Axial Lead	150 ohm 1/6 W ± 5%	BRFT611514Z
R058		100 ohm	BRUB611014Z
R059	Metal Oxide	2.2 ohm 1 W ± 5%	BRSJ102294Z
R060		1 M ohm 1/8 W ± 5%	BRUB181054Z
R061		10 k ohm	BRUB611034Z
R062		15 k ohm	BRUB611534Z
R063		15 k ohm	BRUB611534Z
R064		6.8 k ohm	BRUB616824Z
R065		1.8 k ohm	BRUB611824Z
INTEGRATED CIRCUITS			
IC001	Linear	NJM3359D-A	BDEY0815001
IC002	linear	TDA1905	BDEY0603001
IC003	Silicon Bipolar	UPC7808H	BDEY0401001
IC004	— Not Used —		
IC005	Regulator	M5278L05	BDEY0586001
IC006	DC-DC Convertor	IR3M03A	BDEY1153001
IC007	Regulator	M5278L05	BDEY0586001
MISCELLANEOUS			
T001	Transformer AF Choke	TF-083	BTFY0083001
FT001	Filter Crystal	FL-195	BFLY0195001
FT002	Filter Ceramic	FL-142 SFR450D	BFLY0142001
VR001	Resistor Semi-Fixed	RT-182 TT24R 5KB	BRTY0182502

MICROPROCESSOR PCB ASS'Y

REF. NO.	DESCRIPTION	RS PART NO.	MFR'S PART NO.
	ASSEMBLY, PCB, MICROPROCESSOR Consists of the following:		AB214ZPBEB
CAPACITORS			
The following codes indicate variations of capacitors against temperatures; YA = ±5%, YB = ±10%, YD = +20 -30%, YE = +20 -50% (-25 ~ +85°C), ZF = +30 -80% (-10 ~ +70°C), CH = 0 ± 60ppm/°C, RH = 220ppm/°C ± 60ppm/°C, TH = -470ppm/°C ± 60ppm/°C, SL = +350ppm/°C ~ -1000ppm/°C, UJ = -750ppm/°C ± 120ppm/°C			
C201	Ceramic	0.0047 μF 50 V +80/-20% YF(F)	BCKG814720Z
C202	Ceramic	0.022 μF 50 V +80/-20% YF(F)	BCKG812230Z
C203	Semi-Conductor (SR)	0.1 μF 16 V ± 10%	BCGC311045Z
C204	Semi-Conductor (SR)	0.022 μF 25 V ± 10%	BCGC512235Z
C205	Ceramic	15 pF 50 V ± 5% CH	BCCC811504Z
C206	Ceramic	0.0047 μF 50 V +80/-20% YF(F)	BCKG814720Z
C207	Ceramic	100 pF 50 V ± 5% SL	BCCG811014Z
C208	Ceramic	100 pF 50 V ± 5% SL	BCCG811014Z
C209	Electrolytic	0.47 μF 50 V ± 20% C-095	BCER814786Z
C210	Ceramic	0.0047 μF 50 V +80/-20% YF(F)	BCKG814720Z
C211	Semi-Conductor (SR)	0.0022 μF 25 V ± 10%	BCGC512225Z
C212	Electrolytic	100 μF 10 V ± 20% C-125	BCEQ111016Z
DIODES			
D201	Silicon	1N4148,Uniden	BDAY0258001
D202	Silicon	1N4148,Uniden	BDAY0258001
D203	Silicon	1N4148,Uniden	BDAY0258001
D204	Silicon	1N4148,Uniden	BDAY0258001
D205	Silicon	1N4148,Uniden	BDAY0258001
D206	Silicon	1N4148,Uniden	BDAY0258001
D207	LED	SLP-135B	BDAY0430001
D208	LED	SLP-135B	BDAY0430001
D209	Silicon	LDR204AL	BDAY0202001
D210	Silicon	1N4148,Uniden	BDAY0258001
D211	Silicon	1N4148,Uniden	BDAY0258001
COILS			
L201		LF-150 5PLC-2760N	BLFY0150001
L202		LD-087 BF04-3X5X1	BLDY0087001
TRANSISTORS			
Q201	Silicon NPN	DB-342 2SC2458-Y	BDBC2458124
Q202	Silicon NPN	DB-342 2SC2458-Y	BDBC2458124

REF. NO.	DESCRIPTION	RS PART NO.	MFR'S PART NO.
RESISTORS			
Note : All resistors are Carbon Formed Vertical type, 1/6 watt, $\pm 5\%$, unless otherwise specified.			
R201	Carbon Axial Lead	100 k ohm 1/6 W $\pm 5\%$	BRFT611044Z
R202		220 ohm	BRUB612214Z
R203		68 k ohm	BRUB616834Z
R204		560 ohm	BRUB615614Z
R205		560 ohm	BRUB615614Z
R206		270 ohm	BRUB612714Z
R207		560 ohm	BRUB615614Z
R208		560 ohm	BRUB615614Z
R209		560 ohm	BRUB615614Z
R210		560 ohm	BRUB615614Z
R211		100 k ohm	BRUB611044Z
R212		47 k ohm	BRUB614734Z
R213		1.2 k ohm	BRUB611224Z
R214	Carbon Axial Lead	12 k ohm 1/6 W $\pm 5\%$	BRFT611234Z
R215		100 ohm	BRUB611014Z
R216		100 ohm	BRUB611014Z
R217		100 ohm	BRUB611014Z
R218		220 ohm	BRUB612214Z
R219		560 ohm	BRUB615614Z
R220		560 ohm	BRUB615614Z
R221		560 ohm	BRUB615614Z
R222		220 ohm	BRUB612214Z
R223		220 ohm	BRUB612214Z
R224		220 ohm	BRUB612214Z
R225		220 ohm	BRUB612214Z
R226		220 ohm	BRUB612214Z
R227		220 ohm	BRUB612214Z
R228		1k ohm	BRUB611024Z
R229		100 k ohm	BRUB611044Z
R230		15 k ohm	BRUB611534Z
R231		1 M ohm	BRUB611054Z
R232	Carbon Axial Lead	270 k ohm 1/8 W $\pm 5\%$	BRFT182744Z
INTEGRATED CIRCUIT			
IC201	Microprocessor	UC1116 For U.S.A./CA	BDEY0856001
IC201	Microprocessor	UC1152	BDEY105001

KEY PCB ASS'Y

REF. NO.	DESCRIPTION	RS PART NO.	MFR'S PART NO.
	ASSEMBLY, PCB, KEY Consists of the following:		AB214ZPBEC
B301	PCB, Key Board	PH-063AA	BPHY0063AAZ

UHF PCB ASS'Y

REF. NO.	DESCRIPTION	RS PART NO.	MFR'S PART NO.
	ASSEMBLY, PCB, UHF Consists of the following:		AB214ZPBEDA
CAPACITORS			
Note : All capacitors are Ceramic M/L** (3216) type unless otherwise specified.			
The following codes indicate variations of capacitors against temperatures; YA = ±5%, YB = ±10%, YD = +20 -30%, YE = +20 -50% (-25 ~+85°C), ZF = +30 -80% (-10 ~+70°C), CH = 0 ±60ppm/°C, RH = 220ppm/°C ±60ppm/°C, TH = -470ppm/°C ±60ppm/°C, SL = +350ppm/°C ~-1000ppm/°C, UJ = -750ppm/°C ±120ppm/°C			
C401	3 pF 50 V ±0.25% CG(CH)		BCXD813091Z
C402	56 pF 50 V ±5% SL		BCXQ815604Z
C403	27 pF 50 V ±5% SL		BCXQ812704Z
C404	10 pF 50 V ±5% CG		BCXD811004Z
C405	100 pF 50 V ±5% CG		BCXD811014Z
C406	0.5 pF 50 V ±0.25% SL		BCXQ815081Z
C407	47 pF 50 V ±5% SL		BCXQ814704Z
C408	0.001 μF 50 V ±10% C(B)		BCXB811025Z
C409	0.0033 μF 50 V ±10% B		BCXS813325Z
C410	470 pF 50 V ±10% B		BCXS814715Z
C411	470 pF 50 V ±10% B		BCXS814715Z
C412	5 pF 50 V ±0.5% CG		BCXD815092Z
C413	47 pF 50 V ±5% SL		BCXQ814704Z
C414	2 pF 50 V ±0.25% CG(CH)		BCXD812091Z
DIODES			
D401	Varicap	1SV188-9 TRP	BDAY0398001
D402	Varicap	1SV201-4 TRP	BDAY0399001
D403	Silicon	HSK110 TR	BDAY0400001
D404	Varicap	1SV188-9 TRP	BDAY0398001
COILS			
L401		LE-201 D2.4 3 1/2T	BLEY0201001
L402		LB-606 A119AC-18292F	BLBY0606001
L403		LE-293 D6.96 1/2T	BLEY0293001
L404			
L405	— Not Used —		
L409			
L410	Coil M	PBP 0.4T SN PLTG	HETC416594Z
L411	Coil M	PBP 0.4T SN PLTG	HETC416594Z
TRANSISTORS			
Q401	Silicon NPN	DB-711 2SC3356-R22 T1B	BDBC3356644
Q402	Silicon NPN	DB-711 2SC3356-R22 T1B	BDBC3356644

Note: **M/L = Multilayer.

REF. NO.	DESCRIPTION	RS PART NO.	MFR'S PART NO.
Q403	Silicon NPN DB-724 2SC3121 TE85L		BDBC3121000
RESISTORS			
Note : All resistors are Carbon Fixed Chip type, 1/8 watt, $\pm 5\%$, unless otherwise specified.			
R401	33 k ohm		BRFC183334Z
R402	82 ohm		BRFC188204Z
R403	100 k ohm		BRFC181044Z
R404	100 ohm		BRFC181014Z
R405	33 k ohm		BRFC183334Z
R406	390 k ohm		BRFC183944Z
R407	220 k ohm		BRFC182244Z
R408	1 k ohm		BRFC181024Z
R409	1.5 k ohm		BRFC181524Z
R410	1 k ohm		BRFC181024Z
R411	220 ohm		BRFC182214Z
TRIMMER CAPACITORS			
CT401	CT-054 TZ03R200E 20 pF		BCTY0054200
CT402	CT-054 TZ03R200E 20 pF		BCTY0054200
CT403	CT-054 TZ03R200E 20 pF		BCTY0054200

UHF PCB ASS'Y (Only for CA)

REF. NO.	DESCRIPTION	RS PART NO.	MFR'S PART NO.
	ASSEMBLY, PCB, UHF Consists of the following:		AB214APBED
CAPACITORS			
Note : All capacitors are Ceramic M/L (3216) Type, unless otherwise specified.			
The following codes indicate variations of capacitors against temperatures; YA = $\pm 5\%$, YB = $\pm 10\%$, YD = +20 -30%, YE = +20 -50% (-25 ~ +85°C), ZF = +30 -80% (-10 ~ +70°C), CH = $0 \pm 60\text{ppm}/^\circ\text{C}$, RH = $220\text{ppm}/^\circ\text{C} \pm 60\text{ppm}/^\circ\text{C}$, TH = $-470\text{ppm}/^\circ\text{C} \pm 60\text{ppm}/^\circ\text{C}$, SL = $+350\text{ppm}/^\circ\text{C} \sim -1000\text{ppm}/^\circ\text{C}$, UJ = $-750\text{ppm}/^\circ\text{C} \pm 120\text{ppm}/^\circ\text{C}$			
C401	2 pF 50 V $\pm 0.25\%$ CG(CH)		BCXD812091Z
C402	2 pF 50 V $\pm 0.25\%$ CG(CH)		BCXD812091Z
C403	27 pF 50 V $\pm 5\%$ CG		BCXD812704Z
C404	18 pF 50 V $\pm 5\%$ CG		BCXD811804Z
C405	0.001 μF 50 V $\pm 10\%$ C(B)		BCXE811025Z
C406	100 pF 50 V $\pm 5\%$ CG		BCXD811014Z
C407	6 pF 50 V $\pm 0.5\%$ CG		BCXD816092Z
C408	27 pF 50 V $\pm 5\%$ CG		BCXD812704Z
C409	2 pF 50 V $\pm 0.25\%$ CG(CH)		BCXD812091Z

REF. NO.	DESCRIPTION		RS PART NO.	MFR'S PART NO.
C410		0.001 μ F 50 V \pm 10% C(B)		BCXE811025Z
C411		22 pF 50 V \pm 5% CG		BCXD812204Z
C412		4 pF 50 V \pm 0.25% CG		BCXD814091Z
C413		12 pF 50 V \pm 5% CG		BCXD811204Z
C414		0.001 μ F 50 V \pm 10% C(B)		BCXE811025Z
C415		0.01 μ F 50 V \pm 10% C(B)		BCXE811035Z
C416		0.001 μ F 50 V \pm 10% C(B)		BCXE811025Z
C417		12 pF 50 V \pm 5% CG		BCXD811204Z
C418		0.001 μ F 50 V \pm 10% C(B)		BCXE811025Z
C419		0.01 μ F 50 V \pm 10% C(B)		BCXE811035Z
C420		100 pF 50 V \pm 5% CG		BCXD811014Z
DIODES				
D401	Varicap	1SV188-9 TRP		BDAY0398001
D402	Varicap	1SV188-9 TRP		BDAY0398001
D403	Varicap	1SV188-9 TRP		BDAY0398001
D404	Varicap	1SV188-9 TRP		BDAY0398001
D405	Silicon	HSK120 TR		BDAY0393001
COILS				
L401		LE-293 D6.96 1/2T		BLEY0293001
L402		LE-293 D6.96 1/2T		BLEY0293001
L403		LE-366		BLEY0366001
L404		LB-827		BLBY0827001
TRANSISTORS				
Q401	Silicon NPN	DB-711 2SC3356-R24 T1B		BDBC3356646
Q402	Silicon NPN	DB-711 2SC3356-R22 T1B		BDBC3356644
Q403	Silicon NPN	DB-711 2SC3356-R24 T1B		BDBC3356646
RESISTORS				
Note : All resistors are Carbon Fixed Chip Type, 1/8 watt, \pm 5% unless otherwise specified.				
R401	Carbon Axial Lead	22 k ohm 1/8 W \pm 5%		BRFT182234Z
R402		33 k ohm		BRFC183334Z
R403	Carbon Axial Lead	330 ohm 1/6 W \pm 5%		BRFT613314Z
R404	Carbon Axial Lead	33 k ohm 1/8 W \pm 5%		BRFT183334Z
R405		330 ohm		BRFC183314Z
R406	Jumper Chip	RZ-029		BRZY0029001
R407		330 k ohm		BRFC183344Z
R408		1 k ohm		BRFC181024Z
R409		220 ohm		BRFC182214Z
R410		1 k ohm		BRFC181024Z
R411		220 k ohm		BRFC182244Z
R412		22 k ohm		BRFC182234Z
INTEGRATED CIRCUIT				
IC401	Silicon Bipolar Monolithic	UPC1675G-T1 Surface Mount		BDEY1190001

VHF PCB ASS'Y

REF. NO.	DESCRIPTION	RS PART NO.	MFR'S PART NO.
	ASSEMBLY, PCB, VHF Consists of the following:		AB214ZPBEE
CAPACITORS			
Note : All capacitors are Ceramic Melf***, C-140 Type unless otherwise specified.			
The following codes indicate variations of capacitors against temperatures; YA = ±5%, YB = ±10%, YD = +20 -30%, YE = +20 -50% (-25 ~ +85°C), ZF = +30 -80% (-10 ~ +70°C), CH = 0 ± 60ppm/°C, RH = 220ppm/°C ± 60ppm/°C, TH = -470ppm/°C ± 60ppm/°C, SL = +350ppm/°C ~ -1000ppm/°C, UJ = -750ppm/°C ± 120ppm/°C			
C601		0.001 μF 50 V ± 10% B	BCVP811025Z
C602	Ceramic M/L (3216)	33 pF 50 V ± 5% CG(CH)	BCXD813304Z
C603	Cylinder-Ceramic	0.001 μF 25 V ± 20% Y C-161	BCWJ511026Z
C604	Cylinder-Ceramic	15 pF 50 V ± 5% CH C-161	BCWA811504Z
C605		0.001 μF 50 V ± 10% B	BCVP811025Z
C606		0.01 μF 16 V ± 20% Y	BCVQ311036Z
C607		470 pF 50 V ± 10% B	BCVP814715Z
C608		0.0033 μF 16 V ± 20% X	BCVR313326Z
C609		9 pF 50 V ± 0.5% CH	BCVM819092Z
C610	— Not Used —		
C611		0.01 μF 16 V ± 20% Y	BCVQ311036Z
C612		0.001 μF 50 V ± 10% B	BCVP811025Z
C613	Ceramic M/L (3216)	39 pF 50 V ± 5% UJ	BCXP813904Z
C614		0.001 μF 50 V ± 10% B	BCVP811025Z
C615		0.001 μF 50 V ± 10% B	BCVP811025Z
C616	— Not Used —		
C618			
C619	Ceramic	0.001 μF 50 V ± 10% YB (B)	BCKB811025Z
C620	Ceramic	100 pF 50 V ± 10% YB (B)	BCKB811015Z
DIODES			
D601	Varicap	1SV201-4 TRP	BDAY0399001
D602	Silicon	HSK110 TR	BDAY0400001
D603	Varicap	1SV201-4 TRP	BDAY0399001
D604	Silicon	HSK110 TR	BDAY0400001
D605	— Not Used —		
D606	— Not Used —		
D607	Silicon	HSK110 TR	BDAY0400001
D608	Silicon	HSK110 TR	BDAY0400001
D609	Varicap	1SV201-4 TRP	BDAY0399001
D610	Varicap	1SV201-4 TRP	BDAY0399001
D611	— Not Used —		
D612	— Not Used —		
D613	Silicon	HSK110 TR	BDAY0400001

Note: ***Melf=Metal Electrical Face.

REF. NO.	DESCRIPTION	RS PART NO.	MFR'S PART NO.
COILS			
L601	LB-571 291XN-3505X For U.S.A./CA		BLBY0571001
L601	LB-659 291XN-3994X		BLBY0659001
L602	LB-569 291XN-3504X		BLBY0569001
L603	LB-570 For U.S.A./CA		BLBY0570001
L603	LB-771		BLBY0771001
L604	LC-209		BLCY0209001
RESISTORS			
Note : All resistors are Carbon Melf Chip Type, 1/8 watt, $\pm 5\%$, unless otherwise specified.			
R601	10 k ohm		BRFD181034Z
R602	33 k ohm		BRFD183334Z
R603	2.7 k ohm		BRFD182724Z
R604	1 k ohm		BRFD181024Z
R605	33 k ohm		BRFD183334Z
R606	Carbon Axial Lead 2.7 k ohm 1/6 W $\pm 5\%$		BRFT612724Z
R607	— Not Used —		
R608	100 ohm		BRFD181014Z
R609	33 k ohm		BRFD183334Z
R610	33 k ohm		BRFD183334Z
R611	100 ohm		BRFD181014Z
R612	— Not Used —		
R613	1 k ohm		BRFD181024Z
R614	— Not Used —		
R650			
R651	Jumper Chip RZ-021 JC2A		BRZY0021001
R652	Jumper Chip RZ-021 JC2A		BRZY0021001
R653	Jumper Chip RZ-021 JC2A		BRZY0021001
INTEGRATED CIRCUIT			
IC601	RF AMP. LA-1186N		BDEY1051001

PLL PCB ASS'Y

REF. NO.	DESCRIPTION	RS PART NO.	MFR'S PART NO.
	ASSEMBLY, PCB, PLL Consists of the following:		AB214ZPBEF
CAPACITORS			
<p>The following codes indicate variations of capacitors against temperatures; YA = ±5%, YB = ±10%, YD = +20 -30%, YE = +20 -50% (-25 ~ +85°C), ZF = +30 -80% (-10 ~ +70°C), CH = 0 ± 60ppm/°C, RH = 220ppm/°C ± 60ppm/°C, TH = -470ppm/°C ± 60ppm/°C, SL = +350ppm/°C ~ -1000ppm/°C, UJ = -750ppm/°C ± 120ppm/°C</p>			
C701	Ceramic M/L (2125)	0.0033 μF 50 V ± 10% B	BCXT813325Z
C702	Ceramic M/L (2125)	0.033 μF 50 V +80/-20% F	BCXK813330Z
C703	Cylinder-Ceramic	0.001 μF 25 V ± 20% Y C-161	BCWJ511026Z
C704	Cylinder-Ceramic	1.5 pF 50 V ± 0.25% UK C-161	BCWL811591Z
C705	Cylinder-Ceramic	0.001 μF 25 V ± 20% Y C-161	BCWJ511026Z
C706	Ceramic M/L (2125)	33 pF 50 V ± 5% CG	BCXG813304Z
C707	Cylinder-Ceramic	0.001 μF 25 V ± 20% Y C-161	BCWJ511026Z
C708	Cylinder-Ceramic	0.001 μF 25 V ± 20% Y C-161	BCWJ511026Z
C709	Ceramic M/L (2125)	0.022 μF 50 V ± 10% C(B)	BCXJ812235Z
C710	— Not Used —		
C711	Cylinder-Ceramic	47 pF 50 V ± 5% SL C-161	BCWE814704Z
C712	Ceramic M/L (2125)	0.0033 μF 50 V ± 10% B	BCXT813325Z
C713	Cylinder-Ceramic	0.001 μF 25 V ± 20% Y C-161	BCWJ511026Z
C714	Electrolytic	100 μF 6.3V ± 20% C-158	BCAJ901016Z
C715	— Not Used —		
C716	Ceramic M/L (2125)	18 pF 50 V ± 5% CG	BCXG811804Z
C717	Ceramic M/L (2125)	39 pF 50 V ± 5% CG	BCXG813904Z
C718	Cylinder-Ceramic	10 pF 50 V ± 0.5% SL C-161	BCWE811002Z
C719	Cylinder-Ceramic	10 pF 50 V ± 0.5% SL C-161	BCWE811002Z
C720	— Not Used —		
C721	Mylar (MKT)	0.1 μF 63V ± 5% C-184	BCQX911044Z
C722	Mylar	0.0047 μF 50 V ± 5% C-114	BCQD814724Z
C723	Mylar	0.0047 μF 50 V ± 5% C-114	BCQD814724Z
C724	Electrolytic	22 μF 25 V ± 20% C-158	BCAJ512206Z
DIODES			
D701	Varicap	1SV201-4 TRP	BDAY0399001
D702	Silicon	HSK110 TR	BDAY0400001
D703	Silicon	HSK110 TR	BDAY0400001
D704	Varicap	1SV201-4 TRP	BDAY0399001
D705	— Not Used —		
D707			
D708	Silicon	1SS184 TE85L	BDAY0256001

REF. NO.	DESCRIPTION	RS PART NO.	MFR'S PART NO.
JACKS			
J701	JK-472 5 pin		BJKY0472005
J702	JK-472 3 pin		BJKY0472003
J703	JK-472 3 pin		BJKY0472003
J704	JK-472 3 pin		BJKY0472003
COILS			
L701	LB-552 For U.S.A./CA		BLBY0552001
L701	LB-657 VB363SN 125 IB		BLBY0657001
L702	LB-573		BLBY0573001
L703	Inductor Molded LZ-052 SP0305-R22K 0.22 μ H		BLZY0052228
L704	Inductor Molded LZ-052 SP0305-R56K 0.56 μ H		BLZY0052568
L705	LD-087 BF04-3x5x1		BLDY0087001
TRANSISTORS			
Q701	Silicon NPN DB-724 2SC3121 TE85L		BDBC3121000
Q702	Silicon NPN DB-724 2SC3121 TE85L		BDBC3121000
Q703	Silicon NPN DB-724 2SC3121 TE85L		BDBC3121000
Q704	Silicon PNP DB-036 2SA1162-Y TE85L		BDBA1162124
Q705	Silicon NPN DB-549 DTA143XS		BDBZ0549001
Q706	Silicon NPN DB-724 2SC3121 TE85L		BDBC3121000
Q707	Silicon NPN DB-777 2SC3121-T5L TE85L		BDBC3121814
Q708	Silicon NPN DB-036 2SA1162-Y TE85L		BDBA1162124
Q709	Silicon NPN DB-777 2SC3121-T5L TE85L		BDBC3121814
RESISTORS			
Note : All resistors are Carbon Fixed Chip Type, 1/10 watt, $\pm 5\%$, unless otherwise specified.			
R701	100 ohm		BRFC011014Z
R702	33 k ohm		BRFC013334Z
R703	330 ohm		BRFC013314Z
R704	470 ohm		BRFC014714Z
R705	560 ohm		BRFC015614Z
R706	4.7 k ohm		BRFC014724Z
R707	10 k ohm		BRFC011034Z
R708	4.7 k ohm		BRFC014724Z
R709	47 k ohm		BRFC014734Z
R710	— Not Used —		
R711	100 ohm		BRFC011014Z
R712	1.8 k ohm		BRFC011824Z
R713	100 ohm		BRFC011014Z
R714	10 k ohm		BRFC011034Z
R715	100 k ohm		BRFC011044Z
R716	10 k ohm		BRFC011034Z
R717	100 k ohm		BRFC011044Z
R718	100 ohm		BRFC011014Z
R719	330 ohm		BRFC013314Z
R720	— Not Used —		

REF. NO.	DESCRIPTION		RS PART NO.	MFR'S PART NO.
R721	— Not Used —			
R722		33 k ohm		BRFC013334Z
R723		10 k ohm		BRFC011034Z
R724	— Not Used —			
R725		10 k ohm		BRFC011034Z
R726		220 k ohm		BRFC012244Z
R727		22 k ohm		BRFC012234Z
R728		18 k ohm		BRFC011834Z
R729		15 k ohm		BRFC011534Z
R730	— Not Used —			
R731		18 k ohm		BRFC011834Z
R732		2.2 M ohm		BRFC012254Z
R733		100 ohm		BRFC011014Z
INTEGRATED CIRCUITS				
IC701	C-MOS	PLL2002A1		BDEY0868001
IC702	Linear	CA3140E		BDEY0604001
MISCELLANEOUS				
X701	Crystal	QX-145 10.400 MHz		BQXY0145001
CT701	Capacitor Trimmer	CT-065 TZ03Z500E 50 pF		BCTY0065500

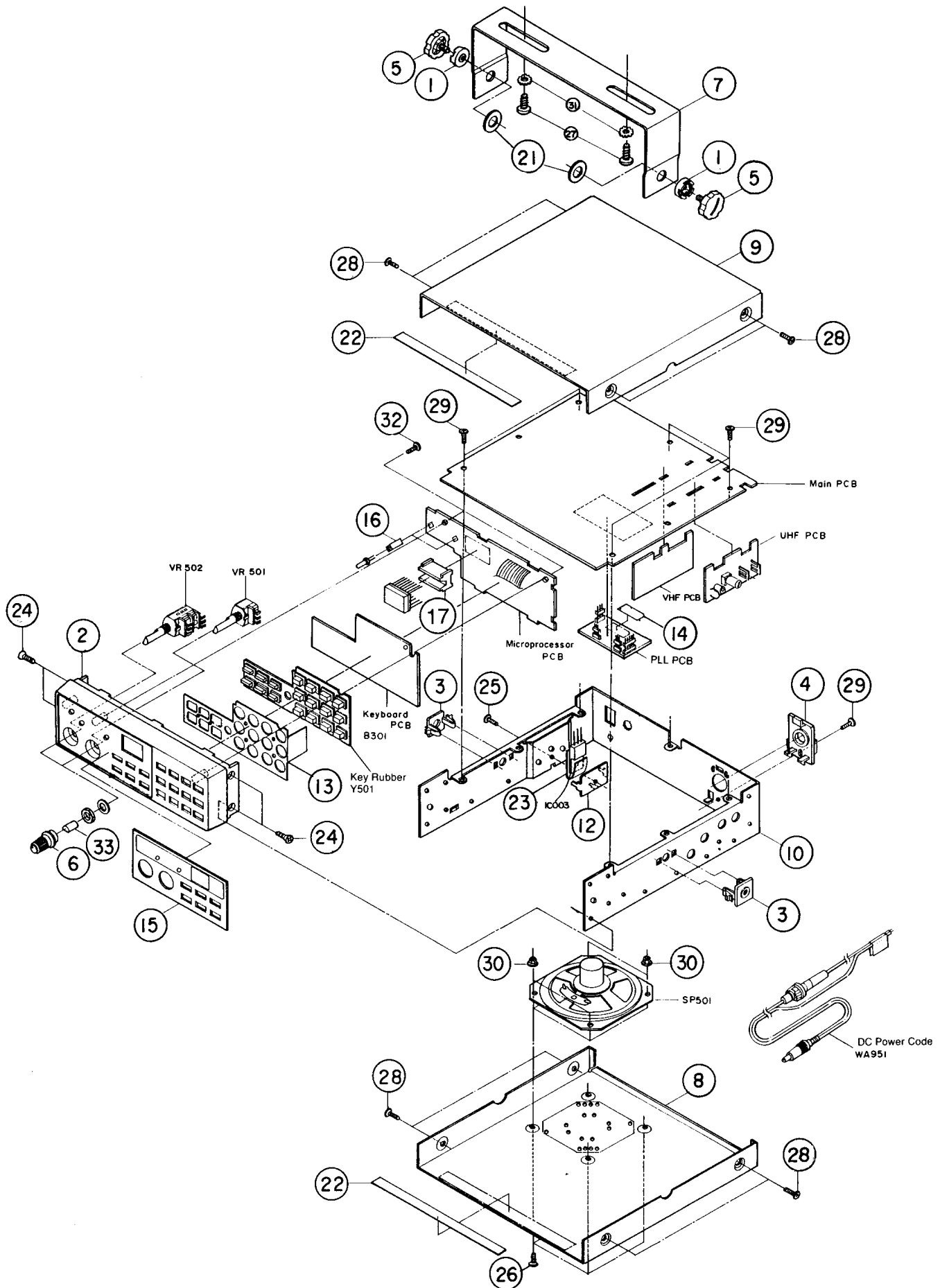
MISCELLANEOUS

REF. NO.	DESCRIPTION		RS PART NO.	MFR'S PART NO.
C501	Capacitor Semi-Conductor (SR)	0.01 μ F 25 V \pm 10% Only for CA		BCGC511035Z
C502	Capacitor Semi-Conductor (SR)	0.001 μ F 25 V \pm 10% Only for CA		BCGC511025Z
Y501	Key Rubber	YY-1000		BYYY1000001
W901	Wire	UL 1007 —26 10-100-10 YEL		CUHD010044Z
W902	Wire	UL 1007 —26 10-150-10 BLK		CUHK015044Z
W904	Wire	UL 1007 —26 10-110-10 BLU		CUHF011044Z
W905	Wire	UL1007 —26 10-120-10 BLK		CUHK012044Z
W906	Wire Only for CA	UL1007 —26 3- 33- 3 BLK		CUHK003311Z
W907	Wire Only for CA	UL1007 —26 3- 35- 3		CUHK003511Z
FC501	Flat Cable	WF-062 3- 20- 3		BWFY0620209
SP501	Speaker	SP-184		BSPY0184001
VR501	Resistor Variable	RV-734 100KC		BRVY0734001
VR502	Resistor Variable	RV-684 100KA W/S		BRVY0684001
WA502	Wire	WZ-684		BWZY0684001
WA501	Wire Assembled	W-071384A		CZDZ071384A
WA503	Wire Assembled	W-071356		CZDZ071356Z
WD951	DC Power Cord	WZ-647		BWZY0647001

SUBSTITUTION PARTS

DESCRIPTION		REF. NO.	RS PART NO.	MFR'S PART NO.
Capacitor Electrolytic	100 μ F 6.3V \pm 20% C-107	C714		BCEX901016Z
Diode	1S1555	D001		BDAY0181001
		D005		
		D006		
		D007		
		D008		
		D009		
		D013		
		D014		
		D018		
		D021		
		D022		
		D023		
		D024		
		D025		
		D026		
		D028		
		D201		
		D202		
		D203		
		D204		
		D205		
		D206		
		D210		
Coil	LD-237 L-2R4W(R22-E563)	L001		BLDY0237001
Coil	LB-726	L002		BLBY0726001
Coil	LB-725	L005		BLBY0725001
		L402		
Inductor Molded	LZ-041 1.2 μ H	L007		BLZY0041129
		L008		
Coil	LF-189	L201		BLFY0189001
Coil	LB-705	L601		BLBY0705001
Coil	LB-704	L602		BLBY0704001
Coil	LB-697	L603		BLBY0697001
Coil	LC-226	L604		BLCY0226001
Inductor Molded	LZ-041 0.22 μ H	L703		BLZY0041228
		L704		
Transformer	TF-374	T001		BTFY0374001
Filter	FL-246 MF10.8R2	FT001		BFLY0246001
Flat Cable	WF-024 3- 20- 3	FC501		BWFY0240209

EXPLODED VIEW



Note: Parts with reference numbers are listed in MECHANICAL PARTS LIST. Other parts are listed in ELECTRICAL PARTS LIST.

MECHANICAL PARTS LIST

REF. NO.	DESCRIPTION	RS PART NO.	MFR'S PART NO.
1	Bush Insulation	ABS INST CLR Black	GBSG411465A
2	Panel Front	ABS Gray Metallic Paint	GCMF123278Z
3	Spacer (C)	P.P. Black	GETC421505Z
4	Holder ANT	ABS Black	GHDZ321495Z
5	Screw Mounting	ABS INST CLR Black	GMSC405736Z
6	Knob	ABS Black Fill White	GNBY323279Z
7	Mounting Bracket	SPCC 1.6T	HBCT321497Z
8	Cover Bottom	SB-K08 1T	HCMB321498Z
9	Cover Top	SB-K08 1T	HCMT321499Z
10	Chassis	SECC 1T	HCSY221500C
11	— Not Used —		
12	Holder IC	SECC 1T	HHDE421501Z
13	Shield Plate	ALP 0.1T	HSDP421502Z
14	Shield Plate	SPTTE 0.3T	HSDP425409Z
15	Plate Display	PC 0.5T	KDPT423280Z
16	Holder LED	EPT, Non-carbon	LHDL405995A
17	Holder LED	Rubber Black	LHDL412010Z
18			
19	— Not Used —		
20			
21	Spacer	Wool Tack 0.5T,Black	RETC490493Z
22	Wool-Coated Paper Wool Tack	Wool Paper,100x10x0.3T	RUTC403305Z
23	Insulation Plate	PC 0.3T	RZEB420863A
24	Screw Flat HD +	M3X5 NI	SSCW133005N
25	Screw Bind HD +	M3X6 NI	SSCW193006N
26	Screw Bind HD +	M3X8 BNI	SSCW193008B
27	Screw Tapping Round HD +	D5X10 NI	SSCW295010N
28	Screw Taptight Bind HD +	M3X6 BNI	SSCW343006B
29	Screw Taptight Bind HD +	M3X6 NI	SSCW343006N
30	Nut Flange	M3 ZMC	SSCW480030Z
31	Washer Star	D5 NI	SSCW540050N
32	Screw P Tight Pan HD +	D3X8 NI	SSCW793008N
33	Spring Plate Knob	D6.02XL9.53	TSTD0200003
	Chassis Assy	(Ref.No. 3,4 and 10)	CHASSY214ZP
	Knob Assy	(Ref.No. 6 and 33)	KNOBAS214ZP
	Mounting Bracket Assy	(Ref.No. 1,7,21 and 31)	MTBRAS214ZP
	Hardware Kit	(Ref.No. 5, 24 ~ 29 and 32)	HDWRKT214ZP

Note: Ref. No. in this Mechanical Parts list corresponds with the number in Exploded View.

IC AND TRANSISTOR VOLTAGE CHART

TRANSISTORS

Unit [V]

Ref. No.	Pin	VHF	VHF	UHF	Remarks
		LOW	HI		
Q1	B		0.7		
	E		0		
	C		2.3		
Q2	B		3.2		
	E		2.5		
	C		8.0		
Q3	B		0/0.7		
	E		0/0		SQ OPEN SQ CLOSE
	C		8/0		SQ OPEN SQ CLOSE
Q4	B		0/5		SQ OPEN SQ CLOSE
	E		0/0		SQ OPEN SQ CLOSE
	C		0/0		SQ OPEN SQ CLOSE
Q6	B	8.0	8.0	0	SQ OPEN SQ CLOSE
	E	8.0	8.0	8.0	
	C	0	0	8.0	
Q7	B	0	8.0	8.0	
	E	8.0	8.0	8.0	
	C	7.9	0	0	
Q9	B	7.6	5.0	7.6	
	E	8.0	8.0	8.0	
	C	0	7.9	0	
Q11	B	7.9	0	0	
	E	0	0	0	
	C	0	5.0	5.0	
Q13	B	4.2	0	0	
	E	0	0	0	
	C	0	8.0	0	
Q401	B	0	0	0.7	
	E	0	0	0	
	C	0	0	6.2	
Q402	B	0	0	0.7	
	E	0	0	0	
	C	0	0	5.8	

Unit [V]

Ref. No.	Pin	VHF	VHF	UHF	Remarks
		LOW	HI		
Q403	B	0	0	0.7	
	E	0	0	0	
	C	0	0	4.7	
Q701	B		3.3		
	E		2.6		
	C		1.5		
Q702	B		1.5		
	E		0.9		
	C		4.7		
Q703	B		1.5		
	E		0.9		
	C		4.0		
Q704	B	4.5	4.3	4.3	
	E	4.9	4.9	4.9	
	C	0	4.9	4.9	
Q705	B	0	4.9	4.9	
	E	4.9	4.9	4.9	
	C	4.9	0	0	
Q706	B		0.7		
	E		0		
	C		4.6		
Q707	B		1.1		
	E		4.9		
	C		17.4		
Q708	B		15.7		
	E		17.4		
	C		9.6		
Q709	B		1.1		
	E		4.9		
	C		9.6		

ICs

Unit [V]

Ref. No.	Pin	VHF	VHF	UHF	Remarks	
		LOW	HI			
IC1	1		7.9			
	2		7.2			
	3		7.5			
	4		8.0			
	5		1.1			
	6		1.1			
	7		1.1			
	8		8.0			
	9		4.0			
	10		3.0			
	11		0			
	12		2.4			
	13		2.7			
	14		0.8/0.5		SQ OPEN SQ CLOSE	
	15		0.2/5.8		SQ OPEN SQ CLOSE	
	16	Not used				
	17		0			
	18		2.1			
IC2	1		6.6			
	2		12.6			
	3		11.2			
	4	Not used				
	5					
	6		2.4			
	7		2.4			
	8		2.4			
	9		0			
	10		0			
	11		0			
	12		0			
	13		0			
	14		0			
	15		0			
	16		0			

Unit [V]

Ref. No.	Pin	VHF	VHF	UHF	Remarks
		LOW	HI		
IC3	1		13.0		
	2		8.0		
	3		0		
IC5	1		5.0		
	2		0		
	3		8.0		
IC6	1		7.5		
	2		0		
	3		0.9		
	4		0		
	5		1.3		
	6		7.5		
	7		7.5		
	8		7.4		
IC7	1		5.0		
	2		0		
	3		9.6		

Unit [V]

Ref. No.	Pin	VHF	VHF	UHF	Remarks	
		LOW	HI			
IC201	1		0.6			
	2		3.4			
	3		6.4			
	4		0.6			
	5		0.6			
	6		3.2			
	7		6.4			
	8		6.3			
	9		6.3			
	10		0			
	11		3.4			
	12		3.4			
	13		3.4			
	14		3.4			
	15		3.5/0.5		SO OPEN SO CLOSE	
	16		2.6			
	17		0			
	18		0			
	19		3.4			
	20		1.8			
	21		1.8			
	22		1.8			
	23		1.8			
	24	4.3	0.1	0.2		
	25	7.6	7.4	0.2		
	26		0.1/0.7		SO OPEN SO CLOSE	
	27		2.0			
	28		0.6			
	29		6.3			
	30		0.6			
IC401 Only for CA	1			0		
	2			3.7		
	3			4.4		
	4			1.0		

Unit [V]

Ref. No.	Pin	VHF	VHF	UHF	Remarks
		LOW	HI		
IC601	1	1.0	1.0	0	
	2	1.7	1.7	0	
	3	7.0	7.0	0	
	4	0	0	0	
	5	0	0	0	
	6	7.1	7.0	0	
	7	0	0	0	
	8	6.5	6.5	0	
	9	7.2	7.1	0	
IC701	1		2.5		
	2		2.6		
	3	Not used			
	4		4.9		
	5	Not used			
	6		0		
	7	Not used			
	8		2.2		
	9		5.0		
	10		0.2		
	11		0		
	12	Not used			
	13	Not used			
	14		5.0		
	15		5.0		
	16		5.0		
IC702	1	Not used			
	2		9.4		
	3		7.8		
	4		0		
	5	Not used			
	6		9.0		
	7		17.4		
	8	Not used			

SEMICONDUCTOR LEAD IDENTIFICATION

DIODES



IN 4148 UNIDEN
IN 4003



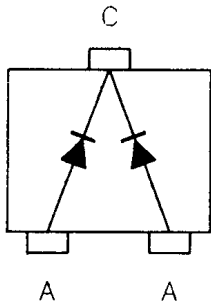
1SS85



HSK110TR

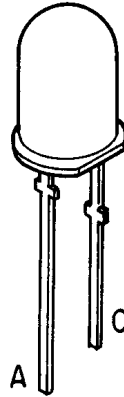


1SV201-4 TRP
1SV188-9 TRP



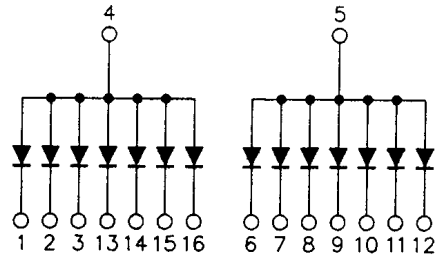
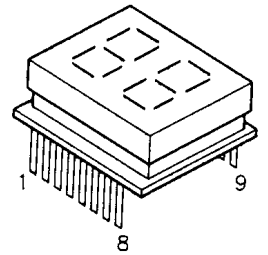
1SS184 TE85L

SLP-135B

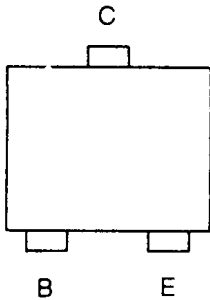


C : Cathode
A : Anode

LDR-204AL

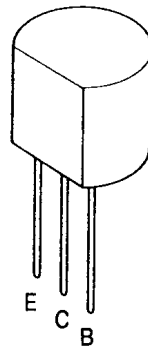


TRANSISTORS

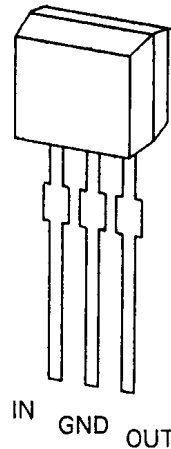


2SC3356-R24 T1B
(Only for CA)
2SC3121 TE85L
2SC1162-Y TE85L
2SC3121-T5L TE85L
2SC3356-R22 T1B

2SC945-AQ
2SC1674-L

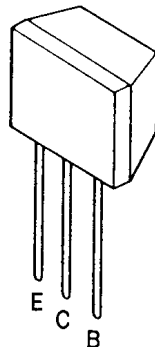


DTA143XS
2SD1676

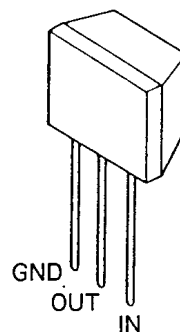


B : Base
E : Emitter
C : Collector

2SC2458-Y

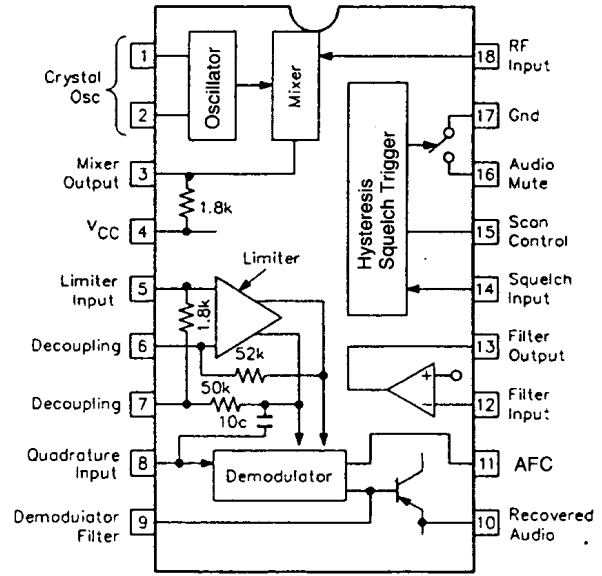
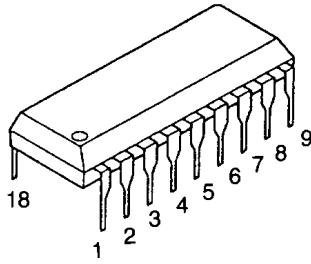


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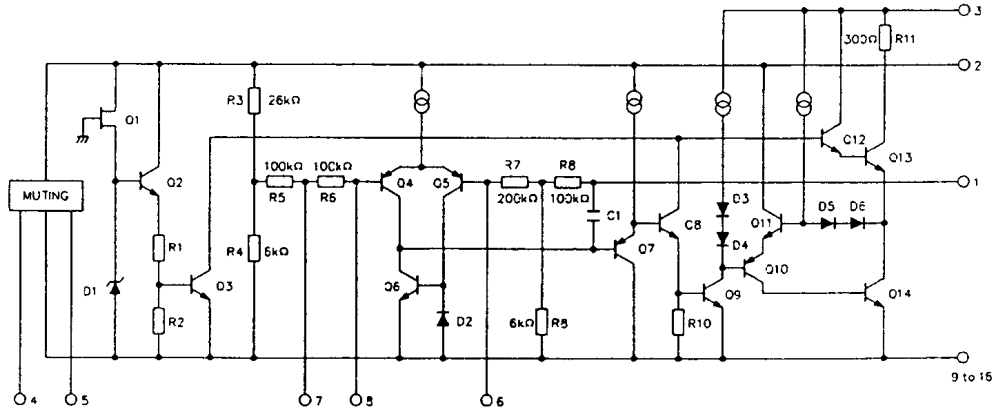
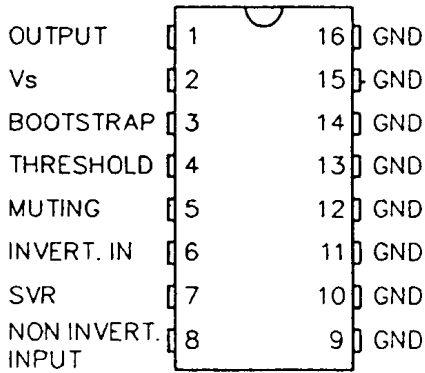


IC INTERNAL DIAGRAM

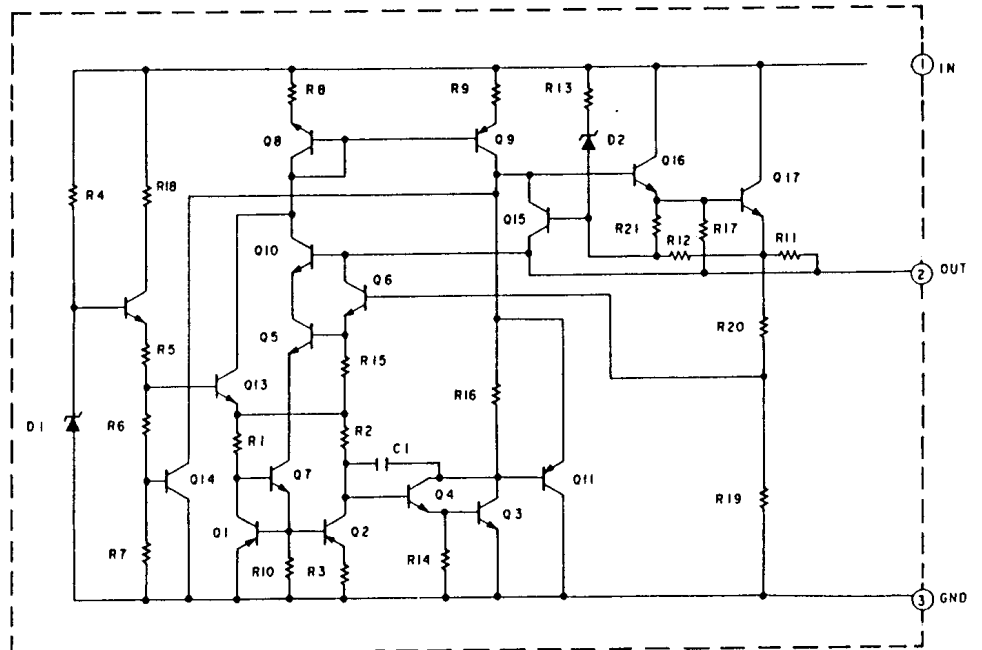
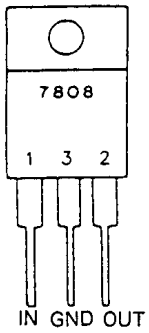
IC001
NJM3359D-A



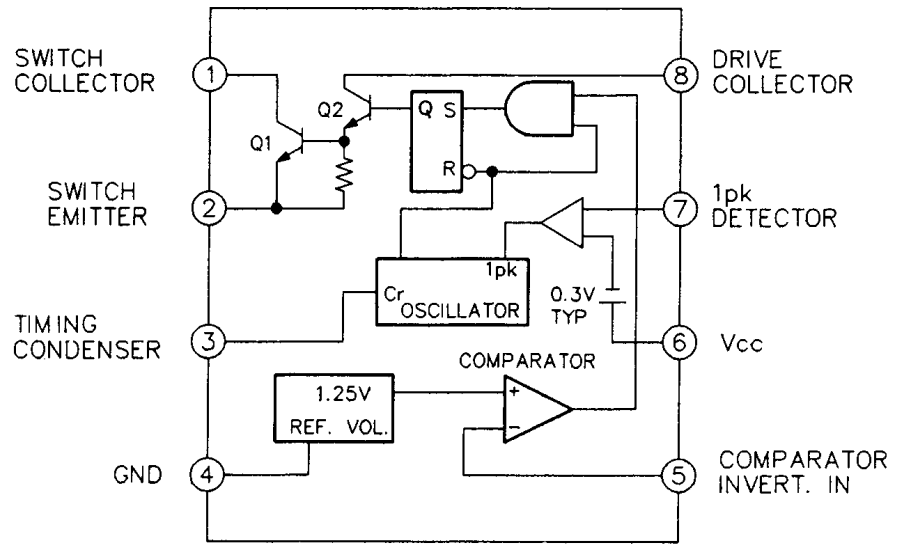
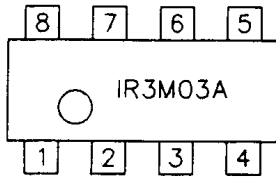
IC002
TDA1905



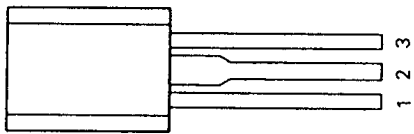
IC003
UPC7808H



IC006
IR3M03A

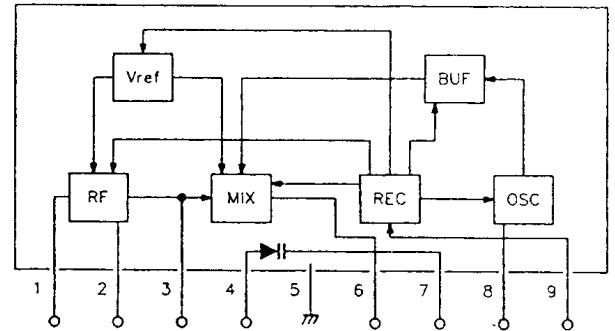
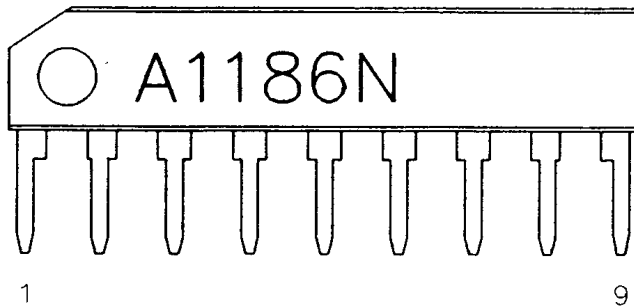


IC007
M5278L05A

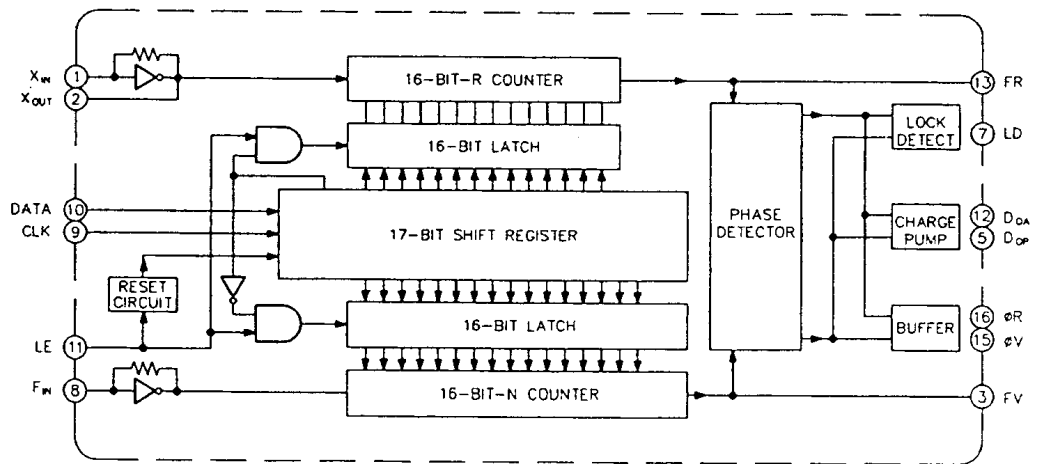
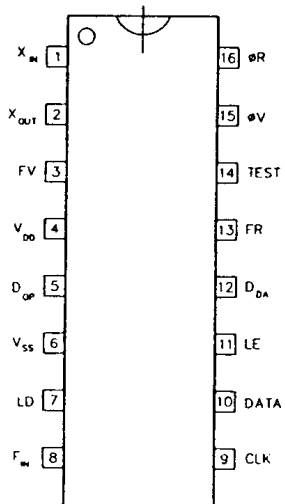


- 1 : V OUT
- 2 : GND
- 3 : V IN

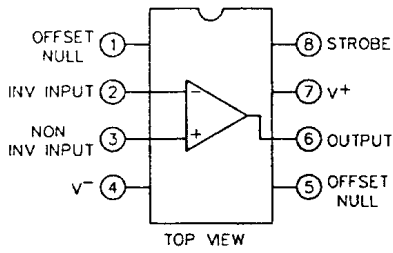
IC601
LA1186N



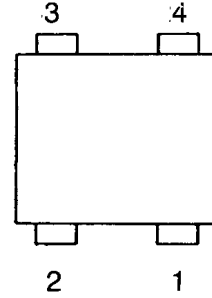
IC701
PLL2002A1



IC702
CA3140E

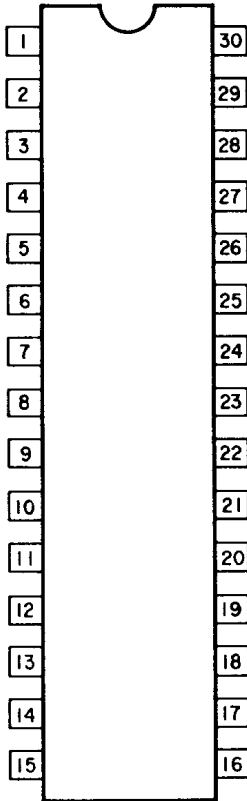


IC401 (Only for CA)
UPC1675G-T1



- 1 GND
- 2 Output
- 3 Vcc
- 4 Input

IC201
UC1116 (For U.S.A./CA)
UC1152

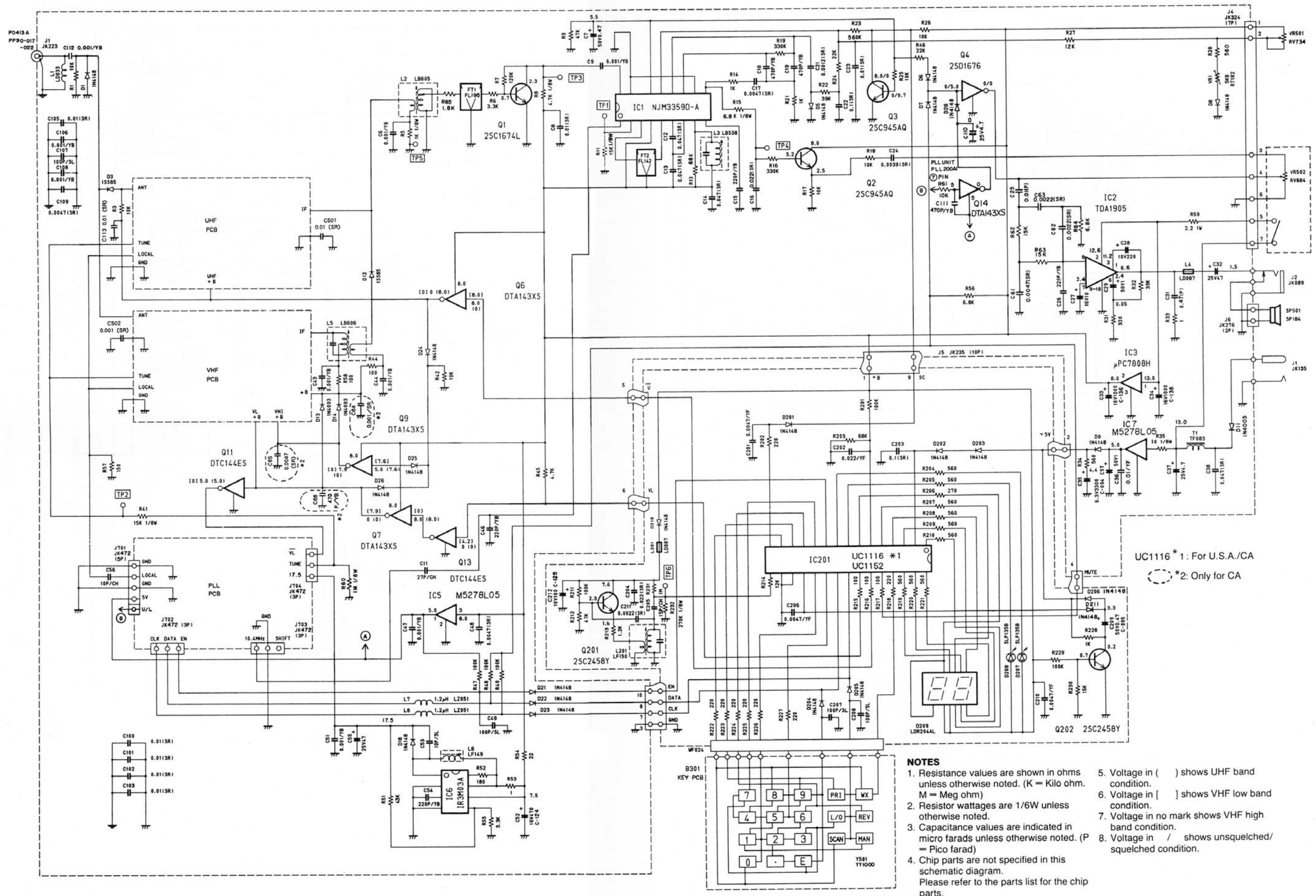


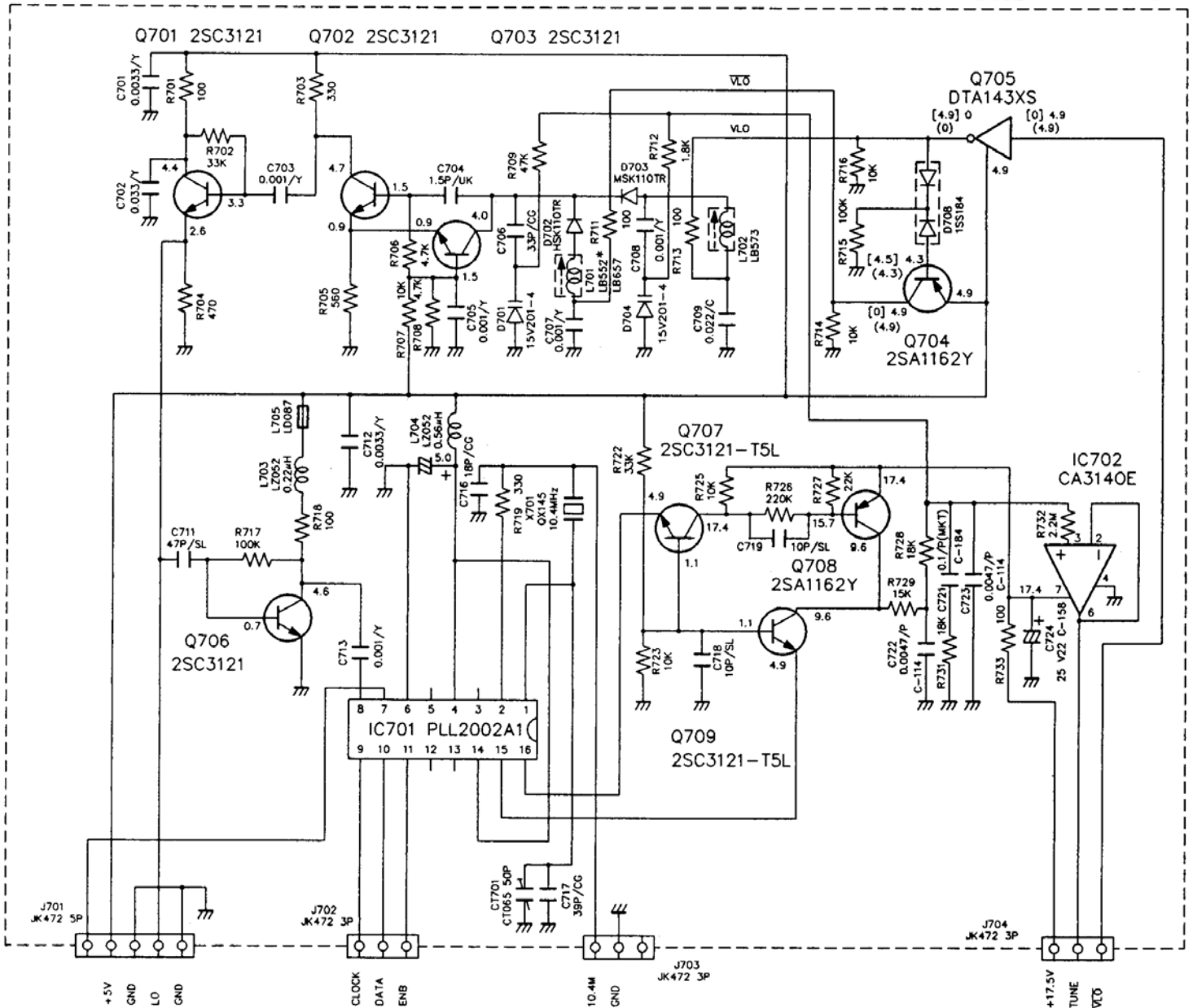
PIN NO.	SIGNAL NAME	TERMINAL DESCRIPTION
1	2d	CH Display LED
2	+5V	
3	2e	CH Display LED "L" : ON
4	2g	CH Display LED "L" : ON
5	2f	CH Display LED "L" : ON
6	Standby	Standby required input
7	1bc	CH Display LED "L" : ON
8	1e	WX LED "L" : ON
9	1f	Lockout LED "L" : ON
10	LE	Set from "L" to "H" PLL LE
11	RW4	KEY read-out input Terminal
12	RW3	KEY read-out input Terminal
13	RW2	KEY read-out input Terminal
14	RW1	KEY read-out input Terminal
15	SC	SCAN Control input "L" → Scan "H" → Scan Stop
16	OSC1	Outside clock input F=400kHz
17	TEST	Connect to GND.
18	GND	
19	RST	"L" → Reset "H" → Reset Cansel
20	CM1	KEY SCAN Output
21	CM2	KEY SCAN Output
22	CM3	KEY SCAN Output
23	CM4	KEY SCAN Output
24	VH	"L" : VHF HI
25	UHF	"H" : UHF
26	MUTE	"L" → Mute Cansel "H" → Mute
27	CM5	KEY SCAN Output
28	2a	CH Display LED "L" : ON
29	2b	CH Display LED "L" : ON
30	2c	CH Display LED "L" : ON

MEMO:

SCHEMATIC DIAGRAMS

Main PCB Section

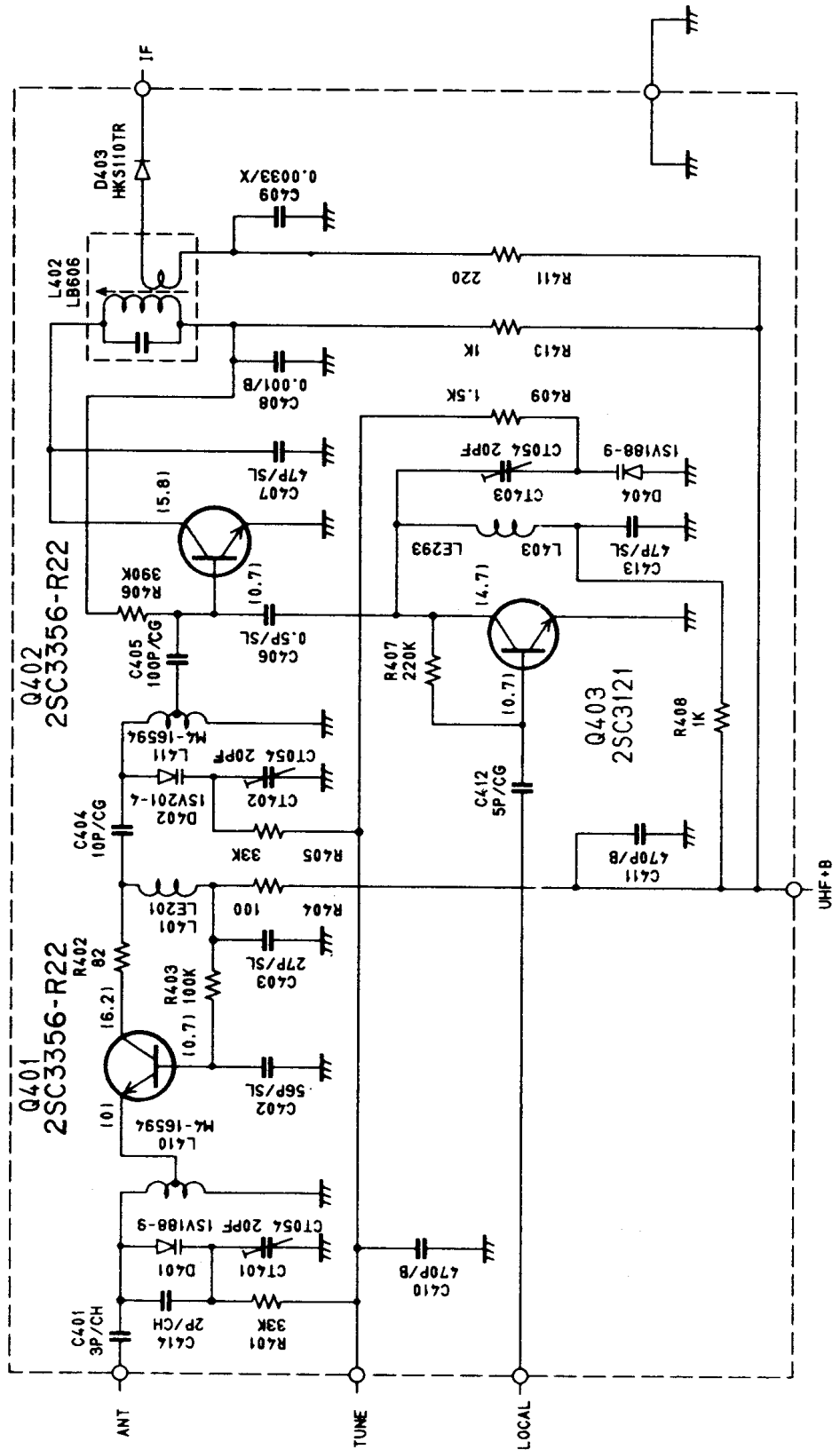




NOTES

1. Resistance values are shown in ohms unless otherwise noted. (K = Kilo ohm. M = Meg ohm)
2. Resistor wattages are 1/8W unless otherwise noted.
3. Capacitance values are indicated in micro farads unless otherwise noted. (P = Pico farad)
4. Chip parts are not specified in this schematic diagram. Please refer to the parts list for the chip parts.
5. Voltage in () shows UHF condition.
6. Voltage in [] shows VHF Lo condition.
7. Voltage in no mark shows VHF Hi condition.

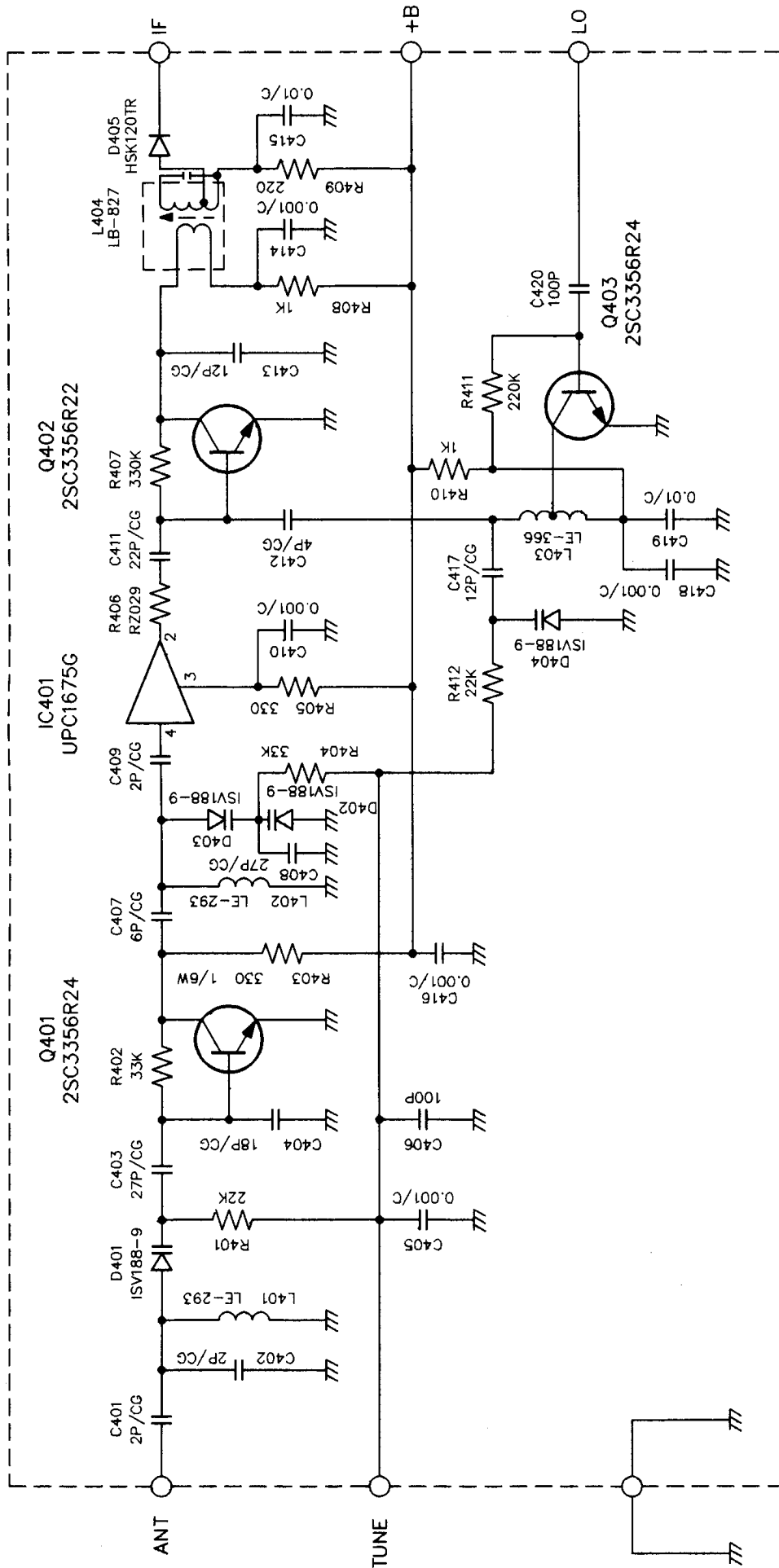
UHF PCB Section



NOTES

1. Resistance values are shown in ohms unless otherwise noted. (K = Kilo ohm, M = Meg ohm)
2. Resistor wattages are 1/8W unless otherwise noted.
3. Capacitance values are indicated in micro farads unless otherwise noted. (P = Pico farad)
4. Chip parts are not specified in this schematic diagram. Please refer to the parts list for the chip parts.
5. Voltage in () shows UHF band condition.

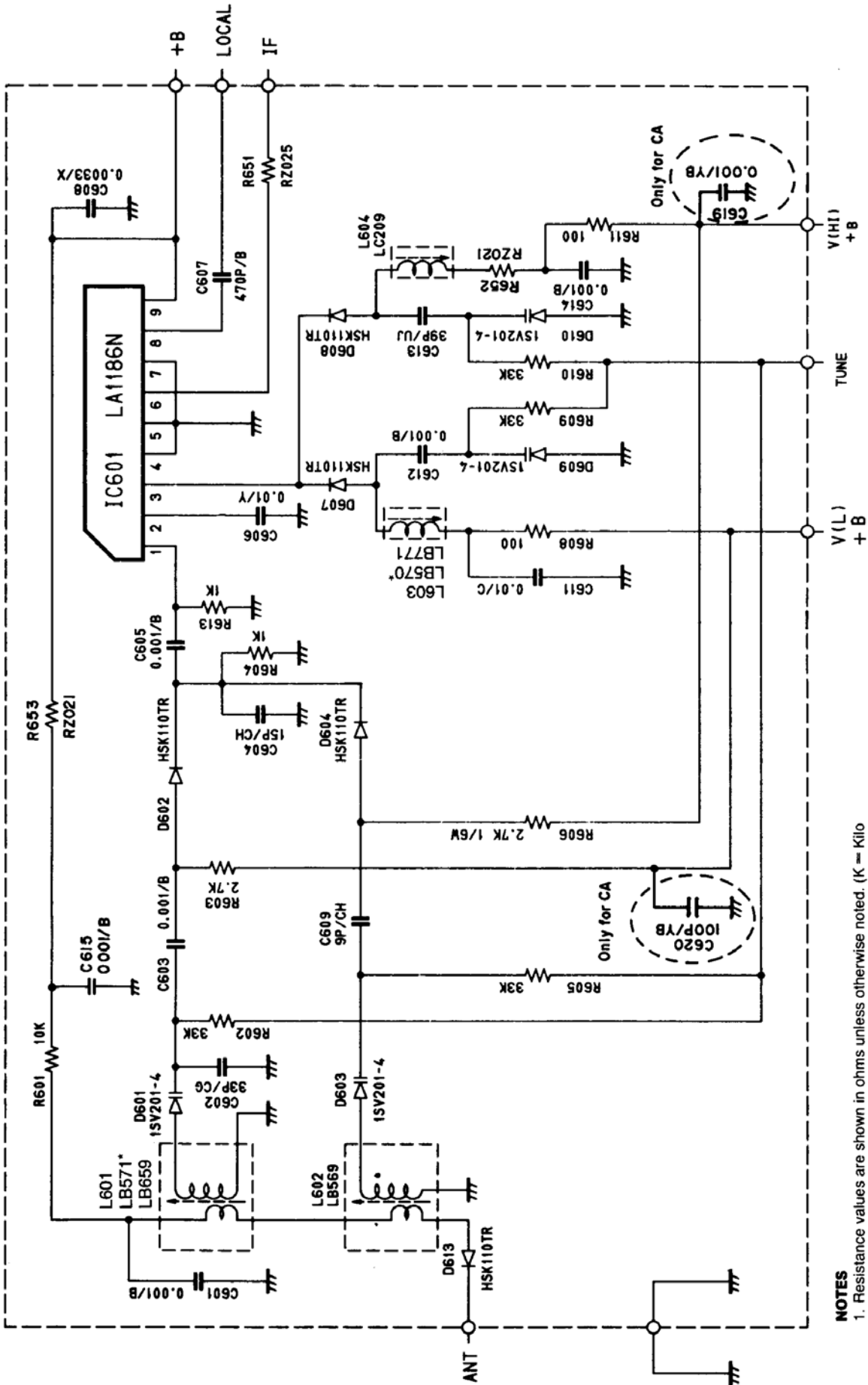
UHF PCB Section (Only for CA)



NOTES

1. Resistance values are shown in ohms unless otherwise noted. (K = Kilo ohm, M = Meg ohm)
2. Resistor wattages are 1/8W unless otherwise noted.
3. Capacitance values are indicated in micro farads unless otherwise noted. (P = Pico farad)
4. Chip parts are not specified in this schematic diagram. Please refer to the parts list for the chip parts.
5. Voltage in () shows UHF band condition.

VHF PCB Section



L601 LB571 * : For U.S.A./CA
 L603 LB570 * : For U.S.A./CA

- NOTES**
1. Resistance values are shown in ohms unless otherwise noted. (K = Kilo ohm, M = Meg ohm)
 2. Resistor wattages are 1/8W unless otherwise noted.
 3. Capacitance values are indicated in micro farads unless otherwise noted. (P = Pico farad)
 4. All capacitors temperature characteristics are ZF unless otherwise noted.
 5. Chip parts are not specified in this schematic diagram. Please refer to the parts list for the chip parts.

RADIO SHACK
A Division of Tandy Corporation
Fort Worth, Texas 76102