REALISTIC®

Service Manual

20-112

PRO-2020

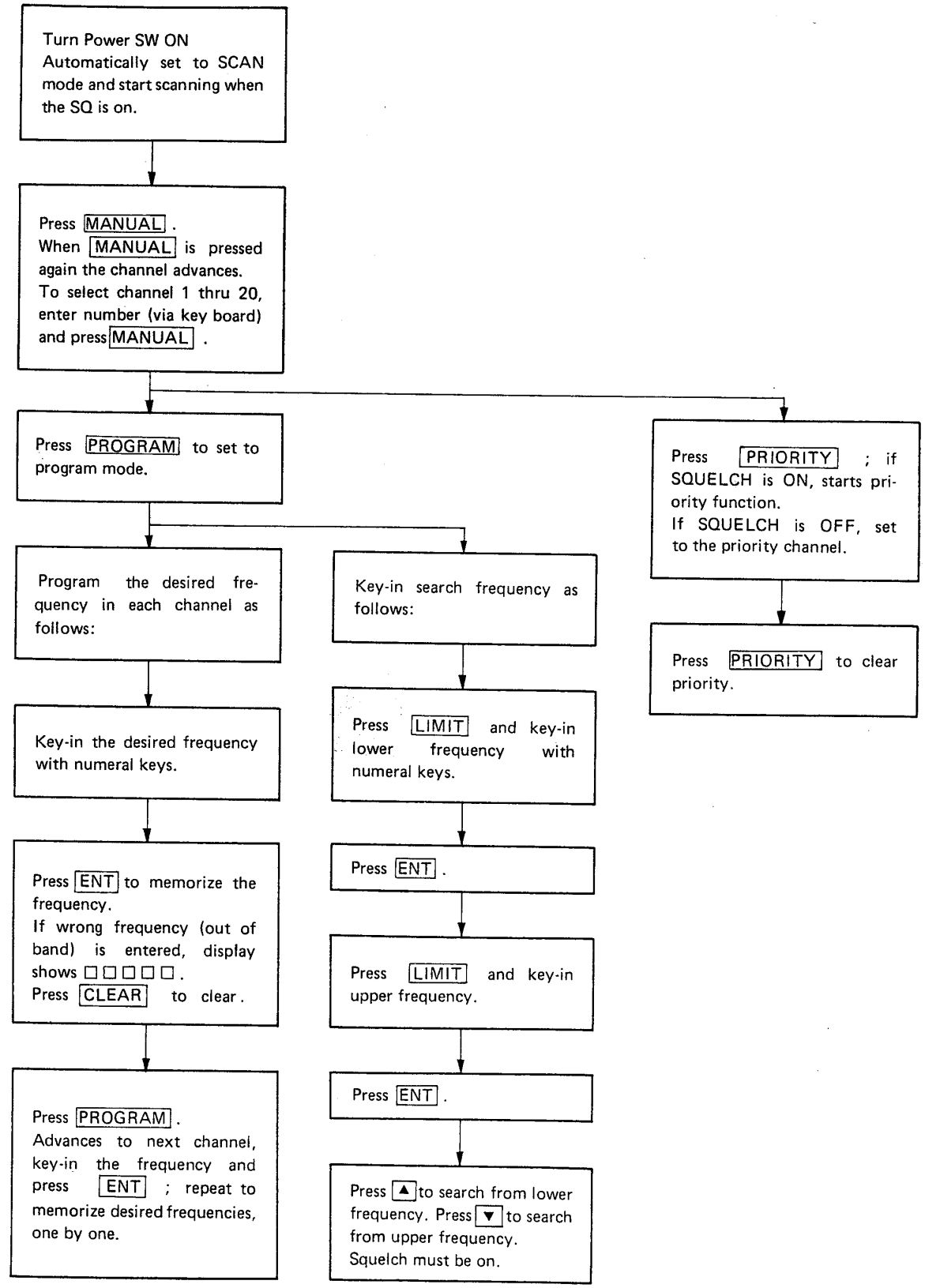
PLL SYNTHESIZED VHF/UHF AM/FM RECEIVER

Catalog Number: 20-112

Manual provided by G.E. Taylor, scanned by L.P. Glaister VE7IT

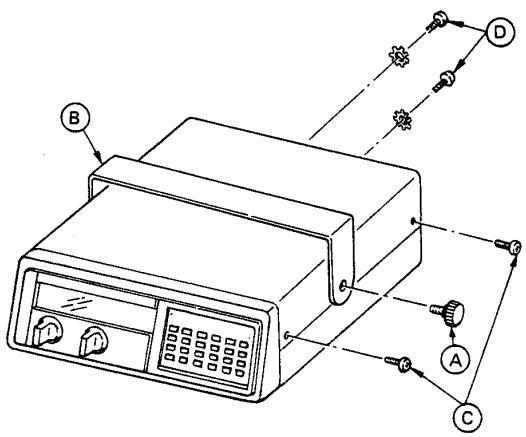
CUSTOM MANUFACTURED FOR RADIO SHACK TC A DIVISION OF TANDY CORPORATION

GENERAL OPERATION OUTLINE

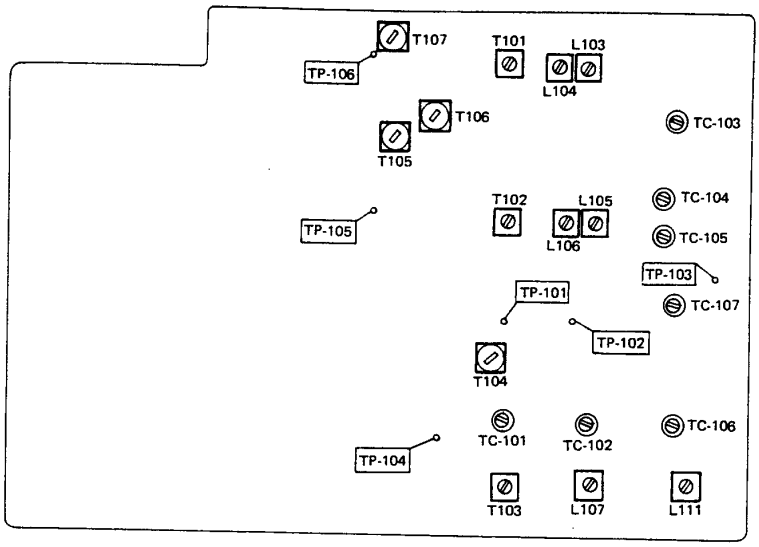


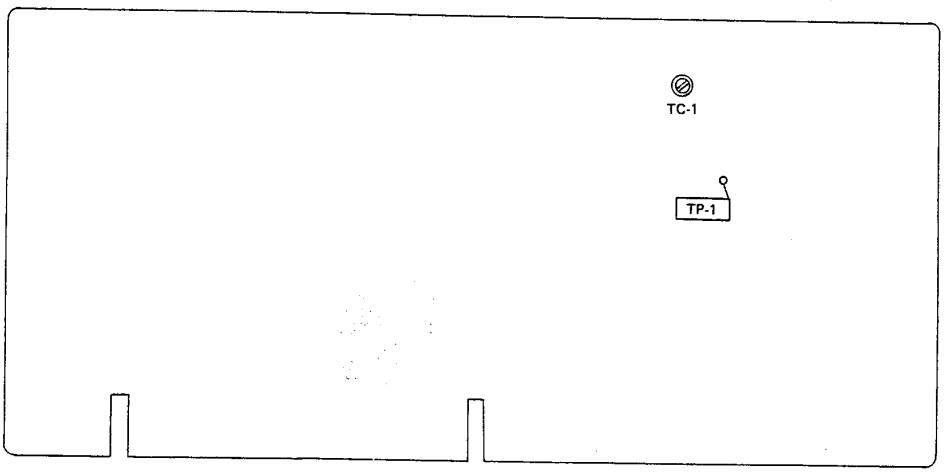
DISASSEMBLY DIAGRAM

Step 1: Remove two bracket screws (A) and the bracket (B).
Step 2: Remove four screws (C) two from each side of the Cabinet.
Step 3: Remove two screws (D) from back of cabinet.
Step 4: Open the cabinet. Use care not to damage leads of speaker installed on the cabinet.



ALIGNMENT AND TEST POINT POSITIONS





ALIGNMENT PREPARATION

Test equipment required

1. Oscilloscope (0 ~ 500 kHz, 0 ~ 50 MHz)
2. AC VTVM
3. DC VTVM
4. Frequency Counter (60 MHz)
5. 8 ohm dummy load
6. Slow Sweep Generator with variable marker (10.7 MHz)
7. VHF Sweep Generator with variable marker (30 ~ 50 MHz, *68 ~ 88 MHz, 108 ~ 174 MHz)
8. UHF Sweep Generator with variable marker (410 ~ 512 MHz)
9. FM Signal Generator (30 ~ 50 MHz, *68 ~ 88 MHz, 138 ~ 174 MHz, 410 ~ 512 MHz)
10. AM Signal Generator (108 ~ 136 MHz)

NOTE 1: *Use non-metallic tuning tools.*
The test equipment and Receiver should be warmed up at least 10 minutes before proceeding with alignment.
Input signal from the Generator should be kept as low as possible and still obtain usable output.

NOTE 2: *A 9-volt battery is required to hold the memory when AC is disconnected. Always be sure the unit is loaded with a fresh 9-volt battery or the pre-programmed channels will be lost (and will have to be re-programmed).*

NOTE 3: *For servicing VHF Mid band of European/Australian models, see Appendix on pages 41 and 42.*

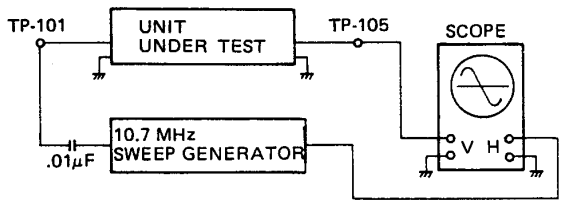
REFERENCE FREQUENCY OSC ALIGNMENT

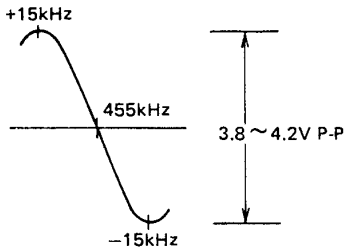
Step 1: Connect Frequency Counter to TP1 and ground. Connect the ground first to prevent IC-8 latch-up.
Step 2: Adjust TC-1 so that the frequency is 6.40000 MHz ±10 Hz.

NOTE 1: *If 6.4 MHz fails to oscillate, it may due to IC-8 latch-up.*
Unplug the power connector momentary to turn power supply completely off.

IF SECTION ALIGNMENT

Step 1: Connect instruments as shown below.





INPUT : 100μV

Step 2: Adjust T105 for maximum output so that the 455 kHz marker is in the center of the discriminator curve and for best linearity as shown above.
During Alignment, maintain Sweep Generator output at the lowest level possible to prevent overloading.

VCO ALIGNMENT

VHF LO BAND

Step 1: Connect a DC VTVM to TP-104 and ground.
Step 2: Program CH1, 2 and 3 as follows:
CH1 (30 MHz), CH2 (40 MHz), CH3 (50 MHz).
Step 3: Select Channel 3 (50 MHz) and adjust TC-101 for 9.0V on the DC VTVM.
Step 4: Select Channel 1 (30 MHz) and adjust T103 for 1.0V on the DC VTVM.
Step 5: Repeat steps 3 and 4 until no improvement is observed. The DC VTVM should show as below.

30 MHz	Voltage at TP104	1.0V
40 MHz	Voltage at TP104	3.4 ±0.3V
50 MHz	Voltage at TP104	9.0V

VHF HI BAND AND AIRCRAFT

Step 1: Connect a DC VTVM to TP104 and ground.
Step 2: Program CH1, 2, 3, 4, 5 and 6 as follows.
CH1 (108 MHz), CH2 (120 MHz), CH3 (136 MHz), CH4 (138 MHz), CH5 (160 MHz), CH6 (174 MHz).
Step 3: Select Channel 6 (174 MHz) and adjust TC102 for 8.0V on the DC VTVM.
Step 4: Select Channel 1 (108 MHz) and adjust L107 for 1.0V on the DC VTVM.
Step 5: Repeat steps 3 and 4 until no improvement is observed. The DC VTVM should show as below.

108 MHz	Voltage at TP-104	1.0V
120 MHz	Voltage at TP-104	2.1 ± 0.3V
136 MHz	Voltage at TP-104	3.6 ± 0.3V
138 MHz	Voltage at TP-104	1.8 ± 0.3V
160 MHz	Voltage at TP-104	3.9 ± 0.3V
174 MHz	Voltage at TP-104	8.0V

UHF BAND

Step 1: Connect a DC VTVM to TP-104 and ground.

Step 2: Program CH1, 2 and 3 as follows:
Ch1 (410 MHz), CH2 (430 MHz), CH3 (512 MHz).

Step 3: Select Channel 3 (512 MHz) and adjust TC-106 for 9.0V on the DC VTVM.

Step 4: Select Channel 1 (410 MHz) and adjust L111 for 1.0V on the DC VTVM.

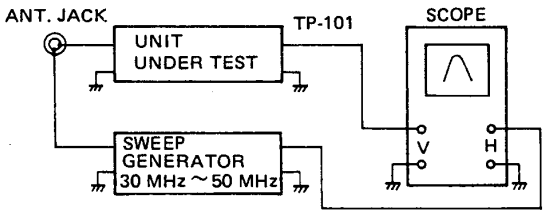
Step 5: Repeat steps 3 and 4 until no improvement is observed. The DC VTVM should show as below.

410 MHz	Voltage at TP-104	1.0V
430 MHz	Voltage at TP-104	1.8 ± 0.3V
512 MHz	Voltage at TP-104	9.0V

RF AMP ALIGNMENT

VHF LO BAND

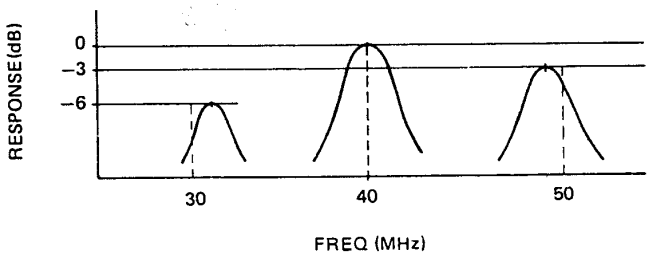
Step 1: Connect instruments as shown below.



Step 2: Program 30 MHz (CH1), 40 MHz (CH2) and 50 MHz (CH3).

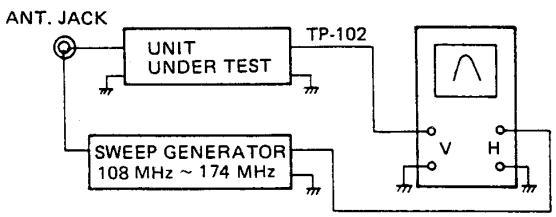
Step 3: Select Channel 2 (40 MHz) and adjust T101 and T102 for maximum RF waveform.

Step 4: Check Channels 1 ~ 3 for the maximum RF waveform. A slight deviation (as shown below) is acceptable.

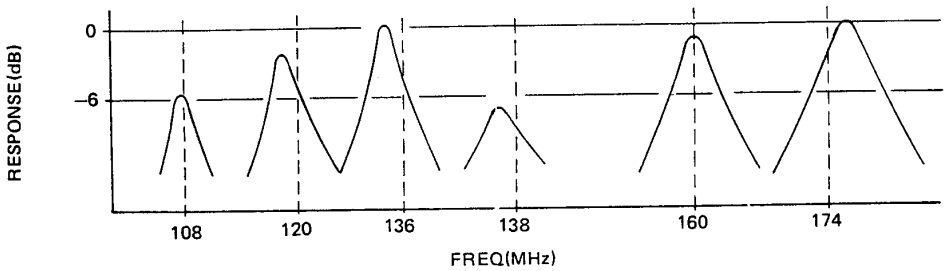


VHF HI AND AIRCRAFT

Step 1: Connect instruments as shown below.

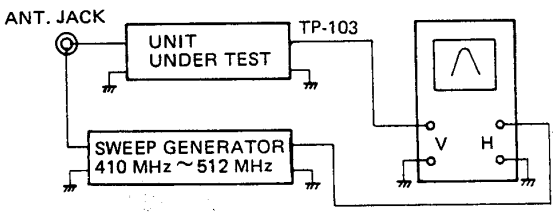


Step 2: Program 108 MHz (CH1), 120 MHz (CH2), 136 MHz (CH3), 138 MHz (CH4), 160 MHz (CH5) and 174 MHz (CH6).
Step 3: Select Channel 1 (108 MHz) and adjust L104 and L106 for maximum RF waveform.
Step 4: Select Channel 5 (160 MHz) and adjust L103 and L105 for maximum RF waveform.
Step 5: Repeat steps 3 and 4 to obtain the maximum RF waveform for each channel.
Step 6: Check Channels 1 ~ 6 for the maximum RF waveform at each frequency marker. A slight deviation (as shown below) is acceptable.

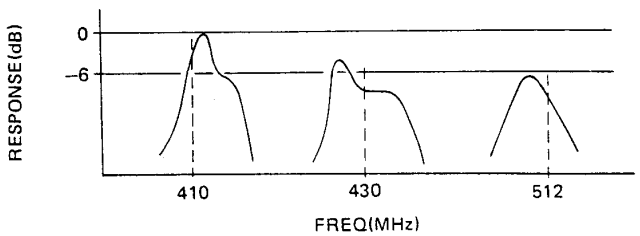


UHF BAND

Step 1: Connect instruments as shown below.



Step 2: Program 410 MHz (CH1), 430 MHz (CH2) and 512 MHz (CH3).
Step 3: Select Channel 2 (430 MHz) and adjust TC-103, TC-104, and TC-105 for maximum RF waveform.
Step 4: Select Channel 3 (512 MHz) and adjust TC-107 for maximum RF waveform.
Step 5: Check Cannels 1 ~ 3 for the maximum RF waveform at each frequency marker. A slight deviation (as shown below is acceptable.



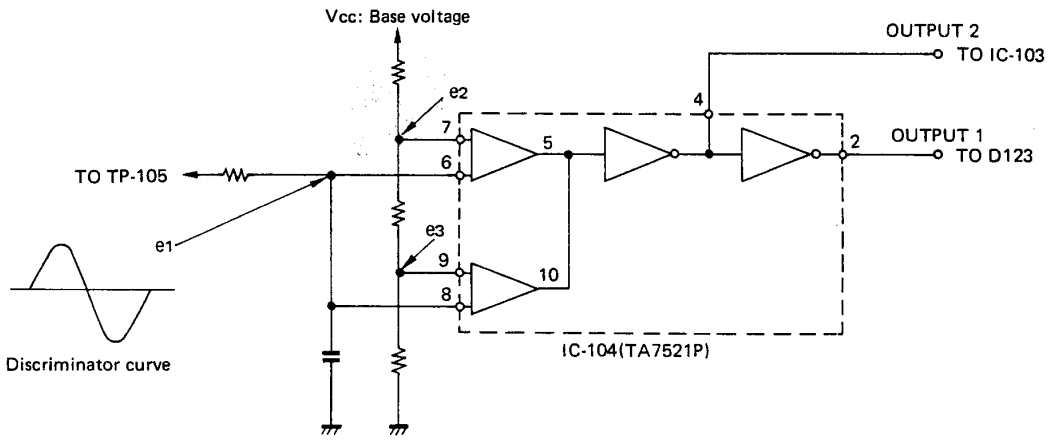
OVERALL ALIGNMENT AND SENSITIVITY MEASUREMENT

Step 1: Connect Signal Generator (SSG) to ANTenna jack and AC VTVM to EXT. SPKR Jack.
Step 2: Turn SQUELCH fully counterclockwise. Set for reception of the channels noted in the following chart. Set the SSG to the center of each band.

CH	BAND	FREQ.
1	VHF LO (MID)	40 MHz (78 MHz)
2	VHF HI	160 MHz
3	UHF	512 MHz
4	AIRCRAFT	120 MHz

Step 3: Set the Signal Generator frequency to 512 MHz (channel 3). Readjust TC-107 for maximum sensitivity.
Step 4: Set the Signal Generator frequency to 120 MHz (channel 4). Adjust T104, T106 and T107 for maximum sensitivity.
Step 5: For each frequency/channel, set Signal Generator to each frequency (FM: 3 kHz deviation, AM: 60% modulation). Set VOLUME control for 0 dB (0.775 V) reading on the VTVM.
Step 6: Turn off the modulation and measure the (S + N)/N ratio.

ZEROMATIC FUNCTION AND HOW TO CHECK IT



* Zeromatic functions when OUTPUT 1 is in "H" level.

e_1	$0 < e_1 < e_3$	$e_3 < e_1 < e_2$	$e_2 < e_1 < V_{CC}$
OUTPUT 1 (Pin No. 2)	L	H	L
OUTPUT 1 (Pin No. 4)	H	L	H

To adjust e_1 voltage, receive signal in Manual mode, and set T105 to get half supply voltage (IC101, 4 pin). It is convenient to use the National Weather Service Signal for the adjuatment.
In the event Zeromatic does not function right, refer to "REFERENCE FREQUENCY OSC ALIGNMENT" and check 6.4 MHz, and adjust T105 again.

RESET TIMING (IC-1)

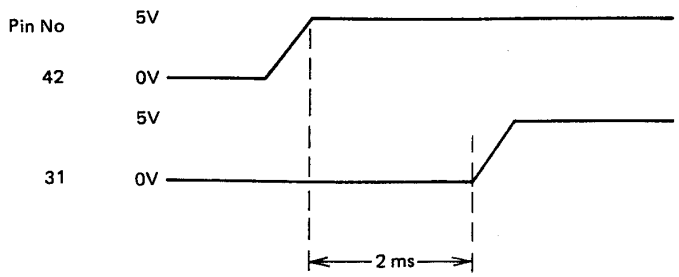


Figure 1

NOTE:
Pin 31 of IC-1 is the RESET terminal which functions at L level. It reverts to H level 2ms after Pin 42 VDD.

CPU CLOCK OSCILLATION WAVEFORM (IC-1)

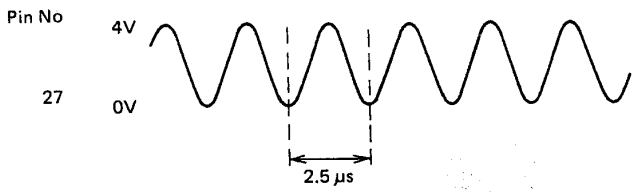


Figure 2

NOTE:
This is the basic waveform of CPU (IC-1).
Ceramic Resonator (X-2)
generates 400 kHz for about 2.5μs

IC-3 INPUT/OUTPUT WAVEFORM

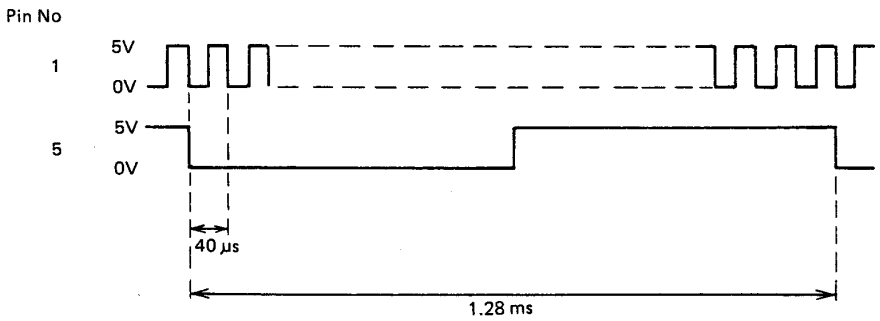
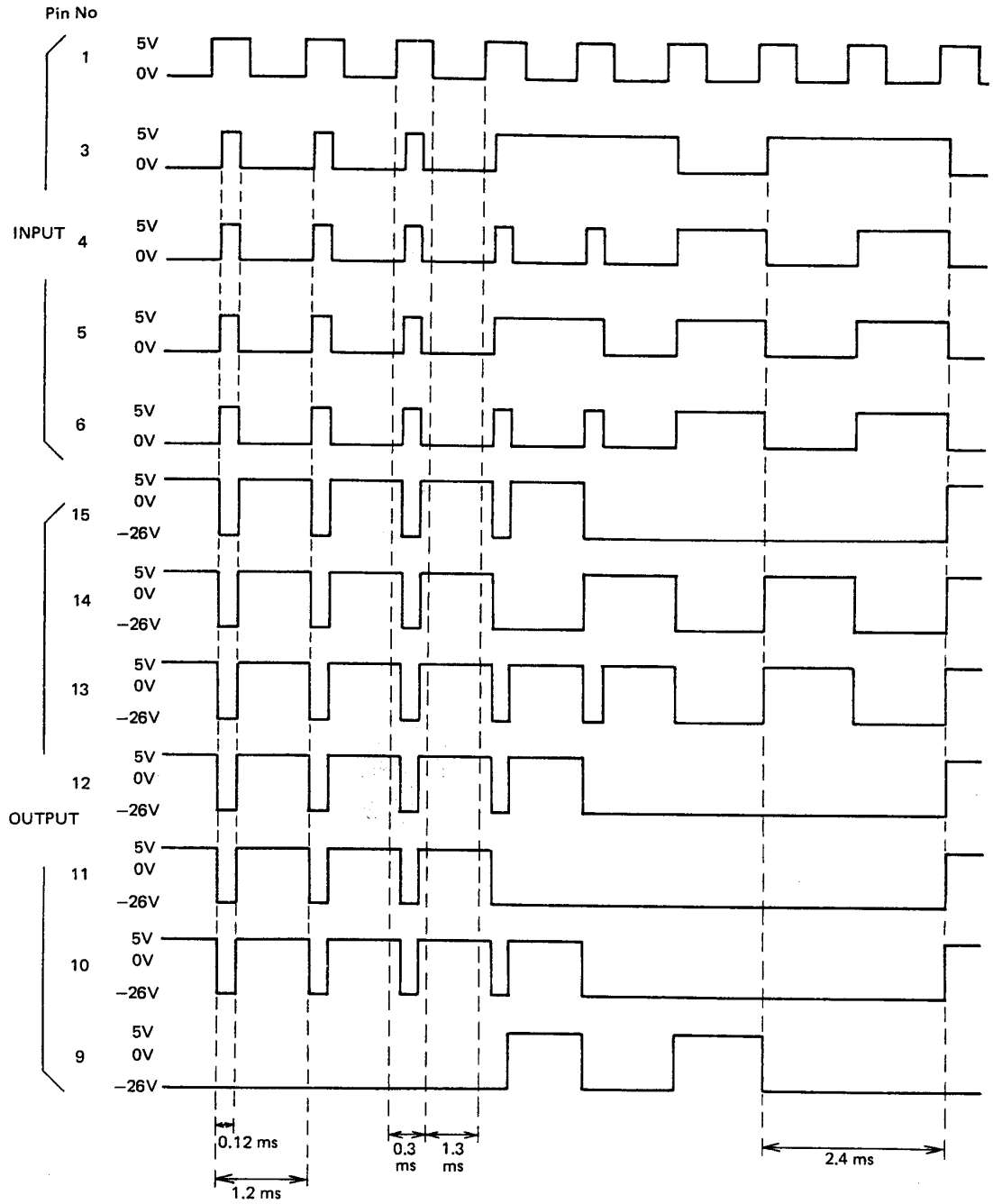


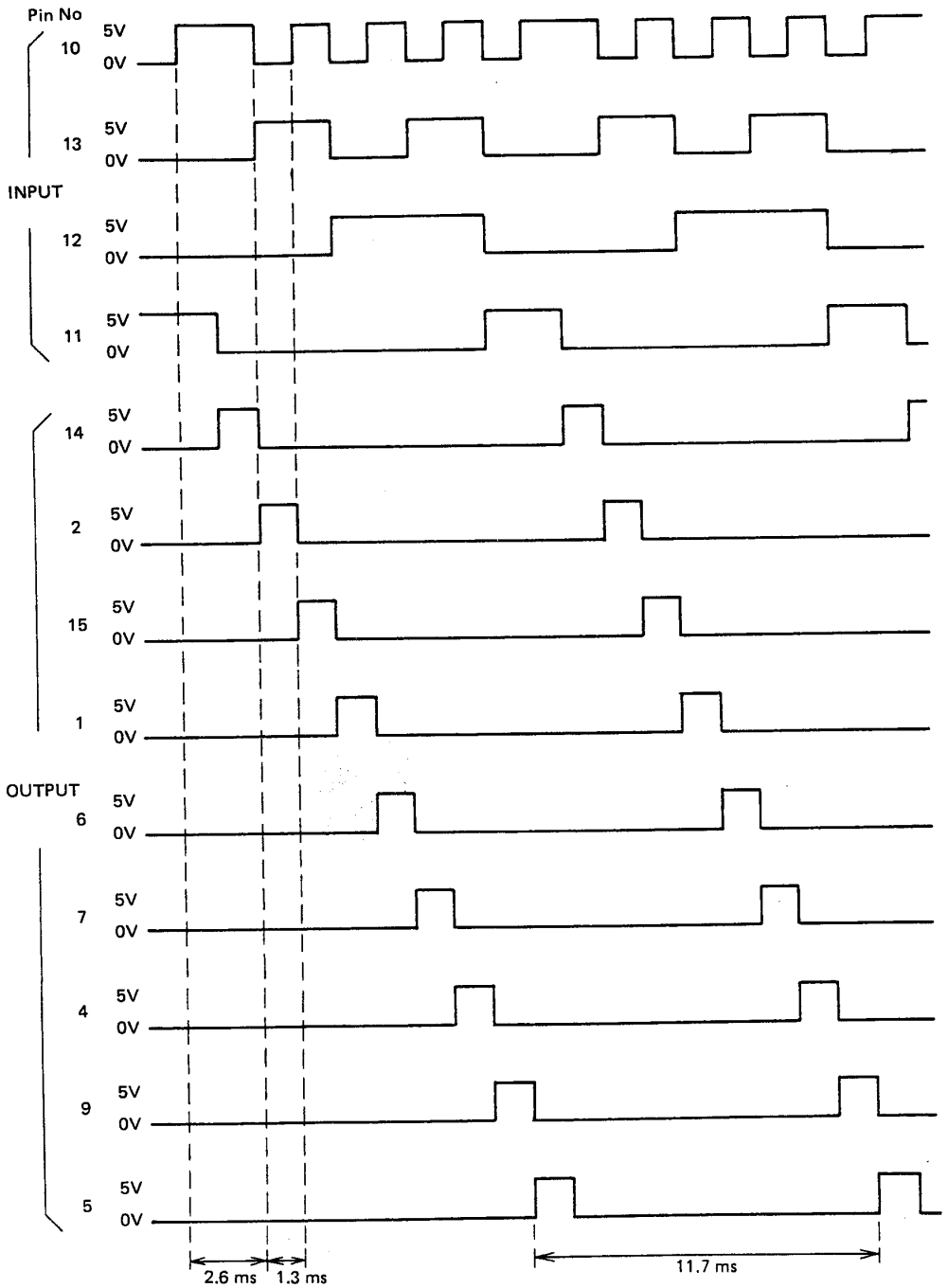
Figure 3

NOTE:
Waveform at Pin No. 5 is CPU (IC-1) interrupt signal. Must have above waveform or the CPU program malfunctions.

IC-4 INPUT/OUTPUT TIME CHART (150 MHz displayed, in Program Mode)

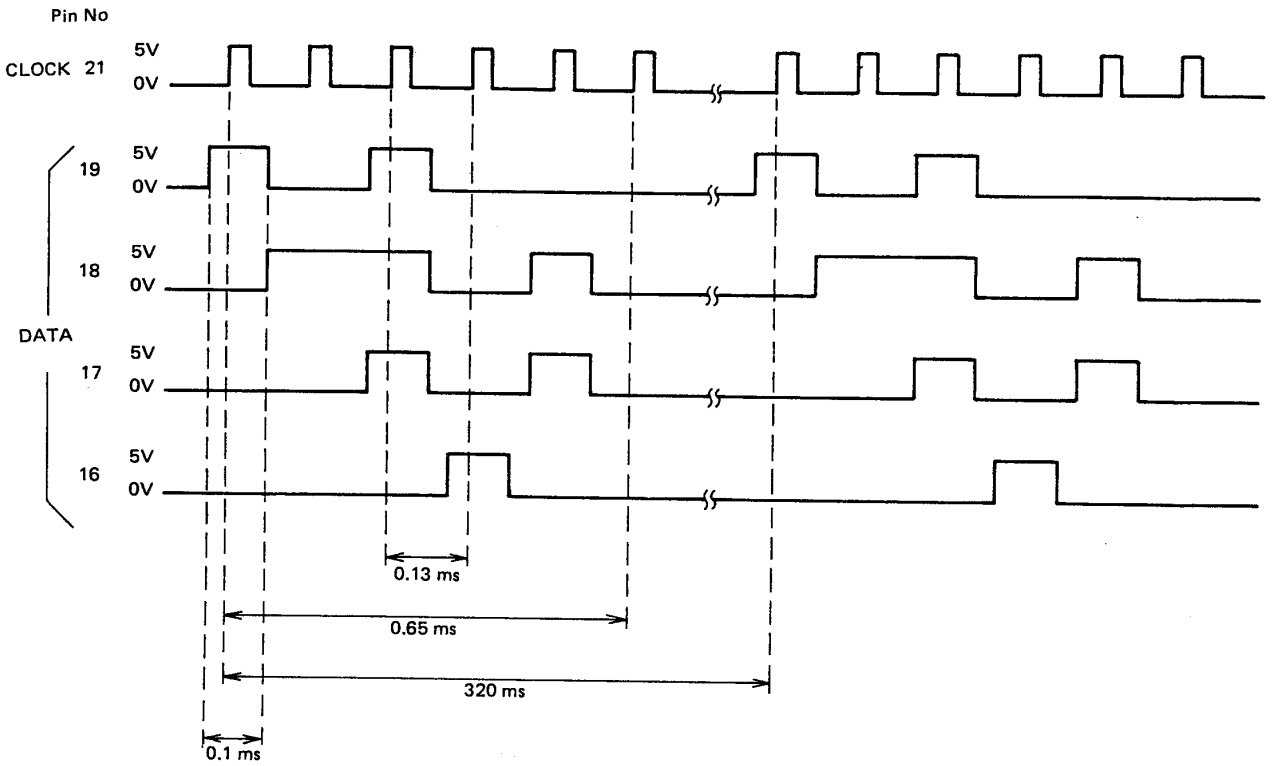


IC-6 INPUT/OUTPUT TIME CHART (150 MHz displayed, in Program Mode)

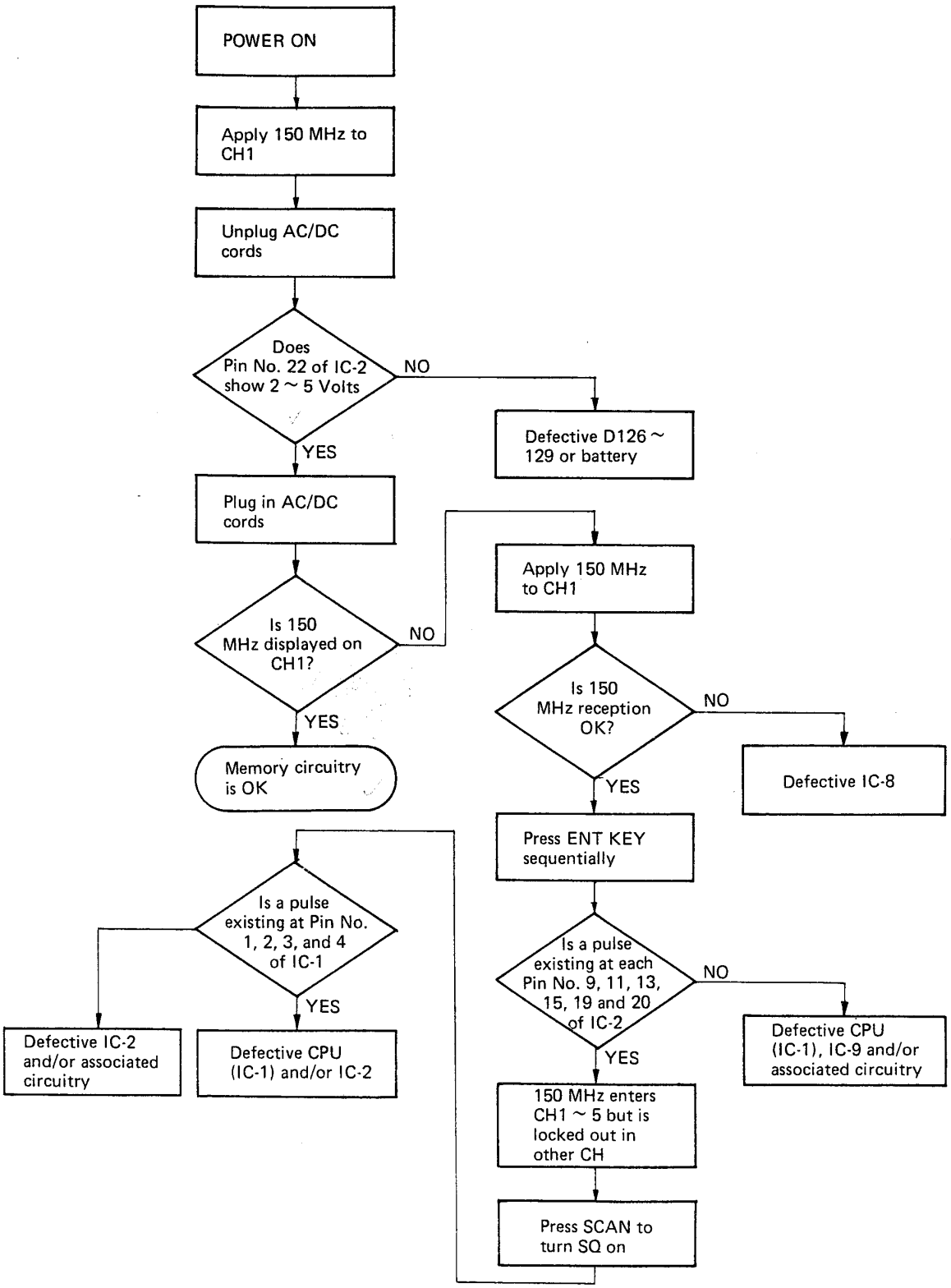


PLL CLOCK AND DATA INPUT WAVEFORMS (IC-8)

***Measured during SCAN: 150 MHz displayed on CH1, CH2 ~ 20 are locked out.**



MEMORY CHECK

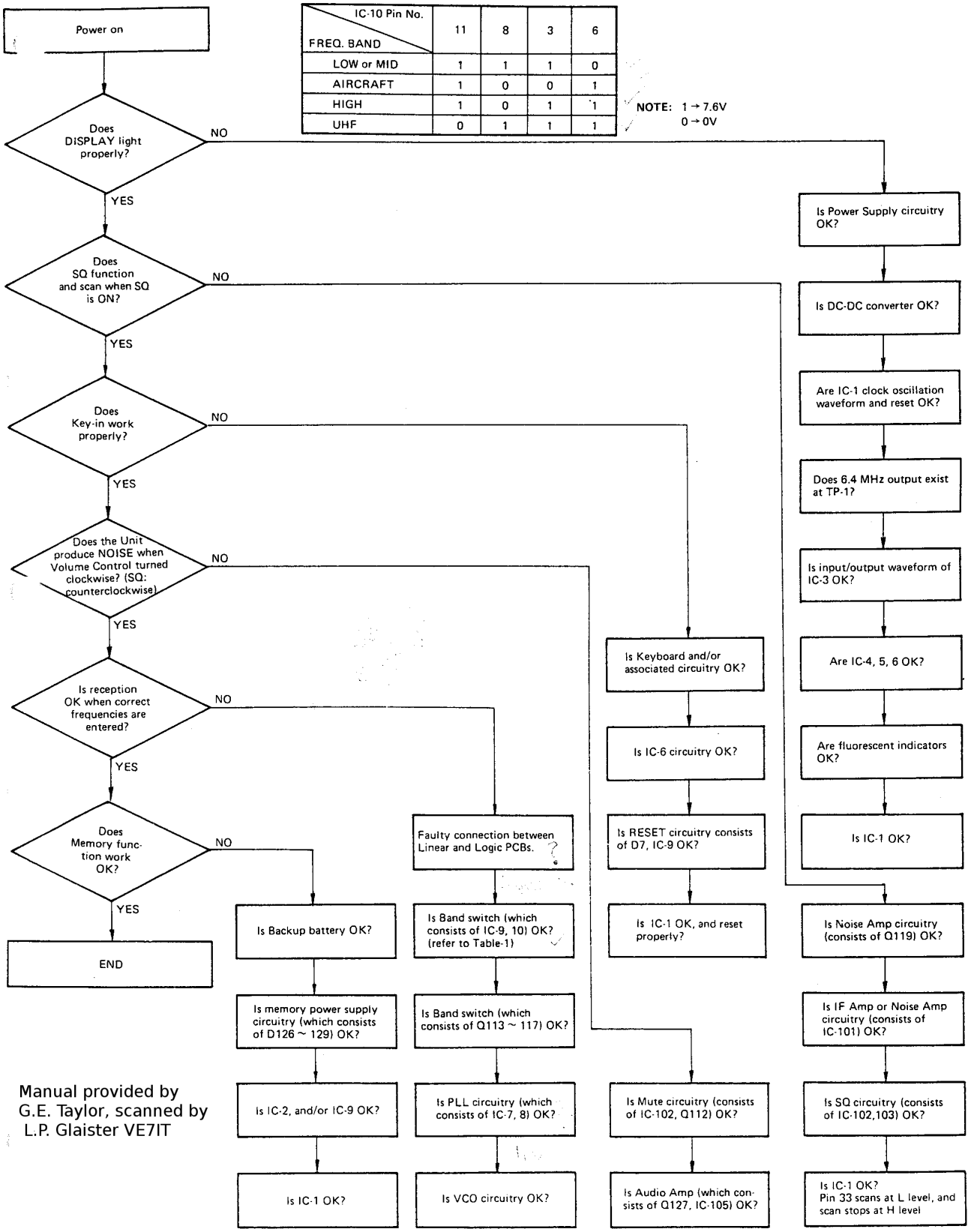


RECEPTION CHECK

Table-1

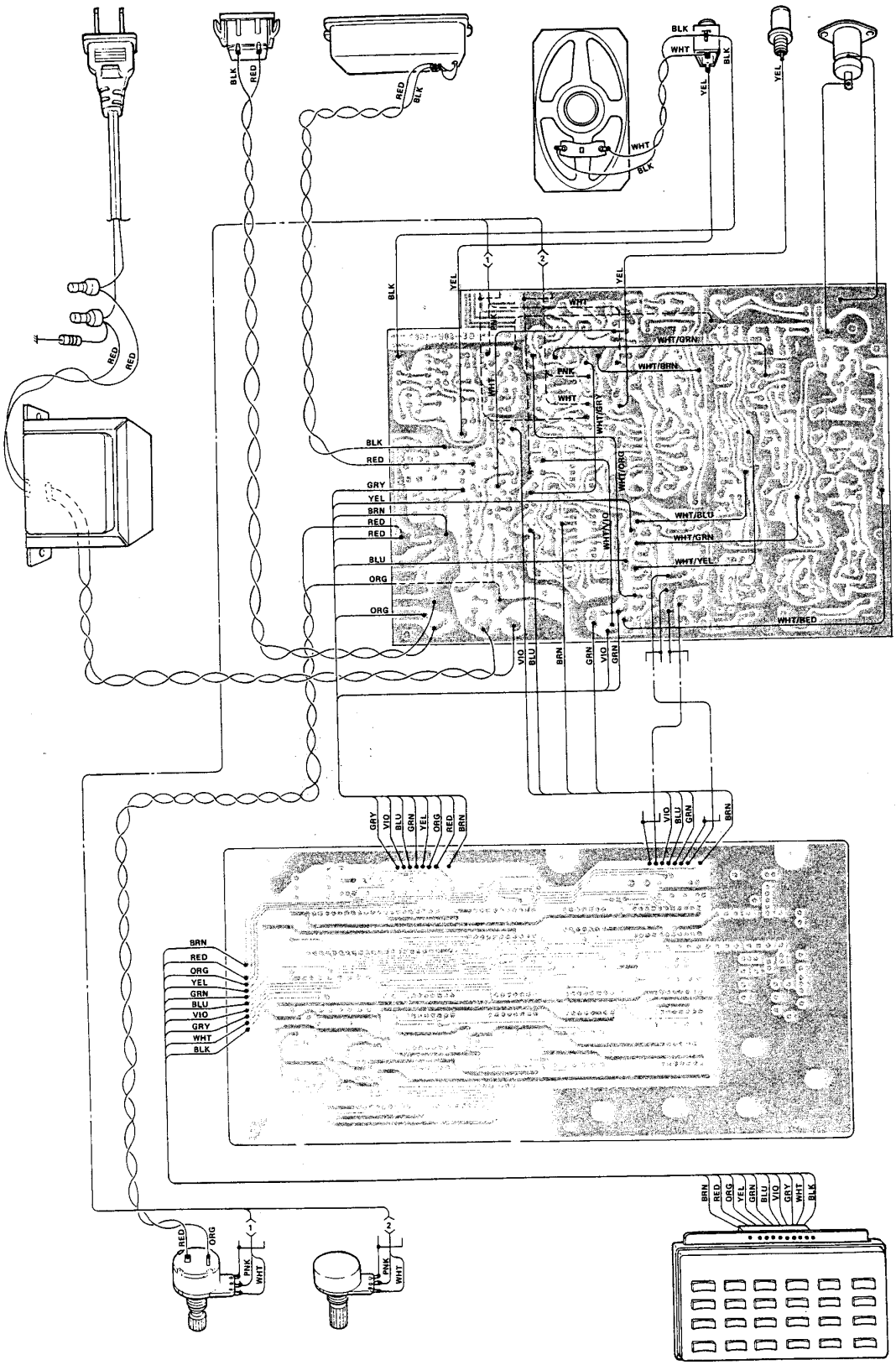
FREQ. BAND \ IC-10 Pin No.	11	8	3	6
LOW or MID	1	1	1	0
AIRCRAFT	1	0	0	1
HIGH	1	0	1	1
UHF	0	1	1	1

NOTE: 1 → 7.6V
0 → 0V

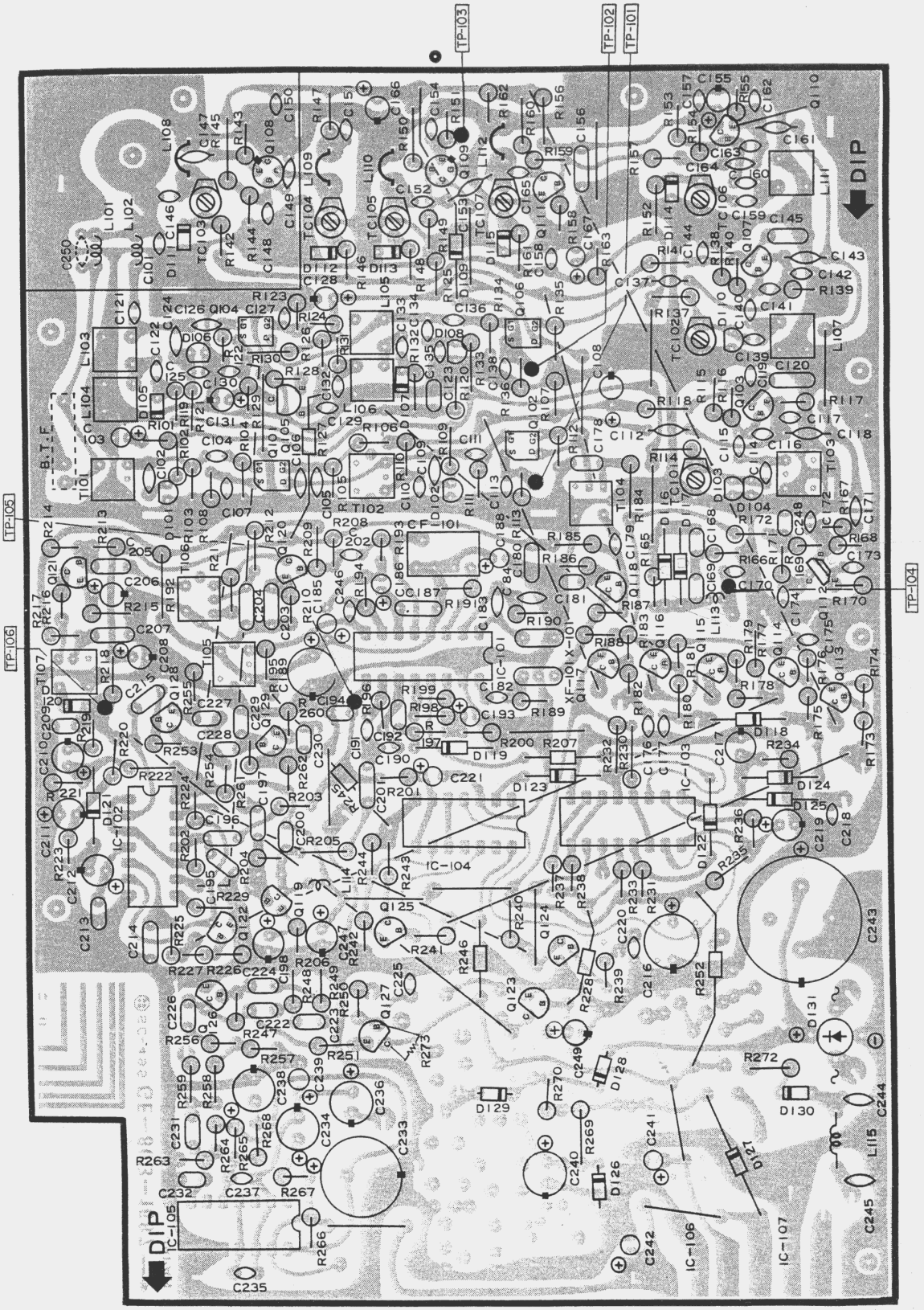


Manual provided by
G.E. Taylor, scanned by
L.P. Glaister VE7IT

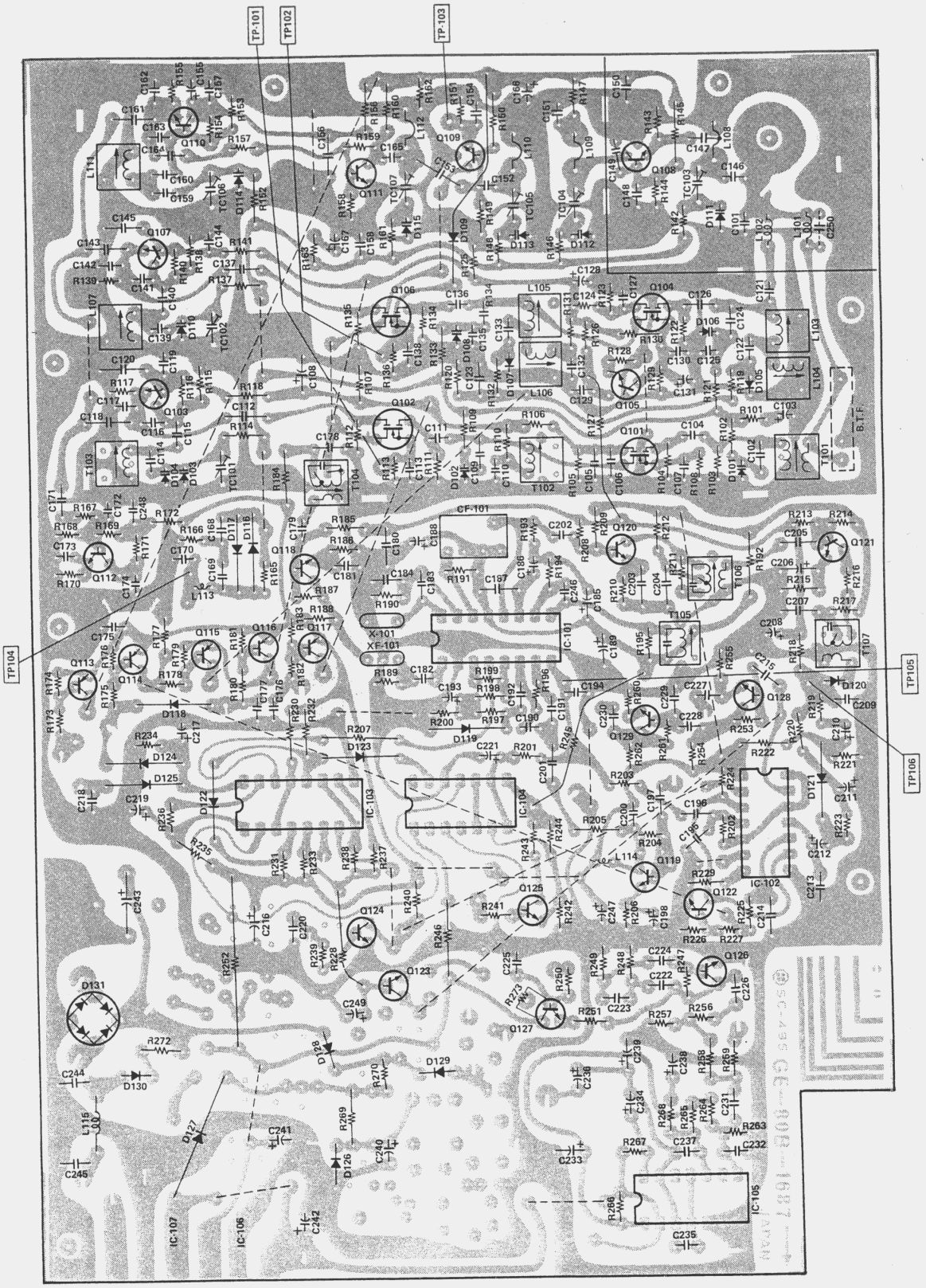
WIRING DIAGRAM



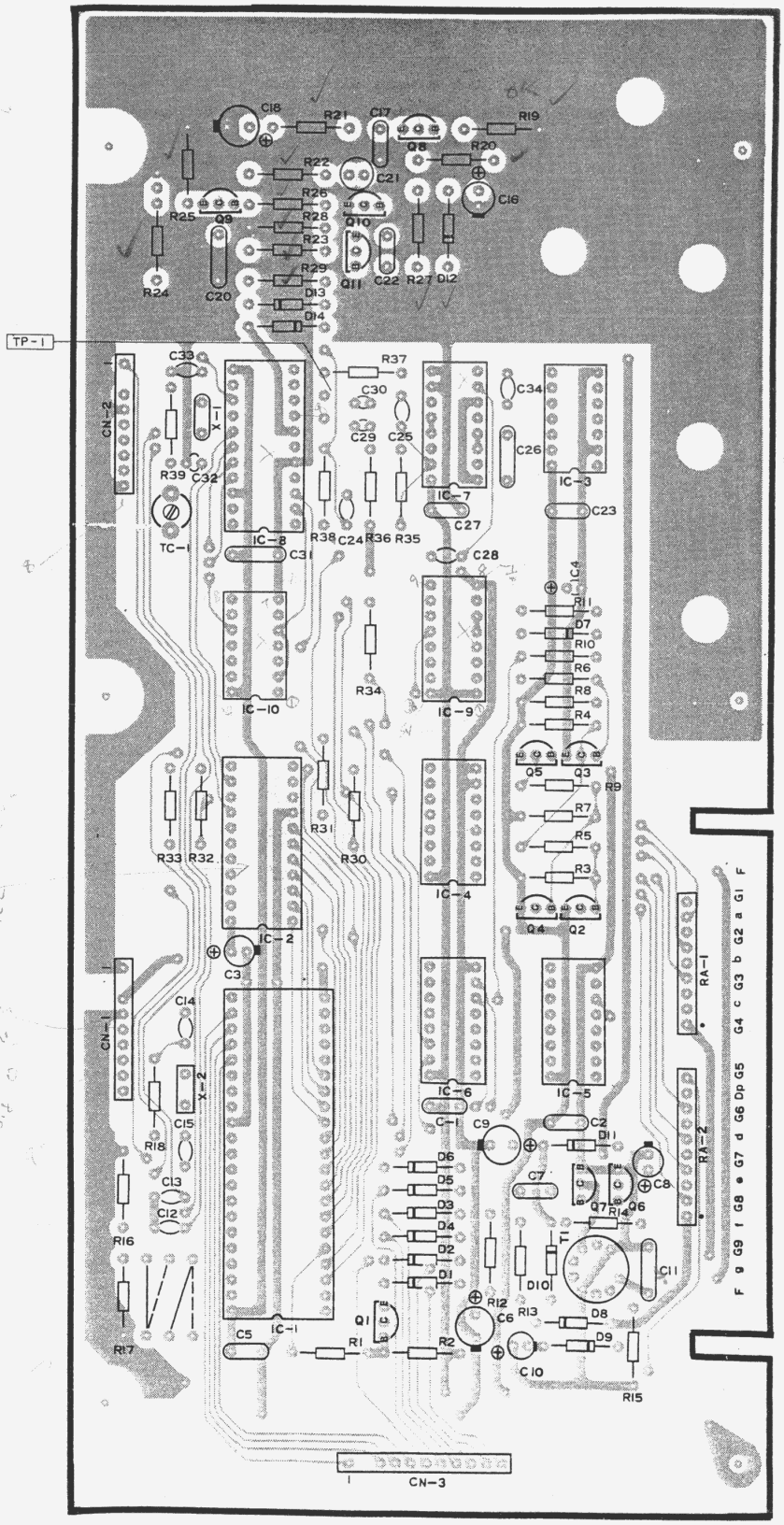
LINEAR P.C.BOARD (TOP VIEW)



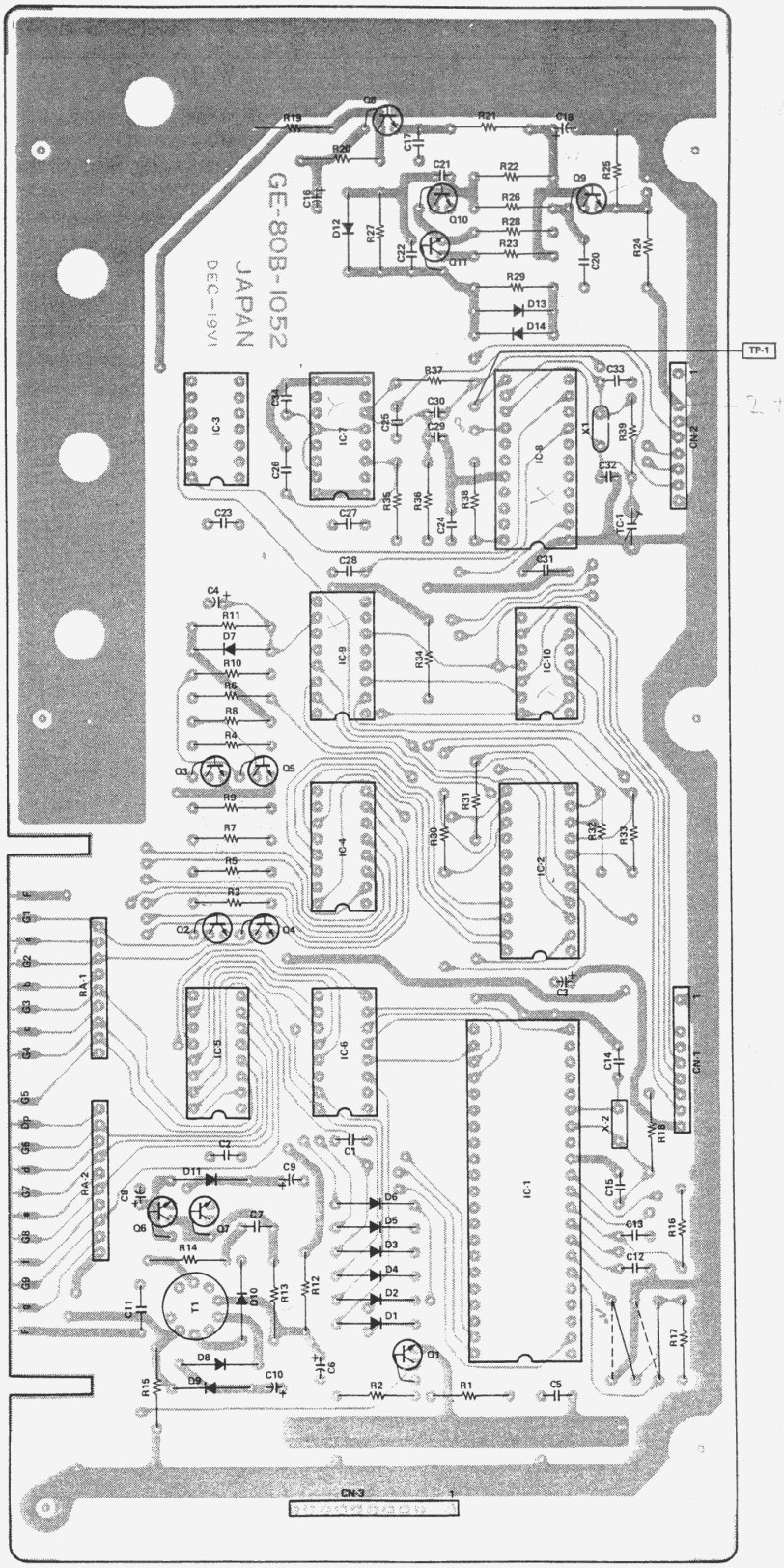
LINEAR P.C.BOARD (BOTTOM VIEW)



LOGIC P.C.BOARD (TOP VIEW)



LOGIC P.C.BOARD (BOTTOM VIEW)



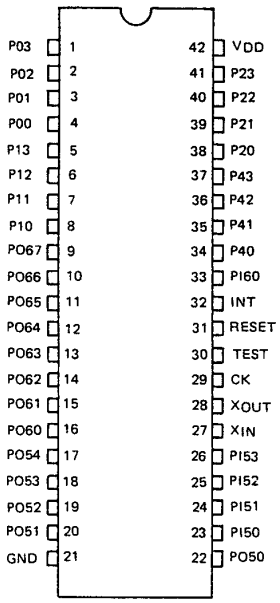
TROUBLESHOOTING

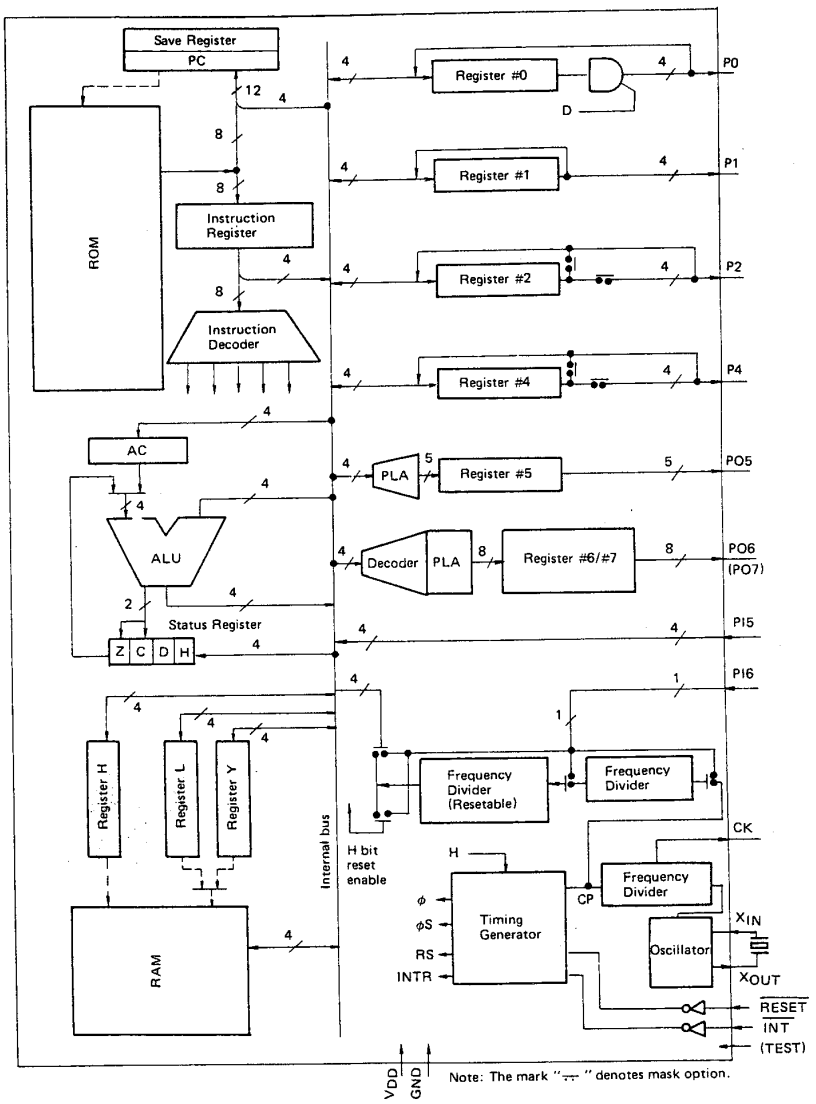
Symptom	Possible Cause
1) Display does not light and no sound when POWER is on. Volume control: MAX. Squelch control: counterclockwise (CCW)	1) Faulty power cord. 2) Defective power transformer. 3) Defective power switch. 4) Defective rectifier D131 or Polarity Protector D130.
2) Display lights but no sound. Volume control: MAX. Squelch control: CCW	1) Defective speaker or EXT. SPKR jack. 2) Defective audio amplifier IC-105, Q128, 129 and/or associated circuit components. 3) Defective IF amplifier IC-101 and/or associated circuit components. 4) Defective functional squelch control and mute switching IC-102, 103 and/or associated circuit components.
3) Sound but display does not light. Volume control: MAX. Squelch control: CCW	1) Defective DC—DC converter consisting of Q6, 7, 8, D8, 9, 10, 11. 2) Defective fluorescent display tube. 3) Defective DC—DC converter Transformer (T1). 4) Defective voltage Regulator IC-107. 5) Defective CPU (IC-1) or associated circuit components.
4) Does not scan and squelch does not operate.	1) Defective Q119 and/or associated circuit components. 2) Defective IC-1, D119 and/or associated circuit components. 3) Defective squelch circuit consisting of IC-102, 103.
5) Does not scan but squelch operates.	1) Faulty connection between Linear and Logic P.C.B. 2) Defective Keyboard and/or associated circuit components. 3) Defective IC-1, and/or associated circuit components.
6) Displays incorrectly and/or unable to key in correctly.	1) Defective Keyboard and/or associated circuit. 2) Defective CPU (IC-1) and/or associated circuit. 3) Defective IC-4, 5, 6 and/or associated circuit.
7) Displays correctly at the time of programming, but after scanning becomes faulty.	1) Defective memory IC-2 and/or associated circuit. 2) Defective IC-3, 9, 10 and/or associated circuit. 3) Defective IC-1 and/or associated circuit.
8) MANUAL scan operates but AUTO scan does not operate.	1) All channels are skipped (lockout). 2) Squelch control is not adjusted right.
9) "Zeromatic" does not operate or holds on a drifted frequency at search operation.	1) Defective Q125, IC-104 in Zeromatic circuit. 2) Discriminator coil is out of adjustment. TP-105 shall have 1/2 V_{CC} (approx. 3.0V) in normal receiving mode. 3) Is 6.4 MHz adjusted correctly?
10) All bands do not operate but display OK.	1) Faulty connection between Linear and Logic PCBs. 2) Defective Q8 ~ 11 in Low-pass filter. 3) Defective IC-7, 8, 9, 10 and/or associated circuit. 4) Defective D116, 117 and/or associated circuit. 5) Defective Q112 and/or associated circuit.

Symptom	Possible Cause
11) Low (Mid) band does not operate but Air, Hi, UHF band operate.	1) Defective Low band RF Amp, mixer and/or VCO circuit. 2) Defective IC-9, 10, Q117 and/or associated circuit.
12) Aircraft band does not operate but Low, High, UHF operate.	1) Defective D105, 107, Q114, 115 and/or associated circuit. 2) Defective AM IF Amp including Q120, 121, D120.
13) Aircraft and High band do not operate but Low, UHF band operate.	1) Defective Q104 ~ 106 in RF Amp mixer and/or in VCO circuit. 2) Defective Q114 ~ 116 in band switch circuit.
14) UHF band does not operate but Low Air, High band operate.	1) Defective Q108 ~ 111 in RF Amp mixer and/or VCO circuit. 2) Defective Q113 in band switch circuit.

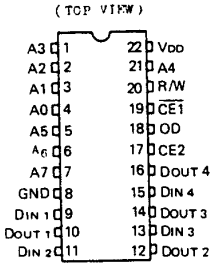
INTEGRATED CIRCUIT LEAD IDENTIFICATION

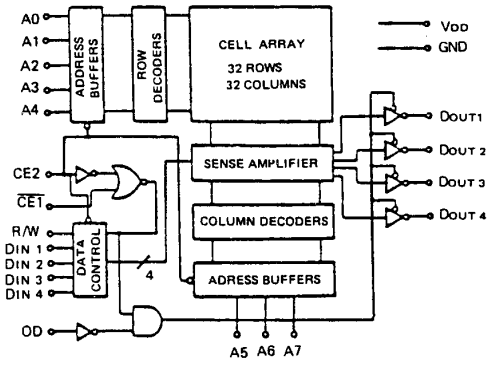
IC-1 GRE7954



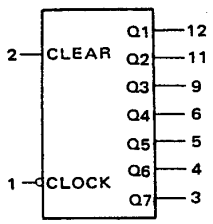


IC-2 TC5501P

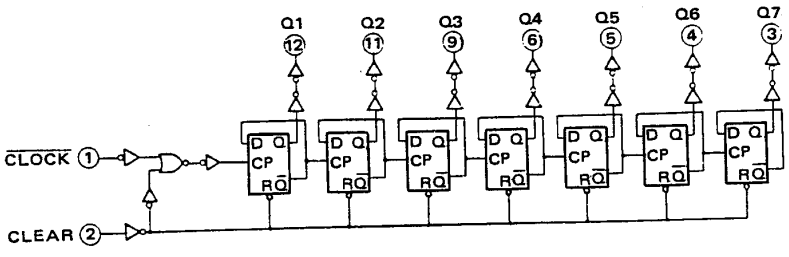




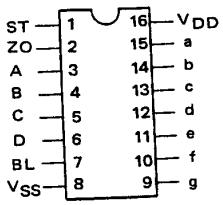
IC-3 TC4024BP

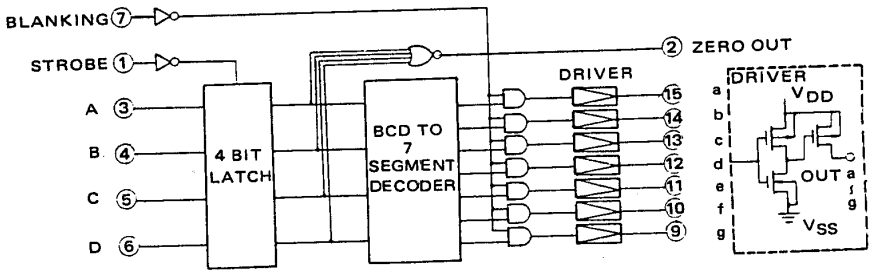


V_{DD} : 14
V_{SS} : 7
NC : 8, 10, 13

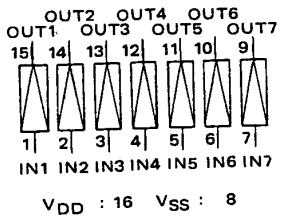


IC-4 TC5069BP



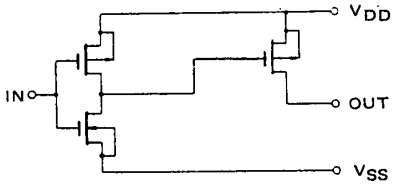


IC-5 TC5066BP

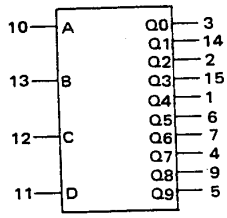


V_{DD} : 16 V_{SS} : 8

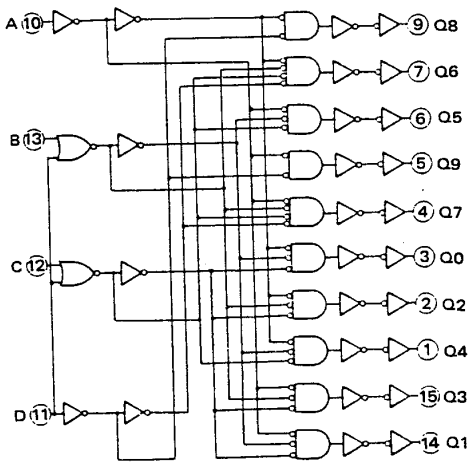
1/7 TC5066BP



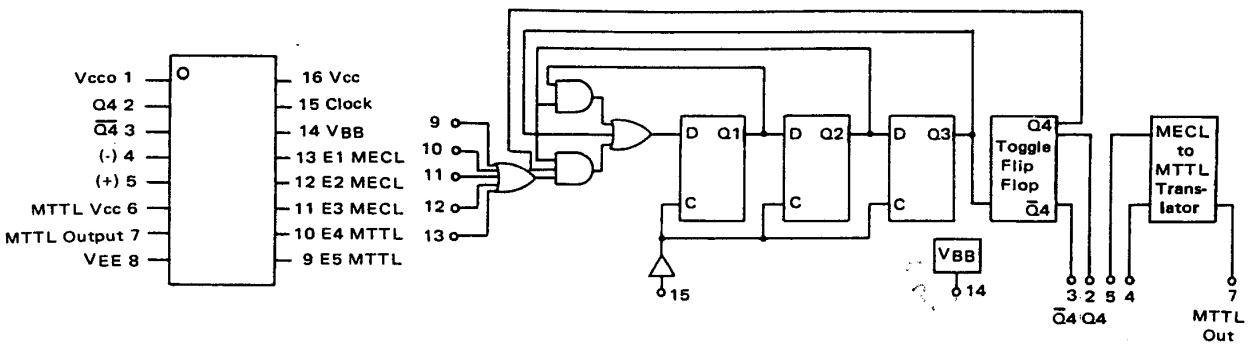
IC-6 TC4028BP



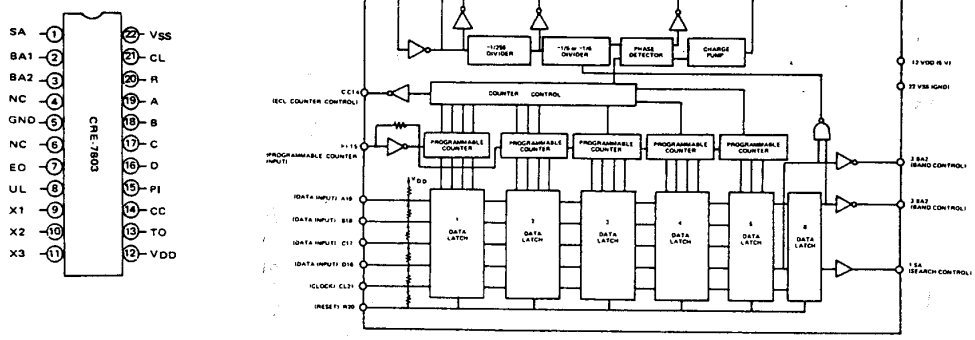
V_{DD} : 16 V_{SS} : 8



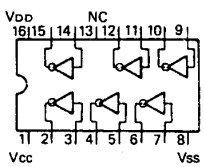
IC-7 MC12013P

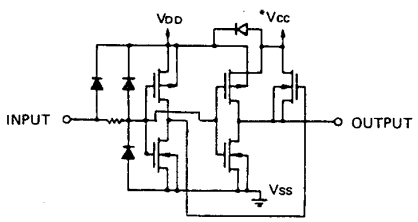


IC-8 GRE-7803A

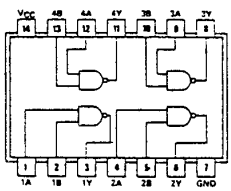


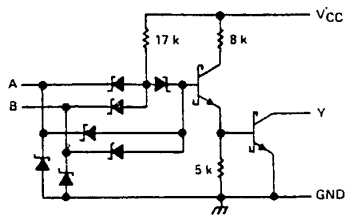
IC-9 TC4009UBP



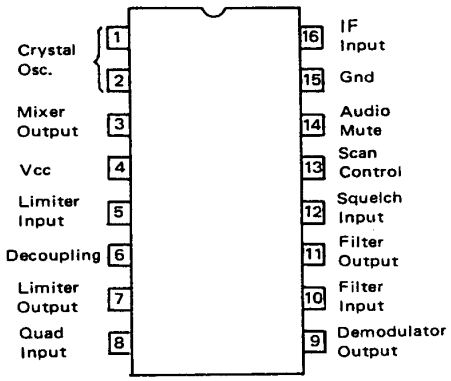


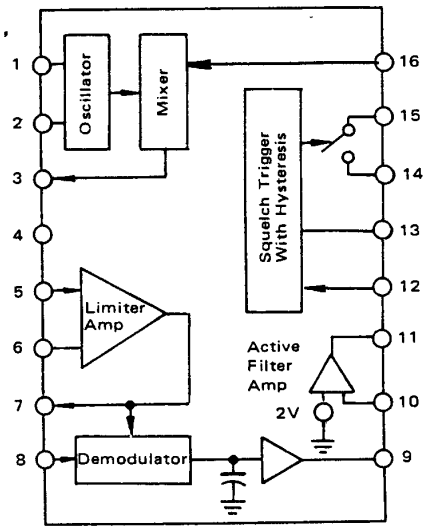
IC-10 SN74LS26



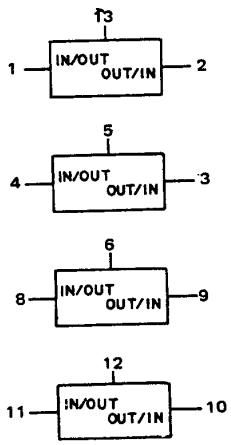


IC101 MC3357P or MPS5071



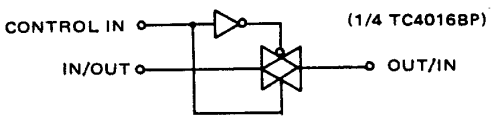


IC-102 TC4016BP or HD14016BP

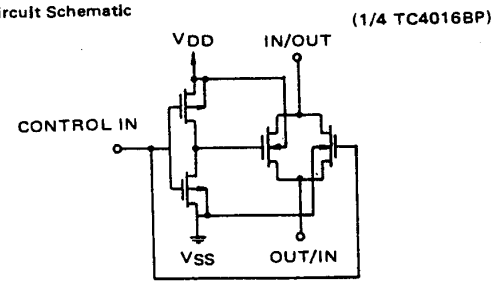


VDD : 14, VSS : 7

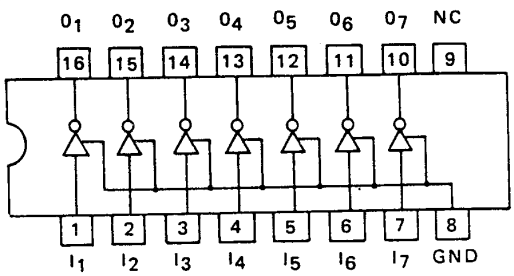
Logic Symbol

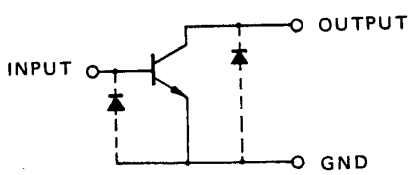


Circuit Schematic

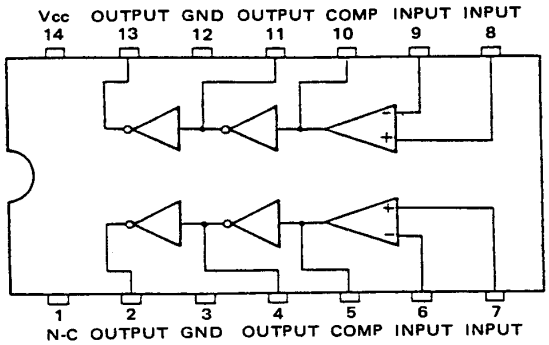


IC-103 TD62501P

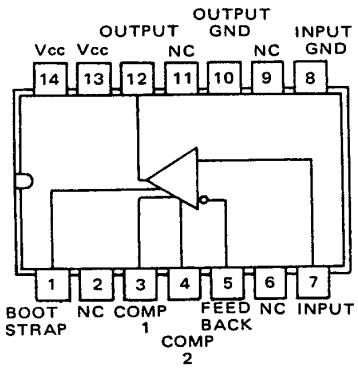


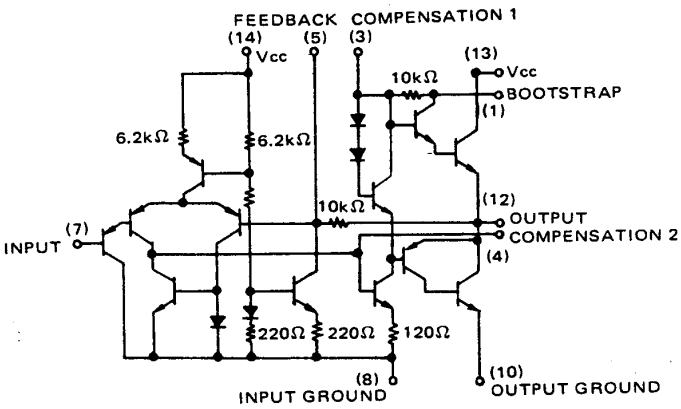


IC-104 TA7521P

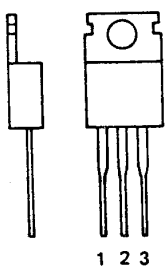


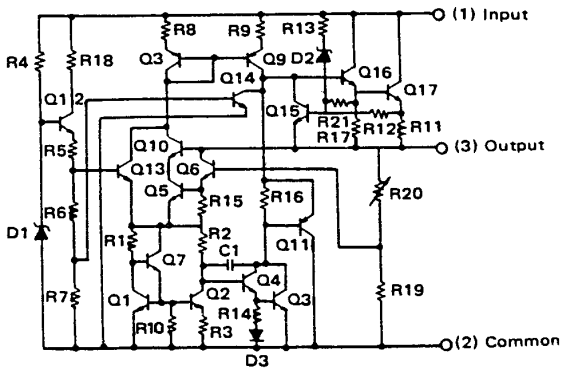
IC-105 SN76007N





IC-106 HA17808P or μA7808UC
IC-107 HA17805P or μA7805UC





SEMICONDUCTOR LEAD IDENTIFICATION

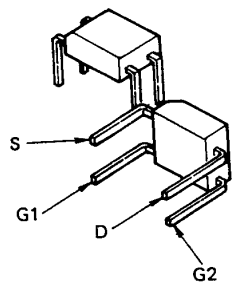
A) 3SK77 (GR)(BL)

B) 2SC1923(R)(O), 2SC1815(O),(Y)(GR), 2SA495(O), 2SA1015(O),(Y), 2SC2347, 2SC732(BL), 2SC1384(R)

B) or C) 2SC535 (B)

D) 2SC1117

Ⓐ



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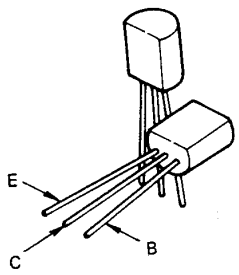

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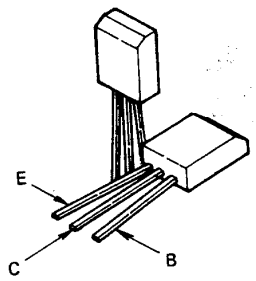

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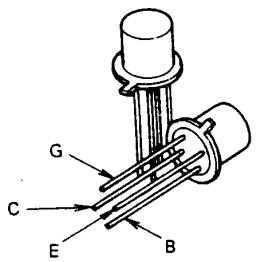
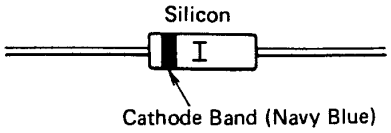
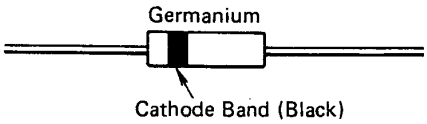


DIODE IDENTIFICATION AND LEAD POLARITY

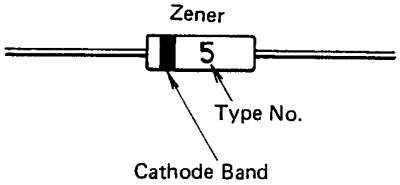
A) 1S2076A



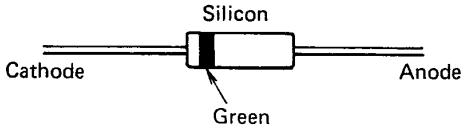
B) 1N60



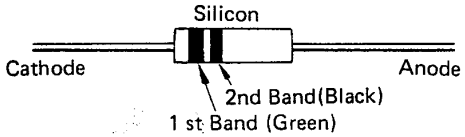
C) HZ5C-2, HZ9LC-3, HZ16L-1



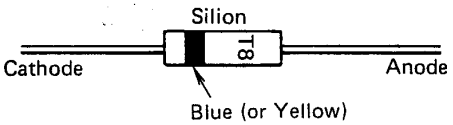
D) 1SS81



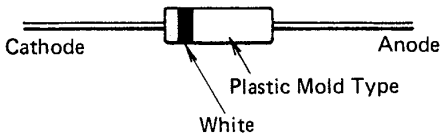
E) 1SS85



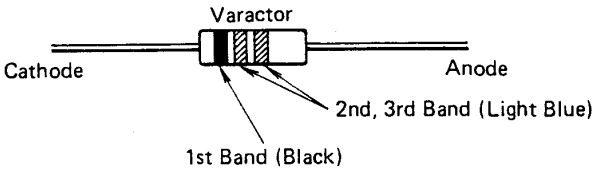
F) 1S1588 (or HV-80)



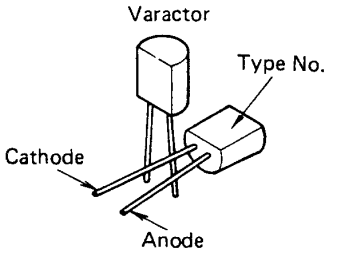
G) S5277B



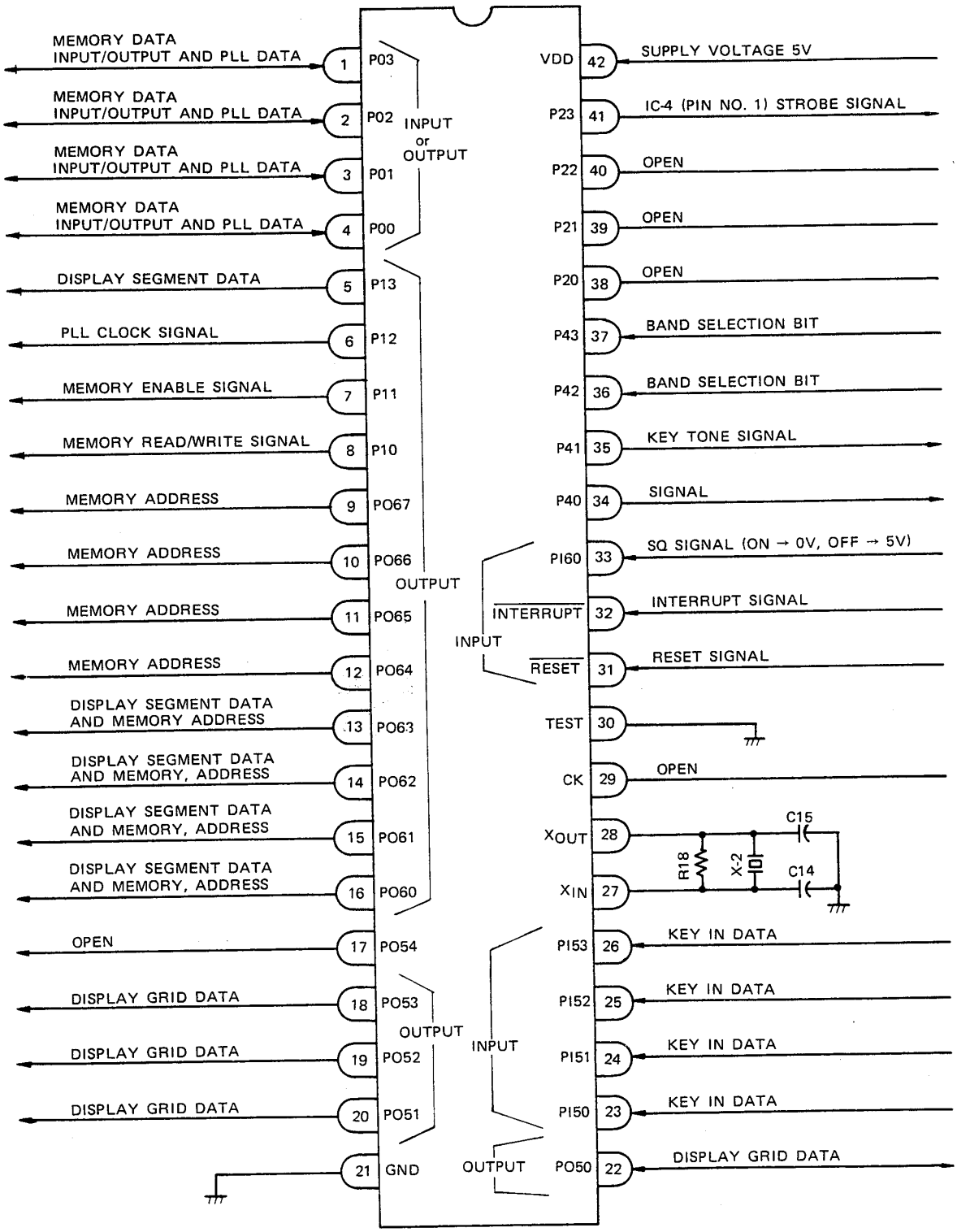
H) 1SV89B



I) FC-54



MICRO-COMPUTER (IC-1) PORT FORMAT



APPENDIX for VHF-MID Band for European/Australian models

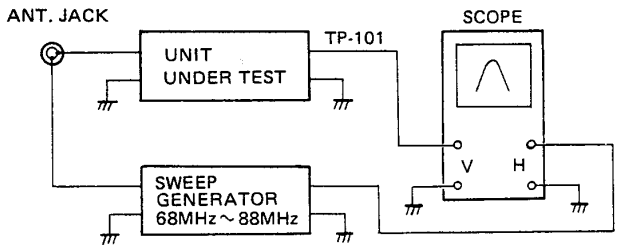
VCO ALIGNENT

Step 1: Connect a DC VTVM to TP-104 and ground
Step 2: Program CH1, 2 and 3 as follows:
CH1 (68 MHz), CH2 (78 MHz), CH3 (88 MHz)
Step 3: Select channel 3 (88 MHz) and adjust TC-101 for 9.0V on the DC VTVM
Step 4: Select channel 1 (68 MHz) and adjust T103 for 1.0V on the DC VTVM
Step 5: Repeat steps 3 and 4 until no improvement is observed.
The DC VTVM should show as below.

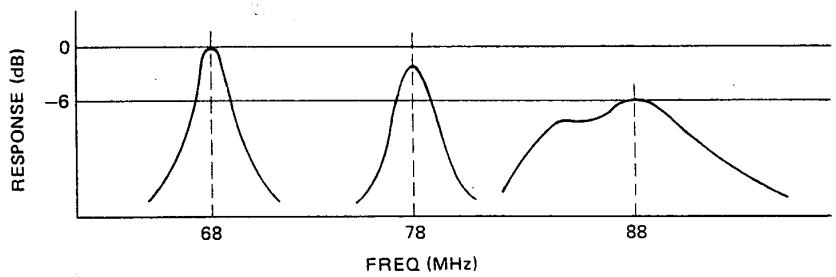
68 MHz	Voltage of TP-104	1.0V
78 MHz	Voltage of TP-104	3.4V ±0.3V
88 MHz	Voltage of TP-104	9.0V

RF AMP ALIGNMENT

Step 1: Connect instruments as shown below.



Step 2: Program 68 MHz (CH1), 78 MHz (CH2), 88 MHz (CH3).
Step 3: Select Channel 1 (68 MHz) and adjust T101 and T102 for maximum RF waveform.
Step 4: Check the Channels 1 ~ 3 one by one for maximum RF waveform.
Slight deviation as shown below is tolerable.



PARTS LIST REVISION

Ref. No.	Value	Voltage (V)	Tolerance (%)	Material
C102	33pF	50	±10	Ceramic
C109	33pF	50	±10	Ceramic
C114	47pF	50	±10	Ceramic
C116	33pF	50	±10	Ceramic
C117	5pF	50	±0.5pF	Ceramic
C250	10pF	50	±0.5pF	Ceramic

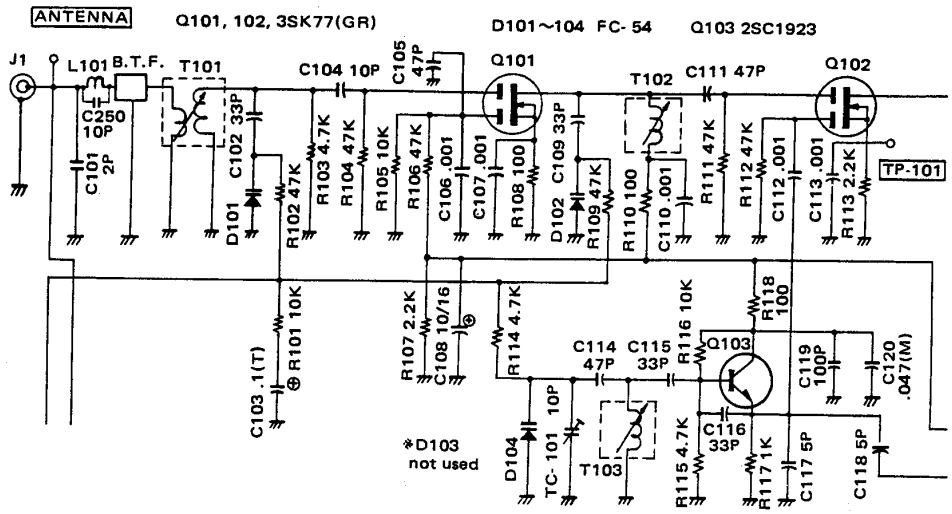
Ref. No.	Value	
R271	1.8MΩ	not used

Ref. No.	Description	
D103	Variable capacitor	not used

Ref. No.	Type No.	RS Part No.	Substitute Type No.
T101	RF Coil		GR-N553
T102	RF Coil		GR-N553
T109	Power Transformer		K6862
B.T.F.	Trap Filter		20LTR-141
	AC Cord		HAR Class 2

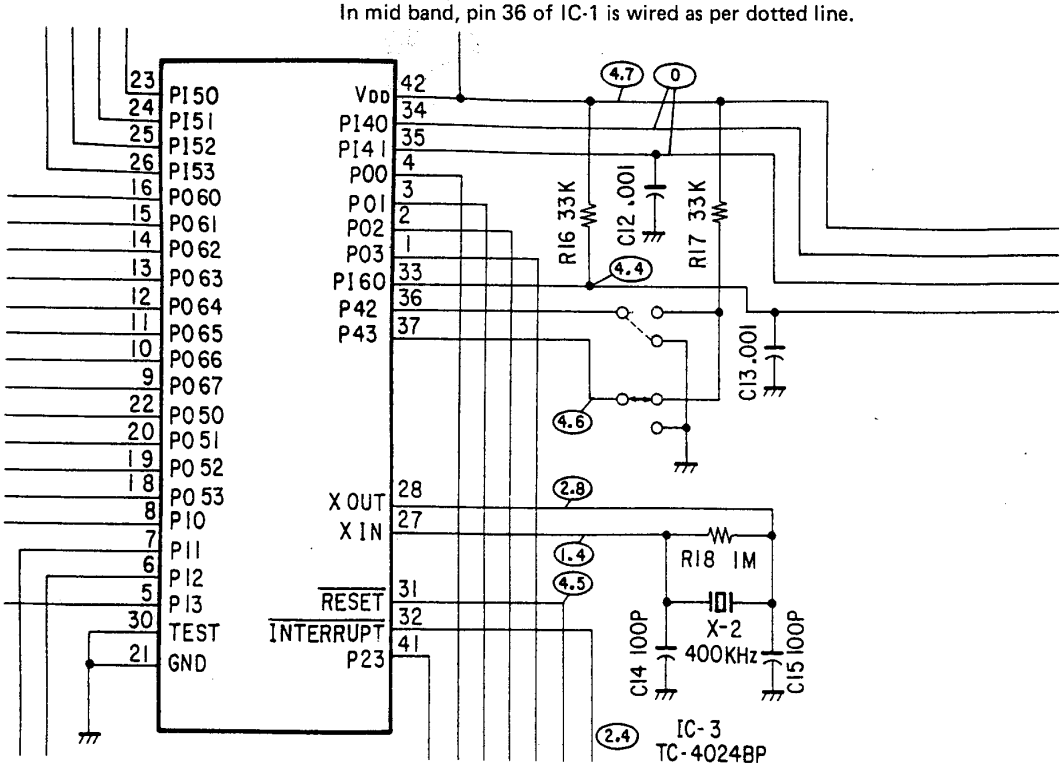
APPENDIX (Continued)

MID BAND RF SECTION SCHEMATIC DIAGRAM

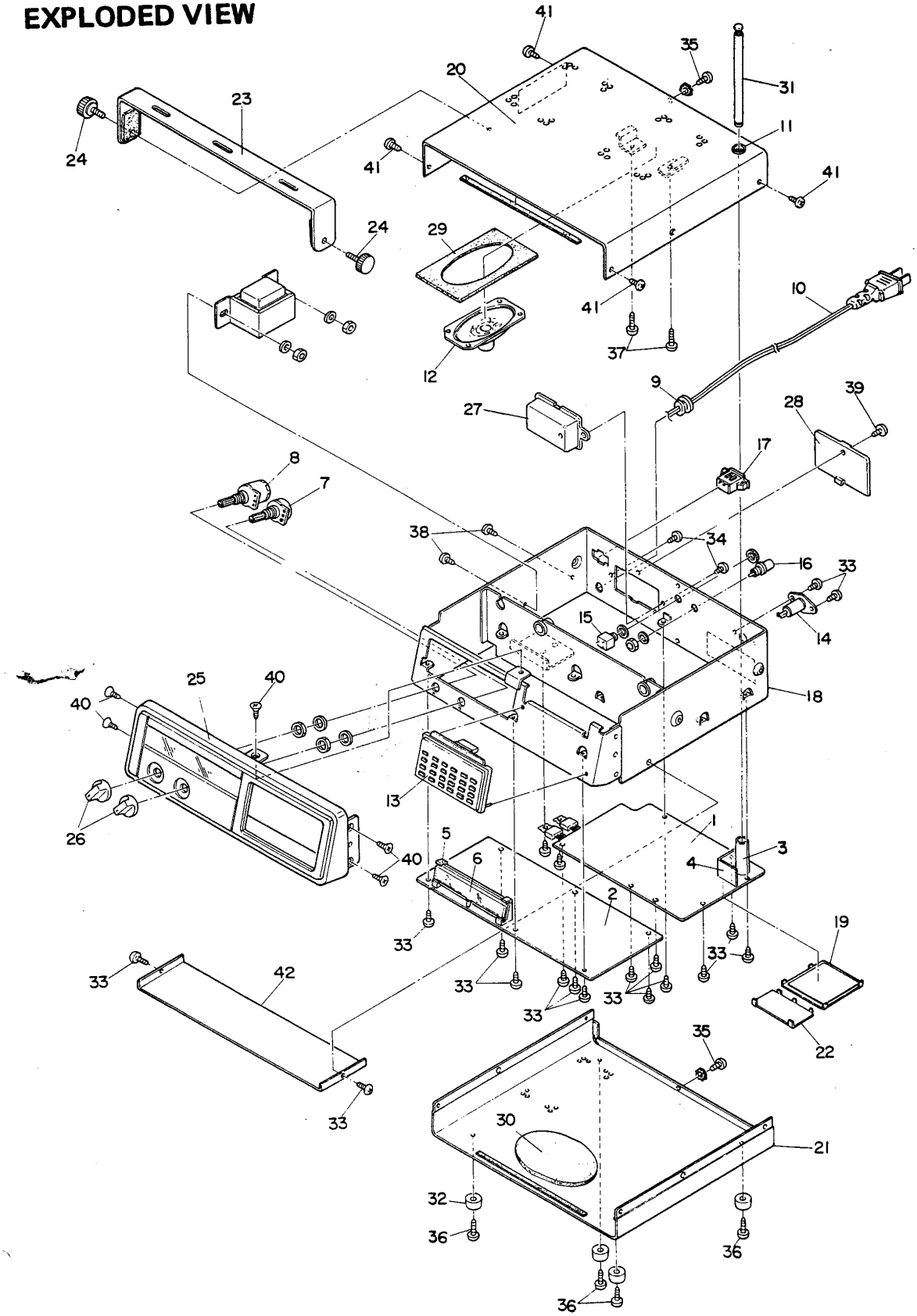


LOGIC SECTION SCHEMATIC DIAGRAM

In mid band, pin 36 of IC-1 is wired as per dotted line.



EXPLODED VIEW



CONTENTS

SPECIFICATIONS

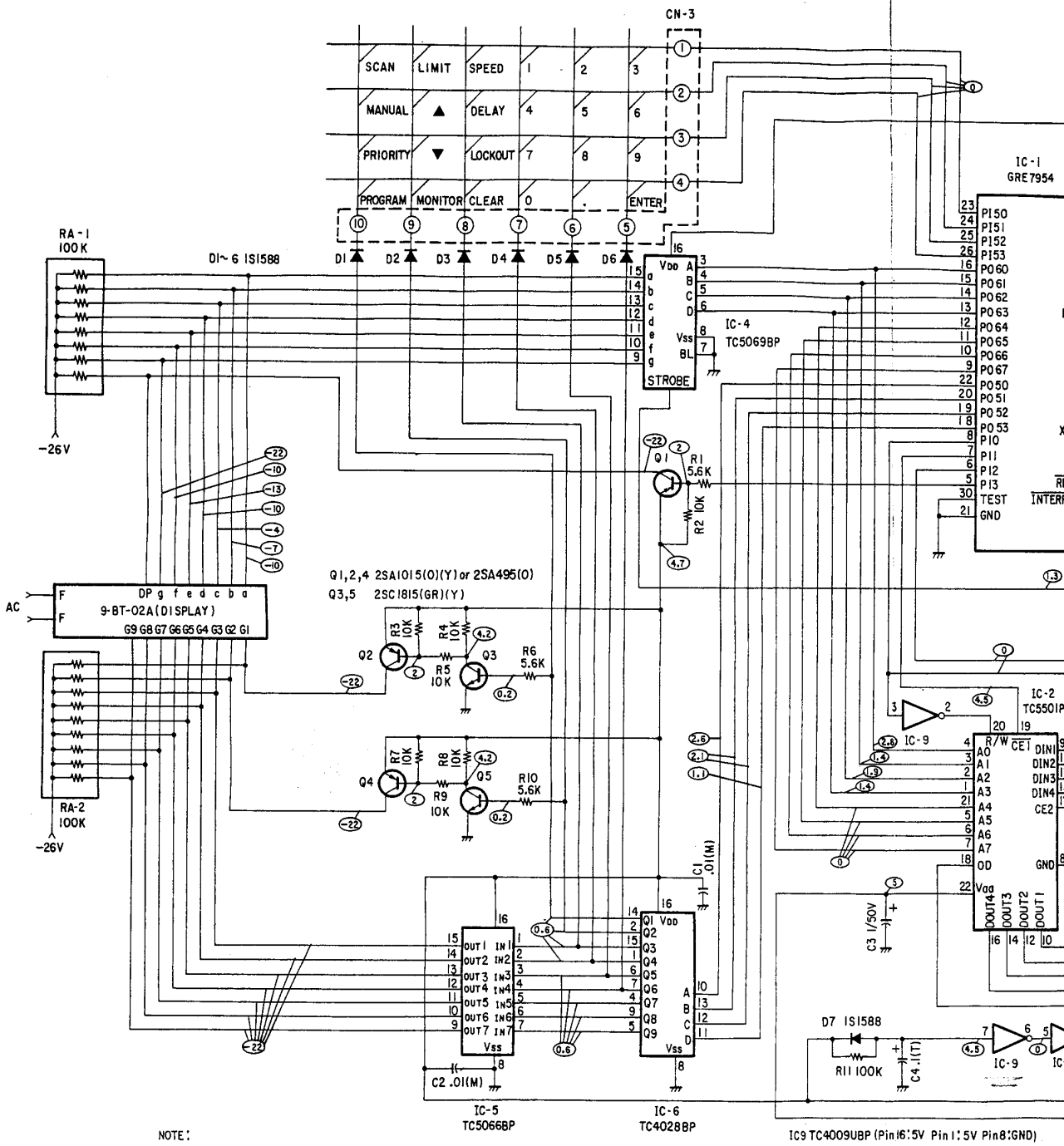
Description	Nominal spec.	Limit spec.
Frequency Coverage		
VHF LOW (* or MID)		30 ~ 50 MHz 5 kHz steps * or 68 ~ 88 MHz 5 kHz steps
AIRCRAFT		108 ~ 136 MHz 25 kHz steps
VHF HIGH		138 ~ 174 MHz 5 kHz steps
UHF		410 ~ 512 MHz 12.5 kHz steps
Sensitivity		
VHF LOW (* or MID) FM	0.5 μV	2 μV
AIRCRAFT AM	1 μV	3 μV
VHF HIGH FM	0.5 μV	2 μV
UHF FM	1 μV	4 μV
	MOD.: 60% at 1 kHz (S + N)/N = 20 dB	
Selectivity – 6 dB	±9 kHz	±12 kHz
–50 dB	±15 kHz	±18 kHz
Spurious Rejection		
at 40 MHz (* or 78 MHz)	50 dB	40 dB
at 120 MHz	50 dB	40 dB
at 160 MHz	50 dB	40 dB
UHF		Not specified
(except primary image)		
IF Rejection 10.7 MHz	80 dB	40 dB
Modulation Acceptance (EIA RS-204-A)	±7 kHz	±5 kHz
Signal to Noise Ratio		
(AM: MOD. 60% at 1 kHz)		
(FM: DEV. 3 kHz at 1 kHz)		
VHF LOW (* or MID)	45 dB	30 dB
AIRCRAFT	40 dB	25 dB
VHF HIGH	40 dB	25 dB
UHF	35 dB	25 dB
Residual Noise (Vol. Min)	3 mV	5 mV
Scanning Speed Fast	9 channels/sec.	6 ~ 12 channels/sec.
Slow	4 channels/sec.	3 ~ 7 channels/sec.
Search Rate Fast	9 steps/sec.	6 ~ 12 steps/sec.
Slow	4 steps/sec	3 ~ 7 steps/sec.
Priority Sampling	2 sec.	1.5 ~ 2.5 sec.
Scan Delay Time	2 sec.	1 ~ 3 sec.
Audio Output Power (T.H.D. 10 %)	1.5 W	1 W

Channels of Operation	Any 20 channels in any band combination
Channel, Frequency and Mode Display	Fluorescent multi display 9 letters
Receiving System	Direct Key entry Digital-Controlled Synthesizer, Superheterodyne 1st IF: 10.7MHz 2nd IF: 455 kHz
Power Requirements	AC-120 V 60 Hz 19 W (220 ~ 240 V, 50 Hz for European/Australian) DC-13.8 V 10 W
Accessory	Telescopic antenna and Car Mounting bracket with Screws.

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 which still might be considered acceptable: in no case should a unit perform to less than within any Limit Spec.*

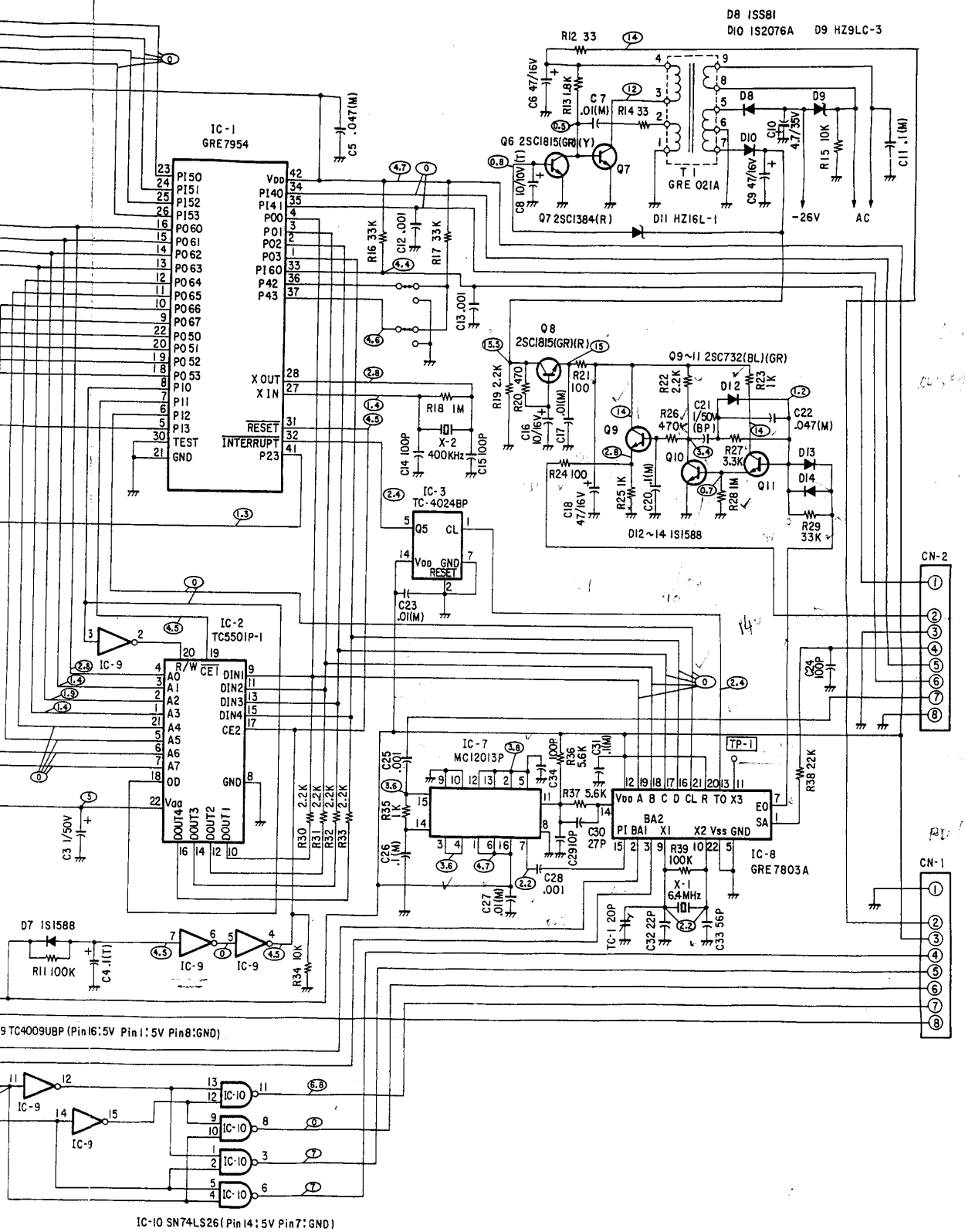
** VHF MID (68 ~ 88 MHz) range is for European and Australian Models only.*

SCHEMATIC DIAGRAM (LOGIC SECTION)

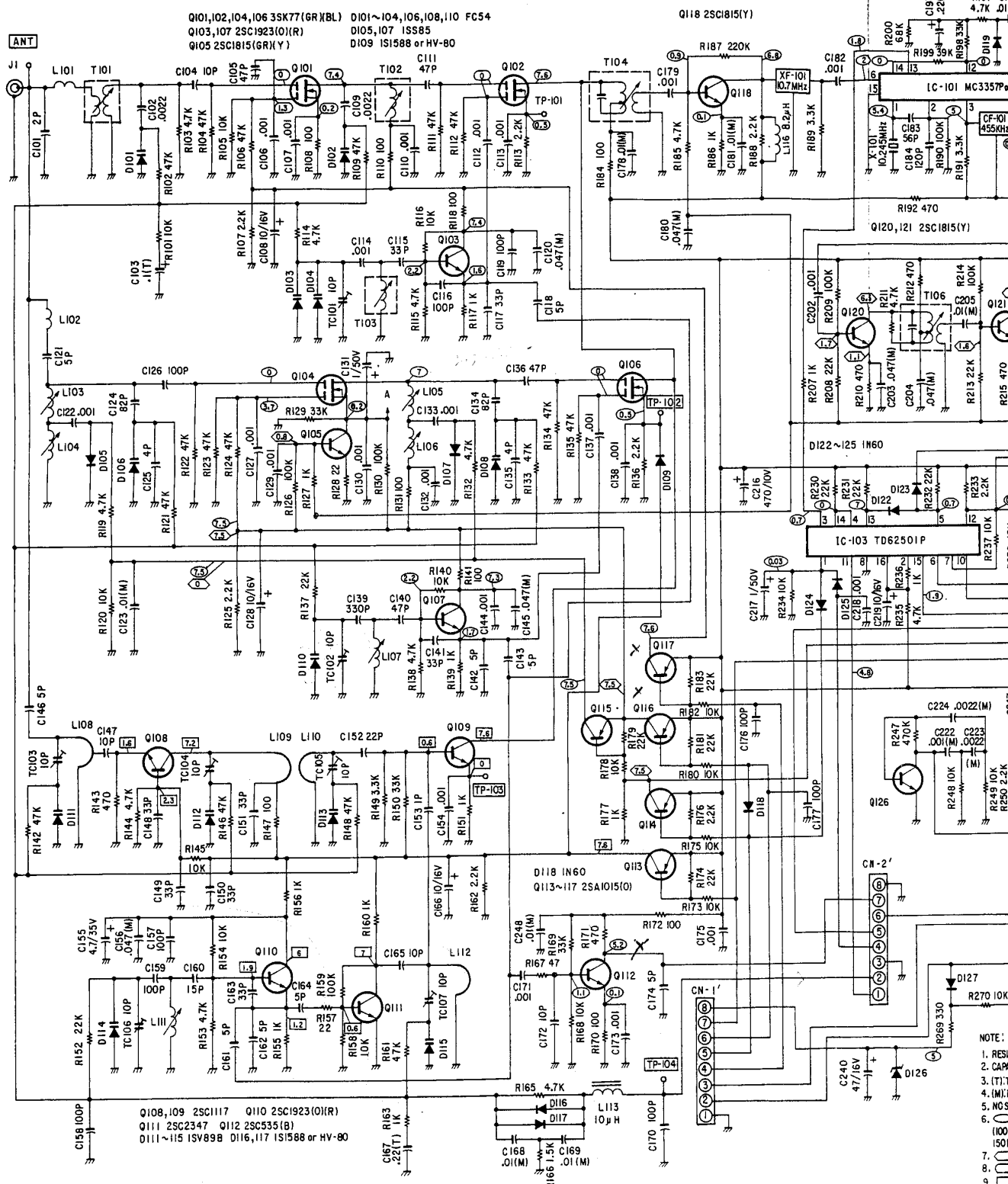


NOTE:

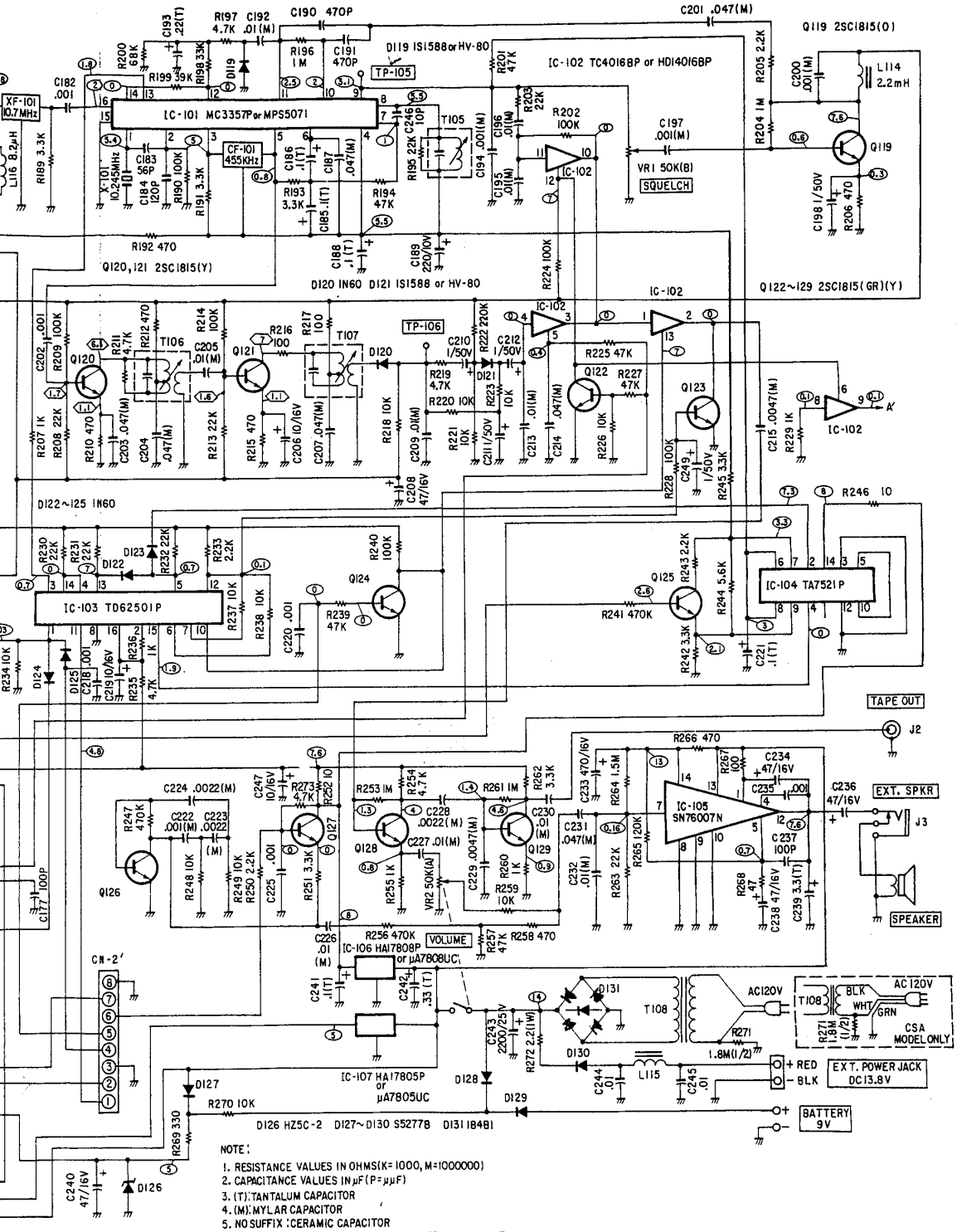
1. RESISTANCE VALUES IN OHMS(K=1000, M=1000000)
2. CAPACITANCE VALUES IN μF(P=μμF)
3. (T):TANTALUM CAPACITOR
4. (M):MYLAR CAPACITOR
5. NO SUFFIX :CERAMIC CAPACITOR
6. ⬭ DENOTES DC VOLTAGE MEASURED WITH DC VOLTMETER (100KΩ/V) UNDER FOLLOWING CONDITIONS :CH-1 HIGH BAND AT 150MHz, MANUAL OPERATION, VOLUME AT MINIMUM AND SQUELCH CCW
7. ⬭ DENOTES VOLTAGES FOR AIRCRAFT BAND OPERATION
8. ⬭ DENOTES VOLTAGES FOR LOW BAND OPERATION
9. ▭ DENOTES VOLTAGES FOR UHF BAND OPERATION
10. RATING OR TYPE NUMBER OF COMPONENT PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT WITHOUT NOTICE


D8 1SS81
D10 1S2076A
D9 HZ9LC-3
IC-1
GRE7954
Q6 2SC1815(GR)(Y)
Q7
Q7 2SC1384(R)
T1
GRE 021A
D11 HZ16L-1
-26V
AC
Q8
2SC1815(GR)(R)
Q9~11 2SC732(BL)(GR)
D12~14 1S1588
IC-3
TC-4024BP
IC-2
TC5501P-1
IC-9
IC-7
MC12013P
IC-8
GRE7803A
CN-2
CN-1
TP-1
D7 1S1588
IC-10 SN74LS26(Pin14:5V Pin7:GND)

SCHEMATIC DIAGRAM (LINEAR SECTION)



VCO



NOTE:

1. RESISTANCE VALUES IN OHMS(K=1000, M=1000000)
2. CAPACITANCE VALUES IN μF(P=μμF)
3. (T):TANTALUM CAPACITOR
4. (M):MYLAR CAPACITOR
5. NO SUFFIX :CERAMIC CAPACITOR
6. ⬭ DENOTES DC VOLTAGE MEASURED WITH DC VOLTMETER (100KΩ/V) UNDER FOLLOWING CONDITIONS ; CH-1 HIGH BAND AT 150MHz, MANUAL OPERATION, VOLUME AT MINIMUM AND SQUELCH CCW
7. ⬭ DENOTES VOLTAGES FOR AIRCRAFT BAND OPERATION
8. ⬭ DENOTES VOLTAGES FOR LOW BAND OPERATION
9. ▭ DENOTES VOLTAGES FOR UHF BAND OPERATION
10. RATING OR TYPE NUMBER OF COMPONENT PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT WITHOUT NOTICE

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