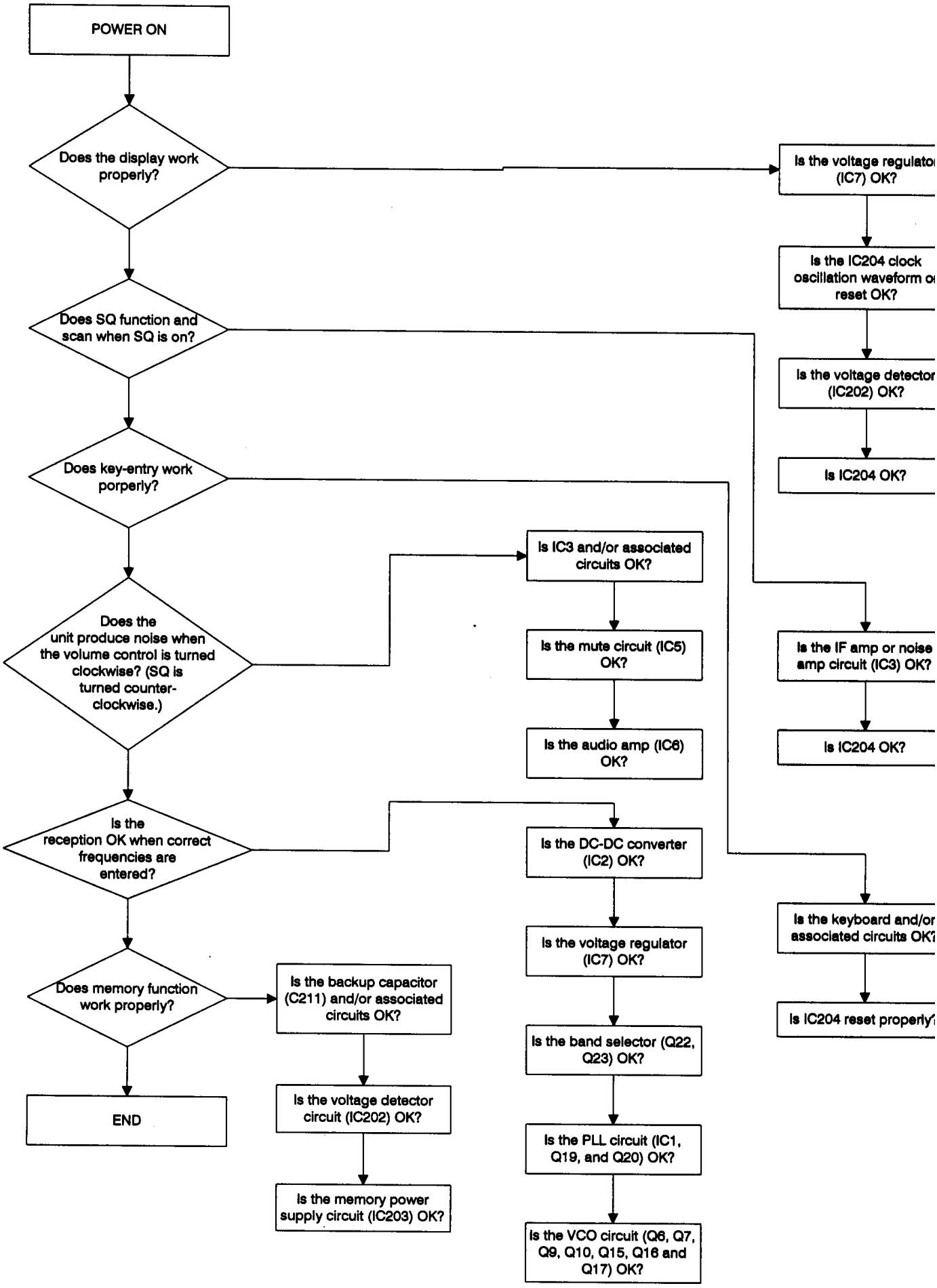
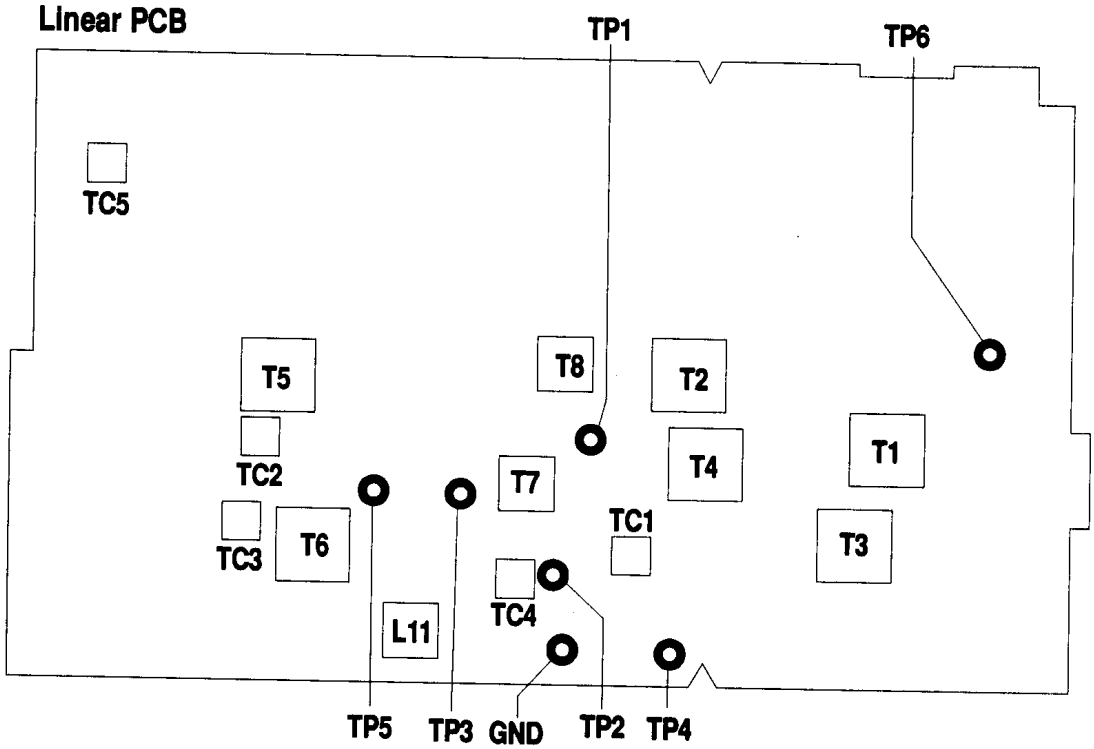
RECEPTION CHECK



ALIGNMENT AND ADJUSTMENT

ALIGNMENT AND TEST POINT LOCATIONS



ALIGNMENT PREPARATION

Test Equipment Required

- Oscilloscope
- AC SSVM
- DC SSVM
- Frequency counter
- 8-ohm dummy load
- VHF/UHF sweep generator with variable marker
- FM signal generator

Notes:

- Use non-metallic tuning tools.
- The test equipment and receiver should be warmed up for at least 10 minutes before proceeding with alignment.
- The signal level from the generator should be kept as low as possible to obtain a usable output.

Program channels 1 through 10 as follows:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	68.000	8	451.000
2	78.000	9	475.625
3	88.000	10	512.000
4	137.000	11	806.000
5	155.000	12	860.000
6	174.000	13	960.000
7	380.000		

ALIGNMENT PROCEDURES

VCO Alignment

VHF Low Band

Control Setting	Test Instrument Connection	Adjust	Result
OFF/VOLUME control: ON. SQUELCH control: Fully counterclockwise (CCW). Select channels 1 through 3.	Connect the DC SSVM to TP5. See Figure 3	TC2 T5	1. Select channel 1 and adjust T5 for 1.0 volt on the DC SSVM. 2. Select channel 3 and adjust TC2 for 10.0 volts on the DC SSVM. 3. Repeat above 1 and 2, until no further improvement is observed. See Table 2.

Channel	Frequency	Voltage at TP5
1	68.000 MHz	0.9-1.1 volts
2	78.000 MHz	4.0-5.0 volts
3	88.000 MHz	9.9-10.1 volts

Table 2

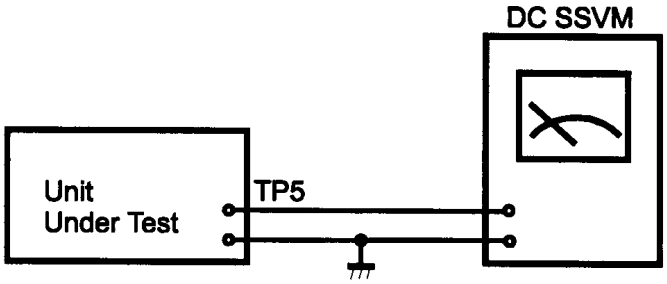


Figure 1

VHF High/UHF Low Band

Control Setting	Test Instrument Connection	Adjust	Result
OFF/VOLUME control: ON. SQUELCH control: Fully counterclockwise (CCW). Select channels 4 through 10.	Connect the DC SSVM to TP5. See Figure 3	TC3 T6	1. Select channel 10 and adjust TC3 for 13.0 volt on the DC SSVM. 2. Select channel 7 and adjust T6 for 1.4 volts on the DC SSVM. 3. Repeat above 1 and 2, until no further improvement is observed. See Table 3.

Channel	Frequency	Voltage at TP5
4	137.000 MHz	1.5-2.5 volts
5	155.000 MHz	4.5-5.5 volts
6	174.000 MHz	10.0-11.5 volts
7	380.000 MHz	1.3-1.5 volts
8	451.000 MHz	5.0-6.0 volts
9	475.625 MHz	7.0-8.0 volts
10	512.000 MHz	12.9-13.1 volts

Table 3

UHF High Band

Control Setting	Test Instrument Connection	Adjust	Result
OFF/VOLUME control: ON. SQUELCH control: CCW. Select channels 11 through 13.	Connect the DC SSVM to TP5. See Figure 3	L11	1. Select channel 13 ar adjust L11 for 13.0 volt (the DC SSVM. 2. Check channel 11 for 5. 6.3 volts on the DC SSVI See Table 4.

Channel	Frequency	Voltage at TP5
11	806.000 MHz	5.3-6.3 volts
12	860.000 MHz	7.5-8.5 volts
13	960.000 MHz	12.9-13.1 volts

Table 4

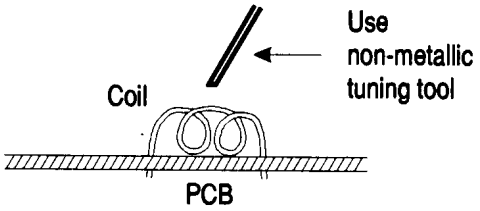


Figure 2

Note: Be very careful when doing internal alignment of coil L11 as shown in Figure 2 because it greatly affects frequency.

Secure the coil with glue after alignment and then repeat the steps above after checking that the coil is secu and the temperature is normal.

Reference Frequency Osc. Alignment

Control Setting	Test Instrument Connection	Adjust	Result
OFF/VOLUME control: ON. SQUELCH control: CCW. Select channel 3.	Connect the frequency counter to TP3. See Figure 3	TC5	Adjust TC5 so the frequency 98.700000 MH ±10 Hz.

IF Section Alignment

Control Setting	Test Instrument Connection	Adjust	Result
OFF/VOLUME control: ON. SQUELCH control: CCW.	Connect DC SSVM to TP6. See Figure 4	T8	Adjust T8 for 2.0 volts on th DC SSVM.

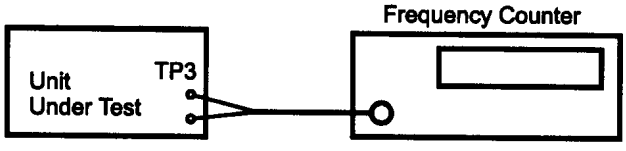


Figure 3

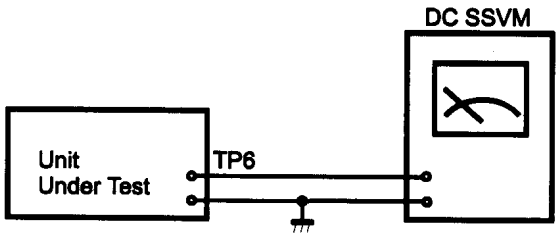


Figure 4

RF Amplifier Alignment

VHF Low Band

Control Setting	Test Instrument Connection	Adjust	Result
OFF/VOLUME control: ON. SQUELCH control: CCW. Select channels 1 through 3.	Connect instruments as shown in Figure 5. Sweep generator: 68-88 MHz.	T1 T2	1. Select channel 1 and adjust T1 and T2 for maximum RF output. 2. Check channels 1 through 3 for maximum output. A slight deviation like in Figure 6 is acceptable.

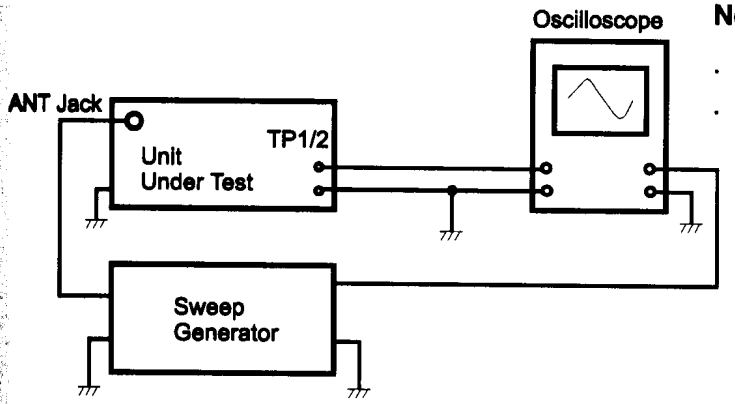


Figure 5

Notes:

- Use TP1 to adjust VHF Low and VHF High bands.
- Use TP2 for UHF Low band.

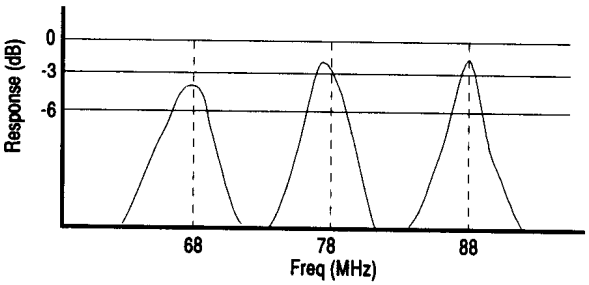


Figure 6

VHF High band

Control Setting	Test Instrument Connection	Adjust	Result
OFF/VOLUME control: ON. SQUELCH control: CCW. Select channels 4 through 6.	Connect instruments as shown in Figure 5. Sweep generator: 137-174 MHz.	T3 T4	1. Select channel 4 and adjust T3 and T4 for maximum RF output. 2. Check channels 4 through 6 for maximum output. A slight deviation like in Figure 7 is acceptable.

UHF Low Band

Control Setting	Test Instrument Connection	Adjust	Result
OFF/VOLUME control: ON. SQUELCH control: CCW. Select channels 7 through 10.	Connect instruments as shown in Figure 5. Sweep generator: 380-512 MHz.	TC1	1. Select channel 7 and adjust TC1 for maximum RF output. 2. Check channels 7 through 10 for maximum output. A slight deviation like in Figure 8 is acceptable.

UHF high band: No adjustment required.

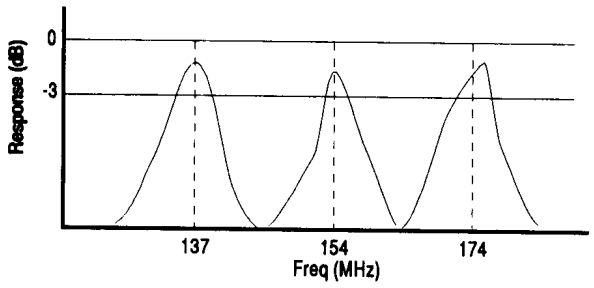


Figure 7

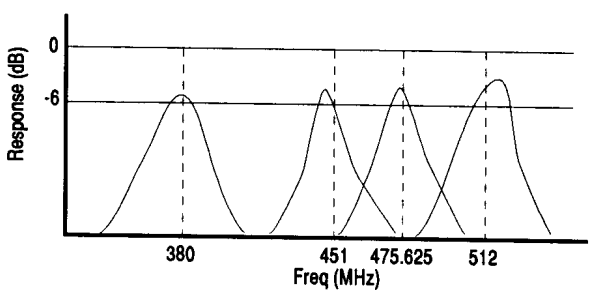


Figure 8

OVERALL ALIGNMENT

Control Setting	Test Instrument Connection	Adjust	Result
OFF/VOLUME control: ON. SQUELCH control: CCW. Select channels 7.	Connect the FM signal generator to the ANT jack and the AC SSVM to the earphone jack across an 8-ohm dummy load. See Figure 9.	TC4	Set the signal generat frequency to 380 MHz, 3 kH deviation, and adjust TC4 f maximum sensitivity.

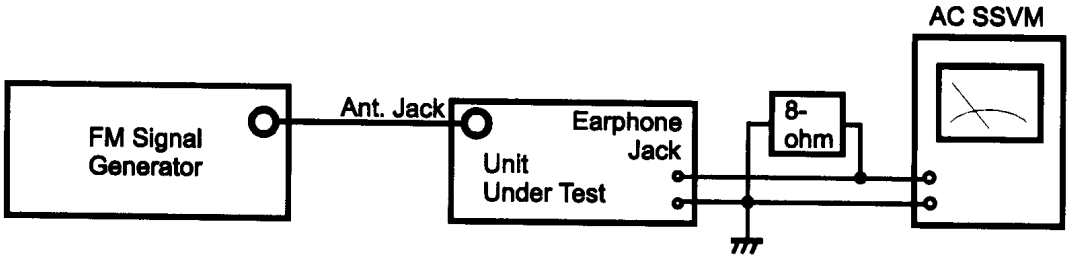
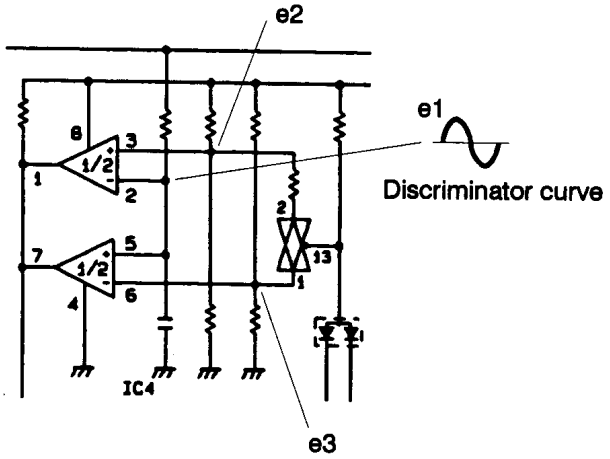


Figure 9

Zeromatic Function Test Procedure



Zeromatic functions when OUTPUT is L.

	0<e1<e3	e3<e1<e2	e2<e1<Vcc
OUTPUT (IC4 Pins 1 and 7)	H	L	H

To adjust the e1 voltage, receive a signal in the manual mode and set T8 to obtain 2.0 volts DC at TP6.

If Zeromatic does not function correctly, refer to "Reference Frequency Osc. Alignment", check that the frequen is 98.700000±10 Hz, and adjust T8 again to 2.0 volts DC at TP5 while a signal is being received.