

## ALIGNMENT AND ADJUSTMENT

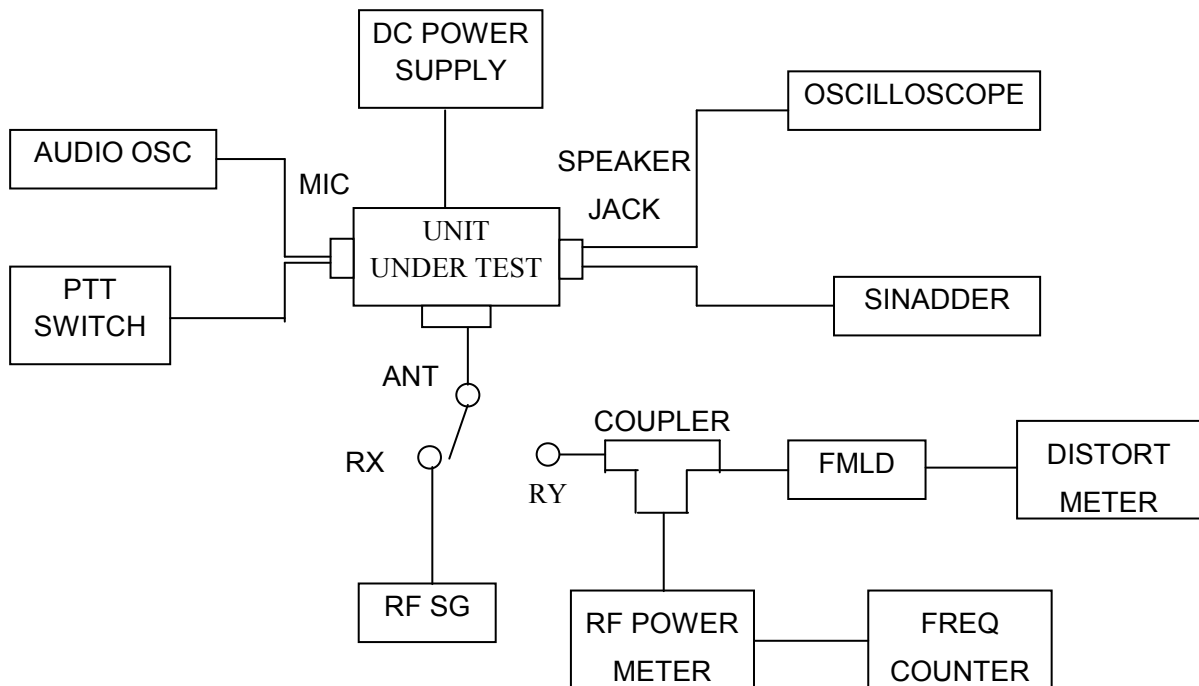
This transceiver is completely aligned at the factory and does not require any adjustments for installation. However it is considered as good practice to verify that none of the adjustments have changed.

The test equipment listed below are used for the test setup shown in Fig. 3.1. This test setup used either partially or totally during the following adjustments.

### A. TEST EQUIPMENT

- 1) DC Power Supply (7.2V DC) 0 - 15V 3A max.
- 2) RF Power Meter 10 W 50 Ohm 100-200 MHz
- 3) RF Signal Generator 100-200 MHz, 50 ohm termination
- 4) FM Linear Detector (FMLD) 100-200 MHz
- 5) Frequency Counter 1-500 MHz
- 6) Oscilloscope 20 MHz
- 7) Distortion Meter
- 8) SINADDER (Trademark of Helper Instruments Co.)
- 9) Audio Oscillator
- 10) Toggle Switch (for use as PTT switch).

Fig. 3.1



## ADJUSTMENT PROCEDURE

Step	Adjustment	Test Point	Procedure
1	L18 Receive	TP1	<ol style="list-style-type: none"> <li>1. Connect digital voltmeter to TP1 on RF PCB.</li> <li>2. Set CH01 .</li> <li>3. Adjust L18.</li> <li>4. TP1 voltage 1.2~1.6V DC.</li> </ol>
2	L20 Transmit	TP1	<ol style="list-style-type: none"> <li>1. Connect a digital voltmeter to TP1 on RF PCB.</li> <li>2. Set CH01 .</li> <li>3. Adjust L20.</li> <li>4. TP1 voltage 1.2~1.6V DC.</li> </ol>
3	VC1		<ol style="list-style-type: none"> <li>1. Connect the antenna coupler output to a frequency counter.</li> <li>2. Set channel to CH01 (156.050 MHz).</li> <li>3. Adjust VC1 to obtain a frequency reading 156.050 MHz±200Hz.</li> </ol>
4	VR2 Modulation		<ol style="list-style-type: none"> <li>1. Connect the antenna coupler output to an FM linear detector.</li> <li>2. Connect Audio Oscillator to Microphone Jack.</li> <li>3. Set unit to transmit mode.</li> <li>4. Set audio oscillator output to -23dBm 1 kHz.</li> <li>5. Adjust VR2 to obtain ±4.5 kHz deviation.</li> </ol>

## TROUBLE SHOOTING

Item	Symptom	Possible Cause
1	Unit does not turn on.	<ul style="list-style-type: none"> <li>● Defective power switch VR3.</li> <li>● Check the battery voltage.</li> <li>● Defective regulator U8.</li> </ul>
2	Speaker no sound with AF signal applied to volume control	<ul style="list-style-type: none"> <li>● Defective volume control.</li> <li>● Defective speaker.</li> <li>● Defective U11 and/or associated components.</li> </ul>
3	Squelch circuit inoperative	<ul style="list-style-type: none"> <li>● Check squelch control.</li> <li>● Defective U1 and/or associated circuitry between pin 9, 10 and 11.</li> </ul>
4	No receive (RX)	<ul style="list-style-type: none"> <li>● Defective regulator U8.</li> <li>● Check TP1 voltage 0.5 – 4V;</li> <li>● Check second OSC 20.95MHz, pin9 of U6;</li> <li>● Defective Q7, Q8, Q2.</li> <li>● Check U1 audio output voltage at pin 9.</li> <li>● Defective F1 and F2;</li> </ul>
5	Low receiver sensitivity	<ul style="list-style-type: none"> <li>● Check antenna and connector for possible corrosion or bad connection.</li> <li>● Failure of the output from Q7, Q8, Q2, U1</li> <li>● Check the output level of local OSC.</li> </ul>
6	No transmit (TX)	<ul style="list-style-type: none"> <li>● Defective PTT switch.</li> <li>● Defective regulator U8.</li> <li>● Check TP1 voltage 0.5 – 4V;</li> <li>● Check power transmits circuit Q12, Q6, D1, D2 and Q1;</li> <li>● Check power control circuit Q17, Q18, Q24;</li> <li>● Check power control circuit U2;</li> </ul>
7	Low RF power output	<ul style="list-style-type: none"> <li>● Check RF power output from Q6, If it checks good, then check and antenna switching diode D1, D2.</li> <li>● If not good then check the voltage level outputs of the drive amplifiers Q3 and Q12 as well as the associated circuitry.</li> </ul>
8	Poor or no modulation	<ul style="list-style-type: none"> <li>● Defective microphone.</li> <li>● Defective U4 and/or its associated components.</li> </ul>
9	Deviation of transmit frequency	<ul style="list-style-type: none"> <li>● Check crystal X2and VC1.</li> </ul>