

ALIGNMENT AND ADJUSTMENT

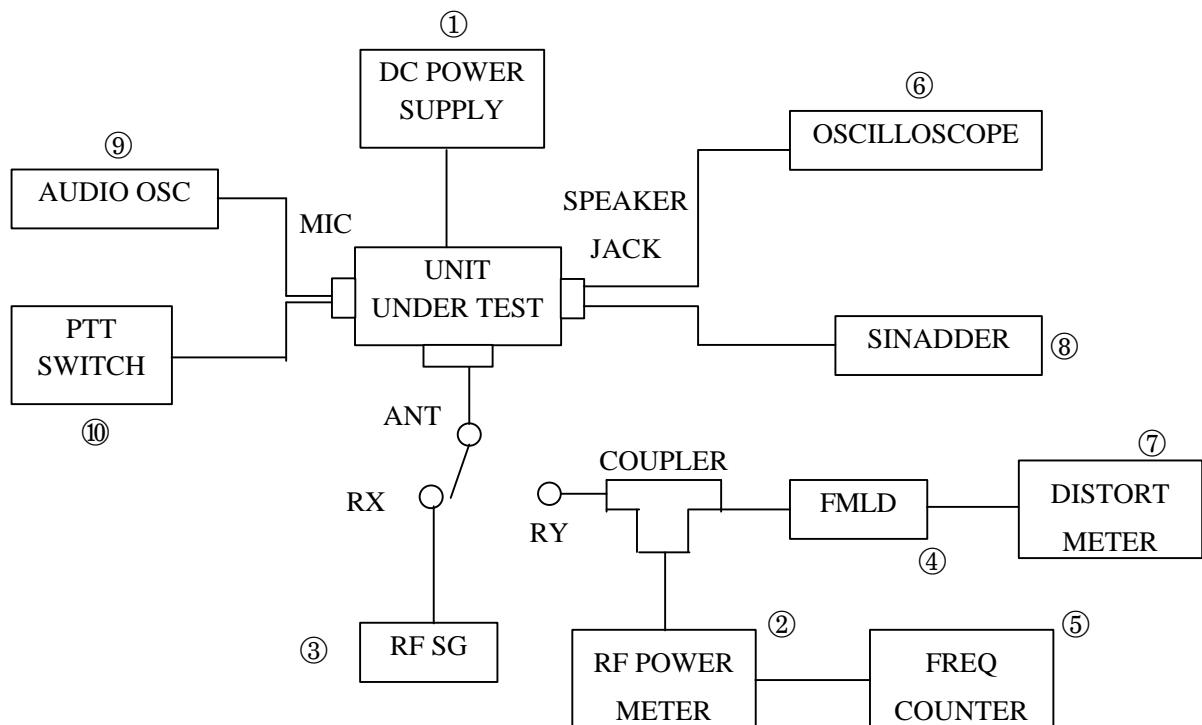
This transceiver is completely aligned at the factory and does not require any adjustments for installation. However it is considered good practice to verify that none of the adjustments have changed.

The test equipment listed below are used for the test set up shown in Fig. 3.1. This test setup used either in part or total during the following adjustments.

TEST EQUIPMENT

1)	• DC Power Supply (7.2V DC)	0 - 15V 3A max. set at 7.2V DC for 0.5~0.7W
2)	• DC Power Supply (12.0V DC)	0 - 15V 3A max. set at 12V DC for 4.7±0.3W
3)	RF Power Meter	10 W 50 Ohm 100-200 MHz
4)	RF Signal Generator	100-200 MHz, 50 ohm termination
5)	FM Linear Detector (FMLD)	100-200 MHz
6)	Frequency Counter	1-500 MHz
7)	Oscilloscope	20 MHz
8)	Distortion Meter	
9)	SINADDER (Trademark of Helper Instruments Co.)	
10)	Audio Oscillator	
11)	Toggle Switch (for use as PTT switch).	

Fig. 3.1



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Step	Adjustment	Test Point	Procedure
1	L23 Receive	TP3	<ol style="list-style-type: none"> 1. Connect digital voltmeter to TP3 on RF PCB. 2. Set CH01 USA. 3. Adjust L23. 4. TP1 voltage 0.8~1.2V DC. 5. Set weather channel WXR. 6. Check TP1 voltage <4.0V DC.
2	L22 Transmit	TP3	<ol style="list-style-type: none"> 1. Connect a digital voltmeter to TP3 on RF PCB. 2. Set CH01 USA. 3. Adjust L22. 4. TP1 voltage 0.8~1.2V DC.
3	VC1		<ol style="list-style-type: none"> 1. Connect the antenna coupler output to a frequency counter. 2. Set channel to CH01 (156.050 MHz). 3. Adjust VC1 to obtain a frequency reading 156.050 MHz±200Hz.
4	VR2 Modulation		<ol style="list-style-type: none"> 1. Connect the antenna coupler output to a FM linear detector. 2. Connect Audio Oscillator to Microphone Jack. 3. Set unit to transmit mode. 4. Set audio oscillator output to -23dBm 1 kHz. 5. Adjust VR2 to obtain ±4.5 kHz deviation. 6. Set audio oscillator output to -43dBm 1 kHz. 7. Read deviation meter (±2.5~±3.5 kHz).
5	VR1 Power Output	RF	<ol style="list-style-type: none"> 1. Connect a RF power meter to antenna connector through antenna coupler. 2. Set unit to transmit mode. 3. Adjust VR1 to obtain: <ul style="list-style-type: none"> Low power 2W. High power 5W.
6	T1 T2 T3 T4 T5		<ol style="list-style-type: none"> 1. Connect a VHF signal generator to the antenna connector. 2. Connect a SINADDER Ext. speaker jack. 3. Set signal generator to output 1 kHz with ±3 kHz deviation. 4. At frequency 156.050 MHz, adjust T1 to get minimum distortion. 5. Adjust T2, T4, and T5 RF coil to get maximum sensitivity. 6. At frequency 163.275 MHz adjust T3 to get max sensitivity.

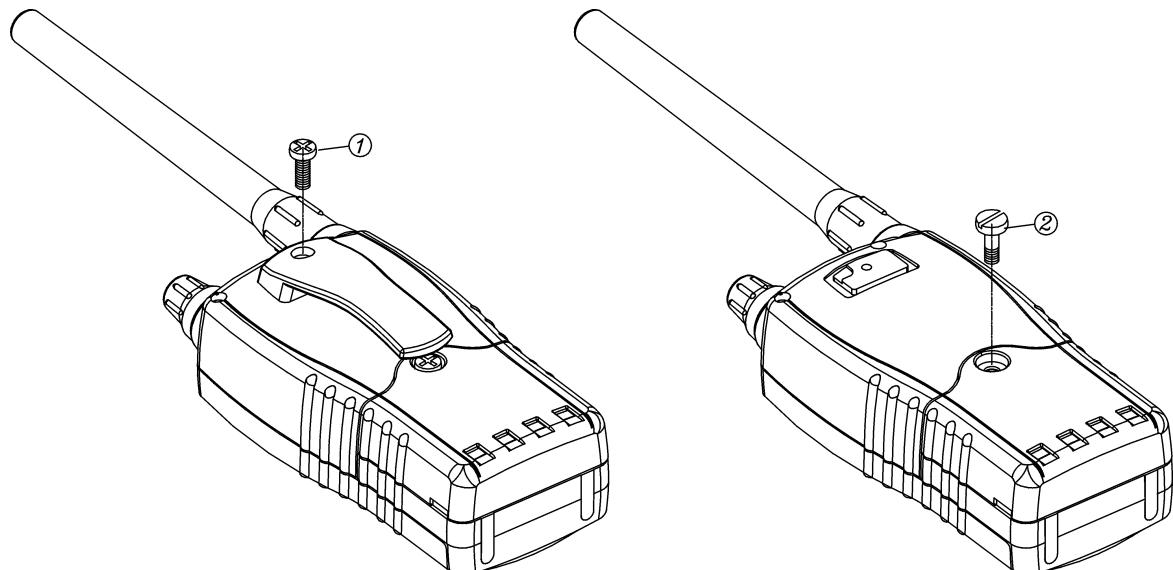
TROUBLE SHOOTING

Item	Symptom	Possible Cause
1	Unit does not turn on.	<ul style="list-style-type: none"> ● Defective power switch. ● Check the battery voltage. ● Defective regulator IC209.
2	No sound with AF signal applied to pin 2 of IC206.	<ul style="list-style-type: none"> ● Defective IC206 and/or associated components. ● Defective speaker ON control circuit Q202, Q203 and Q204.
3	No sound with AF signal applied to volume control	<ul style="list-style-type: none"> ● Defective volume control. ● Defective Audio Filter circuitry Q206.
4	Squelch circuit inoperative	<ul style="list-style-type: none"> ● Check squelch control. ● Defective IC1 and/or associated circuitry between pin 9, 10 and 11, noise amp Q5 and D4.
5	No receive (RX)	<ul style="list-style-type: none"> ● Defective regular IC4. ● Defective Q215, D205, Q20. ● Check IC1 audio output voltage at pin 9. ● Defective audio signal buffer Q6. ● Check X1 output for 21.145 MHz signal. ● Check 21.6 MHz output of first mixer Q19. ● Check 21.6 MHz output of crystal filter F1 and F2. ● Check 21.6 MHz output of first IF amplifier Q1. ● Check 455 kHz signal from ceramic filter F3. ● Failure of local OSC circuit Q12 and Q11.
6	Low receiver sensitivity	<ul style="list-style-type: none"> ● Check antenna and connector for possible corrosion or bad connection. ● Failure of the output from Q18, Q19, Q1, IC1 ● Check the output level of local OSC.
7	No transmit (TX)	<ul style="list-style-type: none"> ● Defective PTT switch. ● Defective regulator IC209. ● Defective Q215, D205, Q13. ● Check power transmits circuit Q2, Q3, Q4 and Q14. ● TX Local OSC. Circuit Q16, Q11.
8	Low RF power output	<ul style="list-style-type: none"> ● Check RF power output from Q2, If it checks good, then check and antenna switching diode D10. ● If not good then check the voltage level outputs of the drive amplifiers Q4 and Q3 as well as the associated circuitry.
9	Poor or no modulation	<ul style="list-style-type: none"> ● Defective microphone or microphone jack. ● Defective IC205 and/or its associated components.
10	Deviation of transmit frequency	<ul style="list-style-type: none"> ● Check Q16 and its associated components. ● Check crystal X2.
11	Deviation of receiver frequency	<ul style="list-style-type: none"> ● Check Q15 and its associated components. ● Check VC1. ● Check crystal X2.

DISASSEMBLY INSTRUCTIONS

To remove the front panels off the battery pack:

1. Remove the screw ① fixing the belt clip to detach it from the radio body, then remove the screw ② to dispart the battery pack from the main unit.



To remove the front and rear panels from the main chassis:

1. Remove the two screws ③ from the upper bottom of the main unit.
2. Remove the screw ④ from the down bottom of the main unit.

