

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 are changed.

Do not adjust any circuitry in this radiotelephone unless you understand the circuit operation and have experience in adjusting radiotelephone. Tampering with the radiotelephone may upset the alignment and lower its performance.

Test Equipment Required:

- Regulated DC power supply, 15V,7A
- Audio signal generator,10Hz~3kHz
- Digital multimeter
- Deviation meter
- Frequency counter,0~500MHz high impedance
- Oscilloscope
- RF power meter, $\geq 30W$
- High frequency standard generator,>500MHz
- Tracking generator,>500MHz
- Distortion analyzer
- Audio level meter
- T-coupler
- Alignment drivers, etc.

ADJUSTMENT PROCEDURE

Step	Item	Adjustment	Procedure
1	TX Frequency	VC2	Adjust VC2 to obtain demanded TX frequency.
2	TX Power Hi	VR5	Adjust VR5 to obtain demanded TX power $23 \pm 2W$.
3	TX Power Lo	VR6	Adjust VR6 to obtain demanded TX power $0.8 \pm 0.1 W$.
4	TX. Dev.	VR3	1. Inject an audio frequency (AF) -20dBm. 2. Adjust VR3 to obtain maximum TX deviation $\leq 5kHz$. 3. Check MIC modulation sensitivity, which should be 2.5~10mV.
5	RX	L10,L11,L12, L13,L14,T1,T2	1. Check RX sensitivity if it is normal. 2. Adjust L10, L11, L12, and L13 to obtain Best Frequency response. 3. Adjust L14,T1 and T2 to obtain Best RX sensitivity

TROUBLE SHOOTING

Before troubleshooting, prepare your unit as follows:

- Turn volume control fully clockwise so that it is all the way up.
- Install the batteries onto your unit.

Item	Symptom	Cause/Remedy
1	Unit is not able to turn on.	● Check the power voltage and power switch. ● Check to see if regulator IC8 defective.
2	No sound with AF signal applied to pin 6 of IC6.	● Check to see if IC1 and /or associated components is Defective. ● Check to see if speaker on control circuit VR201, IC10A, IC10B, is defective.
3	Squelch circuit inoperative.	● Check to see if VR203 is defective. ● Check to see if IC4 is defective.
4	No receiver (RX)	● Check to see if IC11 is defective. ● Check to see if IC4 audio output at pin 9 is defective. ● Check Q12. ● Check 21.6MHz output of first mixer Q10. ● Check 21.6MHz output of crystal filters F1, F2. ● Check 21.6MHz output of first IF amplifier Q11. ● Check 455kHz signal from ceramic filter F3. ● Check to see if VCO circuit is defective. ● Check to see MCU is defective.
5	Low receiver sensitivity	● Check to see if antenna is bad connecting. ● Check to see if the output from Q9, Q10, Q11 and F1, F2 is defective.
6	No transmission (TX)	● Check to see if the PTT switch is defective. ● Check to see if Q13 is defective. ● Check to see if power transmit circuit Q1, Q2, Q3 are Defective. ● Check to see if VCO circuit is defective. ● Check PLL control voltage if it reads $1.2 \pm 0.3V$ at 156.05MHz.
7	Poor or no modulation	● Check to see if the microphone or MIC jack is defective. ● Check to see if IC205 and/or its associated components are defective.
8	Deviation of transmit frequency	● Check the frequency of 12.8MHz crystal X3. ● Adjust VC2 and verify the transmit frequency.

DISASSEMBLY INSTRUCTIONS

1. Rotate counterclockwise volume knob to OFF position.
2. Pull out all external wires (GPS, SP, POWER).
3. Unscrew 2 mounting nuts.
4. Remove the main radio from the mounting bracket.
5. Unscrew the four screws of hand MIC.
6. Separate the front cabinet and bottom cabinet of the hand MIC.
7. Unscrew 6 screws for the bottom cabinet of the main unit.
8. Separate the front cabinet and bottom cabinet of the main unit.
9. Unscrew the mounting screw of the upper shielding case.
10. Remove the upper shielding case.
11. Unscrew the mounting screw of the lower shielding case.
12. Remove the lower shielding case.