

4. Alignment Procedure

Measurement Condition

The following sections describes the alignment procedure for HJC-FRSX 2 transceiver under the following reference environment conditions:

Temperature	:	25 ° (77 °)
Relative Humidity	:	65%
Power Supply Voltage	:	4.8VDC +/- 5%

Test Equipment / Tools required

The following list of equipment is recommended for use in setting up the radio properly. Please ensure the test equipment are calibrated according to the manufacturer's instructions:

- Frequency counter more than 1000MHz +/-100Hz tolerance, high input impedance and high sensitivity
- VHF FM Signal generator, 1000MHz with adjustable frequency, FM deviation, and RF output attenuators. 50Ω Output impedance.
- Oscilloscope, high input impedance.
- 16Ω 1 Watt resistor as loudspeaker load
- Audio Signal Generator, 10Hz to 20KHz, 600Ω impedance with attenuators.
- RF Watt meter, with 50Ω 1 Watt termination resistor (Or RF Voltmeter with 50Ω termination and external 50Ω attenuators)
- Regulated Power Supply 4.8VDC 1A output
- Digital A-V-O Multi-meter
- SINAD Meter
- External Speaker Mic plug (or special audio test jig)
- Interconnection test cable for RF and Control PCB
- Circuit Diagram for HJC-FRS X 2
- PCB layout diagram for HJC-FRS X 2
- Tuning tools for RF/IF transformer and the VR potentiometers

Transmitter Adjustment

- X-TAL frequency

On receiving mode, check X-TAL(X301)output (pin 2) is at 12.8MHz

- VCO control voltage

Set radio to receive on Ch1 (462.5625MHz), adjust L402 for 2.3V on test point VT.

- Transmitter Frequency

Connect RF Power meter to ANT1, Activate PTT to transmit on Ch1 (464.5625MHz) check transmitting frequency error is within +/- 250Hz. (adjust with VC301.)

- Transmitter Output Power

Activate PTT to transmit on CH1, Set L208 for 500mW power output at ANT1. Repeat test on Ch14.

- Transmitter Deviation Limit

Set radio to transmit on CH1, with CTCSS code 38 (250.3Hz) and no audio modulation. At the external microphone input, inject 1KHz tone at -20dBm. Adjust VR501 for 2.0KHz deviation. Reduce 1KHz tone input to -40dBm, check deviation dropped to 1.2 to 1.5KHz. Repeat test on Ch14.