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 attentuators.
- RF Watt meter, with 50Ω 1 Watt termination resistor (Or RF Voltmeter with 50Ω termination and external 50Ω attenuators)
- Regulated Power Supply 4.6VDC 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.