

APPENDIX 6
TRANSMITTER ALIGNMENT

TWO (2) PAGE ALIGNMENT PROCEDURE FOLLOWS THIS SHEET

TRANSMITTER TUNE-UP PROCEDURE
FCC ID: AAO21-1840

APPENDIX 6

ALIGNMENT AND ADJUSTMENT

This transceiver is completely aligned at the factory and does not require any adjustment installation. However it is considered good practice to verify that none of the adjustments has changed or been disturbed.

This test setup used either in part or total during the following adjustments.

A. TEST EQUIPMENT

- 1) DC Power Supply (13.8V DC) 0-15V 3A max. set at 13.8V DC
- 2) RF Power Meter 10W 50 ohm 100-200MHz
- 3) RF Signal Generator 100-200MHz, 50 ohm termination
- 4) FM Linear Detector (FMLD) 100-200MHz
- 5) Frequency Counter 1-500MHz
- 6) Oscilloscope 20MHz
- 7) Distortion Meter
- 8) INVADER (Trademark of Helper Instruments Co.)
- 9) Audio Oscillator
- 10) Toggle Switch (for use as PTT switch).

| STEP | ADJUSTMENT | TEST POINT | PROCEDURE |
|------|---|------------|--|
| 1 | L15 PLL PD Voltage | TP1 | <ol style="list-style-type: none"> 1. Connect a digital voltmeter to TP1 on RF PCB. 2. Set 462.5625MHz. 3. Adjust L15. 4. TP1 Voltage read 1.1VDC (0.9~1.3VDC). 5. Press PTT to check. PD Voltage reads 1.7V \pm 0.2V. |
| 2 | VC1 PLL Frequency | ANT | <ol style="list-style-type: none"> 1. Connect the coupler output to a frequency counter. 2. Set channel to 462.5625MHz) 3. Adjust VC1 to obtain a frequency reading 462.5625MHz \pm 200Hz. |
| 3 | VR2 Modulation | ANT | <ol style="list-style-type: none"> 1. Connect the coupler output to an FM linear detector. 2. Connect audio oscillator to microphone Jack. 3. Set unit to transmit mode. 4. Set audio oscillator output to -23dBm 1KHz. 5. Adjust VR2 to obtain \pm 2.5KHz deviation. 6. Set audio oscillator output to -43dBm 1KHz. 7. Read deviation meter [\pm 1.2 ~ \pm 1.5KHz]. |
| 4 | L422 L1 L3 L21 L2 L5 Receiver | SPK Jack | <ol style="list-style-type: none"> 1. Connect an UHF signal generator to the antenna connector. 2. Connect a SINAD meter to Ext. speaker jack. 3. Set signal generator to output 1Khz modulation signal with \pm 1.5KHz deviation. 4. At frequency 462.5625MHz, adjust L422 to get maximum and minimum distortion. 5. Adjust L422, L1, L3, L21, L2, L5 RF coil to get maximum sensitivity. |

APPENDIX 7

CIRCUITS AND DEVICES TO STABILIZE FREQUENCY

SYNTHESIZER

A phase locked loop (PLL) circuit establishes and stabilizes operating frequency.

The data for producing necessary frequencies is established by the CPU on the digital board.

The frequency stability of the Tx/Rx is maintained by the TCXO, which generates a stable frequency of 12.8 MHz

APPENDIX 8

CIRCUITS TO SUPPRESS SPURIOUS RADIATION
AND LIMIT MODULATIONCircuitry to Suppress Spurious Emissions

Output from the final RF power amplifier is presented to a low-pass filter configured in a "pi" network consisting of L3, L1, C113 and C1.

Circuitry to Limit Modulation and Audio Low Pass Filter

Microphone signal is amplified and limited in IC2 to prevent deviation over 2.5 kHz, and applied to a 3 kHz low-pass filter.

CIRCUITS TO SUPPRESS SPURIOUS
RADIATION AND LIMIT MODULATIONFCC ID: AAO21-1840
APPENDIX 8