

GXM1

ALIGNMENT PROCEDURE

1. REFERENCE TEST EQUIPMENT

- A. HP8921A Cell site test set or HP8920A, B Communication Test Set with Spectrum Analyzer option.
- B. Fluke 187 Digital Voltmeter
- C. HP E3615A Power supply

2. TEST POINT

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|--------------------------|---|
| A. ANTENNA | : Test point is not prepared. Use antenna contact with ANTENNA_GND_T(antenna ground). |
| B. VCO reference voltage | : Test point 1 is prepared. |
| C. RX audio output | : Test point SPKOUT is prepared or use ear-jack(3.5mm). |
| D. TX Mic. Input | : Test point MICIN is prepared or use ear-jack(2.5mm) with 10uF coupling capacitor. |
| E. Battery Vcc | : Test point is not prepared. Please use mechanical contact. |
| F. Up Key | : Test point UP is prepared. |
| G. Down Key | : Test point DW is prepared. |
| H. Function/Power Key | : Test point POWER is prepared. |
| I. Monitor Key | : Test point SCAN is prepared. |
| J. PTT Key | : Test point PTT is prepared. |
| K. CALL Key | : Test point CALL is prepared. |

Note. : All key can be activated when connect with ground.

3. VCO ALIGNMENT

- A. Set unit to Channel 1 and connect a voltmeter to TP1 (VCO PD).
- B. Press & hold PTT.
- C. Extend L303 until the voltmeter reads 1.0V.
- D. ***Cover shield-plate on VCO can and monitor the voltage on TP1.*** The voltage should be 1.5Vdc +/-0.2Vdc. If the voltage is not 1.5Vdc +/-0.2Vdc, realign L303 until meet to requirement.
- E. Release PTT button so units is in receiving mode and monitor the voltage on TP1. The voltage should be in the range 1.0Vds +/-0.5V
- F. Set unit to channel 88A.
- 6. Press & hold the PTT switch and observe the voltage on TP4. The voltage should be 2 – 3,5 Vdc.
- 7. Release PTT and observe the voltage on TP4. The voltage should read between 2.0 - 3.5 Vdc.

Note : VCO shield-can should be soldered after VCO alignment is finished.

4. TRANSMITTER FREQUENCY ALIGNMENT

- A. Press & hold the PTT button.
- B. Align CT201 trimmer capacitor such that the output frequency is equal to the channel frequency with a maximum error of +/- 200 Hz. CT201 is located on the left side of 20.95MHz X-tal.

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5. TRANSMITTER OUTPUT POWER CONFIRMATION

- A. Set unit to channel 1 and power Hi mode.
- B. Press & hold the PTT button.
- C. Transmit power should normally be between 4.5W to 5.5W.
- D. Set unit to power low mode.
- E. Press & hold the PTT button. Ensure that Tx Power should be between 0.5-1.5W.

6. TRANSMITTER DEVIATION ALIGNMENT

- A. Connect an audio generator (600 ohms) to the ear jack. The audio frequency should be set at 1KHz with a level of 200mV RMS.
- B. Connect an FM deviation meter (communications test set) to Antenna contact. Set the monitor to read peak to peak divided by two $[(pk-pk)/2]$ deviation. Set filter of equipment from 25Hz to 15KHz.
- C. Press & hold the PTT button.
- D. Align RV2 for +/- 4.0kHz deviation (+/-0.1KHz). RV2 is located on the bottom of the VCO shield can.
- E. Decrease audio generator level until deviation reads +/- 3kHz (approximately 4mV) and record generator level. Level should be between 2 mV and 8 mV.
- F. Confirm that transmit audio distortion is less than 5%.

7. RECEIVER ALIGNMENT

- A. Set the output level of the RF signal generator for -47dBm. The generator should be set for 3.0kHz deviation at 1 kHz audio.
- B. Set volume position middle.
- C. Connect Audio analyzer to SPKOUT.
- D. Set equipment filter 25Hz to 15KHz.
- E. Align CF2 to get a maximum output level & a minimum distortion and confirm that Rx audio distortion is less than 3%.
- F. Confirm that Rx Sensitivity is less than -120dBm (nominally -123dBm) by reducing the output level of the RF signal generator until a 12 dB SINAD reading is achieved.
- H. Set SSG output level until 9dB sinad sensitivity and align RV1 until the unit is un-squelched.
- I. Set signal generator level to -47dBm.
- J. With 3.0KHz deviation at 1KHz modulation, set volume for maximum audio. Audio level should be on over than 1.7Vrms.

8. BATTERY INDICATOR CONFIRMATION

- A. Set unit to receiving mode. Don't set transmitter mode..
- B. Set power supply voltage to 6V.
- C. Decrease power supply voltage until low battery icon blinks.

9. POWER OFF CURRENT CONSUMPTION

- A. Set power supply voltage to 6V and connect to unit.
- B. Confirm current. It must be less than 100uA.