

# GXT250

## 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

- |                          |   |
|--------------------------|---|
| A. ANTENNA               | : Test point is not prepared. Use antenna contact with TP11(antenna ground).  |
| B. VCO reference voltage | : Test point 1 is prepared.   |
| C. RX audio output       | : Test point 12 is prepared or use ear-jack(3.5mm).   |
| D. TX Mic. Input         | : Test point is not prepared. Please use ear-jack(2.5mm) with 10uF coupling capacitor. It will be prepared on next PCB. |
| E. Battery Vcc           | : Test point is not prepared. Please use mechanical contact. It is posited on bottom right corner of PCB.               |
| F. Up Key                | : Test point 3 is prepared.   |
| G. Down Key              | : Test point 4 is prepared.   |
| H. Function/Power Key    | : Test point 6 is prepared.   |
| I. Monitor Key           | : Test point 10 is prepared.  |
| J. PTT Key               | : Test point 2 is prepared.   |
| K. SCAN Key              | : Test point is not prepared. It will be prepared on next PCB.  |

**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 3.0V.
- D. ***Put shield-can on VCO area and monitor the voltage on TP1.*** The voltage should be 2.0Vdc +/-0.2Vdc. If the voltage is not 2.0Vdc +/-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 2.0Vds +/-0.5V
- F. Set unit to channel 14.
- 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.
- B. Press & hold the PTT button.
- C. Transmit power should normally be 1.47W.
- D. Set unit to channel 14.
- E. Press & hold the PTT button. Ensure that Tx Power meets spec range of 5.D.

### **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 +/- 2.2 kHz deviation (+/-0.1KHz). RV2 is located on the bottom of the VCO shield can.
- E. Decrease audio generator level until deviation reads +/- 1.5 kHz (approximately 12mV) and record generator level. Level should be between 10 mV and 15 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 1.5 kHz deviation at 1 kHz audio.
- B. Set volume level 4 (It is initial.).
- C. Connect Audio analyzer to TP12.
- 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 1.5KHz deviation at 1KHz modulation, set volume for maximum audio. Audio level should be on over than 1.9Vrms.

### **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.

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**10. FREQUENCIES TABLE**

<b>Channel</b>	<b>Freq. MHz</b>	<b>Channel</b>	<b>Freq. MHz</b>
1	462.5625	12	467.6625
2	462.5875	13	467.6875
3	462.6125	14	467.7125
4	462.6375	15	462.5500
5	462.6625	16	462.5750
6	462.6875	17	462.6000
7	462.7125	18	462.6250
8	467.5625	19	462.6500
9	467.5875	20	462.6750
10	467.6125	21	462.7000
11	467.6375	22	462.7250