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

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.

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.