

## **GX-80 / GX-90 Alignment**

The GX-80/90 has been carefully aligned at the factory for the specified performance across the frequency range specified for each version. Re-alignment should therefore not be necessary except in the event of component failure, or altering version type. All component replacement and service should only be performed by an authorized GENEX TELECOM representative, or the warranty policy may be void.

### **Required Test Equipment**

- RF Signal Generator with calibrated output level at 1 GHz(or RADIO COMMUNITION TEST SET)
- Deviation Meter (Liner Detector)
- AC Voltmeter
- SINAD Meter
- In-Line Wattmeter with 5% accuracy at 500 MHz
- Regulated DC Power Supply adjustable from 4 to 10V, 3A
- 50Ω Non-reactive Dummy Load: 10W at 500MHz
- Frequency Counter:  $\pm 0.2$  ppm accuracy at 500MHz
- AF Signal Generator
- DC Voltmeter: High impedance

### **GX-80**

Low Band Edge (Channel 1): 136.000MHz  
Band Center (Channel 2): 155.000MHz  
High Band Edge (Channel 3): 174.000MHz

### **GX-90**

Low Band Edge (Channel 1): 430.000MHz  
Band Center (Channel 2): 450.000MHz  
High Band Edge (Channel 3): 470.000MHz

#### **Note:**

Signal levels in dB referred in the alignment procedure are based on  $0 \text{ dB}\mu = 0.5\text{dB}$ .

#### **PLL & Transmitter**

Set up the test equipment as shown for transmitter alignment. Adjust the supply voltage to 7.4V for all steps where not specified otherwise.

### **PLL VCV (Varactor Control Voltage)**

- Connect the DC voltmeter between TP1 on the Main Unit and Ground.
- Set the transceiver to CH1 (low band edge), and adjust TC301 on the Main Unit for 1.0V ± 0.1V on the DC voltmeter, while receiving.
- Set the transceiver to CH1 (low band edge), and adjust TC302 on the Main Unit for 1.0V ± 0.1V on the DC Voltmeter, while transmitting.
- Set the transceiver to CH3 (high band edge), and confirm the high-end VCV is lower than 12.0V while receiving, and low than 12.0V while transmitting.

### **PLL Reference**

- Set the transceiver to CH1 (low band edge), and adjust trimmer of the VCXO on the Main Unit for band center frequency ±100Hz .

### **Transmitter Output Power**

- Set the transceiver to CH1 (low band edge), and adjust RV2 on the Main Unit for that the power meter reading is 5W. Confirm that the current consumption is 2.0A or below.
- Set the transceiver to CH1 (low band edge), and adjust RV3 on the Main Unit for that the power meter reading is 1W. Confirm that the current consumption is 1.0A or below.

### **Modulation Level**

#### **Max Deviation: (VCO Modulation)**

- Set the transceiver to CH2 (band center).
- Inject a 1KHz tone at 100mVrms to the MIC jack.
- Adjust RV501 on the Main Unit for the deviation meter reading is ±4.2KHz(for 25KHz steps) or ±2.1KHz(for 12.5KHz steps) deviation.

#### **MIC Sensitivity**

- Set the transceiver to CH2 (band center)
- Inject a 1KHz tone at 100mVrms to the MIC jack.
- Adjust tone level so that the deviation meter reading is ±3.0KHz (for 25KHz steps) or ±1.5KHz (for 12.5KHz steps) deviation.

#### **CTCSS Deviation**

- Set the transceiver to CH2 (band center).

- Check the deviation meter reading is  $\pm 0.7\text{KHz}$  (for 25KHz steps) or  $\pm 0.35\text{KHz}$  (for 12.5KHz steps) deviation.

#### **CDCSS Deviation**

- Check the deviation meter reading is  $\pm 0.7\text{KHz}$  (for 25KHz steps) or  $\pm 0.3\text{KHz}$  (for 12.5KHz steps) deviation.

#### **Receiver**

Set up the test equipment as shown for receiver alignment.

#### **Sensitivity**

- Set the transceiver to CH3 (high band edge)
- Turn the RF signal generator to the same frequency of the transceiver, then set the generator output level to 40dB $\square$  with  $\pm 3.0\text{KHz}$  deviation @ 1KHz tone modulation.
  - 1) Adjust SSG RF Level and confirm if 12dB Sinad is below  $-119\text{dBm}$ .
  - 2) Adjust RV2 to open Audio at 12dB Sinad.
  - 3) Set tone frequency to SSG when there is channel set with CTCSS, DCS and then set deviation to 10% Peak Dev. Then check if ORANGE LED is on.
  - 4) Repeat the above in other channels.