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Model No :GMRS2572

Customer : AUDIOVOX

Title: **GMRS2572 Test & Alignment Procedure**

Drawing No: GMRS2572-TAP.

Rev. Date: Jan. 3, 2007

# GMRS2572

## Test and Alignment Procedure

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For Stage : MP	Release Date : Jan. 3, 2007	<b>Page 1 of 8</b>



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## REVISION SHEET

Rev.	Code	Rev. Date	Revision	Revised By:
M-00		Jan.3,2007		

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## 1. RECOMMENDED TEST EQUIPMENT

- 1.1 HP8920A,B Radio Communication Tester or equivalent with Spectrum Analyzer option.
- 1.2 Fluke 187 Digital Voltmeter or equivalent
- 1.3 HPE3615A Power Supply or equivalent

## 2. TEST PREPARATION

- 2.1 Connect a 6.0Vdc power supply to the positive battery terminal input point and the negative battery terminal input point (GND) into the negative terminal.
- 2.3 Connect the HP8920A,B RF Output port to the ANT point.
- 2.4 **SPK (+)** should be connected to the *Audio In Hi* and **SPK (-)** should be connected to the *Audio In Lo* of the HP8920B.
- 2.5 Set the unit at CH1 (462.5625MHz)

## 3. VOLTAGE REGULATOR TEST

- 3.1 MCU Regulator
  - Connect a voltmeter to **Pin6** of IC501 (MCU REG) and measure the voltage. The value must be between **TBD**.
- 3.2 RX Regulator
  - Connect a voltmeter to **Pin7** of IC501 (RX REG) and measure the voltage. The value must be between **TBD**.
- 3.3 TX Regulator
  - Connect a voltmeter to **Pin8** of IC501 (TX REG) and measure the voltage. The value must be between **TBD**.
- 3.4 VCO Regulator
  - Connect a voltmeter to **Pin10** of IC501 (VCO REG) and measure the voltage. The value must be between **TBD**.
- 3.5 IC Regulator
  - Connect a voltmeter to **Pin11** of IC501 (IC REG) and measure the voltage. The value must be between **TBD**.

## 4. VCO ADJUSTMENT

- 4.1 Set the unit at CH1 and connect a digital voltmeter to VCO TP (R502 & C522 connect point).
- 4.2 Press and hold the PTT Button so the unit is in transmit mode.
- 4.3 *Adjust L306 until the voltmeter reads 1.2 to 1.3Vdc (without VCO Plate). L306 is located under the shieldcan.*  
*Solder VCO Plate and let temperature stabilize. Recheck TX VCO at CH1, should be 1.0~1.3 Vdc*
- 4.4 Release the PTT button so the unit will be in receive mode.
- 4.5 Observe the voltage at VCO TP, the voltage should be **0.6~2.5Vdc**.
- 4.6 Set the unit at CH14.
- 4.7 Press and hold the PTT button so the unit is in transmit mode.
- 4.8 Observe the voltage at VCO TP, the voltage should be **1.0~2.5Vdc**.

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- 4.9 Release the PTT button so the unit will be in receive mode.
- 4.10 Observe the voltage at VCO TP, the voltage should be **0.6~2.5Vdc**.
- 4.11 Set the unit at WX Mode. Check the WX VCO is **0.6~3.3Vdc** at all CH1~10.

*NOTE : Above Specifications are measured with VCO Plate soldered.*

## 5. TRANSMITTER FREQUENCY ALIGNMENT

- 5.1 Set the unit at CH1. Press and hold the PTT button so the unit will be in transmit mode.
- 5.2 Adjust CT501 trimmer capacitor until such that the output frequency is equal to the channel frequency with maximum error of +/-200Hz (OQA Limit of +/-800Hz). Production will control as follows:
  - *PCBA Alignment* : +/-200Hz
  - *Casing Test* : +/-500Hz
  - *OQA Limit* : +/-800Hz

## 6. TRANSMITTER OUTPUT POWER CHECK

- 6.1 Set the unit at CH1. Set the Power Supply at 5Vdc. Power is at Hi condition (use short cable)
- 6.2 Press and hold the PTT button so the unit is in transmit mode. Make sure Battery Voltage is at 5Vdc during PTT.
- 6.3 Transmit Power should be >**3.5W**.
- 6.4 Set the unit at CH14, only Power Lo condition could be checked.
- 6.5 Press and hold the PTT button so the unit is in transmit mode. Ensure the TX Power is within **0.1~1.3W**.

## 7. TRANSMITTER DEVIATION ADJUSTMENT

- 7.1 Connect an audio generator (600ohms) to the microphone terminal pads. The audio frequency should be set at 1KHz with a level of 200mVrms.
- 7.2 Connect an FM Deviation Meter (on the HP8920B) on ANT point. Set the monitor to read *(Pk to Pk)/2* deviation. Set *Filter 1* to 25Hz and *Filter 2* to 15KHz. *De-emphasis* should be set to Off.
- 7.3 Press and hold the PTT button so the unit will be in transmit mode.
- 7.4 Adjust VR601 and observe the reading at the Deviation Meter, the reading should be between **2.2 to 2.3KHz**. Checking at all condition (w/o CTCSS) should be **2.0~2.8KHz**.
- 7.5 Decrease the audio generator level until the deviation reads +/-1.5KHz. The generator level should be between **3 to 10mV**.
- 7.6 Check that the transmit audio distortion is less than 5%.
- 7.7 Set the CTCSS to Code 1. Turn OFF the audio generator. Press and hold the PTT button so the unit will be in transmit mode.
- 7.8 Confirm that the CTCSS Code modulation is between **0.4 to 0.7KHz**
- 7.9 Set the CTCSS to Code 38. Press the PTT button so the unit will be in transmit mode.

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7.10 Confirm that the CTCSS Code modulation is between **0.4 to 0.7KHz**.

## 8. RECEIVER OUTPUT CHECK

- 8.1 Set the RF Generator level to -47dBm. The generator should be set for 1.5KHz deviation at 1KHz modulation.
- 8.2 Set **Filter 1** to 25Hz and **Filter 2** to 15kHz.
- 8.3 Connect Audio Analyzer to SPK(+ & - Point)
- 8.4 Set the unit Volume Level to maximum.
- 8.5 Check the maximum Audio Output Level, should be **>1.5V** (w/ load).
- 8.6 Set the Volume at **500mV** Output. Confirm that the RX Distortion is less than 5%.
- 8.7 Reduce the RF Generator signal level until a 12dB Sinad reading is achieved. The RF Generator level should be less than -120dBm (nominal -123dBm).
- 8.8 Set the unit to WX Mode. Set the RF Generator to WX CH1 (162.550MHz). Repeat procedure 9.7 and confirm WX Sensitivity is **<-115dBm** at 12dB Sinad.

## 9. SQUELCH THRESHOLD AND HYSTERESIS

- 9.1 Set unit same as 9.1.
- 9.2 Set the RF Generator level to -124dBm.
- 9.3 Adjust **VR501** until the unit squelches (RX Off).
- 9.4 Slowly increase the RF Signal Generator level until the unit un-squelches (RX On), confirm that the sensitivity is between **6~14dB** Sinad.

## 10. VOX TEST

- 10.1 Set the unit into VOX Mode (**Level 1**). The VOX icon should be displayed on the LCD.
- 10.2 Connect an audio generator into the microphone terminal. The audio frequency should be set for 1KHz frequency with a level of **1mVrms** and the output should be turned off.
- 10.3 Turn on the output of the audio generator.
- 10.4 Increase the Audio Generator level until unit goes into TX Mode.
- 10.5 Check the Generator level, it should be between **1.5~5.0mV**.

## 11. LOW BATTERY LEVEL TEST

- 11.1 Set the unit into receive mode or standby mode.
- 11.2 Set the Power Supply voltage to **4.6Vdc**.
- 11.3 Slowly decrease the Power Supply Voltage until the Low Battery icon appears and blink in the LCD Display.
- 11.4 Observe the Power Supply Level. The level must be **4.3 to 5.1Vdc**.

## 12. JACK CHARGING TEST

- 12.1 Connect a fully charged Ni-MH Battery Pack (~6.5Vdc) into the unit.
- 12.2 Set the Power Supply to **9Vdc**.
- 12.3 Insert the Charger Jack into the Microphone Jack.
- 12.4 Monitor the current on the **Battery (+)** line.

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12.5 Confirm that the Charging Current is within **65~85mA**.

### 13. DESKTOP CHARGING TEST ( for DESKTOP Charger Checking only)

13.1 Connect a fully charged Ni-MH Battery Pack (~6.5Vdc) into the unit.

13.2 Mount the unit at the DESKTOP CHARGER.

13.3 Monitor the current on the Charger Adaptor (+) line.

13.4 Confirm the Charging Current for a single unit is **170~220mA**, and for 2 units is **160~220mA**. The Charger LED should be RED.

13.5 Wait for the Charger to turn normal charger. Confirm that the Battery Voltage should be >**7.1V**.

## 14. FREQUENCIES & CODE TABLE

### 14.1 FRS & GMRS

CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)
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

### 14.2 WX BAND

CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)
1	162.550	6	162.500
2	162.400	7	162.525
3	162.475	8	162.650
4	162.425	9	162.775
5	162.450	10	163.275

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#### 14.3 CTCSS CODE

CODE NO.	FREQ. (Hz)	CODE NO.	FREQ. (Hz)
1	67.0	20	131.8
2	71.9	21	136.5
3	74.4	22	141.3
4	77.0	23	146.2
5	79.7	24	151.4
6	82.5	25	156.7
7	85.4	26	162.2
8	88.5	27	167.9
9	91.5	28	173.8
10	94.8	29	179.9
11	97.4	30	186.2
12	100.0	31	192.8
13	103.5	32	203.5
14	107.2	33	210.7
15	110.9	34	218.1
16	114.8	35	225.7
17	118.8	36	233.6
18	123.0	37	241.8
19	127.3	38	250.3

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