

Midland ATLANTIC-I

Test and Alignment Procedure

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REVISION SHEET

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M-01	18/01/05	PP/MP Release	M. R. Han /JBG

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1. RECOMMENDED TEST EQUIPMENT

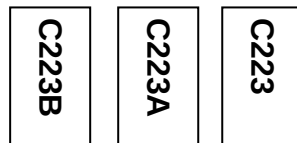
- 1.1 HP8920A,B Radio Communication Tester or equivalent
- 1.2 Fluke 187 Digital Voltmeter or equivalent
- 1.3 HPE3615A Power Supply or equivalent

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 TP12 should be connected to the **Audio In Hi** and Spkr (-) should be connected to the **GND** of the HP8920B.
- 2.5 Set the unit at Ch1.

3. CRYSTAL SELECT

4.1 X202 crystal is marked with red, blue, and no color marking. Matching capacitors **C223**, **C223A**, and **C223B** that are in PCB will be determined by the markings and are as follows:



Note : Below are matching matrix for each grade of X202

Crystal		C223A	C223B
A	Red	3P	3P
B	NO COLOR	3P	NC
C	Blue	NC	NC

4. VCO ADJUSTMENT

- 5.1 Set the unit at Ch1 and connect a digital voltmeter to TP1 (VCO PD).
- 5.2 Press the PTT Button so the unit is in transmit mode.
- 5.3 **Adjust CT1 until the voltmeter reads 1.3 to 1.6Vdc (without VCO Plate). CT1 is located under the shieldcan.**
Solder VCO Plate and let temperature stabilize. Recheck TX VCO at Ch1, should be 1.0~1.5 Vdc
- 5.4 Release the PTT switch so the unit will be in receive mode.
- 5.5 Observe the voltage at TP1, the voltage should be **0.6~3.0Vdc**.
- 5.6 Set the unit at CH88.
- 5.7 Press the PTT switch so the unit is in transmit mode.

- 5.8 Observe the voltage at TP1, the voltage should be **0.6~3.0Vdc**.
 5.9 Release the PTT switch so the unit will be in receive mode.
 5.10 Observe the voltage at TP1, the voltage should be **0.6~3.0Vdc**.

NOTE : Above Specifications are measured with VCO Plate soldered.

5. TRANSMITTER FREQUENCY ALIGNMENT

- 6.1 Set the unit at Ch1. Press the PTT button so the unit will be in transmit mode.
 6.2 Adjust CT201 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

- 7.1 Set the unit at Ch1. Set the Power Supply at 6Vdc. Power is at Hi condition (use short cable)
 7.2 Press the PTT button so the unit is in transmit mode. Make sure Batt. Voltage is at 6Vdc during PTT.
 7.3 Transmit Power should be **>4.5W**.
 7.4 Set the unit at Power Lo condition.
 7.5 Press the PTT button so the unit is in transmit mode. Ensure the TX Power is within **0.3~1.0W**.

7. TRANSMITTER DEVIATION ADJUSTMENT

- 8.1 Connect an audio generator (600ohms) to the microphone terminal pads. The audio frequency should be set at 1kHz with a level of 200mVrms.
 8.2 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 <20Hz and **Filter 2** to 15kHz. **De-emphasis** should be set to Off.
 8.3 Press the PTT button so the unit will be in transmit mode.
 8.4 Adjust RV2 and observe the reading at the Deviation Meter, the reading should be between 3.9 to 4.1kHz. Checking at all condition should be 3.7 ~ 4.3kHz.
 8.5 Decrease the audio generator level until the deviation reads +/-3.0kHz. The generator level should be between **3 to 10mV**.
 8.6 Set the Modulation @ 2.0kHz, check that the transmit audio distortion is less than 5%.

8. RECEIVER ALIGNMENT

- 9.1 Set the RF Generator level to -47dBm . The generator should be set for 3.0kHz deviation at 1kHz modulation.
- 9.2 Set **Filter 1** to 25Hz and **Filter 2** to 15kHz .
- 9.3 Set the Volume at 50mW Output.
- 9.4 Confirm that the RX Distortion is less than 5% .
- 9.5 Reduce the RF Generator signal level until a 12dB Sinad reading is achieved. The RF Generator level should be less than -120dBm (nominal -123dBm).
- 9.6 Set the RF Generator level to -47dBm , and set the unit Volume Level to maximum.
- 9.7 Check the maximum Audio Output Level, should be **$1.8\sim 2.2\text{Vrms}$ (w/o load @ 6.0Vdc)**.

9. SQUELCH THRESHOLD AND HYSTERISIS

- 10.1 Set unit same as 9.1.
- 10.2 Set the RF Generator level to -124dBm .
- 10.3 Adjust RV1 until the unit squelches (RX Off).
- 10.4 Slowly increase the RF Signal Generator level until the unit un-squelches (RX On), confirm that the sensitivity is between **$6\sim 16\text{dB}$ Sinad**.

10. VOX TEST

- 11.1 Set the unit into VOX Mode (Level 2). The VOX icon should be displayed on the LCD.
- 11.2 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.
- 11.3 Turn on the output of the audio generator.
- 11.4 Increase the Audio Generator level until unit goes into TX Mode.
- 11.5 Check the Generator level, it should be between **$1.5\sim 3.0\text{mV}$** .

11. LOW BATTERY LEVEL TEST

- 12.1 Set the unit into receive mode or standby mode.
- 12.2 Set the Power Supply voltage to 5.0Vdc .
- 12.3 Slowly decrease the Power Supply Voltage until the Low Battery icon appears and blink in the LCD Display.
- 12.4 Observe the Power Supply Level. The level must be **4.0 to 4.4Vdc** .

12. CHARGING TEST

- 13.1 Connect a charged Ni-MH Battery Pack ($\sim 6.0\text{Vdc}$) into the unit.
- 13.2 Connect a MW904 Wall Charger into the Mic/Chg Jack
- 13.3 Monitor the current on the **Battery (+)** line.
- 13.4 Confirm the Charging Current is **$135\sim 165\text{mA}$** (unit is at Power Off condition).

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