

# Midland ATLANTIC-I

## Test and Alignment Procedure

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## REVISION SHEET

<b>Rev. Code</b>	<b>Rev. Date</b>	<b>Revision</b>	<b>Revised By:</b>
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## 1. RECOMMENDED TEST EQUIPMENT

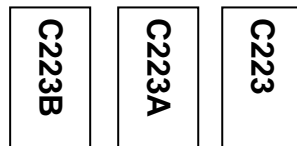
- 1.1 HP8920A,B Radio Communication Tester or equivalent
- 1.2 Fluke 187 Digital Voltmeter or equivalent
- 1.3 HPE3615A Power Supply or equivalent

## 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%.

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## 8. RECEIVER ALIGNMENT

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

## 9. SQUELCH THRESHOLD AND HYSTERISIS

- 10.1 Set unit same as 9.1.
- 10.2 Set the RF Generator level to  $-124\text{dBm}$ .
- 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  $1\text{kHz}$  frequency with a level of  $1\text{mVrms}$  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  $5.0\text{Vdc}$ .
- 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  $4.4\text{Vdc}$** .

## 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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