5. MAINTENANCE

5.1 SERVICE NOTES

The following service information applies when aligning, testing, or troubleshooting the RX Synthesizer:

Aligning, troubleshooting and repair of the synthesizer module is best done with the TQ0650 RF Module Test Fixture (Model TS101285V11 only) and not in the station. The station is a vital part of the radio system and should remain operational and not taken out of operation while working on a module. For that reason, we recommend servicing the module off line using the RF Module Test Fixture. More information about the test fixture can be found in the RF Module Test Fixture manual MM101885V1 and Programming Guide MS102553V1.

- The RX Synthesizer is aligned or *"standardized"* to specific parameters so it can be installed or swapped with a module in a station with minimum station level settings.

- Logic Levels:

  Logic 1 = high = 4.5 to 5.5 Vdc
  Logic 0 = Low = 0 to 0.5 Vdc

- The synthesizer is locked on frequency when the front panel LED indicator is *Off* and a logic *high* is present on the **Flag_2** line (J3 pin 12C).

- Always verify synthesizer lock after each new data loading.

5.2 TEST EQUIPMENT AND TOOLS REQUIRED

5.2.1 Test Equipment

- HP 8903B Audio Analyzer, or equivalent

- Power Supply: +13.8V @ 500 mA

- Power Supply: +12V @ 500mA

- RF signal source for 12.8 MHz ±20 Hz, 10 dBm reference

- Frequency Counter: 1 MHz - 250 MHz

- Power Meter: -20 dBm to +13 dBm

- Spectrum Analyzer: 0-1 GHz

- M/A-COM RF Module Test Fixture TQ0650 (TS101285V11) (replaces power supplies listed above)

- Personal computer and MASTR III RF Module Alignment software for synthesizer loading

	Windows® NT 4.0 (Service Pack 6)	Windows 2000	Windows XP
Processor Speed	Pentium® II 90 MHz	Pentium II 133 MHz	Pentium II 233 MHz
RAM for Windows	128 Megabytes	128 Megabytes	128 Megabytes
Hard Drive Space	160 Megabytes	160 Megabytes	160 Megabytes
Drives	CD-ROM	CD-ROM	CD-ROM
Ports	1 LPT (Parallel Port)	1 LPT (Parallel Port)	1 LPT (Parallel Port)
Microsoft® Internet Explorer	Version 5.01 or higher	Version 5.01 or higher	Version 5.01 or higher

5.2.2   Tools

- Torx® screwdriver (T15)

- Allen Hex Key Set (3/32") or 3/8" common screwdriver with fine tip

- 1/8" common screwdriver or tuning tool

- ESD protection equipment

5.3   SETUP

5.3.1   Connect to Text Fixture

1. Connect the RX Synthesizer to the RF Test Fixture as shown in Figure 5-1.

2. Connect the PC computer to J11 on the test fixture.

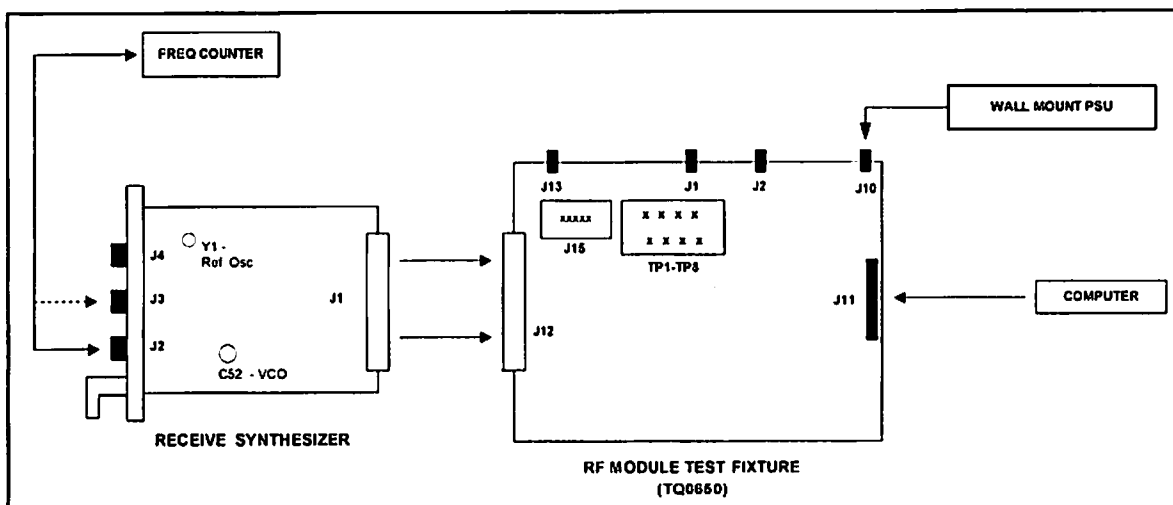3. Run the "MASTR III RF Module Alignment" program on the PC.

Figure 5-1: Initial Test Setup

5.3.2   Initialization

1. Apply power to the test fixture.

2. Verify that the unlock indicator (CR1) is *on* and that Flag_2 (J1, pin 12C) is *low*.

5.3.3   Current Consumption

1. Measure the current on the +13.8 VDC supply on connector J1 (pins A16, B16, & C16).

2. Verify the current is less than 200 mA.

3. Measure the current on the +12 VDC supply on connector J1 (pins A15, B15, & C15).

4. Verify the current is less than 50 mA.

5.4   TEST PROCEDURE

5.4.1   Reference Oscillator

1. Ground the Int Osc signal (J1, Pin A1).

2. Connect the Power Meter to J3.

3. Verify that there is no output at J3.

4. Apply an external reference signal (12.8 MHz @ 10 dBm ±1 dB) to the Ext Ref In connector (J4).

5. Verify that the output level at J3 is 0 dBm ±3 dB.

6. Change the external reference signal to 5 MHz.

7. Verify that the output level at J3 is 0 dBm ±3 dB.

8. Change the external reference signal to 19.2 MHz.

9. Verify that the output level at J3 is 0 dBm ±3 dB.

10. Remove the ground from the Int Osc signal (J1 pin A1).

11. Measure the output power of the reference oscillator output (J3).

12. Verify that the power out is 0 dBm ±3.0 dB.

13. Connect the Frequency Counter to J3.

14. Adjust Y1 for an output frequency of 12.8 MHz ±5 Hz.