# 6 MAINTENANCE

## 6.1 MODULE DISASSEMBLY AND REASSEMBLY

Refer to the following procedures for assembly and disassembly during test, alignment and/or module servicing.

The **ESD** symbol calls attention to procedures, practices, or the like, which could expose equipment to the effects of Electro-Static Discharge. Proper precautions must be taken to prevent ESD when handling circuit modules.

### 6.1.1 Module Disassembly

1. Use a T-15 Torx Screwdriver and remove the six (6) Torx screws from the top housing assembly as shown in Figure 6-1.
2. Carefully remove the top cover. Set aside the screws and top cover for future reassembly.

### 6.1.2 Module Reassembly

1. Carefully reinstall the top cover over the board as shown in Figure 6-1.
2. Reinstall the six (6) Torx screws previously removed from the top housing assembly as shown in Figure 6-1.

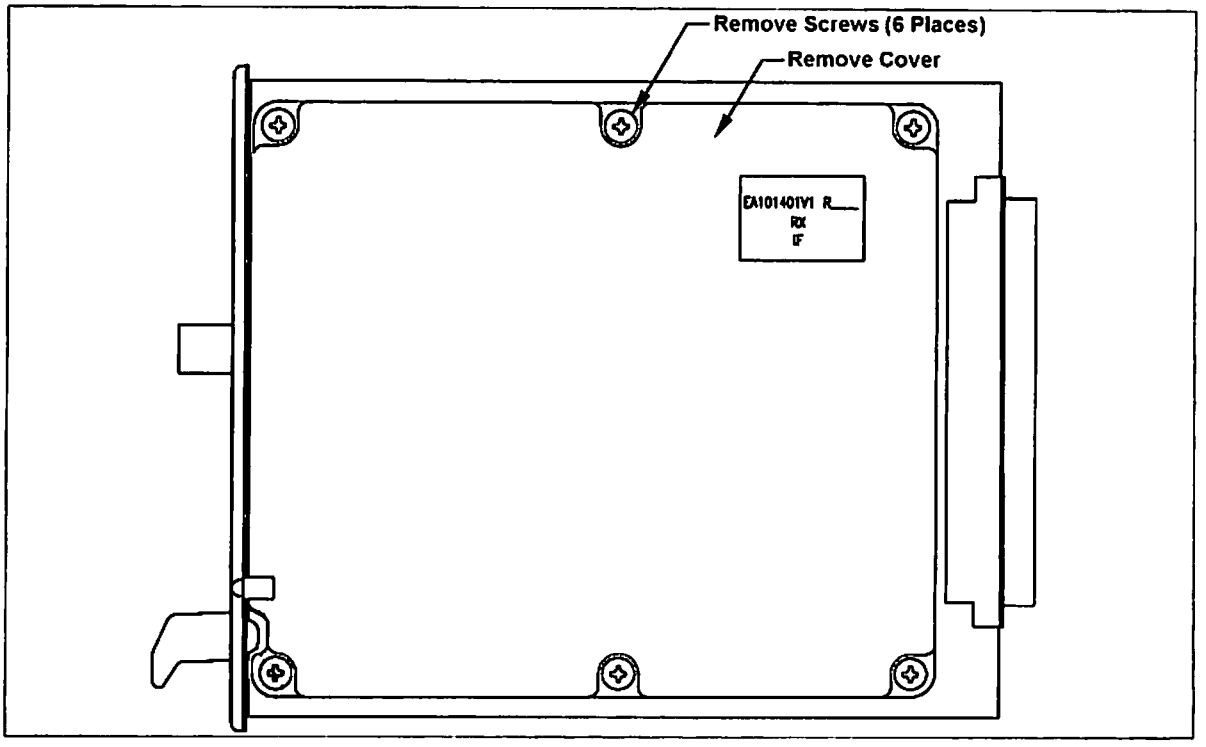


**Figure 6-1: Module Disassembly and Reassembly**

## 6.2 TROUBLESHOOTING

When troubleshooting the module, it is most convenient if the standard test fixture is used. The following conditions are with the module in the 25 kHz mode. This can be set up using a PC with the necessary software connected to the test box. Alternatively, a wire link can be soldered between TP205 and TP206 on the PC board. This forces the module to operate in the wideband (25 kHz) mode.

IF amplifier transistor Q1 has a nominal 8 dB gain. Transistor Q2 has a nominal gain of 8.5 dB. The mixer has about 14 dB voltage gain with proper LO injection. The proper crystal oscillator level is 130 mV p-p measured at TP102.

The following four test points are provided on the PWB for additional test capability:

- TP1: 70.7 mV p-p @ 21.4 MHz with -30 dBm input signal
- TP102: 130 mV p-p @ 20.945 MHz independent of input signal
- TP103: 460 mV p-p @ 455 kHz with -65 dBm input signal
- TP108: 730 mV p-p @ 455 kHz with -75 dBm input signal

NOTE: All RF voltages are measured with an oscilloscope and a 10 Megohm, 11pF, high impedance probe.

**Table 6-1: Troubleshooting Guide**

| SYMPTOM | CHECK *(CORRECT READING SHOWN)* | INCORRECT READING INDICATES DEFECTIVE COMPONENT |
|---|---|---|
| Fault indicator on | Check DC voltages: | If DC voltages not correct |
| | +8V @ U200,U205, Pin 3 | U200,U206 or assoc. components |
| | +6V @ U103, Pin 14 (TP104) | U103 or associated components |
| | 1.5V @ Q1 and Q2 (emitters) | Q1 and Q2 or associated components |
| | | |
| No audio - no noise | With no signal applied to module IF input: | |
| | Check for AF noise @ TP108; 200mV | U107 or associated components |
| | Check for AF noise @ U203, Pin 8; 1 V | U203 or associated components |
| Noise only - no demodulated audio | Check crystal oscillator: | |
| | TP3, 130 mVp-p, 20.945 MHz | U107, Y100 or associated components |
| | Apply -30 dBm, 21.4 MHz input, check TP1, 170 mVp-p | Q1, FL1, FL2 or associated components |
| | Apply -65 dBm, 21.4 MHz input, check TP103, 460 mVp-p | Q2, FL3, FL4, U100, U107 or associated components |
| Poor 12 dB SINAD | Check crystal oscillator: | |
| | TP102, 130 mVp-p, 20.945 MHz | U107, Y100 or associated components |
| | Apply -30 dBm, 21.4 MHz input, check TP1, 170 mVp-p | Q1, FL1, FL2, Y100, or associated components |
| | Apply -65 dBm, 21.4 MHz input, check TP103, 460 mVp-p | Q2, FL3, FL4, U100, U107 or associated components |

| SYMPTOM | CHECK *(CORRECT READING SHOWN)* | INCORRECT READING INDICATES DEFECTIVE COMPONENT |
|---|---|---|
| No squelch function | With squelch pot maximum, or with module AUDIO/ SQUELCH/HI connected to SQUELCH/ARM input and with no signal to module IF input: | |
| | Check Presence of 1 Vpk noise @ U203, Pin 7 | U203 or associated components |
| | Check presence of 1 Vpk noise U203 @ Pin 8 | |
| | Check DC voltage U206 @ Pin 8: 7V | U206 or associated components |
| | Check DC voltage U206 @ Pin 14: 0.5V | |
| No 455 kHz to DSP Module | Check U102 and U106 output: | |
| | Apply -75 dBm 21.4 MHz input, TP105, 120 mV] | U102 or associated components |
| | Apply -75 dBm 21.4 MHz input, check J2, Pins A31 & A32, 1.4 Vp-p | U108 or associated components |

# 7 TECHNICAL ASSISTANCE

The Technical Assistance Center's (TAC) resources are available to help with overall system operation, maintenance, upgrades and product support. TAC is the point of contact when answers are needed to technical questions.

Product specialists, with detailed knowledge of product operation, maintenance and repair provide technical support via a toll-free (in North American) telephone number. Support is also available through mail, fax and e-mail.

For more information about technical assistance services, contact your sales representative, or contact the Technical Assistance Center directly at:

| | |
|---|---|
| North America: | 1-800-528-7711 |
| International: | 1-434-385-2400 |
| Fax: | 1-434-455-6712 |
| E-mail: | tac@tycoelectronics.com |