Field Service Spares Replacement Procedure – ADE Modem, XX04

Approval:

Approving Authority	Signature	Date
Doc Control:	Ron Chaffee / Signature on file.	10-26
Assistant Service Manager, Global	John VanderJagt / Signature on file.	10-26
Author:	Stuart Broadfield / Signature on file.	10.26.11

Revision History

Rev.	ECO	Description of Change	Date
A	8795	Initial release	08-05-2011
B	9041	Clerical Revisions	10-03-2011

1. Brief Summary:

Troubleshooting document for diagnosing a communications fault with and replacing the ADE modem on the XX04 series antennas.

2. Checklist:

- Verify Harness & Coax Connections
- Verify System Configuration
- Frequency Drift

3. Theory of Operation:

Pedestal communications are used so that target calculations, tracking decisions, drive commands & pol position updates can be sent from the DAC to the PCU. In turn the PCU will send the command to drive the relevant axis. The PCU will also communicate with the DAC for dishscan feedback & error information. The communications data is sent between the DAC and PCU using RS-422 protocol. This data is modulated onto a carrier frequency by the systems FSK modems. This modulated carrier is passed along a coax cable between the two above and below decks units.

A communication error (error 4) will be raised when a number of checksums are sent from the DAC but aren't returned by the PCU. It is common to see this error displayed as an error 20. This is due to the DAC not receiving the dishscan pulse from the PCU, so the dishscan error (error 16) is also flagged (4 + 16 = 20). If no communications are established, the DAC will display "Remote Not Responding".

4. Troubleshooting:

A communication error could be caused by any component between the DAC & PCU. For example, a damaged harness, faulty coax cable, loose connector, failure of the FSK Modem(s) or possibly a power failure to the pedestal meaning the PCU would not be energised. Of course the ACU and PCU can be at fault also.

5. System Connections & Configuration:

One of the jumpers (JP3) on the DAC-2202 motherboard (124813-1) is used to switch between the internal FSK modem (J4B F type connection) and the 9-pin D-sub connector (J4A), which is used when operating with an external below decks modem. If using an external below decks modem, JP3 should be across pins 1 and 2. If using the internal FSK modem on the DAC motherboard (typically with xx04 and USAT series antennas) the jumper should be across pins 2 and 3.

Check the connections on the communications path between the ACU and the PCU. This includes the ACU-MUX harness between the DAC and below decks modem as well as the interface harness between the above deck FSK modem & the PCU.

6. Frequency Drift:

In extreme temperatures, legacy FSK modems have been known to experience frequency drift. This will cause loss of communication. If you suspect this to be an issue, try removing the above decks MUX and cooling/warming it to room temperature, then re-install the MUX and see if the communications return. If so, a solution will need to be found. Some older revision modems have since had modifications to help with such a fault so it's always best to check with our Customer Support Teams.

7. FSK Modem Failure:

Once it has been verified that the system is correctly configured, the installation is wired correctly and that the PCU is energised, the next step should be to look at the FSK modems. Replacement of the ADE modem (122363-1) should be the first step in diagnostic process (the system may still be energised even when the communications are down as the PCU will still receive the 24VDC from the DAC).

Power down the pedestal (by turning off the DAC) and disconnect the D-Sub and coax cable from the above deck modem. Connect these to a replacement modem (there is no need to remove the original modem from its radome mount at this time). Power up the system & verify if the communications return.

8. Replacing the XX04 ADE Modem:

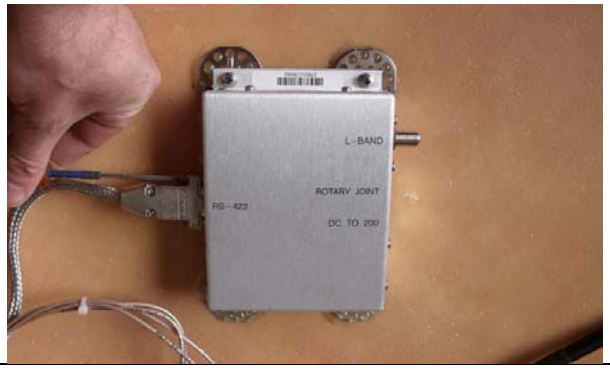
8.1. Tools.

- 2mm Flat Blade (Terminal) Screwdriver
- 7/16" Wrench/Spanner (varies depending on coax connections used).
- #1 Phillips Screwdriver
- Loctite 242

8.2. Procedure.

Procedure for replacing the XX04 series ADE modem, Sea Tel kit part number: 135348 (modem part number: 122363-1).

***CAUTION:** Power down the system by switching off the DAC-2202 before attempting the following procedure. The 24VDC pedestal power on the coax may damage the modem if hot plugged. 1. Disconnect the coax cable from the modem.	

2. Using a 2mm flat blade screwdriver, undo the 9-pin D-sub connector of the interface harness from the modem and disconnect it.	
3. Using a #1 Phillips screwdriver, remove the 4 screws securing the modem into the radome base & save for future use.	
4. Install the replacement modem using the screws removed in the previous step and apply Loctite 242 to the threads. Then connect the interface harness & coax cable.