



iDIRECT

***NetModem II & II+
Troubleshooting Guide***

Troubleshooting Guide for iDirect Remote Site NetModem

- "Section I – Normal Operation" considers an evaluation of normal operational parameters
 - ◆ First level diagnostic "Check"s performed to evaluate & record an associated "Condition"
 - ◆ All Checks considered with:
 - NetModem powered on
 - TX & RX IFL cables terminated and connected
 - VSAT operationally capable
 - ◆ Forms the basis for further investigation of presented Conditions
- "Section II – Console/LAN Port Preparation" step prepares and/or confirms NetModem access via 'Console' & 'LAN' ports
 - ◆ Both may be required for any second level diagnosis
 - ◆ Allows connection for accessing/using console commands
 - ◆ LAN Port allows connection via iSite directly to NetModem board

- "Section III – Boot-up Sequence" describes the 'normal' NetModem boot-up sequence
 - ◆ Common to both NetModem II & II+ (HLCs also) unless otherwise noted

- "Section IV – Abnormal Operation" discusses each potential "Condition" & a "Possible Cause" for each
 - ◆ "Check #" carries through to "Condition #" and related "Indication"
 - ◆ Checks may result in multiple potential Conditions, each with its own related "Possible Cause/Corrective Action" entries
 - ◆ Individual Condition may show multiple, related causes & corrective actions for each
 - ◆ **Example:** Check #3→Condition #3A, 3B, 3C and 3D
 - ◆ **Further:** Condition #3c→Possible Cause 1.a-d, 2.a-d, 3.a-d, 4. & 5.
 - ◆ **Leading to:** Corrective Action 1.a-d, 2.a-d, etc. . . .
 - ◆ Checks & Conditions refer to both NetModem II & II+ unless otherwise noted
 - ◆ Finally, guide suggests a possible "Corrective Action" for each "Possible Cause" recorded

- Check #1:
 - ◆ **Front Panel** 'Power' LED is illuminated, solid green
 - ◆ Check fails, follow "Section IV – Abnormal Operation", Condition #1 Detection/Analysis path
- Check #2:
 - ◆ Verify the **Front Panel** 'Test' LED is not illuminated
 - ◆ Check fails, follow "Section IV – Abnormal Operation", Condition #2 Detection/Analysis path
- Check #3:
 - ◆ Observe the state of the **Front Panel** 'Network' LED (See table # 2, Chapter 8 for reference)
 - ◆ For diagnosis of conditions found, follow "Section IV – Abnormal Operation", **Condition #3 Front Panel** Fault Detection/Analysis path
- Check #4:
 - ◆ Observe the state of the 4 **Rear Panel** LEDs (See table # 3, Chapter 8 for reference)
 - ◆ For diagnosis of conditions found, follow "Section IV – Abnormal Operation", **Condition #4, Rear Panel** Fault Detection/Analysis path

➤ Check #5:

- ◆ NetModem '**Console Port**' serial connection
 - Useful for observing the NetModem 'Boot-up' sequence
 - Can assist when analyzing conditions found in previous checks
- ◆ Refer to "Section II – Console/LAN Port Preparation" for normal console port/PC configuration
- ◆ Connection fails, follow "Section IV – Abnormal Operation", **Condition #5 Console Port** Detection/Analysis path

➤ Check #6:

- ◆ NetModem '**10/100 LAN Port**' connection
 - Required for accessing NetModem using iSite
 - Use of 'crossover' Cat 5 cabling required for direct PC connection
- ◆ Connection fails, follow "Section IV – Abnormal Operation", **Condition #6 LAN Port** Detection/Analysis path

➤ Check #7:

- ◆ NetModem '**Boot-up**' sequence
 - Viewed via 'Console Port'; Key diagnostic tool for many condition checks
- ◆ Sequence fails, hangs or detects errors, follow "Section IV – Abnormal Operation", **Condition #7 Boot-up Sequence** Detection/Analysis path

- Console Port Preparation
 - ✦ Typical serial port connectivity
 - 9600 baud, 8data bits, no parity, 1 stop bit, no flow control
 - DB9 – RJ45 cross-pinned adapter with Cat5 straight cable required
 - ✦ ‘Mobile’ remotes revert to 4800 baud during boot-up
 - ✦ Communications software (HyperTerm, Tera Term Pro) required
- Connection now requires secure login
 - ✦ NetModem ‘Console Port’ login
 - ‘User’ with more limited commands/access
 - ‘Admin’ with access to all commands and capabilities
 - ✦ Once logged in, can determine LAN Port address with ‘laninfo’ command (or ‘reload’ with new address)
 - ✦ Connection fails, follow Condition #5 for Detection/Analysis path
- 10/100 LAN Port Preparation
 - ✦ Auto negotiated, 10/100 Mbps, Half/Full Duplex
 - ✦ IP Address, subnet and gateway can be determined/modified via the Console Port serial connection

- Observation key to condition diagnosis
 - ◆ Observed via NetModem 'Console Port'
 - ◆ Reliable for determining initial boot-up state of NetModem
- Sequence remains constant within a given iDS version
- Console session detail used in conjunction with LED indications to diagnose problems
- All Boot-up observations made considering:
 - ◆ Console Port set to 9600 baud, 8 data bits, no parity, 1 stop bit, no flow control
 - ◆ No IFL cables should be connected
- Record any generated error or failed to load indication as reported
 - ◆ Capture any available 'log' files, if needed

- Connect Power to NetModem
 - ◆ Power LED illuminates solid green
 - ◆ Boot-up can be observed via console port session (next 3 pages)
 - ◆ (DRAM test can be aborted, halting board at 'Bootloader' prompt)
- Rear Panel LEDS all illuminate in 'self-test' sequence
 - ◆ Left to right; Net, Status, TX, RX
 - ◆ Self-test completes, then only 'Status' LED solid green
- Console session detail pauses as Images decompressed
 - ◆ Console Port default to 9600 baud
 - ◆ Mobile remotes switch to 4800 baud for GPS receiver input
- Boot-up detail concludes with 'Modem Ready' indication
- Rear Panel 'RX' LED then solid yellow
- Same time, Front Panel 'Network' LED flashes yellow
- Boot-up concluded, now ready for normal operation

✦ Console Port 'Boot-up' Detail:

Net Modem II Multi-Platform Bootloader version 2.0.0 ←Note hardware type ID'd
Copyright (c) 2000,2001,2002 by iDirect, Inc.

Dram test...

Hit <space bar> to abort test ←Hit spacebar to go to 'Bootloader' mode

% complete 0 25 50 75100

Dram test completed successfully

Copying boot monitor code to ram....completed

The bootloader reserved flash area is 0x80000 bytes

The bootloader size is 0x6F3DC bytes

Retrieving application image from flash....successful. ←Pause while 'decompressed'

Application V5.0.0 is 1447728 bytes to be loaded at 0x01000000. ← Reports version

Copying application to RAM and starting.....

NetModem Boot Monitor

ConsoleSessionMgr started...

NetModem Serial Number: 1534 ← Reports NetModem serial number

Loaded Modem Options... ← Loads 'Options' file first

Initializing Event Handling...

Registering DCM4 Platform Devices

Determining Modem Type: Remote ← Confirms board type (NMII remote only, iDS v5.0)

(Continued on next page)

✦ Console Port 'Boot-up' Detail (cont'd):

```
Initializing Hardware... ← Loads 'FPGA Images next, in succession
Loading RX1 FPGA (SCPC) ... NM2-V400 Successfully loaded ←Successfully loaded, no errors
Loading RX2 FPGA (SCPC) ... NM2-V305 Successfully loaded ←Successfully loaded, no errors
Loading RX Lookup Table (SCPC)...NM2-V003 Successfully loaded ←Successful load, no errors
Loading TX  FPGA (TDMA) ... NM2-V501 Successfully loaded ←Successfully loaded, no errors
Loading DC FEC FPGA (TPC) ... NM2-V118 Successfully loaded ←Successfully loaded, no errors
SUCCESS: TX synthesizer locked
SUCCESS: TX synthesizer locked
Acquisition period Calculated: 1 Set to 10
Initializing RNG... Starting StackManager-Thread...
```

Link Partner DOES NOT Auto Negotiate

```
Power UCP is ON
Initial Tx Power is  -5.00 ← Initial TX power setting from 'Options' file
OOB_RMT frame length set at 124 mS
Demand/Rate: Frame Length = 124
Receiver enabled ...
Starting NMS-Thread...
Starting ServiceMonitor-Thread...
Starting NameServer-Thread...
Starting DownloadMonitor-Thread...
Starting ConsoleServer ...
Enabled ConsoleServer...
Starting Services...
Starting Idle-Thread...
```

(Continued on next page)

Console Port 'Boot-up' Detail:

Modem Ready ←Indicates boot-up process concluded

Enabled ConsoleServer...

Username: admin ←Enter login and password

Password: *****

[RMT:1534] admin@serial

> ←Access granted, ready for command entry

- Condition #1 (from Check #1):
 - ◆ Front Panel 'Power' LED is not illuminated
- Condition #2 (from Check #2):
 - ◆ Verify the Front Panel 'Test' LED is illuminated and flashing Yellow
- Condition #3 (from Check #3):
 - ◆ After observing the state of the Front Panel 'Network' LED (See Table # 2, Chapter 8 for reference)
 - A. Network LED NOT illuminated (power LED is on and displays solid green)
 - B. Network LED is illuminated, but flashing Yellow only – never changes
 - C. Network LED is illuminated, but remains solid Yellow
 - D. Network LED is illuminated, but alternating Yellow & green – never changes
- Condition #4 (from Check #4):
 - ◆ After observing the state of 4 Rear Panel LEDs (See Table # 3, Chapter 8 for reference)
 - A. 'Net' LED NOT illuminated, 'Status' & 'RX' LEDs solid green, 'TX' may, or may not flash green at irregular intervals, but never turns solid green
 - B. Rear Panel 'Status' LED not illuminated (all LEDs off), or is displayed as solid red
 - C. Rear Panel 'TX' LED not illuminated at all, 'Status' & 'RX' LEDs solid green
 - D. Rear Panel 'TX' LED illuminated, but only flashes green at irregular intervals
 - E. Rear Panel 'RX' LED not illuminated at all, Front Panel 'Power' LED is solid green
 - F. Rear Panel 'RX' LED is illuminated, but remains solid Yellow

- Condition #5 (from Check #5):
 - ✦ Unable to connect to NetModem via '**Console Port**'
- Condition #6 (from Check #6):
 - ✦ Unable to connect to NetModem via '**10/100 LAN Port**'
 - A. LAN Ports green 'activity' LED is not illuminated
 - B. Unable to 'surf' or otherwise make proper network connection from remote
- Condition #7 (from Check #7):
 - ✦ Improper '**Boot-up**' sequence observed via the NetModem Console Port
 - A. Begins okay, but appears to hang before completion
 - B. Shows 'Errors' during boot-up while 'Loading' Image files

- Condition #1, Front Panel 'Power' LED:
 - ◆ Front Panel 'Power' LED not illuminated
- Indication:
 - ◆ Power not applied
- Possible Cause(s):
 1. External Power Supply (EPS) has no output – NMII+
 2. or, AC power cord not plugged in – NMII
- Corrective Action(s):
 1. Connect/plug in/replace EPS – NMII+
 2. Connect/plug in AC power cord – NMII



- Condition #2, Front Panel 'Test' LED:
 - ✦ Front Panel 'Test' LED illuminated; flashing Yellow (see also Condition # 2, 3A and 4B, 4E for Rear Panel equivalents)
- Indication:
 - ✦ NetModem failed during boot-up/FPGA load
- Possible Cause:
 1. Corrupted Image(s) or Bootloader problem
- Corrective Action(s):
 1. Perform any or all of the following actions individually
 - a) Reset NetModem & observe boot sequence in console port session
 - b) Reload Image(s) or 'Options' file as necessary
 - c) Remove & Replace NetModem; Obtain RMA and return for repair/replacement if problem fails to clear

- Condition #3A, Front Panel 'Network' LED:
 - ✦ Front Panel 'Network' LED not illuminated; Power LED solid green (see also Condition # 2 and 4B, 4E for Rear Panel equivalents)
- Indication:
 - ✦ NetModem failed/hung during boot-up/FPGA load
 - ✦ Defective 'Network' LED (unlikely, but possible)
- Possible Cause(s):
 1. Corrupted Image(s) or Bootloader problem
 2. Defective NetModem hardware
- Corrective Action(s):
 1. Perform one of the following actions in turn:
 - a) Reset NetModem & observe boot sequence in console port session
 - b) Reload Image(s) or 'Options' file as necessary
 2. Obtain RMA, R&R NetModem if problem fails to clear

- Condition #3B, Front Panel 'Network' LED :
 - ◆ Front Panel 'Network' LED is illuminated; flashing Yellow only (see Condition # 4F for Rear Panel equivalent)
 - ◆ Test LED NOT illuminated (see Condition # 2 previously)
- Indication:
 - ◆ NetModem has not achieved TDM frame lock on the hub outbound, or downstream carrier
- Possible Cause(s):
 1. Hub outbound/downstream carrier down/not being transmitted
 - a) Hub/teleport malfunction or TX power lower than required
 - b) Transponder/satellite interference from adjacent carrier
 - c) Rain fade at the hub or remote site location
- Corrective Action(s):
 1. Coordinate with hub/teleport personnel & accomplish the following checks:
 - a) Confirm hub/teleport equipment operational, and transmit level is correct
 - b) Verify teleport sees no satellite interference (adjacent carriers, cross-pol, etc.)
 - c) Verify weather is clear and/or wait until rain subsides and recheck

- Condition #3B Front Panel 'Network' LED (cont'd):
 - ✦ Front Panel 'Network' LED is illuminated; flashing Yellow only (see Condition # 4F for Rear Panel equivalent)
 - ✦ Test LED NOT illuminated (see Condition # 2 previously)
- Indication:
 - ✦ NetModem has not achieved TDM frame lock on outbound, or downstream carrier
- Possible Cause(s):
 2. VSAT antenna is not pointed/peaked properly on the satellite
 - a) Antenna has physically moved, or has never been peaked properly
 - b) Missing +18 VDC from "RX In" port (power to LNB)
 - c) Problem with receive IFL cable/connectors
 - d) Incorrect/incompatible 'Options' file loaded
- Corrective Action(s):
 2. Verify antenna pointing and repoint/repeak as necessary
 - a) Physically repoint/repeak VSAT antenna
 - b) Check for +18 VDC on "RX In" port on NetModem and/or LNB end of IFL receive cable. (Do so carefully so as to not damage the power supply by shorting out the connector center conductor to the ground/shield).
 - c) Verify/redo IFL cable connector(s). Ensure RX (not TX) cable is connected between "RX In" port on NetModem and LNB (roll cables)
 - d) Generate and apply known correct, or updated 'Options' file

NOTE: Always power down NetModem when connecting/disconnecting IFL

- Condition #3B Front Panel 'Network' LED (cont'd):
 - ✦ Front Panel 'Network' LED is illuminated; flashing Yellow only (see Condition # 4F for Rear Panel equivalent)
 - ✦ Test LED NOT illuminated (see Condition # 2 previously)
- Indication:
 - ✦ NetModem has not achieved TDM frame lock on outbound, or downstream carrier
- Possible Cause(s):
 3. Remote VSAT/LNB hardware and/or related configuration parameters incorrect
 - a) Improperly installed LNB (waveguide port physically 90 degrees out from feed assembly)
 - b) Incorrect LNB installed; (higher stability PLL req'd for outbound =< 512 kbps)
 - c) Correct LNB selected, but 10 MHz reference not enabled (some PLLs required)
 - d) 'Receive Stability' parameter incorrect (used for calc of RX 'Acquisition Range')
- Corrective Action(s):
 3. Verify remote VSAT/LNB hardware and/or related configuration parameters
 - a) Examine/correct LNB physical attachment to feed assembly
 - b) Verify correct LNB requirement and replace, if necessary, DRO with PLL LNB
 - c) Enable 10 MHz reference frequency, if required, for PLL LNB (some models)
 - d) Enter correct LNB 'Stability' value in iBuilder, in MHz

- Condition #3B Front Panel 'Network' LED (cont'd):
 - ✦ Front Panel 'Network' LED is illuminated; flashing Yellow only (see Condition # 4F for Rear Panel equivalent)
 - ✦ Test LED NOT illuminated (see Condition # 2 previously)
- Indication:
 - ✦ NetModem has not achieved TDM frame lock on outbound, or downstream carrier
- Possible Cause(s):
 4. Defective/failed LNB
 5. Defective/failed NetModem demodulator
- Corrective Action(s):
 4. Remove & Replace LNB; Obtain RMA & return for repair/replacement
 5. R & R NetModem; Obtain RMA & return for repair/replacement

➤ Condition #3C Front Panel 'Network' LED:

- ✦ Front Panel 'Network' LED is illuminated, but remains solid Yellow; never changes (see Condition #4C, 4E for Rear Panel equivalents)

➤ Indication:

- ✦ NetModem has achieved TDM frame lock on the SCPC outbound, or downstream carrier but,
 - NetModem is NOT attempting to 'acquire' the network
 - Would indicate normal operation if remote was not configured as 'Active' in iBuilder

➤ Possible Cause:

1. NetModem is not 'Active' in iBuilder, but should be

➤ Corrective Action:

1. Make remote 'Active' in iBuilder and/or 'Apply Configuration Changes' in iBuilder

- Condition #3D Front Panel 'Network' LED:
 - ✦ Front Panel 'Network' LED is illuminated; flashing alternately Yellow & green, but never changes from this state (see Condition 4A, 4C for 'Rear Panel' equivalents)
- Indication:
 - ✦ NetModem has achieved TDM frame lock on the hub outbound, or downstream carrier and is attempting to 'acquire' (tune) to the network
 - ✦ Considered normal unless an excessive amount of time has passed and the remote never acquires the network (LED state never changes)
- Possible Cause(s):
 1. Acquisition time slot congested; many remotes attempting acquisition simultaneously may delay 'Fine Tune' process
 2. Initial Frame Start Delay (FSD) value incorrectly calc'd
 3. 'Mobile' remote has not received proper GEO location input (GPS/manual)
 4. Tx power not sufficient/too high (NetModem 'Initial Tx Power' set too low/too high)
- Corrective Action(s):
 1. Observe NetModem for a short time to see if it acquires the network. If not, (~3 min.), continue with remaining 'Possible Cause' items
 2. Verify iBuilder has correct 'GEO Location' coordinates for a fixed remote
 3. Connect a GPS receiver to NetModem console port, or make command line entry for latitude/longitude and the correct hemispheres
 4. Increase/decrease NetModem transmit power as required and in controlled steps while observing acquisition process

- Condition #3D Front Panel 'Network' LED (cont'd):
 - ✦ Front Panel 'Network' LED is illuminated; flashing alternately Yellow & green, but never changes from this state (see Condition 4A, 4C for 'Rear Panel' equivalent)
- Indication:
 - ✦ NetModem has achieved TDM frame lock on the hub outbound, or downstream carrier and is attempting to 'acquire' (tune) to the network
 - ✦ Considered normal unless an excessive amount of time has passed and the remote never acquires the network (LED state never changes)
- Possible Cause(s):
 5. Tx IFL not connected properly or connector/cable defective
 6. Missing +24 VDC from 'TX Out' port on rear of NetModem (power to BUC)
 7. Missing 10 MHz reference from NetModem, (from 'TX Out' port also)
 8. Defective BUC
 9. Defective NetModem modulator
- Corrective Action(s):
 5. Verify/redo TX IFL cable connector. Ensure TX (not RX) cable is connected between 'TX Out' port on NetModem and BUC (roll cables)
 6. Check for +24 VDC on 'TX Out' port and/or at BUC end of cable. If not detected, check/replace External Power Supply (EPS).
 7. Verify 10 MHz option enabled for BUC configuration in iBuilder, if required
 8. Remove & Replace BUC; Obtain RMA and return for repair/replacement
 9. R & R NetModem; Obtain RMA and return for repair/replacement

NOTE: Always power down NetModem when connecting/disconnecting IFL



- Condition #4A Rear Panel 'Net' LED:
 - ✦ Rear Panel 'Net' LED not illuminated; 'Status' & 'RX' LEDs solid green, 'TX' may flash green at irregular intervals (see Condition 3D for 'Front Panel' equivalent, & 4D)
- Indication:
 - ✦ NetModem has achieved TDM frame lock on the hub outbound, or downstream carrier and is attempting to 'acquire' (tune) to the network
 - ✦ Considered normal unless an excessive amount of time has passed and the remote never acquires the network (LED state never changes)
- Possible Cause(s):
 1. Acquisition time slot congested; many remotes attempting acquisition simultaneously may delay 'Fine Tune' process
 2. Initial Frame Start Delay (FSD) value incorrectly calc'd
 3. 'Mobile' remote has not received proper GEO location input (GPS/manual)
 4. Tx power not sufficient/too high (NetModem 'Initial Tx Power' set too low/too high)
- Corrective Action(s):
 1. Observe NetModem for a short time to see if it acquires the network. If not, (~3 min.), continue with remaining 'Possible Cause' items
 2. Verify iBuilder has correct 'GEO Location' coordinates for a fixed remote
 3. Connect a GPS receiver to NetModem console port, or make command line entry for latitude/longitude and the correct hemispheres
 4. Increase/decrease NetModem transmit power as required and in controlled steps while observing acquisition process

- Condition #4A Rear Panel 'Net' LED (cont'd):
 - ✦ Rear Panel 'Net' LED not illuminated; 'Status' & 'RX' LEDs solid green, 'TX' may flash green at irregular intervals (see Condition 3D for 'Front Panel' equivalent; & 4D)
- Indication:
 - ✦ NetModem has achieved TDM frame lock on the hub outbound, or downstream carrier and is attempting to 'acquire' (tune) to the network
 - ✦ Considered normal unless an excessive amount of time has passed and the remote never acquires the network (LED state never changes)
- Possible Cause(s):
 5. Tx IFL not connected properly or connector/cable defective
 6. Missing +24 VDC from 'TX Out' port on rear of NetModem (power to BUC)
 7. Missing 10 MHz reference from NetModem, (from 'TX Out' port also)
 8. Defective BUC
 9. Defective NetModem modulator
- Corrective Action(s):
 5. Verify/redo TX IFL cable connector. Ensure TX (not RX) cable is connected between 'TX Out' port on NetModem and BUC (roll cables)
 6. Check for +24 VDC on 'TX Out' port and/or at BUC end of cable. If not detected, check/replace External Power Supply (EPS).
 7. Verify 10 MHz option enabled for BUC configuration in iBuilder, if required
 8. Remove & Replace BUC; Obtain RMA and return for repair/replacement
 9. R & R NetModem; Obtain RMA and return for repair/replacement

NOTE: Always power down NetModem when connecting/disconnecting IFL

- Condition #4B Rear Panel 'Status' LED:
 - ✦ Rear Panel 'Status' LED not illuminated, or is displayed as solid red; other Rear Panel LEDs irrelevant (see Condition #2 for 'Front Panel' equivalent)
- Indication:
 - ✦ NetModem failed during boot-up/FPGA load
- Possible Cause:
 1. Corrupted Image(s) or Bootloader problem
- Corrective Action(s):
 1. Perform any or all of the following actions individually
 - a) Reset NetModem & observe boot sequence in console port session
 - b) Reload Image(s) or 'Options' file as necessary
 - c) Remove & Replace NetModem; Obtain RMA and return for repair/replacement if problem fails to clear

➤ Condition #4C Rear Panel 'TX' LED:

- ✦ Rear Panel 'TX' LED not illuminated at all, Rear Panel 'Status' and 'RX' LEDs are solid green (see Condition #3C for 'Front Panel' equivalent)

➤ Indication:

- ✦ NetModem has achieved TDM frame lock on the SCPC outbound, or downstream carrier but,
 - NetModem is NOT attempting to 'acquire' the network
 - Would indicate normal operation if remote was not configured as 'Active' in iBuilder

➤ Possible Cause:

1. NetModem is not 'Active' in iBuilder, but should be

➤ Corrective Action:

1. Make remote 'Active' in iBuilder and/or 'Apply Configuration Changes' in iBuilder

➤ Condition #4D Rear Panel 'TX' LED:

- ◆ Rear Panel 'TX' LED not illuminated at all, or flashes green at irregular intervals (see Condition #3D for 'Front Panel' equivalent; also refer to Condition #4A, 4C)

➤ Indication:

- ◆ NetModem has achieved TDM frame lock on the hub outbound, or downstream carrier and is attempting to 'acquire' (tune) to the network
- ◆ Considered normal unless an excessive amount of time has passed and the remote never acquires the network (LED state never changes)

➤ Possible Cause:

- ◆ Review Condition 3D and/or 4A, 4C previously for discussion

➤ Corrective Action:

- ◆ Review Condition 3D and/or 4A, 4C previously for discussion

- Condition #4E, Rear Panel 'RX' LED:
 - ✦ Rear Panel 'RX' LED not illuminated; Power LED solid green (see Condition #2, 3A for Front Panel equivalent and 4B alternatively)
- Indication:
 - ✦ NetModem failed/hung during boot-up/FPGA load
 - ✦ Defective 'Network' LED (unlikely, but possible)
- Possible Cause(s):
 1. Corrupted Image(s) or Bootloader problem
 2. Defective NetModem hardware
- Corrective Action(s):
 1. Perform one of the following actions in turn:
 - a) Reset NetModem & observe boot sequence in console port session
 - b) Reload Image(s) or 'Options' file as necessary
 2. Obtain RMA, R&R NetModem if problem fails to clear

- Condition #4F, Rear Panel 'RX' LED:
 - ✦ Rear Panel 'RX' LED is illuminated but remains solid Yellow (see Condition #3B for Front Panel equivalent)
- Indication:
 - ✦ NetModem has not achieved TDM frame lock on the hub outbound, or downstream carrier
- Possible Cause(s):
 1. Hub outbound/downstream carrier down/not being transmitted
 - a) Hub/teleport malfunction or TX power lower than required
 - b) Transponder/satellite interference from adjacent carrier
 - c) Rain fade at the hub or remote site location
- Corrective Action(s):
 1. Coordinate with hub/teleport personnel & accomplish the following checks:
 - a) Confirm hub/teleport equipment operational, and transmit level is correct
 - b) Verify teleport sees no satellite interference (adjacent carriers, cross-pol, etc.)
 - c) Verify weather is clear and/or wait until rain subsides and recheck

- Condition #4F, Rear Panel 'RX' LED:
 - ✦ Rear Panel 'RX' LED is illuminated but remains solid Yellow (see Condition #3B for Front Panel equivalent)
- Indication:
 - ✦ NetModem has not achieved TDM frame lock on outbound carrier
- Possible Cause(s):
 2. VSAT antenna is not pointed/peaked properly on the satellite
 - a) Antenna has physically moved, or has never been peaked properly
 - b) Missing +18 VDC from "RX In" port (power to LNB)
 - c) Problem with receive IFL cable/connectors
 - d) Incorrect/incompatible 'Options' file loaded
- Corrective Action(s):
 2. Verify antenna pointing and repoint/repeak as necessary
 - a) Physically repoint/repeak VSAT antenna
 - b) Check for +18 VDC on "RX In" port on NetModem and/or LNB end of IFL receive cable. (Do not damage the power supply by shorting out the center conductor).
 - c) Verify/redo IFL cable connector(s). Ensure RX (not TX) cable is connected between "RX In" port on NetModem and LNB (roll cables)
 - d) Generate and apply known correct, or updated 'Options' file

NOTE: Always power down NetModem when connecting/disconnecting IFL

- Condition #4F, Rear Panel 'RX' LED:
 - ✦ Rear Panel 'RX' LED is illuminated but remains solid Yellow (see Condition #3B for Front Panel equivalent)
- Indication:
 - ✦ NetModem has not achieved TDM frame lock on outbound, or downstream carrier
- Possible Cause(s):
 3. Remote VSAT/LNB hardware and/or related parameters incorrect
 - a) Improperly installed LNB (waveguide port physically 90 degrees out from feed assembly)
 - b) Incorrect LNB installed; (higher stability PLL req'd for outbound =< 512 kbps)
 - c) Correct LNB selected, but 10 MHz reference not enabled (some PLLs required)
 - d) 'Receive Stability' parameter incorrect (used for calc of RX 'Acquisition Range')
- Corrective Action(s):
 3. Verify remote VSAT/LNB hardware and/or related configuration parameters
 - a) Examine/correct LNB physical attachment to feed assembly
 - b) Verify correct LNB requirement and replace, if necessary, DRO with PLL LNB
 - c) Enable 10 MHz reference frequency, if required, for PLL LNB (some models)
 - d) Enter correct LNB 'Stability' value in iBuilder, in MHz

- Condition #4F, Rear Panel 'RX' LED:
 - ✦ Rear Panel 'RX' LED is illuminated but remains solid Yellow (see Condition #3B for Front Panel equivalent)
- Indication:
 - ✦ NetModem has not achieved TDM frame lock on outbound, or downstream carrier
- Possible Cause(s):
 4. Defective/failed LNB
 5. Defective/failed NetModem demodulator
- Corrective Action(s):
 4. Remove & Replace LNB; Obtain RMA & return for repair/replacement
 5. R & R NetModem; Obtain RMA & return for repair/replacement

- Condition #5, Console Port:
 - ◆ Console Port cannot be accessed
- Indication:
 - ◆ Inability to issue console commands, observe boot-up sequence
- Possible Cause(s):
 1. Improper PC/laptop serial port configuration
 2. Incorrectly pinned DB9-RJ45 adapter or defective CAT5 cable, (physical connection)
 3. Defective/failed NetModem
- Corrective Action(s):
 1. Verify PC/laptop serial port settings are:
9600 baud, 8 data bits 1 stop bit, no parity or flow control
(4800 baud for 'Mobile' remotes)
 2. Replace adapter/CAT5 cable as required
 3. R & R NetModem; Obtain RMA and return for repair/replacement

- Condition #6A, LAN Port:
 - ◆ LAN Port cannot be accessed; is not functioning properly
- Indication:
 - ◆ NetModem LAN Port 'activity' LED is not illuminated
- Possible Cause(s):
 1. Incorrect or defective CAT5 cable, (physical connection)
 2. Defective/failed NetModem
- Corrective Action(s):
 1. Verify CAT5 crossover cable in use or replace defective cable
 2. R & R NetModem; Obtain RMA and return for repair/replacement

- Condition #6B, LAN Port:
 - ✦ LAN Port cannot be accessed; is not functioning properly
- Indication:
 - ✦ Unable to connect using iSite or otherwise access LAN Port
- Possible Cause(s):
 1. Improper configured PC/laptop Network Adapter
 2. Improperly configured NetModem LAN Port
 3. Defective/failed NetModem
- Corrective Action(s):
 1. Verify/Modify PC/laptop Network Adapter settings
 2. Verify/Modify NetModem LAN Port configuration (issue laninfo command at console prompt)
 3. R & R NetModem; Obtain RMA and return for repair/replacement

- Condition #7, Boot-up sequence:
 - ✦ Improper Boot-up sequence observed via the 'Console Port'
- Indication:
 - ✦ NetModem hangs or displays errors during boot-up sequence
- Possible Cause(s):
 1. Improperly loaded/corrupted Application, Images or Options files
 2. Incompatible software versions loaded
 3. NetModem 'power cycled' while boot-up sequence is running
 4. Defective/failed NetModem
- Corrective Action(s):
 1. Reload Application, Images or Options files as required
 2. Reload compatible Application, Images or Options files as required
 3. Power cycle and allow boot-up sequence to complete
(Stop boot process at 'Bootloader' prompt for reload if problem persists)
 4. R & R NetModem; Obtain RMA and return for repair/replacement