

**iDirect iNFINITI series™  
3000/5000/7000 Satellite Router  
and  
iDirect NetModem II Plus**



**i D I R E C T**

**Installation  
Quick Reference Guide**

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## Contents

|          |  |           |
|----------|--|-----------|
| <b>1</b> | <b>GETTING STARTED .....</b>   | <b>6</b>  |
| 1.1      | INTRODUCTION .....   | 6         |
| 1.2      | REQUIRED EQUIPMENT.....  | 6         |
| 1.3      | WHEN TO USE THIS GUIDE .....   | 6         |
| 1.4      | BEFORE YOU BEGIN .....   | 7         |
| <b>2</b> | <b>SETTING UP YOUR ANTENNA.....</b>  | <b>8</b>  |
| 2.1      | SELECT A SITE FOR THE ANTENNA .....  | 8         |
| 2.2      | ASSEMBLE THE ANTENNA .....   | 8         |
| 2.3      | ALIGN THE ANTENNA TOWARD THE SPACECRAFT.....                               | 8         |
| <b>3</b> | <b>POINTING THE ANTENNA USING A VOLTMETER ON A TRANSMIT ISL CABLE.....</b> | <b>10</b> |
| 3.1      | PREPARING THE IDU (INDOOR UNIT) AND ODU (OUTDOOR UNIT) FOR POINTING.....   | 10        |
| 3.2      | LOGGING IN TO YOUR NETMODEM.....   | 10        |
| 3.3      | CALCULATE POLARIZATION, AZIMUTH, AND ELEVATION .....                       | 12        |
| 3.4      | PERFORM PULSE WIDTH MODULATION (PWM) ANTENNA POINTING .....                | 13        |
| <b>4</b> | <b>FINE-TUNING ANTENNA POINTING AND CROSS POLARIZATION.....</b>            | <b>17</b> |
| 4.1      | SET UP THE NETMODEM (OR SATELLITE ROUTER) FOR CROSS POLARIZATION.....      | 17        |
| 4.2      | SET UP ISITE FOR CROSS POLARIZATION.....                                   | 17        |
| 4.3      | PREPARING FOR THE CROSS-POLARIZATION TEST .....                            | 18        |
| 4.4      | RUNNING THE CROSS-POLARIZATION TEST.....                                   | 18        |
| 4.4.1    | Adjusting Azimuth.....   | 19        |
| 4.4.2    | Adjusting Elevation .....  | 19        |
| 4.4.3    | Peaking the Polarization.....  | 19        |
| 4.4.4    | After the Cross Polarization Test.....                                     | 20        |
| <b>5</b> | <b>ESTABLISHING THE 1 DB COMPRESSION POINT .....</b>                       | <b>21</b> |
| <b>6</b> | <b>RECORDING THE GEO LOCATION - MOBILE SECURE REMOTES ONLY.....</b>        | <b>22</b> |
| 6.1      | SETTING THE NETMODEM'S GEO LOCATION .....                                  | 22        |
| 6.2      | VERIFYING THE NETMODEM'S GEO LOCATION .....                                | 22        |
| <b>7</b> | <b>BRINGING THE NETMODEM (OR SATELLITE ROUTER) INTO THE NETWORK .....</b>  | <b>23</b> |
| 7.1      | NETMODEM II PLUS FRONT PANEL LEDs.....                                     | 23        |
| 7.2      | SERIES 3000, 5000 AND 7000 FRONT PANEL LEDs.....                           | 24        |
| 7.3      | POST ACQUISITION ACTIVITIES .....  | 25        |
| 7.3.1    | Network Help Desk Duties.....  | 25        |

|   |           |
|---|-----------|
| 7.3.2 Remote Duties .....   | 26        |
| <b>APPENDIX A – INSTALLING REMOTE SOFTWARE ON YOUR LAPTOP.....</b>                                      | <b>28</b> |
| A.1 INSTALLING SOFTWARE DOWNLOADED OVER THE INTERNET .....  | 28        |
| A.2 INSTALLING SOFTWARE FROM THE iDIRECT NETMODEM CD:.....  | 29        |
| <b>APPENDIX B – ESTABLISHING A NETMODEM/SATELLITE ROUTER CONSOLE CONNECTION .....</b>                   | <b>30</b> |
| <b>APPENDIX C – GAINING IP CONNECTIVITY TO THE NETMODEM .....</b>                                       | <b>33</b> |
| <b>APPENDIX D - TERMINATION OF COAXIAL CABLE .....</b>  | <b>37</b> |
| <b>APPENDIX E – DISABLING THE PWM VOLTAGE THROUGH IBUILDER.....</b>                                     | <b>41</b> |
| <b>APPENDIX F – DOWNLOADING THE OPTIONS FILE IN ISITE .....</b>   | <b>43</b> |
| <b>APPENDIX G – DOWNLOADING PACKAGES IN ISITE.....</b>  | <b>45</b> |
| <b>APPENDIX H – DOWNLOADING THE APPLICATION AND FIRMWARE IMAGES (NETMODEM II AND II PLUS ONLY).....</b> | <b>48</b> |
| <b>APPENDIX I – LOADING IMAGES USING THE TFTP SERVER (INFINITI SERIES ONLY) .</b>                       | <b>52</b> |
| <b>APPENDIX J – GAINING IP CONNECTIVITY TO THE INFINITI SATELLITE ROUTER .....</b>                      | <b>53</b> |
| <b>APPENDIX K – POINTING THE ANTENNA THROUGH THE CONSOLE PORT .....</b>                                 | <b>56</b> |
| K.1 PERFORMING CONSOLE ANTENNA POINTING .....   | 56        |
| K.2 MODIFYING THE OPTIONS FILE TO DISABLE THE TRANSMIT PWM VOLTAGE.....                                 | 56        |
| K.3 STARTING THE CONSOLE POINTING .....   | 57        |
| K.4 USING THE DVM FOR CONSOLE POINTING.....   | 57        |
| K.5 CONSOLE POINTING.....   | 58        |

## Figures

|   |    |
|---|----|
| Figure 1 Antenna Elevation Offset.....                | 9  |
| Figure 2: Comparing Signal Strengths .....            | 14 |
| Figure 3: Locking into a Carrier Stream.....          | 15 |
| Figure 4 iSite Cross Polarization .....               | 17 |
| Figure 5 NetModem II Plus Front Panel .....           | 23 |
| Figure 6 : iDirect 3000 series Satellite Router ..... | 24 |
| Figure 7 : Sample Output of the Laninfo Command ..... | 33 |
| Figure 8 Dimensions A and B .....                     | 38 |

## Tables

|  |    |
|--|----|
| Table 1: NetModem II Plus Front Panel LED Status ..... | 23 |
| Table 2: iDirect 3000/5000/70000 LED Status .....      | 24 |
| Table 3: DB-9 to RJ-45 Adapter Pinouts .....           | 30 |
| Table 4 : Coax Trim Table .....                        | 38 |
| Table 5: Signal Strength Ranges.....                   | 58 |

## 1 Getting Started

### 1.1 Introduction

This Quick Reference Guide is intended to help the user quickly commission his iDirect NetModem II Plus or iDirect iNFINITI series™ 3000, 5000 or 7000 Satellite Router. Throughout this manual, we will refer to an iDirect NetModem II Plus as a “NetModem” and to an iDirect iNFINITI series™ 3000, 5000 or 7000 Satellite Router as simply a “Satellite Router”. Differences in the handling of the different typed of Satellite Routers will be noted.

### 1.2 Required Equipment

You will need the following equipment to successfully commission your iDirect NetModem or Satellite Router in the field:

1. A console cable with DB9 adapter ☐
2. A cross-over LAN cable ☐
3. Digital (or Analog) Voltmeter plus adaptor from voltmeter to IFL “F” connector ☐
4. A hand-held GPS unit or a map that shows your current geographic location coordinates ☐
5. A laptop with Windows XP or Windows 2000 Service Pack 3 loaded; (512 MB RAM recommended; 1 GHz processor or more; and at least 50 MB of free disk space) We recommend disabling the firewall for call functioning. ☐
6. iDirect iSite software installed on the laptop and the correct options file and remote application and firmware images downloaded to the laptop. ☐

Please refer to the appendices for additional information about installing iSite software on your laptop, establishing a console connection to your NetModem or Satellite Router, and gaining IP connectivity to the NetModem or iNFINITI series.

### 1.3 When to Use this Guide

Once you have successfully commissioned your iDirect NetModem II Plus or iNFINITI series Satellite Router at a specific location, you can reset it at any time without repeating the procedures in this manual again. It will perform its self-test startup sequence and acquire into the network. However, these procedures must be repeated every time you move it from one established location to another.

## 1.4 Before You Begin

This document assumes that the following prerequisite conditions already exist, or can be made to exist, prior to beginning the commissioning procedure.

Additional information intended to help you achieve these conditions is contained in the Appendices of this document.

1. An appropriate antenna location has been selected. See Section 2.1. ☐
2. If you are commissioning a NetModem, it is configured with the correct options file, and application and firmware images. See the Appendices. ☐
3. If you are commissioning a Satellite Router, it is configured with the correct Options file and Image Package. See the Appendices. ☐
4. IP connectivity is established between the NetModem or Satellite Router and the laptop running iSite. See Appendix C. ☐
5. To support iDirect iNFINITI series™ Satellite Routers, the Network must be operating on iDS version 6.0.1 or later. ☐

Do NOT proceed to commissioning your iDirect NetModem II Plus or iNFINITI series Satellite Router unless you have completed all of the above.

## 2 Setting Up your Antenna

### 2.1 Select a Site for the Antenna

It is important to select an appropriate site for your antenna, prior to assembling the antenna.

1. Select a level surface that is approximately 10 feet by 10 feet. ☐
2. Verify that nothing is blocking the line of site to the satellite in azimuth and elevation ☐
3. Verify the IFL cable can reach the NetModem or iNFINITI series from the antenna location (RG-6 IFL cable may be used up to a distance of 250 feet. If your run is longer, RG-11 must be used, up to a distance of 500 feet.) ☐
4. Verify that the IFL cable does not cross roads or heavy foot-traffic areas. ☐

### 2.2 Assemble the Antenna

Assemble the antenna using the supplied antenna assembly instructions. After installation, ensure that the following are true:

1. The antenna base is on a stable surface that will not shift during windstorms. ☐
2. Ballast is installed on the antenna base. ☐
3. The mast pipe is plumb.

### 2.3 Align the Antenna toward the Spacecraft

You are now ready to perform the initial alignment of your antenna.

1. Set the antenna's polarization to the approximate value provided by iSite's Look Angle Calculator. ☐
2. Set elevation to the value provided by iSite's Look Angle Calculator. ☐

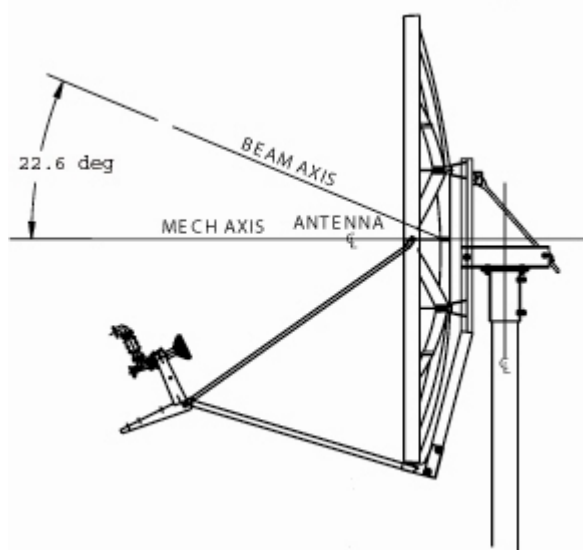
### *Magnetic Angle of Declination*

To take into consideration the magnetic angle of declination in your location and to ensure that the compass reading is correct, you must

1. Take a reading at the back of the antenna
2. So that you have something to point to, mark a reference point some distance ahead on the antenna.

Keep in mind that large metal objects can throw off compass readings.

### *Antenna Offset Angle*



The 1.8 meter antenna has 22.6° offset and a 1.2 meter antenna has 17° offset. For example, an elevation angle of 50° would be set as follows:

$$50^\circ - 22.6^\circ = 27.4^\circ$$

The back plane is perpendicular to the line of sight of the antenna plus 22.6°.

If the back plane is at 90°, the antenna elevation angle is at 22.6°.

In the example above the antenna would be elevated from 90° to 117.4° or depending on the type of inclinometer being used a reading of 62.6° to reach an elevation angle to 50°.

Figure 1 Antenna Elevation Offset

3. To prepare the antenna for pointing, move the antenna off the desired azimuth, by swinging the antenna 20° away in azimuth. This will enable you to get a clear sky reading and compare signal strengths during the antenna pointing procedure.



### 3 Pointing the Antenna Using a Voltmeter on a Transmit ISL Cable

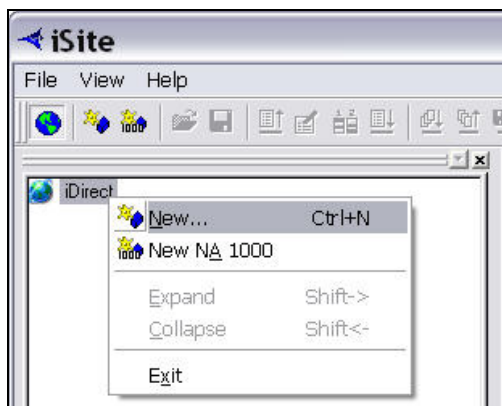
This section describes pointing the antenna using Pulse Width Modulation and iSite. Pointing through the Console Port, as an alternative pointing method is described in Appendix K of this document.

#### 3.1 Preparing the IDU (Indoor Unit) and ODU (Outdoor Unit) for Pointing

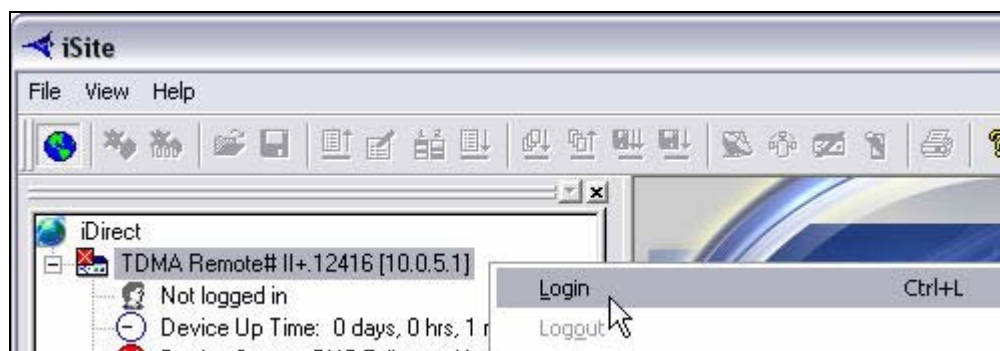
1. If your NetModem (or Satellite Router) is powered on, power it off at this time. ☐
2. Ensure that the Receive IFL cable is connected from the LNB to the IDU. ☐
3. Ensure that the Transmit IFL cable is connected to the IDU. ☐
4. Disconnect the Transmit IFL cable from the BUC and connect it to the Digital Volt Meter ☐

#### 3.2 Logging in to Your NetModem

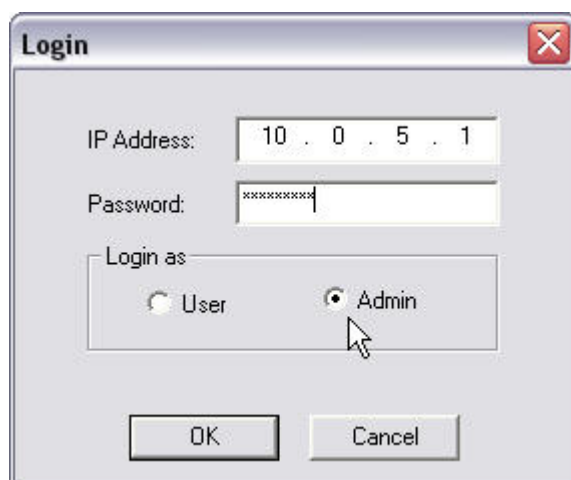
1. Power on your NetModem (or Satellite Router) and make sure that you have IP connectivity to it from your laptop computer. ☐
2. Launch the iSite application on your laptop. ☐
3. If the remote is on the same LAN, it will be auto-detected. However, if it is on a different LAN, you must right-click on the globe in the iSite Tree View, and then select **New** to create a new remote. ☐



4. Select your remote, right-click on the remote, and then select **Login**. ☐



5. In Login, enter the case-sensitive, default password, *iDirect* and the IP address of the NetModem (or Satellite Router). In this example 10.0.5.1. □



6. Select Admin, and then click **OK**. □



**NOTE**

For instructions on determining the IP address of your Netmodem or Satellite Router, please refer to the appendices.

A new password may have been assigned at your Network Operator's Help Desk. If "iDirect" doesn't work, obtain the correct password by contacting the Network Help Desk.



**NOTE**

If you do not have admin privileges, log in as User.



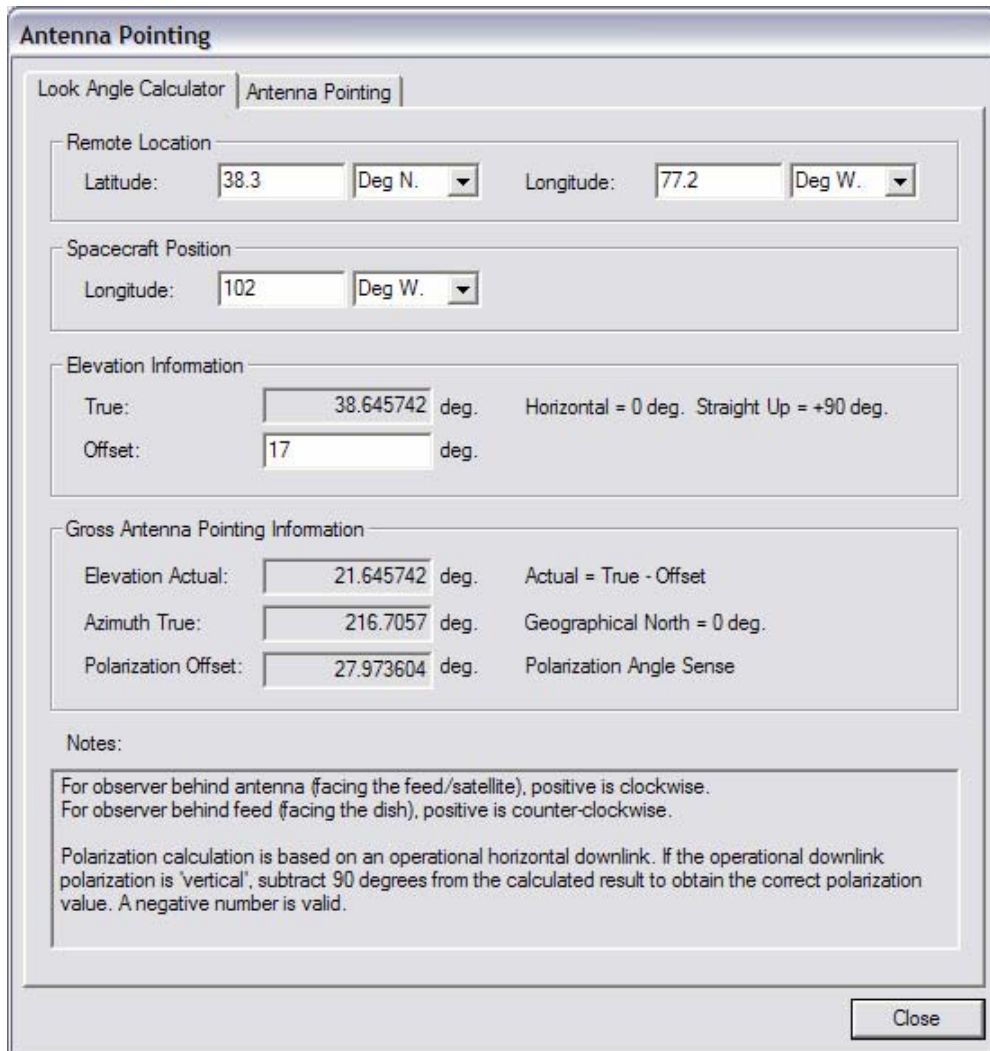
**NOTE**

You can only change the password at the remote unit, if the original password is known.

### 3.3 Calculate Polarization, Azimuth, and Elevation

Using iSite, calculate the polarization, azimuth, and elevation appropriate for your current location.

1. In the iSite Tree View, select the remote, right-click the remote, select **Align Antenna**, and then click **Antenna Pointing**. ☐
2. On the **Look Angle Calculator** tab, Longitude parameters should already be entered for you in Spacecraft Position. If they are not, enter the appropriate longitude values for the satellite that you are using. ☐



The **Antenna Pointing** dialog box is shown with the **Look Angle Calculator** tab selected. It contains the following sections:

- Remote Location:** Latitude: 38.3 Deg N., Longitude: 77.2 Deg W.
- Spacecraft Position:** Longitude: 102 Deg W.
- Elevation Information:** True: 38.645742 deg. Horizontal = 0 deg. Straight Up = +90 deg. Offset: 17 deg.
- Gross Antenna Pointing Information:**
  - Elevation Actual: 21.645742 deg. Actual = True - Offset
  - Azimuth True: 216.7057 deg. Geographical North = 0 deg.
  - Polarization Offset: 27.973604 deg. Polarization Angle Sense
- Notes:**

For observer behind antenna (facing the feed/satellite), positive is clockwise.  
For observer behind feed (facing the dish), positive is counter-clockwise.

Polarization calculation is based on an operational horizontal downlink. If the operational downlink polarization is 'vertical', subtract 90 degrees from the calculated result to obtain the correct polarization value. A negative number is valid.

A **Close** button is located at the bottom right.

If you are implementing a mobile remote, the white fields will all be blank. You must enter the following information.

1. In **Remote Location**, enter the appropriate latitude and longitude values for your current geographic location. In mobile remotes, this can be determined by your GPS unit. ☐
2. In **Spacecraft Position**, enter the appropriate longitude values for the satellite that you are using ☐
3. In **Elevation Information**, enter the appropriate Offset value for your antenna. ☐

The offset for a 1.8 meter antenna is 22.6°.

The offset for a 1.2 meter antenna is 17°.

When all of the information is entered, iSite automatically calculates your polarization offset, azimuth, and elevation values.



**NOTE**

**Write these values down, or leave this screen open on your laptop. You will need these values later to perform the initial pointing of your antenna.**

### 3.4 Perform Pulse Width Modulation (PWM) Antenna Pointing

Next, you must fine-tune the antenna pointing. You will attempt to lock onto the downstream carrier for your network, by sweeping the antenna in azimuth, looking for a value in the range of 12 to 24 volts DC. Readings in this range indicate that you have successfully locked into the correct satellite.

| <i>Signal Strength Ranges</i> |   |
|-------------------------------|---|
| volts DC                      | Antenna Status  |
| 0 – 2:                        | Not in pointing mode, hardware problem, or off satellite      |
| 2 – 10                        | Detecting RF energy, but not locked on the downstream carrier |
| 12 – 24                       | Locked on the downstream carrier                              |



**NOTE**

**You can *only* get a reading of  $\geq 12$  volts when you are locked onto the correct spacecraft or network.**

If you are not already connected to the NetModem (or Satellite Router), power it on, launch iSite, and connect to the NetModem following the instructions earlier in this section

4. In the iSite Tree View, right-click the remote, select **Align Antenna**, and then click **Antenna Pointing**. ☐
5. Slowly sweep the reflector in azimuth until a signal of the appropriate strength is found. ☐

The signal reading on the pointing graph will turn red, then yellow, and finally, completely green, as you sweep the reflector to lock onto the downstream carrier.

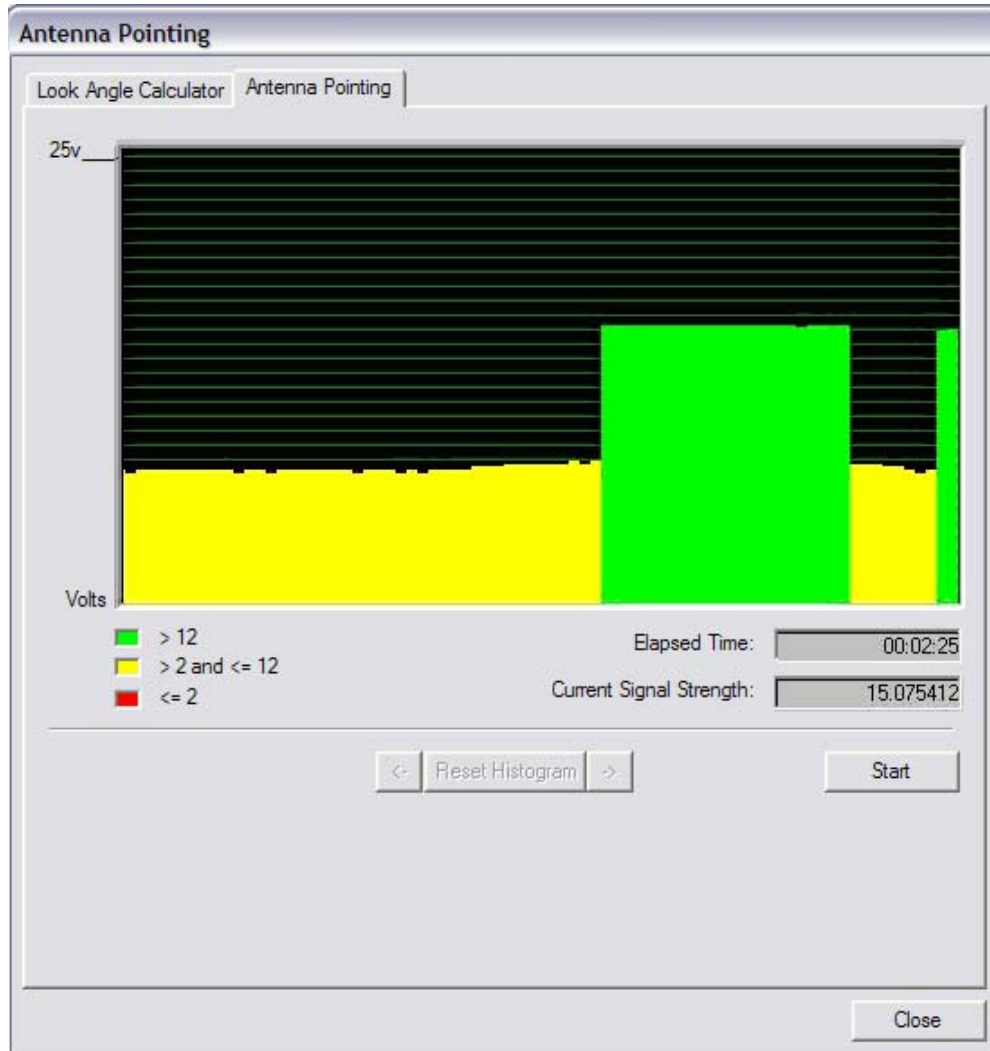


Figure 2: Comparing Signal Strengths

When you have achieved strong signal strength on the correct satellite, you should see:

1. a green reading on the Antenna Pointing graph ☐
2. a reading within the desired range in the **Current Signal Strength** box ☐
3. a signal within the correct range on the digital voltmeter (DVM) => 12 volts ☐



**NOTE**

**You will not get a correct reading ((DVM)  $\geq$  12 volts) from the wrong spacecraft or network.**

4. If the desired signal is not found, increase or decrease elevation setting by 2° increments and repeat the azimuth sweep, until the correct signal is found. ☐

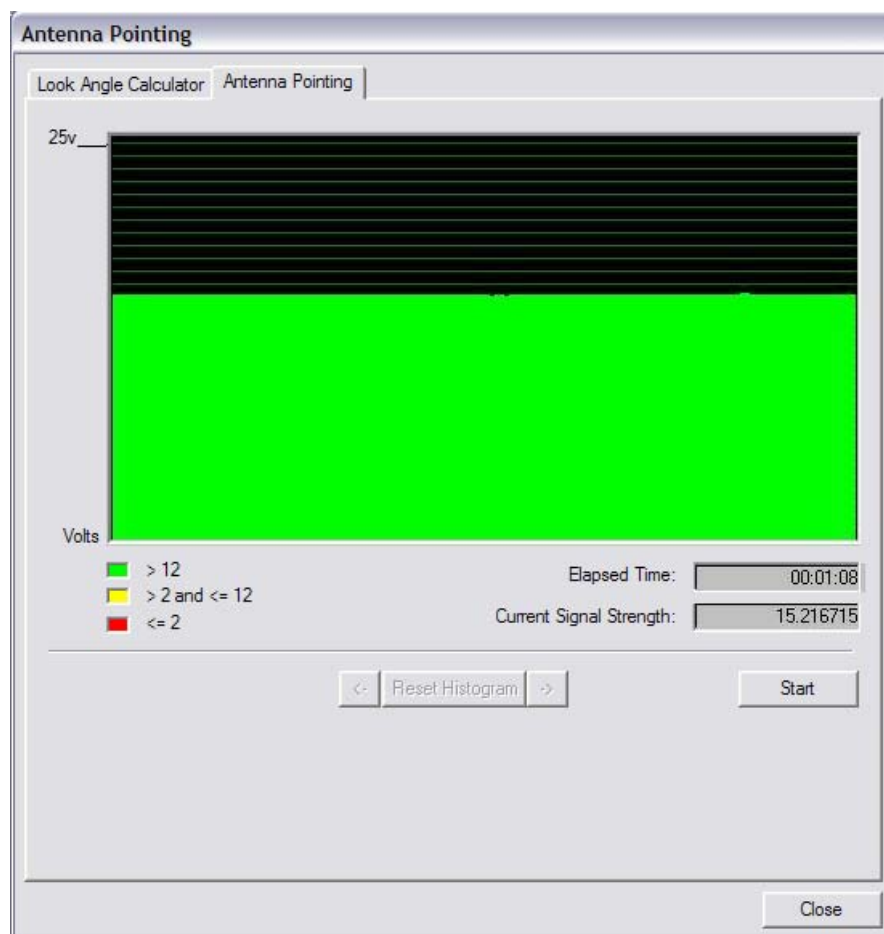


Figure 3: Locking into a Carrier Stream

When you have found the desired signal:

5. Tighten down the 4 bolts on the Yoke Cap that secure the Yoke Cap to the Mast Pipe. ☐
6. Ensure that the Top Plate locking bolts are snug to allow azimuth movement ☐
7. Adjust the elevation until maximum dc voltage is obtained ☐

The rest of the azimuth adjustments will be made with the azimuth adjustment screws.

8. Fine tune azimuth until maximum dc voltage is obtained ☐
9. Make sure azimuth and elevation are locked down ☐
10. Adjust polarization until maximum dc voltage is obtained ☐
11. Write down the final antenna pointing voltage reading and give the reading to the operator at the Network Help Desk ☐
12. In iSite, click **Stop** to exit the modem's antenna pointing mode ☐
13. Power down the NetModem (or Satellite Router). ☐



**CAUTION**

**You *must* power down the NetModem (or Satellite Router) before continuing to the next section, Fine-tuning Antenna Pointing and Cross Polarization.**

## 4 Fine-tuning Antenna Pointing and Cross Polarization

Complete fine-tuning the antenna pointing and cross polarization from within the iSite GUI.

### 4.1 Set up the NetModem (or Satellite Router) for Cross Polarization

1. Disable the power to the NetModem (or Satellite Router) to set it up for cross polarization.
2. Disconnect the receive IFL cable from the NetModem (or Satellite Router). ☐
3. Disconnect the transmit IFL cable from the DVM and connect it to the BUC. ☐

### 4.2 Set up iSite for Cross Polarization

The remote portion of the cross polarization test is conducted from the iSite GUI.

1. Power on the NetModem (or Satellite Router) and ensure that you have IP connectivity to it from your laptop. ☐
2. Launch iSite and connect to the NetModem (or Satellite Router) using its IP address ☐
3. Log in as Admin with a valid password. ☐
4. In the iSite main menu, select **Configure**, select **Align Antenna**, and then click **Cross Polarization**. ☐

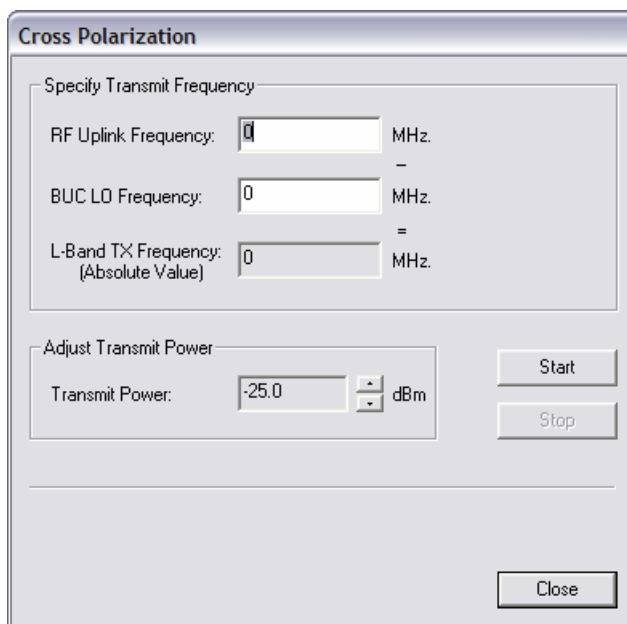


Figure 4 iSite Cross Polarization

### 4.3 Preparing for the Cross-Polarization Test

1. While still in the iSite GUI, call the Network Help Desk. The operator will establish a conference call between you, the help desk, and the satellite provider. ☐
2. Provide the final antenna pointing voltage reading to the operator at the Network Help Desk; he will record the value for their records. ☐
3. Provide the final antenna pointing voltage reading to the operator at the Network Help Desk; he will record the value for their records. ☐
4. Obtain the test frequency from the satellite provider and enter the test frequency into the **RF Uplink Frequency** box. ☐

The BUC LO frequency is read from the options file on your NetModem. Using these values, iSite automatically calculates the L-Band TX frequency.

5. Verify the L-Band TX frequency with the Network Help Desk operator. ☐

The BUC LO frequency will typically show a value of 13050 MHz for KU-Band and 4900 for C-Band. This value is read from the options file on your NetModem. Using the RF Uplink and BUC LO frequencies, iSite automatically generates an L-Band frequency for the NetModem.

### 4.4 Running the Cross-Polarization Test

1. When instructed by the satellite provider, click the **Start** button. This will program the NetModem with the calculated L-Band frequency. ☐



#### CAUTION

**Do not click the Start button until instructed to do so by the satellite provider. When you do click Start, your NetModem will start transmitting a Continuous Wave Carrier, or "CW."**



#### CAUTION

**You may receive an error message after clicking the Start button. If this happens, click the Stop button and try again.**

2. If the Satellite Provider asks you to adjust the NetModem's (or Satellite Router's) transmit power, in the **Transmit Power** box, select a power value as appropriate. ☐

The satellite provider will then ask to have the azimuth, polarization, and/or elevation adjusted. The polarization is usually adjusted first. If the correct isolation cannot be achieved, then the operator may ask to adjust the azimuth and/or elevation.

#### 4.4.1 Adjusting Azimuth

1. Adjust the azimuth and the elevation, by making  $\frac{1}{4}$  turns of the adjustment nut, and then waiting for the satellite provider to measure the cross polarization reading. The provider will then instruct you to continue adjusting in the same direction or to reverse the direction. ☐
2. Adjust the azimuth by loosening the four bolts on top of the canister as little and as evenly between the four as possible. ☐

Loosening the four bolts too much, or adjusting some of them more than others, will throw the elevation off more than necessary.

3. After the azimuth has been peaked, make certain that the four bolts and the fine adjustment rod are completely tightened, so that the elevation is not affected later, after being peaked. ☐

#### 4.4.2 Adjusting Elevation

The elevation adjustment is performed in the same manner as the azimuth adjustment.

1. Using the elevation rod/nut, adjust the elevation. ☐
2. Once the elevation is peaked, make certain that the elevation rod and nuts are completely tightened. ☐

#### 4.4.3 Peaking the Polarization

The polarization of the feed will now be peaked.

1. Loosen the two screws at the feed. ☐
2. Loosen the hose clamp on the back end of the BUC just enough that entire assembly (feed, BUC, and LNB) will rotate freely. ☐
3. At the direction of the satellite provider, move the feed in one direction in approximately  $1/2^\circ$  increments, or as little as possible. ☐
4. Wait for the satellite provider to take a measurement. The satellite provider may tell you to continue moving the feed in the same direction, or to reverse the direction. Continue until the satellite provider tells you that the polarization is peaked. ☐
5. Lock down the two screws and the hose clamp to secure the outdoor unit. ☐

At this point, the canister bolts on the pole should be completely tightened.

#### 4.4.4 After the Cross Polarization Test

1. Wait for the satellite provider to verify that the cross polarization is still good after everything is tightened. ☐
2. Confirm that the network operator at the help desk has recorded the cross polarization results ☐
3. This completes the satellite provider's portion of the call. Disconnect the satellite provider from the call, but do not shut down iSite or stop the cross polarization test yet. ☐

## 5 Establishing the 1 dB Compression Point

The 1 dB Compression Point test is performed with the same CW setup used during the previous cross polarization test. This test establishes the point at which the NetModem's (or Satellite Router's) transmit power saturates the BUC.

1. While still in iSite Cross Polarization dialog box and the Network Operator is watching the CW, increase the transmit power of the carrier in the Adjust Transmit Power drop-down box by 1 dBm increments ☐



### CAUTION

The operator should see the CW increase in power by approximately 1 dB. If the power does not increase, then the BUC may already be saturated. Although this scenario is unusual, it can occur.

2. If power does not increase, decrease the power by 1 dBm until the operator sees the CW decrease by 1 dB. ☐



### NOTE

The last point at which the CW changes by 1 dB is the 1 dB compression point.

3. If power does not increase, decrease the power by 1 dBm until the operator sees the CW decrease by 1 dB. ☐
4. Record the TX power value. This will be used as the maximum power for this remote in the NMS. ☐
5. Click the **Stop** button to turn off the CW carrier and exit the iSite application. ☐

The 1 dB compression point has now been established. Do not power off the NetModem (or Satellite Router) yet.

## 6 Recording the Geo Location - Mobile Secure Remotes Only



### NOTE

This section describes a specific operational scenario for configuring remote NetModems and Satellite Routers as both Mobile and Secure. If your remotes do not fall into this category, skip this section.

If for security reasons the NetModem's (or Satellite Router's) geographic location coordinates have not been recorded by the Network Help Desk, you must enter these coordinates into the NetModem (or Satellite router) manually, before the modem will acquire into the network.



### CAUTION

It is critical that the geographic coordinates accurately reflect your current geographic location. If the values are incorrect, your NetModem (or Satellite Router) will not be acquired into the network.

### 6.1 Setting the NetModem's Geo Location

You will enter the lat/long coordinates from the NetModem (or Satellite Router) console via a special command.

1. Open a HyperTerminal session on the NetModem's (or Satellite Router's) console. Alternatively, you may telnet to the NetModem (or Satellite Router). ☐
2. At the prompt, type the following command ☐  
`latlong <your lat> [N|S] <your long> [E|W]`

#### *Format of the latlong Command*

The format of the latlong command is: `latlong <lat> [N/S] <long> [E/W]`

When entering this command, replace the <lat> string with your current latitude in decimal notation, followed by N for north or S for south. Replace the <long> string with your current longitude in decimal notation, followed by E for east or W for west.

### 6.2 Verifying the NetModem's Geo Location

You should verify that you have entered the correct geographic location coordinates.

1. Type "**extras show**" at the console prompt to display the current settings for latitude and longitude. ☐
2. Reset the NetModem (or Satellite Router). ☐

## 7 Bringing the NetModem (or Satellite Router) into the Network

After you have entered the correct geographic coordinates for your current location and reset the NetModem, the NetModem should perform its power-up self-test and acquire into the network. Observe the LEDs on the front of the NetModem while the network powers on and goes through the acquisition process. You will see various combinations of front-panel lights indicating the current status of the NetModem.

The first time that the NetModem is acquired into the network, complete the post-acquisition steps in sections 7.3 below.

If your NetModem does not acquire into the network, contact the Network Help Desk for assistance.

### 7.1 NetModem II Plus Front Panel LEDs

Various combinations of the power and network LEDs on the front panel of the NetModem II Plus will indicate the different states of the iDirect NetModem.

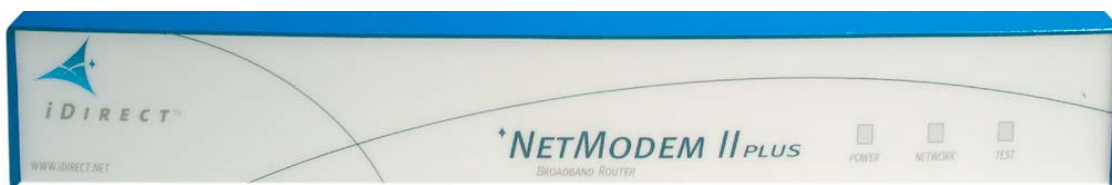


Figure 5 NetModem II Plus Front Panel

Table 1: NetModem II Plus Front Panel LED Status

| NetModem II Plus Front Panel Status Combinations |                 |   |
|--|-----------------|---|
| POWER  | NETWORK         | Indicated Unit Status                                 |
| Dark   | Dark            | Unit is Powered OFF                                   |
| Solid Green                                      | Dark            | Unit is booting Up.                                   |
| Solid Green                                      | Flashing Yellow | Unit is attempting to lock on the downstream carrier. |
| Solid Green                                      | Solid Yellow    | Unit is locked on the downstream carrier.             |
| Solid Green                                      | Flashing Green  | Unit is transmitting and attempting to acquire.       |
| Solid Green                                      | Solid Green     | Unit is acquired into the network.                    |

The Test LED is normally off. If the test LED is flashing yellow, then self test has detected a hardware fault or boot up software loading error.

## 7.2 Series 3000, 5000 and 7000 Front Panel LEDs

Various combinations of the LEDs on the front panel of the 3000/5000/7000 series remote will indicate the different states of your iDirect NetModem.



Figure 6 : iDirect 3000 series Satellite Router

Table 2: iDirect 3000/5000/70000 LED Status

| LED Label     | LED Color       | Indicated Unit Status   |
|---------------|-----------------|---|
| <b>PWR</b>    | OFF             | Indicates that the IDU is powered Off or there is a Power Supply problem.   |
|               | GREEN           | The IDU is powered On. The boot loader has started.   |
| <b>NET</b>    | GREEN           | Indicates that the remotes have been acquired into the network.   |
|               | FLASHING GREEN  | Indicates that the elements are in network acquisition.   |
|               | SOLID YELLOW    | Indicates that the downstream SCPC is locked.   |
|               | FLASHING YELLOW | Indicates that the downstream SCPC is not locked.   |
| <b>STATUS</b> | GREEN           | IDU is functioning properly. The DRAM test is successful.   |
|               | FLASHING GREEN  | Indicates that the unit is booting. The DRAM test is in progress.   |
|               | RED             | Indicates a serious fault or failure in either software, hardware or configuration. May indicate that the DRAM test failed. |
| <b>TX</b>     | GREEN           | Indicates that the IDU's transmitter is enabled.  |
|               | YELLOW          | Indicates that the IDU's transmitter is disabled.   |

| LED Label | LED Color | Indicated Unit Status  |
|-----------|-----------|--|
| RX        | GREEN     | Indicates that the IDU transmitter is successfully locked to the downstream. |
|           | YELLOW    | Indicates that the IDU is not locked to the downstream carrier.              |

### 7.3 Post Acquisition Activities

To guarantee trouble-free operation of your NetModem (or Satellite Router), certain activities should be completed after the NetModem (or Satellite Router) comes into the network for the first time. Some activities will be performed at the Network Help Desk. Other activities will be performed by you.

#### 7.3.1 Network Help Desk Duties

After commissioning the NetModem (or Satellite Router) for the first time and after it has acquired into the network, the Network Help Desk will take control of the NetModem (or Satellite Router) to perform the following tasks.



**CAUTION** *Do not power down the NetModem during this time.*

1. The Network Help Desk will make adjustments to the NetModem's (or Satellite Router's) configuration to set the initial and maximum transmit power settings. Initial transmit power is typically set to 1 to 2 dB above nominal transmit power in clear sky conditions. The maximum transmit power is set for the 1 dB compression point. ☐



**CAUTION** **Setting the initial power too high above the normal operating levels can cause problems with the remote acquiring into the network or cause problems on the network.**

2. The Network Help Desk will download the updated configuration to the NetModem (or Satellite Router) and issue a reset. ☐
3. The Network Help Desk will also record levels of the remote NetModem (or Satellite Router) as a baseline for troubleshooting. ☐

4. The Network Help Desk will ensure that the software and firmware on the NetModem (or Satellite Router) are at the correct revision level. If necessary they will upgrade the software on the NetModem and issue a reset. ☐

The Network Help Desk will let you know when they are finished.

### 7.3.2 Remote Duties

After the Network Help Desk has made any necessary adjustments to the NetModem's (or Satellite Router's) configuration, you should record some baseline readings for local reference, in case the antenna is moved, or some other service issue arises.

Use the following procedure to record the baseline readings.

1. Open a HyperTerminal session to the NetModem's (or Satellite Router's) console. Alternatively, you may telnet to it. ☐



2. Record the receive SNR of the NetModem (or Satellite Router). (> 10.0 dB Clear Sky Conditions). ☐
3. The transmit power of the NetModem (or Satellite Router). ☐
4. The receive composite power into the NetModem (or Satellite Router). (-60 to -5 dBm). ☐
5. The temperature reading in Celsius. ☐

#### *Example: Remote Status Message*

```
RemoteStatus: t:000017435715 SNR=15.60 RxPower=-33.79
dBm TxPower=-15.00 dBm DigitalRxPower=21.07 Temp=49.1
TDM_Lost=0 FllDac = 1812 LAN Port: 10 Mbps Half Duplex
(AutoNegotiation: None)
```

These readings should be checked periodically to ensure that the service is not degrading. These readings will be monitored from the Network Help Desk. Heavy weather or sandstorms can cause these levels to change. During heavy weather or sandstorms the levels should be monitored because it is important that they return to the original readings once the weather or sandstorm has cleared.

## Appendix A – Installing Remote Software on Your Laptop

These instructions will guide you through the process of installing iSite software and remote images onto your laptop computer.

### Components of the Remote-Modem Images Software

- The NMS iSite program and support files
- The NetModem II Remote-Modem application and image files
- The NetModem II Plus Remote-Modem application and image files
- The iNFINITI Remote-Modem application and image files

A directory structure similar to the following will be created when the files are uncompressed:

```
NetModem-<6_0_X>/  
    iSite/  
    Images  
        Remote_2plus/  
        Remote_iNFINITI  
        Remote_NM2/
```

The steps for installing the software are dependent upon whether you downloaded the software via the Internet, or received a copy on a CD.

### A.1 Installing Software Downloaded Over the Internet

iSite software is usually distributed in a ZIP file. Once you have the ZIP file you can extract the contents using one of the several Windows tools that recognize the .zip format, such as Info-Zip (at <http://www.info-zip.org/>), WinZip (at <http://www.winzip.com/>), or PKZIP (at <http://www.pkware.com/>).

After receiving the compressed archive file remote-<version>.zip from iDirect, copy it to a directory where you can uncompress the files.



#### NOTE

**<version> is the NetModem version number in the form '6\_X\_X'.**

1. Uncompress the files by using unzip, WinZip, PKZIP, or another utility that understands the .zip format. ☐
2. If desired, create a shortcut on the desktop or Windows taskbar to *iSite.exe* (located in the *iSite* folder). ☐

## A.2 Installing software from the iDirect NetModem CD:

1. Put the iDirect NetModem CD into the CD drive, and locate the file **remote-*<version>*.zip** in the directory *NetModem-*<version>** on the CD. ☐



### NOTE

***<version>* is the NetModem version number in the form '6\_X\_X'.**

2. Uncompress the files in the .zip file to a folder on your hard drive by using unzip, WinZip, PKZIP, or another utility that understands the .zip format.) ☐
3. Create a shortcut to iSite.exe (in the iSite folder) on the desktop or Windows taskbar, if desired. ☐

## Appendix B – Establishing a NetModem/Satellite Router Console Connection

You can use any terminal emulator to connect to the NetModem console. The HyperTerm application comes pre-installed on all Windows 2000 and XP machines.

In addition to the NetModem Console Table cable, you will need an RJ-45 to DB-9 adapter.

The pin outs for a NetModem console cable are as follows:

Table 3: DB-9 to RJ-45 Adapter Pinouts

| DB-9 to RJ-45 Adapter Pin-Out |            |      |
|-------------------------------|------------|------|
| RJ-45                         | Color Code | DB-9 |
| 1                             | Blue       | 8    |
| 2                             | Orange     | 6    |
| 3                             | Black      | 2    |
| 4                             | Red        | 5    |
| 5                             | Green      | N.C. |
| 6                             | Yellow     | 3    |
| 7                             | Brown      | 4    |
| 8                             | White/Gray | 7    |

Complete the following procedure to set up and save a Hyper Terminal session:

1. Connect the RJ-45 to DB-9 adapter to the COM1 port of your laptop. ☐
2. Plug the other end of the cable into the Console port of the iDirect NetModem or Satellite Router. ☐
3. In the Windows Start menu, select Programs, select Accessories, select Communications, and then select HyperTerminal. ☐

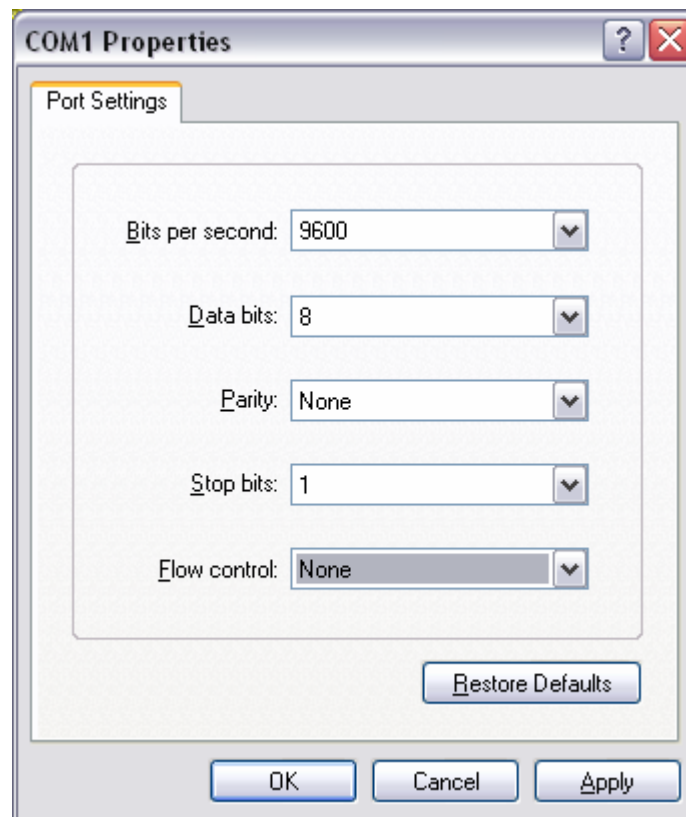
4. You may have to answer some questions about your area code and provide dialing information. (The information that you enter here isn't important, but you must enter something.) ☐
5. In the **Connection Description** dialog box, enter a name for the connection, such as "NetModem Console." (You may also select an icon other than the default icon.) ☐



6. Select COM1 in the **Connect To** dialog box. ☐



7. Using the default variables in the COM1 Properties dialog box below, enter the session properties. Be certain that your settings exactly match these settings. ☐



**NOTE**

If you lose contact with the remote and if this is a mobile remote, then the console port settings will change during the boot process to 4800 bps, while all other settings will remain the same. In order to reestablish communication with the NetModem console port, you must change your serial settings to match those in this dialog box.

8. Click **Enter** a few times to see if you can generate a response from the NetModem. If you are successful, you will see the NetModem console prompt. If you are unable to generate a response from the NetModem, reexamine your settings to be certain that they are correct. ☐
9. When you close the console session, you will be prompted to save the session. Click **Yes** to save this session for re-use later ☐

## Appendix C – Gaining IP Connectivity to the NetModem

### C.1 Mandatory Conditions

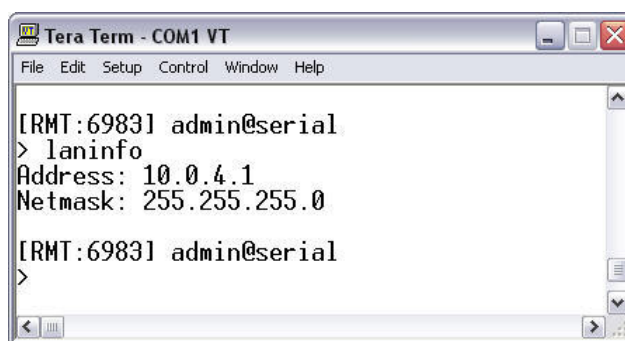
Establishing IP connectivity to the NetModem from your laptop computer requires the following conditions to exist:

1. Your computer must be connected directly to the NetModem via a LAN crossover cable, or indirectly via an external switch or router. ☐
2. Your computer's IP address must be in the range of addresses specified by the NetModem's IP address and subnet mask ☐
3. Your subnet mask must match the NetModem's subnet mask. ☐

### C.2 Determining the NetModem's IP Address and Subnet Mask

The easiest way to determine the NetModem's IP address is to establish a console session and type the appropriate console command.

1. Open a console session to the NetModem. (See Appendix B for details.) ☐
2. At the NetModem prompt, enter the command *laninfo*. Sample output is shown below. ☐



```
Tera Term - COM1 VT
File Edit Setup Control Window Help

[RTT:6983] admin@serial
> laninfo
Address: 10.0.4.1
Netmask: 255.255.255.0

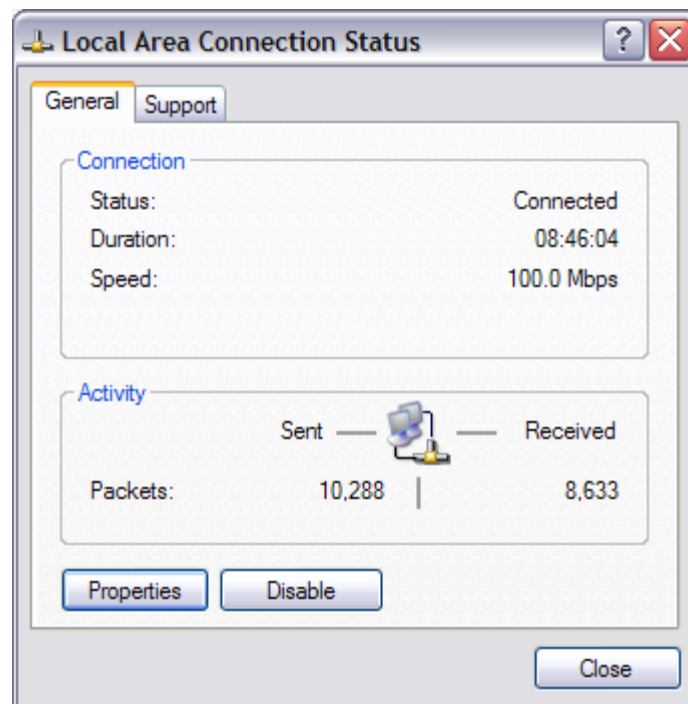
[RTT:6983] admin@serial
>
```

Figure 7 : Sample Output of the Laninfo Command

### C.3 Modifying Your Laptop's IP Address and Subnet Mask

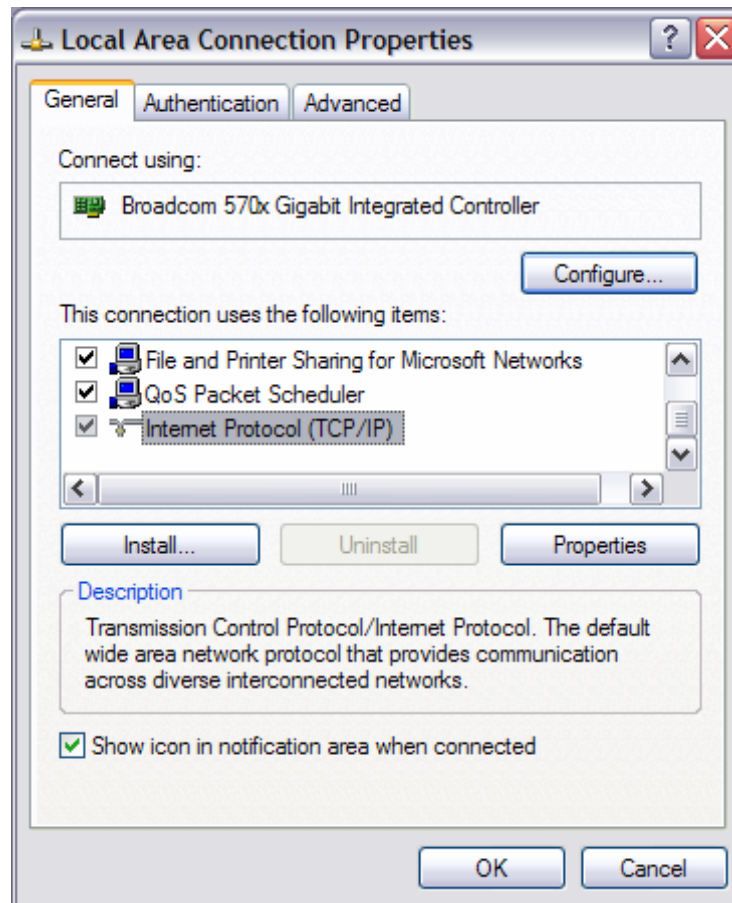
To modify your laptop's IP address, you must bring up the Network Connections window, and then launch TCP properties.

1. From your computer's Control Panel, double-click Network Connections. This screen's appearance is different in Windows 2000 and Windows XP. ☐
2. Launch the status dialog box for your Local Area Connection object by double-clicking on the icon. The dialog box should look similar to the following. ☐

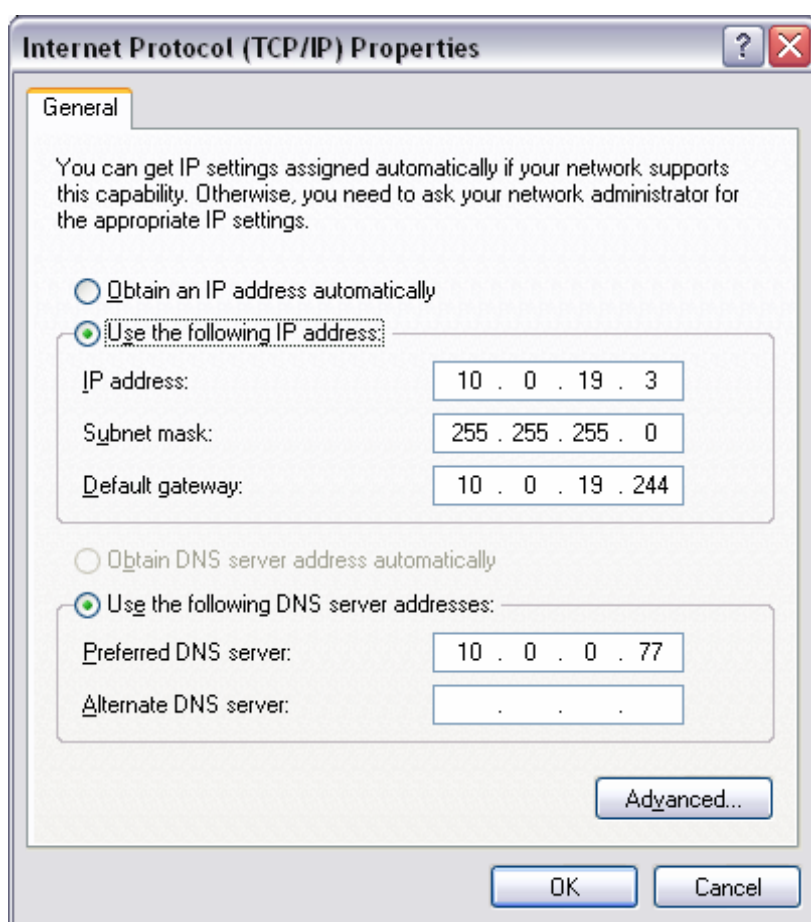


3. Click **Properties**. ☐

4. In the **Local Area Connection Properties** dialog box, select the **Internet Protocol** box. ☐
5. Click the **Properties** button. ☐



6. In the **Internet Protocol (TCP/IP) Properties** dialog box, select **Use the following IP address**, and then enter an IP address that is inside the range specified by the NetModem's IP address and subnet mask. ☐
7. Enter the same subnet mask that you retrieved from the NetModem using the "laninfo" command. For the purposes of a local connection, you do not need to specify DNS server addresses. ☐
8. Click **OK** to save your changes. ☐



You should now be able to connect to the NetModem using either the "telnet" command, or the iSite GUI.

Once you have established IP connectivity to the NetModem, you can start a NetModem console session either by using telnet or using the HyperTerminal connection discussed in Appendix B.

## Appendix D - Termination of Coaxial Cable

### D.1 Recommended Tools



Paladin Tools: LC-CST-CATV-'F' 1257



CablePrep: RG-6 HCT-775 Crimp Hex Size 0.384 inch  
RG-11 HCT-116 Crimp Hex Size 0.472 inch



Coax Cutter: Benner-Bawman TMT-BN-76

### D.2 Terminating a Type-F Connector onto a RG-6 or RG-11 cable

1. Cut off each end of the coax squarely with the proper cable cutter. ☐



#### CAUTION:

If other cutter type used, ensure the center conductor is straight and cylindrical without any burrs. Failure to do so will result in damage to the NetModem, BUC, and/or LNB connector.

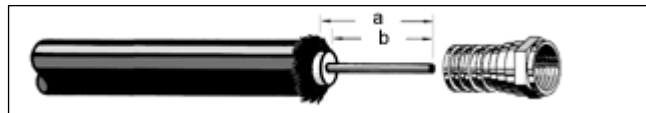


Figure 8 Dimensions A and B

Table 4 : Coax Trim Table

| Coax Trim Dimensions |             |             |                 |
|----------------------|-------------|-------------|-----------------|
|                      | a inch (mm) | b inch (mm) | Braid Fold Back |
| <b>RG-6</b>          | 1/8 (9.5)   | 1/4 (6.4)   | 1/4 (6.4)       |
| <b>RG-11</b>         | 7/16 (10.3) | 5/16 (7.9)  | 7/16 (10.3)     |

2. Remove jacket material and foam insulation per dimension “a” in the trim table as shown. For RG-6, use a 2-step Coax Stripper, such as the LC-CST 1257 from Paladin Tools.



**Step 3:** Remove any foil in the braid. Fold the braid back over the jacket and trim the braid length per the “Braid Fold Back” in the Coax Trim Dimension Table.

**Step 4:** Remove foil and cut dielectric to length “b” (if using a coax stripper, then skip this step). Be careful not to cut into the copper of the center conductor. Remove any dielectric residue.

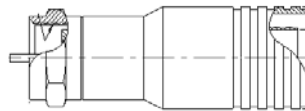
**Step 5:** If the conductive foil is burred, then smooth out the burr so that the edge (area where the dielectric material was removed) is smooth and provides a lead-in for the connector mandrel.

**Step 6:** Install connector mandrel over foil and underneath the braid.



**NOTE**

Since the RG-11 connector has built-in center pin, ensure the coax center pin makes contact to the internal seizing pin of the connector. Refer to picture below.

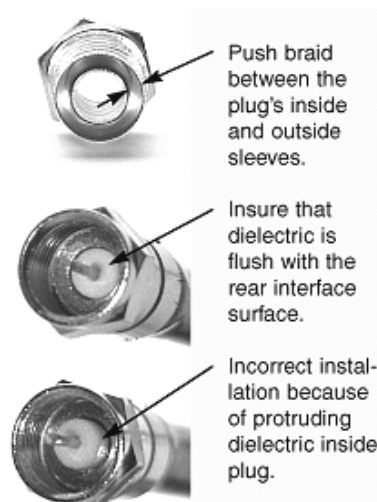


**RG-11 Connector  
with Center Pin**

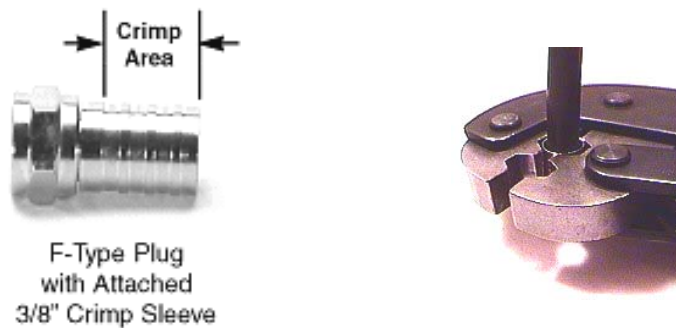


**NOTE**

For RG-6, the white color inner dielectric insulation should be flush even with the inner rear surface of the connector. Refer to the picture below for RG-6 termination.



**Step 7:** Crimp the connector with the proper crimp tool such as CablePrep HCT-775 for RG-6 or HCT-116 for RG-11.



**Step 8:** Inspect and ensure that the copper center conductor only protrudes 1/8 inch (3.2mm) nominally beyond the rim of the F-connector. Trim if necessary.



**NOTE**

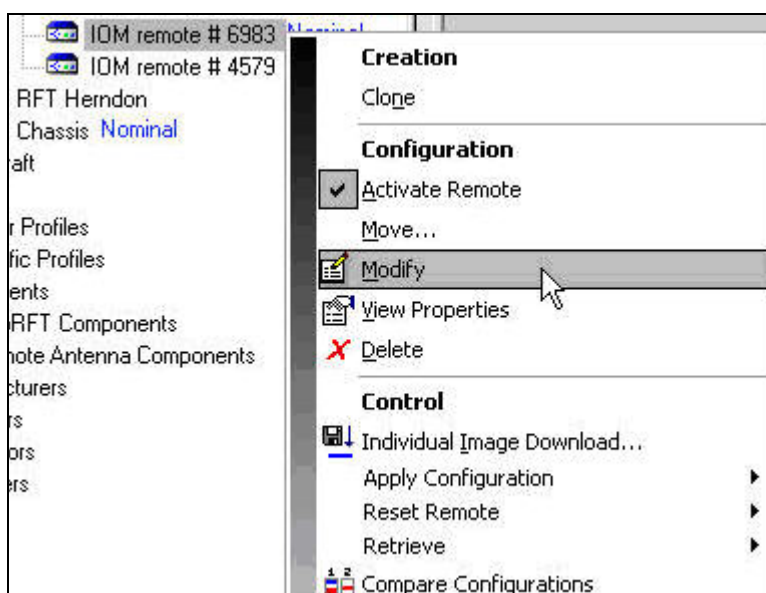
The copper center conductor shall only extend 1/8 inch (3.2mm) beyond the rim of the F-connector. It must be straight and cylindrical without any burrs at the end. Failure to do so will result in damage to the NetModem, BUC, LNB connector, and/or cause possible intermittent service.

## Appendix E – Disabling the PWM Voltage through iBuilder

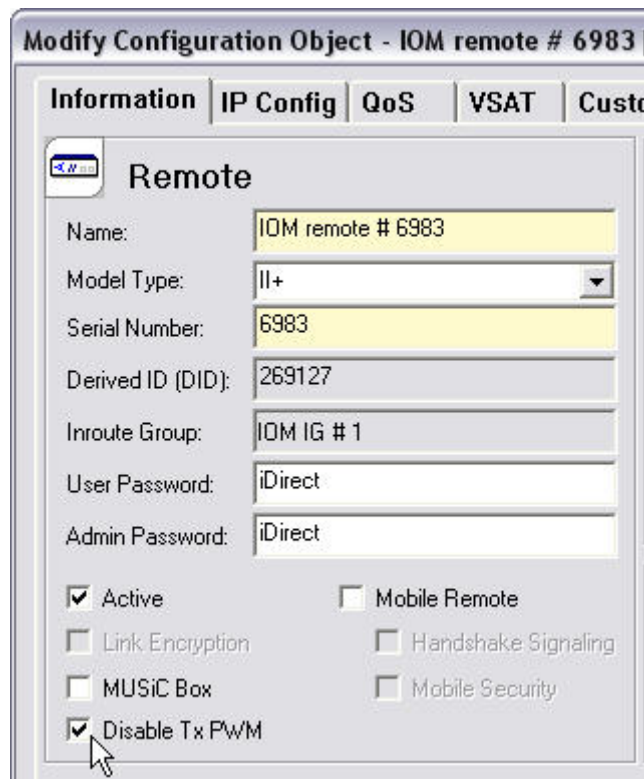
In release 6.0 or above, if you have access to iBuilder, you can verify that the transmit PWM voltage normally present on the transmit IFL cable is disabled.

To verify the transmit PWM voltage normally present on the transmit IFL cable is disabled through iBuilder complete the following procedure.

1. Power up the NetModem and let it boot up completely. ☐
2. In iBuilder, right-click on the remote and select modify. ☐



3. In the Modify Configuration dialog box, make sure that the Disable Tx PWM check box is selected. ☐
4. Reset the NetModem. ☐



**Modify Configuration Object - IOM remote # 6983**

Information | IP Config | QoS | VSAT | Custom

**Remote**

Name: IOM remote # 6983

Model Type: II+ ▼

Serial Number: 6983

Derived ID (DID): 269127

Inroute Group: IOM IG # 1

User Password: iDirect

Admin Password: iDirect

☒ Active ☐ Mobile Remote


☐ Link Encryption ☐ Handshake Signaling

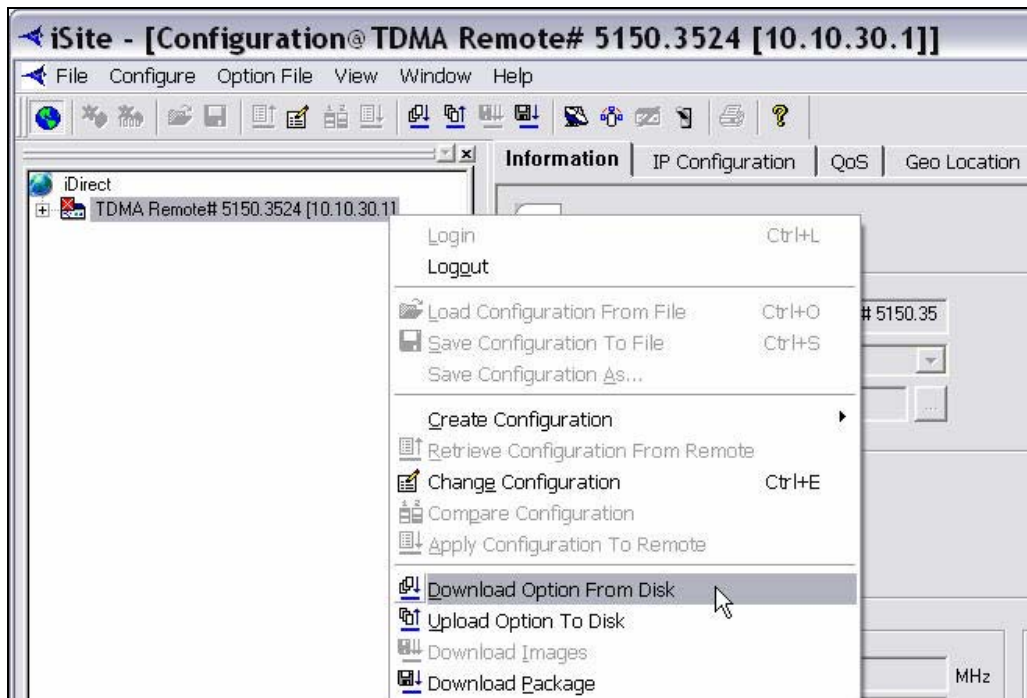
☐ MUSIC Box ☐ Mobile Security

☒ Disable Tx PWM

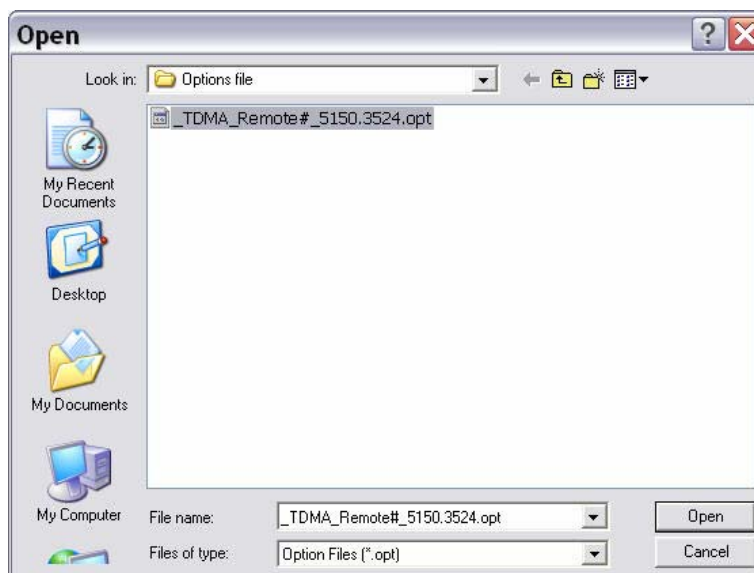
## Appendix F – Downloading the Options File in iSite

Download images before downloading your options files. To download the options file.

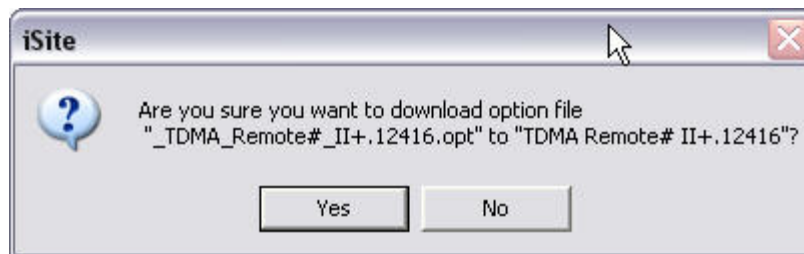
1. Open iSite, right-click on the remote and select **Download Option from Disk**. (Alternately click the  button.)



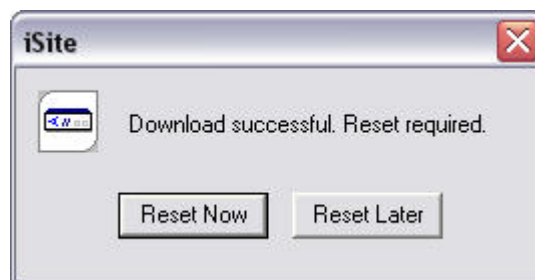
2. Locate the Options file, highlight and click **Open**.



3. When iSite requests confirmation of the download request, click **Yes**.

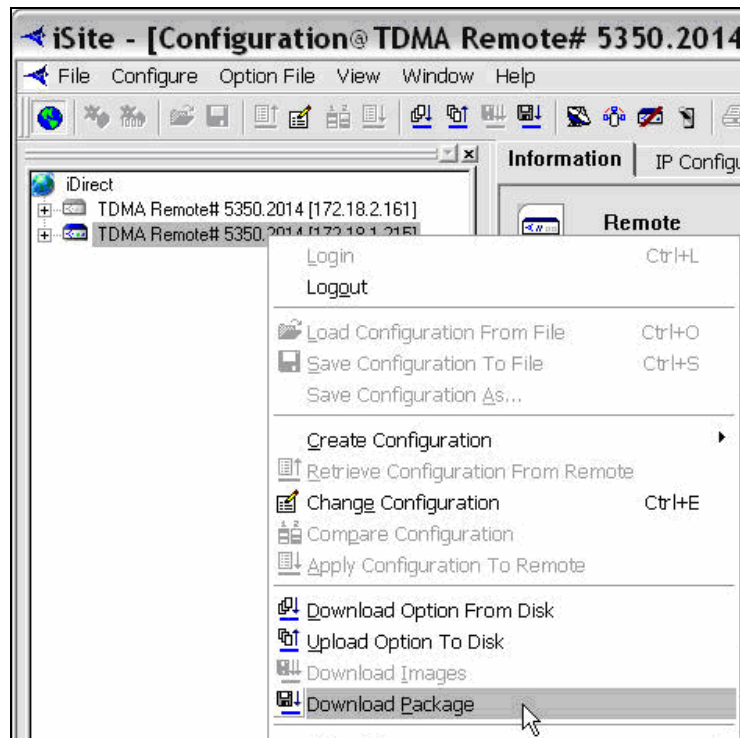


4. Download reports "success". Click **Reset Now** to reset the Netmodem



## Appendix G – Downloading Packages in iSite

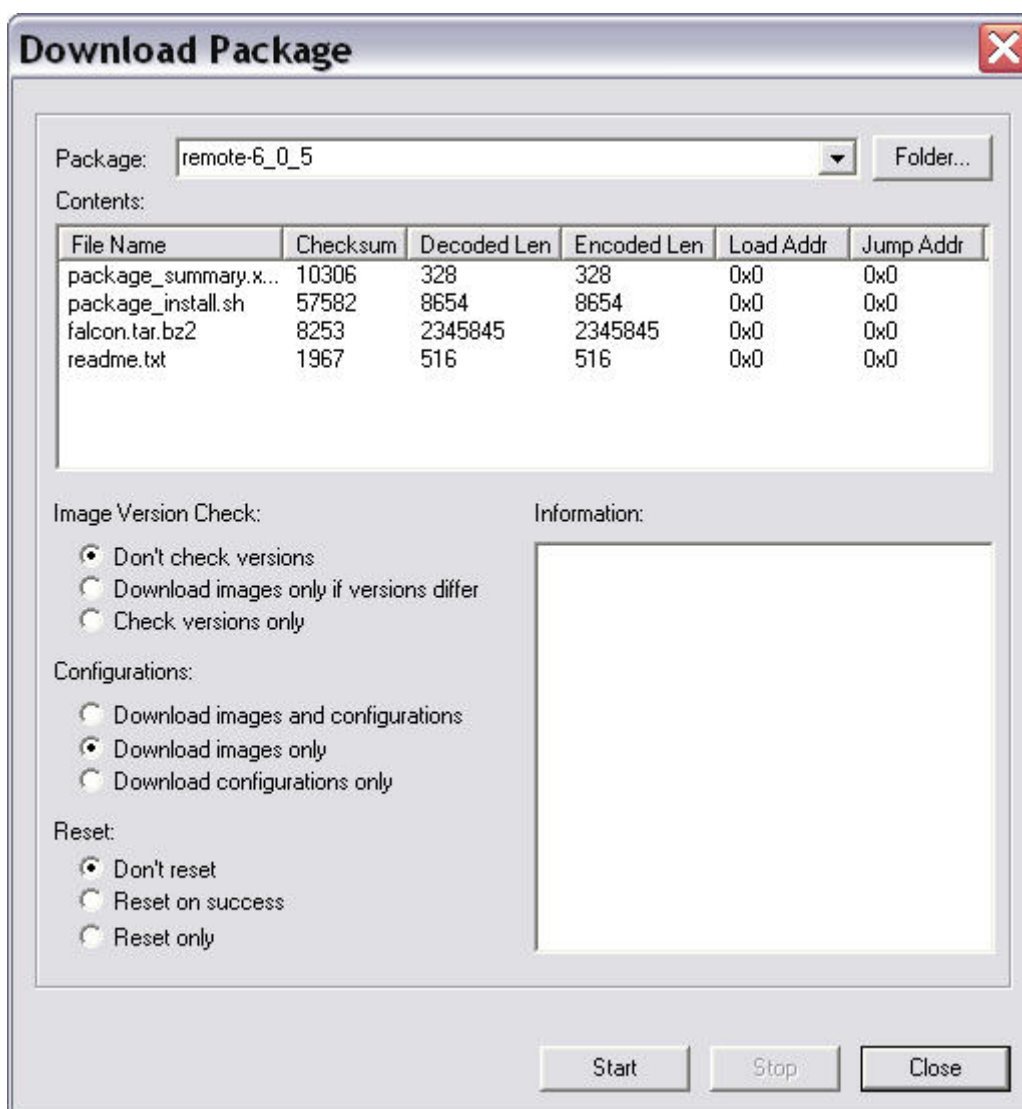
1. Open iSite, right-click on the remote and select **Download Package**. ☐



2. In the **Download Package Dialog** select the folder button and locate and select the Remote-iNFINITI image package on your laptop. ☐



3. In the **Download Package** dialog, select **Don't check versions**, **Download images only** and **Don't reset**, and then click **Start**.



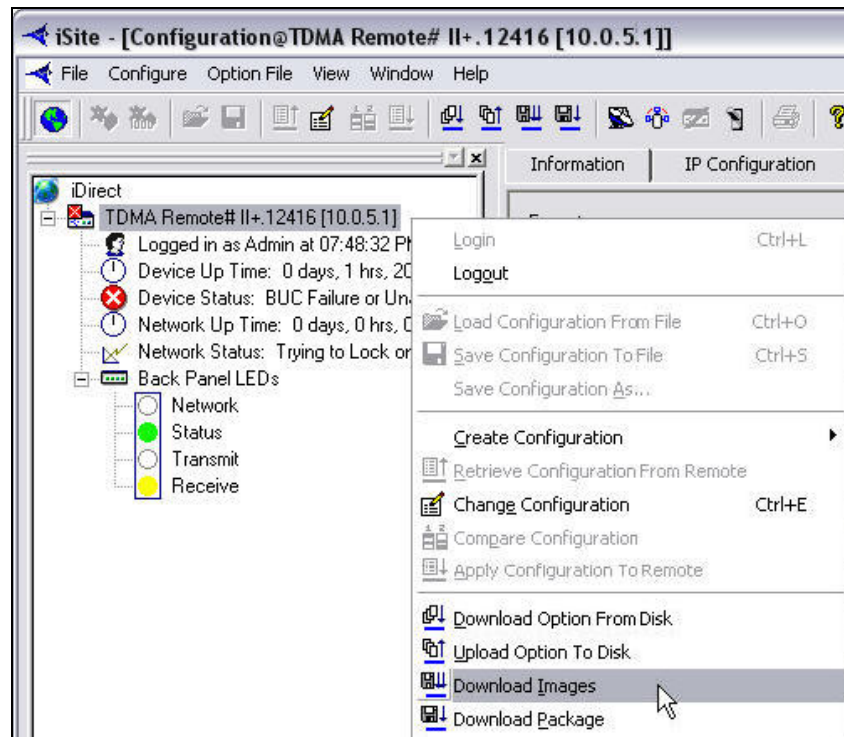
4. Wait and observe the information in the Information section of the Download Package dialog until you see “Done”.



## Appendix H – Downloading the Application and Firmware Images (NetModem II and II Plus Only)

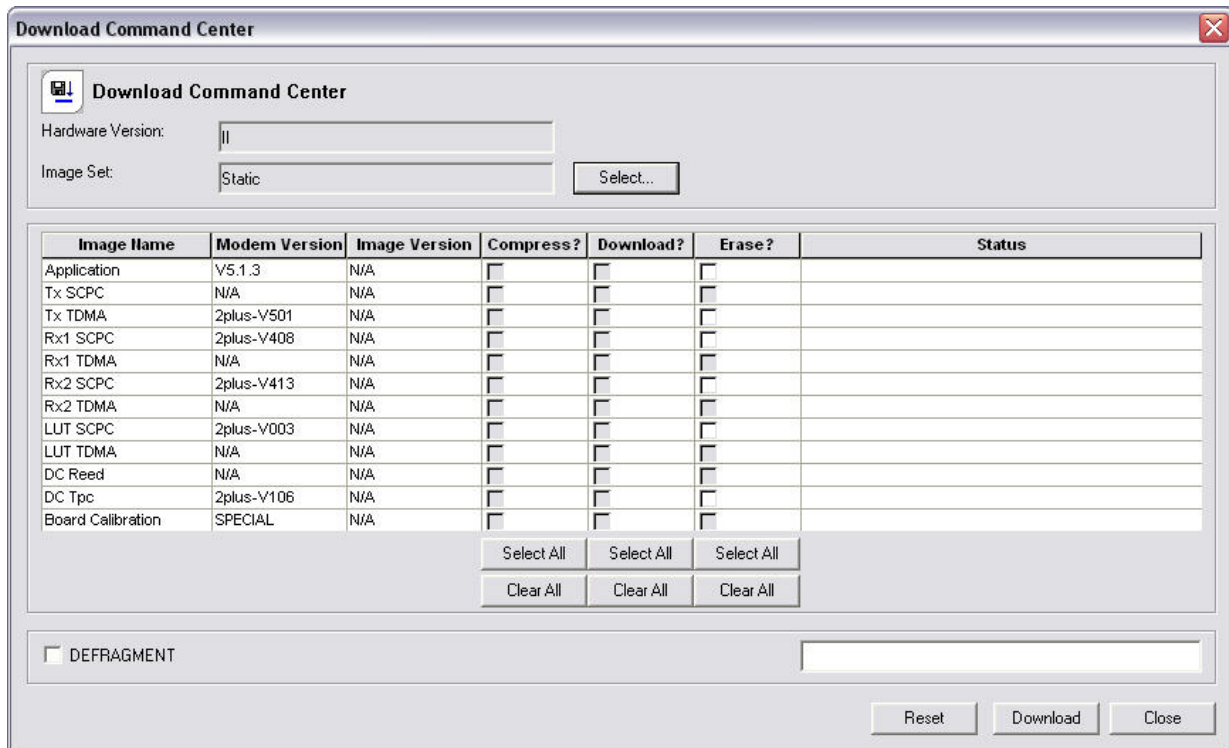
Download images before the options file.

1. Open iSite, right-click on the remote and select **Download Images**.



In the **Download Command Center**, the image name column lists all possible image variations. Currently loaded images are displayed in the “Modem version” column.

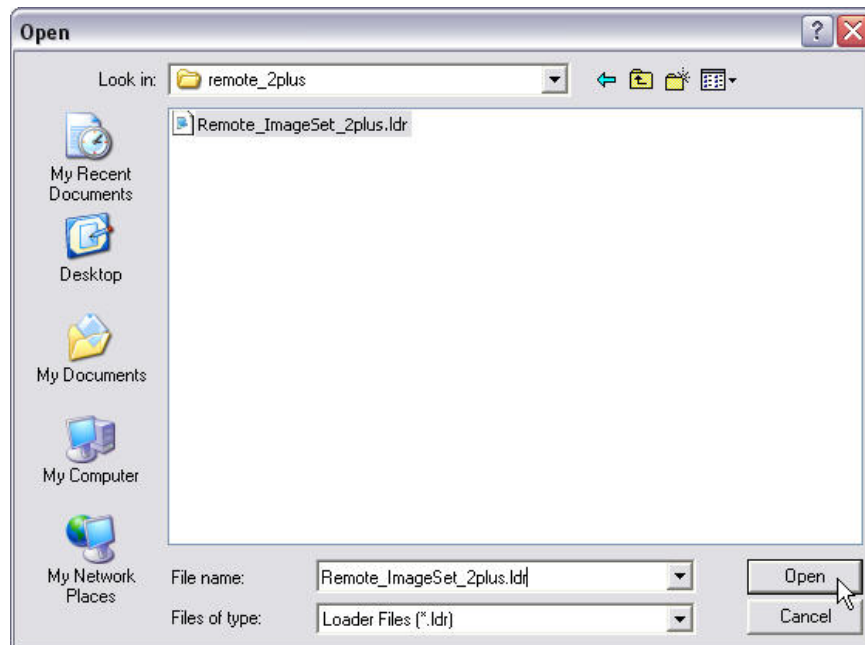
2. Click the Select button to locate the correct image set.

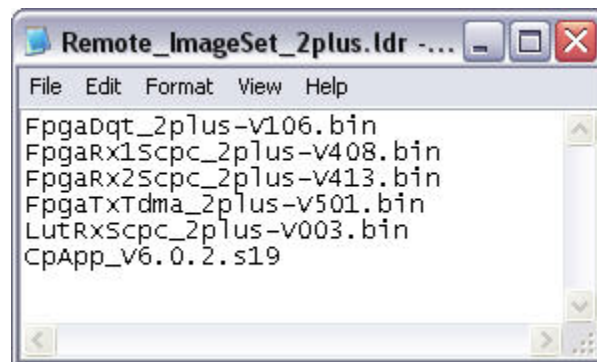
The screenshot shows the 'Download Command Center' window. It has a title bar with a close button. Inside, there's a section with a folder icon and the title 'Download Command Center'. Below this, there are two input fields: 'Hardware Version:' with a dropdown menu showing 'II', and 'Image Set:' with a dropdown menu showing 'Static' and a 'Select...' button next to it. Below these fields is a table with the following columns: 'Image Name', 'Modem Version', 'Image Version', 'Compress?', 'Download?', 'Erase?', and 'Status'. The table contains 12 rows of data. Below the table are three buttons: 'Select All', 'Clear All', and 'Erase All'. At the bottom of the window, there is a checkbox labeled 'DEFRAGMENT' and a text input field. On the far right, there are three buttons: 'Reset', 'Download', and 'Close'.

| Image Name        | Modem Version | Image Version | Compress?                | Download?                | Erase?                   | Status |
|-------------------|---------------|---------------|--------------------------|--------------------------|--------------------------|--------|
| Application       | V5.1.3        | N/A           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |        |
| Tx SCPC           | N/A           | N/A           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |        |
| Tx TDMA           | 2plus-V501    | N/A           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |        |
| Rx1 SCPC          | 2plus-V408    | N/A           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |        |
| Rx1 TDMA          | N/A           | N/A           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |        |
| Rx2 SCPC          | 2plus-V413    | N/A           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |        |
| Rx2 TDMA          | N/A           | N/A           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |        |
| LUT SCPC          | 2plus-V003    | N/A           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |        |
| LUT TDMA          | N/A           | N/A           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |        |
| DC Reed           | N/A           | N/A           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |        |
| DC Tpc            | 2plus-V106    | N/A           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |        |
| Board Calibration | SPECIAL       | N/A           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |        |

3. Click the Select button to locate the correct image set on your laptop ☐

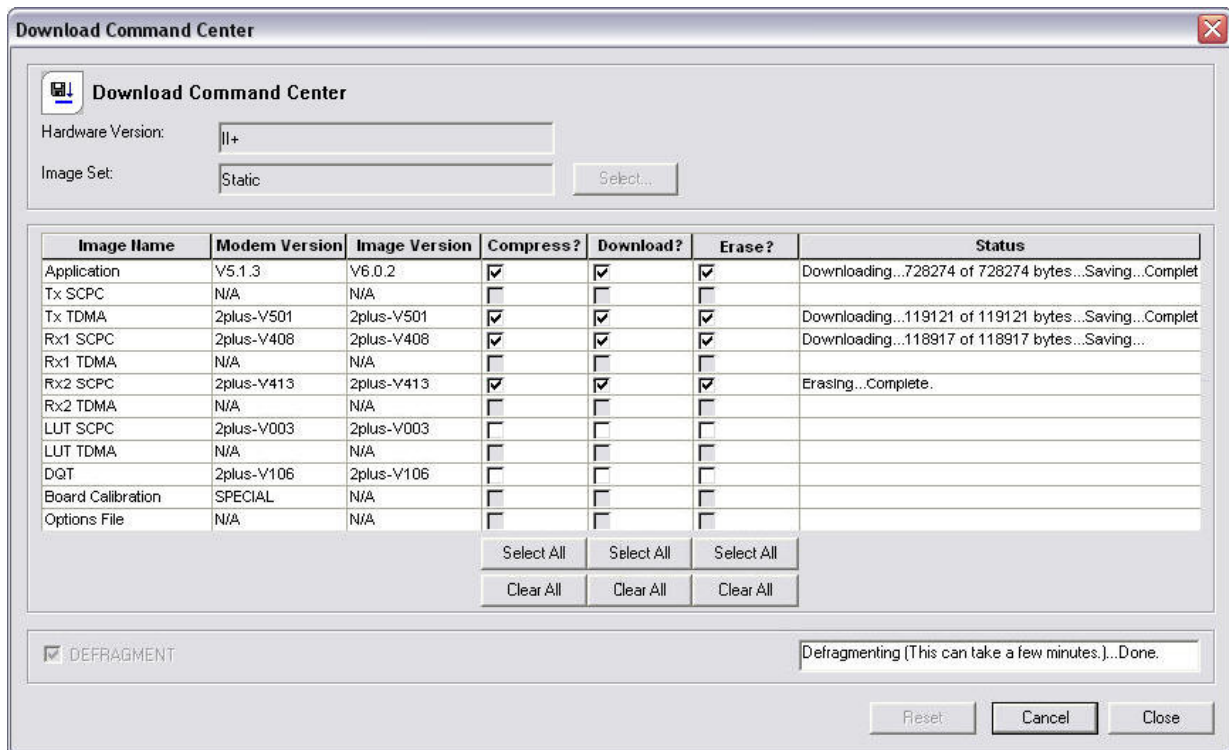


Remote\_ImageSet\_2plus.ldr identifies the images to be loaded. iSite automatically selects Compress and Download for each image being updated.



4. In the **Download Command Center**, select **Download** for each image to update. ☐

5. Wait for “Completed” to be displayed. Reset only if images are compatible with the options file. ☐



**Download Command Center**

Hardware Version:

Image Set:

| Image Name        | Modem Version | Image Version | Compress?                           | Download?                           | Erase?                              | Status   |
|-------------------|---------------|---------------|-------------------------------------|-------------------------------------|-------------------------------------|--|
| Application       | V5.1.3        | V6.0.2        | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Downloading...728274 of 728274 bytes...Saving...Comple |
| Tx SCPC           | N/A           | N/A           | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            |  |
| Tx TDMA           | 2plus-V501    | 2plus-V501    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Downloading...119121 of 119121 bytes...Saving...Comple |
| Rx1 SCPC          | 2plus-V408    | 2plus-V408    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Downloading...118917 of 118917 bytes...Saving...       |
| Rx1 TDMA          | N/A           | N/A           | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            |  |
| Rx2 SCPC          | 2plus-V413    | 2plus-V413    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Erasing...Complete.                                    |
| Rx2 TDMA          | N/A           | N/A           | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            |  |
| LUT SCPC          | 2plus-V003    | 2plus-V003    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            |  |
| LUT TDMA          | N/A           | N/A           | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            |  |
| DQT               | 2plus-V106    | 2plus-V106    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            |  |
| Board Calibration | SPECIAL       | N/A           | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            |  |
| Options File      | N/A           | N/A           | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            |  |

☒ DEFRAGMENT

6. Close the Download Command Center. ☐

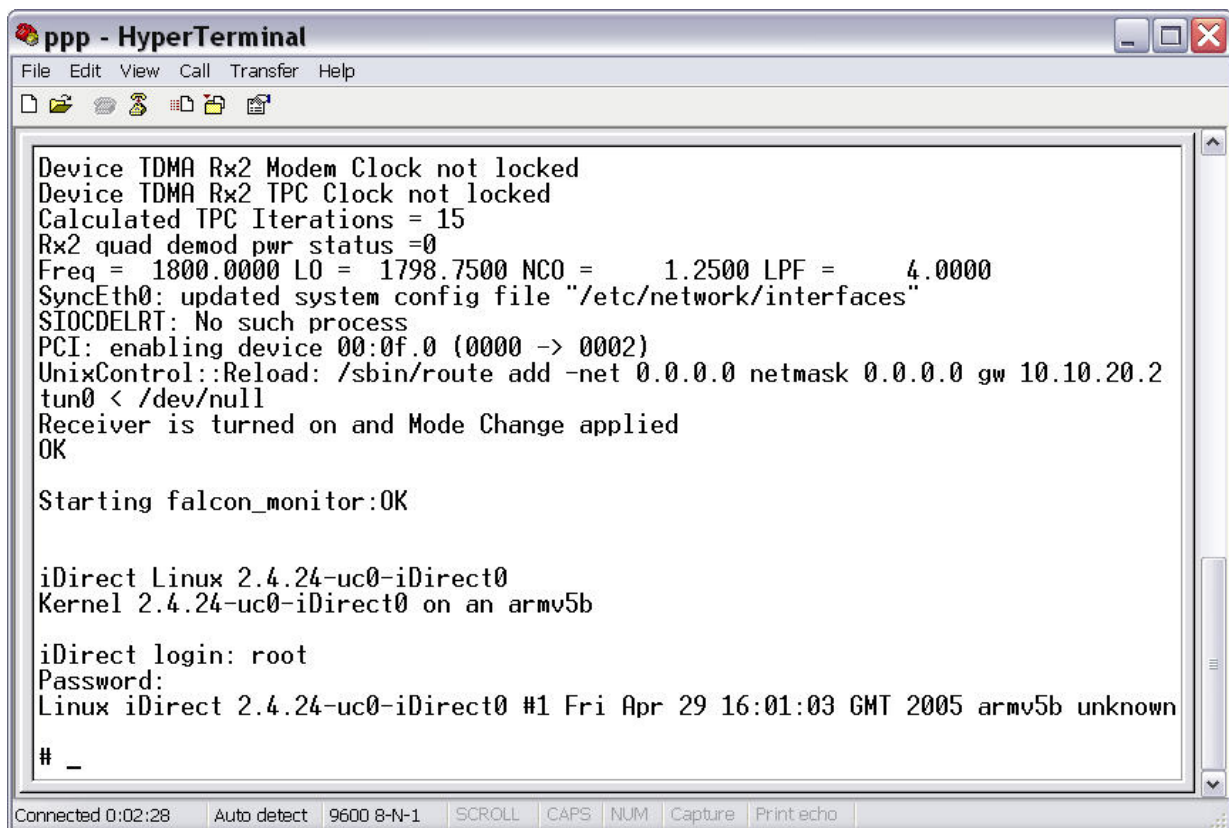
## Appendix I – Loading Images using the TFTP Server (iNFINITI series Only)

An alternate method of loading the images is to use the TFTP server that comes bundled with iSite.

1. Open iSite and from the File menu select TFTP. ☐
2. A pop up window will prompt you to the TFTP server local folder. Browse and select the folder in which the remote package resides. ☐
3. Open a console session to the iNFINITI unit and login to the Linux prompt as root. ☐
4. Type “service idirect\_falcon stop”. This will stop the application. ☐
5. Type “tftp\_package.sh <IP address of TFTP server> <package name>”.  
For example, if your PC is 10.10.1.2 and you are loading 6.0.3 remote package the command will be “tftp\_package.sh 10.10.1.2 remote 6\_0\_3.pkg”. ☐
6. Once the transfer is complete, reset the unit using the “reboot” command. ☐

## Appendix J – Gaining IP Connectivity to the iNFINITI Satellite Router

1. Open a HyperTerminal Session on your laptop. ☐
2. Log in to the Satellite Router as root and use the default password "iDirect". ☐



```
ppp - HyperTerminal
File Edit View Call Transfer Help

Device TDMA Rx2 Modem Clock not locked
Device TDMA Rx2 TPC Clock not locked
Calculated TPC Iterations = 15
Rx2 quad demod pwr status = 0
Freq = 1800.0000 LO = 1798.7500 NCO = 1.2500 LPF = 4.0000
SyncEth0: updated system config file "/etc/network/interfaces"
SIOCDELRT: No such process
PCI: enabling device 00:0f.0 (0000 -> 0002)
UnixControl::Reload: /sbin/route add -net 0.0.0.0 netmask 0.0.0.0 gw 10.10.20.2
tun0 < /dev/null
Receiver is turned on and Mode Change applied
OK

Starting falcon_monitor:OK

iDirect Linux 2.4.24-uc0-iDirect0
Kernel 2.4.24-uc0-iDirect0 on an armv5b

iDirect login: root
Password:
Linux iDirect 2.4.24-uc0-iDirect0 #1 Fri Apr 29 16:01:03 GMT 2005 armv5b unknown
# _

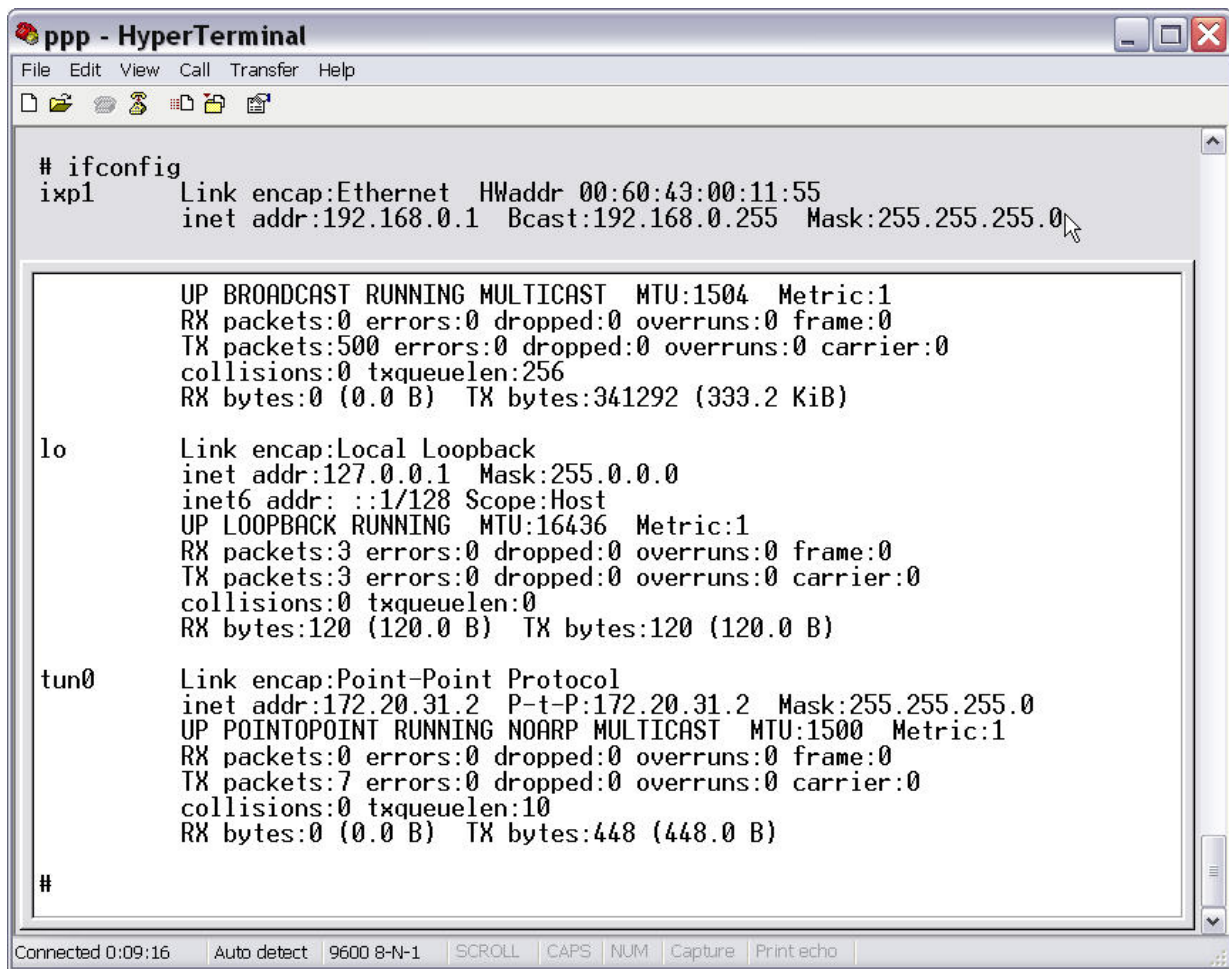
Connected 0:02:28 Auto detect 9600 8-N-1 SCROLL CAPS NUM Capture Print echo
```

3. At the Linux prompt, type

**ifconfig iXP1**

for a 5000 or 7000 series Satellite Router to determine the Satellite Router's IP address.

(Type ifconfig iXP0 for 3000 series)



```
# ifconfig
ixp1      Link encap:Ethernet  HWaddr 00:60:43:00:11:55
          inet addr:192.168.0.1  Bcast:192.168.0.255  Mask:255.255.255.0

          UP BROADCAST RUNNING MULTICAST  MTU:1504  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:500 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:256
          RX bytes:0 (0.0 B)  TX bytes:341292 (333.2 KiB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:3 errors:0 dropped:0 overruns:0 frame:0
          TX packets:3 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:120 (120.0 B)  TX bytes:120 (120.0 B)

tun0      Link encap:Point-Point Protocol
          inet addr:172.20.31.2  P-t-P:172.20.31.2  Mask:255.255.255.0
          UP POINTOPOINT RUNNING NOARP MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:7 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:10
          RX bytes:0 (0.0 B)  TX bytes:448 (448.0 B)

#
```

4. Check the IP address and subnet mask of the Satellite Router.

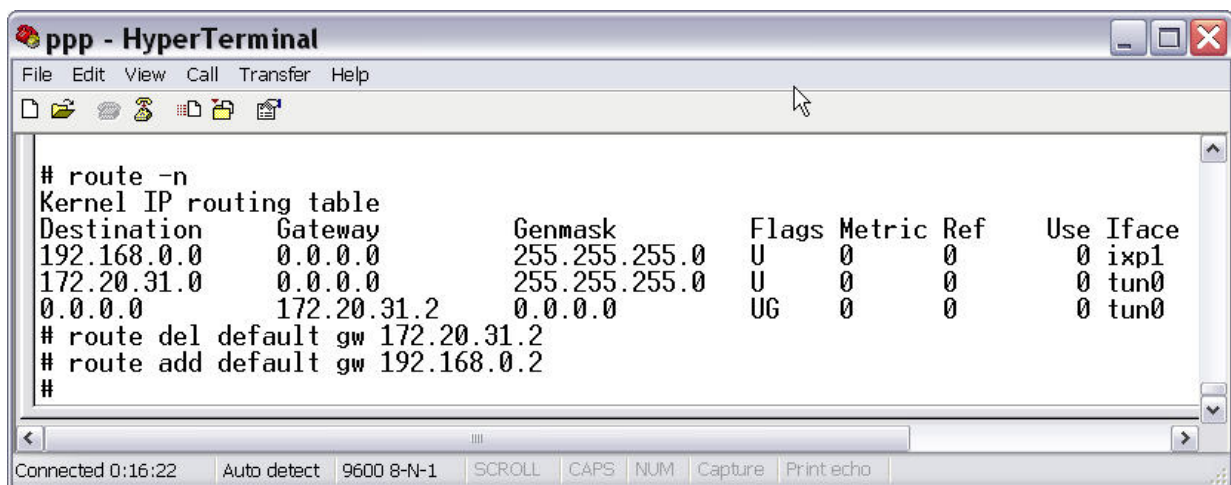


5. Configure your laptop's IP address to be in the same subnet as the Satellite Router's interface. ☐
6. Use the following commands to change the default gateway of the Satellite Router to your be the same as your laptop's IP address. ☐

**Route -n**

**route del default gw**

**route add default gw**



```
# route -n
Kernel IP routing table
Destination      Gateway          Genmask          Flags Metric Ref    Use Iface
192.168.0.0      0.0.0.0          255.255.255.0    U      0      0      0    ixp1
172.20.31.0      0.0.0.0          255.255.255.0    U      0      0      0    tun0
0.0.0.0          172.20.31.2      0.0.0.0          UG     0      0      0    tun0
# route del default gw 172.20.31.2
# route add default gw 192.168.0.2
#
```

7. Now iSite will autodetect the Satellite Router and you will be able to log in to it through iSite. ☐

## Appendix K – Pointing the Antenna through the Console Port

### K.1 Performing Console Antenna Pointing

This pointing is only available for NMII+ remotes serial number 6000 and above, loaded with ISite version 5.0 or later software.

When using console pointing the Rx and Tx cables can remain connected to the LNB and BUC, respectively, from the NetModem.

Pin 8 on the RJ-45 connector **MUST** be pinned to pin 8 on the DB-9 connector to read DVM voltages from the serial port.



#### CAUTION

The following section **MUST** be completed to ensure that damage is not done to the BUC and that console pointing mode works correctly.

### K.2 Modifying the Options File to Disable the Transmit PWM Voltage

The options file must contain the line `options set ODU odu_disable_tx_pwm 1` with the value set to “1”, which disables the transmit PWM voltage normally present on the transmit IFL cable.

The options file must be modified through the console port.



#### NOTE

When the value is set to zero, DC voltage will be felt on the transmit IFL cable at the BUC (Block Up-Converter) during the pointing process which could cause damage to the BUC and potentially generate an unwanted carrier.

To modify the options file through the console port complete the following procedure.

1. Power up the NetModem and let it boot up completely. ☐
2. From console or telnet session enter the command  
    `options set ODU odu_disable_tx_pwm 1` ☐
3. Press **Enter**. ☐

4. Type **"options flash"** ☐
5. Press **Enter**. ☐
6. Reset the NetModem. ☐

After the modem reboots, you must make sure that the correct entry is in the options file.

1. Type **"options show ODU"** ☐
2. Press **Enter**. ☐
3. In the ODU group, check to see that the line `odu_disable_tx_pwm = 1` is present. If this line is not present in the Options file, you must not start console pointing until it is present, or you will damage your hardware. ☐

### K.3 Starting the Console Pointing

To start the console pointing, enter the following commands.

1. Type **"rx pointing enable"** ☐
2. Type **"rx pointing on"** ☐

At this point, the NetModem is in console pointing mode.

### K.4 Using the DVM for Console Pointing

To use the digital voltmeter for console pointing, complete the following.

1. Disconnect the console port from the laptop, or PC, leaving the RJ-45 connector in the NetModem. ☐
2. From the DB-9 connector, connect pin 4 or 5 (GND) to the negative probe on the DVM. ☐
3. Connect pin 8 (+) to the positive probe on the DVM. ☐
4. Point the antenna using the normal procedure, until the signal falls into the desired range. ☐

Table 5: Signal Strength Ranges

| <b>Signal Strength Ranges</b> |   |
|-------------------------------|---|
| <b>volts DC</b>               | <b>Antenna Status</b>                               |
| 0-2.5 vdc                     | RF energy is detected, but from the wrong satellite |
| 2.6 – 5.0 vdc                 | Carrier lock, correct satellite                     |



**NOTE**

The LEDs on both the front and rear panel of the NetModem II Plus will verify Carrier Lock. If the front “Network” LED is solid orange it indicates Carrier Lock. If the rear “RX” LED is solid green, it indicates Carrier Lock.

### K.5 Console Pointing

1. Slowly sweep the reflector in azimuth until a signal of the appropriate strength is found. ☐
2. If the desired signal is not found, increase or decrease elevation setting by 2° and repeat the azimuth sweep. ☐
3. When you have found the desired signal, tighten down the 4 bolts on the Yoke Cap that secure the Yoke Cap to the Mast Pipe. ☐

The remaining azimuth adjustments are made with the azimuth adjustment screws.

1. Ensure Top Plate locking bolts are snug to allow azimuth movement. ☐
2. Adjust the elevation until maximum dc voltage is obtained. ☐
3. Fine tune azimuth until maximum dc voltage is obtained. ☐
4. Make sure azimuth and elevation are locked down ☐
5. Adjust polarization until maximum dc voltage is obtained ☐
6. Write down the final antenna pointing voltage reading and give the reading to the operator at the Network Help Desk ☐
7. When finished pointing, disconnect power from the NetModem to stop the pointing process ☐