User Guide

Terminal Web User Interface

Velocity Release 1.5

iDirect Satellite CX750 Series, CX700, CX780, X7, and 980 Routers

May 05, 2017

iDirect

VT iDirect® is a global leader in IP-based satellite communications providing technology and solutions that enable our partners worldwide to optimize their networks, differentiate their services and profitably expand their businesses. Our product portfolio, branded under the name **iDirect®**, sets standards in performance and efficiency to deliver voice, video and data connectivity anywhere in the world. **VT iDirect®** is the world's largest TDMA enterprise VSAT manufacturer and is the leader in key industries including mobility, military/government and cellular backhaul.

Company web site: http://www.idirect.net ~ Main Phone: 703.648.8000
TAC Contact Information: Phone: 703.648.8151 ~ Email: tac@idirect.net ~ Web site: http://tac.idirect.net

iDirect Government™, created in 2007, is a wholly owned subsidiary of iDirect and was formed to better serve the U.S. government and defense communities.

Company web site: http://www.idirectgov.com ~ Main Phone: 703.648.8118
TAC Contact Information: Phone: 703.648.8111 ~ Email: tac@idirectgov.com ~ Web site: http://tac.idirectgov.com

Document Name: UG_TerminalWUI_Vel1.5_T0000862_RevA_05052017.pdf

Document Part Number: T0000862

Revision History

The following table shows all revisions for this document. To determine if this is the latest revision, check the Technical Assistance Center (TAC) Web site. Refer to *Getting Help* on page vii for TAC access information.

Revision	Date	Updates
A	05/05/2017	Initial release of the document.

About

This chapter contains the following sections:

Intended Audience

The Terminal Web User Interface User Guide is for iDirect network operators or installers who need to connect directly to a satellite router. This may include installers responsible for Terminal commissioning; network operators connecting remotely; or on-site personnel working with iDirect to troubleshoot network problems.

Manual Contents

In addition to the information in this chapter, this manual also includes the following:

- Chapter 1, *Introduction* on page 1, provides information about what the terminal WUI is, the supported routers, the login details, and the LED information.
- Chapter 2, *Terminal Web User Interface* provides information on how to connect to the terminal WUI and provides information on the terminal WUI and explains each one of the tabs in-detail.
- Chapter 3, *Commissioning a Terminal* provides information on how to commission a new remote using the terminal WUI.

NOTE: A basic list of acronyms and abbreviations can be found in Appendix A, *Acronyms and Abbreviations*.

Document Conventions

This section illustrates and describes the conventions used throughout this document.

Convention	Description	Example
Command	Used when the user is required to enter a command at a command line prompt or in a console.	Enter the command: **cd /etc/snmp/**
Terminal Output	Used when showing resulting output from a command that was entered at a command line or on a console.	**crc report all** 8350.3235 : DATA CRC [1] 8350.3502 : DATA CRC [5818] 8350.4382 : DATA CRC [20]
Screen Reference	Used when referring to text that appears on the screen on a Graphical User Interface (GUI). Used when specifying names of commands, menus, folders, tabs, dialogs, list boxes, and options.	1. To add a Terminal to an in route group, right-click the In route Group and select **Add Terminal**. The Terminal dialog box has a number of user-selectable tabs across the top. The **Information** tab is visible when the dialog box opens.
Hyperlink	Used to show all hyperlinked text within a document or external links such as web page URLs.	For instructions on loading Option Files using the Terminal, see *Loading Option Files using the Terminal WUI* on page 23.

WARNING: A ***Warning*** highlights an essential operating or maintenance procedure, practice, condition, or statement which, if not strictly observed, could result in injury, death, or long term health hazards.

CAUTION: A ***Caution*** highlights an essential operating or maintenance procedure, practice, condition, or statement which, if not strictly observed, could result in damage to, or destruction of, equipment or a condition that adversely affects system operation.

NOTE: A ***Note*** is a statement or other notification that adds, emphasizes, or clarifies essential information of special importance or interest.

Related Documents

The following iDirect documents are available at http://tac.idirect.net and contain related information. Consult these documents for additional information about iDirect systems and equipment:

- iDirect Pulse™ NMS User Guide
- *Quick Start Guide (QSG), included in package with router*
- *iDirect Velocity™ Software Release Notes*

- *Velocity Network Operations using Pulse NMS*

Related Training Services

iDirect offers scheduled classroom training at various global training centers, as well as eLearning, in the installation, operation, maintenance and management of iDirect satellite networks. For training course descriptions and available training dates visit the iDirect web site ***Training and Services*** at: http://www.idirect.net/Training-and-Services.aspx or call +1 (800) 648-8240 for class registration and information.

Getting Help

The iDirect Technical Assistance Center (TAC) and the iDirect Government Technical Assistance Center (TAC) are available to provide assistance 24 hours a day, 365 days a year. Software user guides, installation procedures, FAQs, and other documents that support iDirect and iDirect Government products are available on the respective TAC Web site:

- Access the iDirect TAC Web site at http://tac.idirect.net
- Access the iDirect Government TAC Web site at http://tac.idirectgov.com

The iDirect TAC may be contacted by telephone or email:

- Telephone: 703.648.8151
- E-mail: tac@idirect.net

The iDirect Government TAC may be contacted by telephone or email:

- Telephone: 703.648.8111
- Email: tac@idirectgov.com

iDirect and iDirect Government produce documentation that are technically accurate, easy to use, and helpful to our customers. Please assist us in improving this document by providing feedback. Send comments to:

- iDirect: techpubs@idirect.net
- iDirect Government: techpubs@idirectgov.com

For sales or product purchasing information contact iDirect Corporate Sales at the following telephone number or e-mail address:

- Telephone: 703.648.8000
- E-mail: sales@idirect.net

Contents

Figures

Tables

1 Introduction

This chapter provides a general overview of the Terminal Web User Interface (WUI).

1.1 Supported Routers

The Terminal WUI is supported on the CX750 Series, CX700, CX780, X7, and 980 Satellite Routers.

1.2 Terminal Web User Interface

The Terminal Web User Interface (WUI) provides users with the means to monitor satellite routers from the local area network (LAN).

The Terminal WUI also provides configuration and real-time status and statistical information about the satellite routers. Terminal WUI interacts with the satellite router, enabling configuration, commissioning, and monitoring without a direct connection with the Pulse NMS. The level of functionality available to the user is determined by the login access (admin or user).

1.2.1 Terminal WUI Features

Terminal WUI provides the following features:

- LED indicators that display real-time status of the satellite router
- A dashboard view of high-level satellite router information (for example, displays if a satellite router is in network or locked to the satellite)
- A status and monitoring view that provides status and monitoring information about the satellite router in real-time for modem information, events, Ethernet receive and transmit connections, and Internet Protocol (IP) configuration and information
- Administration tools for loading software packages and options files

- A wizard for commissioning new remotes

1.3 Connecting to the Terminal WUI

Terminal WUI may be used at any time to access the Satellite Routers. All that is necessary is the IP address assigned to the satellite router and a physical Ethernet connection to the LAN port.

Default factory settings for the Satellite Routers are shown below:

- LAN IP Address: 192.168.1.1
- Subnet mask: 255.255.255.0

1.3.1 Local Area Connection

1. Click **Start** > **Control Panel** > **Network and Sharing Center**.

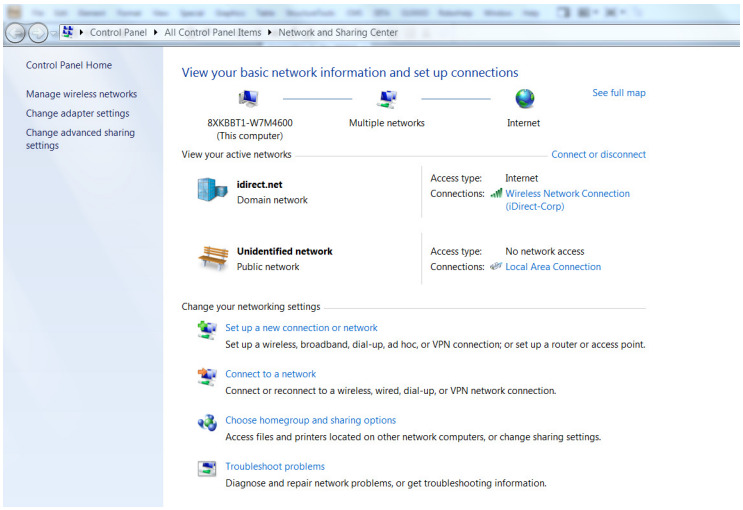

Figure 1-1. Network and Sharing Center

2. Under **View your active networks**, click **Local Area Connection**.

   The **Local Area Connection Status** window is displayed.

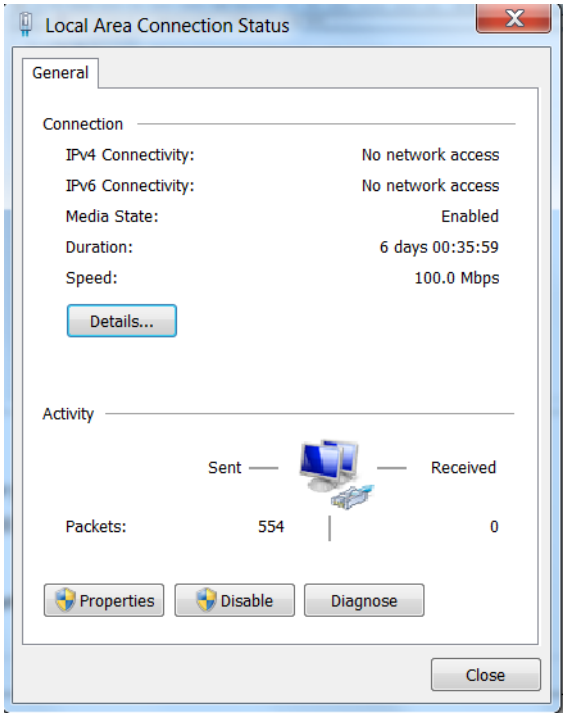

Figure 1-2. Local Area Connection Status

3. Click **Properties**.

   The **Local Area Connection Properties** window is displayed.

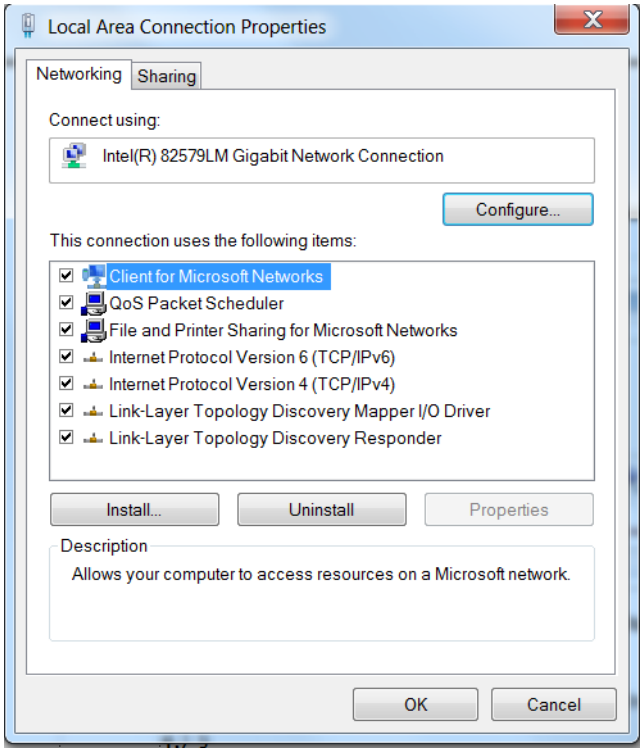

Figure 1-3. Local Area Connection Properties Window

4. Select the **Internet Protocol Version 4 (TCP/IPv4)** check box, and click **Properties**. The **Internet Protocol Version 4 (TCP/IPv4) Properties** window is displayed.

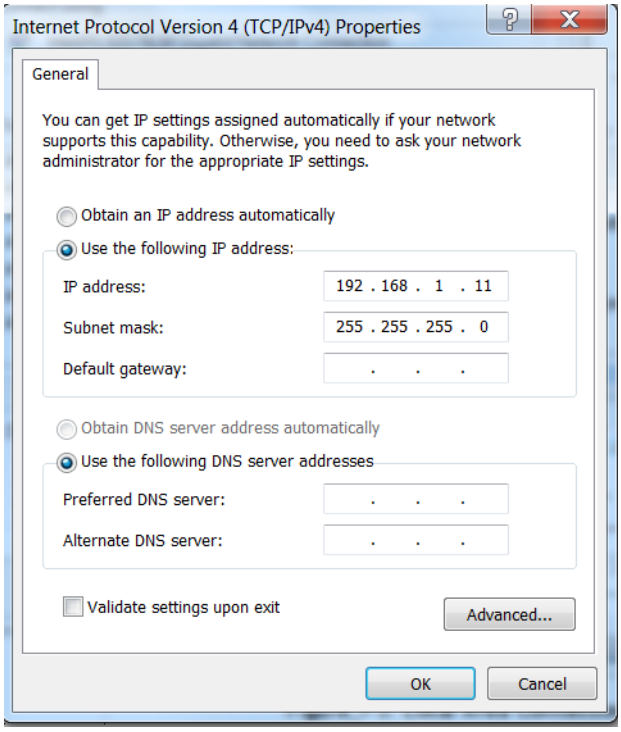

Figure 1-4. Internet Protocol Version 4 Properties

5. Select **Use the following IP address**, and enter the following:
   - **IP address**–Enter an unused IP address on the same subnet as the router.
   - **Subnet mask**–Enter the IP address, and the subnet mask is automatically retrieved.
   - **Default gateway**–This field is optional.
6. Click **OK**.

1.4 Starting a Terminal WUI Session

The Web view is compatible with Internet Explorer 10 and above, or latest Mozilla Firefox and Chrome browsers.

The Terminal WUI has two default user accounts:

• **admin**: Provides full access to WUI functionality

• **user**: Provides restricted access to WUI functionality

To launch the Terminal WUI, perform the following:

1. Connect the personal computer (PC) LAN port to the satellite router local area network (LAN) Port 1 using an Ethernet cable.
2. Launch the Web browser of choice.

   On the address bar, enter the IP address of the satellite router into the address field.

The login terminal as seen in Figure 1-5 is displayed.

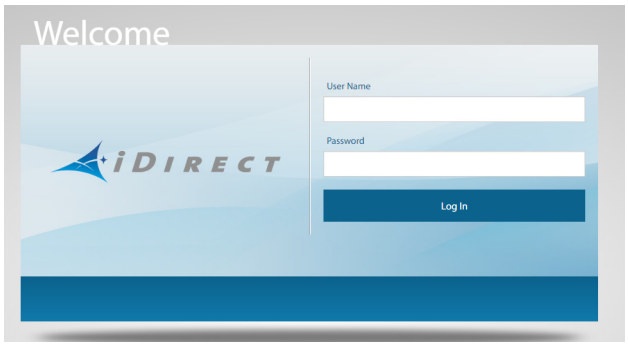

Figure 1-5. WUI Terminal

3. Enter the Username and Password as follows:

   Username - admin

   Password - iDirect

4. Click **Login**.

   The Web User Interface dashboard as seen in Figure 1-6 is displayed.

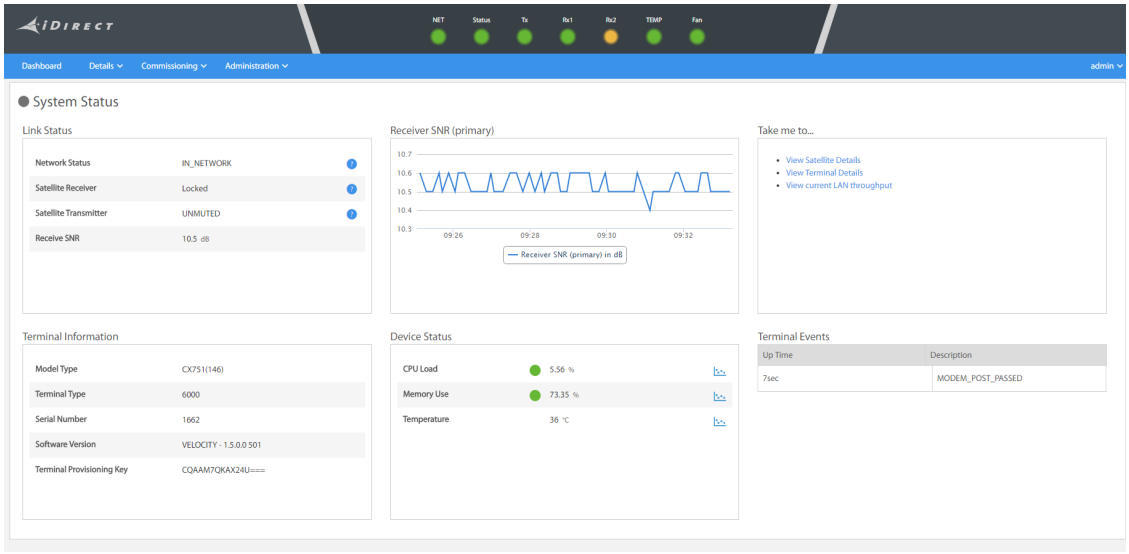

Figure 1-6. Terminal WUI Dashboard

1.5 Simulated LEDs

The menus in the Terminal WUI display simulated LEDS (see Figure 1-7). For detailed information on the LED color and function, see the routers *Installation, Support, and Maintenance Guide* or *Integration Guide*.

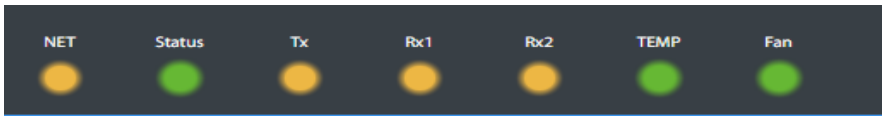

Figure 1-7. LED Indicators

2 Terminal Web User Interface

This chapter introduces the Terminal Web User Interface (WUI) provided on iDirect Satellite Routers. It contains the following sections:

2.1 Dashboard

The Dashboard page provides key information about the Satellite Routers that have an established connection.

The Dashboard page is the default landing page on the Terminal Web UI. See Figure 2-1.

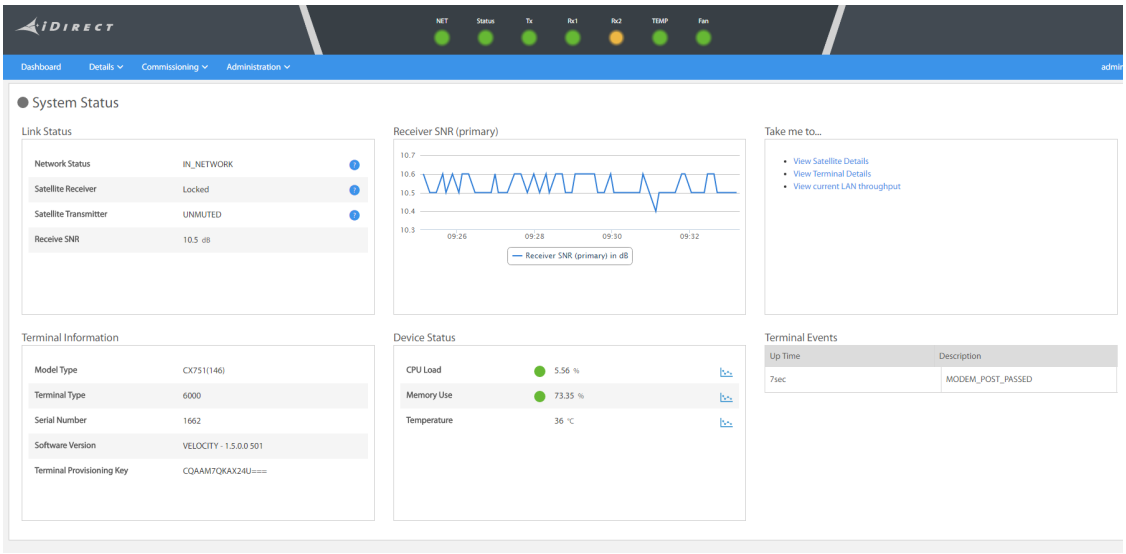

Figure 2-1. Dashboard Menu

Table 2-1 describes the dashboard fields in the Terminal WUI.

Table 2-1. Dashboard Menu Items

Menu Item	Sub-menu Item	Description
System Status		Displays the overall status of the Terminal system.
Link Status		Displays the status of all the network links.
	Network Status	Displays if the router is in the network.
	Satellite Receiver	Displays if the router is enabled to receive information.
	Satellite Transmitter	Displays if the router is enabled to transmit information.
	Receive SNR	Displays the SNR of the received downstream.
Terminal Information		Displays the configuration of the terminal.
	Model Type	Displays the model type of the terminal.
	Terminal Type	Displays the terminal type of the terminal.
	Serial Number	Displays the serial number of the terminal.
	Software Version	Displays the current software version that is running.
	Terminal Provisioning Key	Displays the terminal provisioning key.
Receive SNR (Primary)		Displays the Signal-to-Noise ratio for the primary receiver for the last 25 minutes.
Device Status		Displays the status of the terminal.
	Fan Status	Displays the status of the fan.
	CPU Load	Displays the current CPU load.
	Memory Use	Displays the current memory in use.
	Temperature	Displays the device temperature.
Take me to...	View Satellite Details	Displays the details of the satellite.
	View Terminal Details	Displays the details of the terminal.
	View current LAN throughput	Displays the details of the LAN ports.
Terminal Events		Displays the events sent to the NMS.
	Up Time	Displays the amount of time falcon was running when an event occurred.
	Description	Displays the content of the event.

2.2 Details Menu

Use the Details Menu page to report and view satellite, terminal, LAN, and external equipment information.

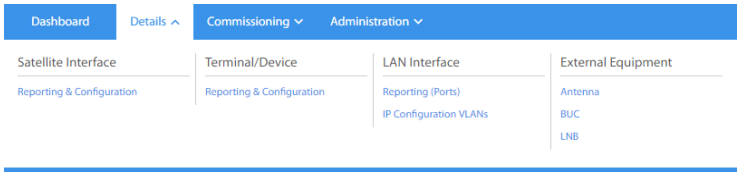

Figure 2-2. Details Menu

2.2.1 Satellite Interface

The Satellite Interface displays information on the satellite.

2.2.1.1 Satellite Interface - Reporting and Configuration

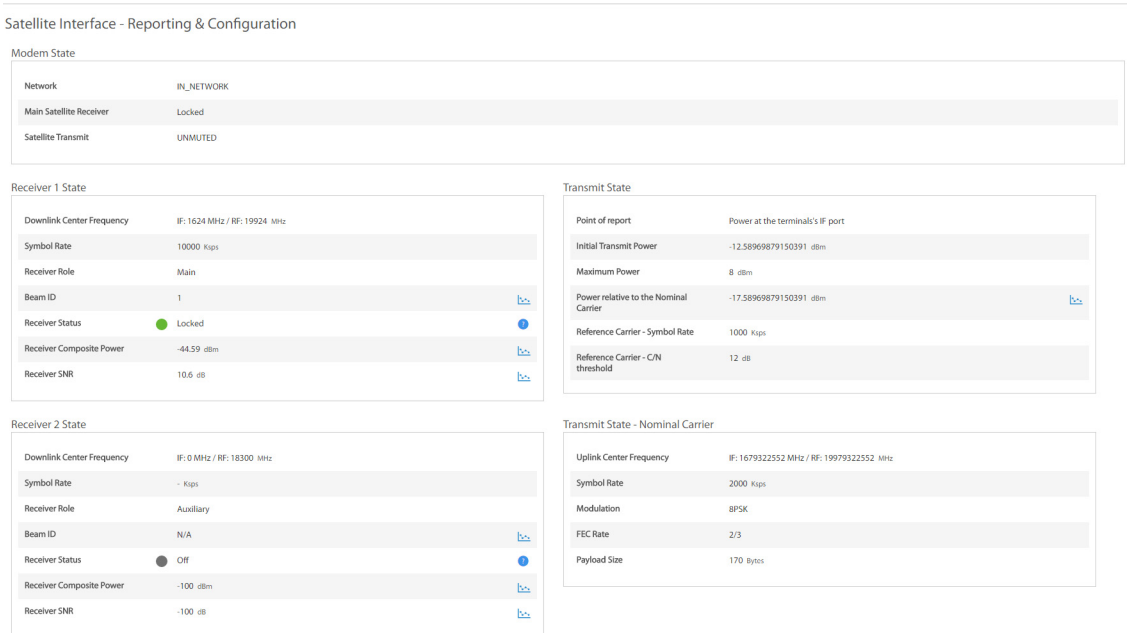

Figure 2-3. Satellite Interface - Reporting and Configuration

Table 2-2 describes the satellite interface fields in the Terminal WUI.

Table 2-2. Satellite Interface - Reporting and Configuration Field Descriptions

Menu Item	Sub-menu Item	Sub-menu Item	Description
Satellite Interface-Reporting and Configuration			Displays the reporting and configuration information for a satellite.

Menu Item	Sub-menu Item	Sub-menu Item	Description
	Modem State		Displays the status of the modem.
		Network	Displays if the modem is connected to the network.
		Main Satellite Receive	Displays one of the following: • Locked • Waiting for NCR Lock—Third and final stage of the receiver lock. • Waiting for Demod Lock—Second stage of the receiver lock. • Locktuner_locked—First stage of the receiver lock. • Off
		Satellite Transmit	Displays the state as either MUTED or UNMUTED. The transmitter can be muted by any of the following conditions: • not in network • external mute signal • OpenAMIP mute command **NOTE:** The above conditions are not exhaustive.
	Transmit State		Displays the state of the transmitter.
		Point of Report	Indicates the point for which the terminal's transmit power is reported. This point could be either at the output of the satellite router's transmit output, or at the BUC flange.
		Initial Transmit Power	Displays the initial transmit power of the satellite router.
		Maximum Power	Displays the configured max power of the satellite router’s transmitter.

Menu Item	Sub-menu Item	Sub-menu Item	Description
		Power Relative to the Nominal Carrier	Displays the current transmit power relative to the nominal carrier.
		Reference Carrier - Symbol Rate	Displays the symbol rate of the reference carrier.
		Reference Carrier - C/N threshold	Displays the threshold of the reference carrier.
	Transmit State - Nominal Carrier		Displays the signal to noise ratio for a nominal carrier.
		Uplink Center Frequency	Displays the uplink center frequency of the carrier.
		Symbol Rate	Displays the symbol rate of the carrier.
		Modulation	Displays the modulation.
		FEC Rate	Displays the FEC rate.
		Payload Size	Displays the payload size.
	Receiver 1 and 2 State		Displays the status of the first receiver.
		Downlink Center Frequency	Displays the routers listening frequency.
		Symbol Rate	Displays the symbol rate.
		Receiver Role	Displays the receiver role as MAIN or AUXILIARY.
		Beam ID	Displays the Beam ID.
		Receiver Status	Displays the status of the receiver.
		Receive Composite Power	Displays the total power at the front end.
		Receiver SNR	Displays the signal noise ratio measured in the terminal.

2.2.2 Terminal/Device

The Terminal Device page displays details of the terminal.

2.2.2.1 Terminal Device - Reporting and Configuration

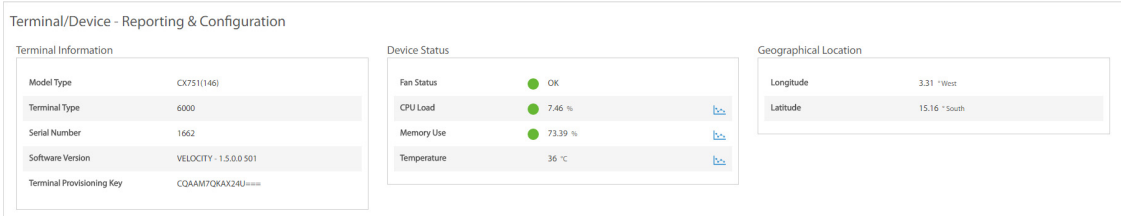

Figure 2-4. Terminal Device - Reporting and Configuration

Table 2-3 describes the terminal device fields in the Terminal WUI.

Table 2-3. Terminal Device - Reporting and Configuration Field Descriptions

Menu Item	Sub-menu Item	Sub-menu Item	Description
Terminal/Device-Reporting and Configuration			Displays information about the terminal or device.
	Terminal Information		Displays information about the terminal.
		Model Type	Displays the model type of the terminal.
		Terminal Type	Displays the terminal type.
		Serial Number	Displays the serial number.
		Software Version	Displays the software version that is active on the terminal.
		Terminal Provisioning Key	Displays unique key for each terminal
	Device Status		Displays the status of the terminal.
		Fan Status	Displays the status of the fan.
		CPU Load	Displays the CPU load.
		Memory Use	Displays the amount of memory used by the device.
		Temperature	Displays the temperature on the board surface.
	Geographical Location		Displays the geographic location of the terminal.
		Longitude	Displays the longitude in decimal notation E or W.
		Latitude	Displays the latitude in decimal notation N or S.

2.2.3 LAN Interface

The LAN Interface page displays information on ports and VLANs.

2.2.3.1 LAN Interface - Reporting (LAN Ports)

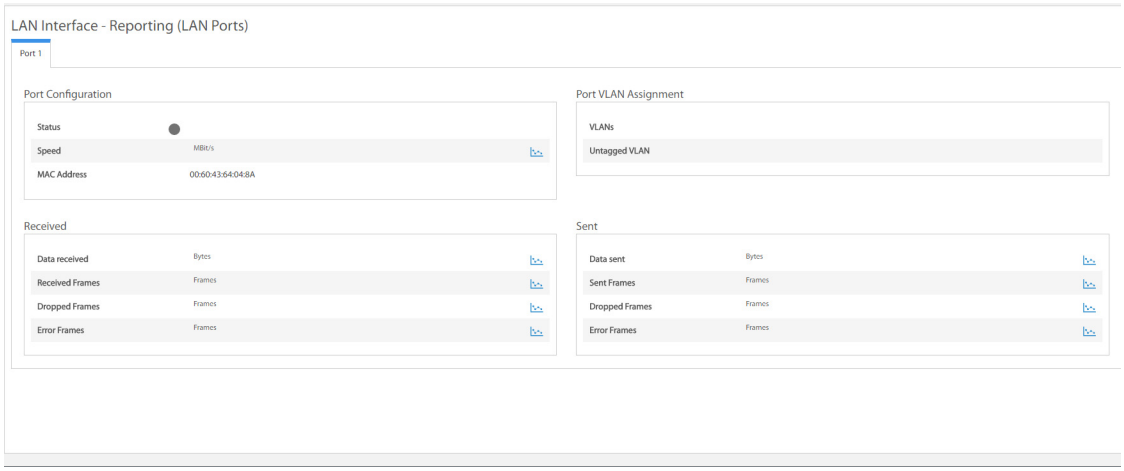

Figure 2-5. LAN Interface - Reporting (LAN Ports)

Table 2-4 describes the LAN interface fields in the Terminal WUI.

Table 2-4. LAN Interface - Reporting (LAN Ports) Field Descriptions

Menu Item	Sub-menu Item	Sub-menu Item	Description
LAN Interface - Reporting (LAN Ports)			Displays information about the terminal Ethernet port(s).
	Port Configuration		Displays the status of the port.
		Status	Displays the status of the port as connected, disconnected or disabled.
		Speed	Displays the speed of the port in 10, 100, or 1000 Mbps.
		MAC Address	Displays the MAC address of the LAN interface.
	Port VLAN Assignment		Displays information about the various Ports and VLANs assigned to those ports.
		VLANs	Displays the VLANs configured on the port.

Menu Item	Sub-menu Item	Sub-menu Item	Description
		Untagged VLAN	Displays the VLAN that is not tagged with any VLAN ID.
	Received		
		Data Received	Displays the number of packets received.
		Received Frames	Displays the frames of ethernet data received through the port.
		Dropped Frames	Displays the number of dropped frames.
		Error Frames	Displays the number of error frames.
	Sent		
		Data Sent	Displays the number of packets sent.
		Sent Frames	Displays the frames of ethernet data sent through the port.
		Dropped Frames	Displays the number of dropped frames.
		Error Frames	Displays the number of error frames.

2.2.3.2 LAN Interface - IP Configuration VLANs

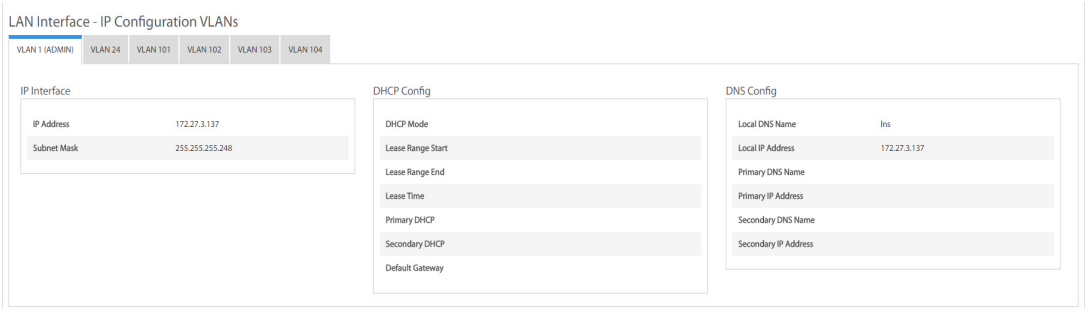

Figure 2-6. LAN Interface - IP Configuration VLANs

Table 2-5 describes the IP configuration VLAN fields in the Terminal WUI.

Table 2-5. IP Configuration VLANs Field Descriptions

Menu Item	Sub-menu Item	Description
IP Interface		Displays the IP address/mask of the Ethernet interface of the management VLAN.
	IP Address	Displays the IP address.
	Subnet Mask	Displays the subnet mask address.
DHCP Config		Displays the DHCP configuration information.
	DHCP Mode	Displays the DHCP mode as either Server, Client, or Relay.
	Lease Range Start	Displays the DHCP servers lease range start.
	Lease Start End	Displays the DHCP servers lease range end.
	Lease Time	Displays the DHCP servers lease time.
	Primary DHCP	Displays the primary DHCP server.
	Secondary DHCP	Displays the secondary DHCP server.
	Default Gateway	Displays the default gateway.
DNS Config		
	Local DNS Name	Displays the local DNS name.
	Local IP Address	Displays the local IP address.
	Primary DNS Name	Displays the DNS server name.
	Primary IP Address	Displays the primary DNS server IP address.
	Secondary DNS Name	Displays the DNS secondary name.
	Secondary IP Address	Displays the secondary DNS server IP address.

2.2.4 External Equipment

The External Equipment page displays information on the BUC, LNB, and Antenna.

2.2.4.1 External Equipment - Antenna

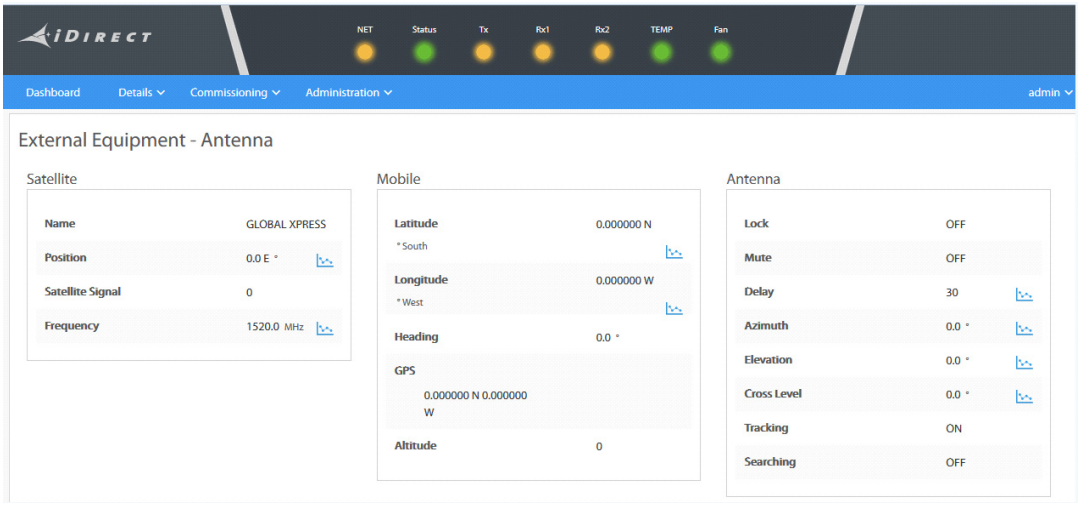

Figure 2-7. External Equipment - Antenna

Table 2-6 describes the antenna fields in the Terminal WUI.

Table 2-6. Antenna Field Descriptions

Menu Item	Sub-menu Item	Sub-menu Item	Description
External Equipment - Antenna			Displays the status of the Antenna.
	Satellite		Displays information on the satellite name, position, frequency, and satellite signal.
		Name	Displays the satellite name that the ACS is targeting.
		Position	Displays the satellite longitude position that the ACS is targeting.
		Satellite Signal	Displays the signal strength of the satellite that is being tracked by ACS.
		Frequency	Displays the satellite frequency that is being tracked by ACS.
	Mobile		Displays the longitude, latitude, heading, and GPS information of the mobile device.
		Latitude	Displays the satellite latitude position that is being tracked by ACS.

Menu Item	Sub-menu Item	Sub-menu Item	Description
		Longitude	Displays the satellite longitude position that is being tracked by ACS.
		Heading	Displays the ship, vehicle, or aircrafts heading as reported by the ACS.
		GPS	Displays the ship, vehicle, or aircrafts position as reported by the ACS GPS.
		Altitude	Displays the altitude of the terminal.
	Antenna		Displays information on the antenna.
		Lock	Displays the current state of the modem lock reported by ACS.
		Mute	Displays the routers transmitter mute state.
		Delay	Displays the amount of time needed after a re-point is requested over OpenAMIP.
		Azimuth	Displays the position of the antenna.
		Elevation	Displays the position of the antenna.
		Cross Level	Displays the current cross level position of the ACS.
		Tracking	Displays the state of the antenna.
		Searching	Displays the ACS is currently in search and conveys specific information about the search (if any).

2.2.4.2 External Equipment - BUC

NOTE: This page is only displayed on a terminal with OpenBMIP.

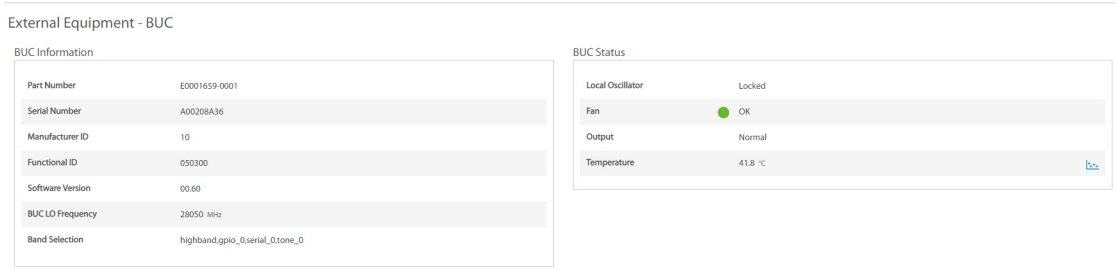

Figure 2-8. External Equipment - BUC

Table 2-7 describes the BUC fields in the Terminal WUI.

Table 2-7. BUC Field Descriptions

Menu Item	Sub-menu Item	Sub-menu Item	Description
External Equipment - BUC			Displays the status of the BUC.
	BUC Information		Displays information on the BUC.
		Part Number	Displays the BUC part number.
		Serial Number	Displays the serial number of the BUC.
		Manufacturer ID	Displays the BUCs Manufacturer ID.
		Functional ID	Displays the Functional ID of the BUC.
		Software Version	Displays the software version of the BUC.
		BUC LO Frequency	Displays the upstream frequency band.
		Band Selection	Displays the state of the BUCs input filter.
	BUC Status		Displays the status of the BUC.
		Local Oscillator	Displays the status of the oscillator.
		Fan	Displays operational status of BUC Fan(s).
		Output	Displays the output as normal, mute, or overridden.

Menu Item	Sub-menu Item	Sub-menu Item	Description
		Temperature	Displays the temperature of the board surface.

2.2.4.3 External Equipment - LNB

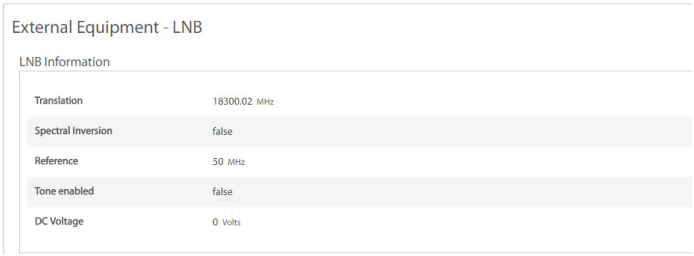

Figure 2-9. External Equipment - LNB

Table 2-8 describes the LNB fields in the Terminal WUI.

Table 2-8. LNB Field Descriptions

Menu Item	Sub-menu Item	Sub-menu Item	Description
External Equipment -LNB			
	LNB Information		Displays LNB information.
		Translation	Displays the LNBs LO frequency.
		Spectral Inversion	Not supported in Velocity.
		Reference	Displays the LNB's reference clock in MHz.
		Tone enabled	Displays the control tone to the LNB.
		DC Voltage	Displays the power output to the LNB in volts.

2.3 Administration

The Administration page displays the software and configuration information. See Figure 2-10.

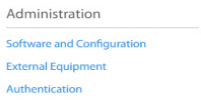

Figure 2-10. Administration Menu

2.3.1 Software and Configuration

Use this tab to load the latest software packages or option files.

2.3.1.1 Loading Packages using the Terminal WUI

Use the terminal WUI to upload the latest software packages.

NOTE: Ensure the Velocity software is loaded only in locations release 3 and 4.

1. On the terminal WUI, click **Administration**> **Software and Configuration**. The **Manage Software Packages** page is displayed.

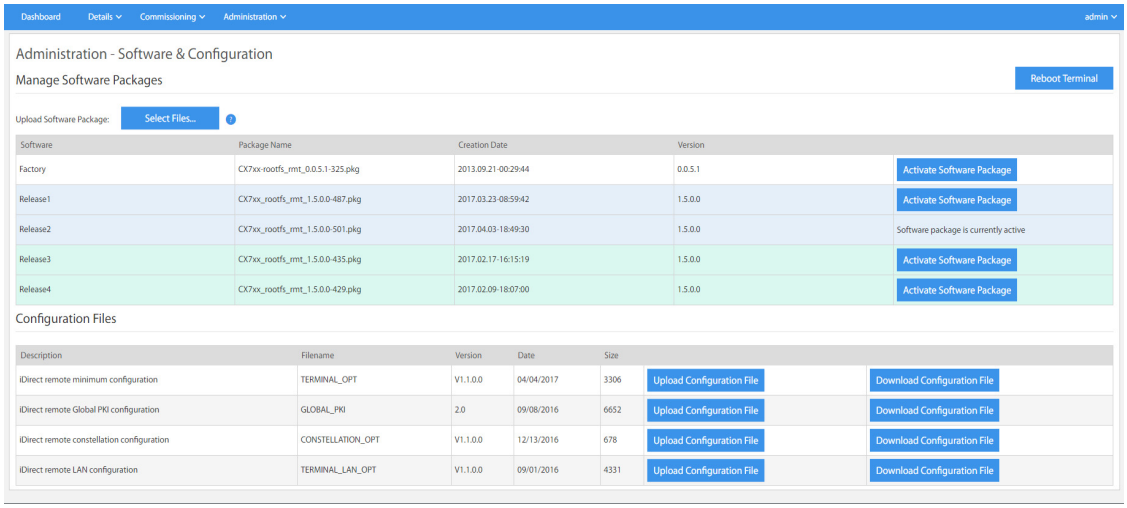

Figure 2-11. Upload Software Packages

2. Click **Select Files** and browse to the location where the packages are stored on the local system and click **Open**. The upload progress is seen on the right-hand corner. and the software package will be uploaded and listed under Upload Software Package.

   The current Package Name, Creation Date, and Version are displayed.

3. To activate the latest software, click **Activate Software Package** against the required partition.

4. After updating the latest software on the partition, a message to reboot the terminal is displayed. click **Reboot Terminal** to restart the terminal.

2.3.1.2 Loading Option Files using the Terminal WUI

Use the terminal WUI to upload the latest option files.

1. On the terminal WUI, click **Administration** > **Software and Configuration**. The **Manage Software Packages** page is displayed (see Figure 2-11).
2. Under **Configuration Files**, click **Download Configuration File** to download the existing configuration file and click **Upload Configuration File** to upload a new configuration file from your system.

   After updating the latest software on the partition, a message to reboot the terminal is displayed. click **Reboot Terminal** to restart the terminal.

   All the configuration files that are currently uploaded are displayed with the Description, Filename, Version, Date, and Size.

2.3.2 External Equipment

Use the External Equipment page to upload package and upgrade the BUC software and other terminal component equipment. This web page is shown in Figure 2-12 and the elements are described in Table 2-9.

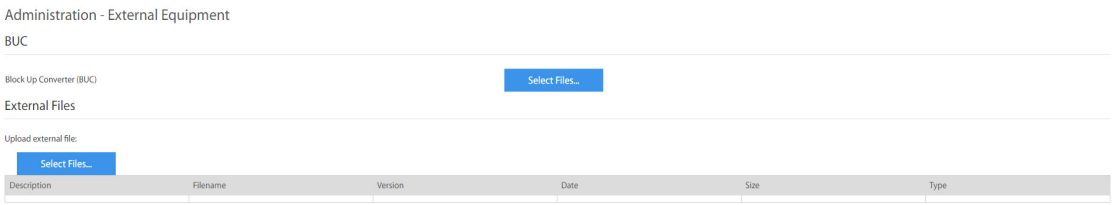

Figure 2-12. External Equipment Web Page

Table 2-9 describes the external equipment fields in the Terminal WUI.

Table 2-9. External Equipment Menu

Menu Item	Action	Description
BUC	Click Select Files	Browse to select and upgrade to the latest BUC file.
External Files	Click Select Files	Browse to select the external file.

2.3.3 Authentication

With token-based authentication, terminals can be authenticated into the Velocity system using a single-use token that is obtained from the network operator. This authentication method ensures that only authorized terminals can join the network.

After initial authentication of a newly-installed terminal, a shared secret is loaded over the air to the terminal. This shared secret is then used on each subsequent attempt by the terminal to be authenticated.

On the **Terminal WUI**, under **Authentication**, enter the **One Time Token** and click **Submit Token**.

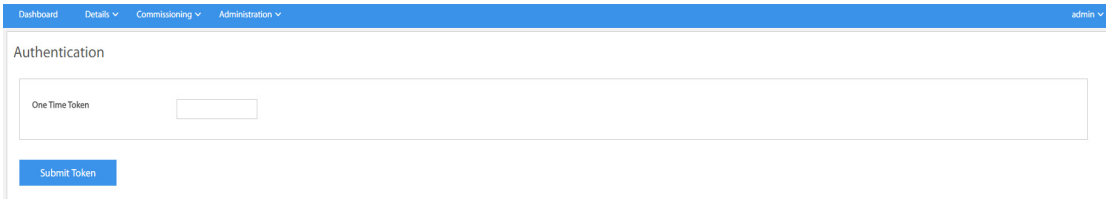

Figure 2-13. One Time Token Authentication

A confirmation message is displayed (see Figure 2-14). Carefully read through the instructions and click **Continue**. To abort the one time token authentication, click **Cancel**.

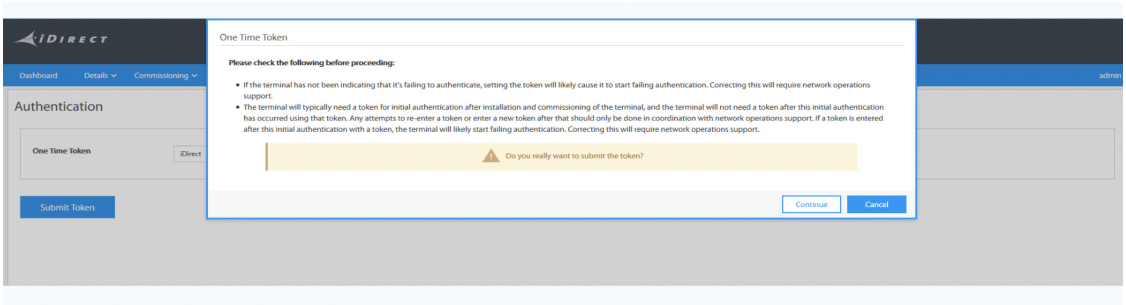

Figure 2-14. Authentication Confirmation

2.4 Commissioning

This section describes the procedure to bring a terminal into network using the Terminal WUI. Commissioning is the process of preparing a terminal to be able to properly transmit in a network. See Figure 2-15.

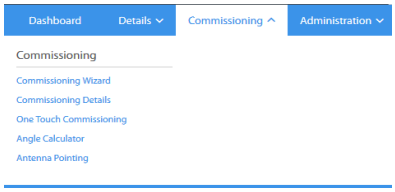

Figure 2-15. Commissioning Menu

2.4.1 Commissioning Wizard

For information on commissioning the terminal using the commissioning wizard, see *Commissioning a Terminal* on page 31.

2.4.2 Commissioning Details

The tab displays the commissioning details of the terminal.

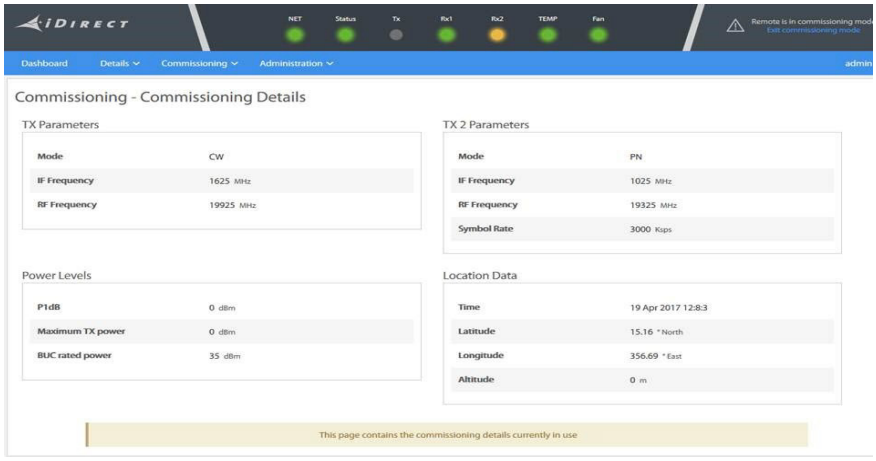

Figure 2-16. Commissioning Details

Table 2-10 describes the commissioning fields in the Terminal WUI.

Table 2-10. Commissioning Details

Menu Item	Sub-menu Item	Description
TX Parameters		
	Mode	Displays the mode as CW.
	IF Frequency	Displays the IF frequency used.
	RF Frequency	Displays the RF frequency used.
Power Levels		
	P1dB	Displays the P1dB level at which the BUC output begins to saturate.
	Maximum TX Power	Displays the maximum allowed transmit power.
TX2 Parameters		
	Mode	Displays the mode as PN.
	IF Frequency	Displays the IF frequency used.
	RF Frequency	Displays the RF frequency used.
	Symbol Rate	Displays the symbol rate of the carrier.
Location Data		
	Time	Displays the time taken to retrieve the longitude and latitude time during commissioning.

Menu Item	Sub-menu Item	Description
	Latitude	Displays the latitude in decimal notation N or S.
	Longitude	Displays the longitude in decimal notation E or W.
	Altitude	Displays the altitude of the terminal.

2.4.3 Angle Calculator

Use this tab to calculate the antenna settings to be used for initial, and manual pointing of the antenna.

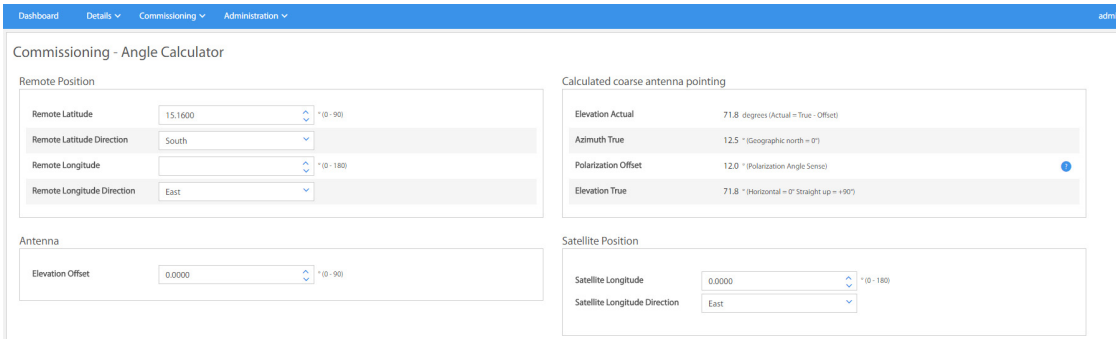

Figure 2-17. Angle Calculator

Table 2-11 describes the angle calculator fields in the Terminal WUI.

Table 2-11. Angle Calculator

Menu Item	Sub-menu Item	Description
Remote Position		
	Remote Latitude	Displays the latitude of the terminal.
	Remote Latitude Direction	Indicates whether the latitude is in the North or South direction.
	Remote Longitude	Displays the longitude of the terminal.
	Remote Longitude Direction	Indicates whether the longitude is in the East or West direction.
Antenna		
	Elevation Offset	The offset angle of the antenna (that is, the degree to which the mechanical axis of the antenna feed is different from the optical axis).

Menu Item	Sub-menu Item	Description
Calculated coarse antenna pointing		
	Elevation Actual	The calculated elevation of the mechanical axis of the antenna reflector.
	Azimuth True	The calculated true azimuth to the spacecraft, referenced to geographic North (does not include magnetic variation).
	Polarization Offset	The calculated polarization skew angle.
	Elevation True	The angle to the spacecraft if the antenna had no offset at all. This value is derived from the site geo-coordinates and the spacecraft longitude. It does not include antenna offset.
Satellite Position		
	Satellite Longitude	Displays the longitude of the satellite.
	Satellite Longitude Direction	Indicates whether the longitude is in the East or West direction.

2.4.4 Antenna Pointing

Use this tab to set the parameters needed to receive a downstream that will be used to fine-point the antenna.

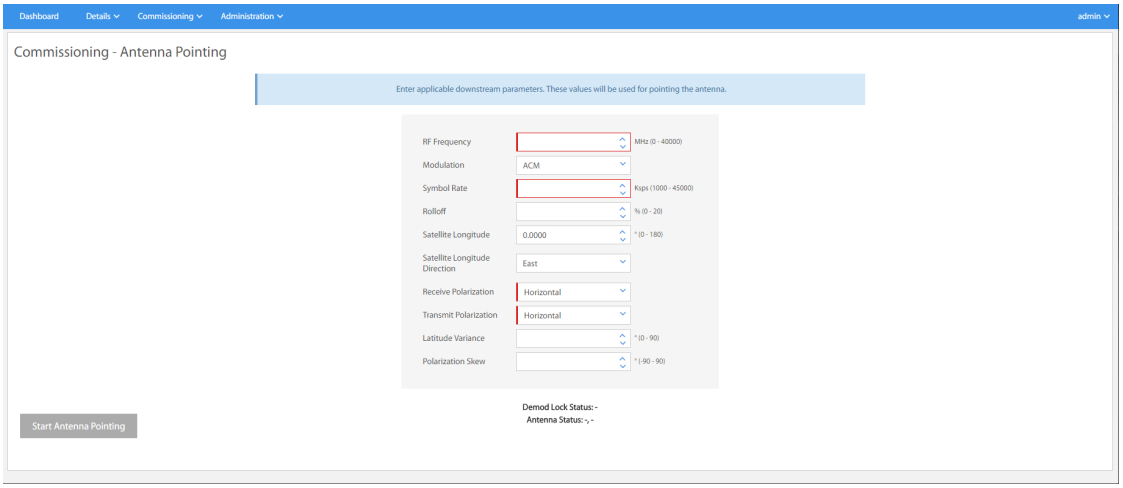

Figure 2-18. Antenna Pointing

Table 2-12 describes the antenna pointing fields in the Terminal WUI.

Table 2-12. Antenna Pointing

Menu Item	Sub-menu Item	Description
	RF Frequency	Describes the RF frequency used.
	Modulation	Displays the modulation options.
	Symbol Rate	Displays the symbol rate selected by the installer.
	Rolloff	Displays the roll-off value.
	Satellite Longitude	Displays the longitude of the satellite.
	Satellite Longitude Direction	Displays the satellite longitude direction.
	Receive Polarization	The values are: L - Left circular R - Right circular V - Vertical H - Horizontal
	Transmit Polarization	The values are: L - Left circular R - Right circular V - Vertical H - Horizontal
	Latitude Variance	Displays the value in degrees for inclined orbit satellites.
	Polarization Skew	Displays the value in degrees for skewed satellites.

3 Commissioning a Terminal

This chapter describes how to commission a terminal for a non-mobile Satellite Router and includes the following sections:

3.1 Introduction

Commissioning is the process of preparing a terminal to be able to properly transmit in a network.

NOTE: For commissioning a remote with manual antenna, see *Manual Antenna Pointing (without OpenAMIP)* on page 32. For commissioning a remote with automatic antennas, see *Automatic Antenna Pointing (with OpenAMIP)* on page 37.

To commission a remote using the Terminal WUI, click **Commissioning** > **Commissioning Wizard**. See Figure 3-1.

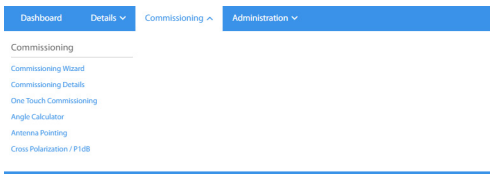

Figure 3-1. Commissioning Menu

Once the user clicks the Commissioning Wizard, the commissioning procedure starts with the following page:

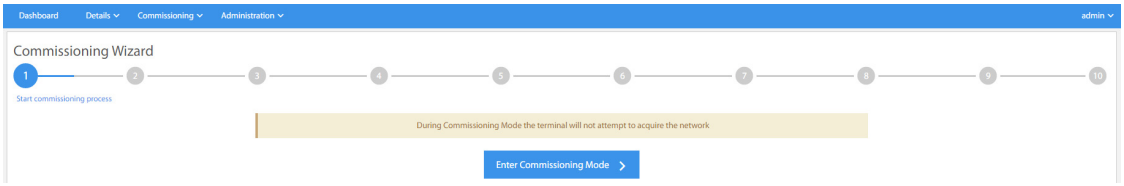

Figure 3-2. Commissioning Wizard

3.2 Software Upgrade

See *Loading Packages using the Terminal WUI* on page 22 and *Loading Option Files using the Terminal WUI* on page 23.

3.3 Manual Antenna Pointing (without OpenAMIP)

Follow the procedure in this section only if a remote is being commissioned with a manual antenna.

Selecting a Site

A comprehensive site survey is beyond the scope of this guide. However, keep the following general guidelines in mind when selecting the site:

- Select a surface level that is approximately 10 feet by 10 feet.
- Avoid proximity to other transmitters.
- Avoid exposing others to incident radiation.
- Verify a clear line-of-sight to the satellite.
- Consider availability of electrical power and routing of cables (power, IFL, LAN).
- Verify that the coaxial IF cables (Tx, Rx) can reach the Satellite Router from the selected antenna location. RG-6 cable may be used up to a distance of 250 feet and if the distance is longer, RG-11 cable must be used up to a maximum distance of 500 feet.
- Ensure that cables do not cross roads or foot-traffic areas.

Assembly

Follow the manufacturer's assembly instructions to assemble and mount the antenna. After installation, ensure that:

- The antenna base is fixed on a stable surface that will not shift.
- Ballast is installed on the antenna base (to combat wind).
- The mast pipe is plumb.

Orientation

The following section describes antenna orientation principles generally applicable to all site installations, illustrated with a typical VSAT antenna configuration. Magnetic variation and elevation offset principles are discussed in detail.

NOTE: The antenna may not be identical to the antenna used in this example. See the antenna manufacturer's instructions for specific information.

Magnetic Variation

Magnetic variation (also referred to as "declination") is the difference between the true heading referenced to the geographic North Pole, and the magnetic heading as registered on a magnetic compass. The magnitude and direction of magnetic variation differs depending upon the geographic location. Magnetic variation changes slowly with time.

Figure 3-3 illustrates magnetic variation in the United States. More detailed, up-to-date maps are available on the Internet, and must be consulted for the latest data.

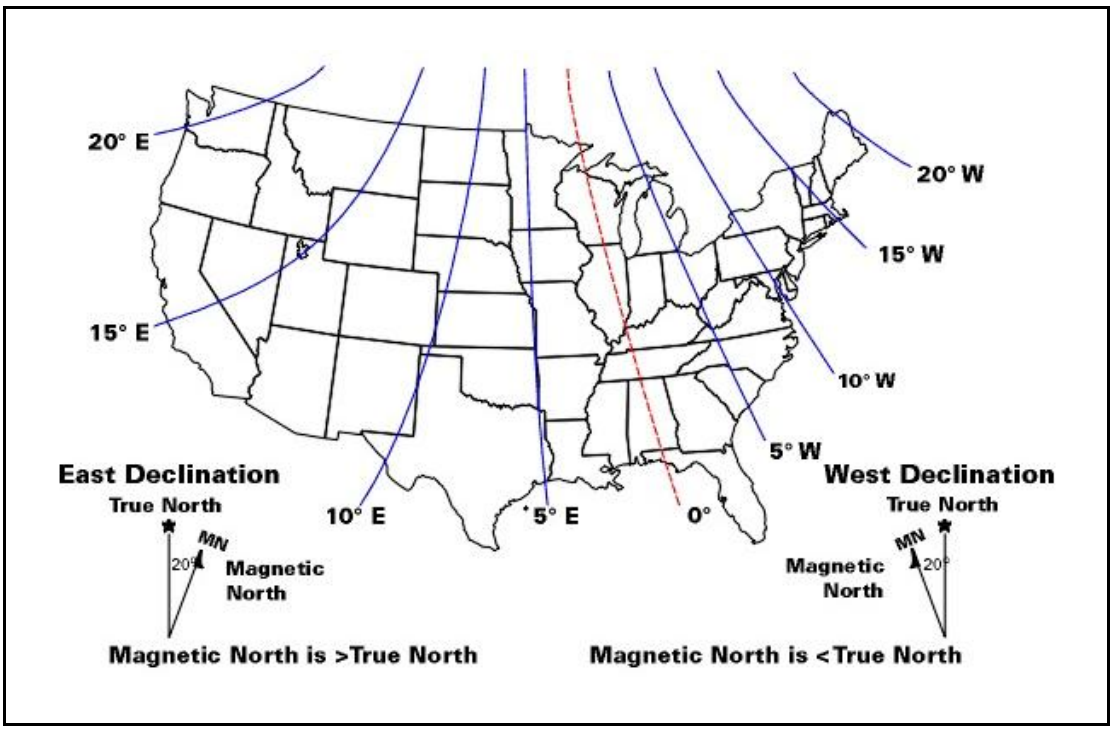

Figure 3-3. Example: Magnetic Declination

Magnetic variation alters the reading of a magnetic compass with respect to true North. Maps and map display systems, including the output of the iDirect **Look Angle Calculator**, are referenced to true geographic North. Therefore a correction factor must be applied to readings taken by a magnetic compass to obtain the correct value, referred to as the true heading.

Magnetic variation is specified in degrees East or West of the *agonic line* (line of zero variation), shown as a red dotted line in Figure 3-3. As depicted in the figure, East declination causes the compass to be deflected to the right of the true heading, while West declination causes the compass needle to deflect to the left of the true heading. Consequently, add West declination, and subtract East declination, from the compass reading to obtain the true heading (Mnemonic: “West is Best, East is Least”).

For example, the illustration depicts the 10° West isogonic line passing through Baltimore, MD. In that location, 10 degrees must be added to the compass indication to obtain the true heading.

Sighting Antenna Azimuth

When sighting the antenna to determine azimuth, it is important to consider the effect of large metal objects nearby, which could influence the compass measurement.

Measure from behind the antenna, looking in the direction of the feed horn. Walk around behind the antenna and watch the compass to determine if the field is uniform or if anomalies exist.

Use an object in the far background as a target to align the compass. Sight along a line perpendicular to the plane of the reflector. The back plate of the reflector assembly can serve as a reference.

Add or subtract the declination in your location to the compass reading. This is the true heading of the antenna. When aligning the antenna to the value determined by the **Look Angle Calculator**, mark the position with a line drawn across the lower section of the azimuth mount and the pole using an indelible marker.

Elevation Offset

An offset antenna has the virtue of unobstructed antenna aperture, especially beneficial for VSAT terminals. Reflector optics are modified from a parabola, allowing the feed to be placed off the mechanical axis. The resulting beam (optical) axis is offset by an angle equal to the angle between the feed and the mechanical axis. See Figure 3-4.

A typical 1.8 meter antenna has a 22.6° offset, while a typical 1.2 meter antenna has a 17° offset. For example, the antenna reflector elevation required to achieve a beam angle of 50° relative to the horizon is calculated as follows for a 1.8 meter antenna:

$$50° - 22.6° = 27.4°$$

The reflector back plate is perpendicular to the mechanical axis of the antenna. When the back plate is vertical (90°), the beam elevation is 22.6°. To move the beam axis to the desired 50° elevation angle as in the example above, the antenna back plate is elevated from 90° to 117.4° (90 + 27.4) or, depending on the type of inclinometer used, a reading of 62.6° (90 - 27.4).

Always refer the original equipment manufacturer’s (OEM) installation instructions when installing the antenna and mount. Consult the OEM specifications to determine the offset angle for the particular antenna being installed.

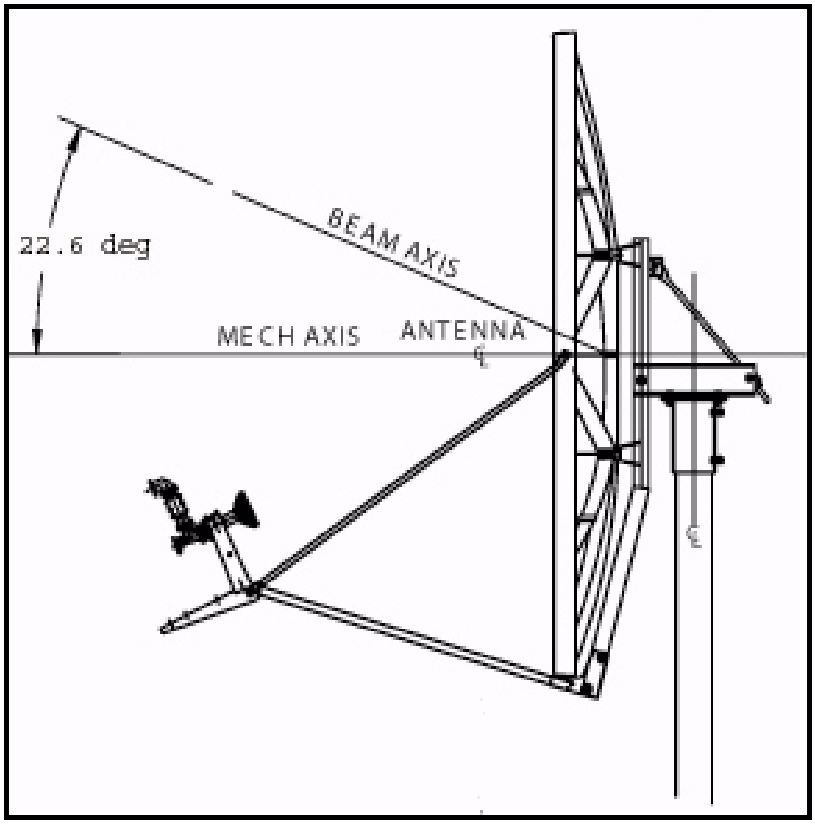

Figure 3-4. Antenna Elevation Offset

Using the Terminal WUI

1. On the terminal WUI, click **Commissioning** > **Commissioning Wizard**. On the **Coarse Antenna Pointing** page (see Figure 3-5), enter or adjust the remotes latitude, longitude, or direction. Click **Save Remote Location and Continue.** Table 2-11 provides the field descriptions.

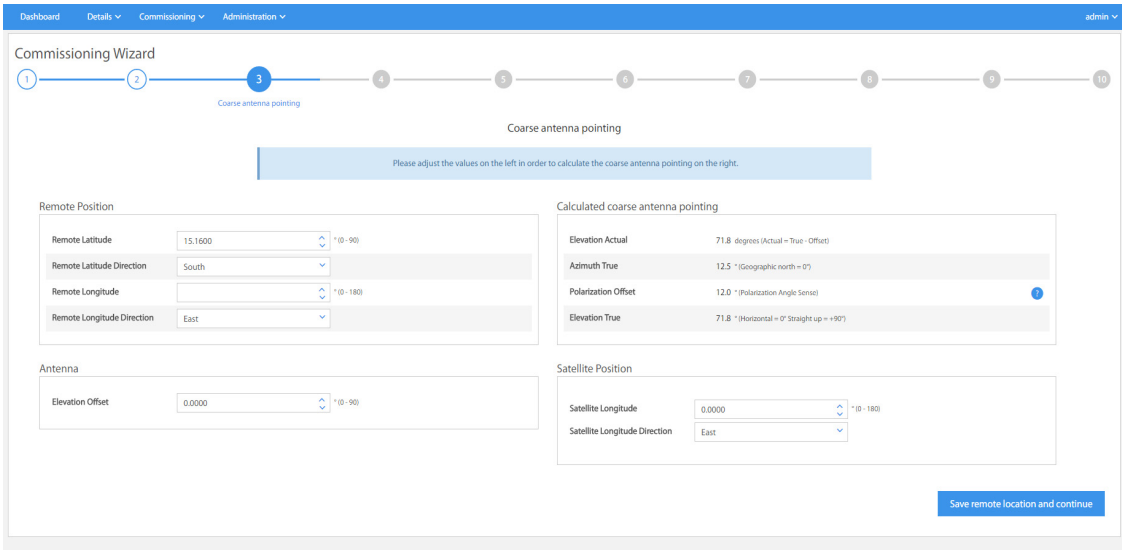

Figure 3-5. Antenna Pointing

2. On the **Configure Downstream** page (see Figure 3-6), tune the parameters until the correct frequency to point to the antenna is achieved. Table 2-12 provides the field descriptions.

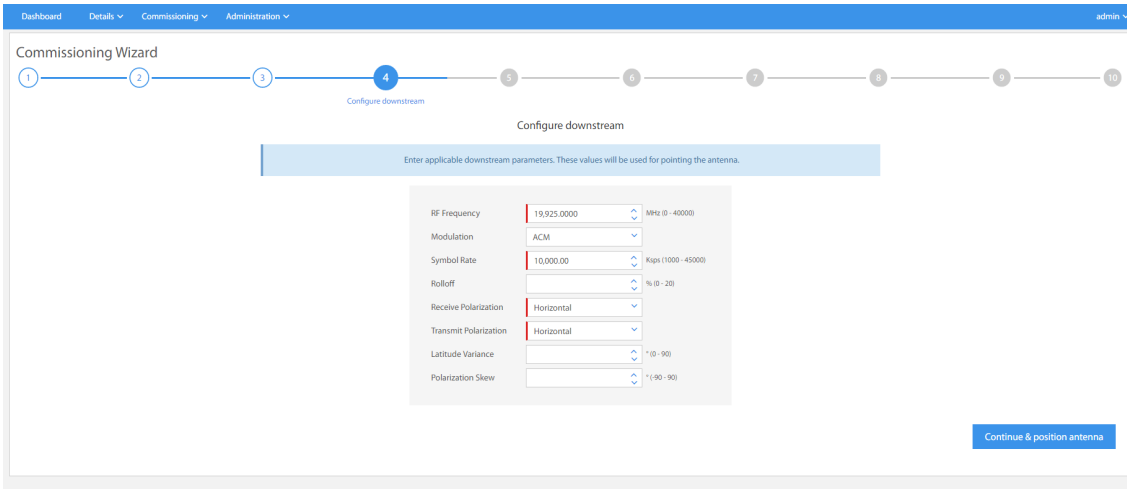

Figure 3-6. Configure Downstream

NOTE: Before pointing the antenna to the satellite, ensure the highlighted step in the **Fine Antenna Pointing** page is followed. Always point the antenna to cold sky first and mark the measurement. The WUI will instruct the installer to turn the antenna towards the satellite.

3. On the **Fine Antenna Pointing** page (see Figure 3-7), physically position the antenna to point to the satellite.

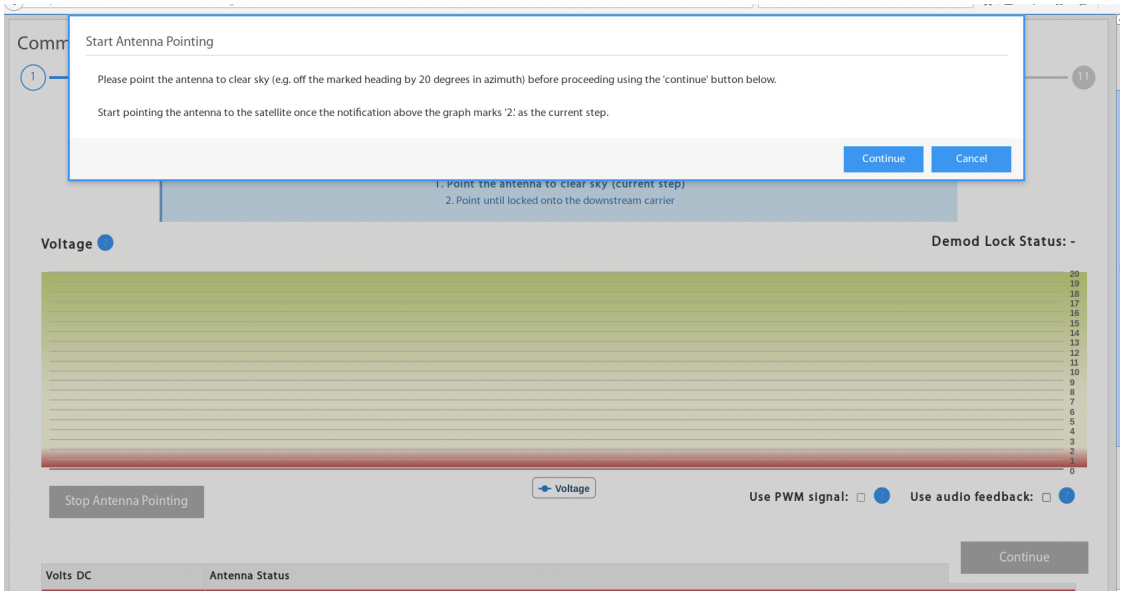

Figure 3-7. Antenna Pointing

4. Click **Start Antenna Pointing** to start positioning the antenna. The user is asked to point the antenna to the clear sky (see Figure 3-7).
5. Once the user points the antenna to the clear sky, click **Continue**.

   The user should wait for the terminal to measure the cold sky reference voltage. The user is allowed to proceed the commissioning wizard only after the measurement is completed.
6. Once the above step is completed, the user points the antenna to the satellite using the voltages on the graph for guidance.

3.4 Automatic Antenna Pointing (with OpenAMIP)

1. On the terminal WUI, click **Commissioning** > **Commissioning Wizard**. On the **Coarse Antenna Pointing** page (see Figure 3-8), enter or adjust the satellites latitude, longitude, or direction. Click **Save Remote Location and Continue.** Table 2-11 provides the field descriptions.

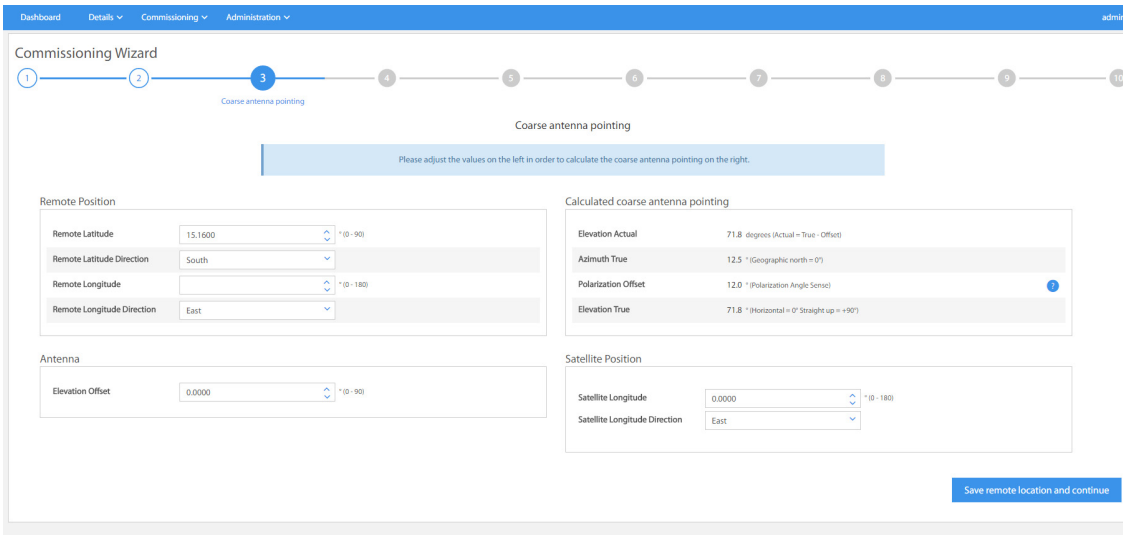

Figure 3-8. Antenna Pointing

2. On the **Configure Downstream** page (see Figure 3-9), enter the required fields. Table 2-12 provides the field descriptions.

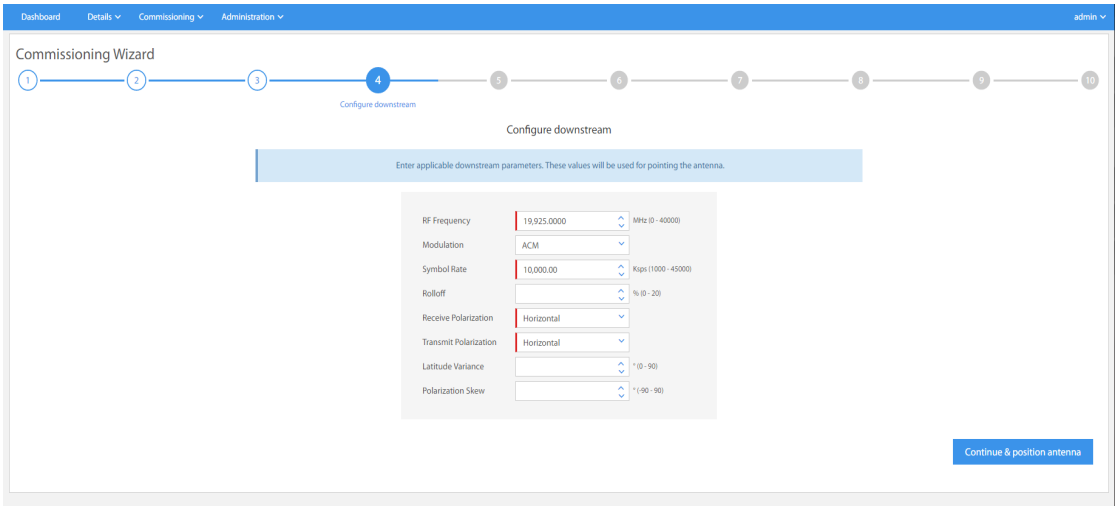

Figure 3-9. Configure Downstream

3. Click **Continue and Position Antenna**. Antenna Pointing starts automatically. The user will not be able proceed (see Figure 3-10) with commissioning until the antenna and demod are locked.

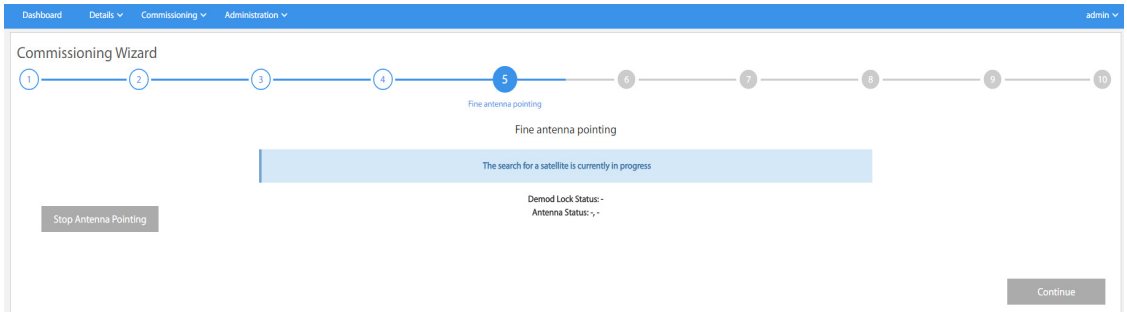

Figure 3-10. Fine Antenna Pointing

3.5 Cross-Polarization Test

Cross-pol isolation is measured over-the-air by the satellite access control center. Be prepared to contact the Network Operator by telephone.

Transmit cross-pol isolation is maximized in order to limit interference to users on the opposite polarity of linearly-polarized satellite transponders. Typically, the spacecraft operator requires a minimum of 30 dB of isolation. To measure this, the terminal must transmit at a power level at least 30 dB above the noise floor of the transponder. The satellite access control center measures and compares the received co-pol and cross-pol energy to determine if the site meets polarity isolation standards.

VSAT terminals using circularly-polarized feed systems need not perform cross-pol tests.

To Prepare for Cross-Pol Adjustment:

1. Disconnect power from the Satellite Router.
2. Disconnect the receive IF cable from the Satellite Router.
3. Connect the transmit IF cable to the BUC Tx input.
4. Connect power to the Satellite Router.
5. Connect to the satellite router's web user interface using a Web browser.
6. Log in as **Admin** and click **Commissioning** > **Cross Polarization/P1dB**. See Figure 3-11.

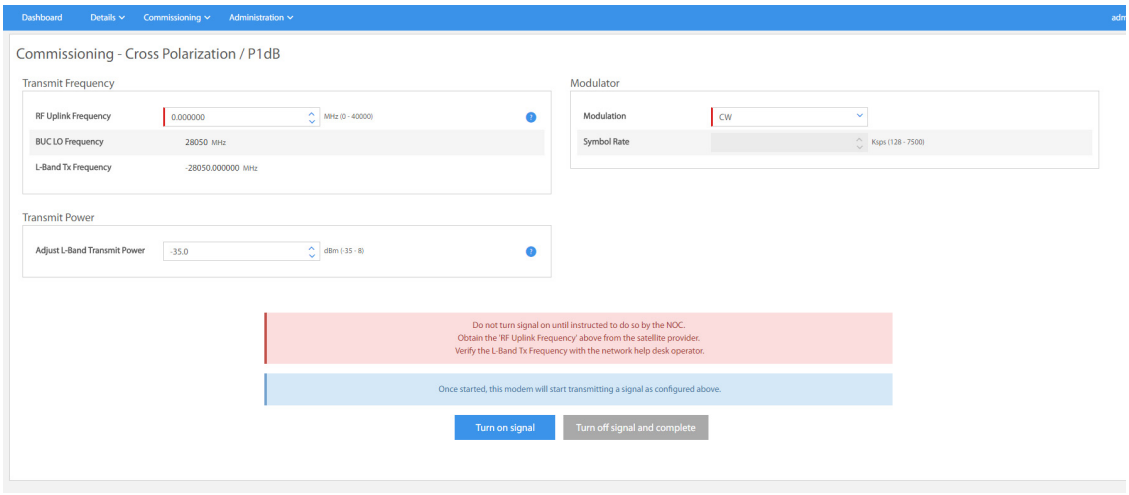

Figure 3-11. Cross Polarization

Satellite Access

WARNING: Do not click the **Turn on Signal** until instructed to do so by the satellite access control center. Clicking the **Turn on Signal** causes the Satellite Router to transmit a continuous-wave (CW) signal to the satellite.

While still connected to the Satellite Router, call the Network Operator. The Network Operator will establish a conference call with the satellite access control center. The access controller will assign an uplink frequency for performing the cross-pol isolation adjustment. For a Satellite Router that transmits an SCPC return channel, the assigned test frequency may be the same as the final operating frequency. For TDMA terminals, cross-pol must be measured at a test frequency different from the traffic-carrying channel.

Preparation

Follow the steps below to prepare for satellite access and cross-pol adjustment:

To Prepare for Satellite Access:

1. Loosen the fasteners securing the feed, as well as the hose clamp on the BUC, so that the entire assembly (feed, BUC, and LNB) rotates freely.
2. Provide the final antenna pointing voltage reading to the Network Operator. The Network Operator records the value.
3. Obtain the test frequency from the satellite access controller.

4. Under **Commissioning** > **Cross Polarization/P1dB** screen, under **RF Uplink Frequency** (Figure 3-11) enter the test frequency.

NOTE: The BUC LO Frequency is read from the options file loaded on the Satellite Router. Using the RF Uplink Frequency and BUC LO Frequency, the L-band TX Frequency is calculated automatically.

5. Verify with the Network Operator that the displayed **L-band TX Frequency** is correct.
6. In **Adjust Transmit Power**, set power to **-35 dBm**.

Performing Cross-Pol Adjustment

During adjustment of the antenna feed, the satellite access controller observes the transmitted signal on a spectrum analyzer, switching from co-pol to cross-pol to compare levels. The controller will ask for power to be increased until sufficient energy is available to detect the cross-pol signal. At that time a polarity adjustment is made. The controller may ask for more changes in transmit power and additional polarity adjustments as needed until the required level of isolation is achieved.

The access controller will not specify a transmit power in absolute terms, such as -35 dBm or -20 dBm. Instead, the controller will ask for power increases or decreases in relative terms, such as a 1 dB increase, or a 2 dB decrease. Perform the following procedure when instructed by the access controller.

To Start the CW Carrier and Adjust TX Polarity Isolation:

1. On the Terminal WUI, click **Turn On Signal** (Figure 3-11).
2. In the terminal WUI, adjust the transmit power as instructed by the access controller by selecting the appropriate power value in the **Transmit Power** section of the Cross Polarization screen (see Figure 3-11).
3. At the instruction of the access controller, rotate the feed slowly in one direction. Move the assembly in small (1/2°) increments.
4. Wait for the access controller to make a measurement. The access controller may say to continue moving the feed in the same direction, or to reverse direction. Continue as directed until the required isolation is achieved.
5. Secure all fasteners and the hose clamp.

It may be necessary to re-peak azimuth and elevation in order to achieve sufficient cross-pol isolation. The access controller may ask for fine adjustments in azimuth or elevation before repeating the cross-pol adjustment. Follow the directions of the access controller. Securely fasten all antenna axes after peaking and isolation have been optimized.

After Securing the Antenna

Wait for the access controller to verify that cross-pol isolation and peaking did not change due to tightening of the antenna axis fixing hardware. Confirm that the Network Operator has recorded the final cross-pol isolation value.

When directed to modulate the test carrier, perform the following:

1. Using the Terminal WUI, on the **Cross Polarization/P1dB** page (see Figure 3-11):
   a. In the **Modulation** field of the **Modulator** section, select **BPSK**.
   b. Enter the **Symbol Rate** as directed.
   c. Click **Turn On Signal**.

After completing the cross-pol isolation adjustments, proceed to *Determining the 1 dB Compression Point* on page 44.

Using the Terminal WUI

1. On the Terminal WUI, click **Commissioning** > **Commissioning Wizard**. On the **Cross Polarization test** page (see Figure 3-12), under **CW Transmit Frequency**, enter the **RF Uplink Frequency**. The **BUC LO** and **L-Band Tx Frequency** are automatically displayed.

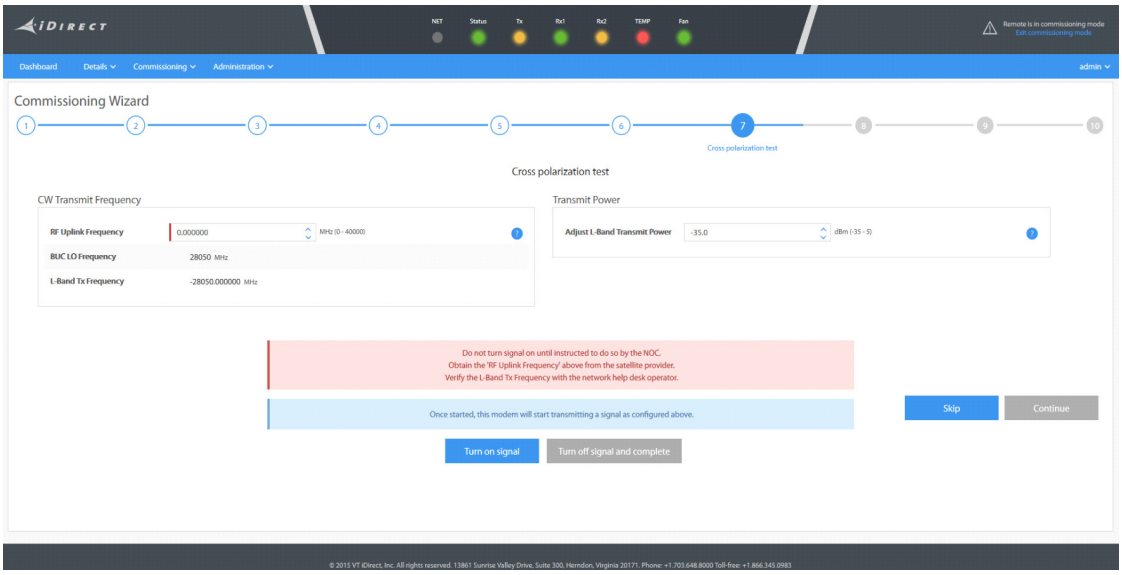

Figure 3-12. Cross Polarization test

NOTE: The satellite provider should provide the RF Uplink Frequency and the NOC operator should provide the Adjust L-Band Transmit Power.

2. Under **Transmit Power**, select the **Adjust L-Band Transmit Power** from the drop-down box.
3. Click **Turn on Signal** once the RF Uplink Frequency and Adjust L-Band Transmit Power are entered. The router starts transmitting CW (continuous waves) at the specified frequency and transmit power.

The user can increase or decrease the frequency and transmit power. Once the CW is transmitted accurately at the desired level, click **Turn off signal and Complete** to stop transmitting CW.

3.6 Adjusting Transmit Power (without OpenBMIP)

P1dB Test

This section describes how to determine the IF drive level that causes 1 dB gain compression of the Block Up-Converter (BUC). This IF level is the “never exceed” level for driving the particular BUC used. The chapter also contains an optional procedure to determine the maximum power with a modulated carrier.

Preparation

Determination of the 1 dB compression point (P1dB) is made immediately following successful cross-pol adjustment. The Satellite Router is transmitting a high-level continuous-wave (CW) signal to the satellite, and the respective **Cross Polarization** windows are open on the local PC user interface. Under direction of the satellite access control center, the Satellite Router transmit IF level is increased until BUC gain compression is detected.

To determine the 1 dB compression point, the access controller must carefully measure incremental power changes at a high resolution. It may be necessary to perform the procedure more than once to be certain that the 1 dB compression point has been properly identified. Follow the direction of the access controller.

The 1 dB compression point is defined as the output power level at which BUC amplifier gain has decreased by 1 dB from the small-signal value. If for example a particular amplifier exhibits a low-power gain of 40 dB, the P1dB point is the output power level at which gain has been reduced to 39 dB. See Figure 3-13 for an illustration of the concept using sample data representing a typical solid-state amplifier.

Although the P1dB point is located beyond the start of gain compression and is therefore in the non-linear region of the transfer characteristic, most BUCs can operate safely at that power level without exceeding the limits imposed by the transmit spectral mask. Many of today’s BUCs are able to maintain acceptable Adjacent Channel Power Ratios (ACPR) while operating within a dB or less of maximum rated power.

Network designers consult manufacturer data sheets to determine the operating point and headroom requirements of individual amplifiers. The considerations are incorporated into the link budget and site provisioning calculations. The purpose of P1dB determination in the iDirect system is to set a maximum IF transmit power limit for each site.

Pin	Pout	Pout Increase	Delta	Gain	
-14	26	1	0	40	Linear Region
-13	27	1	0	40	
-12	28	1	0	40	
-11	29	1	0	40	
-10	30	1	0	40	
-9	31	1	0	40	
-8	32	1	0	40	
-7	32.9	0.9	0.1	39.9	
-6	33.7	0.8	0.2	39.7	
-5	34.4	0.7	0.3	39.4	
-4	35	0.6	0.4	39	Sum of deltas = 1
-3	35.5	0.5	0.5	38.5	
-2	35.9	0.4	0.6	37.9	
-1	36.2	0.3	0.7	37.2	
0	36.4	0.2	0.8	36.4	
1	36.5	0.1	0.9	35.5	
2	36.5	0	1	34.5	
3	36.5	0	1	33.5	

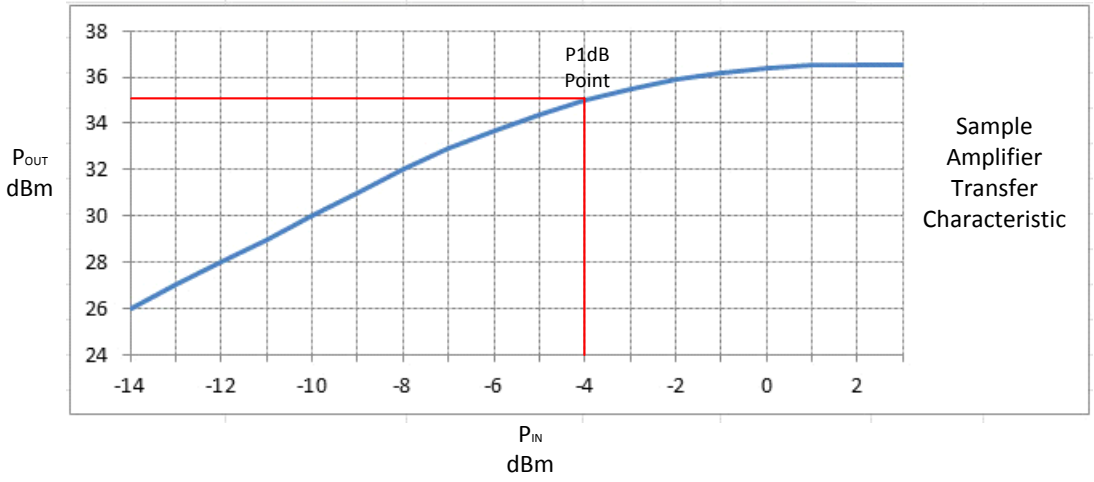

Figure 3-13. Sample Transfer Characteristic

Determining the 1 dB Compression Point

Perform the 1 dB Compression Point test using the same CW carrier used during the cross polarization test. This test determines the point at which the Satellite Router's transmit power saturates the BUC.

If using the Terminal WUI, perform this procedure in the **Transmit Power** section of the Cross Polarization dialog box. See Figure 3-11.

WARNING: To avoid over driving the satellite, the BUC and antenna must be sized correctly for the network.

To Determine the 1 dB Compression Point:

1. With the access controller observing the transmitted CW signal, increase the **Transmit Power** in the Terminal WUI by 1 dBm.

WARNING: If no power increase is observed, the BUC may already be saturated. Although this is unusual, it can occur. Reduce power and try again.

2. If a 1 dB increase in power is observed, increase the **Transmit Power** by another 1 dBm.
3. Repeat Step 2 until the observed power increase is less than 1 dB.
4. Subtract the observed power increase from 1. For example, if power increased by 0.8 dB, the difference is 0.2 dB. Record the difference as “delta.”
5. Increase the **Transmit Power** by 1 dBm. Confirm that the observed power increase is again less than 1 dB from the previous value. Add the difference from 1 to the delta recorded in Step 4.
6. Repeat Step 5 until the sum of all differences (delta) is equal to 1.
7. Record the **Transmit Power** setting of the Satellite Router at the point at which delta equals 1. This is the 1 dB compression point.
8. Click **Turn Off Signal** in the Terminal WUI to turn off the CW carrier.

NOTE: Do not restart or remove power from the Satellite Router.

The 1 dB compression point has now been established.

Optional Procedure to Determine PN Max Power

The optional procedure in this section determines the maximum transmit power of the Satellite Router using a modulated pseudo-noise code (PN) test carrier.

Newer low-cost BUCs use quasi-linear final stage amplifiers (Class AB) to improve DC power consumption and to keep the BUC form factor to a minimum. These BUCs compress a CW tone much earlier than a modulated carrier. There can be as much as 3 dB difference in maximum EIRP when the maximum power is determined using a modulated PN carrier versus a CW carrier. This discrepancy is mainly due to the crest factor difference in the waveforms that results in shifting the bias point of the amplifier. Linear BUCs do not exhibit this characteristic, making the EIRP difference for those BUCs less significant.

Adaptive TDMA reduces the need to provision VSAT terminals with large rain fade margins. This improves throughput in clear sky conditions. Since a terminal so provisioned operates very near its maximum output power under most conditions, proper determination of maximum power is extremely important in an Adaptive TDMA system.

The maximum power must be configured such that the levels do not exceed the target Adjacent Channel Interference (ACI). The procedure defines maximum power to be the power which meets the maximum Adjacent Channel Power Ratio (ACPR) limit permitted by the spacecraft operator for the modulated carrier. The acceptable ACPR varies depending upon the particular spectral mask definition, which in turn varies by signal type, transponder, and spacecraft operator. This procedure generates a BPSK PN sequence. The default Symbol Rate of 128 ksps should be used for this procedure. This carrier configuration produces a worst-case ACPR compared to all other MODCODs and symbol rates supported in iDirect networks.

NOTE: This procedure assumes the acceptable side lobe level is -20 dBc.

NOTE: This procedure assumes that the maximum power configured on the Satellite Router is set to the highest possible value. The maximum value is +5 dBm for all Satellite Routers.

To Determine Maximum Power:

1. After performing the P1dB compression test, ask the access controller for permission to radiate a modulated carrier. The test carrier requires 154 kHz of satellite bandwidth.
2. Advise the access controller to configure the spectrum analyzer as follows:
   - Resolution BW: < 8 kHz
   - Span: 800 kHz
   - Vertical scale: 2 dB/div
   - Video BW: 1 kHz
   - Averaging: 10 sweeps (This is required to smooth out in-band ripple)
3. Start the **Transmit Power** at the CW P1dB power level. (Refer to Figure 3-11).
4. Wait until the access controller is ready.
5. Using the Terminal WUI:
   a. In the **Modulation** field of the **Modulator** section, select **BPSK** (Figure 3-11).
   b. Accept the default **Symbol Rate** of 128 kilo-symbols per second.
   c. Click **Turn on Signal** to transmit the modulated carrier.
6. While the access controller observes the spectrum analyzer, increase power in 1 dB increments.
7. After each 1 dB power increase, have the access controller clear the averaging mode set in Step 2 and restart averaging.
8. Continue to increase power in 1 dB units. Stop when one of the following occurs:
   a. The total change in observed signal level is 1 dB less than the total change in transmit level
   b. The difference between the main lobe and the side lobes becomes less than 20 dB

c. The total increase from the CW P1dB exceeds 6 dB and neither of the above conditions is observed

NOTE: If the total increase from the CW P1dB is greater than 3 dB, ensure that the CW P1dB was determined correctly in ***Determining the 1 dB Compression Point* on page 44**.

9. Record the **Transmit Power** setting at which one of the conditions in Step 8 occurred.

Disconnect the access control center from the call.

Using the Terminal WUI

1. On the Terminal WUI, click **Commissioning** > **Commissioning Wizard**. On the **P1dB test** page, a cross-polarization test will allow the installer to transmit a signal back to the hub that an operator at the hub can use to compare the received signal level between horizontal and vertical polarization.

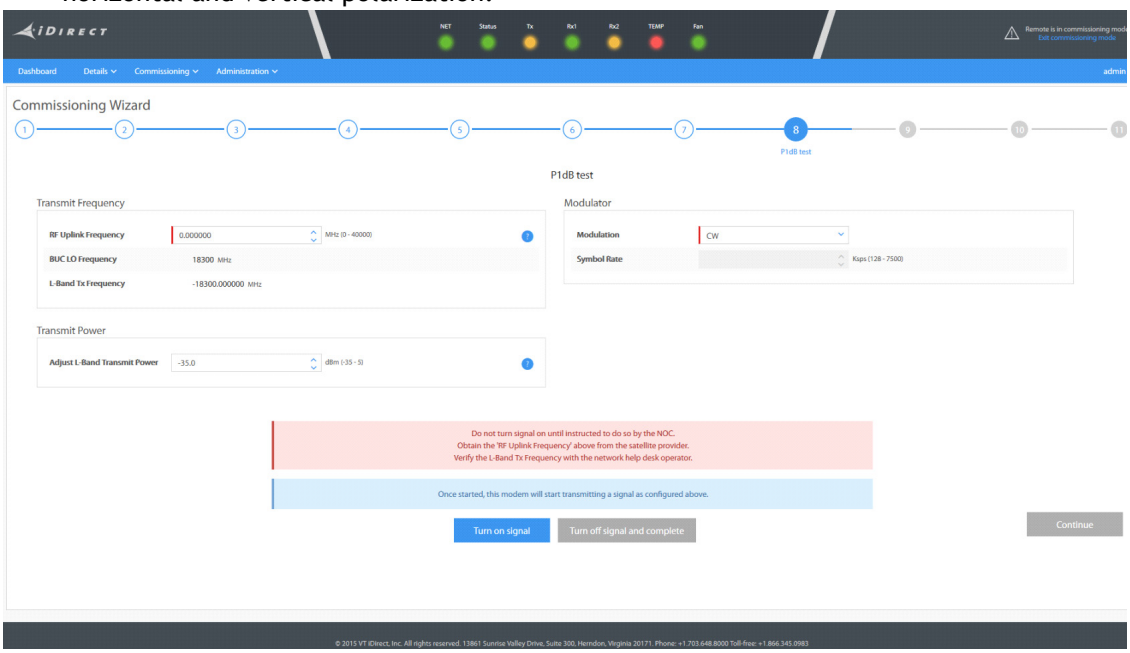

Figure 3-14. P1dB Test

2. Under **Transmit Frequency**, enter the **RF Uplink Frequency**. The user needs to get the RF uplink frequency from the Network Operator. This is the frequency at which the router would transmit. The BUC LO Frequency is automatically populated from the terminal option file. The L-Band Tx Frequency is calculated based on the RF uplink frequency and BUC LO Frequency.
3. Under **Modulator**, from the drop-down list, select the **Modulation**. The user should receive the modulation details from the network operator.
4. Once the required Modulation is selected, select the **Symbol Rate** for that modulation.

Click **Continue**. The **Transmit Power Parameters** page is displayed.

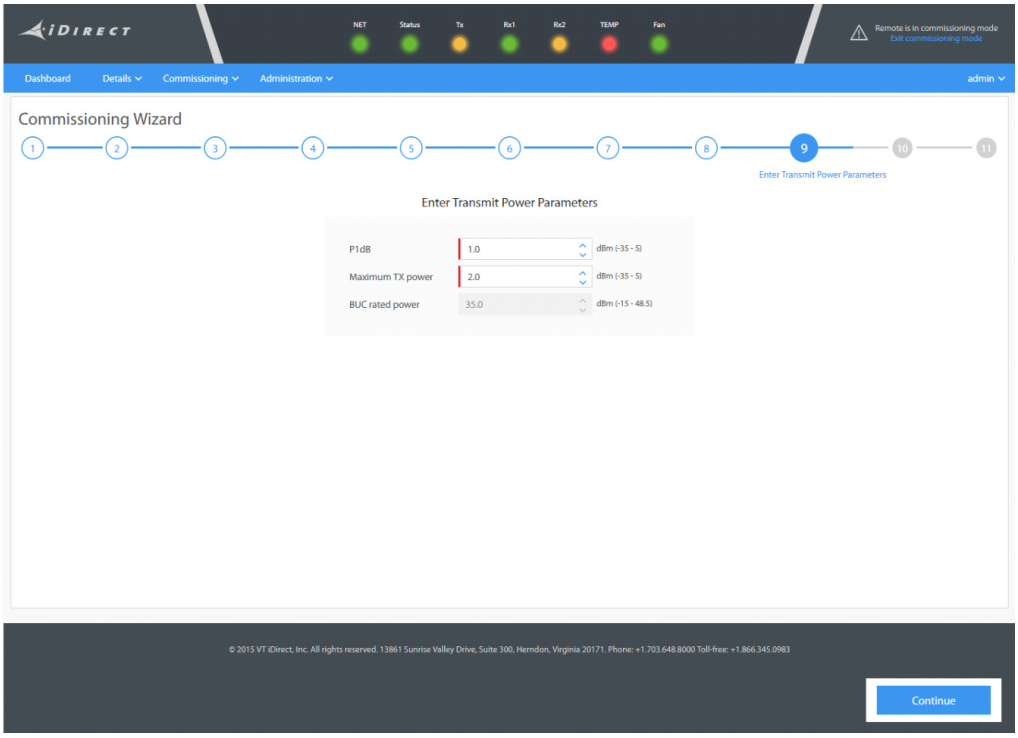

Figure 3-15. Transmit Power Parameters

5. Enter the P1dB and Maximum TX power. The P1dB and Maximum TX power values are based on the results of the P1dB test page.

6. Click **Continue**. The **Exit Commissioning Mode** page is displayed.

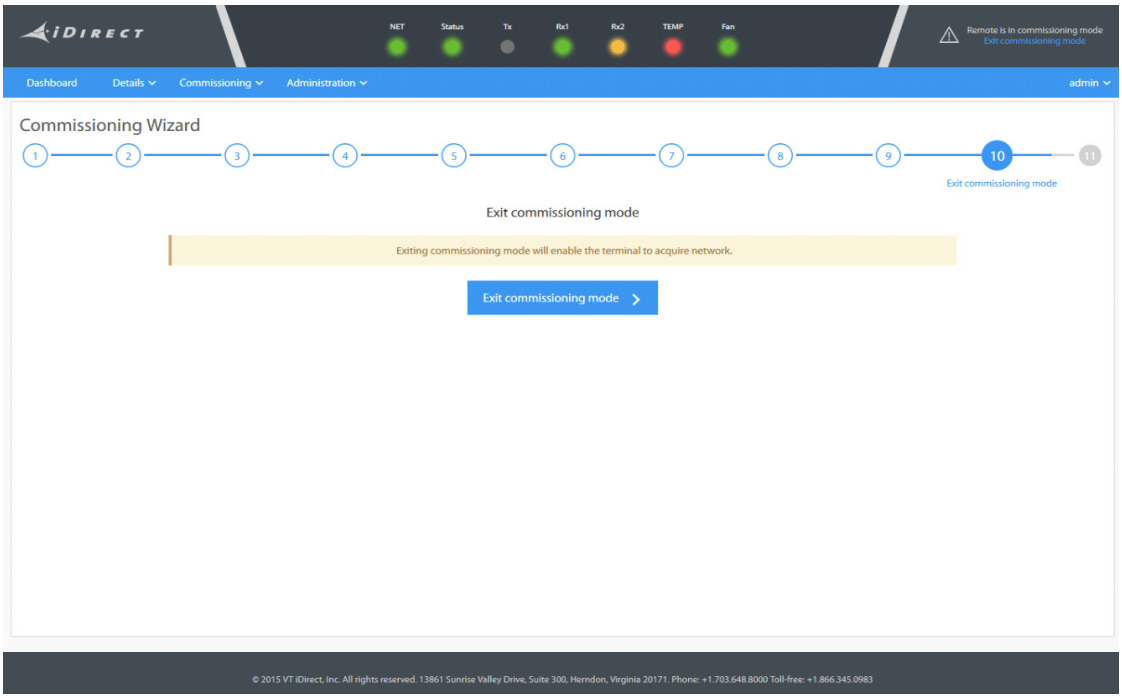

Figure 3-16. Exit Commissioning Mode

7. Click **Exit Commissioning Mode**. The terminal is successfully commissioned.

3.7 Adjusting Transmit Power (with OpenBMIP)

To use this automated way of commissioning the terminal, the user will require a factory calibrated BUC supporting OpenBMIP to calibrate the transmit power of the terminal.

The prerequisite required to perform One-Touch Commissioning is a BUC supporting OpenBMIP.

Procedure

1. On the **Terminal UI**, click **Commissioning** > **One-Touch Commissioning**.

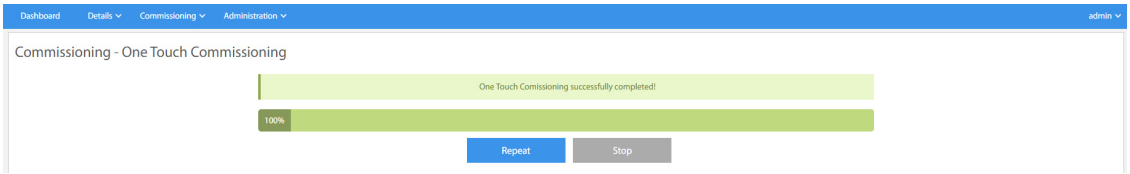

Figure 3-17. One-Touch Commissioning

2. Click **Start** to start commissioning the terminal.
3. Reboot the remote and exit the commissioning mode.

Once the commissioning is complete, the user can view the status of the terminal under Commissioning Details page. To view the commissioning details, click **Commissioning** > **Commissioning Details**.

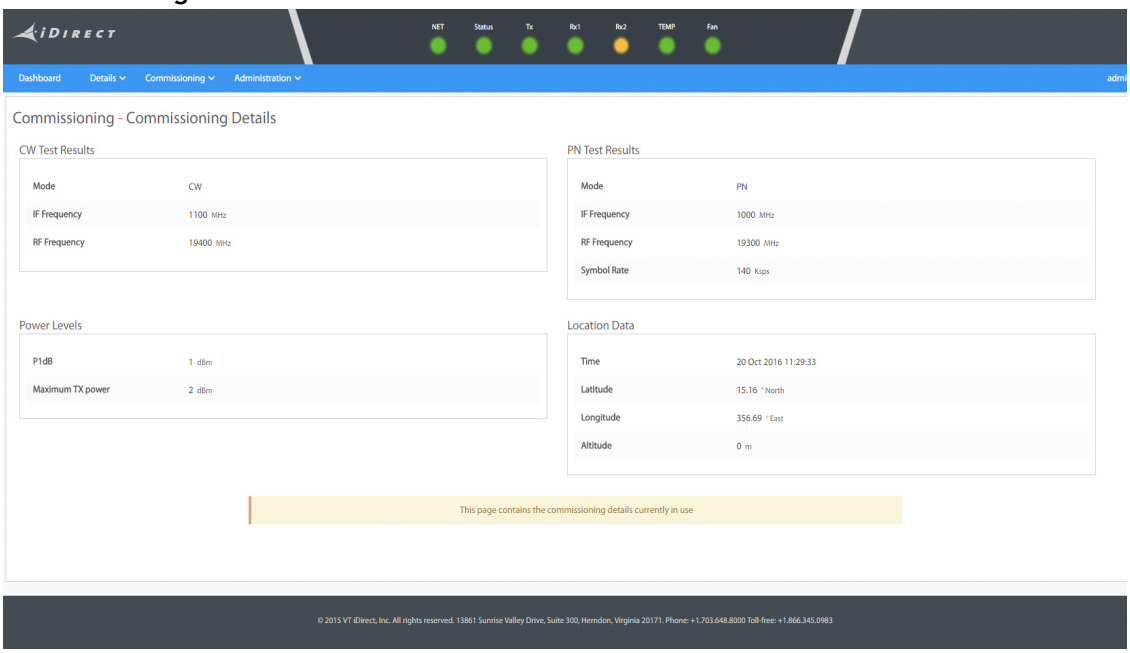

Figure 3-18. Commissioning Details

Appendix A Acronyms and Abbreviations

The list in this appendix is meant to be generic and may contain acronyms and abbreviations not found in this manual and some terms may not be defined based on industry standards of knowledge.

0…9

16APSK	Sixteen Amplitude and Phase Shift Keying
8PSK	Eight Phase Shift Keying

A

A-TDMA	Adaptive Time Division Multiple Access
ABS	Automatic Beam Switching
AC	Alternating Current
ACM	Adaptive Coding and Modulation
ACS	Antenna Control System
AES	Advanced Encryption Standard
APSK	Amplitude and Phase-shift keying
AWG	American Wire Gauge
AZ	Azimuth

B

BB	BaseBand
BIM	Below-Decks Interface Module
BIST	Built-In Self-Test
BITE	Built-In Test Equipment
BPN	BUC Part Number
BPSK	Binary Phase Shift Keying
BSN	BUC Serial Number

BTP	Burst Time Plan
BUC	Block Up Converter

C

C/N	Carrier to Noise ratio
CBIT	Continuous Built In Test
CDR	Critical Design Review
CIR	Committed Information Rate
CPE	Customer Premise Equipment
CPU	Central Processing Unit
CRC	Cyclic Redundancy Check
CSA	Canadian Space Agency

D

DAC	Digital to Analog Converter
dB	deciBel
dBi	deciBel isotropic
dBm	deciBel milli-Watt
dBW	deciBel Watt
DC	Direct Current
DDR	Double Data Rate
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name Service
DVB-S2	Digital Video Broadcasting over Satellite, Second Generation

E

EIRP	Effective Isotropic Radiated Power
Eb/N0	Bit Energy to Noise Power Spectral Density ratio
EEPROM	Electrically Erasable Programmable Read-Only Memory
EL	Elevation
EMC	ElectroMagnetic Compatibility
EMI	ElectroMagnetic Interference
ETSI	European Telecommunications Standards Institute

F

FCC	Federal Communication Commission
FEC	Forward Error Correction
FID	Functional ID
FMECA	Failure Mode Effects Criticality Analysis
FPGA	Field Programmable Gate Array
FS	Functional Specification

G

G/T	Gain over Temperature
GHz	GigaHertz
GPIO	General-Purpose Input/Output
GPS	Global Positioning System

H

HCP	High-Capacity Payload

I

IBIT	Initiated Built In Test
ICD	Interface Control Document
ICMP	Internet Control Message Protocol
iDX	Evolution Software System
IEC	International Electrotechnical Commission
IFL	Inter-Facility Link
IF	Intermediate-frequency
IP	Ingress Protection
IP	Internet Protocol
IR	Information Rate

J

K

kbps	kilobit per second
kHz	kilohertz
KRFU	Ku/Ka-band Radio Frequency Unit
ksps	kilosymbol per second

L

LAN	Local Area Network
LDPC	Low-Density Parity Coding
LED	Light Emitting Diode
LNB	Low Noise Block Converter
LOS	Loss of Signal
LRU	Line-Replaceable Unit

M

Mbps	Megabits per second
Mcps	Megachips per second
MES	Mobile Earth Station
MF-TDMA	Multi-Frequency TDMA
MHz	Megahertz
MID	Manufacturer ID
MIL-STD	US Military Standard
MODCOD	Modulation and Coding
Msps	Mega Symbols per Second
MTBF	Mean Time Between Failures
MTBUR	Mean Time Between Unscheduled Removals

N

NAND	Not AND
NF	Noise Figure
NOR	Not OR
NMS	Network Management System

O

OAE	Outside Antenna Equipment
ODU	Outdoor Unit
OEM	Original Equipment Manufacturer
OMT	Orthogonal-Mode Transducer
OpenAMIP	Open Antenna-Modem Interface Protocol
OTA	Over The Air
OTP	One Time Programmable

P

PA	Power Amplifier
PAST	Person-Activated Self-Test
PCB	Printed Circuit Board
PC	Personal Computer
PDR	Preliminary Design Review
PLL	Phased Locked Loop
PSK	Phase Shift Keying
PSU	Power Supply Unit

Q

QEF	Quasi Error Free
QoS	Quality of Service
QPSK	Quadrature Phase Shift Keying

R

RF	Radio Frequency
RGMII	Reduced Gigabit Media Independent Interface
RMS	Root Mean Square
RoHS	Restriction of Hazardous Substances
ROM	Read-Only Memory
RSSI	Receive Signal Strength Indication
RTP	Real-Time Protocol
Rx or RX	Receive

S

SAS	Satellite Access Station
SCPC	Single Channel Per Carrier
SGMII	Serial Gigabit Media Independent Interface
SIM	Subscriber Identity Module
SNR	Signal to Noise Ratio
SRS	Systems Requirement Specification
SRU	Shop Replaceable Unit
SSB	Single Side Band

T

TBD	To Be Defined
TCP	Transmission Control Protocol
TDMA	Time Division Multiple Access
TFI	Terminal Functional ID
TMI	Terminal Manufacturer ID
TPCFEC	Turbo Product Code FEC
TPN	Terminal Part Number
TSN	Terminal Serial Number
TTC	Terminal Transmit Control
Tx or TX	Transmit

U

UDP	Universal Data Protocol
UL	Underwriters Laboratories

V

VAC	Volts Alternating Current
VDC	Volts Direct Current
VSAT	Very Small Aperture Terminal

W

WFQ	Weighted Fair Queuing
WGS	Wideband Global SATCOM

X

X

Z

iDirect

13861 Sunrise Valley Drive, Suite 300
Herndon, VA 20171-6126
+1 703.648.8000
+1 866.345.0983

www.idirect.net

Advancing a Connected World