

MDM2200 IP Satellite Modem

User Manual

Release 2.2.5



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About this manual

This user manual is intended for the user of the MDM2200 IP satellite modem. It provides a description of the modem and a detailed description of how to use the GUI (Graphical User Interface).

Cautions and Symbols

The following symbols appear in this manual:



A caution message indicates a hazardous situation that, if not avoided, may result in minor or moderate injury. It may also refer to a procedure or practice that, if not correctly followed, could result in equipment damage or destruction.



A hint message indicates information for the proper operation of your equipment, including helpful hints, shortcuts or important reminders.



A reference message is used to direct to; an internal reference within the document, a related document or a web-link.

Important Safety Precautions



Please first read the safety precautions which can be found on the CD-ROM provided with your modem.

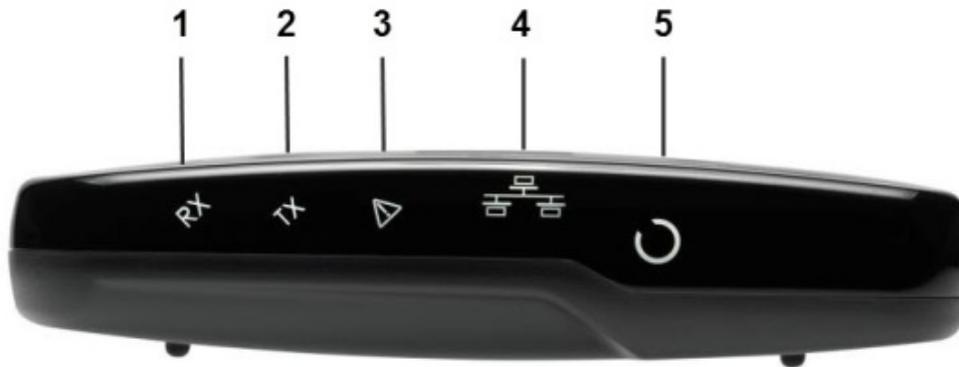
Table of Contents

- About this manual 3**
 - Cautions and Symbols 3
 - Important Safety Precautions 3
- 1 Modem Description 6**
 - 1.1 Modem Front Panel 6
 - 1.2 Modem Back Panel 7
 - 1.3 Power Supply..... 8
- 2 Modem Web Interface 9**
 - 2.1 Connecting the Modem to Your Computer 9
 - 2.2 How to Access the Modem Web Interface? 9
 - 2.3 Overview Web Interface 10
 - 2.3.1 General Lay Out 10
 - 2.3.2 Menu Structure 11
 - 2.4 Status Bar 12
 - 2.4.1 Ethernet LED 12
 - 2.4.2 Satellite LED 12
 - 2.4.3 Software LED..... 12
 - 2.4.4 Rebooting the Modem 13
 - 2.5 Status Page 13
 - 2.5.1 Introduction 13
 - 2.5.2 Overview 14
 - 2.5.3 Interface Statistics 15
 - 2.6 Configuration 16
 - 2.6.1 Ethernet Interface 16
 - 2.6.2 Satellite Interface 17
 - 2.6.3 Multicast..... 21
 - 2.6.4 Outdoor Unit 23
 - 2.7 Device..... 28
 - 2.7.1 Software..... 28
 - 2.8 Terminal Installation 30
 - 2.8.1 Introduction 30
 - 2.8.2 Selecting the Outdoor Unit 30
 - 2.8.3 Selecting the Spot Beam 31
 - 2.8.4 Pointing the Antenna 31
 - 2.8.5 Software Download 34

- 2.8.6 Validating the Installation.....35
- 2.9 Diagnostic report38
 - 2.9.1 The Short Diagnostic Report38
 - 2.9.2 The Extended Diagnostic Report.....38
- 2.10 Test.....40
 - 2.10.1 Test Descriptions40
 - 2.10.2 On-Screen Test Results43
 - 2.10.3 Export Test Results44
- 3 Appendix A – Acronyms.....45**
- 4 Appendix B – Licenses46**

1 Modem Description

1.1 Modem Front Panel



Nr	What	Description
1	RX indicator LED	Blue continuous – forward satellite signalling receiving.
2	TX indicator LED	Blue blinking – traffic transmitting via the satellite link.
3	Warning LED	Yellow continuous – when the terminal is not logged on to the satellite network
4	LAN indicator LEDs	<ul style="list-style-type: none"> • Left: Blue continuous – link layer status. • Right: Blue blinking – Ethernet frames are received or transmitted.
5	Power LED	Blue continuous – when powered up.

Table 1 - Description of the Elements on the Modem Front Panel

1.2 Modem Back Panel



Nr	What	Description
1	18V/24V power cable connector	Power connector (5.5/2.1mm plug).
2	TX connector	Indoor connection for the transmit coax cable.
3	RX connector	Indoor connection for the receive coax cable.
4	Micro SD	For future use – not yet supported.
5	Ethernet cable connector	Connection for the LAN, type RJ-45 (Ethernet cable).
6	Reset button	Multi-functional button: <ul style="list-style-type: none"> • Press once briefly (hold less than 5 seconds) to reboot the modem; • Press and hold for more than 5 seconds to perform a Factory Reset. This will reboot the modem and change all IP-settings back to the default factory settings.
7	USB Port	For future use – not yet supported.

Table 2 - Description of the Elements on the Modem Back Panel

1.3 Power Supply

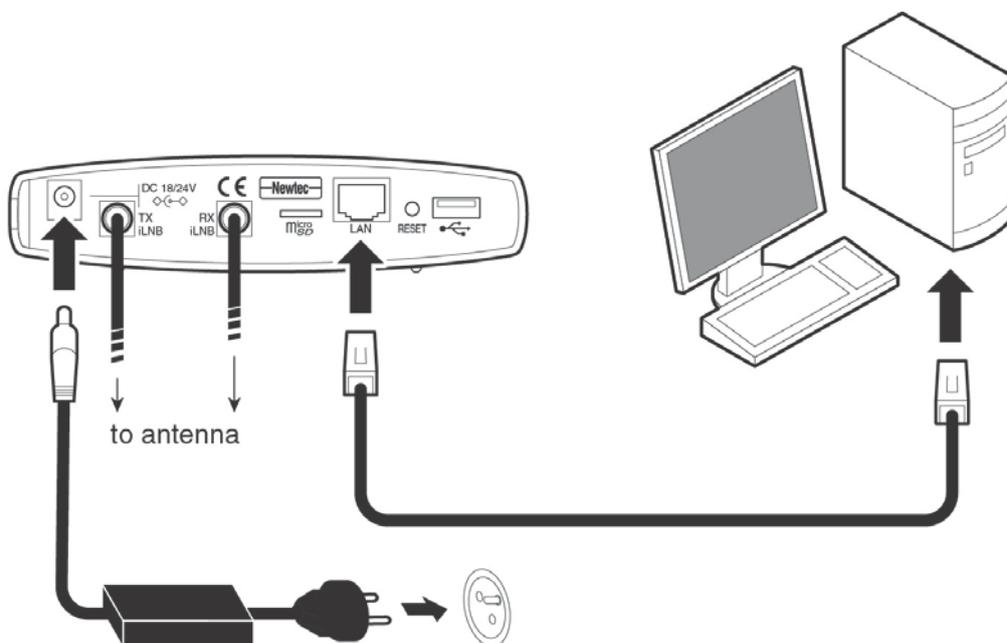


- Universal input range: nominal 100 – 240 Volt / 50 – 60 Hz;
- IEC60320/C14 socket;
- CE approved;
- Output 18V / 2A (ILB2110, ILB2120, ILB2121) or 24V / 2.5A (ILB2140, ILB2141, ILB2210);
- Plug 5.5 x 2.1 mm.

2 Modem Web Interface

2.1 Connecting the Modem to Your Computer

- Plug the network cable in the modem's and your computer's Ethernet ports.
- Connect the power adapter provided in the box gently to the modem and a wall outlet. The result should resemble like the figure below.



Check if your computer is set to DHCP. This way the computer can receive an IP address from the modem.



To check and/or change your IP settings, please refer to the help pages of the Operating System on your computer.

2.2 How to Access the Modem Web Interface?

In the normal operational mode a connected computer should be configured in DHCP mode to retrieve an IP address automatically and to retrieve the DNS server. The modem acts as a DHCP server for the computer.

Browse to the Web Interface

- Type the modem's address in the address bar of the browser: 192.168.1.1.



The first time your modem starts up, you are re-directed to the Terminal Installation page. If your modem has already been installed before, you are re-directed to the Status page of the terminal.

When the terminal is not linked to the satellite network, after three minutes, the computer will automatically receive its IP address, via DHCP, from the modem and you will then be able to browse the web interface.

If no DHCP address is assigned to your terminal: remove the Ethernet cable from your computer, wait a few seconds, and plug the Ethernet cable back into your computer. If the problem remains, you need to assign a static IP address to your computer.

2.3 Overview Web Interface

2.3.1 General Lay Out

Overview

- Modem State:** operational
- Demodulator:** -65.0 dBm, E_s/N_0 : 19.5 dB
- Software Version:** 2.2.3.12

Interface Statistics

Interface		bytes	packets	errors	dropped
Ethernet Interface	RX	5840126	49054	0	0
	TX	47813482	40713	0	0
Satellite Interface	RX	58391	168	0	0
	TX	6269	75	9	9

Each of the web interface pages contains the same elements.

- **A – Banner:** The banner contains the Newtec logo and shows the Air MAC address.
- **B – Status bar:** The status bar always shows the most important status LEDs. This information will be specified in the body of the Status page.
- **C – Menu structure:** On the left hand side of the page the site navigation is found. Click an item to select it.
- **D – Body:** The actual content of the web interface is shown in the body. It always shows the page title and one or more content blocks or forms.

2.3.2 Menu Structure

Menu
▶ Status
Configuration
Ethernet Interface
Satellite Interface
Multicast
Outdoor Unit
Device
Software
Hardware
Terminal Installation
Diagnostic Report
Test

- **Status**
 - Check on the device and network status.
- **Configuration**
 - **Ethernet Interface**
 - Check and alter the Ethernet interface configuration.
 - **Satellite Interface**
 - Check and alter the Satellite interface configuration.
 - **Multicast**
 - Check and alter the Multicast configuration.
 - **Outdoor Unit**
 - Check and alter the Outdoor Unit configuration.
- **Device Interface**
 - **Software**
 - Check or alter the software version.
 - **Hardware**
 - Check the Hardware version.
- **Terminal Installation**
 - Run the installation procedure.
- **Diagnostic report**
 - Generate a diagnostic report.
- **Test**
 - Run tests on the device.

2.4 Status Bar

2.4.1 Ethernet LED

The **Ethernet** LED gives the general status of the Ethernet connection to the modem.

LED colour code	Description
Red	Connection is not OK.
Yellow	Connection is OK, but no DHCP address is given.
Green	A DHCP address is given and the connection is OK.

Table 3 - Status LEDs > Ethernet

2.4.2 Satellite LED

The **Satellite** LED gives the general status of the Satellite connection to the modem.

LED colour code	Description
Red	No connectivity, no valid signal received.
Yellow	A valid signal was received. The terminal is busy logging in on the satellite network.
Green	The system is operational and the user is logged in on the satellite network.

Table 4 - Status LEDs > Satellite

2.4.3 Software LED

The **Software** LED gives the general status of the installed software or the updates.

LED colour code	Description
Red	The terminal has a newer software version than the running software version, and the newer software version was not selected because the software validation process failed.
Yellow	The terminal is retrieving new software via satellite. This can take up to 10 minutes.
Green	No problem. The terminal is running with the latest software version.

Table 5 - Status LEDs > Software

2.4.4 Rebooting the Modem



See section 1.2 for similarities with the hardware button reboot.



- Click the [Reboot] link at the right of the status bar to reboot the terminal.

The modem will reboot and return to the Status page. This may take up to one minute, including satellite link initialization.

2.5 Status Page

2.5.1 Introduction

The Status Page contains two parts as shown in the figure below:

- **Overview**
This part gives an overview of the modem, demodulator and software state.
- **Interface Statistics**
This part gives an overview of the modem statistics.

Status

Overview

- **Modem State:** operational
- **Demodulator:** -47.8 dBm, E_s/N_0 : 22.4 dB
- Software Version:** 2.2.4.19

Interface Statistics

Interface		bytes	packets	errors	dropped
Ethernet Interface	RX	1097368	9046	0	0
	TX	4155957	8622	0	0
Satellite Interface	RX	131981	760	0	0
	TX	13848	123	146	146

2.5.2 Overview

2.5.2.1 Modem State

The modem state is indicated by a colored LED and a state description. For the LED color code, refer to Table 6. The possible modem state descriptions are given below.

Modem state	Colour	Description
Awaiting installer action	Red	The terminal is waiting for an action of the installer.
Satellite network lookup	Red / Yellow	The terminal is looking for the satellite network.
Synchronising	Yellow	The terminal found the satellite network and time synchronisation.
Synchronised	Green	The terminal is synchronised and can directly log in on the satellite network when IP traffic is received via the Ethernet interface.
Network login	Yellow	The terminal is trying to log in on the satellite network.
Operational	Green	The terminal is logged in.

Table 6 - Status Page > Modem State

2.5.2.2 Demodulator

The Demodulator state is indicated by a colored LED and a state description.

LED colour code	Description
Green	The demodulator is locked.
Red	The demodulator is not locked.

Table 7 - Status Page > Demodulator LED

The demodulator state is built as follows (see Table 8 for more details):

- *-95.0 dBm, Es/No: 23.2 dB, <Satellite network name>*

Demodulator label value	Description
-xx.x dBm	Indication of the received signal strength expressed in dBm. This indication can change when going from pointing mode to operational mode.
Es/No	Es/No is an indication of the received signal quality expressed in dB. This indication can change when going from pointing mode to operational mode.
Satellite network name	Optional satellite network name as specified by the Network Operator.

Table 8 - Status Page > Demodulator Labels

2.5.2.3 Info by Error State

An error message can be displayed. This error message displays the current error status and will be reset when the terminal has entered the satellite network and the terminal is operational.



Please refer to the Troubleshooting Guide on the CD-ROM (provided with your modem) for more details on possible errors and actions needed to resolve the occurring error.

2.5.2.4 Software version

The running software version is indicated by its version number.

2.5.3 Interface Statistics

Modem state		Description
Interfaces	Ethernet interface	User side interface (Ethernet frames)
	Satellite interface	Satellite side interface (IP packets)
Directions	RX	Receive IP traffic of the modem, including all multicast and unicast traffic, as well as internal management traffic.
	TX	Transmit IP traffic of the modem, including all transmitted IP packets, unicast traffic, control & management traffic.
Statistics	Bytes	Total number of received (or transmitted) bytes
	Packets	Received (or transmitted) Ethernet frames or IP packets
	Errors	Number of occurred errors
	Dropped	Dropped Ethernet frames or IP packets

Table 9 - Status Page > Interface Statistics

2.6 Configuration

2.6.1 Ethernet Interface

This section describes the interface between the computer and the modem.

2.6.1.1 View the Ethernet Interface Configuration

Configuration for Ethernet Interface

Ethernet Interface

Eth MAC Address: 00:06:39:85:61:ec
 Management IP Address: 192.168.1.1
 Netmask: 255.255.255.0
 Gateway: 1.41.128.1/18
 IPv6 Gateway: fd00:1000:0:5::1/64
 DHCPv4 enabled: yes

2.6.1.2 The Parameters of the Ethernet Interface

The displayed parameters and their description are shown below.

Parameter	Description
Eth MAC address	MAC address of the Ethernet interface
Management IP address	Management IP address of the Ethernet interface
Netmask	Network range for the user's LAN
Gateway	IPv4 address used as gateway address for the connected CPE's.
IPv6 Gateway	IPv6 address used as gateway address for the connected CPE's.
DHCPv4 enabled	Indicates whether the DHCP server on the terminal is enabled or not.

Table 10 - Configuration Page > Ethernet Interface Parameters

2.6.1.3 Modify the Ethernet Interface Configuration

Configuration for Ethernet Interface

Ethernet Interface

Eth MAC Address: 00:06:39:83:01:f2

Management IP Address:

Netmask:

Gateway: 1.41.128.1/18

IPv6 Gateway: fd00:1000::1/64

DHCPv4 enabled: yes

- Click on in the Web Interface > View Configuration Ethernet interface to change the Ethernet Settings;
- Edit the parameters to be changed;
- Click on in the Web Interface > Edit Configuration Ethernet interface to save the new settings.

The Ethernet interface configuration is now saved.

2.6.2 Satellite Interface

This section describes the interface settings between the terminal and the satellite.



The satellite interface settings are predefined in factory. These settings may only be changed upon advice of your Service Provider!



The displayed satellite interface settings depend on the beam that was selected during the terminal installation. Refer to *Terminal Installation* for more information.



A satellite beam covers a limited geographical area in which terminals are serviced by the satellite.

Every satellite interface setting consists of:

Initial Receive Carrier

This is the initial receive carrier through which the modem will try to gain access to the network.

Pointing Carrier

This carrier is needed to enable antenna pointing via the Point&Play mechanism. When two different pointing carriers are assigned to the terminal, the installer can perform his pointing on two different pointing carriers. At least one pointing carrier must be enabled.

Maximum two satellite interface settings per beam can be assigned to the terminal. This is for redundancy or migration reasons. In case two initial receive and/or pointing carriers are assigned to the terminal, one preferred carrier is marked.

In case no carrier setting is configured, no carrier setting is shown in the GUI.

2.6.2.1 View the Satellite Interface Configuration

As already mentioned above, Maximum two initial receive carrier settings and pointing carrier settings can be assigned and displayed. Only the settings that are enabled are displayed. How to change the satellite interface configuration is described in section 2.6.2.3.

If two initial receive carriers are enabled and displayed, the preferred initial receive carrier is marked by ✓.

If two pointing carriers are enabled and displayed, the default pointing carrier is marked by ✓.



The pointing carrier that is used for pointing is selected through the Terminal Installation menu. Refer to *Terminal Installation* for more details.



The parameter values in the figure below are just an example. They are randomly chosen and may therefore differ from the predefined settings on your modem.

Your Selected Beam is 30

Satellite Settings for Beam 30

Initial Receive Carrier

	Initial Receive Carrier 1	Initial Receive Carrier 2
Preferred:	<input checked="" type="checkbox"/>	
Transport Mode:	DVB-S2 (ACM)	DVB-S2 (CCM)
Frequency:	10.8500000 GHz	12.1485000 GHz
Symbol Rate:	30.0000 MBaud	27.5000 MBaud

Pointing Carrier

	Pointing Carrier 1	Pointing Carrier 2
Default:	<input checked="" type="checkbox"/>	
Transport Mode:	DVB-S2 (ACM)	DVB-S2 (CCM)
Frequency:	10.8500000 GHz	12.1485000 GHz
Symbol Rate:	30.0000 MBaud	27.5000 MBaud
Orbital Position:	23.5° East	23.5° East

2.6.2.2 The Parameters of the Satellite Interface

The displayed parameters and their descriptions are shown in the table below.

Parameter	Description
Initial Receive Carrier	
Preferred	Mark for the preferred Initial Receive Carrier
Transport Mode	DVB-S; DVB-S2 (Constant Coding Modulation - CCM); DVB-S2 (Adaptive Coding Modulation – ACM).
Frequency	Initial receive frequency (GHz)
Symbol Rate	Initial receive symbol rate (Mbaud)
Pointing Carrier	
Default	Mark for the default pointing carrier
Transport Mode	DVB-S; DVB-S2 (Constant Coding Modulation - CCM); DVB-S2 (Adaptive Coding Modulation – ACM).
Frequency	Initial receive frequency (GHz)
Symbol Rate	Initial receive symbol rate (Mbaud)
Orbital Position	Orbital position of the satellite in degrees and East/West selection.

Table 11 - Configuration Page > Satellite Interface Parameters

2.6.2.3 Edit the Satellite Interface Configuration



Editing the Satellite Interface Configuration can be disabled by the Network Operator. In such case, the Edit button is not present and the configuration settings are read-only.

- Click on **Edit** in the Web Interface > View Satellite Configuration Interface;
- Edit the parameters to be changed;



At least the preferred initial receive carrier and default pointing carrier must be enabled.

Edit Satellite Spot Beam 30

Initial Receive Carrier

	Initial Receive Carrier 1	Initial Receive Carrier 2
Preferred:	<input checked="" type="radio"/> Carrier 1	<input type="radio"/> Carrier 2
Enabled:	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled
Transport Mode:	<input type="radio"/> DVB-S <input type="radio"/> DVB-S2 (CCM) <input checked="" type="radio"/> DVB-S2 (ACM)	<input type="radio"/> DVB-S <input checked="" type="radio"/> DVB-S2 (CCM) <input type="radio"/> DVB-S2 (ACM)
Frequency:	<input type="text" value="10.8500000"/> GHz	<input type="text" value="12.1485000"/> GHz
Symbol Rate:	<input type="text" value="30.0000"/> MBaud	<input type="text" value="27.5000"/> MBaud

Pointing Carrier

	Pointing Carrier 1	Pointing Carrier 2
Default:	<input checked="" type="radio"/> Carrier 1	<input type="radio"/> Carrier 2
Enabled:	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled
Transport Mode:	<input type="radio"/> DVB-S <input type="radio"/> DVB-S2 (CCM) <input checked="" type="radio"/> DVB-S2 (ACM)	<input type="radio"/> DVB-S <input checked="" type="radio"/> DVB-S2 (CCM) <input type="radio"/> DVB-S2 (ACM)
Frequency:	<input type="text" value="10.8500000"/> GHz	<input type="text" value="12.1485000"/> GHz
Symbol Rate:	<input type="text" value="30.0000"/> MBaud	<input type="text" value="27.5000"/> MBaud
Orbital Position:	<input type="text" value="23.5"/> ° <input checked="" type="radio"/> East <input type="radio"/> West	<input type="text" value="23.5"/> ° <input checked="" type="radio"/> East <input type="radio"/> West

Warning: Entering incorrect settings will prevent your modem from logging onto the network! Only change satellite configuration settings when requested by your Internet Service Provider.

- Click on **Save** in the Web Interface > Edit Configuration Satellite Interface to save the new settings;

The adjusted satellite interface configuration is now ready for use.



Refer to *Terminal Installation* if you want to change the selected beam.

2.6.3 Multicast

The satellite can send several sessions to a number of satellite terminals at the same time.

This is IP multicasting. There are two configurations possible in the satellite terminal to receive these programs:

- Static IP addresses: these are IP addresses where the sessions are received. You will be provided with these addresses if needed;
- IGMP: this is a protocol that lets you receive multicast sessions (maximum 10) without entering specific IP addresses.

2.6.3.1 View the Multicast Configuration



2.6.3.2 The Multicast Parameters

The displayed parameters and their description are shown below:

Parameter	Description
Multicast Mode	<ul style="list-style-type: none"> • Disabled: Multicast mode is disabled. • Static: The active Multicast Configuration is based on entered Static Multicast IP Addresses. • IGMP Dynamic: Dynamic IGMP multicast mode.
Static Multicast IP Address 1-10	Maximum 10 multicast IP Addresses can be assigned and active in case of Static Multicast Mode.

Table 12 - Configuration Page > Multicast parameters

2.6.3.3 Edit the Multicast Configuration

- Click on **Edit** in the Web Interface > View Multicast configuration to change the Multicast Settings;
- Edit the parameters to be changed;

Configuration for Multicast

Receive Multicast

Multicast Mode: Disabled Static IGMP Dynamic

Static Multicast IP Address:

➤ Click on in the Web Interface > Edit Multicast configuration to save the new settings.



In case an invalid multicast IP address is replacing a valid multicast IP address, the last valid multicast IP address will still be in use.

A committed multicast configuration is shown to confirm the applied settings:

Committed Multicast Configuration

Multicast Mode: Static

Static Multicast IP Address: 225.0.55.55

Static Multicast IP Address: 238.1.1.1

If 'disabled' mode is selected, following screen is shown:

Committed Multicast Configuration

Multicast Mode: Disabled

All Static Multicast IP Addresses are ignored in this mode.

A similar screen is shown if 'IGMP Dynamic' mode is selected.

2.6.4 Outdoor Unit

2.6.4.1 Introduction

An “Outdoor Unit” (ODU) is defined as the combined set of antenna and iLNB.

The MDM2200 modem hardware and software support several ODU types, but in order to verify the quality of a terminal installation, the system should know which ODU is actually used.

An ODU type is known to the terminal in one of the following ways:

- Normally one or more ODU types are predefined in factory. If only one ODU type is preconfigured, this ODU will be selected automatically during the installation procedure (see *Terminal Installation*). If multiple types are predefined, then the user can select the ODU he is actually using via a dropdown list during the installation procedure.
- If no ODU types have been preconfigured, the user must first add one or more ODU types before starting the installation procedure (see *Add Outdoor Unit Parameters*).



ODU types are not only configured in the modem, but are also set by the Network Operator in the hub. Consequently the parameters visible in the modem GUI must match with the ones defined at the hub side, in order for the modem to be able to transmit and receive. This is particularly important when adding new ODU types.



The ODU types are not affected by a factory reset of the modem.

2.6.4.2 Display Outdoor Unit Parameters

When selecting the Outdoor Unit configuration from the menu, the parameters of the ODU which was selected during installation are displayed by default. The mode indicates ‘Display’. If multiple outdoor unit types are defined, you can use the dropdown box to select the ODU for which you want to display the parameters.



Editing or adding an ODU can be disabled by the Network Operator. In such case, the radiobuttons indicating the mode (Display, Edit or Add) are not present and the ODU configuration settings are read-only.

Outdoor Unit

Change ODU Configuration Data

800mW_Ku_(ILB2120)_-_75cm_(ANT2010) mode: Add Edit Display

ODU Type Id 2

ODU Description 800mW_Ku_(ILB2120)_-_75cm_(ANT2010)

LNB Band Selection 22 kHz Tone

LNB Frequencies

	L.O.	RF Start	RF Stop
Low Band	9.75 GHz	10.7 GHz	11.7 GHz
High Band	10.6 GHz	11.7 GHz	12.75 GHz

	Multiplication factor	RF Start	RF Stop
MUC	5	13.75 GHz	14.5 GHz

LNB Currents

	Min	Max
TX	140 mA	910 mA
RX	65 mA	140 mA

Miscellaneous

TX Detection Freq 0 KHz

Poweroff Timeout 0 secs

The displayed parameters and their descriptions are shown in the table below.

Parameter	Description
Change ODU Configuration Data	
ODU Description	String used as a description of the selected ODU type.
Mode	<ul style="list-style-type: none"> • Display: show the values of the selected ODU; • Add: create a new ODU; • Edit: adjust the parameters of an existing ODU.
ODU Type Id	Positive integer used as unique identifier. <ul style="list-style-type: none"> • Range 1-32 is reserved for Newtec ODU types. • Range 33-64 is for user definable ODU types.
LNB Band Selection	Used to inform the LNB about which polarization or frequency band it needs to use. Possible values are: <ul style="list-style-type: none"> • None; • Voltage; • 22kHz Tone.
LNB Frequencies	
Low Band L.O.	Local oscillator frequency (in Hz) used when the LNB is operating in low band, which can typically be found in the LNB datasheet.

Parameter	Description
Low Band RF Start	Minimum frequency used by the LNB when operating in low band.
Low Band RF Stop	Maximum frequency used by the LNB when operating in low band.
High Band L.O.	Local oscillator frequency (in Hz) used when the LNB is operating in high band, which can typically be found in the LNB datasheet.
High Band RF Start	Minimum frequency used by the LNB when operating in high band.
High Band RF Stop	Maximum frequency used by the LNB when operating in high band.
MUC Multiplication factor	Multiplication factor used by the MUC to convert from IF to RF-band (as $n \times \text{transmitted IF freq} = \text{transmitted RF freq}$, where $n = \text{multiplication factor}$).
MUC RF Start	Minimum RF frequency the MUC can transmit.
MUC RF Stop	Maximum RF frequency the MUC can transmit.
LNB Currents	
TX Min / Max	Minimum/maximum allowed current on the TX interface. This input is required for correct functioning of the current measurement test (see section <i>Hardware Test</i>).
RX Min / Max	Minimum/maximum allowed current on the RX interface. This input is required for correct functioning of the current measurement test (see section <i>Hardware Test</i>).
Miscellaneous	
TX Detection Freq	This is for Newtec predefined ODU types only.
Poweroff Timeout	Not yet supported

Table 13 - Outdoor Unit Configuration Parameters

2.6.4.3 Edit Outdoor Unit Parameters



Editing an ODU can be disabled by the Network Operator. In such case, the radiobuttons indicating the mode (Display, Edit or Add) are not present and the ODU configuration settings are read-only.

- Select 'Edit' mode to edit the parameters of an existing outdoor unit type.

Outdoor Unit

Change ODU Configuration Data

800mW_Ku_(ILB2120)_-_75cm_(ANT2010) mode: Add Edit Display

ODU Type Id 2

ODU Description 800mW_Ku_(ILB2120)_-_75cm_(ANT2010)

LNB Band Selection None Voltage 22 kHz Tone

LNB Frequencies

	L.O.	RF Start	RF Stop
Low Band	<input type="text" value="9.75"/> GHz	<input type="text" value="10.7"/> GHz	<input type="text" value="11.7"/> GHz
High Band	<input type="text" value="10.6"/> GHz	<input type="text" value="11.7"/> GHz	<input type="text" value="12.75"/> GHz

	Multiplication factor	RF Start	RF Stop
MUC	<input type="text" value="5"/>	<input type="text" value="13.75"/> GHz	<input type="text" value="14.5"/> GHz

LNB Currents

	Min	Max
TX	<input type="text" value="140"/> mA	<input type="text" value="910"/> mA
RX	<input type="text" value="65"/> mA	<input type="text" value="140"/> mA

Miscellaneous

TX Detection Freq KHz

Poweroff Timeout secs

Warning: Entering incorrect settings will prevent your modem from logging onto the network! Only add or change outdoor unit settings when requested by your Internet Service Provider.



Entering incorrect settings can prevent your modem from logging onto the network! Only change outdoor unit settings when requested by your Service Provider or Network Operator.

The ODU Type ID and ODU Description parameters cannot be edited. The editable parameters are described in Table 13 - Outdoor Unit Configuration Parameters.

- Click on in the Web Interface > Edit Outdoor Unit Parameters to save the new settings.

2.6.4.4 Add Outdoor Unit Parameters



Adding an ODU can be disabled by the Network Operator. In such case, the radiobuttons indicating the mode (Display, Edit or Add) are not present and the ODU configuration settings are read-only.



When adding a new outdoor unit in the modem, it should also be configured with the exact same settings in the hub by the Network Operator. If an outdoor unit type in the modem has no matching entry in the hub, the modem will possibly be prevented from logging onto the network. Please contact your Service Provider or Network Operator in case of doubt!

- Select 'Add' mode to create an outdoor unit type.

Outdoor Unit

Change ODU Configuration Data

mode: Add Edit Display

ODU Type Id

ODU Description

LNB Band Selection None Voltage 22 kHz Tone

LNB Frequencies

	L.O.	RF Start	RF Stop
Low Band	<input type="text"/> GHz	<input type="text"/> GHz	<input type="text"/> GHz
High Band	<input type="text"/> GHz	<input type="text"/> GHz	<input type="text"/> GHz
	Multiplication factor	RF Start	RF Stop
MUC	<input type="text"/>	<input type="text"/> GHz	<input type="text"/> GHz

LNB Currents

	Min	Max
TX	<input type="text"/> mA	<input type="text"/> mA
RX	<input type="text"/> mA	<input type="text"/> mA

Miscellaneous

TX Detection Freq KHz

Poweroff Timeout secs

Warning: Entering incorrect settings will prevent your modem from logging onto the network! Only add or change outdoor unit settings when requested by your Internet Service Provider.

- Enter the values for the new ODU type. Refer to Table 13 for parameter descriptions.



Entering incorrect settings can prevent your modem from logging onto the network! Contact your Service Provider or Network Operator in case of doubt.

- Click on in the Web Interface > Add Outdoor Unit Type to save the new settings.

2.7 Device

2.7.1 Software

The modem software is automatically upgraded over the satellite without any user interaction. In general, the only requirement for an upgrade to be successful is for the modem to have satellite connectivity during the time of upgrade.

To allow a secure modem software upgrade mechanism, the flash memory of the modem can contain two different software versions. A newly installed software version has to pass an automatic software validation procedure.

- After a successful software validation, the modem is automatically rebooted to activate the new software.

Software
<div style="border: 1px solid #ccc; padding: 10px; margin: 5px 0;"> <p>Software Version</p> <p>Currently Running Software Version: 2.2.4.19</p> <p>Alternate Software Version: 2.1.11.16</p> </div>

Table 14 gives a description of the parameters in the Software menu:

Parameter	Description
Software version	
Currently Running Software Version	The currently installed software version is displayed.
Alternate Software Version	Only displayed when an alternative software version is present.

Table 14 - Software Page

- When this software validation process fails, the old software version remains in use. The passive memory bank now contains a newer software version that did not pass the validation process. In this case, the user has the possibility to re-trigger the validation process. This situation can occur when a user turns off his modem during the validation process or when satellite connectivity was not possible to establish during the validation process.



When a newer version is present and validation fails, the software LED is red.
 Refer to section 2.4 for more information on the meaning of the software status LEDs.

Software Version
 Currently Running Software Version: 2.1.11.16
 Alternate Software Version: 2.2.4.19. [Try Alternate Version.](#)

NOTE: "Try alternate version" restarts the Modem!

To re-trigger the validation process:

- Click the link **Try Alternate Version**;

The *Software Upgrade* page will be displayed indicating the new software version number (see below).

Software Upgrade

Alternate software version 2.2.4.19 will be used.

The Modem will restart in a few seconds.

The modem will restart automatically after a few seconds. A total reboot, including satellite link initialization might take up to 10 minutes.



If the web interface doesn't refresh automatically, navigate back to the Status page.

2.7.1.1 Hardware

Hardware

Hardware ID: NTC/2299.AA
 Hardware Version: 1

Below are given the displayed parameters and their description. These values are read only.

Parameter	Description
Device	
Hardware ID	Hardware identifier of the modem
Hardware Version	Hardware version number of the modem

Table 15 - Configuration Page > View Hardware Parameters

2.8 Terminal Installation

2.8.1 Introduction

The first time your modem starts up, you are redirected to the Terminal Installation page. The installation procedure must be performed step by step, and starts with selecting an outdoor unit (see section 2.8.2).

If your modem has already been installed before, an overview of the selected installation settings is displayed.

Terminal Installation

Outdoor Unit	✓	800mW_Ku_(ILB2120)_-_75cm_(ANT2010)
Spot Beam	✓	30
Antenna Pointing	✓	
Software Download	✓	2.2.4.19
Validate Installation	✓	

- Click to restart the complete installation procedure.

2.8.2 Selecting the Outdoor Unit



“Outdoor Unit” is defined as the combined set of antenna and iLNB.

- Select the outdoor unit type which will be connected to your modem and confirm.

Terminal Installation

Outdoor Unit

800mW_Ku_(ILB2120)_-_75cm_(ANT2010)



Selecting an incorrect outdoor unit type may prevent the modem from logging onto the network.



The supported outdoor unit type(s) are predefined in factory. If, for some reason, your outdoor unit is not listed, please refer to *Add Outdoor Unit Parameters*.

2.8.3 Selecting the Spot Beam



The spot beams are predefined in factory.
If, for some reason, a new beam has to be added, please contact your Service Provider.

- Select the beam identifier corresponding to your location and confirm.

Terminal Installation

Outdoor Unit 800mW_Ku_(ILB2120)_-_75cm_(ANT2010)

Spot Beam

1

2.8.4 Pointing the Antenna



Before proceeding with this step, make sure that:

- Your antenna and iLNB are properly installed. For instructions, refer to the Installation Guide provided with your terminal.
- The RX interface of the iLNB is connected to the RX interface on the modem.

Note: The TX interfaces should not yet be connected.

- If two pointing carriers have been preconfigured, keep the pre-selected carrier. If pointing fails during the procedure, you will need to repeat this step with the other pointing carrier.

Terminal Installation

Outdoor Unit 800mW_Ku_(ILB2120)_-_75cm_(ANT2010)

Spot Beam 30

Antenna Pointing

When asked by your Service Provider, change the pointing carrier below

Pointing Carrier 1 : 12.3045000 GHz, 27.5000 MBaud

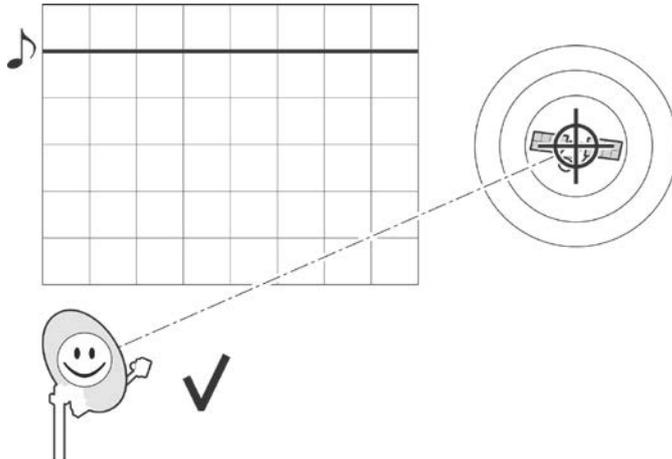
- Click to start the pointing procedure with the Point&Play tool and proceed to the next section: Using the Point&Play Tool.
- Click to skip the pointing procedure (use if the antenna is already correctly pointed). You can proceed to *Software Download*.

2.8.4.1 Using the Point&Play Tool

The Point&Play tool helps you to point the antenna correctly. During the pointing procedure, the Point&Play tool can produce various sounds, each having a specific meaning described below.

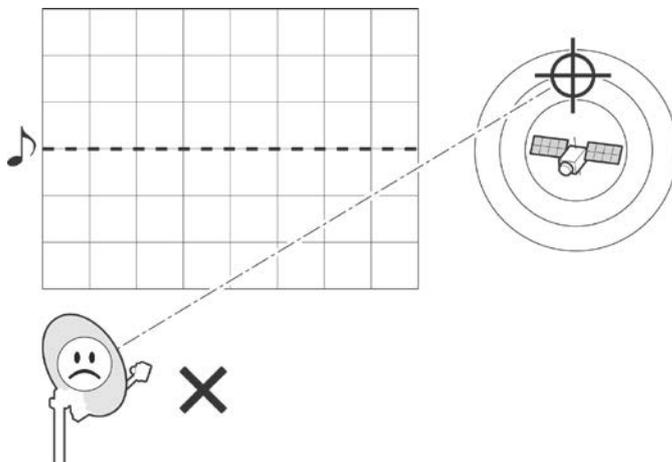
- **High uninterrupted tone (correct tone):**

The antenna points to the correct satellite and is receiving the strongest signal. Some fine-pointing might still be required to find the optimal position of the antenna (highest tone within the high uninterrupted tone range).



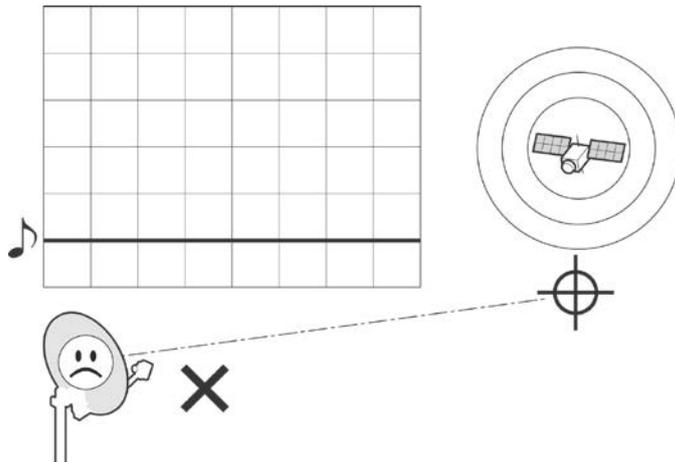
- **Medium or high interrupted tone:**

The antenna points to the correct satellite but does not receive the strongest signal so far. The pointing procedure must be continued until an uninterrupted high tone is perceived.



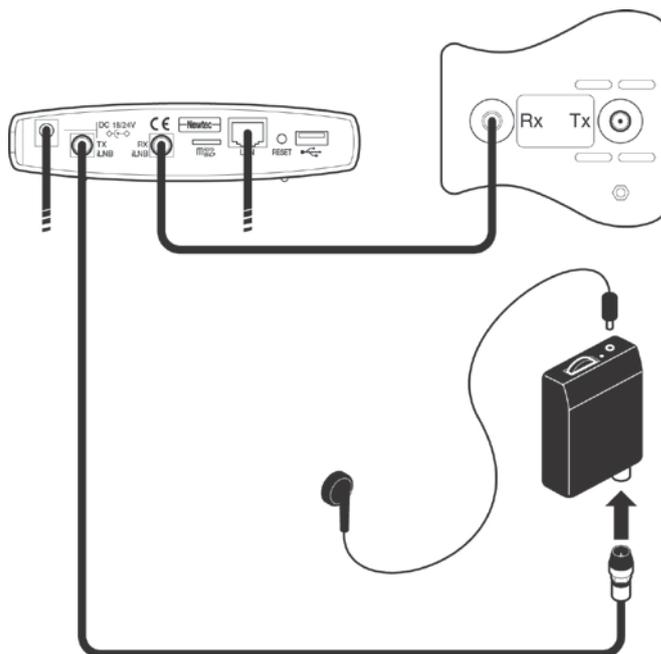
- **Low uninterrupted tone:**

The antenna points to a wrong satellite or is not pointing to a satellite.



To use the Point&Play tool:

- Connect the TX interface on the modem to the Point&Play tool.
- Connect the earphone to the Point&Play tool. Make sure the Point&Play tool is still switched off.
- Switch on the Point&Play tool by slowly turning the volume wheel until the green LED illuminates. Put on the earphone and adjust the volume if necessary.

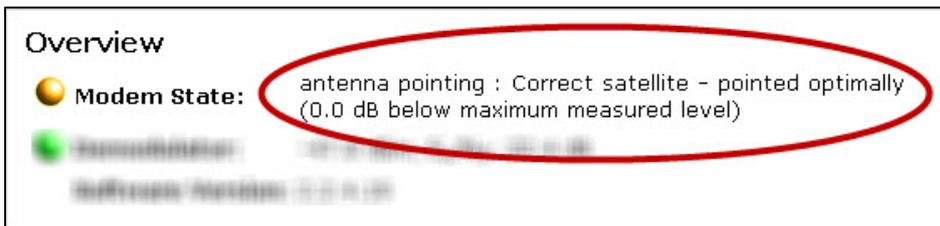


Ensure that the volume of the Point&Play® tool is not set too loud, otherwise damage to your hearing may occur.

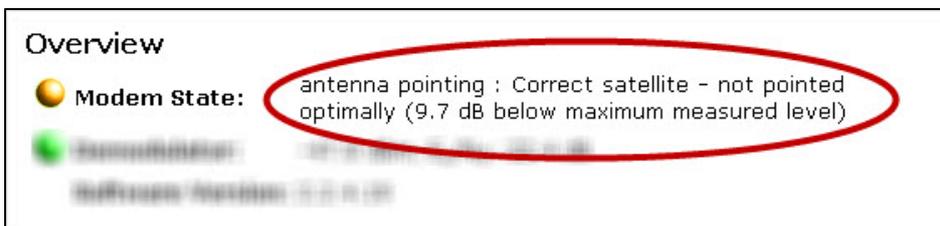
- Start pointing the antenna until you hear the highest possible uninterrupted tone. Please refer to the installation guide for more information.

2.8.4.2 Check the Pointing

- If the antenna is correctly and optimally pointed, the message **Correct satellite – pointed optimally** appears in the modem webGUI. You can now proceed to the next section: Finishing the Pointing.



- If the antenna is not yet optimally pointed, the message **Correct satellite – not pointed optimally** is displayed. Continue the pointing procedure until optimal pointing is achieved.



In case of problems, refer to the Troubleshooting Guide available on the CD-ROM provided with your modem.

2.8.4.3 Finishing the Pointing

- Switch off the Point&Play tool.
- Remove the TX cable from the Point&Play tool and connect it to the TX interface of the iLNB.
- Back at your computer, click .



2.8.5 Software Download

The modem continuously checks for software updates.

- If the software is still up to date, this step is skipped automatically. You can proceed to the next step: Validating the Installation.
- If a newer software version is available, download will start automatically.



Once the download is complete, the new software is written to flash memory and the modem reboots to activate the new software. You can now proceed to the next step: Validating the Installation.

Software Download status: Downloaded version 2.2.3.12. Writing downloaded software to flash



You may need to refresh the page of your browser manually after the reboot.

2.8.6 Validating the Installation

When the previous step is completed, the following screen is shown:

Terminal Installation

Outdoor Unit	✓	800mW_Ku_(ILB2120)_-_75cm_(ANT2010)
Spot Beam	✓	30
Antenna Pointing	✓	
Software Download	✓	2.2.4.19

Validate Installation

Waiting for terminal to initialise. This can take several minutes. Please wait

The modem will now check if the quality of the installation needs to be validated. This depends on your Network Operator.

- If validation is not required, this step is skipped automatically. The following screen appears:

Terminal Installation

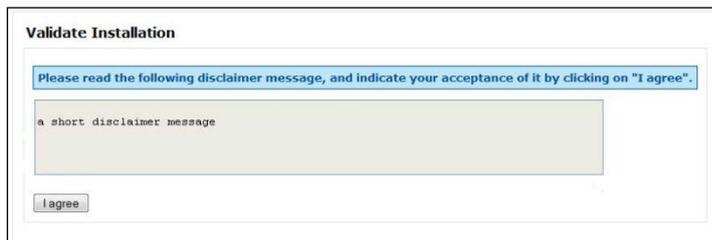
Outdoor Unit	✓	800mW_Ku_(ILB2120)_-_75cm_(ANT2010)
Spot Beam	✓	30
Antenna Pointing	✓	
Software Download	✓	2.2.4.19
Validate Installation	✓	

- Click to go to the Status Page. Your modem is now installed. Depending on your Service Provider, you might need to register first before you can start browsing the web.

- If validation is required, please proceed with this section.

2.8.6.1 Accepting the Disclaimer

As this validation procedure involves sensitive information such as geographical location of the terminal which is subject to legal restrictions, a disclaimer is presented. Please read the disclaimer message and indicate your acceptance by clicking .



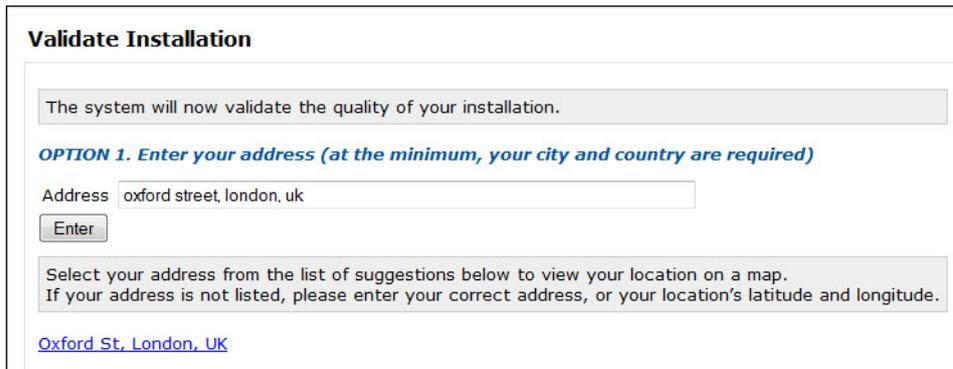
2.8.6.2 Entering your Location

The validation of your installation is based on the geographical location of your terminal. There are 2 options to enter this information:

- Option 1: enter your address;
- Option 2: enter your location's latitude and longitude.

Option 1: Enter your Address

- Enter the address where the terminal is located. At a minimum, your city and country are required.



- A list of one or more matching locations is displayed. Select your address from the list to view your location on a map. If your address is not listed or no results are displayed, refer to the Troubleshooting Guide available on the CD-ROM provided with your modem.



The map is used to show the area of the selected location. Zooming in or out is not possible.

- Click to accept and proceed. If this is not your location, refer to the Troubleshooting Guide available on the CD-ROM provided with your modem.

Option 2: Enter your Location

- Enter your location's latitude and longitude.



These values should be entered in degrees, minutes and seconds notation or in decimal form (using a dot as a separator). Positive latitude = NORTH, positive longitude = EAST.



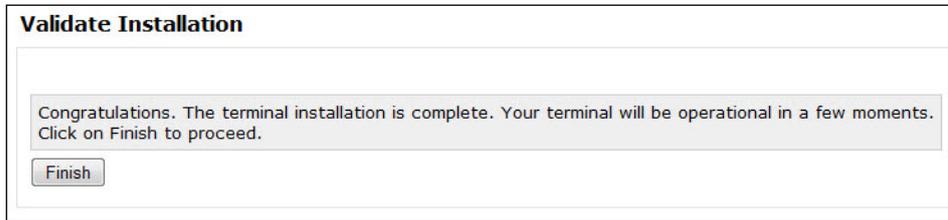
This option can be used in case Option 1 fails. No map is displayed when latitude or longitude values are entered using Option 2.

- Click to continue or to return to the previous screen.

2.8.6.3 Validation

Once the location is confirmed, the validation of the installation begins.

- When validation is successful, click to proceed.



The Status Page is shown. Your modem is now installed.

Depending on your Service Provider, you might need to register first before you can start browsing the web.

- If the validation fails, refer to the Troubleshooting Guide available on the CD-ROM provided with your modem.

2.9 Diagnostic report

A Diagnostic Report can be created by simply clicking Diagnostic Report in the menu at the left hand side of the screen.

The Diagnostic Report consists of following elements:

2.9.1 The Short Diagnostic Report

The short Diagnostic Report exists out of following information:

- Terminal Identification;
- Terminal Status;
- Terminal Configuration.

2.9.2 The Extended Diagnostic Report

The Extended Terminal Diagnostic Report has the following structure:

- Terminal Firmware + FPGA version;
- Terminal general status report;
- Internal modem driver states;
- Layer 2 counters of modem driver;
- Terminal initial configuration;
- Terminal operational configuration;
- Running processes;
- Ethernet link status;
- Memory usage info;
- Network configuration.
 - IP interface Addresses;

- Multicast Addresses;
- Ethernet ARP Cache;
- Policy-Based Routing;
- Network Link;
- IP routing;
- IP tables;
- IP-6 tables;
- ARP Tables.
- Tellitec-client configuration;
- DHCP leases;
- Terminal Logfile.

The diagnostic report is provided as a web page in your browser.
This page can now be saved as a text file from the browser.

2.10 Test

To view the functioning status of the satellite terminal, or to identify problems that may occur, several tests can be run on the terminal:

Tests

Hardware test

Current measurement test not executed

Software test

Software test not executed

Ethernet/LAN test

Ethernet test not executed

Number of TCP Sessions not executed

Satellite connection test

Physical layer test not executed

Data link layer test not executed

Network layer test not executed

Traffic test

Ping traffic test not executed

Ping packet size (bytes):

Number of pings:

DNS traffic test not executed

Http GET traffic test not executed

2.10.1 Test Descriptions

2.10.1.1 Hardware Test

The Hardware test verifies the proper functioning of the iLNB by measuring the current in the receive and transmit path between the modem and the iLNB.

Possible test results:

- A successful hardware test means that both the RX and TX current are within the expected range. The figure below shows an example of a successful hardware test.

Hardware test

ODU current measurement test ✔

Rx Current = 104mA
Tx Current = 288mA

- A failed hardware test means that at least one of the measured currents falls outside the expected range. This indicates a problem in the receive and/or transmit path. The following figure shows an example where an error occurred in the receive path.

Hardware test

ODU current measurement test 

No current detected on RX



If the hardware test has failed, please always verify the installation of the coaxial cable. A defect cable, swapped TX and RX cables, or loose contacts at one or more connectors can cause the hardware test to fail even if the iLNB itself is working correctly. If the problem persists, please contact your Service Provider.

- In some cases, the hardware test cannot be executed because of the actual modem state e.g. during pointing. In this case, one is requested to try again later.

Hardware test

ODU current measurement test 

Test cannot be executed right now,
please try again later

2.10.1.2 Software Test

The Software test verifies the validity of the software.

2.10.1.3 Ethernet/LAN Test

The Ethernet/LAN test is composed of two tests:

- The “Ethernet test” exists of three tasks:
 - Checking the Ethernet physical layer;
 - Obtaining the IP address off the computer connected to the modem;
 - Checking the IP address of the computer, provided via DHCP by the modem.
- The “Number of TCP sessions” shows how many TCP sessions are currently active.



The maximum number of TCP sessions is set by the Network Operator.

- If more than half the maximum allowed number of TCP sessions is active, a warning message is displayed. In the example shown below, the maximum number was set to 200.

Ethernet/LAN test	
<input type="checkbox"/> Ethernet test	not executed
<input checked="" type="checkbox"/> Number of TCP Sessions	 Warning: more than 100 active TCP sessions can cause time-outs TCP Sessions: 110

- If the number of active TCP sessions exceeds the maximum number set by the Network Operator, an error message is displayed, TCP sessions will be delayed until the number drops again below the maximum. In the example shown below, the maximum number was set to 250.

Ethernet/LAN test	
<input type="checkbox"/> Ethernet test	not executed
<input checked="" type="checkbox"/> Number of TCP Sessions	 Maximum number of TCP sessions exceeded TCP Sessions: 270

2.10.1.4 Satellite Connection Test

The Satellite connection test is composed of three tests:

- The Physical layer test, checks if the physical layer of the modem – satellite connection is able to receive data;
- The Data link layer test, checks if the system is able to send data to the satellite;
- The Network layer test, checks the IP connection.

2.10.1.5 Traffic Test

The Traffic test is composed of three tests:

- A ping traffic test, tests if ping packets can be transported over the network from the modem, over the satellite to the hub site;

The following fields can be filled in:

- Ping packet size (bytes): minimum 1 and maximum 65,507 bytes;
- Number of pings: minimum 1 and maximum 100.

- The DNS traffic test resolves a URL via a name server at the hub site;
- The Http GET traffic test verifies the TCP acceleration and pre-fetching.



The Http GET traffic test uses a TCP connection and can hence not be executed when the maximum number of TCP sessions is exceeded (see section 2.9.1.3). In this case the Http GET traffic test will time out or should be stopped manually.

2.10.2 On-Screen Test Results

Mark () or unmark () the tests that you want to run.

Click on the -button to start the execution of the tests.

During and after test execution, the state of the tests is shown on screen (see Table 16) until finally are results are available.

Test waiting for execution	
Test is being executed	
Test is finished and successful (passed)	
Test is finished and unsuccessful (failed)	

Table 16 - Possible States of Modem Test

Tests

Tests started 5 seconds ago.

Hardware test

ODU current measurement test not executed

Software test

Software test 

running software version: 2.2.4.19
alternative software version: 2.1.11.16

Ethernet/LAN test

Ethernet test not executed

Number of TCP Sessions not executed

Satellite connection test

Physical layer test 

Data link layer test 

Network layer test 

Traffic test

Ping traffic test 

Ping packet size (bytes):

Number of pings:

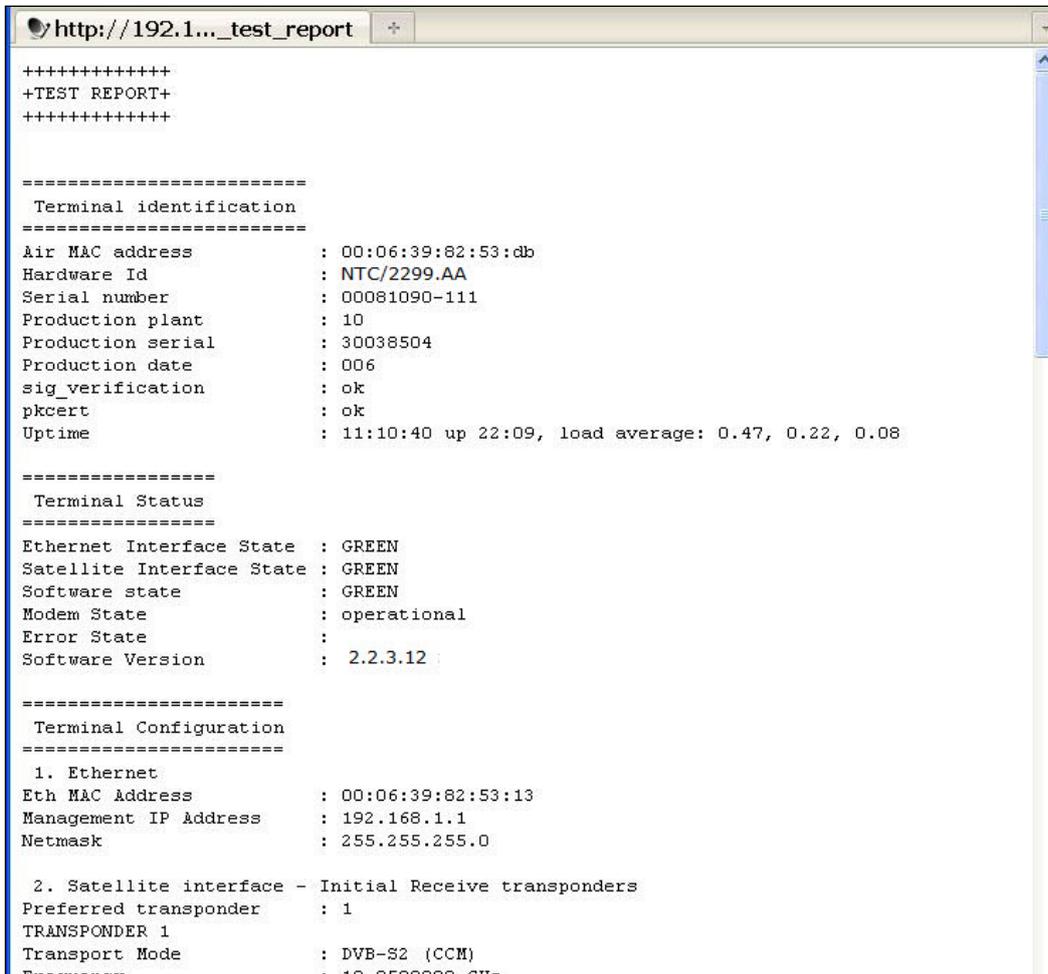
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 1448.927/1448.927/1448.927 ms

DNS traffic test 

Http GET traffic test 

2.10.3 Export Test Results

Click [Export to text file](#) to export the on-screen test results. A web page with the test results in text format will be provided. This page can now be saved as a text file from the browser.

A screenshot of a web browser window showing a test report. The browser's address bar displays 'http://192.1..._test_report'. The report content is as follows:

```
+++++
+TEST REPORT+
+++++

=====
Terminal identification
=====
Air MAC address      : 00:06:39:82:53:db
Hardware Id         : NTC/2299.AA
Serial number       : 00081090-111
Production plant    : 10
Production serial   : 30038504
Production date     : 006
sig_verification    : ok
pkcert             : ok
Uptime             : 11:10:40 up 22:09, load average: 0.47, 0.22, 0.08

=====
Terminal Status
=====
Ethernet Interface State : GREEN
Satellite Interface State : GREEN
Software state          : GREEN
Modem State             : operational
Error State             :
Software Version        : 2.2.3.12

=====
Terminal Configuration
=====
1. Ethernet
Eth MAC Address        : 00:06:39:82:53:13
Management IP Address : 192.168.1.1
Netmask                : 255.255.255.0

2. Satellite interface - Initial Receive transponders
Preferred transponder  : 1
TRANSPONDER 1
Transport Mode         : DVB-S2 (CCM)
Frequency              : 10.950000 GHz
```

3 Appendix A – Acronyms

Acronym / term	Description
AC	Alternating Current
ACM	Adaptive Coding Modulation
CCM	Constant Coding Modulation
CE approved	Conformité Européenne (European health & safety product label)
DC	Direct Current
DHCP	Dynamic Host Configuration Protocol
DVB-S	Open standard for Digital Video Broadcasting over Satellite
DVB-S2	Improved version of DVB-S standard
GHz	GigaHertz
GUI	Graphical User Interface
HTTP	Hyper Text Transfer Protocol
IGMP	Internet Group Management Protocol
iLNB	Interactive Low Noise Block-down converter
IP	Internet Protocol
LAN	Local Area Network
LED	Light Emitting Diode
LNB (iLNB)	Low Noise Block-down converter
LO	Local Oscillator
MAC address	Medium Access Control
MHz	MegaHertz
MODEM	Modulator/Demodulator
ODU	Outdoor Unit
RF	Radio Frequency
RX	Receive
TCP	Transport Control Protocol
TX	Transmit
URL	Universal Resource Locator (WWW)
USB	Universal Serial Bus

Table 17 - Acronyms

4 Appendix B – Licenses

GNU software is used in this product:



You can download GNU Wget from the following location: <http://www.gnu.org/software/wget/>



For more information about GPL: check out our website at <http://www.newtec.eu/index.php?id=gpl>