HUGHES
An EchoStar Company

JUPITER™ SYSTEM

HT2000W Satellite Modem Installation Guide

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Contents

Understanding safety alert messages

Safety alert messages call attention to potential safety hazards and tell you how to avoid them. These messages are identified by the signal words DANGER, WARNING, CAUTION, or NOTICE, as illustrated below. To avoid possible property damage, personal injury, or in some cases possible death, read and comply with all safety alert messages.

Messages concerning personal injury

The signal words DANGER, WARNING, and CAUTION indicate hazards that could result in personal injury or in some cases death, as explained below. Each of these signal words indicates the severity of the potential hazard.

DANGER indicates a potentially hazardous situation which, if not avoided, *will* result in death or serious injury.

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

Messages concerning property damage

A NOTICE concerns property damage only.

NOTICE is used for advisory messages concerning possible property damage, product damage or malfunction, data loss, or other unwanted results—but *not* personal injury.

Safety symbols

The generic safety alert symbol

calls attention to a potential personal injury hazard. It appears next to the DANGER, WARNING, and CAUTION signal words as part of the signal word label. Other symbols may appear next to DANGER, WARNING, or CAUTION to indicate a specific type of hazard (for example, fire or electric shock). If other hazard symbols are used in this document they are identified in this section.

Additional symbols

This document uses the following hazard symbols:

Indicates a safety message that concerns a potential electric shock hazard.

CAUTION

Do not connect the power supply to the satellite modem, or connect the power supply to a power source until you are instructed to do so.

Chapter 1

Satellite modem overview

Introduction

The HT2000W satellite modem provides Internet service by connecting a computer to a Ka-band bent-pipe satellite network. The modem's Ethernet port connects to a computer or local area network (LAN). Figure 1 shows the HT2000W from the front and back.

Figure 1: HT2000W satellite modem front and back

Terminology

In this installation guide:

- Satellite modem and modem both refer to the HT2000W satellite modem.
- Installer Support refers to organizations that provide assistance to professional installers of Hughes satellite equipment. If you do not know who provides your support, contact Hughes dealer services.

Scope

This installation guide explains how to install, commission, and activate the HT2000W satellite modem. It also contains reference information to assist you in this process.

Audience

This guide is intended for professional installers. It may also be useful for:

- Trainers who train installers
- Call center operators who respond to customers' calls

Overview of tasks

Figure 2 gives an overview of the installation, commissioning, and activation tasks. Each task may be composed of numerous subtasks.

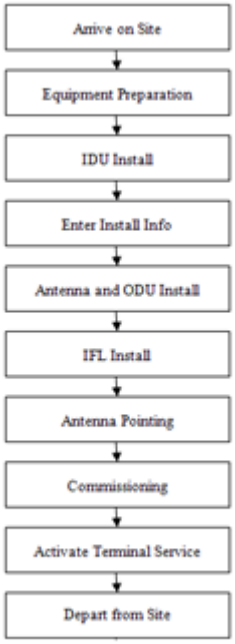

Figure 2: Summary of tasks

Chapter 2

Preparing for installation

This chapter describes preparations for installing the satellite modem. Review this information before you install the satellite modem, antenna assembly, antenna mount, or inter-facility link (IFL) cable.

To install the satellite modem, you need the Installation Reference Sheet, which contains installation parameters and other information specific to your site. Print the Installation Reference Sheet from your installation support web site.

Installation summary

The satellite modem is the small indoor unit (IDU). The outdoor unit (ODU) includes the antenna and radio assembly. An IFL cable connects the indoor unit to the outdoor unit, as shown in Figure 3.

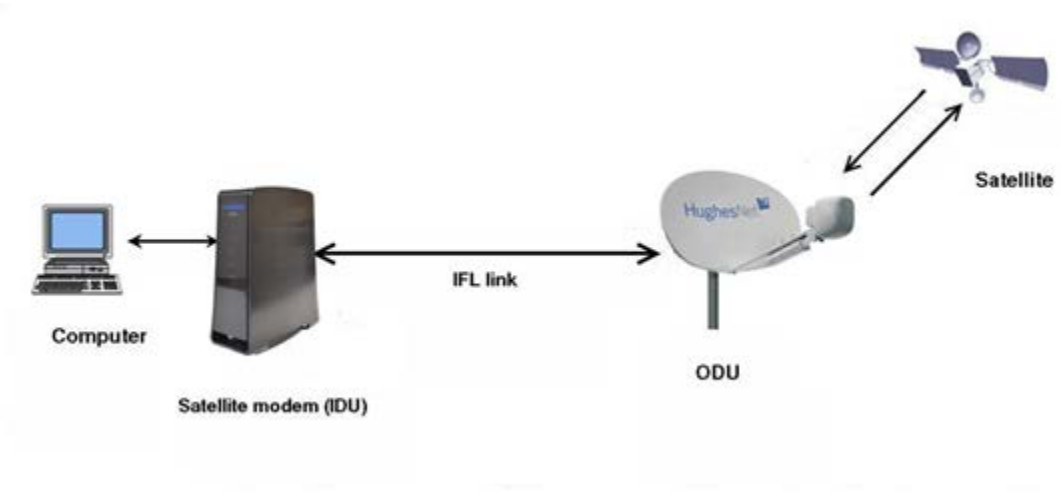

Figure 3: Satellite modem and related components

Preparing for the installation

- Make sure you have all items required for installation, including the Installation Reference Sheet, all equipment to be installed, and required tools for the outdoor equipment.
- Make sure the customer's computer meets the requirements listed in *Computer and networking requirements* on page 15.
- Conduct a site survey.
- Assemble and install the antenna and radio as instructed in the antenna installation guide.

Installing the satellite modem

Connect the IFL cable.

- Clear your cache of your Web browser.
- Connect the modem to your laptop.
- Connect the power supply.
- Power up the modem and observe the LEDs to verify normal operation.

Commissioning the modem and pointing the antenna

- Upload the sbc.cfg file (if you are instructed to upload it).
- Enter the parameters.
- Point the antenna.
- Register the satellite modem.

Completing the installation

- Run OVT (Onsite Validation Tool).
- Connect the modem to the customer's computer for activation.
- Confirm that the customer can connect to the Web.

Installation checklist

To help ensure a successful installation, pay careful attention to the items listed below as you install the satellite modem, antenna, and the IFL cable.

IFL cables

- For specific cable information see Table 2: Related installation documents.
- Use only Hughes-approved cables.
- Do not exceed maximum length for the outdoor unit (ODU) type, cable type, and cable part number.
- Do not exceed the cable bend radius.
- Properly terminate cables.

Connectors and connections

Use only connector types approved for cable type used. Check all connections for tightness.

Outdoors

- Make sure F connectors connected to the radio assembly are tightened to 20 inch-lb torque.
- Carefully follow waterproofing procedures, using dielectric grease and Hughes-approved weatherproof tape.

Power source

Before connecting the modem power supply to the AC power source, use an AC outlet tester to verify that the outlet is wired correctly. Wiring problems may include:

- Hot and neutral wires reversed
- Neutral and ground wires reversed
- Open ground (incomplete connection)
- Open neutral (incomplete connection)

If the outlet is wired improperly, notify the customer you are not permitted to connect the system to a faulty outlet. Do not proceed with installation until a properly wired outlet is provided.

Check neutral-ground (N-G) voltage

With a digital multimeter set to AC voltage, measure the voltage between neutral and ground at the AC power outlet. If the N-G voltage measures 2 VAC or greater, advise the customer to have an electrician evaluate the electrical power outlet. N-G voltages may have a negative impact on the performance of electronic equipment.

Grounding (modem, antenna, radio, and IFL)

- Adhere to Hughes grounding requirements.
- Use only approved ground wires, ground blocks, lugs, and clamps.
- For detailed information refer to the appropriate FSB, as listed in Table 2.

Items required for installation

To install the HT2000W satellite modem, you need:

- HT2000W satellite modem
- Power supply (provided in the shipping carton)
- Surge protector (recommended), provided by the customer
- Cat-5 Ethernet cable
- sbc.cfg file (if you are instructed to upload it)
- Installation Reference Sheet (provided to you)
- ***Welcome to the HughesNet Quick Start Guide*** (1039433-0001) (to give to the customer)

Additional information

- sbc.cfg file – If needed, you can download the most current sbc.cfg file from your installation support web site.
- SAN and PIN – Identification numbers are required to register the satellite modem. Customers who purchased their system from a Hughes retail channel in the United States or Canada receive an order confirmation e-mail containing their site account number (SAN) and personal identification number (PIN).

Additional equipment

- Antenna
- Hughes DiSEqC antenna pointing tool (DAPT2)
- IFL cable, cable connectors, and ground blocks

For more information on these items, see *Related components* on page 16.

No tools are required to install the modem. For tools needed to install the antenna mount and antenna and point the antenna, see:

- ***Antenna Site Preparation and Mount Installation Guide*** (1035678-0001)
- The installation guide for the antenna model you are installing

Conducting a site survey

Survey the customer site to confirm that the location meets the requirements for installation of the satellite modem. For complete site survey information, including site requirements, see the ***Antenna Site Preparation and Mount Installation Guide*** (1035678-0001).

The key site survey tasks related to installation of the satellite modem are:

1. Ensure there is an unobstructed line of sight to the satellite specified on the Installation Reference Sheet.
2. Review the Installation Reference Sheet for site-specific instructions.

Power supply information

The satellite modem shipping carton contains the power supply information. Figure 4 shows a sample power supply.

Figure 4: AC power supply

Before proceeding, make sure you have the correct power supply. Check the part number on the power supply as listed in Table 1 on page 15.

NOTICE

- Always use the power supply provided with the satellite modem. The modem's performance may suffer if the wrong power supply is used.
- Connect the AC/DC power supply to a 110 Voltage Alternating Current (VAC) three-wired grounded outlet. A suitable surge protector is recommended to protect the satellite modem from possible damage due to power surges.
- Always connect the DC power cord to the HT2000W rear panel before applying power to the power supply. If you apply power to the power supply and then connect the DC power cord, the satellite modem may not perform properly and could be damaged.
- Observe the power standards and requirements of the country where it is installed.

CAUTION

If there is any reason to remove power from the satellite modem, always unplug the AC power cord from the power source (power outlet, power strip, or surge protector). Do not remove the DC power cord from the modem's rear panel. Doing so could result in an electrical shock or damage the modem.

When you re-apply power to the modem, plug the AC power cord into the power source.

Table 1: Power supply specifications

Power supply type	Description	Electrical requirements
AC/DC, Ravel 75 W P/N 1504941-0001	HT2000W satellite router with 1 W radio only	Input line voltage: 100 - 130 V, 1.5 A maximum Input line frequency: 60 Hz AC Rated output power: 75 W

Computer and networking requirements

This section lists the requirements for the computer or other device, network, and browser to be used with the satellite modem.

Computer requirements

The HT2000W satellite modem can be used with any device that supports Internet Protocol (IP) and has a 10/100 BaseT Ethernet LAN port. Typically, the modem is connected to a customer's computer. However, the HT2000W is self-hosted; it does not require a computer for any of its functions.

Requirements for the computer to be used with the satellite modem are the same for the laptop computer you use to install the modem. The computer should meet the minimum requirements specified by the computer operating system manufacturer and the following networking and browser requirements. Make sure your laptop is configured to support DHCP.

Note: The satellite modem can be used with a Mac computer that meets these requirements, but Mac computers are not supported as a tool for installing the satellite modem.

Networking and Internet browser requirements

- Ethernet port
- Ethernet Network interface card (NIC) installed on at least one computer, 10/100 BaseT
- Ethernet cable (provided)
- A web browser such as Internet Explorer with proxy settings disabled

Connecting a network – If the customer wants to connect a network to the satellite modem, this requires an Ethernet hub or other such device. The customer must supply and configure the hub and cables. Required IP address information is obtained during commissioning.

Related components

Antenna

You must assemble and install the antenna before you install the satellite modem. You point the antenna as part of the modem commissioning process.

⚠ CAUTION

Only a trained professional installer should install the outdoor antenna assembly. In the United States, the Federal Communications Commission (FCC) requires professional installation and service of the antenna assembly because it transmits radio frequency (RF) energy.

The HT2000W satellite modem can be used with a 0.69 m, 0.74 m, or 0.98 m two-way satellite antenna. The antenna assembly is shipped in a separate box.

The main source of information on the antenna is the antenna installation guide. If you do not have the antenna installation guide, refer to your Installation Reference Sheet; then locate the guide for that model on your installation support web site.

NOTICE

When you install the antenna assembly, read and follow all safety alerts and instructions in the antenna installation guide and in the ***Antenna Site Preparation and Mount Installation Guide*** (1035678-0001).

IFL cable

Before you can install the satellite modem, you must route the coaxial IFL cable between the indoor satellite modem location and the antenna. Then you connect the modem and the antenna by connecting the IFL cable to both components.

The routing path of the IFL cable between the modem and the antenna depends on the building configuration. ***The Antenna Site Preparation and Mount Installation Guide*** (1035678-0001) give guidelines for installing IFL cables.

Requirements for cables, connectors, and ground blocks

You must use approved cable types and connectors to connect the modem to the outdoor satellite antenna. For grounding, you must use approved ground blocks and grounding connectors. For detailed specifications and information on these components, see the documents listed in Table 2.

The coaxial IFL cable and the ground block to which they are connected must meet the grounding requirements specified in the following warning:

You must comply with applicable local codes and the grounding requirements in Field Service Bulletin (FSB), ***HNS Broadband Requirements for RG-6 and RG-11 IFL Cable Connectors, Ground Blocks, and Ground Block Location*** (FSB_050518_01). Improper grounding can result in electric shock injury, property damage, and/or poor modem performance.

Labeling the IFL cable

Label the IFL cable at the outdoor point-of-entry and at the indoor location where the satellite modem is installed as follows:

Wrap a piece of blue electrical tape around the cable, and mark SAT on the tape.

Hub or similar network device

The customer must supply and configure the network device, including required cables, according to the device manufacturer's documentation. Required IP address information is obtained during modem commissioning.

Instructions for related components

This installation guide covers only installation of the satellite modem. For installation instructions for other components, see Table 2 on page 18.

You can view or download these documents at https://dwayinstalls.hns.com/. Click *Installer Login Click Here!* on your installation support web site. If you cannot log in, contact your installer support for access to these documents

Table 2: Related installation documents

Component or topic	Where to find instructions
Safety (all components) Site survey, Site preparation, Antenna mounts, IFL cable	***Antenna Site Preparation and Mount Installation Guide*** (1035678-0001)
IFL cables (specifications, approved types, maximum lengths)	***HNS Broadband Requirements for RG-6 and RG-11 IFL Cable Connectors, Ground Blocks, and Ground Block Location*** (FSB_050518_01)
Antenna, antenna pointing, Radio assembly	See the antenna installation guide for the specific antenna model you are installing. For Ka-band antennas, see the ***Jupiter Antenna Pointing Guide*** (1039429-0001)

Chapter 3

Installing the satellite modem

Installation of the HT2000W satellite modem consists of physical installation followed by a highly automated process that fully prepares the modem for operation on the satellite network. Installation tasks include:

- Physical installation and power-up
- Entering required installation parameters
- Pointing the antenna
- Monitoring the commissioning process
- Service activation

The installation software is factory pre-installed in the satellite modem and automatically updated as part of the installation process. You access the installation software through your computer's browser to perform installation tasks.

Prerequisites for installing the modem

Make sure the installation location meets the following requirements concerning ventilation and heat sources.

- Do not block any of the modem's ventilation openings.
- Leave 6 inches of space around the top and sides of the modem to ensure adequate ventilation and prevent overheating.
- Do not place the modem near a heat source such as direct sunlight, a radiator, heat register or vent, oven, stove, amplifier, or other apparatus that produces heat.

Selecting the modem installation location

Select a location for the satellite modem that accommodates all required cable connections, including the connection to the power source.

Ventilation and heat sources

Make sure the installation location meets the following requirements concerning ventilation and heat sources.

NOTICE

- Do not block any of the modem's ventilation openings.
- Leave 6 inches of space around the top and sides of the modem to ensure adequate ventilation and prevent overheating.
- Do not place the modem near a heat source such as direct sunlight, a radiator, heat register or vent, oven, stove, amplifier, or other apparatus that produces heat.

Modem operating position

Install and operate the HT2000W modem only in the upright vertical position resting on its built-in base as shown in Figure 5. Any other position could result in insufficient ventilation, overheating, and malfunction.

Figure 5: Powering up the modem

Powering up the modem

For this task you must have the satellite modem and the correct power supply. To make sure you have the correct power supply, see Table 1 on page 15.

Test the power outlet and power up the satellite modem:

1. Use an AC outlet tester to verify that the power outlet is wired correctly. Wiring problems may include:
    - Hot and neutral wires reversed
    - Neutral and ground wires reversed
    - Open ground (incomplete connection)
    - Open neutral (incomplete connection)

If the outlet is wired improperly, notify the customer that you are not permitted to connect the system to a faulty outlet. Do not proceed with the installation until a properly wired outlet is provided.

2. Connect the DC power cord to the modem's DC IN connector, as shown in Figure 6. Connect the AC power cord to the three-prong connector on the modem's power supply.
   a. The HT2000W power cord connector uses a locking mechanism to ensure it stays snugly connected to the modem. Make sure the connector is oriented correctly when plugging it into the DC IN port; **the flat side of the plug should face the modem's side panel nearest to the port**.

Figure 6: Proper power cord orientation

3. Connect the surge connector (recommended) to an AC power outlet.
4. Apply power by connecting the AC power cord to the surge connector. The Power LED turns on, and various LEDs turn on and off as the modem performs a self-test and transitions to boot phase.

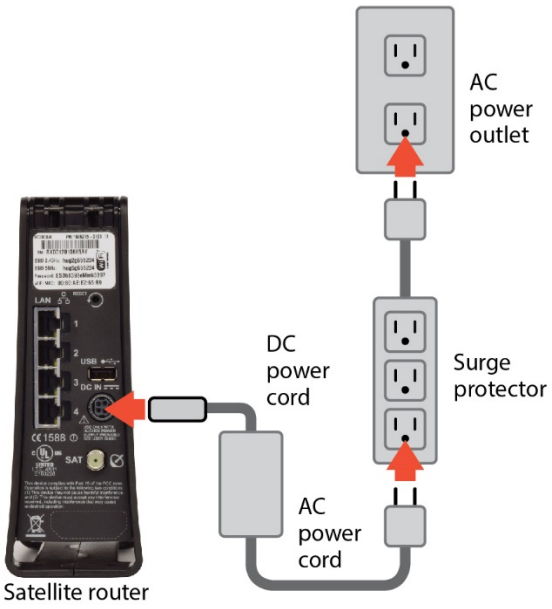

Figure 7: Powering up the modem

NOTICE

A suitable surge protector is recommended to protect the satellite modem from possible damage due to power surges.

Clearing the cache

Before connecting your laptop to the modem, it is important you clear your computer's cache.

Clearing the cache in Internet Explorer

1. Press the **Ctrl + Shift + Del** keys. The Delete Browsing History screen appears.
2. Select the options as shown in Figure 7.
3. Click **Delete**.

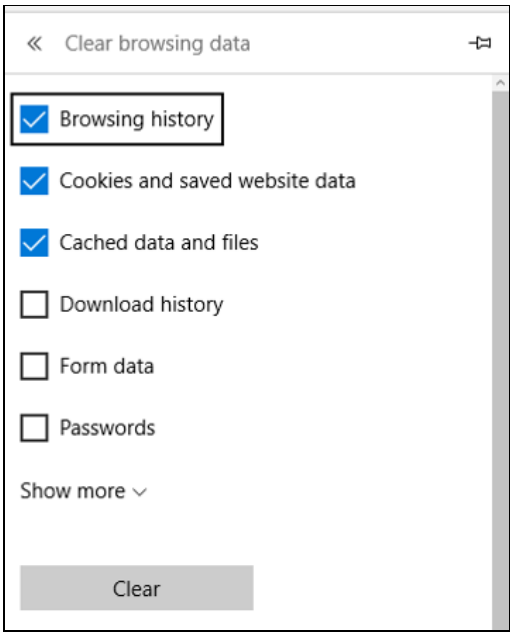

Figure 8: Internet Explorer Delete Browsing History screen

Clearing the cache in Mozilla FireFox

1. Press the **Ctrl + Shift + Del** keys. The Clear All History screen appears.
2. Select the options as shown in Figure 8.
3. Click **Clear Now**.

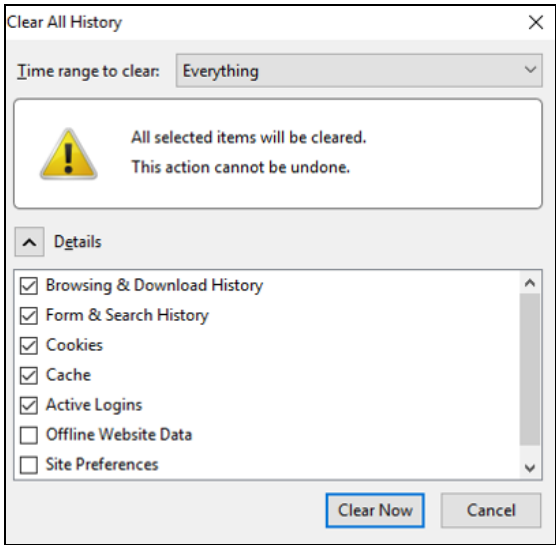

Figure 9: Mozilla FireFox Clear All History

Connecting the laptop

Connect your laptop to the modem:

Note: An Ethernet cable is recommended for initial installation. Once HughesNet service is activated, Wi-Fi service can then be set up. Setting up and connecting to Wi-Fi is covered in Chapter 10 of this guide.

1. Use an Ethernet cable to connect your laptop computer directly to the modem's LAN port, as shown in Figure 9. Do not connect the laptop to the modem through an Ethernet modem or switch.

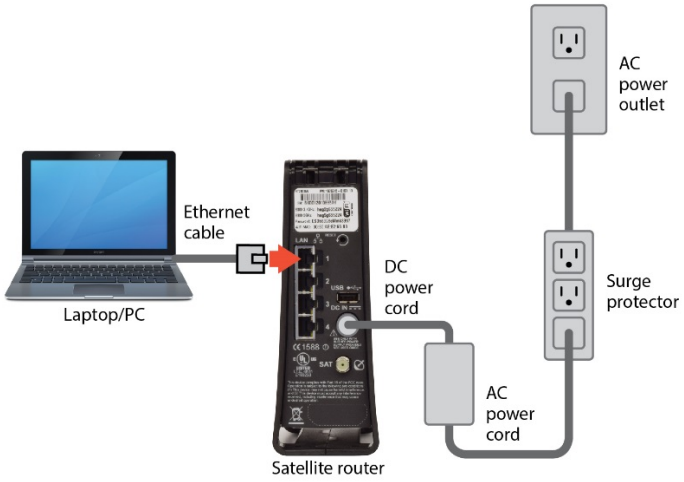

Figure 10: Connecting your laptop to the modem

Note: If you are running firewall software on the laptop computer, disable it until you complete installation of the modem. The LAN LED on the front of the modem should now be on.

Overview of entering installation parameters

Successful installation of the satellite modem depends on your tasks, network and installation software, and interaction between the satellite modem and the Network Operations Center (NOC). After powering up the modem, enter the required parameters and then complete the antenna pointing.

The following apply to the screen illustrations in this guide:

- The screen illustrations are examples. Values shown in these illustrations may not apply to the satellite modem you are installing. Do not use values shown to install or configure the modem unless the instructions say to do so.
- On some screens and in some messages you may see the word modem or the abbreviation VSAT. Both refer to the HT2000W satellite modem.

- Screen and page are both used to refer to the information displayed on your computer monitor.

1. Enter `192.168.0.1` into a browser on your laptop. The System Control Center home page appears as shown in Figure 10. Note the "Your System is Not Quite Ready" message. This is the first screen of the commissioning process.

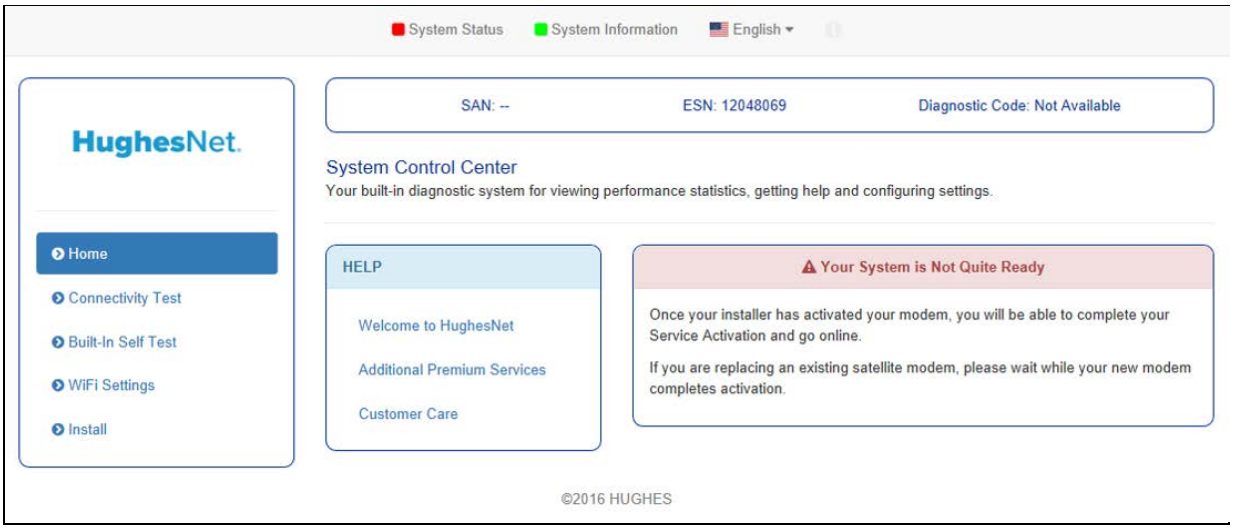

Figure 11: System not ready screen

2. Click the Advanced Pages icon at the top of the page as shown in Figure 11. The Advanced Configuration and Statistics page appears as shown in Figure 12.

Figure 12: Advanced pages icon

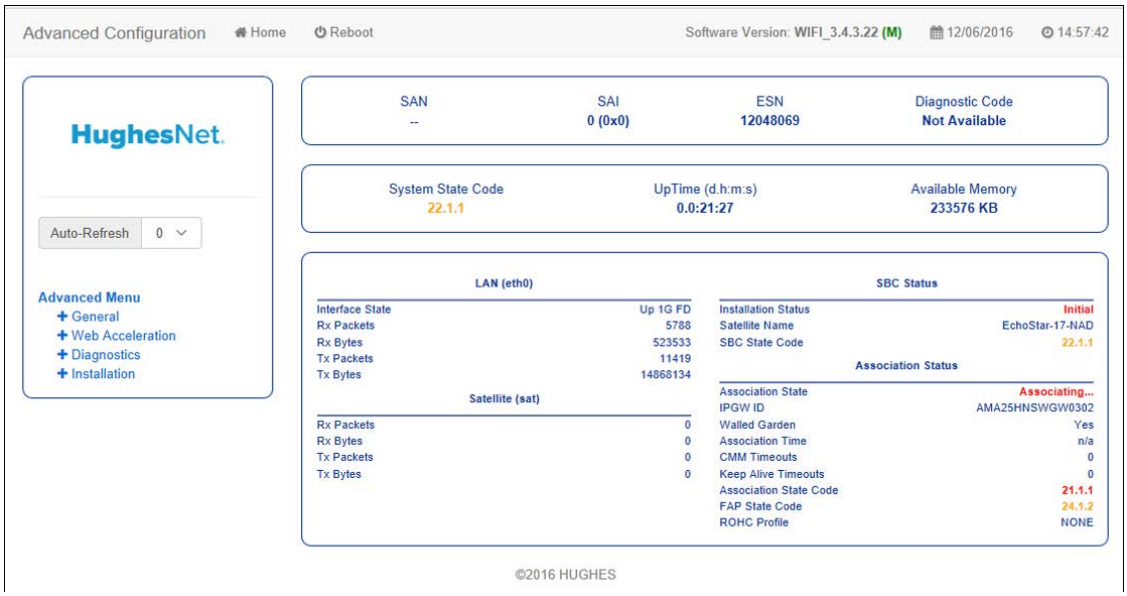

Figure 13: Advanced Configuration and Statistics page

3. Click Installation on the side panel to access the drop-down menu as shown in Figure 13.

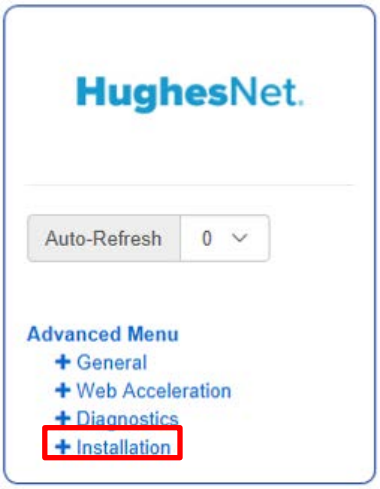

Figure 14: Advanced Pages Installation link

4. Click the Install link to begin the installation. The Input Params screen appears as shown in Figure 14.

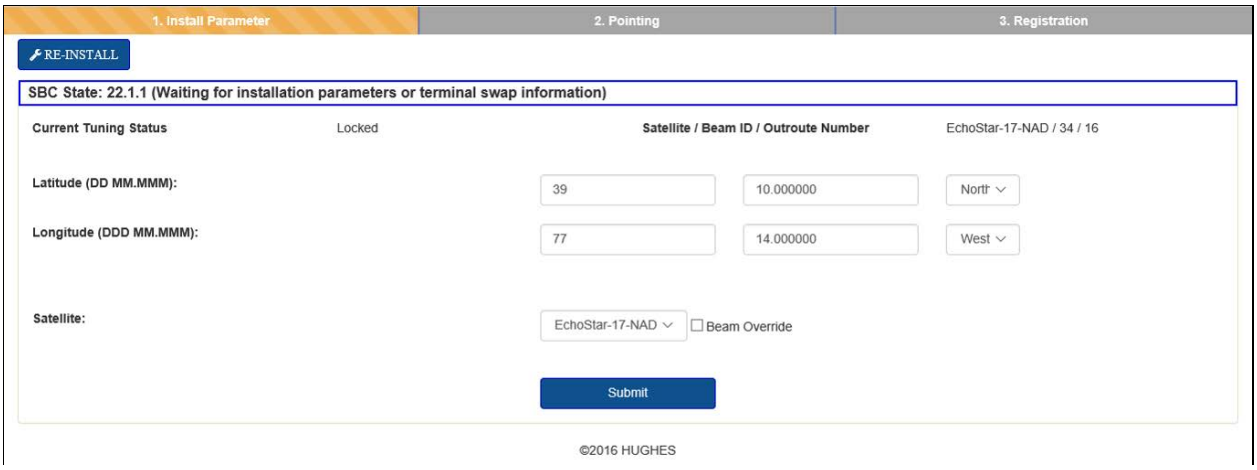

Figure 15: Terminal Installation screen – Input Params

Entering installation parameters

1. On the Input Params screen enter the Latitude and Longitude from your GPS as shown in Figure 15.

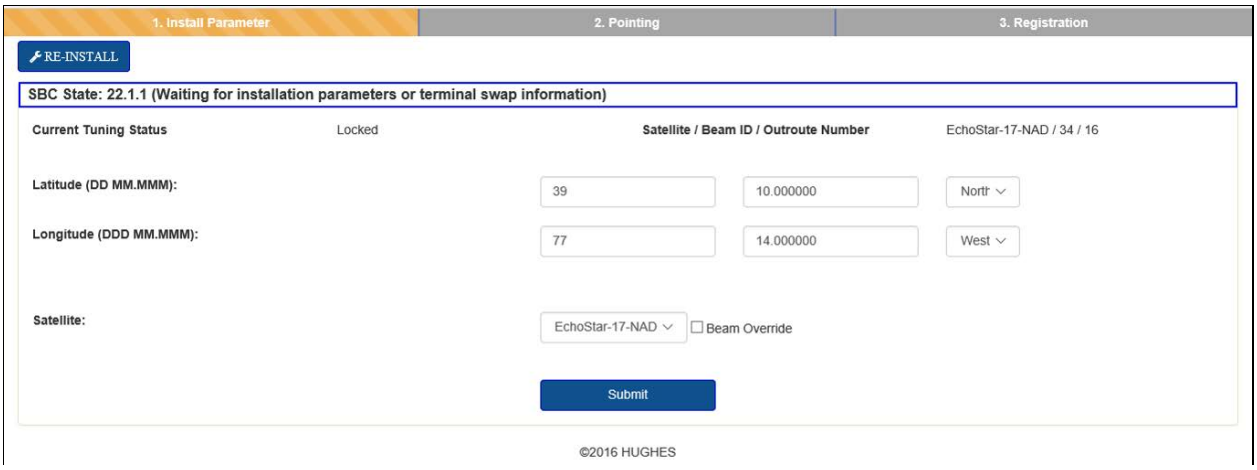

Figure 16: Latitude and longitude parameters

2. Enter the site latitude and longitude values from your Global Positioning System (GPS) receiver, in degrees and minutes to three decimal places.

- The modem's installation software uses the site's latitude and longitude to determine the uplink and downlink cells to assign to the modem and the uplink polarization setting on the radio's assembly left-handed circular polarization (LHCP) or right-handed circular polarization (RHCP).
- You must enter the latitude and longitude in the format shown below:

  Latitude: DD MM.MMM

  Longitude: DDD MM.MMM

- Enter degrees in whole numbers only, with no decimals. Degrees latitude is 1 or 2 digits (0- 90° north or south). Degrees longitude is 1 - 3 digits (0 - 180° east or west). Examples of degrees correctly entered:

  5, 05, 42 or 112

- Enter minutes as a whole number plus a decimal fraction to three places (thousandths) with no seconds. Examples of minutes correctly entered:

  7.223 and 34.775

- If you type a number with a leading zero, the zero is not displayed after you press Submit. For example, if you type 06 it is displayed as 6.
- Some GPS receivers are suitable for Ka-band installations; some are not. For a complete discussion on various GPS receivers, see FSB, ***Introduction to Commercial GPS Units for Ka Installers*** (FSB_080404_01).

3. Accept the defaults for the Satellite: and Advanced: fields as shown in Figure 15 unless directed to do otherwise.
4. Click Submit.

After you enter the installation parameters on the Installation Params screen and click Submit, the satellite modem enters pointing mode. Refer to Chapter 4 – Installing outdoor equipment and antenna pointing for the next step in the process.

Chapter 4

Installing outdoor equipment and antenna pointing

This section provides some general information about antenna installation and pointing relating to modem installation. For complete instructions on installing antenna mounts, antennas (including radio assemblies) and pointing, refer to the manuals listed in Table 2.

The HT2000W satellite modem can be used with a 0.69 m, 0.74 m, or 0.98 m two-way satellite antenna. Assemble and install the antenna assembly according to the antenna installation manual. If you do not have the antenna installation manual, refer to your Installation Reference Sheet to find the manual for your antenna on the installation support web site.

⚠ CAUTION

When you install the antenna assembly, read and follow all safety alerts and instructions in the antenna installation manual and in the ***Antenna Site Preparation and Mount Installation Guide*** (1035678-0001).

Installing the IFL cable

Before you can point the antenna, you must route the IFL cable between the indoor satellite modem location and the antenna. Then connect the modem to the radio assembly with the IFL cable.

Routing and connecting the IFL cable

To point the antenna, you must connect the modem to the antenna and install the DAPT2 (a Hughes tool that displays antenna pointing values).

1. Route the IFL cable from the indoor satellite modem location to the antenna. The routing path depends on the building configuration. ***The Antenna Site Preparation and Mount Installation Guide*** (1035678-0001) gives guidelines for installing IFL cables.
2. Connect the IFL cable to the connector on the radio transmitter. Use a temporary cable to connect the DAPT2 to the LNB which is part of the radio assembly as shown in Figure 16. This is a temporary arrangement that is required for antenna pointing.

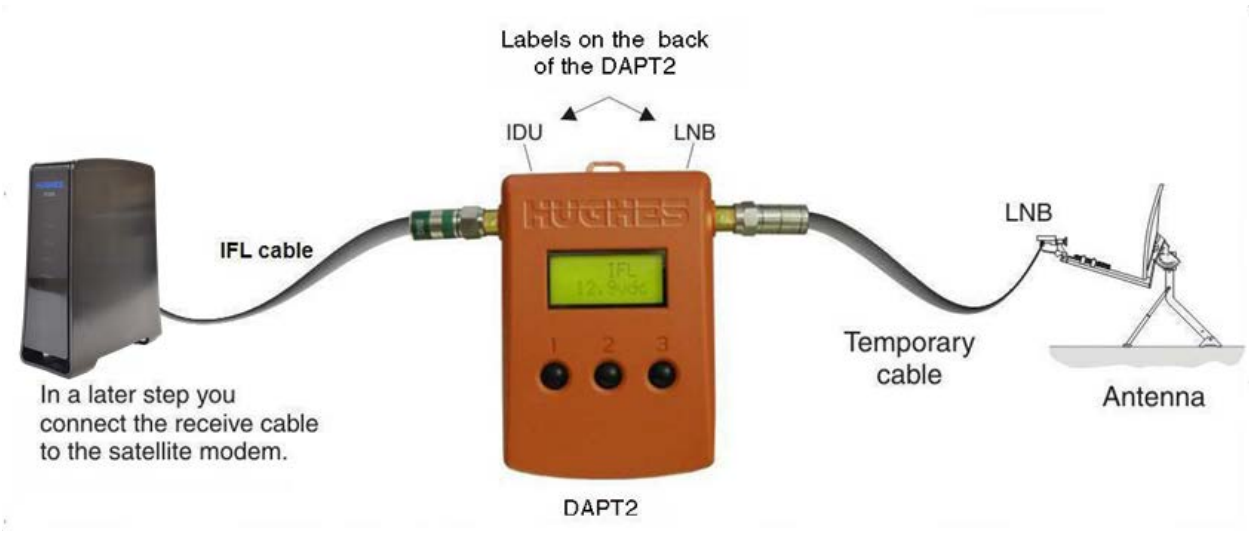

Figure 17: Connection of the DAPT2

Note: The connectors on the DAPT2 are labeled IDU and LNB. If the cable from the satellite modem (the IDU) and the cable from the radio assembly on the antenna are connected to the wrong connectors, the DAPT2 will not receive a signal.

IFL grounding requirement

The coaxial IFL cable and the ground block connecting them must meet the grounding requirements specified in the following warning:

⚠ WARNING

You must comply with applicable local codes and the grounding requirements in Field Service Bulletin (FSB), HNS Broadband Requirements for ***RG-6 and RG-11 IFL Cable Connectors, Ground Blocks, and Ground Block Location*** (FSB_050518_01). Improper grounding can result in electric shock injury, property damage, and/or poor modem performance.

Labeling the IFL cable

Label the IFL cable at the outdoor point-of-entry and at the indoor location where the satellite modem is installed as follows:

Wrap a piece of blue electrical tape around the cable, and mark SAT on the tape.

Connecting the IFL cable to the modem

Connect the IFL cable to the connector on the rear panel of the modem as shown in Figure 17 which shows the placement of all connections.

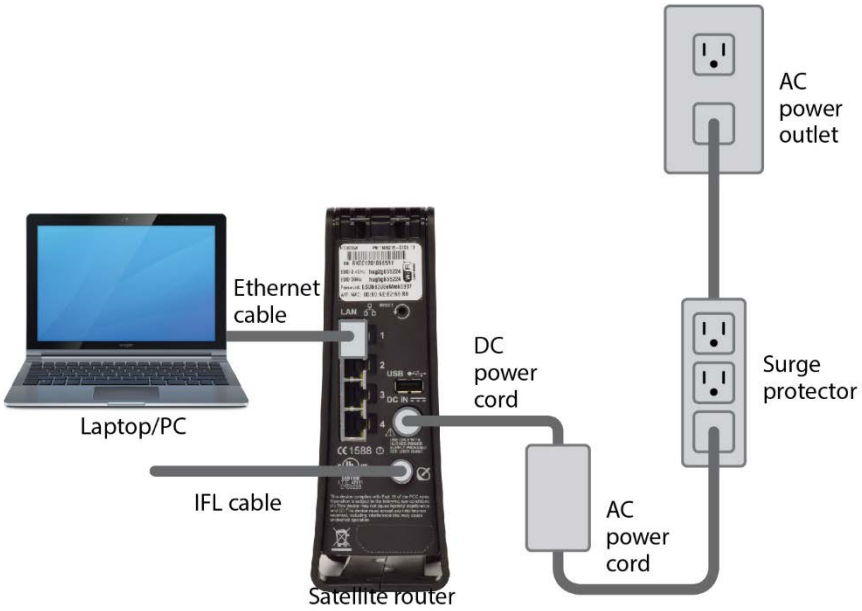

Figure 18: All connections completed

NOTICE

The cable connector must be securely tightened. Make sure each connector is properly aligned (not cross-threaded). The connector should be finger tight with no play.

Make sure neither the satellite modem nor the customer's computer is connected to an Ethernet device.

Do not connect any device to the satellite modem at this time except your laptop computer. Other Ethernet devices may only be connected to the modem after it installed and commissioned.

Pointing the antenna

Make sure you have the DAPT2. You will need this to point the antenna.

1. Go outside to the antenna location.
2. Follow the procedure explained in the ***Jupiter Antenna Pointing Guide*** (1039429-0001) to point the antenna using the DAPT2. When you finish the pointing procedure, a screen message on the DAPT2 asks if you want to store the pointing information in the satellite modem. If you answer yes, the modem exits pointing mode. When the modem finishes downloading the pointing information, the DAPT2 displays a *Pointing Done* message.

3. Make sure you see the *Pointing Done* message on the DAPT2. Do not remove the DAPT2 until you see the Pointing Done.

The following screens show the progression of pointing on the Terminal Installation screens.

Coarse and fine pointing

Coarse pointing refers to pointing the antenna in the general direction of the Jupiter satellite so that the antenna can acquire the satellite signal. Fine pointing refers to refining the antenna adjustment to point the antenna as accurately as possible. Figure 18 shows fine and course pointing in progress. Once pointing is complete, click **Next** to continue.

Figure 19: Coarse and fine pointing detail

Pointing validation

Once you have finished coarse pointing, use the DAPT2 to fine point the antenna. The Pointing Validation screen, Figure 18, shows the validation in progress.

Ranging

Ranging occurs when the HT2000W measures the distance to the satellite to calibrate transmit power and timing. Once ranging is complete the HT2000W's transmit and receive signal are synchronized to the satellite for optimal transport service.

Once the ranging process finishes, registering the modem begins automatically. See *Prerequisites for commissioning* on page 35 for details on registering and commissioning the modem.

1. Remove the DAPT2 and connect the IFL cable from the satellite modem to the radio assembly. At this point the modem automatically begins the process of commissioning which includes registering with the NOC, and related activities.
2. Go back inside to complete installation of the modem.

Chapter 5

Registering and commissioning the satellite modem

During commissioning, the modem interacts with the satellite to establish transmit timing and synchronization. It interacts with the NOC for authentication and registration; and to obtain required software, security keys, and a preliminary configuration. The NOC notifies the NSP that the satellite modem has registered with the network.

The modem downloads a temporary configuration from the NOC. The temporary configuration allows the modem to communicate with the NSP so the broadband service can be activated. Final configuration is provided to the modem after service activation.

Prerequisites for commissioning

The following are prerequisites for commissioning:

- The satellite modem must be physically installed.
- The antenna must be pointed, and the modem must have exited pointing mode. Service for the modem must be configured by the service provider and the NOC, and the terminal site you entered. Installation must match the terminal site name configured by the service provider and NOC.
- The satellite modem must be defined at the NOC and authorized for commissioning by the service provider.

Monitoring the commissioning process

Commissioning activities are performed automatically by the satellite modem, the satellite, and the NOC. Commissioning begins when the modem exits pointing mode and progresses until completion. Normally, there is no need for intervention.

After you point the antenna and respond **Yes** on the DAPT to store the pointing information, the modem exits pointing mode and displays the Terminal Initialization Sequence screen on your browser.

The Terminal Initialization screen lists each commissioning activity and each activity's progress as the satellite modem proceeds through the commissioning (or initialization) sequence.

Figure 19 shows the registration process in progress with several other activities underway. The activities occur in the order they are listed on the screen, top to bottom.

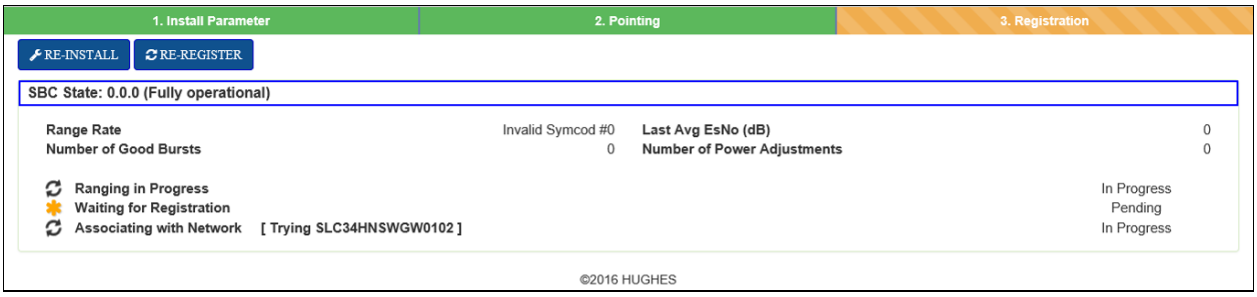

Figure 20: Process in progress and completed

Once the registration in complete, the Configuration process begins automatically. Figure 20 shows that Ranging, Registration, and Associating with Network are done. Notice that two links appear on the screen.

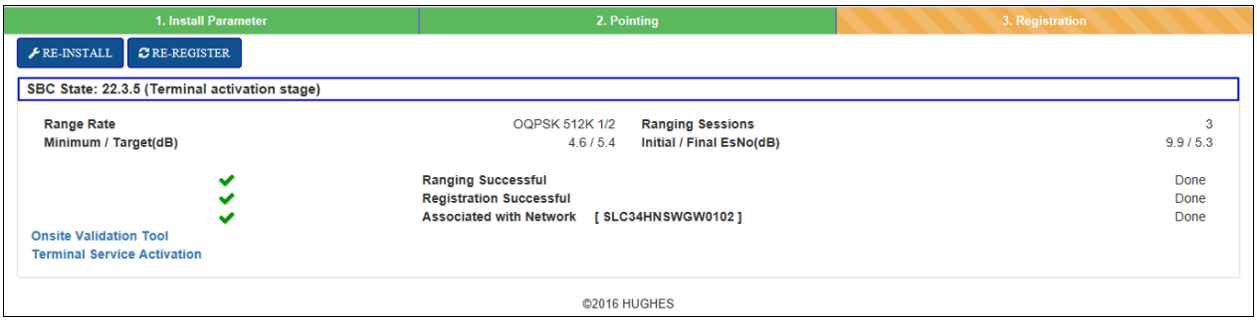

Figure 21: Registration and configuration processes

Click the *Onsite Validation Tool* link to begin the validation process.

Chapter 6

Validating the installation

As part of every HT2000W installation you are required to validate the overall installation (modem, antenna, cables, and connections) using the Ka-band Onsite Validation Tool (OVT). This browser-based tool helps to ensure a high-quality installation. If the site performance is not satisfactory, the OVT suggests corrective actions you can take and then analyzes the results of your actions.

Important: Run the OVT on your installer laptop after the modem has completed commissioning and registration, but before the customer activates the HughesNet service.

The OVT helps you obtain the best possible performance for a newly installed site by comparing current measured values from the site with target values. Before using the OVT, you must first complete the installation to the best of your ability.

The OVT is automated, but it does require certain information and actions from you. Online instructions and prompts guide you through the validation process.

The OVT logs the measured values and corrective actions to the Installer Support database. When you successfully complete the OVT process, the tool issues a sign-off code that you record on the Installation Reference Sheet.

A quick look at the validation procedure

This section summarizes how you use the HughesNet Ka-band OVT to evaluate the performance and quality of a newly installed HT2000W site. For detailed information on the OVT, see ***Installer's Guide to the Ka-Band Onsite Validation Tool (OVT)*** (1038091-0001).

If for any reason you cannot access or use the OVT, call your installer support number. To access and start the OVT:

1. Make sure your laptop computer is connected to the modem's LAN port.
2. Navigate to the Advanced Pages Terminal Installation page.
3. Click the Onsite Validation Tool link (OVT) as shown in Figure 21.

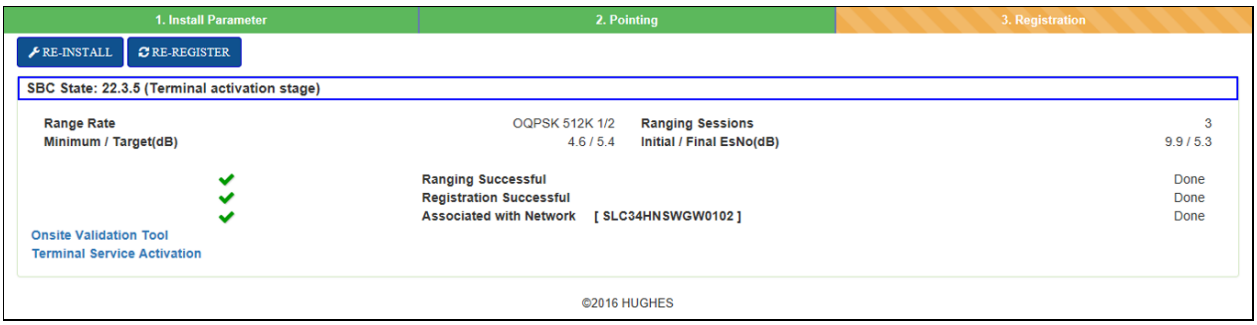

Figure 22: Onsite Validation Tool link

Note: Hughes installers will connect to the HughesNet Installation Portal. If you are a VAR you may have a different way to access the OVT and validate the installation. Please refer to your VAR procedures.

The HughesNet Installation Portal login screen opens, as shown in Figure 22.

Figure 23: Installation Portal, installer login screen

1. Enter your User Name.
2. Enter your Password.
3. Click **LOG IN**.
4. If you pop-up screen is blocked Figure 23 appears.

Figure 24: Pop-up error screen

5. Click the hyperlink to correct the problem.
6. The initial OVT screen appears as shown in Figure 24.

Figure 25: OVT initial screen

7. Enter your San:
8. Enter your Service Order number.
9. Click **Launch OVT**.
10. The first OVT screen appears.

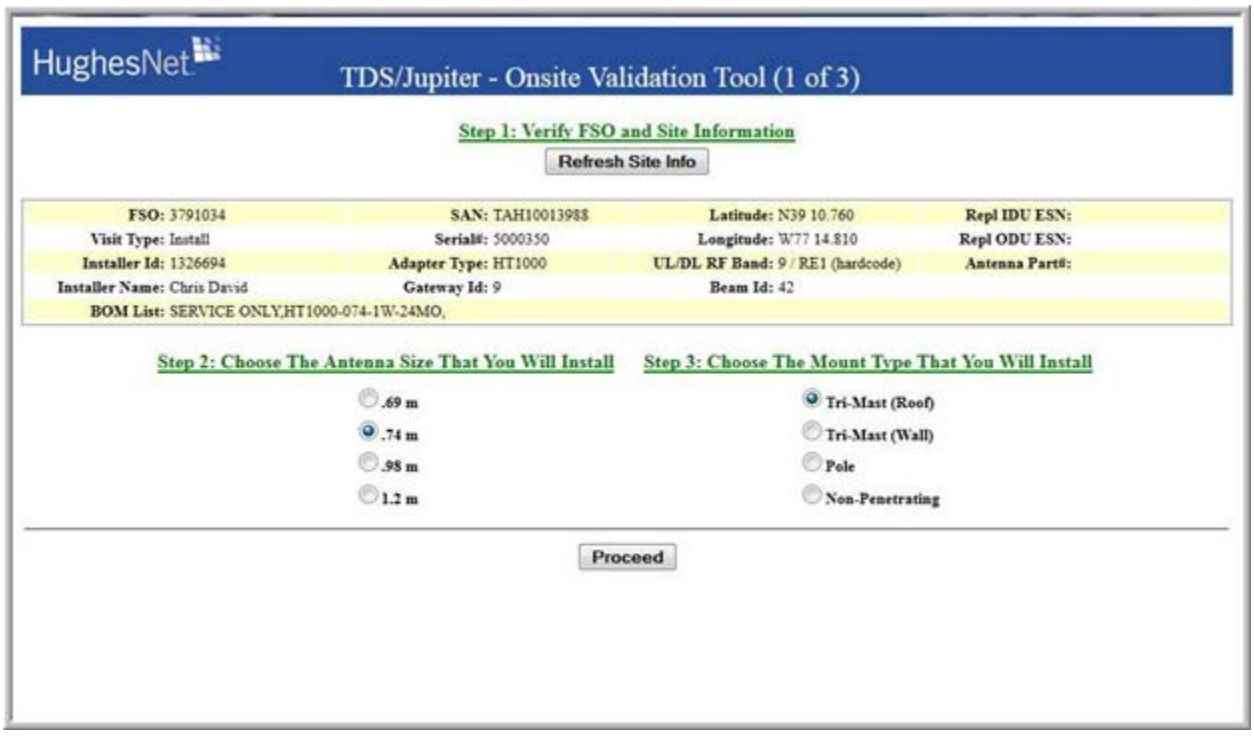

Figure 26: OVT screen 1

1. Click the **Refresh Site Info** button to update the display.

2. Select the antenna size in Step 2 on the screen.
3. Choose the mount type in Step 3 on the screen.
4. Click **Proceed**. The second screen of the OVT appears as shown in Figure 26.

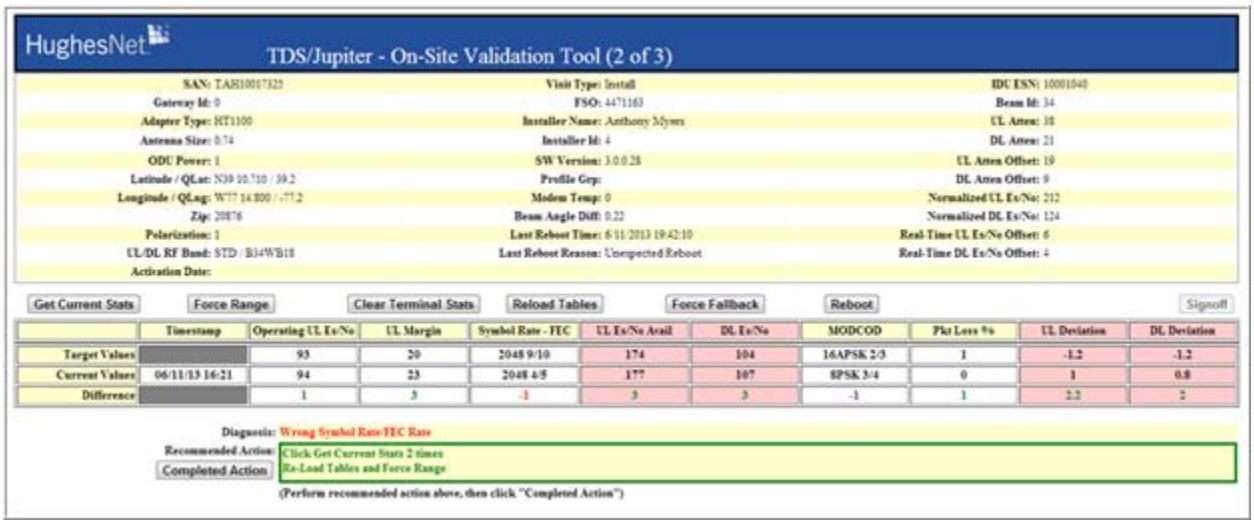

Figure 27: OVT screen 2

5. The Diagnosis and Recommended Action fields at the bottom of the screen give you instructions on your next step. Once you have completed the recommended course of action, click the **Completed Action** button
6. Click **Signoff** after all Recommended Actions have been completed.
7. The third screen of the OVT appears as shown in Figure 27.

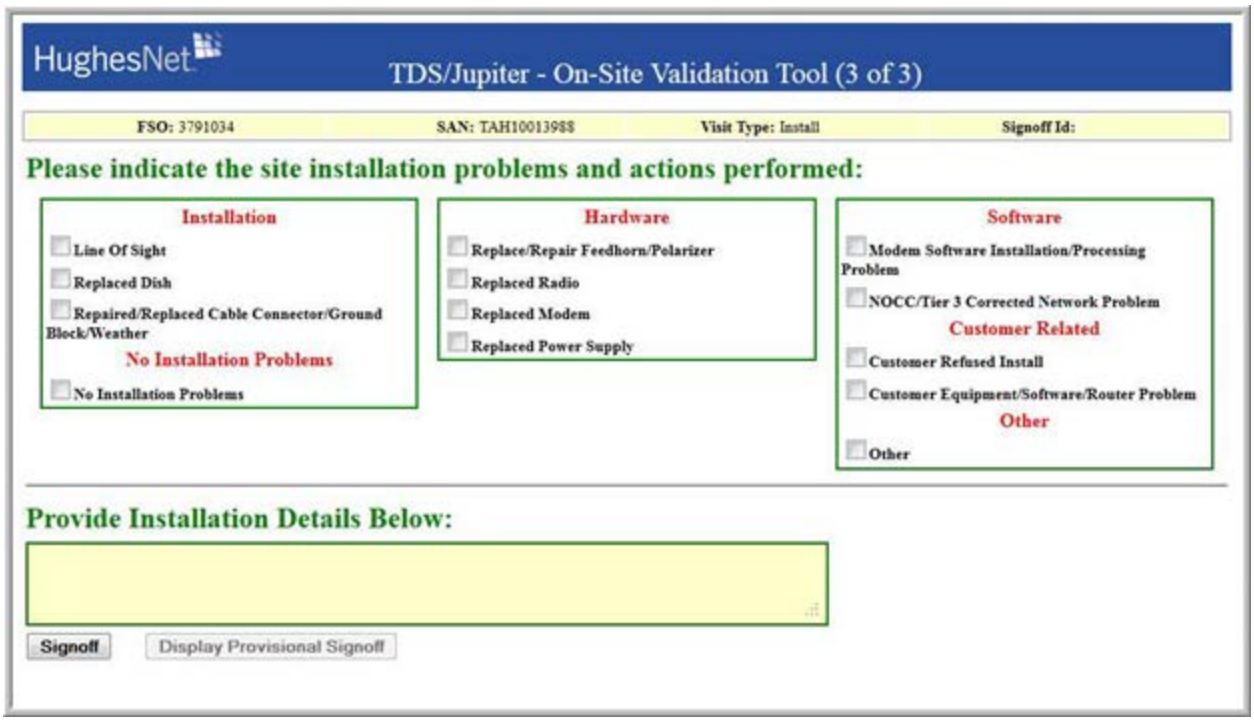

Figure 28: OVT screen 3

8. Select the appropriate options describing your installation from categories displayed on the screen. You must enter a comment in the *Provide Installation Details Below* box before you click the **Signoff** button as shown in Figure 28.

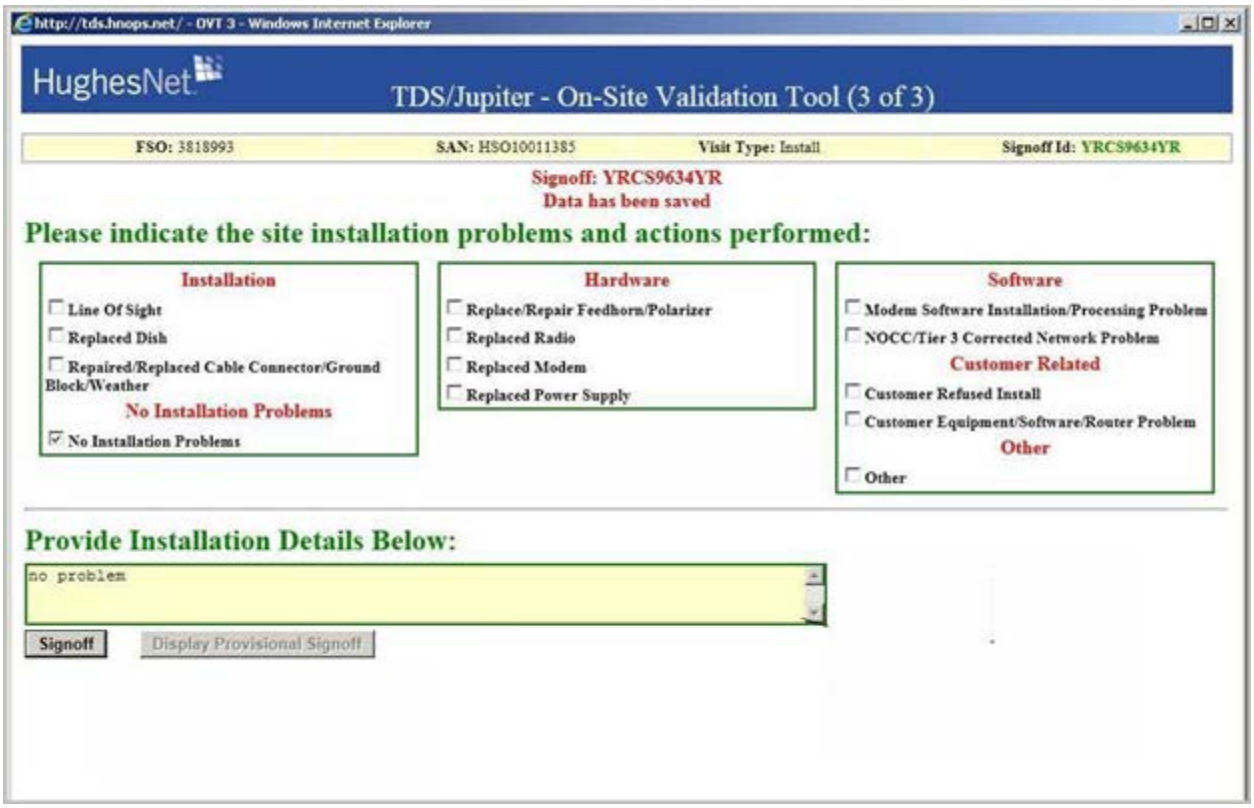

Figure 29: OVT Signoff screen

9. The screen refreshes. Make sure you copy down your signoff code displayed at the top of the screen.
10. Close the window.

For detailed information about the OVT, see the ***Installer's Guide to the Ka-Band Onsite Validation Tool (OVT)*** (1038091-0001).

Chapter 7
Activating the terminal

The next step in the process is activating the terminal. The terminal activation process associates the SAN with the ESN.

1. Make sure your laptop computer is connected to the modem's LAN port.
2. Go back to the HT2000W Registration tab at the top of the Terminal Installation page.
3. The Terminal Service Activation link is displayed under the Onsite Validation Tool link.. The Terminal Activation link appears only on a new installation when the modem is ready to be activated (after commissioning is complete). The link is not present after activation is completed.
4. Click the Terminal Activation link as shown in Figure 29.

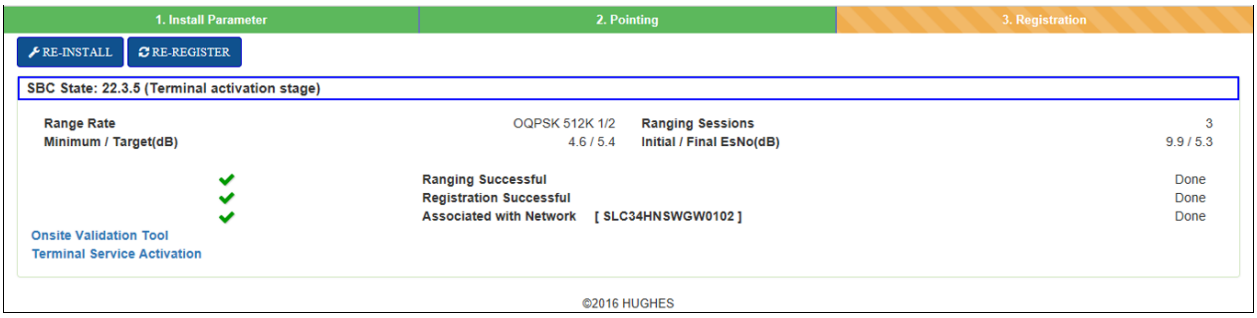

Figure 30: Terminal Activation link

If you see a Page not found error, check the following:

- Make sure the modem is powered on.
- Check the Ethernet connection. The orange LED on the LAN port should blink if you send data from the computer to the modem.
- Make sure a router is not connected between the modem and the PC.
- Before proceeding to the next step, make sure at least 5 minutes have passed since the Terminal Initialization Sequence. This allows the modem to complete its final configuration.

5. The HughesNet Activation screen appears as shown in Figure 30.

Figure 31: Activation screen

6. Enter the SAN and PIN. The SAN and PIN are provided on the customer's Order Confirmation email and on the Installation Reference Sheet. Click **Continue**.
7. After the SAN and PIN information is entered and validated, a screen appears that includes the customer's name and other details as shown in Figure 31.

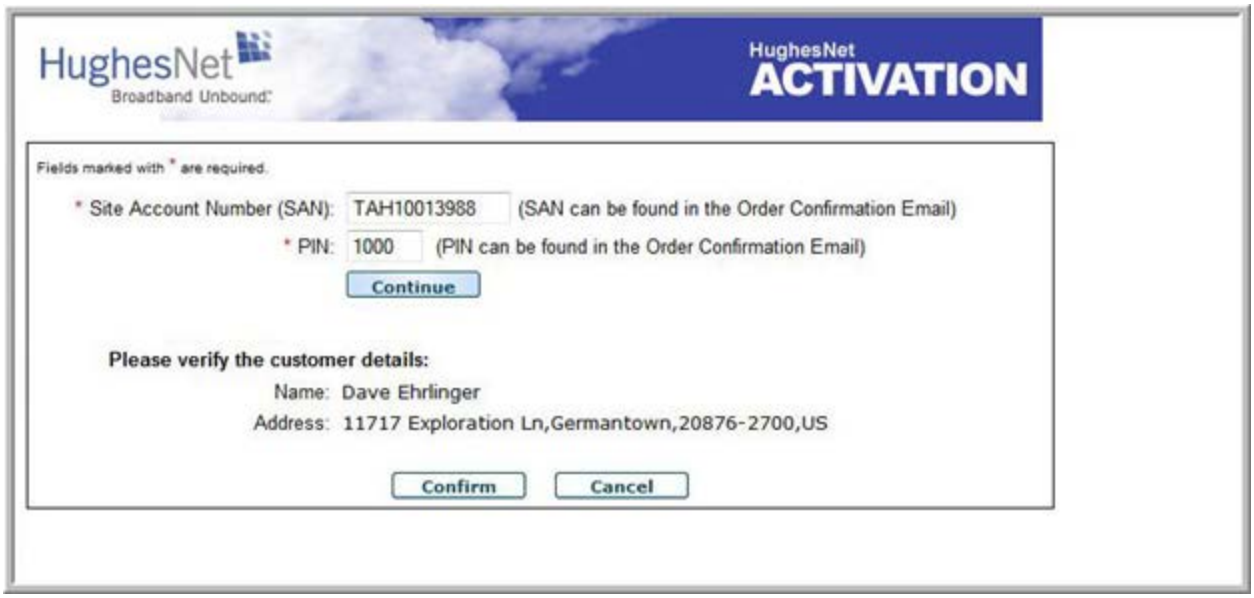

Figure 32: Confirm screen

Note: It is very important that the SAN and PIN match the customer's name and address. Check this information carefully and verify it with the customer.

8. Click **Confirm**. The Terminal Activation Successful screen appears as shown in Figure 32.

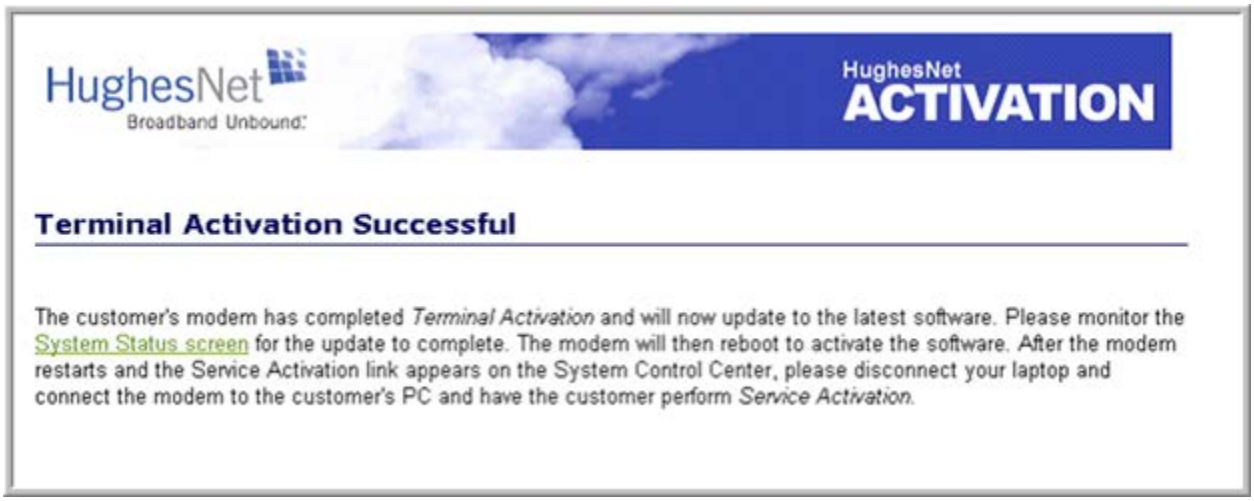

Figure 33: Successful activation screen

Proceed to Chapter 8 – Activating the HughesNet service for the next step in the process.

Chapter 8

Activating the HughesNet service

Activating the HughesNet broadband service is the final step in installing the satellite modem. The customer performs this step, and at the same time accepts the HughesNet subscriber agreement.

You prepare the customer for activation by connecting the satellite modem to the customer's computer. You should stay at the installation site until the customer can connect to the Internet so you can offer guidance and assistance if necessary.

This section gives a broad overview of the activation process. The operating system of the customer's PC determines the prompting sequence the customer sees.

Validating downloaded files

Before activating service, you should validate that all files downloaded correctly and that the terminal activation is complete.

1. From the Terminal Activation Successful screen, click the System Status Screen link as shown in Figure 33.

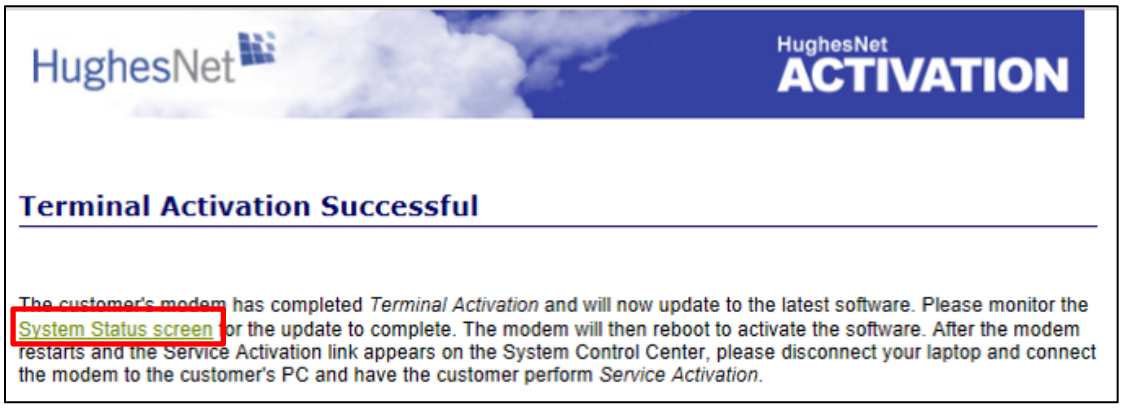

Figure 34: Complete message screen

2. The System Status screen appears. Ensure that all downloads are complete as indicated by the green check marks following the procedures or tasks as shown in Figure 34.

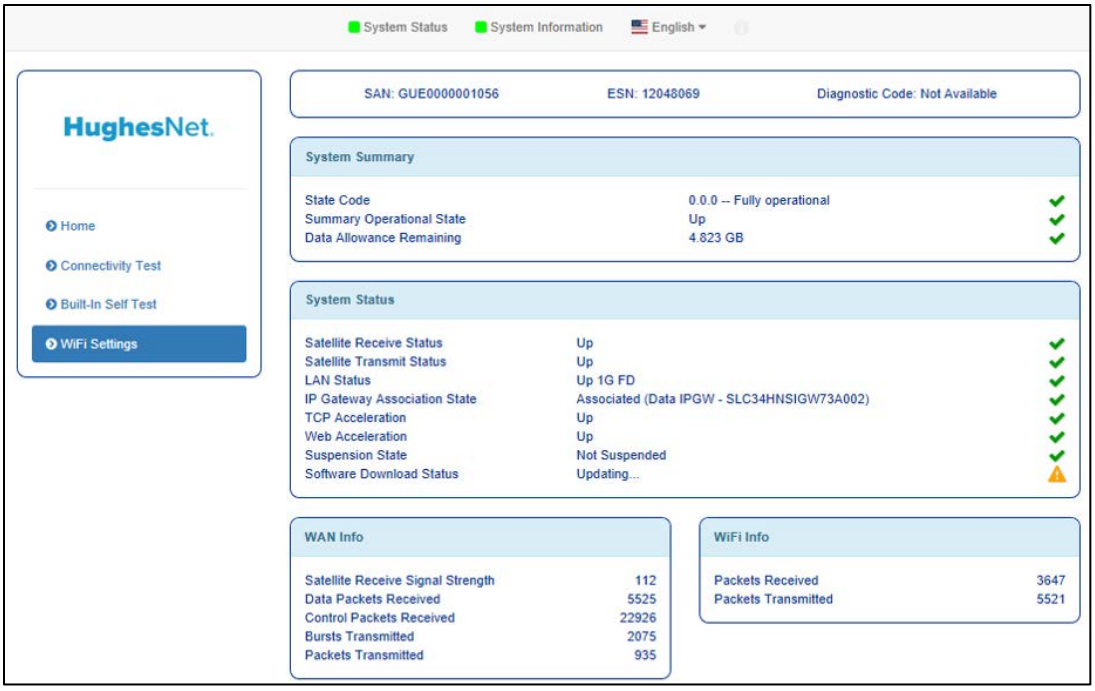

Figure 35: System Status screen

3. Click the Home link on the side panel. The System Control home page appears as shown in Figure 35.

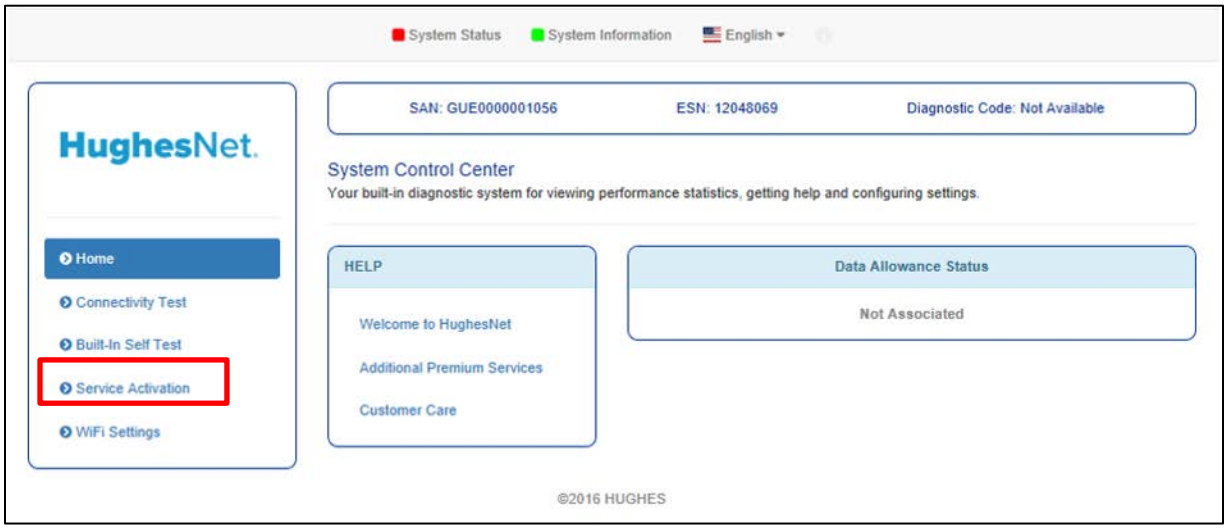

Figure 36: System Control Center home page

4. Notice you have a Service Activation link on the side panel. **Do not click this link at this time.** Before you activate the customer's service, you must connect the customer's computer to the satellite modem.

Service activation prerequisites

Before proceeding, make sure the modem and the customer's computer are ready for service activation. Prerequisites for service activation are:

- The modem must be commissioned.
- The modem must be connected to the customer's computer (next step).
- The customer's computer must be configured for DHCP.

Connecting the satellite modem to the customer's computer

1. Use an Ethernet cable to connect the satellite modem to the customer's computer as shown in Figure 36.
   a. Disconnect the Ethernet cable from your laptop computer. The Ethernet cable is already connected to the LAN port on the rear panel of the satellite modem.
   b. Connect the Ethernet cable to the LAN port on the customer's PC or other device as shown in Figure 36.

   Note: If the customer wants to connect the modem to a router, do not connect the router until activation is complete.

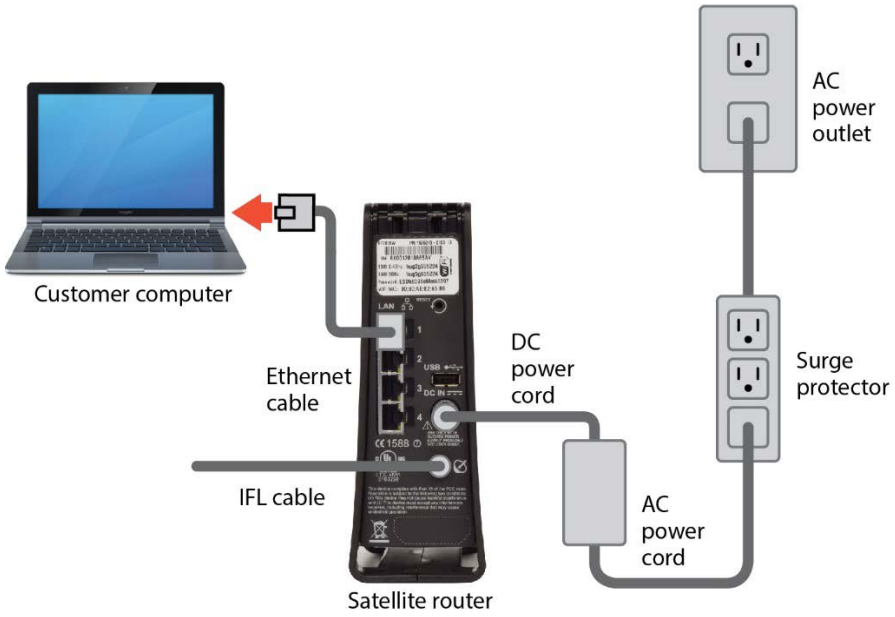

Figure 37: Connecting the Ethernet cable to the customer's computer

Activation procedure

The customer activates the HughesNet service. A summary of the activation process is provided here, so that you will know what the customer should expect. This summary description is not a complete description of the activation process, and it does not show all the screens the customer will see during service activation. The screens that follow give you an idea of what to expect during service activation.

Ask the customer to do the following:

1. Navigate to the System Control Center home page, if not already there.
2. Click the Service Activation link as shown in Figure 35.
3. The Welcome to HughesNet! screen appears as shown in Figure 37.
4. Click the **Get Started Now** button.

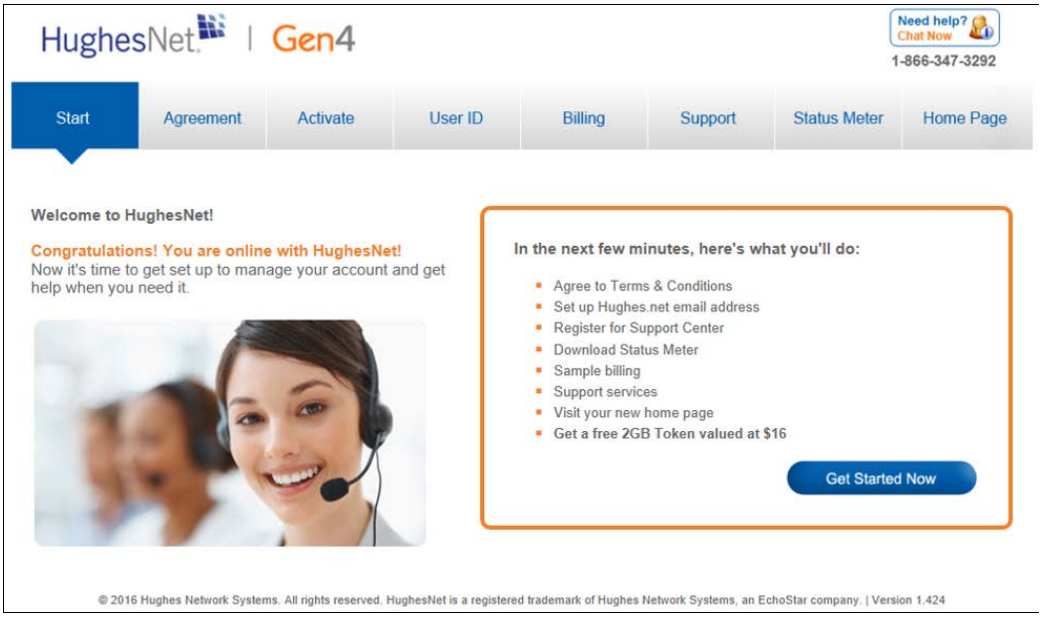

Figure 38: Welcome to HughesNet screen

5. The Terms & Conditions Agreement page appears.

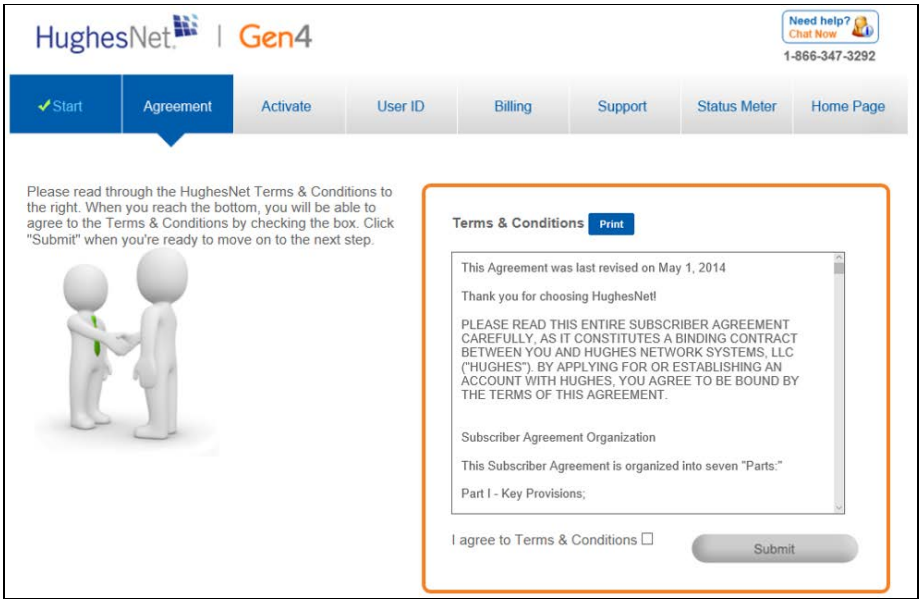

Figure 39: Terms & Conditions screen

6. Click the *I agree to Terms & Conditions* box.
7. Click **Submit**. The system displays an activation message.
8. The Activate screen appears as shown in Figure 39.

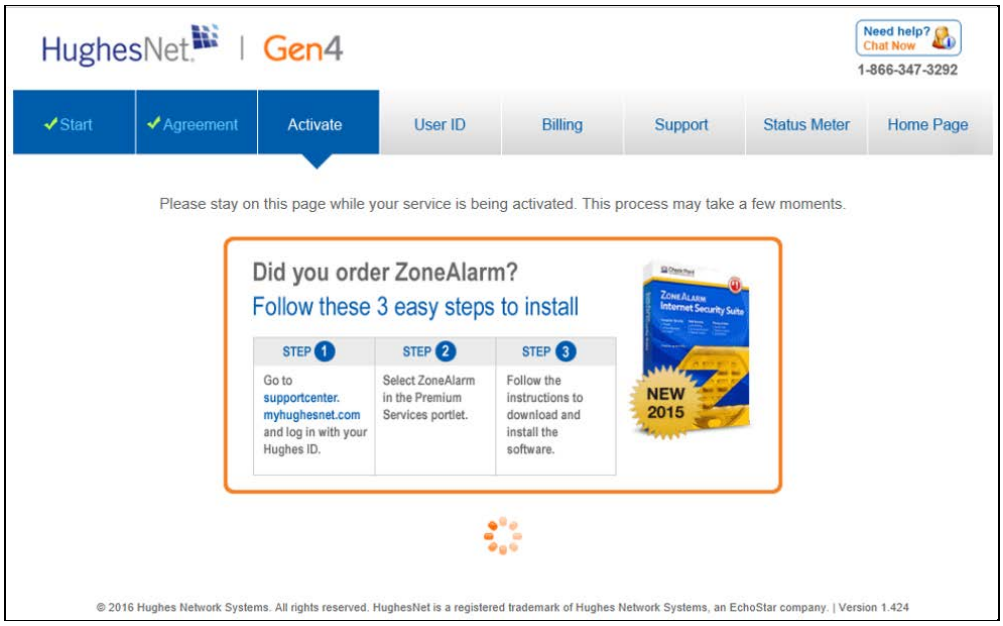

Figure 40: Activate screen

9. Once the system finishes processing on the Activate screen, the User ID page will appear, as shown in Figure 40.
10. Click the **Start Here** button.

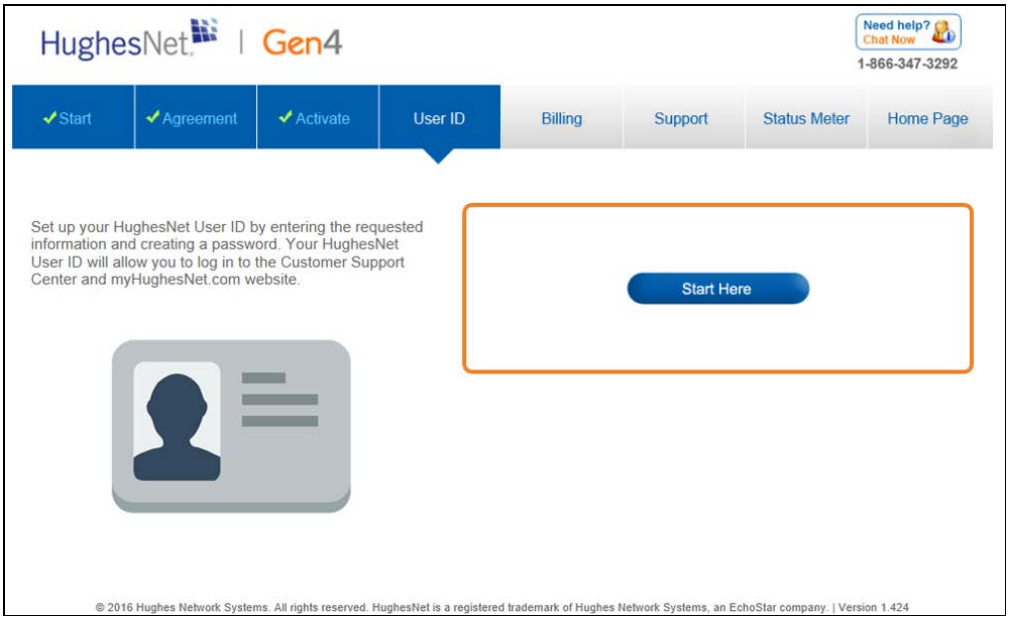

Figure 41: User ID screen

11. The Create a HughesNet Desktop Account screen will appear, as shown in Figure 41.

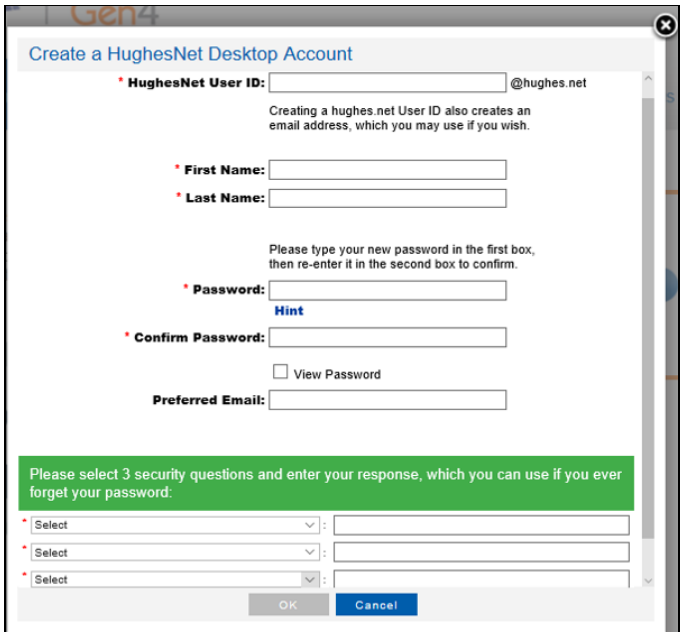

Figure 42: Create User ID screen

12. The customer should complete each field and click the OK button. The system displays an updating message.

    Note: If the email address is valid, a green check mark appears next to the address entered. If a red X appears next to the email address, the address is invalid and the customer must enter a new email address.

13. Once the system is finished updating, the User ID Card screen will appear, as shown in Figure 42.

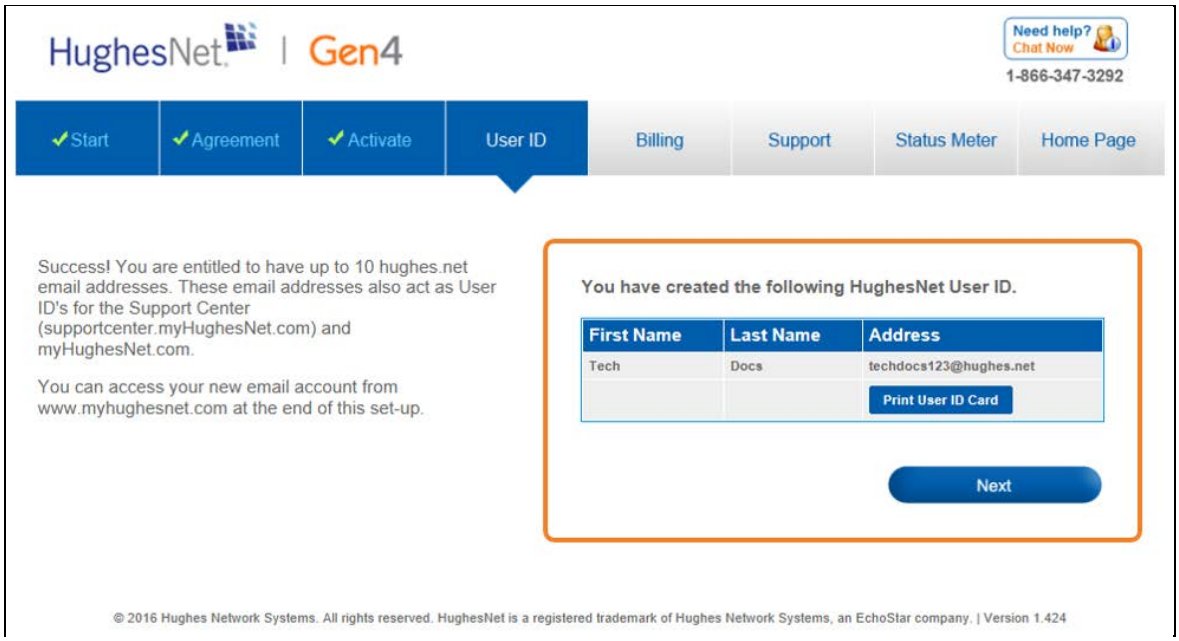

Figure 43: User ID Card screen

14. The customer can choose to print their User ID Card or proceed without printing.
15. Click the **Next** button.
16. The Billing page appears, displaying a sample Order Summary, as shown in Figure 43. This page explains the types of charges the customer can expect to see on a monthly bill.

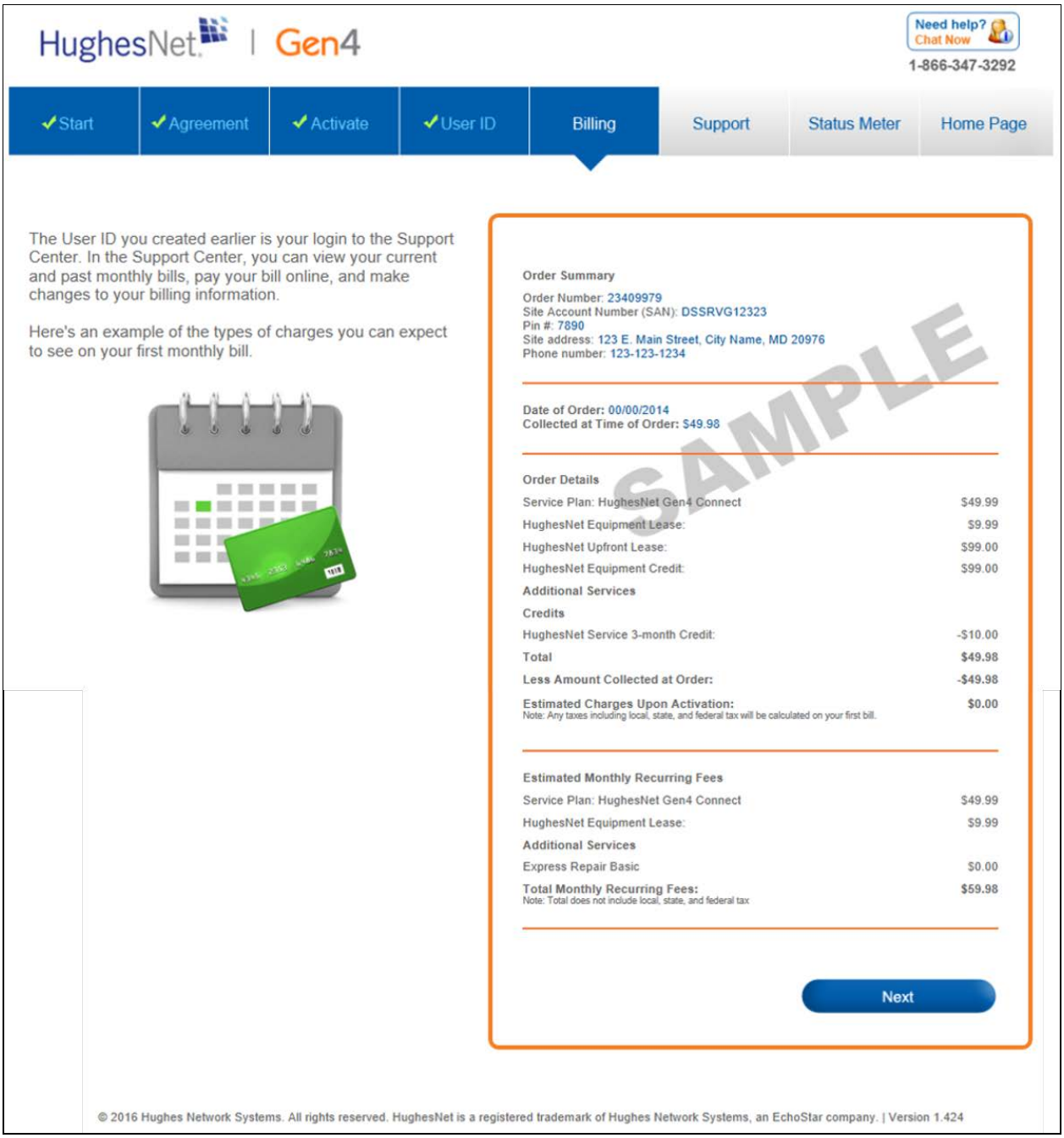

Figure 44: Sample Order Summary screen

17. After reviewing the sample Order Summary, click the **Next** button.
18. This brings up the Support page, as shown in Figure 44.

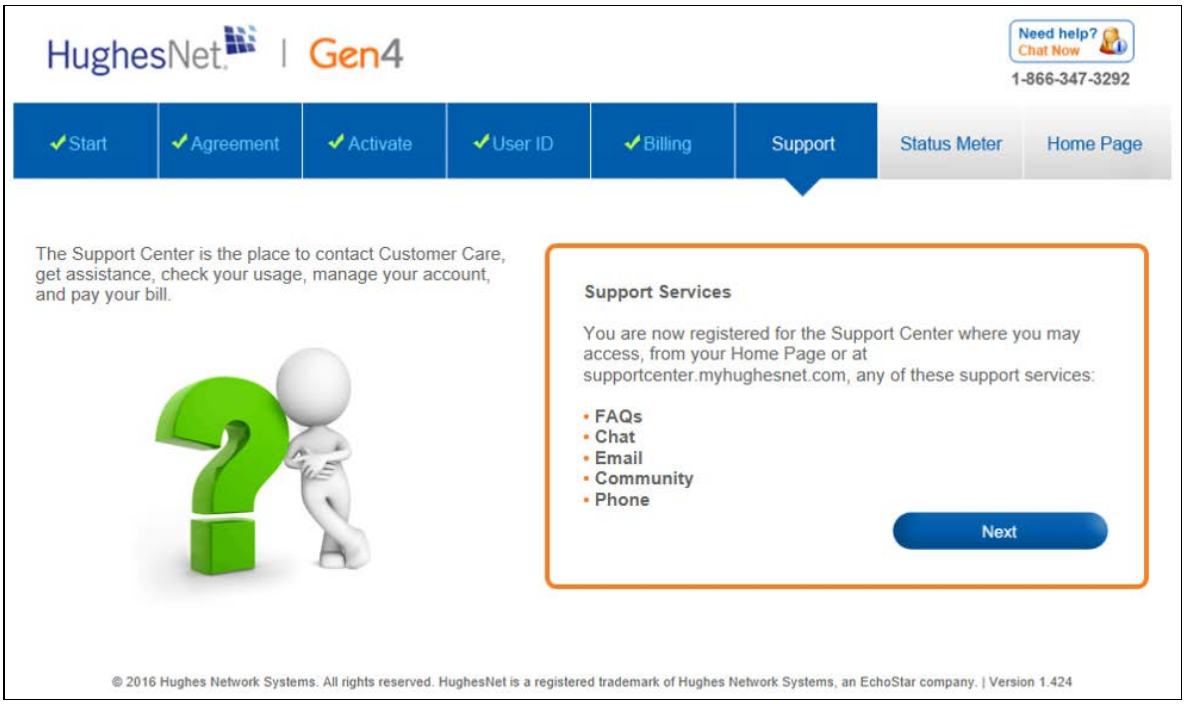

Figure 45: Support screen

19. This page details the support services now available, which you can review with the customer.
20. Click the **Next** button.
21. This brings up the Status Meter page, which is detailed in the following section.

Service activation options

Explain to the customer they have two options:

- To download the Status Meter.
- To proceed without downloading the Status Meter.

If the customer elects not to download this service at this time, explain that this service is available through the Customer Service website for download at a later date.

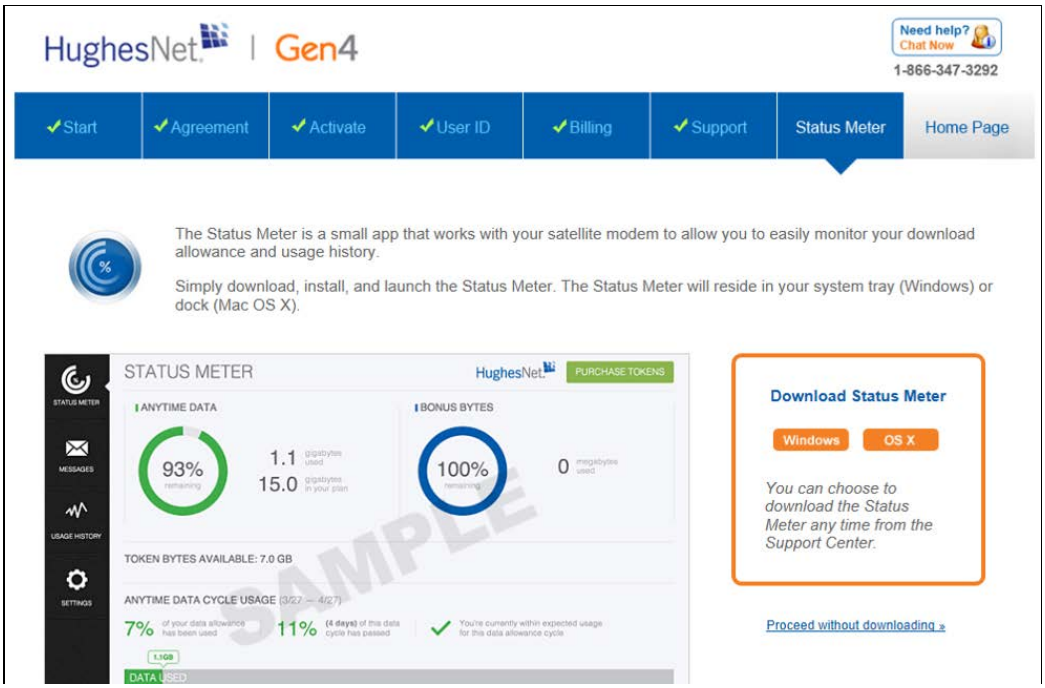

Figure 46: Status Meter screen

If the customer selects **Proceed without downloading**, the system displays a pop-up window as shown in Figure 46. Ask the customer to select the button of their choice.

Figure 47: Status Meter confirmation screen

Once the customer makes their selection, the **Home Page** screen as shown in Figure 47.

This screen explains the customer's new myHughesNet home page.

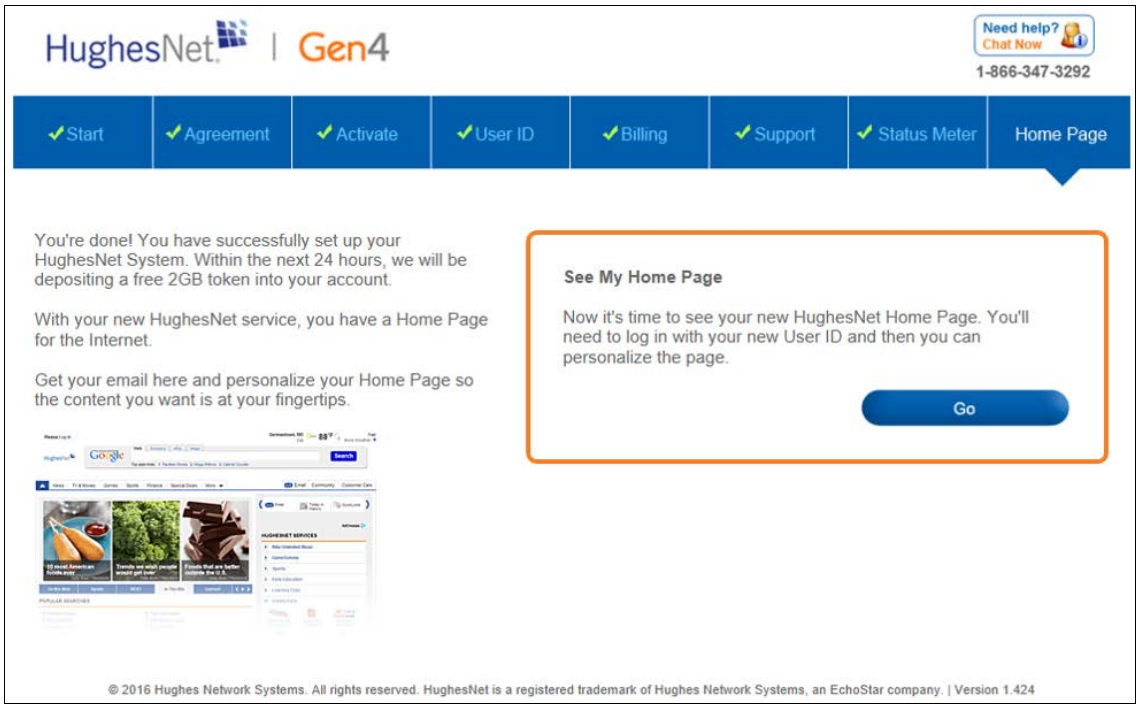

Figure 48: Home Page screen

22. Instruct the customer to click **Go** to access the my.hughesnet.com web page.
23. Before you leave the site, make sure the user can access and browse the web.

Chapter 9

System Control Center

The System Control Center is a set of screens and links used to monitor the broadband service and troubleshoot the satellite modem in the event of a problem. The System Control Center provides access to system status, configuration information, and online documentation through a web browser on a computer connected to the satellite modem. The customer uses the System Control Center to find system information to check system performance if the satellite modem does not seem to be functioning properly.

Accessing the System Control Center

Prerequisites: To access the System Control Center, a computer with a web browser installed must be connected to the satellite modem's LAN port. The System Control Center web site is hosted on the modem. Consequently, an internet connection is not needed. To open the System Control Center, double-click the System Control Center shortcut on the computer desktop, or follow these steps:

1. Open a web browser such as Internet Explorer.
2. In the browser address bar, type www.systemcontrolcenter.com and press Enter.

The System Control Center home page appears as shown in Figure 48.

System Control Center home page

The System Control Center home page contains numerous links to satellite modem features and important information regarding operation of the satellite modem.

Figure 48 shows the System Control Center home page before activation. Notice that the System Status indicator is red which means that system requires attention. Refer to Indicator links on page 60 for more additional information about indicator links.

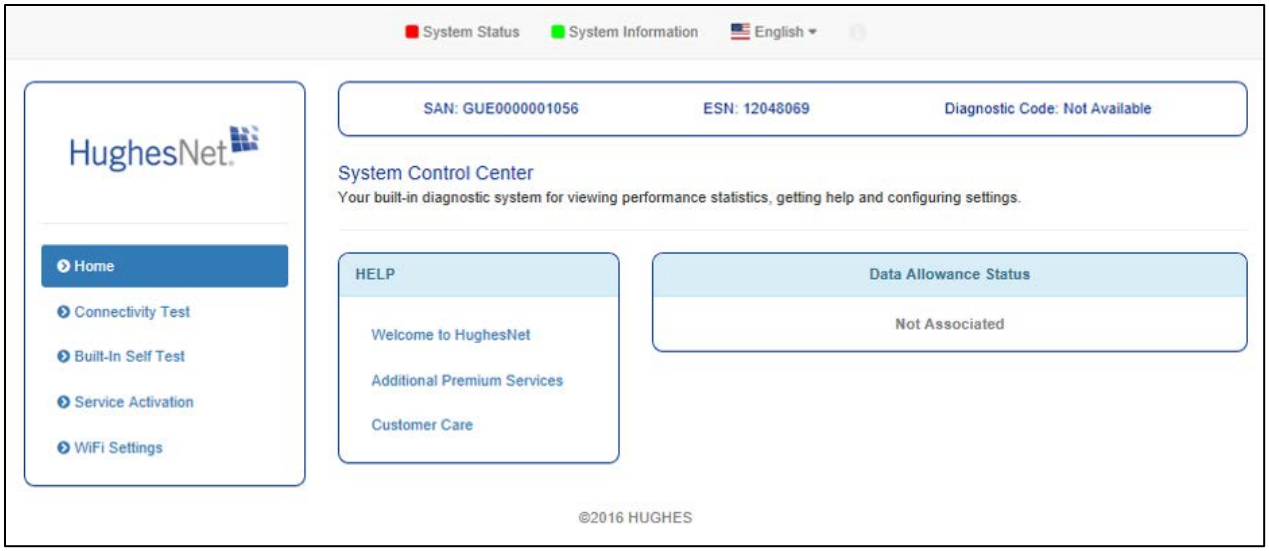

Figure 49: System Control Center page before activation

Figure 49 shows the System Control Center home page after activation. The System Status indicator is green, which means that all functions are working within normal parameters.

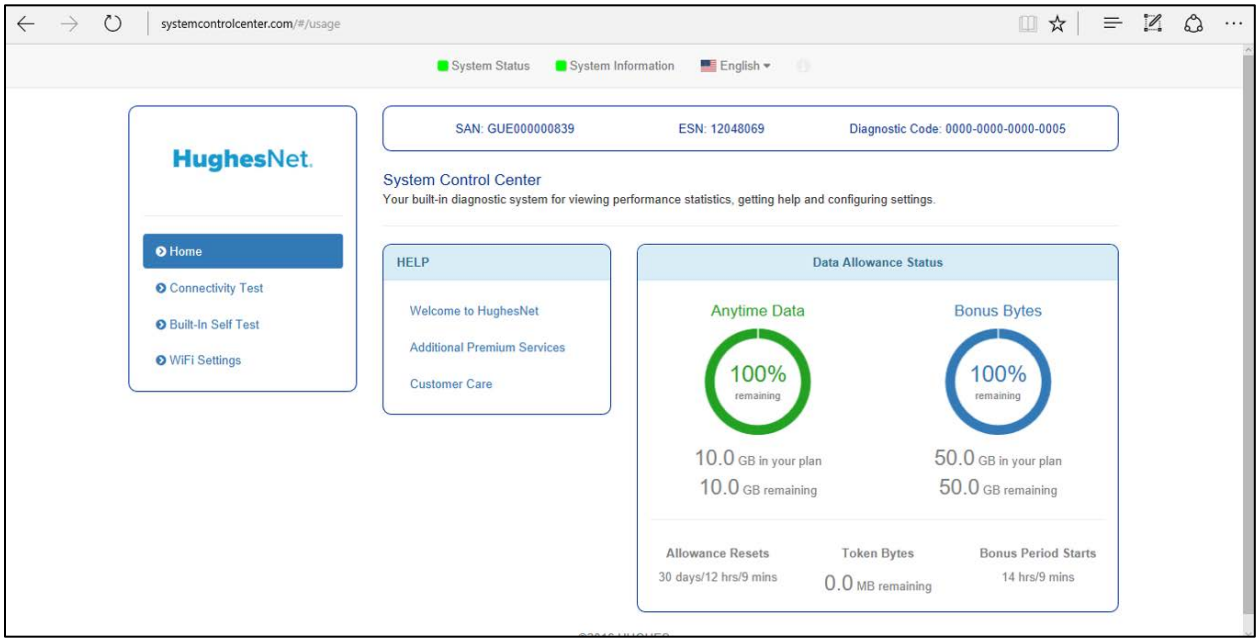

Figure 50: System Control Center page after activation

Indicator links

At the top of each System Control Center page are two indicators (Figure 53) followed by a link.

- The System Status link
- The System Information link

Figure 51: Indicators and links

Each link navigates to a page in the System Control Center. Refer to Table 3 for a description of the pages. The *System Status* link navigates to the System Status page. The System Status indicator also changes color to indicate the operational status of the satellite modem. Figure 51 explains the colors and their meanings for the System Status indicator.

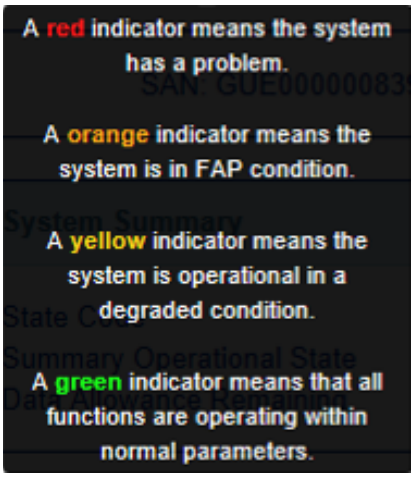

Figure 52: Indicator colors and meaning

Note: Hughes maintains a Fair Access Policy. This policy establishes an equitable balance in Internet access for all HughesNet subscribers. Hughes assigns a Data Allowance to each service plan that limits the amount of data that may be downloaded or uploaded within a one-month period. Subscribers who exceed this limit will experience a temporary reduction of speed.

Table 3 identifies the destination page for each link.

Table 3: Destination pages

Indicator	Destination	Description
System Status	System Status page	Gives important information about the satellite modem's operational status.
System Information	System Information page	General information screen that identifies software and hardware versions, and satellite connection information.

Parameters bar

The parameters bar appears at the top of all System Control Center screens as shown in Figure 52. This bar displays three important fields of information:

- SAN – Site account number (SAN)
- ESN – Electronic Serial Number
- Diagnostic Code – Used to troubleshoot problems if the customer needs to call customer care.

Figure 53: Parameters bar

Center panel text links and information

The System Control Center home page center panel includes the following text links and informational panels once service is activated.

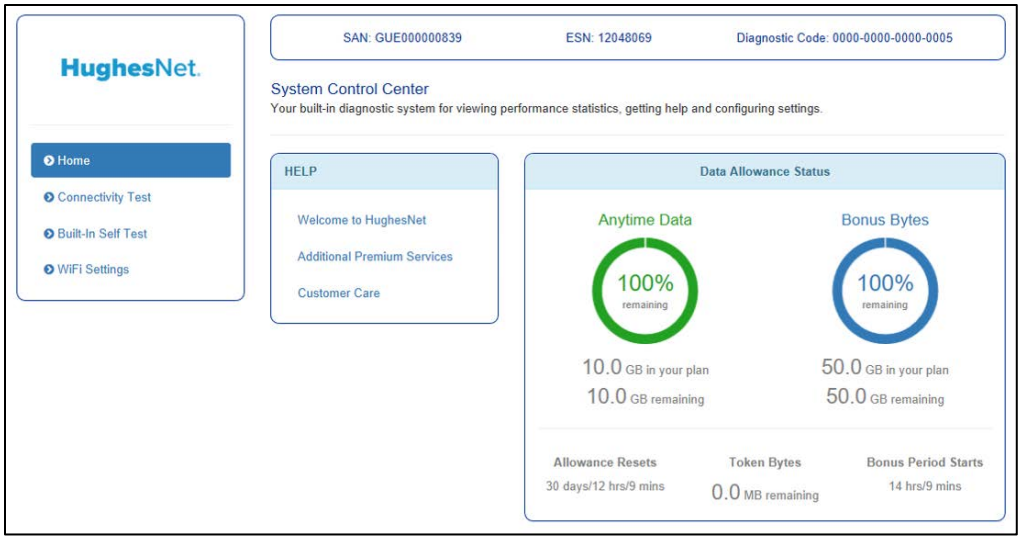

Figure 54: System Control Center Help panel

HELP area

The following options are available in the HELP area.

Welcome to HughesNet

HughesNet Web Portal contains a variety of useful tools, resources, and information. Access to the HughesNet portal is determined by the customer's service plan.

Additional Premium Services

Gives the user access to additional services and self-help information.

Customer Care

Navigates to the Customer Care web page where the user can manage various facets of their account.

Side panel

The following links appear on the left panel of each System Control Center screen as shown in Figure 54.

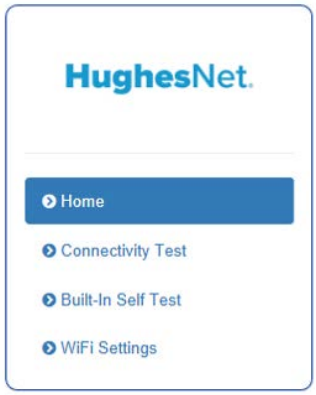

Figure 55: Side panel links

Home

The Home link opens the System Control Center home page.

Connectivity Test

The Connectivity Test link opens the Connectivity Test page, which you can use to test the connection between the satellite modem and the NOC.

Built-In Self Test

The Built-In Self Test link tests the connectivity to the satellite.

WiFi Settings

This link opens WiFi Settings. These pages allow the customer to interact with a number of different features of the Wi-Fi functionality.

Small icon on System Control Center screens (Advanced Pages)

The icon indicated by the arrow in the following illustration opens the Advanced Pages. This icon appears on all System Control Center pages. For more information on the Advanced Pages, see Chapter 11.

Figure 56: Advanced pages icon

Status and information screens

The System Control Center screens list status and operational parameters and their current values in a tabular format. For example, the following illustration shows the System Status page. The left column list the parameters, and the right column shows the current value of the parameter listed in the left column. Parameters are listed in this format on the following pages:

- System Status page
- System Information page

System Status page

The System Status page lists parameter information vital to the proper operation of the HT2000W. Available system status values (as shown in Figure 56) may vary, depending on how the satellite modem is configured.

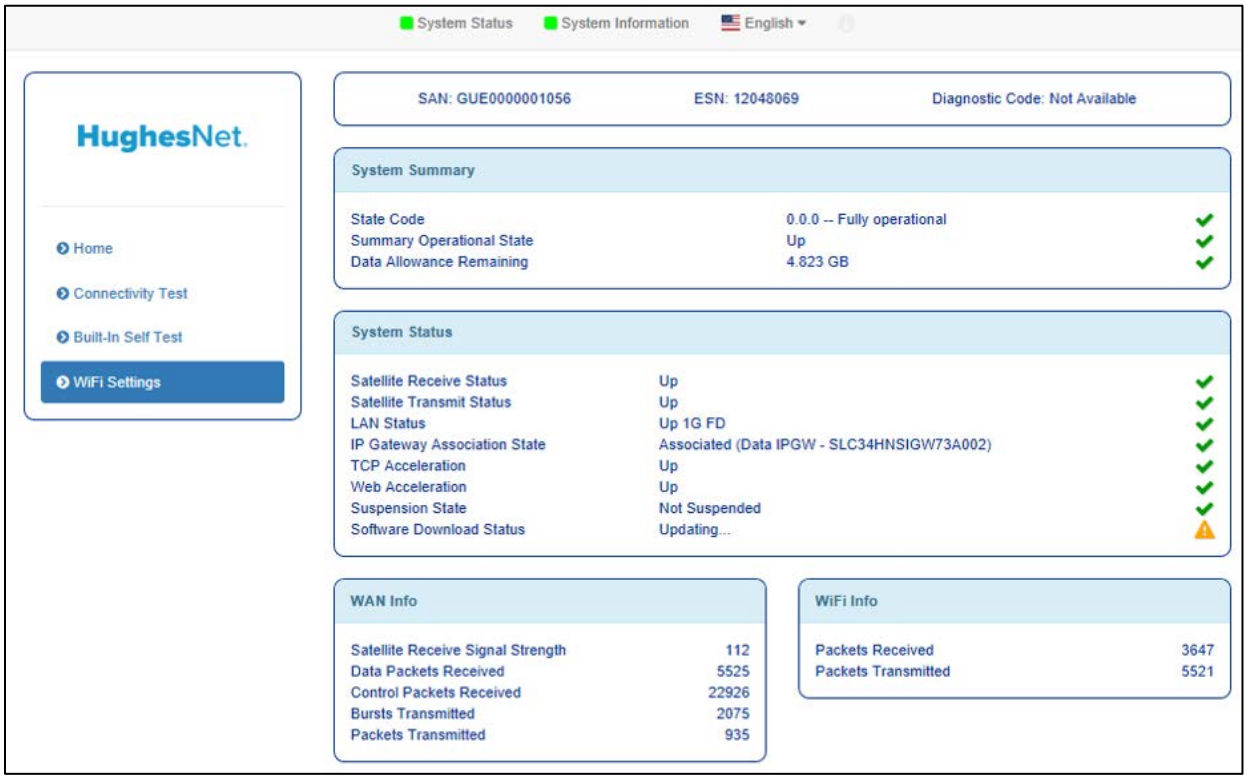

Figure 57: System Status page

System Information page

The System Information page, shown in Figure 57, provides system information for the satellite modem such as identification information, software versions, and satellite information.

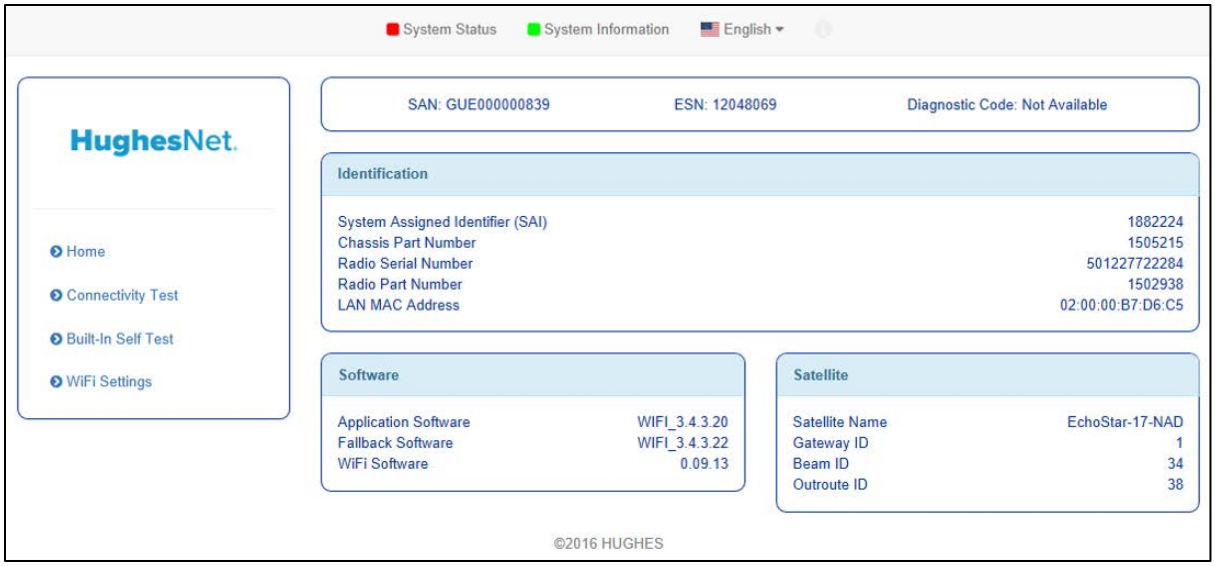

Figure 58: System Information page

Chapter 10

Wi-Fi Configuration

Getting Connected for the First Time

Connecting via Ethernet

1. Using the provided Ethernet cable, connect one end of the cable to one of the open LAN ports on the rear of the HT2000W, connect the other end to your PC's Ethernet port.
2. Ensure lights are blinking on the LAN port you have connected your PC to. If lights are not blinking, ensure that the connector on the cable is fully seated in the LAN port.
3. You are now connected to your HT2000W.

Connecting via Wi-Fi with WPA Password

1. On the rear of the HT2000W is a label containing the default SSID (Wi-Fi Network Name) for both 2.4GHz and 5GHz networks, as well as the password to connect.
2. On your Wi-Fi enabled device, choose either the 2.4GHz or 5GHz network name in your Wi-Fi setup utility. Enter the password noted from the rear of the unit when prompted to.
3. You are now connected to your HT2000W!

Connecting via Wi-Fi with WPS setup

WPS setup is supported only on Windows and Android devices.

1. Put your device into WPS pairing mode (this step varies by device).
2. Once your device tells you to, press the WPS button on the HT2000W.
3. Your device should then connect to the HT2000W's wireless network automatically.
4. You are now connected to your HT2000W!

Basic Setup

Logging into your HT2000W's Wi-Fi configuration page

1. Connect to your HT2000W
2. Open your internet browser and navigate to http://192.168.42.1
3. You will be presented with a login screen, the default password is "admin."
4. Click Login

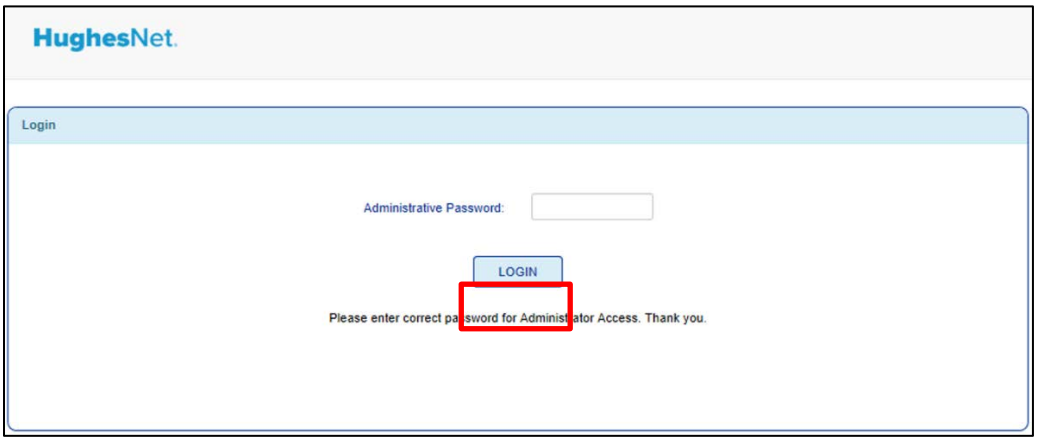

Figure 59: Wi-Fi login page

Changing the administrator password

We recommend you change this immediately upon installation. Choose a password that is easy to remember but cannot be easily guessed.

1. Login to your HT2000W's Wi-Fi configuration page
2. On the left panel, select Administration.

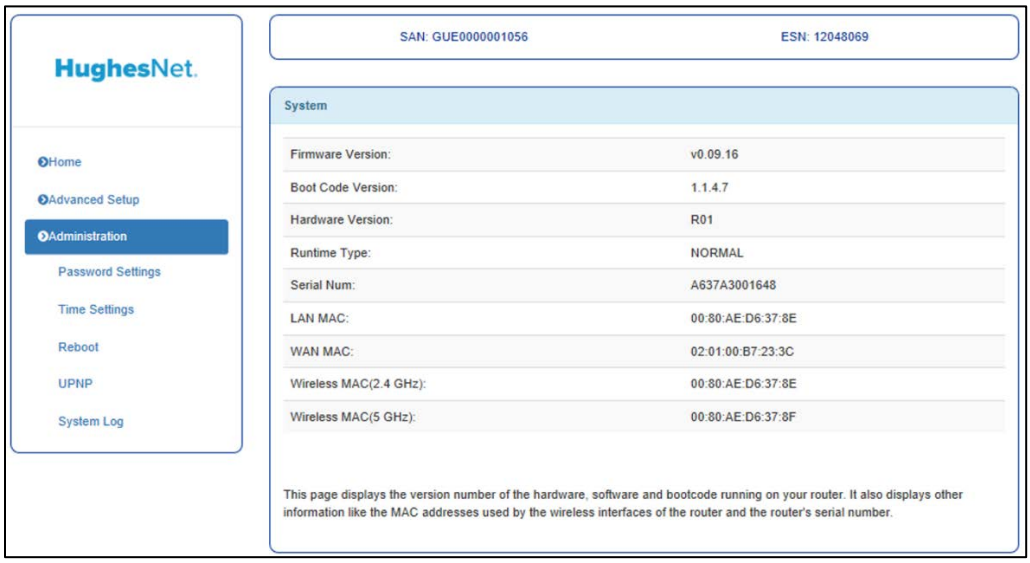

Figure 60: Administration main page

3. New options will appear in the left panel, select Password Settings.

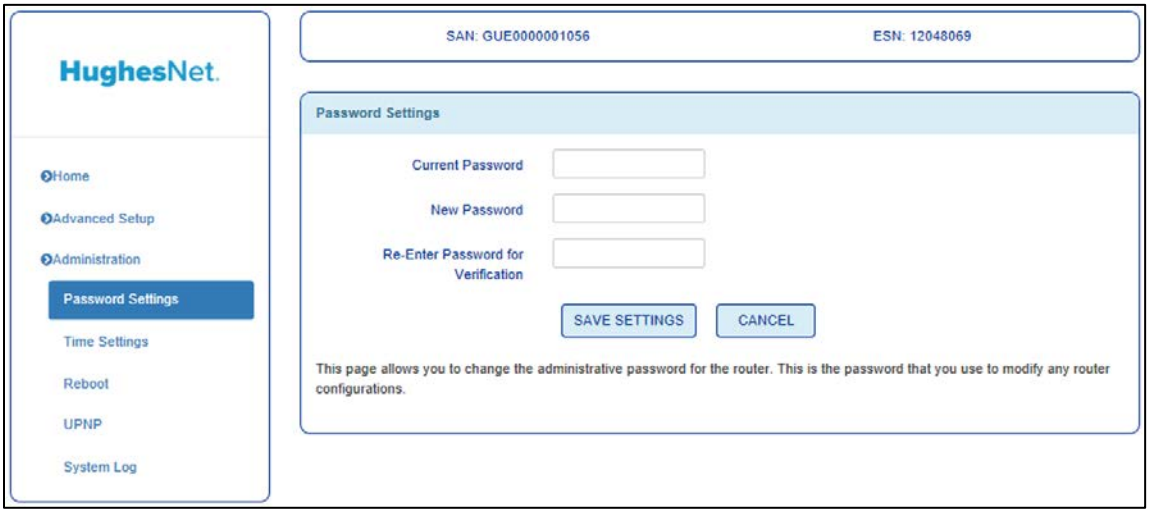

Figure 61: Password Settings page

4. Type in your old password, followed by your new password, typed twice for verification.
5. Click Save Settings.
6. Once finished applying changes, you will be logged out, and your new password must be used to log in.

Changing your Wi-Fi networks' names and security settings

Out of the box, your HT2000W is setup to work with the Wi-Fi settings listed on the rear label. Should you wish to change these, you can easily do so.

1. Login to your HT2000W Wi-Fi configuration page

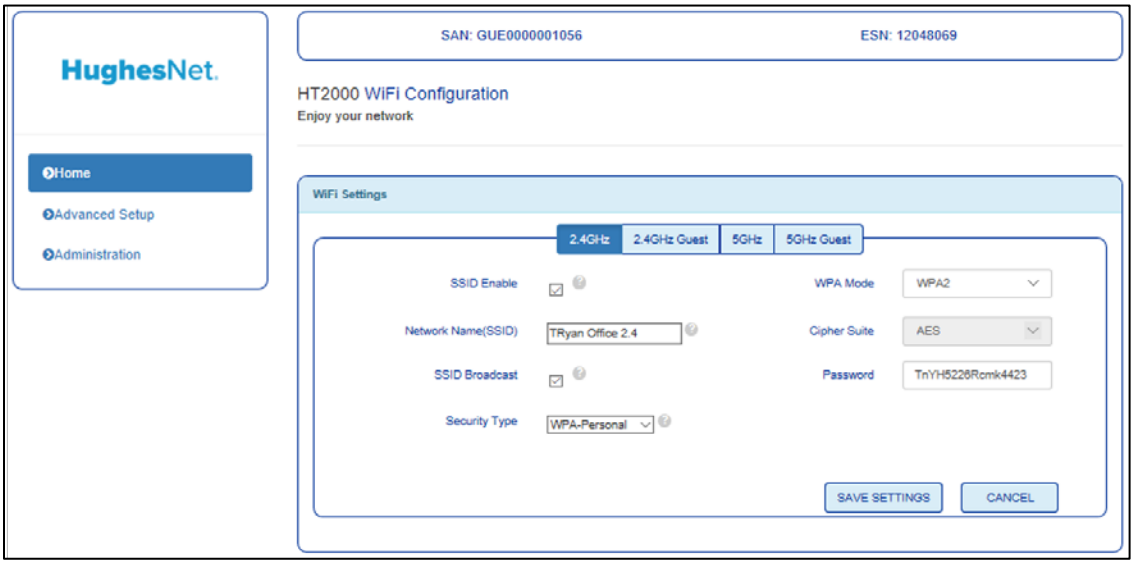

Figure 62: Wi-Fi Configuration main page

2. The default screen will be Wi-Fi settings. The settings listed for both 2.4GHz and 5GHz networks are as follows:
   a. SSID Enable – Enable/Disable this SSID. Default is on.
   b. Network Name (SSID) – Choose the name of your network. Default value is the same as displayed on the rear label.
   c. SSID Broadcast – When un-checked, this option allows you to hide your network from appearing when searching for Wi-Fi networks on your devices. You can still access this network, but must use the hidden network option on the device you are trying to connect.
   d. Security Type – Choose WPA-Personal, WPA-Enterprise, or No Password. We recommend not operating your HT2000W without a Wi-Fi password. Default is WPA-Personal.
   e. WPA Mode – Choose WPA mode. WPA2 by default, some legacy devices only support WPA, you can change this to WPA/WPA2 for such devices.
   f. Cipher Suite – This cannot be changed, but is to inform you of the cipher suite being used.
   g. Password – This is your Wi-Fi password. This will overwrite the default password on the rear label.

Enabling Guest Networks

Guest networks allow your guests to access the internet without being granted access to other network resources. By default, these are disabled.

1. Login to your HT2000W Wi-Fi configuration page
2. On the main page, you will see tabs for “2.4GHz Guest” and “5GHz Guest.” Click the frequency you wish to set up, you may set up guest networks on both bands if you wish.

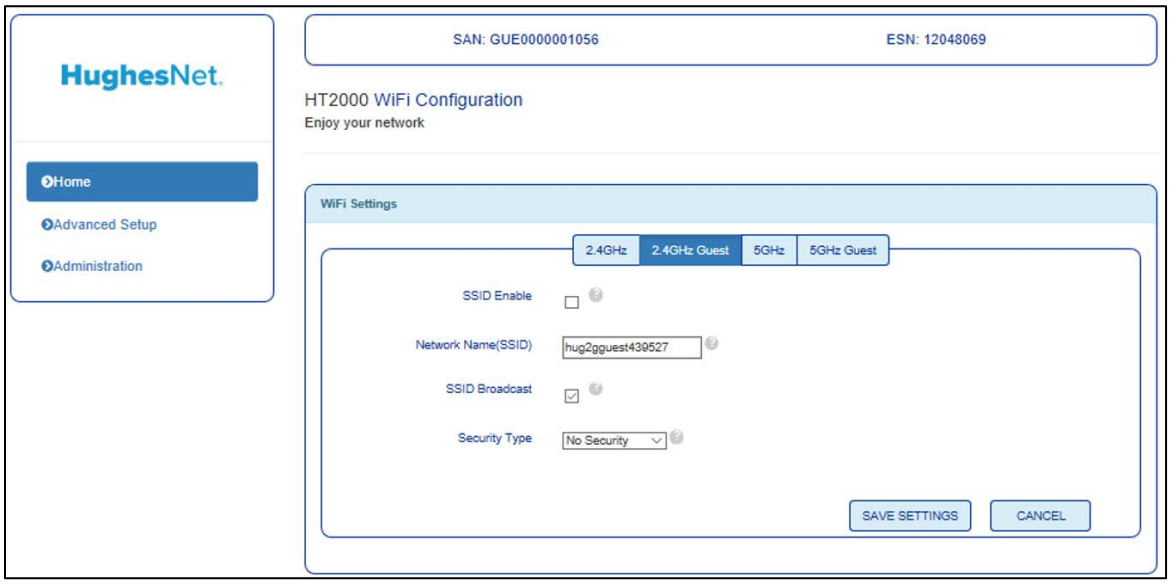

Figure 63: Wi-Fi guest network configuration page

3. Guest network configuration options are as follows:

a. SSID Enable – This box must be checked in order to enable the guest network. Default is unchecked.
b. Network Name (SSID) – Choose the name for your guest network. Default is guest, you cannot keep this name the same for both 2.4GHz and 5GHz networks.
c. SSID Broadcast – When un-checked, this option allows you to hide your network from appearing when searching for Wi-Fi networks on your devices. You can still access this network, but must use the hidden network option on the device you are trying to connect.
d. Security Type – Choose your preferred security type. Default is No Security, but we recommend changing this to WPA-Personal should you activate guest networks.

Rebooting your HT2000W

If you experience any issues with your HT2000W, it may be a good idea to reboot your unit.

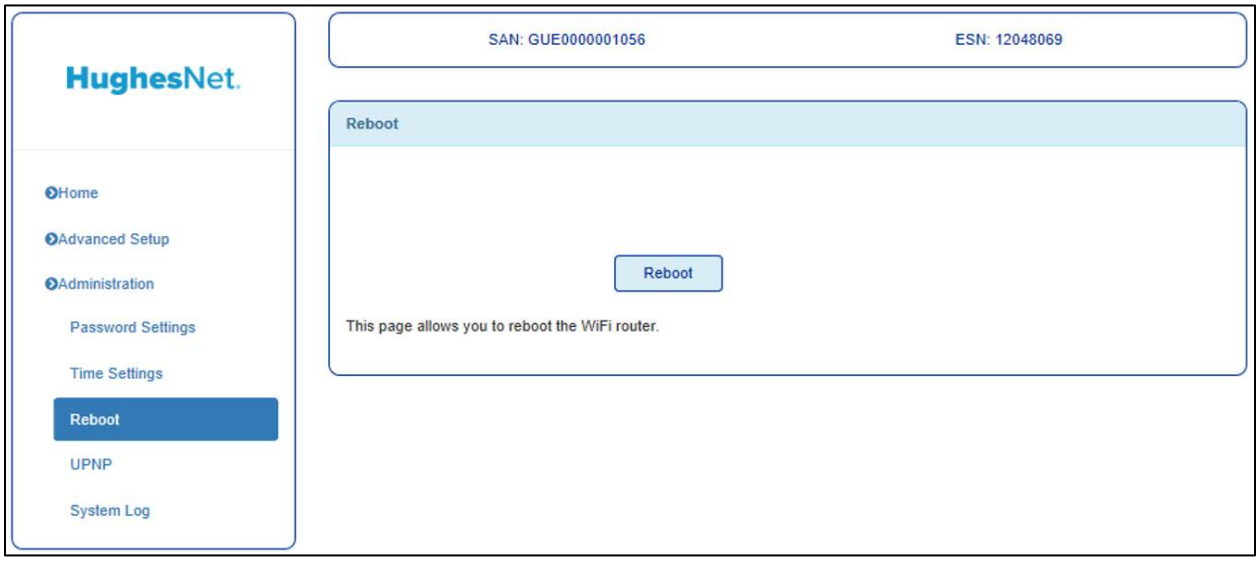

Figure 64: Modem reboot page

1. Login to your HT2000W's Wi-Fi configuration page
2. On the left panel, select Administration.
3. Click the Reboot option on the left panel.
4. Click the Reboot button on the page.
5. Click OK on the confirmation dialog.

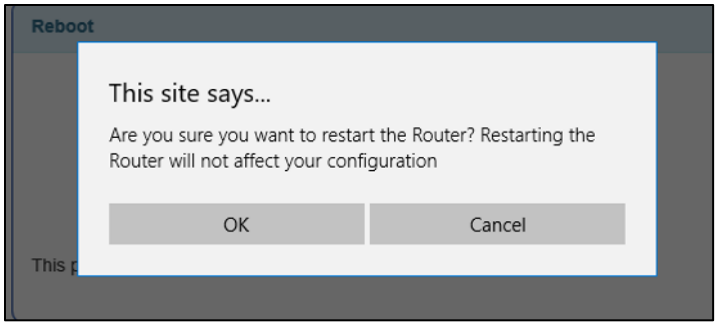

Figure 65: Reboot confirmation page

6. Your unit will now reboot.

Advanced Settings

Advanced settings are all found under the Advanced Setup page in the left panel. Advance settings allow for finer control over your network.

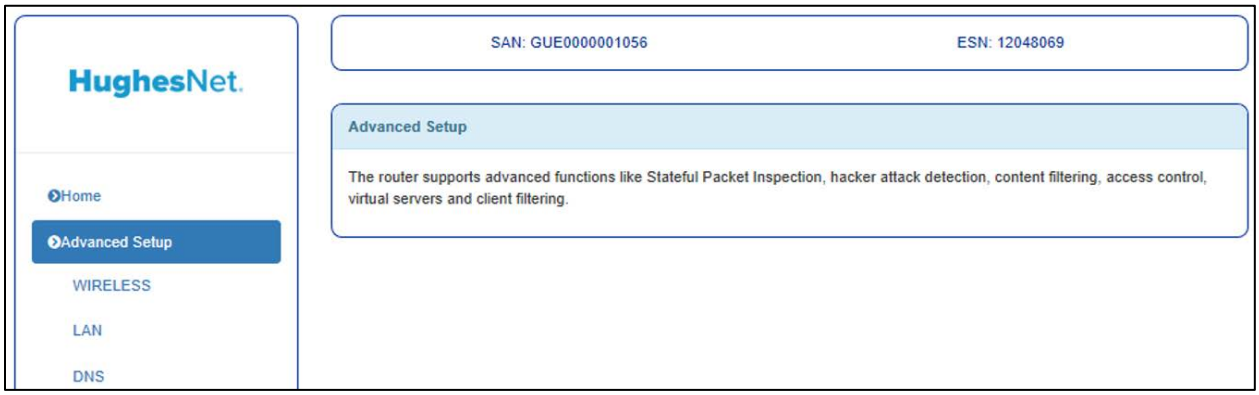

Figure 66: Advanced Setup main page

Wireless

Main Page

On the main page you can customize the following settings:

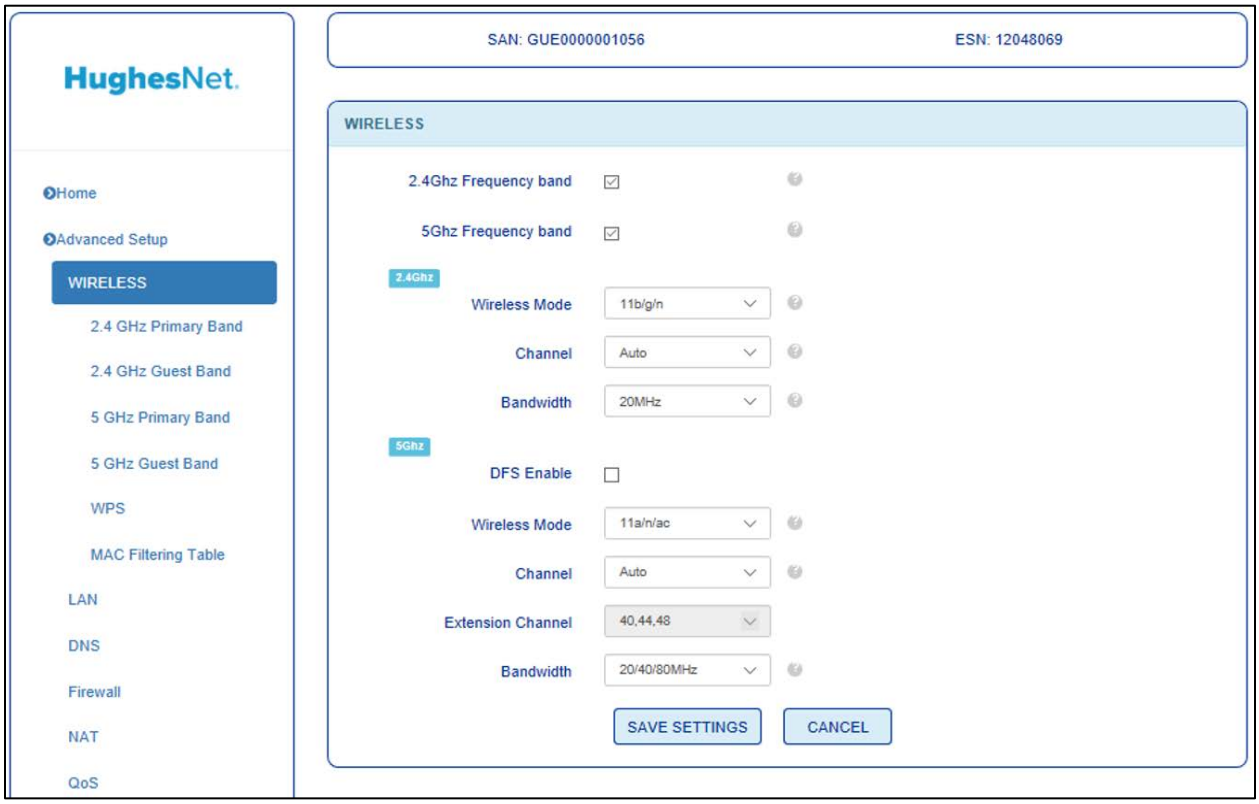

Figure 67: Wireless main page

1. Wireless Mode – Choose which protocols each band will use in operation. On 2.4GHz you can select just on protocol (b/g/n) or allow automatic control. On 5GHz you can choose “a only,” “n only,” “an/ mix,” or “a/n/ac mix.”
2. Channel – Choose the wireless channel you prefer to use. For best performance, it is recommended you leave this on Auto.
3. Bandwidth – Choose your channel bandwidth. You can select either 20MHz only, 20/40, or 20/40/80 (Only on 5GHz). By default your HT2000W will choose the maximum bandwidth based on local interference.
4. DFS Enable – 5GHz only option, this allows support of Dynamic Frequency Switching channels. These channels are in the UNII-2 spectrum where weather radar operates. Should a weather radar signal be detected, your router will change channels to a non UNII-2 channel.

2.4/5GHz Primary/Guest Network Pages

Here you can change the same settings available on the router's home page.

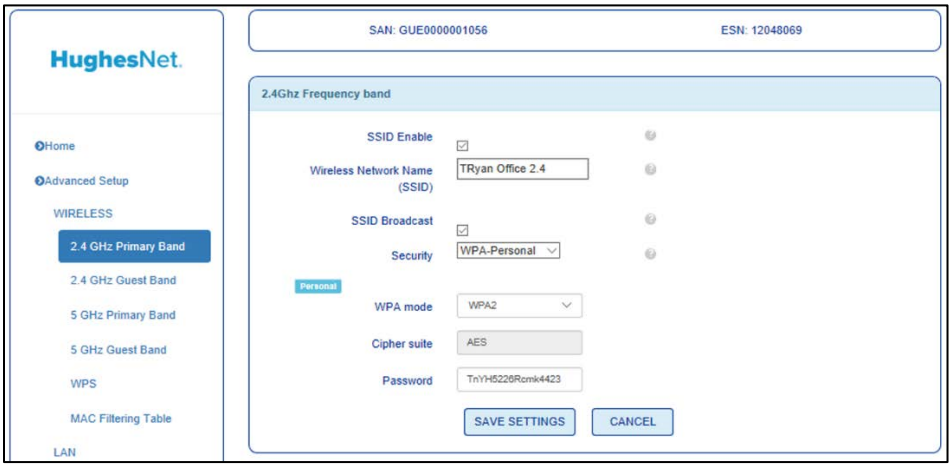

Figure 68: 2.4GHz Primary Band

WPS

Here you can manage your WPS settings. WPS, enabled by default, allows for simple push button or PIN-based setup. This page allows you to enable/disable WPS, use the PIN-based method to connect, as well as activate the push button method, as if you had pressed the WPS button the front of your HT2000W.

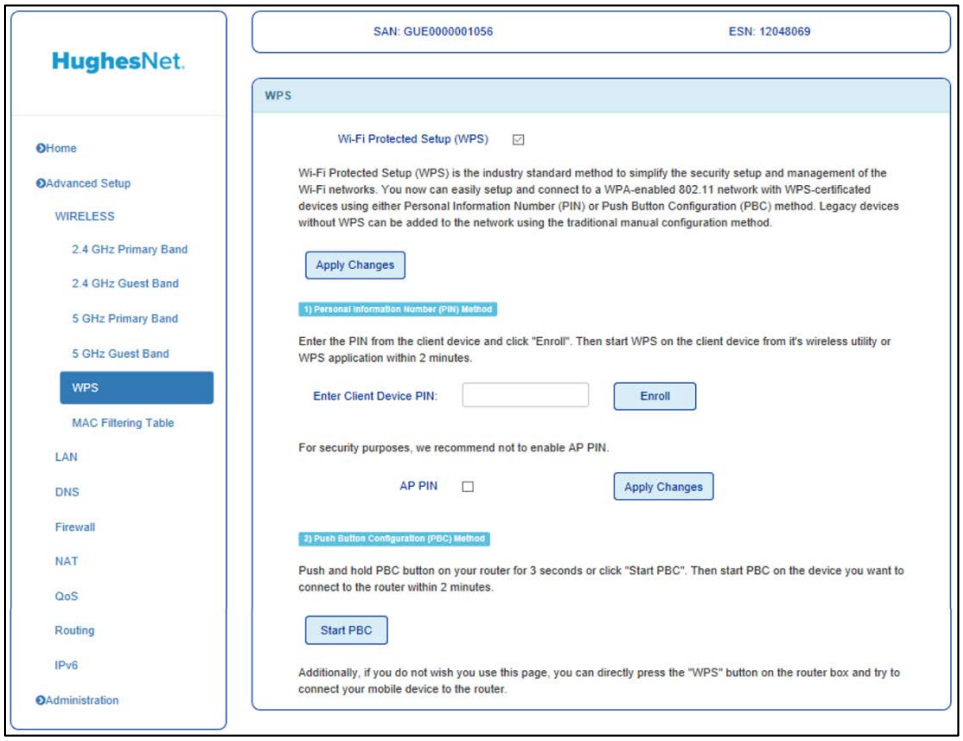

Figure 69: WPS

MAC Filtering Table

MAC filtering allows you to specify only certain MAC addresses that can connect to your router. This option is disabled when WPS is enabled.

Figure 70: MAC Filtering Table

LAN

Main Page

On the main page for LAN you can change the following settings:

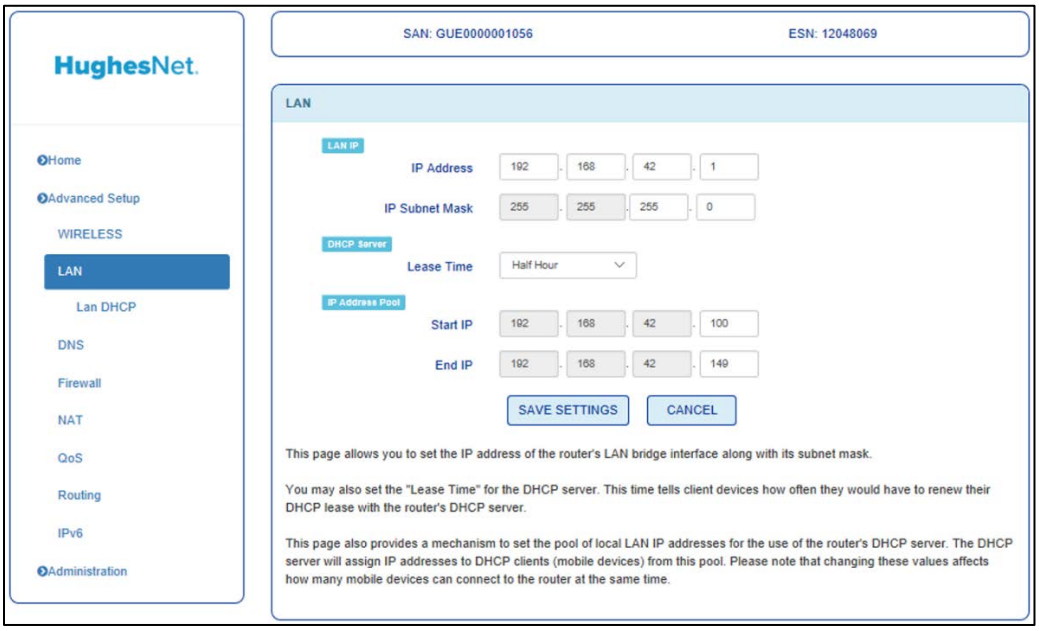

Figure 71: LAN main page

1. LAN IP – IP address of your HT2000W. If you change this, you will need to navigate to the new address to make any further settings changes.
2. IP Subnet Mask – Subnet mask used on all devices.
3. Lease Time – How long DHCP leases are maintained for devices connected to your HT2000W.
4. IP address pool – Range of addresses connecting devices can be assigned.

LAN DHCP

This page can be used to reserve IP addresses for specific MAC addresses. Fill in the left side with a device's MAC address and the right side with the IP you wish to permanently assign that device.

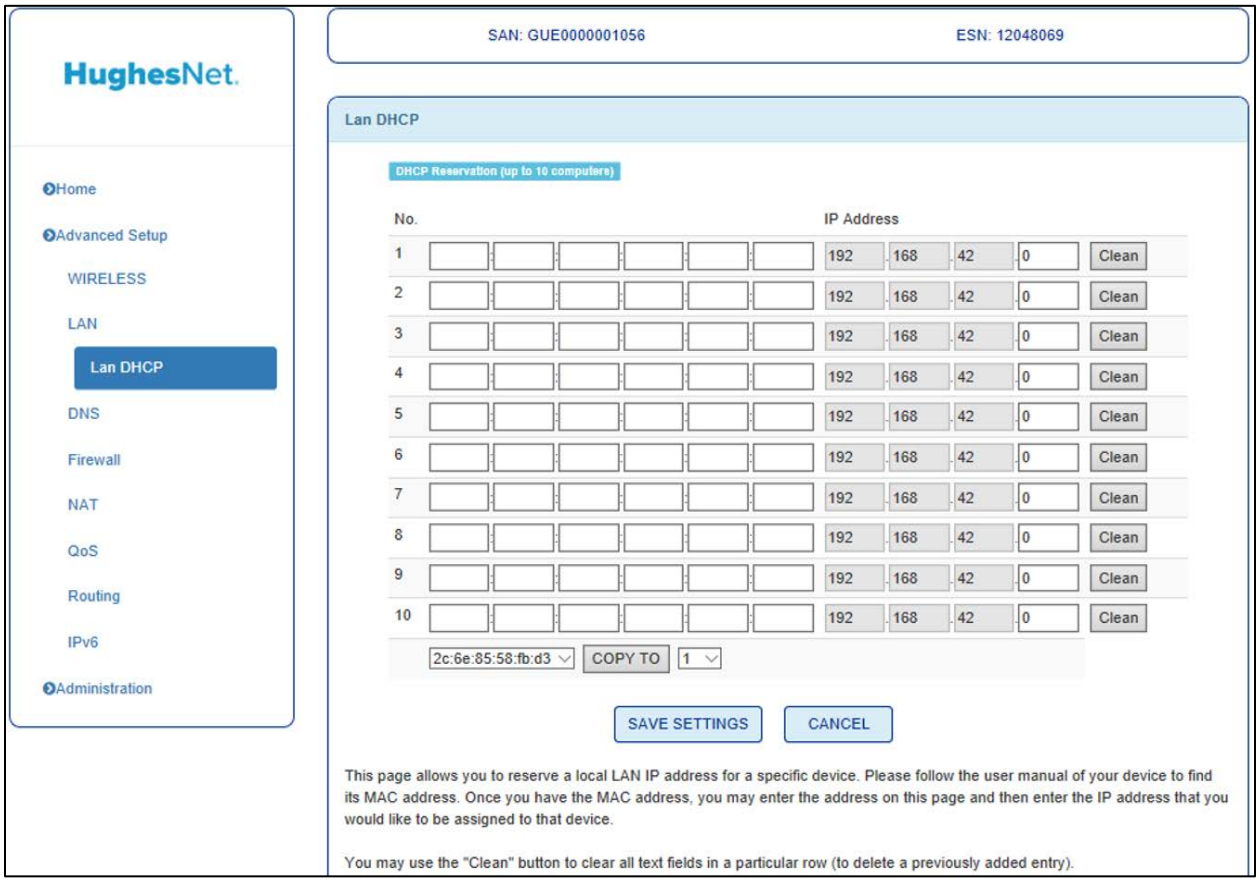

Figure 72: LAN DHCP

DNS

Main Page

This page allows you to change your DNS server that any DHCP clients will utilize. By default, you will obtain this from your ISP.

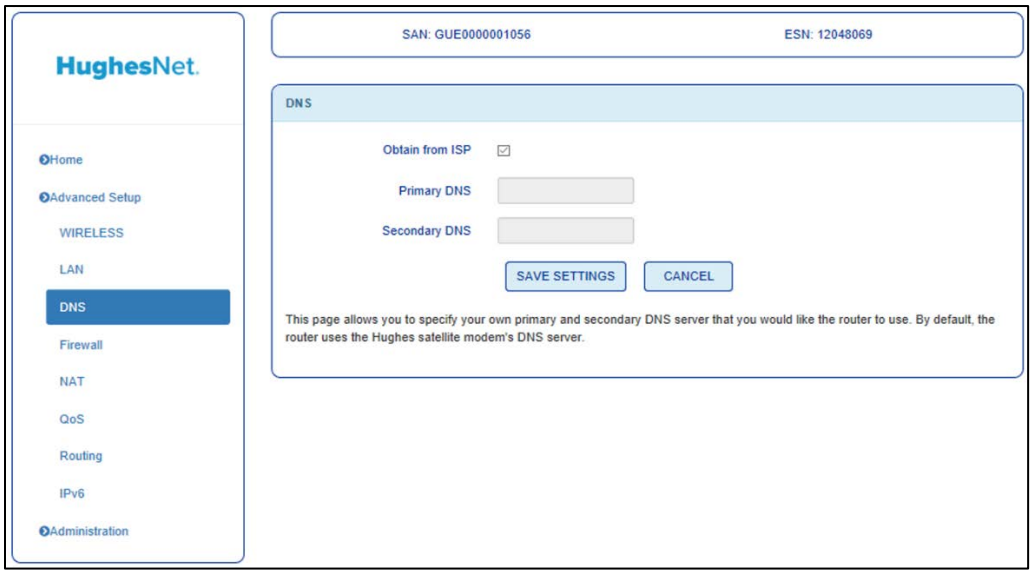

Figure 73: DNS main page

Firewall

Main Page

This page allows you to quickly enable/disable all firewall features.

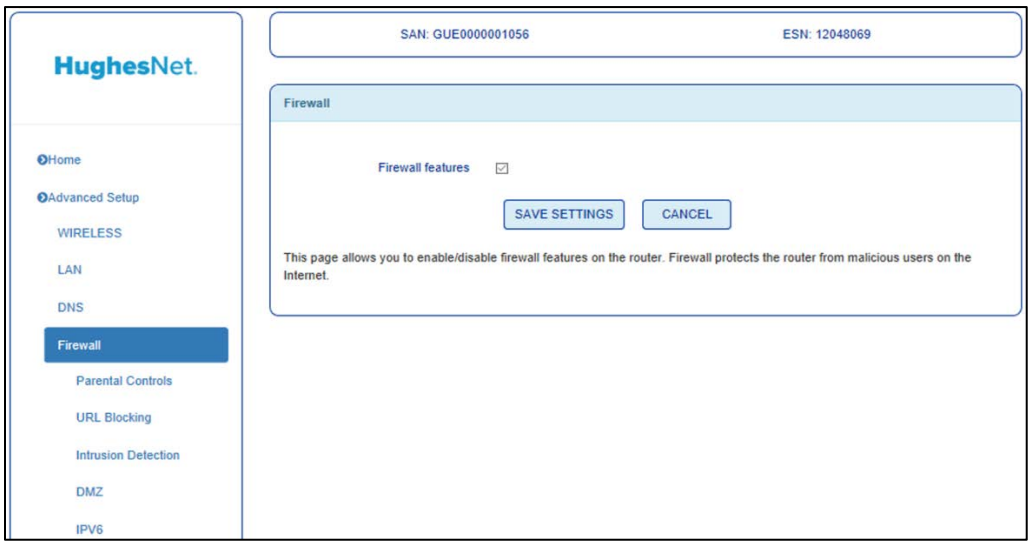

Figure 74: Firewall main page

Parental Controls

Here you can set rules for certain client devices. Clicking **Add Rule** will allow you to create a new rule for one or a range of IP addresses.

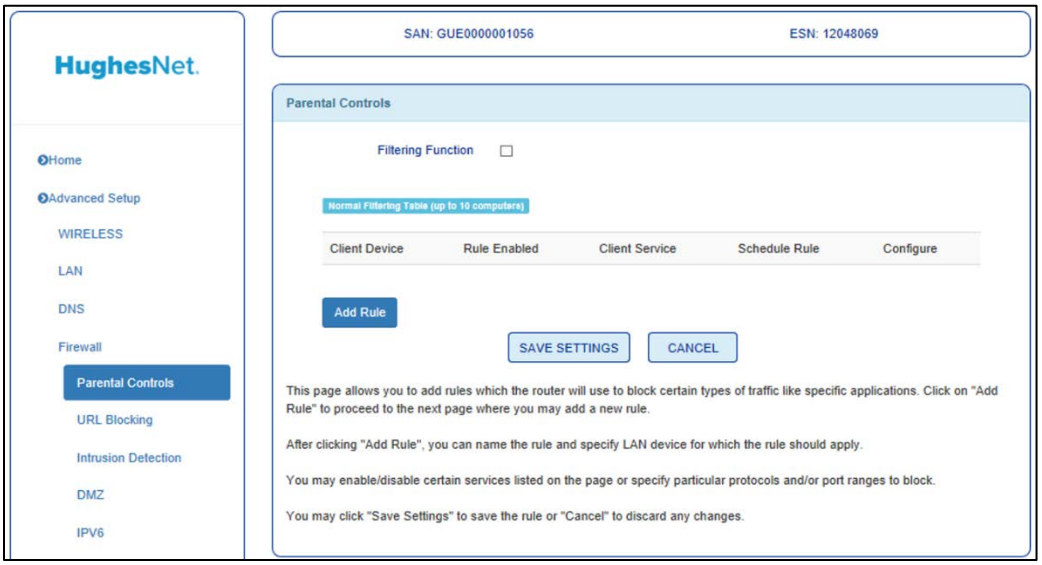

Figure 75: Parental Controls

URL Blocking

This page allows you to list specific URLs to disallow. These will be valid for all users.

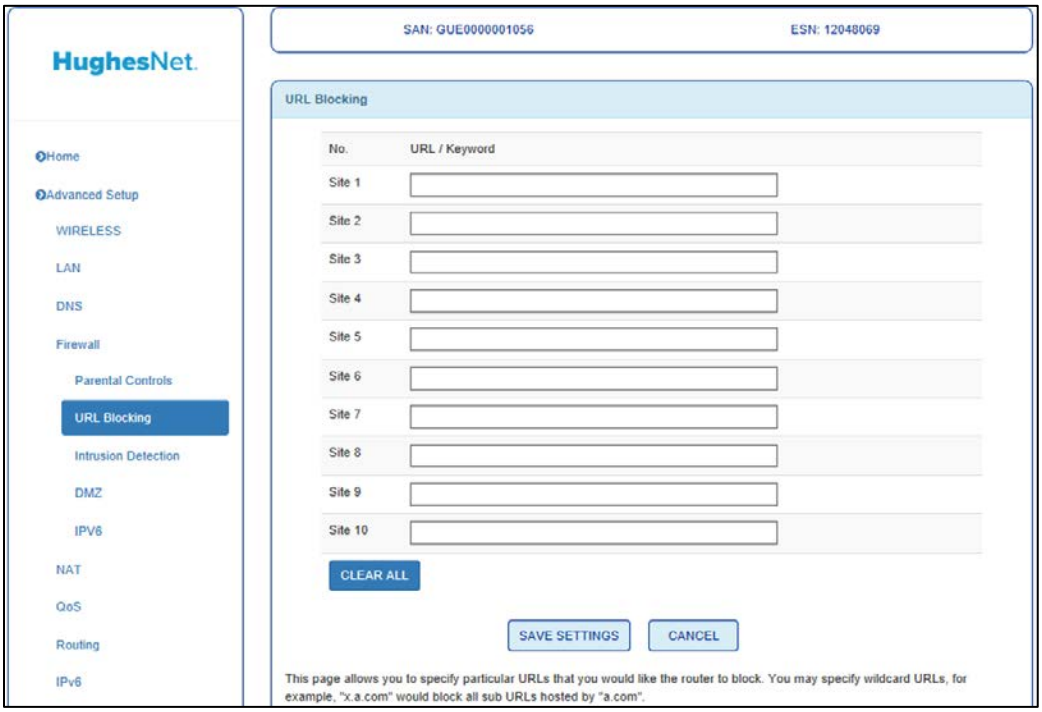

Figure 76: URL Blocking

Intrusion Detection

This page allows you to enable/disable SPI and Anti-DoS filtering as well as discarding all pings coming from your WAN interface.

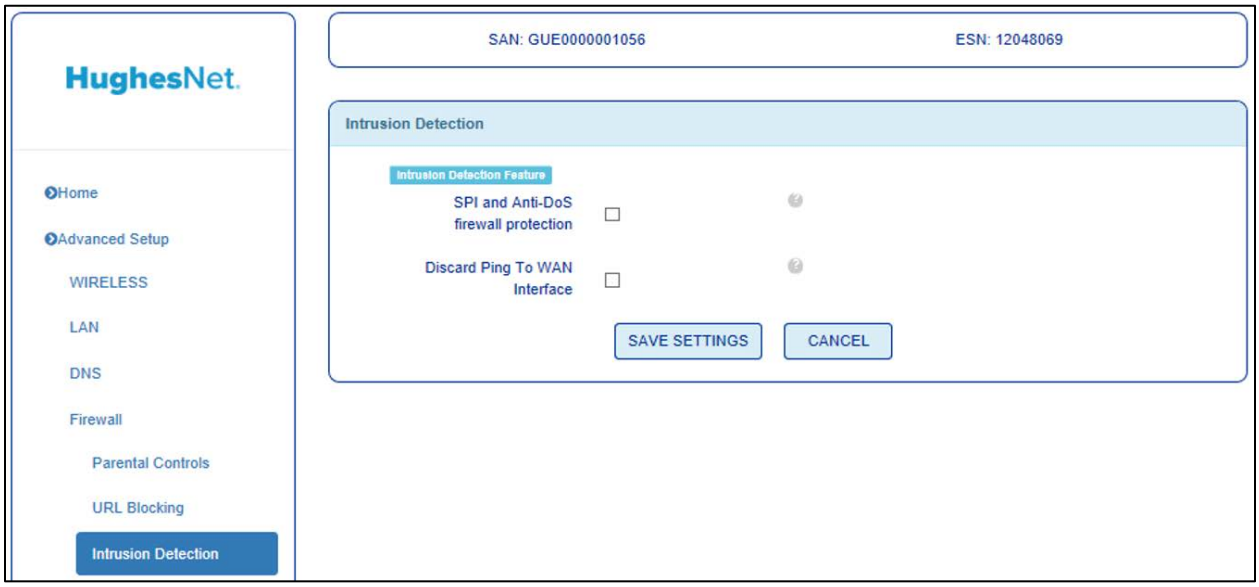

Figure 77: Intrusion Detection

DMZ

This page allows you to add one device to the demilitarized zone, or DMZ for short. A device in the DMZ will not abide by firewall rules.

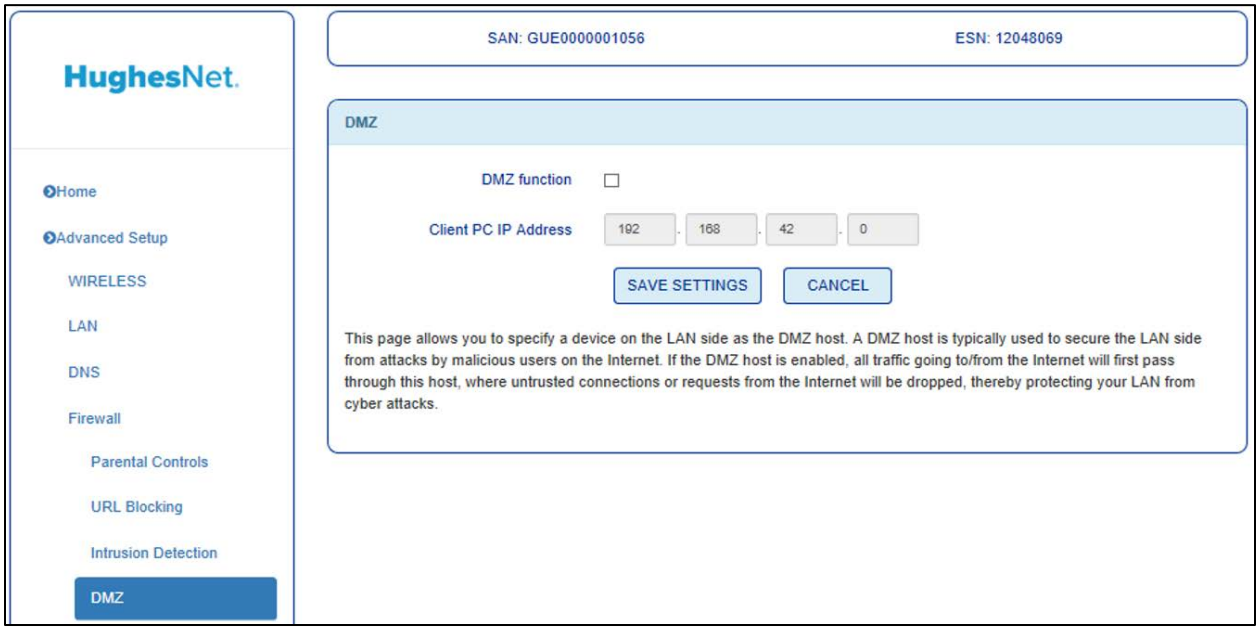

Figure 78: DMZ

IPv6

This page allows you to make port forwarding rules for IPv6.

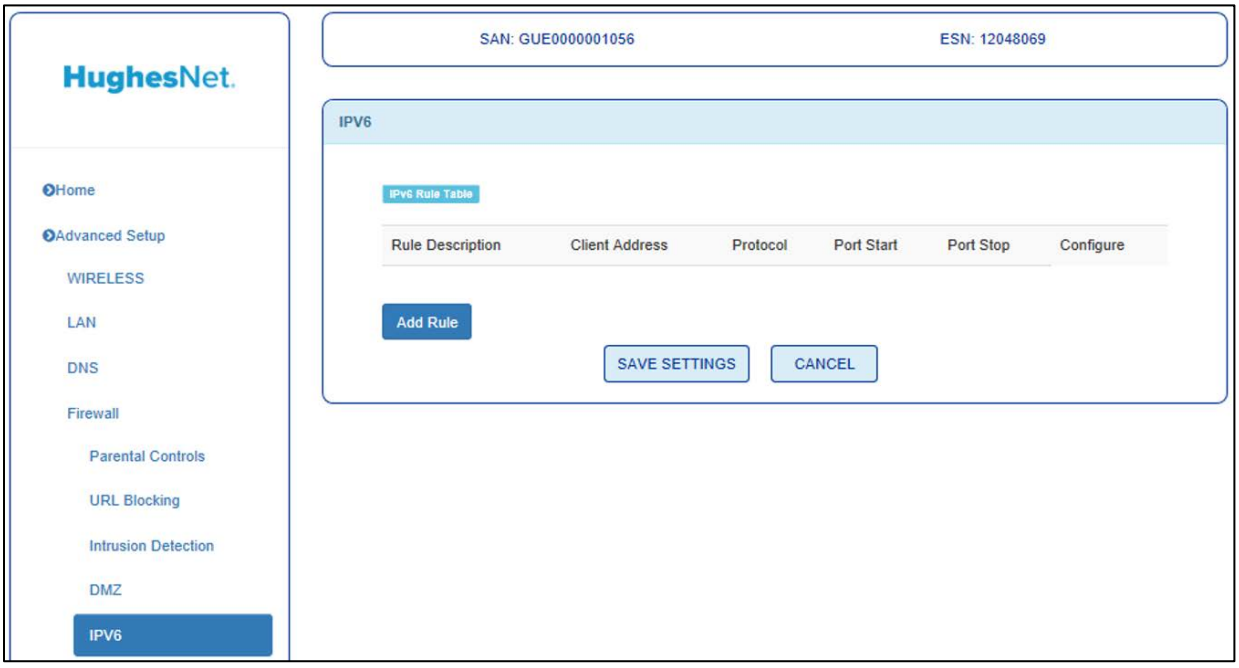

Figure 79: IPV6

NAT

Main Page

This page allows to you enable/disable NAT functions.

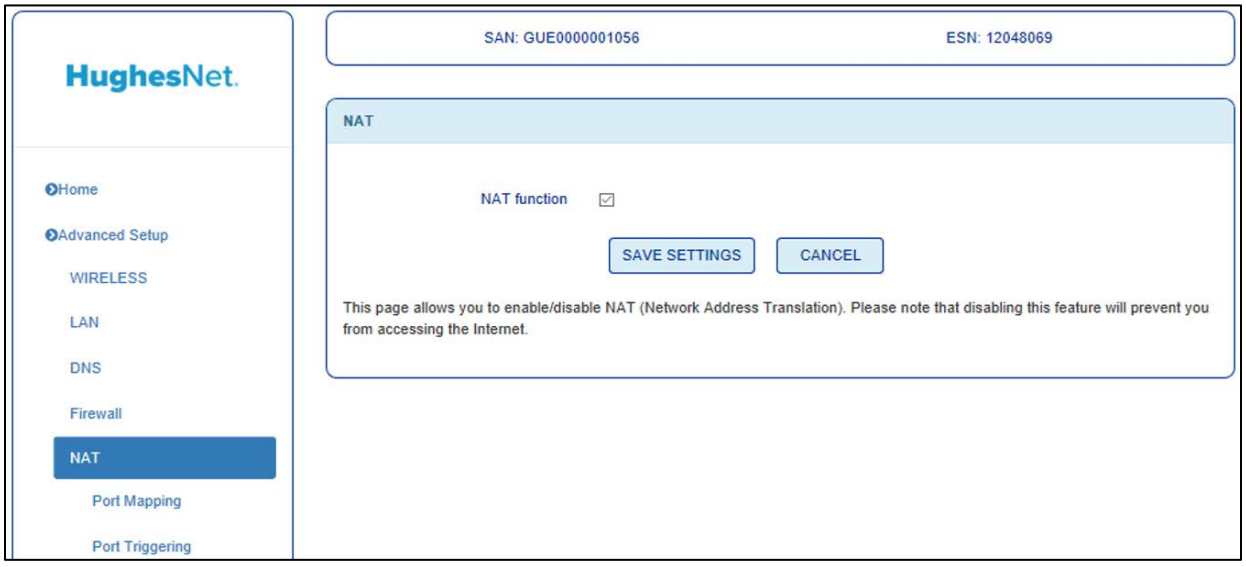

Figure 80: NAT main page

Port Mapping

This page allows you to make custom NAT port forwarding rules.

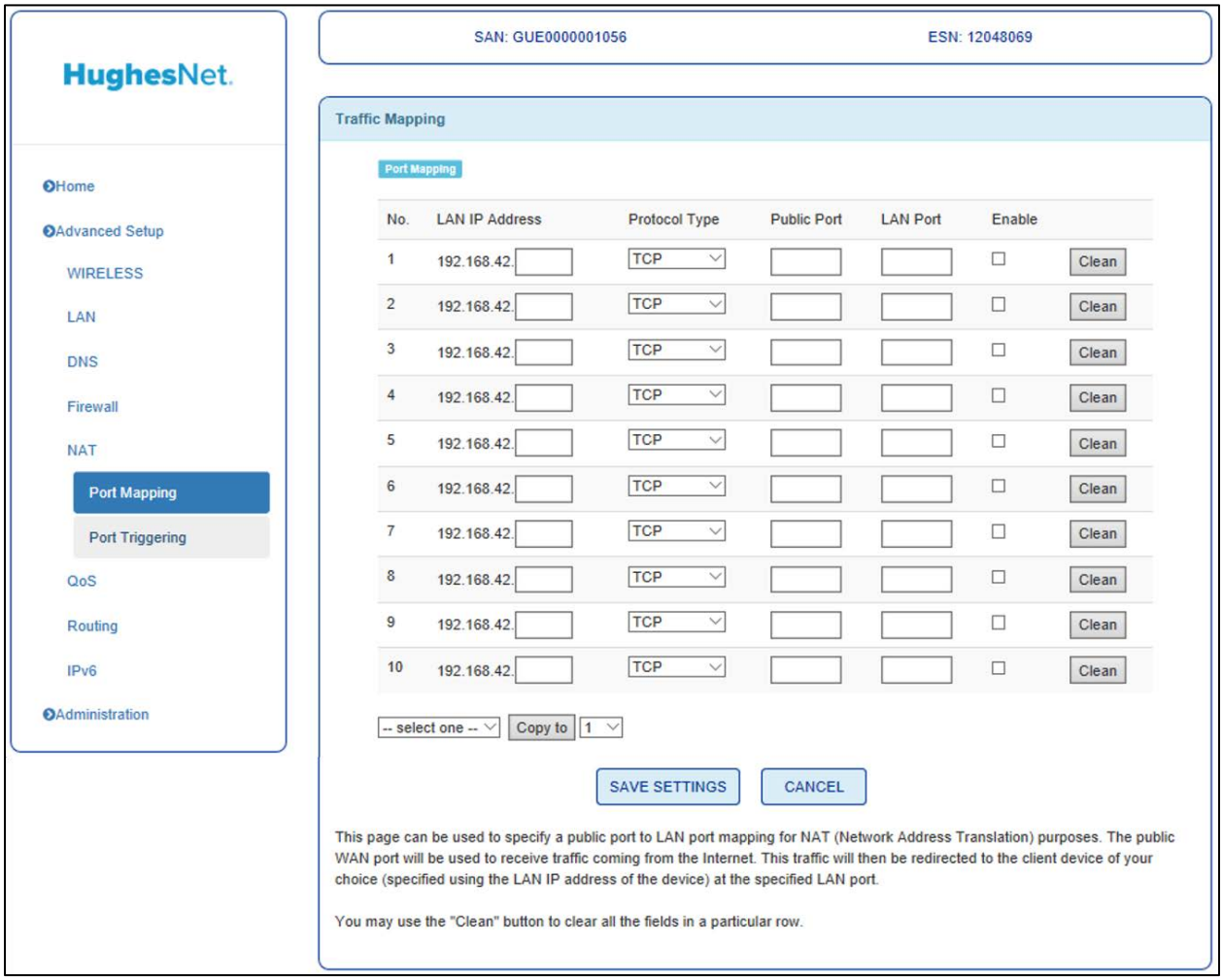

Figure 81: Port Mapping

Port Triggering

This page allows you setup port triggering options, specifying ports on WAN that will only be active when a specific range of ports on LAN is active.

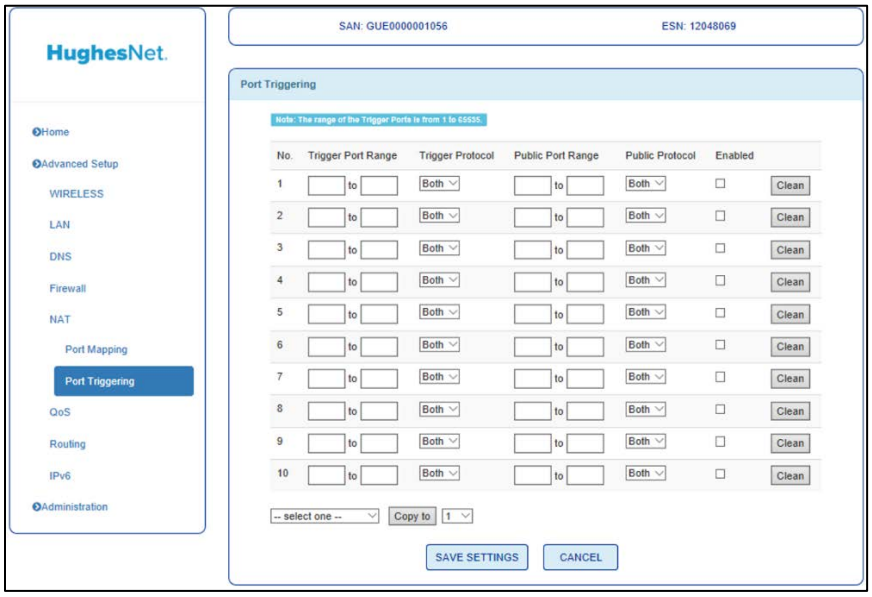

Figure 82: Port Triggering

QoS

Main Page

This page allows you to enable/disable QoS as well as bias each priority level of traffic.

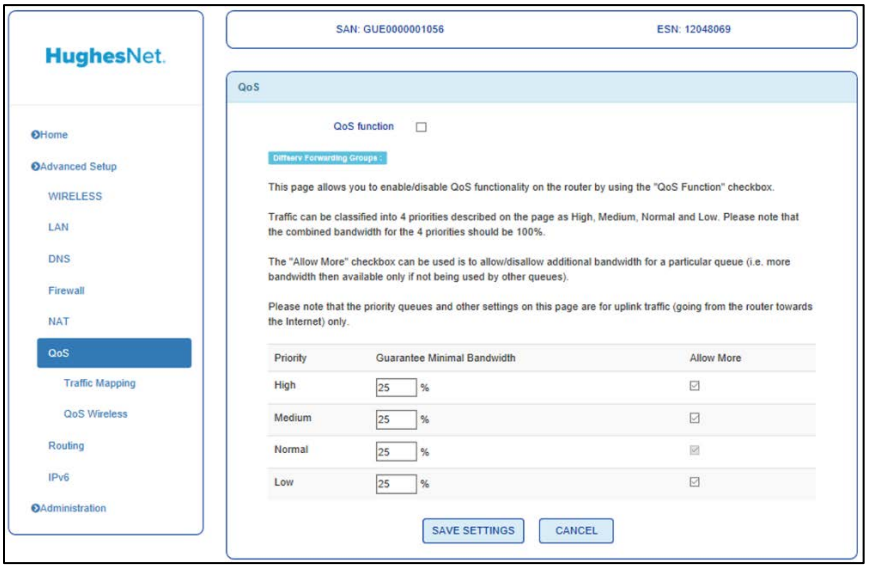

Figure 83: QoS main page

Traffic Mapping

This page allows you to setup QoS rules. Rules can made to follow either specific devices, external or internal IP addresses, as well as ports.

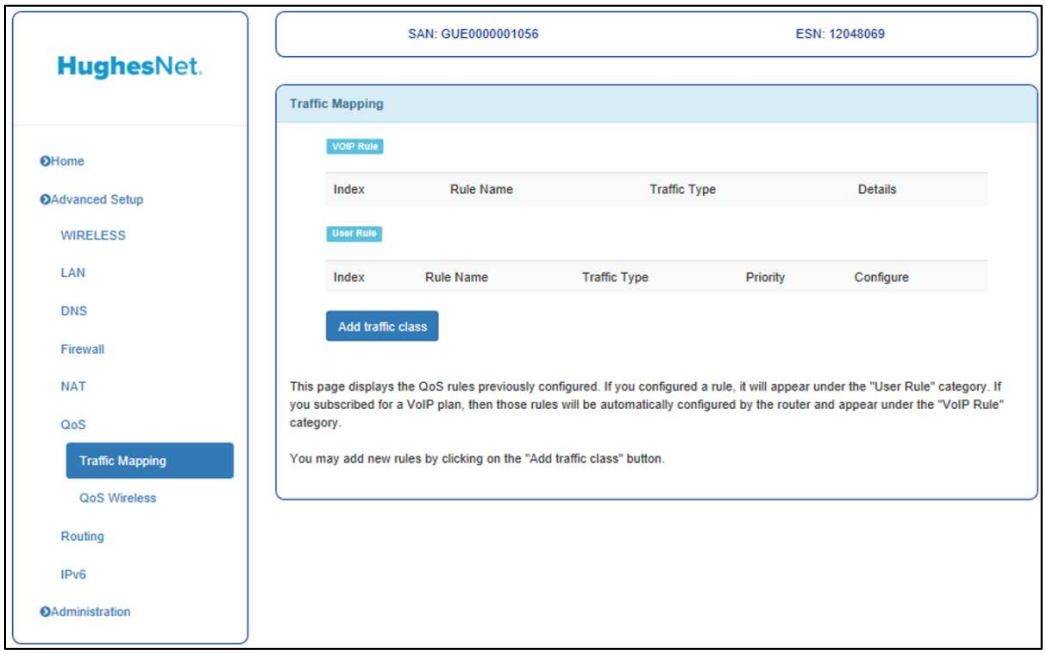

Figure 84: Traffic Mapping

Routing

Main Page

This page shows you the current routing table.

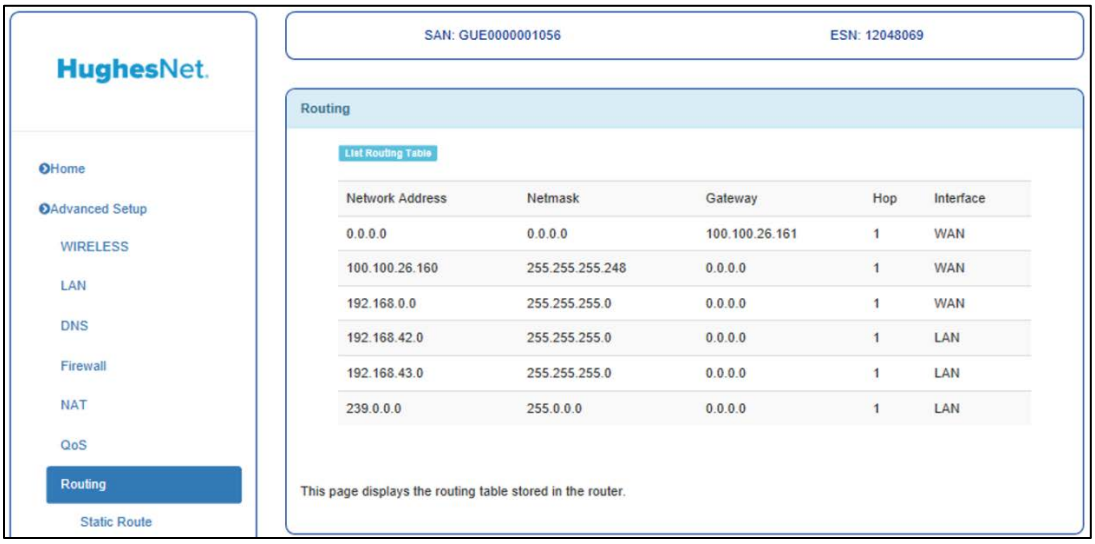

Figure 85: Routing main page

Static Route

This page allows you to design a static network route. Click edit to configure a route.

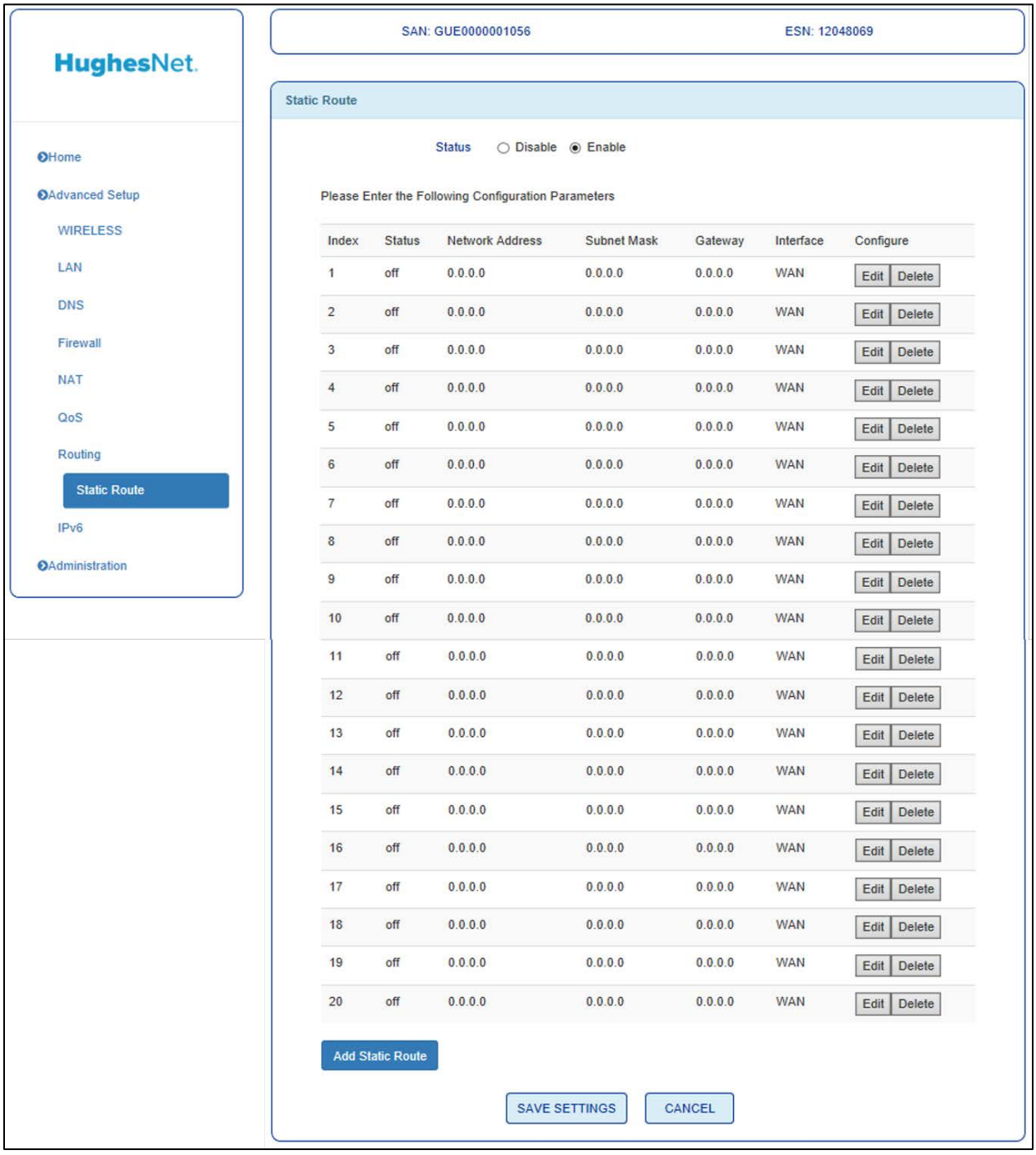

Figure 86: Static Route

IPv6

Main Page

This page allows you to enable/disable IPv6 as well as provide the IPv6 prefix to use.

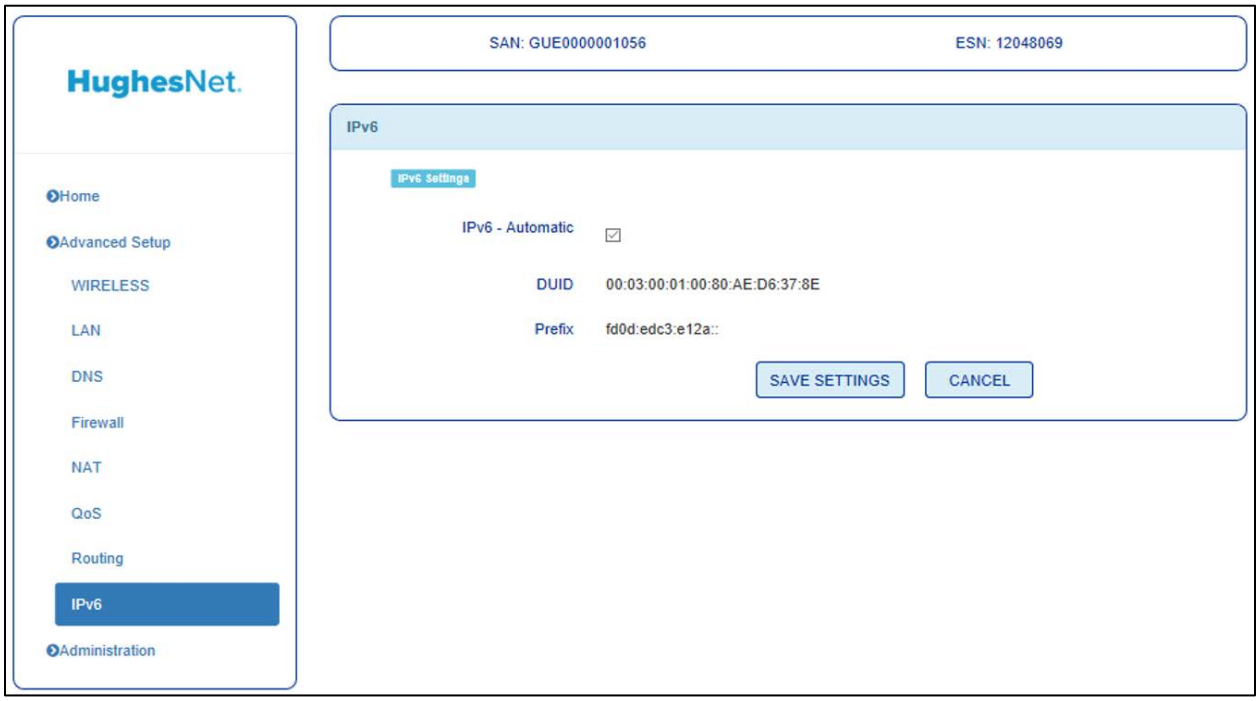

Figure 87: IPv6 main page

Chapter 11
LEDS

Front panel LEDs

The satellite modem has six LEDs on the front panel, as shown in Figure 66. By their appearance (on, off, or blinking) the LEDs indicate the modem's operating status. The front panel LEDs are white when lit.

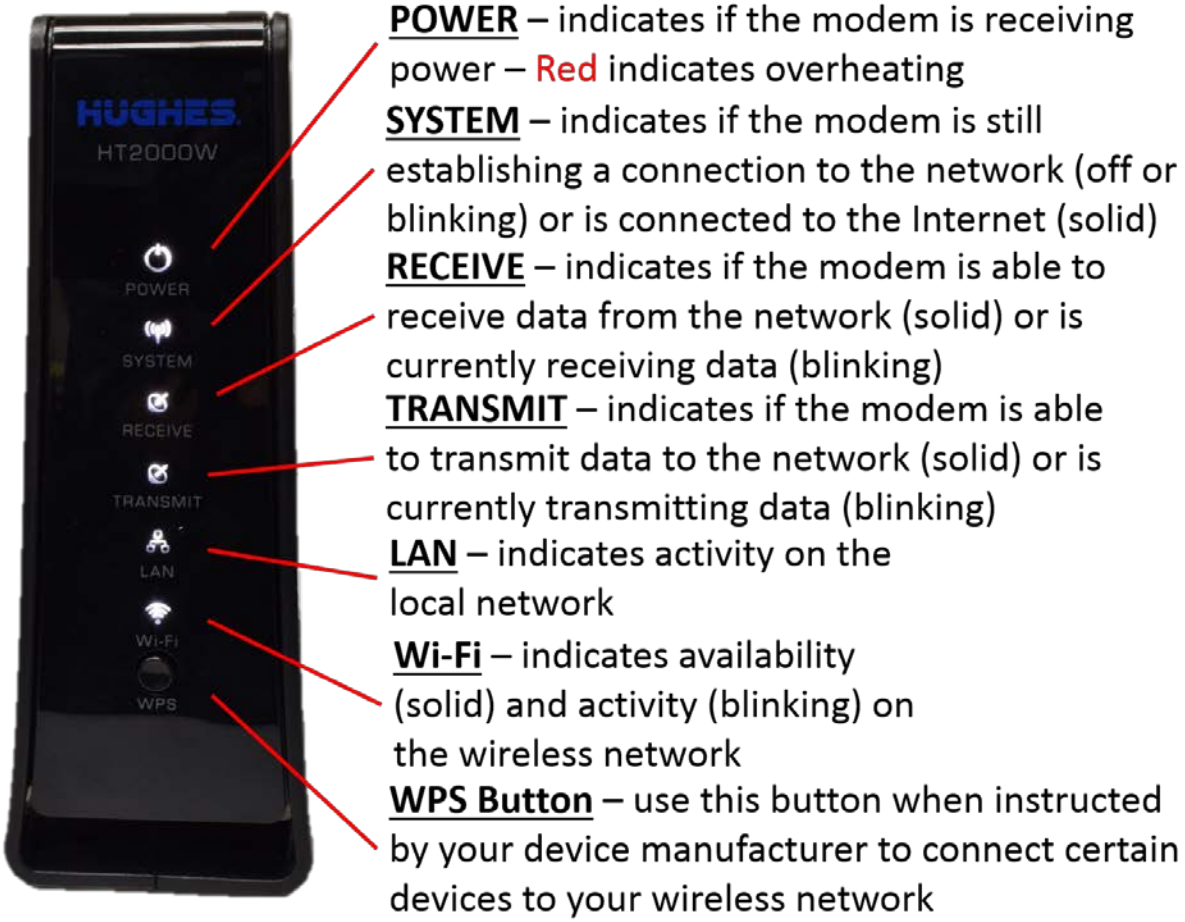

Figure 88: Front panel LEDS

Table 4 explains what the modem status is when the LEDs are on, off, or blinking. On means the LED is continuously lit. Blinking means the LED is usually on, but intermittently turns off briefly.

Table 4: Front panel LEDS

LEDS	Appearance	Status
Power	On Red color**	Power is on and the modem is functioning normally **Indicates alarm condition.
	Blinking	Operating with fallback.bin (backup) version of software
	Off*	No power
System	On	Connection established with the NOC
	Off	Condition preventing full operation
Receive	On	OK - Receive path is operational
	Blinking	Receiving data
	Off*	Condition preventing receipt of data
Transmit	On	OK - Transmit path is operational
	Blinking, mostly on	Transmitting data
	Blinking, mostly off	Ranging (The modem is measuring the distance to the satellite to calibrate transmit timing and transmit power.)
	Off*	Condition preventing transmission
LAN	On	Satellite modem is connected to a computer network card or Ethernet device
	Blinking	Transmitting and/or receiving data
	Off*	No device is connected to the LAN port or the device connected to the LAN port is not working properly.
Wi-Fi	Blinking	One or both of the Wi-Fi bands are on and broadcasting. The LED will blink faster when a user is connected to and using one or both of the Wi-Fi bands.
	Off	Both the 2.4 and 5 GHz Wi-Fi bands are disabled.

Bold type indicates LED appearance during normal operation when the satellite modem is transmitting or receiving data. *Indicates an operational problem.

If it appears the LEDs are not functioning properly, make sure you have the correct power supply. Refer to Table 1: Power supply specifications for detailed power supply information.

LAN port LEDs

Table 5 shows the HT2000W LAN LED scheme.

Table 5: LED description

LED	Color	Description
Right LED	Orange Static	The port speed is 1000 Mbps.
	Green Static	The port speed is 100 Mbps.
	Off	The port speed is 10 Mbps.
Left LED	Yellow Static	The port has a link.
	Yellow Flashing	The port is transmitting or receiving data at 10/100/1000 Mpbs.
All LEDS	Off	No link.

The LEDs on the LAN (Ethernet) port on the modem's rear panel indicate link status and speed, as shown in Figure 67.

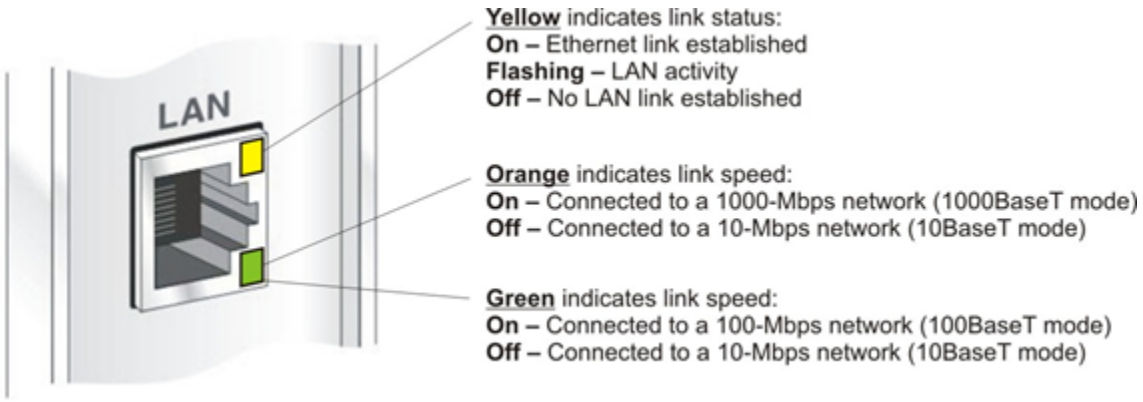

Figure 89: LAN port LEDS

Chapter 12

Advanced pages

The Advanced Configuration and Statistics pages, also known as the Advanced Pages, contain a great deal of detailed information about the satellite modem including statistics, diagnostic information, logs, status, and operating parameters. You may need to access the Advanced Pages to find specific information or to configure special features.

The Advanced Pages provide access to critical configuration parameters and other functions. Do not use these pages unless you are a qualified installer or other technician who thoroughly understands how the satellite modem operates or unless an Installer Support representative instructs you to access the Advanced Pages for troubleshooting purposes.

Accessing the Advanced Pages

You can access the Advanced Pages using either of the following methods:

- On the System Control Center home page, click the small icon indicated by the arrow in Figure 68. The icon is a link to the Advanced Pages.
- Type `192.168.0.1/fs/advanced/advanced.html` in the browser's address bar and press **Enter**.

Figure 90: Icon for accessing Advanced pages

Figure 69 shows one of the many available Advanced Pages. Other Advanced Pages are available through the Advanced menu in the left panel.

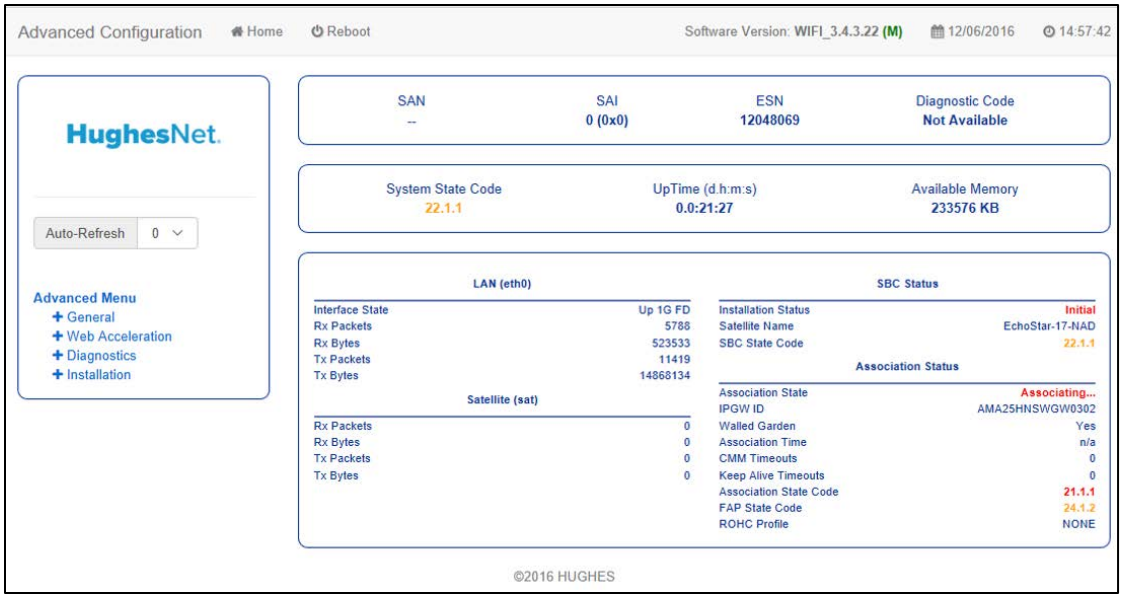

Figure 91: Advanced Pages example showing the advanced menu

Expanding and collapsing menus

To expand the Advanced Menu on the left side of the screen to show additional selections, click a menu item. If you expand another menu item, the previously expanded menu item collapses.

Opening the Installation sub-menu

Advanced Pages of particular interest to installers are listed in the Installation sub-menu. To open this sub-menu, click Installation as shown in Figure 70.

Figure 92: Installation sub-menu

State codes

The terminal state code provides a hierarchical representation of the current status of the satellite modem. The state code displays on the System Status page as shown in Figure 71.

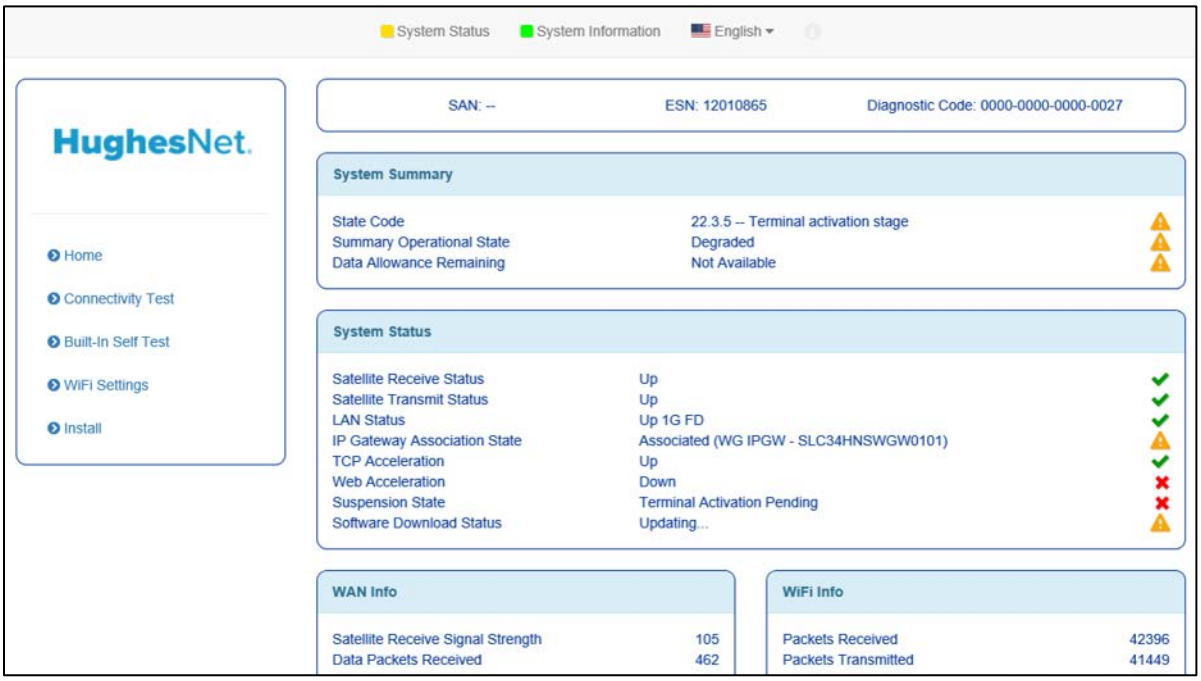

Figure 93: System status showing state code

To access the State Code monitor page:

1. Access the Advanced Configuration and Statistics page.
2. Expand the General menu item.
3. Click State Code Monitor. The State Code Monitor page appears as shown in Figure 72.

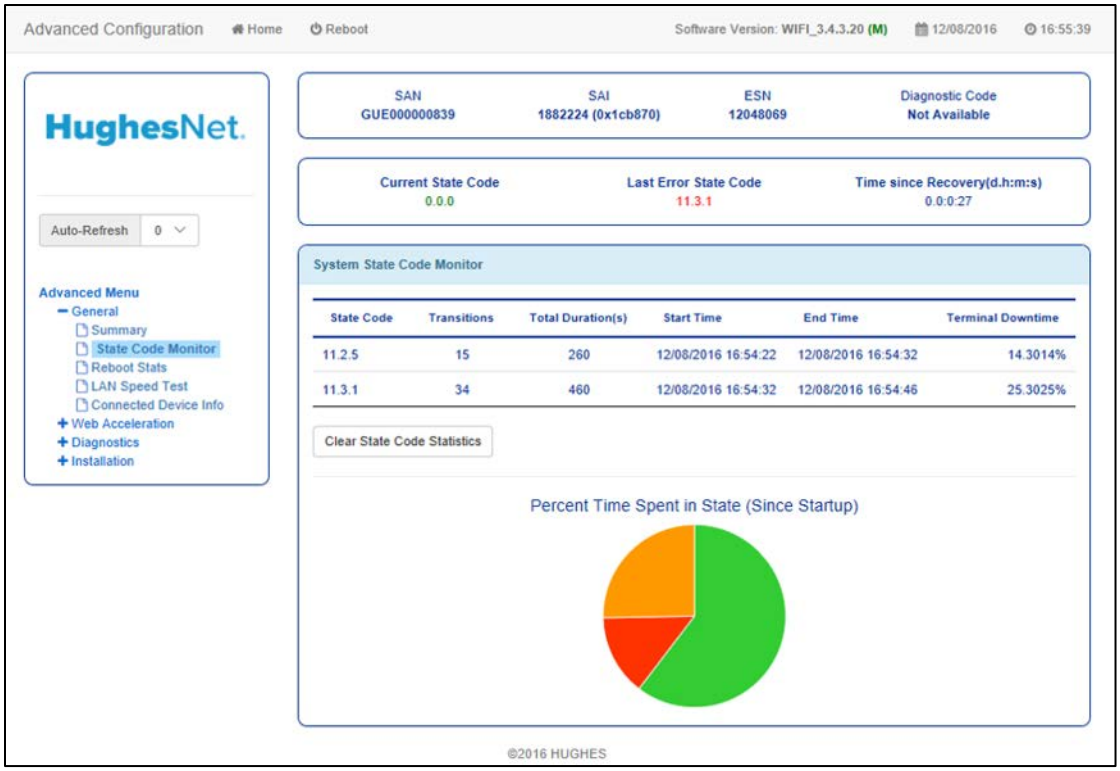

Figure 94: State code monitor page

The State Code Monitor page provides:

- Current system state code.
- The current state code per component /process.
- Overview of the terminal since startup and the total duration in seconds for each state code.

Appendix A

Specifications

HT2000W modem specifications

The specifications for the HT2000W modem are listed in Table 6.

Table 6: HT2000W modem specifications

Item	Specifications
Weight	1.6 lb (0.73 kg)
Height	8.0 inches (20.3 cm)
Width	1.6 inches (4.1 cm); 2.4 inches (6.1 cm) at base
Depth	9.0 inches (22.9 cm)
Operating temperature range	41 °F to 104 °F (5 °C to 40 °C) Above 5,000 ft (1,524 m) altitude, the maximum temperature is reduced by 1 °C per 1,000 ft (305 m).
Operating humidity range	5% to 90% non-condensing
Altitude	Up to 15,000 ft (4,572 m)
Cooling method	Convection
Protocol support	TCP/IP (Transmission Control Protocol / Internet Protocol) protocol suite
Supported frequency ranges	Ka-band
Network interface ports	RJ-45 Ethernet LAN port supporting 10BaseT, 100BaseT or 1000BaseT operation

Appendix B

Standards

The HT2000W satellite modem has been certified to comply with the standards listed in Table 7. Additional information follows the table.

Table 7: HT100 standards compliance

Category	Standard
Safety	UL60950-1 for the USA CAN/CSA-C22.2 No. 60950-1 for Canada
Electromagnetic Interference (EMI)	FCC Part 15 for the USA ICES-003 for Canada
Telecommunications	TIA IPoS

Repairs in Canada

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should not attempt to make electrical ground connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.

Electromagnetic interference (EMI)

This product conforms to EMI standards of the U.S. FCC, and Canadian CSA, as detailed in the following sections. The installation and maintenance procedures in the installation guide must be followed to ensure compliance with these regulations.

NOTICE

This is a class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

FCC Part 15

This section applies to the HT2000W satellite modem. Standards to which conformity is declared: FCC Part 15

The modem complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible party's name: Hughes Network System, LLC Address: 11717 Exploration Lane, Germantown, MD 20876

Telephone: 1 (866) 347-3292

Trade name: HUGHES

Type of equipment: Two-way Hughes system

Model number: HT2000W (1502573)

Canada Class B warning

The two-way Hughes system (HT2000W) complies with the Canadian ICES-003, Class B standard. Cet appareil numérique de la classe B est conforme á la norme NMB-003 du Canada.

Acronyms

A

AC - Alternating current

D

DAPT – DiSEqC antenna pointing tool

E

EMI - Electromagnetic interference

F

FCC - Federal Communications Committee
FSB – Field Service Bulletin

G

GPS - Global Positioning System

I

IFL - Inter- facility link

L

LAN - Local Area Network
LED - Light emitting diode
LHCP - Left-handed circular polarization

N

N-G - Neutral-ground
NIC - Network interface card
NOC - Network Operations Center

O

ODU - Outdoor unit
OVT - Onsite Validation Tool

P

PIN - Personal identification number

R

RF - Radio frequency
RHCP - Right-handed circular polarization

S

SAN - Site account number

V

VAC - Voltage alternating current

Index

I