HUGHES®
An EchoStar Company

EchoStar Mobile™

Hughes 4200 User Guide

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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.

⚠ CAUTION

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

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:

Warning: Potential Radio Frequency (RF) hazard. Where you see this alert symbol and WARNING heading, strictly follow the warning instructions to avoid injury to eyes or other personal injury.

Warning: Where you see this alert symbol and WARNING heading, strictly follow the warning instructions to avoid personal injury.

Danger: Electric shock hazard: Where you see this alert symbol and DANGER heading, strictly follow the warning instructions to avoid electric shock injury or death.

Warnings for satellite terminal

CAUTION

Do Not Stand in Front of the Antenna: This device emits radio frequency energy. To avoid injury, do not place head or other body parts in front of the satellite antenna when system is operational. Maintain a distance of one meter or more from the front of the Satellite Terminal antenna.

General: Handle your Satellite Terminal with care. The unit is weather resistant per IEC 60529 IP54; however, do not submerge the unit. Avoid exposing your Satellite Terminal to extreme hot or cold temperatures outside the range -25° C to +55° C.

Avoid placing the Terminal close to cigarettes, open flames or any source of heat.

Changes or modifications to the Terminal not expressly approved by Hughes Network Systems could void your authority to operate this equipment.

Only use a soft damp cloth to clean the Terminal.

To avoid impaired Terminal performance, please ensure the unit's antenna is not damaged or covered with foreign material like paint or labeling

When inserting the SIM, do not bend it or damage the contacts in any way. When connecting the interface cables, do not use excessive force.

In the Vicinity of Blasting Work and in Explosive Environments: Never use the Satellite Terminal where blasting work is in progress. Observe all restrictions and follow any regulations or rules. Areas with a potentially explosive environment are often, but not always, clearly marked. Do not use the Terminal while at a petrol filling station. Do not use near fuel or chemicals.

Qualified Service: Do not attempt to disassemble your Satellite Terminal. The unit does not contain consumer-serviceable components. Only qualified service personnel may install or repair equipment.

Accessories: Use Hughes approved accessories only. Use of non-approved accessories may result in loss of performance, damage to the Satellite Terminal, fire, electric shock or injury.

Battery: Use only a battery approved by Hughes. Risk of explosion if battery is replaced by an incorrect type. Recycle or dispose of this battery in accordance with local regulations.

Connecting Devices: Never connect incompatible devices to the Satellite Terminal. When connecting the Satellite Terminal to any other device, read the device's User Manual for detailed safety instructions.

CAUTION

Pacemakers: The various brands and models of cardiac pacemakers available exhibit a wide range of immunity levels to radio signals. Therefore, people who wear a cardiac pacemaker and who want to use a Satellite Terminal should seek the advice of their cardiologist. If, as a pacemaker user, you are still concerned about interaction with the Satellite Terminal, we suggest you follow these guidelines:

- Maintain a distance of one meter from the main antenna front and sides and your pacemaker
- Refer to your pacemaker product literature for information on your particular device

If you have any reason to suspect that interference is taking place, turn off your Satellite Terminal immediately.

CAUTION

Hearing Aids: Most new models of hearing aids are immune to radio frequency interference from Satellite Terminals that are more than 2 meters away. Many types of older hearing aids may be susceptible to interference, making it very difficult to use them near a Terminal. Should interference be experienced, maintain additional separation between you and the Satellite Terminal.

CAUTION

Electrical Storms: Operation of the Satellite Terminal during electrical storms may result in severe personal injury or death.

Equipment users

User must be a skilled person. Designated users should not be exposed to conditions that could cause pain or injury, nor intentionally caused said conditions.

Chapter 1

Introduction

1.1 Overview

The Hughes 4200 portable terminal provides reliable satellite connectivity over the EchoStar Mobile GMR-1 3G satellite network. The Hughes 4200 comes in a very small and portable package, and it allows the user to send and receive IP packets via Ethernet and Wi-Fi interfaces. In parallel with the packet data services, the Hughes 4200 supports voice calls via a standard POTS interface and also via an IP based softphone application.

Figure 1: Hughes 4200 terminal

1.2 About this user guide

This user guide contains the most up-to-date information available on this product on the date it was generated. It is focused on the specific information needed to operate the Hughes 4200 terminal and to connect to the EchoStar Mobile network. If you are a first time user, you will be guided through the procedure for powering up your terminal, obtaining a GPS fix, connecting your computer to the terminal and registering with the network. You are then ready to start using voice and broadband services.

1.3 Package contents

When you unpack the Hughes 4200 Portable Terminal kit package, you will find the following:

- Hughes 4200 terminal
- AC/DC power adapter
- Ethernet cable
- Lithium Ion battery
- Quick Start User Guide

Your Service Provider will supply you with a UMTS Subscriber Identification Module (USIM) and its PIN, and Satellite Terminal configuration instructions – you will need these to access the satellite network.

1.4 Minimum system requirements for laptop/PC

These are the minimum computer system requirements for successful interface with the Satellite Terminal:

- Internet Browser: Microsoft Internet Explorer (IE11 or later), Mozilla Firefox, Chrome, or Safari.
- PC Support for Ethernet or Wi-Fi (802.11b/g/n).

Chapter 2

Using the Hughes 4200

2.1 Before getting started

NOTICE

Install the USIM and battery into the terminal unit and then fully charge the battery using the supplied AC/DC converter before powering up the unit.

Figure 2: Inserting the USIM card

2.2 Quick start

Press the power button for at least 2 seconds to power on the unit.

Since the Hughes 4200 terminal is a portable device, you must first obtain a GPS fix by laying the terminal flat with the antenna facing up and an open view of the sky.

2.2.1 GPS icon

The GPS icon on the LCD indicates the state of the GPS information in the terminal.

The icon **flashes** after power up until a fresh GPS fix is obtained.

The icon is **on steady** when the terminal has a new GPS fix.

2.2.2 Satellite icons

The satellite icons, located next to the GPS icon, indicate the **status of the GPS receiver** in the terminal and the **number of visible satellites** The satellite icons, located next to the GPS icon, indicate the **status of the GPS receiver** in the terminal and the **number of visible satellites**.

The icons are **off** when the **GPS receiver is off**.

The icons are **active** when the **GPS receiver is on**, either flashing or steady state. The number of icons in steady state indicates the number of GPS satellites in view. You will need all three on solid to acquire a new GPS fix. Note that once an adequate GPS fix is obtained, both the GPS receiver and all of the satellite icons are turned off and the word "GPS" should go on steady.

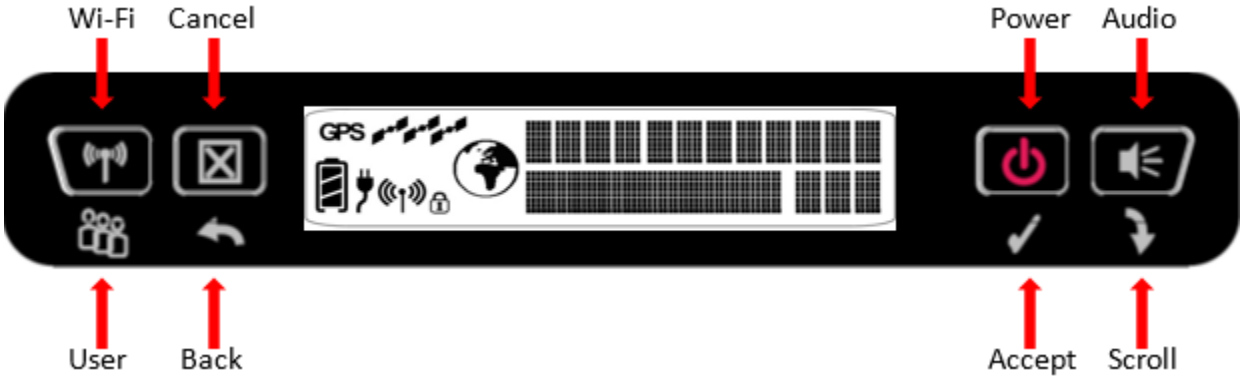


Figure 3: Terminal iUI (LCD)

The top line gives the compass bearing and elevation angle of the EML satellite.

Figure 4: Compass bearing and elevation angle of the EML satellite

Use the signal quality bar and numeric display on the lower line to help point the terminal to the satellite. While in pointing mode, you may also activate the audio pointing aid by a long press of the **Audio/Scroll** button on the right.

Once you have accurately pointed the unit to the satellite, exit pointing by a long press of the **Cancel/Back** button. The unit will now attempt to register with the satellite network.

Once the unit has registered and is Packet Switched (PS) attached, it will automatically create a "**Shared**" data connection.

2.2.3 Web UI quick start

Alternatively, you can connect a computer and use the Hughes 4200's internal Web server. From your terminal equipment (e.g., PC), enter **192.168.128.100** as the URL to access the Hughes 4200's home page.

The Terminal Status page gives you all the information you need to point and register with the network.

You will need to define an APN Profile to be connected to the Network.

Enter the APN details in the Settings Page, the APN Username and Password are mandatory for EML Network. Press the “Add Profile” button in order to save the Profile.

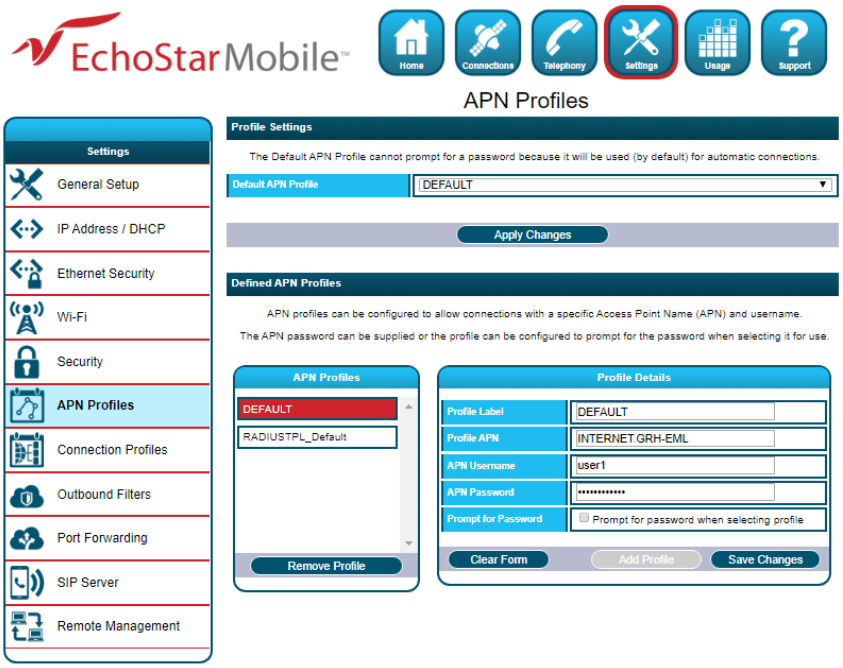


Figure 5: APN definition on the WebUI

Once you have a GPS fix and are pointed to the satellite as best you can, click the **Register with Network** button to start the registration process.

Once you are registered and attached, the terminal automatically establishes the **Shared** connection. You can also establish a dedicated connection and select the Quality of Service (QoS) for your data connection from the Connections page.

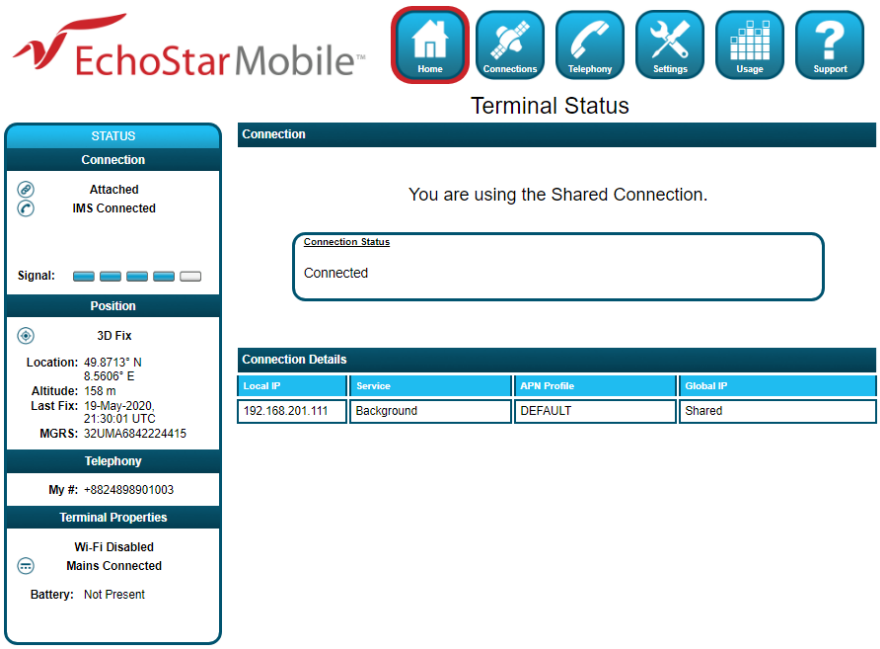


Figure 6: Shared Connection established on the WebUI

2.3 Connecting the terminal to the computer

You can connect your computer to the Hughes 4200 with one or more of the following interfaces:

- Ethernet
- Wi-Fi

NOTICE

During initial setup, the terminal can only be configured using an Ethernet connection. Once the terminal has been configured, both interfaces (Ethernet and Wi-Fi) can be used for data transfer depending on the service required.

Your computer must be configured to support your chosen connection method. Refer to the documentation supplied with your computer for details.

2.3.1 Connecting by Ethernet

To connect the Hughes 4200 terminal to a device using Ethernet:

- Connect a standard Ethernet cable to your device's Ethernet port, and insert the other end of the connector into the Ethernet port on the Hughes 4200.

2.3.2 Connecting by Wi-Fi

To enable the Wi-Fi, long press (> 2 seconds) the **Wi-Fi** button on the front of the terminal.

- The default SSID is "EML-last 7 digits of IMEI"
- The default channel number is 11

- Up to 4 users can connect by W-Fi

NOTICE

You cannot enable WPA or WPA2 encryption from the LCD/keypad interface. The Wi-Fi encryption must be configured in the Web UI.

2.3.2.1 Wi-Fi security

- WPA and WPA2 Protection Status: Check the box to “Enable” either the WPA or WPA2 for added security.
- WPA or WPA2 Key: It is strongly recommended to replace the default password with your own unique password.

NOTICE

- SSID Broadcast: For added security you can choose not to broadcast your SSID.
- MAC Filtering: For added security, check the box to “Enable” MAC Filtering. You can define up to 10 MAC addresses that are allowed to connect to your Wi-Fi.

NOTICE

To determine the MAC address of a PC, go to a DOS prompt and type **ipconfig/all**.

For Mac OS X, under the Apple Menu go to **System Preferences > Network** and **Show Airport**. The Airport Id is the MAC address. Alternatively, go to **About this Mac > More Info > network**, and select **Airport**.

NOTICE

When Wi-Fi is enabled, unauthorized users may be able to access your EchoStar Mobile service. If WPA/WPA2 is enabled, you must provide other Wi-Fi users with the password in order for them to connect to the terminal. You can go to the **Manage Connections** page on the Web UI to see what computers are actually using the terminal’s EchoStar Mobile service.

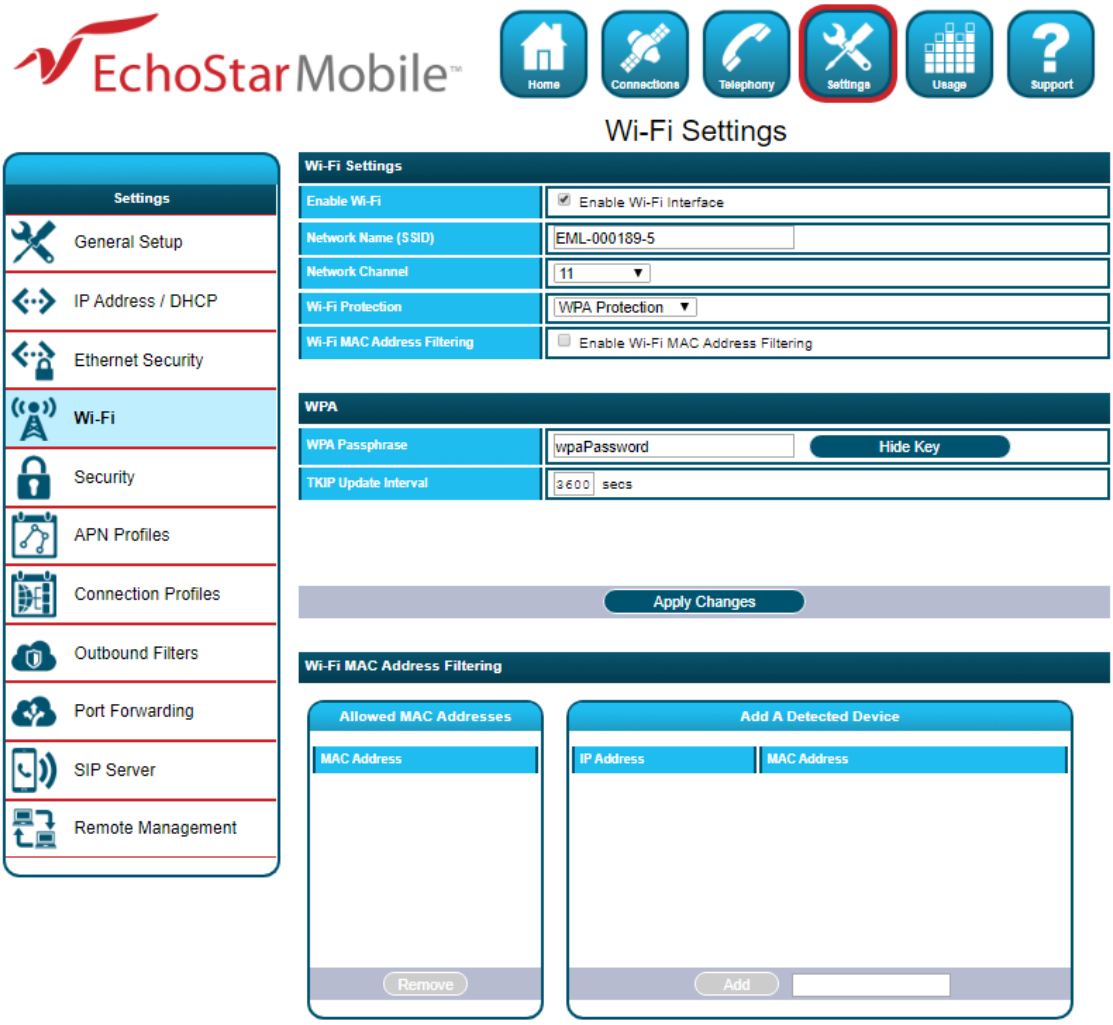


Figure 7: Wi-Fi settings on the WebUI

2.4 Connecting devices for telephony

2.4.1 Connecting by RJ-11

NOTICE

The RJ-11 port is active by default.

You can connect an analog phone directly to the RJ-11 port with an RJ-11 cable to make voice calls.

To dial, prefix the international number with 00 and terminate with #. For example, to dial a number in the UK, enter: 00441908425# (00 + Country code + phone number+ #)

NOTICE

Your EchoStar Mobile phone number is using the shared country code 882 with the identification code 48. Your phone number will be of the format +88248nnnnnnn

2.4.2 Connecting by Wi-Fi – SIP telephony service

The SIP telephony service allows you to make phone calls using a SIP softphone App on a smart device (smartphone or tablet) connected through Wi-Fi.

To prepare your smart device, download a softphone application from the Apple App store or the Android Play store. Recommended Apps are:

- Linphone
- Groundwire

Connect your smart device to the Hughes 4200 by Wi-Fi.

To prepare the Hughes 4200, navigate to the Settings/SIP Server page on the Web UI and enter a User Name and Password.

NOTICE

A reboot of the terminal is required to apply the changes and restart the SIP server in the Hughes 4200 with the updated account information.

To register the smart device with the Hughes 4200 SIP server, enter the same account information on the softphone App along with the information provided for the SIP Server Settings.

Now enable the SIP Phone service under the Settings/General Setup Web UI page. Under Telephony Settings select one of the following options for Telephony Service:

- **SIP Phone Preferred:**
  With this selection the terminal will use the SIP softphone App if it is registered, otherwise use the wired phone connected through RJ-11.
- **SIP Phone Only:**
  Always use the SIP softphone App.

NOTICE

If you select **SIP Phone Only** and don't have a smart device with softphone registered, then you will not be able to make or receive phone calls, even if a wired phone is connected to the RJ-11 port.

The SIP server status can be verified by clicking on the "SIP Server Status" button on the Telephony Web UI page.

Once the softphone App on the smart device is successfully registered you can make and receive telephony calls with your smart device.

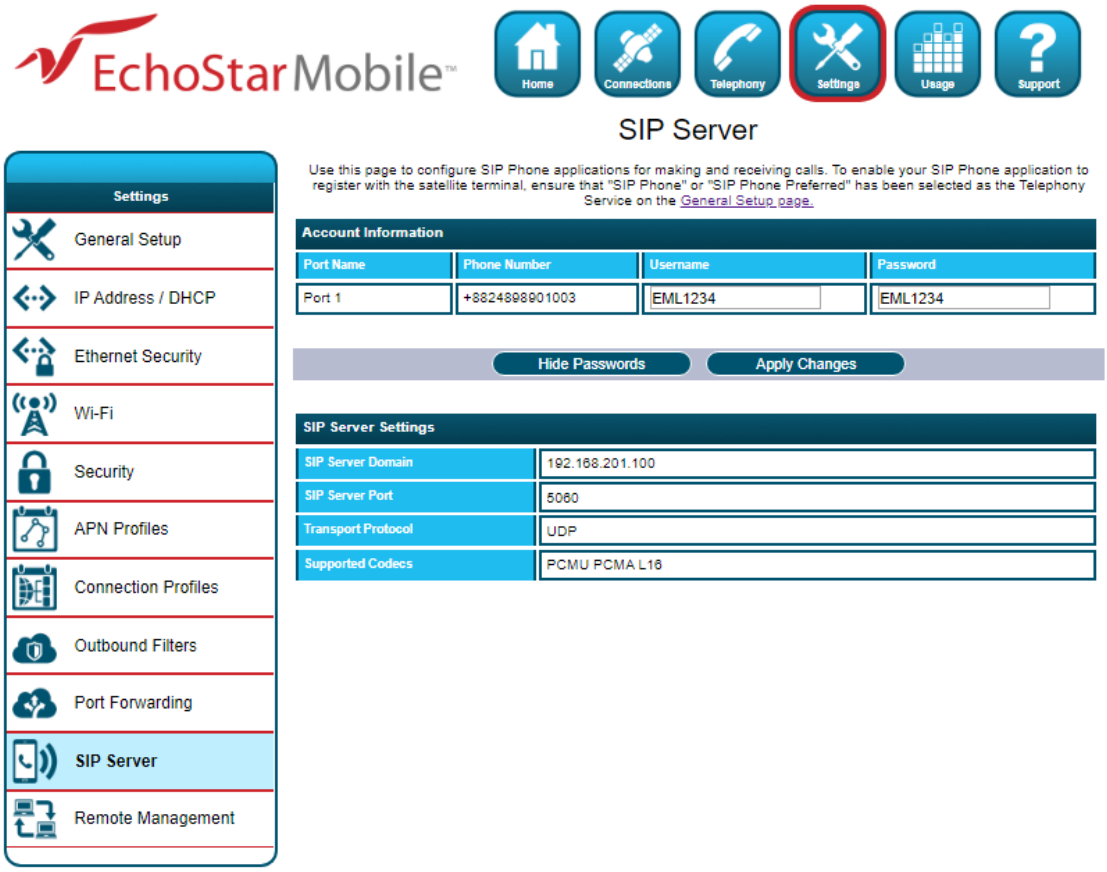


Figure 8: SIP Server settings on the WebUI

Chapter 3

Using the LCD keypad

3.1 LCD display and keypad

The Hughes 4200 terminal has an LCD display that provides status information about the terminal. It has a four-button keypad that allows you to control the operational features of the terminal without the need of a PC or a browser. It also includes control of an audible pointing aid integrated into the terminal.

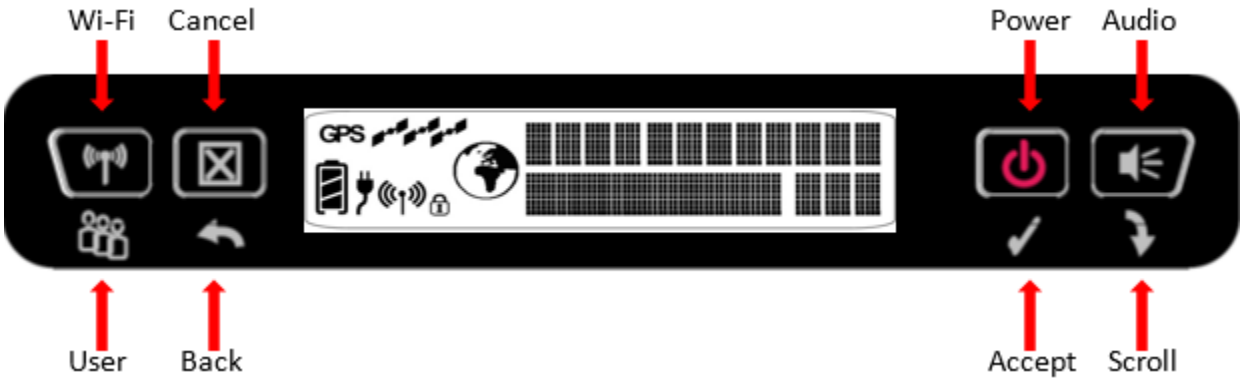


Figure 9: Layout of the LCD and keypad

3.2 Terminal buttons

The Hughes 4200 terminal provides four buttons for the user. Each button has two primary functions, one invoked with a short press and the other invoked with a long press. The top icon (icon on button) associated with a button is the long press function. The bottom icon is the short press function.

Table 1: Terminal buttons

Button name	Short press	Long press
User	Selects the user to display	Wi-Fi on/off
Back	Up one level in menu	Cancel menu/Exits pointing
Accept	Enters menu and confirms selection	Power on/off
Scroll	Scrolls through a menu	Turns Audio on/off

A **"short press"** is pressing a key for less than two seconds.

A **"long press"** is pressing a key for two seconds or longer.

3.3 LCD status display

3.3.1 Pointing mode display

By default, at power up the LCD shows the pointing display. The top line alternates between "Pointing" and the compass bearing and elevation angle of the closest satellite. In Figure 10, the satellite bearing is South-South-East (SSE), the elevation angle to the satellite is 46 degrees and the signal strength is 51 dB.

Figure 10: Pointing Mode Display

The compass bearing is indicated with abbreviated compass directions as shown in Figure 11.

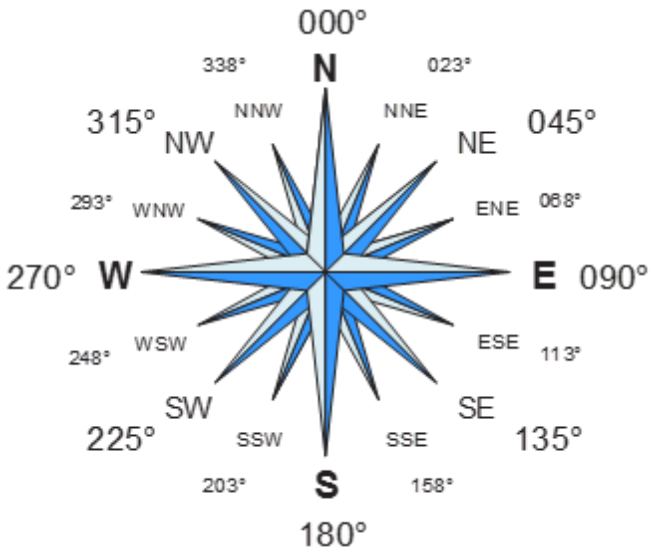


Figure 11: Compass Bearings

3.3.2 Audible pointing indicator

A buzzer provides an audible representation of the signal quality during antenna pointing. When turned on, the indicator emits pointing tones that increase in tempo and pitch as the signal strength increases. If the satellite is not found, one tone is followed by a pause.

Use a long press of the Audio button to toggle the audio pointing indicator on and off.

3.3.3 Exit pointing and registering with the network

Once you have accurately pointed the terminal to the satellite, exit pointing by a long press of the Back button. This will cause the unit to attempt to register with the EML network (Note: if audible pointing tones were enabled during pointing, they will automatically turn off once you attempt to register).

3.3.4 Idle mode display

Once the terminal exits pointing, it will automatically attempt to attach to the network and establish a "Shared" connection. During this operation it displays "Attaching" on the upper line of the LCD.

Once it attaches and establishes a "Shared" context, the LCD displays "Shared" on the upper line.

Once it is registered with the IMS, the unit is ready for voice calls and displays the globe icon.

In idle mode, the strength of the received satellite signal is displayed by a 5-bar indicator located in the lower right hand corner of the LCD.

Figure 12: Idle Mode Display

If user equipment is connected (via Ethernet or Wireless LAN), the lower line will display "ADDR:" followed by the last octet of the IP address of the currently selected user terminal. If multiple devices are attached, you can select the other user's information by pressing the user button until you see the device you want.

3.3.5 Status messages

The upper level of the LCD is used for status messages and menu items. Status messages are listed in Table 2.

Table 2: Status messages

Display	Description
HUGHES 4200	On screen during power up.
Boot Failure	The terminal failed to boot.
Insert SIM	No SIM is detected. Insert the SIM to continue.
Reading SIM…	Terminal is reading information from SIM.
Enter PIN	A SIM PIN code is needed. (This can be entered using the front panel buttons.)
Enter PUK	A SIM PUK code is needed. (This must be entered using the Web UI.)
SIM Blocked	The SIM is blocked due to too many SIM PIN/PUK attempts.
SIM Error	There is a SIM communication error.
Unlock SIM	The terminal is locked to another SIM and the SIM Lock PIN is needed. (This must be entered using the Web UI.)
Wrong SIM	Incorrect SIM found in this unit. The SIM inserted is not the SIM that was originally locked to the terminal.
Bad SIM	SIM card is invalid.
Getting POS…	Terminal is getting a GPS position.

Display	Description
Searching…	Terminal is searching for the satellite signal. This message alternates with satellite bearing and elevation angle on a 3 second cycle.
Point ANT	Terminal is in antenna pointing mode. This message alternates with satellite bearing and elevation angle on a 3 second cycle
Attaching…	Terminal is attaching to the network.
Ready	Terminal is attached to the network, but no data connections are currently opened.
Shared	Selected TE is using the default shared context.
Background	Selected TE is using a background data connection.
Stream {rate}K	Selected TE is using a streaming data connection. Streaming rate is listed.
SAT Blocked	The satellite signal has been temporarily obstructed, blocking the connection.
Charged	Battery is fully Charged
Charging	Battery is Charging
Battery Low	Battery charge level is low
Batt Empty	Battery charge is near empty
Too Hot	Unit is too hot; if not corrected, a temporary thermal shutdown may occur
Battery Hot	Battery is too hot; reduce temperature or turn off unit to avoid damage to the battery
Reboot Req	UT Reboot is required
Critical Err	A hardware error has caused a forced shutdown of the terminal.
Powering Off	Displayed while the Hughes 4200 is powering down
Rebooting…	The terminal is currently rebooting.
Resetting…	The terminal is currently resetting to default parameters.
Upgrading…	The terminal software is currently being upgraded.
Factory Mode	The terminal is in a test mode and cannot be used.
Attach Fail	The terminal failed to attach to the network.
GPS Comm Err	The terminal was unable to communicate with GPS receiver.
HW Failure	The terminal has encountered a hardware fault and cannot continue.

3.4 Menu navigation

From the status display, a short press of the Accept button takes the display to menu mode and displays the first of a circular list of menu items. The keypad menu structure is shown under Table 4 on page 23.

Use the scroll button to scroll between options and the accept button to select options. A short press of the Back button takes the user up one level in the menu and a long press exits the menu system and returns to the status display.

The status display is the default display, so after 30 seconds of inactivity while in the menu system the unit reverts to the status display.

Pressing the Accept button in the menu takes the display to the submenu for that option, or, at the lowest level, it selects the menu option, if applicable. When entering a submenu containing a list of parameter values/choices, such as connection types, the currently set choice is displayed.

Alternative parameters values can then be accessed by pressing the Scroll button; these flash until selected, and then remain on and steady to confirm they have been selected.

Note that configuration and status information shown in the menu context refers to the currently selected user TE. The user can change the selected user TE while in the menu system via the User button. This changes the displayed menu item as needed to reflect the newly-selected TE.

Table 3: UT button operations

Short press	UT state	Result
Scroll button	On, menu item	Scroll to next option of displayed menu item
Back button	On, menu item	Goes up one level in menu
Accept button	On, status display	Enter menu
	On, menu item	Confirm selected menu item
User button	On	Select the next user terminal equipment connected to the UT (.101, .102, …)
Long press	**UT state**	**Result**
Audio button	On, status display	Toggle audio tone on/off (save state in NVRAM)
Cancel button	On, menu item	Cancel menu action, return to status display
	On, pointing	Exit pointing, start normal operation
Power button	Off	Turn on, LCD lamp test confirms button action
	On	Turn off, UT ignores additional power button input until power down sequence is complete
Wi-Fi button	On	Toggle Wi-Fi on/off
Special press	**UT state**	**Result**
Power and Audio buttons, simultaneous long press	Off	Go to minimum boot mode
	On	Force Factory Defaults and power down

Table 4: LCD menu structure

Level 1	Level 2	Level 3	Level 4	Comment
Connection	Shared	Connect		Menu dynamically changes from Connect to Disconnect depending on Connection status
		Disconnect		
	Dedicated 1	Background		Menu dynamically changes between showing available QoS and “Disconnect” depending on Connection status.
		Streaming 32k		
		Streaming 64k		

Level 1	Level 2	Level 3	Level 4	Comment
		Disconnect		If the connection is active, the TE address associated with the connection is displayed.
	Dedicated 2			Same as Dedicated Connection 1
Information	GPS	{Latitude}		50.12861° N format
		{Longitude}		8.45833° E format
	IP Status	Global IP	{IP Address} or Shared	For the selected TE
		APN	{APN string 1}	First 12 characters
			{APN string 2}	Remaining, if needed
		Gateway Addr	{192.168.128.100}	
	Terminal	Version	{Software version}	
		IMEI	{IMEI 1}	First half
			{IMEI 2}	Second half
		IMSI	{IMSI 1}	First half
			{IMSI 2}	Second half
Configure	Pointing Mode	Enabled		Start display with current setting
		Bypass		
	Backlight	30 seconds		Controls backlight setting
		120 seconds		
		On		
		Off		
	Wi-Fi	Enabled		
		Disabled		
	LCD	Level 1		Adjust LCD contrast. Start with current level, Accept button confirms
		Level 2		
		Level 3		
		Level 4		
		Level 5		
	Language	English		English
		Español		Spanish
		Français		French
		Deutsch		German
		Italiano		Italian

3.5 Display icons

3.5.1 Battery icon

The battery icon displays the estimated life of the battery while under battery power. The battery icon displays the charging state while under external power.

Under battery power:

- Three segments: 75% to full
- Two segments: 50% to 74%
- One segment: 25% to 49%
- Zero segments: 10% to 24%
- Zero segments, flashing: 0% to 9%

If the icon is off, no battery has been detected or the AC/DC converter is not connected.

Under external power (UT "on" or "off")

Icon will flash zero, then one, then two and then three segments, one second each, while charging to display level of charge state while charging.

Three segments steady when fully charged and the LCD will show "Charged."

No battery present

Blank battery icon

3.5.2 Power icon

The power icon displays the state of the **external power input**.

- On if external power is connected.
- Off if external power is disconnected.

3.5.3 GPS icon

The GPS icon indicates the state of the GPS information in the terminal.

The icon **flashes** after power up until a fresh GPS fix is obtained.

The icon is **on steady** when the terminal has a new fix.

3.5.4 Satellite icons

The satellite icons, located next to the GPS icon, indicate the **status of the GPS receiver** in the terminal and the **number of visible satellites**.

The icons are **off** when the **GPS receiver is off**.

The icons are **active** when the **GPS receiver is on**, either flashing or steady state. The number of icons in steady state indicates the number of GPS satellites acquired and tracked . You will need all three on solid to acquire a new GPS fix. Note that once an adequate GPS fix is obtained, both the GPS receiver and all of the satellite icons are turned off and the word "GPS" should go on steady.

3.5.5 Wireless LAN icon

The wireless LAN icon displays the state of the Wi-Fi feature.

- Off if Wi-Fi operation is turned off.
- On if Wi-Fi is on.

3.5.6 Wireless LAN lock icon

The lock icon displays the state of encryption for the Wi-Fi feature. It is displayed only if Wi-Fi is enabled and Wi-Fi encryption is turned on.

3.5.7 Globe icon

The globe icon displays the IMS registration status of the terminal which is the prerequisite to make phone calls.

- Off if not IMS registered to the network: No voice calls are possible.
- On if IMS registered: Ready for voice calls.

3.6 SIM PIN entry

If the SIM PIN is enabled, the PIN must be entered before the UT can be used. This can be entered via the Web UI.

The upper row of the LCD displays “Enter PIN” while the lower row is used for PIN entry.

The cursor flashes under the current digit location.

A short press of the Scroll button cycles the current digit 0 – 9.

A short press of the Accept button advances to the next digit. When the fourth digit is entered, pressing **Accept** enters the PIN.

A short press of the Back button moves the cursor back to the previous digit.

When PIN entry is complete, the UT confirms the correct PIN has been entered. If it is correct, it proceeds with the normal display. If it is incorrect, it displays “SIM RetryErr” on the display.

3.7 Multiple users

Multiple TEs can be connected to the Hughes 4200, e.g., via the Wi-Fi interface or if an external Ethernet hub or switch is used. To use the menu and keypad to control connections for all the TEs, press the User button and the display will cycle through the IP addresses of the connected TEs.

To activate a “Custom Context” for a particular TE, press the user button until the correct IP address is displayed, and then press the Accept button to enter the menu and configure the Custom Context.

3.8 Information messages

Table 5 shows possible error and status messages with explanations and suggested actions. Most of these messages will self-clear after 15 seconds or can be cleared immediately by pressing any button on the front panel.

Table 5: Quick-text status message descriptions

When setting up contexts from the menu, these messages are possible:	
Opening…	The terminal is currently opening the data connection.
Already Open	The data connection is already open.
Not Attached	The terminal is not attached to the network.
No TE Found	There is no TE currently connected/identified by the UT as available for data traffic.
Conn Busy	The data connection is currently busy.
Conn Failed	The attempt to open the data connection has failed.
Conn Opened	The data connection was opened successfully.

When taking down contexts from the menu, these messages are possible:	
Closing…	The terminal is currently closing the data connection.
Conn Busy	The data connection is currently busy.
Conn Error	An error occurred while closing the data connection.
Conn Closed	The data connection was closed successfully.
If in pointing mode, this message is possible on the LCD:	
Insert SIM	There was no SIM detected; pointing can still continue, but once complete, "No SIM" will appear permanently.
Wrong SIM	The SIM detected is not the SIM that was locked to the terminal
If changing the Telephony settings, this message is possible on the LCD:	
Reboot Req	The change to the telephony settings will not take effect until the UT is rebooted.
At any time during operation, this message is possible on the LCD:	
Battery Low!	The battery is extremely low. Plug in the DC cord to avoid automatic power off when the battery level becomes critical. This message persists until the condition has been corrected or a button is pressed.

Chapter 4

Using the Web UI

4.1 Accessing the Web UI

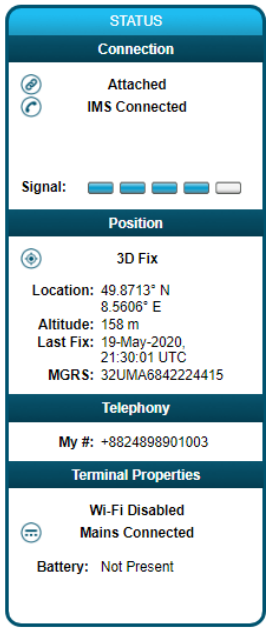
The Hughes 4200 includes an internal Web User Interface (Web UI). To access the Web UI, open your favourite web browser and type in the internal IP address of the terminal, e.g., **http://192.168.128.100**. The Web UI opens up to the **Home** or **Terminal Status** page.

Along the top of all Web UI pages are icons representing the categories of available subpages; **Home, Connections, Telephony, Settings, Usage** and **Support**.

4.2 Home page

The Home page shows the current terminal status and allows you to set up your initial data connection.

On the left side of the page is the **STATUS** bar. These items are updated automatically when the status of any item changes.



1. **Connection:** This field indicates whether you are registered with the EML Network. It also shows if you are registered with the IMS and receive signal strength.
2. **Position:** This field displays the current position status. If the terminal acquired a GPS fix, it will display the Latitude, Longitude, Fix Quality, and the last time the GPS position was updated. Time displayed is UTC time.
3. **Telephony:** This field shows your phone number.
4. **Terminal Properties:** This field indicates if Wi-Fi is on, whether security is enabled or not, it shows the battery status and whether mains power is connected.

Once connected to the network, the Terminal Status page will show that the UT is registered with the network. In the middle of the **Home** page it will show that the "Shared Connection" is established along with the TE's local IP address.

Note: If the WebUI is accessed while the terminal is in antenna pointing mode or in the process of establishing the satellite link, then this will be indicated on the home screen as well.

While in pointing mode the terminal displays signal strength only in the antenna pointing status window. The signal strength bar in the left status window becomes active after exiting antenna pointing.

4.3 Connections

The **Connections** page shows the status of the "Shared Connection" and the Dedicated connections. It also shows the Global IP address for the active data connections.

Shared Connection:

- The **Shared Connection** shows the Connection status, the global IP address and an Action button to disconnect the connection.

Local Devices Using the Shared Connection:

- This section shows the IP addresses of all devices connected to the Shared Connection.

Dedicated Connection 1 and Dedicated Connection 2:

- Select a Service (or QoS) and an APN Profile from the drop-down menu and click the "Connect" button to start a Dedicated Connection with the network. Once connected, a global IP address will be populated and the Connect button will change to "Disconnect".

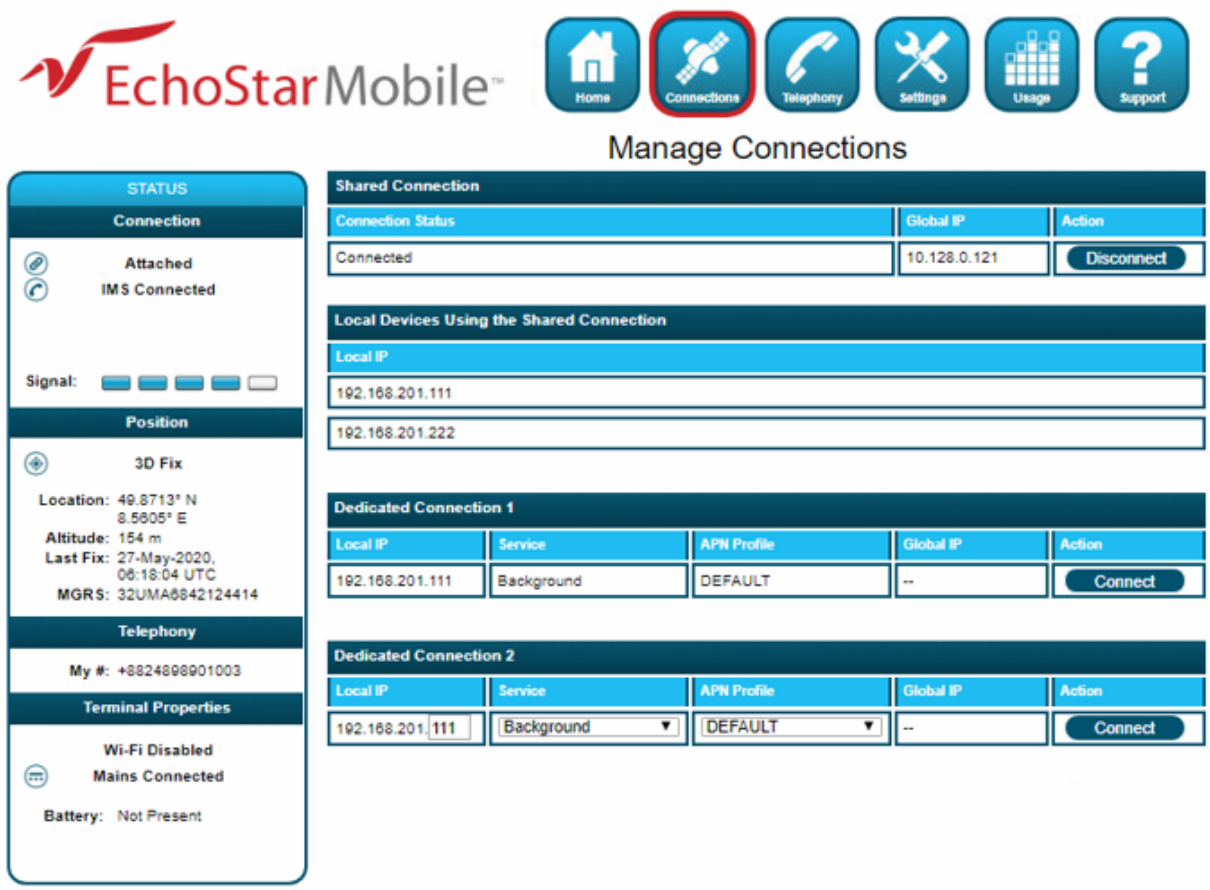


Figure 13: Connections page

4.4 Telephony

The telephony status page provides an overview of the telephony configuration and status. The Line ID shows the dialed number for an Outgoing call and the Caller ID for Incoming calls.

SIP Server Status: This button will take you to the SIP Server page.

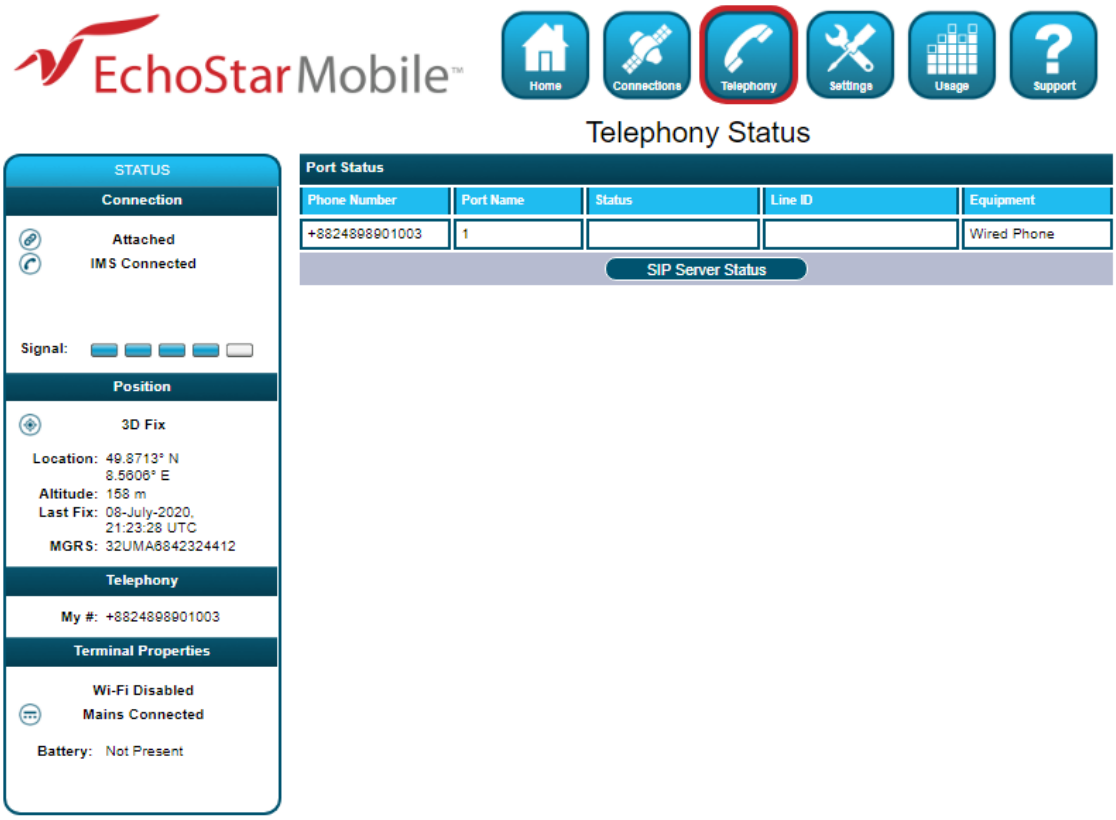


Figure 14: Telephony page

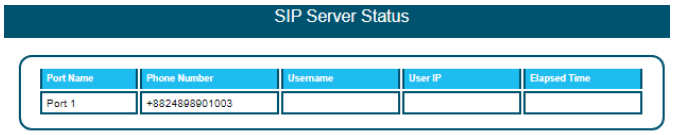


Figure 15: SIP Server Status

4.5 Settings page

The Settings page provides a set of subpages for the configuration of various parameters of the terminal:

- General Setup
- IP Address/DHCP
- Ethernet Security
- Wi-Fi
- Security
- APN Profiles
- Connection Profiles
- Outbound Filters
- Port Forwarding
- SIP Server
- Remote Management

4.5.1 General setup

This subpage allows the user to configure general parameters of the Hughes 4200. A description of each item is as follows:

Terminal Startup:

- **Auto Power On:** When enabled, the terminal will automatically power on when connected to the AC/DC adapter.
- **Antenna Pointing:** This parameter is used if the terminal is permanently mounted and you want to bypass antenna pointing on subsequent power ups. For permanent installations it is also recommended to enable "Auto Power On" to avoid having to use the power button.

Language: Allows the user to select between 5 different languages by clicking the drop-down arrow, select the language and then click the "Apply Changes" button.

Telephony Settings: Allows the user to configure the Telephony Service to use:

- Wired Phone: Always use the POTS phone.
- SIP Phone Only: Always use the SIP phone.
- SIP Phone Preferred: Use the SIP phone if available, otherwise use POTS.

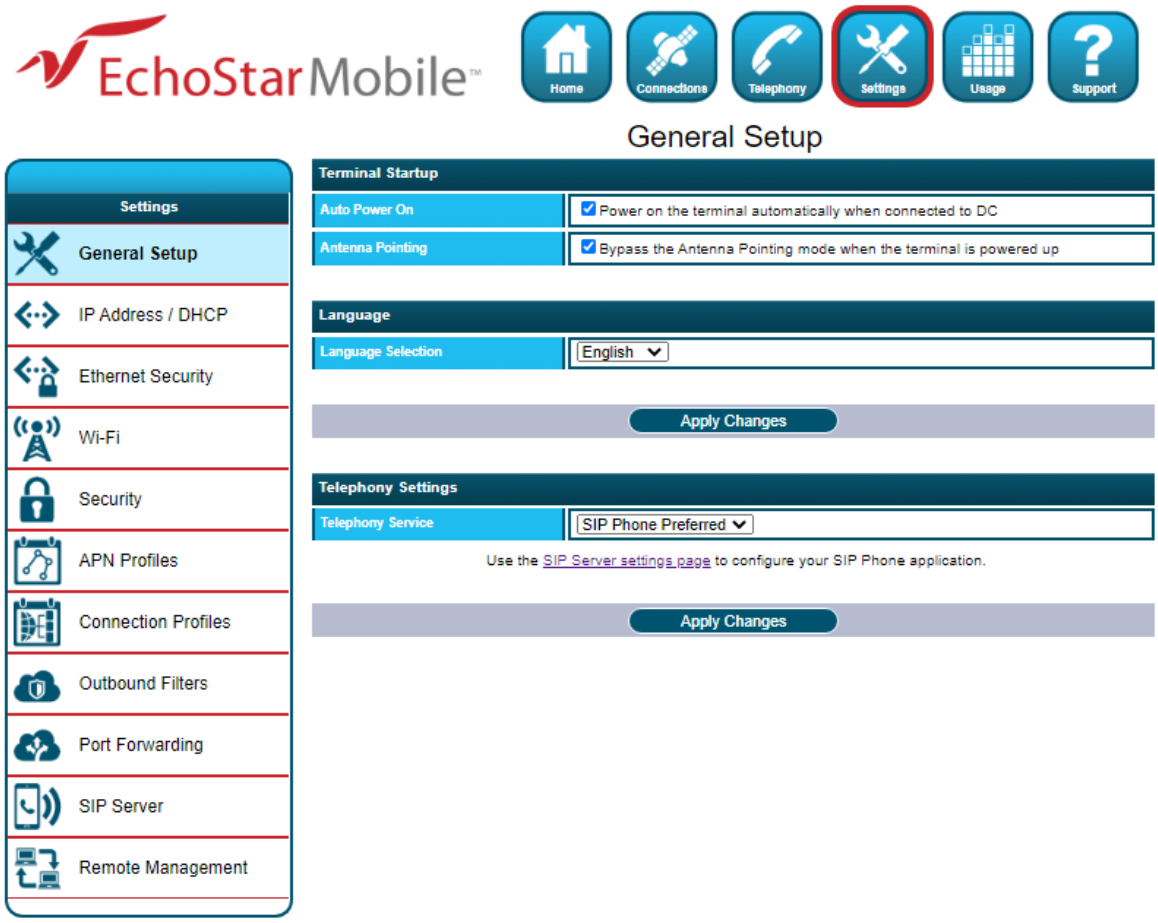


Figure 16: General Setup page

4.5.2 IP Address/DHCP Settings

Terminal Local IP Address: This section allows the user to change the local IP address of the terminal from the default **192.168.128.100** IP address. All four octets are available to change. Once the local IP address is changed on this page and applied, the first 3 octets of the DHCP address range will also change automatically.

DHCP Server:

- **DHCP Server:** Allows the DHCP server in the UT to be turned on or off by checking the Enable box.
- **DHCP Address Range:** This allows the user to set the range of DHCP addresses that are given out by the UT to connected TEs.

NOTICE

Updates to the Local IP address and DHCP server will **not** take effect until the UT is **rebooted**.

DHCP Reservations: This section allows the user to add an IP address that will permanently be assigned to a particular DHCP address based upon the detected device's MAC address.

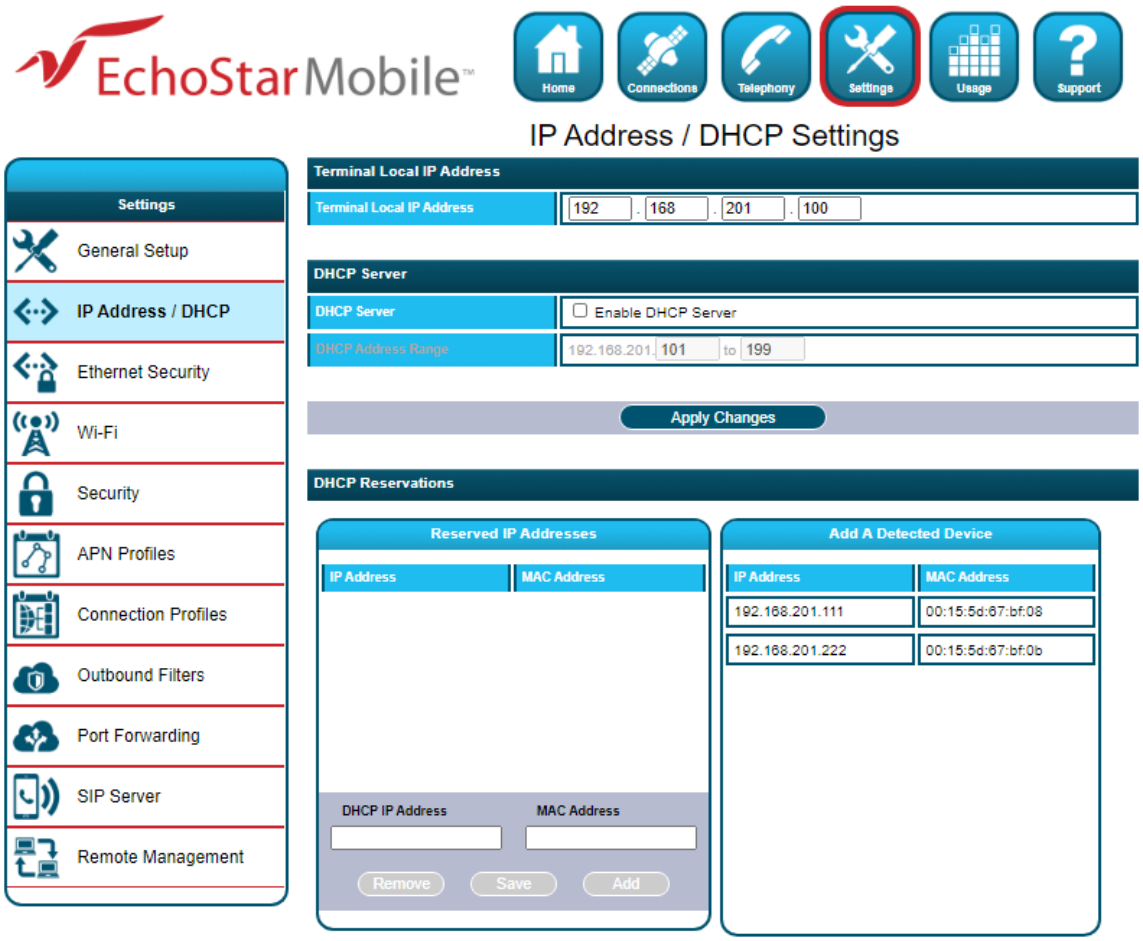


Figure 17: IP Address / DHCP page

4.5.3 *Ethernet security*

The Ethernet Security page allows the user to enable **Ethernet MAC Filtering**.

Ethernet MAC Filtering: User can select any detected device and add the MAC address to the Allowed MAC Addresses field to the left. The user can also manually add a MAC address in the box at the bottom of the page, then add it to the Allowed MAC Address field.

NOTICE

Enabling Ethernet MAC Address Filtering will also block any Wi-Fi connected devices unless they are included in the Wi-Fi MAC Address Filter list.

Figure 18: Ethernet Security page

4.5.4 *Wi-Fi*

The Wi-Fi settings page allows the user to enable, disable, and configure the Wi-Fi functionality of the terminal. Once Wi-Fi is enabled and configured, TEs can connect to the terminal wirelessly. The Wi-Fi Settings include the following:

- **Enable Wi-Fi:** Turns the Wireless LAN interface on/off. The default is off (unchecked).

- **Network Name (SSID):** The default is “EML_ and the last 7 digits of the terminal’s IMEI number)”, but you can change it to your preferred setting.
- **Network Channel:** This controls the radio channel number (1 through 13) used by the access point.
- **Wi-Fi Protection:** The user can select between WPA or WPA2 encryption of the Wi-Fi data.
- **Wi-Fi MAC Address Filtering:** This section allows the user to enable MAC Address Filtering for devices connected over Wi-Fi. The user can select any detected device and add the MAC address to the “Allowed MAC Addresses” field to the left. The user can also manually add a MAC address in the box at the bottom of the page, then add it to the "Allowed MAC Addresses” field.

Note: If performance issues occur over the Wi-Fi interface it may help changing the Wi-Fi channel.

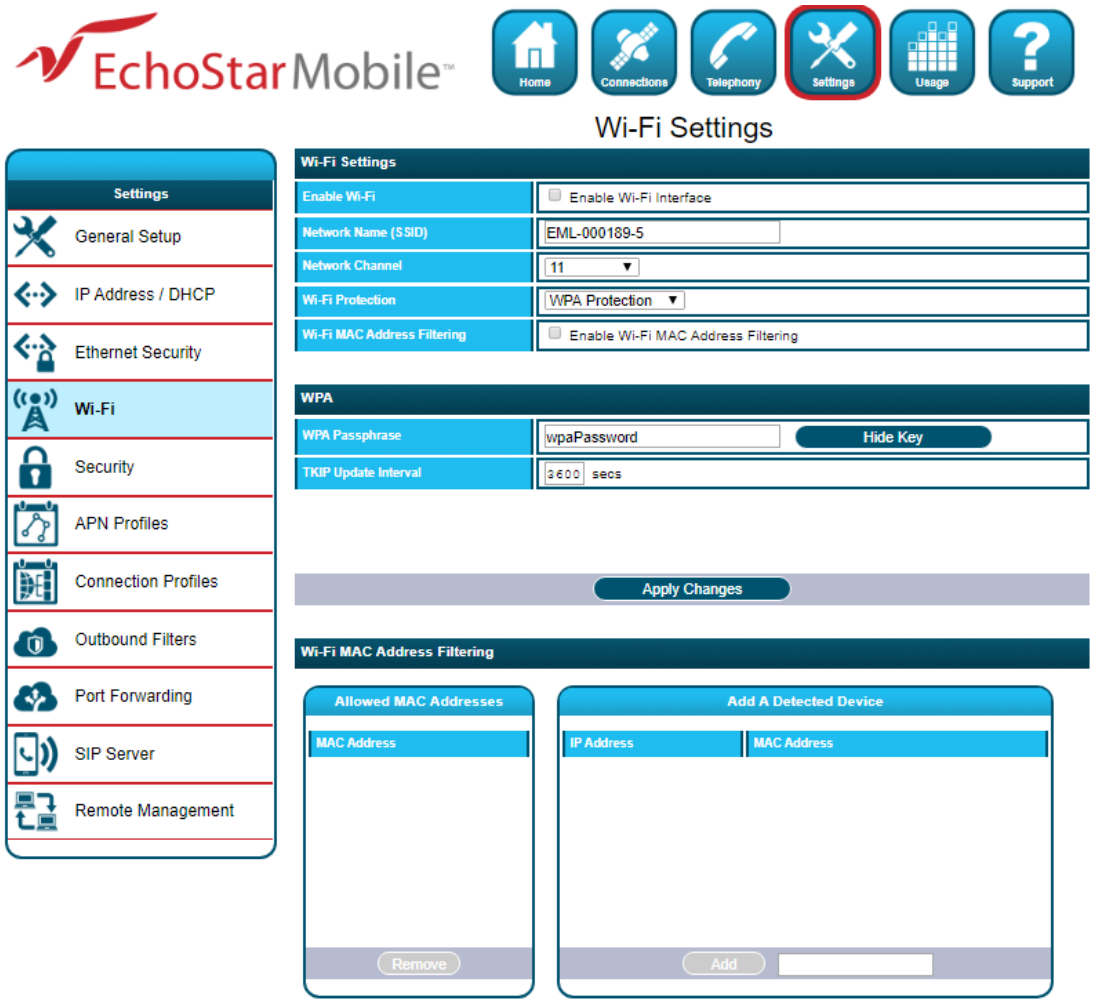


Figure 19: Wi-Fi page

4.5.5 Security

This page allows the user to setup and enable/disable various passwords for the terminal.

- **SIM PIN:** This is a four-digit field that can be enabled and configured by the user to secure the SIM against unwanted use. The PIN is stored on the SIM itself. Once enabled, the terminal will require the PIN at startup.

After 3 incorrect attempts to enter the PIN, the user will have to use the PUK number to reset the PIN of the SIM card.

- **SIM Lock PIN:** Use up to 8 digits to lock the terminal to the current SIM card. The PIN code will have to be entered any time a different SIM card is used with the terminal. There is no limit on the number of attempts to enter the PIN. However, there is no PUK equivalent code to recover the PIN. If the PIN is forgotten, the user must return the terminal to factory conditions to reset the PIN.
- **Local Access Password:** This password blocks all local access to the terminal including WebUI, the AT command interface and the telnet/SSH access. The password must be enabled on the WebUI after a 15 minutes inactivity timeout. Alternatively, the terminal can be immediately locked by pressing the "Lock Terminal" button on the Security Passwords page after the feature is enabled. The user will be given a total of 5 attempts to correctly enter the Password. After all attempts are exhausted, the terminal must be rebooted in order to make more attempts.

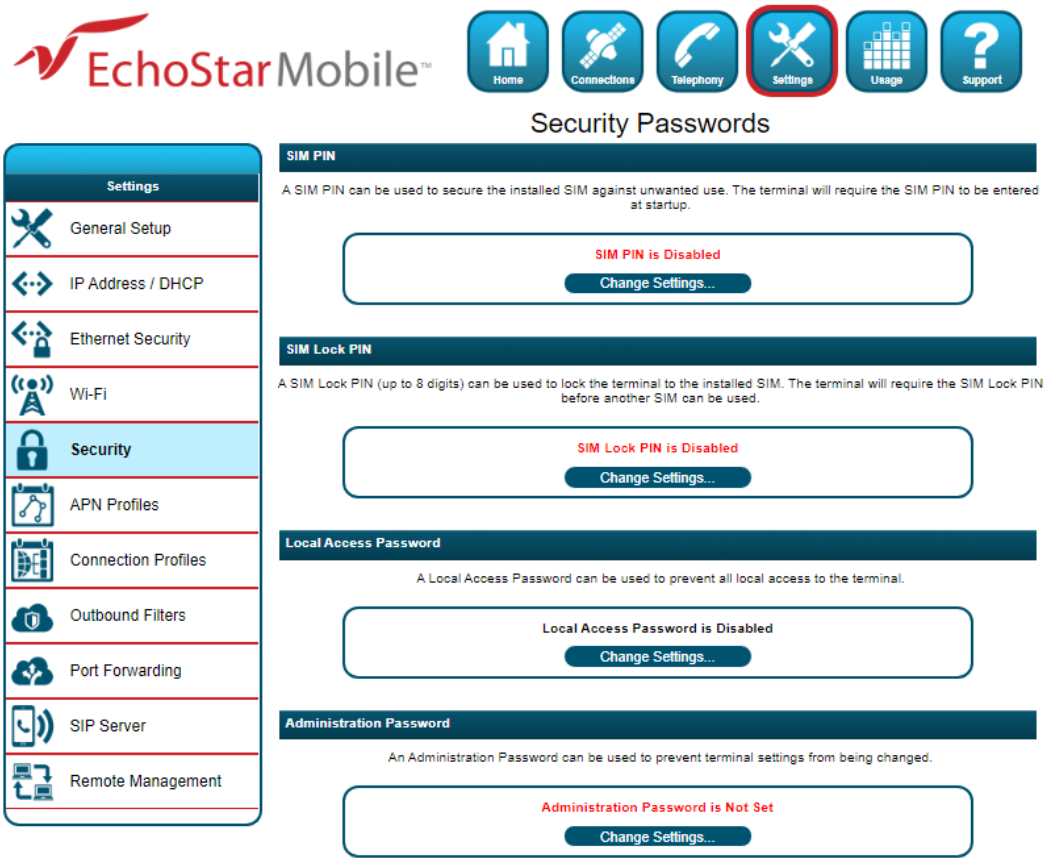


Figure 20: Security page

- **Administration Password:** This password allows to prevent terminal settings from being changed by unauthorized users once the terminal is configured properly. Once enabled, this password will have to be entered before any settings can be changed. The pop-up shown below will come up if the Password is enabled and the user attempts to change a protected configuration parameter.

4.5.6 APN profiles

The APN profiles page allows the user to configure multiple APNs for the user connections. At least one Profile needs to be configured and selected as the Default APN.

Profile Settings: This section allows the user to select one APN profile from the drop-down menu and select it as the Default APN. Click on the "Apply Changes" button to save the changes. If the USIM card has an APN programmed, then it is automatically used as the Default APN.

Defined APN Profiles: This section allows the user to configure an APN profile. In order to define a new profile, enter the Profile details. The APN Username and Password are mandatory for EML Network. Click on the "Add Profile" button and the new profile will appear on the APN Profile Table.

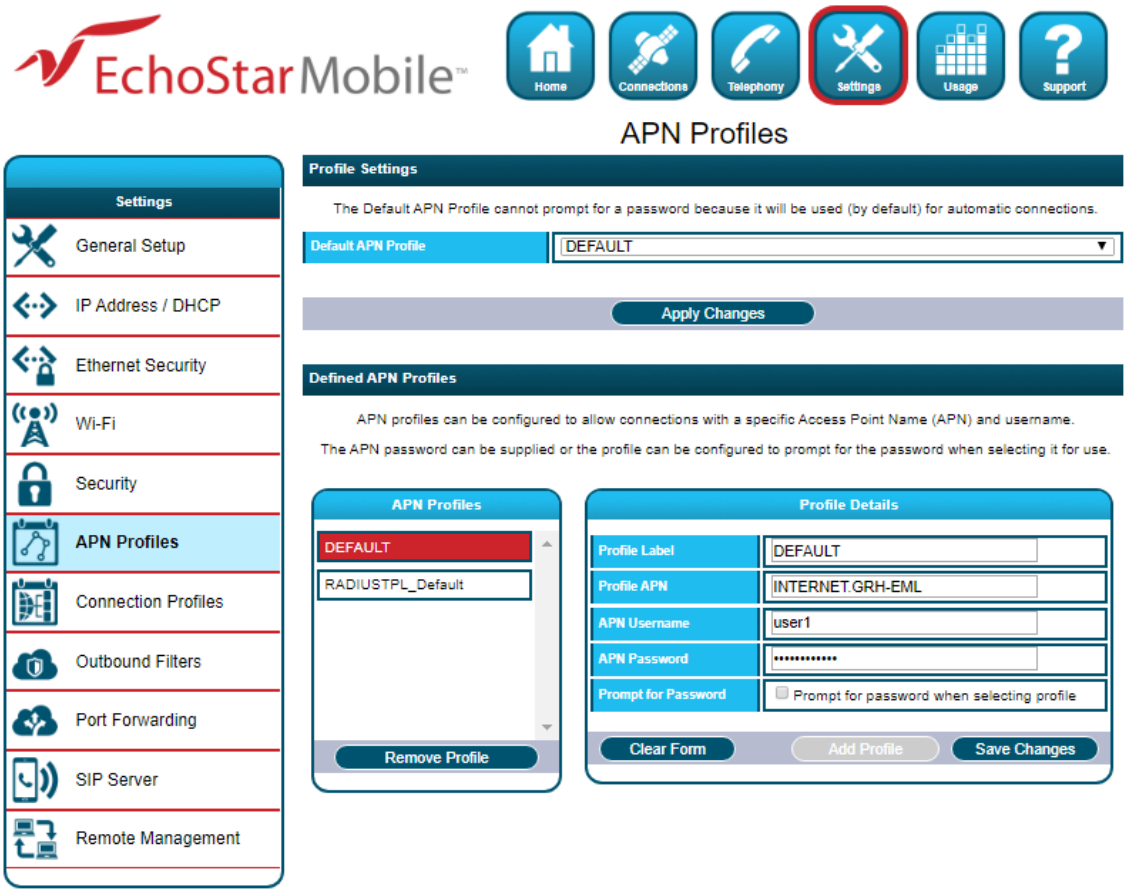


Figure 21: APN Profiles page

4.5.7 Connection profiles

The Connection profiles page allows the user to configure the user data connections (Shared and Dedicated).

Connection Watchdog: this section allows the user to enable the Connection Watchdog and to configure it to avoid unnecessary reboots.

- **Enable Connection Watchdog:** when the feature is enabled the traffic on the spacelink is monitored and the terminal will reboot if there is no traffic detected during the monitoring period.

- **Traffic Monitoring:** the user can choose the options available on the drop-down menu.
- **Traffic Monitoring Timeout:** the user can modify the monitoring period to avoid unnecessary reboots. The default Timeout value is 60 minutes.

Note: the minimal value for the Traffic Monitoring Timeout is 5minutes.

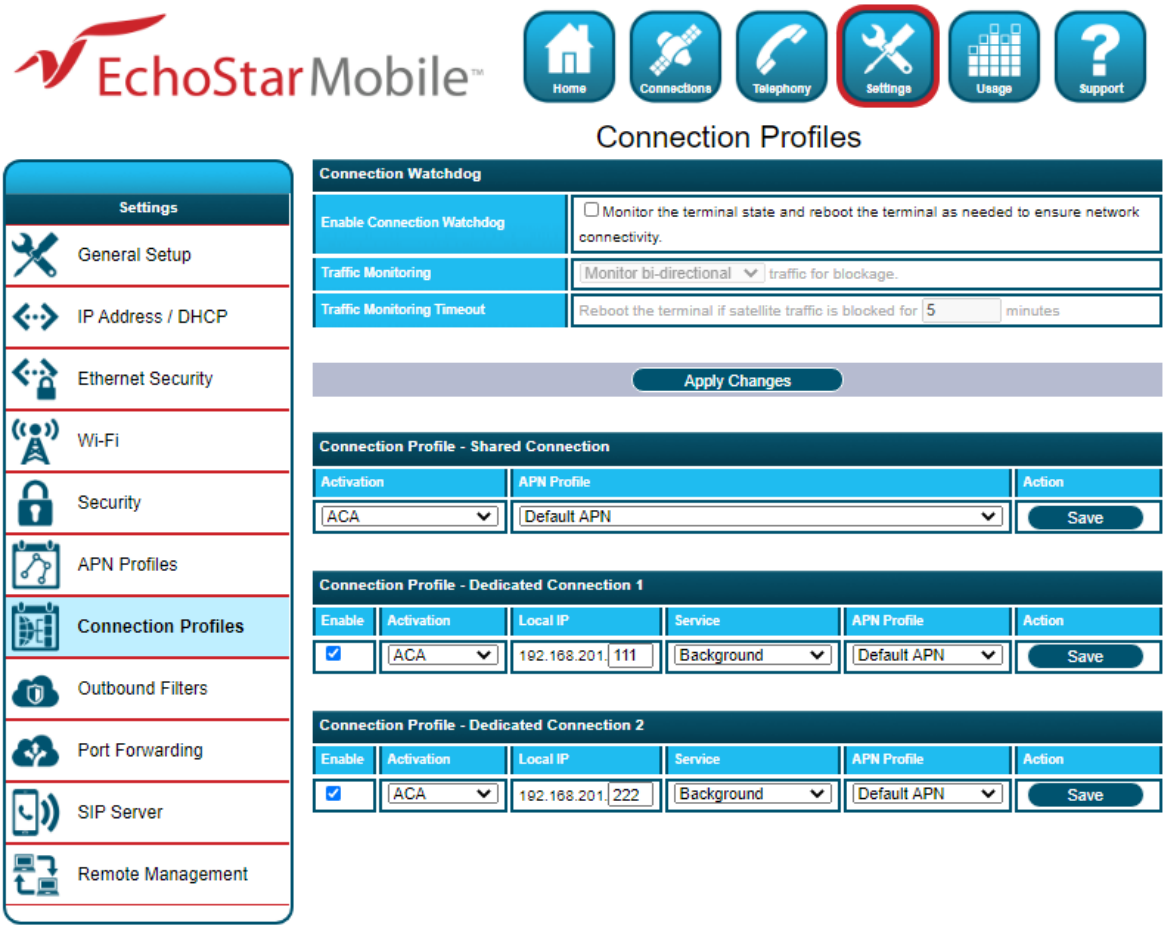


Figure 22: Connection Profiles page

Connection Profile – Shared Connection: this section allows the user to enable and configure your Shared data connection with the following parameters. Click on the "Save" button to save the changes.

- **Activation:** this defines how the connection is established. The user can choose between the options available on the drop-down menu:
  - **Manually:** the user connects and disconnects the connection on the WebUI.
  - **Always-On:** the connection is automatically established after attach to the network and will automatically reestablish when dropped unexpectedly.
  - **Automatic Context Activation (ACA):** this is similar to the "Always On", but only if an eligible device is connected. This refers to a connected device that matches the local IP address criteria to activate the automatic context.
- **APN Profiles:** this allows the user to select the APN Profile from the profiles available or previously configured by the user.

Connection Profile – Dedicated Connection: this section allows the user to enable the configure your Dedicated data connections with the following parameters. Click on the "Save" button to save the changes.

- **Enable:** this allows the user to enable the data connection.
- **Activation:** this defines how the connection is established. The user can choose between the options available on the drop-down menu:
  - **Manually:** the user connects and disconnects the connection on the WebUI.
  - **Always-On:** the connection is automatically established after attach to the network and will automatically reestablish when dropped unexpectedly.
  - **Automatic Context Activation (ACA):** this is similar to the "Always On", but only if an eligible device is connected. This refers to a connected device that matches the local IP address criteria to activate the automatic context.
- **Local IP**
- **Service:** this allows the user to select the Quality Of Service from the options available on the drop-down menu.
- **APN Profiles:** this allows the user to select the APN Profile from the profiles available or from the ones previously configured by the user.

  Note that when Dedicated connections are configured with Manual activation and with an enabled connection profile then the connection profile settings act as hardcoded defaults on the Manage Connections page. This essentially allows someone with the administration password to "lock down" settings that can be used when activating Dedicated connections.

4.5.8 Outbound filters

Outbound Filters: This section allows the user to control the access to the network. The filter rules provide the flexibility to either block or allow specific access. The rules can be based on address and port numbers of source or destination based on the protocol. The Outbound Filters page allows the user to enable or disable this feature by checking the box and clicking on "Apply Changes" button.

Outbound Filter Rules: The user can configure the rule details and name the rule. You can configure up to five rules. The following rule parameters are configurable:

- Rule precedence
- Rule Action
- Rule Enabled

At least one of the following optional parameters must be provided:

- Source Address
- Destination Address
- Destination port low
- Destination port high
- Rule Protocol
  - UDP
  - TCP

Figure 23: Outbound Filters page

4.5.9 Port forwarding

The Port Forwarding page allows the user to enable and setup a DMZ IP address and specific Port Forwarding rules. If both DMZ and Port Forwarding rules are enabled, then the Port Forwarding rules take precedence and all other traffic is forwarded to the DMZ IP address.

DMZ Settings: This section allows the user to enable and configure the DMZ IP address. When enabled, all incoming traffic is forwarded to that address.

Port Forwarding: This section allows the user to configure the Rule details for five separate rules.

The Port Forwarding parameters to be configured are:

- Rule name
- Local Address
- Incoming Port
- Incoming Protocol
  - TCP
  - UDP
  - TCP and UDP
- Rule Enabled

Port Triggering: This allows for outgoing traffic to automatically configure port forwarding to the originating device. The port forwarding rule is active for 120 seconds after the trigger event occurred.

When the TE custom application opens “Trigger Port” X, then

- NAT sets up a translation rule for port X
- NAT adds translation rules for network-initiated connections to “Incoming Ports” X1, X2, and X3 for a period of 120 seconds

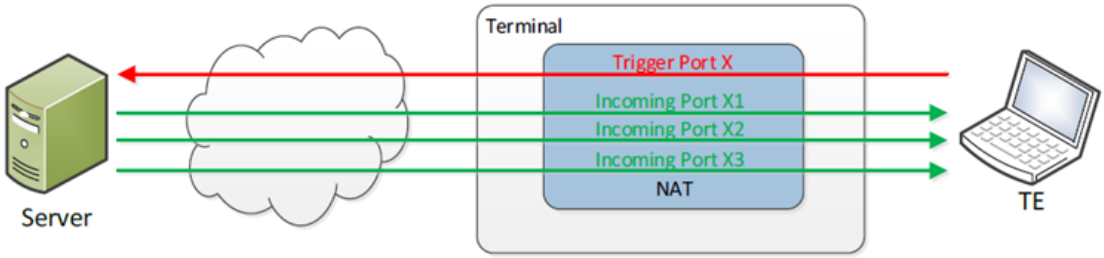


Figure 24: Port Forwarding concept

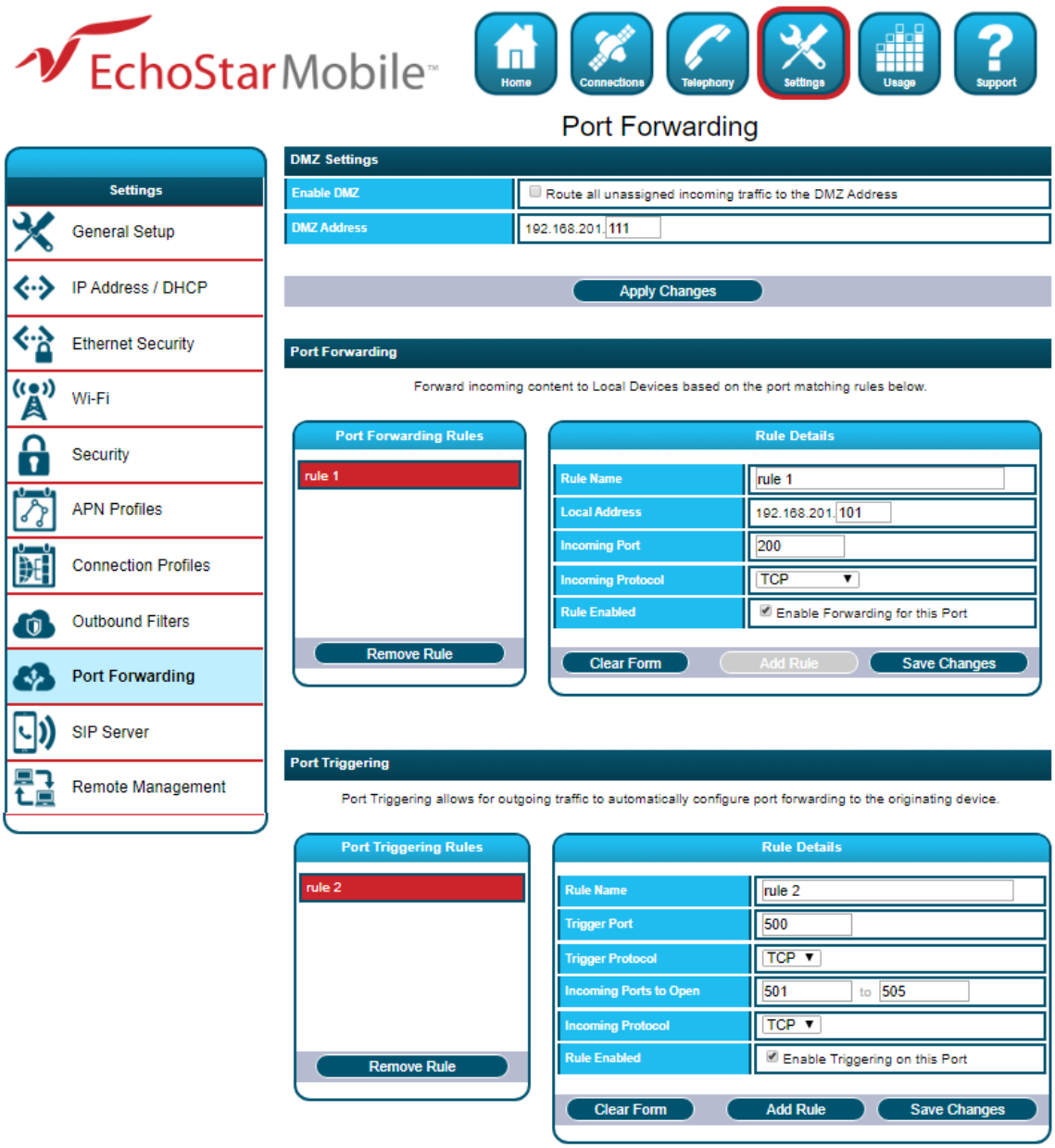


Figure 25: Port Forwarding page

4.5.10 SIP server

SIP server page shows the SIP server account information and allows the user to setup and configure the SIP server settings.

- **Account Information:** This field shows the Port Name, Phone Number, Username and Password (if both are enabled).
- **SIP Server Settings:** Shows the SIP Server Domain IP address, SIP Server Port and the Supported Codecs.
  Use this information to configure the SIP phone application.

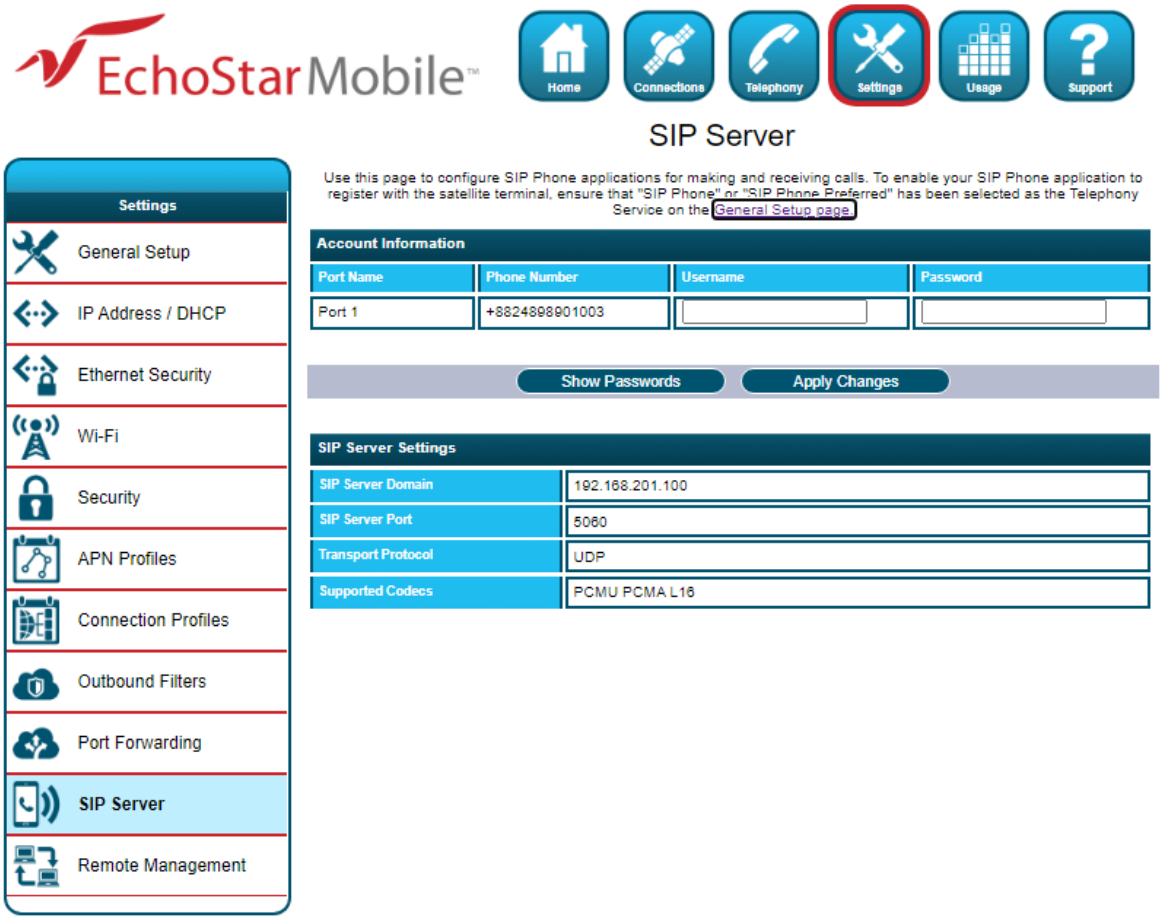


Figure 26: SIP Server page

4.5.11 Remote Management

This page allows the user to manage the Remote Management feature applying the changes in the sections here below:

- **Remote Management:** This function allows the terminal to be managed remotely over the satellite connection.
  - **Add Management Address:** This section allows the user to configure a list of IP Addresses that can send remote commands. The user needs to edit the IP Address and then click the Add Address button. The IP address will appear in the Management Address table on the left.
  - **Management Addresses:** This table shows the list of IP addresses allowed to send remote commands. The user can remove an IP address from the list selecting it from the list and then clicking the Remove Address button.

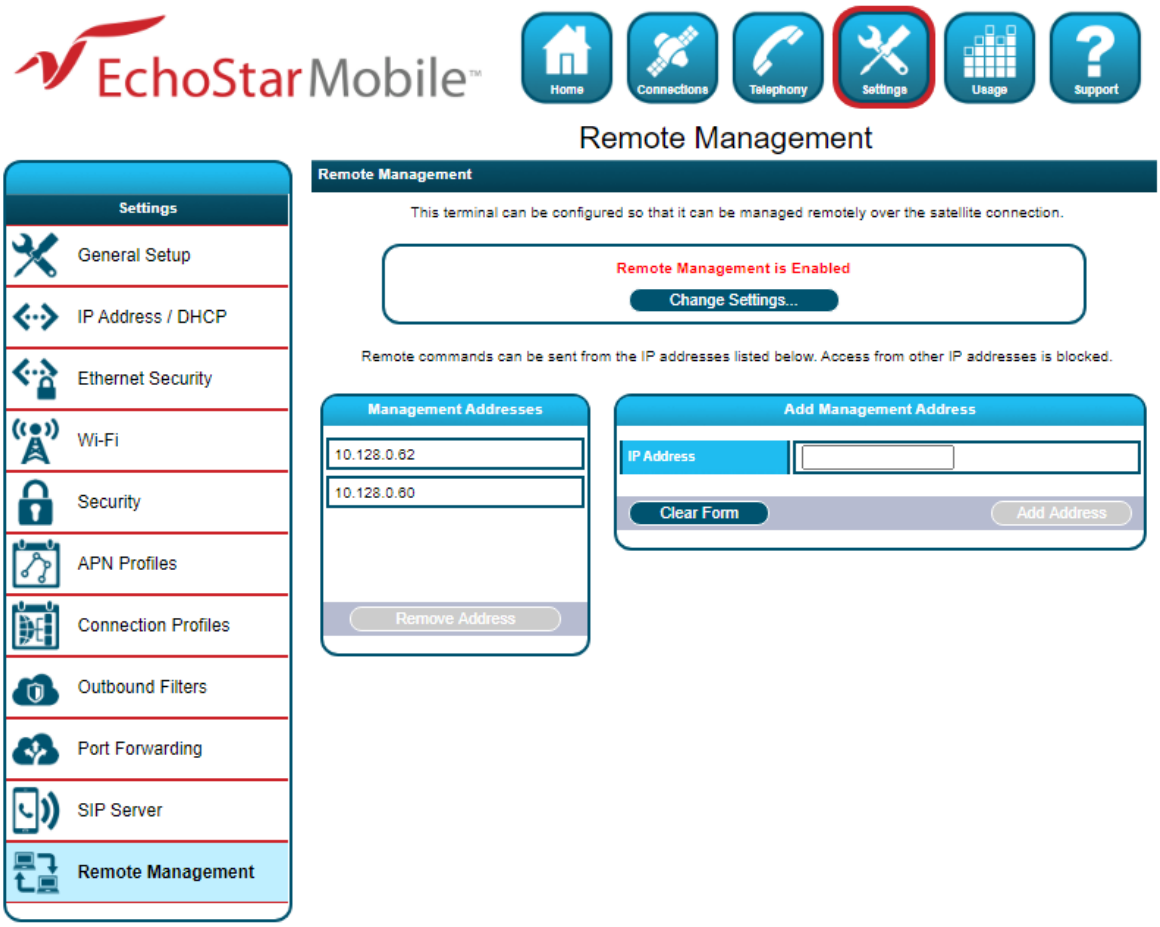


Figure 27: Remote Management page

Click the Change Settings button to modify the **Remote Management Settings.** The user will need to enter the Current Remote Password in order to change any parameters, as shown in Figure 28.

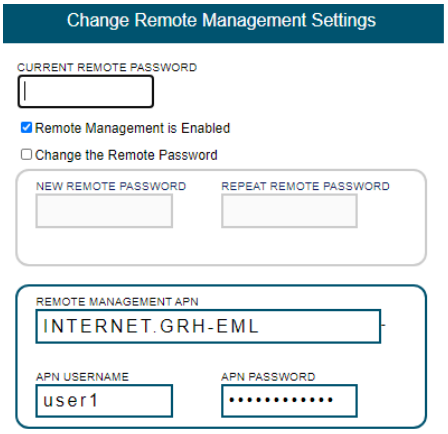


Figure 28: Remote Management settings

4.6 Usage statistics

This page shows the statistics of data transmitted and received on connections using background or interactive QoS and also shows the streaming data in both time and megabytes. The Trip statistics can be reset, but the Lifetime statistics cannot be reset. They are similar to the odometer of a car.

Note: The usage statistics are only an estimate and do not reflect actual billing system details

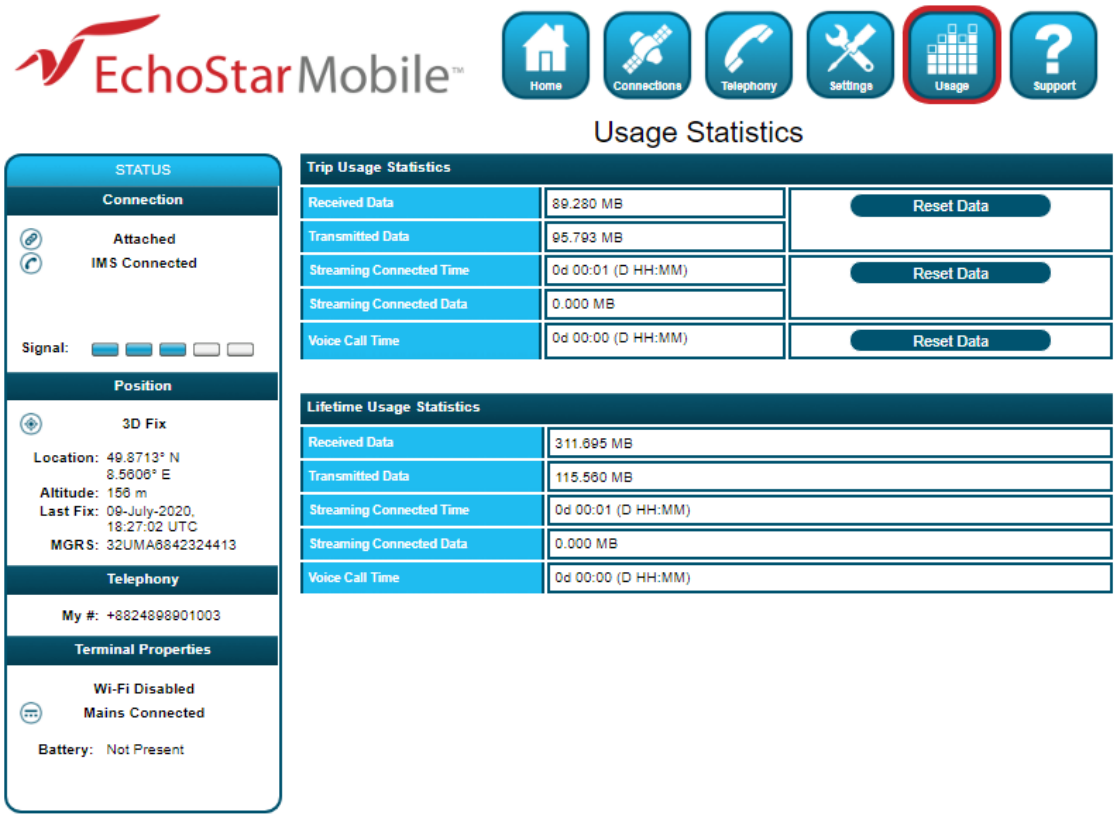


Figure 29: Usage page

4.7 Support page

This Web page allows the user to obtain technical and support information about the terminal. It also facilitates:

- **Reboot Terminal**
- **Reset Terminal to Factory Defaults**
- **Enable Full Band Search Mode**
- **Update of the terminal software:** This feature provides a convenient method to upgrade the Terminal Software. Before starting the process please make sure to obtain the latest Terminal Software Package, which is a file with the name “EML_5.X.X.X.hif”, where the X’s correspond to the Software release number. The EML Terminal Software Package contains all necessary images for the Hughes 4200 product. The terminal automatically detects the Software images which apply to the product after loading the Software Package into the terminal.

Note: It is not recommended to downgrade the terminal software to an older release. Doing so will automatically reset all configuration settings to factory default and delete all user data stored on the terminal.

Figure 30: Support page

To upgrade the Terminal Software follow these steps:

1. Store the Terminal Software Package on the local drive of a computer attached to the terminal.
2. Select the “Browse” button.
3. Navigate to the storage location of the Software Package, select the file and click “Open.”
4. Click the “Start Update” button:

Note: The file selection can be cleared by clicking the “Clear” button.

The terminal will copy the Software Package from the computer to the terminal and prepare the terminal for the SW upgrade.

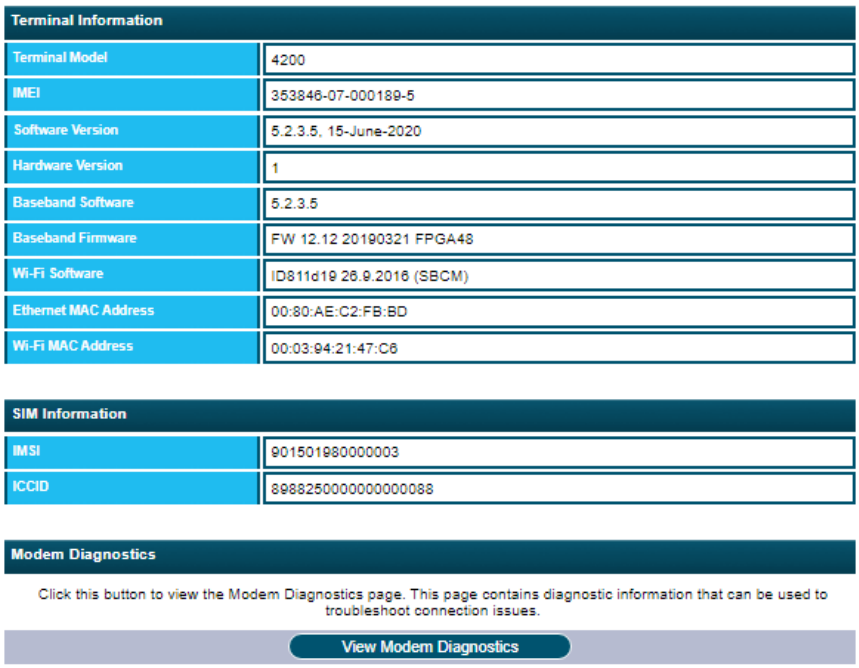
After the Software Package is uploaded and verified the Web UI will present the components which are ready to be installed.

Click the “Install” button to start the installation process. This will deactivate all active connections and calls and place the terminal into service mode. After the software installation is complete the terminal will automatically reboot.

Progress of the installation process is indicated to the user with a series of updates on the Web UI.

After the reboot the software version can be verified on the **Support page**.

- **Terminal information:** This section provides detailed information about the terminal hardware and the installed software. Provide this information when requested by support technicians
- **SIM information:** This section provides detailed information about the SIM card installed in the terminal. Provide this information when requested by support technicians



Terminal Information	
Terminal Model	4200
IMEI	353846-07-000189-5
Software Version	5.2.3.5, 15-June-2020
Hardware Version	1
Baseband Software	5.2.3.5
Baseband Firmware	FW 12.12 20190321 FPGA48
Wi-Fi Software	ID811d19 26.9.2016 (SBCM)
Ethernet MAC Address	00:80:AE:C2:FB:BD
Wi-Fi MAC Address	00:03:94:21:47:C6

SIM Information	
IMSI	901501980000003
ICCID	8988250000000000088

Modem Diagnostics

Click this button to view the Modem Diagnostics page. This page contains diagnostic information that can be used to troubleshoot connection issues.

View Modem Diagnostics

Figure 31: Terminal Information section

- **Modem Diagnostics:** This section provides access to information that may be useful to aid in troubleshooting. Follow instructions of technical support personnel to obtain diagnostics information if needed.

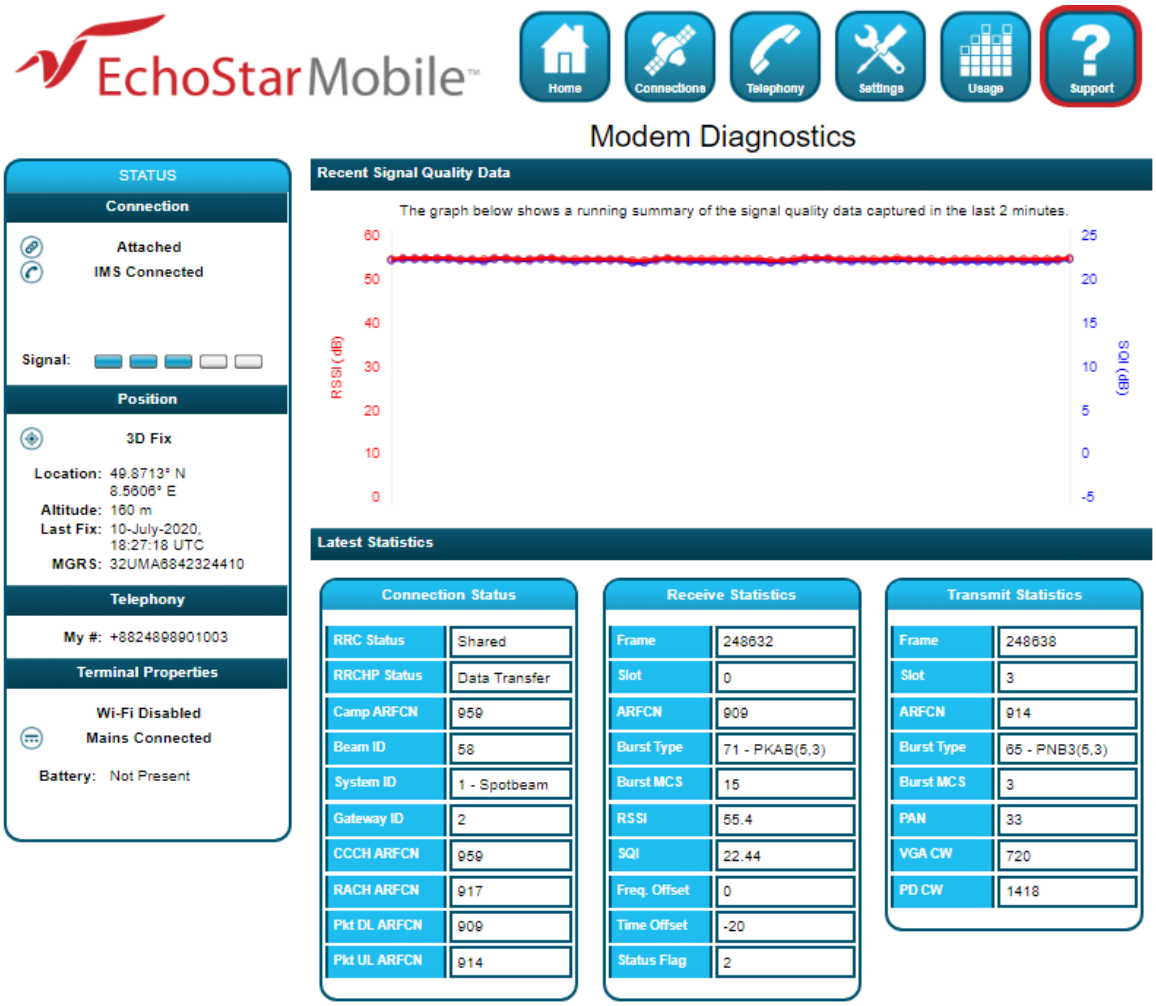


Figure 32: Modem Diagnostic page

Chapter 5
Troubleshooting

Table 6: Troubleshooting

Problem	Possible cause	Possible solution
Terminal will not turn on	Battery not connected properly Battery not charged	Check battery is correctly installed. Connect AC/DC converter to charge the battery.
Cannot get USIM card to lock into position	USIM is not correctly oriented for insertion	Ensure the USIM is oriented as shown in the "Before Getting Started" Section. Ensure the USIM is pressed firmly into the SIM slot.
The Web UI will not connect to the terminal	No interface connection between the terminal and computer Your computer is configured with a static IP address in the wrong subnet.	Ensure there is a Wi-Fi or Ethernet connection between the terminal and computer. Check the IP configuration settings on your computer. Enable DHCP or use a static IP address in the same subnet as the terminal's local IP address. The default terminal IP address is: **192.168.128.100**.
Terminal is connected to the network but cannot obtain the requested Quality of Service	Network temporarily not available.	Retry again. If problem persists, contact your service provider.
Terminal does not obtain a GPS fix	Terminal's location limits visibility of 3 or more GPS satellites.	Move the terminal to a location where there are few obstructions such as trees or tall buildings, so that as much as possible of the sky is visible. Point the antenna towards the most open area of sky (normally straight up).
None of the above solutions resolve the problem	Terminal may have a hardware or software fault and needs to be re-booted.	Remove power. Wait 30 seconds. Reconnect the DC power and turn on the terminal.

Chapter 6

Technical specifications

Table 7: Technical specifications

Item	Specifications
Weight	2 kg
Dimensions	233 mm x 293 mm x 51 mm
Humidity	95% RH at 40 °C
Power, Max	57 W (when transmitting)
Water/Dust	IP-54
Operating Temperature	-5 °C to +40 °C with battery -25 °C to +55 °C excluding battery
Storage Temperature	-40 °C to +60 °C with battery -40 °C to +80 °C excluding battery
Battery Charging Temp	0 °C to 40° C
External Power Supply	Hughes AC/DC Adapter
Wind Loading	40 km/h with stand secured
Other Features	Rechargeable lithium ion battery USIM/ISIM slot behind battery Mounting point on terminal Compass to assist pointing

Note: The Hughes 4200 satellite terminal operates on DC power which can be supplied by an AC or DC power source. To comply with safety requirements, the terminal must be powered with an AC/DC adapter or DC power adapter supplied or approved by Hughes.

Chapter 7

Battery safety

7.1 Safety information

1. Replace battery with 3500800-0007 or 3500800-0008 battery only. Use of another battery may present a risk of fire or explosion.
2. The battery used in this device may present a risk of fire or chemical burn if mistreated. Risk of Fire and Burns. Do Not Open, Crush, Heat (above 50 ˚C) or Incinerate. Follow the instructions in this user manual.
3. Do not dismantle, open or shred the battery.
4. Do not short circuit the battery. Do not store batteries haphazardly in a box or drawer where they may short circuit each other or be short circuited by conductive materials.
5. Do not remove a battery from its original packaging until required for use.
6. Do not expose batteries to heat or fire. Avoid storage in direct sunlight.
7. Do not subject the batteries to mechanical shock.
8. In the event of a cell leaking, do not allow the liquid to come into contact with the skin or eyes. If contact has been made, wash the affected area with copious amounts of water and seek medical advice.
9. Store the batteries in a dry place at a temperature between 0 ˚C and +40 ˚C.
10. Secondary (rechargeable) batteries give their best performance when they are operated at room temperature (20 ˚C +/- 5 ˚C).

7.2 Charging

1. Only charge batteries with a Hughes 4200.
2. The Hughes 4200 charges with a constant-voltage, constant current battery charger circuit with the following parameters:
   a. Nominal charge voltages: 8.40 VDC
      (Maximum charge voltage: 8.50 VDC)
   b. Nominal charge current: 3200 mA
      (Maximum charge current: 3250 mA)
   c. Charge temperature range: 0 ˚C to +40 ˚C

7.3 Disposal

1. Dispose of used battery promptly. Keep away from children. Do not disassemble and do not dispose of in fire.
2. When disposing of batteries, keep cells or batteries of different electrochemical systems separate from each other.
3. Recycle or dispose of this battery in accordance with local regulations.

7.4 Safety information

1. Replace battery with 3500800-0007 or 3500800-0008 battery only. Use of another battery may present a risk of fire or explosion.

2. The battery used in this device may present a risk of fire or chemical burn if mistreated. Risk of Fire and Burns. Do Not Open, Crush, Heat (above 50 ˚C) or Incinerate. Follow the instructions in this user manual.
3. Do not dismantle, open or shred the battery.
4. Do not short circuit the battery. Do not store batteries haphazardly in a box or drawer where they may short circuit each other or be short circuited by conductive materials.
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6. Do not expose batteries to heat or fire. Avoid storage in direct sunlight.
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8. In the event of a cell leaking, do not allow the liquid to come into contact with the skin or eyes. If contact has been made, wash the affected area with copious amounts of water and seek medical advice.
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7.5 Charging

1. Only charge batteries with a Hughes 4200.
2. The Hughes 4200 charges with a constant-voltage, constant current battery charger circuit with the following parameters:
   a. Nominal charge voltages: 8.40 VDC
      (Maximum charge voltage: 8.50 VDC)
   b. Nominal charge current: 3200 mA
      (Maximum charge current: 3250 mA)
   c. Charge temperature range: 0 ˚C to +40 ˚C

7.6 Disposal

1. Dispose of used battery promptly. Keep away from children. Do not disassemble and do not dispose of in fire.
2. When disposing of batteries, keep cells or batteries of different electrochemical systems separate from each other.
3. Recycle or dispose of this battery in accordance with local regulations.

Chapter 8

Regulatory Compliance Statements

8.1 ISED Compliance Statement

This device complies with CAN ICES-3 (B)/NMB-3(B) (Canada)

Le présent appareil est conforme aux CAN ICES-3 (B)/NMB-3(B) (Canada)

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

(1) This device may not cause interference; and
(2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

(1) 1) l'appareil ne doit pas produire de brouillage;
(2) 2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

In order to comply with FCC/ISED RF Exposure requirements, this device must be installed to provide at least 100 cm separation from the human body at all times.

Pour satisfaire aux exigences de la FCC/ISED en matière d'exposition aux radiofréquences, le dispositif doit être placé à une distance d'au moins 100 cm à partir de toutes les personnes au cours de son fonctionnement normal.

IC: 1232B-HUGHESPDT1

Contains/Contiens IC: 8516A-SMG2SMT

8.2 FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

This device 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.

Contains FCC ID: XM5-SMG2SMT

Acronyms

A

AI – Air Interface

E

EML – EchoStar Mobile Limited

G

GPS – Global Positioning System

H

HW – Hardware

I

ICCID – Integrated Circuit Card ID
ID – Identifier
IGMP – Internet Group Management Protocol
IMEI – International Mobile Equipment Identity
IMPI – IP Multimedia Private Identity
IMPU – IP Multimedia Public Identity
IMS – IP Multimedia Subsystem
IMSI – International Mobile Subscriber Identity
ISIM – IMS Subscriber Identity Module

L

LCD – Liquid Crystal Display

P

PDT – Packet Data Terminal
PIN – Personal Identification Number
POTS – Plain Old Telephone Service
PUK – PIN Unlock Key (Password provided by the USIM card provider to unlock a lost/forgotten PIN code)

R

RJ – Registered Jack
RX – Receive

S

SIP – Session Initiation Protocol
SIP Server – Server used for VoIP calls
SOW – Statement of Work

T

TCP – Transmission Control Protocol
TE – Terminal Equipment
TX – Transmit

U

UDP – User Datagram Protocol
UI – User Interface
UMTS – Universal Mobile Telecommunications System
URI – Uniform Resource Identifier
USIM – UMTS Subscriber Identity Module
USIM PIN – USIM Personal Identification Number (located on the USIM card)
UT – User Terminal

V

VoIP – Voice over IP

W

Web UI – Web based User Interface