



Hughes 9300 Series BGAN Terminal User Guide

P/N 1038495-0001

Revision D



Copyright © 2009-2010 Hughes Network Systems, LLC

All rights reserved. This publication and its contents are proprietary to Hughes Network Systems, LLC. No part of this publication may be reproduced in any form or by any means without the written permission of Hughes Network Systems, LLC, 11717 Exploration Lane, Germantown, Maryland 20876.

Hughes Network Systems, LLC has made every effort to ensure the correctness and completeness of the material in this document. Hughes Network Systems, LLC shall not be liable for errors contained herein. The information in this document is subject to change without notice. Hughes Network Systems, LLC makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

Trademarks

Hughes, HughesNet, Hughes Network Systems, and SPACEWAY are trademarks of Hughes Network Systems, LLC. All other trademarks are the property of their respective owners.

INMARSAT is a trademark of the International Mobile Satellite Organization. The Inmarsat LOGO and the trademark BGAN are trademarks of Inmarsat (IP) Company limited. All trademarks are licensed to Inmarsat Limited.

For your safety and protection, read this entire user manual before you attempt to use the Broadband Global Area Network (BGAN) Land Mobile Satellite Terminal. In particular, read this safety section carefully. Keep this safety information where you can refer to it if necessary.

▶▶ WARNING SYMBOLS USED IN THIS MANUAL



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



DO NOT STAND NEAR TOP AND SIDES OF THE ANTENNA

This device emits radio frequency energy. To avoid injury, do not place head or other body parts near the top and sides of the satellite antenna when system is operational. Maintain a distance of one meter or more from the top and sides of the Satellite Terminal antenna.



ELECTRICAL STORMS

Operation of the Satellite Terminal during electrical storms may result in severe personal injury or death. Ensure the Below Deck Equipment is properly grounded to the chassis.



GENERAL

Handle your Satellite Terminal with care. The indoor unit is weather resistant per IEC 60529 IP54 and the antenna is IP56; 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 USIM/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.



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.



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 25 cm between the WLAN antenna and your pacemaker;
- Maintain a distance of one meter from the top and sides of the unit's antenna;
- 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!



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.

SAFETY INFORMATION	I
Warning Symbols Used in this Manual.....	i
Warnings for Satellite Terminal	i
CONTENTS	IV
INTRODUCTION	I
About This Product	1
About This User Guide.....	2
Package Contents	2
Minimum System Requirements for Laptop/PC.....	2
GETTING STARTED	4
Introduction to Getting Started	4
Installing Your Terminal	4
Terminal LED Functionality.....	4
USING THE HUGHES 9300 SERIES TERMINALS	5
Autostart configuration.....	5
Power-up and Connection to the Internet.....	6
Connecting the Terminal to External Devices.....	6
Connecting by USB	6
Connecting by Ethernet.....	7
Connecting by ISDN.....	7
Connecting by WLAN.....	7
Connecting by RJ-11	7
Coverage Map	8
USING THE HUGHES UT WEB MMI	9
Accessing the UT Web MMI.....	9
Properties Page.....	11
Setup Page.....	12
Statistics.....	14
PDP Contexts	15
WLAN	18
Connecting by WLAN.....	18
WEP Security.....	19
ACA.....	21
ISDN.....	24
Antenna	26
Accessing the UT Mobile Web MMI	28
Mobile Web - PDP Contexts.....	29
Mobile Web – ACA Page.....	31

TROUBLESHOOTING	32
TECHNOLOGY OVERVIEW	34
GPS	34
Obtaining a GPS Fix	34
GPS and BGAN Registration	34
ISDN	35
Dialing and Numbering	35
PDP Context	35
WLAN	36
Performance	36
SSID	36
TECHNICAL SPECIFICATIONS	37
DECLARATION OF CONFORMITY	38
FCC Compliance	38
Japanese Radio Law "Technical Regulation Conformity Certification" (GITEKI)	38
EU WEEE (Waste Electrical and Electronic Equipment) Directives	39
GLOSSARY	40

▶▶ ABOUT THIS PRODUCT

The Hughes Network Systems 9300 Series Broadband Satellite Terminals are your gateway to global communication. The 9300 Series terminals allow you to simultaneously send and receive IP packet and circuit-switched data via Ethernet, USB, Integrated Services Digital Network (ISDN), and WLAN interfaces over the Inmarsat BGAN satellite network.

The unit offers you the following features and benefits:

- Fully autonomous tracking antenna that acquires and tracks the BGAN satellite signal while on the move
- Easy antenna installation (magnetic mount) on vehicle roof
- Cables for vehicular installation
- Up to 492 kbps data (transmit and receive) and 256 kbps streaming IP data rate (Class 10 only)¹. However, below 45 ° look angle to the satellite, the max streaming rate is 128 kbps
- 2 X RJ-11 ports for voice (4 kbps) and fax
- ISDN voice (3.1 kHz audio) (above 15 ° (Class 10) and above 20° (Class 11) look angle to the satellite)
- ISDN data (64 kbps) (above 15 ° (Class 10) and above 20° (Class 11) look angle to the satellite)
- WLAN access point
- Multiuser capability for sharing a single unit
- Selectable Quality-of-Service (QoS)
- Full IP compatibility for email, file transfer (FTP), browsing, VPN, etc.
- Cost-effective “always-on” access – charges only for data sent and received
- UMTS IP-based services
- WLAN, FCC, and CE certified
- Subscriber Identification Module (SIM) card security

The unit is easy to install and connects in minutes. It is built for use in vehicular environments.

In this document, the following names and abbreviations are used to identify the Satellite Terminal and your computer.

Term	Definition
ACA	Automatic Context Activation
CS	Circuit Switch
FTP	File Transfer Protocol
GPRS	General Packet Radio Service
IB	Interface Board

¹ Best efforts performance under moving conditions depending on obstruction of satellite signal. Signal outages of more than 60 seconds will cause circuit switched calls to be dropped and packet switched sessions to be interrupted. May require user intervention to reactivate connections for longer outage durations.

Term	Definition
IDU	Indoor Unit or Modem
MSN	Multiple Subscriber Number
PS	Packet Switch
QoS	Quality of Service
RDI	Restricted Digital Information (US Standard)
SIM	Subscriber Identification Module
SSID	Service Set Identifier
TE	Terminal Equipment (your computer)
Terminal	Satellite Terminal
UDI	Unrestricted Digital Information (European Standard)
UT	User Terminal/Satellite Terminal
WEP	Wireless Encryption Protocol
WLAN	Wireless Local Area Networking

▶▶ ABOUT THIS USER GUIDE

This user guide contains the most up-to-date information available on the 9300 Series terminals, on the date it was generated. It is focused on the specific information needed to operate the Hughes 9300 Series Land Mobile User Terminals.

Refer to the *Hughes 9201 User Guide* for general information on how to access the BGAN network and how to use the Inmarsat LaunchPad Software. This guide can be downloaded from the Hughes Web site at www.bgan.hughes.com

▶▶ PACKAGE CONTENTS

When you unpack any of the Land Mobile Terminal Kit packages, you will find the following:

- BGAN Land Mobile Tracking Antenna Kit
- Hughes BGAN Satellite Modem Kit (IDU)

Your service provider will supply you with a SIM and its PIN, and Satellite Terminal configuration instructions you will need to access the network. **Note:** The SIM card may also have four MSISDN numbers associated with it for various ISDN services:

- 4K voice
- 3.1 kHz audio/fax
- 64K UDI data
- 56K RDI data

▶▶ 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, Mozilla, or Safari. Java must be active and running version 1.6 or newer (available from www.java.com).
- PC support for at least one of these interfaces: Ethernet, USB, or WLAN (802.11b or b/g).
- 100 MB of free hard disk space if using LaunchPad.

▶▶ INTRODUCTION TO GETTING STARTED

This guide is the simplest and quickest way to connect to the BGAN 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 external devices to the terminal, and registering with the BGAN network. You are then ready to start using voice and broadband services.

▶▶ INSTALLING YOUR TERMINAL

Install the Hughes satellite terminal according to the Installation Guide P/N 1038494 supplied with the terminal. Refer to the *Installation Guide* for grounding instructions.

▶▶ TERMINAL LED FUNCTIONALITY

The IDU has four LEDs with the following functions:

Power: Green when on

Ready: Green when attached to the network, flashing if not attached.

Alarm: Red if hardware fault detected. Check that the antenna is connected and the SIM card is installed. Check the Web MMI for error messages.

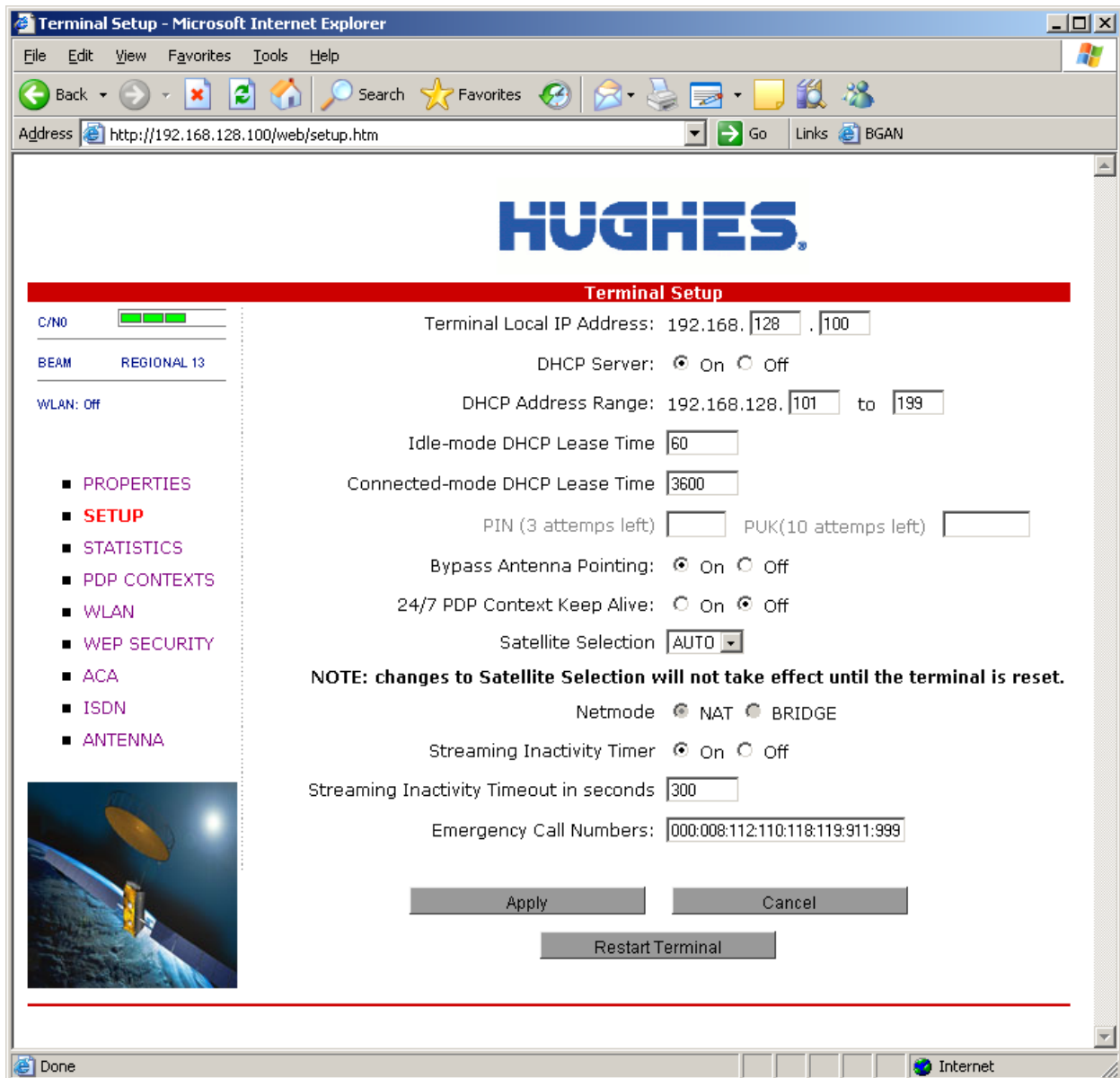
Comm: Green when circuit switched call is up.

USING THE HUGHES 9300 SERIES TERMINALS

AUTOSTART CONFIGURATION

Since the Hughes 9300 Series terminals are equipped with a tracking antenna, the default configurations are as follows:

- The Hughes 9300 Series terminals are configured to bypass antenna pointing by default and will automatically register with the network: The terminal will automatically attempt to register with the network once the tracking antenna has acquired the satellite signal and obtained a GPS fix.
- The IDU has a power button and an ignition sense line. For the unit to turn on, the on button must be pushed in and 12 V or 24 V applied to the ignition sense line.



<input checked="" type="checkbox"/> Note	These default configurations are accessible through LaunchPad or the Web MMI, and It is recommended to keep these settings for proper operation of the Hughes 9300 Series Land Mobile Terminals.
--	--

POWER-UP AND CONNECTION TO THE INTERNET

After power is applied, the IDU and tracking antenna will begin their start-up sequence. The tracking antenna will begin its search for the BGAN satellite, and the antenna motors may be heard during this time. Note that the tracking antenna must have line-of-sight to the BGAN satellite. Once the antenna has locked onto the BGAN satellite, it will continue to make minor adjustments to acquire optimum signal strength. The antenna may be heard “twitching” during this time. Eventually the antenna will remain at an optimum position while the vehicle is stationary.

Once the vehicle starts moving, the tracking antenna will automatically track the satellite signal and keep the antenna pointed toward the satellite. During short outages (driving under a bridge, etc.) the antenna will remain in the same position and pick up the satellite signal immediately. For longer outages the antenna may need to repeat the search pattern to reacquire the satellite signal.

<input checked="" type="checkbox"/> Note	Circuit switched and packet switched connections will typically recover from signal outages of less than 60 seconds. User intervention may be required to reactivate connections for outages longer than 60 seconds.
--	--

CONNECTING THE TERMINAL TO EXTERNAL DEVICES

You can connect various external devices to the IDU with one or more of the following interfaces:

- USB
- RJ-11
- Ethernet
- Integrated Services Digital Network (ISDN)
- WLAN

<input checked="" type="checkbox"/> Note	There is no need to check the active interface. All interfaces can be used simultaneously to accommodate multiple users.
--	---

<input checked="" type="checkbox"/> Note	<p>During initial setup, the terminal can only be configured using either a USB or an Ethernet connection. Once the terminal has been configured, all five interfaces (USB, RJ-11, Ethernet, WLAN, and ISDN) can be used for data transfer, depending on the service required.</p> <p>Your computer must be configured to support your chosen connection method. Refer to the documentation supplied with your computer for details.</p>
--	--

CONNECTING BY USB

To connect the IDU to the computer using the USB port, perform the following:

- Connect a USB cable to your computer’s USB port and insert the other end of the connector into the IDU’s USB port.

<input checked="" type="checkbox"/>	When plugging in the USB cable for the first time, you will see Windows installing a new driver for
-------------------------------------	---

Note	the device.
-------------	-------------

If you install LaunchPad, the USB driver for the terminal will also be installed. When you plug in the USB cable into your computer for the first time, your computer will detect that new USB hardware has been connected. You should then follow the computer's instruction to install the **Hughes USB LAN LINK** driver software (for computers using the Windows operating system, the installation is carried out using a **Found New Hardware Wizard**). Your computer will then use this driver to connect to the terminal.

If you do not install LaunchPad, USB drivers are available from: www.inmarsat.com/support or www.bgan.hughes.com

CONNECTING BY ETHERNET

To connect the IDU to the computer using Ethernet, perform the following:

- Connect an Ethernet cable to your computer's Ethernet port and insert the other end of the connector into the IDU's Ethernet port.

CONNECTING BY ISDN

- Connect an ISDN cable to your computer's or phone's ISDN port and insert the other end of the connector into the IDU's ISDN port.
- To dial, prefix the international number with 00 and terminate with #. For example, to dial a number in the USA, enter 0018005551234#
- To receive incoming calls you must configure your ISDN device with the Multiple Subscriber Number (MSN) of the service it supports. See the ISDN section for information on configuration of MSNs. To configure the MSN in your ISDN device, refer to the user guide of your ISDN device.

CONNECTING BY WLAN

- If you have not previously used the IDU's WLAN interface, it has to be enabled from the internal Web MMI or LaunchPad with your computer connected to the IDU using either the USB or Ethernet interface.
- As you are configuring the WLAN, you can enable the Wireless Encryption Protocol (WEP), MAC address filtering and no broadcast SSID features for added security.
- Once the WLAN is turned ON and configured, any device with a WLAN interface can detect the IDU's WLAN SSID and connect to it automatically.

Note: If WEP is enabled, you must provide other WLAN users with the proper WEP key in order for them to connect to the IDU.

CONNECTING BY RJ-11

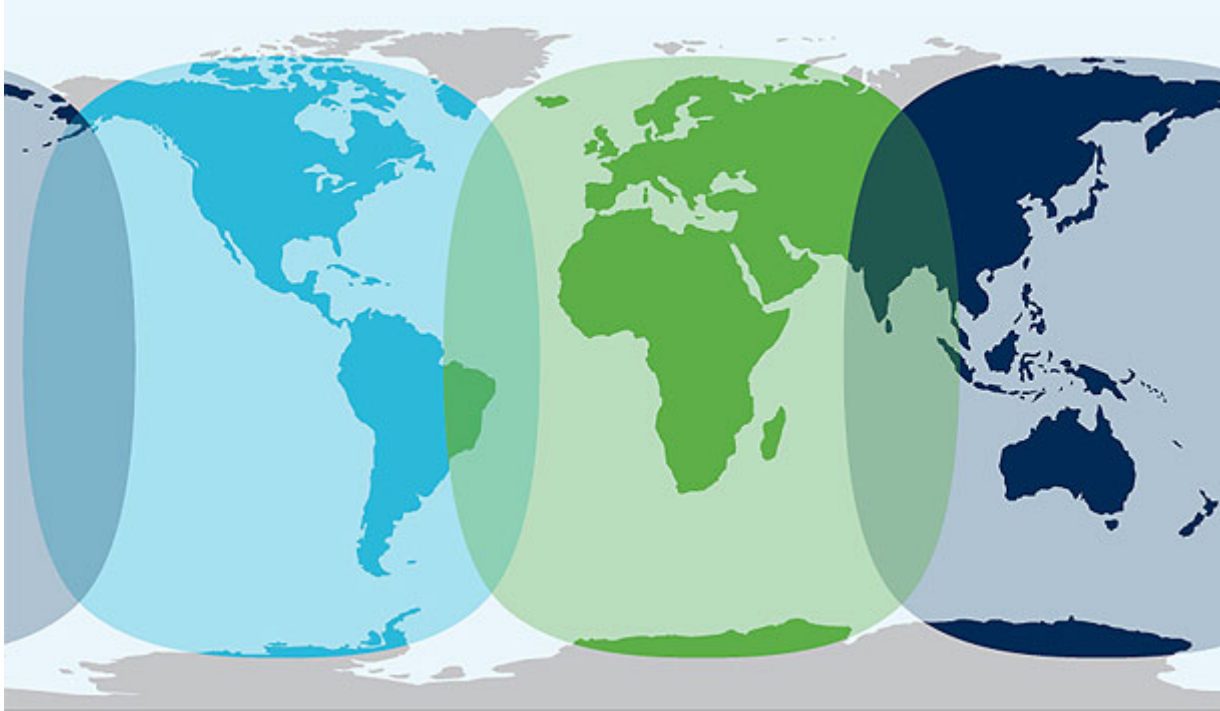
To connect an analog phone or fax machine to the RJ-11 ports, perform the following:

- The fax port is configured for 3.1K service for fax
- The tel port is configured for speech service for voice calls

To dial, prefix the international number with 00 and terminate with #. For example, to dial a number in the USA, enter 0018005551234#

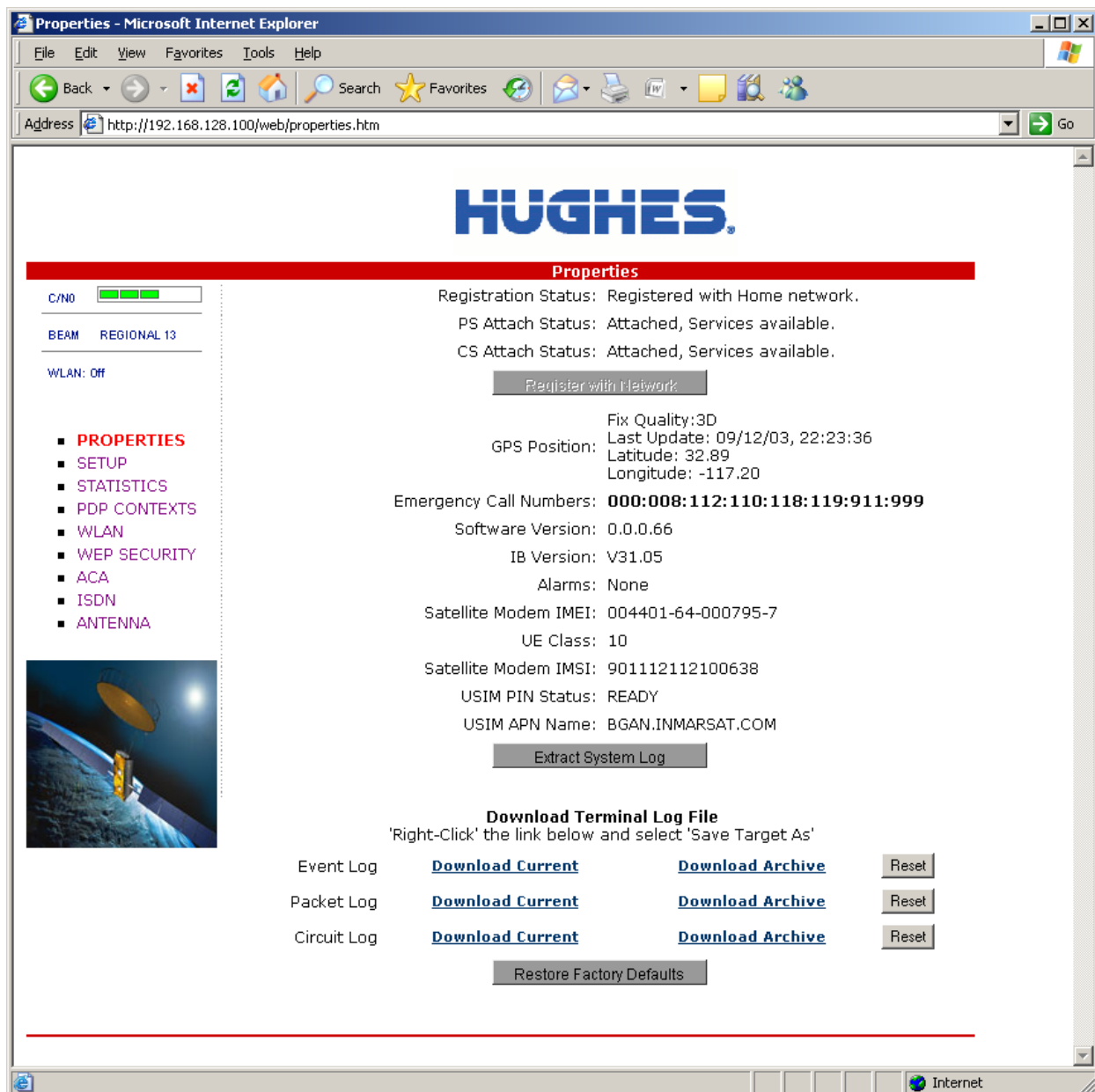
▶▶ COVERAGE MAP

The Inmarsat BGAN service is operated with three satellites as shown below. The Hughes 9300 Series terminals will perform best in areas where the elevation angle is 20 ° or higher. Lower elevation angles increase the probability of signal outages caused by trees, buildings, and hilly terrain and may severely impact the usability on the move.



▶▶ ACCESSING THE UT WEB MMI

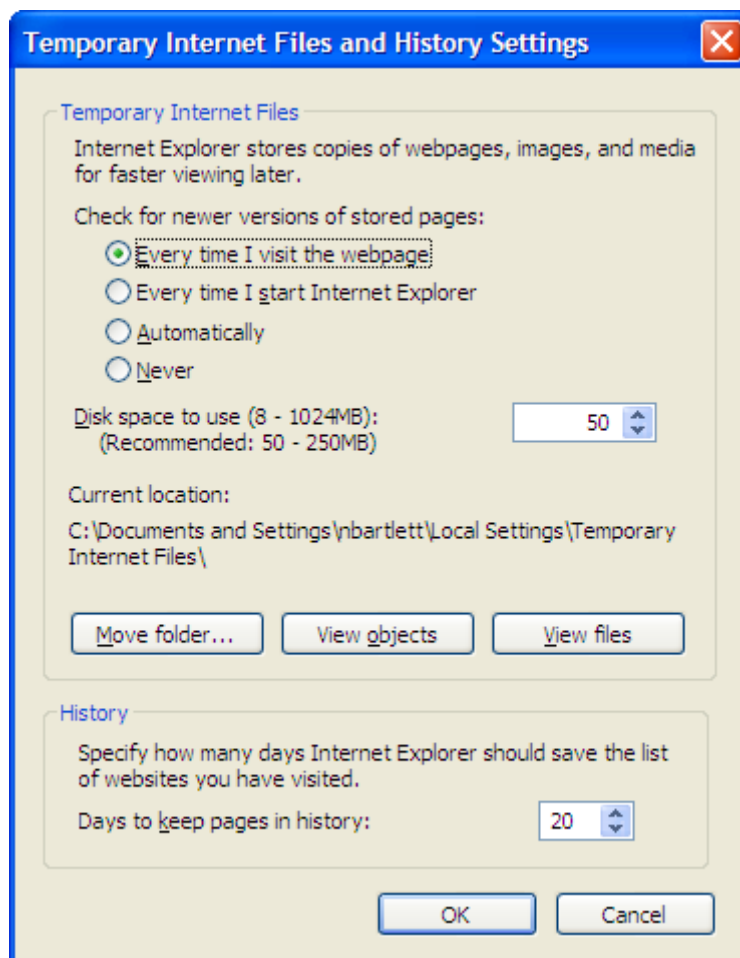
The Hughes UT includes its own internal Web MMI. To access the UT Web MMI, open your favorite Web browser and type in the internal IP address of the UT, e.g., <http://192.168.128.100>. The Web MMI opens up to the “Properties” page as shown below:



To ensure the Web pages update correctly with dynamic changes, set your browser to check for newer versions of stored pages on every visit to the page.

In Internet Explorer, this is configured in **Tools/Internet Options/Browsing History/Settings**.

In the Temporary Internet Files section, select the “Every time I visit the webpage” option.



PROPERTIES PAGE

The Properties page shows the current status of the UT. A description of each item on the page follows:

In the top left-hand corner of the screen there are satellite signal strength and beam ID indications. These items are updated automatically when the status of that item changes.

1. **Registration Status:** This field indicates whether you are registered with the network. Click the “Register with Network” button. **Note:** For the 9300 Series terminals, bypass antenna pointing is turned on as default, so it will automatically register with the network each time.
2. **PS Attach Status:** This field indicates whether you are Packet Switch (PS) attached with the network. You will still need to set up a PDP context in order to send PS data.
3. **CS Attach Status:** This indicates whether you are Circuit Switch (CS) attached with the network. Once you are CS attached and registered with the network, you are able to make CS calls.
4. **GPS Position:** This field displays the current GPS position status. If you have received a GPS fix and the network GPS policy has been received and allows the GPS position to be shown to the user, it will display the latitude, longitude, fix quality, and the last time the GPS position was updated. Time displayed is UTC time.
5. **Emergency Call Numbers:** This field displays the emergency call numbers that can be used with the UT.
6. **Software Version and IB Version:** These display the current version of software that is running on the UT. Core module and Interface Board (IB) SW versions are both shown.
7. **Alarms:** Any alarms, such as SIM not installed or no antenna connected are displayed.
8. **Satellite Modem IMEI:** This displays the IMEI number of the UT.
9. **UE Class:** This indicates the UT class, such as Class 10 (high gain) or Class 11 (mid- gain) land mobile terminal.
10. **Satellite Modem IMSI:** This displays the IMSI number of the USIM card in the UT. If the IMSI is not displayed, it indicates that there is a problem reading the SIM card, for example, because there is no SIM, it is installed incorrectly or PIN must be entered.
11. **USIM PIN Status:** This field indicates whether the USIM is ready or the PIN has to be entered. If the PIN needs to be entered, go to the Setup page.
12. **USIM APN Name:** This displays the default APN that has been provisioned on the USIM card. Note that some USIM cards may have multiple APNs provisioned on them.
13. **Extract System Log:** Clicking this button allows the User to automatically extract a UT system log and save the file to a location on the TE for debugging purposes. This file can be emailed to Hughes directly for fault analysis if the User experiences any problems.
14. **Download Terminal Log File:** This allows you to extract and save different log files.
15. **Restore Factory Defaults:** Clicking this button will restore the UT back to factory defaults and delete any of the user parameters that have been set-up in the UT. Hughes highly recommends that the user exhaust all possible debug procedures before using this feature.

▶▶ SETUP PAGE

The Setup page allows the User to configure various parameters of the UT. A description of each item on the page follows:

1. **Terminal Local IP Address:** This allows the user to change the local IP address of the terminal from the default 192.168.128.100 IP address. Only the last two octets are available to change. Once the local IP address is changed on this page and applied, the IP address ranges for the DHCP server; the PDP Context page and ACA page will also be changed automatically. **Note:** Updates to this field will not take effect until the UT is rebooted.
2. **DHCP Server:** allows the DHCP server in the UT to be turned on or off
3. **DHCP Address Range:** This allows the user to set the range of DHCP addresses that are given out by the UT to any connected TE.
4. **Idle-mode DHCP Lease Time:** Idle-mode DHCP lease time refers to the DHCP lease time when the UT is not connected to the network. This parameter allows the user to change the default time (60 seconds) that the DHCP lease to the TE is good for. This parameter was introduced because of a problem with some models of Cisco routers that will not accept a short DHCP lease time. **Note:** The longer the Idle-mode

DHCP lease time, the longer it will take the network/UT to update the TE with the correct DNS servers for Web browsing after establishing a PDP context.

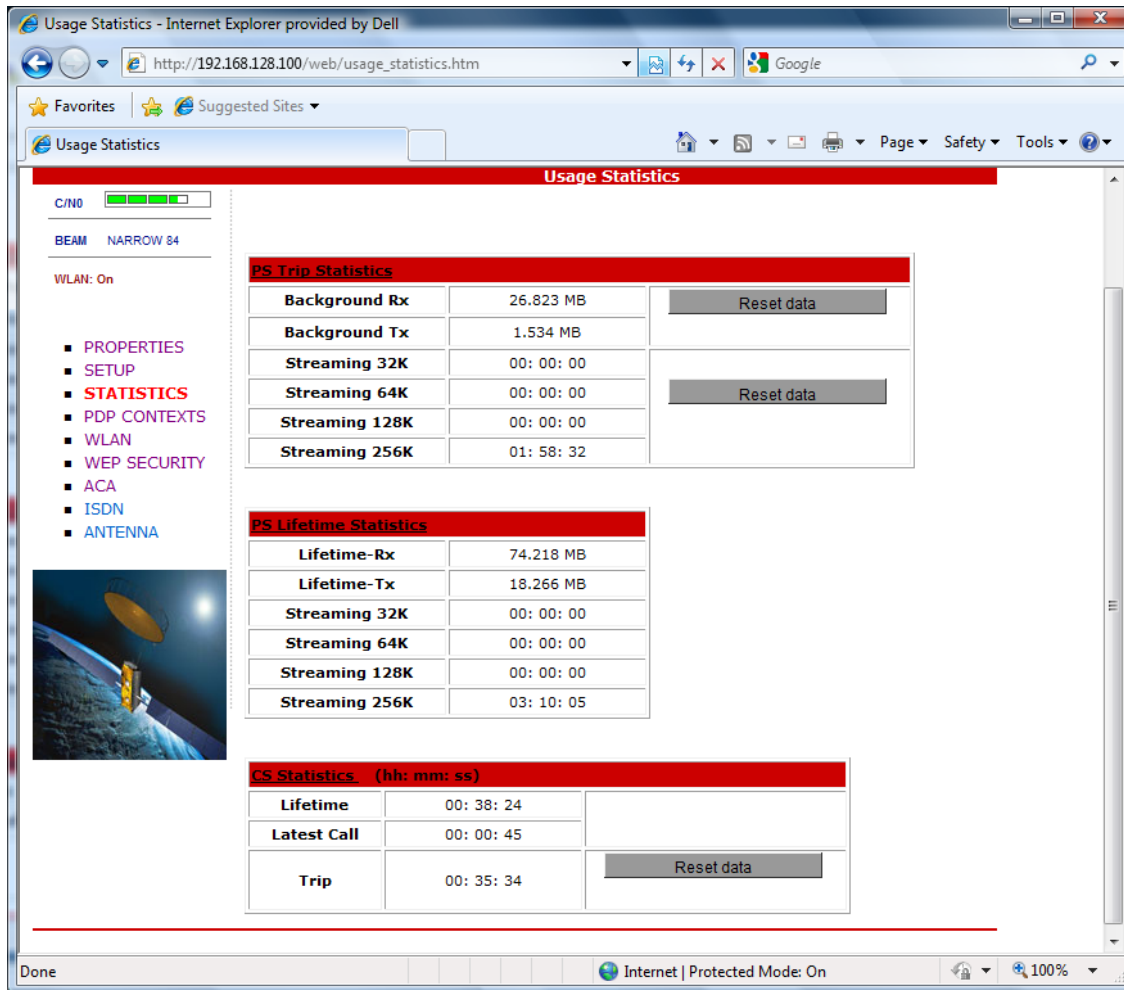
5. **Connected-mode DHCP Lease Time:** The Connected-mode DHCP Lease Time refers to the DHCP lease time when the UT is connected to the network. Most Users will have no need to change this parameter.
6. **PIN and PUK:** The PIN and PUK fields indicate whether the PIN or PUK needs to be entered to unlock the terminal. When grayed out, they indicate the PIN is not required or is already satisfied.
7. **Bypass Antenna Pointing:** This parameter allows the User to bypass antenna pointing and have the UT go straight into registering with the network. This is turned “on” as default for the 9300 Series terminals.
8. **24/7 PDP Keep Alive:** This is the setting is for keeping a PDP context alive indefinitely. **Note:** This parameter should not be checked unless you have a need to keep the PDP context alive for critical information. This is not a good use of satellite resources.
9. **Satellite Selection:** This parameter is used within a satellite overlap region and allows the user to override the default satellite (selected by the 9300 Series terminals based upon elevation angle/GPS location) and select a different satellite. **Note:** This change does not take effect until the UT is reset. When set to AUTO, the UT will select the satellite based on the unit’s GPS position. When set to a specific satellite, it will attempt to use that satellite only. Be careful to select the correct satellite for your position.
10. **Net Mode:** This option is grayed out and is set to NAT mode.
11. **Streaming Inactivity Timer:** This allows the user to turn on a timer for inactivity for a streaming QoS that has been set up. The timer is in seconds and will tear down a streaming context after **X** seconds of inactivity.
12. **Emergency Call Numbers:** Allows the User to add the emergency call number that is applicable in the part of the world where the terminal is being used, if it is not already defined.
13. **Apply, Cancel, and Restart Terminal Buttons:** These buttons are self-explanatory.

STATISTICS

This Web page provides an estimate of the amount of packet switched data sent and received, along with time spent on a CS call. The data is broken down into two types:

Trip: The trip counter is similar to the trip counter on your vehicle. It can be zeroed out at any time by the user and it will track the statistics until the user resets it.

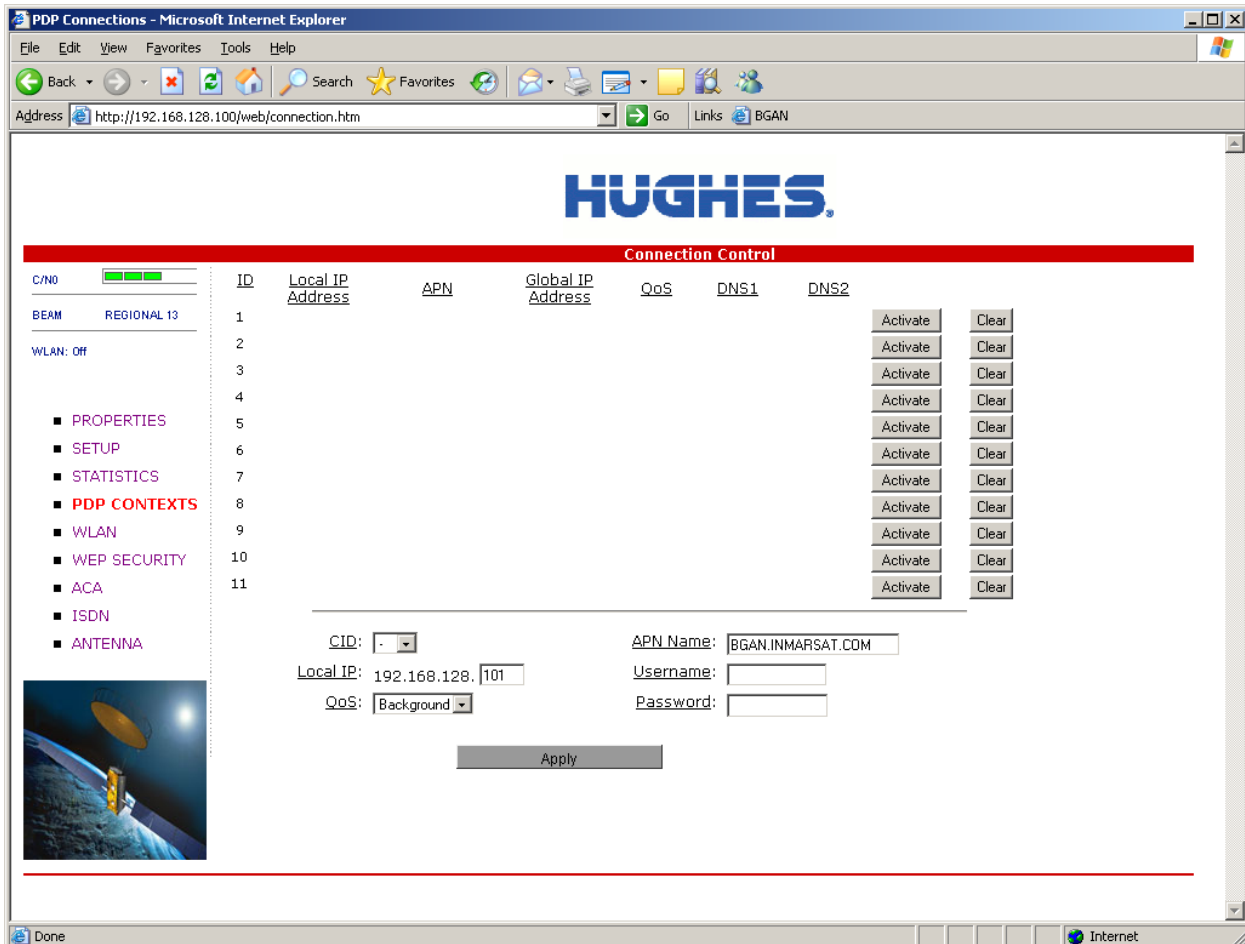
Lifetime: The lifetime counter is similar to the odometer on your vehicle. It shows the lifetime usage of the terminal. The user **cannot** reset these counters.



Note: If the UT power is abruptly disconnected for some reason, the UT will not be able to save the statistics to flash, and hence the statistics for the session may be inaccurate.

PDP CONTEXTS

The PDP Context page allows the user to set up and configure PDP contexts for any TE connected to the UT. To activate a PDP Context, go to the bottom of the page. You will see the CID, Local IP Address, APN, Requested QoS, Username, and Password fields.

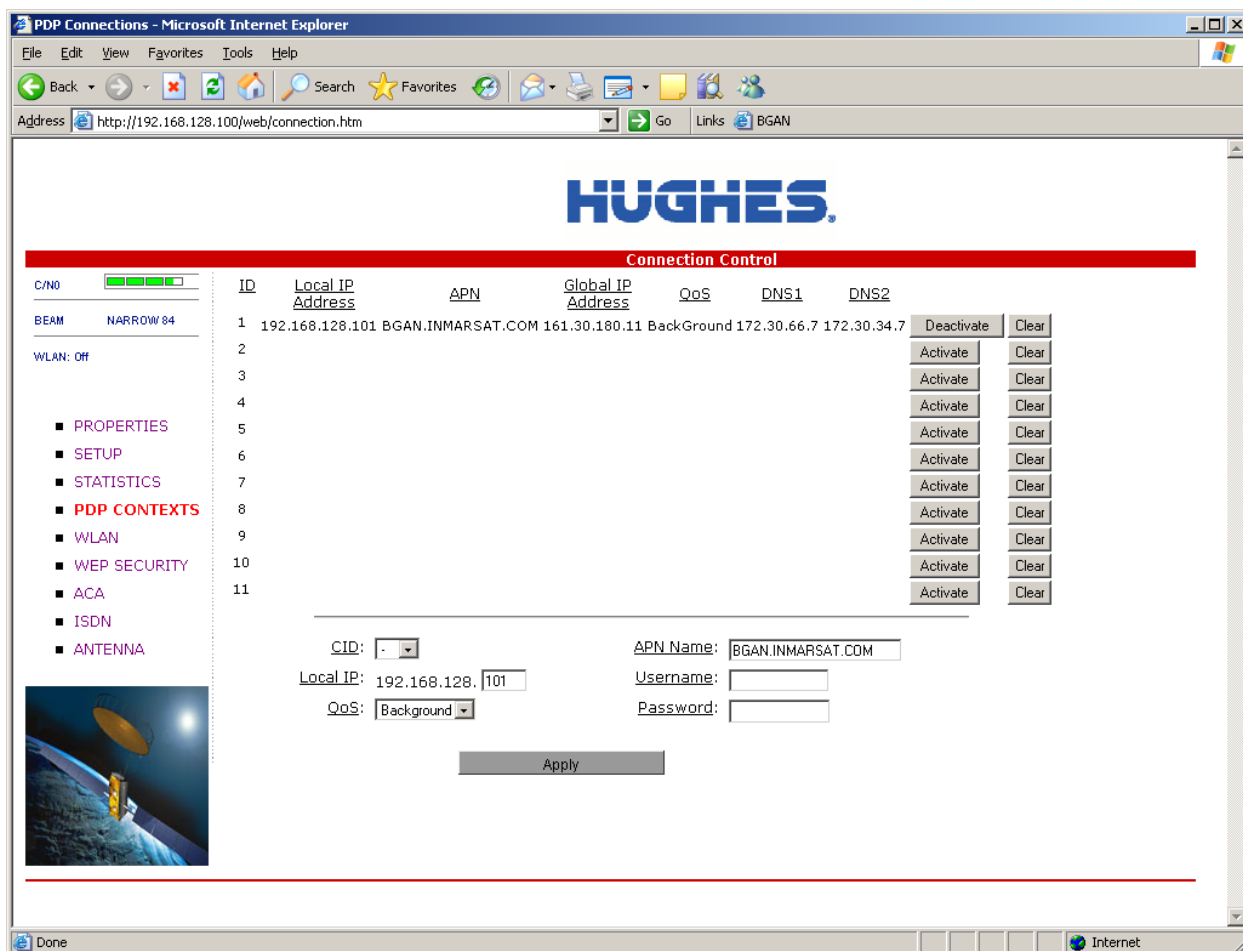


1. **CID:** The CID of each context is automatic by default. If for some reason the user wants to assign a particular context to a specific CID, use the drop-down arrow and select the wanted CID number. Most users will **not** need to change this field from the automatic default setting.
2. **Local IP Address:** This is the local IP address of the TE for which you want to setup a PDP context. Note that the first three octets of the IP address will reflect any changes made in the setup screen to the UT local IP address. **Note:** The field will default to the IP address of your TE. You can change the IP address if you wish to configure a PDP context for another device.
3. **APN name:** This field is configurable, but it will always show the default APN that has been provisioned on the USIM. If you have a USIM that has been provisioned with multiple APNs, you can type in any of these secondary APN names as part of the PDP context setup.
4. **Requested QoS:** The drop-down list shows all of the different QoS types: background, streaming 32K, streaming 64K, streaming 128K, and streaming 256K. Select the appropriate QoS required for the PDP context you are setting up.
5. **Username (UN)/Password (PW):** Some service providers require a username and password to be used when setting up a PDP context. This is often required when using Static Global IP addresses assigned by the service provider.

Activating a PDP Context:

To activate a PDP context, perform the following:

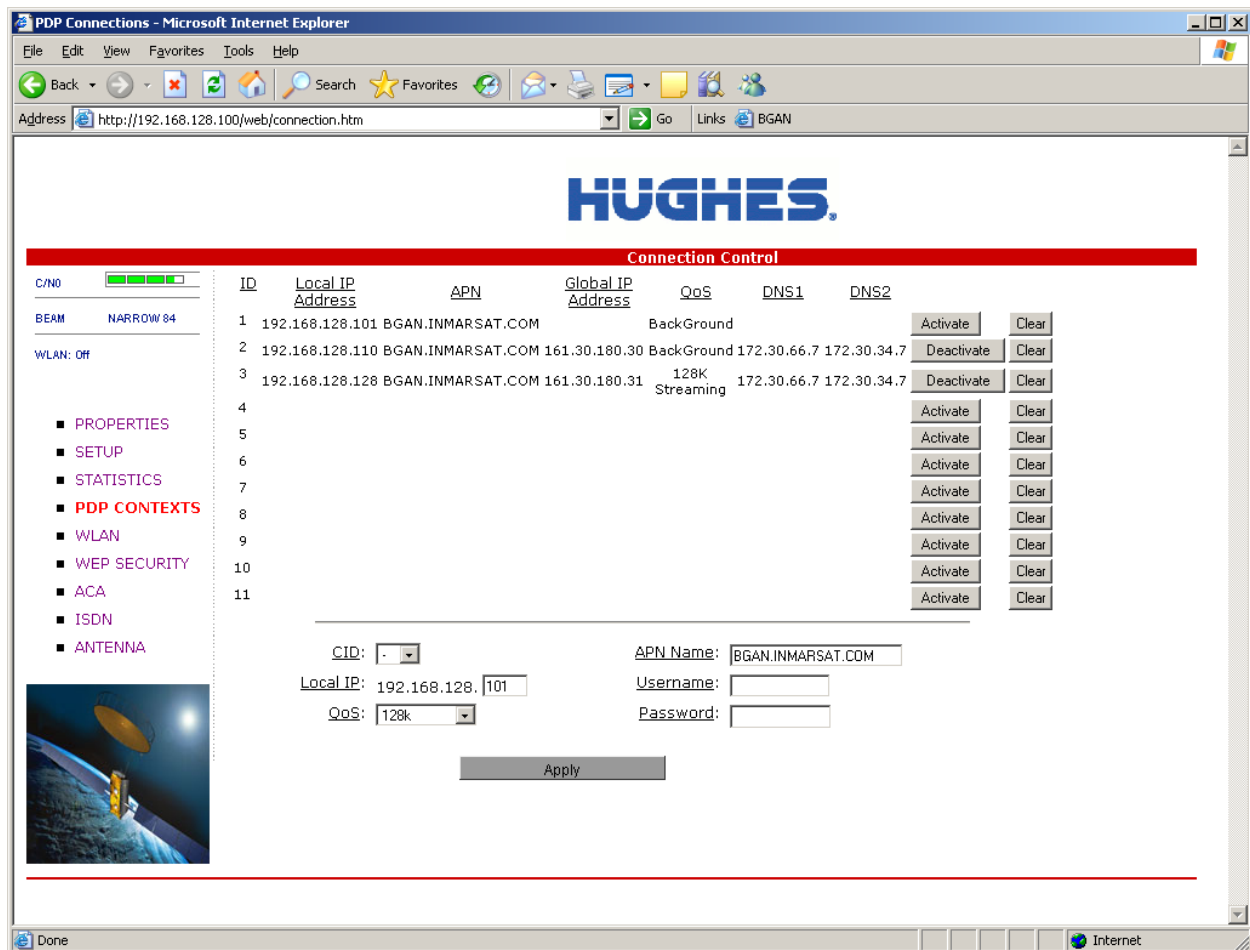
- Do not modify the CID field unless you need to set up a specific ID for one of your devices. Leaving it blank will allow the software to automatically choose the next CID available.
- Leave the IP address field unchanged unless you need to set up a connection for another TE.
- The APN is read from the USIM card and is usually not changed unless you have more than one APN provisioned on the USIM card.
- Next, select the QoS that is needed by selecting it from the drop-down list.
- If your service provider requires a UN and PW, enter it in the Username and Password boxes. Then click Apply.
- The new connection will be displayed as shown below.



Background context activated for 192.168.128.101

Once the context has been set up, whether it is successful or not, the context field will always be populated until you click the Clear box. This allows you to retry/reactive the existing context parameters (See CID #1 below).

You can tell if a context is active by looking to see if the Global IP Address and DNS fields are populated. If they are populated, the context is active.



CID #1 Inactive; CID #2 and 3 active

Activating Multiple PDP Contexts

To activate multiple PDP contexts for additional TE devices, follow the same procedures above. Each time you activate a context for a particular local IP address, it will show up in the table as shown in the screenshot above.

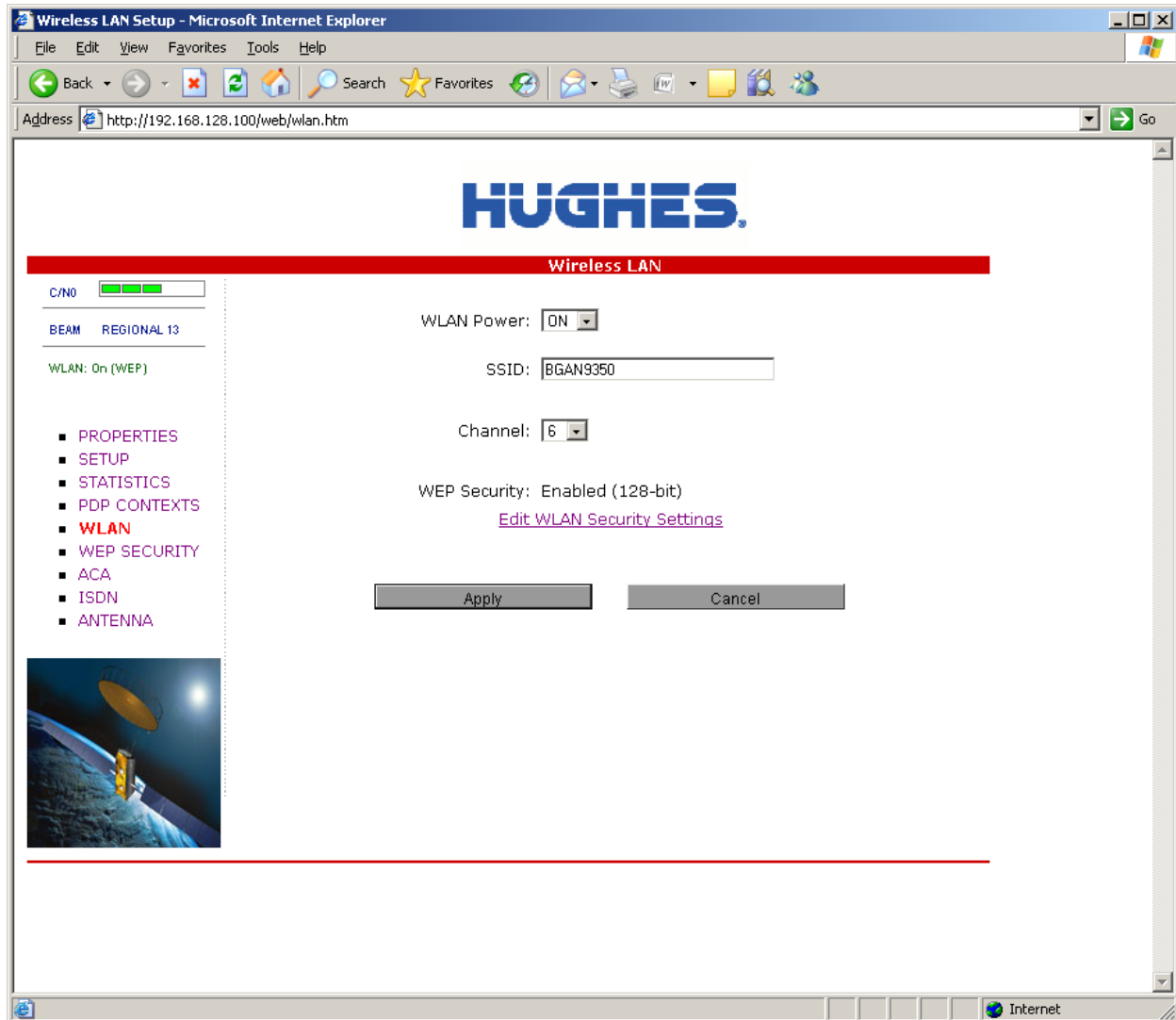
Deactivating PDP Contexts

To deactivate a PDP context, press the Deactivate or Clear button. The Deactivate button will leave the definition of the context so it can be reactivated with the Activate button. The Clear button will both deactivate and delete the context.

Connecting by WLAN

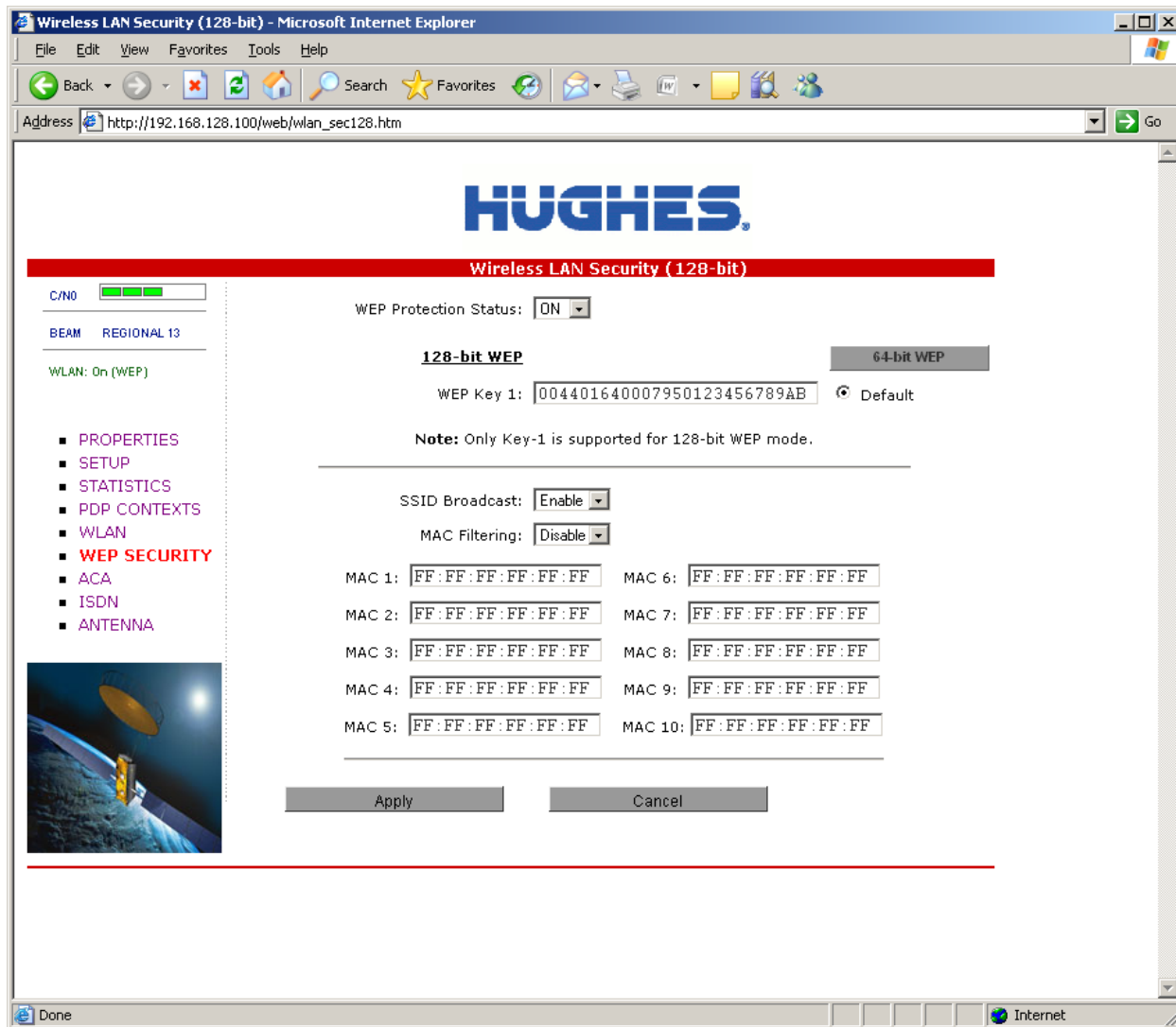
If you have not previously used the terminal's WLAN interface, it has to be enabled from the Web MMI with your computer connected to the terminal using the Ethernet interface.

- **WLAN Power:** The default is off, which disables the WLAN feature.
- **SSID** (network name): The default is BGAN, but you can change it to whatever you want.
- **Channel Number:** This controls the radio channel number (1 through 11) used by the access point. To meet FCC regulations, channels 12 to 14 are not supported.



▶▶ WEP SECURITY

WEP Protection Status: Select On from the drop-down list to enable the WEP for added security. When the terminal's WLAN interface is enabled, the WLAN icon is either green (WEP is enabled) or red (WEP is not enabled). When the icon is red, any computer with a WLAN interface can detect the terminal's WLAN SSID, and connect to it.



Encryption Level: 64 or 128 bit WEP encryption can be enabled.

WEP Key: You can define the WEP key or use the default WEP key, which is formulated using the IMEI number of the terminal.

- Hexadecimal 128-bit: Requires 26 characters. **Recommended**
- Hexadecimal 64-bit: Requires 10 characters

Note: If WEP is enabled, you must provide other WLAN users with the WEP key in order for them to connect to the terminal.

SSID Broadcast: For added security you can choose not to broadcast your SSID.

MAC Filtering: For added security, click ENABLE from the drop-down list, and then you can define up to 10 MAC addresses that are allowed to connect to your WLAN. **Note:** 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.

<input checked="" type="checkbox"/> Note	When WLAN is enabled, unauthorized users may be able to access your BGAN service. The features on this page provide some security. You can see from the PDP context page what computers are actually using the BGAN service.
--	--



This Web page allows you to use Automatic Context Activation (ACA) in **two** different ways: (1) Using static IP addresses in the TE device you can establish an automatic PDP context with any QoS that is offered by the network (upper half of the Web page) or (2) Using DHCP from the UT, you can establish an automatic background PDP context for any TE that connects to the UT (lower part of the Web page).

You can also choose whether the context should be activated as soon as the UT detects the device, or if the context should only be activated when the TE attempts to send data to the satellite link. For the “data activated” option, use the “DA” button rather than the On button. With DA, if the context is ever deactivated, it will be reactivated when more data is sent.

ACA settings for TEs with Static IP address:

You can set up your own range of static IP addresses for setting up an automatic PDP context with any of the QoSs offered by the network.

To turn on a particular range of addresses, select the “On” radio button and choose a range of addresses, low and high, to use (such as 192.168.128.200 to 192.168.128.205) or leave the defaults. To have the context only be activated when the TE sends data, select “DA”.

Next select the desired QoS for that range of IP addresses (32K streaming). The APN listed is the default APN read from the USIM card (bgan.inmarsat.com). If your USIM is provisioned for more than one APN, you can type a secondary APN in this field.

If your service provider requires a username and password, enter them in the next two fields.

IP ACA Properties - Windows Internet Explorer

http://192.168.128.100/web/aca.htm

File Edit View Favorites Tools Help

IP ACA Properties

HUGHES

IP ACA Properties

C/N0

BEAM REGIONAL 13

WLAN: Off

■ PROPERTIES
■ SETUP
■ STATISTICS
■ PDP CONTEXTS
■ WLAN
■ WEP Security
■ ACA
■ ISDN
■ ANTENNA

DHCP Address Range: 192.168.128.101 to 199

USIM APN Name: BGAN.INMARSAT.COM

ACA settings for TEs with Static-IP address.

Off	On	DA	Low IP Address	High IP Address	QoS	APN	Username	Password
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	192.168.128.200	192.168.128.209	Background	BGAN.INMARSAT.COM		
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	192.168.128.210	192.168.128.219	32k	BGAN.INMARSAT.COM		
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	192.168.128.220	192.168.128.229	64k	BGAN.INMARSAT.COM		
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	192.168.128.230	192.168.128.239	128k	BGAN.INMARSAT.COM		
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	192.168.128.240	192.168.128.249	256k	BGAN.INMARSAT.COM		
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	192.168.128.250	192.168.128.254	Background	BGAN.INMARSAT.COM		

ACA settings for TEs using DHCP assigned IP address.

Dynamic Background ACA Only: ☒ Off ☐ On ☐ DA

NOTE: DA = Data Activated context.

Apply Cancel Restart Terminal

If you want to set up additional ranges of addresses, follow the same instructions as above. **Note:** You cannot overlap the IP address ranges. If you do, an error will pop up telling you that you have an overlap region. Check all of the ranges for overlaps and try again.

When you are finished, click Apply, and you should see a message saying Operation Successful.

ACA settings for TEs using DHCP assigned IP address: This option allows you to set up the UT for dynamic background ACA. This means that any device connected to the UT will automatically receive a background PDP context.

To activate this feature, select the On radio button under ACA settings for TEs using DHCP assigned IP address and click Apply. To have the context only be activated when the TE sends data, select “DA”.

To see if the context has been set up properly, click the PDP Contexts page and this will display all contexts that have been set up (active or inactive). See screen shot below.

HUGHES

Connection Control

C/N0: ■■■■■

BEAM: **NARROW 84**

WLAN: OFF

- PROPERTIES
- SETUP
- STATISTICS
- **PDP CONTEXTS**
- WLAN
- WEP SECURITY
- ACA
- ISDN
- ANTENNA

ID	Local IP Address	APN	Global IP Address	QoS	DNS1	DNS2		
1	192.168.128.101	BGAN.INMARSAT.COM	161.30.180.176	BackGround	172.30.66.7	172.30.34.7	Deactivate	Clear
2	192.168.128.205	BGAN.INMARSAT.COM	161.30.180.166	BackGround	172.30.66.7	172.30.34.7	Deactivate	Clear
3	192.168.128.215	BGAN.INMARSAT.COM	161.30.180.187	32K Streaming	172.30.66.7	172.30.34.7	Deactivate	Clear
4							Activate	Clear
5							Activate	Clear
6							Activate	Clear
7							Activate	Clear
8							Activate	Clear
9							Activate	Clear
10							Activate	Clear
11							Activate	Clear

CID:

APN Name:

Local IP:

Username:

QoS:

Password:

ISDN

You can establish ISDN data communication by connecting your ISDN equipment directly to the BGAN Terminal's ISDN port with the supplied ISDN cable (which is the same as the Ethernet cable). This Web page allows you to activate 40 V power sourcing on the ISDN interface, and set MSN numbering options.

ISDN Interface Properties - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://192.168.128.100/web/isdn.htm> Go Links BGAN

HUGHES

ISDN Properties

C/N0 ☐ ☐ ☐ ☐ ☐

BEAM **NARROW 84**

WLAN: Off

- PROPERTIES
- SETUP
- STATISTICS
- PDP CONTEXTS
- WLAN
- WEP SECURITY
- ACA
- **ISDN**
- ANTENNA

ISDN Power Sourcing: ☒ On ☐ Off

MSN Speech:

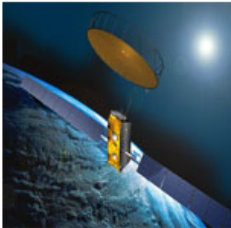
MSN 3.1 KHz:

MSN UDI:

MSN RDI:

Trigger for Mobile-Originated call type (Bearer):

Apply Cancel



1. **ISDN Power Sourcing:** To turn on the ISDN power sourcing, click the On radio button. The ISDN device should receive 40 V power immediately via the ISDN cable. This field should be on unless you never use ISDN or are using an ISDN device that has its own power source.
2. **MSN Speech:** By default, MSN 1 is entered into the MSN Speech number text box. To receive incoming calls, you must program the same MSN into your ISDN handset connected to the ISDN port.
3. **MSN 3.1 kHz Audio:** By default, MSN 2 is entered into the MSN 3.1 kHz audio number text box. To receive incoming calls, you must program the same MSN into your ISDN fax machine connected to the ISDN port.
4. **MSN Unrestricted Digital Information (UDI):** By default, MSN 3 is entered into the MSN UDI text box. UDI is a 64 kbps service that is a European standard ISDN.
5. **MSN Restricted Digital Information (RDI):** By default, MSN 3 is entered into the MSN RDI text box. RDI is a 56 kbps service found in the US.

6. **Trigger for Mobile-Originated call type (Bearer):** This box controls the mechanism used by the terminal to select the bearer type for mobile originated calls. By default, “Bearer Capability” is set as the trigger in this text box. There is also an option under the drop down arrow to set the trigger to use the MSN rather than the bearer. Most ISDN devices correctly signal the call type (speech, 3.1 kHz audio, UDI, RDI) via the bearer capability. If there is a problem, this field can be changed to use the MSN number instead.

ISDN Interface Properties - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Refresh Print Mail Links BGAN

Address http://192.168.128.100/web/isdn.htm Go

HUGHES

ISDN Properties

C/N0 ☐ ☐ ☐ ☐

BEAM NARROW 84

WLAN: Off

- PROPERTIES
- SETUP
- STATISTICS
- PDP CONTEXTS
- WLAN
- WEP SECURITY
- ACA
- **ISDN**
- ANTENNA

ISDN Power Sourcing: ☒ On ☐ Off

MSN Speech:

MSN 3.1 KHz:

MSN UDI:

MSN RDI:

Trigger for Mobile-Originated call type (Bearer):

Apply Cancel

Internet

Once all changes have been made, click Apply.

Note: You can use different MSNs for any of the ISDN call types above, but your ISDN equipment must be programmed with the same MSN to accept incoming calls, and you must use different numbers for speech, audio, and UDI/RDI calls.

▶▶ ANTENNA

This Web page allows you to monitor the status of the antenna. **Note:** This page does not automatically update and must be refreshed to poll for the latest status.

ATB State: This field indicates the detailed state of the antenna tracking board and indicates whether the antenna is tracking or searching for the satellite.

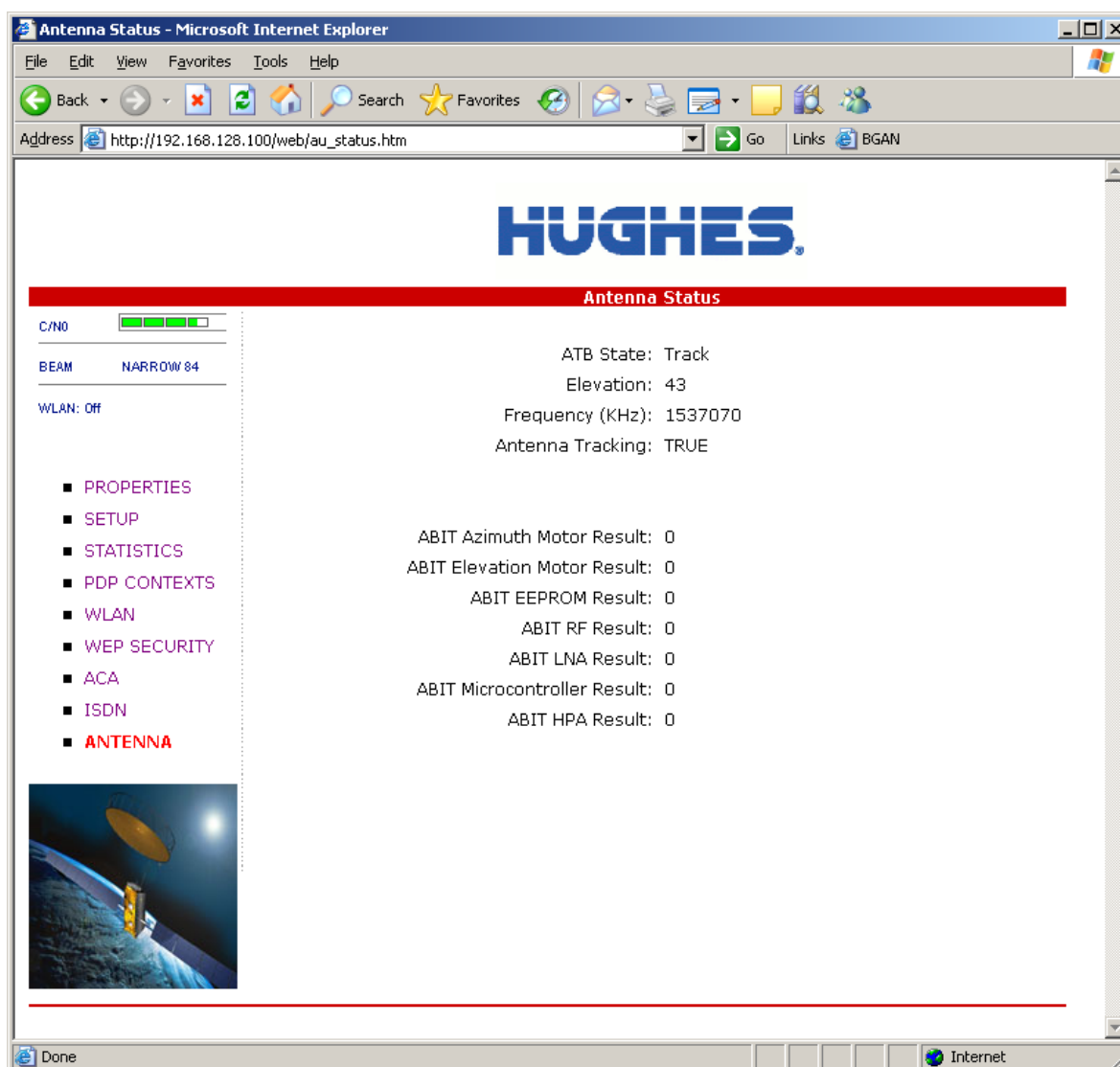
Elevation: The current elevation angle of the antenna.

Frequency (kHz): The frequency of the global beam in kHz that the antenna will attempt to track. If the unit is experiencing problems, use the table below to verify the antenna is searching for the correct satellite for your location.

Antenna Tracking: indicates () whether or not the antenna is currently tracking the satellite.

ABIT Results: these fields indicate if any errors are found in the antenna during startup self-test:

- 0 indicates no error.
- 255 indicates the test has not yet been run.
- Any other value indicates a problem. If the same code is seen repeatedly, contact your service provider.



Additional Information on the various antenna parameters (ATB states) is shown below:

#	State Name	State Description
0	INIT_ST	Initial state
1	IDLE_ST	Wait for a frequency from the TU
2	AZ_SEEK1_ST	Determine min/max signal levels in a full sky scan
3	AZ_SEEK2_ST	Find azimuth direction
4	AZ_SEEK_ELEVATION_ST	Determine min/max signal levels on a single elevation
5	TR_TUNE_EL_ST	Track and tune elevation state
6	TR_TUNE_PLL_ST	Track and tune PLL state
7	TRACK_ST	Track state
8	BLOCK_ST	Blocked state
9	FREEZE_ST	Antenna has stopped all motors
10	0x0A) TEST_ST	Test state

The field at the bottom of the page is true/false indicating whether the antenna is tracking (that is, in states 5, 6, or 7).

The frequency is the frequency of the global beam. Possible values are the primary and secondary frequencies of the three satellites.

Satellite ID	Satellite Longitude	Primary Frequency kHz	Alternate Frequency kHz
I4-F1 APAC	143.5 E	1537485	1540825
I4-F2 EMEA	25.0 E	1537920	1541115
I4-F3 AMER	98.0 W	1537070	1540730

ACCESSING THE UT MOBILE WEB MMI

The UT includes special versions of the Web pages formatted for mobile devices with small screens such as PDAs, BlackBerrys, and iPhones. The UT queries the connecting device screen resolution to determine whether to load the normal or the mobile version of the Web pages. The pages contain the same information and most operate the same way as the regular pages.

Note that mobile devices may not include Java, and thus the Java Applet with C/N₀, etc., is typically not displayed.

**BGAN USER TERMINAL, Hughes
9350, Ver 1**

PROPERTIES

Registration Status:	Registered with Home network.
PS Attach Status:	Attached, Services available.
CS Attach Status:	Attached, Services available.

Register with Network

GPS Position:	Fix Quality:3D Last Update: 09/12/05, 01:02:36 Latitude: 32.89 Longitude: -117.20
---------------	---

Emergency Call Numbers:
000:008:112:110:118:119:911:999

Software Version:	0.0.0.18
IB Version:	V31.05
Alarms:	None
Satellite Modem IMEI:	004401-64-000795-7
UE Class:	10
Satellite Modem IMSI:	901112112100638
USIM PIN Status:	READY
USIM APN Name:	BGAN.INMARSAT.COM

Extract System Log

Download Terminal Log File

'Right-Click' the link below and select 'Save Target As'

Event Log	Download Current	Download Archive	Reset
Packet Log	Download Current	Download Archive	Reset
Circuit Log	Download Current	Download Archive	Reset

Restore Factory Defaults

- **PROPERTIES**
- [WLAN](#)
- [SETUP](#)
- [WE P SECURITY](#)
- [STATISTICS](#)
- [PDP CONTEXTS](#)
- [ACA](#)
- [ISDN](#)
- [ANTENNA](#)

MOBILE WEB - PDP CONTEXTS

There is insufficient room to display all the PDP contexts on one page in the mobile Web version.

PDP contexts are created in the usual way from the “Add a New PDP Context” section of the screen.

The IP address of your device automatically appears in the Local IP Address field.

PDP CONNECTIONS

Current Defined PDP Contexts.

Select ID:

Update

Local IP
Address:

APN:

Global IP
Address:

QoS:

DNS1:

DNS2:

Activate

Clear

Add a New PDP Context.

CID:

Local IP
Address: 192.168.128.102

APN Name: BGAN.INMARSAT.COM

Requested
QoS: Background

Username:

Password:

Apply

- [PROPERTIES](#)
- [WLAN](#)
- [SETUP](#)
- [WEP SECURITY](#)
- [STATISTICS](#)
- [PDP CONTEXTS](#)
- [ACA](#)
- [ISDN](#)
- [ANTENNA](#)

To display a defined context, select it from the Select Id field and press update.

PDP CONNECTIONS

Operation Successful !!

Current Defined PDP Contexts.

Select ID:

Local IP Address:

APN:

Global IP Address:

QoS:

DNS1:

DNS2:

Activate

Clear

Add a New PDP Context.

CID:

Local IP Address: 192.168.128.

APN Name:

Requested QoS:

Username:

Password:

Apply

- [PROPERTIES](#) ■ [WLAN](#)
- [SETUP](#) ■ [WEP SECURITY](#)
- [STATISTICS](#) ■ [PDP CONTEXTS](#)
- [ACA](#) ■ [ISDN](#)
- [ANTENNA](#)

PDP CONNECTIONS

Current Defined PDP Contexts.

Select ID:

Update

Local IP Address: 192.168.128.102

APN: BGAN.INMARSAT.COM

Global IP Address: 161.30.23.227

QoS: Background

DNS1: 172.30.194.8

DNS2: 172.30.194.11

Deactivate

Clear

Add a New PDP Context.

CID:

Local IP Address: 192.168.128.

APN Name:

Requested QoS:

Username:

Password:

Apply

- [PROPERTIES](#) ■ [WLAN](#)
- [SETUP](#) ■ [WEP SECURITY](#)
- [STATISTICS](#) ■ [PDP CONTEXTS](#)
- [ACA](#) ■ [ISDN](#)
- [ANTENNA](#)

MOBILE WEB – ACA PAGE

There is insufficient room to display all the ACA IP address ranges on the mobile version of the ACA page. To configure IP address ranges for different ACA QoSs, select the required IP range and press Update.

IP ACA PROPERTIES

DHCP Address Range: 192.168.128.101 to 199
USIM APN Name: **bgan.inmarsat.com**

ACA settings for TEs with Static-IP address.

Select IP Range: 1

Update

Status: ☐ On ☒ Off
☐ DA

Low IP Address: 192.168.128.200

High IP Address: 192.168.128.201

QoS: Background

APN: BGAN.INMARSAT.

Username:

Password:

ACA settings for TEs using DHCP assigned IP address.

Dynamic Background ACA Only: ☐ On ☐ Off
☒ DA

Apply

Cancel

Problem	Possible Cause	Possible Solution
Terminal will not turn on	Power button not on No ignition sense	Check that the power button is depressed. Check positive voltage is applied to the ignition sense pin of the power connector
Cannot insert USIM card holder into terminal	USIM is not correctly seated in the card holder Card holder incorrectly oriented	Ensure the USIM is pressed firmly into the card holder Ensure the card holder is oriented as shown in the Install Guide
The BGAN LaunchPad or Web MMI 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 WLAN, USB or Ethernet connection between the terminal and computer; see the <i>User Guide</i> Check the IP configuration settings on your computer. Enable DHCP or use a static IP address in the same subnet as the UT
The BGAN LaunchPad or Web MMI will not connect to the terminal over the WLAN interface	Terminal WLAN Power is off WLAN WEP is enabled on terminal and the computer's WLAN is not programmed with the WEP keys WLAN signal is not strong enough	Set WLAN Power to "ON" in the MMI or LaunchPad WLAN page Disable WEP, or use the same WEP keys for both the terminal and computer. For details, review the <i>User Guide</i> Locate the terminal and computer closer together and reduce any obstructions between them
Terminal will not accept incoming ISDN calls	The MSN programmed into the ISDN device does not match the MSN programmed into the terminal	Ensure the appropriate MSN is programmed into the ISDN device, see ISDN Section of the <i>User Guide</i> Ensure the appropriate MSN is programmed into the terminal, see ISDN Section of the <i>User Guide</i>
Terminal will not make outgoing ISDN calls	ISDN power sourcing is turned off Terminal is not registered with the network	Enable the ISDN power sourcing from the BGAN LaunchPad or ISDN Web MMI page (unless the ISDN device has a separate power source) Check the Properties page in Web MMI to make sure the unit is CS attached

Problem	Possible Cause	Possible Solution
Terminal is connected to the BGAN network but cannot obtain the requested Quality of Service	<p>Network temporarily not available</p> <p>User tried to set up a 256 kbps streaming connection</p>	<p>Retry again. If problem persists, contact your service provider</p> <p>The Inmarsat network only supports 256 kbps streaming connections for Class 10 terminals that have an elevation angle greater than or equal to 45°. The highest QoS for Class 11 terminals is 128 kbps</p>
Terminal does not obtain a GPS fix	Terminal's location limits visibility of four or more GPS satellites	Move the vehicle/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.
ISDN device does not operate correctly	<p>The ISDN device is trying to draw too much power from the satellite terminal's ISDN interface</p> <p>The device you are connecting is not an ISDN device. It might be an Ethernet device that you are accidentally connecting to the ISDN port</p>	<p>Only connect an ISDN device that draws less than 70 mA of current at 40 V (equivalent power 2.8 W)</p> <p>Make sure you connect only ISDN devices to the ISDN port</p>
None of the above solutions resolve the problem	Terminal may have a hardware or software fault, and needs to be rebooted	Remove power. Wait 30 seconds. Reconnect the DC power and turn on the terminal

▶▶ GPS

The Global Positioning System (GPS) uses 24 orbital satellites to determine the position of the terminal anywhere on the globe.

OBTAINING A GPS FIX

In normal operation, a GPS receiver, such as that built into the tracking antenna, needs to be able to receive signals from at least four satellites so that it can then calculate a latitude, a longitude, and an altitude; This position fix is referred to as a three-dimensional or 3-D fix. If only three GPS satellites can be seen by the GPS receiver, the last available altitude measurement is assumed and the GPS receiver calculates a position fix based on latitude and longitude only. This simpler position fix is referred to as a two-dimensional or 2-D fix, which is quicker and easier to obtain than a 3-D fix but may be less accurate.

The GPS receiver may take between a few seconds and a few minutes to obtain a GPS fix, depending on how frequently the GPS receiver is being used. The frequency of use determines the how quickly the GPS Terminal is able to start.

- **Hot start:** If the GPS receiver is being used frequently, (that is, in the last 2 hours), it is regularly updated with data from the GPS satellites, and thus only takes a few seconds to obtain a GPS fix after being switched on.
- **Warm start:** If a GPS receiver has not been used for more than 2 hours, it will take up to 45 seconds to obtain a GPS fix.
- **Cold start:** If the GPS receiver has not been used for some time or is 300 km or more from where it was last used, it can take as long as 15 minutes to obtain a valid position fix.

The time taken to obtain a valid GPS fix can also be affected by the visibility that the GPS receiver has of the GPS satellites. The GPS system is relatively tolerant of atmospheric conditions such as heavy cloud or rainfall. However, physical blockages, such as tall buildings or terrain can significantly degrade the ability of the GPS receiver to obtain a fix. For this reason, ensure that the GPS receiver has a clear view of as much open sky as possible.

GPS AND BGAN REGISTRATION

BGAN uses the accurate position and timing information obtained from GPS to help ensure efficient registration of a BGAN Terminal with the BGAN network.

Following successful registration and providing the terminal is left switched on and remains stationary, the GPS is no longer needed. Periodically, the BGAN terminal contacts the BGAN network to inform the network that it is still switched on. In addition, the BGAN network periodically checks each terminal for activity, and if the terminal has not automatically contacted the BGAN network as described above, the terminal will be deregistered from the network.

ISDN

The Satellite Terminal provides an ISDN interface to connect devices for circuit switched voice and data services. It is a basic rate (also known as 2B+D) interface and uses the Euro ISDN protocol. Note that the Satellite Terminal can only provide service for one 64 kbps B-channel at a time.

DIALING AND NUMBERING

DIALING

As the ISDN numbering system follows the same pattern as the normal telephone system, dialing is carried out in exactly the same manner as making a normal telephone call. The subscriber number is used with the same international and area codes as any other telephone network. Start the dialed number with 00 and terminate it with a #.

MULTI-SUBSCRIBER NUMBERING (MSN)

ISDN supports MSN, which is a facility whereby more than one telephone number can be allocated to an ISDN line. The BGAN Satellite Terminal assigns different MSNs for voice, 3.1 kHz audio, and UDI and RDI devices. Each incoming call will be directed to the appropriate MSN depending on the type of call. This allows proper routing of incoming calls to the correct ISDN device (such as ISDN phone, data card, or fax).

PDP CONTEXT

A Packet Data Protocol (PDP) context defines connection aspects such as routing, QoS, security, and billing between a mobile user terminal, such as the BGAN terminal, and a data network. PDP contexts are essential to the General Packet Radio Service (GPRS) system, which is used by GSM and UMTS-based 3G networks worldwide for transmitting data.

In order for a user to be able to transfer data across a network, a PDP context must be activated in the terminal and associated core network. The procedure for this is as follows:

1. After registration with the network, the user activates a PDP context using an application on the computer or terminal, and requests sufficient radio resources (that is, power and bandwidth) to support the context activation procedure.
2. Once the resources are allocated, the Terminal sends the Activate PDP context request to the core network. This request includes key information about the mobile user's PDP address (for example, an IP address), PDP type (that is, static or dynamic address) the QoS requested for this context, the APN of the external network to which connectivity is requested, the user's identity (IMSI) and any necessary IP configuration parameters (for example, security settings).
3. On receiving the Activate PDP Context message, the core network checks the user's subscription record to establish whether the request is valid. If the request is valid, a virtual connection is established between the terminal and the core network, and data transfer can then take place between the Terminal and the external data network, within the scope of the current PDP context. The PDP context is stored in both the terminal and the core network.

A single terminal may have multiple PDP contexts each with different QoS profiles. The primary PDP context is a PDP context with default QoS profile attributes and is always activated first. All other PDP contexts with the same PDP address are secondary PDP contexts. Secondary PDP contexts share the same PDP address and connect to the same APN but may have different QoS profiles.



Wireless Local Area Networking (WLAN) enables two or more computers equipped with wireless adapter cards to share resources.

A wireless network comprises two or more computers, each equipped with wireless adapter cards forming a network. When the computers are within range of each other each computer has access only to the resources of the other computer but not to any central server or other resource. This type of basic configuration is known as an ad hoc network.

A more common and efficient use of a wireless network is one in which two or more computers equipped with wireless adapter cards are linked to a WLAN access point. The access point allows each computer to have access to shared resources, such as a broadband Internet connection, as well as to other computers on the network. Such a configuration is known as infrastructure mode. This is the default configuration for WLAN in the UT.

PERFORMANCE

The performance of a WLAN network will be influenced by several factors including the number of users on the network, the location of the antenna, the distance from the antenna, and the degree of blocking from buildings and other infrastructure. Typical operating ranges are 200 to 300 meters outdoors and 30 to 60 meters indoors; the performance degrades gradually as the signal strength decreases.

SSID

A wireless network is identified by a Service Set Identifier (SSID). An SSID is also referred to as a network name because it is a name that identifies a wireless network. Wireless devices that wish to communicate with each other must be configured with the same SSID. Several access points can be set up using the same SSID so that users can roam from one access point to the other without losing network access. The SSID is broadcast so that any wireless device in range can read the SSID and ask permission to associate with it. The SSID is not intended as a security measure; it is used only to identify different networks.

TECHNICAL SPECIFICATIONS

	Terminal	Antenna
Weight C10 Weight C11	2.4 Kg 2.4 Kg	5.5 Kg 1.9 Kg
C10 Dimensions C11 Dimensions	44 mm (H) x 210 mm (W) x 260 mm (D) 44 mm (H) x 210 mm (W) x 260 mm (D)	Ø494 mm x 152 mm Ø252 mm x 119 mm
Humidity	95% RH at +40°C	95% RH at +40° C
Temperature	-25° C to +55° C operating -25° C to +80° C storage	-25° C to +55° C operating -25° C to +80° C survival
Water & Dust	IP-54 standard	IP-56 standard
Wind	N/A	125 mph (200 km/h) Exception for magnetic mount: 100 mph (160 km/h)
Ice	N/A	25 mm nonoperational
Vehicle Motions	N/A	Turning rate: 40°/s Turning acceleration 50°/s ²
Power (terminal plus antenna)	Idle: 20 W Max: 100 W (when transmitting)	

DECLARATION OF CONFORMITY

Hughes Network Systems, LLC, of 9605 Scranton Road, San Diego, CA, 92121, USA, declares under our sole responsibility that the Hughes 9300 Series Satellite IP Terminals to which this declaration relates, are in conformity with the following standards and/or other normative documents:

ETSI EN 301 444, ETSI EN 300 328, ETSI EN 301 489-1, ETSI EN 301 489-17, ETSI EN 301 489-20, EN 62311, EN 60950-1.

We hereby declare that all essential radio test suites have been carried out and that the above named product is in conformity to all the essential requirements of R&TTE Directive 1999/5/EC.

The conformity assessment procedure referred to in Article 10 and detailed in Annex [III] or [IV] of Directive 1999/5/EC has been followed with the involvement of the following Notified Body(ies):

AmericanTCB, Inc. 6731 Whittier Avenue, Suite C110 McLean, VA 22101

Identification mark: **1588** (Notified Body number).

The technical documentation relevant to the above equipment will be held at:

- Hughes Network Systems, LLC, 9605 Scranton Road, San Diego, CA, 92121, USA
- Signed by Nigel Bartlett (Senior Technical Director, September, 2009) and Bill Lindsay (Senior Program Manager, September, 2009)

<input checked="" type="checkbox"/> Note	The Ethernet cable used with the Hughes 9300 Series terminals shall not be longer than 3 meters to comply with ETSI emissions requirements.
--	---

FCC COMPLIANCE

- This device conforms to the FCC rules. Any changes or modifications to Hughes Network Systems' equipment, not expressly approved by Hughes Network Systems, could void the user's authority to operate the equipment.
- To comply with FCC RF exposure requirements, this device must be operated with a minimum separation distance of 20 cm or more from a person's body. Other operating configurations should be avoided.
- 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.

JAPANESE RADIO LAW "TECHNICAL REGULATION CONFORMITY CERTIFICATION" (GITEKI)

The 9350 Class 10 has been certified for use in Japan but requires an additional step before the terminal can be legally used in that country. Contact JSAT Mobile before attempting to use a terminal in Japan:

Stuart Lester
JSAT Mobile Communications
Kamiyacho Sankei Building 7F, Azabudai 1-7-2 Minato-ku,
Tokyo 106-0041 Japan
TEL: +81 (0)3-6459-1167

EU WEEE (WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT) DIRECTIVES

The European Union (EU) directive on waste electrical and electronic equipment mandates recycling of electrical and electronic equipment throughout the EU by August 13, 2005.

Unless otherwise noted, all products, assemblies, and subassemblies manufactured by Hughes and its subcontractors will be compliant with this directive and any subsequent revisions or amendments. This product carries the WEEE label below to demonstrate compliance.

For addition information, contact Hughes Network Systems at: www.hughes.com.



APN: An Access Point Name (APN) provides access to an external network. By default, the SIM card in your terminal is configured with the APN of your service provider. You may want to configure further APNs if you have arranged with your service provider to use more than one SIM card.

BGAN Satellite Terminal: Referenced throughout this document as the Satellite Terminal, “the terminal,” or UT. This device implements and manages BGAN satellite communications between your computer and the service provider’s network.

Quality of Service: QoS assigns a level of priority to certain types of data traffic, in particular high bandwidth applications such as video and multimedia. QoS attempts to maintain a guaranteed throughput level and minimize error rates and end-to-end latency, thus providing a higher level of service than “best effort” protocols.

DNS Server: The Domain Name System (DNS) is an Internet service that is required because the Internet does not recognize the text-based Web address or email address that you type into your Web browser or email application. All or part of a Web address or an email address is a domain name, and DNS translates this domain name into an IP address that is recognized by the Internet.

A DNS server holds a database of domain names and IP addresses, so that when you enter a Web address or email address, you are directed to the correct IP address over the Internet.

Dynamic DNS Server: If you are using dynamic IP addressing, Inmarsat recommends that you use a dynamic DNS server. A dynamic DNS server updates the IP address information in the DNS database each time your IP address changes. A dynamic DNS server also enables a computer using a dynamic IP address to use network applications that normally require a static IP address, for example FTP servers. This service requires subscription with a dynamic DNS provider.

Static DNS Server: If you are using static IP addressing, Inmarsat recommends that you use a static DNS server. If you select this option, you must enter the IP address of the primary DNS server. This is supplied by your Internet service provider. Optionally, you can enter the IP address of a secondary DNS server, also supplied by your ISP. This is used in the event of failure of the primary DNS server.

Error Correction: Error correction ensures that very little data is lost during transfer by asking for dropped packets to be resent. However, because it holds subsequent data whilst the packet is being resent, you may notice some jitter or delay in the received data. This is normal for most data types.

For real-time applications, such as Voice over IP (VoIP) or video, it is recommended that you remove error correction. Removing error correction minimizes delay and jitter.

Ethernet: Ethernet is a local area networking method used widely throughout the computer industry. It is one of the three communications interfaces supported by the Satellite Terminal.

Fault Code: A number that uniquely references an error in a hardware or software system. If there is a fault detected in the Satellite Terminal, the fault code and a description are displayed in suitable LaunchPad windows.

GPS: Global Positioning System. The GPS receiver in the Satellite Terminal receives signals from the constellation of GPS satellites. It uses these signals to determine the terminal’s location on earth. That location is used during registration to gain access to the BGAN system.

Header Compression: A header is the component of a data packet that precedes the data you are sending. The header contains information such as source and destination address, error checking and other administrative details. In most data types this does not noticeably affect the data transmission rates. However in multimedia applications such as voice and video, the header can significantly affect performance.

IP Address: An Internet Protocol address, or IP address, is a number that uniquely identifies the computer accessible over a TCP/IP-based LAN or the Internet that is sending or receiving information. An IP address is a 32-bit numeric address written as four numbers, separated by periods with each number between 0 and 255. For example, 207.115.79.4 is an IP address. In the BGAN system, IP addresses for the network and the TE can be dynamic or static.

Network Dynamic IP Address: A network dynamic IP address is a temporary address that is assigned by your BGAN service provider when you connect to the BGAN network. If you do not need a permanent static IP address, most service providers use a dynamic IP address. Some service providers provide a

private network IP address not routable within the Internet) and others provide a routable public IP address.

Static IP Address: A static IP address is assigned by service providers to BGAN Users when the USIM is provisioned. This static IP address is used every time you connect to the BGAN network and is associated with a specific username and password.

DHCP Address: Local IP address that is assigned by the UT DHCP server to the TE once connected to the UT. This is a private IP address that is not routable within the Internet.

Terminal Local IP Address: IP address of the UT to access the Web MMI and talk to the UT via Telnet. This address is configurable by the user.

Standard Connection: A standard connection is charged by volume of data sent. The bandwidth you are allocated depends on terminal type and network availability, but is always “best effort,” that is, you are allocated bandwidth depending on your requirements and the requirements of other users of the BGAN network or BGAN terminal. This connection class is suitable for most data types other than multimedia.

Streaming: A streaming connection is charged by time. You are charged for the amount of time the connection is active. Streaming enables multimedia data, such as video, to be sent in a continuous data stream and converted into sound and pictures. The bandwidth required for a streaming connection is difficult to predict, and depends on factors such as length of connection and number of receivers.

Symmetrical Rate: The rate at which streaming data is transmitted, in kilobits per second (kbps). This rate applies to transmitted (uplink) and received (downlink) data.

Desired Symmetrical Rate: From the drop-down list, choose the desired data rate for your Streaming connection. This can be 32 kbps, 64 kbps, 128 kbps, or 256 kbps. This figure is guaranteed, unless the connection cannot meet this requirement because of bandwidth restrictions. In this case, the rate defaults to the minimum symmetrical rate.

Minimum Symmetrical Rate: From the drop-down list, choose the minimum data rate that you are prepared to accept for your streaming connection. This can be 32 kbps, 64 kbps, 128 kbps, or 256 kbps. This rate must be lower than the desired symmetrical rate. If the connection cannot meet this requirement, an error message displays.

Terminal Equipment (TE): Terminal equipment refers to the piece of equipment connected to the BGAN UT (laptop, video equipment, phone, etc.)

Traffic Flow Template: A traffic flow template, also called an application template, is a series of data filters such as QoS, PDP context, and security settings that allow the core network to classify packets received from an external network into the correct PDP context. When incoming data arrives at an access point in the core network, a packet classifier will make a PDP context selection based on the traffic flow template, and map the incoming data packets into the PDP context with the correct QoS attributes. The use of a traffic flow template allows multiple PDP contexts to be associated with the same PDP address.

User Terminal (UT): The user terminal is the BGAN modem device, that is, the IDU.

USIM Card: Your BGAN service provider supplies you with a Universal Mobile Telecommunications System Subscriber SIM (USIM) card.

The USIM card is similar to the SIM card commonly used in a GSM phone. The card holds a microchip that stores information and encrypts voice and data transmissions, making it extremely difficult to listen in on calls. The USIM card also stores data that identifies the caller to the BGAN service provider.

Virtual Private Network: A Virtual Private Network (VPN) enables remote offices or users to gain secure access to their organization's network over the public telecommunications network. This provides the benefits of remote access without the expense of dedicated leased or owned lines. VPNs work by using tunneling protocols to encrypt data at the sending end, and decrypt the data at the receiving end. This “tunnel” cannot be accessed by data that is not properly encrypted.