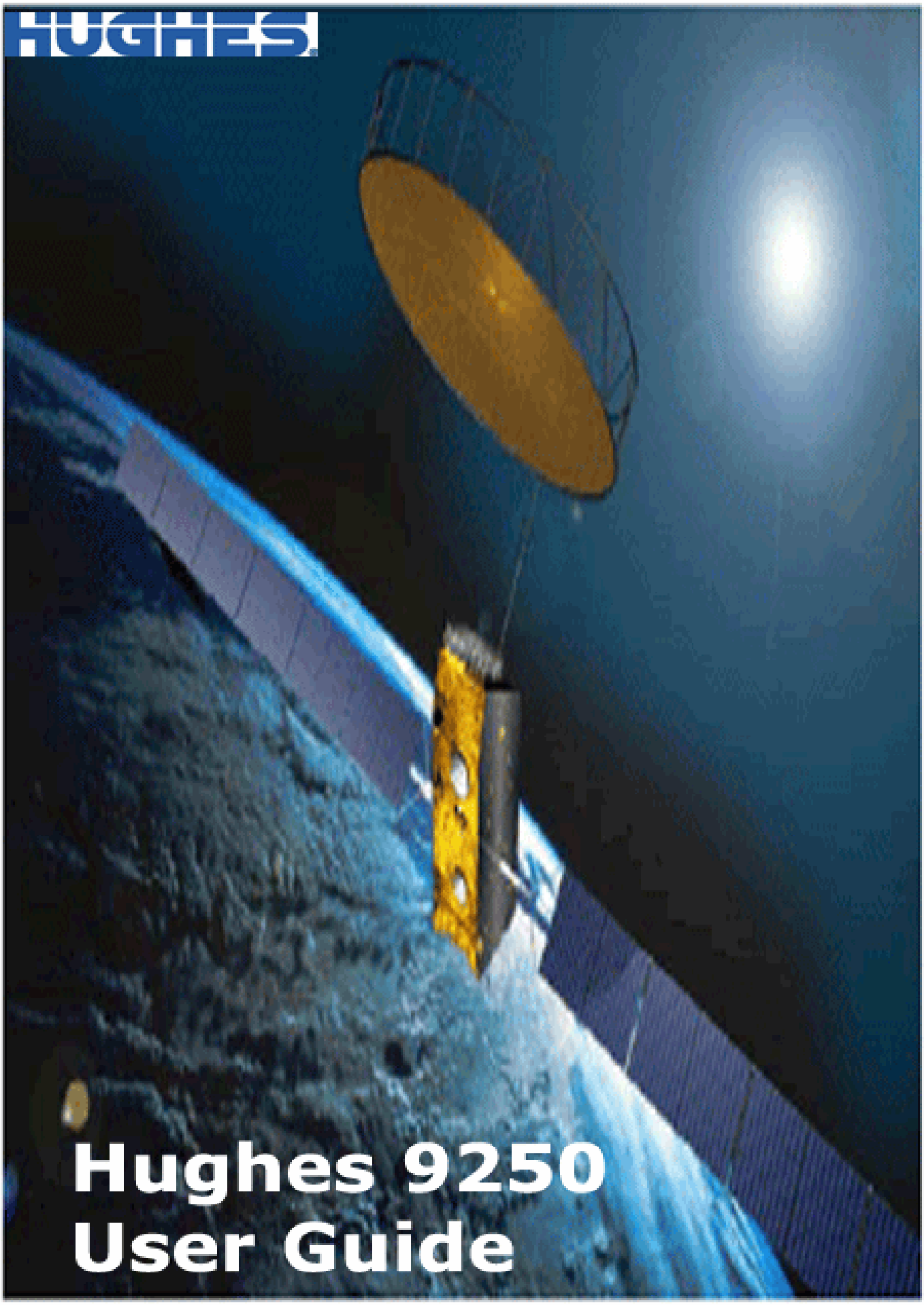
HUGHES
Hughes 9250
User Guide

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SAFETY INFORMATION

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 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 two meters or more from the front of the Satellite Terminal antenna.

PROPERLY GROUND THE EXTERNAL ANTENNA

Failure to properly ground the optional external antenna may result in severe personal injury or death. Do not attempt to ground the optional external antenna unless you have the skills to do so in accordance with local electrical codes.

DO NOT OPERATE DURING ELECTRICAL STORMS

Operation of the Satellite Terminal during electrical storms may result in severe personal injury or death. Disconnect the Terminal from the computer and store the unit indoors if lightning is anticipated in the area of operation.

GENERAL

Handle your Satellite Terminal with care. The enclosure is weather resistant per IEC 60529 IP55; however, do not submerge the unit or expose it to severe rain storms. Avoid exposing your Satellite Terminal to extreme hot or cold temperatures outside the range -25°C to +60°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.

BATTERIES AND ACCESSORIES

Use approved batteries (Hughes P/N 3003702-0001) and accessories only. Use of non-approved accessories may result in loss of performance, damage to the Satellite Terminal, fire, electric shock or injury.

AC mains power adapter (Hughes P/N 3003727-0001) is for indoor use only. It has an indoor operating temperature range of 0°C to +40°C and provides an output voltage of 20 VDC.

The storage capacity of the battery decreases when operated.

The terminal will only charge the battery when the temperature is within the range of 0 to 45°C.

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 30 cm between the Terminal and your pacemaker;
- Maintain a distance of two meters from the front 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.

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INTRODUCTION

ABOUT THIS PRODUCT

The Hughes Network Systems (HNS) 9250 Broadband Satellite Terminal and WLAN Access Point is your gateway to global communication. The 9250 allows you to simultaneously send and receive IP packet and circuit-switched data via Ethernet, 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 acquires and tracks the BGAN satellite signal while on the move
- Easy antenna installation (magnetic mount) on vehicle roof
- Includes antenna control unit and all cables and power supplies for vehicular installation
- Up to 464 Kbps data (transmit and receive) and 128 Kbps streaming IP data rate[1]
- Speech (4Kbps)
- ISDN voice (3.1KHz audio)
- ISDN data (64Kbps)
- WLAN access point
- Multi-user 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, CE, and GMPCS certified
- Subscriber Identification Module (SIM) card security
- GPS and WLAN status LEDs

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

The Satellite Terminal carries a warranty for 12 months from the date of sale. Contact your Service Provider if you have questions about the warranty, or need to return the terminal for repair.

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

Term	Definition
Terminal	Satellite Terminal
TE	Terminal Equipment (your computer)
UT	User Terminal/satellite terminal

[1] . Best efforts performance under moving conditions depending on obstruction of satellite signal. Performance is limited by the BGAN system design: Signal outages of more than 3 seconds will cause circuit switched calls to be dropped and packet switched sessions being interrupted. May require user intervention to reactivate connections for longer outage durations

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 9250 Land Mobile User Terminal and to document the differences to the Hughes 9201 BGAN Class 1 Satellite Terminal.

Please refer to the Hughes 9201 User Guide for general information on how to access the BGAN network and how to use the LaunchPad Software.

Package Contents

When you unpack the Land Mobile Terminal Kit package, you will find the following:

- BGAN Land Mobile Tracking Antenna Kit
- Hughes 9250 Class 2 BGAN Satellite Modem Kit

Your Service Provider will supply you with a Subscriber Identification Module (SIM) and its PIN, and Satellite Terminal configuration instructions – you will need these to access the network. Note: The SIM card will also have four (4) MSISDN numbers associated with it for various ISDN services:

4K Voice

3.1KHz Audio/Fax

64K UDI data

56K RDI data

Minimum System Requirements

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

- CD-ROM (for installation CD)
- Internet Browser: Microsoft Internet Explorer version 5.5 or later; Netscape Communicator version 7.0 or later (Java must be active).
- PC Support for at least one of these interfaces – Ethernet, ISDN or WLAN (802.11b or b/g).
- Intel Pentium III CPU, or equivalent.
- 100 MB of free hard disk space.
- 128 MB of RAM.

GETTING STARTED

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 computer to the terminal and registering with the BGAN network. You are then ready to start using voice and broadband services.

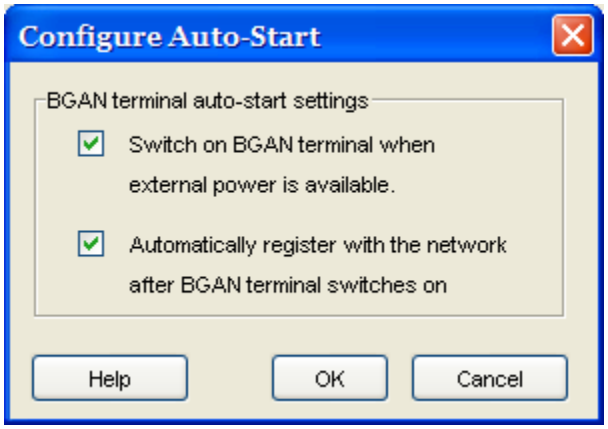
SETTING UP YOUR TERMINAL

Set up the Hughes 9250 terminal according to the Quick Install Guide supplied with the terminal.

AUTO START CONFIGURATION

Since the Hughes 9250 is equipped with a tracking antenna, the default configurations for the Hughes 9250 Land Mobile Terminal are as follows:

- The Hughes 9250 is configured for automatic registration with the network: The terminal will automatically attempt to register with the network once the tracking antenna has acquired the satellite signal.
- The Hughes 9250 is configured for Auto "On" Mode: The terminal automatically power sup when the DC power adapter is plugged in.



☑ **Note**	These default configurations are accessible through the LaunchPad "Auto Start Mode" menu. It is recommended to keep these settings for convenient operation of the Hughes 9250 Land Mobile Terminal.

FEATURES OF THE HUGHES 9250

The User should be aware of the following differences between the Hughes 9250 Land Mobile Terminal and the Hughes 9201 Satellite Terminal:

- The Hughes 9250 is configured for automatic registration with the network as discussed above.
- The Hughes 9250 will automatically power off after 30 seconds when the DC power adapter is removed, even though a battery is inserted. This feature will prevent the user from operating the power button to operate the terminal.
- The Hughes 9250 operates as a BGAN Class 2 terminal. It can therefore not establish 256Kbps streaming class connections.

POWER UP AND CONNECTION TO THE INTERNET

After power is applied, the Hughes-9250 Terminal and Hughes Tracking Antenna will begin their start-up sequence. The tracking antenna will begin its search of the BGAN satellite and the antenna motors may be heard during this time. Note that the tracking antenna must have line of sight of 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 sit at an optimum position while the vehicle is stationary.

Refer to the Hughes 9201 Terminal User Guide for instructions on

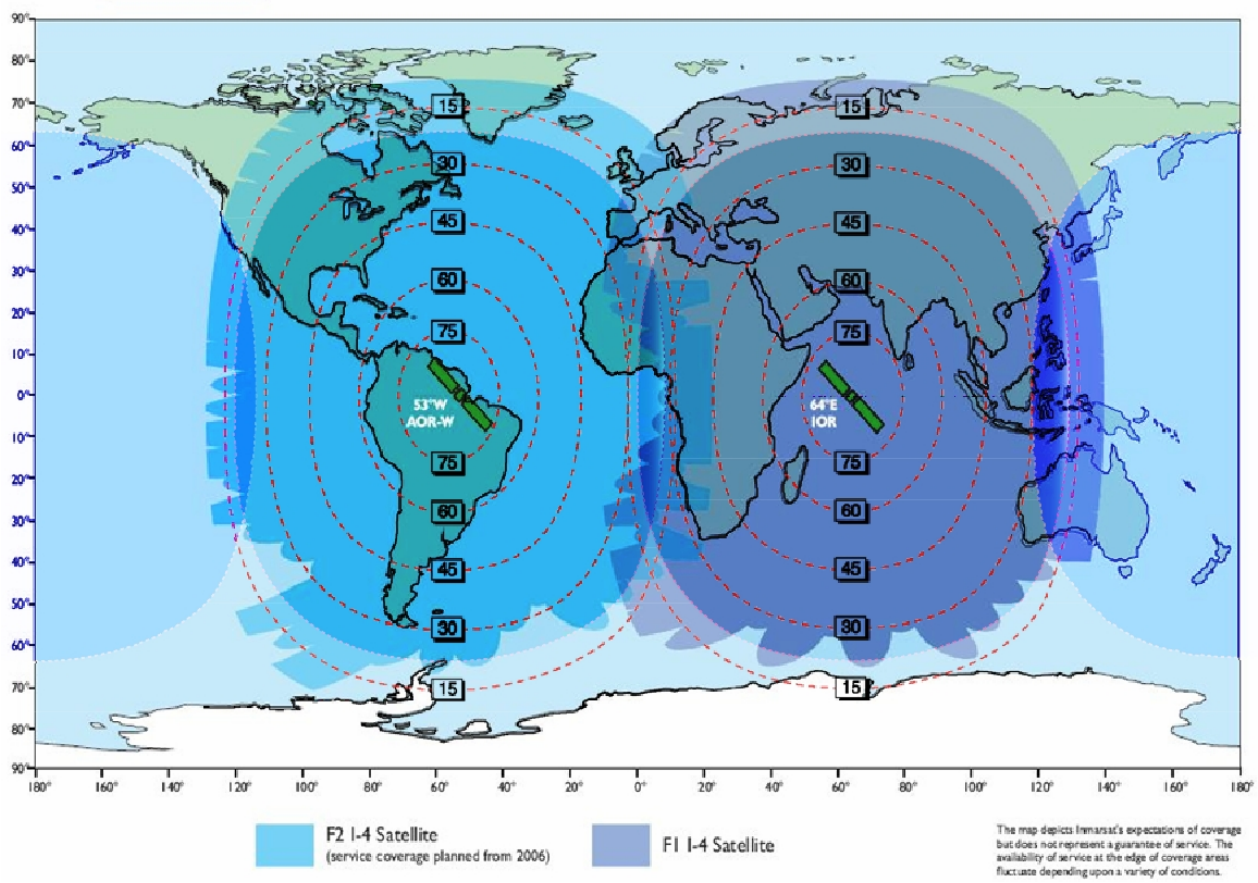
- How to connect a Personal Computer or Mac to the terminal.
- How to establish a data connection to the Internet
- How to use the Automatic Context Activation Feature
- How to use the LaunchPad user interface
- How to connect and use ISDN terminals

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

☑ **Note**	Only 'best effort' performance can be expected under moving conditions due to the higher probability of obstruction of satellite signal and limitations of the current BGAN system. Signal outages of more than 3 seconds will cause circuit switched calls to drop and packet switched sessions to pause. User intervention may be required to reactivate connections for longer outage durations

Coverage Map

The Hughes 9250 will perform best in areas where the elevation angle is 20 degrees 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.



TROUBLE SHOOTING

Problem	Possible Cause	Possible Solution
Terminal will not turn on	DC power adapter not connected properly. User disabled the Auto "On" Mode.	Connect the DC power adapter Press the power button for 2 seconds to power up the terminal. Use LaunchPad to enable the Auto "On" Mode.
Battery does not charge	Battery is defective (battery LED is flashing red) Battery temperature is outside charging range	Replace battery Battery will only be charged at temperatures between 0°C and 45°C.
Cannot insert battery into terminal	Battery incorrectly oriented	Ensure the battery is oriented as shown in **First Time Setup**
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 **First Time Setup**
The BGAN LaunchPad will not connect to the terminal	No interface connection between the terminal and computer	Ensure there is a WLAN or Ethernet connection between the terminal and computer, see **Hughes 9201 User Guide**
The BGAN LaunchPad will not connect to the terminal over the WLAN interface	WLAN WEP is enabled on terminal and the computer's WLAN is not programmed with the WEP keys WLAN signal is not strong enough	Disable WEP, or use the same WEP keys for both the terminal and computer. For details, go to **Hughes 9201 User Guide** Locate the terminal and computer to reduce any obstructions between them, and locate them closer together.
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 **Hughes 9201 User Guide** Ensure the appropriate MSN is programmed into the terminal, see **Hughes 9201 User Guide**

Problem	Possible Cause	Possible Solution
Terminal will not make outgoing ISDN calls	The ISDN interface is turned off (Note the interface turns off automatically when the terminal is operating from battery power, if no ISDN device is detected within 5 minutes from power on)	Enable the ISDN interface from the BGAN LaunchPad, see **Hughes 9201 User Guide** Alternatively, turn the terminal off, then turn it on and immediately connect the ISDN device
	Terminal is still in antenna pointing mode	Exit antenna pointing
Terminal is connected to the BGAN network, but cannot obtain the requested Quality of Service	Network temporarily not available	Retry again. If problem persists, contact your service provider.
	User tried to set up a 256 Kbps streaming connection.	The Hughes 9250 only supports 128 Kbps streaming connections.
Terminal does not obtain a GPS fix	Terminal's location limits visibility of 4 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.
You hear a continuous beep from the terminal when you connect an ISDN device to the ISDN port	The ISDN device is trying to draw too much power from the satellite terminal's ISDN interface	Only connect an ISDN device that draws less than 70mA of current at 40V (equivalent power 2.8W)
	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.	Make sure you connect only ISDN devices to the ISDN port
None of the above solutions resolve the problem	Terminal may have a hardware or software fault, and needs to be re-booted.	Remove both the DC power adapter and battery. Wait 30 seconds. Reconnect the DC power adapter or the battery, and turn on the terminal. As the terminal powers up, check the status of the LEDs, see **Satellite Terminal Boot Behavior** in the **Hughes 9201 User Guide**

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 in to 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 3-dimensional or 3-D fix. If only three GPS satellites can be seen by the GPS receiver, then 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 2-dimensional or 2-D fix and 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 20 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 two hours), it is regularly updated with data from the GPS satellites, and so 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 two hours, then 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, then the Terminal will be de-registered from the network.

ISDN

The Satellite Terminal provides an ISDN (Integrated Services Digital Network) 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 64Kbps 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.

MULTI-SUBSCRIBER NUMBERING (MSN)

ISDN supports Multi-Subscriber Numbering (MSN). MSN 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, 3.1KHz Audio, UDI and RDI devices. Each incoming call will be directed to the appropriate MSN depending on the type of call. This allows to route incoming calls to the correct ISDN device (e.g. ISDN phone, data card or Fax).

PDP CONTEXT

A Packet Data Protocol (PDP) Context defines connection aspects such as routing, Quality of Service (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.

WLAN

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

A wireless network comprises of 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 know 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 200-300 meters outdoors and 30-60 meters indoors, the performance degrades gradually as the signal strength decreases.

SSID

A wireless network is identified by a Service Set Identifier or 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	2.8 Kg (terminal with battery)	5.5 Kg
Dimensions	27.5 cm x 34.5 cm x 5.0 cm	Ø47.7 cm x 15.3 cm
Humidity	95% RH at +40˚C	95% RH at +40° C
Temperature	-25˚C to +60˚C operating -25˚C to +80˚C storage	-25° C to +55° C operating -25° C to +80° C survival
Water & Dust	IP-55 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 non-operational
Vehicle Motions	N/A	Turning Rate: 40°/s Turning acceleration 50°/s^2
Power	Idle: 20 W Max: 100 W (when transmitting)	

The Satellite Terminal carries a warranty for 12 months from the date of sale. Contact your Service Provider if you have questions about the warranty, or need to return the terminal for repair.

DECLARATION OF CONFORMITY

Hughes Network Systems, LLC, of 9605 Scranton Road, San Diego, CA, 92121, USA, declares under our sole responsibility that the product Hughes 9250 Satellite IP Terminal to which this declaration relates, is 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 60950-1, Council Recommendation 1999/519/EC.

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):

Washington Laboratories, LTD, 7560 Lindbergh Drive, Gaithersburg, MD 20879, USA

Identification mark: **1317** (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 Juerg Widmer (Senior Technical Director, January, 2007) and Bill Lindsay (Senior Program Manager, January, 2005).

☑ **Note**	The Ethernet cable used with the Hughes 9250 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.

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 sub-assemblies manufactured by Hughes and its sub-contractors 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**.

GLOSSARY

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 or "The Terminal," this device implements and manages BGAN satellite communications between your computer and Service Provider's network.

Quality of Service: 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, so 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 which uniquely references an error in a hardware or software system. In the Satellite Terminal, if there is a fault detected, 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 that 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.

Inmarsat recommends that you switch on header compression for multimedia applications, such as video.

IP Address: An Internet Protocol address, or IP address, is a number that identifies the computer that is sending or receiving information transmitted over the Internet. An IP address is made up of four groups of numbers between 0 and 255, separated by periods. For example, 207.115.79.4 is an IP address. In the BGAN system, IP addresses can be dynamic or static.

Dynamic IP Address: A dynamic IP address is a temporary address that is assigned by your Internet Service Provider (ISP) when you connect to the Internet. If you do not need a permanent IP address, Inmarsat recommends that you obtain a dynamic IP address. Normally, individual users of the Internet use a dynamic IP address.

Static IP Address: A static IP address is assigned permanently, and is used every time you connect to the Internet. Normally, companies and other organizations that have their own networks use static IP addresses.

SIM Card: Your Service Provider supplies you with a Subscriber Identification Module (SIM) Card or a Universal Mobile Telecommunications System Subscriber SIM (USIM) Card.

A SIM or USIM Card is a 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 Service Provider.

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.

Traffic Flow Template: A Traffic Flow Template, also called an Application Template, is a series of data filters such as QoS (Quality of Service), 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.

USIM Card: Your Service Provider supplies you with a Subscriber Identification Module (SIM) Card or a Universal Mobile Telecommunications System Subscriber SIM (USIM) Card.

A SIM or USIM Card is a 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 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, such as L2TP, 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.