



GLOCOM



GX-9

Inmarsat Fleet Broadband
Marine User Terminal

Operating Manual

Version 1.0



SAFETY INFORMATION

For your safety and protection, read this entire user manual before you attempt to use the Fleet Broadband Marine 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 IP54; 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 Glocom Inc., 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 Glocom 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 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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▶▶| ABOUT THIS PRODUCT

The Glocom GX-9 (an Inmarsat FB250 class) Satellite Terminal provides a comprehensive range of voice and data services using the Inmarsat Broadband Global Area Network (BGAN) satellites. These services support a wide range of applications including placing and receiving telephone calls, WEB browsing, email, and other Internet data services. Data services can be accessed using either Ethernet LAN, built in wireless WiFi Access Point, USB or ISDN connections. Voice services can be accessed through a standard RJ-11 interface or by ISDN. The GX-9 allows simultaneous voice service while browsing the WEB, sending and receiving email, or using other data services.

The GX-9 consists of a compact antenna Above Deck Unit (ADU) and a modem and interface Below Decks Unit (BDU) that are connected by a single cable. The antenna includes a 3-axis stabilized design that automatically acquires and tracks the satellite while the vessel is underway over a wide range of vessel motion and sea conditions. The BDU can be conveniently located anywhere on the vessel. It provides interfaces for standard telephones (RJ-11), Ethernet WAN (RJ-45), USB, ISDN and wireless WiFi connections to multiple PCs, PDAs, or other Terminal Equipments (TE). The GX-9's operates on a wide range of input voltage from 10.8 to 31.2 Vdc. Detailed specification are listed on page 34.

▶▶| ABOUT THIS OPERATING MANUAL

This document contains the information require to operate the GX-9 Fleet Broadband Satellite Terminal including procedures for start up, registering on the network and using the various voice and data services available.

▶▶| PACKAGE CONTENTS

The GX-9 Standard package includes the following items:

- 1 ea,. Above Deck Unit (ADU)
- 1 ea. Below Deck Unit (BDU)
- 1 ea. ADU/BDU Coaxial Cable (RG223 15m) with two installed connectors
- 1 ea. Extra Coaxial Connector
- 1 ea. DC Power Cable (5m)
- 1 ea. Operating Manual on CD

The following optional items are available:

Extended ADUE/BDU LMR-400 Coaxial Cable, 50m

ADU Stanchion Mounting Kit

A Subscriber Identification Module (SIM) and its PIN which are needed to access the Inmarsat network can be provided by your Inmarsat Service provider along with related configuration instructions for the Satellite Terminal.

Note: The SIM card will also have four (4) MSISDN numbers associated with it for the ISDN services:

4K Voice

3.1KHz 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:

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.

▶▶ INTRODUCTION TO GETTING STARTED

This guide outlines the procedure to connect to the Inmarsat network. It will guided you through the procedure for powering up your terminal, obtaining a GPS position 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 GX-9 terminal as follows.

1. Verify that the ADU and BDU are properly connected by the coaxial cable, a valid SIM card is in the MIU, and the MIU is connected to a suitable source of dc power. Refer to the GX-9 Installation Instructions for details.
2. Press the power ON/OFF switch (located at the left corner of the BDU front panel). The power LED will illuminate. The flashing READY LED indicates that the antenna is automatically scanning the sky, the GPS receiver is acquiring a position fix, and the software is preparing the terminal for operation. When the satellite signal has been acquired the READY LED will change from flashing to steady on. The terminal is now ready to operate.

▶▶ AUTO START CONFIGURATION

The terminal is configured by default to automatically attempt to register with the Inmarsat network once the antenna has acquired the satellite signal and obtained a GPS position fix.



Note

These default configurations are accessible through LaunchPad or the web Man-Machine Interface (MMI). It is recommended that these settings be retained for convenient operation of the GX-9 Terminal.

▶▶ POWER UP AND CONNECTION TO THE INTERNET

When power is first applied GX-9 will begin a start-up sequence. The antenna will begin its search for the satellite and the antenna motors may be heard during this time. Note that the antenna must have line of sight view towards the satellite.

When the vessel is at a fixed location after acquiring the satellite signal the antenna will continue to make minor adjustments to optimize the signal strength. During this time the you may hear the antenna motors “tweaking” its direction toward the satellite. If the vessel is completely stationary the antenna will find an optimum position and stop searching.

When the vessel is underway the antenna will automatically track the satellite signal and keep the antenna pointed towards the satellite. During short outages (caused by moving under a bridge) the antenna will remain in the same position and will re-acquire the satellite signal immediately after the blockage is removed. For longer outages the antenna may need to repeat the search sequence to reacquire the satellite signal.



Note

Circuit switched and packet switched connections will recover from signal outages of less than 60 seconds. User intervention may be required to reactivate connections for outage longer than 60 seconds.

▶▶ CONNECTING THE TERMINAL TO THE COMPUTER

You can connect your computer to the GX-9 with one or more of the following interfaces

- USB
- Ethernet
- WLAN



Note

There is no need to check the active interface. All interfaces can be used simultaneously to accommodate multiple users.



Note

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.

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

CONNECTING BY USB

To connect the GX-9 to the computer using the USB port:

1. Connect a USB cable between your computer's USB port and the GX-9's USB port.



Note

When plugging in the USB cable for the first time, you will see Windows installing a new driver for the device.

If you install LaunchPad software on your PC, the USB driver for the GX-9 will also be installed. When you plug the USB cable into your computer for the first time, your computer will detect that a new USB device has been connected. Follow the computer's instruction to install the **Glocom 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 GX-9.

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

CONNECTING BY ETHERNET

To connect the GX-9 to the computer using Ethernet:

1. Connect an Ethernet cable between your computer's Ethernet port and the GX-9's Ethernet port.

CONNECTING BY WLAN

If you have not previously used the GX-9's WLAN interface, it must first be enabled using either the GX-9's internal web Man-Machine Interface (MMI) or LaunchPad while your computer is connected to the GX-9 using either the USB or Ethernet interface.

When you are configuring the WLAN, you can also enable the Wireless Encryption Protocol (WEP), MAC address filtering, and no broadcast SSID features for added security.

Once the WLAN is appropriately configured and turned ON any device with a WLAN interface can detect the GX-9's WLAN SSID, and connect to it automatically.

Note: If WEP is enabled, you must provide WLAN users with the proper WEP key in order for them to connect to the GX-9.



CONNECTING THE ANALOG PHONE/FAX MACHINE

BGAN provides circuit switched fax service via an ISDN 3.1KHz audio channel. You may connect your analog fax machine to either an ISDN terminal adaptor which is connected to the GX-9 ISDN port or directly to the TEL1 (RJ-11) port. Even though it is more convenient to connect an analog fax to a RJ-11 port be aware that the BGAN fax calls are charged at ISDN rate (usually higher than the BGAN low rate voice service).



A voice call made via TEL1 will be charged as an ISDN 3.1kHz audio service – if user did not used the forced service dialing sequence (see below).

DIALING FROM TEL1 OR TEL2

1. Dial-up without forced service type

- Regular Dialing

- Redialing

Port Service Type

TEL1 3.1kHz Audio (FAX)

TEL2 4kbps AMBE

2. Dial-up with forced service type

- Regular Dialing - 4kbps AMBE

- Redialing - 4kbps AMBE

- Regular Dialing – 3.1kHz Audio

- Redialing – 3.1kHz Audio

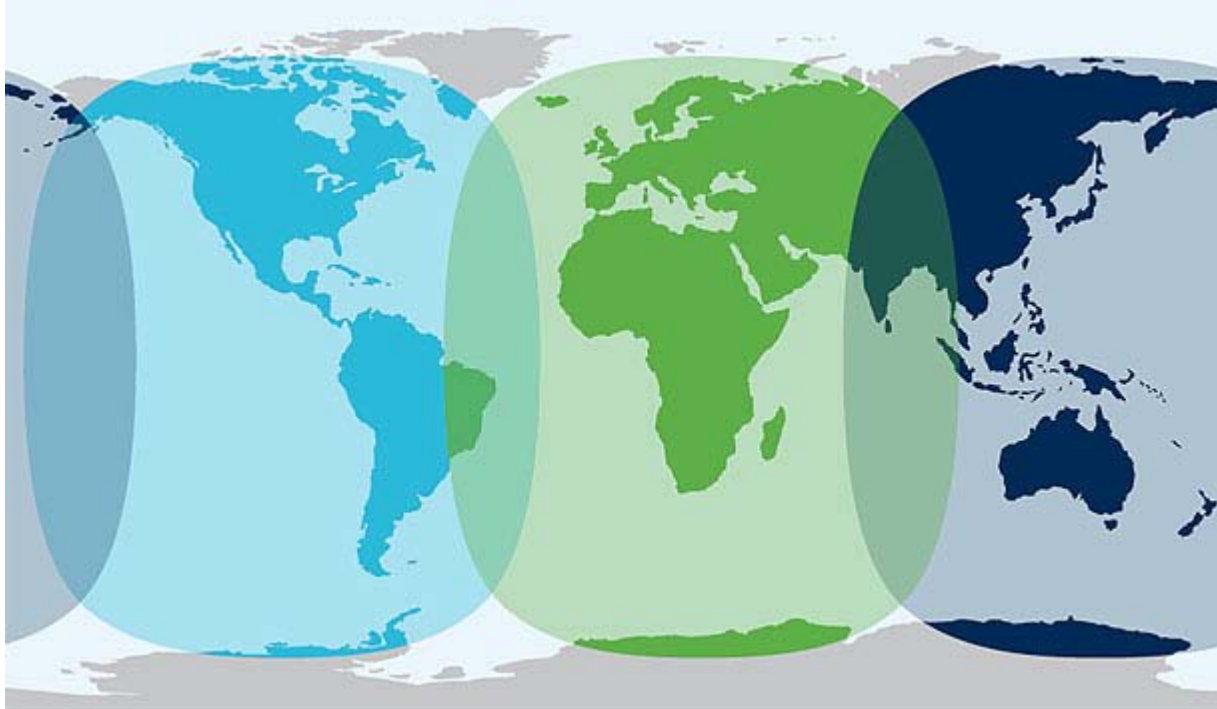
▶▶ CONNECTING THE ISDN DEVICE

You can connect an ISDN device (e.g. ISDN phone, ISDN TA etc) to the ISDN port on GX-9 terminal to access circuit-switched service.

Dial-up from ISDN port:

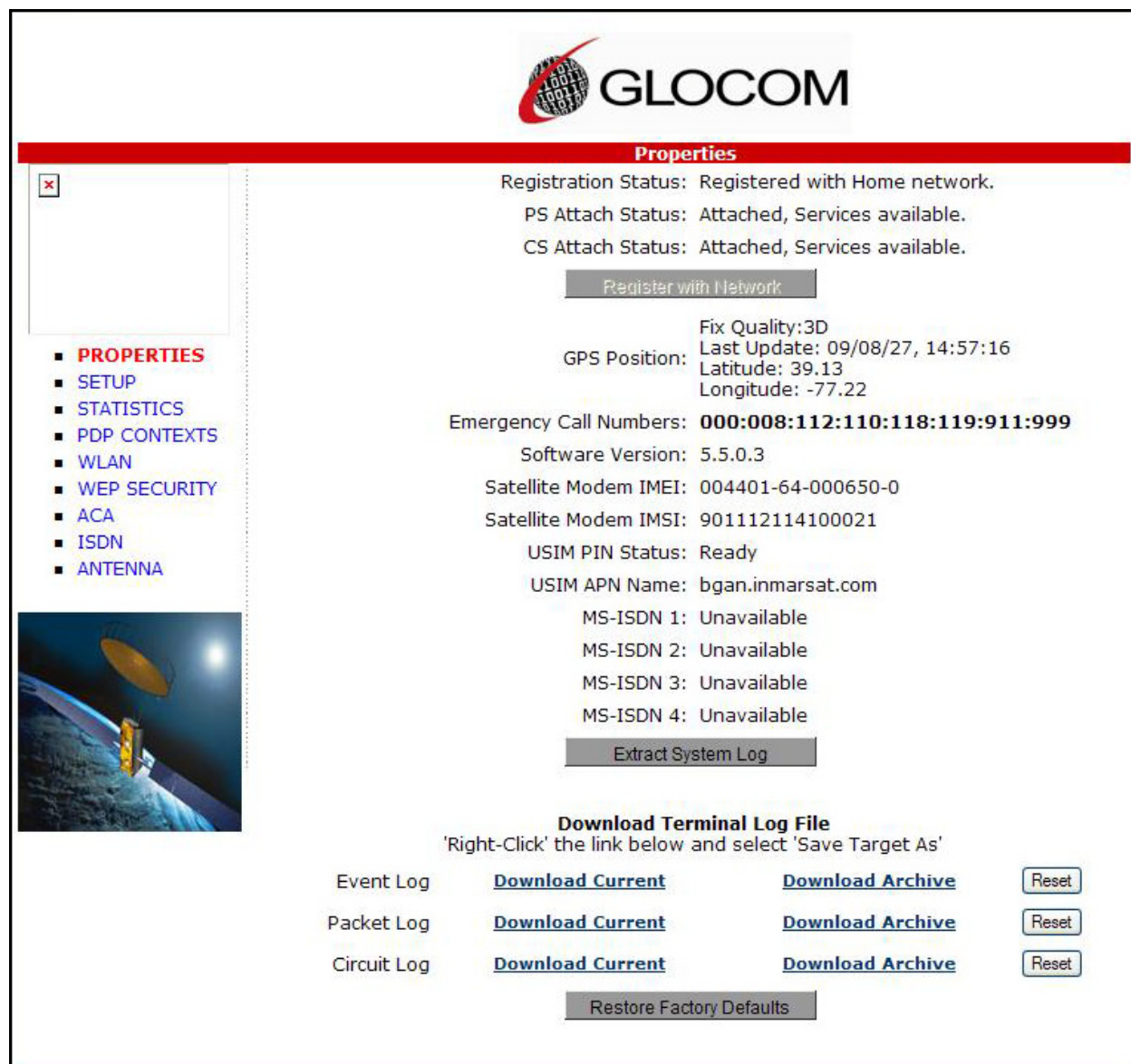
▶▶ COVERAGE MAP

The GX-9 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 the vessel rolling and pitching and may severely impact the usability while underway in heavy seas.



▶▶ ACCESSING THE UT WEB MMI

The GX-9 includes an internal Web MMI. To access the UT Web MMI, open your preferred Web Browser and enter the internal IP address of the GX-9, <http://192.168.128.100>. The web MMI opens to the "Properties" page as shown below:



The screenshot displays the GLOCOM Web MMI interface. At the top, the GLOCOM logo is visible. Below it, a red header bar contains the word "Properties". On the left side, there is a sidebar with a list of menu items: PROPERTIES (highlighted in red), SETUP, STATISTICS, PDP CONTEXTS, WLAN, WEP SECURITY, ACA, ISDN, and ANTENNA. Below the menu is a small image of a satellite dish. The main content area displays various status and configuration information:

- Registration Status: Registered with Home network.
- PS Attach Status: Attached, Services available.
- CS Attach Status: Attached, Services available.
- A button labeled "Register with Network".
- GPS Position: Fix Quality: 3D, Last Update: 09/08/27, 14:57:16, Latitude: 39.13, Longitude: -77.22.
- Emergency Call Numbers: 000:008:112:110:118:119:911:999.
- Software Version: 5.5.0.3.
- Satellite Modem IMEI: 004401-64-000650-0.
- Satellite Modem IMSI: 901112114100021.
- USIM PIN Status: Ready.
- USIM APN Name: bgan.inmarsat.com.
- MS-ISDN 1: Unavailable.
- MS-ISDN 2: Unavailable.
- MS-ISDN 3: Unavailable.
- MS-ISDN 4: Unavailable.
- A button labeled "Extract System Log".
- A section titled "Download Terminal Log File" with the instruction: "Right-Click' the link below and select 'Save Target As'".
- Three rows of links for downloading logs:

Log Type	Download Current	Download Archive	Reset
Event Log	Download Current	Download Archive	Reset
Packet Log	Download Current	Download Archive	Reset
Circuit Log	Download Current	Download Archive	Reset
- A button labeled "Restore Factory Defaults".

▶▶ PROPERTIES PAGE

The Properties page shows the current status of the GX-9. A description of each item on the page follows:

In the Top left-hand corner of the screen you will notice that there are three status items: Satellite Signal Strength, Beam ID, and input power status. These items are updated automatically when their status changes.

Network Status: This shows the current status of the network, two messages appear in this field:

1. Registration Status: This field indicates whether the GX-9 is Registered with the Network. Click on the "Register with Network" button. **Note:** Bypass antenna pointing is turned on as default so that the GX-9 will automatically register with the Network each time.

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Properties

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

[Register with Network](#)

Fix Quality: 3D
Last Update: 09/08/27, 14:57:16
GPS Position: Latitude: 39.13
Longitude: -77.22

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

Software Version: 5.5.0.3
Satellite Modem IMEI: 004401-64-000650-0
Satellite Modem IMSI: 901112114100021
USIM PIN Status: Ready
USIM APN Name: bgan.inmarsat.com
MS-ISDN 1: Unavailable
MS-ISDN 2: Unavailable
MS-ISDN 3: Unavailable
MS-ISDN 4: Unavailable

[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](#)

2. **PS Attach Status:** This indicates whether the GX-9 is PS (Packet Switch) attached to the Network. You will need to setup a PDP context in order to send PS data.
3. **CS Attached:** This indicates whether the GX-9 is CS (Circuit Switch) attached to 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 the GX-9 has received a GPS position fix and the Network GPS policy has been received then the GPS Fix Quality, Last Update time and the Position (Latitude, Longitude) will be displayed. Time is GMT.
5. **Emergency Call Numbers:** This field displays the Emergency call numbers that can be used with the GX-9.
6. **Software Version:** This displays the current version of software that is running on the GX-9.
7. **Satellite Modem IMEI:** This displays the IMEI number of the GX-9.
8. **Satellite Modem IMSI:** This displays the IMSI number of the USIM card in the GX-9. If the IMSI is not displayed, it indicates that there is a problem reading the SIM card, e.g. because there is no SIM, it is installed incorrectly or PIN must be entered.
9. **USIM PIN Status:** This field indicates whether the USIM is ready or a PIN needs to be entered. If the PIN needs to be entered, go to the SETUP page.
10. **USIM APN Name:** This displays the default APN that has been provisioned on the USIM card. Note that some USIM cards may have multiple APN's provisioned on them.
11. **MS-ISDN 1 thru 4:** Each USIM card has four (4) separate MS-ISDN numbers if the USIM has been provisioned for these services. MS-ISDN 1 is for 4K Speech, MS-ISDN 2 is for 3.1KHz Audio (fax, etc.), MS-ISDN 3 is for UDI data, and MS-ISDN 4 is for RDI data.
12. **Extract System Log:** Clicking this button allows the User to automatically extract a GX-9 system log and save the file to a location on the PC for debugging purposes. This file can be e-mailed to Glocom directly for fault analysis if the User experiences any problems.
13. **Restore factory Defaults:** Clicking this button will restore the GX-9 back to factory defaults and delete any of the user parameters that have been entered in the GX-9. It is recommended 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 GX-9. A description of each item on the screen follows:

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Terminal Setup

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

Terminal Local IP Address: 192.168.128.100

DHCP Server: ☒ On ☐ Off

DHCP Address Range: 192.168.128.101 to 199

Idle-mode DHCP Lease Time: 60

Connected-mode DHCP Lease Time: 3600

PIN (3 attempts left): PUK(10 attempts left):

Bypass Antenna Pointing: ☒ On ☐ Off

Auto Power On: ☒ On ☐ Off

24/7 PDP Context Keep Alive: ☐ On ☒ Off

Satellite Selection: AUTO

NOTE: changes to Satellite Selection will not take effect until the terminal is reset.

Netmode: ☒ NAT ☐ BRIDGE

Streaming Inactivity Timer: ☒ On ☐ Off

Streaming Inactivity Timeout in seconds: 300

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

Apply Cancel

Restart Terminal

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 affect until the GX-9 is rebooted.
2. **DHCP Address Range:** This allows the User to set the range of DHCP addresses that are given out by the GX-9 to any connected PC or other Terminal Equipment (TE).
3. **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 duration (default is 60 seconds) of the DHCP lease. This parameter was introduced to address a situation 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/GX-9 to update the PC or other TE with the correct DNS servers used for web browsing after establishing a PDP context.

4. **Connected-mode DHCP Lease Time:** The Connected-mode DHCP Lease Time refers to the DHCP lease duration when the GX-9 is connected to the network. Most Users will have no need to change this parameter.
5. **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.
6. **Bypass Antenna Pointing:** This parameter allows the User to bypass antenna pointing and have the GX-9 go straight into Registering with the Network. This is turned “on” as default for the GX-9.
7. **Auto Power On:** This parameter is used when the User wants the GX-9 to power up automatically if AC/DC power is applied to the GX-9.
8. **24/7 PDP Keep Alive:** This is setting allows retaining a PDP context indefinitely. **Note:** This parameter should not be checked unless you have a critical 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 (normally selected by the GX-9 based upon elevation angle/GPS location) and select a different satellite. **Note:** This change does not take affect until the GX-9 is reset. When set to AUTO the GX-9 will select the satellite based on the 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 and note the time periods when the specific satellites are valid.
10. **Net mode:** Most users will use NAT mode for their application. Bridge mode requires the PC or other TE to be intelligent enough to handle two IP addresses and to be able to route traffic to either address. One address is the GX-9's private IP address and the other is the public IP address assigned by the network when a PDP context is activated.
11. **Streaming Activity Timer:** This allows the user to turn On an inactivity timer for a Streaming QoS connection. 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 update the emergency call number that is applicable in that part of the world where the terminal is being used.
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 divided into three types:

Session: The PS session statistics track the cumulative PS data sent and received on background PDP contexts since the unit was powered on. CS sessions statistics track the time of the last call.

Trip: The trip counter is similar to the trip counter on your vehicle. It can be set to zero at anytime 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 statistics of the terminal since the software version that added this feature was loaded onto the UT. The User **cannot** reset these counters.


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

PS Streaming Session duration

32K	00: 00: 00
64K	00: 00: 00
128K	00: 00: 00
256K	00: 00: 00

PS Background Session Statistics

Session-Rx	0.000 MB
Session-Tx	0.000 MB

PS Trip Statistics

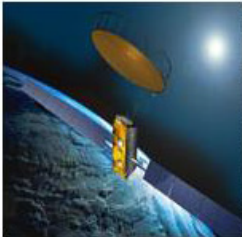
Background Rx	4095.999 MB	Reset data
Background Tx	4095.999 MB	
Streaming 32K	86: 28: 15	Reset data
Streaming 64K	86: 28: 15	
Streaming 128K	86: 28: 15	
Streaming 256K	86: 28: 15	

PS Lifetime Statistics

Lifetime-Rx	4095.999 MB
Lifetime-Tx	4095.999 MB

CS Statistics (hh: mm: ss)

Lifetime	12: 45: 09	
Session	00: 00: 00	
Trip	04: 47: 57	Reset data



Note: If the GX-9 power is abruptly disconnected for some reason, it will not be able to save the statistics to flash memory and hence the statistics for the session maybe inaccurate.

PDP CONTEXTS

The PDP Context page allows the User to setup and configure PDP contexts for any PC or other TE that is connected to the GX-9. 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.



ID	Local IP Address	APN	Global IP Address	QoS	DNS1	DNS2
1						Activate Clear
2						Activate Clear
3						Activate 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:

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 desired 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 PC or other TE that you want to setup a PDP context for. Note that the first three octets of the IP address will reflect any changes made in the setup screen to the GX-9 local IP address. You can use the “ipconfig” command from a “cmd” window to find the IP address of a PC.
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 APN’s, 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 that 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 a Static Global IP addresses assigned by the Service provider.

Activating a PDP Context:

To activate a PDP context, perform the following procedure:

Do not modify the CID field unless you need to setup a specific ID for one of your devices. Leaving it blank will allow the software to automatically choose the next CID that is available.

Next, type in the local IP address of the device that you want to setup the connection for. 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 on "Apply".

The new connection will show up in the table above (See screen shot below for example).



The screenshot displays the GLOCOM Connection Control interface. On the left, a sidebar contains a list of menu items: PROPERTIES, SETUP, STATISTICS, PDP CONTEXTS (highlighted in red), WLAN, WEP SECURITY, ACA, ISDN, and ANTENNA. Below the menu is a small image of a satellite dish. The main area features a table with columns: ID, Local IP Address, APN, Global IP Address, QoS, DNS1, and DNS2. The table lists 11 PDP contexts, each with an 'Activate' and 'Clear' button. Below the table, there are configuration fields: CID (a dropdown menu), APN Name (a text box containing 'bgan.inmarsat.com'), Local IP (a text box containing '192.168.128.101'), QoS (a dropdown menu set to 'Background'), Username (a text box), and Password (a text box). An 'Apply' button is located at the bottom center.


ID	Local IP Address	APN	Global IP Address	QoS	DNS1	DNS2
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						

CID: APN Name:
 Local IP: Username:
 QoS: Password:

Background Context activated for 192.168.128.101


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

You can determine 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.



Connection Control

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



ID	Local IP Address	APN	Global IP Address	QoS	DNS1	DNS2
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						

CID: -

Local IP: 192.168.128. 101

QoS: Background

APN Name: lgan.inmarsat.com


Username:

Password:

CID #1 Inactive; CID #2 & 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 below.

 **GLOCOM**

Connection Control

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



ID	Local IP Address	APN	Global IP Address	QoS	DNS1	DNS2
1						<div>Activate Clear</div>
2						<div>Activate Clear</div>
3						<div>Activate Clear</div>
4						<div>Activate Clear</div>
5						<div>Activate Clear</div>
6						<div>Activate Clear</div>
7						<div>Activate Clear</div>
8						<div>Activate Clear</div>
9						<div>Activate Clear</div>
10						<div>Activate Clear</div>
11						<div>Activate Clear</div>

CID: -

APN Name: lgan.inmarsat.com

Local IP: 192.168.128.101

Username:

QoS: Background

Password:

Apply

▶▶ WLAN

CONNECTING BY WLAN

If you have not previously used the terminal's WLAN interface, it must be enabled using the web MMI, with your PC connected to the terminal via the Ethernet interface.

Wireless LAN interface enabled/disabled: The default is disabled.

Network (SSID) name: The default is "BGAN" but you can change it to whatever you prefer.

Channel number: This controls the radio channel number (1-14) used by the access point. Depending on the country only certain subsets of these channels may be used (3 options: France, Spain or Rest of the World). Channel 11 is common to almost all countries, so it is used as the default.

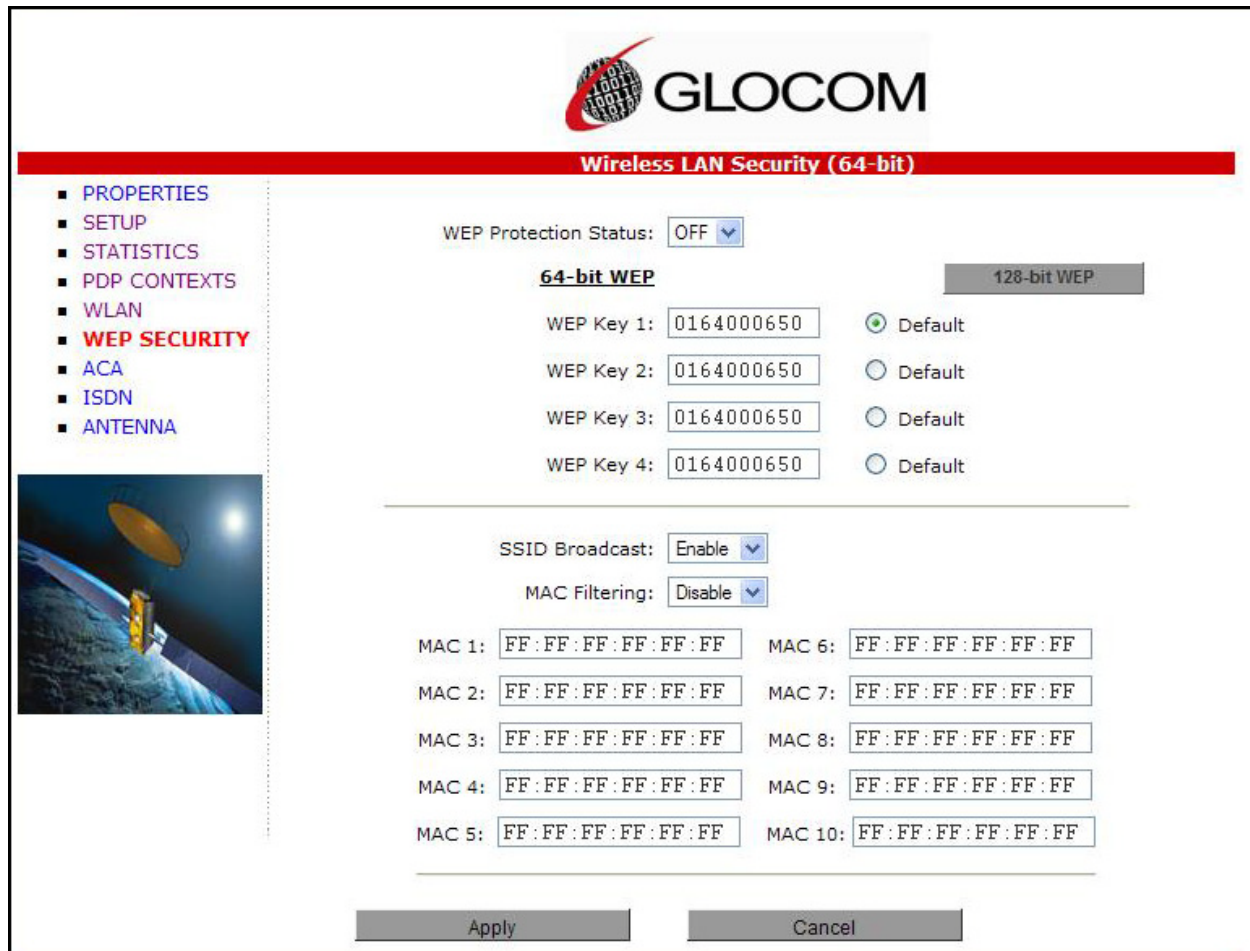


The screenshot shows the GLOCOM web MMI interface for configuring the Wireless LAN. The GLOCOM logo is at the top center. Below it, a red header bar contains the text "Wireless LAN". On the left side, there is a vertical menu with the following items: PROPERTIES, SETUP, STATISTICS, PDP CONTEXTS, WLAN (highlighted in red), WEP SECURITY, ACA, ISDN, and ANTENNA. Below the menu is a small image of a satellite in space. The main configuration area on the right contains the following settings:

- WLAN Power: ON (dropdown menu)
- SSID: BGAN (text input field)
- Region: X30-ETSI (1-13) (dropdown menu)
- Channel: 11 (dropdown menu)
- WEP Security: Disabled
- [Edit WLAN Security Settings](#) (blue link)
- Apply (button)
- Cancel (button)

▶▶ WEP SECURITY

WEP Protection Status: Click “On” from the drop down list to enable the Wireless Encryption Protocol (WEP) for added security. When the terminal’s WLAN interface is enabled, the WLAN LED is either green (WEP is enabled) or red (WEP is not enabled). When the LED is red, any computer with a WLAN interface can detect the terminal’s WLAN SSID, and connect to it automatically.



GLOCOM

Wireless LAN Security (64-bit)

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

WEP Protection Status:

64-bit WEP 128-bit WEP

WEP Key 1: ☒ Default

WEP Key 2: ☐ Default

WEP Key 3: ☐ Default

WEP Key 4: ☐ Default

SSID Broadcast:

MAC Filtering:

MAC 1: MAC 6:

MAC 2: MAC 7:

MAC 3: MAC 8:

MAC 4: MAC 9:

MAC 5: MAC 10:

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

WEP Key 1: Default WEP keys are formulated using the IMEI number of the terminal. If you want to use different WEP keys, please use the following table as a reference when entering the new WEP keys:

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

Hexadecimal 64-bit: Requires 10 characters

Note: If WEP is enabled, you must provide WLAN users with the proper WEP key in order for them to connect to the GX-9 terminal. Please write down the WEP key that you use because once entered, there is no way to view this key again. You will have to disable WEP, reboot the terminal and reset it if the WEP key is forgotten.

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

MAC Filtering: For added security, click on ENABLE from the drop down list. Then choose up to 10 selected MAC addresses that will be allowed to connect to your WLAN. **Note:** To determine the MAC address of a PC or other TE, go to the DoS prompt and enter ipconfig /all.

ACA

This web page allows you to use Automatic Context Activation (ACA) in either of two ways;

- 1) using static IP addresses in the PC or other TE device to establish an automatic PDP context with any QoS that is offered by the network (upper half of the web page) or
- 2) using the DHCP from the GX-9 and establishing an automatic background PDP context for any PC or other TE that connects to the GX-9 (lower part of the web page).

ACA settings for TEs with Static IP address:

You can establish a range of static IP addresses for setting up an automatic PDP context with any of the QoS's 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 (e.g. 192.168.128.1 to 192.168.128.10).

Next select the desired QoS for that range of IP addresses (e.g. 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, then you can type a secondary APN in this field.

Next, if your Service Provider requires a UN and PW, enter it in the next two fields.

IP ACA Properties

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

ACA settings for TEs using DHCP assigned IP address.

Dynamic Background ACA Only: ☐ On ☒ Off


Apply

Cancel


Restart Terminal

To setup additional ranges of addresses, follow the same instructions as above. **Note:** IP address ranges can not overlap.

When you are finished, click on “Apply” and “Operation Successful” will be displayed.


GLOCOM

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



Connection Control

ID	Local IP Address	APN	Global IP Address	QoS	DNS1	DNS2		
1	192.168.128.101	bgan.inmarsat.com	161.30.180.18	BackGround	172.30.66.7	172.30.34.7	Activate	Clear
2	192.168.128.110	london.bgan.inmarsat.com	10.10.10.2	BackGround	161.30.105.72	0.0.0.0	Activate	Clear
3	192.168.128.112	bgan.inmarsat.com	161.30.180.23	128K Streaming	172.30.66.7	172.30.34.7	Activate	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: bgan.inmarsat.com

Local IP: 192.168.128. 101

Username:

QoS: Background

Password:

Apply

ACA settings for PCs and other TEs using DHCP assigned IP address: This option allows setting up the GX-9 for dynamic background ACA. In this mode any device connected to the GX-9 will automatically receive a background PDP context.

To activate this feature, select the “On” radio button under ACA settings for PCs or other TEs using DHCP assigned IP address and click on “Apply”.

IP ACA Properties

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

ACA settings for TEs using DHCP assigned IP address.

Dynamic Background ACA Only: ☐ On ☒ Off

Apply

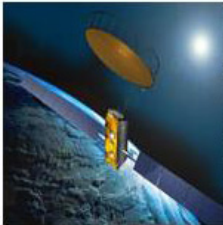
Cancel

Restart Terminal

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

IP ACA Properties

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



DHCP Address Range: 192.168.128.101 to 199

Operation Successful !!

USIM APN Name: **bgan.inmarsat.com**
ACA settings for TEs with Static-IP address.

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

ACA settings for TEs using DHCP assigned IP address.

Dynamic Background ACA Only: ☐ On ☒ Off

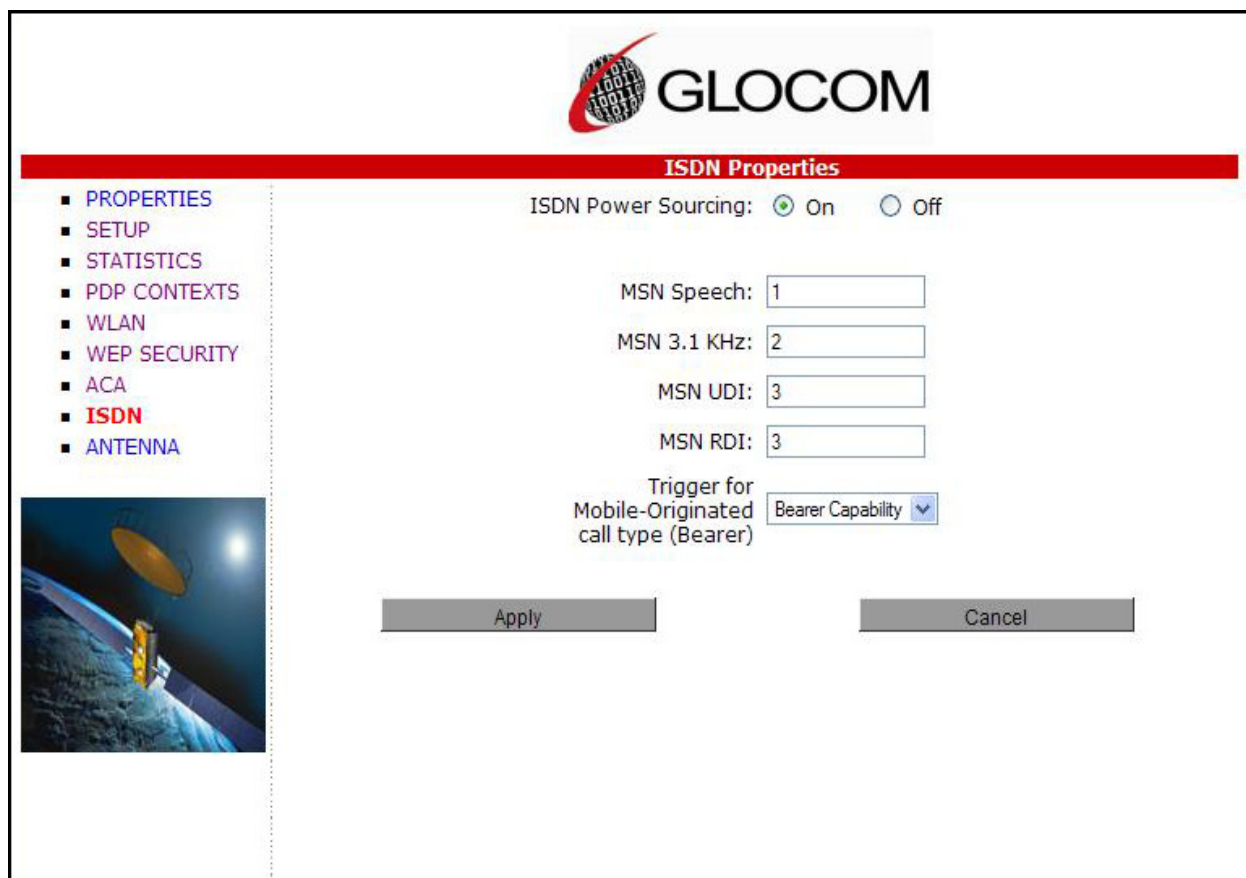
Apply

Cancel

Restart Terminal

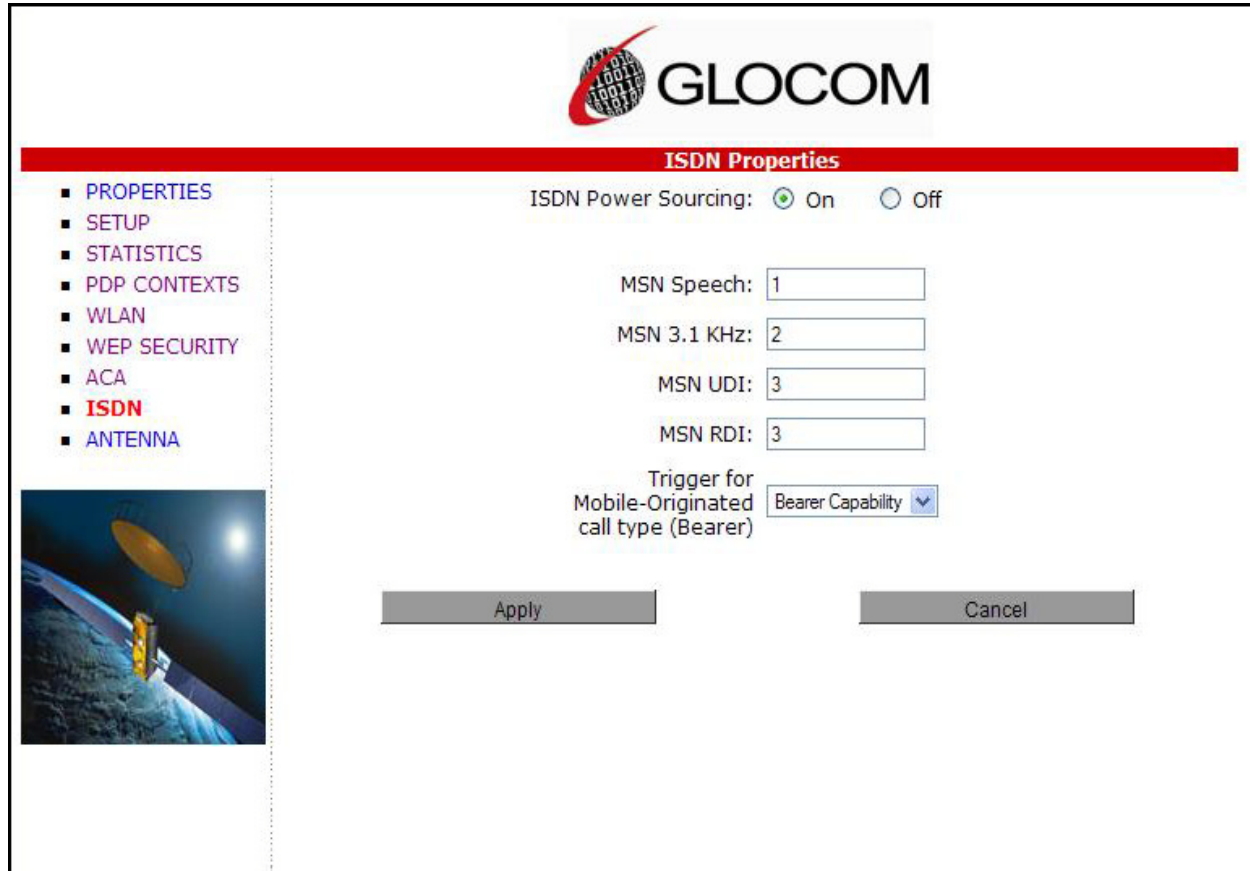
▶▶ ISDN

An ISDN data connection can be established by connecting the ISDN equipment directly to the GX-9s ISDN port with an ISDN cable (same as an Ethernet cable). This web page allows you to activate 40V power sourcing on the ISDN interface, and set MSN numbering options.



1. **ISDN Power Sourcing:** To turn on the ISDN power sourcing click on the “On” radio button. The ISDN device will receive 40V power immediately via the ISDN cable. This field should be On unless ISDN is never required or the ISDN device 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, first program the same MSN into the ISDN handset that connected to the GX-9’s 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, program the same MSN into the ISDN fax machine connected to the ISDN port.
4. **MSN UDI (Unrestricted Digital Information):** By default, MSN 3 is entered into the MSN UDI text box. UDI is a 64 Kbps service that is the European standard for ISDN.
5. **MSN RDI (Restricted Digital Information):** By default, MSN 3 is entered into the MSN RDI text box. RDI is a 56 Kbps service that is normally found in the USA.

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, 3.1KHz audio, UDI, RDI) via the bearer capability. If there is a problem, this field can be changed to use the MSN number instead.



Once all changes have been made, click on "Apply". Any changes to this screen require a re-boot of the terminal to save the new configuration. Use the power button on the GX-9 or the "Restart Terminal" button to gracefully re-boot the GX-9.

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

▶▶ ANTENNA

This web allows monitoring 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 is tracking

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



Antenna Status

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



ATB State: Track
Elevation: 35
Frequency (KHz): 1537070
Antenna Tracking: TRUE

Run ABIT

ABIT Azimuth Motor Result: 0
ABIT Elevation Motor Result: 0
ABIT EEPROM Result: 0
ABIT RF Result: 0
ABIT LNA Result: 0
ABIT Microcontroller Result: 0
ABIT HPA Result: 0

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

#	State name	State Description
0	INIT_ST	Initial state
1	IDLE_ST	Wait on 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 (i.e. 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 3 satellites.

Satellite ID	Satellite Longitude	Primary		Alternate
		Freq kHz	Freq kHz	
I4-F1 IOR	64.0 E	1537485	1540825	Old position
I4-F1 APAC	143.5 E	1537485	1540825	New position
I4-F2 AOR	53.0 W	1537920	1541115	Old position
I4-F2 EMEA	25.0 E	1537920	1541115	New position
I4-F3 AMER	98.0W	1537070	1540730	New Satellite

TROUBLE SHOOTING

Problem	Possible Cause	Possible Solution
Terminal will not turn on	DC power adapter not connected properly. User disabled the Auto “On” Mode.	Check DC power adapter connection points Use LaunchPad or web MMI to enable the Auto “On” Mode.
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 or web MMI will not connect to the terminal	No interface connection between the terminal and computer Static IP address has been setup in your laptop and will not accept the terminal DHCP address.	Ensure there is a WLAN or Ethernet connection between the terminal and computer, see User Guide Check the IP configuration settings on your laptop
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, review the User Guide Locate the terminal and computer closer together and reduce any obstructions between them.

Problem	Possible Cause	Possible Solution
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 User Guide Ensure the appropriate MSN is programmed into the terminal, see ISDN Section of User Guide
Terminal will not make outgoing ISDN calls	ISDN power sourcing is turned off Terminal is not Registered with the Network and still in antenna pointing mode. "Bypass antenna pointing" may be turned off.	Enable the ISDN power sourcing from the BGAN LaunchPad or ISDN web MMI page (unless the ISDN device has a separate power source). Check Setup page in web MMI to make sure "Bypass antenna pointing" is turned ON.
Terminal is connected to the BGAN network, but cannot obtain the requested Quality of Service	Network temporarily not available User tried to set up a 256 Kbps streaming connection.	Retry again. If problem persists, contact your service provider. The Inmarsat Network only supports 256 Kbps streaming connections from terminals that have an elevation angle greater than or equal to 45 degrees.
Terminal does not obtain a GPS fix	Terminal's location limits visibility of 4 or more GPS satellites.	Move the vessel to a location where there are no obstructions.
You hear a loud 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 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.	Only connect an ISDN device that draws less than 70mA of current at 40V (equivalent power 2.8W) Make sure you connect only ISDN devices to the ISDN port

Problem	Possible Cause	Possible Solution
None of the above solutions resolve the problem	Terminal may have a hardware or software fault, and needs to be re-booted.	Remove DC power adapter. 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 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 proper routing of 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 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 200-300 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 (terminal plus antenna)		Idle: 20 W Max: 100 W (when transmitting)

DECLARATION OF CONFORMITY

Glocom Inc., 22 Firstfield Rd., Ste 125 Gaithersburg, MD 20878 USA , declares under our sole responsibility that the product GX-9 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, EN62311, 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):

PHOENIX TESTLAB. GmbH Königswinkel 10 D-32825 Blomberg, Germany

Identification mark: **0700** (Notified Body number).

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

Glocom Inc., 22 Firstfield Rd., Ste 125 Gaithersburg, MD 20878 USA

Signed by JD Pan (Managing Director, August , 2009)

Note	The Ethernet cable used with the GX-9 shall not be longer than 3 meters to comply with ETSI emissions requirements.
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☐ **FCC COMPLIANCE**

This device conforms to the FCC rules. Any changes or modifications to Glocom's equipment, not expressly approved by Glocom Inc., 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 **200 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.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio

frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

☐ **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 Glocom Inc., 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 Glocom Inc., at: www.glocom-us.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 APN's 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 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 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 and each number is 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.

TE (Terminal Equipment): Terminal equipment refers to the piece of equipment that is connected to the BGAN UT (e.g. 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 (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.

UT (User Terminal): The User terminal is the BGAN modem device

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 that is 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, 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.