

BGAN ANTENNA GUIDE

INSTALLATION & ORIENTATION



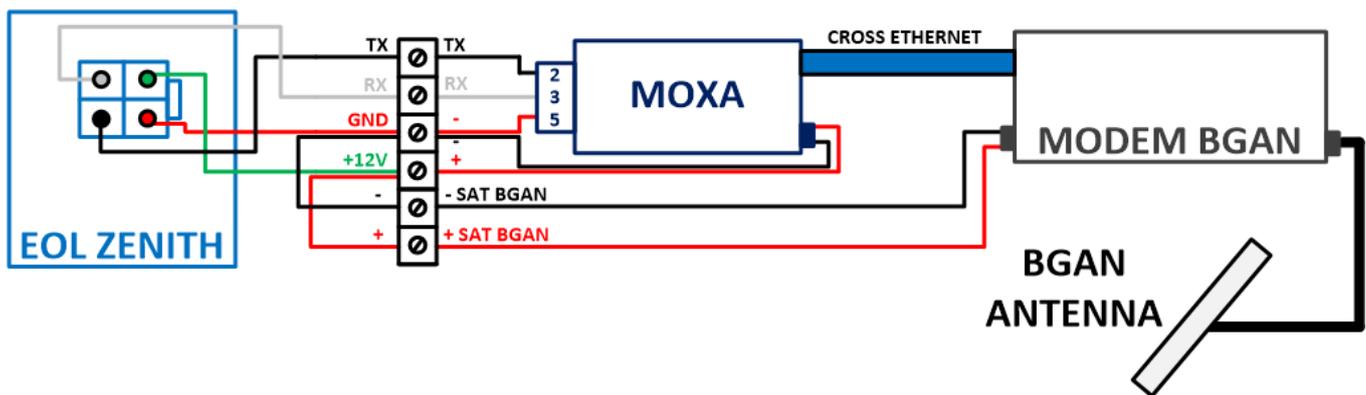
HERE ARE THE THINGS YOU WILL LEARN WHEN YOU HAVE READ THIS BGAN ANTENNA GUIDE:

- ① How to prepare the EOL Zenith, Moxa & BGAN modem
- ② How to install and pre-orientate the BGAN Antenna
- ③ How to fine adjust the BGAN antenna
- ④ How to configure BGAN communication in EOL Manager

If you need technical support while setting up these devices, please go to our website, www.kintech-engineering.com and click on "Technical Support." You can also contact our technical support directly via phone and/or email.

1. How to prepare the EOL Zenith, Moxa & BGAN modem

- Verify that all cables are plugged in correctly and check for continuity (according to the wiring diagram shown below).
- Make sure the data logger has the correct .sit file configured with BGAN communication in EOL Manager (see chapter 4).
- Verify that BGAN SIM card is activated correctly including data plan.



2. How to install and pre-orientate the BGAN Antenna

The BGAN system operates with a **directional antenna** which means that the orientation of the antenna is crucial for its operation and good coverage.

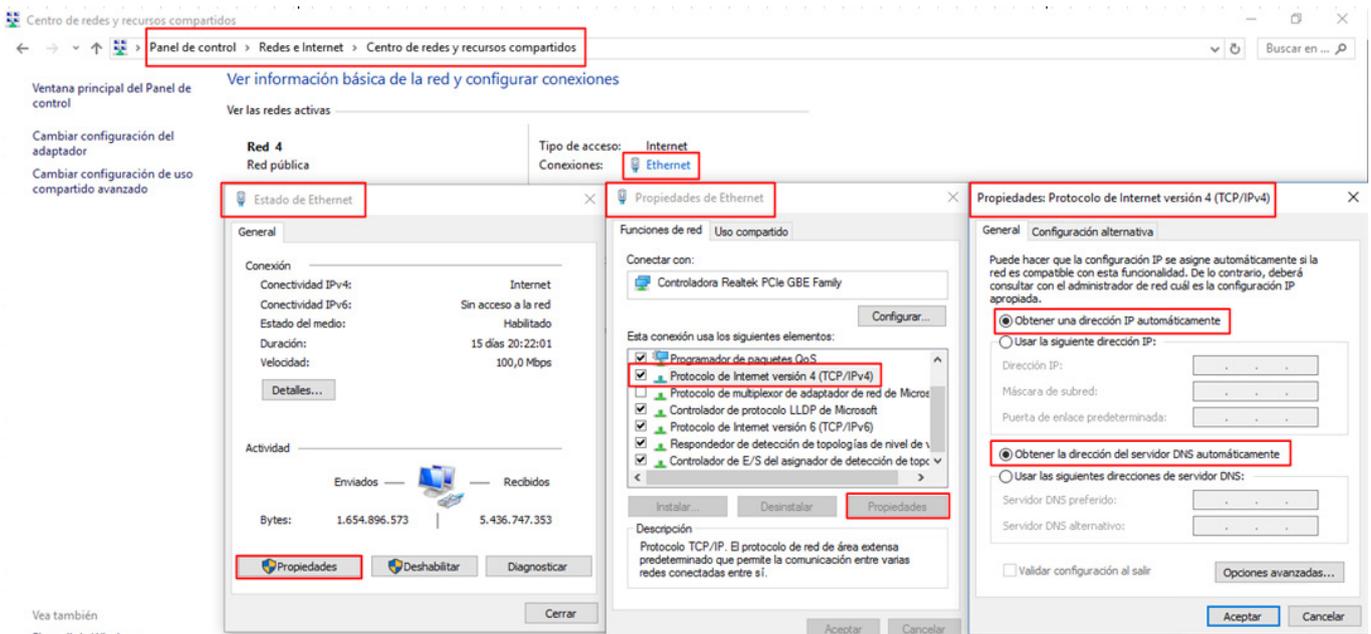
Before installing the antenna support boom to the mast make sure the antenna will be located and orientated in such a way that it has a clear line of sight between the antenna and the satellite (**unobstructed**).

Follow these steps to verify in what direction to point the antenna. These steps should be performed outside:

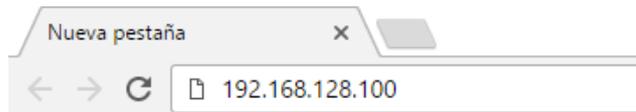


Do not stand in front of the antenna. This device emits high-energy radiofrequency waves. Do not place the head or other body part in front of the satellite antenna when the system is operational. Keep a distance of at least 1 m from the front of the satellite antenna.

- Connect the RF antenna and screw the antenna onto the support boom (final antenna orientation will be adjusted later).
- Connect the cross-wire ethernet cable from the BGAN modem to your laptop.
- Power on the BGAN modem.
- Wait until the Power and the GPS LEDs are on (fixed).
- Disable the Wifi connection on your laptop.
- Open "Control Panel" > "Network and Internet" > "Network and Sharing Center" > "Ethernet".
- In the "Ethernet Status" tab, click on "Settings".
- In the "Ethernet Settings" tab, click on "Internet Protocol version 4 (TCP/IPv4)".
- In the "Internet Protocol version 4 (TCP/IP)" tab, click on "Obtain an IP address automatically".
- Finally, click on "OK" until you exit the menu.



Now open your web browser to access the BGAN terminal by typing the following default IP address: **192.168.128.100**.

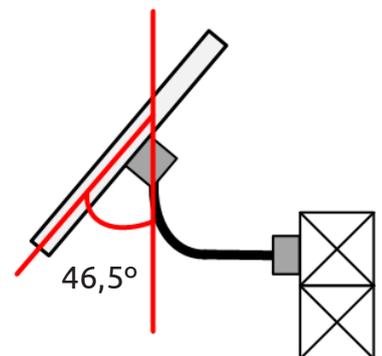


In the lower part of the **STATUS box** (indicated as Pointing Info as shown below) you can find the recommended orientation and inclination of the BGAN antenna. Now screw on the support boom to the mast according to this orientation and incline the BGAN antenna as indicated. Roughly adjust the BGAN antenna as indicated below in the **inclination angle diagram** (i.e. 46,5°).

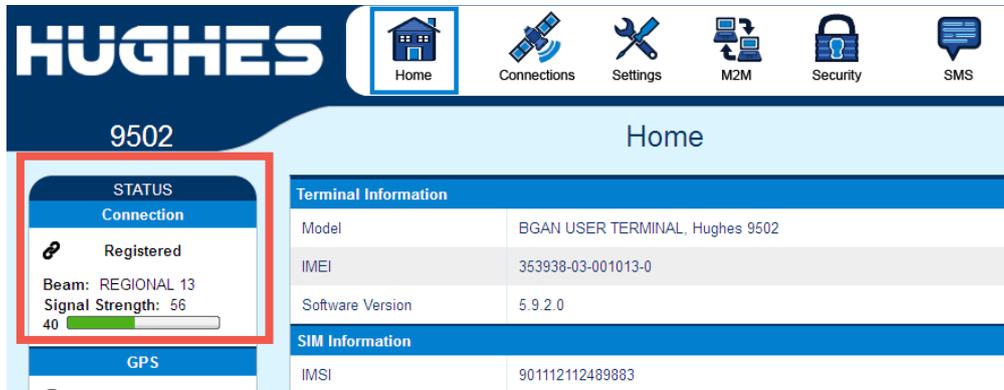
Terminal Information	
Model	BGAN USER TERMINAL, Hughes 9502
IMEI	353938-03-001013-0
Software Version	5.9.2.0

SIM Information	
IMSI	901112112489883
APN	bgan.inmarsat.com
Subscriber Phone Number	Not configured by Service Provider.

Terminal Logs			
Log Type	Current Log	Archived Log	Reset Log

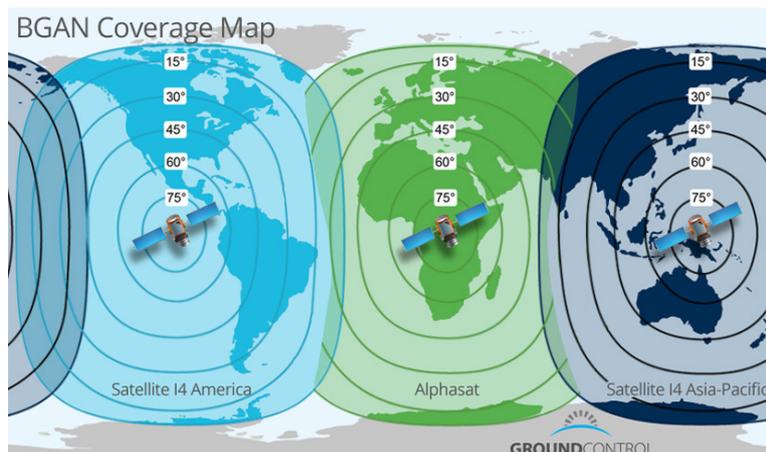


➤ In the upper part of the **STATUS box** (indicated as Connection as shown below) check the green bar in order to verify the **Signal Strength**. Any value over 50 dB will be suitable for a good coverage (i.e. 56 dB).



➤ Exit the BGAN terminal in your web browser and turn off the BGAN modem.

➤ The following picture shows the Immarsat satellites and its coverage map.



3. How to fine adjust the BGAN antenna

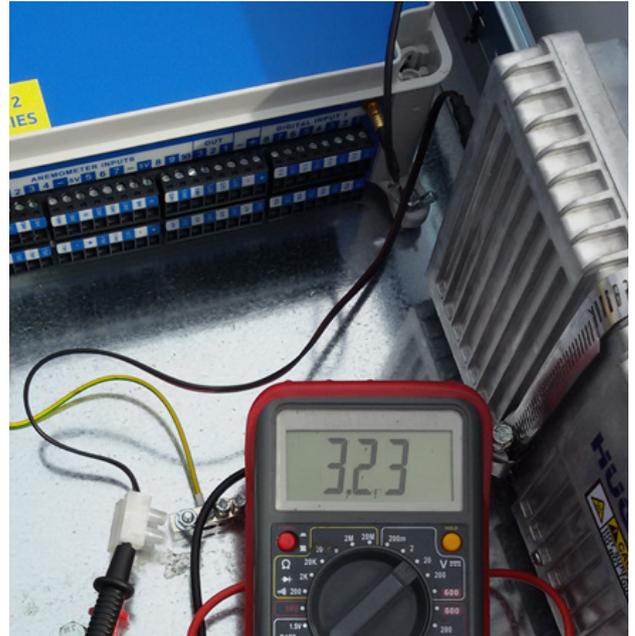
- Now disconnect the ethernet cable from your PC and plug it back into the Moxa Nport.
- Power on the BGAN modem.
- The BGAN LEDs carry out a startup sequence that lasts 25-30 seconds. Wait until the Power LED on the front panel starts blinking with the other two LEDs off.
- With the Power LED blinking, press the Function Button (< 2 seconds, without holding it). If done correctly, the three LEDs will start blinking at the same time. The modem now enters **orientation mode**.



Once the modem is in orientation mode, there are two options to fine adjust the BGAN antenna:

a. Headphones: Insert the headphones into the 3,5 mm Audio Jack on the modem. These headphones are not supplied with the equipment, although most of the ones supplied with mobile phones are compatible. The BGAN modem will emit a beep proportional to satellite coverage. The better your orientation and therefore the coverage, the sharper and faster the beep.

b. Voltmeter (recommended): Insert the supplied audio jack cable with the white connection terminal into the BGAN modem. Now measure DC voltage with a voltmeter (see photo on the right). The modem will generate a voltage directly proportional to the correct orientation of the BGAN antenna and therefore to the satellite coverage signal. It is recommended to leave the BGAN antenna screwed onto the support boom with a value of 2,5 V or more for an optimal connection and **never less than 2 V**. The better your orientation and therefore the coverage, the higher the voltage value (i.e. below shows 3,23 V).



When you are done with the final adjustment of the antenna fix its position onto the support boom.

Press the Function Button (< 2 seconds, without holding it) to exit orientation mode.

To confirm that the orientation of the BGAN antenna is correct and the modem is available to communicate, **wait until all three LEDs remain on**. It may take about 2-5 minutes to stay on after a sequence of on and off. If the 3 LEDs do not remain fixed (on) after a few minutes, start the orientation process again (starting from chapter 2).

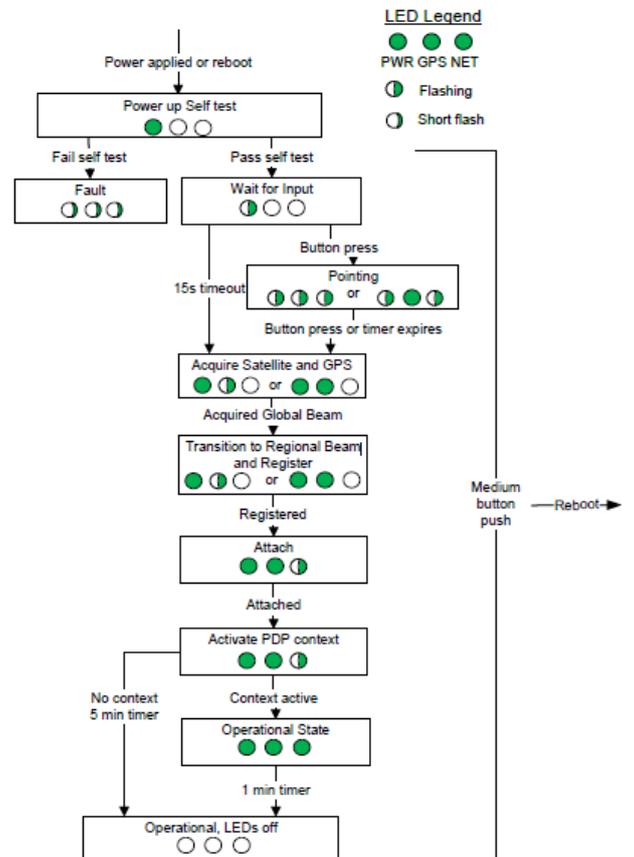
Make a real-time connection using EOL Manager from the office to verify that everything is OK.

Summary of the three LEDs:

See on the right the LED flow chart of the BGAN modem.

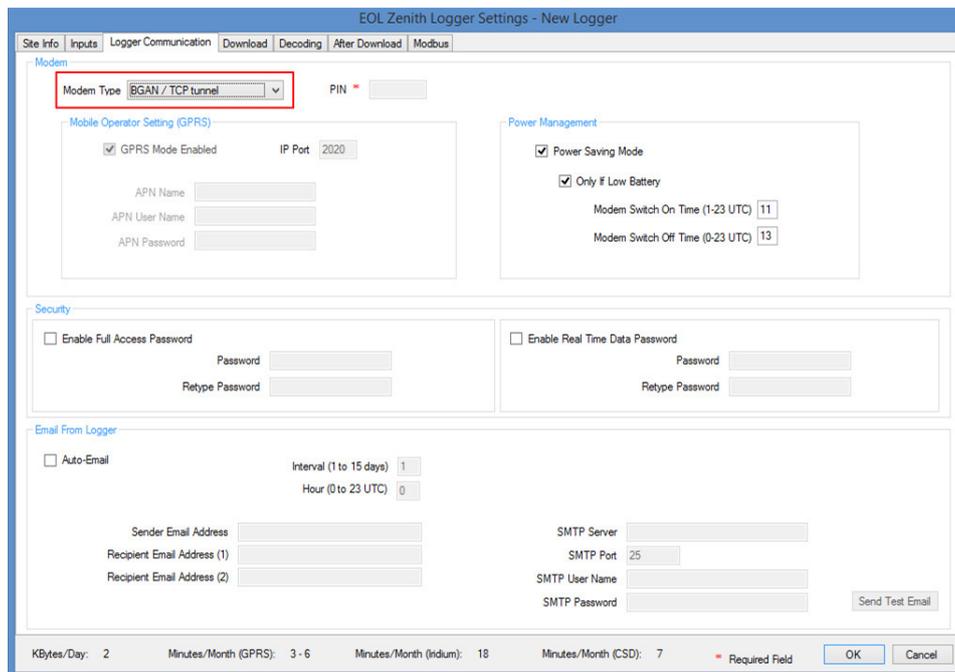
- Power LED fixed: power OK.
- GPS LED blinking: BGAN modem searching for GPS signal.
- GPS Fixed LED: GPS signal OK.
- NET LED blinking: registering on the network.
- NET LED fixed (three fixed LEDs): BGAN modem with satellite coverage and ready for communication.

Note: The three LEDs turn off after one minute of inactivity to save power. To turn them back on and check the modem status short press the Function Button (<2 seconds).

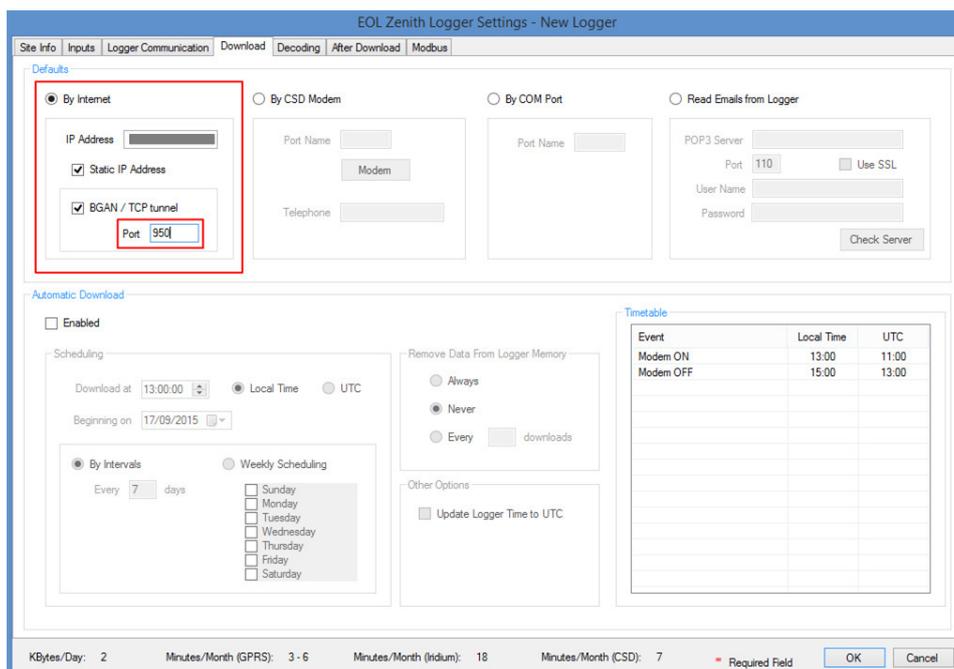


4. How to configure BGAN communication in EOL Manager

- Open the corresponding data logger in EOL Manager and click on “Settings”
- Click on the “Logger Communication” tab and select BGAN / TCP tunnel in the “Modem Type” section.



- Click on the “Download” tab and select the option “By Internet”.
- Click on “Static IP Address” and type the IP of the BGAN modem in the field marked with “IP Address”.
- Click on “BGAN / TCP tunnel” and type in 950 in the “Port” field.



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