

# Technology Overview

## Wave Glider BGAN Option Specifications

Liquid Robotics offers a BGAN communications option for the Wave Glider. This service allows the Wave Glider to access and use substantially more satellite bandwidth, as much as 100x more than Iridium RUDICS, in locations around the world.

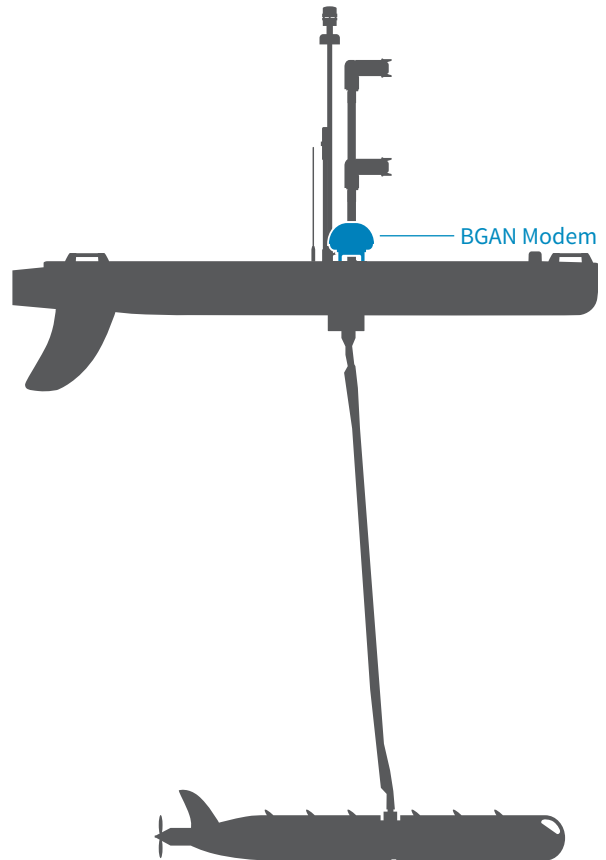
Hardware and software integration of the Hughes 9450 BGAN modem includes a custom designed, protective housing, power duty cycling to conserve energy, and the transmission of acoustic and visual data files through Mission Management software.

### Advantages

- Cost-effective and fast transfer of acoustic audio files and HD photos (100x faster vs. Iridium Rudics)
- Worldwide coverage except for the extreme polar regions (see map on the next page)
- Custom designed protective shell designed to fit on float of Wave Glider

### Additional Wave Glider Specifications

- Antenna housing dimensions: 252mm diameter x 193mm tall (9.9" x 7.6")
- Available for Wave Glider SV3 only
- BGAN modem installed in a 3MPU payload box is included
- Requires Regulus 1.1.0 or later
- Modem power lock-out feature enables marine operations and service personnel to work within the 1m safe operation envelope
- Ethernet cable/connector required for BGAN is included
- Max file size transfer: 20MB (approximately 30 minutes)
- Additional weight: insignificant relative to float / vehicle shipping <10kg (20lbs)



### Inmarsat-Based BGAN Option Specifications

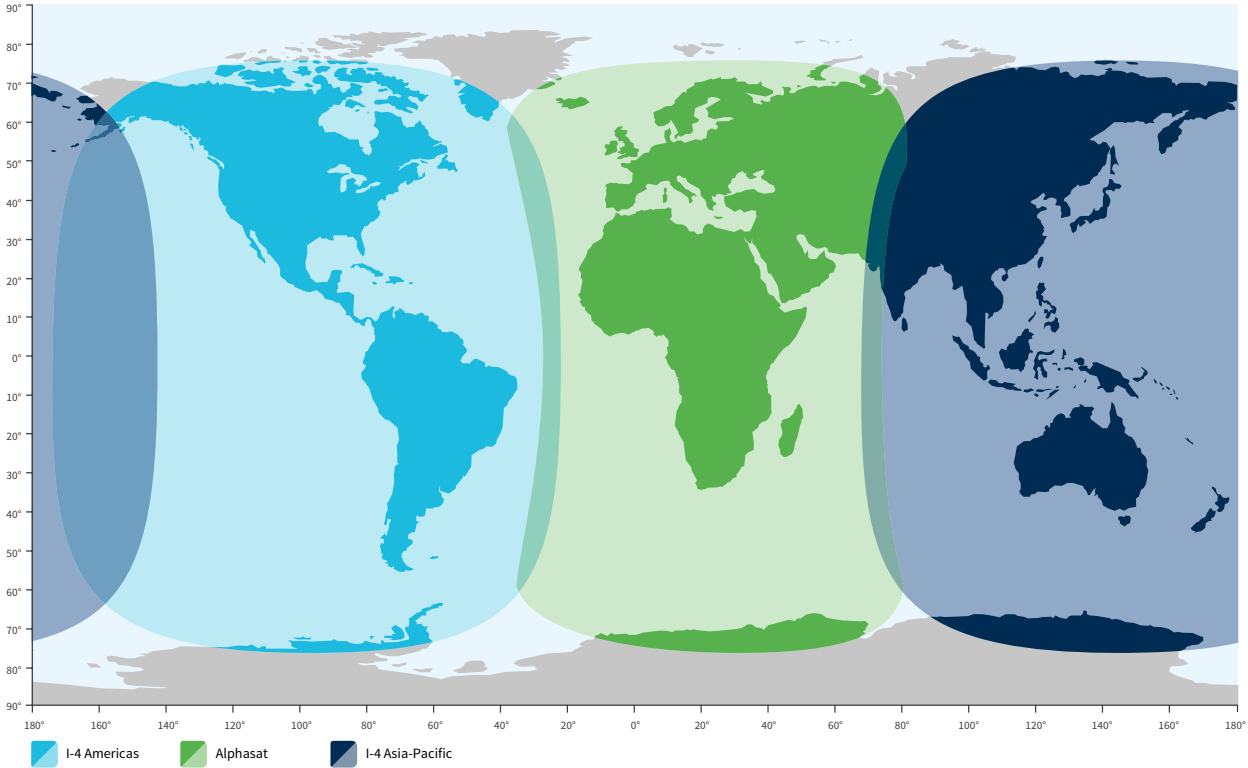
Model	Hughes 9450 BGAN modem
BGAN Class 2 transfer rates	Up to 464kbps (kilobyets per second). <i>Liquid Robotics observed rates of 250-300kbps</i>
Power consumption	Appx. 30W (i.e., 24W idle and 33W file transfer or receive)
Communications frequencies	<ul style="list-style-type: none"><li>• Transmit: 1626.5Mhz to 1660.5Mhz</li><li>• Receive: 1525-1559MHz</li></ul>
L-Band transceiver	Avoids rain fade (1.5-1.6Ghz)
Operational temperature	-13° to 131° F (-25°C to 55°C)
Cost	\$3 to \$4.50 per Mb, depending on the plan chosen

## BGAN Communications Option (continued)

### Approximate File Transfer Rates (Based upon 250kbps observed rates)

File types (compressed)	Transfer w/ modem active	Modem boot-up + transfer
Photo (1mb)	34 seconds	180 seconds / 3 minutes
Audio snippet of 3 mins (4mb)	180 seconds / 3 minutes	300 seconds / 5 minutes

### Inmarsat BGAN Coverage Map



For additional coverage details visit:  
<http://www.inmarsat.com/about-us/our-satellites/our-coverage/>