

Glomex Technical Tips Mobile Data Speed – weBBoat range

What does weBBoat® do?

There are many factors that can cause disruption to either the cellular or Wi-Fi network while you are underway such as the size of your phones' internal antenna, boat layout, antenna placement, humidity, time of season, etc.

Thanks to the advanced technology used, the weBBoat® can help prevent or solve these connection problems. Using twin high-gain antennas, and high-speed data transfer protocols, the weBBoat® is by far the most advanced antenna system in the market today!

Mounting the antenna as high as possible on the vessel ensures maximum range and coverage stability for your internet connection.

Using the advanced switching software, allows the user to save money on costly roaming and overage charges by automatically switching to Wi-Fi when available.

Why should you choose weBBoat®?



Representation of signal strength comparing Webboat4G to 4G Phone

Even when the cellular 4G coverage is good on land, it starts to weaken after a few miles from the coast. Thank to two 4G/3G diversity antennas, one Wi-Fi antenna, and a super-fast 3G/4G/Wi-Fi router, weBBoat® allows you to surf the web offshore ensuring stable and high speed connections.

To get a better idea of how the weBBoat® worked in comparison with standard mobile reception, a field test was required.

This is why we have tested weBBoat® at the Adriatic Sea onboard Glomex Test Lab 3.

As shown in the graph on the right, during the sailing weBBoat® never dropped below 90% 4G signal, however numerous times all of our phones dropped to 3G, GSM, and to emergency only.

So, weBBoat® offers an easy to use, cost effective solution to those looking for high speed internet along the coast and those that don't want to added expensive satellite equipment.

Glomex weBBoat® device Speed

	Boat type		Unit		Slot SIM		Ethernet ports	Speed 5G + 4G/LTE		Reception range 5G + 4G/LTE	Geographical Area	
	Medium-small	Integrating Commercial	All-in-one	Indoor	Indoor + external antennas	Single	Dual	2	4G: Cat. 6 up to 300 Mbps (DL)	5G/4G: Cat. 16 up to 2.5 Gbps (DL)	Up to miles	Europe, Middle East, Africa, Asia, South America, Oceania
weBBoat 4G Lite 	✓		✓			✓		✓	✓	15	IT1104HS	IT1104HS/US
weBBoat Plus 5G 	✓	✓	✓				✓	✓	✓	25 ⁺	Global: IT1205PLUS	
5G Extender 	✓	✓	✓	✓		1 ROUTER 4 SIM		✓	✓	25 ⁺	Global: IT1205PLUS/SE	
weBBoat Link 	✓			✓		✓		✓	✓	10	IT1304HS	IT1304HS/US
weBBoat Link EXT 	✓				✓	✓		✓	✓	20	IT1304HSEXT	IT1304HSEXT/US
weBBoat Link PRO 5G 	✓			✓		✓	✓	✓	✓	15	Global: IT1405PRO	
weBBoat Link PRO 5G EXT 	✓	✓			✓	✓	✓	✓	✓	25 ⁺	Global: IT1405PROEXT	

Figure 1- Glomex 5G/4G/Wi-Fi Coastal & Ocean internet system

As shown in Fig. 1, the weBBoat® download speed can be at most 100Mbps or 150Mbps, while in upload it is 50Mbps.

It is important to note that the speed values provided here are theoretical maximum values. This means that the maximum speeds can only be expected under ideal laboratory conditions which are unavailable in every-day use cases.

Comparing speeds to other devices

If you have noticed that your Glomex weBBoat® (except for 5G models that are equipped with modules with top-of-the-range features) provides slower speeds than other LTE devices (phones, tablets, other

routers, etc.) when tested under similar or identical conditions, it may be due to the fact that the devices use different technologies and are all-in-all made to be utilized for very different purposes.

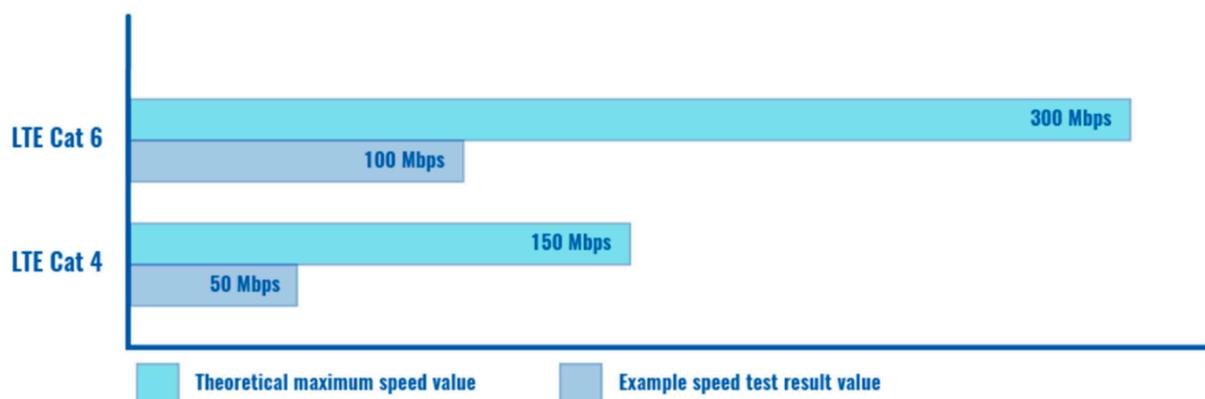
Please note that even if other LTE devices could provide better internet connection performance on harbor, one of the weBBoat® main key point is to allow you to surf the web even offshore, where other internet devices cannot.

Please, read the example below to how and why LTE speeds may differ from device to device.

Example

Let's say that we have two different LTE devices and we want to compare their speeds. One is LTE Cat 4; the other is LTE Cat 6; all other test conditions are identical (same location, time of day, SIM card, etc.) For the sake clarity, let's focus only on download (DL) speed for this example.

After conducting speed tests on both of them, we notice a DL speed of 100 Mbps on the Cat 6 device and a DL speed of 50Mbps on Cat4.



Because both results are well below the theoretical maximum speed values for each category and the devices were tested under identical conditions, we may have expected the speeds to be about equal or at least more similar. However, this assumption is incorrect because Cat 6 does not only increase the maximum speed cap, it also introduces additional technologies that can utilize the same resources more effectively. In this particular example, the most logical explanation for the speed discrepancy is that Cat 6 supports 2 carrier aggregation (2CA).

Carrier aggregation (CA) is an LTE-Advanced feature that allows for multiple frequency blocks (a.k.a. component carriers (CC)) to be assigned to a single piece of user equipment (UE), thus, increasing the data rate for that UE. 2CA is simply the aggregation of two CCs.

2 Carrier Aggregation



Cat 4 does not support carrier aggregation. Therefore, slower speeds should be expected in most Cat 4 to Cat 6 comparisons.

No Carrier Aggregation



Furthermore, most modern phones are much faster than LTE Cat 6 and can support 3CA, 4CA and 5CA (depending on the supported LTE category), which provide even more speed.

3 Carrier Aggregation



In addition, other factors differing from category to category (such as higher-order constellations of quadrature amplitude modulation (QAM)) may also affect data rates. Therefore, if you are making LTE speed comparisons, please make sure that you are comparing adequate devices that use identical or similar technologies.

Category	Download (Mbps)	Upload (Mbps)	Example devices
Cat 3	100	50	Apple iPhone 5
Cat 4	150	50	Apple iPhone 6, Samsung Galaxy S5
Cat 6	300	50	Apple iPhone 6s , Samsung Galaxy S6
Cat 9	450	50	Samsung Galaxy Note 7
Cat 12	600	50	iPhone 8 , iPhone 8 Plus , iPhone X
Cat 16	1000	50	Samsung Galaxy S8 , Sony Xperia XZ Premium
Cat 18	1200	150	Galaxy S9 , Galaxy S9+ , Huawei P20 Pro
Cat 20	2000	300	Samsung Galaxy S10 , S10e , S10+
Cat 21	1400	300	Huawei P30 , Huawei P30 Pro , Huawei Mate 20 , Huawei Mate 20 Pro

Figure 2- LTE Categories

Glomex weBBoat High Speed is a CAT6 LTE device

Glomex weBBoat 5G Plus is a CAT23 LTE device

What affects mobile data speed

Other than LTE category, there are many other factors that may affect the speed of mobile data transfer.

- **Bandwidth.** Different frequency bands provide different channel bandwidth options and higher bandwidths generally mean more speed. However, this not something that can be configured on the device but is rather set by the serving cell.
- **Cell tower load.** Mobile speeds can be affected by the busyness of the serving cell. The more devices a cell serves, the less speed should be expected. Therefore, during peak hours mobile speed is very likely to be lower as more clients are using the same serving cell.
- **Frequency bands.** Under certain conditions different frequency bands may also affect data transfer rates. Higher frequency bands can generally provide better speeds. However, lower frequency waves traverse the environment more effectively and may provide better speeds in areas with many possible signal obstructions (such as urban areas).

- **Location & signal strength.** Your device may be in a location with poor cellular coverage. This makes for poor signal conditions, which means a decreased data transfer rate.
- **Network interface card (NIC).** If you have 100 Mbps NIC and a device that provides speeds over 100 Mbps, you will not be able to utilize that device's speed to its full potential.
- **Physical obstructions.** Physical objects, such as walls, buildings, trees and others may cause obstructions in the path between your device and its serving cell, which may cause lower speeds than under line-of-sight conditions. Even the materials of which these objects consist are also a factor in determining speed.
- **Service mode.** The greatest factor for mobile data speed is the service mode under which a device is operating. You can check which service mode is in use by inspecting the control panel in the Glomex App.
- **Weather conditions.** Poor weather conditions (such as rain, strong winds, thunderstorms, extreme temperature, etc) can also decrease expected data speed values.

Tips

Here are some general tips that may help increase the mobile speed on your device.

- **Antenna orientation.** Trying different antenna positions may help create better signal conditions. Open your device's App while experimenting with your antennas and look to the "Mobile" widget in the "Overview" page to see if the signal strength value changes based on antenna orientation. Leave the antennas in a position which provides the highest signal strength value.
- **Different antennas.** In some cases (for example, if the device is far away from the serving cell) it may be hard to achieve good signal conditions without additional equipment. Different antennas may come in handy for this purpose. For example, higher gain and directional antennas will provide better coverage in long distance communication.
- **Location.** Try moving your device around its environment in order to find better signal conditions. Try placing the device next to a window or other transparent material. If you have clear view of the serving cell itself, try placing the device next to a window facing that cell.