



# LOUD AND CLEAR

In the world of satellite communications the correct choice of antenna is crucial. **Frances and Michael Howorth** look at what is on offer and talk to the experts.

In the ever changing world of super yachts, perhaps the area of fastest change is in the field of on-board electronics and in particular satellite communications. This speed of change is if anything set to increase and as it does so it becomes more and more important to carefully look at the hardware installed on a super yacht during build, refit and upgrade. When it comes to choice of VSAT antennas there is nearly always a conflict of interest: The owner normally wants an antenna that is as small as possible to minimise the impact on the yacht's look and reduce his costs. The brutal truth of the matter is however, the bigger the antenna, the better the quality and service it provides. Bigger antennas give wider coverage areas, and are less affected by disturbance from the likes of rain fade and blockage. Jan Holmen represents Maritime Network Systems the super yacht division of Norwegian VSAT service provider and Cobham distributor GIS and is based in Palma Mallorca. He says, "For a smaller yacht doing mostly coastal cruising in nice weather, having a smaller antenna won't matter, but for ocean going vessels or sailing vessels, you need 3 axis stabilisation in order to get a stable VSAT service."

### Stable communication

With 2 axis stabilisation means that the antenna can not compensate for rolling movement when the antenna is pointing aft or forward, and if the antenna is pointing sideways, it won't be able to compensate for pitching movement of the vessel. Both effects degrade the level of service. Holman adds, "Smaller antennas, like the Seatel USAT and the smaller KVH antennas only have stabilisation in 2 axis. Bigger units such as the 30" and up in the Seatel range have 3 axis stabilisation." Roger Horner heads up the e3 network a yachting specialist communications company that has offices around the world in every major super yachting hub. He has no doubt that the correct choice of antenna is one sure way of helping future proof a VSAT installation. He says, "Firstly, make sure the antenna selected will work with most of the, over 100 VSAT service providers available simply by changing the modem." He adds, "Thus if the demands of the yacht change or the VSAT service degrades or can't keep up, it is a simple job to change to a new service provider that may have a better deal and a faster service as you do with a cell phone. Remember for example, that KVH antennas will only work with KVH service. Horner also recommends selecting an upgradable antenna that can use Ku and Ka band VSAT services. Marine satellite antenna builder Intellian, has introduced three new solutions for the Inmarsat FleetBroadband (FB) networks and each have innovative new features and stylish design domes among their latest additions to their line of antenna systems.

Backed by a three year warranty their FB150, FB250 and FB500 include a broad range of IP and networking related value-added features such as IP routing, Firewall capability and

vessel fleet tracking.

The Intellian FB150 is a high performance satellite communication solution designed to provide global, high quality data and voice for business, operational or recreational applications in a compact size and light weight ADU (Above Deck Unit) with the optional matching dome solution and simple user installation. The FB250 enables the opportunity to enter the broadband arena for commercial vessels providing all the required functions. A low initial investment and the per MB pricing of the Inmarsat FleetBroadband service reduces the communication cost despite the increase in functionality and frequency of use. While their Intellian FB500 is their fastest designed specifically for intensive use onboard the hardest working super yacht. All three provide simultaneous voice and data service, have compact and reliable hardware, IP connection for e-mail, Internet, fax and SMS, LAN interface and single-user and multi-user router features, IP Handset interface, matching dome solutions with the Intellian TVRO systems

### Size matters

Costas Charalambos is the Sales Director of Global Marine Communications. He is quick to point out that not every yacht needs to have a large sized array of domes. He says, "Yachts that are permanently based in one just area of the world can opt for a service supplied over KuBand. They can get away with smaller and therefore less expensive antenna systems."

But a new and emerging Ka band is starting to become available for super yachts. The new Ka band satellites will typically have higher capacity than the existing Ku band satellites, so clients will be able to subscribe to higher Internet speeds at lower prices. However newer generation of Ku band satellites will be able to offer higher capacity as well.

The spot beam coverage of a Ka band satellite will be smaller than the normal coverage for a Ku band satellite. Also the rain fade effect will be 3 to 5 times higher than on Ku band, making Ku band a lot more robust in poor weather conditions.

Jan Holmen of Maritime Network Systems says, "It looks like many of the providers of Satellite capacity will in the future provide Ka band coverage for areas with high traffic density, and Ku-band and C-band service for more remote areas and at sea. Antennas with support for both Ku band and Ka band are starting to become available. The Seatel 4012 antenna was probably the first, being released last year with a Ku to Ka band radio package upgrade option."

Predicting future usage can be tricky and because super yachts are early adopters of technology and in this sector of the marine industry demand is growing more quickly on yachts than on commercial cargo ships. In the merchant navy the user is the Captain and the chief engineer and their requirements are governed by their need to communicate only with their head office. Aboard super yachts users include owners, guests and crew. In merchant ships crew seldom have access to the Internet

guests and crew. In merchant ships crew seldom have access to the Internet while at sea. In super yachts data demand is growing logarithmically as streaming video becomes the standard, with iPlayer Global and Netflix being in great demand, and so the supply of data and bandwidth will increase.

### Around the corner

So what lies around the corner? With 4G and 4G LTE is being launched gradually all over the world Robert Horner of e3 believes, "Recent launch rates for 4G LTE are so low and bandwidth so high that this is likely to affect the demand and price for VSAT as 4G LTE services are likely to be substituted when a yacht is in-shore.

There are also rumours about a combined 3G or 4G data device that straps a number of radios together and combines their data pipes into one providing huge bandwidth at a low price.

Horner says, "There is the possibility that an Inmarsat Fleet Broadband yacht contract may be launched this year allowing the small antenna to be used but with a much more flexible contract providing mid bandwidth services. This is

likely to be what performance sail boats have been looking for." Global Express, which is the new high bandwidth, small antenna Ka band service from Inmarsat should be in beta test by the end of 2013.

### Stylish design

Antenna systems used on board super yachts have to offer stylish designed domes but equally, they must be manufactured and tested to withstand the vibration and extreme shock in all sea states and weather conditions. One final consideration when choosing an antenna must revolve around service depots. No matter how good the warranty or indeed the offer to look after it getting service some distance from a yachts home port can be problematic.

### Contacts

- Intellian** [www.intelliantech.com](http://www.intelliantech.com)
- MNS** [www.maritime-systems.net](http://www.maritime-systems.net)
- Inmarsat** [www.inmarsat.com](http://www.inmarsat.com)
- KVH** [www.kvh.com](http://www.kvh.com)
- Nera** [www.nera.no](http://www.nera.no)
- Thrane & Thrane** [www.tt.dk](http://www.tt.dk)
- e3** [www.e3s.com](http://www.e3s.com)
- Global Marine Communications**  
[www.gmcomms.net](http://www.gmcomms.net)



### Maritime Network Systems SL (MNS)

Maritime Network Systems SL (MNS) provide complete design and refit of Superyacht electronics systems including; VSAT & satellite TV, entertainment and IT systems. MNS was established on Mallorca in 2000, and has become the Superyacht division of the Norwegian GIS group whom specialize in VSAT, telecommunication and entertainment systems for the offshore oil market, commercial shipping and cruise industry. MNS distribute the GIS Wavelink VSAT service, Seatel VSAT and TVRO antennas, and the Lantic Entertainment System, - offering solutions tailor-made to each customer's individual needs.  
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### Don't Forget the TV Aerial

Super yachts that cross the Atlantic each summer have sometimes had to leave their TV reception in Europe but now, a new dual-band antenna for global uninterrupted TV coverage including LNB [Low Noise Block-Down Converter] technology, has been developed by Intellian.

The new dual-band 3-axis s80HD WorldView™ TVRO antenna is an 83cm dish WorldView antenna that simultaneously receives two Ka-band satellite signals and one Ku-band signal for DIRECTV North American programming, enabling all channels to be watched simultaneously. Additionally, the antenna incorporates the company's first dual-band LNB combined with WorldView.

The Intellian Ku-/Ka-band WorldView Trio LNB with triple feed horn enables HD and SD TV to be watched anywhere in the world, particularly suited for larger yachts.

The unique benefit of this antenna means that the user will have access to HD TV in the Mediterranean as well as when travelling to and from the Caribbean as well as in North America.

The user simply selects a satellite television provider and connects to a satellite receiver, allowing the WorldView Trio LNB to automatically switch frequency depending on the region the antenna is operating in. There is no requirement to purchase multiple LNB modules, reconfigure complex systems and manually change an LNB inside the antenna dome each time the vessel crosses into a different satellite service region.

The pre-programmed Global Satellite Library makes it possible for the user to select their preferred TV satellite service whilst travelling from region to region. It also provides information on location-based satellite availability. An Intellian App is available for download to enable users to access their library and operate their antenna from an iPhone, iPad or other chosen device. The Multi-Switch module is included in the system and provides simple connection to different satellite receivers, enabling TV viewing on multiple TV screens. The integrated SWM [Single Wire Multiswitch] technology makes installations a lot simpler on larger yachts with multiple TVs.

The Intellian s80HD WorldView is easily installed and matches the v80G VSAT antenna, providing complementary high quality communications and entertainment on board.