



## **Stabilized Antennas Reshape Maritime Satellite Market**

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The high seas used to be the exclusive domain of Inmarsat, but the development of stabilized VSAT platforms, which keep satellite antennas oriented when a ship is turning, pitching or rolling, has changed that forever. These stabilized platforms, combined with an untamed hunger for bandwidth, has increased demand for broadband services in the marine marketplace.

In a perfect world, ocean waves would be limited to a certain size and would approach in an orderly fashion, allowing ship-borne VSATs to remain locked on their designated satellite. When seas turn angry, things do not always go according to plan. Should a ship heave too quickly in one direction, the stabilizing mechanism may not be able to keep up. The result: the stabilized antenna is knocked off track and RF energy is splashed onto adjacent satellites, causing interference. If the vessel is close to shore, it could also interfere with fixed microwave systems. With whole fleets of ships, barges, and drilling rigs utilizing stabilized VSATs, the potential for major interference problems is growing.

Recognizing the potential for problems, countries began lobbying the International Telecommunication Union (ITU) to adopt a standard for Earth stations on vessels. The ITU took action in 2003, the U.S. Federal Communications Commission (FCC) adopted its own ESV (Earth Station on Vessels) standards in 2005 and the European Telecommunications Standards Institute (ETSI) followed suit shortly thereafter.

The FCC regulations called for stabilized antennas to meet certain power density requirements as well as be capable of shutting off transmission when deviating more than 0.5 degrees from the target satellite. The standard also calls for the station location to be tracked at least every 20 minutes and data must be kept for at least a year. This data can be used at a later date should the FCC need to track down a problematic source of interference. Additional requirements were enacted for [C-band](#) systems, which can only be used on vessels weighing at least 300 gross tons, and if the vessel is within 125 miles of the U.S. coast, the station must be frequency coordinated.

In the two years since the regulations were released, only a handful of service providers have complied, said Raul Magallanes, a Houston-based telecoms lawyer who helped secure one of the first licenses granted by the FCC. "There are no FCC penalties specific to [Earth stations on vessels] yet," he said. "However, the penalties for operating without an appropriate license still apply. Those penalties include fines for every day of non-compliant transmissions, stiffer penalties if the offense is being done knowingly, and loss of privileges in future FCC applications."

Although end users who obtain service from a provider that owns the antenna are not subject to fines for a non-compliant Earth station on one of their ships, they could suffer damages. "Should the service provider knowingly operate a non-compliant [Earth station], the FCC could force

them to shut down the earth station,"Magallanes said. "In the case of a cruise ship or drilling rig, this could have major ramifications. In the worst case, the matter between the service provider and the FCC may not be resolved, forcing the end-user to change service providers on very short notice. This would be very disruptive and expensive."

Magallanes, said that new applications typically take three to six months to be approved, although some applications have been pending for several years. "Most applications that have been rejected were due to technical errors,"he said. "There are often communication issues between law firms and engineering firms and the legal narrative and technical argument in the application isn't coherent."

Older generations of stabilized platforms lack the antenna radiation pattern performance needed to satisfy the requirements, which will force service providers to upgrade remote hardware. Several manufacturers, notably Seatel and iDirect, are in tune with the new regulations and have introduced specific software or hardware to meet the requirements.

Earth stations that transmit while in motion are here to stay and it all started on the high seas. The FCC has tipped its hand as to when it will start enforcing the regulations but when they do violators will have to walk the plank with a substantially lighter wallet.