Dual Band Flat Panel Phased Array VSAT Antenna

INNOVATION, AGAIN
Ku and Ka VSAT bands are finally combined into one single high-performing integrated antenna, compounding two universes for higher speed and better coverage.

The low profile, superior tracking and high agility make this antenna ideal for fast patrol boats or vehicles, and allow for hidden installations inside custom roll bars. An invisible antenna can replace bulky and visible domes.

The best-in-class flat panel phased array technologies are combined into a single chassis with two independent, mechanically steered panels.

Engineered with the same reliability and rugged design of our BBx VSAT product line, it benefits from a reliable switching technology, allowing quick and automated commuting among available satellites globally. An intuitive screen app manages network preferences, coverage areas and security features.

INNOVATION IN RF
The big challenges and drawbacks of phased array antennas like high heat dissipation, narrow working bands, poor efficiency at low elevation angles, expensive beam steering technology, all of them have been addressed and solved by our engineers using two independent, mechanically steered single-band panels. Hundreds of hours of computer simulation and tight-tolerance machining led to this outstanding achievement.

The antenna is equipped with two independent RF panels for the Ku and Ka band sharing the same chassis and elevation gearbox. According to the selected band, the antenna exposes the required panel to the satellite.

DOME – An innovative “Super-tuned” radome was designed specifically to reduce losses and depolarization effects in Ka band, through research in new materials and computer simulation.

STEALTH – The low profile of the antenna allows for hidden installations in special roll bars with a RF transparent top layer. This means that fast patrol boats can get rid of bulky and visible domes.

INNOVATION IN HARDWARE
MECHANICS – The solution of mechanically steered panels allows a wide working range with 0/90 degrees elevation and unlimited azimuth through a slip-ring/rotary joint. There is no gain loss at northern latitudes and/or in rough sea. Structural and vibration analysis was employed to guarantee maximum stiffness to the structure for the most demanding Oil&Gas or military operations.

ELECTRONICS – All the electronic components, including the antenna controller unit (ACU), the KU and KA band satellite modems, and the routing logic are embedded inside the radome. This allows for a simple and hassle-free installation: only power and Ethernet cables are necessary.

The antenna is delivered pre-activated and Internet-ready; also, because of the reduced weight, it can be installed by a single technician in less than an hour.

INNOVATION IN SOFTWARE
Special care in the use of multi-spotbeam HTS was embedded in the software design of the dual band flat panel antenna. Pre-loaded coverage maps and signal fading prediction allow for smooth transition between spotbeams and bands to achieve optimum availability. The antenna controller and embedded router take care of switching user traffic between bands, beams, and satellites.

COMPLIANT WITH THE FUTURE
IEC60945 compliance for EMI, Climatic and Vibration requirements means that the antenna is qualified for professional maritime equipment applications like Oil & Gas operation vessels.

The antenna can be managed and updated locally or remotely by the same software run by Skytech for all other antenna series, making it fully supported by the Skytech Service Centre throughout its life, within a single or fleet diagnostics with intuitive web-based server, gathering real-time and historical performance information from all ships.
# VFlat Ku/Ka Dual-Band Phased Array

## Technical Specs

<table>
<thead>
<tr>
<th><strong>Radiating Panels:</strong></th>
<th>Phased array of horn elements</th>
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<tbody>
<tr>
<td><strong>KU-Band:</strong></td>
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TX: 13.75-14.5 GHz  
RX: 10.7-12.7 GHz  
**G/T @12 GHz:**  
11.5 dB/K @ 20° elevation  
Linear polarization w/ rotating skew  
**BUC type:** 16W JRC  
**LNB low noise figure:**  
<0.6dB Swedish Microwave Quad band  
**Radome loss:** <0.5dB  
**Max EIRP w/ 16W BUC:** 44 dBW  
**Ka-Band:**  
TX: 29.5-30.0 GHz  
RX: 19.7-20.2 GHz  
**G/T @20 GHz:**  
12.5 dB/K @ 20° elevation  
LHCP/RHCP Circular polarization  
**BUC type:** 4W ViaSat (Ka-Band)  
**Radome loss:** <0.7dB  
**Max EIRP:** 42 dBW  
**Dome size:**  
DIA 70 cm, H 30 cm  
**Antenna weight:**  
27Kg (with 16W BUC)  
**Operating temperature:**  
-20°C/+60°C  
**Antenna power:**  
24Vcc – 10A or  
110-230Vac (ext power supply)  
**Maximum angles:**  
Elevation 0° / 90° with no gain loss  
Unlimited azimuth movement  
**Rotary joint:**  
Combined slip ring for Ethernet and power, plus optional coaxial rotary joint for RF signals (external modem)  

| **Ships motion:** | Roll +/- 20° /sec  
Pitch +/- 20° /sec  
Yaw +/- 20°/sec  
**Tracking accuracy:** <0.2°  
**GPS:**  
All in view 12 channels internal  
**Internal 3-axis gyro sensor:**  
9 sensors with Kalman filter  
**Tracking possibilities:**  
Geostationary satellites  
Inclined orbit satellites  
**Lock sources:**  
Internal Broadband DVB-S2 Tuner  
Internal Narrowband Tuner  
External modem lock  
AGC carrier level  
**BBCController software:**  
OpenAMIP compliant  
HTTP/HTTPS access to the antenna interface  
Remote software update  
Ethernet HDT input gyrocompass  
Double antenna configuration with optional intelligent Switchbox  
**Modem capability:**  
iDirect X5 (KU) and Viasat (KA) integrated inside antenna (default)  
Hughes, Gilat or Comtech (optional)  
Other technologies optional on request  
Coaxial rotary joint for RF signals is also available for external modems  
Auto satellite link budget calculation capability and automatic beam switch  
Unlimited number of satellite configurations  
**Wi-Fi and 3G/4G/LTE module (optional):**  
Supports 2.4 GHz Wi-Fi with diversity antenna  
Supports 2G GSM, 3G UMTS quad-band, 4G LTE  
**Standards:**  
Conforming to FCC and Eutelsat EESS502 (in progress)  
IEC60945 for professional maritime equipment |

All specifications are subject to change.