VHR-600 AT-A-GLANCE

» Fully digital, high-rate PSK demodulator and test modulator providing maximum rate coverage for the remote sensing band.
» Supports BPSK, QPSK, OQPSK, 8PSK, 4D-8PSK-TCM, and Auto-switching OQPSK/8PSK.
» Data rates from 7.5Mbps to 600Mbps.
» Modular, compact chassis to permit configuration to individual system requirements and to minimize rack space.
» A single chassis provides two 600 Mbps demodulators and one 600 Mbps test modulator.
» Linux operating system for more secure operation.
» All features are included with unit purchase. No complicated and expensive licensing codes are required to access any feature.

The VHR-600 brings 600 Mbps 8PSK capability to the Earth Exploration band. The VHR-600 is the successor to the previous generation VHR-400 and provides all new RF sections and signal processing.

ViaSat, the world leader in remote sensing, is proud to introduce our fifth-generation high-rate modem. The VHR-600 has been specifically designed for the remote sensing and earth observation marketplace based on ViaSat’s 30 years of experience in remote sensing applications.

The VHR-600 is a state-of-the-art digital modem, designed to meet the demanding requirements of current and future remote sensing and earth observation missions. It delivers full coverage of the commercial remote sensing band, at data rates up to 600 Mbps 8PSK. The modular design of the modem allows for easy sparing at the LRU level and rapid service times. The modem is provided with a test modulator installed which allows easy system level verification of end-to-end bit error rate testing without the need for external test equipment.

Satellite configurations are preprogrammed for simple remote and front panel operation and the modem is field programmable to accommodate newly defined future missions. An easy to use browser-based GUI and a rich XML based M&C command set make operation and integration of the VHR-600 simple to achieve.
KEY FEATURES

» PSK demodulator and optional test modulator providing tunable data rate coverage from:
  ‣ 7.5 to 200 Mbps BPSK
  ‣ 15 to 400 Mbps QPSK and OQPSK
  ‣ 22.5 to 600 Mbps 8PSK
  ‣ 15 to 600 Mbps OQ/8PSK Autoswitching
  ‣ 15 to 550 Mbps 4D-8PSK-TCM

» IF with either of two frequency options:
  ‣ 720 MHz fixed IF
  ‣ 1200 MHz tunable

» All features included with unit purchase. No complicated and expensive licensing codes are required to access any feature.

» Programmable matched filter for bandwidth limited downlinks.

» Test modulator includes built-in BER test capability and internal noise source.

» XML based Ethernet remote monitor and control.

» Industrial Telcon-grade ATCA 5U chassis.

» Rate 1/2 CCSDS FEC including rate 1/2 Convolutional coding and 4D-8PSK-TCM Forward-Error-Correction.

» Built-in adaptive equalizer compensates for signal distortions between the spacecraft modulator and the VHR-600.
A SAMPLE OF SATELLITES SUPPORTED BY THE VHR-600:

AURA
AQUA (DB & DP Modes)
CBERS (CCD & HW-DT)
COSMO Sky-Med
ENVISAT (MERIS & ASAR)
EO-1
EROS-A
EROS-B
ERS-2
GeoEye-1/2
GOES-R
GokTurk-2
IceSat
IKONOS
IRS-1C/D (PAN & LISS)
IRS-P5 (Cartosat-1, SaoCom, Sentinel)
IRS-P6 (RESOURCESAT)
LandSat-5/7
Kompsat-1
Kompsat-2
Kompsat-5
LDCM
METOP
OFEQ
QuickBird
RADARSAT-1/2
RASAT
SPOT-4/5
TanDEM-X
Terra (DB mode)
TerraSAR-X
WorldView-1/2
WorldView-3
VHR-600 ViaSat High Rate Modem

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>IF Frequency</td>
<td>720 or 1200 MHz</td>
</tr>
<tr>
<td>Tuning Step Size</td>
<td>1 kHz</td>
</tr>
<tr>
<td>Carrier Acquisition Range</td>
<td>±1 MHz</td>
</tr>
<tr>
<td>Doppler Tracking Rate</td>
<td>±12 kHz/sec</td>
</tr>
<tr>
<td>Modulation Types</td>
<td>BPSK, QPSK, OQPSK, 8PSK</td>
</tr>
<tr>
<td>Demod IF Input Level</td>
<td>-50 to -10 dBm</td>
</tr>
<tr>
<td>Forward Error Correction Decoding</td>
<td>Rate 1/2 Convolutional, 4D-8PSK-TCM (rates 2/3, 2.25/3, 2.5/3, 2.75/3)</td>
</tr>
<tr>
<td>Modulator IF Output Level</td>
<td>-70 to -10 dBm</td>
</tr>
<tr>
<td>Symbol Rates</td>
<td>7.5 Msps to 200 Msps</td>
</tr>
<tr>
<td>Data Rate Step Size</td>
<td>1 kbps</td>
</tr>
<tr>
<td>Tilt Equalization</td>
<td>±5.0 dB, in 0.1 dB increments</td>
</tr>
</tbody>
</table>
| Matched Filtering                | » Non-Bandlimited (sinx/x spectrum)  
» Square Root Raised Cosine  
» Adaptive matched filter |
| BER Performance* Uncoded degradation: | < 0.6dB, 10-6 BER, with diff encoding |
|                                  | < 1.6dB, 10-6 BER, with diff encoding |
| Output Format                    | Two Differential ECL Outputs  
Each with Data and Clock |
| Remote Control                   | Ethernet               |
| Dimensions                       | 5U, 16 in deep         |
| Weight                           | ≤ 50 lb                |
| Prime Power                      | » 85 to 265 VAC, auto-sensing, auto-ranging 47 to 63 Hz  
» ≤ 375 W (depending upon configuration) |

**CONTACT**

SALES  
TEL +1 678 924 2400  
FAX +1 678 924 2480  
WEB www.viasat.com/antenna-systems/remote-sensing-systems

FULL MOTION SYSTEMS  
TEL +1 678 924 2641  
EMAIL fullmotionantennas@viasat.com

* When operated at IF with a high quality, low degradation commercial test signal source