



The VHR-600 brings maximum data rate (600 Mbps 8PSK) capability to the Earth Exploration band, and provides an unprecedented level of user configurability.

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. This modem is based on ViaSat's 30 years of remote sensing and earth observation ground station design, manufacture and deployment expertise.

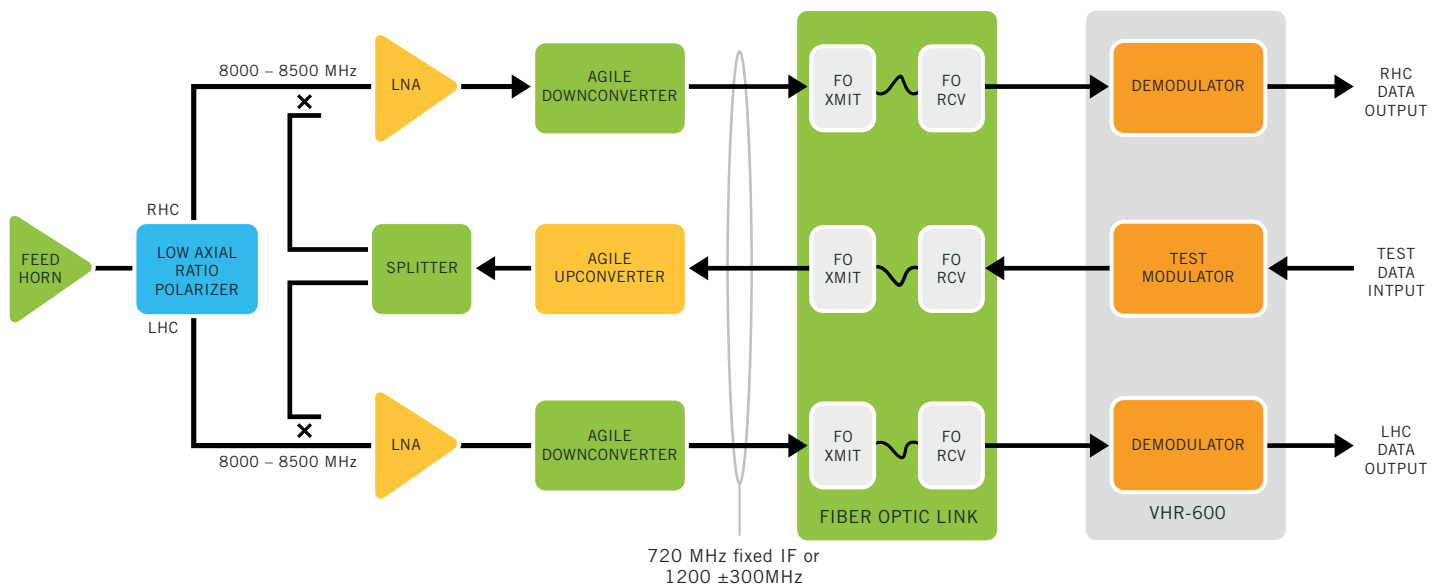
The VHR-600 is a state-of-the-art digital modem, designed to meet the demanding requirements of current and future remote sensing and earth observation missions. It delivers full coverage of the commercial remote sensing band, at data rates up to 600 Mbps 8PSK. The modular design of the modem allows for easy sparring at the LRU level and rapid service times. The modem also provides one empty slot for future enhancements making the modem very future-proof. 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. Easy to use web-based GUI and a rich XML based M&C command set make operation and integration of the VHR-600 easy to accomplish.

VHR-600 AT-A-GLANCE

- » Fully digital, high-rate PSK demodulator and test modulator providing maximum rate coverage for the remote sensing band.
- » Preprogrammed to cover existing remote sensing missions; field programmable to support future missions.
- » 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 can accommodate two 600 Mbps demodulators and a 600 Mbps test modulator.
- » Linux operating system for more secure operation.

TYPICAL REMOTE SENSING RECEIVE SUBSYSTEM



KEY FEATURES

- » PSK demodulator and optional test modulator providing tunable data rate coverage from:
 - 1 to 200 Mbps BPSK
 - 2 to 400 Mbps QPSK and OQPSK
 - 3 to 600 Mbps 8PSK
 - 3 to 600 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 required to access any feature.
- » Programmable matched filter for bandwidth limited downlinks (SRRC and custom filtering options)
- » Amplitude tilt equalization to compensate for cable tilt to improve BER performance
- » Test modulator includes built-in BER test capability and internal noise source
- » XML based Ethernet remote monitor and control
- » Compact telecom standards-based chassis with 5 user configurable slots for configuration with up to two demodulators and a test modulator
- » Viterbi and TCM Forward-Error-Correction
- » Built-in adaptive equalizer compensates for spacecraft band limiting effects in real time





Satellites Supported by the VHR-600:

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

IF Frequency	720 or 1200 MHz
Tuning Step Size	100 kHz
Carrier Acquisition Range	±1 MHz
Doppler Tracking Rate	±12 kHz/sec
Modulation Types	BPSK, QPSK, OQPSK, 8PSK
Demod IF Input Level	-50 to -10 dBm
Forward Error Correction Decoding:	Viterbi, TCM
Modulator IF Output Level	-70 to 0 dBm
Symbol Rates	1 Msps to 200 Msps
Symbol Rate Step Size	1 kpsps
Tilt Equalization	±5.0 dB, in 0.1 dB increments
Matched Filtering	Non-Bandlimited (sinx/x spectrum) Square Root Raised Cosine Adaptive matched filter
BER Performance*	Uncoded degradation: B/QPSK: < 0.6dB, 10 ⁻⁶ BER, w/ diff encoding 8PSK: < 1.6dB, 10 ⁻⁶ BER, w/ diff encoding
Output Format	Two Differential ECL Outputs Each with Data and Clock
Remote Control	Ethernet
Dimensions	5U, 16 in deep
Weight	≤ 25 lbs
Prime Power	85 to 265 Vac, auto-sensing, auto-ranging 47 to 63 Hz ≤ 375 W (depending upon configuration)

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

RANGE OF DATA RATES DIFFERENTIAL DECODING

MODULATION TYPE	RANGE OF DATA RATES	DIFFERENTIAL DECODING
BPSK	1 to 200 Mbps	NRZ-L/M/S
OQPSK	2 to 400 Mbps	NRZ-L/M/S
QPSK	2 to 400 Mbps	Modulo-4 Gray Codes
8-PSK	3 to 600 Mbps	NRZ-L/M/S

TYPICAL CONFIGURATIONS

	SLOT 1	SLOT 2	SLOT 4	SLOT 5
2 Channels with Test Modulator (Standard configuration)	Demod		Test Mod	Demod
2 Channels with FEC	Demod	Future Expansion	Future Expansion	Demod



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