OPTIMIZE YOUR SPACE SEGMENT COST

Slash bandwidth costs and unleash the capacity of your satellite networks with the VPCMA-L Enhanced Hub Canceller from ViaSat. This frequency-reuse appliance harnesses the power of ViaSat's patented Paired Carrier Multiple Access (PCMA) technology to cut satellite bandwidth needs by as much as fifty percent.

By simply adding the appliance to your satellite network, you can expand the capacity of transponders, free up bandwidth for more applications, and lower your network's operating costs. For example, while satellite space segment costs can vary greatly depending on location and usage, a network operator paying $4,000 per MHz per month for 54 MHz can save up to $907,200 a year on bandwidth by using the VPCMA-L.

The VPCMA-L boosts the capacity of your satellite transponder space by combining the uplink and downlink transmissions into the same bandwidth. While most satellite transmissions require separate frequencies to transmit and receive, this device enables two different signals to overlap in frequency, which increases the bandwidth available to the system. The appliance uses an adaptive self-interference cancellation technique to subtract your transmitted signal to recover the desired signal. The canceller works with all modulation and FEC techniques on "bent pipe", non-cross-strapped satellite networks to enhance the benefits of any advanced modulation techniques or turbo coding you may already use.

The VPCMA-L is an RF appliance that is located between a satellite modem and its antenna. The unit intercepts the modem's transmit signal, diverting a small amount of power to allow digital sampling. The rest of the transmit signal is then passed on to the uplink. The unit also intercepts the modem's receive signal after the LNB, just before entering the modem's Rx demodulator port. This signal is digitally processed and output to the modem's Rx port. The sampled transmitted signal is digitally delayed, with time and frequency aligned with its return copy on the received signal. This allows for the signal transmitted by this terminal to be digitally subtracted from the received signal, thus canceling it on the receive path. The process can be done in the presence of other signals and Additive White Gaussian Noise (AWGN) on the receive path. This enables signals from the local terminal to share the same bandwidth as signals from remote terminals.

With a 1U form factor, the VPCMA-L fits in a standard rack and interfaces with any digital satellite modem. The device cancels signals with bandwidths of 2 to 72 MHz. The device is also available as a card in compact PCI form factor.

Maximize the capacity of your satellite networks.

BUILT FOR BANDWIDTH-LIMITED NETWORKS

Overlap Satellite Signals for Bandwidth Savings
- Cut satellite space segment costs
- Increase network capacity
- Free up bandwidth for new applications
- Lower the cost of satellite networking

One Device for Multiple Network Applications
- Star (Hub/Spoke; One-to-Many)
- FDMA Mesh (Single Satellite Hop; Many-to-Many)
- Hybrid Star-Mesh
- Single Channel Per Carrier (SCPC)
- Co-located multi-carrier
- Demand Assigned Multiple Access (DAMA) voice and data networks

Broad Compatibility
- Modem and waveform agnostic
- Works with all standard modulation types (Spread, BPSK, QPSK, 8-PSK,16-ary, etc.)
- Coding-independent (works with Viterbi, Reed-Solomon, LDPC, Turbo, etc.)

Feature-Rich for Powerful Performance
- Programmable Cancellation bandwidth tiers: 2 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz, 36 MHz, 54 MHz, 72 MHz
- Cancel bandwidth from as low as 2 MHz to as high as 72 MHz
- L band IF (950 to 2150 MHz)
- Use down/up converter for 70 MHz interface
- 1U 19-inch rack mount Chassis form factor standard
- Compact PCI Card form factor option available
- Front panel and remote (SNMP over Ethernet) interface

SPECIFICATIONS

WAVEFORM AND PERFORMANCE SPECIFICATION

Compatibility	Modem and waveform agnostic; Standard modulation types (Spread, BPSK, QPSK, 8-PSK,16-ary, QAM, etc.); Coding-independent (works with Viterbi, Reed-Solomon, LDPC, Turbo, etc.)
Frequency Range	L band (950 to 2150 MHz)
Frequency Tunability	1 kHz steps
Signal Bandwidth	2 MHz to 72 MHz
Acquisition Time	< 1 Minute
Self-interference Suppression	At least 25 dB
Phase Noise Added	< 2.5 degree RMS integrated to 54 MHz
Receive RF Input Level	-59 dBm to 0dBm
Reference RF Input Level	-30 to 0 dBm
RF Output Level	-35 to -5 dBm

CHANNEL CONDITIONS SUPPORTED

Frequency Error	up to ± 100 kHz
Channel Gain Change Rate	up to 1 dB per second
Round trip propagation time	User selectable from 0 to 300 msec
Adjacent Carrier Interference	Suppression performance does not degrade in presence of adjacent channels
Non-linear transponder operation	May be operated in the non-linear region of transponder

HARDWARE

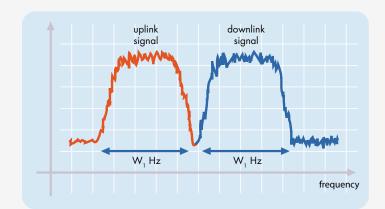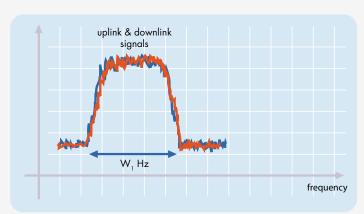|	
Packaging	1U 19-inch rack mountable (Compact PCI Form Factor Card is also available)
Power	90 to 264 V AC 50/60 Hz (auto-sense), 110 Watts
Weight	6.1 lbs (2.8 kg)
Cooling	Forced air
Operational Temperature	0 to +50° C
Non-Operational Temperature	-20 to +70° C
Humidity	10 to 95% non condensing
Altitude	0 to 3050 meters operational (Estimate); 0 to 12,200 meters non-operational (Estimate)
Safety Compliance	TUV CUE mark (Safety testing for Canada, US, Europe. Includes UL and CE Marking requirements IEC/EN/UL/CSA 60950-1); IECEE CB-Scheme
Electro-Magnetic Compatibility	FCC Class A, EN 55022, EN 55024, C-tick and VCCI reports
Environmental Compliance	RoHS
Input and Output Connectors	SMA 50 ohm
Management Interface	Ethernet 10/100 Base-T; SNMP
Built-In Diagnostics	Included
Redundancy	Configurable for 1:1 redundancy

OVERLAP TRANSMIT AND RECEIVE CHANNELS FOR BANDWIDTH SAVINGS

Typical satellite transmission with separate frequencies for uplink and downlink

Channels overlapped by VPCMA-L to increase bandwidth capacity and cut bandwidth needs

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