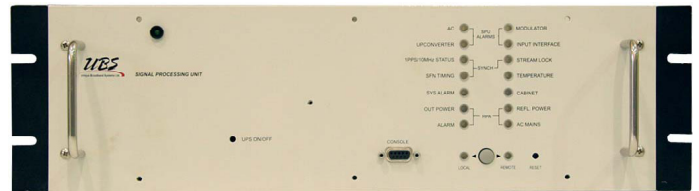


Product Features

- *DVB-SH compliant with ETSI DVB standards - COFDM and TDM waveforms are software selectable*
- *High accuracy adjustment to compensate for satellite variable propagation delay and Doppler frequency shift*
- *Fully ready to be used at a satellite uplink Head-end*
- *RF output frequency range adjustable from 2170 MHz to 2200 MHz (1173 MHz L-band output optional)*
- *DVB-S/S2 Receiver*
- *RF Upconverter*
- *Embedded GPS Receiver*
- *Linear and Non-linear Digital Pre-corrector*
- *SFN and MFN network support*
- *Control interfaces for HPA and output power monitoring*
- *Dial-up connectivity for working conditions and alarm reporting*



Product Description

The DVB-SH Exciter consists of the following main functional blocks:

The DVB-S/S2 Receiver module accepts a downconverted L-Band input data stream from a satellite downlink and converts it to a DVB-ASI transport stream signal. The DVB-S/S2 receiver output is connected to a DVB-SH modulator module.

The DVB-SH Modulator module receives the DVB-ASI TS signal from the DVB-S/S2 receiver, performs digital signal processing and outputs the processed data as quadrature I and Q signals. The DVB-SH modulator output is connected to the RF upconverter.

The modulator can provide amplitude and phase adjustment to balance the quadrature I and Q signals.

The system clock can be synchronized to a 10 MHz reference from a GPS receiver.

A Linear and Non-linear Digital Pre-corrector significantly improves the performance of the power amplifier by compensating for amplifier non-linearity and group delay introduced by RF filters.

The RF Upconverter converts the modulator IF (I and Q channels) output to an adjustable S-band frequency range of 2170 MHz to 2200 MHz. The signal level is also increased to drive the power amplifier.

The Main Controller module provides, configuration, management, status and alarm reporting, RF control and monitoring, local and remote monitoring, event logging and handles all control interfaces.

It includes the main and supervisor processors, on-board GPS receiver and dial-up modem.

The GPS Receiver provides high accuracy 1 PPS and 10 MHz reference signals to support SFN operation.

Enclosure

All modules are designed as replaceable cards that can be plugged into the exciter.

The exciter is implemented in a 19" wide, 3U unit with most of the connectors located on the rear panel. The front panel contains status LED's and the local console port. This design allows the exciter to be fully integrated into a complete repeater system.

DVB-SH Exciter

Model: DVSH 5500



Unique Broadband Systems Ltd.

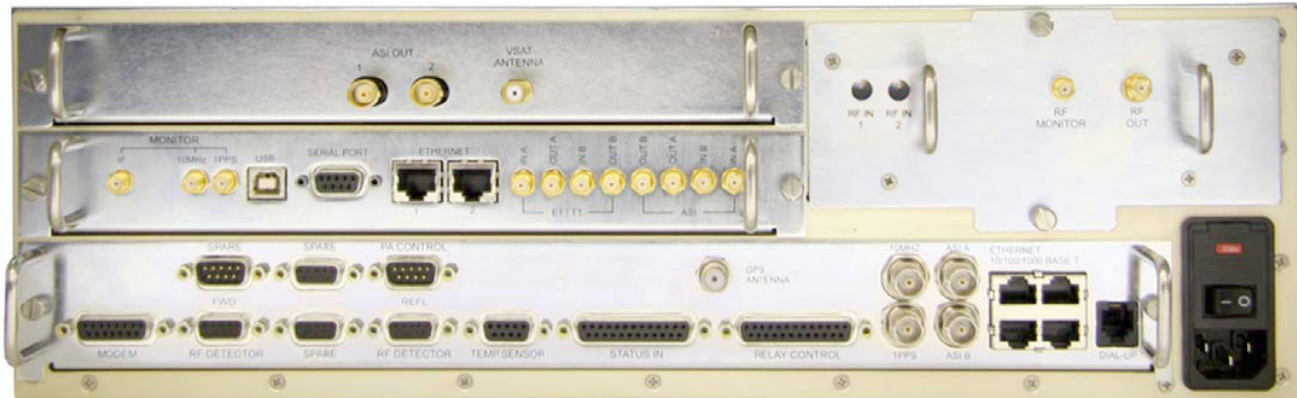


Fig.1 - Rear Panel

Product Specifications (specifications are subject to change without notice)

DVB-S/S2 Receiver

Input Connector	VSAT Antenna: F-type (F), 75 Ω
Input Frequency Range	950 MHz - 2150 MHz
Input Signal Level	-80 dBm to -20 dBm
Modulation Type	QPSK, 8PSK
FEC	DVB-S and DVB-S2 compliant
Symbol Rate	1 - 45 Mbaud
Output Connectors	2 DVB-ASI outputs: BNC (F), 75Ω

DVB-SH Modulator

DVB-ASI Input Connectors IN-A, IN-B	2 DVB-ASI inputs: SMA (F), 50 Ω (connected to the DVB-S/S2 receiver outputs)
Clock Reference - 10 MHz Time Reference - 1 PPS	Internally connected to the GPS receiver
IF Output	Internally connected to the RF upconverter input
DVB-ASI Output Connectors OUT-A, OUT-B	2 DVB-ASI outputs: SMA (F), 50 Ω (for monitoring only)
IF Monitor Connector	SMA (F), 50 Ω Analog I: 76 MHz, -3 dBm ±5 %
10 MHz Monitor Connector	SMA (F), 50 Ω
1 PPS Monitor Connector	SMA (F), 50 Ω
USB Interface	Interactive CLI commands
RS232 Interface	Connector: DB9 (M) Interactive CLI commands
WEB Interface	Ethernet 10/100/1000 Base-T 2 Connectors: RJ45

DVB-SH Signal Processing

Multiplexing Schemes	OFDM, TDM
Guard Intervals	1/4, 1/8, 1/16, 1/32
Code Rates	1/2, 1/3, 1/4, 1/5, 2/3, 2/5, 2/7, 2/9
Constellations	QPSK, 16-QAM
Turbo Code	3GPP2 encoding
Network Mode	SFN and MFN
Bandwidth	8 MHz, 7 MHz, 6 MHz, 5 MHz, 1.7 MHz
Time Interleaver	From 100 ms to several seconds
Input	MPEG-2 Transport Stream

OFDM Supported Modes	IFFT: 1k, 2k, 4k, 8k
TDM Mapping	QPSK, 8-PSK, 16-APSK
TDM Roll-off Factor	0.15, 0.25, 0.35

Non-Linear Pre-Correction

Curve Formats	S 21 and VO/VI
Amplitude Scale	Linear and Logarithmic
Correction Points	Max. 256, user-defined position
Gain Correction	Max. 12 dB, subject to available headroom
Phase Correction	-6 to +30 degrees, subject to available headroom

Linear Pre-Correction

Correction Points	61
Point Spacing	1/60 of nominal spectrum BW
Amplitude Correction	±10 dB
Amplitude Resolution	0.01 dB
Group Delay Correction	±2000 ns
Group Delay Resolution	1 ns
Peak Power Clip Level	+17 dB to +7 dB (peak power relative to average RMS level)



Product Specifications (specifications are subject to change without notice)

RF Upconverter

IF Input	Internally connected to the modulator output
RF Output Connector	SMA (F), 50 Ω
RF Output Frequency Range	2170 MHz - 2200 MHz (1173 MHz optional)
RF Output Frequency adjustable step size	1 Hz
RF Output Level	-3 dBm to +3 dBm
RF Output Power stability	≤ ±0.35 dB
In-band Spurious Products	≤ -50 dBc
Out-of-band Spurious Products	≤ -60 dBc
System Noise Figure	≤ 3 dB typ
RF Monitor Connector	SMA (F), 50 Ω (15 dB below RF output level)

Main Controller

Front Panel	LED status indicators
RS232 Interface (front panel)	Connector: DB9 (F) Protocol: Interactive CLI commands
Web Interface	Internet Explorer 6.0+ Ethernet 10/100/1000 Base-T 4 Connectors: RJ45
SNMP Control Interface	Ethernet 10/100/1000 Base-T 4 Connectors: RJ45 MIBs are provided
Dial-Up Modem	RJ11
10 MHz Reference Input	Connector: BNC (F), 50 Ω Level: 100 mV - 3 Vpp
1 PPS Reference Input	Connector: BNC (F), 50 Ω Level: TTL
DVB-ASI Connectors (Spare) A, B	2 DVB-ASI connectors: BNC (F), 50 Ω (can be hardware configured as input or output)
Control Ports	
PA Control	RS485, DB9 (M)
RF Detectors	DB9 (F)
Temperature Sensors	DB9 (F)
Status In	DB25 (F)
Relay Control	DB25 (F)
Modem (Spare)	DB15 (F)
Spare	2x RS232, DB9 (F); 1x RS485, DB9 (M)

Power Supply

Voltage	110 - 240 VAC
Frequency	50/60 Hz
Power Consumption	1000 VA max.

GPS Receiver

GPS Antenna Input	Connector: F-type, 75 Ω, 5 Vdc biased
Recommended Antenna	Bullet III GPS antenna - Trimble model no. 57860-10 or equivalent
Receiver Architecture	L1 1575.42 MHz
12 Parallel Channels	C/A code (1.023 MHz chip rate) Code plus carrier tracking (carrier aided tracking)
Tracking Capability	12 simultaneous satellite vehicles
Acquisition Time (Time To First Fix, TTFF)	< 15 seconds typical TTFF-hot (with current almanac, position, time and ephemeris) < 150 seconds typical TTFF-cold (no stored information)
Positioning Accuracy	< 5 m, 1 - sigma < 10 m, 2 - sigma
Timing Accuracy	< 2 ns, 1 - sigma < 6 ns, 6 - sigma
Holdover Time	±1 usec during 2 hours
10 MHz Output Signal	Internally connected to the modulator input Level: 10 dBm +/- 2.5 dBm, sine wave Harmonic Level: -40 dBc max. Phase Noise: 1 Hz: -80 dBc/Hz 10 Hz: -115 dBc/Hz 100 Hz: -135 dBc/Hz 1 kHz: -145 dBc/Hz 10 kHz: -155 dBc/Hz 100 kHz: -155 dBc/Hz
1PPS Output Signal	Internally connected to the modulator input Level: TTL
TOD	TOD information for CMMB applications Internally connected to the modulator input
Mechanical	
Size	3 U of 19" wide cabinet
Dimensions (W x H x D)	432mm x 135 mm x 483mm (17" x 5.25" x 19")
Weight	15 kg (35 lbs.)
Environmental	
Operating Temperature	+0° C to +50° C (+32° F to +122° F)
Storage Temperature	-50° C to +65° C (-58° F to +149° F)
Relative Humidity (operating/storage)	max. 95%, non condensing
Cooling	Forced air