

ACTIVECORE®

MAXIMIZING TRANSMITTER EFFICIENCY

UPLINK TRANSMITTER SITE MONITORING PLATFORM
Real performance measurements

DOWNLINK AND RECEPTION LOCATIONS
DVB-S/S2/S2X SIGNAL ANALYSIS
RF layer monitoring at remote sites



AVQ1020DVBS ActiveCore® DVB-S/S2/S2X RF Layer Monitoring Receiver

**COST-EFFECTIVE EMBEDDED SOLUTION FOR 24/7
REMOTE QoS MONITORING AND CONTROL**



Based on ActiveCore® Platform, AVQ1020DVBS is a DVB-S/S2/S2X monitoring receiver and RF layer signal analyzer. It has been designed as an easy-to-use and cost-effective solution for monitoring DVB-S/S2/S2X transmitter systems performance. The receiver can be integrated into a transmitter system for remote monitoring applications or used as a stand-alone unit during design verification and production tests.

AVQ1020DVBS allows monitoring of the modulated and transmitted signal at the RF layer and reports DVB-S/S2/S2X signal parameters in different modes and modulations.

In the context where broadcasters are more and more concerned about reducing their network OPEX costs and at the same time limiting impact on the environment, it becomes important for the transmitter systems and repeater networks to be designed as reliable as possible in terms of the QoS provided to the service subscribers.

The receiver allows not only monitoring broadcasting signal parameters but it also can be used for estimation and characterization of the transmitter system performance - distortions introduced by the amplification and filtering chains. The unique functionality allows the receiver to be also used for estimation of critical RF parameters of high power amplifier performance using real DVB-S/S2/S2X modulated signals.

The ActiveCore® monitoring receiver is available as a stand-alone unit (1U) and an OEM module.

Features:

- ▶ Monitoring and measurement of the RF Modulated Layer at the DVB-S/S2/S2X transmitter output;
- ▶ Real performance metrics of a DVB-S/S2/S2X transmission system;
- ▶ Combination of functional and measurement capabilities with cost effectiveness of the Receiver/Analyzer guarantees the ideal solution for monitoring DVB-S/S2/S2X modulated RF signal quality at local and remote installations, re-broadcast links, repeaters, and unmanned sites without additional costly RF test equipment;
- ▶ Comprehensive set of critical RF measurements including signal MER, frequency spectrum, shoulder attenuation or ACLR, frequency shift, etc.
- ▶ In-band interference analysis;
- ▶ SNMP trap and email alarm notification;
- ▶ Early indication of signal degradation as a result of the transmitter system components aging or operational parameters variations;
- ▶ An embedded solution for remote applications, in-field diagnostics, production testing and design verification;
- ▶ Flexible solution with the in-field upgrade capability including diagnostic and monitoring features that can be tuned to meet the most demanding requirements of customer's application;
- ▶ Rich plotting capabilities for data visualization during DVB-S/S2/S2X system measurements and tests;
- ▶ Event log.

AVQ1020DVBS ActiveCore® DVB-S/S2 RF Layer Monitoring Receiver

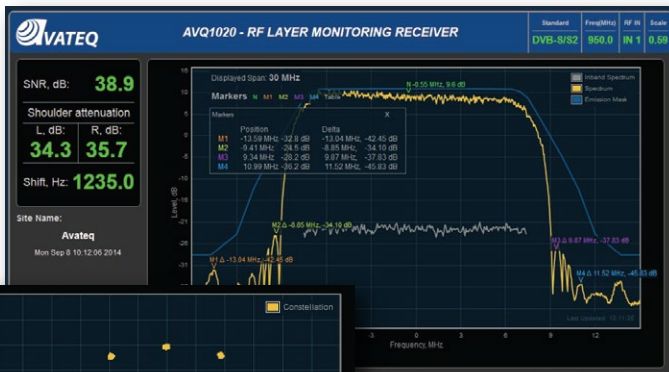
Technical specification:

Note: Though AVQ1020DVBS works with all Roll-Offs, detects and reports higher modulation schemes and new MODCOD, the system **does not** demodulate the signal down to the data stream and **does not** perform FEC.

Main signal input "RF in":		RF signal distortions:	
Input level:	-50..0dBm;	In-band Interference:	Spectrum plot
Frequency range*:	950..2150 MHz	Linear:	Group Delay, Amplitude and Phase response, output complex FIR coefficients are available for DAP
Frequency tuning step:	1 Hz	Output band-path filter:	Group Delay, Amplitude and Phase responses
Analyzed bandwidth:	50 MHz	Interfaces:	
Connector type:	N-type, 50 Ohm	Hardware:	Ethernet, RS232
Reference frequency:	10 MHz, 1 PPS	Software:	- WEB GUI - SNMP - Email
DVB-S/S2/S2X parameters:		Relay control:	Open drain pairs
Channel bandwidth:	up to 48 MHz	Power supply:	5A@12V DC (OEM module) 110-250V, 50/60Hz AC (1U unit)
Modulation:	QPSK, 8PSK, 16/32/64/128/256APSK, QAM	Parameter update rate:	≤ 15 sec
Symbol rate:	1..48 MSps	Operating temperature range:	0..50, °C
Measured signal parameters**:	- signal MER/SNR/EVM, dB; - Eb/NO, STED, STEM; - signal PAR, dB; - magnitude and phase error; - framing structure.	Form factors:	- OEM module; - 1U stand-alone unit
Application-specific alarm events:	User-defined set of parameters and their thresholds, SNMP traps based on customized thresholds		

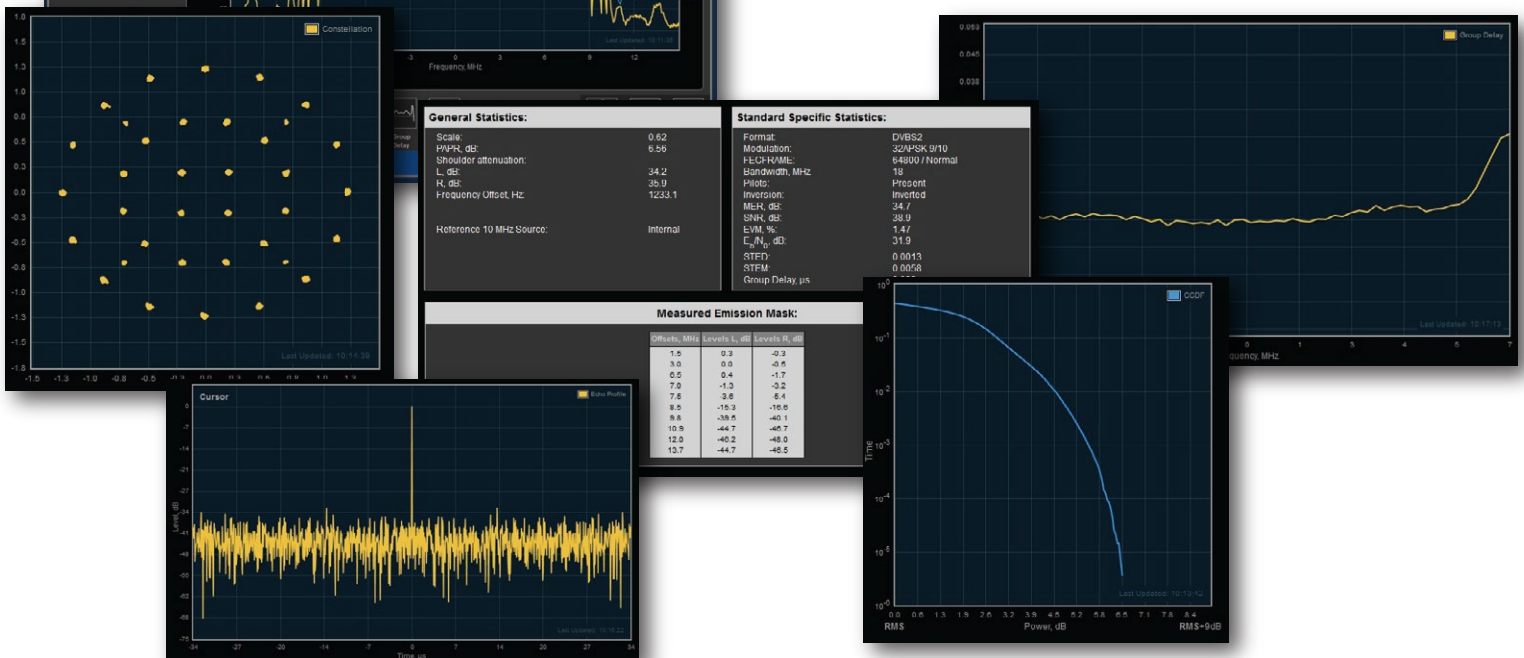
* No DiSEqC for LNB control. In applications with adjacent channels, an external selector (filter) might be required
** Accuracy is subject to symbol rate/signal bandwidth

Samples of Plots and Reported Parameters:



Applications:

- ▶ DVB-S/S2/S2X transmitter/repeater performance monitor;
- ▶ Intelligent transmitting site controller platform;
- ▶ Remote monitoring platform for transmitter/repeater system network;
- ▶ Test and design verification equipment;
- ▶ DVB-S/S2/S2X Signal analyzer for a wide variety of applications;
- ▶ R & D;
- ▶ In-field and production testing.

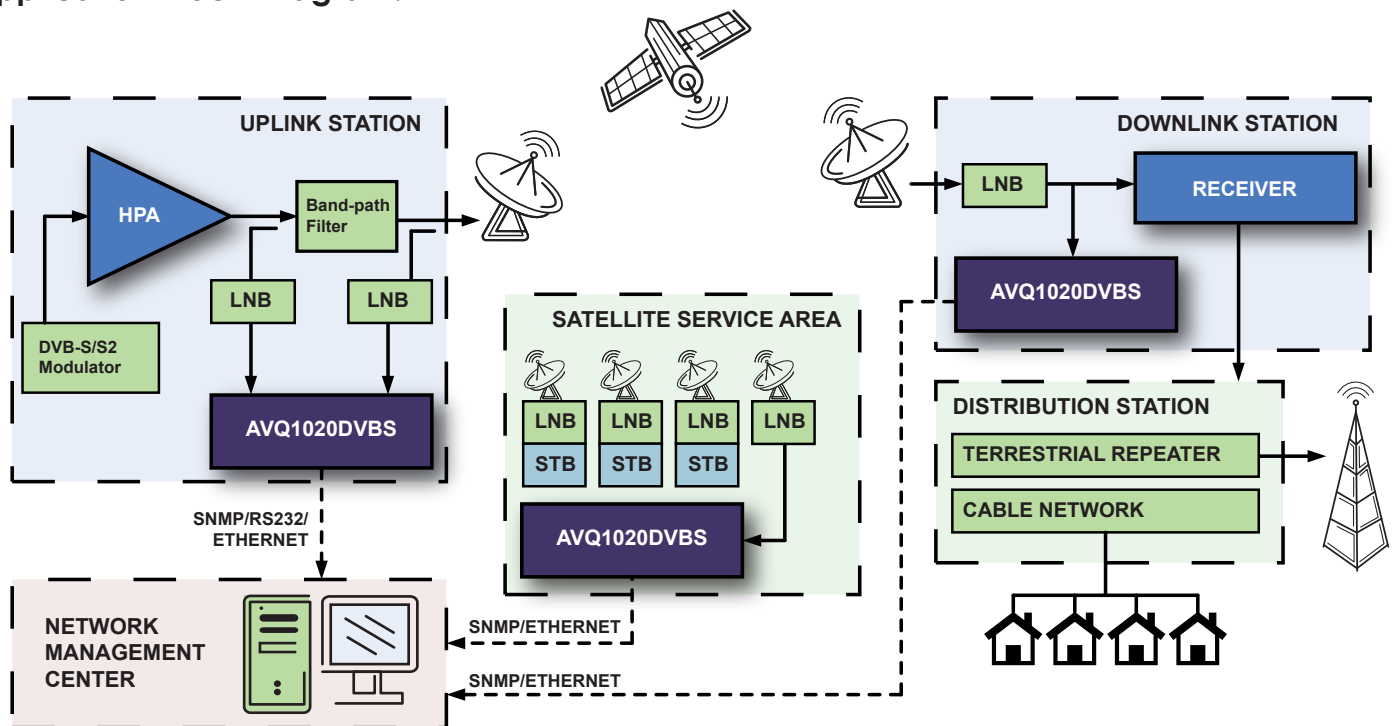


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Measurements and Metrics

- ▶ Spectrum mask;
- ▶ Signal statistic: MER/EVM/SNR, C/N and Eb/No for a number of symbols and time slots, signal RMS, PAR, maximum peak value;
- ▶ Spectral measurements and shoulder attenuation;
- ▶ DVB-S/S2/S2X signal bandwidth, modulation and constellation;
- ▶ Modulation Magnitude and Phase error estimation;
- ▶ Carrier frequency offset;
- ▶ DVB-S2/S2X frame structure;
- ▶ Linear distortions found in the output RF signal - signal-group delay and frequency response;
- ▶ Results of the non-linearity and linearity measurements recalculated in a form of complex LUT and FIR suitable for pre-correction;
- ▶ Complex channel estimation for re-transmitting applications;
- ▶ Multipath echo and feedback interference detection, estimation and visualization;
- ▶ Echo profile.

Application Block-Diagram:



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