

ACTIVECORE®

AVQ200ATSC

RF SIGNAL INSPECTOR™

for ATSC 1.0 and ATSC 3.0 off-air monitoring



FEATURES:

- ▶ In-Band interference detection and visualization
- ▶ Rich set of tools for remote monitoring
- ▶ IP Transport Stream output

Description

AVQ200 RF Signal Inspector™ is an RF signal analyzer for **ATSC 1.0 (A/53 and A/153)** and **ATSC 3.0 (A/321:2016, A/322:2018 except for Annexes K and L, A/330:2019)** digital broadcasting standards. AVQ200 is an extension of Avateq's line of products designed for remote off-air signal monitoring. Along with extensive RF measurements, AVQ200 features advanced web-based user interface with unique interference monitoring tools, a report generator, and a user-defined alarm engine. This combination of functionality and available set of measurements makes AVQ200 an efficient tool for on-site or remote signal quality monitoring in the service area.

Technical Specification

Supported standards^(*):	- ATSC 1.0 (A/53, A/153) - ATSC 3.0 (A/321:2016, A/322:2018 except for Annexes K and L, A/330:2019)	- Mandatory Modulation and Coding Combinations; - All guard interval patterns; - Single and multiple PLPs; - LDM (Layered Division Multiplexing); - ALP (ATSC Link Layer Protocol) output.
Main signal input "RF in":		
Connector:	50Ω, SMA	
Level:	-80 .. +5 dBm	
Frequency range:	42 .. 1000 MHz	
Frequency tuning step:	1kHz	
ATSC 1.0:	- 6MHz bandwidth; - 8VSB modulation; - 2/3 code rate.	
ATSC 3.0:	- 6, 7, and 8MHz bandwidth; - 8K, 16K, and 32K FFT sizes;	
		Control and Monitor Ports:
		Ethernet: RJ45 10/100/1000
		Transport Stream Output: IP (RJ45)
		Form factor: 205mm x 105mm x 50mm (8.1" x 4.1" x 2")
		Operating temperature: 0 .. 50, °C
		Power Supply: 12VDC, 4 Amp

(*) - Subject to licensing.

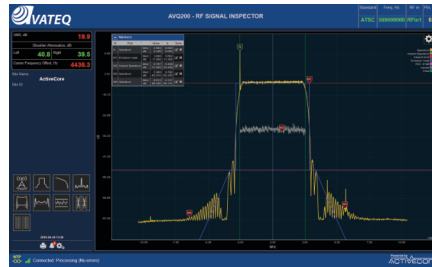
Monitored Parameters

General parameters:	- MER/SNR; - Signal PAPR; - Bandwidth; - Frequency and Sampling rate shifts; - Shoulder attenuation; - Emission/Spectral output; - Amplitude and Phase response; - Group Delay across bandwidth.	ATSC 3.0 standard specific:	Parameters: - MER for Bootstrap, L1 and PLP; - ATSC 3.0 frame structure; - Bootstrap L1D and L1B signaling info; - LDPC BER for L1 and selected PLP; - Decoded Bootstrap and L1 info.
General plots:	- Spectrum of the main lobe and in-band interference; - Channel Amplitude/Phase and Impulse responses; - CCDF; - Constellation; - Echo profile;		Plots: - Bootstrap, L1, LDM, and selected PLP constellations;
ATSC 1.0 standard specific:	Parameters: - ATSC pilot Amplitude and Phase Errors; Plots: - Eye Diagram.	Default set of alarms:	- Input Signal level; - Spectrum shoulder levels; - Signal MER; - SFN Echo profile variation; - Frequency shift.
		Data logging and reporting:	- Detailed report with data and plots; - Event and alarm log; - Main parameters internal log.
		Software interfaces:	- Web GUI;

Measurements and Metrics

- ▶ In-band interference power spectral density;
- ▶ Signal statistic: MER, signal RMS, PAPR, signal CCDF;
- ▶ Echo profile with monitoring capabilities for SFN applications;
- ▶ Signal group delay and frequency responses;
- ▶ Multipath echo and interference detection, estimation and visualization;
- ▶ Detailed characterization of ATSC 3.0 signal components

Samples of Reported Parameters and Plots



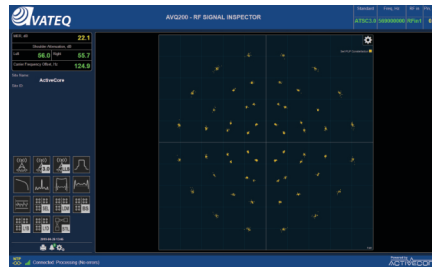
ATSC 1.0 Spectrum with In-Band and Markers



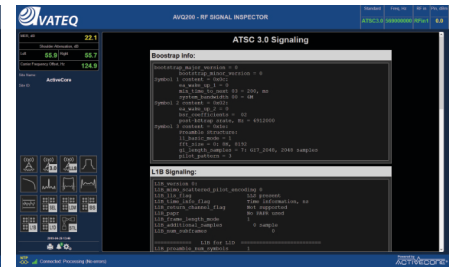
ATSC 1.0 Statistics

Applications

- ▶ ATSC 1.0 / ATSC 3.0 coverage area 24/7 QoS monitor;
- ▶ Remote monitoring for broadcasting repeater system network;
- ▶ SFN/Echo profile monitor;
- ▶ In-field and production testing.



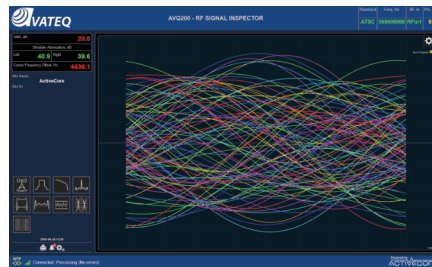
ATSC 3.0 Constellation



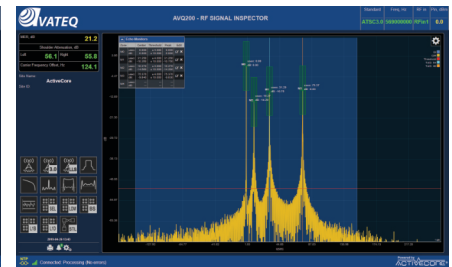
ATSC 3.0 Statistics

Plot tools and accessories

- ▶ Normal and Delta markers;
- ▶ Min/Max hold;
- ▶ Manual scale adjustment;
- ▶ Cross bar;
- ▶ Thresholds for SFN profile and in-band interference level.

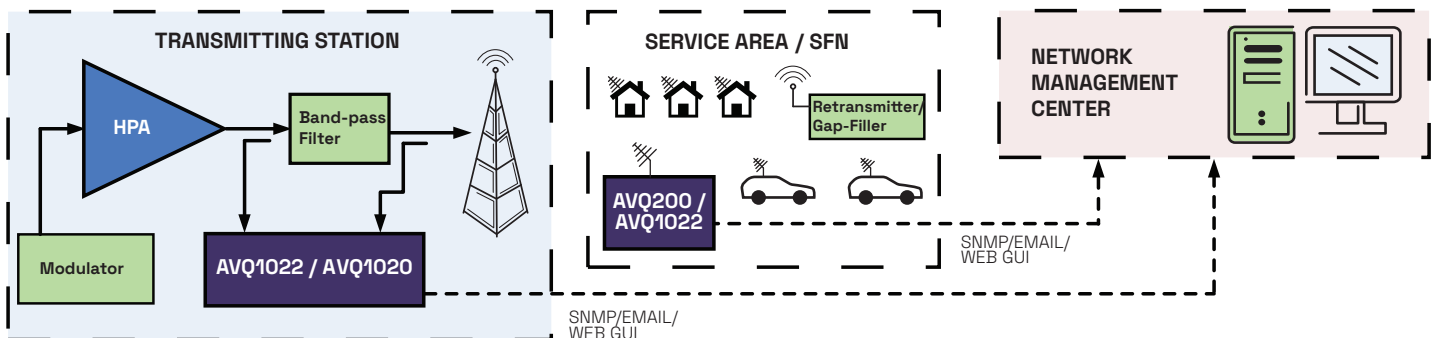


ATSC 1.0 Eye Diagram



ATSC 3.0 SFN / Echo profile with TxIDs

Application Block-Diagram



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