RF Signal Analyzers
RF Layer Monitoring
Receivers

MONITOR.
ANALYZE.
ARCHIVE.
ANYWHERE.

DATASHEET

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 embedded 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[1]:	- 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	**Control and Monitor Ports:**	
Level:	-80 .. +5 dBm	Ethernet:	RJ45 10/100/1000
Frequency range:	42 .. 1000 MHz	Transport Stream Output:	IP (RJ45)
Frequency tuning step:	1kHz	**Form factor:**	205mm x 105mm x 50mm (8.1" x 4.1" x 2")
ATSC 1.0:	- 6MHz bandwidth; - 8VSB modulation: - 2/3 code rate.	**Operating temperature:**	0 .. 50, ºC
ATSC 3.0:	- 6, 7, and 8MHz bandwidth; - 8K, 16K, and 32K FFT sizes;	**Power Supply:**	12VDC, 4 Amp
		(1) - 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. Plots: - Bootstrap, L1, LDM, and selected PLP constellations;
General plots:	- Spectrum of the main lobe and in-band interference; - Channel Amplitude/Phase and Impulse responses; - CCDF; - Constellation; - Echo profile;	**Default set of alarms:**	- Input Signal level; - Spectrum shoulder levels; - Signal MER; - SFN Echo profile variation; - Frequency shift.
ATSC 1.0 standard specific:	Parameters: - ATSC pilot Amplitude and Phase Errors; Plots: - Eye Diagram.	**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;
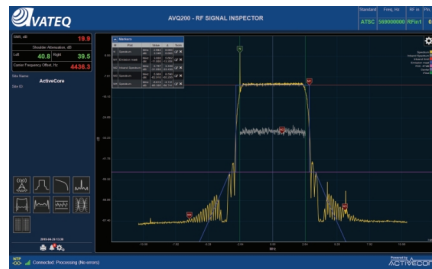
▶ Detailed characterization of ATSC 3.0 signal components

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.

Plot tools and accessories

▶ Normal and Delta markers;

▶ Min/Max hold;

▶ Manual scale adjustment;

▶ Cross bar;

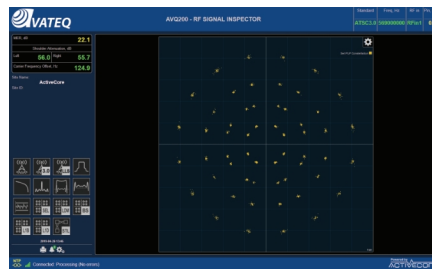▶ Thresholds for SFN profile and in-band interference level.

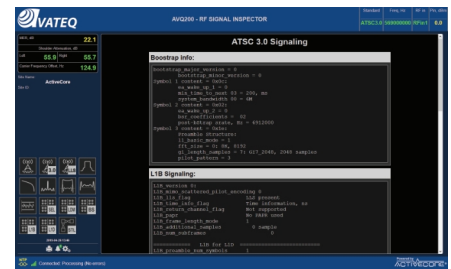## Samples of Reported Parameters and Plots

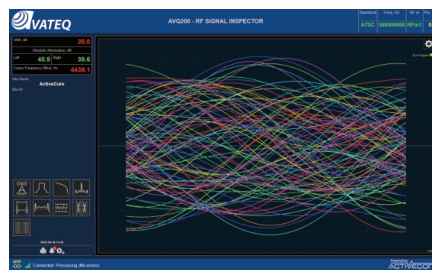
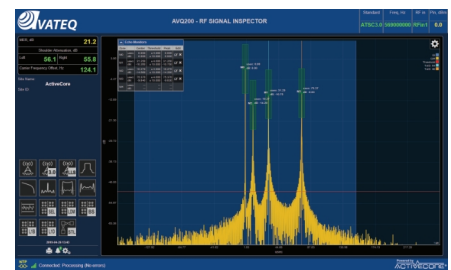ATSC 1.0 Spectrum with In-Band and Markers

ATSC 1.0 Statistics
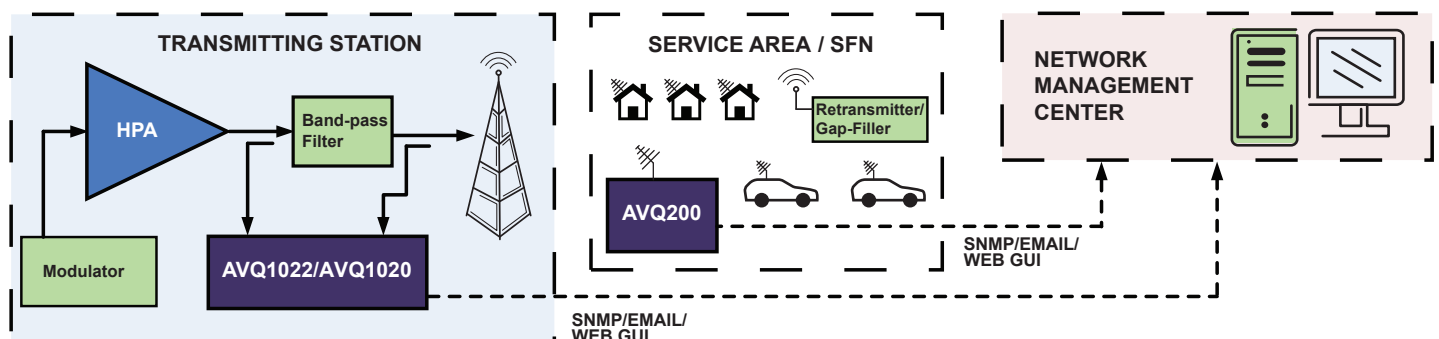

ATSC 3.0 Constellation

ATSC 3.0 Statistics

ATSC 1.0 Eye Diagram

ATSC 3.0 SFN / Echo profile with TxIDs

Application Block-Diagram

Contact Information

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