AVQ1020
ActiveCore®
Multistandard Monitoring Receiver

Based on ActiveCore® Platform, AVQ1020 is a monitoring receiver and signal analyzer for all major digital broadcasting standards including proprietary modulation schemes. It has been designed as an easy-to-use and cost-effective solution for monitoring digital 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.

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 broadcasting signals.

The ActiveCore® monitoring receiver is available as a stand-alone unit (1U), OEM module or PCIe card in an instrumental PC.

Features:

- Monitoring and measurement of RF Modulated Layer at the transmitter output;
- Real performance metrics of the transmission system;
- Combination of functional and measurement capabilities with cost effectiveness of the Receiver/Analyzer guarantees the ideal solution for monitoring RF signal quality of remote transposers, rebroadcast links, repeaters, and unmanned sites without additional costly RF test equipment;
- Comprehensive set of critical RF measurements including signal MER/SNR, frequency spectrum, shoulder attenuation, frequency shift, etc.
- Estimation of signal distortions at the transmitter system output caused by the system non-linearity - AM-AM/AM-PM curves and band-path filtering - group delay, amplitude and phase responses with an ability to use the estimated numbers in a form of complex LUT and FIR for non- and linear pre-correction;
- 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;
- Transmitter site monitoring device with rich set of hardware interfaces;
- Event log.

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AVQ1020 ActiveCore® Multistandard Monitoring Receiver

Technical specification:

Main signal input “RF in”:
- Input level: -50.0 dBm;
- Frequency range: 470...862 MHz (standard);
- Frequency tuning step: 1 Hz;
- Analyzed bandwidth: 50 MHz;
- Connector type: SMA, 50 Ohm.
- Reference frequency: 10 MHz, 1 PPS.

Standard-specific measured parameters:
- Signal MER, dB;
- Signal RMS, dB;
- Signal PAR, dB;
- Signal CCDF.

RF signal distortions:
- Non-linear: AM-AM, AM-PM curve, an output complex LUT array is available for DPD.
- Linear: Group Delay, Amplitude and Phase response, output complex FIR coefficients are available for DPD.

Output band-path filter:
- Group Delay, Amplitude and Phase responses.

Default set of alarm events:
- Spectrum shoulder levels;
- Signal MER/SNR;
- Signal max Group Delay;
- Spectrum tilt/ripple.

Application-specific alarm events:
- User-defined set of parameters and their thresholds.

Interfaces:
- Hardware: Ethernet, USB, CAN, PCIe, RS232.
- Software: WEB GUI, host based GUI (PC GUI), SNMP, simplified machine-to-machine protocol.

Power supply:
- 5A@12V DC (OEM module);
- 110-250V, 50/60Hz AC (1U unit).

Operating temperature range: 0...50 °C.

Form factors:
- OEM module;
- 1U stand-alone unit;
- Full-size PCIe card.

Measurements and Metrics:
- RF signal level and its variations;
- Signal statistic: MER/SNR, signal RMS, PAR, maximum peak value, signal CCDF, peak compression ratio;
- Frequency spectrum including the spectrum tilt, amplitude ripple, shoulder attenuation;
- Signal bandwidth and standard specific parameters;
- Effects of the transmission system non-linearity in terms of AM-AM/AM-PM curves measured on the broadcasted signal;
- 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-broadcasting applications;
- Multipath echo and feedback interference detection, estimation and visualization;
- SFN impulse response.

Application Block-Diagram:

Applications:
- Digital transmitter/repeater performance monitor;
- Remote monitoring for broadcasting repeater system network;
- Test and design verification equipment;
- Signal analyzer for a wide variety of applications;
- R & D;
- In-field and production testing.

Ordering Information:

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<td>AVQ1020-SAU</td>
<td>ActiveCore® Multistandard Monitoring Receiver (stand-alone 1U unit)</td>
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<td>AVQ1020-OEM</td>
<td>ActiveCore® Multistandard Monitoring Receiver (OEM module)</td>
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<tr>
<td>AVQ1020-PCI</td>
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