

ACTIVECORE™

MAXIMIZING TRANSMITTER EFFICIENCY

STANDARD AND MODULATOR INDEPENDENT

INTEGRATED PAR REDUCTION ENGINE

UNIVERSAL SOLUTION FOR
DIGITAL TRANSMITTER SYSTEMS



AVQ1040 ActiveCore™ Adaptive Linear and Non-Linear Digital Predistorter



Avateq's AVQ1040 ActiveCore™ Adaptive Linear and Non-Linear Digital Predistorter (DPD) is characterized by its flexibility and adaptivity to all major broadcasting standards and modulation schemes (including proprietary). The DPD has been designed to compensate non-linear and linear distortions found in digital transmitter systems and repeaters widely being deployed as the digital TV and radio broadcasting is replacing the legacy analogue techniques.

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 that the new digital transmitters are designed to be as energy-efficient as possible.

Another important application of Avateq's solution is combining DPD with a monitoring receiver functionality. By using Avateq's adaptive DPD, a broadcaster acquires the ability to constantly monitor the transmitted signal quality. This functionality can also be used by digital audio and video broadcasting equipment manufacturers at design and manufacturing stages as a part of the transmitter test bench.

The solution effectiveness has been proven with a wide range of amplifiers built on different technologies and working in different frequency ranges - UHF/VHF, L- and S-Band.

Features:

- ▶ Intelligent RFin - RFout solution;
- ▶ Fully adaptive algorithm for non- and linear distortion estimation and compensation;
- ▶ High performance PAR reduction engine;
- ▶ Supports OFDM and single carrier signals;
- ▶ Supports all major broadcasting standards and proprietary modulation schemes - DRM+, RAVIS (PABIC), ISDBT, ATSC, DAB, CMMB, DVB-T/H/T2, HD Radio, etc.;
- ▶ Suitable for multi channel transmitters;
- ▶ Broadcasting signal physical layer analyzer at the transmitter output (broadcasting standard specific);
- ▶ Amplifier non - linearity characterization and estimation on real broadcasting signals;
- ▶ Amplifier memory effects estimation;
- ▶ Transmitting and amplification path responses.

AVQ1040 ActiveCore™ Adaptive Linear and Non-Linear Digital Predistorter

Applications:

- ▶ Non- and linear adaptive pre-distorter for broadcasting industry;
- ▶ Remote monitoring receiver in terrestrial repeater networks;
- ▶ Modulator design and production test bench;
- ▶ Test and monitoring receiver for transmitter development and production;
- ▶ HPA test equipment.

HPA Measurements and Testing:

- ▶ Amplifier non – linearity characterization and estimation on real broadcasting signals;
- ▶ Amplifier memory effects estimation;
- ▶ Wide input frequency range (UHF/VHF, L-band, S-band) and analyzed signal bandwidth;
- ▶ Transmitting and amplification path responses;
- ▶ Highly informative GUI with measured results and plots:
 - * eye / level diagram / constellation;
 - * amplifier parameters;
 - * channel and filter responses;
 - * signal spectrum;
 - * spectrum shoulder levels;
 - * peak compression;
 - * echoes detection.

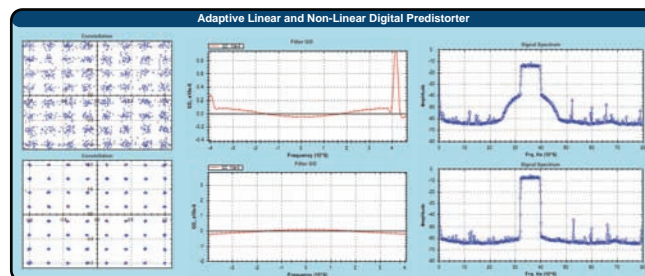
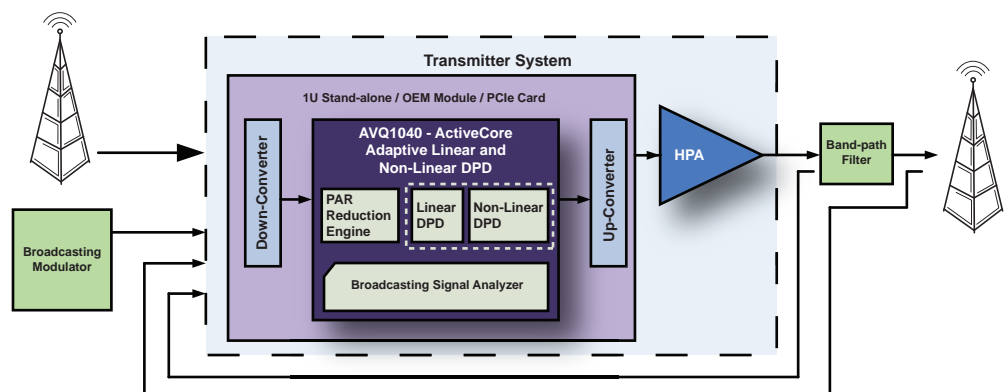
Monitoring Receiver:

- ▶ Broadcasting signal physical layer analyzer at the transmitter output (broadcasting standard specific);
- ▶ Signal time and frequency domain parameters estimation;
- ▶ MER/SNR measurements;
- ▶ Estimation and monitoring of the transmitted signal spectrum, sideband energy, central frequency, etc.

Technical specification:

Main signal input RF in:	-50..0dBm; 470..862 MHz (standard)
Feedback signal input RF fbd (input is used for DPD and monitoring):	-50..0dBm; 470..862 MHz (standard), two capturing ports available
Main output RFout:	-50..0dBm; 470..862MHz (standard), input signal level tracking
Digital AGC::	input signal level tracking or fixed gain with AGC/ALC loop;
MER degradation with DPD "Off":	1dB@45dB MER at the unit input
Interfaces:	
a) hardware:	Ethernet, USB, CAN, PCIe, RS232
b) software:	WEB GUI, host based GUI, SNMP, simplified machine-to-machine protocol
Power supply:	5A@12V DC (OEM module) 110-250V, 50/60Hz AC (1U unit)
Operating temperature:	0..50, °C

Application Block-Diagram:



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