
# RealWORX®

## Web Performance Verification System

**CATV and Broadband Monitoring Simplified**

RealWORX is a 24/7, fully-automated and completely web-based RF monitoring system for CATV and broadband communication services.

The RealWORX Web Performance Verification System allows operators to monitor return ingress levels, analog signal performance, as well as QAM performance and statistics from many nodes using any browser interface. RealWORX compares RF performance against user-set limits and generates an alarm when signal impairments are detected. The system sends alarm notifications by email, pager, or cell-phone, and can report to the NOC via an SNMP trap interface to ensure that the operator is notified promptly when an alarm occurs.

With VeEX's high-performance AT2500HMQ broadband spectrum analyzer at its core, RealWORX can detect transient and low level RF impairments invisible to competing systems.

RealWORX also integrates both upstream and downstream RF quality measurements in one system, which results in decreased costs of software, training and support. With RealWORX, tests that had once been complex and time-consuming can be performed routinely, automatically and consistently.

## Platform Highlights

- Comprehensive Digital, Analog and Return Path monitoring from 1 MHz to 1.0 GHz
- Ingress monitoring up to 200 MHz provides visibility of entire optical return spectrum
- Automatic alarm notification by pager, cell phone, e-mail, SNMP traps
- Remote Ingress display viewing using RealVIEW™
- Supports up to 256 switch ports per analyzer (scalable)
- Support multiple analyzer/switch groups
- Over one year historical storage of ingress and performance data metrics
- Modular and scalable distributed architecture

## Key Features

- Automated Ingress, Analog and Digital performance verification testing saves money, increases productivity and improves quality of service
- Remote monitoring eliminates the need to send staff and equipment to remote sites for routine network monitoring
- High sensitivity (-65 dBmV) measurements detect impairments before services are affected
- Extended Ingress monitoring up to 200 MHz provides visibility of laser compression and clipping, CPD, transient events and Gaussian noise floor degradation over the RF electrical diplex frequency that was previously not possible to view or inspect
- Automated Alarm Management functions ensure prompt response to alarms
- View historical Ingress level measurements for proactive maintenance planning and trend analysis
- Node Hardening just became a lot simpler with the RealWORX Historical Ingress Viewer
- Modular and scalable cost-effective solution for your requirements and budget
- Leverage existing CM series meters to view return spectrum in field

## Applications

- Ingress monitoring for evaluation of the upstream bandwidth health. All return nodes can be monitored at headends and hubsites
- RF downstream monitoring of all analog and digital measurements at headends and hubsites or VHO's and VSO's

## Specifications

### RealWORX Server

Analyzers (max): 20
Alarm + Statistical Records (Ingress) (max): Approx. 2,000,000
Switch ports per analyzer (AT160x) (max): 256

### RealWORX Client

Concurrent Users (max): 10 per system

### RealVIEW System

Concurrent Users (max): 20 per Controller
Client Connectivity

- WinRemote Client: Internet/IP
- 3010R Client: RF-FSK to 3010H

### RealWORX Modular Options

R WORX-US: Return Path Performance Verification Option (Ingress / Spectral)
R WORX-DS: Analog and Digital Performance Verification/ Measurement Module (CATV and QAM)

### Device Models Supported

The following table lists the hardware devices currently supported by RealWORX.

| Device Type | Make | Model |
|---|---|---|
| Spectrum Analyzers | VeEX | AT2500HM, HMQ |
| Multiplexers | VeEX | AT1600E Series New (Provides peak performance) |
| | VeEX | AT1700 Series 10 dB Gain |
| | VeEX | AT1600 Series (old) on existing system only. New hardware obsolete |
| | Cheetah | RPS |
| | Electroline | Contact Factory |

### Performance Specifications

The following table lists some of RealWORX's key performance specifications.

| Item / Feature | Specifications | Notes |
|---|---|---|
| Frequency Bandwidth | 1 MHz - 1 GHz | AT2500HM/HMQ |
| Raw Performance Verification Speed (Ingress) | 60 ports/sec (max) (L-Series AT2500) 80 ports/sec (max) (MIPS-Series AT2500) | 3 msec sweep time, no alarms, no averaging, no interval logging, no custom port settings, switch = AT1600M 2 msec sweep time, no alarms, no averaging, no interval |
| Live Trace Refresh Rate (Ingress) | 11 frames per second (max) | |
| Quick Scan (Performance Monitoring) (New) | Accuracy +/- 0.5 dB of DCP | Full spectrum scan per node in less than 3 sec for signal levels |
| Analyzer Specifications* (Partial)<br><br>Sweep Time Settings (msec)<br>Resolution Bandwidths<br>Video Bandwidth Sensitivity<br>Level Accuracy<br>Response Flatness<br>Spurious Free Dynamic Range<br>Input Attenuator<br>Maximum Input | <br><br>3<br>10 kHz, 30 kHz, 300 kHz, 1<br>10 kHz, 100 kHz, 1 MHz<br>-65 dBmV to +65 dBmV<br>± 0.75 dB @25°C<br>± 0.75 dB (1-1000 MHz)<br>>70 dB<br>0 to 65 dB in 5 dB steps +68 dBmV | Please refer to the AT2500HM/HMQ datasheet for complete analzyer specifcations |
| Trace Resolution | 500 data points per use | Any spectral trace |
| Ingress Alarm Thresholds | 3 (Minor, Major, Link Loss) | |

**AT2500HM Specification*

## Testable Parameters

| Measurement Parameters | Digital (DS) | Analog (DS) | Return (US) |
|---|---|---|---|
| Digital Channel Power | X | X | |
| Modulation Error Ratio | X | | |
| Error Vector Magnitude | X | | |
| Estimated Noise Margin | X | | |
| Signal to Noise Ratio | | | X |
| Carrier to Interference | | | |
| Frequency Response | | | |
| Echo Margin | | | |
| Compression | | | |
| Hum | | | |
| Phase Noise | | | |
| I/Q Gain Difference | | | |
| I/Q Phase Difference | | | |
| Carrier Frequency Error | | | |
| Symbol Rate Error | | | |
| Video Level | | X | |
| Aural 1 Level | | X | |
| Delta V/A1 Level | | X | |
| Video Frequency | | X | |
| Aural 1 Frequency | | X | |
| Delta V/A1 Frequency | | X | |
| Return Path Ingress | | | X |
| Spectral Monitoring (Forward and Return) | | | X |
| Pre-BER | X | | |
| Post-BER | X | | |
| Stream Lock | X | | |
| Forward Error Lock | X | | |
| Symbol Lock | X | | |
| Depth of Modulation | | | |
| CCN | | | |
| CSO | | | |
| CTB | | | |

### Units

| | |
|---|---|
| AT2500HM | 1.5 GHz Headend Rackmount CATV Spectrum Analyzer |
| AT2500HMQ | 1.5 GHz Headend Rackmount QAM/CATV Spectrum Analyzer |
| AT1602E | 1 GHz 16 × 2 Headend Multiplexer |
| AT1601E | 1 GHz 16 × 1 Headend Multiplexer |
| AT1702 | 1 GHz 16 × 2 Headend Multiplexer (Forward path with 10 dB gain) |
| AT1701 | 1 GHz 16 × 1 Headend Multiplexer (Forward path with 10 dB gain) |

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