DVStation: Advanced Monitoring for Digital Networks

DVB-T Line Interface

High Performance Monitoring

The DVB-T Line Interface is a high performance solution for monitoring of digital terrestrial transmission, both over the terrestrial channel and at the transmission tower. The high fidelity demodulator is well suited to monitoring directly off a broadcast tower's high power amplifier to ensure the integrity of the broadcast signal driving the transmission antenna.

Two inputs, RF at 47 to 1000 MHz and IF at 11.875, 36 and 44 MHz are provided to interface to the DVB-T COFDM signal.

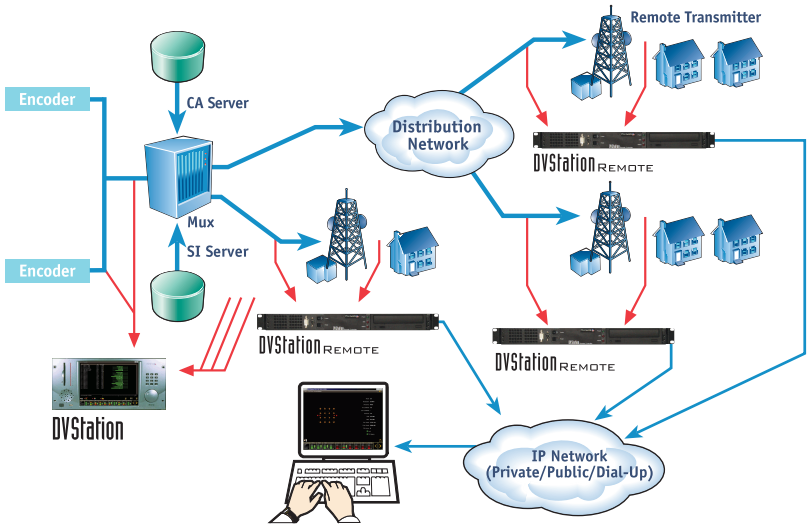
The DVB Signal Analyzer/ Demodulator is a standard DVStation family module available for DVStation Remote Controller, DVStation-210, as well as portable DVStation Pod applications.

An ASI connector provides transport stream output for detailed TS analysis using the Pixelmetrix TSP120 Transport Stream Processor.

In conjunction with the TSP120, the module pair can perform DVB signal demodulation and a comprehensive suite of continuous RF, modulation, SFN integrity, transport stream and content validation tests.

Key Features

- DVB-T (EN 300 744) COFDM demodulator
- Modulation fidelity analysis via MER, up to 40dB measurements limits
- Complete forward error correction chain monitoring
- Modulation and TPS parameter monitoring
- Constellation, spectrum and impulse response visualizations
- Impulse response mask monitoring
- Long term logging of all measurements
- Multiple configuration profiles and round-robin scheduler for monitoring multiple channnels
- Multi-user remote access over LAN, internet or modem connection



RF Measurements and Graphical Displays

Signal measurements include RF level, signal quality and bit error ratios at various points in the forward error correction chain.

A graphical display shows actual constellation points with data carrier and TPS points each identified with unique colors.

A separate graphical display shows carrier performance over the COFDM spectrum. This display combines the spectral power information from the demodulation FFT and the carrier confidence information based on the scattered pilot MER values. Seeing both power and MER versus frequency allows quick visual identification as to the type of impairment in the channel: PAL interference, Gaussian broadband noise, narrowband noise or impulse noise. If a signal is of insufficient quality to demodulate, the system can bypass the demodulator and present a "raw" spectrum for looking at whatever signal may be in the channel.

An impulse response graphical display allows analysis of SFN networks and multi-path environments. Echo strength in dB is displayed against delay time in µs or distance in km. Masks can be set up to test the actual signal against an expected multi-path reception. This allows a single DVB Signal Analyzer/ Demodulator to monitor the synchronization of several SFN broadcast towers.

RF measurements performed by the module are integrated into the DVStation physical Status-at-a-Glance display.

Alarms and Remote Access

All measured parameters can be monitored unattended through user definable alarms. The comprehensive DVStation Alarm Sub-System can trigger actions that include log entries, audible alarms, SNMP traps, contact closures, transport stream recording and even user-programmable actions (email notification, SMS paging, etc).

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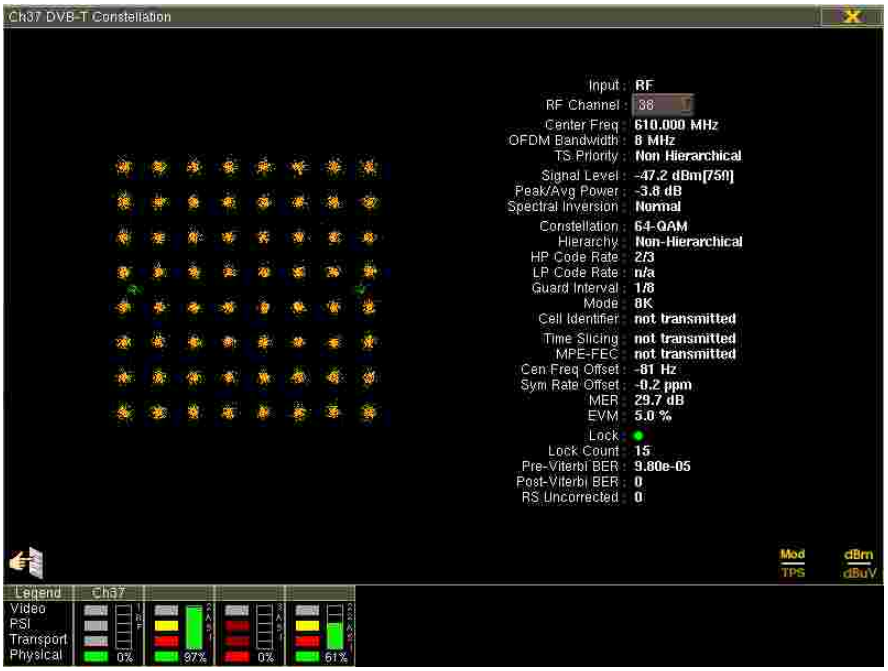
Comprehensive Transport Stream Monitoring

When used in conjunction with the Pixelmetrix TSP120 transport stream processor, comprehensive real–time transport stream operational monitoring tests can be performed in parallel with the RF signal integrity tests:

- MIP tests (Timing, Structure, Presence, Pointer, Periodicity and TS Rate)
- TR 101 290 health checks, priorities 1, 2 and 3
- Video thumbnails with freeze and blackout detection
- MHP and DSM-CC data carousels
- Bandwidth of services and individual PIDs
- Stream capture
- Automatic On-air Content Validation
- IP traffic (MPE)
- PCR Jitter

Please refer to the Pixelmetrix TSP datasheet for more information.



Specifications

Standards
- ETSI EN 300 744 (DVB-T)
- ETSI TR 101 290 (Measurement Guidelines for DVB Systems)

Form Factor
- Standard DVStation series hot-swappable, single slot Card1 module
- DVStation Remote Controller compatible module
- DVStation Pod module

Input (IF)
- Connector: BNC
- Impedance: 50Ω or 75Ω, user-configured
- Return loss: >30 dB at 50Ω, >22 dB at 75Ω
- Signal level: -25 to 0 dBm
- Center frequency: 11.875, 36.125 and 44 MHz

Input (RF)
- Connector: BNC
- Impedance: 75Ω
- Return loss: >15 dB
- Signal level: -70 to -5 dBm
- Center frequency: 47 to 1000 MHz

Transport Stream Output
- ASI interface on front panel, BNC connector
- Backplane output (for Card1 module form factor)

SAW Filters
- Bandwidths of 6 MHz at Fc = 44 MHz, 7 MHz at Fc = 36.125 MHz, and 8 MHz at Fc = 36.125 MHz
- Optional SAW filter bypass for IF input, optional dual cascaded SAW filters for RF input

Demodulation
- All DVB-T 2K and 8K mode modulations as per EN 300 744
- Bandwidths of 6 MHz, 7 MHz and 8 MHz

Performance
- Echo power compatibility: 0 dB
- Adjacent channel rejection (-1dB MER): >20 dB
- Adjacent channel rejection (QEF): >50 dB
- MER measurement range (RF): up to 40 dB
- MER measurement range (IF): up to 44 dB

Reported Demodulation Parameters
- Signal lock and lock count
- Mode, constellation, hierarchy and code rate(s) of actual modulation and TPS data
- Cell identifier
- Spectral inversion

Measurements
- Signal level
- Peak to average ratio
- Center frequency offset
- Symbol rate offset
- MER and EVM
- Pre-Viterbi and post-Viterbi BER
- RS uncorrected count

Graphical Presentations
- Constellation with data and TPS in unique colors
- Demodulator spectral power with noise distribution over carriers
- Raw spectrum (demodulator bypass)
- Impulse response with programmable mask

Alarms
- Matching against expected values for all reported demodulation parameters
- Matching of actual modulation and TPS parameters
- Threshold alarms on all measurements
- Percentage of carriers falling below user defined noise threshold
- Impulse response mask violation

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