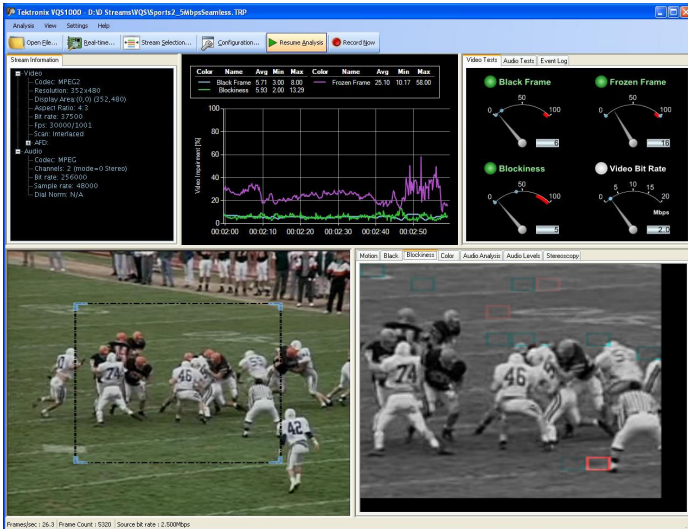


Video Quality Analysis Software

VQS1000 Data Sheet



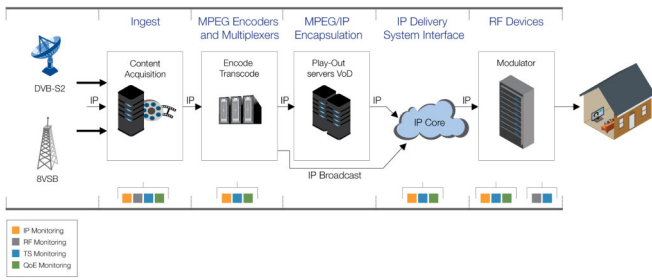
- Triggered-capture of streams and logging of live data enable offline analysis of service quality issues
- Logging of live data to capture min, max, and average impairment values and bit rates at user-definable time intervals enables long-term quality of experience for a service to be assessed and optimized
- Connect either directly to an Ethernet switch or integrate with Tektronix IP Video and DTV Monitoring probes
- IGMP support for analyzing multicast streams beyond the local router
- Integrate with Tektronix IP Video and DTV Monitoring probes so that QoE errors appear in the monitoring probe log interleaved with the TS and physical layer (IP and RF) QoS errors. This enables users to easily distinguish between errors that are caused by network issues (dropped packets, CC errors, etc.) and errors which do not have a corresponding network issue and are therefore caused by an upstream encoder problem

Features & Benefits

- Reliable and sophisticated analysis algorithms applied to decoded MPEG-2 or H.264 video to identify stuck, black, macro-blocking, and compression artifacts. This enables operators to distinguish between impairments resulting from network distribution versus artifacts resulting from compression
- Industry-first unique visualization tool with innovative impairment displays highlights the location and severity of video defects, enabling engineers to clearly see and validate the presence of impairments on the image
- Analysis of decoded MPEG-2, AC-3, MPEG-2 AAC, and MPEG-4 AAC audio to identify loudness problems in accordance with ITU-R BS.1770/1771
- Trending of video and audio metrics to help diagnose intermittent and time related problems

Applications

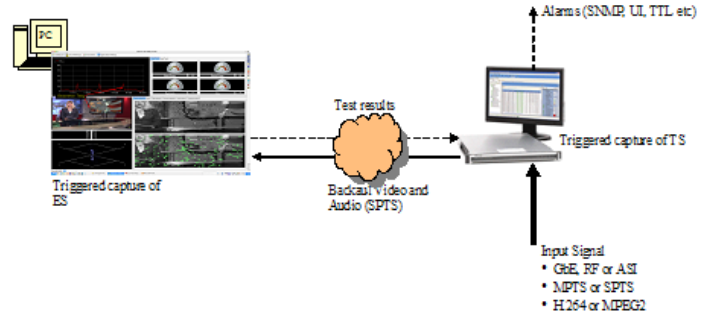
- Affordable QoE Monitoring – Alarms with configurable impairment magnitude, duration, and frequency thresholds can be generated to alert users to content that will impact customers' viewing and listening experience
- Network Performance Optimization – QoE and bit rate monitoring and logging enable in-service tuning of networks to deliver the best viewing experience possible within bandwidth constraints to viewers
- Remote In-service Diagnostics of Broadcast Delivery Issues – Combined with physical transport alarms from the Tektronix IPM400A or any MTM400A Series probe, operators can determine if the source of a problem is in the content (for example, over-compression) or in network distribution layers



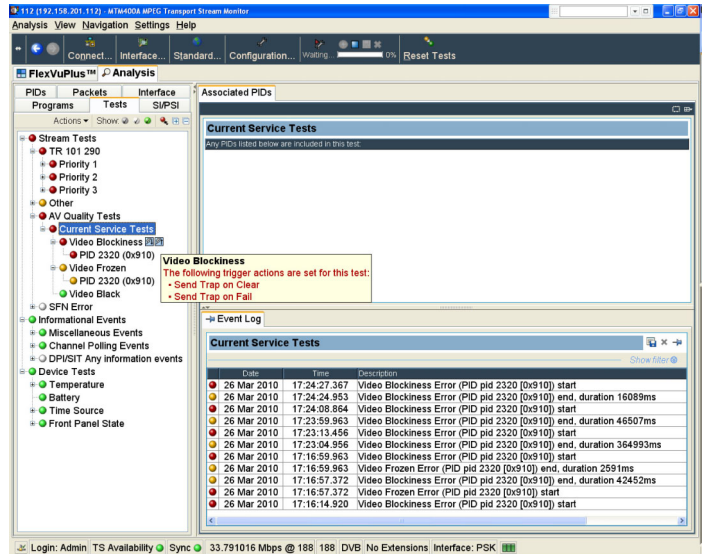
QoE Monitoring in the Video Delivery Chain

VQS1000 Overview

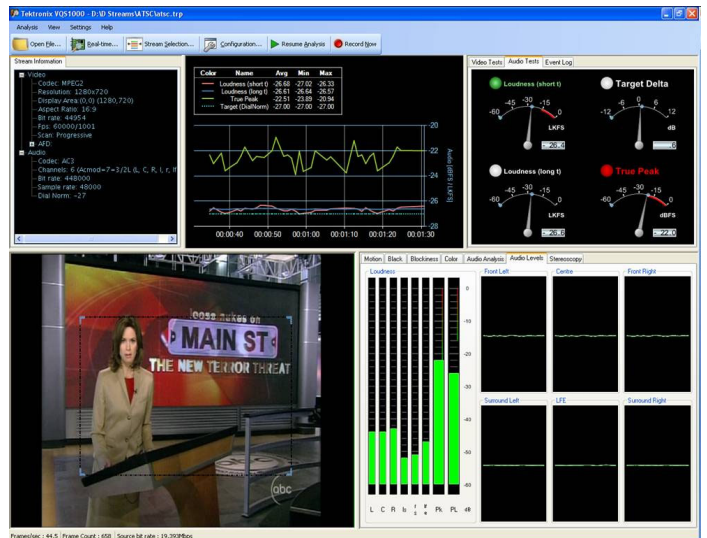
- Available for installation on the customer's own PC
- Two instances can be run per license to enable service comparison at different network locations (dependent on PC processing power and video content type)
- Triggered capture with pre-trigger buffer enables archive of impairments or offline video quality analysis to be performed
- Application can be also be used stand-alone for offline file analysis with support for MPTS and SPTS files
- Can be connected directly to an Ethernet switch. Supports IGMP for accessing remote multicast streams
- Can be used with all Tektronix DTV monitoring probe configurations using robust private backhauled video from the monitoring probes
 - QoE results are reflected in monitoring probe's Remote User Interface and event log
 - Results available to management systems through monitoring probes SNMP MIB
 - Automated round-robin polling sequentially checks services within an MPTS
 - Can be used in conjunction with the probes polling capability to sequentially test different Transport Streams carried on up to 500 IP flows (IPM400A) or up to 200 RF channel presets (MTM400A)
- Also available for use with MTS400 Series analyzers



Configuration for Use in Monitoring Systems



Results Displayed in DTV Monitor or IP Video Monitor User Interface



Audio Analysis Display

Characteristics

Key Specs

- All measurements are performed on decoded video and audio, using standards based on Tektronix proprietary algorithms
- Video measurements are shown below:
 - MPEG-2 and H.264 codec support
 - Stuck/Frozen Video detection
 - Black Video detection
 - Blockiness/Compression artifact detection
 - Color display using Tektronix Diamond display
 - QoE dashboard
 - Display of video metadata including codec type, resolution, display area, aspect ratio, bit rate, frames per second, scan, and AFD
- Audio measurements are shown below:
 - MPEG-2, AC-3, MPEG-2 AAC, and MPEG-4 AAC codec support
 - Loudness, true peak and deviation from Dial Norm measurements in accordance with ITU-R BS.1770/1771
 - Phase analysis using Lissajous display
 - Loudness bars and trend for each channel
 - QoE dashboard
 - Display of audio metadata including codec type, number of channels, sample rate, and Dial Norm

Recommended PC System Requirements

- Supported OS: Windows XP or Windows 7
- PC Processing Requirements: Xeon 5500 Series (i7-based) quad-core processor or equivalent
- RAM: 4 GB minimum
- HDD: 250 GB

Ordering Information

Nomenclature	Option	Description
VQS1000		Video Quality Software application for single-ended (no reference) QoE analysis of video and audio content
	AUD	Audio analysis option for VQS series software
	LUD	Installation on a pre-existing MTS400 Series dongle
	USB	USB security dongle supplied with stand-alone software package

Complementary Products

Product	Description
IPM400A	IP Video Monitoring Probe for QoS of up to 500 MPTS or SPTS IP video flows. For full details see separate data sheet
MTM400A	Digital TV Monitor. For full product details, refer to product data sheet
RFM300	ATSC Digital TV Monitor. For full product details, refer to product data sheet
QAM400A	QAM Digital TV Monitor. For full product details, refer to product data sheet
MTS400 Series	MPEG test systems available in desktop, portable, or stand-alone software versions. For full product details, refer to product data sheets



Tektronix is registered to ISO 9001 and ISO 14001 by SRI Quality System Registrar.

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For Further Information. Tektronix maintains a comprehensive, constantly expanding collection of application notes, technical briefs and other resources to help engineers working on the cutting edge of technology. Please visit www.tektronix.com



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