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Find the *Tektronix PQA300* at our website: *Click HERE*

Picture Quality Analysis System

▶ PQA300



▶ Features & Benefits

Replaces Time-consuming and Expensive Human Assessment with a Reliable Alternative by Providing Fast, Accurate and Repeatable Objective Picture Quality Measurements

Complete, Practical, Detailed Results for Digital Compression, Equipment Performance Verification and Video Picture Analysis by Providing In-depth Picture Quality Analysis Including PQR-scale Difference Maps and Frame-by-frame Results

Flexibility of Either the Supplied Video Test Sequences or Any User-defined Video Input Signal by Allowing Use of Any Input Video as a Reference Signal for Video Evaluation

▶ Applications

Encoder Product and Component Design Verification

Transmission Equipment and Systems Evaluation

Picture Quality Video Content Verification and Analysis at the Program (Video) Layer

Picture Quality Analysis System

Introducing the PQA300… the industry's leading objective picture quality measurement tool that actually looks at video, based on the Emmy Award-winning PQA200 platform.

The PQA300 analyzes picture quality with repeatable, objective measurements that directly replicate subjective human visual assessments. These measurements provide invaluable information for engineers working to optimize video compression without compromising picture quality.

The PQA300 is both a generator and analyzer of reference test material for testing compressed video systems. Standard inputs and outputs are 270 Mb/s serial component (Rec. 601). Option 01 provides analog composite NTSC/PAL inputs and outputs.

Compressed Video Requires a New Method of Testing

The best measure of any analog or digital television system is the viewer's satisfaction with the image received. Traditionally, the quality of analog and full-bandwidth digital video systems has been measured indirectly by measuring the distortions of static test signals.

Compressed television systems, however, pose a far more difficult measurement challenge. Picture quality in these systems changes dynamically based on the data rate, picture complexity and encoding algorithm employed. The static nature of test signals does not provide true characterization of picture quality. Natural test scenes that are far more complex than test signals must be used to stress the capabilities of compressed video systems.

Until now, subjective testing using human viewers has been the only available method for evaluating compressed video systems. But, while useful for establishing academic reference data, subjective testing has been impractical for operational, manufacturing and troubleshooting applications – until the development of the Tektronix PQA300, which provides a fast, practical and repeatable objective measurement alternative to subjective evaluation of picture quality.

Tektronix

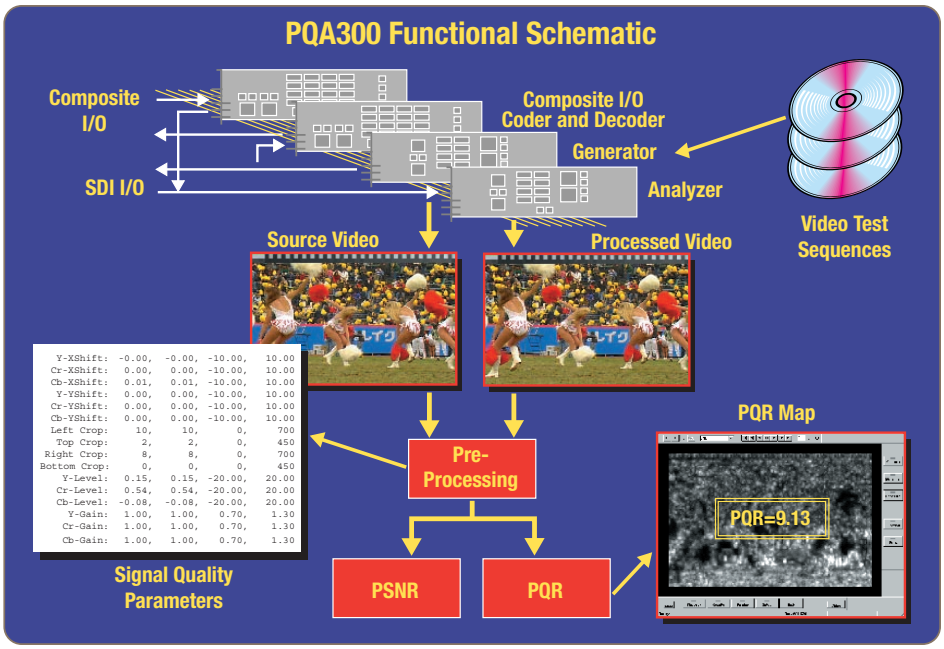
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How It Works

The PQA300 measures a 2-second portion of a 5-second video test sequence. The video test sequences may be downloaded from supplied CD-ROMs or recorded from your own video, and played out to the system under test. While serial digital interfaces are standard, analog composite and S-Video (Y/C) interfaces can also be accommodated with the addition of Option 01.

The output of the system under test is then stored and analysis performed with DSP-accelerated hardware on the 2-second sequence. The measurement results in a single numeric value of picture quality called Picture Quality Rating (PQR). Utilizing a human vision system model, JNDmetrix™, based on years of research by the Sarnoff Corporation, the PQA300 analyzes the three necessary dimensions for evaluation of dynamic and complex motion test sequences: spatial analysis, temporal analysis and full-color analysis.

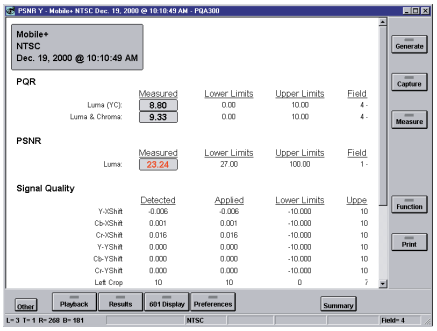
In addition to reporting the Picture Quality Rating, the PQA300 provides PSNR-values and an animated map whose intensity is related to the perceived differences between the original and captured image. This provides invaluable information for evaluation and optimization of digital video compression systems.



▶ *PQA300 Functional Schematic.*

Picture Quality Analysis Outputs

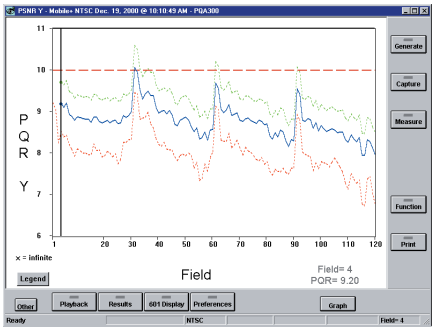
The PQA300 provides Results Summary, Graph Files and PSNR Difference Maps for in-depth, detailed analysis to help you evaluate your equipment design, transmission system evaluation, or conduct your picture quality content verification and analysis at the program (video) layer.



The Results Summary

The results summary screen shows a frame-by-frame summary of the test results, PQR, and PSNR scores for both the reference and test video.

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The Graph File

The analysis performed in the graph screen allows the user to select any of the results in much greater detail. For example, as you go to the PQR graph, you will be able to see the distribution of the scores on a frame-by-frame basis and identify individual frames that may be of interest based on the scores.



The PSNR Difference Map

A visual illustration of the differences between the reference and test video is displayed on this difference map. By highlighting the dissimilarities in the content, it visually illustrates the impairments that were imposed by the equipment on the resulting video.

▶ Characteristics

Serial Digital Video Channels

Format – 270 Mb/s serial component digital video. Complies with ITU-R BT.601, BT.656, SMPTE 259M, 272M, 165.

Video Inputs – Active loopthrough, 75 Ω compensated, BNC connector (channel 1), SMB connector (channel 2).

Video Output – 75 Ω compensated, BNC connector.

Return Loss – <15 dB (1-270 MHz), with power on.

Serial Receiver Equalization Range – Proper operation with coaxial cable up to 14.5 dB loss at 135 MHz.

Analog Video Channel (Opt. 01)

Format – Analog composite baseband NTSC/PAL or S-Video.

Video Inputs – Passive loopthrough, 75 Ω compensated, BNC connector and S-Video connector.

Genlock Input – Passive loopthrough, 75 Ω compensated, BNC connector.

Video Outputs – Analog composite, BNC connector and S-Video connector.

Power

Voltage Range – 100 to 240 VAC.

Frequency – 50 or 60 Hz.

Power Consumption – <200 W.

System Components

Mainframe – Tektronix manufactured, rack-mountable in standard 19 in. rack. SVGA monitor for local display and mouse and keyboard for UI control are optional.

Processor – Two 400 MHz Pentium II processors.

System Memory – 256 MB.

Real-time Clock – Real-time clock/calendar with a resolution of 1 second or less.

BIOS – Phoenix BIOS, Y2K compliant, field upgradable.

Bus – 32-Bit PCI.

Nonvolatile Storage –
Floppy Disk Drive: Standard 3.5 in. PC compatible floppy disk drive; 1.44 MB high-density double sided (2HD).

Mainframe Interfaces –
One loop-through Ethernet port.
One bi-directional RS-232/RS-422/RS-485 port.
One parallel port (printer).
One hot-pluggable keyboard port (on the rear panel).
One hot-pluggable mouse port (on the rear panel).

Network Connection – Ethernet.

Safety

Designed and Tested for Compliance with –
IEC 950.
CAN/CSA C22.2 No. 950 M89.
UL 1950.
73/23/EEC.
93/68/EEC.

Physical Characteristics

Dimensions	mm	in.
Height	215.9	8.5
Width	431.8	17.0
Depth	558.8	22.0
Weight	**kg**	**lbs.**
	17.2	38.0

(Base unit only – does not include monitor, keyboard or mouse.)

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▶ Ordering Information

PQA300

Picture Quality Analysis System.

Options

Opt. 01 – Analog Video Inputs/Outputs for PQA300.

Opt. A1 – Universal Europe power cord.

Opt. A2 – United Kingdom power cord.

Opt. A3 – Australia power cord.

Opt. A5 – Switzerland power cord.

Opt. PQA300-LC – Integrated display, keyboard (U.S.), touchscreen, keypad and three-button mouse.

Opt. IF – Field-configured modular installation.

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