

# Video Quality Monitor

“No Reference”, “Parametric” and “Hybrid” Perceived Video Quality Measurement/Monitoring Solution

## Product information

### Product

- Software
- Hardware <sup>(1)</sup>

### Video quality metrics

- No reference
- Parametric
- Hybrid <sup>(2)</sup>
- Camera noise
- Decodability

### Audio quality metrics

- No reference
- Loudness (according to recommendations ITU BS 1770-2 and EBU R128)
- Decodability

### Input types

- File
- IP streaming <sup>(2)</sup>
- Capture card/device
- Desktop capture

### Input formats

- HEVC (H.265)
- MPEG-4/AVC (H.264)
- MPEG-2
- Uncompressed <sup>(3)</sup>
- Other encoded formats <sup>(4)</sup>

### Applications

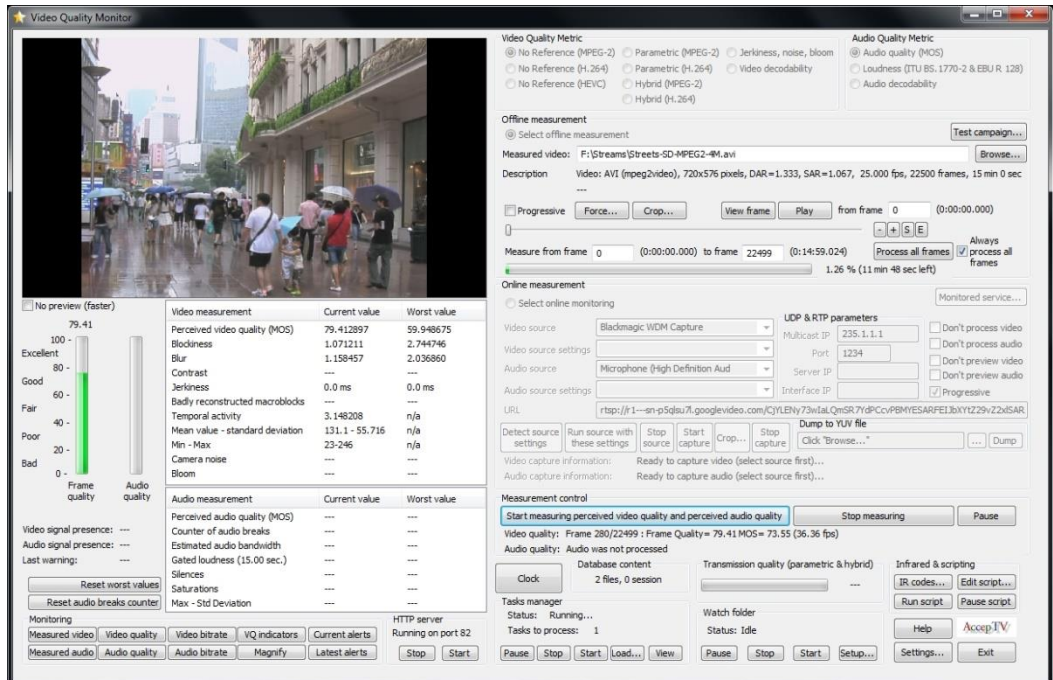
- Video encoders and cameras benchmarking and comparison <sup>(4)</sup>
- File-based encoding monitoring <sup>(4)</sup>
- Live monitoring <sup>(2)</sup>
- Jerkiness monitoring
- Loudness monitoring
- Optimal bitrate determination <sup>(4)</sup>
- Video processing optimization <sup>(4)</sup>

<sup>(1)</sup> Hardware (PC) may be supplied as an option

<sup>(2)</sup> For IP video monitoring, also see our other product MPEG Monitor

<sup>(3)</sup> Uncompressed video must be the result of HEVC, H.264 or MPEG-2 decoding

<sup>(4)</sup> Also see our other product Video Quality Analyzer



The satisfaction of your customers is of the utmost importance.

And when it comes to satisfaction about video, visual quality is essential. And to check that you reach the quality level you expect for your video services, you need to monitor it.

Unfortunately, video quality measurement is usually difficult and monitoring solutions are often complicated to use.

To solve these problems, Video Quality Monitor is here.

Video Quality Monitor is a powerful software solution to measure and monitor video quality as perceived by end-users. Video Quality Monitor can also measure and monitor audio quality and audio loudness.

Video Quality Monitor computes video quality using a MOS (Mean Opinion Score) scale ranging from 0 to 100.

Video Quality Monitor is the most precise tool to:

- **measure (offline) and monitor (in real time) the quality** of a TV channel or any other video service,
- **monitor the quality of a video coming from IP streaming, from a capture card, from a video device, from desktop capture or simply from a file,**
- **measure (offline) and monitor (in real time) audio loudness according to international recommendations,**
- **measure the impact on perceived quality of unwanted pauses (due to rebuffering) during video playing,**
- **optimize encoding parameters (like bitrate).**

And since Video Quality Monitor does not depend on specific hardware, you can install it on any Windows™ PC. You can even run it on a laptop!

Based on an elaborate human vision model, Video Quality Monitor quickly provides accurate, detailed and repeatable measurements. Video Quality Monitor includes different video quality measurement technologies (“metrics”).

The **No Reference metrics** compute video quality by exploring the decoded frames at pixel level. **Parametric metrics** use parameters from the encoded bitstream. **Hybrid metrics** use both parameters from the bitstream and information extracted from the decoded images.

Each metric computes codec-specific artifacts:

- The **No Reference MPEG-2 metric** measures blockiness visibility and blur perception,
- The **No Reference H.264 metric** measures blockiness visibility, blur perception and objects contrast,
- The **No Reference HEVC metric** measures blur perception and picture flatness,
- The **Parametric MPEG-2 metric** measures compression strength and badly reconstructed blocks,
- The **Parametric H.264 metric** also measures compression strength and badly reconstructed blocks,
- The **Hybrid MPEG-2 metric** measures blockiness visibility, blur perception, compression strength and badly reconstructed blocks,
- The **Hybrid H.264 metric** measures blockiness visibility, blur perception, objects contrast, compression strength and badly reconstructed blocks.

VQM also enables:

- measurement and monitoring of **audio quality** and **audio loudness** according to ITU BS 1770-2 and EBU R128,
- video cameras benchmarking with **camera noise measurement and monitoring,**
- measurement and monitoring of the **impact of image freezing** (due to rebuffering) during video playing,
- high speed (>1000 fps) **decodability checking** to count the number of decoded audio samples and decoded video frames (and compare them to expected values parsed from files' headers).

Take the lead in the race for quality

## Key features

### Perceived video quality measurement and bitrate measurement

Video Quality Monitor measures the perceived video quality on a scale from 0 to 100. It also measures the bitrate of any frame (instant bitrate) and the mean bitrate.

### Integrated web server and database

Video Quality Monitor saves all measured data in an integrated database and includes its own web server so you can remotely:

- consult the results from the database
- get monitoring statistics between two dates and times
- display interactive quality curves and "Quality vs. Bitrate" curves
- generate quantitative and detailed quality analysis reports
- generate mosaics and real time maps

### Loudness and audio quality measurement

Video Quality Monitor enables to measure and monitor audio quality, audio bitrate and loudness according to international recommendations ITU BS 1770 and EBU R128.

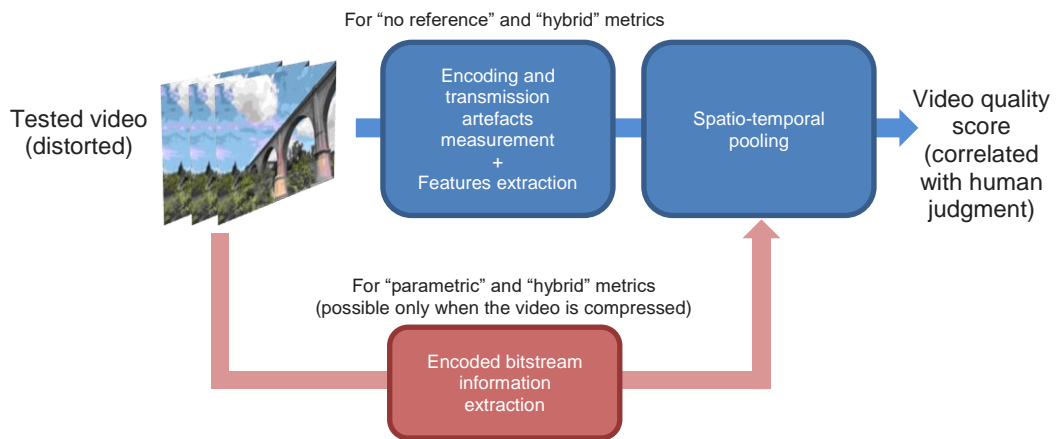
### Many other features

Video Quality Monitor also includes many other features like a watch folder, automation features, command line usage, a magnifying glass, etc.

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AccepTV  
172 route de Saint Joseph  
44300 NANTES  
FRANCE

## Principle



## Features

### Input

Compatible with all common codecs: HEVC, H.264, MPEG-2, VP9, VC-1 ... and also with uncompressed YUV (4:2:0, 4:2:2, 4:4:4)  
Compatible with the most common containers (TS, AVI, MP4 ...) and with raw data  
Compatible with all resolutions: SD, 720p, 1080i, 1080p, 4K, custom...  
Compatible with all frame rates: 4:3, 16:9, 1.85, 2.21, 2.35, custom...  
Compatible with all durations from 5 seconds to several hours  
Compatible with CBR and VBR encoding  
User-chosen audio/video decoders: integrated decoders or external (DirectShow) filters  
Compatible with all audio sampling rates (loudness measurement adapts itself to the sampling rate)

### Input source

File: offline or online (when the file is being played)  
Streaming video (UDP, RTP, HTTP, HLS, RTMP, RTSP)  
Capture card or device  
Desktop capture

### Measurement

Elaborate Human Vision modeling  
Video quality measurement: measurement of blockiness, blur, contrast, jerkiness, computation of MOS (Mean Opinion Score) indicating the quality of the tested video  
Impact of image freezing (due to rebuffering) on perceived video quality  
Audio quality measurement: errors detection (silence, important distortions, signal breaks)  
Loudness measurement in accordance with recommendations ITU BS 1770-2 and EBU R128  
Audio and video "decodability metrics" to check the number of decoded frames and the number of decoded audio samples (at high speed: more than 1000 fps)  
Instant video bitrate measurement (for each frame)  
Mean video bitrate measurement (for the whole video)

### Results

Curves and values of MOS, bitrate, blockiness, blur, contrast, jerkiness, camera noise, loudness  
"Quality vs Bitrate" curves generation  
Useful interface: measured video, video quality curves, video bitrate curve, measured audio waveform, audio quality curve, audio loudness curves, audio bitrate curve, magnifying glass  
Monitoring statistics and curves between two user-defined dates (with one-minute granularity)  
Automatic reports generation (TXT, CSV, HTML)  
Alerts (email, SNMP traps) if quality is too low or if decoded frames number or audio samples number are incorrect  
Video samples when problems happen (saved from a few frames before the problem so you see the problem appearing in the video sample)

### Extra

Integrated HTTP server for distant results consultation and built-in database to store results  
Possible command line usage (with many available arguments), script loading  
Possible sending of commands to VQM while it is running (by calling URLs from the HTTP server)  
Watch Folder: automatic processing of each new file in a folder (and its subfolders)  
Measurement reports by email  
Real time operating mode  
Can process several files in parallel  
Scripting and infrared support (learning and sending of IR codes) for Set-Top Box control  
VQM Centralization Server (VQM CS) to gather the results of several VQM instances in real time and generate reports, mosaics, real time maps



Perceived Video Quality Metrics

[www.aceptv.com](http://www.aceptv.com)

[info@acceptv.com](mailto:info@acceptv.com)

Take the lead in the race for quality