Visualizer™ SDR/HDR+WCG Digital Video Test Pattern

The Visualizer™ test pattern offers a comprehensive way to evaluate more than 20 key parameters of video quality from a single screen. It enables you to easily identify processing and transmission errors throughout the digital signal chain.

Standard Formats
- SD (576i, 480p, 486i)
- HD (720p, 1080i, 1080p)
- 2k (2048 x 1080)
- UHD (3840 x 2160)
- 4k (4096 x 2160)
- Custom formats: any resolution, frame rate, and color space

Media File Formats
- Y’UV 10-bit 4:2:2 in ‘v210’ files
- R’G’B’ 4:4:4 in 10-bit DPX or 16-bit TIFF files
- R’G’B’ or XYZ OpenEXR files
- Rec. 709, PQv2020, HLGv2020, ACESproxy, S-Log3 or Log-C
- Uncompressed Y’UV 4:2:2, in media wrapper
- Compressed MPEG-2, H.264 or HEVC Transport Streams

HDR+WCG Version
- Reveals tone mapping and clipping
- Shows color gamut mismatch
- Indicates gamut mapping

End-to-End Digital Video Diagnostics
The Visualizer™ test tool is an easy-to-interpret, visual pattern that enables accurate evaluation and calibration of a wide range of digital video systems. From simplifying equipment configuration to measuring compression performance, the Visualizer pattern takes the guesswork out of digital video quality control.

The pattern is available as an uncompressed or compressed video sequence. In streaming form—as HEVC/H.265, H.264/MPEG-4 AVC and MPEG-2 video—it is suitable for testing both file-based and streaming systems. The sequence has been carefully compressed using custom SRI encoders, ensuring that compression-sensitive features remain intact.

- Quantifies compression fidelity
- Identifies color matrix mismatch
- Determines bit depth and chroma subsampling
- Reveals skipped frames
- Quantifies lip sync errors
- Provides 18 additional tests

HDR+WCG Version
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Identify the quality issues that matter most to you. Inside is a quick reference guide detailing the pattern’s specific test parameters.

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Frequency Response
At the left, H and V linear frequency sweeps from zero to the Nyquist limit. At right, after conversion from 1920x1080 to 1280x720 and back. Note the aliasing at the top that should have been filtered away to gray. Note the strong Moiré pattern 2/3 the way up. 2/3 = 720/1080. Use pattern’s 12-unit grid scale to measure frequency ratios (6/12 = 720/1080).

Compression Fidelity
Right: Some regions have missing detail. At each frequency, note the highest bit depth with visible signal. Left: Uncompressed shows visible signal from bottom to top in every frequency burst. (Contrast exaggerated.)

Reference Image
Check skin tones, detail in hair and jewelry; check for highlight clipping, black clipping. The image is color-managed for gamma and RGB primaries.

Jacob's Ladder
Calibrated linear light stairstep from 100% (10,000 nits) down 6 decades in 24 steps, with +/- 1/3 stop deltas. Check monitor tone mapping and clipping, and darkest visible light level.

ST-303M
See User Guide Appendix for RGB values for each chip. Note six dim blocks in the fifth row. They are 1/200, 1/400, 1/800, 1/1600, 1/3200, 1/6400 of the linear light range.

Lava Lamp
Right half: luma only. Left half: chroma only. Look for jumps or stutter indicating dropped or repeated frames. 1/4 way up, speed is 1 line per frame or field: look for jaggies there. Look for differences between luma and chroma resolution and motion smoothness.

Chroma Downsampling

Chroma Upsampling Back to 4:4:4

Color Matrix

Correct
Rec.709 YUV
decoded as
Rec.601
Rec.2020
decoded as
Rec.709

White Pluge

Pluge

Bit Depth
Left: 10-bit shows no contour lines. Dithered 8-bit may look almost as smooth. Right: 8-bit video has rotating contour lines. Compression artifacts may also appear. (Contrast exaggerated.)

Gamut Bars
12 color points around each gamut, with small chips desaturated by 5 delta-E. Reveals gamut mapping.

Field Dominance
Correct
Reversed

Lip Sync
Correct: Tick is heard when center mark flashes.
Incorrect: Audio is 3 frames/fields early.

Chroma Motion Error
Demonstrates incorrect processing of Chroma in interlaced 4:2:0 systems

Border Marquee & Crop Lines
Correct: Top white dashed line is showing
Top line is missing
When center-cropped to the indicated aspect ratio, the associated dashed lines will be the edge pixels of the new image.