



# VideoQ Test Patterns Library

## Overview

*Training Presentation*

*December 2024*

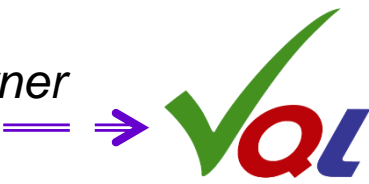


[videoq.com/vql.html](https://videoq.com/vql.html)

[videoq.com](https://videoq.com)

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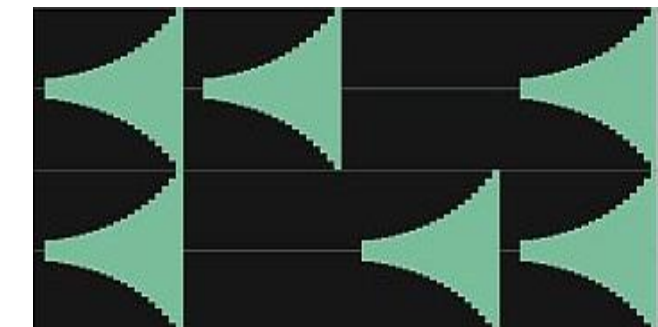
# 1. VideoQ Approach to Test Patterns Usage

VideoQ approach combines “classic”, “digital” and “cloud” methodologies, sharing same test patterns and covering all 3 levels of video quality control:

**Instant visual-aural quality estimation**



**Objective measurements of video and audio parameters**



**Fully automated Quality Control**

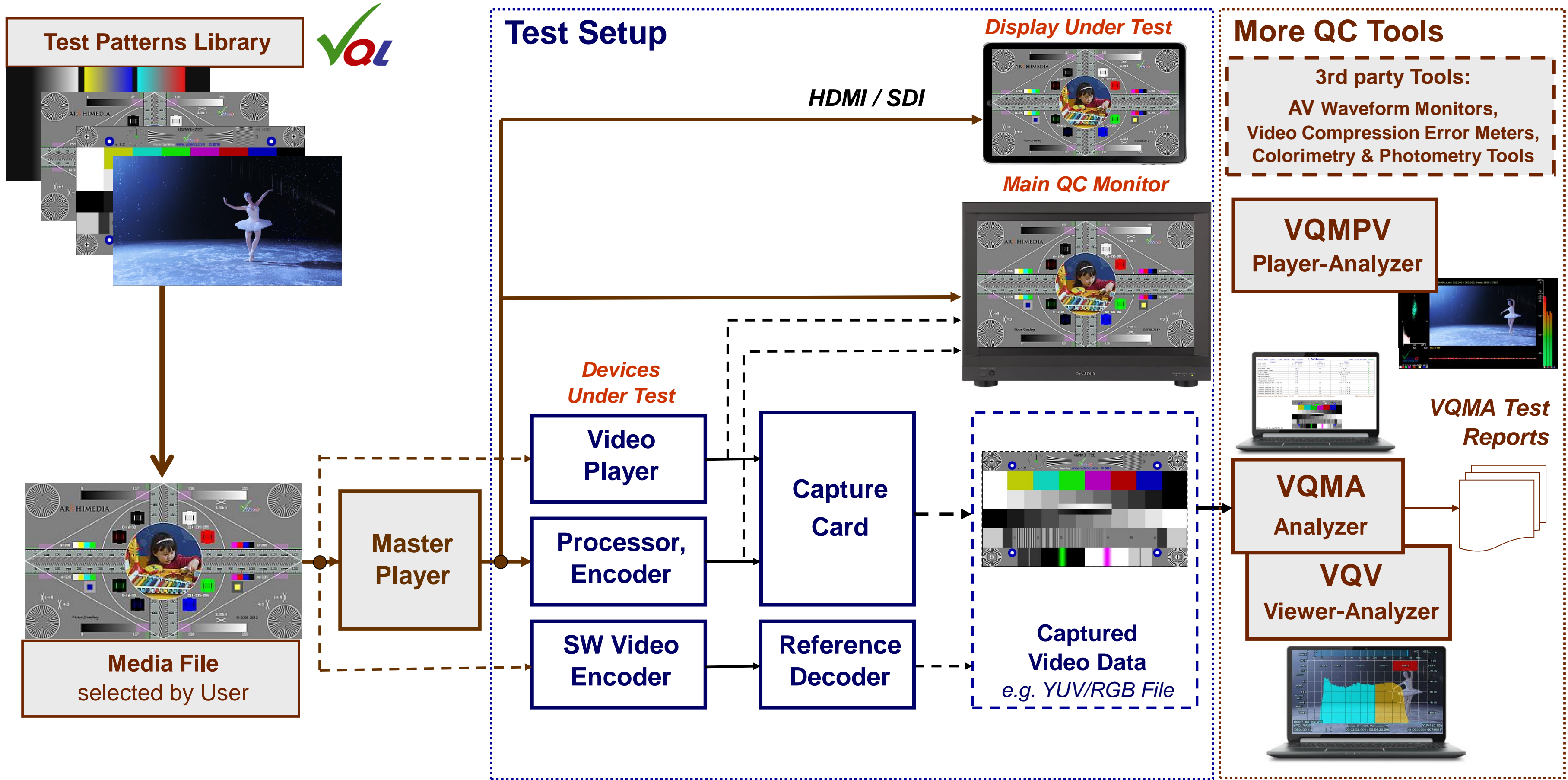


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> (0) "videoParameters": {} (19)
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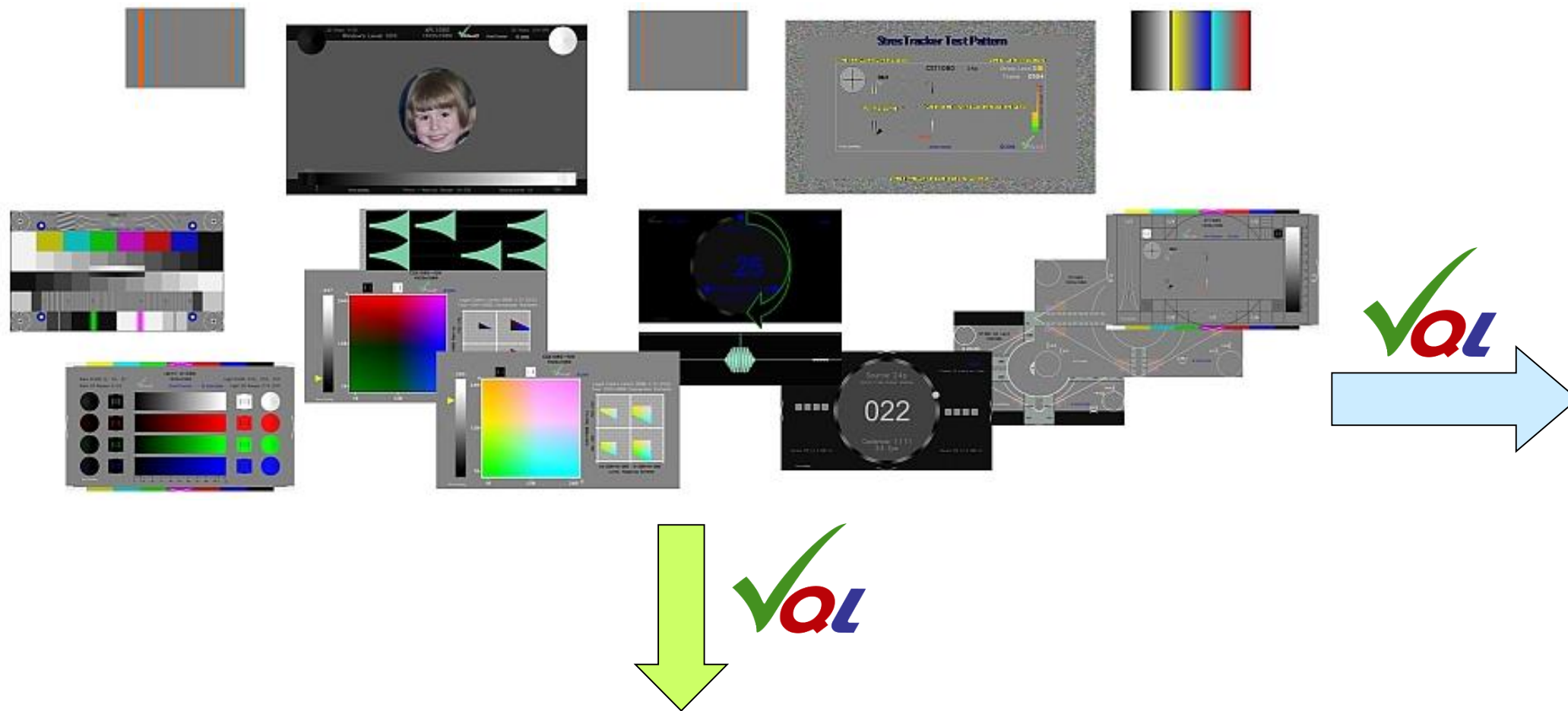
# 2. Workflow



# 3. Software and Hardware Applications



VQL tests are used by Amazon, Harmonic, Netflix, Samsung, OBS, and many other industry leaders



VQL Compatible Hardware  
Players/Generators

Software Coders, Transcoders, Players, Analyzers



VideoQ Players:  
VQTS series

Other (3<sup>rd</sup> party) Players:  
e.g. Video Clarity 'ClearView',



or ISF/Murideo portable 8K HDR Generator

## 4. Key Features

- VQL files are designed to be compatible with all commonly used software or hardware codecs and media players.
- Static and dynamic video test patterns are available in a variety of interlace modes, aspect ratios, frame rates and resolutions from 192x108 up to 8K
- All test patterns remain suitable for accurate measurements even after low bitrate coding, heavy scaling and/or cropping, e.g. after down-conversion for mobile devices
- Full custom compressed and uncompressed test files and application-specific live video clips are available on request



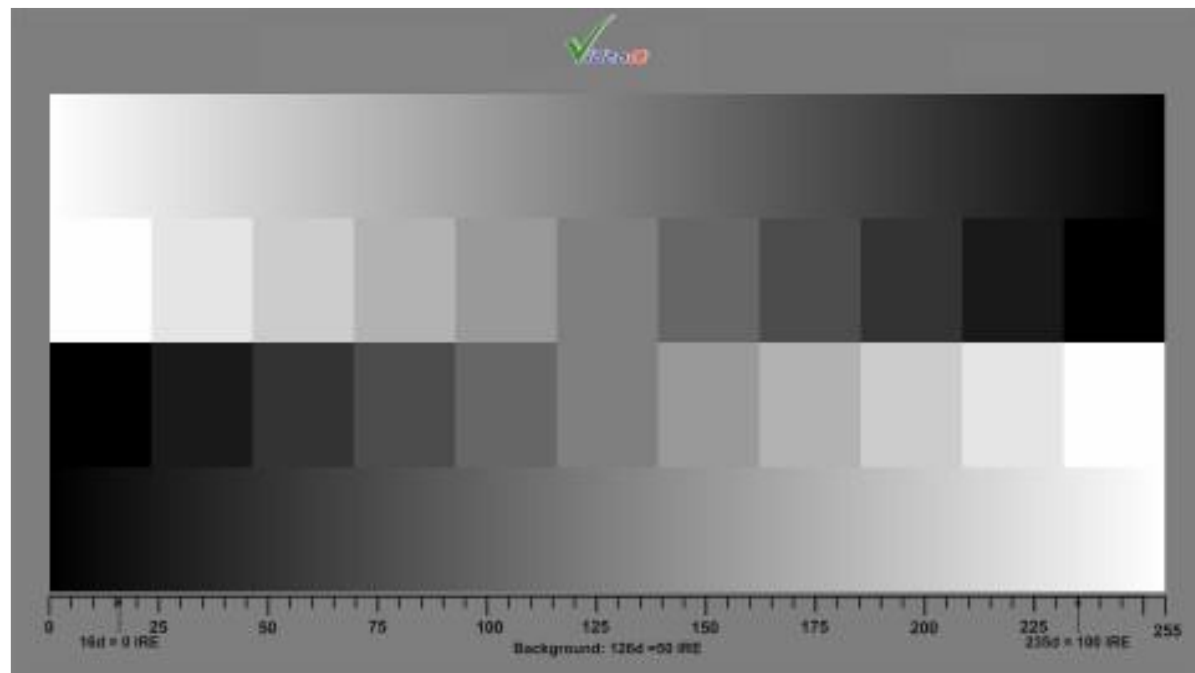
## 5. Test Patterns by Categories

1. Color Space, Gradations and Linearity Tests – **GradTracker™** series
  - 1.A *Special HDR (High Dynamic Range) Tests*
2. Geometry, Scaling, and Sharpness Tests – **ScalTracker™** series
3. Motion Portrayal Tests: Frames Continuity, De-Interlacing, and AV Sync – **ChronTracker™** series
4. Compression Quality Tests – **StresTracker™** series
5. Static and Dynamic **Multi-purpose Test Charts**
6. **Live Clips** with optional **VQCB** leader segments
7. **Audio Tests**

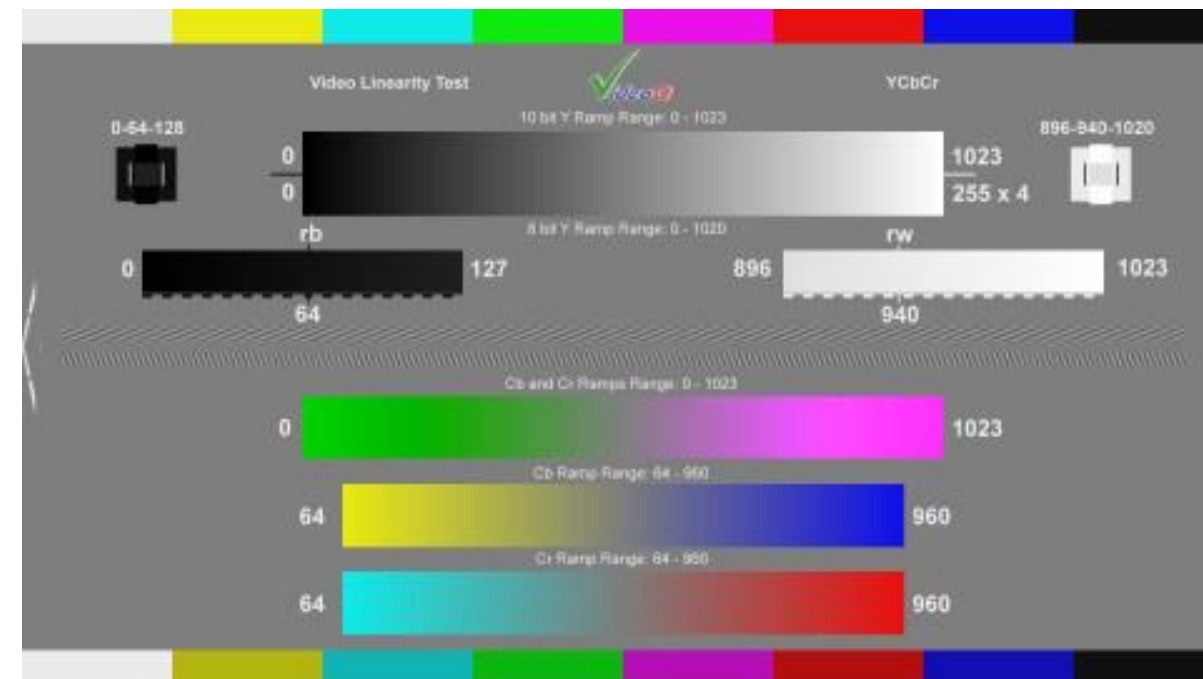
*Next slides show just few examples of the VQL library test patterns sorted by categories, total number of titles in VideoQ library exceeds 4,000.*

# 6. Color Space, Gradations and Linearity Tests

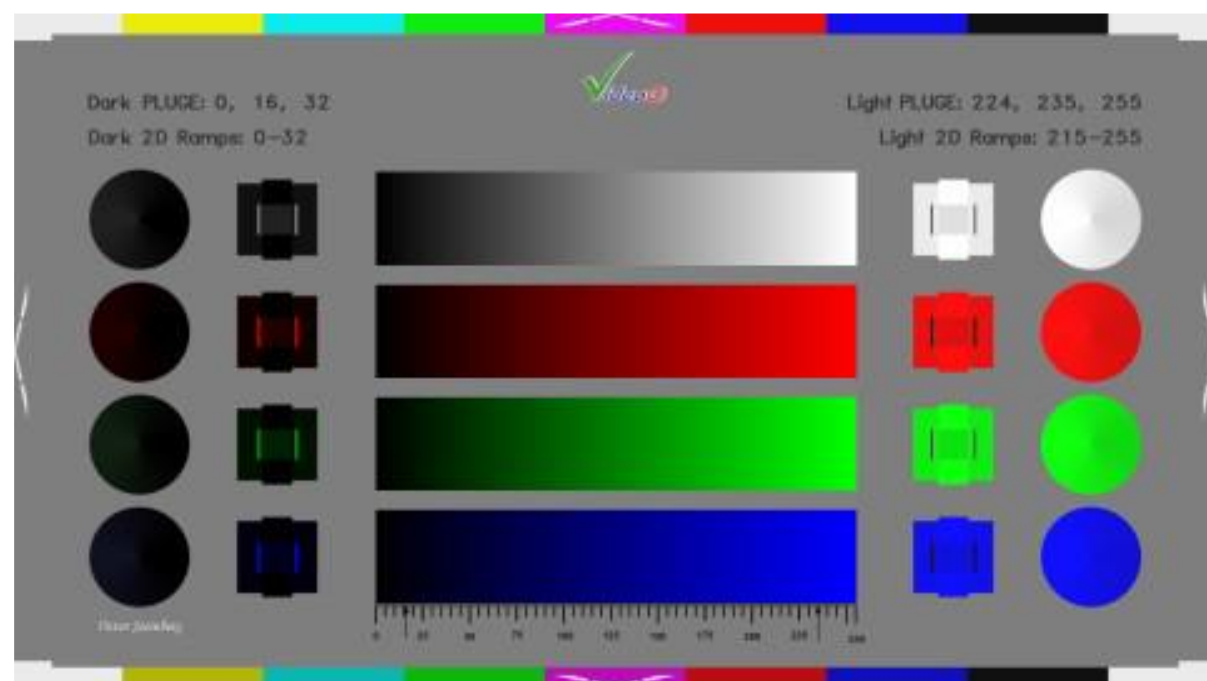
**SHGS:** Static Horizontal GrayScale, HD, 8 bit



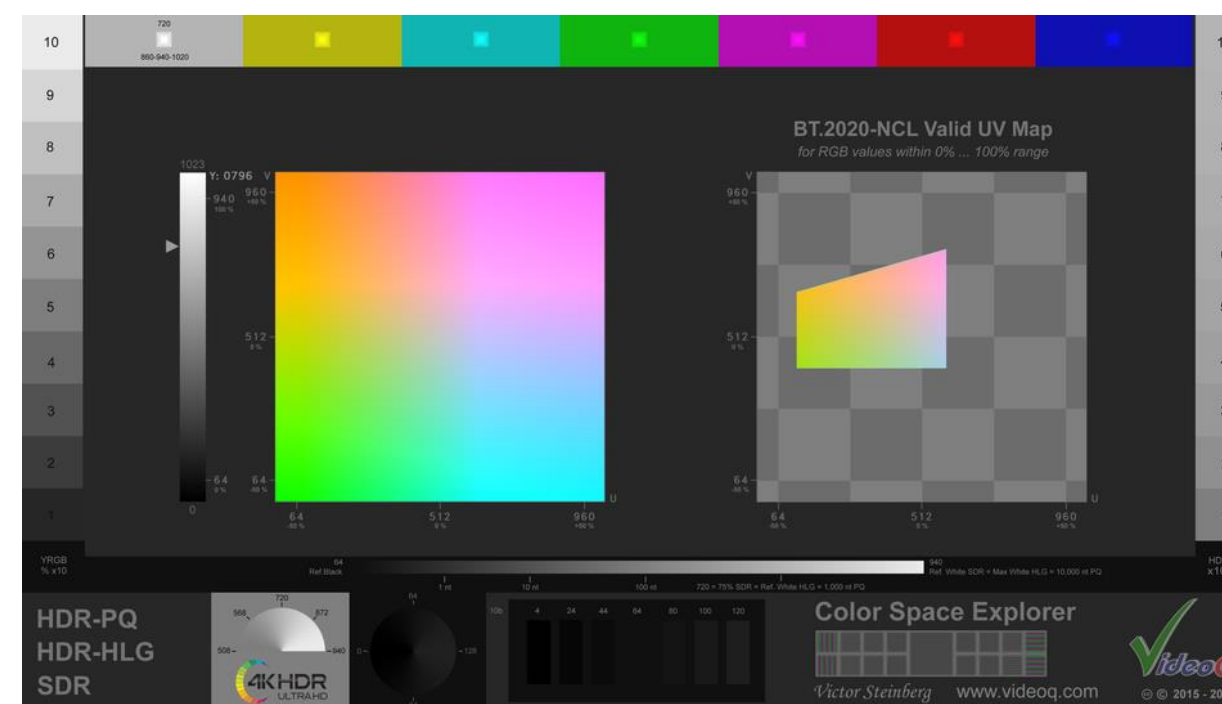
**YUVL:** Static Y, U (Cb), V (Cr) linearity test, UHD, 10 bit



**YRGBL:** Static Y, R, G, B Linearity test, HD, 8 bit



**VQCSE:** Dynamic YUV Color Space Explorer™ test, UHD, 10 bit





# 7. HDR Tests

**VQLA-PQ: HDR Levels Alignment Test**



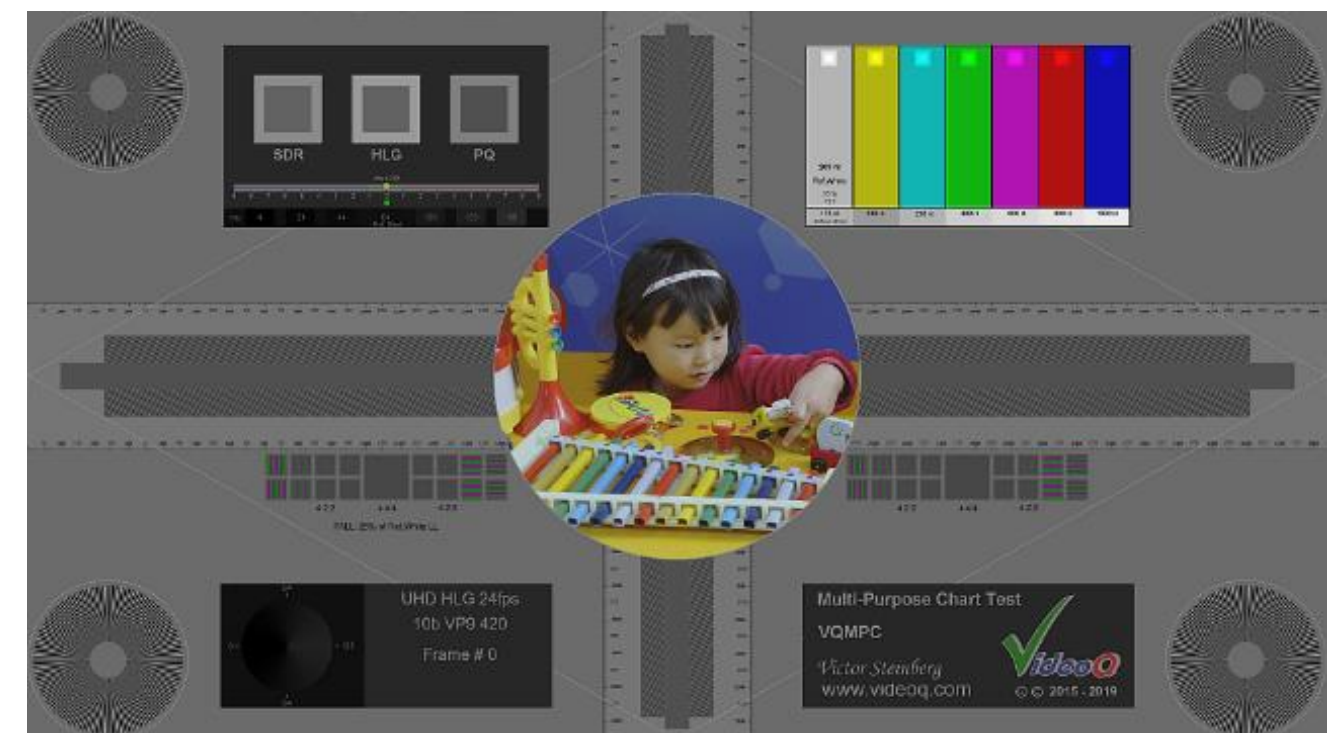
**VQLA-HLG: HDR Levels Alignment Test**



**VQMPC-PQ: Dynamic Multi-Purpose Chart**



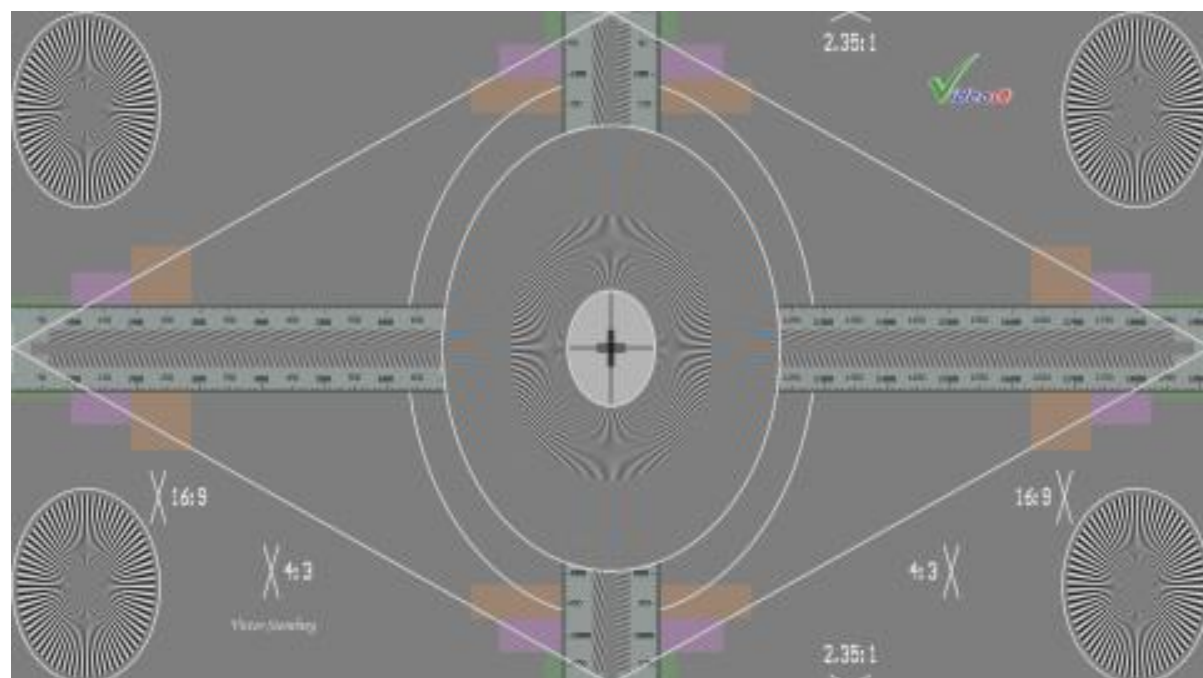
**VQMPC-HLG: Dynamic Multi-Purpose Chart**



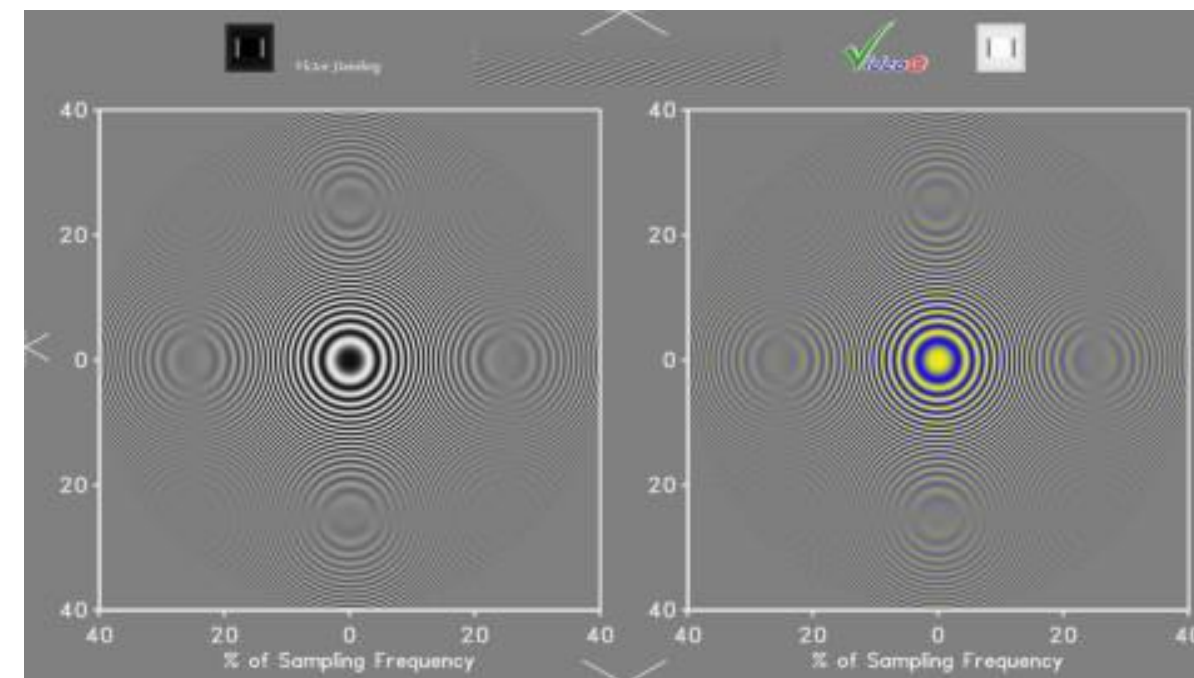
# 8. Geometry, Scaling, and Sharpness Tests



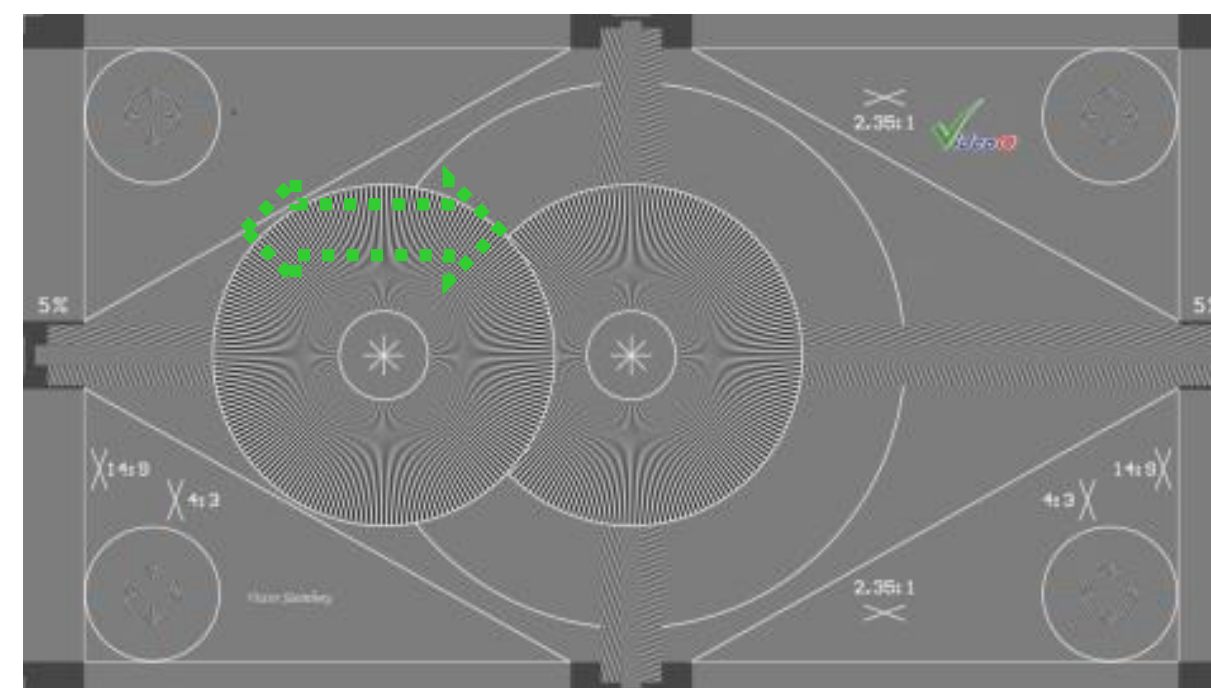
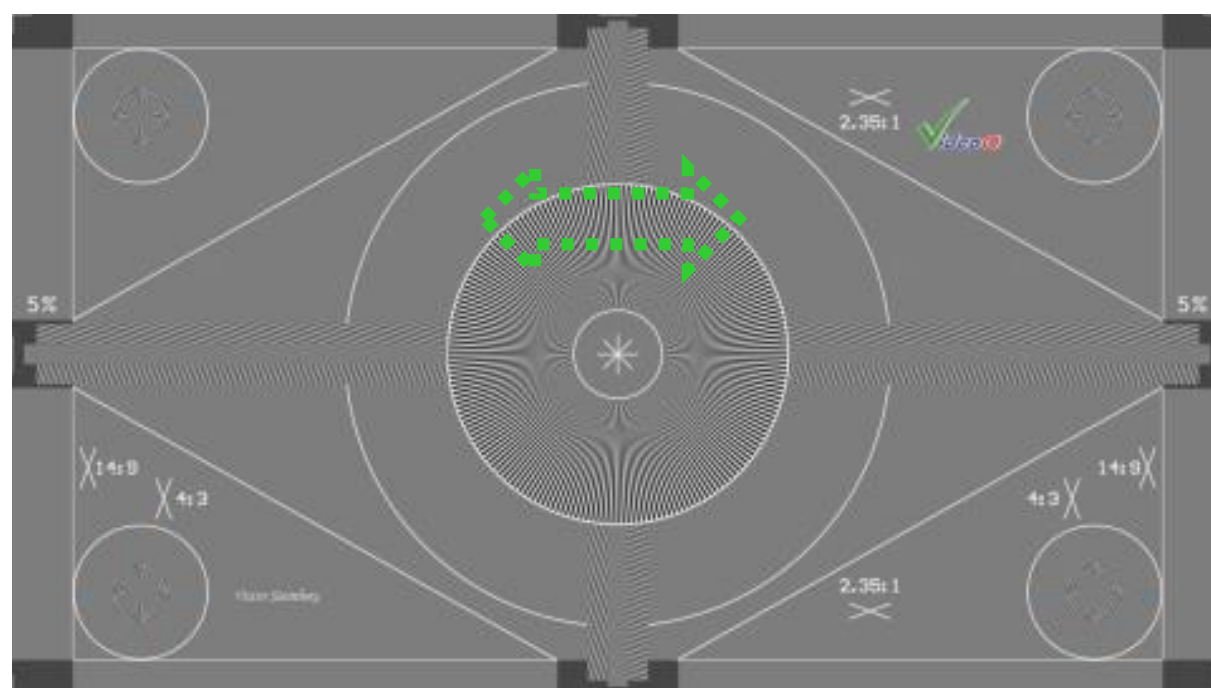
**SGS235LB:** Static Geometry & Sharpness test  
Active Image Aspect Ratio = 2.35:1



**DZP:** Dynamic Zone Plate test  
Variable zone plates phase speed profile



**DGS178:** Dynamic Geometry and Scaling test, HD, 8 bit, central sprite moves left-right with pauses

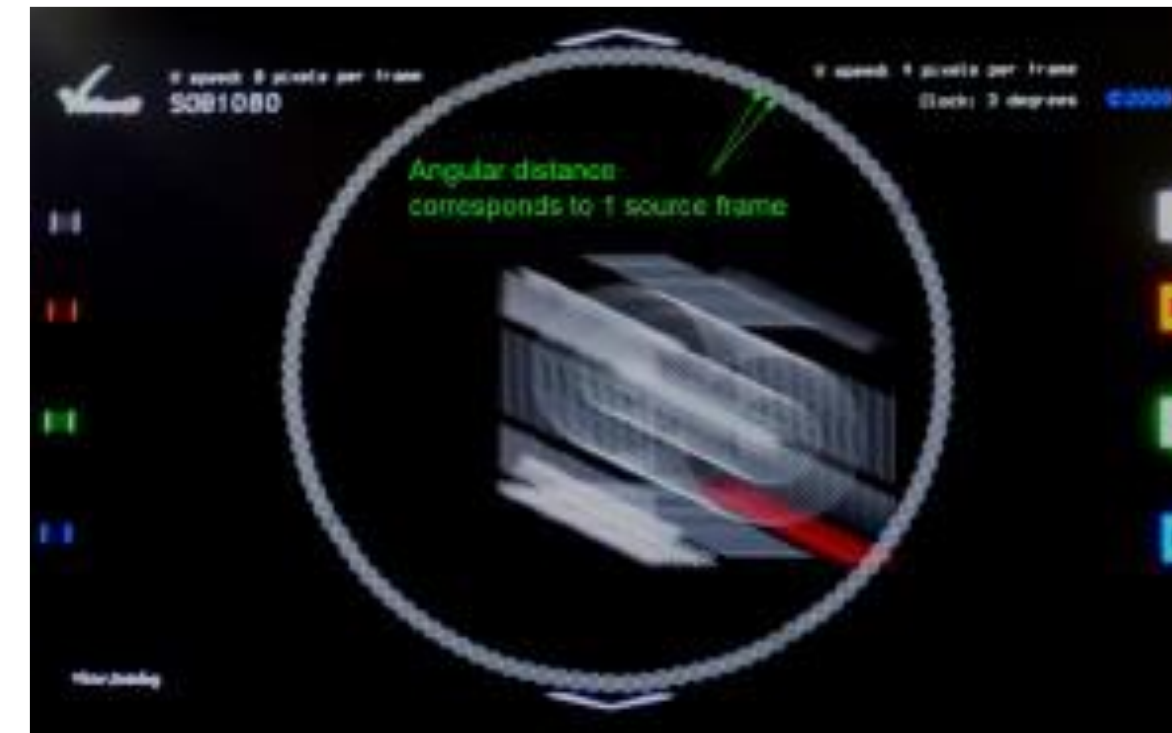


# 9. Motion Portrayal Tests

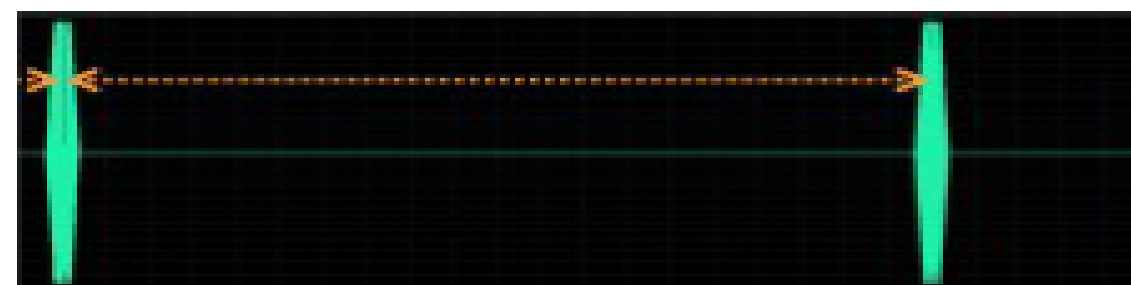
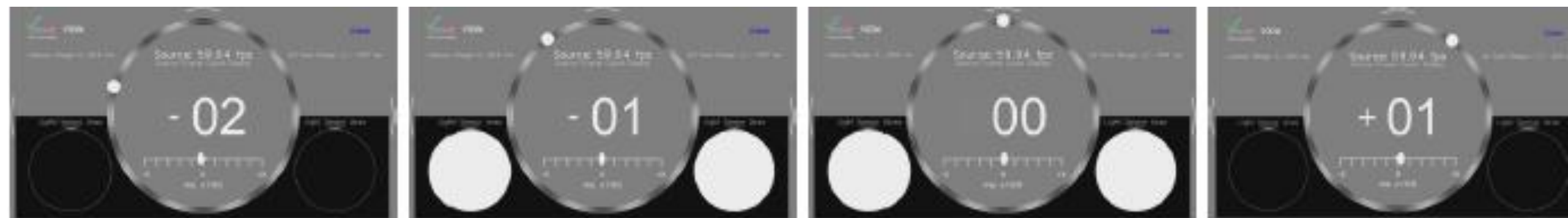
**DIFC:** De-Interlacing and Frames Continuity test, NTSC, PAL and HD versions



**SOBFC:** Sprite and Orbiting Balls Frames Continuity test. Off-screen photo, long exposure time, consistent frame sequence

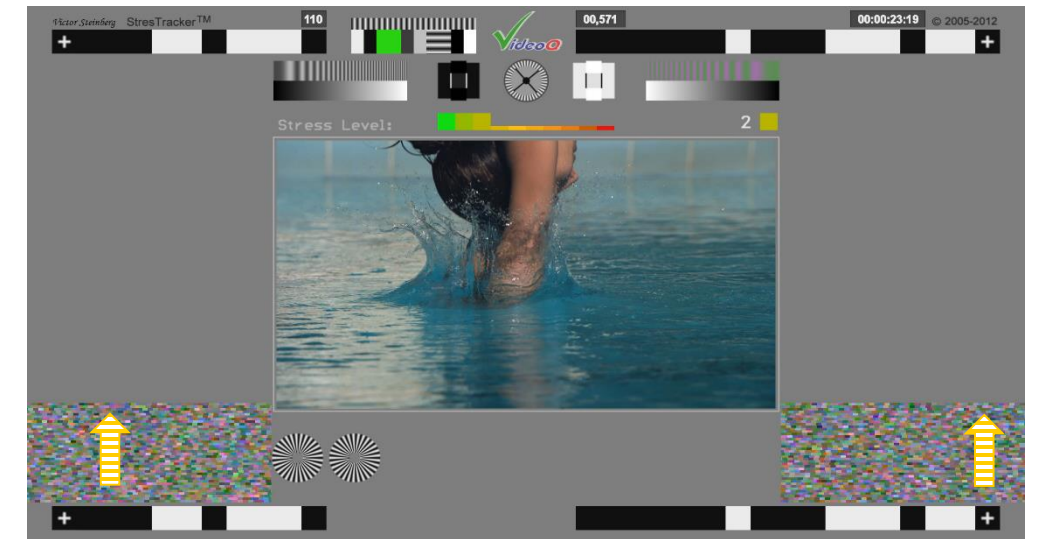
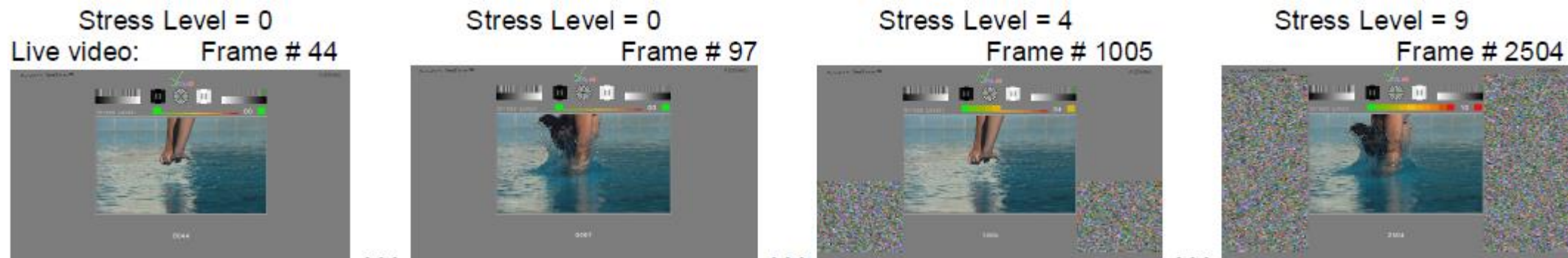


**VQDM1:** Dynamic AV Delay Measurement test, measurable AV sync error range: +/-500 ms



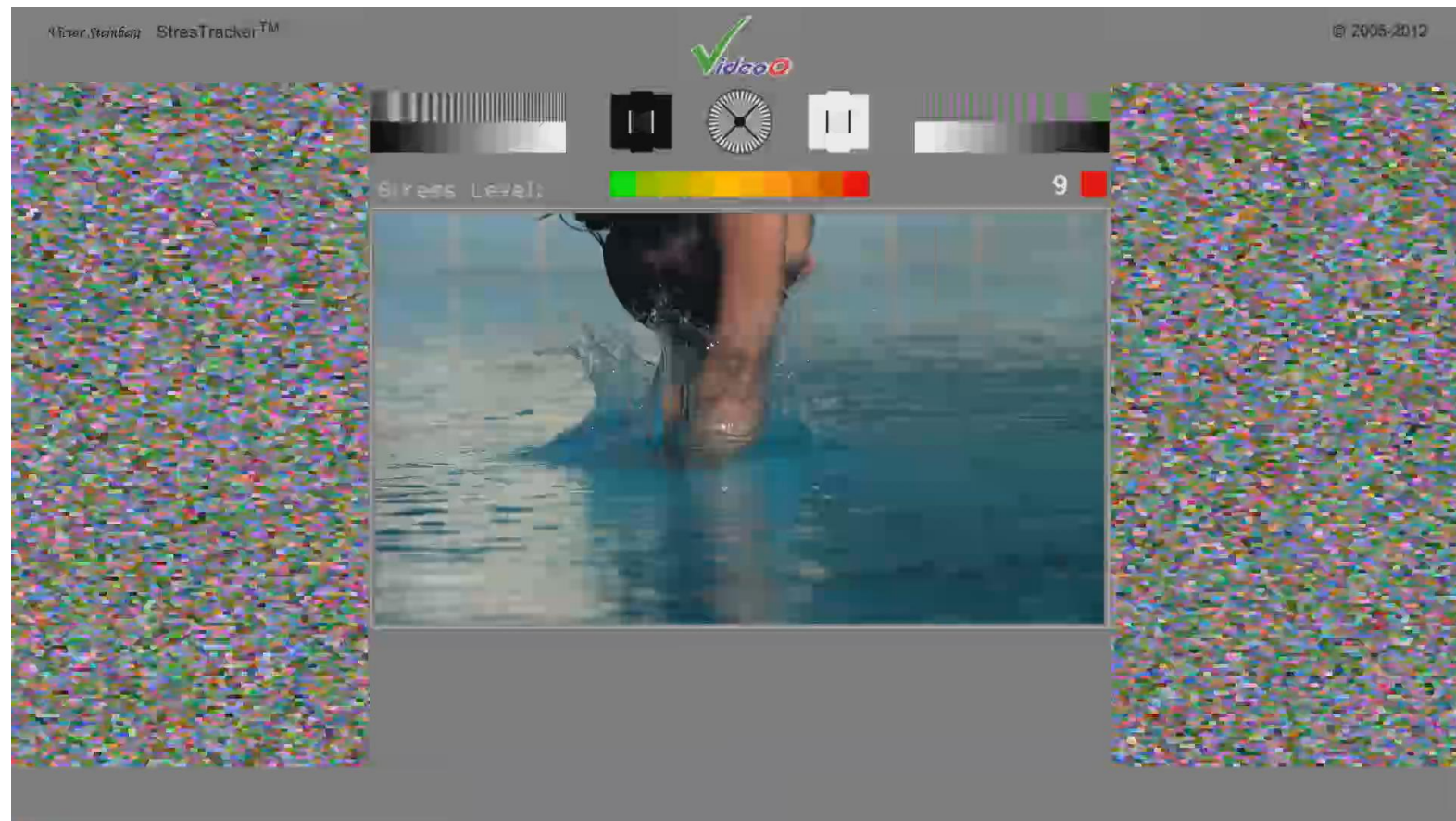
# 10. Compression Quality Test

VQCST: Compression Stress test, version with live image insert



1920x1080, H264, 25 Mbps, Stress Level 9,  
slightly noticeable compression artifacts

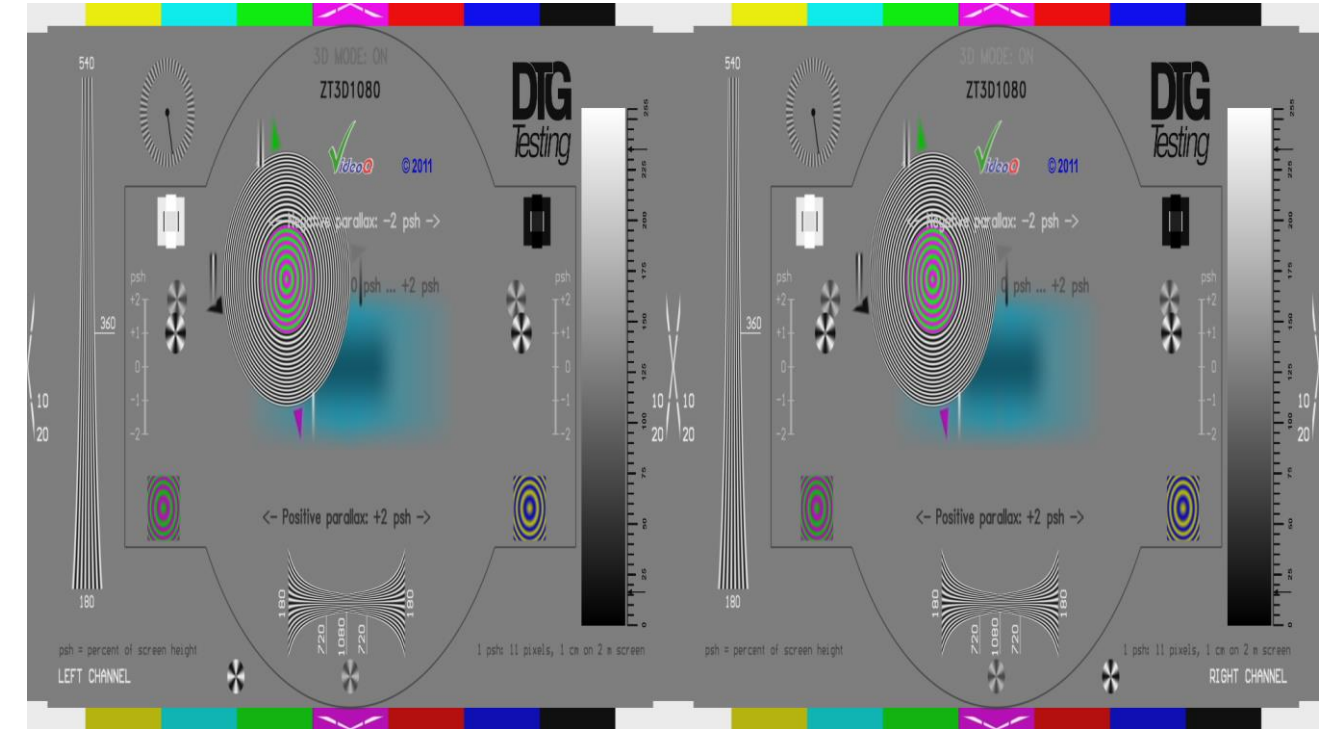
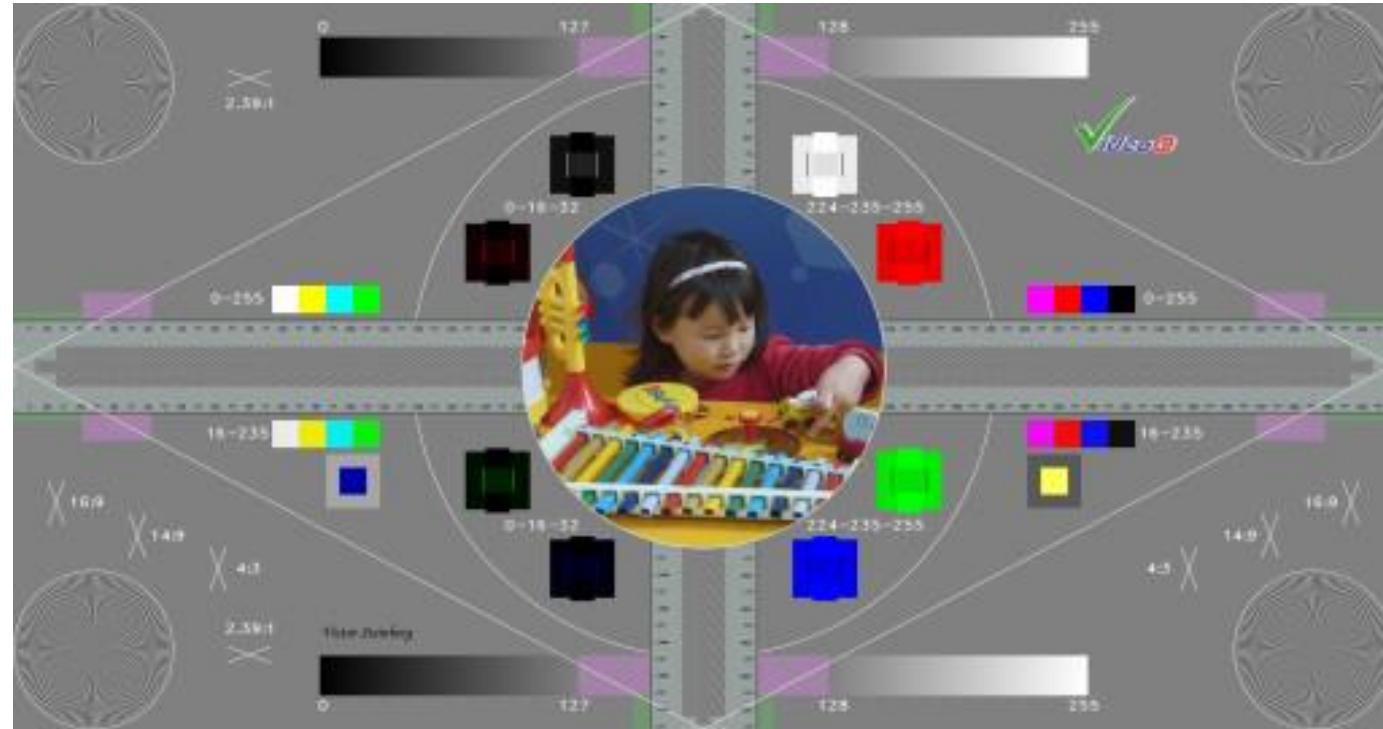
1920x1080, H264, 2.5 Mbps, Stress Level 6,  
very strong compression artifacts



# 11. Multi-purpose Test Charts

**VQMPC-S:** Static Multi-Purpose Chart, 4K, 16 bit per component

**VQZT-3D-DTG:** Multi-Purpose Chart with Zone Plate sprite, 3D version



**VQMPC:** Multi-Purpose Dynamic Chart with AV Sync component, versions up to UHD, 16 bit per component

*VQMPC is the **most popular** VideoQ test pattern, used by many renown industry leaders*



“Beep-bop” sound bursts:



“Bop” burst start marks 0 ms reference moment

# 12. Live Test Clips

**SFO:** Aerial HD video, **high original frame rate**, decimated to various frame rates; the clip versions serve for frame rate conversion testing





**Ballet:** based on Netflix open content 'Nocturne' clip; **HDR** and **SDR** versions, variety of **frame sizes** (up to **4K**) and **frame rates** (up to **120fps**). Each test clip starts with 20s long **VQCB** leader: text box with QR code, followed by VQCB test pattern, followed by test clip live content.

TEST  
**Ballet**

VIDEO  
3840x2160, HDR10, 120.00 fps  
MP4, HEVC 5.2@Main10/Main, 35 Mbps

AUDIO  
DD+, 6 channels, 48 kHz, 192 kbps  
5.1, L R C LFE Ls Rs

PACKAGE  
VideoQ VQL



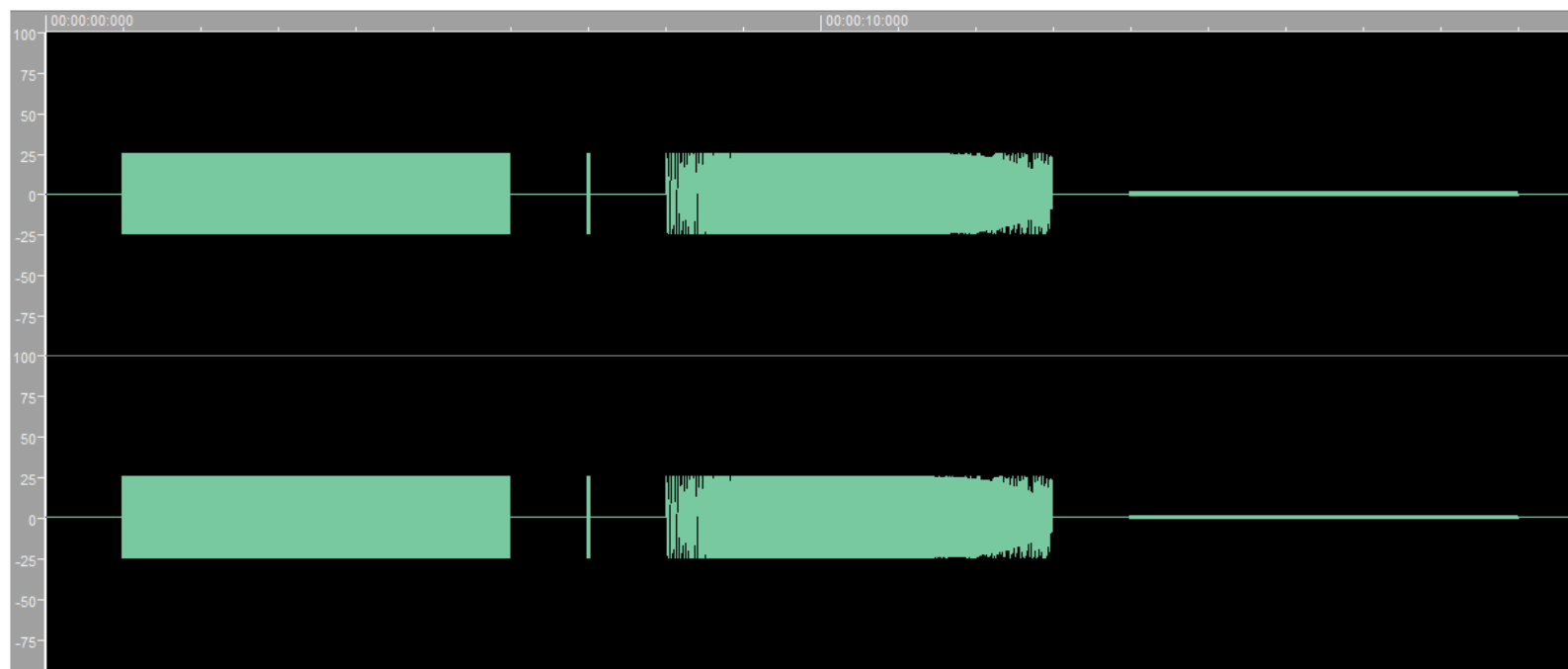
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VideoQ, Inc.  
www.videoq.com



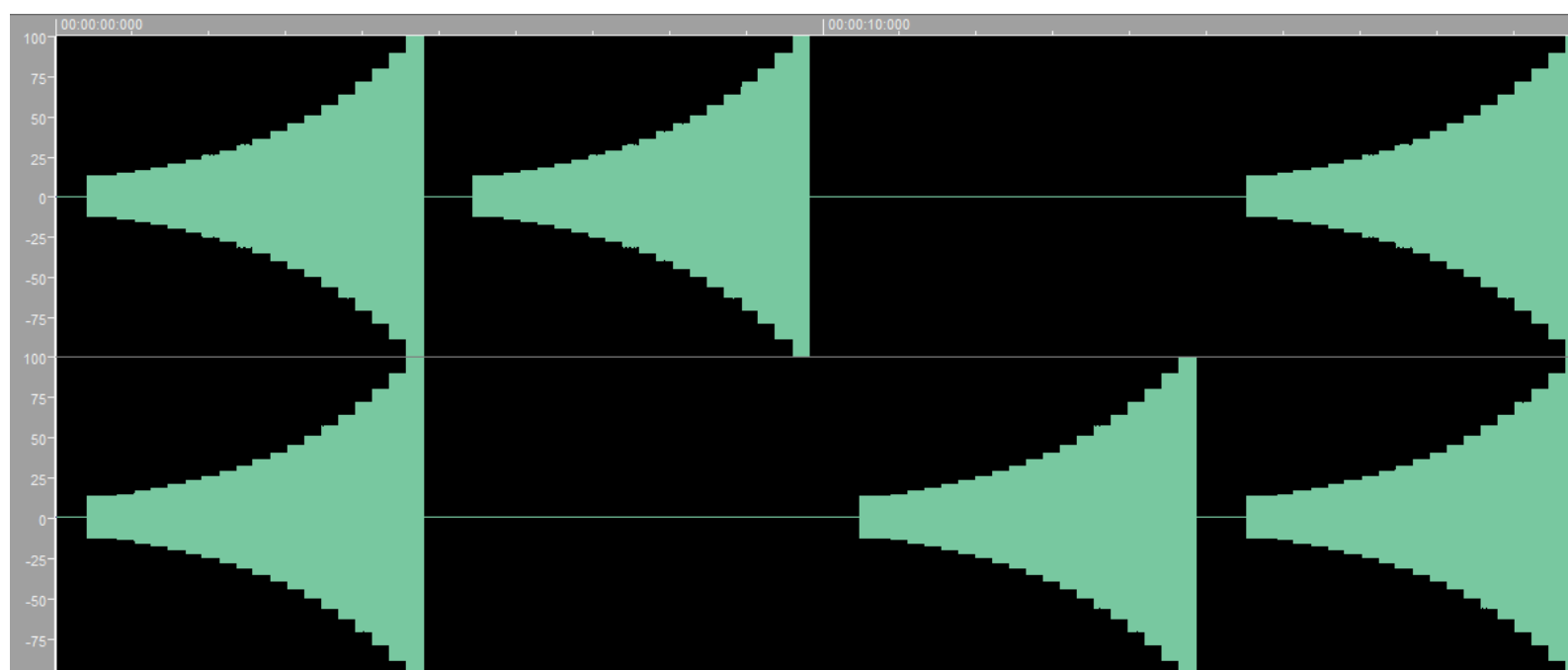
# 13. Audio Tests

**AUD1:** Audio Frequency and Pulse Response Test; 20 s Sequence



- 1 sec mute
- 5 sec of 1kHz@-12dBFS
- 1 sec mute
- Pulse 0.02 sec, 1kHz@-12dBFS  
(Modulated Pulse Duration= 1 TV frame in 50p)
- 1 sec mute
- 5 sec of Logarithmic (Exponential) Sweep:  
2 octaves/sec, 10 octaves,  
20-20,000Hz @-12dBFS
- 1 sec mute
- 5 sec 1kHz@-40dBFS
- 1 sec mute

**AUD2:** Stereo Balance and Levels Test; 20 s Sequence



- 0.4 sec mute
- 4.4 sec L&R, 1kHz,  
18 steps Raiser from -18dBFS to 0dBFS
- 0.6 sec mute
- 4.4 sec, L only (R=mute) 1kHz,  
18 steps Raiser from -18dBFS to 0dBFS
- 0.6 sec mute
- 4.4 sec, R only (L=mute) 1kHz,  
18 steps Raiser from -18dBFS to 0dBFS
- 0.6 sec mute
- 4.4 sec, R & Inverted L, 1kHz,  
18 steps Raiser from -18dBFS to 0dBFS
- 0.13 sec mute

# 14. VQL Files and Data Formats



## Raw video data formats:

- .YUV, interleaved UYVY 4:2:2, 8 bit per component = *default data format*
- .YUV, planar YUV 4:4:4, 8, 10, 12 or 16 bit per component
- .TIFF, .PNG, lossless, 16 bit per component, 48 bit per pixel
- .RGB 4:4:4, 8 bit or 16 bit per component

## Frame sizes:

- 3820x2160 (UHD) **and above** (4K, 8K, etc.)
- 1920x1080 (HD) = *default frame size*
- 1280x720 (Sub-HD)
- 720x576 (SD-PAL)
- 720x480 (SD-NTSC)

## Frame rates:

- 23.976 (24), 25, 29.97 (30), 50, 59.94 (60) **and above**, e.g. 120fps

## Raw audio data formats:

- .WAV, 48 kHz, 24 bit per sample,
- Multi-Mono, LR stereo and/or 5.1, 7.1, 7.1.4 surround sound. *Default audio data format = LR stereo.*

*Alternative video formats (e.g. raw planar .YUV 4:2:0, .Y4M with header, wrapped .AVI, .MOV or .MP4), alternative frame sizes and frame rates are available on request.*

**VQCB: 8K HDR-PQ, BT.2111 compliant test, lossless PNG RGB codec, 16 bit per component, 23.976 fps, .MOV container**





# 15. About VideoQ



## Customers & Partners



## Company History



- Founded in 2005
- Formed by an Engineering Awards winning team sharing between them decades of global video technology.
- VideoQ is a renown player in calibration and benchmarking of Video Processors, Transcoders and Displays, providing tools and technologies instantly revealing artifacts, problems and deficiencies, thus raising the bar in productivity and video quality experience.
- VideoQ products and services cover all aspects of video processing and quality assurance - from visual picture quality estimation and quality control to fully automated processing, utilizing advanced VideoQ algorithms and robotic video quality analyzers, including latest UHD and HDR developments.

## Operations

- Headquarters in CA, USA
- Software developers in Silicon Valley and worldwide
- Distributors and partners in several countries
- Sales & support offices in USA, UK