

Visualizer™ Digital Video Test Pattern

End-to-End Digital Video Diagnostics



The award-winning Visualizer™ Digital Video Test Pattern* is an uncompressed video sequence that enables visual testing for processing and transmission errors throughout the entire digital video signal chain. Employing this easy-to-interpret, visual test pattern enables accurate evaluation and calibration of a wide range of digital video systems. From simplifying equipment configuration to measuring compression performance, Sarnoff's Visualizer takes the guesswork out of digital video quality control.



Digital Test Pattern



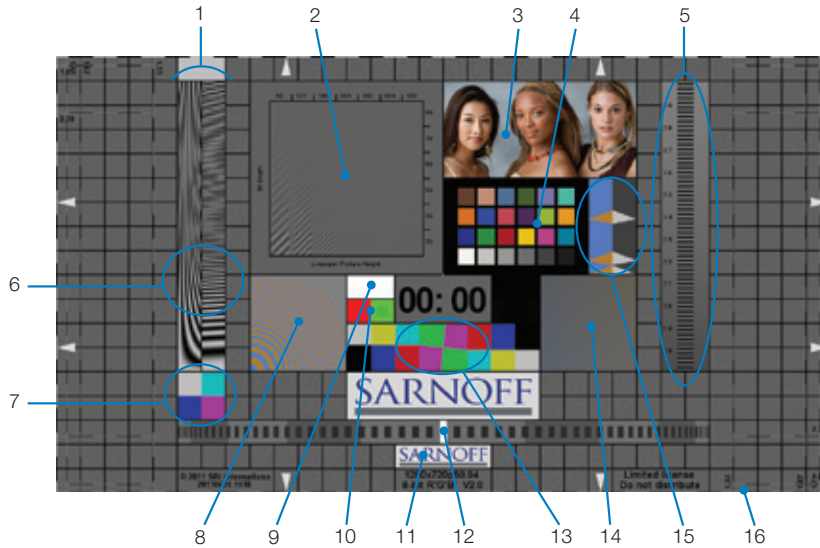
Unique Visual Capabilities

- *Lip-sync*– Measure and quantify the synchronization offset between audio and video
- *Compression Fidelity*– Measure and quantify compression levels numerically in real time
- *Color Matrix Mismatch*– Determine HD (709) and SD (601) color space conversion errors instantly
- *Field Dominance*– Definitively determine field order reversal
- *Chroma Motion Error*– Demonstrate incorrect processing of Chroma in interlaced 4:2:0 systems
- *Closed Caption Synchronization*– Confirm caption timing along the signal chain
- *Format Conversion*– Reveal errors accumulated along the signal chain
- *Chroma Sub-sampling*– Determine the Chroma sub-sampling being used (4:2:2, 4:2:0, 4:1:1...)
- *Highlight Clipping*– Indicate lowlight and highlight clipping in signal processing and LCD displays
- *Bit Depth*– Detect 10 bit to 8 bit truncation

Visual Verification of Digital Video Signal Quality

Formats

- 3 Off-the-shelf packages:
 - 30 Hz
 - 1080i 29.97 fps, 720p 59.94 fps, 480i 29.97
 - 25 Hz
 - 1080i 25 fps, 720p 50 fps, 576i 25 fps
 - “Film”/Progressive
 - 1920 x 1080p 23.98 fps, 720 x 480p 23.98 fps
 - 1280 x 720p 23.98 fps (available on DVD only)
- Custom formats available:
 - Any resolution
 - R’G’B’, X’Y’Z’
 - 8 to 16 bits
 - 3G
 - 416 x 240p30 (ATSC Mobile DTV)
- Available as:
 - DVD containing uncompressed Y’CbCr in a .avi wrapper
 - 10-bit 4:2:2
 - Pre-installed on TSG-1



Key: 1. Format conversion; 2. Compression fidelity; 3. Skin tones; 4. Reference colors; 5. Linearity and gamma; 6. Frequency response; 7. Chroma gain/phase; 8. Chroma subsampling; 9. Highlight clipping; 10. Color matrix mismatch; 11. Logo customization; 12. Lip-sync; 13. Chroma/luma phase; 14. Bit depth: 8/10; 15. Frame drops; 16. Edge-pixel marquee

Options

- Customized logo
- 720 x 486i 29.97
- EIA-608 closed caption sync

Measurement Capabilities

- Compression: bit depth and resolution
- Color matrix mismatch
- Lip-sync offset: to one field-time
- Closed caption sync: to one field-time
- Format conversion
- Frequency response
- Chroma subsampling:
 - 4:4:4, 4:2:2, 4:1:1
- Chroma aliasing
- Luma aliasing
- Skin tone reproduction
- Color accuracy
- Frame drops/repeats

- Black level offset (pluge)
- Color phase and gain
- Linearity
- Field dominance error
- Highlight clipping >235
- Gamma
- Bit depth
 - 10 bit/8 bit
- Dithering/error diffusion
- 4:2:0 int/pro error
- 4:2:2, 4:2:0 luma alignment
- Instrumented lip-sync
- Edge pixel loss

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