

3D Frame Compatible Test Compliance Bitstreams

Testing for 3D-Capable MPEG-2
and H.264 / MPEG-4 AVC Decoders

3D video is an emerging medium, poised to redefine the video media industry. Like any new technology, it is susceptible to unprecedented challenges. Therefore, it is critically important to test 3D decoder ASICs, set-top boxes, and software decoders throughout development to identify and resolve compliance and performance errors.

As the latest addition to our Emmy® award-winning and patented Bitstreams product suite, SRI Sarnoff's 3D Compliance Bitstreams systematically and unambiguously tests decoder designs and completed products.

The 3D Frame Compatible Test Bitstreams were created to test a decoder's compliance with OpenCable™ Content Encoding Profiles 3.0 (CEP 3.0) Specification, Stereoscopic 3D Formatting (OC-SP-CEP3.0-I02-110131). These bitstreams reveal the decoder's ability to switch between 2D and two different 3D modes; between programs and within one program; and between various combinations of MPEG-2/H.264, image resolutions, frame rates and bit rates.

In addition to coding video according to H.264 / MPEG-4 AVC and MPEG-2 standards, SRI Sarnoff's 3D Bitstreams include the following syntax elements:

- *3d_video_descriptor* in the PMT of each transport stream (Table 3 of CEP 3.0)
- *Frame_packing_arrangement* SEI message (Section 10.6 SEI Setting for S3D with AVC/H.264 Encoding in CEP 3.0)
- *Stereo 3D user_data* MPEG-2 data (Table 4 of CEP 3.0)
- *CEA-708 closed captioning data* for both MPEG-2- and H.264-encoded streams

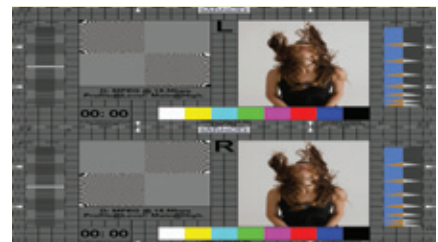
The 3D Frame Compatible Test Compliance Bitstreams are supplied as transport streams with a transport rate of 38,785,309.72 bits/second.

Applicable Industries

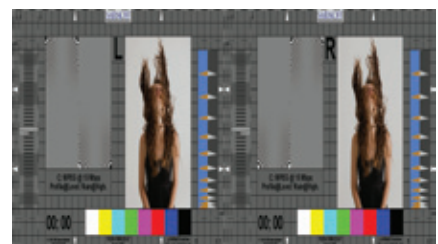
- Decoder chip developers
- Manufacturers of set-top boxes
- Consumer electronics manufacturers
- Television service providers
- Government testing organizations



Visually Test 3D Decoders for Compliance and Performance



Top-and-Bottom



Side-by-Side



Left eye image

Image resolutions and frame rates for both MPEG-2 and H.264 / MPEG-4 AVC-coded video

- 1920x1080p23.98—2D & Top-and-Bottom 3D Formats
- 1920x1080p24.00—2D & Top-and-Bottom 3D Formats
- 1920x1080i29.97—2D & Side-by-Side 3D Formats
- 1280x720p59.94—2D & Top-and-Bottom 3D Formats

Audio

- 500 Hz tone with A/V sync “tick”, encoded AC-3

Compression

- MPEG-2 and H.264 / MPEG-4 AVC-encoded streams include both High profile (profile_idc = 100) and Main profile (profile_idc = 77) bitstreams

Video Content

- The 3D Bitstream Video Content consists of a number of test patterns for testing the following:
 - Format (Codec and resolution) identifier
 - Stream identifier title
 - Closed caption title (CEA-708)
 - Frame counter
 - Scrolling pixel border and cropping grid
 - Left/right identification
 - Left/right synchronization (Eye-Sync™)
 - 3D Mux mode verifier
 - Subsampling: (Top & Bottom, Side by Side)
 - Color bars
 - 3D natural image
 - Audio/video lip sync

Contact Us

For more information about this product:

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About SRI International

Silicon Valley-based SRI International, a nonprofit research and development organization, performs sponsored R&D for governments, businesses, and foundations. SRI brings its innovations to the marketplace through technology licensing, new products, and spin-off ventures. SRI is known for world-changing innovations in computing, health and pharmaceuticals, chemistry and materials, sensing, energy, education, national defense, and more.

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