

**WBU-ISOG
MPEG-4 (H.264) CONTRIBUTION
HD CODEC
INTEROPERABILITY PROGRAM**

WBU-ISOG
Montreal, Canada
May 18-19, 2011
Tom Gibbon for NHK
Chair
MPEG-4 HD CODEC
INTEROPERABILITY PROGRAM

BASIC ELEMENTS OF WBU-ISOG MPEG-4 HD CODEC INTEROPERABILITY PROGRAM

1. Sponsorship by WBU-ISOG
2. Formal Participation Agreements Signed by Vendors
3. Payment of Test Fees By Vendor to Test Contractor - \$8,000
4. Appointment of Telesat as Test Contractor
5. Test Tapes and Transport Stream parameters provided by WBU-ISOG

BASIC ELEMENTS OF WBU-ISOG MPEG-4 HD CODEC INTEROPERABILITY PROGRAM (cont.)

6. Transport Streams created by Vendors and uploaded to Telesat server
7. Transport Streams downloaded by Vendors for informal tests by Vendors
8. Formal Tests conducted by Telesat
9. Publish Results of Tests on WBU-ISOG website

MPEG-4 PARTICIPATING VENDORS

8 Vendors

1. ADTEC
2. ATEME
3. Ericsson Television Inc.
4. Evertz Microsystems Inc.
5. Harmonic, Inc.
6. Harris Broadcast
7. International Datacasting
8. NTT Electronics Corporation

TEST PARAMETERS SUMMARY

- a. Tests will be conducted only for high definition formats.
- b. Tests will be conducted using bit rates for high quality contribution (e.g., major events, potential concatenation), medium quality contribution and SNG. Tests for medium quality will be curtailed if necessary due to time constraints.
- c. The chroma for each bit rate are as indicted in the transport stream table.
- d. Four video formats will be tested.
- e. Latency will be tested because if latency is too extreme for a particular vendor decoder, the decoder may not be interoperable because it cannot effectively be used. Codec settings for latency at each bit rate are as indicated.

TEST PARAMETERS SUMMARY (cont.)

- Video Formats:
 - 1080i/59.94
 - 1080i/50
 - 720p/59.94
 - 720p/50
- Transport Stream Bit Rates:
 - High Quality: 38 Mbps
 - Medium Quality: 20 Mbps
 - SNG: 10.3 Mbps
- Chroma:
 - High Quality: 4:2:2 (Hi 422 @L4 10 bit, 8 bit)
 - Medium Quality: 4:2:2 (Hi 422@L4 10 bit, 8 bit)
 - SNG: 4:2:0 (HiP@L4 8 bit)

TEST PARAMETERS SUMMARY (cont.)

- or if 4:2:2 not supported:

High Quality: 4:2:0 (HiP @ L4 8 bit)

Medium Quality: 4:2:0 (HiP @ L4 8 bit)

- Coding Structure/GOP:

High Quality: Mfg's choice for high quality

Medium Quality: Mfg's choice for medium quality

SNG: Mfg's choice for SNG quality

Ultra Low Latency: Mfg's choice for lowest latency with medium quality.

TEST PARAMETERS SUMMARY (cont.)

- Audio Format:
 - MPEG-2 4 Ch. Audio, (MPEG 1 Layer 2)
 - Dolby E 20 bit mode, 8 channels (SMPTE 302 M 2002)
 - PCM – 4 Channel and 8 Channel (SMPTE 302 M 2002)
 - AAC – MPEG2 AAC-LC, audio synchronized to video, sample rate 48Khz
 - 4 channels @ 96Kb/channel in mono or stereo, audio on all channels.
- Lip Sync:
 - Test all audio formats
- Latency:
 - High Quality - Standard latency
 - Medium Quality - Standard latency
 - Ultra Low latency
 - SNG - Low Latency

TEST PARAMETERS SUMMARY (cont.)

- Resolution:

All tests will be done at full resolution:

1920 (1800 line) h pixels

1280 (720 line) h pixels

- Carrier Identification:

Encoding equipment capable of carrier ID (CID) shall have it enabled.

SCHEDULE OF TESTING

- August 8, 2011: Deadline by which participating vendors must upload the required Transport Streams to the Telesat server.
- August 8 - September 16, 2011: Vendors perform informal interoperability testing of the Transport Streams uploaded by other vendors.
- September 16, 2011: Deadline by which participating vendors must upload any Transport Streams that were revised by the vendor due to its informal testing of other vendors' Transport Streams.
- October 3 - October 7, 2011: Live testing at Telesat in Ottawa. All vendors must attend with encoders and decoders.

CHANGES TO TEST PARAMETERS

- Add test for pass-through of carrier ID
- Add test for 8-bit 4:2:2
- Remove GOP specification of transport streams – vendor choice
- Add test for 8-channel PCM for 38 mbps
- Add test for Ultra Low Delay Mode
- Reduce number of transport streams from 28 to 22