

**WBU-ISOG
MPEG-4 (H.264) CONTRIBUTION
1080i/720p CODEC
INTEROPERABILITY PROGRAM**

WBU-ISOG
Tokyo, Japan
May 13-15, 2009
Tom Gibbon for NHK
Chair
1080i/720p CODEC
INTEROPERABILITY PROGRAM

TEST PARAMETERS

- 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. The chroma for each bit rate are as indicted.
- c. Four video formats will be tested, although 720p/50 tests are subject to availability of equipment.
- d. 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 (cont.)

- Video Formats:

- 1080i/59.94
- 1080i/50
- 720p/59.9
- 720p/50

- Bit Rates:

- High Quality: 38 Mbps
- Medium Quality: 20 Mbps – perhaps tests would be limited
- SNG: 10.3 Mbps

- Chroma:

- High Quality: 4:2:2 (Hi 422 @L4 (10 bit if supported, otherwise 8 bit))
- Medium Quality: 4:2:2 (Hi 422@L4 (10 bit if supported, otherwise 8 bit))
- SNG: 4:2:0 ((HiP@L4 8 bit))

- or if 4:2:2 not supported:

- High Quality: 4:2:0 (H:P @ L4 8 bit)
- Medium Quality: 4:2:0 (H:P @ L4 8 bit)

- Coding Structure:

- IBBP

TEST PARAMETERS (cont.)

- GOP:
 - GOP 15 (vendors will be asked whether they support longer GOP)
- Audio Format:
 - 4 Ch. Audio MPEG-2 (MPEG 1 Layer 2)
 - Dolby E 20 bit mode 8 channels (SMPTE 302 M 2002)
 - PCM (SMPTE 302 M 2002)
 - AAC – if sufficient vendors support
- Lip Sync:
 - Test all audio formats
- Latency:
 - High – Standard latency
 - Medium – Standard latency
 - SNG - Low Latency
- Resolution:
 - All tests will be done at full resolution:
 - 1920 (1800 line) h pixels
 - 1280 (720 line) h pixels

MPEG-4 PARTICIPATING VENDORS

1. ATEME
2. Cisco
3. Comtech TV
4. Evertz Microsystems Inc.
5. Fujitsu
6. Harmonic, Inc.
7. International Datacasting (decoder only)
8. NTT Electronics Corporation
9. Sencore (decoder only)
10. Tandberg Television
11. Thomson Grass Valley

TEST SCHEDULE

June 8-12, 2009

Telesat Headquarters
Ottawa, Canada

STATUS

- 140 Transport Streams Uploaded to Telesat Server as of May 1
- Evertz only Encoder Vendor That Has Not Uploaded TS

TEST PROCEDURES PROPOSED BY TELESAT AND CRC

1. Video Tests

- Uploaded ASI streams will be used for tests
(onsite encoders to be used only if technical problems arise)
- Will be pass/fail
(previous tests required expert viewers and ratings)
- TS will be sent to all 10 decoders simultaneously
- Decoder stations will have 24" HD 1920x1080
(60Hz/50Hz monitors)
- Pass/fail assessment will be done directly at decoder station
- If video present (pass) but impairment is visible, impairment will be reported and video can be patched for larger 24" display for closer scrutiny

TEST PROCEDURES PROPOSED BY TELESAT AND CRC (cont.)

2. Audio Tests

- Uploaded ASI streams will be used for tests
(onsite encoders to be used only if technical problems arise)
- Will be pass/fail
- TS will be sent to all 10 decoders simultaneously
- Assessments will be done at central audio station or at decoder site
- Tests will be performed with one representative TS in each available audio encoded format (MPEG-2, AAC, PCM, Dolby E)

TEST PROCEDURES PROPOSED BY TELESAT AND CRC (cont.)

3. Latency Test

- Will be live test using on-site encoder
- Will be performed only at 1080i/59.94
- Tests at 38 Mbps (high quality) with standard latency setting and 10.3 Mbps (SNG quality) with low latency setting
- Tests at 20 Mbps (medium quality) with standard latency only if vendor does not support 38 Mbps

TEST PROCEDURES PROPOSED BY TELESAT AND CRC (cont.)

4. Short Term Lip Sync

- Uploaded ASI streams will be used for tests
(onsite encoders to be used only if technical problems arise)
- Maximum 5 minute duration using 30 second Vistek loop
- 5 minutes may be reduced if tests show no significant drift
- Tests at 1080i/50Hz MPEG 2 and 1080i/60Hz PCM, AAC, Dolby E with representative TS
- If time is problem, lip sync can be done by Telesat following week without vendor support

TEST PROCEDURES PROPOSED BY TELESAT AND CRC (cont.)

5. Long Term Lip Sync

- Include or drop?
- MPEG-2 testing used limited number of encoders and one encoder showed 20 ms of drift
- If include, overnight testing with limited number of decoders

INCLUDE ADTEC AT LAST MINUTE?

- 1.