**Q6/16 Meeting Notes for San Diego 2016-06-20/26**

**Meeting session scheduling:**

* JVET meetings (joint)
* JCT-VC meetings (joint)
* JCT-3V meetings (joint)
* VCEG meetings
	+ Mon 1400–1600 VCEG
	+ Mon 1630–1800 Joint with MPEG on JCT-VC related topics (HDR, SCC)
	+ Mon 1800–1830 Joint with MPEG on AVC related topics

**Agenda**

* Progress the work on development of the HEVC screen content coding extensions
* Progress the work on High Dynamic Range extensions
* Progress the work on 3D extensions of HEVC and other video coding standards including Rec. H.264 and possibly Rec. H.262.
* Progress the work on development of reference software and conformance tests for Q6/16 video and image coding Recommendations
* Address maintenance needs and proposed enhancements for Q6/16 video and image coding Recommendations
* Progress the work on specification of code point identifiers for video and image signal types in video and image coding specifications
* Address any AAP comments submitted in the approval process of texts for Q6/16
* Collect verification testing data and non-normative information for assisting in the use and deployment of Recommendations in the domain of Q6/16
* Coordinate and communicate with MPEG, JPEG, and other organizations regarding image and video coding and the work of Q6/16, JCT-VC, and JCT-3V
* Plan for future work of Q6/16, JCT-VC, and JCT-3V

**Attendance**

Attendance was recorded on a sign-in sheet circulated in the meeting room.

**Communication practices**

The work also progressed by correspondence using the Q6/16 email reflector (vceg-experts@yahoogroups.com) and JVT email reflector (jvt-experts@lists.rwth-aachen.de) and the JCT-VC, JCT-3V, and JVEG email reflectors as described below. Documentation is found in the VCEG archive site <http://ftp3.itu.int/av-arch/video-site/>. A subdirectory called [1602\_San](http://wftp3.itu.int/av-arch/video-site/1602_San) was used for documents of this meeting.

**IPR policy**

Participants were reminded of the ITU-T IPR policy. The floor was opened for any necessary verbal reports of patent rights that had not been previously reported, and no such verbal reports of patent rights were expressed.

[**JVET-B0001**](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=2597) **Report of VCEG AHG1 on coding efficiency improvements [M. Karczewicz, M. Budagavi]**

See JVET report.

**JVET-B0002 Report of VCEG AHG on quality metrics [T. K. Tan] [miss]**

See JVET report.

**VCEG-BA03 Report of VCEG AHG on future applications, devices, and formats [T. Wiegand, K. Kawamura and R. Sjoberg] [miss]**

[**JVET-B0004**](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=2594) **Report of VCEG AHG on test sequences selection (AHG4 of VCEG) [T. Suzuki, J. Boyce, A. Norkin] [miss]**

See JVET report.

[**JVET-B0006**](http://phenix.it-sudparis.eu/jvet/doc_end_user/current_document.php?id=2593) **Report of VCEG AHG on JEM software development [X. Li, K. Suehring]**

See JVET report.

[**VCEG-BA07**](http://wftp3.itu.int/av-arch/video-site/1602_San/VCEG-BA07.docx) **Virtual reality requirements for future video coding [J. Ridge, M.M. Hannuksela (Nokia)]**

This contribution considers the application of video coding to Virtual Reality (VR) content. It asserts that VR is gaining in use and popularity, and that future video coding standards should efficiently support VR. It further asserts that the differences between a “regular” video codec and one optimized for VR are not significant enough to justify a separate codec. The content of the contribution is essentially the same as MPEG input document m37709, and proposes specific use case and requirement text. It is understood that VCEG has not yet established a formal set of requirements for future video coding, however the authors anticipate that work may be conducted in a joint body such as JVET, and therefore an alignment of requirements between the parent bodies will be desirable.

[**VCEG-BA08**](http://wftp3.itu.int/av-arch/video-site/1602_San/VCEG-BA08.docx) **High level syntax support for ARIB STD-B67 in Rec. H.264 / MPEG-4 AVC [M. Naccari, A. Cotton, T. Heritage (BBC), Y. Nishida, A. Ichigaya (NHK)]**

This contribution proposes to extend the high level syntax of Rec. H.264 / MPEG-4 AVC to support the transfer characteristic curve for High Dynamic Range (HDR) content as specified in ARIB STD-B67. Two additions are proposed: a new entry code in the transfer\_characteristics table of the VUI and a new SEI message which allows to override the transfer\_characteristics entry in VUI for those receivers with HDR capabilities.

[**VCEG-BA09**](http://wftp3.itu.int/av-arch/video-site/1602_San/VCEG-BA09.docx) **A Progressive High 10 profile in ITU-T Rec. H.264/MPEG-4 AVC [A. M. Tourapis, D. Singer, K. Kolarov (Apple)]**

Contribution m37478 in MPEG in October 2015 initially requested the addition of several new profiles in the ITU-T Rec. H.264/ MPEG-4 AVC standard. By the end of the 113th MPEG meeting, several organizations agreed that at least a Progressive High 10 profile would be highly desirable. This contribution requests that this profile be added in this specification.

[**VCEG-BA10**](http://wftp3.itu.int/av-arch/video-site/1602_San/VCEG-BA10.docx) **Generalized constant and non-constant luminance code points in ITU-T Rec. H.264/MPEG-4 AVC [A. M. Tourapis, Y. Su, D. Singer, K. Kolarov (Apple), C. Fogg (Motion Picture Labs)]**

Two new code points were proposed in MPEG contribution m36979 and adopted in the draft HEVC specification. These two new code points allowed the definition of the non-constant luminance and constant luminance representations for any colour primaries and transfer characteristics, unlike previous practice where a corresponding code point for any new colour primaries had to be specified. In this contribution it is requested that these code points are also added in the ITU-T Rec. H.264/MPEG-4 AVC specification.

**Liaison activity**

TD list from <http://itu.int/md/doclstww.aspx?l=en&mtg=T13-SG16-160523&opt=2>

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Web** | **IFA** | **Local** | **Received** | **Source** | **Title** | **Questions** |
| [[ TD 387-GEN ]](%0D%0A%20%20%20%20%20%20%20%20%20%20%20%20%20%20http%3A//www.itu.int/md/meetingdoc.asp?lang=en&parent=T13-SG16-160523-TD-GEN-0387)+Add.1-5 | [[ TD 387-GEN ]](http://ties.itu.int/u/tsg16/sg16/documents/160523/td/gen/T13-SG16-160523-TD-GEN-0387-E.htm) | [[ TD 387-GEN ]](T13-SG16-160523-TD-GEN-0387-E.htm) | 2016-02-22 | SMPTE | **LS/i on high dynamic range video content remapping [from SMPTE]**SMPTE ST 2094 has been developed to address the problem of content remapping of HDR/WCG material. Application documents will have completed FCD ballot, but not ballot comment resolution.ST 2094-30 describes metadata already carried in the CRI SEI message.Additional parts are in development, specifically ST 2094-40 Application #4, and ST 2094-2 Containers and Serialization.Attached are the relevant draft documents, ST 2094-1,-10,-20,-30, while draft ST 2094-0 provides an informal overview of the document suite. | Q6/16 |
| [[ TD 385-GEN ]](%0D%0A%20%20%20%20%20%20%20%20%20%20%20%20%20%20http%3A//www.itu.int/md/meetingdoc.asp?lang=en&parent=T13-SG16-160523-TD-GEN-0385)+Add.1-2 | [[ TD 385-GEN ]](http://ties.itu.int/u/tsg16/sg16/documents/160523/td/gen/T13-SG16-160523-TD-GEN-0385-E.htm) | [[ TD 385-GEN ]](T13-SG16-160523-TD-GEN-0385-E.htm) | 2016-02-09 | ITU-R WP6C | **LS/i on high dynamic range television (HDR-TV) [from ITU-R WP6C]**ITU-R Study Group 6 at its meeting on 5 February 2016 agreed to seek adoption and approval for a draft new Recommendation ITU-R BT.[HDR-TV] and a new Report ITU-R BT.2390 and requests MPEG and VCEG to update its specifications to provide signalling and code points for the new parameters and would appreciate to be kept informed of related developments in MPEG and VCEG. | Q6/16 |
| [[ TD 368-GEN ]](%0D%0A%20%20%20%20%20%20%20%20%20%20%20%20%20%20http%3A//www.itu.int/md/meetingdoc.asp?lang=en&parent=T13-SG16-160523-TD-GEN-0368)+Add.1-6 | [[ TD 368-GEN ]](http://ties.itu.int/u/tsg16/sg16/documents/160523/td/gen/T13-SG16-160523-TD-GEN-0368-E.htm) | [[ TD 368-GEN ]](T13-SG16-160523-TD-GEN-0368-E.htm) | 2016-02-02 | ITU-T SG9 | **LS/i on SG9 quality related activities [from ITU-T SG9]**Three 3D-related Recommendations were consented at the SG9 meeting (21-28 January 2016)Three revisions were consentedP.912 Subjective video quality assessment for recognition tasksP.913 subjective assessment of video quality, audio quality and audiovisual quality of Internet video and distribution quality televisionJ.341 Objective perceptual multimedia video quality measurement of HDTV for digital cable television in the presence of a full reference | Q6/16 |
| [[ TD 367-GEN ]](%0D%0A%20%20%20%20%20%20%20%20%20%20%20%20%20%20http%3A//www.itu.int/md/meetingdoc.asp?lang=en&parent=T13-SG16-160523-TD-GEN-0367)+Add.1 | [[ TD 367-GEN ]](http://ties.itu.int/u/tsg16/sg16/documents/160523/td/gen/T13-SG16-160523-TD-GEN-0367-E.htm) | [[ TD 367-GEN ]](T13-SG16-160523-TD-GEN-0367-E.htm) | 2016-01-28 | IMTC SIP Parity Activity Group | **LS/i on IMTC1013 SIP Video Profile: Bandwidth, Flow Control and Intra-frame Request Use Cases & Proposed Best Practices [from IMTC SIP Parity Activity Group]**IMTC1013 SIP Video Profile: Bandwidth, Flow Control and Intra-frame Request Use Cases & Proposed Best Practices, lists the use cases that are associated with bandwidth, flow control, and intra-frame request functionalities, and provides recommendations on best current practice. The liaison statement is for the purpose of sharing a proposed update to that document to provide clarifications for the negotiation of RTCP feedback messages (per RFC 5104). These clarifications address interoperability challenges uncovered at SuperOp 2015. The proposed update is provided as IMTC1013bis. | Q1/16, Q2/16, Q5/16, Q6/16 |
| [[ TD 362-GEN ]](%0D%0A%20%20%20%20%20%20%20%20%20%20%20%20%20%20http%3A//www.itu.int/md/meetingdoc.asp?lang=en&parent=T13-SG16-160523-TD-GEN-0362)+Add.1 | [[ TD 362-GEN ]](http://ties.itu.int/u/tsg16/sg16/documents/160523/td/gen/T13-SG16-160523-TD-GEN-0362-E.htm) | [[ TD 362-GEN ]](T13-SG16-160523-TD-GEN-0362-E.htm) | 2016-01-20 | DVB TM-AVC | **LS/i on the use of HEVC with High Dynamic Range [from DVB TM-AVC]**DVB Steering Board has recently approved Commercial Requirements for HDR video, part of "UHD-1 Phase 2"It is anticipated that the video format will be 4:2:0 with 10 bit data, progressive scanning, square pixels and BT.2020 colorimetry, both for HDR and when providing backwards compatibility to Standard Dynamic Range (SDR) UHD decoders defined in previous versions of TS 101 154.it would be helpful if MPEG and VCEG could summarize the available methods of providing HEVC encoded HDR video and provide information on their standardisation status. In view of the DVB standardization timeline, we are particularly interested in methods that are expected to be published or at least be technically frozen (i.e. to have been promoted to FDAM ballot or an equivalent indication of stability) before the end of June 2016. We would also appreciate any information that could be provided on verification testing for the potential options. | Q6/16 |
| [[ TD 349-GEN ]](%0D%0A%20%20%20%20%20%20%20%20%20%20%20%20%20%20http%3A//www.itu.int/md/meetingdoc.asp?lang=en&parent=T13-SG16-160523-TD-GEN-0349) | [[ TD 349-GEN ]](http://ties.itu.int/u/tsg16/sg16/documents/160523/td/gen/T13-SG16-160523-TD-GEN-0349-E.htm) | [[ TD 349-GEN ]](T13-SG16-160523-TD-GEN-0349-E.htm) | 2015-11-13 | ISO/IEC JTC1/SC29/WG11 | **LS/i/r on video coding collaboration (COM16-LS196) [from MPEG]**Confirm that the HDR/WCG video coding standardization activity will be … inside of the JCT-VCLook forward to collaborating in new “Joint Video Exploration Team” (JVET).The representative that we nominate on our side for coordinating this collaboration is Jens-Rainer Ohm. | Q6/16 |

Joint discussion Monday 1630 on JCT-VC related topics (esp. HDR and SCC)

* HDR
	+ HDR CE1 vs. CE2
	+ HDR backward compatibility: Two flavours have been proposed
		- Decoders that do not use new extension data, for "bitstream backward compatibility"
		- Using new extension data for "display backward compatibility"
		- Also "decoder-side content DR adaptation" within HDR context
		- Requirements (check C.853 and the Feb 2015 report for VCEG)
	+ [[ TD 387-GEN ]](file:///C%3A%5CGarySull%5CTemp8%5C2016_02_SanDiego%5C2016_02_VCEG_53_BA_SanDiego%5C%0D%0A%20%20%20%20%20%20%20%20%20%20%20%20%20%20http%3A%5Cwww.itu.int%5Cmd%5Cmeetingdoc.asp%3Flang%3Den%26parent%3DT13-SG16-160523-TD-GEN-0387) / m38082 SMPTE ST 2094 HDR remapping (also [JCTVC-W0086](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=10396))
	+ Affecting SCC text
		- CRI SEI message semantics clarification
		- [[ TD 385-GEN ]](file:///C%3A%5CGarySull%5CTemp8%5C2016_02_SanDiego%5C2016_02_VCEG_53_BA_SanDiego%5C%0D%0A%20%20%20%20%20%20%20%20%20%20%20%20%20%20http%3A%5Cwww.itu.int%5Cmd%5Cmeetingdoc.asp%3Flang%3Den%26parent%3DT13-SG16-160523-TD-GEN-0385) ITU-R WP 6C on BT.[HDR] (equation details, ICtCp) (also [JCTVC-W0044](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=10343))
	+ [[ TD 362-GEN ]](file:///C%3A%5CGarySull%5CTemp8%5C2016_02_SanDiego%5C2016_02_VCEG_53_BA_SanDiego%5C%0D%0A%20%20%20%20%20%20%20%20%20%20%20%20%20%20http%3A%5Cwww.itu.int%5Cmd%5Cmeetingdoc.asp%3Flang%3Den%26parent%3DT13-SG16-160523-TD-GEN-0362) DVB on BT.2020 colorimetry, both for HDR and for backward compatibility to SDR for "UHD-1 Phase 2"
	+ HDR10 verification testing
	+ Good practices text development
	+ Other SEI
		- [JCTVC-W0057](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=10364) Content colour gamut SEI message [H. M. Oh, J. Choi, J.-Y. Suh]
		- [JCTVC-W0058](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=10366) Video usability information signalling for SDR backward compatibility [H. M. Oh, J.-Y. Suh (LGE)]
		- [JCTVC-W0098](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=10411) Effective Colour Volume SEI [A. Tourapis, Y. Su, D. Singer (Apple Inc.)]
* SCC
	+ [JCTVC-W0129](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=10450) Requiring support for more reference pictures in 4:4:4 profiles when using 4:2:0 video
	+ Combined wavefronts & tiles
	+ SCC High Throughput 4:4:4 profiles requiring support for 4:2:2
	+ [JCTVC-W0077](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=10387) Bug fix for DPB operations with CPR
	+ Monochrome is not supported in Screen-Extended Main and Screen-Extended Main 10 profiles - presumed no action
* Other
	+ SHVC verification testing
	+ RExt conformance
	+ SHVC conformance
	+ SHVC software

Joint discussion Monday 1800 on other topics

* General [[ TD 349-GEN ]](file:///C%3A%5CGarySull%5CTemp8%5C2016_02_SanDiego%5C2016_02_VCEG_53_BA_SanDiego%5C%0D%0A%20%20%20%20%20%20%20%20%20%20%20%20%20%20http%3A%5Cwww.itu.int%5Cmd%5Cmeetingdoc.asp%3Flang%3Den%26parent%3DT13-SG16-160523-TD-GEN-0349) from MPEG, mXXXX from VCEG
* AVC
	+ [VCEG-BA08](http://wftp3.itu.int/av-arch/video-site/1602_San/VCEG-BA08.docx) High level syntax support for ARIB STD-B67
	+ [VCEG-BA09](http://wftp3.itu.int/av-arch/video-site/1602_San/VCEG-BA09.docx) Progressive High 10 profile
	+ [VCEG-BA10](http://wftp3.itu.int/av-arch/video-site/1602_San/VCEG-BA10.docx) Generalized constant and non-Constant luminance matrix coefficient code points
	+ [[ TD 385-GEN ]](file:///C%3A%5CGarySull%5CTemp8%5C2016_02_SanDiego%5C2016_02_VCEG_53_BA_SanDiego%5C%0D%0A%20%20%20%20%20%20%20%20%20%20%20%20%20%20http%3A%5Cwww.itu.int%5Cmd%5Cmeetingdoc.asp%3Flang%3Den%26parent%3DT13-SG16-160523-TD-GEN-0385) ITU-R WP 6C on BT.[HDR]
* JCT-3V
* Future video
	+ JVET exploration
	+ [VCEG-BA07](http://wftp3.itu.int/av-arch/video-site/1602_San/VCEG-BA07.docx) / m37709 on video for virtual reality systems