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| **Joint Collaborative Team on Video Coding (JCT-VC)**  **of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 11**  24th Meeting: Geneva, CH, May 26 – June 1 2016 | Document: JCTVC-X0007 |

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| *Title:* | **JCT-VC AHG report: SCC extensions text editing (AHG7))** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Report | | |
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| *Source:* | Ad Hoc Group | | |

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# Abstract

This document reports on the work of the JCT-VC ad hoc group on SCC extensions text editing (AHG7) between the 23rd JCT-VC meeting in San Diego, USA (February 2016).and the 24th JCT-VC meeting in Geneva, Switzerland (May 2016).

# Introduction

At the 23rd meeting of the ITU-T/ISO/IEC Joint Collaborative Team on Video Coding (JCT-VC), AHG7 on SCC extensions text editing was established with the following mandates:

* Produce and finalize JCTVC-W1005 HEVC screen content coding extensions draft 6 and JCTVC-W1014 test model 7 text.
* Gather and address comments for refinement of the test model.
* Coordinate with AHG8 to address issues relating to mismatches between software and text.

# Status

The sixth specification text draft (JCTVC-W1005) for the High Efficiency Video Coding Screen Content Coding (HEVC SCC) extensions was produced by the editing ad hoc group as an output document following the decisions taken at the 23rd JCT-VC meeting in San Diego, USA (February 2016).

Three versions of JCTVC-W1005 were produced. The text of JCTVC-W1005 (version 3) is considered final for the ISO/IEC FDIS ballot text.

The following is a list of changes with respect to JCTVC-V1005:

* Alignment with SHVC, MV-HEVC and 3D-HEVC in the syntax for disabling weighted prediction when current picture reference (CPR) is enabled, by using both layer ID and POC (JCTVC-W0076)
* Decoding process invocation for an independent non-base layer in an additional layer set containing more than one layer (FINB comment #1)
* Relaxed constraint on the presence of layers not present SEI messages (FINB comment #3)
* Changed the instances of VpsMaxLatencyPictures[][] to MaxVpsLatencyPictures[][], as there are also instances of VpsMaxLatencyPictures[] (JCTVC-V0031)
* Ignore the undefined RPS when deriving NumPicTotalCurr in IDR pictures (JCTVC-V0031)
* Setting of the initial value of NumActiveRefLayerPics0 and NumActiveRefLayerPics1 equal to 0 in clause F.8.1.4 (JCTVC-V0031)
* Added an update of the constraint, specified in clause 8.3.2, that requires no entry in RefPicSetStCurrBefore, RefPicSetStCurrAfter, or RefPicSetLtCurr when one or more of three conditions are true into clause F.8.3.2 to take FirstPicInLayerDecodedFlag into account. (JCTVC-V0031)
* Clarified the semantics of poc\_reset\_period\_id and added a constraint to explicitly express that the value of poc\_reset\_period\_id shall be the same for all pictures in an access unit. (JCTVC-V0031)
* Name change for chromaticity-derived colour matrix coefficient specification for clarity, precision, and objectivity
* Renamed variables pps\_act\_\*\_qp\_offset to PpsActQpOffset\* to follow editorial conventions. Added a note regarding the default values for qp offsets (JCTVC-W0096)
* Enabled simultaneous use of wavefronts and tiles for Screen-Extended Main 4:4:4 and Screen-Extended Main 4:4:4 10 profiles. (Geneva October 2015 meeting notes)
* Modified the semantics of entry\_point\_offset\_minus1 (ticket #1440)
* Miscellaneous tickets (ticket #1435, ticket #1437, ticket #1439, ticket #1441)
* Added a constraint that when sps\_max\_dec\_pic\_buffering\_minus1[ TemporalId ] is equal to 0, the value of TwoVersionsOfCurrDecPicFlag shall be equal to 0
* Corrected the constraint that requires slice\_type to be equal to 2 to be "When sps\_max\_dec\_pic\_buffering\_minus1[ TemporalId ] is equal to 0, nuh\_layer\_id is equal to 0, and pps\_curr\_pic\_ref\_enabled\_flag is equal to 0, slice\_type shall be equal to 2."
* On a constraint on the value of num\_long\_term\_pics, a correction was also made from using sps\_max\_dec\_pic\_buffering\_minus1[ sps\_max\_sub\_layers\_minus1 ] to sps\_max\_dec\_pic\_buffering\_minus1[ TemporalId ], as this is a slice segment header level constraint
* Added a note to clause 8.1.3 trying to clearly describe the difference cases of the current decoded picture depending on the values of TwoVersionsOfCurrDecPicFlag and pps\_curr\_pic\_ref\_enabled\_flag, and markings of the different versions of the current decoded picture
* Updated, in clause C.5.2.2, the condition for invocation of the bumping process by taking into account the value of TwoVersionsOfCurrDecPicFlag (JCTVC-W0077)
* Clarification of the semantics of the colour remapping information SEI message semantics in a less restrictive way than had been planned at the Geneva October 2015 meeting (per meeting notes of editorial review at San Diego February 2016 meeting)
* Fixed subscript typo for ST 2084 transfer function, missing space for SMPTE ST 428-1, and factor-of-12 scaling, full-range scaling, and nominal range for ARIB STD-B67 transfer function (JCTVC-W0044)
* Updated, in clause F.13.5.2.2, the condition for invocation of the bumping process by taking into account the value of TwoVersionsOfCurrDecPicFlag, to be aligned with the bumping process invocation in clause C.5.2.2
* Aligned the DPB handling process in clause F.8.1.5 with that in clause 8.1.3
* Removed the definition and initialization of CurrPicInList0Flag and CurrPicInList1Flag, which are not used anymore
* Corrected the condition in the equation for including the current picture into RefPicList0 when reference picture list modification is not in use
* Updated the reference picture list construction process in clause F.8.3.4 to enable current picture reference
* Updated the constraint on the value of NumPicTotalCurr in clause F.8.3.2 to take into consideration of pps\_curr\_pic\_ref\_enabled\_flag, for alignment with the corresponding constraint in clause 8.3.2
* Updated in clause F.7.4.7.2 the equation for deriving NumPicTotalCurr taking in account pps\_curr\_pic\_ref\_enabled\_flag, for alignment with the corresponding equation in clause 7.4.7.2
* Added in clause F.8.3.4 a constraint on RefPicList0 and RefPicList1 not to contain entries that refer to a picture other than the current picture for an independent non-base layer, for alignment with clause 8.3.4
* Replaced the decoder capability requirement description in clause H.11.1.2 with changes to clause F.11.2
* Added the derivation of sub-bitstreams subBitstream and baseBitstream to a new clause F.11.3 and replaced each of the descriptions of the same derivation in clauses G.11.1.1, H.11.1.1, H.11.1.2, and I.11.1.1with a reference to clause F.11.3
* Added missing CABAC information related to the palette mode in clause 9.3 (ticket 1433)
* Added fix for SHVC text and test model ticket 111
* Clarified the bitstream conformance condition on the picture referred to by the collocated\_ref\_idx so that the condition applies only when slice\_temporal\_mvp\_enabled\_flag is equal to 1 and the slice type is not 2. This allows for pictures having only the current picture in the reference list, which was intended to be allowed but had been accidentally disallowed by the previously drafted language.
* Changed the payloadType values for the alternative transfer characteristics information SEI message and the ambient viewing environment SEI message from 182 and 183 to 147 and 148 to maintain the intended logical groupings of SEI messages
* Added the coded region completion SEI message to the suffix part of the syntax table as intended by the contributions and meeting notes (already present in the prefix part).

The screen content coding test model7 (SCM 7) **(**document JCTVC-W1014) was released on 23rd May 2016. The main changes from SCM 6 to SCM 7 are the introduction of bottom-up hash value calculation and validity check method for hash-based inter search

# Recommendations

The recommendations of the HEVC SCC extension draft text AHG are to:

* Approve the documents JCTVC-W1005 and JCTVC-W1014 as JCT-VC outputs
* Address the comments and feedback on SCC extensions text specification as appropriate
* Compare the HEVC SCC extensions document with the HEVC SCC extensions software and resolve any discrepancies that may exist, in collaboration with the SCC extension software development (AHG8)