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| *Title:* | **Proposed editorial improvements to HEVC Screen Context Coding Draft Text 5** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Proposed editorial improvements to Draft of HEVC | | |
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# Abstract

This document summarizes the proposed editorial improvements to HEVC Screen Context Coding Draft Text 4. It also identifies known issues that should be addressed in version 6 of the draft text. The accompanying documents, JCTVC-V1005-W0096.doc and JCTVC-V0031\_fixes\_annexes\_F\_G\_v2, contain the proposed changes with revision marks relative to JCTVC-V1005-v1.

# Summary of the proposed changes

## Proposed editorial improvements related to adaptive colour transform

* The variable names pps\_act\_y\_qp\_offset, pps\_act\_cb\_qp\_offset, and pps\_act\_cr\_qp\_offset have been changed to PpsActQpOffsetY, PpsActQpOffsetCb, and PpsActQpOffsetCr, respectively, to conform to the variable naming conventions in the specification.
* A NOTE has been added to the semantics of **pps\_act\_y\_qp\_offset\_plus5**, **pps\_act\_cb\_qp\_offset\_plus5** and **pps\_act\_cr\_qp\_offset\_plus3** to clarify the use of offset values of −5, −5 and −3.

These changes are also address issues pointed out in ticket #1434. These changes are under editorial token "QP for ACT".

## Proposed editorial improvements related to wavefronts and tiles

* As per the decision in the Geneva meeting, the combination of tiles and wavefronts should be allowed for the Screen Extended Main 4:4:4 and Screen Extended Main 4:4:4 10 profiles. The specification changes are as follows:

– In bitstreams conforming to the Screen-Extended Main~~,~~ or Screen-Extended Main 10~~, Screen-Extended Main 4:4:4 or Screen-Extended Main 4:4:4 10~~ profiles, when an active PPS for the base layer has tiles\_enabled\_flag equal to 1, it shall have entropy\_coding\_sync\_enabled\_flag equal to 0.

– In bitstreams conforming to the Screen-Extended High Throughput 4:4:4, Screen-Extended High Throughput 4:4:4 10 or Screen-Extended High Throughput 4:4:4 14 profiles, active PPSs for the base layer shall have entropy\_coding\_sync\_enabled\_flag equal to 1 only.

NOTE – Unlike for some other profiles specified in this annex, an active PPS for the base layer for the Screen-Extended Main 4:4:4, Screen-Extended Main 4:4:4 10, Screen-Extended High Throughput 4:4:4, Screen-Extended High Throughput 4:4:4 10, or Screen-Extended High Throughput 4:4:4 14 profiles may have tiles\_enabled\_flag equal to 1 with entropy\_coding\_sync\_enabled\_flag equal to 1.

* Ticket #1440: The text was fixed as follows:

When tiles\_enabled\_flag is equal to 1 and entropy\_coding\_sync\_enabled\_flag is equal to 1, each subset k with k in the range of 0 to num\_entry\_point\_offsets, inclusive, shall consist of all coded bits of all coding tree units in the slice segment that include luma coding tree blocks that are in the same luma coding tree block row of a tile, and the number of subsets (i.e., the value of num\_entry\_point\_offsets + 1) shall be equal to the number of luma coding tree block rows of ~~a~~the tile(s) that contain the coding tree units ~~that are in~~of the coded slice segment.

These changes are under the editorial token "wavefronts and tiles"

## Miscellaneous

* Ticket #1435: Changed "residual\_adaptive\_colour\_transform\_flag" to "residual\_adaptive\_colour\_transform\_enabled\_flag" in subclause 8.4.1.
* Ticket #1434 and #1436: Introduced the variable ControlParaAct as an input to subclause 8.4.4.1: General decoding for intra blocks.
* Ticket #1437

These changes are under the editorial token "JCTVC-W0096".

## Known issues in the text related to SCC

* Ticket #1431: In subclause 7.3.6.3, pred\_weight\_table( ), which is invoked from slice\_segment\_header( ), has dependencies on RefPicList0 and PicOrderCntVal, variables that (according to the first sentence of subclause 8.3.2) are only computed "after decoding of a slice header".
* In subclause I.7.4.3.3.7, "Picture parameter set 3D extension semantics", the variable MaxNumLayersMinus1 is used without a definition.
* In subclauses G.11.2.1 and H.11.2.1, an equation number is missing.
* Ticket #1433: Missing CABAC information.
* Ticket #1439: IRAP constraint for Main 4:4:4 Intra profile.

## Summary of proposed editorial improvements in Annexes F and G

Editorial fixes for Annex F and G were proposed in JCTVC-V0031. These were not integrated into JCTVC-V1005. These are provided in the document JCTVC-V0031\_fixes\_annexes\_F\_G\_v1. In particular, following changes might be considered after review:

* (VpsMaxLatencyPictures)  
  Issue: VpsMaxLatencyPictures is defined twice: in (7‑2) and (F‑15).  
  Fix: Renamed VpsMaxLatencyPictures in (F‑15) to MaxVpsLatencyPictures.
* (crossLayerBufferEmptyFlag)  
  Issue: In F.13.5.2.2 an used variable crossLayerBufferEmptyFlag is derived instead of listOfSubDpbsToEmpty.  
  Fix: Removed crossLayerBufferEmptyFlag and added derivation of listOfSubDpbsToEmpty as done in F.13.3.2.
* (NumPicTotalCurr):  
  Issue: Although required NumPicTotalCurr is not defined in P- or B- slices in IDR pictures of non-base layers. Consider e.g. the following scenario:  
  nal\_unit\_type is equal to IDR\_N\_LP  
  🡪 short\_term\_ref\_pic\_set\_sps\_flag is not present in the slice\_segment\_header( ) syntax structure and thus not defined  
  🡪 CurrRpsIdx is not defined  
  🡪 UsedByCurrPicS0[ CurrRpsIdx ] and UsedByCurrPicS1[ CurrRpsIdx ] in (F‑56) are not defined  
  🡪 NumPicTotalCurr is not defined  
  🡪 When slice\_type is e.g. equal to P, the condition "if( lists\_modification\_present\_flag && NumPicTotalCurr > 1 )" used in the slice\_segment\_header( ) syntax structure is not defined.  
  🡪 it is not clear whether to parse the ref\_pic\_lists\_modification( ) syntax structure  
    
  Fix: Ignore the not defined RPS, when deriving NumPicTotalCurr in IDR pictures.
* (NumActiveRefLayerPics)  
  Issue: Although required in some cases, NumActiveRefLayerPics0 and NumActiveRefLayerPics1 are not defined for the base layer. Consider e.g. the following scenario:  
    
  F.8.1.3 is invoked with nuh\_layer\_id equal to 0  
  🡪 The decoding process for a coded picture with nuh\_layer\_id equal to 0 as specified in clause F.8.1.4 is invoked.  
  🡪 The decoding process for reference picture lists construction as specified in F.8.3.4 is invoked.  
  🡪 (F‑65) in F.8.3.4 requires NumActiveRefLayerPics0 and NumActiveRefLayerPics1  
    
  F.8.1.3 is invoked with nuh\_layer\_id equal to 0  
  🡪 None of the decoding processes specified in G.8.1.2, H.8.1.2, or I.8.1.2 are invoked.  
  🡪 None of the decoding processes for inter-layer reference picture set as specified in G.8.1.3 or H.8.1.3, are invoked.  
  🡪 NumActiveRefLayerPics0 and NumActiveRefLayerPics1 are not defined  
    
  Fix: In F.8.1.4, set NumActiveRefLayerPics0 and NumActiveRefLayerPics1 equal to 0.
* (Condition on "no reference picture")  
  Issue: The decoding process for reference picture set as specified in 8.3.2 requires that there shall be no entry in RefPicSetStCurrBefore, RefPicSetStCurrAfter or RefPicSetLtCurr for which the entry is equal to "no reference picture". However, when 8.3.2 is invoked from F.8.3.2 for a picture with FirstPicInLayerDecodedFlag equal to 0, these pictures may not be present, but are intended to be generated later in the decoding process for generating unavailable reference pictures for pictures first in decoding order within a layer as specified in F.8.1.7  
    
  Fix: Modified the condition in F.8.3.2 to take FirstPicInLayerDecodedFlag into account
* (Inference poc\_reset\_period\_id) :  
  Issue: When the current condition is true, picA would always be the picture with the highest nuh\_layer\_id in its AU and the current picture would be in the same layer  
    
  Fix: My assumption is that "the" needs to be replace with "a".
* (Indices Multiview acquisition information SEI)  
  Issue: Wrong indices. This is actually copied and pasted from AVC spec. Thus, the same issue can be found there.
* (instrinsic\_param\_flag Multiview acquisition info SEI)  
  Issue: Typo. This is actually copied and pasted from AVC spec. Thus, the same issue can be found there.
* (possible clarifications): Some comments on text that seems not clear for me. Maybe you can check if a clarification is required.
* Removed separate\_colour\_flag from a constraint on the SPS representation format parameters in relative to their VPS counterparts. This was an integration mistake and was already corrected in the published version 3 of the ITU-T specification.
* SHVC Ticket #75
* Fixed SHVC Ticket #89 (in document JCTVC-V1005-W0096.doc, editorial token JCTVC-W0096)