**3GPP TSG-SA4 Meeting #130S4-241984**

**Orlando, 18th - 22nd November 2024**

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| *CR-Form-v12.2* |
| **PSEUDO CHANGE REQUEST** |
|  |
|  |  | **CR** |  | **rev** |  | **Current version:** |  |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network | **X** |

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| ***Title:***  | s |
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| ***Source to WG:*** | Apple Inc. |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** |  |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** |  |  | ***Release:*** |  |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
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| ***Reason for change:*** | Current version of draft TS is missing Multiview video operating points. |
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| ***Summary of change:*** | Adds Multiview operating points. Adds some corrections to existing profile names. |
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| ***Consequences if not approved:*** | Multiview operating points will remain missing. |
|  |  |
| ***Clauses affected:*** | 5.2, 5.3 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** | Revision 1:* Removed 8-bit MV-HEVC profiles in favour of 10-bit profiles, also combining Multiview Extended 10 and Multiview Main 10, collapsing 4 operating points to 1.
* Limit the number of layers to 2.
* Added level of each layer to 5.1 to allow 4k 60 fps and combined 5.2 for 4k 120 fps.
* Corrections H.265 naming.
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\* \* \* First Change \* \* \* \*

5.2 Codecs, Profiles and Levels

5.2.1 Codec & profile

This specification defines capabilities based on the following video codecs and video codec profiles:

- AVC/H.264 Progressive High Profile [h264],

- HEVC/H.265 Main Profile Main Tier [h265],

- HEVC/H.265 Main-10 Profile Main Tier [h265].

- HEVC/H.265 Multiview Main 10 Main Tier [h265].

- HEVC/H.265 Multiview Extended 10 Tier [h265].

5.2.2 Codec & profile & Levels

This specification defines capabilities based on the following video codec profile and levels:

- AVC/H.264 Progressive High Profile Level 3.1,

- AVC/H.264 Progressive High Profile Level 4.0,

- AVC/H.264 Progressive High Profile Level 4.2,

- AVC/H.264 Progressive High Profile Level 5.1,

- AVC/H.264 Progressive High Profile Level 6.1,

- HEVC/H.265 Main Profile Main Tier Level 3.1,

- HEVC/H.265 Main-10 Profile Main Tier Level 4.1,

- HEVC/H.265 Main-10 Profile Main Tier Level 5.0,

- HEVC/H.265 Main-10 Profile Main Tier Level 5.1,

- HEVC/H.265 Main-10 Profile Main Tier Level 6.1,

- HEVC/H.265 Multiview Main 10 Profile Main Tier Level 5.1,

- HEVC/H.265 Multiview Extended 10 Profile Main Tier Level 5.1.

\* \* \* Next Change \* \* \* \*

5.3 Single-Instance Decoding Capabilities

Editor’s Note: This is copy and paste from S4-240619, clause 5.2.3. More edits are needed.

5.3.1 AVC Decoding Capabilities

The following decoding capabilities are defined:

**- AVC-FullHD-Dec**: the capability to decode AVC/ITU-T H.264 Progressive High Profile Level 4.0 [h264] bitstreams.

**- AVC-UHD-Dec:** the capability to decode AVC/ITU-T H.264 Progressive High Profile Level 5.1 [h264] bitstreams with the following additional requirements:

- the maximum VCL Bit Rate is constrained to be 120 Mbps with cpbBrVclFactor and cpbBrNalFactor being fixed to be 1250 and 1500, respectively; and,

- the bitstream does not contain more than 10 slices per picture.

**- AVC-8K-Dec:** the capability to decode AVC/ITU-T H.264 Progressive High Profile Level 6.1 [h264] bitstreams with the following requirements:

- the maximum VCL Bit Rate is constrained to be 120 Mbps with cpbBrVclFactor and cpbBrNalFactor being fixed to be 1250 and 1500, respectively; and,

- the bitstream does not contain more than 16 slices per picture.

- the bitstream shall not include horizontal motion vector component values that exceed the range from −2048 to 2047, inclusive, or that have vertical motion vector component values that exceed the range from −512 to 511, inclusive, in units of ¼ luma sample displacement. This constraint should be indicated by using values of log2\_max\_mv\_length\_horizontal less than or equal to 11 and values of log2\_max\_mv\_length\_vertical less than or equal to 9.

5.3.2 HEVC Decoding Capabilities

The following decoding capabilities are defined:

- **HEVC-HD-Dec**: the capability to decode HEVC/ITU-T H.265 Main Profile, Main Tier, Level 3.1 [h265] bitstreams that have general\_progressive\_source\_flag equal to 1, general interlaced\_source\_flag equal to 0, general\_non\_packed\_constraint\_flag equal to 1, and general\_frame\_only\_constraint\_flag equal to 1.

- **HEVC-FullHD-Dec**: the capability to decode HEVC/ITU-T H.265 Main 10 Profile, Main Tier, Level 4.1 [h265] bitstreams that have general\_progressive\_source\_flag equal to 1, general interlaced\_source\_flag equal to 0, general\_non\_packed\_constraint\_flag equal to 1, and general\_frame\_only\_constraint\_flag equal to 1.

- **HEVC-UHD-Dec**: the capability to decode HEVC/ITU-T H.265 Main 10 Profile, Main Tier, Level 5.1 [h265] bitstreams that have general\_progressive\_source\_flag equal to 1, general interlaced\_source\_flag equal to 0, general\_non\_packed\_constraint\_flag equal to 1, and general\_frame\_only\_constraint\_flag equal to 1.

- **HEVC-8K-Dec**: the capability to decode HEVC/ITU-T H.265 Main10 Profile, Main Tier, Level 6.1 [h265] bitstreams that have general\_progressive\_source\_flag equal to 1, general interlaced\_source\_flag equal to 0, general\_non\_packed\_constraint\_flag equal to 1, and general\_frame\_only\_constraint\_flag equal to 1 with the following further limitations:

- **MV-HEVC-UHD-Dec**: the capability to decode bitstreams with an HEVC/ITU-T H.265 Main 10 Profile base layer (layer\_id=0), and a single HEVC/ITU-T H.265 Multiview Main 10 [or Multiview Extended 10] layer (layer\_id=1) [h265]. Each layer shall conform to Main Tier, Level 5.1, while the device should be capable of supporting single layer decoding of HEVC/ITU-T H.265 Main 10 Profile bitstreams at Main Tier, Level 5.2. All layers shall have general\_progressive\_source\_flag equal to 1, general interlaced\_source\_flag equal to 0, general\_non\_packed\_constraint\_flag equal to 1, and general\_frame\_only\_constraint\_flag equal to 1.

Editor’s Note: Operating point(s) for 8k stereoscopic video may be added.

Editor’s Note: Operating point(s) for frame packed stereoscopic video need to be implemented.

- the bitstream does not exceed the maximum luma picture size in samples of 33,554,432,

- the maximum VCL Bit Rate is constrained to be 80 Mbps with CpbVclFactor and CpbNalFactor being fixed to be 1000 and 1100, respectively.

\* \* \* End of Changes \* \* \* \*