3GPP TSG-SA WG4 Meeting #123-e S4-230494

E-meeting 17 – 21 April 2023

Source: Apple, Dolby Laboratories Inc., Fraunhofer HHI

Title: New WID on new HEVC profiles and operating points

Document for: Approval

Agenda Item: 9.9

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>   
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm)

Title: Video codec profiles and operating points

Acronym: HEVC\_Profiles

Unique identifier: 9500xy

Potential target Release: Rel-18

# 1 Impacts

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Affects: | UICC apps | ME | AN | CN | Others (specify) |
| Yes |  | X |  |  |  |
| No | X |  | X | X |  |
| Don't know |  |  |  |  | X |

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a …

|  |  |
| --- | --- |
| X | Feature |
|  | Building Block |
|  | Work Task |
|  | Study Item |

## 2.2 Parent Work Item

For a brand-new topic, use “N/A” in the table below. Otherwise indicate the parent Work Item.

|  |  |  |  |
| --- | --- | --- | --- |
| Parent Work / Study Items | | | |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| FS\_5Gvideo | SA4 | 870011 | Study on 5G Video Codec Characteristics |

### 2.3 Other related Work Items and dependencies

|  |  |  |
| --- | --- | --- |
| Other related Work /Study Items (if any) | | |
| Unique ID | Title | Nature of relationship |
|  |  |  |
|  |  |  |
|  |  |  |

# 3 Justification

The SA4 Study on 5G Video Codec Characteristics (FS\_5Gvideo) was concluded in June 2022 after more than two years of investigations. The process included defining various 5GMS applications and profiles of interest, selecting test content with different test characteristics, followed by anchor generation and gathering for the defined test scenarios. Evaluations were then performed using different codecs on all of the test scenarios. This resulted in a comprehensive characterization of several video codecs, with the results documented in TR 26.955. The TR documents in detail, among others, the characterization and performance evaluation for the HEVC video coding standard and its HM reference SW. There has not been a follow-up work done in SA4 after this study, while significant advancements have been made in services and applications that would benefit from new HEVC functionality. For example, in the past two years there is a renewed interest in 3D movie content as evident by media coverage of recent 3D movie releases, where Multiview HEVC coding may prove a suitable tool. Also, advancement has happened on end user device support for new HEVC tools to support higher quality video such as 4:4:4. Also, scalable HEVC content, if offered in conjunction with normal video content, may help in improved network performance. This study aims to gather existing evidence that such new tools provide advantage for specific services and applications, and if so, normative work adds such tools in SA4 specifications.

# 4 Objective

This work is done in two phases. The first study phase aims to gather existing evidence to demonstrate HEVC profiles that include 4:4:4 (i.e. 8 and 10 bit), Multiview, and Scalable video coding provide advantage for specific services and applications. Given such evidence, the normative work in the second phase would add those tools in relevant SA4 specifications. The normative work may impact, among others:

* the Video profiles for TV services over 3GPP (TS 26.116) including:
  + profiles/levels, resolutions, framerates, receiver compatibility, colour information,
  + 3GP DASH MPD, file format and adaption set constraints,
* TS 26.119 MeCAR bitstream capabilities etc.
* TS 26.511 5GMS profiles.

# 5 Expected Output and Time scale

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| New specifications | | | | | |
| Type | TS/TR number | Title | For info  at TSG# | For approval at TSG# | Editor |
| TR | 26.xxx (New) | Evaluation of new HEVC coding tools | SA#101 (Sep 2023) | SA#102 (Dec 2023) | Waqar Zia |

|  |  |  |  |
| --- | --- | --- | --- |
| Impacted existing TS/TR | | | |
| TS/TR No. | Description of change | Target completion plenary# | Remarks |
| TS 26.116 | Profiles/levels, resolutions, framerates, receiver compatibility, colour information. 3GP DASH MPD, file format and adaption set constraints | SA#103 (March 2024) |  |
| TS 26.118 | Potential impact on video operating points (profile/levels, aspect rations, framerates, random access) | SA#103 (March 2024) |  |
| TS 26.119 | Potential impact for bitstream capabilities etc. | SA#103 (March 2024) |  |
| TS 26.511 | Potential impact on 5GMS profiles | SA#103 (March 2024) |  |

# 6 Work item Rapporteur(s)

Waqar Zia (waqar\_zia (at) apple.com)

# 7 Work item leadership

SA4

# 8 Aspects that involve other WGs

None

# 9 Supporting Individual Members

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| --- |
| Supporting IM name |
| Apple |
| Dolby Laboratories Inc. |
| Fraunhofer HHI |
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