**3GPP TSG-SA WG4 Meeting #132 S4-250880**

**Fukuoka, JP, 19 – 23 May 2025**

**Source: China Mobile Com. Corporation**

**Title: [FS\_Beyond2D] Scenario 1: Detailed Test Conditions**

**Agenda item: 9.7**

**Document for: Agreement**

**1. Introduction**

This proposal provides updates on encoding and decoding constraints, and detailed test condition for Scenario 1: UE-to-UE Stereoscopic Video Live Streaming.

**2. Proposal**

It is proposed to agree the following changes to the 3GPP draft TR 26.956 V0.4.0

\* \* \* First Change \* \* \*

[LS-13] HTM Codec Software, version 16.3, <https://hevc.hhi.fraunhofer.de/svn/svn_3DVCSoftware/branches/HTM-16.3-fixes/cfg/MV-HEVC/>

\* \* \* Second Change \* \* \*

### 7.2.4 Encoding and Decoding Constraints

Table 7.2.4-1 provides an overview of encoding and decoding constraints for UE-to-UE Stereoscopic Video Live Streaming scenario using H.265/HEVC and MV-HEVC. This information supports the definition of detailed anchor conditions.

Table 7.2.4-1 Encoding and Decoding Constraints

|  |  |  |
| --- | --- | --- |
| Encoding and Decoding Constraints | H.265/HEVC | MV-HEVC |
| Relevant Codec and Codec Profile/Levels | H.265/HEVC Main 10 Profile  Level 4.1, 5.1 | Multiview Main or Multiview Main10 profile  Level 4, 5.1 and higher |
| Random access frequency | 1 second | 1 second |
| Bit rates and quality configuration | Fixed QP: [17, 22, 27, 32, 37]  CBR  Half Width/Height: 5-8Mbps  Full Width/Height: 8-16Mbps  Capped-VBR | Fixed QP: [17, 22, 27, 32, 37] |
| Bit rate parameters (CBR, VBR, CAE, HRD parameters) | Covering a range of relevant bitrates and qualities | Covering a range of relevant bitrates and qualities |
| Latency requirements and specific encoding settings | Low latency requirements | Low latency requirements |
| Encoding complexity context | Real-time encoding, Cloud-based encoding | Real-time encoding, Cloud-based encoding |
| Required decoding capabilities | H.265/HEVC Main 10 Profile  Level 4.1, 5.1 | Multiview Main or Multiview Main10 profile  Level 4, 5.1 and higher |

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\* \* \* Third Change (All New) \* \* \*

### 7.2.8 Test Condition

#### 7.2.8.1 Test model and configuration files

The encoder configuration settings for both encodings are are outlined below:

- Inter-view coding structure

- 2 view case: left-right (in coding order)

- I-P inter-view prediction MV-HEVC

- Temporal prediction structure: GOP 8, intra every 24 frames (random access at ~1sec)

- Full resolution texture coding

- Codec software: HTM v16.3 for Simulcast HEVC and MV-HEVC

The following configuration files are provided in [LS-13]:

- /HTM-16.3-fixed/cfg/MV-HEVC/baseCfg\_2view.cfg: Used to configure input/output filenames and encoder parameters (I-frame interval, number of B-frames, etc.)

- /HTM-16.3-fixed/cfg/MV-HEVC/qpCfg\_QP25.cfg: : Used to configure the encoding QP

- /HTM-16.3-fixed/cfg/MV-HEVC/seqCfg\_Shark.cfg: Contains the source sequence parameters (resolution, frame count, frame rate, etc.)

For each selected test sequence, configuration files containing information needed for HTM-16.3 configuration will be provided.

#### 7.3.9.2 Rate points and test conditions

Fixed QP was used to evaluate and compare the performance of MV-HEVC and Simulcast HEVC is compared and evaluated in terms of PSNR (dB) and bitrate (kbps) over the set of QP values [17, 22, 27, 32, 37].



#### 7.3.9.3 Profiles

MV-HEVC Main Profile is used.

#### 7.3.9.4 Bitstream Generation

The HTM v16.3 is used to encode and decode test sequences as described in clause 7.2.8.1.

Below are examples of command lines for encoding and decoding test sequence:

- Before compilation, navigate to source/Lib/TLibCommon/TypeDef.h and modify the following parameter to configure the software as an MV-HEVC encoder:

/\*\* \file TypeDef.h

\brief Define macros, basic types, new types and enumerations

\*/

(…)

/\* HEVC\_EXT might be defined by compiler/makefile options.

Linux makefiles support the following settings:

make -> HEVC\_EXT not defined

make HEVC\_EXT=0 -> NH\_MV=0 H\_3D=0 --> plain HM

make HEVC\_EXT=1 -> NH\_MV=1 H\_3D=0 --> MV only

make HEVC\_EXT=2 -> NH\_MV=1 H\_3D=1 --> full 3D

\*/

#ifndef HEVC\_EXT

#define HEVC\_EXT 1

#endif

(…)

- to encode a test sequence:

./TAppEncoder.exe -c baseCfg\_2view.cfg -c seqCfg\_Shark.cfg -c qpCfg\_QP25.cfg

- to decode a test sequence:

./TAppDecoder.exe -b stream.bit -o shark\_qp25.yuv -w 1

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