**Source: China Mobile Com. Corporation**

**Title: [FS\_Beyond2D] Permanent Document v0.1**

**Version: 0.0.1**

**Agenda Item: 9.9**

**Document for: Agreement**

# 1 Introduction

During SA4 AH Telco on Rel-19, New Study Item on “Study on Beyond 2D Video” was agreed in S4-240525 and afterwards approved in by SA#103 in SP-240479.

The objective of this study item are are as follows:

1. Identify and document beyond 2D formats, that are market-relevant within the next few years, generated from established and emerging capturing systems (including cameras for spatial video capturing), contribution, and usable on display technologies (smartphones, VR HMDs, AR glasses, autostereoscopic and multiscopic displays).

2. Establish and document a set of beyond 2D video end-to-end reference scenarios, including real-time communication, streaming services, split rendering, and messaging and corresponding workflows (capturing, encoding, packaging, delivery, decoding, rendering, including general constraints on latency, as well as complexity) to support 3GPP network related delivery and devices leveraging the generation or display technologies. This includes identifying and defining relevant beyond 2D formats in the context of above workflows, and representation technologies to support delivery of these formats within 3GPP networks.

3. Prioritize the scenarios and the associated formats based on market relevance for further evaluation.

4. Define concrete evaluation framework per scenario (test conditions, KPIs, Metrics, test sequences, agreed reference signals) based on the above prioritized reference scenarios, and evaluate the feasibility and performance of existing 3GPP codecs as well as potentially new codecs to support the scenarios.

5. Based on the findings in steps 1, 2, and 4 document (i) interoperability requirements, (ii) traffic characteristics and (iii) potential QoS optimizations or requirements, to support the above workflows and evaluate the feasibility of new formats with different services, considering the implementation constraints and performance indicators such as encoding, decoding, and rendering complexity, bandwidth utilization, and interoperability considerations.

6. Based on the findings in steps 1, 2, 4 and 5, identify potential gaps or deficiencies of existing 3GPP codecs, and offer recommendations to potentially extend 3GPP video specifications and capabilities.

1. Identify potential areas for normative work as the next phase and communicate with other 3GPP WGs regarding relevant aspects related to the study to the extent needed.

# 2 Collected Scenarios

# 3 Metrics

Table 3-1 summarizes the identified open issues on Metrics

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| Number | Issue | Responsible |

# 4 Reference Sequences

The reference sequences for the anchor generation are provided below.

* Pink: reference sequences are missing
* Yellow: reference sequences are selected, but not yet frozen.
* Green: Reference Sequences are frozen

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| **Scenario** | **Clause** | **Reference Sequences** | **Notes** |
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# 5 Reference Software and Configurations Anchors

The configuration files for the anchor generation are provided below.

* Pink: configurations are missing
* Yellow: configurations are available, but not yet frozen. Comments still welcome
* Green: Configurations are frozen

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| **Scenario** | **Clause** | **General constraints** | **Codec A configurations** | **Codec X configurations** | **Notes** |
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# 6 Anchors and Metrics

* Pink: anchors definitions are missing
* Yellow: anchors defined, but open for comments
* Cyan: anchor definition frozen, but not yet produced
* Green: anchors available

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| **Scenario** | **Clause** | **Codec A anchors** | **Codec X anchors** | **Notes** |
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# 7 Verification Anchors

* Pink: verification missing
* Yellow: verification assigned to someone
* Green: verification done

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| **Scenario** | **Clause** | **Codec A anchors** | **Codec X anchors** | **Notes** |
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# 8 Reference Software and Configuration Tests

The configuration files for the anchor generation are provided below.

* Pink: configurations are missing
* Yellow: configurations are available, but not yet frozen. Comments still welcome
* Green: Configurations are frozen

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| **Scenario** | **Clause** | **Codec A configurations** | **Codec B configurations** | **Codec X configurations** | **Notes** |
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Table 8-1 summarizes the open issues on Configurations.

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| Number | Issue | Responsible |

# 9 Tests

* Pink: test definitions are missing
* Yellow: tests defined, but open for comments
* Cyan: test definition frozen, but not yet produced
* Green: tests available

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| **Scenario** | **Clause** | **Codec A Tests** | **Codec B Tests**  | **Codec X Tests** | **Notes** |
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Table 6-1 summarizes the open issues on Configurations.

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| Number | Issue | Responsible |

# 10 Verification Tests

* Pink: verification missing
* Yellow: verification assigned to someone
* Green: verification done

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| **Scenario** | **Clause** | **Code A Tests** | **Codec B Tests** | **Codec X Tests** | **Notes** |
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# 11 Characterization

Table 11-1 summarizes the open issues on Characterization.

# 12 Software

see above actions that relate to the software.

# 13 Online Repository

CSV of all Files are provided here:

All reference sequences are documented.

Table 13-1 summarizes the open issues on Online Repository.

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| Number | Issue | Responsible |

Other content issues are documented here:

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