**3GPP TSG SA WG4#125 S4-231207**

**Gothenburg, Sweden, 21 – 25 August 2023**

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| *CR-Form-v12.0* |
| **PSEUDO CHANGE REQUEST** |
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|  | **26**.**565** | **CR** | **pseudo** | **rev** | **-** | **Current version:** | **0.5.0** |  |
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| *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:***  | **[SR\_MSE] Updates to Media Capabilities** |
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| ***Source to WG:*** | Qualcomm Incorporated |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** | **MeCAR** |  | ***Date:*** | 15/08/2023 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | 18 |
|  | *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-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
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| ***Reason for change:*** | Media Formats for Split Rendering are not defined yet properly |
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| ***Summary of change:*** | Updates Annex C |
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| ***Consequences if not approved:*** |  |
|  |  |
| ***Clauses affected:*** |  |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS/TR ... CR 26.119-PD (S4-231215) |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** | The information is preferably moved to MeCAR TS 26.119 |
|  |  |
| ***This CR's revision history:*** |  |

**===== CHANGE =====**

Annex C (normative):
Split Rendering Profiles

## C.1 Pixel Streaming Profile

### C.1.1 Introduction

This profile defines required capabilities for UE-based SRC functionalities. Requirements for the following functions are defined in this clause:

- Media Decapsulation

- Media Decryption

- Media Decoding

- Media Presentation and Rendering

The capabilities of the receiving UE are shared with the split rendering server prior to the start of the split rendering session. These capabilities and configurations would indicate the audio-visual output setup on the UE. For example, it would indicate that the output device is an HMD that supports 2 views and stereo audio.

### C.1.2 Video decoding

The UE shall support**:**

- the **AVC-FullHD-Dec** capability as defined in clause 6.6.1 of MeCAR PD.

- the **HEVC-UHD-Dec** capability as defined in clause 6.6.1 of MeCAR PD.

- the **AVC-FullHD-Dec-4** capability as defined in clause 6.6.3.2 of MeCAR PD.

- the **HEVC-UHD-Dec-4** capability as defined in clause 6.6.3.2 of MeCAR PD.

The UE should support**:**

- the **HEVC-8K-Dec** capability as defined in clause 6.6.3.2.

- the **HEVC-8K-Dec-8** capability as defined in clause 6.6.3.2.

### C.1.3 Audio and Speech decoding

If the UE supports the reception of speech, the following shall be supported:

- the **EVS** decoding capability as defined in 3GPP TS 26.117 [4] clause 5.2.

- the **EVS-DEC-4** capability as defined in clause 6.7.3.2 of MeCAR PD.

If the UE supports the reception of audio, the following shall be supported:

- the capability to decode MPEG-4 Low Delay AAC v2 Profile (AAC-ELDv2) Level 2 bitstreams [AAC-ELDv2] shall be supported.

- the **LD-AACv2-4** capability as defined in clause 6.7.3.2 of MeCAR PD.

### C.1.X Uplink Formats

**XR-Pose-Cap 1:** the SRC shall be able to retrieve one or more pose predictions for each view and for every frame to be rendered. The pose predication shall be formatted according to clause 8.2.2.2.

**XR-Pose-Cap 2:** the SRC shall be able to retrieve and collect the user actions that occurred during an identified time interval. The action information shall be formatted according to clause 8.2.2.3.

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Editor’s Note: the below is only initial food for thought based on what is defined in TS 26.511.

### C.1.5 Subtitles

If the UE supports the reception of subtitles:

- the IMSC1.1 Text Track decoding capabilities IMSC1.1-TEXT-DEC as defined in clause 4.5.1.1 should be supported.

### C.1.6 Scene Format

If UE supports a scene format, .

### C.1.7 Decapsulation and decryption

#### 5.2.7.1 Introduction

This clause defines the requirements in terms of decapsulation and decryption of media for a 5GMSd Media Player in combination with codecs. Media Encapsulation in 5G Media Streaming for downlink is defined based on the MPEG Common Media Application Format (CMAF) [7]. Based on this, this clause documents the requirements and recommendations for the support of media profiles by the definition of media player requirements.

#### 5.2.7.2 Video media profiles

If the 5GMSd Client supports the reception of video, then the following applies:

- the AVC-HD playback requirements as defined in clause 4.2.1.3.1.4 shall be supported.

- the HEVC-HD playback requirements as defined in clause 4.2.2.3.1.4 should be supported.

If the 5GMSd Client supports the reception of video and HD-HDR Capabilities, then the following applies:

- the AVC-FullHD playback requirements as defined in clause 4.2.1.3.2.4 shall be supported.

- the HEVC-FullHD playback requirements as defined in clause 4.2.2.3.2.4 shall be supported.

- the HEVC-UHD playback requirements as defined in clause 4.2.2.3.3.4 may be supported.

#### 5.2.7.3 Speech media profiles

If the 5GMSd Client supports the reception of speech, then the following shall be supported:

- the **EVS** playback requirements as defined in 3GPP TS 26.117 [4] clause 7.4.2.4.

If the 5GMSd Client supports the reception of speech, then the following should be supported:

- the **AMR-WB** playback requirements as defined in 3GPP TS 26.117 [4] clause 7.3.2.4.

If the 5GMSd Client supports the reception of speech, then the following may be supported:

- the **AMR** playback requirements as defined in 3GPP TS 26.117 [4] clause 7.2.2.4.

#### 5.2.7.4 Audio media profiles

If the 5GMSd Client supports the reception of audio, then the following should be supported:

- the **xHE-AAC stereo** playback requirements as defined in 3GPP TS 26.117 [4] clause 7.8.4.

If the 5GMSd Client supports the reception of audio, then the following shall be supported:

- the **eAAC+ stereo** playback requirements as defined in 3GPP TS 26.117 [4] clause 7.6.2.4.

If the 5GMSd Client supports the reception of audio, then the following may be supported:

- the **AMR-WB+** playback requirements as defined in 3GPP TS 26.117 [4] clause 7.7.2.4.

#### 5.2.7.5 Subtitle media profiles

If the 5GMSd Client supports the reception of subtitle, then the following should be supported:

- the IMSC1.1 text track playback requirements as defined in clause 4.5.1.5.

#### 5.2.7.6 Encrypted content

If the 5GMSd Client supports encrypted content and any of the video playback requirement as defined in clause 5.2.7.2, then the 5GMSd client shall support the playback requirements for encrypted content as documented in clause 8 of CTA-WAVE 5003 [9], clause 8.12 for either:

- video content encrypted according to [7] clause 8, using the 'cenc' AES-CTR subsample pattern encryption scheme, as specified in [8], clause 10.1; or

- video content encrypted according to [7] clause 8, using the 'cbcs' AES-CBC subsample pattern encryption scheme, as specified in [8], clause 10.4, with the following restrictions Pattern Block length of 10 and an encrypt:skip pattern of 1:9 as defined in clause 9.6 of [8].

If the 5GMSd Client supports decrypted content and any of the video playback requirement in clause 5.2.7.2, then the 5GMSd client should support the playback requirements for encrypted content as documented in clause 8 of CTA-WAVE 5003 [9], clause 8.12 for both:

- video content encrypted according to [7] clause 8, using the 'cenc' AES-CTR subsample pattern encryption scheme, as specified in [8], clause 10.1; and

- video content encrypted according to [7] clause 8, using the 'cbcs' AES-CBC subsample pattern encryption scheme, as specified in [8], clause 10.4, with the following restrictions Pattern Block length of 10 and an encrypt:skip pattern of 1:9 as defined in clause 9.6 of [8].

If the 5GMSd Client supports encrypted content and any of the speech and audio playback requirement in clause 5.2.7.3 and clause 5.2.7.4, then the 5GMSd client shall support the playback requirements for encrypted content as documented in clause 8 of CTA-WAVE 5003 [9], clause 8.12 for either:

- audio content encrypted according to [7] clause 8, using the 'cenc' AES-CTR subsample pattern encryption scheme, as specified in [8], clause 10.1; or

- audio content encrypted according to [7] clause 8, using the 'cbc1' AES-CBC subsample pattern encryption scheme, as specified in [8], clause 9.7.

If the 5GMSd client supports encrypted content and any of the speech and audio playback requirement in clause 5.2.7.3 and clause 5.2.7.4, then the 5GMSd client should support the playback requirements for encrypted content as documented in clause 8 of CTA-WAVE 5003 [9], clause 8.12 for both:

- audio content encrypted according to [7] clause 8, using the 'cenc' AES-CTR subsample pattern encryption scheme, as specified in [8], clause 10.1; and

- audio content encrypted according to [7] clause 8, using the 'cbc1' AES-CBC subsample pattern encryption scheme, as specified in [8], clause 9.7.

Any subtitle track, if present, should not be encrypted.

### 5.2.8 Capability discovery

#### 5.2.8.1 General

A 5GMSd Client is expected to support capability discovery such that 5GMS-Aware Applications can identify if a specific media profile is supported. In order to identify whether a media profile is supported, the 5GMSd Client may provide an API as defined in TS 26.512 [10] via the M7d interface, for which the client can be queried with a specific MIME type string, if the media profile is supported.

The MIME types follow RFC 6381 [11].

A 5GMSd Client should support at least one of the following capability discovery mechanisms for media profiles:

- If isTypeSupported() for the media profile with argument <profiles> results in a yes, then the respective media profile is supported with the requirements defined in a specific clause.

- If isTypeSupported() for the media profile with argument <codecs> results in a yes, then the respective media profile is supported with the requirements defined in a specific clause.

- If a conforming CMAF header is provided for playback initialization and the 5GMSd Client does not throw an error response, then the respective media profile is supported with the requirements defined in a specific clause.

For each media profile mentioned in clause 5.2.6, the <profiles> parameter and the <codecs> parameter are provided in the following. These parameters should be used in the capability exchange.

#### 5.2.8.2 Video media profiles

NOTE: In the following, "compatible" means either that the parameter is identical to the value specified or, if a different value is used for the parameter in a capability query, then it has the same positive result.

For AVC-HD:

- the <profiles> parameter is compatible to video/mp4 profiles='cmfc'

- the <codecs> parameter is compatible to either 'avc1.640028' or 'avc3.640028'

For AVC-FullHD:

- the <profiles> parameter is compatible with video/mp4 profiles='cmfc'

- the <codecs> parameter is compatible with either 'avc1.640029' or 'avc3.640029'

For AVC-UHD:

- the <profiles> parameter is compatible with video/mp4 profiles='cmfc'

- the <codecs> parameter is compatible with either 'avc1.640028' or 'avc3.640028'

For HEVC-HD:

- the <profiles> parameter is compatible with video/mp4 profiles='cmfc'

- the <codecs> parameter is compatible with either 'hvc1.1.2.L93.B0' or 'hev1.1.2.L93.B0'

For HEVC-FullHD:

- the <profiles> parameter is compatible with video/mp4 profiles='cmfc'

- the <codecs> parameter is compatible with either 'hvc1.2.4.L123.B0' or 'hev1.2.4.L123.B0'

For HEVC-UHD:

- the <profiles> parameter is compatible with video/mp4 profiles='cmfc'

- the <codecs> parameter is compatible with either 'hvc1.2.4.L153.B0' or 'hev1.2.4.L153.B0'

#### 5.2.8.3 Audio media profiles

For AMR:

- the <profiles> parameter is defined in TS 26.117, clause 7.2.2.4 as audio/mp4 profiles='camr'

- the <codecss> parameter is defined in TS 26.117, clause 7.2.2.4 as 'samr'

For AMR-WB:

- the <profiles> parameter is defined in TS 26.117, clause 7.3.2.4 as audio/mp4 profiles='camw'

- the <codecs> parameter is defined in TS 26.117, clause 7.3.2.4 as 'samw'

For EVS:

- the <profiles> parameter is defined in TS 26.117, clause 7.4.2.4 as audio/mp4 profiles='cevs'

- the <codecs> parameter is defined in TS 26.117, clause 7.4.2.4 as 'sevs'

For xHE-AAC stereo:

- the <profiles> parameter is defined in TS 26.117, clause 7.8 as audio/mp4 profiles='casu'

- the <codecs> parameter is defined in TS 26.117, clause 7.8 as 'mp4a'

For eAAC+ stereo:

- the <profiles> parameter is defined in TS 26.117, clause 7.6.2.4 as audio/mp4 profiles='ceac'

- the <codecs> parameter is defined in TS 26.117, clause 7.6.2.4 as 'mp4a'

For AMR-WB+:

- the <profiles> parameter is defined in TS:26.117, clause 7.7.2.4 as audio/mp4 profiles='camp'

- the <codecs> parameter is defined in TS:26.117, clause 7.7.2.4 as 'sawp'

#### 5.2.8.4 Subtitle media profiles

For IMSC1.1 Text Tracks:

- the <profiles> parameter is defined in ISO/IEC 23000-19 [7], clause 11.3.3 as application/mp4 profiles='im2t';

- the <codecs> parameter is defined in ISO/IEC 23000-19 [7], clause 11.3.3 as 'stpp.ttml.im2t'.

#### 5.2.8.5 Encryption mode discovery

Encryption mode discovery will be studied in due course.