**3GPP TSG- Meeting #**

**, , -  *revision of S4-240700***

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** |  | **rev** | **1** | **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:*** |  | | | | | | | | | |
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| ***Source to WG:*** |  | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
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| ***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 can be 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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Addition of IVAS to 5GMS | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Addition of IVAS Decoding and Generation Capabilities based on the IVAS Operation Point in 26.117  Recommendation for IVAS for  - Downlink Streaming Default Profile  - Uplink Streaming Default Profile  - Downlink 360 VR profile  - Uplink VR 360 Profile  Optional support for IVAS for  - Television Profile | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | No support for IVAS in 5GMS | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 3.3, 5.2.3/5.2.4, 5.2.7.3/5.2.7.4, 5.2.8.3, 5.3.3/5.3.4, 5.3.5.3/5.3.5.4, 5.4.2, 5.5.2, 5.6.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

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

## 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

5GMS 5G Media Streaming

5GMSA 5G Media Streaming Architecture

AMR Adaptive Multi Rate

AMR-WB Adaptive Multi Rate – Wide Band

API Application Programming Interface

AS Application Server

AVC Advanced Video Coding

AVC-HD Advanced Video Codec – High Definition

CMAF Common Media Application Format

DASH Dynamic Adaptive Streaming over HTTP

EVS Enhanced Voice Services

HD High Definition

HDR High Dynamic Range

HD-HDR High Definition and High Dynamic Range

HEVC High Efficiency Video Coding

HLG Hybrid Log-Gamma

HLS HTTP Live Streaming

IMSC Internet Media Subtitles and Captions

IVAS Immersive Voice and Audio Services

MPEG Moving Picture Experts Group

OMAF Omnidirectional Media Application Format

PSS Packet-switched Streaming Service

TTML Timed Text Markup Language

TV Television

UE User Equipment

UHD Ultra High Definition

VR Virtual Reality

VCL Video Coding Layer

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

### 5.2.3 Audio decoding

If the 5GMSd Client supports the reception of audio:

- the **IVAS** decoding capability should be supported as defined in 3GPP TS 26.117 [4] clause 5.2.

- **xHE-AAC stereo** decoding capability should be supported as defined in 3GPP TS 26.117 [4] clause 5.2.

NOTE: xHE-AAC® is a registered trademark of Fraunhofer in Germany and other countries and is used with Fraunhofer’s permission.

- **eAAC+** decoding capability shall be supported as defined in 3GPP TS 26.117 [4] clause 5.2.

- **AMR-WB+** decoding capability may be supported as defined in 3GPP TS 26.117 [4] clause 5.2.

### 5.2.4 Speech decoding

If the 5GMSd Client supports the reception of speech:

- the **IVAS** decoding capability should be supported as defined in 3GPP TS 26.117 [4] clause 5.2.

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

**-** the **AMR-WB** decoding capability should be supported as defined in 3GPP TS 26.117 [4] clause 5.2.

- the **AMR** decoding capability may be supported as defined in 3GPP TS 26.117 [4] clause 5.2.

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

#### 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 **IVAS** playback requirements as defined in 3GPP TS 26.117 [4] clause 7.5.2.4.

- 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 **IVAS** playback requirements as defined in 3GPP TS 26.117 [4] clause 7.5.2.4.

- 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.

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

#### 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 IVAS:

- the <profiles> parameter is defined in TS 26.117, clause 7.5.2.4 as audio/mp4 profiles='civs'

- the <codecs> parameter is defined in TS 26.117, clause 7.5.2.4 as 'sivs'

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

### 5.3.3 Audio encoding

If the 5GMS UE supports the transmission of audio:

- the sender requirements for the **eAAC+ stereo** Operation Point as defined in 3GPP TS 26.117 [4] clause 6.3.2.3 shall be supported.

- the sender requirements for the IVAS Operation Point as defined in 3GPP TS 26.117 [4] clause 6.3.5.3 should be supported;

- the sender requirements for the **xHE-AAC stereo** Operation Point as defined in 3GPP TS 26.117 [4] clause 6.3.4.3 should be supported.

### 5.3.4 Speech encoding

If the 5GMS UE supports the transmission of speech:

- the sender requirements for the IVAS Operation Point as defined in 3GPP TS 26.117 [4] clause 6.3.5.3 should be supported;

- the sender requirements for the EVS Operation Point as defined in 3GPP TS 26.117 [4] clause 6.2.4.3 shall be supported;

- the sender requirements for the AMR-WB Operation Point as defined in 3GPP TS 26.117 [4] clause 6.2.3.3 should be supported;

- the sender requirements for the AMR Operation Point as defined in 3GPP TS 26.117 [4] clause 6.2.2.3 may be supported.

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

#### 5.3.5.3 Speech media profile

If the 5GMSu Client supports the transmission of speech, then the following shall be supported:

- the EVS content generation requirements as defined in 3GPP TS 26.117 [4] clause 7.4.2.5.

If the 5GMSu Client supports the transmission of speech, then the following should be supported:

- the IVAS content generation requirements as defined in 3GPP TS 26.117 [4] clause 7.5.2.5.

- the AMR-WB content generation requirements as defined in 3GPP TS 26.117 [4] clause 7.3.2.5.

If the 5GMSu Client supports the transmission of speech, then the following may be supported:

- the AMR content generation requirements as defined in 3GPP TS 26.117 [4] clause 7.2.2.5.

#### 5.3.5.4 Audio media profile

If the 5GMSu Client supports the transmission of audio, then the following shall be supported:

- the eAAC+ stereo content generation requirements as defined in 3GPP TS 26.117 [4] clause 7.6.2.5.

If the 5GMSu Client supports the transmission of audio, then the following should be supported:

- the IVAS content generation requirements as defined in 3GPP TS 26.117 [4] clause 7.5.2.5.

- the xHE-AAC stereo content generation requirements as defined in 3GPP TS 26.117 [4] clause 7.8.5.

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

### 5.4.2 Audio decoding

If the 5GMSd Client supports the Television (TV) profile, it shall support *eAAC+ stereo* Operation point as defined in 3GPP TS 26. 117 [4], clause 6.3.2.

If the 5GMSd Client supports the Television (TV) profile, it should support *xHE-AAC stereo* Operation point as defined in 3GPP TS 26. 117 [4], clause 6.3.4.

If the 5GMSd Client supports the Television (TV) profile, it may support *IVAS* Operation point as defined in 3GPP TS 26. 117 [4], clause 6.3.5.

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

### 5.5.2 Audio

#### 5.5.2.1 Operation Points

If the 5GMS UE supports 3D/VR audio, it should include a receiver that complies with:

- the *3GPP MPEG-H Audio* Operation Point Receiver requirements as specified in TS 26.118 [13], clause 6.1.4.

- the *IVAS* Operation Point Receiver requirements as defined in 3GPP TS 26. 117 [4], clause 6.3.5.2

#### 5.5.2.2 DASH encapsulation

If the 5GMS UE supports 3D/VR audio for DASH services, it should include a receiver that complies with:

- the *OMAF 3D Audio Baseline* Media Profile Receiver requirements for file format signalling and encapsulation as specified in TS 26.118 [13], clause 6.2.2.3.

- the *CMAF IVAS* Media Profile Receiver requirements for file format signalling and encapsulation as specified in TS 26.117 [4], clause 7.5.2.4.

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

### 5.6.2 Audio

#### 5.6.2.1 Operation Points

If the 5GMS UE supports 3D/VR audio, it should include an encoder that can encode a bitstream that can be decoded by a receiver that complies with:

- the 3GPP MPEG-H Audio Operation Point Receiver requirements as specified in TS 26.118 [13], clause 6.1.4.

- the *IVAS* Operation Point Receiver requirements as defined in 3GPP TS 26. 117 [4], clause 6.3.5.2

#### 5.6.2.2 Encapsulation

Media Encapsulation in 5G Media Streaming for uplink is defined based on the MPEG Common Media Application Format (CMAF) [7]. A sender shall at least support the generation of CMAF tracks.

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