**3GPP TSG SA WG4#109-e meeting *S4-200967***

**20th May – 3rd June 2020**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **26.140** | **CR** | **0020** | **rev** | **-** | **Current version:** | **15.0.0** |  |
|  |
| *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:***  | Removing H.263 from MMS |
|  |  |
| ***Source to WG:*** | Qualcomm Incorporated |
| ***Source to TSG:*** | SA4 |
|  |  |
| ***Work item code:*** | RM\_H263\_MP4V |  | ***Date:*** | 2020-06-01 |
|  |  |  |  |  |
| ***Category:*** | **C** |  | ***Release:*** | Rel-16 |
|  | *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)* |
|  |  |
| ***Reason for change:*** | H.263 was a state-of-the art codec in the last millennium and made mobile video possible and an actual reality. Many 3GPP specs adopted H.263 and H.263 was the format of choice for the first mobile video deployments. However, more than 20 years later, this format has done its duty and 3GPP should feel good about sending this codec to retirement as part of their Rel-16 specs.In 2012 (Rel-11), 3GPP already addressed to change the status of H.263 and MPEG-4 Video in several specifications, but did not fully remove the technology for all services.Why is it relevant to retire older codecs? Supporting codecs on hardware is a significant amount effort and cost, including area size, design and testing. Even if the codec is supported in SW only (which may well be ok for H.263), it still requires a significant amount of unnecessary and costly testing efforts. Supporting such codecs on newly shipping 5G device will just reduce space for new codecs and technologies to be potentially added. One important reason is, that despite on Android there is SW codec for these formats, there are more and more devices such as watches which which do not use Android and hence would require custom H.263 integration. |
|  |  |
| ***Summary of change:*** | Remove recommendation for H.263Add a note that the technology was recommended/mandatory in earlier Releases. |
|  |  |
| ***Consequences if not approved:*** | Unnecessary costs for testing and implementation |
|  |  |
| ***Clauses affected:*** | 2, 3.2, 4.7 |
|  |  |
|  | **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:*** |  |

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

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] The Unicode Consortium: "The Unicode Standard", Version 2.0, Addison-Wesley Developers Press, 1996.URL: http://www.unicode.org/.

[3] ANSI X3.4, 1986: "Information Systems; Coded Character Set 7 Bit; American National Standard Code for Information Interchange".

[4] ISO/IEC 8859-1:1998: "Information technology; 8-bit single-byte coded graphic character sets; Part 1: Latin alphabet No. 1".

[5] IETF; RFC 2279: "UTF-8, A Transformation format of ISO 10646", URL: http://www.ietf.org/rfc/rfc2279.txt.

[6] 3GPP TS 24.011: "Point‑to‑Point (PP) Short Message Service (SMS) support on mobile radio interface".

[7] 3GPP TS 26.090: "AMR speech Codec Transcoding functions".

[8] ITU-T Recommendation T.81: "Information technology; Digital compression and coding of continuous-tone still images: Requirements and guidelines".

[9] "JPEG File Interchange Format", Version 1.02, September 1, 1992.

[10] ITU-T Recommendation H.263 (02/98): "Video coding for low bit rate communication".

[11] ITU-T Recommendation H.263 – Annex X (03/04): "Annex X: Profiles and levels definition".

[12] (void).

[13] (void).

[14] 3GPP TS 26.234: "End-to-end transparent streaming Service; Protocols and codecs".

[15] CompuServe Incorporated: "GIF Graphics Interchange Format: A Standard defining a mechanism for the storage and transmission of raster-based graphics information", Columbus, OH, USA, 1987.

[16] Compuserve Incorporated, Columbus, Ohio (1990): "Graphics Interchange Format (Version 89a)".

[17] IETF RFC 2083: "PNG (Portable Networks Graphics) Specification version 1.0 ", T. Boutell, et. al., March 1997.

[18] (void).

[19] ISO/IEC 14496-3:2001, "Information technology -- Coding of audio-visual objects -- Part 3: Audio".

[20] W3C Last Call Working Draft: "Scalable Vector Graphics (SVG) 1.2", <http://www.w3.org/TR/2004/WD-SVG12-20041027/>, October 2004.

[21] W3C Last Call Working Draft: "Mobile SVG Profile: SVG Tiny, Version 1.2", <http://www.w3.org/TR/2004/WD-SVGMobile12-20040813/>, August 2004.

[22] 3GPP 22.140: "Service Aspects; Stage 1; Multimedia Messaging Service".

[23] 3GPP 23.140: "Multimedia Messaging Service (MMS); Functional Description; Stage 2".

[24] W3C Recommendation: "Synchronized Multimedia Integration Language (SMIL 2.0)", <http://www.w3.org/TR/2001/REC-smil20-20010807/>, August 2001.

[25] IETF RFC 2046: "Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types".

[26] 3GPP TS 26.071: "Mandatory Speech Codec speech processing functions; AMR Speech Codec; General description".

[27] 3GPP TS 26.171: "Speech codec speech processing functions; Adaptive Multi-Rate - Wideband (AMR-WB) speech codec; General description".

[28] Scalable Polyphony MIDI Specification Version 1.0, RP-34, MIDI Manufacturers Association, Los Angeles, CA, February 2002.

[29] Scalable Polyphony MIDI Device 5-to-24 Note Profile for 3GPP, RP-35, MIDI Manufacturers Association, Los Angeles, CA, February 2002.

[30] WAP Forum Specification: "XHTML Mobile Profile", <http://www1.wapforum.org/tech/terms.asp?doc=WAP-277-XHTMLMP-20011029-a.pdf>, October 2001.

[31] "Standard MIDI Files 1.0", RP-001, in "The Complete MIDI 1.0 Detailed Specification, Document Version 96.1" The MIDI Manufacturers Association, Los Angeles, CA, USA, February 1996.

[32] IETF RFC 3267: "RTP payload format and file storage format for the Adaptive Multi-Rate (AMR) Adaptive Multi-Rate Wideband (AMR-WB) audio codecs ", March 2002.

[33] 3GPP TS 26.244: "Transparent end-to-end packet switched streaming service (PSS); 3GPP file format (3GP)"

[34] 3GPP TS 26.246: "Transparent end-to-end packet switched streaming service (PSS); 3GPP SMIL Language Profile".

[35] 3GPP TS 26.245: "Transparent end-to-end packet switched streaming service (PSS); Timed text format"

[36] IETF RFC 1952 "GZIP file format specification version 4.3", Deutsch P, May 1996.

[37] (void)

[38] Mobile DLS, MMA specification v1.0. RP-41 Los Angeles, CA, USA. 2004.

[39] Mobile XMF Content Format Specification, MMA specification v1.0., RP-42, Los Angeles, CA, USA. 2004.

[40] 3GPP TS 26.090: "Mandatory Speech Codec speech processing functions; Adaptive Multi-Rate (AMR) speech codec; Transcoding functions".

[41] 3GPP TS 26.073: "ANSI-C code for the Adaptive Multi Rate (AMR) speech codec".

[42] 3GPP TS 26.104: "ANSI-C code for the floating-point Adaptive Multi Rate (AMR) speech codec".

[43] 3GPP TS 26.190: "Speech Codec speech processing functions; AMR Wideband speech codec; Transcoding functions".

[44] 3GPP TS 26.173: "ANCI-C code for the Adaptive Multi Rate - Wideband (AMR-WB) speech codec".

[45] 3GPP TS 26.204: "ANSI-C code for the Floating-point Adaptive Multi-Rate Wideband (AMR-WB) speech codec".

[46] 3GPP TS 26.290: "Extended AMR Wideband codec; Transcoding functions".

[47] 3GPP TS 26.304: "ANSI-C code for the Floating-point; Extended AMR Wideband codec".

[48] 3GPP TS 26.273: "ANSI-C code for the Fixed-point; Extended AMR Wideband codec".

[49] 3GPP TS 26.401: "General audio codec audio processing functions; Enhanced aacPlus general audio codec; General description".

[50] 3GPP TS 26.410: "General audio codec audio processing functions; Enhanced aacPlus general audio codec; Floating-point ANSI-C code".

[51] 3GPP TS 26.411: "General audio codec audio processing functions; Enhanced aacPlus general audio codec; Fixed-point ANSI-C code".

[52] ITU-T Recommendation H.264 (04/2013): "Advanced video coding for generic audiovisual services".

[53] (void)

[54] "Exchangeable image file format for digital still cameras: EXIF 2.2", Specification by the Japan Electronics and Information Technology Industries Association (JEITA), April 2002, URL: <http://www.exif.org/>

[55] Standard ECMA-327: "ECMAScript 3rd Edition Compact Profile", June 2001.

[56] "Digital Rights Management", Open Mobile AllianceTM, OMA-Download-DRM-v1\_0, <http://www.openmobilealliance.org/>

[57] "DRM Rights Expression Language", Open Mobile AllianceTM, OMA-Download-DRMREL-v1\_0, <http://www.openmobilealliance.org/>

[58] "DRM Content Format", Open Mobile AllianceTM, OMA-Download-DRMCF-v1\_0, <http://www.openmobilealliance.org/>

[59] "vObject Minimum Interoperability Profile", Open Mobile AllianceTM, OMA-TS-vObjectOMAProfile-V1\_0, <http://www.openmobilealliance.org/>

[60] 3GPP TR [26.936](http://www.3gpp.org/ftp/Specs/html-info/26936.htm): "Performance characterization of 3GPP audio codecs".

[61] (void)

[62] ITU-T Recommendation H.265 (04/2013): "High efficiency video coding".

[63] 3GPP TS 26.307 "Presentation Layer for 3GPP Services".

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## 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply:

3GP 3GPP file format

AAC Advanced Audio Coding

AVC Advanced Video Coding

CC/PP Composite Capability/Preference Profiles

CPB Coding Picture Buffer

DIMS Dynamic and Interactive Multimedia Scene

DLS Downloadable Sounds

DRM Digital Rights Management

Enhanced aacPlus MPEG-4 High Efficiency AAC plus MPEG-4 Parametric Stereo

EXIF Exchangeable image file format

GIF Graphics Interchange Format

HDTV High-definition television

HEVC High Efficiency Video Coding

ITU-T International Telecommunications Union - Telecommunications

JFIF JPEG File Interchange Format

JPEG Joint Picture Expert Group

MIDI Musical Instrument Digital Interface

MIME Multipurpose Internet Mail Extensions

MM Multimedia Message

MMS Multimedia Messaging Service

MPEG Motion Picture Expert Group

MP4 MPEG-4 file format

PIM Personal Information Manager

PSS Packet-switched Streaming Service

SBR Spectral Band Replication

SP-MIDI Scalable Polyphony MIDI

SVG Scalable Vector Graphics

UTF-8 Unicode Transformation Format (the 8-bit form)

VCL Video Coding Layer

XMF Extensible Music Format

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

## 4.7 Video

If video is supported, the following applies:

- H.264 (AVC) [52] Constrained Baseline Profile (CBP) Level 1.3 shall be supported.

- H.264 (AVC) [52] High Profile Level 3.1 with frame\_mbs\_only\_flag=1 should be supported by MMS clients supporting HDTV video content at a resolution of 1280x720 (720p) with progressive scan at 30 frames per second. Maximum VCL Bit Rate shall be constrained to 14Mbps by cpbBrVclFactor & cpbBrNalFactor being fixed to 1000 and 1200 respectively, irrespective of the profile. Note that peak Bit Rate is determined by the CPB size.

- H.265 (HEVC) [62] Main Profile, Main Tier, Level 3.1 decoder should be supported. H.265 (HEVC) Main Profile shall be used with general\_progressive\_source\_flag equal to 1, general\_interlaced\_source\_flag equal to 0, general\_non\_packed\_constraint\_flag equal to 1, and general\_frame\_only\_constraint\_flag equal to 1.

NOTE: H.263 profile 0 level 45 [10][11] was mandatory or recommended in earlier Releases of this specification.

If stereoscopic 3D video is supported, ITU-T Recommendation H.264 / MPEG-4 (Part 10) AVC [52] Stereo High Profile (SHP) Level 3.1 with frame\_mbs\_only\_flag=1 should be supported. When an H.264 (AVC) SHP sub-bitstream containing the base view only complies with Level 1.3 or below, it should be constrained as follows: the value of the profile\_idc should be equal to 66 and the value of the constraint\_set1\_flag should be equal to 1 in all active sequence parameter sets, i.e. the H.264 (AVC) Constrained Baseline Profile should be indicated to be used for the base view.

NOTE: When the base view sub-bitstream of the MM complies with H.264 (AVC) CPB Level 1.3 or below, the base view of an MM can be played back by any MMS (Release 11) client supporting video, or the MM can be modified without re-encoding to an MM including 2D video to be played back in H.264 (AVC) CPB compatible MMS clients.

There are no requirements on output timing conformance of H.264 (AVC) decoding (Annex C of [52]) or H.265 (HEVC) decoding (Annex C of [62]).