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INTERNATIONAL STANDARD

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Digital living network alliance (DLNA) home networked device interoperability guidelines –
Part 2: DLNA media formats

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

DIGITAL LIVING NETWORK ALLIANCE (DLNA) HOME NETWORKED DEVICE INTEROPERABILITY GUIDELINES –

Part 2: DLNA media formats

FOREWORD

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International Standard IEC 62481-2 has been prepared technical area 9: Audio, video and multimedia applications for end-user network, by IEC technical committee 100: Audio, video and multimedia systems and equipment.

This second edition cancels and replaces the first edition published in 2007, and constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) addition of new optional media format profiles for Audio and AV content;

b) addition of mandatory media format profiles for the CVP-1 Device Profile;

c) includes updates to resolve interoperability issues.

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The text of this standard is based on the following documents:

CDV	Report on voting
100/1993/CDV	100/2081/RVC

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of IEC 62481 series, published under the general title *Digital living network alliance (DLNA) home networked device interoperability guidelines,* can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

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INTRODUCTION

It is envisioned that in the home network environment, devices will be capable of exchanging content items that originate from different sources. Content items will typically come encoded in different formats. The term "format" designates the compression and encoding tools utilized to generate the binary instance of a content item, which will be eventually exchanged over the home network using streaming or file transfer protocols. Examples of formats include MPEG-2, MPEG-4, WMV and others for video; or MP3, AAC, WMA and others for audio.

Formats alone, however, include as part of their specifications, multiple parameters, features and tools which can be used in a myriad of combinations to generate content binaries. In this standard, the notion of a Media Format Profile is introduced to identify a particular suitable combination of format parameters which define a way for representing content binaries. A format like MPEG-2 for example, can have multiple Media Format Profiles depending on selections for the companion audio, the system-layer multiplexing specifications, allowed frame resolutions, allowed aspect ratios, allowed bit rates, etc.

The number of potential combinations for suitable Media Format Profiles increases rather quickly, as evidenced by the long profile lists observed in the different clauses and subclauses of this standard. Consequently, this standard introduces the notion of mandatory profiles, supported by all devices, as a means to provide baseline content interoperability in the home. Servers shall be capable of exposing and transferring mandatory profiles while players and renderers shall be capable of decoding and rendering the mandatory profiles. Unfortunately, mandatory Media Format Profiles cannot be defined universally to suit all scenarios. For this reason, the definition of mandatory profiles has to be made taking into account the geographical region and the target device category. Clause 6 provides the definitions and requirements for using mandatory profiles.

All profiles not defined as mandatory become optional in the home. An implementer can choose whether to support optional profiles. When supported and used with DLNA’s discovery and transfer methods, it shall follow the guideline provisions for encoding and exposing optional profiles.

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DIGITAL LIVING NETWORK ALLIANCE (DLNA) HOME NETWORKED DEVICE INTEROPERABILITY GUIDELINES –

Part 2: DLNA media formats

1 Scope

This part of IEC 62481 describes DLNA Media Format Profiles applicable to the DLNA Device Classes defined in IEC 62481-1. Media Format Profiles are defined for each of the following media classes: Audio, Image, and AV. In addition, Profile ID values that identify media collections and printer XHTML documents are also introduced.

The Profile ID is exposed in a server's Content Directory Service (CDS) to signal potential networked players or renderers the existence of a content item with particular coding and compression features defined precisely by the item's Profile ID.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62481-1:2013, *Digital living network alliance (DLNA) home networked device interoperability guidelines – Part 1: Architecture and protocols*

ISO/IEC 10918-1:1994, *Information technology – Digital compression and coding of continuous-tone still images: Requirements and guidelines*

ISO/IEC 11172-1:1993, *Information technology – Coding of moving pictures and associated audio for digital storage media at up to about 1,5 Mbit/s – Part 1: Systems*

ISO/IEC 11172-2:1993, *Information technology – Coding of moving pictures and associated audio for digital storage media at up to about 1,5 Mbit/s – Part 2: Video*

ISO/IEC 11172-3:1993, *Information technology – Coding of moving pictures and associated audio for digital storage media at up to about 1,5 Mbit/s – Part 3: Audio*

ISO/IEC 13818-1:2000, *Information technology – Generic coding of moving pictures and associated audio information – Part 1: Systems*

ISO/IEC 13818-2:2000, *Information technology – Generic coding of moving pictures and associated audio information – Part 2: Video*

ISO/IEC 13818-3:1998, *Information technology – Generic coding of moving pictures and associated audio information – Part 3: Audio*

ISO/IEC 13818-7:2003, *Information technology – Generic coding of moving pictures and associated audio information – Part 7: Advanced Audio Coding (AAC)*

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ISO/IEC 13818-7:2003/Amd 1:2004, *Information technology – Generic coding of moving pictures and associated audio information – Part 7: Advanced Audio Coding (AAC) Amendment 1: Embedding of bandwidth extension*

ISO/IEC 13818-7:2005, *Information technology – Generic coding of moving pictures and associated audio information– Part 7: Advanced Audio Coding (AAC)*

ISO/IEC 13818-7:2006/Amd 1: 2007, *Information technology – Coding of Audio-Visual Objects – Part 7: Advanced Audio Coding (AAC) Amendment 1*

ISO/IEC 13818-11:2004, *Information technology – Generic coding of moving pictures and associated audio information – Part 11:IPMP on MPEG-2 Systems:*

ISO/IEC 14496-1:2001, *Information Technology – Coding of Audio-Visual Objects – Part 1: Systems*

ISO/IEC 14496-2:2001, *Information technology – Coding of audio-visual objects – Part 2: Visual*[1]

ISO/IEC 14496-2:2001/Amd 2:2002, *Information Technology – Coding of audio-visual objects – Part 2: Visual, Amendment 2: Streaming video profile*

ISO/IEC 14496-2:2004, *Information Technology – Coding of audio-visual objects – Part 2: Visual*

ISO/IEC 14496-2:2004/ Amd 1, *Information Technology – Coding of Audio-Visual Objects – Part 2: Visual, AMENDMENT 1: Error resilient simple scalable profile*

ISO/IEC 14496-2:2004/Amd 2:2005, *Information Technology – Coding of audio-visual objects – Part 2: Visual, Amendment 2: "New Levels for Simple Profile"*

ISO/IEC 14496-2:2004/Amd 3 – *Coding of audio-visual objects – Part 2: Visual, Amendment 3:New levels and tools for MPEG-4 visual*

ISO/IEC 14496-2:2004/PDAM 4, *Information Technology – Coding of Audio-Visual Objects – Part 2: Visual, Amendment 4, Simple profile Level 6*

ISO/IEC 14496-3:2001, *Information technology – Coding of Audio-Visual Objects – Part 3: Audio*

ISO/IEC 14496-3:2001/Amd.1:2003, *Information technology – Coding of Audio-Visual Objects – Part 3: Audio, Amendment 1: Bandwidth extension*

ISO/IEC 14496-3:2005, *Information technology – Coding of audio-visual objects: Audio*

ISO/IEC 14496-3:2005/Amd 2:2006, *Information technology – Coding of Audio-Visual Objects – Part 3: Audio, Amendment 2: Audio Lossless Coding (ALS), new audio profiles and BSAC extensions*

ISO/IEC 14496-3:2005/Amd 2:2006/Cor 2, *Information technology – Coding of Audio-Visual Objects – Part 3: Audio, Amendment 2, Technical Corrigendum 2*

ISO/IEC 14496-4, *Information technology – Coding of audio-visual objects – Part 4: Conformance testing*[2]

_____

1 In this standard referenced as MPEG 4, part 2.

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ISO/IEC 14496-10:2003, MPEG-4 Video, *Information technology – Coding of audio-visual objects – Part 10: Advanced Video Coding*[3]

ISO/IEC 14496-12:2004, *Information technology – Coding of Audio-Visual Objects – Part 12: ISO base media file format*

ISO/IEC 14496-14:2003, *Information technology – Coding of Audio-Visual Objects – Part 14: MP4 file format*[4]

ISO/IEC 14496-15:2004, *Information technology – Coding of Audio-Visual Objects – Part 15: AVC file format*

ISO/IEC 15948:2004, *Information technology – Computer graphics and image processing – Portable Network Graphics (PNG): Functional specification,* International Standard Organization

ISO/IEC 23003-1:2007, *Information technology – MPEG audio technologies – Part 1: MPEG Surround*

ISO/IEC 29341-3-12:2008, *Information technology – UPnP Device Architecture – Part 3-12: Audio Video Device Control Protocol – Content Directory Service*

ITU-R Rec BS.1196-11, *Audio coding for digital terrestrial television broadcasting, Annex 2 (Dolby* AC-3 Audio),* International Telecommunication Union, April 2001

ITU-R Rec BO.1516, *Digital multiprogramme television systems for use by satellite operating in the 11/12 GHz frequency range, System B,* International Telecommunications Union, 2001

ITU-T Rec H.263:2005, *Video coding for low bit rate communication*

ITU-T Rec H.263 Annex X, *Profiles and levels definition*

ITU-T Rec G.726, *General Aspects of Digital Transmission Systems, Terminal Equipment – 40, 32, 24,16 kbit/s Adaptive Differential Pulse Code Modulation (ADPCM)*,1990

ETSI EN 300 468, *Specification for Service Information (SI) In DVB systems (SI),* V1.5.1 (2003-05), Digital Video Broadcasting (DVB), European Telecommunications Standard Institute. http://pda.etsi.org/pda/home.asp?wki_id=U4j.cLPj9hPQUQUWcyK@f

ETSI EN 300 468, *Specification for Service Information (SI) In DVB systems (SI),* Digital Video Broadcasting (DVB), v1.10.1, European Telecommunications Standard Institute (2009-07) (This is an update of ETSI EN 300 468)

ETSI EN 300 472, *Specification for conveying ITU-R System B Teletext in DVB bitstreams (DVB Teletext),* V1.3.1 (2003-05), Digital Video Broadcasting (DVB), European Telecommunications Standard Institute
http://pda.etsi.org/pda/home.asp?wki_id=a0DKmDqQGXpqwwpsWuZ3v

ETSI EN 300 743, *Subtitling systems (DVB Subtitles), V1.2.1 (2002-10),* Digital Video Broadcasting (DVB), European Telecommunications Standard Institute
http://pda.etsi.org/pda/home.asp?wki_id=l6LxE44yeylmqmqq@b59E

---

2 In this standard referenced as MPEG 4, part 4.

3 In this standard referenced as MPEG 4, part 10.

4 In this standard referenced as MPEG 4, part 14.

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ETSI EN 300 743, *Subtitling systems,* Digital Video Broadcasting (DVB), v1.3.1, (2006-07) (This is an update of ETSI EN 300 743)

ETSI EN 301 192, *DVB Specification for Data broadcasting (DVB data broadcasting),* V1.3.1 (2003-05), European Telecommunications Standard Institute
http://pda.etsi.org/pda/home.asp?wki_id=iSlfFHo2bsMNRNRSwmkAp

ETSI EN 301 775, *Specification for the carriage of Vertical Blanking Information (VBI) data in DVB bitstreams (DVB VBI data),* European Telecommunications Standard Institute, V1.2.1 (2003-05), Digital Video Broadcasting (DVB)
http://pda.etsi.org/pda/home.asp?wki_id=2760SgqWfSklrrkocwSOy

ETSI ES 201 812, *Multimedia Home Platform (MHP) specification 1.0.3 (DVB-MHP),* V1.1.1 (2003-12), Digital Video Broadcasting (DVB), European Telecommunications Standard Institute
http://pda.etsi.org/pda/home.asp?wki_id=EmytK-ljBPIJQQIIzKtBe

ETSI TSR 101 154, *Implementation Guidelines for the use of MPEG-2 Systems, Video and Audio Coding in Broadcasting Applications based on the MPEG-2 Transport Stream,* V1.4.1 (20040-057), Digital Video Broadcasting (DVB*), European Telecommunications Standard Institute
http://webapp.etsi.org/action/PU/20050111/ts_101154v010601p.pdf

ETSI TS 101 154, *Implementation guidelines for the use of Video and Audio Coding in Broadcasting Applications based on the MPEG-2 Transport Stream,* Digital Video Broadcasting (DVB); v1.7.1 (2005-06) (This is an update of ETSI TSR 101 154)

ETSI TS 101 154, *Implementation guidelines for the use of Video and Audio Coding in Broadcasting Applications based on the MPEG-2 Transport Stream,* Digital Video Broadcasting (DVB), v1.9.1 (2009-09) (This is an update of ETSI TS 101 154)

ETSI TS 102 005, *Specification for the use of video and audio coding in DVB services delivered directly over IP,* Digital Video Broadcasting (DVB), Version 1.2.1, 2006-04

ETSI TS 102 114, *DTS Coherent Acoustics; Core and Extensions,* 2006

ETSI TS 102 366, *Digital Audio Compression (AC-3, Enhanced AC-3) Standard,* Version 1.1.1, 2005-02

ETSI TS 102 366, *Digital Audio Compression (AC-3, Enhanced AC-3) Standard*, v1.2.1 (2008-08) (This is an update of ETSI TS 102 366)

ETSI TS 102 563, *Transport of Advanced Audio Coding AAC) audio,* Digital Audio Broadcasting (DAB), Version 1.1.1, 2007-01

IETF RFC 1945, *Hypertext Transfer Protocol – HTTP/1.0,* T. Berners-Lee, MIT/LCS, R. Fielding, UC Irvine, H. Frystyk, May 1996.
http://www.ietf.org/rfc/rfc1945.txt

IETF RFC 2046, *Multipurpose Internet Mail Extensions (MIME) – Part Two: Media Types,* November 1996

IETF RFC 2616, *Hypertext Transfer Protocol HTTP/1.1.*
ftp://ftp.isi.edu/in-notes/rfc2616.txt

IETF RFC 3551, *RTP Profile for Audio and Video Conferences with Minimal Control,* H. Schulzrinne and S. Casner, July 2003
http://www.ietf.org/rfc/rfc3551.txt

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IETF RFC 3555, *MIME Type Registration of RTP Payload Formats,* S. Casner, Packet Design, P. Hoschka, July 2003
http://www.ietf.org/rfc/rfc3555.txt

ANSI/SCTE 43:2005, *Digital Video Systems Characteristics Standard for Cable Television*, 2005

ANSI/SCTE 65:2008, *Service Information Delivered Out-Of-Band For Digital Cable Television*

ANSI/SCTE-128:2010, *AVC Video Systems and Transport Constraints for Cable Television*

ARIB STD B-1, Ver.2.0, *Digital Receiver for Digital Satellite Broadcasting Services using Communication Satellites*, Mar 14 2007

ARIB TR B-14, Ver. 2.7, *Operational Guidelines For Digital Terrestrial Television Broadcasting*, March 14 2006

ARIB TR B-15, Ver. 3.6, *Operational Guidelines For Digital Satellite Broadcasting*, March 14 2006

ARIB STD B-21, Ver. 4.4, *Receiver for Digital Broadcasting*, Sept 29 2005

ARIB B 24, ARIB* STD-B24 Version 3.2, *Data Coding and Transmission Specification for Digital Broadcasting*, Association of Radio Industries and Businesses, November 15, 2001
http://www.arib.or.jp/english/html/overview/sb_e.html

ARIB STD B-32, Ver. 1.9, *Video Coding, Audio Coding and Multiplexing Specifications for Digital Broadcasting*, March 14 2006

ASF, *Advanced System Format (ASF) Specification*
which can be obtained from
http://www.microsoft.com/windows/windowsmedia/format/asfspec.aspx

ATRAC3plus specification,
which can be obtained from ATRAC3 Licensing Program for DLNA, Sony, by contacting atrac_dlna@av.crl.sony.co.jp
http://www.sony.net/Products/ATRAC3/tech/atrac3plus.html

ATSC Standard A/6, *Program and System Information Protocol for Terrestrial Broadcast and Cable(PSIP)*

ATSC Standard A/52A, *Digital Audio Compression (AC-3*) Rev A*, Advanced Television Systems Committee, 20 Aug. 2001
http://www.digitalpreservation.gov/formats/fdd/fdd000209.shtml

ATSC A/53B Annex B, *ATSC Digital Television Standard: Part 1 – Digital Television System* (A/53, Part 1:2007)

ATSC Standard A/53, *Digital Television Standard*, 2007, 2009, 2010
(This is an update of the ATSC Standard A/53C:2004 ATSC Standard A/53C)

ATSC Standard A/53C:2004: *Digital Television Standard*, Revision C with Amendment 1, 21, May, 2004
http://www.atsc.org

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BDA, *System Description Blu-ray Disc Rewritable Format Part 3, Audio Visual Basic Specifications (Version 3.01)*

BDA, *System Description Blu-ray Disc Rewritable Format Part 3, Audio Visual Basic Specifications (Version 2.11)*

BDA, *System Description Blu-ray Disc Read-Only Format Part 3 Audio Visual Basic Specifications (2005-03)*

CEA-849A, *Application Profiles for EIA*-775A compliant DTVs*, CEA. (DTV), Consumer Electronics Association, December 6, 2001
http://www.ce.org/Standards/StandardsListing.aspx

CompuServe Incorporated, *Graphics Interchange Format: Version 89a*, Columbus, OH, USA, 1990

CSS Print Profile, *W3C Candidate Recommendation*, World Wide Web Consortium (W3C), February 25, 2004. Available from
http://www.w3.org/TR/css-print/

CSS3 Paged Media Module, *CSS3 Paged Media Module*, H. Lie and J. Bigelow (editor), W3C February 25, 2004
http://www.w3.org/TR/2004/CR-css3-page-20040225

DTS 9302J85300, DTS document #9302J85300, *Implementation of DTS audio in MPEG-2 structures as defined in ISO/IEC 13818-1*

DTS 9302J81100, DTS document #9302J81100, *Implementation of DTS audio in media files based on ISO/IEC 14496*

DTS 9302F30400, DTS document #9302F30400, *DTS-HD Substream and Decoder Interface Description*

DVD Specifications, *for DVD-RAM/DVD-RW/DVD-R* for General Discs Part 3 Video Recording*, DVD Forum, Version 1.1, May 2001
http://www.dvdfllc.co.jp/

DVD Specifications, *DVD for High Definition Video: MLP Reference Information*, DVD Forum, Version 1.0, August 2005

DVD Forum DVD Specifications, *for High Definition Video, DTS-HD Reference Information (Version 1.0, 2005-08)*

DVD Forum DVD Specifications, *DVD Specifications for High Definition Video (Chapter 5, Version 1.0, 2005-08)*

DVD Forum DVD Specifications, *for Read Only Disc (Part 3: Video Specifications Ver1.1)*

HighMAT specifications,
which can be obtained through the HighMAT Licensing Program
http://www.highmat.com/license/specifications.asp

ID3 tag version 2.4.0 – *Main Structure*, M. Nilsson, November 1, 2000
http://www.id3.org/id3v2.4.0-structure.txt

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JEITA CP-3451, *Exchangeable image file format for digital still cameras*: Exif Version 2.2, Standard of Japan Electronics and Information Technology Industries Association, April 2002.
http://tsc.jeita.or.jp/avs/data/cp3451.pdf

JEITA CP-3451-1, *Exchangeable image file format for digital still cameras*: Exif Version 2.21. (Amendment Ver2.2), Standard of Japan Electronics and Information Technology Industries Association, September 2003.
http://tsc.jeita.or.jp/avs/data/cp3451_1.pdf

JEITA CP-3461, *Design rule for Camera File system DCF*, Version 2.0, Standard of Japan Electronics and Information Technology Industries Association, September 2003
http://tsc.jeita.or.jp/avs/data/cp3461.pdf

JPEG File Interchange Format, Version 1.02, Eric Hamilton, C-Cube Microsystems, September 1, 1992
http://www.w3.org/Graphics/JPEG/jfif3.pdf

Matroska, *Matroska File Format specification*
http://www.matroska.org/

Nero Digital Format, *Nero Digital Format Specification v.2.0*, 2007

OMA (Open Mobile Alliance), *OMA Multimedia Messaging Service v1.3*

SCTE 54 2002, *Digital Video Service Multiplex and Transport System Standard for Cable Television*, Society of Cable Telecommunications Engineers Inc.
(formerly DVS 241)
http://www.scte.org/home.cfm

SMPTE 421M-2006, *VC-1 Compressed Video Bitstream Format and Decoding Process*, 2006

SMPTE RP227-2006, *VC-1 Bitstream Transport Encodings*, 2006

WMA Specifications
which can be obtained through the Windows Media 9 Series License Program
http://wmlicense.smdisp.net/licenserequest/

WMV9 specifications, *Windows Media 9 Series License Program*,
http://wmlicense.smdisp.net/licenserequest/

W3C PNG, *Portable Network Graphics (PNG) Specification (Second Edition) Information technology – Computer graphics and image processing – Portable Network Graphics (PNG):* Functional specification, ISO/IEC 15948:2004, W3C, November 10, 2003
http://www.w3.org/TR/2003/REC-PNG-20031110

W3C XHTML-Print, *XHTML-Print,* W3C Recommendation, World Wide Web Consortium (W3C), January 20, 2004. Available from
http://www.w3.org/TR/xhtml-print/

XHTML-Print/CSS-Print Guidelines, *XHTML-Print/CSS Print Profile Guidelines for PrintEnhanced:1*, UPnP Forum, May 4, 2005.
http://www.upnp.org/standardizeddcps/documents/PrintEnhanced1_guideline_v1_050504.pdf

XHTML Photo Templates, *XHTML-Print Photo Templates for UPnP PrintEnhanced:1 v1.0*, UPnP Forum, May 4, 2005
http://www.upnp.org/standardizeddcps/documents/Phototemplates_v1_050504.pdf

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XHTML-Print Test, *XHTML-Print Test Suite*, W3C Candidate Recommendation, World Wide Web Consortium (W3C), January 20, 2004
http://www.w3.org/MarkUp/Test/xhtml-print/20040426

3GPP TR 26.911, *Codecs for Circuit Switched Multimedia Telephony Service; Terminal Implementer's Guide*, Release 6 Version 6.0.0, 2004-09-30
http://www.3gpp.org/ftp/Specs/html-info/26911.htm

3GPP TS 26.244, *3GPP* file format (3GP)*, Release-6, 3GPP
http://www.3gpp.org/ftp/Specs/html-info/26244.htm

3GPP TS 26.090, *Adaptive Multi-Rate (AMR) Speech Codec, Transcoding functions*, Release 6 Version 6.0.0, 2005-01-06
http://www.3gpp.org/ftp/Specs/html-info/26290.htm

3GPP TS 26.101, *Adaptive Multi-Rate (AMR) Speech Codec Frame Structure*, Release 6 Version 6.0.0, 2004-09-30
http://www.3gpp.org/ftp/Specs/html-info/26101.htm

3GPP TS 26.140, *Multimedia Messaging Service (MMS); Media Formats and Codecs*, Release 6 Version 6.2.0, 2005-04-01
http://www.3gpp.org/ftp/Specs/html-info/26140.htm

3GPP TS 26.140, *Multimedia Messaging Service (MMS); Media Formats and Codecs*, Release 7

3GPP TS 26.234, *Transparent End-to-End Packet-Switched Streaming Service (PSS); Protocols and Codecs*, Release 6 Version 6.4.0, 2005-06-24
http://www.3gpp.org/ftp/Specs/html-info/26234.htm

3GPP TS 26.234, *Transparent end-to-end Packet-switched Streaming Service (PSS); Protocols and codecs*, Release 7

3GPP TS 26.244, *3GPP file format (3GP)*, Release 7

3GPP TS 26.290, *Extended AMR Wideband codec; Transcoding functions*, Release 6 Version 6.3.0, 2005-06-24
http://www.3gpp.org/ftp/Specs/html-info/26290.htm

3GPP TS 26.346, *Multimedia Broadcast/Multicast Service (MBMS); Protocols and codecs*, Release 6

3GPP TS 26.346, *Multimedia Broadcast/Multicast Service (MBMS); Protocols and codecs*, Release 7

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1
Audio Super Frame
audio framing syntax used for transmission in DAB frames

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3.1.2
Buried Data
dithered noise shaping algorithm allowing auxiliary data inside a PCM bitstream

3.1.3
Content Source
endpoint that places content onto the network for transfer to another endpoint

3.1.4
Content Receiver
endpoint that consumes content received via a network transfer from another endpoint

3.1.5
Decoder Friendly Alignment Position
position in the bitstream defined for decoder friendly alignment

Note 1 to entry: A Decoder Friendly Alignment Position is always a valid transport alignment position.

3.1.6
Device Capability
set of Device Functions (at least 1) aggregated to support a System Usage

Note 1 to entry: A Device Capability is deployed in conjunction with an implementation of a valid DLNA Device Class. It cannot stand alone. Since a Device Capability does not stand alone, it does not have components in all layers of the DLNA Architecture.

Note 2 to entry: A Device Capability can have a one to one correspondence to a Device Function. A Device Capability is a certifiable entity only when it is implemented as an addition to at least one Device Class.

3.1.7
Device Category
group of Device Classes with the same environmental characteristics and sharing common System Usages that are enabling home networking use case scenarios

Note 1 to entry: Examples used within this standard are HND (Home Network Devices), MHD (Mobile Handheld Device), and HID (Home Infrastructure Device).

Note 2 to entry: While Device Classes are grouped within a Device Category, a single physical device can support Device Classes that fall into multiple Device Categories.

3.1.8
Device Class
defined by a set of Device Functions

Note 1 to entry: A Device Class specifies the features supported on a device regardless of its physical attributes. A single device can support multiple Device Classes. A DLNA device will support at least one Device Class and can support one or more Device Capabilities. A Device Class is the certifiable entity in DLNA.

Note 2 to entry: Examples used within this document are DMS (Digital Media Server) and DMP (Digital Media Player).

3.1.9
DLNA Transport Packet
collectively refers to the three MPEG-2 Transport Stream packet formats defined by DLNA comprising a 188 B ISO MPEG2 TS packet, a 192 B packet consisting of a 188 B ISO MPEG2 TS packet preceded by a 4 B timestamp zero-value timestamp field, and a 192 B packet consisting of a 188 B ISO MPEG2 TS packet preceded by a 4 B valid timestamp

3.1.10
Elementary Stream
coded video, coded audio, or other coded bitstream

Note 1 to entry: Elementary Stream is a general term for a coded bitstream.

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3.1.11
Media Format
family of encoding algorithm that share similar features or characteristics

Note 1 to entry: For example the MPEG-4 family of AV encoding algorithms, the MPEG-2 family of encoding algorithms, or the WMV family of encoding algorithms.

3.1.12
Media Format Profile
particular instantiation of a media format

Note 1 to entry: Given one family of encoding algorithms, a particular combination of algorithms and encoding parameters results in content items encoded with very specific features. For example, given the MPEG-4 Media Format, a Media Format Profile results from the selection of AVC encoding at Main Profile and Level 3, AAC audio, and the MP4 file format.

3.1.13
ID3
ID3v2
general tagging format for audio that enables storage of metadata about the audio inside the audio file itself

Note 1 to entry: It is a tag mainly targeted at files encoded with MPEG-1/2 layer I, MPEG-1/2 layer II, MPEG-1/2 layer III, and MPEG-2.5, but might work with other types of encoded audio or as a stand-alone format for audio metadata.

3.1.14
Media Class
multimedia objects, classified according to their purpose in Audio-only, Audio and Video, or Images

Note 1 to entry: These options constitute the 3 Media Classes defined in the DLNA guidelines.

Note 2 to entry: See: Media Format.

3.1.15
Matroska
Matroska Video

3.1.16
Multiple Program Transport Stream
two or more distinct programs which have been multiplexed into a single stream formatted to be a compliant MPEG Transport Stream

3.1.17
Nero Digital
format that is based on the ISO/IEC 14496 series of standards for system/video/audio coding, with proprietary extensions

3.1.18
Profile Parameter Set
collection of compression, encoding, and encapsulation parameters that results in a valid object binary

Note 1 to entry: Each Media Format Profile defined in these Guidelines is identified by its Profile ID. Each profile is defined selecting a subset of compression parameters, encoding parameters, and file format (or encapsulation) parameters. The implementer chooses certain parameters to produce a content object binary.

3.1.19
Render
reproduction of encoded content binary in a human recognizable manner

Note 1 to entry: The reproduction process can adjust the features of the content binary to the output characteristics of the device.

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Note 2 to entry: An A/V bit stream in high definition can be readjusted into SD resolution for display in standard definition TV.

3.1.20
Rendering Endpoints
Content Receiver devices with the capability of rendering the content they receive

Note 1 to entry: These devices could play the content at the time of the transfer, right after the transfer has finished, or at a later time after the transfer has finished.

Note 2 to entry: For the purpose of this standard, devices in the following Device Classes constitute the only known Rendering Endpoints: DMP, DMR, DMPr, M-DMP, M-DMD.

3.1.21
Serving Endpoints
Content Source devices with the capability of making content available to any client device in the home network

Note 1 to entry: In order to make content available to other home devices, Content Source devices act as UPnP media servers.

Note 2 to entry: For the purpose of this standard, devices in the following Device Classes constitute the only known Serving Endpoints: DMS, M-DMS.

Note 3 to entry: Note that an uploader device (M-DMU) does not constitute a Serving Endpoint although it acts as a Content Source device.

3.1.22
Single Program Transport Stream
MPEG Transport Stream containing a single program

3.1.23
Systems
<media formats> encapsulation and multiplexing protocol that allows the delivery of audio, and audio/video streams

Note 1 to entry: This layer provides rules for identifying individual audio and video components, rules for synchronizing audio and video components, and others.

3.1.24
Systems Bit Rate
theoretical maximum of the instantaneous playback bit rate of the entire content

Note 1 to entry: The playback bit rate is the rate at which the content is decoded and processed for real-time consumption. Real-time consumption indicates a mode to render encoded content in such a way that it is never slower or faster than the native audio or A/V content (i.e. before encoding).

3.1.25
Tolerance
capability of an enpoint to decode, parse and gracefully ignore information that is not understood

Note 1 to entry: Used as a noun or as a verb, it indicates that when a particular endpoint (Serving or Rendering or even an Intermediate device) receives data packets, the endpoint tolerates information that it does not understand.

3.1.26
Transport Alignment Position
position in the bitstream defined for transport alignment

3.1.27
Transport Stream
collection of multiplexed audio, video, and data packets organized in one or more programs (or services) in compliance with the MPEG-2 Systems specifications

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3.1.28
Uploading Endpoints
Content Source devices with the capability of uploading content to certain devices in the home network

Note 1 to entry: When used as Uploading Endpoints, the devices cannot serve to any potential client devices in the network. Instead, they transfer content only to those devices capable of receiving uploads.

Note 2 to entry: A device that belongs to the M-DMU device class, or a device that implements the +UP+ capability constitute Uploading Endpoints.

3.2 Abbreviated terms

3.2.1
3GPP
3rd Generation Partnership Project

this term also refers to a file format designed by this organization and used to encapsulate data

3.2.2
AAC
Advanced Audio Coding

3.2.3
AC-3
Audio Code 3

popularly known as Dolby® Digital, an audio format standard for delivering up to 5.1 audio channels developed by Dolby Laboratories[5]

3.2.4
ADTS
Audio Data Transport Stream

3.2.5
AMR
Adaptive Multi-Rate

type of audio codec

3.2.6
AMR-WB+
Extended Adaptive Multi-Rate Wideband

type of audio codec

3.2.7
AOT
Audio Object Types

3.2.8
ARIB
Association of Radio Industries and Businesses

one of the standards' bodies for digital television broadcasting

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5 Dolby Digital and AC-3 are the tradenames of technologies supplied by Dolby Laboratories.

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3.2.9
ASF
Advanced System Format

3.2.10
ATRAC3plus
Adaptive Transform Acoustic Coding 3 Plus

audio codec developed by Sony Corporation[6]

3.2.11
ATSC
Advanced Television Systems Committee

one of the standards' bodies for digital television broadcasting

3.2.12
AV
Audio with Video

media content that contains both moving pictures and sound

3.2.13
AVC
Advanced Video Codec

abbreviated term often used to refer to the H.264 video codec

3.2.14
BIFS
Binary Format for Scenes

3.3

3.3.1
BP
Baseline Profile

3.3.2
BSAC
Bit-Sliced Arithmetic Coding

a type of audio codec

3.3.3
CAT
Conditional Access Table

3.3.4
CBR
Constant Bit Rate

3.3.5
CDS
Content Directory Service

_____

6 ATRAC3plus is a tradename of a technology supplied by Sony Corporation.

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UPnP service that provides network-based discovery of content. The ContentDirectory Service specification is a standard UPnP DCP.

3.3.6
CIF
Common Intermediate Format

3.3.7
CRC
Cyclic Redundancy Check

3.3.8
DCP
Device Control Protocol

3.3.9
DIDL
Digital Item Declaration Language

3.3.10
DIT
Discontinuity Information Table

3.3.11
DLNA
Digital Living Network Alliance

organization that created these guidelines

3.3.12
DMC
Digital Media Controller

one of the device classes defined by DLNA

3.3.13
DMP
Digital Media Player

one of the device classes defined by DLNA

3.3.14
DMPr
Digital Media Printer

one of the device classes defined by DLNA

3.3.15
DMR
Digital Media Renderer

one of the device classes defined by DLNA

3.3.16
DMS
Digital Media Server

one of the device classes defined by DLNA

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3.3.17
+DN+
Download Controller

one of the device capabilities defined by DLNA

3.3.18
DPB
Decoded Picture Buffer

3.3.19
DTS
Decoding Time Stamp[7]

3.3.20
DVB
Digital Video Broadcast

one of the standard bodies for digital television broadcasting

3.3.21
DVD
Digital Versatile Disc

high capacity multimedia data storage medium

3.3.22
DVD-VR
DVD Video Recording

3.3.23
EDTV
Enhanced Definition Television

3.3.24
EIT
Event Information Table

3.3.25
ES
Elementary Streams

3.3.26
EU
European Union

3.3.27
EXIF
Exchangeable Image File

standardized format for exchanging images

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7 DTS is the tradename for a series of multichannel technologies supplied by DTS, Inc.

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3.3.28
fps
frames per second

3.3.29
GIF
Graphics Interchange Format is a bitmap image format that was introduced by CompuServe in 1987

3.3.30
GOP
Group Of Pictures

3.3.31
HD
High Definition

picture quality at HDTV level

3.3.32
HDTV
High Definition Television

provides a higher quality display, with a vertical resolution display from 720p to 1080i and higher and an aspect ratio (the width to height ratio of the screen) of 16:9, for a viewing experience similar to watching a movie

3.3.33
HE-AAC
High Efficiency Advanced Audio Coding

3.3.34
HighMAT
High-Performance Media Access Technology

3.3.35
HND
Home Network Device

one of the device categories defined by DLNA

3.3.36
HTTP
HyperText Transfer Protocol

3.3.37
ID
Identifier

3.3.38
IFO
Information file

file containing information regarding a content item utilized in DVD content encoding and creation

3.3.39
IP
Internet Protocol

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3.3.40
IPR
Intellectual Property Rights

3.3.41
IRD
Integrated Receiver Decoder

3.3.42
ISMA
Internet Streaming Media Alliance

3.3.43
ISO
International Standards Organization

3.3.44
JFIF
JPEG File Interchange Format

standardized file format for the exchange of images

3.3.45
JPEG
Joint Photographic Experts Group

coding standard for compression of still images (pictures)

3.3.46
KO
Korea

Korean media profiles, i.e. video content specifically created for the Korean market

3.3.47
LC
Low Complexity (used with AAC)

3.3.48
LFE
Low Frequency Effects or Low Frequency Enhancement

3.3.49
LPCM
Linear Pulse Code Modulation

uncompressed audio encoding

3.3.50
LRG
Large

3.3.51
LTP
Long Term Prediction

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3.3.52
MM
Media Management

one of the architecture components of DLNA

3.3.53
MKV
Matroska Video

3.3.54
M-DMC
MHD Digital Media Controller

one of the device classes defined by DLNA

3.3.55
M-DMD
MHD Digital Media Downloader

one of the device classes defined by DLNA

3.3.56
M-DMP
MHD Digital Media Player

one of the device classes defined by DLNA

3.3.57
M-DMS
MHD Digital Media Server

one of the device classes defined by DLNA

3.3.58
M-DMU
MHD Digital Media Uploader

one of the device classes defined by DLNA

3.3.59
MF
Media Format

3.3.60
MHP
Multimedia Home Platform

optional application interface used together with MPEG-2 transmissions

3.3.61
MHD
Mobile Handheld Device

one of the device categories defined by DLNA

3.3.62
MIME
Multipurpose Internet Mail Extension

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standard system for identifying the type of data contained in a file. MIME is an Internet protocol that allows sending binary files across the Internet as attachments to e mail messages. This includes graphics, photos, sound, video files, and formatted text documents.

3.3.63
MLP
Meridian Lossless Packing

lossless compression codec for audio data

3.3.64
MP3
MPEG-1 Audio Layer 3

coding standard for compression of audio data

3.3.65
MP4
MPEG-4 file format

tool for storing MPEG-4 data in a file

3.3.66
MPEG
Moving Picture Experts Group

3.3.67
MPS
MPEG Surround

3.3.68
MPTS
Multiple-Program Transport Streams

3.3.69
MSCP
MediaServer 1.0 Control Point

UPnP AV control point that issues actions to an MSD

3.3.70
MULT5
Multiple channels, up to 5.1 channels

3.3.71
MULT7
Multiple channels, up to 7.1 channels

3.3.72
NA
North America

content specifically created for North American region

3.3.73
NTSC
National Television Systems Committee

standard for broadcast and reception of analog television signals

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3.3.74
PAL
Phase Alternating Line

standard for broadcast and reception of analog television signals

3.3.75
PAT
Program Association Table

3.3.76
PC
Personal Computer

general-purpose computer equipped with a microprocessor and designed to run commercial software (such as a word processor or World Wide Web browser) for an individual user

3.3.77
PCR
Program Clock Reference

3.3.78
PES
Packetized Elementary Streams

3.3.79
PMT
Program Map Table

3.3.80
PNG
Portable Network Graphics

3.3.81
+PR1+, +PR2+
Printing Controller

two of the device capabilities defined by DLNA

3.3.82
PS
Program Stream

3.3.83
PSI
Program Specific Information

3.3.84
PSM
Program Stream Map

3.3.85
PTS
Presentation Time Stamp

3.3.86
+PU+
Push Uploader

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one of the device capabilities defined by DLNA

3.3.87
QCIF
Quarter Common Intermediate Format

3.3.88
QoS
Quality of Service

guarantees on the ability of a network to deliver predictable results

3.3.89
QVGA
Quarter VGA

display format used in digital cameras

3.3.90
RDI
Real-time Data Information

3.3.91
RRT
Region Rating Table

3.3.92
RTP
Real Time Transport Protocol

media transport that provides end-to-end network transport functions for transmitting real-time data, such as AV. It provides services such as payload type identification, sequence numbering, time-stamping, and delivery monitoring.

3.3.93
SBR
Spectral Band Replication

3.3.94
SCR
System Clock Reference

3.3.95
SCTE
Society of Cable Telecommunications Engineers

3.3.96
SVC
Scalable Video Coding

extension of the H.264/AVC video coding standard

3.3.97
SD
Standard Definition

picture quality at a SDTV level

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3.3.98
SDTV
Standard Definition Television

mode of operation of digital television that provides standard quality display, with a vertical resolution display less than 720p and an aspect ration of 4:3, resulting in a viewing experience similar or slightly better than today's analog television.

3.3.99
SI
Service Information (in DVB specifications);

System Information (in SCTE specifications)

3.3.100
SIT
Selection Information Table

service(s) and event(s) carried by a partial TS

3.3.101
SM
Small

3.3.102
SPTS
Single Program Transport Stream

3.3.103
STB
Set-Top Box

3.3.104
STC
System Time Clock

3.3.105
TS
Transport Stream

3.3.106
TTS
Timestamped Transport Stream

3.3.107
TV
Television

3.3.108
+UP+
Upload Controller

one of the device capabilities defined by DLNA

3.3.109
UPnP
Universal Plug and Play

name of the organization that defines some of the foundation standards for DLNA

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3.3.110
URI
Uniform Resource Identifier

3.3.111
URN
Uniform Resource Name

3.3.112
UTF
Unicode Transformation Format

3.3.113
VBI
Vertical Blanking Interval

3.3.114
VBR
Variable Bit Rate

3.3.115
VC1
Video Codec 1

3.3.116
VGA
Video Graphics Array

3.3.117
VOB
Video Object

3.3.118
VOP
Video Object Plane

3.3.119
W3C
World Wide Web Consortium

3.3.120
WM
Windows Media

3.3.121
WMA
Windows Media Audio[8]

3.3.122
WMV
Windows Media Video[8]

_____

8 WMA and WMV are tradenames of technologies supplied by Microsoft Corporation.

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3.3.123
WMV9
Windows Media Version 9 Series

3.3.124
XHTML
XML Hypertext Markup Language

3.3.125
XML
Extensible Markup Language

3.4 Conventions

In IEC 62481-1:2013 and this standard, a number of terms, conditions, mechanisms, sequences, parameters, events, states, or similar terms are printed with the first letter of each word in uppercase and the rest lowercase (e.g., Move). Any lowercase uses of these words have the normal technical English meaning.

4 Guideline terminology and conventions

4.1 Guideline compliance classifiers

The details of each guideline will carry a compliance classifier from the following set:

[M] Shall, Required: This is the minimum set of requirements that will ensure interoperability and/or robust operation between devices. All devices are expected to comply with these requirements when expressed in unconditional form. A conditional requirement expressed in the form, "If X, then Y shall be implemented", means that the requirement "Y" shall be met when the conditional aspect "X" applies to a given implementation.

[S]hould, Recommended: Recommended items are optional items that are strongly recommended for inclusion in products. The difference between "recommended" items and "optional" items, below, is one of priority. When considering features for inclusion in a product, recommended items should be included first.

[O]ptional, May: Optional items are suggestions for features that will enhance the user experience or are offered as a less preferred choice relative to another recommended feature. When optional features are included, they should comply with the requirement to ensure interoperability with other implementations.

E[X]pressly Forbidden, Shall not: This term means that an item shall not be incorporated in a product implementation.

4.2 Standard or specification usage classifiers

When specifying guideline details, it is often useful to reiterate or clarify certain aspects of a standard or specification that are often violated or misunderstood. Furthermore, there are guidelines that intentionally contradict or restrict implementation of certain aspects of a standard or specification in order to ensure interoperability between digital home devices. The following classifiers are used in the guidelines to indicate the relationship of a specific guideline to a source standard or specification:

[A]dding: A guideline that adds to or supplements a standard or specification to enhance interoperability.

[C]larifying: A guideline that addresses vague or ambiguous aspects of a standard or specification.

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[F]ixing: A guideline that intentionally supersedes and fixes aspects of a standard or specification that is incorrect and would otherwise provide a poor user experience or prevent device interoperability.

[L]imiting: A guideline that narrows or specifies an exact behavior in areas where a standard or specification provides for greater degrees of latitude in implementation.

[R]epeating: A guideline that repeats what is already in a standard or specification because of observed and repeated problems with implementations. Whenever a guideline with this usage classifier seems to be in conflict with the actual standard, the standard prevails over the guideline.

4.3 Guideline font usage conventions

The following font usage conventions are used within the guidelines to provide additional clarity:

- Hyperlinks to reference citations are indicated as **[number]**. For example ISO/IEC 14496-3, ISO/IEC 13818-3.
- Some special terms are *italicized*. Some guidelines define a term for use within that guideline and the term will be *italicized*.

4.4 Layout for guidelines

This subclause covers the guidelines that enable vendors to build interoperable products. Devices built to the DLNA Home Networked Device Interoperability Guidelines will be able to manage, transfer, and play personal media over a home network.

These guidelines are in a clause/subclause format as shown in Figure 1.

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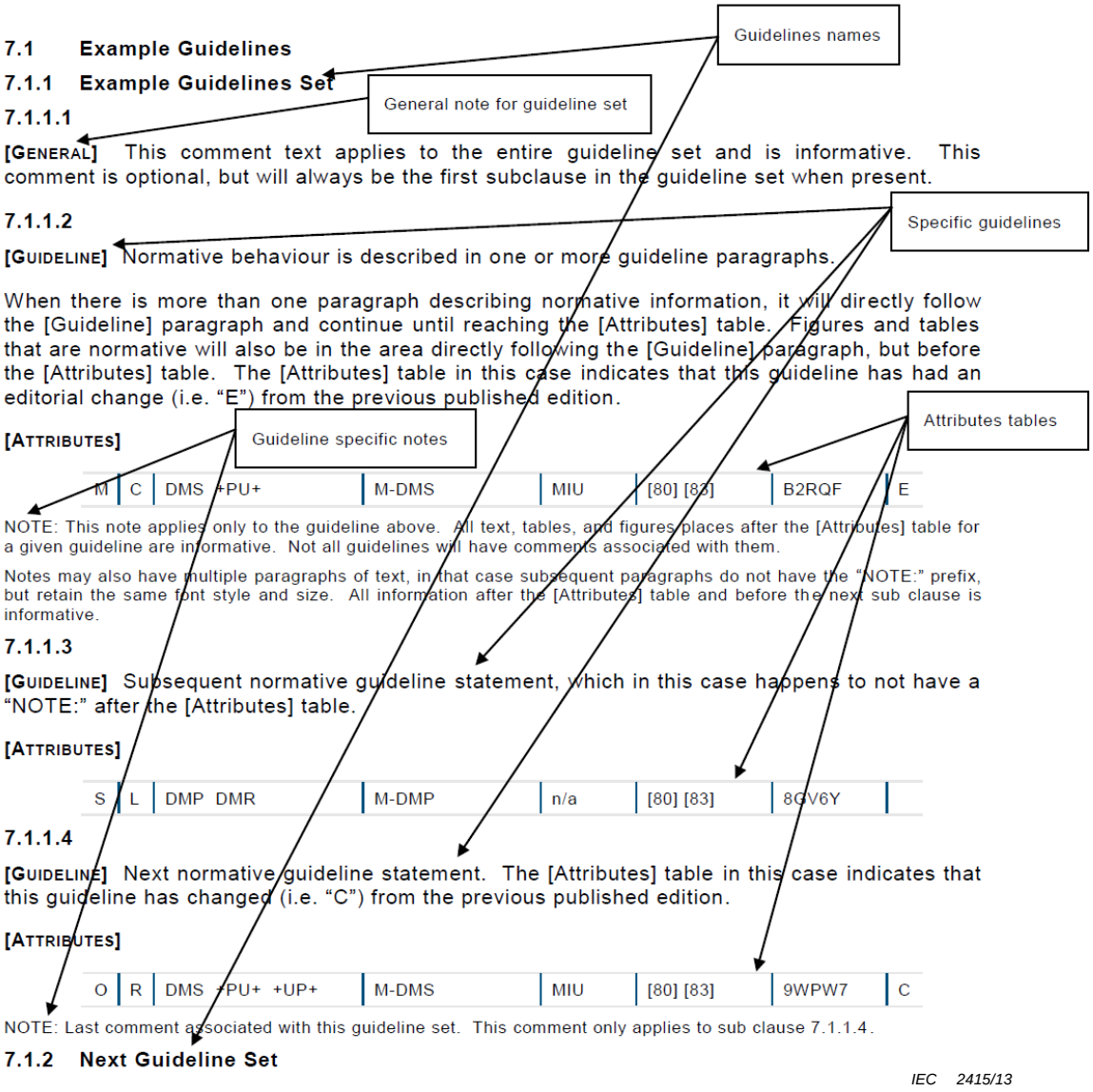

Figure 1 – Guideline layout and definitions

The following list describes the content of Figure 1.

a) Name: A unique label for the guideline. The label is preceded with a sequentially increasing number to allow easy lookup.

b) Guidelines: The actual normative text of a guideline. A guideline is preceded with a sequentially increasing number in each part to allow easy lookup and the beginning of the paragraph starts with "**[GUIDELINE]**".

c) Attribute table: A summary of the essential attributes of a guideline. The table is preceeded with the paragraph text **[ATTRIBUTES]** and is a single row with the following definitions for the columns.

- Compliance classifier: M/S/O (See 4.1 for the definition of guideline compliance classifiers).
- The specification usage classifier: A/C/F/L/R: for the guideline. (See 4.2 for the definition of specification usage classifiers.)
- HND Device Classes and Device Capabilities (see Table 2 and Table 3 for definitions). Device Capabilities are always listed in the HND column of the attribute table. Device

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Capabilities can also apply equally to the MHD Device Category but have been omitted from the MHD column in the attribute table to provide for better readability.

- MHD Device Classes (see Table 4 for definitions).
- HID Device Classes (see Table 5 for definitions).
- Standards citation: Standards that are referenced by the guideline. Standards citations are by name and are declared in Clause 2.
- Guideline unique number: an alpha-numeric string that uniquely identifies a guideline in IEC 62481-1 to IEC 62481-5.
- Change indicator: documents the change in the Guideline that occurred since the last edition of the Guideline (see Table 1 for definitions).
- Guideline attribute columns that do not have a value have the designation "n/a" (not applicable). A visual map of possible values for the attribute tables is indicated in Figure 2.

d) **[COMMENT]** Add supplementary informative information about a guideline such as a justification for the guideline, the specific interoperability issue that is addressed, etc. The first paragraph is preceeded by the text **[COMMENT]**.

Many guidelines do not explicitly list MIU since guidelines which apply to a device class also apply to the virtualized variants.

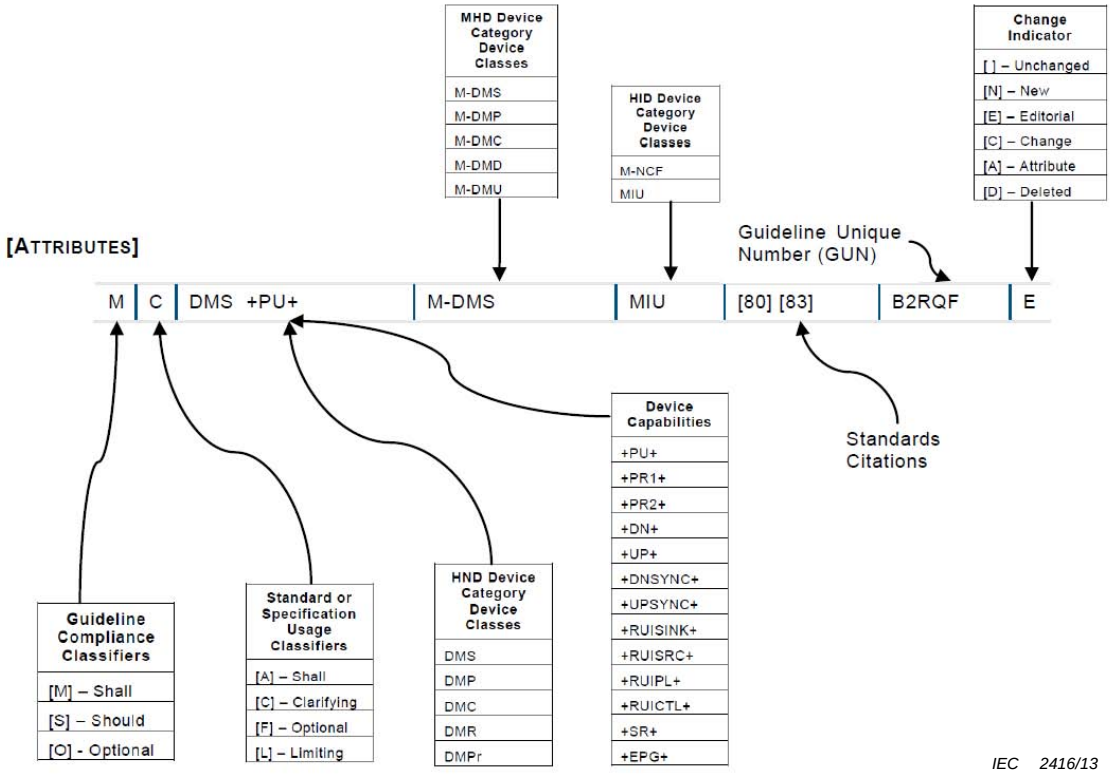

Figure 2 – Visual map of possible values for the attribute tables

Table 1 below describes the meaning of the change indicator field in the Attribute Table.

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Table 1 – Allowed Values for Change Indicator field in Attribute Table

Value	Meaning
<blank>	No changes in the text or figures from the immediately-preceding version of this guideline
A	Attribute table itself, excluding the change indicator, has changed. E.g. a new device class was added.
C	Changes made to the guideline modify the testing, intent, or other normative behavior relative to the immediately-preceding version of this guideline
D	Guideline has been deleted.
E	Changes made that do not modify testable guidelines, intent, or other normative behavior.

Many of the Guidelines in this document define specific Media Format Profiles. Each profile is composed of parameters like bitrate, sampling rate, resolution, etc. Each parameter admits one or more options recognized sometimes by textual description and other times by the use of a list of options signaled with the "➢" entry indicator. For example, a guideline entry might have sampling rates defines as follows:

- ➢ 44,1 kHz
- ➢ 48 kHz

In this example, these two values define two different encoding parameters. Servers choose to support one or both, but players have to support both.

4.5 Interoperability Guidelines Usage

The guideline attribute tables found in Clauses 6, 7, 8, 9, 10, and 11 contain a column that specifies which Device Classes apply to a guideline. For the v1.0 Interoperability Guidelines, only DMS and DMP were applicable. For these Interoperability Guidelines, three new Device Classes are defined in addition to the two above for the HND Device Category. They are a DMC, DMR, and DMPr. The MHD Device Category with five new Device Classes is introduced in this version of the guidelines along with the two Device Classes of the HID Device Category. Table 2 summarizes all of the Device Classes in the HND Device Category and the mnemonics used within these Interoperability Guidelines. Table 3 summarizes all of the Device Capabilities that can be deployed with any Device Class and the mnemonics used within these Interoperability Guidelines. Table 4 summarizes all of the Device Classes in the MHD Device Category and the mnemonics used for these Device Classes. Table 5 contains the Device Classes in the HID Device Categories and the mnemonics used for these Device Classes.

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Table 2 – DLNA Device Classes in the HND Device Category

DLNA Device Class	Media Management components	Media Transport components	Functional description	Device Classes or Capabilities interacted with for defined System Usages	Device Classes interacted with given compatible networking and Media Format Profiles
v1.0 Device Classes					
DMS (Digital Media Server)	MSD	Media Transport Server	Serves up media	DMP, DMC, DMR, DMPr, other endpoints with +UP+, +DN+, or +PR2+ capabilities	M-DMP, M-DMC, M-DMD, M-DMU
DMP (Digital Media Player)	MSCP	Media Transport Client	Selects, controls and renders the selected media	DMS	M-DMS
Device Classes new to v1.5					
DMC (Digital Media Controller)	MSCP MRCP	n/a	Controls the content selection and content rendering between networked devices	DMS, DMR	M-DMS
DMR (Digital Media Renderer)	MRD	Media Transport Client	Renders content	DMC, DMS, other endpoints with +PU+ capabilities	M-DMC, M-DMS
DMPr (Digital Media Printer)	PrD	Media Transport Client	Prints images	DMS, other endpoints with +PR1+ or +PR2+ capabilities	M-DMS

A new concept introduced in this version of the Interoperability Guidelines is a Device Capability. A Device Capability can be applied to any valid DLNA Device Class. Table 3 summarizes all of the Device Capabilities used in the System Usages and the mnemonics used within these Interoperability Guidelines to specify which guidelines apply to them.

Table 3 – DLNA Device Capabilities

DLNA Device Capability	Device Capability controller identifier	Applicable Device Classes	Media Management components	Media Transport components	Required Device Classes interacted with for defined System Usages	Device Classes interacted with given compatible networking and Media Formats Profiles
Push Controller	+PU+	Any	MRCP	Media Transport Server	DMR	n/a
Printing Controller-1	+PR1+	Any	PrCP	Media Transport Server	DMPr	n/a
Printing Controller-2	+PR2+	Any	PrCP MSCP	Media Transport Server	DMPr, DMS	M-DMS
Download Controller	+DN+	Any	MSCP	Media Transport Client	DMS	M-DMS
Upload Controller	+UP+	Any	MSCP	Media Transport Client	DMS	M-DMS

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The MHD Device Category has different media format and network connectivity needs because of various device constraints. Table 4 summarizes all of the Device Classes in the MHD Device Category and the mnemonics used within these Interoperability Guidelines.

Table 4 – DLNA Device Classes in the MHD Device Category

DLNA Device Class	Media Management components	Media Transport components	Functional description	Device Classes interacted with for defined System Usages	Device Classes or Capabilities interacted with given compatible networking and Media Formats Profiles
M-DMS (Mobile Digital Media Server)	MSD	Media Transport Server	Serves up media	M-DMP, M-DMC, M-DMD, M-DMU	DMP, DMC, DMR, DMPr, other endpoints with +UP+, +DN+, or +PR2+ capabilities
M-DMP (Mobile Digital Media Player)	MSCP	Media Transport Client	Selects, controls and renders the selected media	M-DMS	DMS
M-DMC (Mobile Digital Media Controller)	MSCP MRCP	n/a	Controls the content selection and content rendering between networked devices	M-DMS, DMR	DMS
M-DMU (Mobile Digital Media Uploader)	MSCP	Media Transport Client	Uploads the selected media to servers	M-DMS	DMS
M-DMD (Mobile Digital Media Downloader)	MSCP	Media Transport Client	Selects, controls and downloads the selected media	M-DMS	DMS

Due to the differences in the Media Format Profile support and network connectivity needs, the interoperability for Device Classes is only assured within a Device Category. To extend interoperability for the Device Classes in the MHD Device Category throughout the home network, including the Device Classes in the HND Device Category, a special Device Category named Home Infrastructure Device (HID) is defined. The HID Device Category ensures interoperability between devices of different categories and ensures interoperability between the Device Classes and Capabilities and the devices listed in the final two columns in the above tables. Table 5 summarizes all of the Device Classes in the HID Device Category and the mnemonics used within these Interoperability Guidelines.

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Table 5 – DLNA Device Classes in the HID Device Category

DLNA Device Class	Media Management components	Media Transport components	Functional description
M-NCF (Mobile Network Connectivity Function)	n/a	n/a	Provides a network connectivity bridge between devices in the HND and MHD Device Categories.
MIU (Media Interoperability Unit)	MSD, MRD, MSCP, MRCP	Media Transport Server, Media Transport Client	Provides virtual services for content transformation between required media formats for devices in the HND and MHD Device Categories

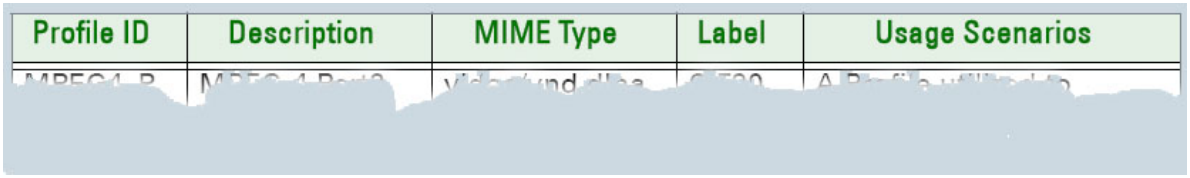
5 Compendium of Media Format Profiles

5.1 Overview

This clause provides a comprehensive list of all Media Format Profiles defined for this version of the Media Format Guidelines. The description includes the Profile ID values as well as a brief summary of features and usage scenarios.

Content objects exchanged according to the DLNA Home Network Device Interoperability guidelines belong to one of the following media classes: image, audio, and AV. Each media Class typically includes multiple Media Formats, and each Media Format can be instantiated according to multiple Media Format Profiles. This specification defines the particular Media Format Profiles based on strict selection of format parameters and features. Each Media Class typically includes multiple Formats, and each Format can be instantiated according to multiple Media Format Profiles. This document also contains Media Format Profiles for media collections and printer XHTML documents. These profiles do not map into any of these media classes.

This clause contains a set of Tables which contain a summary of the various Media Format Profile definitions contained in this document. Each Table has the header shown below in Figure 3 and as described in the bulleted list.



IEC 2417/13

Figure 3 – Profile summary Table header

- Profile ID: Profiles are identified by an alphanumeric token that is known as the Profile ID. This parameter is used by DLNA specifications and implementations whenever devices need to advertise or reference a content item of a particular profile. This clause provides a comprehensive list of all media format profiles, it describes their main features, and explains possible usage scenarios. Subsequent clauses of this guideline describe the strict specifications that define each of the profiles.
- Description: A description of the Profile ID.
- MIME type: The MIME Type to be utilized along with the DLNA Profile ID. Note that the MIME types defined for each of the profiles are always case-insensitive.
- Label: A Categorization Label which helps identify related Profile IDs.
- Usage scenarios: The rightmost column in the profile tables presented below describes existing and developing applicability scenarios for each of the DLNA media format profiles. The description in this column should be considered complementary information on each profile. It is not intended to be an exhaustive list of all potential usage or applicability scenarios. In fact, many other usage scenarios might become applicable in the near future

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due to the emergence of new standards, new products, and new trends. In this column, the text in bold indicates applications or services whereas the text in italics indicates devices.

5.2 Categorization labels

The tables for DLNA Media Format Profiles presented in this subclause include a column called "Label." Table 6 defines the meaning of these labels. Three audio labels, two image labels, and five video labels have been defined to provide guidance on the expected complexity level of each of the defined format profiles. The audio labels differentiate between single-channel, 2-channel and multi channel scenarios. The video labels differentiate in terms of resolution; ranging from QCIF to High Definition (HD) scenarios. The image labels differentiate in terms of the purpose of usage. For a given audio or AV profile, the label indicates the most complex scenario. Any given profile typically defines a range of scenarios, of which only the most complex is typically indicated by the label.

Table 6 – Categorization Labels

Label name	Definition
mono	Single channel audio application scenarios (speech)
2 ch	2-channel audio application scenarios
multi	Multi-channel audio application scenarios
QCIF15	low resolution A/V application scenarios
CIF15	medium resolution A/V application scenarios with lower frame rates
CIF30	medium resolution A/V application scenarios
SD	standard resolution A/V application scenarios
HD	high resolution A/V application scenarios
picture	image objects of different sizes used as content items
icon	image objects of different sizes used only for icon or thumbnail representations

5.3 Image Class: JPEG profiles

Table 7 describes the JPEG profiles of the DLNA Image Class.

Table 7 – Image Class: JPEG profiles

Profile ID	Description	MIME type	Label	Usage scenarios
JPEG_SM	Profile for image media class content of small resolution	image/jpeg	picture	A profile used by multiple types of devices (*cameras, cell phones, PCs)* to represent small images in compressed format.
JPEG_MED	Profile for image media class content of medium resolution	image/jpeg	picture	A profile used by multiple types of devices (*cameras, cell phones, PCs*) to represent medium-size images in compressed format.
JPEG_LRG	Profile for image media class content of high resolution	image/jpeg	picture	A profile used by multiple types of devices (*cameras, cell phones, PCs*) to represent large images in compressed format.
JPEG_RES_<H>_<V>	Profile for image media class content. Values <H> and <V> indicate the horizontal and vertical resolutions in pixel numbers	image/jpeg	picture	A profile used by multiple types of devices (cameras, cell phones, PCs) to represent images in a compressed format.

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Profile ID	Description	MIME type	Label	Usage scenarios
JPEG_TN	Profile for image thumbnails	image/jpeg	icon	An image profile for images in thumbnail resolutions used to provide a compact visual representation (a companion image) of other media objects (images, audio, AV), using JPEG encoding. This profile is used by multiple types of devices ().
JPEG_SM_ICO	Profile for small icons	image/jpeg	icon	A profile used to represent small icons using JPEG image coding. This icon profile is used by multiple types of devices (*cameras, cell phones, PCs*) for UPnP device descriptions.
JPEG_LRG_ICO	Profile for large icons	image/jpeg	icon	A profile used to represent large icons using JPEG image coding. This icon profile is used by multiple types of devices (*cameras, cell phones, PCs*) for UPnP device descriptions.

5.4 Image Class: PNG profiles

Table 8 describes the PNG profiles of the DLNA Image Class.

Table 8 – Image Class: PNG profiles

Profile ID	Description	MIME type	Label	Usage scenarios
PNG_TN	Profile for image thumbnails	image/png	icon	An image profile for images in thumbnail resolutions used to provide a compact visual representation (a companion image) of other media objects (images, audio, AV), using PNG encoding. This profile is used by multiple types of devices (*cameras, cell phones, PCs*).
PNG_SM_ICO	Profile for small icons	image/png	icon	A profile used to represent small icons using PNG image coding. This icon profile is used by multiple types of devices (*cameras, cell phones, PCs*) for UPnP device descriptions.
PNG_LRG_ICO	Profile for large icons	image/png	icon	A profile used to represent large icons using PNG image coding. This icon profile is used by multiple types of devices (*cameras, cell phones, PCs*) for UPnP device descriptions.
PNG_LRG	Profile for image class content of high resolution	image/png	picture	A profile used by multiple types of devices (*cameras, cell phones, PCs*) to represent large images in compressed format.

5.5 Audio Class: AC-3 profiles

Table 9 describes the AC-3 profiles of the DLNA Audio Class.

Table 9 – Audio Class: AC-3 profiles

Profile ID	Description	MIME type	Label	Usage scenarios
AC3	Profile for audio media class content	audio/vnd.dolby.dd-raw	2-ch multi	A profile used for audio content, including multichannel audio content. A related format profile is used in DVD-Audio for backward compatible multichannel audio content.

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5.6 Audio Class: AMR profiles

Table 10 describes the AMR profiles of the DLNA Audio Class.

Table 10 – Audio Class: AMR profiles

Profile ID	Description	MIME type	Label	Usage scenarios
AMR_3GPP	Profile for audio media class content	audio/3gpp audio/mp4	mono	A profile utilized for audio capture and exchanging speech content in streaming and multimedia messaging services in 3GPP. This profile is supported by *Cellular Phones* and *PDAs*.
AMR_WBplus	Profile for audio media class content	audio/3gpp	2-ch	This profile is used for 3GPP services. This profile is supported by *Cellular Phones*. A related format profile is recommended in 3GPP and optional in DVB.

5.7 Audio Class: ATRAC3plus profiles

Table 11 describes the ATRAC3plus profiles of the DLNA Audio Class.

Table 11 – Audio Class: ATRAC3plus profiles

Profile ID	Description	MIME type	Label	Usage scenarios
ATRAC3plus	Profile for audio media class content	audio/x-sony-oma	2-ch multi	This profile is supported by Personal Audio Players, Multichannel Audio Systems, and PCs.

5.8 Audio Class: LPCM profiles

Table 12 describes the LPCM profiles of the DLNA Audio Class.

Table 12 – Audio Class: LPCM profiles

Profile ID	Description	MIME type	Label	Usage scenarios
LPCM	Profile for audio media class content	audio/L16	2-ch	A profile used for creating recordings of Radio Broadcasts and User Created Audio Content. This profile is supported by *CD players, audio systems*, and *PCs*.
LPCM_low	Profile for audio media class content	audio/L16	2-ch	A profile used for creating recordings of Radio Broadcasts and User Created Audio Content. This profile is supported by *Cellular phones, CD players, audio systems*, and *PCs*.
LPCM_MPS	Profile for audio media class content with up to 7.1 channels.	audio/L16	multi	A profile utilized to create recordings of Personal Content. This profile is supported by *TVs, Home Theatre Systems*, and *PCs*.

As shown in guideline 8.4.4.2, the use of MIME type audio/L16 requires additional parameters.

5.9 Audio Class: MP3 profiles

Table 13 describes the MP3 profiles of the DLNA Audio Class.

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Table 13 – Audio Class: MP3 profiles

Profile ID	Description	MIME type	Label	Usage scenarios
MP3	Profile for audio media class content	audio/mpeg	2-ch	A profile used for creating recordings of music and voice for storage on devices and for Internet transmission. This profile is supported by *Personal Audio Players, Cellular Phones*, and *PCs*.
MP3X	Profile for MP3 audio media class content with extensions for lower sampling rates and bitrates.	audio/mpeg	2-ch	A profile used for creating recordings of Radio Broadcasts and Ripping CD Audio Content, and Internet Radio Broadcasting. This profile is supported by *Personal Audio Players, Cellular Phones*, and *PCs*.

5.10 Audio Class: MPEG-4 profiles

Table 14 describes the MPEG-4 profiles of the DLNA Audio Class.

Table 14 – Audio Class: MPEG-4 profiles

Profile ID	Description	MIME type	Label	Usage scenarios
AAC_ADTS	Profile for audio media class content	audio/vnd.dlna.adts	2-ch	A profile used for creating recordings of Radio Broadcasts and User Created Audio Content and for Digital Radio Broadcasting. This profile is supported by *Personal Audio Players, Cellular Phones*, and *PCs*. This profile is used by ARIB Radio.
AAC_ADTS_192	Profile for audio media class content	audio/vnd.dlna.adts	2-ch	A profile used for creating recordings of Radio Broadcasts and User Created Audio Content and for Digital Radio Broadcasting. This profile is supported by *Personal Audio Players, Cellular Phones*, and *PCs*.
AAC_ADTS_320	Profile for audio media class content	audio/vnd.dlna.adts	2-ch	A profile used for creating recordings of Radio Broadcasts and User Created Audio Content and for Digital Radio Broadcasting. This profile is supported by *Personal Audio Players, Cellular Phones*, and *PCs*.
AAC_ISO	Profile for audio media class content	audio/mp4 audio/3gpp	2-ch	A profile used for creating recordings of Radio Broadcasts and User Created Audio Content and for Digital Radio Broadcasting. This profile is supported by *Personal Audio Players, Cellular Phones*, and *PCs*. A related format profile is used in iTunes and is required in ISMA. A related format profile is optional in DVB and 3GPP.

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Profile ID	Description	MIME type	Label	Usage scenarios
AAC_ISO_192	Profile for audio media class content	audio/mp4 audio/3gpp	2-ch	A profile used for creating recordings of Radio Broadcasts and User Created Audio Content and for Digital Radio Broadcasting. This profile is supported by *Personal Audio Players, Cellular Phones*, and *PCs*.
AAC_ISO_320	Profile for audio media class content	audio/mp4 audio/3gpp	2-ch	A profile used for creating recordings of Radio Broadcasts and User Created Audio Content and for Digital Radio Broadcasting. This profile is supported by *Personal Audio Players, Cellular Phones*, and *PCs*.
AAC_LTP_ISO	Profile for audio media class content. In the case of the AAC LTP profiles, both the ISO file formats and the ADTS format are supported by the same profile.	audio/mp4 audio/3gpp audio/vnd.dlna.adts	2-ch	A profile used for creating recording of Radio Broadcasts, the Audio component of TV Broadcast, and Personal Content. This profile is supported by *Cellular Phones*. A related format profile is optional in 3GPP.
AAC_LTP_MULT5_ISO	Profile for audio media class content with up to 5.1 channels	audio/mp4 audio/3gpp audio/vnd.dlna.adts	multi	A profile used for creating recording of Radio Broadcasts, the Audio component of TV Broadcast, and Personal Content. This profile is supported by *Personal Audio Players, Cellular Phones*, and *PCs*.
AAC_LTP_MULT7_ISO	Profile for audio media class content with up to 7.1 channels	audio/mp4 audio/3gpp audio/vnd.dlna.adts	multi	A profile used for creating recording of Radio Broadcasts, the Audio component of TV Broadcast, and Personal Content. This profile is supported by *Cellular Phones*.
AAC_MULT5_ADTS	Profile for audio media class content with up to 5.1 channels	audio/vnd.dlna.adts	multi	A profile used for creating recording of Radio Broadcasts, and the Audio component of TV Broadcast. This profile is supported by *Personal Audio Players* and *PCs*.
AAC_MULT5_ISO	Profile for audio media class content with up to 5.1 channels	audio/mp4 audio/3gpp	multi	A profile used for creating multichannel recordings of audio. It is incorporated by reference in DLNA AV profiles. A related format profile is expected to be required in ISMA.
HEAAC_L2_ADTS	Profile for audio media class content	audio/vnd.dlna.adts	2-ch	A profile used for creating recordings of Radio Broadcasts and User Created Audio Content and for Digital Radio Broadcasting. This profile is supported by *Personal Audio Players, Cellular Phones*, and *PCs*.

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Profile ID	Description	MIME type	Label	Usage scenarios
HEAAC_L2_ISO	Profile for audio media class content	audio/mp4 audio/3gpp	2-ch	A profile used for creating recordings of Radio Broadcasts and User Created Audio Content and for Digital Radio Broadcasting. This profile is *supported by Personal Audio Players, Cellular Phones*, and *PCs*.
HEAACv2_L2_128	Profile for audio media class content	audio/mp4 audio/3gpp audio/vnd.dlna.adts	2-ch	A profile used for creating audio recordings for usage in online and mobile purchases, storage on physical distribution media, Radio Broadcasts and User Created Audio Content. This profile is supported by *Personal Audio Players, Cellular Phones, PCs, set-top boxes, and IPTV receivers.*
HEAAC_L2_ISO_128	Profile for audio media class content	audio/mp4audio/3gpp	2-ch	A profile used for creating recordings of Radio Broadcasts and User Created Audio Content and for Digital Radio Broadcasting. This profile is supported by *Personal Audio Players, Cellular Phones, and PCs.*
HEAAC_L3_ADTS	Profile for audio media class content	audio/vnd.dlna.adts	2-ch	A profile used for creating recordings of Radio Broadcasts and User Created Audio Content and for Digital Radio Broadcasting. This profile is supported by *Personal Audio Players, Cellular Phones,* and *PCs*.
HEAAC_L3_ISO	Profile for audio media class content	audio/mp4 audio/3gpp	2-ch	A profile utilized in Digital Radio Broadcasting. This profile is used in terrestrial and satellite broadcast digital radio. A related format profile is expected to be optional in 3GPP, ISMA, and DVB.
HEAAC_MULT5_ADTS	Profile for audio media class content with up to 5.1 channels	audio/vnd.dlna.adts	multi	A profile utilized for creating Multichannel Music Tracks from AV Content. A related format profile is expected to be used in DVD-A.
HEAAC_MULT5_ISO	Profile for audio media class content with up to 5.1 channels	audio/mp4 audio/3gpp	multi	A profile utilized for creating Multichannel Music Tracks from AV Content. A related format profile is expected to be optional in 3GPP, ISMA, and DVB.
HEAAC_L2_ADTS_320	Profile for audio media class content	audio/vnd.dlna.adts	2-ch	A profile used for creating recordings of Radio Broadcasts and User Created Audio Content and for Digital Radio Broadcasting. This profile is supported by *Personal Audio Players, Cellular Phones,* and *PCs*.
HEAAC_L2_ISO_320	Profile for audio media class content	audio/mp4 audio/3gpp	2-ch	A profile used for creating recordings of Radio Broadcasts and User Created Audio Content and for Digital Radio Broadcasting. This profile is supported by *Personal Audio Players, Cellular Phones*, and *PCs*.

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Profile ID	Description	MIME type	Label	Usage scenarios
BSAC_ISO	Profile for audio media class content	audio/mp4 audio/3gpp	2-ch	A profile used for creating recording of Radio Broadcasts, the Audio component of TV Broadcast, and Personal Content. This profile is supported by *Personal Audio Players, Cellular Phones* and *PCs*.
BSAC_MULT5_ISO	Profile for audio media class content with up to 5.1 channels	audio/mp4 audio/3gpp	multi	A profile used for creating recording of Radio Broadcasts, the Audio component of TV Broadcast, and Personal Content. This profile is supported by *Personal Audio Players, Cellular Phones*, and *PCs*.
AAC_MPS	Profile for audio media class content with up to 7.1 channels.	audio/mp4 audio/3gpp audio/vnd.dlna.adts	multi	A profile for creating recordings of Radio Broadcasts, Music Downloads and User Created Audio Content and for Digital Radio Broadcasting. This profile is supported by Personal Audio Players, Cellular Phones and PCs.
ALS_ISO	Profile for audio media class content	audio/mp4	2-ch	A profile used for User Created Audio Content, Internet Music Services, and Ripping CD Audio Content. This profile is supported by Personal Audio Players, Cellular Phones, and PCs.
ALS_MULT5_ISO	Profile for audio media class content with up to 5.1 channels	audio/mp4	multi	A profile used for User Created Multichannel Audio Content, Internet Music Services. This profile is supported by Personal Audio Players, Multichannel Audio Systems, and PCs.
HEAAC_L4	Profile for audio media class content with up to 5.1 channels	audio/mp4 audio/3gpp audio/vnd.dlna.adts	multi	This profile is used for audio content delivery, recordings thereof and Personal Content. This profile is supported by Home Theatre Systems and PCs.
HEAAC_MPS	Profile for audio media class content with up to 7.1 channels	audio/mp4 audio/3gpp audio/vnd.dlna.adts	multi	A profile for creating recordings of Radio Broadcasts, Music Downloads and User Created Audio Content and for Digital Radio Broadcasting. This profile is supported by Personal Audio Players, Cellular Phones and PCs.
HEAAC_MULT7	Profile for audio media class content with up to 7.1 channels	audio/mp4 audio/3gpp audio/vnd.dlna.adts	multi	This profile is used for audio content delivery, recordings thereof and Personal Content. This profile is supported by Home Theatre Systems and PCs.

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Profile ID	Description	MIME type	Label	Usage scenarios
HEAACv2_L2	Profile for audio media class content	audio/mp4 audio/3gpp audio/vnd.dlna.adts	2-ch	A profile used for creating audio recordings for usage in online and mobile purchases, storage on physical distribution media, Radio Broadcasts and User Created Audio Content. This profile is supported by Personal Audio Players, Cellular Phones, PCs, set-top boxes, and IPTV receivers.
HEAACv2_L2_320	Profile for audio media class content	audio/mp4 audio/3gpp audio/vnd.dlna.adts	2-ch	A profile used for creating audio recordings for usage in online and mobile purchases, storage on physical distribution media, Radio Broadcasts and User Created Audio Content. This profile is supported by Personal Audio Players, Cellular Phones, PCs, set-top boxes, and IPTV receivers.
HEAACv2_L2_MPS_DAB	Profile for audio media class content with up to 5.1 channels.	audio/x-dab	multi	A profile used for creating recording of Radio Broadcasts and for Digital Radio Broadcasting. This profile is supported by Stereos, Home Theatre Systems and Car Radios.
HEAACv2_L3	Profile for audio media class content	audio/mp4 audio/3gpp audio/vnd.dlna.adts	2-ch	A profile used for creating audio recordings for usage in online and mobile purchases, storage on physical distribution media, Radio Broadcasts and User Created Audio Content. This profile is supported by Personal Audio Players, Cellular Phones, PCs, set-top boxes, and IPTV receivers.
HEAACv2_L4	Profile for audio media class content with up to 5.1 channels	audio/mp4 audio/3gpp audio/vnd.dlna.adts	multi	This profile is used for audio content delivery, recordings thereof and Personal Content. This profile is supported by Home Theatre Systems and PCs.
HEAACv2_MULT5	Profile for audio media class content with up to 5.1 channels	audio/mp4 audio/3gpp audio/vnd.dlna.adts	multi	A profile utilized for creating multichannel music tracks from AV content. This profile is supported by Personal Audio Players, PCs, and devices in the home-entertainment eco-system.
HEAACv2_MULT7	Profile for audio media class content with up to 7.1 channels	audio/mp4 audio/3gpp audio/vnd.dlna.adts	multi	This profile is used for audio content delivery, recordings thereof and Personal Content. This profile is supported by Home Theatre Systems and PCs.
MPEG2_AAC_MPS	Profile for audio media class content with up to 7.1 channels.	audio/mp4 audio/3gpp audio/vnd.dlna.adts	multi	A profile for creating recordings of Radio Broadcasts, Music Downloads and User Created Audio Content and for Digital Radio Broadcasting. This profile is supported by Personal Audio Players, Cellular Phones and PCs.

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5.11 Audio Class: WMA profiles

Table 15 describes the WMA profiles of the DLNA Audio Class.

Table 15 – Audio Class: WMA profiles

Profile ID	Description	MIME type	Label	Usage scenarios
WMABASE	WMA content (bit rates less than 193 kbit/s)	audio/x-ms-wma	2-ch	A profile used for User Created Audio Content, Internet Music Services, and Internet Radio. This profile is supported by *Personal Audio Players* and *PCs*.
WMAFULL	WMA content	audio/x-ms-wma	2-ch	A profile used for User Created Audio Content, Internet Music Services, and Internet Radio. This profile is supported by *Personal Audio Players* and *PCs*.
WMAPRO	WMA professional version	audio/x-ms-wma	2-ch multi	A profile used by User Created Audio Content, and Internet Music Services. This profile is supported by *Multichannel Audio Systems*, and *PCs*.
WMALSL	WMA Lossless – stereo 16 bit, 2 channel	audio/x-ms-wma	2-ch	Stereo lossless playback – identical to source file.
WMALSL_MULT5	WMA Lossless – Surround 24 bit, 5.1 channel	audio/x-ms-wma	multi	Surround sound lossless playback – identical to source file.

5.12 AV Class: MPEG-1 profiles

Table 16 describes the MPEG-1 profiles of the DLNA AV Class.

Table 16 – AV Class: MPEG-1 profiles

Profile ID	Description	MIME type	Label	Usage scenarios
MPEG1	MPEG-1 video with 2 channel MPEG-1 Layer2 audio encapsulated in MPEG-1 system	video/mpeg	CIF30	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by *TVs, Cellular Phones, PDAs, Portable Video Players*, and *PCs*.

5.13 AV Class: MPEG-2 profiles

Table 17 describes the MPEG-2 profiles of the DLNA AV Class.

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Table 17 – AV Class: MPEG-2 profiles

Profile ID	Description	MIME type	Label	Usage scenarios
MPEG_PS_NTSC	Profile for NTSC-formatted AV class media	video/mpeg	SD	A profile used to create recordings of Broadcast TV and for content storage in DVDs. This profile is supported by *DVD Players* and *PCs*.
MPEG_PS_NTSC_ XAC3	Profile for NTSC-formatted AV class media	video/mpeg	SD	A profile used to create recordings of Broadcast. This profile is supported by *PCs*.
MPEG_PS_PAL	Profile for PAL-formatted AV class media	video/mpeg	SD	A profile used to create recordings of Broadcast TV and for content storage in DVDs. This profile is supported by *DVD Players* and *PCs*.
MPEG_PS_PAL_ XAC3	Profile for PAL-formatted AV class media	video/mpeg	SD	A profile used to create recordings of Broadcast TV. This profile is supported by *PCs*.
MPEG_TS_SD_NA	North America region profile for Standard Definition AV class utilizing a DLNA Transport Packet with zero value timestamp	video/vnd.dlna.mpeg-tts	SD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_SD_NA_T	North America region profile for Standard Definition AV class utilizing a DLNA Transport Packet with a valid non-zero timestamp	video/vnd.dlna.mpeg-tts	SD	A profile deived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_SD_NA_ ISO	North America region profile for Standard Definition AV class utilizing a DLNA Transport Packet without a Timestamp field	video/mpeg	SD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_HD_NA	North America region profile for High Definition AV class utilizing a DLNA Transport Packet with zero value timestamp	video/vnd.dlna.mpeg-tts	HD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_HD_NA_T	North America region profile for High Definition AV class utilizing a DLNA Transport Packet with a valid non-zero timestamp	video/vnd.dlna.mpeg-tts	HD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.

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Profile ID	Description	MIME type	Label	Usage scenarios
MPEG_TS_HD_NA_ ISO	North America region profile for High Definition AV class utilizing a DLNA Transport Packet without a Timestamp field	video/mpeg	HD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_SD_EU	European region profile for Standard Definition AV class utilizing a DLNA Transport Packet with zero value timestamp	video/vnd.dlna.mpeg-tts	SD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to DVB (terrestrial, cable, and satellite) systems. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_SD_EU_T	European region profile for Standard Definition AV class utilizing a DLNA Transport Packet with a valid non-zero timestamp	video/vnd.dlna.mpeg-tts	SD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to DVB (terrestrial, cable, and satellite) systems. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_SD_EU_ ISO	European region profile for Standard Definition AV class utilizing a DLNA Transport Packet without a Timestamp field	Video/mpeg	SD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to DVB (terrestrial, cable, and satellite) systems. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_SD_KO	Korea region profile for Standard Definition AV utilizing a DLNA Transport Packet with zero value timestamp	video/vnd.dlna.mpeg-tts	SD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems with extensions for Korea. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_SD_KO_T	Korea region profile for Standard Definition AV class utilizing a DLNA Transport Packet with a valid non-zero timestamp	video/vnd.dlna.mpeg-tts	SD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems with extensions for Korea. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_SD_KO_ ISO	Korea region profile for Standard Definition AV class utilizing a DLNA Transport Packet without a Timestamp field	video/mpeg	SD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems with extensions for Korea. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.

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Profile ID	Description	MIME type	Label	Usage scenarios
MPEG_TS_HD_KO	Korea region profile for High Definition AV class utilizing a DLNA Transport Packet with zero value timestamp	video/vnd.dlna.mpeg-tts	HD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems with extensions for Korea. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_HD_KO_T	Korea region profile for High Definition AV class utilizing a DLNA Transport Packet with a valid non-zero timestamp	video/vnd.dlna.mpeg-tts	HD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems with extensions for Korea. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_HD_KO_ ISO	Korea region profile for High Definition AV class utilizing a DLNA Transport Packet without a Timestamp field	video/mpeg	HD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems with extensions for Korea. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_HD_KO_ XAC3	Korea region profile for transcoded High Definition AV class media with a zero value timestamp	video/vnd.dlna.mpeg-tts	HD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems with extensions for Korea. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_HD_KO_ XAC3_T	Korea region profile for transcoded High Definition AV class media with a valid non-zero timestamp	video/vnd.dlna.mpeg-tts	HD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems with extensions for Korea. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_HD_KO_ XAC3_ISO	Korea region profile for transcoded High Definition AV class media without a Timestamp field	video/mpeg	HD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems with extensions for Korea. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_HD_NA_ XAC3	North America region profile for transcoded High Definition AV class media with a zero value timestamp	video/vnd.dlna.mpeg-tts	HD	A profile deived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.

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Profile ID	Description	MIME type	Label	Usage scenarios
MPEG_TS_HD_NA_XAC3_T	North America region profile for transcoded High Definition AV class media with a valid non-zero timestamp	video/vnd.dlna.mpeg-tts	HD	A profile deived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_HD_NA_XAC3_ISO	North America region profile for transcoded High Definition AV class media without a Timestamp field	video/mpeg	HD	A profile deived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_SD_KO_XAC3	Korea region profile for Standard Definition AV class media with a zero value timestamp	video/vnd.dlna.mpeg-tts	SD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems with extensions for Korea. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_SD_KO_XAC3_T	Korea region profile for Standard Definition AV class media with a valid non-zero timestamp	video/vnd.dlna.mpeg-tts	SD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems with extensions for Korea. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_SD_KO_XAC3_ISO	Korea region profile for Standard Definition AV class media without a Timestamp field	video/mpeg	SD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems with extensions for Korea. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_SD_NA_XAC3	North America region profile for Standard Definition AV class media with a zero value timestamp	video/vnd.dlna.mpeg-tts	SD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_SD_NA_XAC3_T	North America region profile for Standard Definition AV class media with a valid non-zero timestamp	video/vnd.dlna.mpeg-tts	SD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.

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Profile ID	Description	MIME type	Label	Usage scenarios
MPEG_TS_SD_NA_XAC3_ISO	North America region profile for Standard Definition AV class media without a Timestamp field	video/mpeg	SD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems. It is supported by *DTVs, STBs,* and *PCs with DTV tuner cards*.
MPEG_TS_MP_LL_AAC	MPEG-2 Main Profile at Low Level with AAC LC audio encapsulated in MPEG-2 transport stream with zero value timestamp	video/vnd.dlna.mpeg-tts	CIF30	A profile used for limited distribution of DTV broadcast content. This profile can be supported by *Cellular Phones* and *PDAs*.
MPEG_TS_MP_LL_AAC_T	MPEG-2 Main Profile at Low Level with AAC LC audio encapsulated in MPEG-2 transport stream with valid timestamp	video/vnd.dlna.mpeg-tts	CIF30	A profile used for limited distribution of DTV broadcast content. This profile can be supported by *Cellular Phones* and *PDAs*.
MPEG_TS_MP_LL_AAC_ISO	MPEG-2 Main Profile at Low Level with AAC LC audio encapsulated in MPEG-2 transport stream without a Timestamp field	video/mpeg	CIF30	A profile used for limited distribution of DTV broadcast content. This profile can be supported by *Cellular Phones* and *PDAs*.
MPEG_ES_PAL	Profile defining ES encapsulation for transport of MPEG_PS_PAL over RTP	video/mpeg	SD	A profile derived from content that exists as recordings of Broadcast TV and from content stored in DVDs. This profile is supported by DVD Players and *PCs*.
MPEG_ES_NTSC	Profile defining ES encapsulation for transport of MPEG_PS_NTSC over RTP	video/mpeg	SD	A profile derived from content that exists as recordings of Broadcast TV and from content stored in DVDs. This profile is supported by DVD Players and *PCs*.
MPEG_ES_PAL_XAC3	Profile defining ES encapsulation for transport of MPEG_PS_PAL_XAC3 over RTP	video/mpeg	SD	A profile derived from content that exists as recordings of Broadcast TV. This profile is supported by *PCs*.
MPEG_ES_NTSC_XAC3	Profile defining ES encapsulation for transport of MPEG_PS_NTSC_XAC3 over RTP	video/mpeg	SD	A profile derived from content that exists as recordings of Broadcast TV. This profile is supported by *PCs*.
DIRECTV_TS_SD	MPEG-2 Video wrapped in ITU-R Rec BO.1516 system B transport stream, with MPEG-1 L2 or AC-3 audio.	video/x-mpeg2-directv	SD	A profile utilized used in North and South America for Direct Broadcast Satellite distribution of A/V content. This profile is supported by *STBs and Digital Video Recorders*.
MPEG_PS_HD_DTS	MPEG-2 Video wrapped in MPEG-2 program stream, with DTS Digital Surround Audio	video/mpeg	HD	A profile for creating AV content. This profile is supported by Personal AV Players, PCs, and all devices in the home-entertainment eco-system.

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Profile ID	Description	MIME type	Label	Usage scenarios
MPEG_PS_HD_ DTSHD	MPEG-2 Video wrapped in MPEG-2 program stream, with DTS-HD Audio	video/mpeg	HD	A profile for creating AV content. This profile is supported by Personal AV Players, PCs, and all devices in the home-entertainment eco-system.
MPEG_PS_HD_ DTSHD_HRA	MPEG-2 Video wrapped in MPEG-2 program stream, with DTS-HD High Resolution Audio	video/mpeg	HD	A profile for creating AV content. This profile is supported by Personal AV Players, PCs, and all devices in the home-entertainment eco-system.
MPEG_PS_HD_ DTSHD_MA	MPEG-2 Video wrapped in MPEG-2 program stream, with DTS-HD Master Audio	video/mpeg	HD	A profile for creating AV content. This profile is supported by Personal AV Players, PCs, and all devices in the home-entertainment eco-system.
MPEG_PS_SD_DTS	MPEG-2 Video wrapped in MPEG-2 program stream, with DTS Digital Surround Audio	video/mpeg	SD	A profile for creating AV content. This profile is supported by Personal AV Players, PCs, and all devices in the home-entertainment eco-system.
MPEG_TS_DTS_ISO	MPEG-2 Video, wrapped in MPEG-2 transport stream, with DTS Digital Surround Audio, without a timestamp field	video/mpeg	HD	A profile for creating AV content. This profile is supported by Personal AV Players, PCs, and all devices in the home-entertainment eco-system.
MPEG_TS_DTS_T	MPEG-2 Video, wrapped in MPEG-2 transport stream, with DTS Digital Surround Audio, with a valid non-zero timestamp field	video/vnd.dlna.mpeg-tts	HD	A profile for creating AV content. This profile is supported by Personal AV Players, PCs, and all devices in the home-entertainment eco-system.
MPEG_TS_DTSHD_ HRA_ISO	MPEG-2 Video, wrapped in MPEG-2 transport stream, with DTS-HD High Resolution Audio, without a timestamp field	video/mpeg	HD	A profile for creating AV content. This profile is supported by Personal AV Players, PCs, and all devices in the home-entertainment eco-system.
MPEG_TS_DTSHD_ HRA_T	MPEG-2 Video, wrapped in MPEG-2 transport stream, with DTS-HD High Resolution Audio, with a valid non-zero timestamp field.	video/vnd.dlna.mpeg-tts	HD	A profile for creating AV content. This profile is supported by Personal AV Players, PCs, and all devices in the home-entertainment eco-system.
MPEG_TS_DTSHD_ MA_ISO	MPEG-2 Video, wrapped in MPEG-2 transport stream, with DTS-HD Master Audio, without a timestamp field	video/mpeg	HD	A profile for creating AV content. This profile is supported by Personal AV Players, PCs, and all devices in the home-entertainment eco-system.
MPEG_TS_DTSHD_ MA_T	MPEG-2 Video, wrapped in MPEG-2 transport stream, with DTS-HD Master Audio, with a valid non-zero timestamp field.	video/vnd.dlna.mpeg-tts	HD	A profile for creating AV content. This profile is supported by Personal AV Players, PCs, and all devices in the home-entertainment eco-system.

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Profile ID	Description	MIME type	Label	Usage scenarios
MPEG_TS_HD_50_L2_ISO	MPEG-2 Main Profile at High-1 440 Level with MPEG-1 Audio Layer 2 encapsulated in MPEG-2 TS without a timestamp field for 50i system	video/mpeg	HD	A profile utilized to create recording of Personal HD Content with a Mobile Recording Device. This profile is supported by *PCs, Digital Movie Cameras, TVs and STBs*.
MPEG_TS_HD_50_L2_T	MPEG-2 Main Profile at High-1 440 Level with MPEG-1 Audio Layer 2 encapsulated in MPEG-2 TS with valid timestamp for 50i system	video/vnd.dlna.mpeg-tts	HD	A profile utilized to create recording of Personal HD Content with a Mobile Recording Device. This profile is supported by *PCs, Digital Movie Cameras, TVs and STBs*.
MPEG_TS_HD_X_50_L2_T	MPEG-2 Main Profile at High Level with MPEG-1 Audio Layer 2 encapsulated in MPEG-2 TS with valid timestamp for 50i System	video/vnd.dlna.mpeg-tts	HD	A profile utilized to create recording of Personal HD Content with a Mobile Recording Device. This profile is supported by *PCs, Digital Movie Cameras, TVs and STBs*.
MPEG_TS_HD_X_50_L2_ISO	MPEG-2 Main Profile at High Level with MPEG-1 Audio Layer 2 encapsulated in MPEG-2 TS without a timestamp field for 50i System	video/mpeg	HD	A profile utilized to create recording of Personal HD Content with a Mobile Recording Device. This profile is supported by *PCs, Digital Movie Cameras, TVs and STBs*.
MPEG_TS_HD_60_L2_ISO	MPEG-2 Main Profile at High-1 440 Level with MPEG-1 Audio Layer 2 encapsulated in MPEG-2 TS without a timestamp field for 59,94i system	video/mpeg	HD	A profile utilized to create recording of Personal HD Content with a Mobile Recording Device. This profile is supported by *PCs, Digital Movie Cameras, TVs and STBs*.
MPEG_TS_HD_60_L2_T	MPEG-2 Main Profile at High-1 440 Level with MPEG-1 Audio Layer 2 encapsulated in MPEG-2 TS with valid timestamp for 59,94i system	video/vnd.dlna.mpeg-tts	HD	A profile utilized to create recording of Personal HD Content with a Mobile Recording Device. This profile is supported by *PCs, Digital Movie Cameras, TVs and STBs*.
MPEG_TS_HD_X_60_L2_T	MPEG-2 Main Profile at High Level with MPEG-1 Audio Layer 2 encapsulated in MPEG-2 TS with valid timestamp for 59,94i System	video/vnd.dlna.mpeg-tts	HD	A profile utilized to create recording of Personal HD Content with a Mobile Recording Device. This profile is supported by *PCs, Digital Movie Cameras. TVs and STBs*.
MPEG_TS_HD_X_60_L2_ISO	MPEG-2 Main Profile at High Level with MPEG-1 Audio Layer 2 encapsulated in MPEG-2 TS without a timestamp field for 59,94i System	video/mpeg	HD	A profile utilized to create recording of Personal HD Content with a Mobile Recording Device. This profile is supported by *PCs, Digital Movie Cameras. TVs and STBs*.
MPEG_TS_HD_NA_MPEG1_L2_ISO	MPEG-2 Video, wrapped in MPEG-2 transport stream, Main Profile High Definition, with MPEG-1 L2 audio, without a timestamp field	video/mpeg	HD	This profile is used for DTV broadcasting. This profile is supported by *TVs, Home Theatre Systems, and PCs*.

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Profile ID	Description	MIME type	Label	Usage scenarios
MPEG_TS_HD_NA_MPEG1_L2_T	MPEG-2 Video, wrapped in MPEG-2 transport stream, Main Profile High Definition, with MPEG-1 L2 audio, with a valid non-zero timestamp field.	video/vnd.dlna.mpeg-tts	HD	This profile is used for DTV broadcasting. This profile is supported by *TVs, Home Theatre Systems, and PCs*.
MPEG_TS_JP_T	MPEG-2 Main Profile at Main, High-1 440 and High Level with MPEG-2 AAC encapsulated in MPEG-2 TS with valid timestamp	video/vnd.dlna.mpeg-tts	HD	A profile utilized to create recordings of Japanese Broadcast TV. This profile is supported by *PCs, TVs and STBs*.
MPEG_TS_SD_50_AC3_T	MPEG-2 Main Profile at Main Level with AC-3 encapsulated in MPEG-2 TS with valid timestamp for 625/50 system	video/vnd.dlna.mpeg-tts	SD	A profile utilized to create recordings of Personal Content or Broadcast TV. This profile is supported by *PCs, TVs and STBs*.
MPEG_TS_SD_50_L2_T	MPEG-2 Main Profile at Main Level with MPEG-1 Audio Layer 2 encapsulated in MPEG-2 TS with valid timestamp for 625/50 system	video/vnd.dlna.mpeg-tts	SD	A profile utilized to create recordings of Personal Content or Broadcast TV. This profile is supported by *PCs, TVs and STBs*.
MPEG_TS_SD_60_AC3_T	MPEG-2 Main Profile at Main Level with AC-3 encapsulated in MPEG-2 TS with valid timestamp for 525/60 system	video/vnd.dlna.mpeg-tts	SD	A profile utilized to create recordings of Personal Content or Broadcast TV. This profile is supported by *PCs, TVs and STBs*.
MPEG_TS_SD_60_L2_T	MPEG-2 Main Profile at Main Level with MPEG-1 Audio Layer 2 encapsulated in MPEG-2 TS with valid timestamp for 525/60 system	video/vnd.dlna.mpeg-tts	SD	A profile utilized to create recordings of Personal Content or Broadcast TV. This profile is supported by *PCs, TVs and STBs*.
MPEG_TS_SD_EU_AC3_ISO	MPEG-2 Video, wrapped in MPEG-2 transport stream, Main Profile, Standard Definition, with AC-3 audio, without a timestamp field	video/mpeg	SD	This profile is used for DTV broadcasting. This profile is supported by *TVs, Home Theatre Systems, and PCs*.
MPEG_TS_SD_EU_AC3_T	MPEG-2 Video, wrapped in MPEG-2 transport stream, Main Profile Standard Definition, with AC-3 audio, with a valid non-zero timestamp field	video/vnd.dlna.mpeg-tts	SD	This profile is used for DTV broadcasting. This profile is supported by *TVs, Home Theatre Systems, and PCs*.
MPEG_TS_SD_JP_MPEG1_L2_T	MPEG-2 Video, encapsulated in MPEG-2 transport stream, Main Profile at Main Level, with MPEG-1 L2 audio, with a valid non-zero timestamp field	video/vnd.dlna.mpeg-tts	HD	A profile utilized to create recordings of Japanese Broadcast TV. This profile is supported by *PCs, TVs and STBs*.

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Profile ID	Description	MIME type	Label	Usage scenarios
MPEG_TS_SD_NA_ MPEG1_L2_ISO	MPEG-2 Video, wrapped in MPEG-2 transport stream, Main Profile, Standard Definition, with MPEG-1 L2 audio, without a timestamp field	video/mpeg	SD	This profile is used for DTV broadcasting. This profile is supported by *TVs, Home Theatre Systems, and PCs*.
MPEG_TS_SD_NA_ MPEG1_L2_T	MPEG-2 Video, wrapped in MPEG-2 transport stream, Main Profile, Standard Definition, with MPEG-1 L2 audio, with a valid non-zero timestamp field	video/vnd.dlna.mpeg-tts	SD	This profile is used for DTV broadcasting. This profile is supported by *TVs, Home Theatre Systems, and PCs*.
MPEG_DIRECTV_ SD_MPEG1_L2	MPEG-2 video wrapped in ITU-R Rec BO.1516 system B transport stream with MPEG-1 L2 audio, without a timestamp field	video/vnd.directv.mpeg	SD	A profile used in North and South America for Direct Broadcast Satellite distribution and home networking of A/V content. This profile is supported by STBs, Home Media Centers, Home Media Center clients and Digital Video Recorders.
MPEG_DIRECTV_ SD_MPEG1_L2_T	MPEG-2 video wrapped in ITU BO 1516 system B transport stream with MPEG-1 L2 audio, with a valid non-zero timestamp field	video/vnd.directv.mpeg-tts	SD	A profile used in North and South America for Direct Broadcast Satellite distribution and home networking of A/V content. This profile is supported by STBs, Home Media Centers, Home Media Center clients and Digital Video Recorders.
MPEG_TS_NA_ISO	MPEG-2 HD/SD video wrapped in MPEG-2 transport stream as constrained by SCTE-43 standards, with AC-3 audio, without a timestamp field	video/mpeg	HD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to ATSC (terrestrial) and SCTE (cable) systems. It is supported by DTVs, STBs, and PCs with DTV tuner cards.
MPEG_TS_SD_DTS_ ISO	MPEG-2 video, wrapped in MPEG-2 transport stream, with DTS audio, without a timestamp field	video/mpeg	SD	A profile used for digital television broadcasting, and for storing digital video streams. It is supported by DTVs, STBs, and PCs with DTV tuner cards.
MPEG_TS_HD_DTS_ ISO	MPEG-2 video, wrapped in MPEG-2 transport stream with DTS audio, without a timestamp field	video/mpeg	HD	A profile used for digital television broadcasting, and for storing digital video streams. It is supported by DTVs, STBs, and PCs with DTV tuner cards.
MPEG_TS_SD_EU_ DTS_ISO	MPEG-2 video, wrapped in MPEG-2 transport stream with DTS audio, without a timestamp field	video/mpeg	SD	A profile used for digital television broadcasting, and for storing digital video streams. This profile applies to DVB (terrestrial, cable, and satellite) systems. It is supported by DTVs, STBs, and PCs with DTV tuner cards.

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5.14 AV Class: MPEG-4 Part 2 profiles

Table 18 describes the MPEG-4 Part 2 profiles of the DLNA AV Class.

Table 18 – AV Class: MPEG-4 Part 2 profiles

Profile ID	Description	MIME type	Label	Usage scenarios
MPEG4_P2_MP4_SP_AAC	MPEG-4 Part 2 Simple Profile with AAC LC audio, encapsulated in MP4.	video/mp4	CIF30	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*. A subset of this profile is used by ISMA (Profile 0).
MPEG4_P2_MP4_SP_HEAAC	MPEG-4 Part 2 Simple Profile with HE-AAC audio, encapsulated in MP4	video/mp4	CIF30	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*.
MPEG4_P2_MP4_SP_ATRAC3plus	MPEG-4 Part 2 Simple Profile with ATRAC3plus audio, encapsulated in MP4	video/mp4	CIF30	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*.
MPEG4_P2_MP4_SP_AAC_LTP	MPEG-4 Part 2 Simple Profile with AAC LTP audio encapsulated in MP4	video/mp4	CIF30	A profile utilized to create recordings of Personal Content with a Mobile Recording Device. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
MPEG4_P2_MP4_SP_L2_AAC	MPEG-4 Part 2 Simple Profile Level 2 with AAC audio encapsulated in MP4	video/mp4	CIF15	A profile utilized for multimedia capture. This profile can be supported by *Cellular Phones* and *PDAs.*
MPEG4_P2_MP4_SP_L2_AMR	MPEG-4 Part 2 Simple Profile Level 2 with AMR audio encapsulated in MP4	video/mp4	CIF15	A profile utilized for multimedia capture. This profile can be supported by *Cellular Phones* and *PDAs.*
MPEG4_P2_TS_SP_AAC	MPEG-4 Part 2 Simple Profile with AAC LC audio encapsulated in MPEG-2-TS with a zero timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	
MPEG4_P2_TS_SP_AAC_T	MPEG-4 Part 2 Simple Profile with AAC LC audio encapsulated in MPEG-2-TS with a valid timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	

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Profile ID	Description	MIME type	Label	Usage scenarios
MPEG4_P2_TS_SP_AAC_ISO	MPEG-4 Part 2 Simple Profile with AAC LC audio encapsulated in MPEG-2-TS without a timestamp field	video/mpeg	CIF30	
MPEG4_P2_TS_SP_MPEG1_L3	MPEG-4 Part 2 Simple Profile with MPEG-1 Layer3 audio encapsulated in MPEG-2-TS with a zero timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	A profile utilized to transcode existing Video Content into lower spatial resolutions. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
MPEG4_P2_TS_SP_MPEG1_L3_T	MPEG-4 Part 2 Simple Profile with MPEG-1 Layer3 audio encapsulated in MPEG-2-TS with a valid timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	A profile utilized to transcode existing Video Content into lower spatial resolutions. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
MPEG4_P2_TS_SP_MPEG1_L3_ISO	MPEG-4 Part 2 Simple Profile with MPEG-1 Layer3 audio encapsulated in MPEG-2-TS without a timestamp field.	video/mpeg	CIF30	A profile utilized to transcode existing Video Content into lower spatial resolutions. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
MPEG4_P2_TS_SP_AC3	MPEG-4 Part 2 Simple Profile with AC3 multi-channel audio encapsulated in MPEG-2-TS with a zero timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	A profile utilized to transcode existing Video Content into lower spatial resolutions. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
MPEG4_P2_TS_SP_AC3_T	MPEG-4 Part 2 Simple Profile with AC3 multi-channel audio encapsulated in MPEG-2-TS with a valid timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	A profile utilized to transcode existing Video Content into lower spatial resolutions. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
MPEG4_P2_TS_SP_AC3_ISO	MPEG-4 Part 2 Simple Profile with AC3 multi-channel audio encapsulated in MPEG-2-TS without a timestamp field.	video/mpeg	CIF30	A profile utilized to transcode existing Video Content into lower spatial resolutions. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
MPEG4_P2_TS_SP_MPEG2_L2	MPEG-4 Part 2 Simple Profile with MPEG-1/2 Layer1/2 multi-channel audio encapsulated in MPEG-2-TS with a zero timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	A profile utilized to transcode existing Video Content into lower spatial resolutions. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.

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Profile ID	Description	MIME type	Label	Usage scenarios
MPEG4_P2_TS_SP_MPEG2_L2_T	MPEG-4 Part 2 Simple Profile with MPEG-1/2 Layer 1/2 multi-channel audio encapsulated in MPEG-2-TS with a valid timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	A profile utilized to transcode existing Video Content into lower spatial resolutions. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
MPEG4_P2_TS_SP_MPEG2_L2_ISO	MPEG-4 Part 2 Simple Profile with MPEG-1/2 Layer 1/2 multi-channel audio encapsulated in MPEG-2-TS without a timestamp field.	video/mpeg	CIF30	A profile utilized to transcode existing Video Content into lower spatial resolutions. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
MPEG4_P2_ASF_SP_G726	MPEG-4 Part 2 Simple Profile with ITU-T Rec. G.726 audio encapsulated in ASF.	video/x-ms-asf	CIF30	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*.
MPEG4_P2_MP4_SP_VGA_AAC	MPEG-4 Part 2 Simple Profile Level 3+ with AAC audio encapsulated in MP4.	video/mp4	SD	A profile utilized for multimedia capture. This profile can be supported by *Cellular Phones* and *PDAs*.
MPEG4_P2_MP4_SP_VGA_HEAAC	MPEG-4 Part 2 Simple Profile Level 3+ with HE-AAC audio encapsulated in MP4.	video/mp4	SD	A profile utilized for multimedia capture. This profile can be supported by *Cellular Phones* and *PDAs*.
MPEG4_P2_MP4_ASP_AAC	MPEG-4 Part 2 Advanced Simple Profile with AAC LC encapsulated in MP4.	video/mp4	SD	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*. A subset of this profile is used by ISMA (Profile 1).
MPEG4_P2_MP4_ASP_HEAAC	MPEG-4 Part 2 Advanced Simple Profile with HE-AAC audio encapsulated in MP4.	video/mp4	SD	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by *TVs*, *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*.
MPEG4_P2_MP4_ASP_HEAAC_MULT5	MPEG-4 Part 2 Advanced Simple Profile with HE-AAC multi-channel audio encapsulated in MP4.	video/mp4	SD	A profile utilized to create recording of Broadcast TV and Personal Content. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*.
MPEG4_P2_MP4_ASP_ATRAC3plus	MPEG-4 Part 2 Advanced Simple Profile with ATRAC3plus audio encapsulated in MP4.	video/mp4	SD	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by *TVs*, *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*.

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Profile ID	Description	MIME type	Label	Usage scenarios
MPEG4_P2_TS_ASP_AAC	MPEG-4 Part 2 Advanced Simple Profile with AAC LC audio encapsulated in MPEG-2-TS with a zero timestamp field.	video/vnd.dlna.mpeg-tts	SD	
MPEG4_P2_TS_ASP_AAC_T	MPEG-4 Part 2 Advanced Simple Profile with AAC LC audio encapsulated in MPEG-2-TS with a valid timestamp field.	video/vnd.dlna.mpeg-tts	SD	
MPEG4_P2_TS_ASP_AAC_ISO	MPEG-4 Part 2 Advanced Simple Profile with AAC LC audio encapsulated in MPEG-2-TS without a timestamp field.	video/mpeg	SD	
MPEG4_P2_TS_ASP_MPEG1_L3	MPEG-4 Part 2 Advanced Simple Profile with MPEG-1 Layer3 audio encapsulated in MPEG-2-TS with a zero timestamp field.	video/vnd.dlna.mpeg-tts	SD	
MPEG4_P2_TS_ASP_MPEG1_L3_T	MPEG-4 Part 2 Advanced Simple Profile with MPEG-1 Layer3 audio encapsulated in MPEG-2-TS with a valid timestamp field.	video/vnd.dlna.mpeg-tts	SD	
MPEG4_P2_TS_ASP_MPEG1_L3_ISO	MPEG-4 Part 2 Advanced Simple Profile with MPEG-1 Layer3 audio encapsulated in MPEG-2-TS without a Timestamp field.	video/mpeg	SD	
MPEG4_P2_TS_ASP_AC3	MPEG-4 Part 2 Advanced Simple Profile with AC3 multi-channel audio encapsulated in MPEG-2-TS with a zero timestamp field.	video/vnd.dlna.mpeg-tts	SD	
MPEG4_P2_TS_ASP_AC3_T	MPEG-4 Part 2 Advanced Simple Profile with AC3 multi-channel audio encapsulated in MPEG-2-TS with a valid timestamp field.	video/vnd.dlna.mpeg-tts	SD	

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Profile ID	Description	MIME type	Label	Usage scenarios
MPEG4_P2_TS_ ASP_AC3_ISO	MPEG-4 Part 2 Advanced Simple Profile with AC3 multi-channel audio encapsulated in MPEG-2-TS without a timestamp field.	video/mpeg	SD	
MPEG4_P2_MP4_ ASP_L5_SO_AAC	MPEG-4 Part 2 Advanced Simple Profile up to Level 5 with only Simple Object with AAC LC audio encapsulated in MP4.	video/mp4	SD	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*.
MPEG4_P2_MP4_ ASP_L5_SO_ HEAAC	MPEG-4 Part 2 Advanced Simple Profile up to Level 5 with only Simple Object with HE-AAC audio encapsulated in MP4.	video/mp4	SD	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*.
MPEG4_P2_MP4_ ASP_L5_SO_ HEAAC_MULT5	MPEG-4 Part 2 Advanced Simple Profile up to Level 5 with only Simple Object with HE-AAC multi-channel audio encapsulated in MP4.	video/mp4	SD	A profile utilized to create recording of Broadcast TV and Personal Content. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*.
MPEG4_P2_ASF_ ASP_L5_SO_G726	MPEG-4 Part 2 Advanced Simple Profile up to Level 5 with only Simple Object with ITU-T Rec. G.726 audio encapsulated in ASF.	video/x-ms-asf	SD	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by *TVs*, *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*.
MPEG4_P2_MP4_ ASP_L4_SO_AAC	MPEG-4 Part 2 Advanced Simple Profile up to Level 4 with only Simple Object with AAC LC audio encapsulated in MP4.	video/mp4	CIF30	A profile utilized to create recordings of Broadcast TV and Personal Content. It is utilized to create recordings with a Mobile Recording Device. This profile is supported by *TVs*, *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*.
MPEG4_P2_MP4_ ASP_L4_SO_ HEAAC	MPEG-4 Part 2 Advanced Simple Profile up to Level 4 with only Simple Object with HE-AAC audio encapsulated in MP4.	video/mp4	CIF30	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by *TVs*, *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*.

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Profile ID	Description	MIME type	Label	Usage scenarios
MPEG4_P2_MP4_ ASP_L4_SO_ HEAAC_MULT5	MPEG-4 Part 2 Advanced Simple Profile up to Level 4 with only Simple Object with HE-AAC multi-channel audio encapsulated in MP4.	video/mp4	CIF30	A profile utilized to create recording of Broadcast TV and Personal Content. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*.
MPEG4_P2_ASF_ ASP_L4_SO_G726	MPEG4 Part 2 Advanced Simple Profile up to Level 4 with only Simple Object with ITU-T Rec. G.726 audio encapsulated in ASF.	video/x-ms-asf	CIF30	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by *TVs*, *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*.
MPEG4_H263_ MP4_P0_L10_AAC	H.263 Profile 0 Level 10 with AAC LC audio encapsulated in MP4.	video/3gpp	QCIF 15	A profile utilized to create recordings of Personal Content with a Mobile Recording Device. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players.*
MPEG4_H263_ MP4_P0_L10_ AAC_LTP	H.263 Profile 0 Level 10 with AAC LTP audio encapsulated in MP4.	video/3gpp	QCIF 15	A profile utilized to create recordings of Personal Content with a Mobile Recording Device. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players.*
MPEG4_H263_ 3GPP_P0_L10_ AMR_WBplus	H.263 Profile 0 Level 10 with AMR-WB+ audio encapsulated in 3GPP.	video/3gpp	QCIF 15	This profile is used for 3GPP services. This profile is supported by *Cellular Phones*.
MPEG4_P2_TS_ CO_AC3	MPEG-4 Part 2 Core Profile with AC3 multi-channel audio encapsulated in MPEG-2-TS with a zero timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	This profile is utilized in Broadcast TV. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*. ARIB has adopted this profile for future Digital TV broadcasting.
MPEG4_P2_TS_ CO_AC3_T	MPEG-4 Part 2 Core Profile with AC3 multi-channel audio encapsulated in MPEG-2-TS with a valid timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	This profile is utilized in Broadcast TV. This Profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*. ARIB has adopted this profile for future Digital TV broadcasting.
MPEG4_P2_TS_ CO_AC3_ISO	MPEG-4 Part 2 Core Profile with AC3 multi-channel audio encapsulated in MPEG-2-TS without a Timestamp field.	video/mpeg	CIF30	This profile is utilized in Broadcast TV. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*. ARIB has adopted this profile for future Digital TV broadcasting.

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Profile ID	Description	MIME type	Label	Usage scenarios
MPEG4_P2_TS_CO_MPEG2_L2	MPEG-4 Part 2 Core Profile with MPEG-1/2 Layer1/2 multi-channel audio encapsulated in MPEG-2 transport stream with a zero timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	This profile is utilized in Broadcast TV. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*. ARIB has adopted this profile for future Digital TV broadcasting.
MPEG4_P2_TS_CO_MPEG2_L2_T	MPEG-4 Part 2 Core Profile with MPEG-1/2 Layer1/2 multi-channel audio encapsulated in MPEG-2-TS with a valid timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	This profile is utilized in Broadcast TV. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*. ARIB has adopted this profile for future Digital TV broadcasting.
MPEG4_P2_TS_CO_MPEG2_L2_ISO	MPEG-4 Part 2 Core Profile with MPEG-1/2 Layer1/2 multi-channel audio encapsulated in MPEG-2-TS without a Timestemp field.	video/mpeg	CIF30	This profile is utilized in Broadcast TV. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*. ARIB has adopted this profile for future Digital TV broadcasting.
MPEG4_P2_3GPP_SP_L0B_AAC	MPEG-4 Part 2 Simple Profile Level 0b with AAC audio encapsulated in 3GPP.	video/3gpp video/mp4	QCIF 15	A profile utilized for multimedia streaming, and messaging services in 3GPP. This profile can be supported by *Cellular Phones* and *PDAs*.
MPEG4_P2_3GPP_SP_L0B_AMR	MPEG-4 Part 2 Simple Profile Level 0b with AMR audio encapsulated in 3GPP.	video/3gpp video/mp4	QCIF 15	A profile utilized for multimedia conversations, streaming, and messaging services in 3GPP. This profile is supported by *Cellular Phones* and *PDAs*.
MPEG4_H263_3GPP_P3_L10_AMR	MPEG-4 H.263 Profile 3 Level 10 with AMR audio encapsulated in 3GPP.	video/3gpp video/mp4	QCIF 15	A profile utilized for multimedia conversations, streaming, and messaging services in 3GPP. This profile is supported by *Cellular Phones* and *PDAs*.
MPEG4_H263_3GPP_P0_L10_AMR	H.263 Profile 0 Level 10 with AMR audio encapsulated in 3GPP.	video/3gpp	QCIF 15	This profile is used for 3GPP services. This profile is supported by Cellular Phones.
MPEG4_H263_3GPP_P0_L45_AMR	H.263 Profile 0 Level 45 with AMR audio encapsulated in 3GPP.	video/3gpp	QCIF 15	This profile is used for 3GPP services. This profile is supported by Cellular Phones.
MPEG4_H263_3GPP_P0_L45_AMR_WBplus	H.263 Profile 0 Level 45 with AMR-WB+ audio encapsulated in 3GPP.	video/3gpp	QCIF 15	This profile is used for 3GPP services. This profile is supported by Cellular Phones.
MPEG4_H263_MP4_P0_L45_HEAACv2_L2	H.263 Profile 0 Level 45 with HE-AACv2 audio, encapsulated in 3GPP.	video/mp4	QCIF 15	This profile is used for 3GPP services. This profile is supported by Cellular Phones.

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Profile ID	Description	MIME type	Label	Usage scenarios
MPEG4_P2_3GPP_SP_L0B_AMR_WBplus	MPEG-4 P2 L0b with AMR-WB+ audio, encapsulated in 3GPP.	video/3gpp	QCIF 15	This profile is used for 3GPP services. This profile is supported by Cellular Phones.
MPEG4_P2_3GPP_SP_L3_AMR_WBplus	MPEG-4 P2 L3 with AMR-WB+ audio, encapsulated in 3GPP.	video/3gpp	CIF15	This profile is used for 3GPP services. This profile is supported by Cellular Phones.
MPEG4_P2_MP4_NDSD	MPEG4 Part 2 Advanced Simple Profile, Standard Definition, with AC-3 or MPEG-1 Layer 3 audio, encapsulated in MP4.	video/mp4	SD	Profile utilized for A/V content that is compliant with the Nero Digital Standard format. This profile is supported by A/V players, STBs and PCs.
MPEG4_P2_MP4_SP_L0B_HEAACv2_L2	MPEG-4 P2 L0b with HE-AACv2 audio, encapsulated in 3GPP.	video/mp4	QCIF 15	This profile is used for 3GPP services. This profile is supported by Cellular Phones.
MPEG4_P2_MP4_SP_L3_HEAACv2_L2	MPEG-4 P2 L3 with HE-AACv2 audio, encapsulated in 3GPP.	video/mp4	CIF15	This profile is used for 3GPP services. This profile is supported by Cellular Phones.
MPEG4_P2_MP4_SP_L5_AAC	MPEG-4 Part 2 Simple Profile with AAC LC encapsulated in MP4.	video/mp4	SD	A profile utilized to create recordings of Personal Content. This profile is supported by Cellular Phones, PDAs, Portable Video Players, and PCs.
MPEG4_P2_MP4_SP_L6_AAC	MPEG-4 Part 2 Simple Profile with AAC LC audio, encapsulated in MP4.	video/mp4	HD	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by Cellular Phones, PDAs, Portable Video Players, and PCs.
MPEG4_P2_MP4_SP_L6_AAC_LTP	MPEG-4 Part 2 Simple Profile with AAC LTP audio, encapsulated in MP4.	video/mp4	HD	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by Cellular Phones, PDAs, Portable Video Players, and PCs.
MPEG4_P2_MP4_SP_L6_HEAAC_L2	MPEG-4 Part 2 Simple Profile with HE-AAC audio, encapsulated in MP4.	video/mp4	HD	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by Cellular Phones, PDAs, Portable Video Players, and PCs.
MPEG4_P2_MP4_SP_VGA_AAC_res	MPEG-4 Part 2 Simple Profile with AAC LC audio, encapsulated in MP4.	video/mp4	CIF30	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by Cellular Phones, PDAs, Portable Video Players, and PCs.

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Profile ID	Description	MIME type	Label	Usage scenarios
MPEG4_P2_MP4_SP_VGA_HEAAC_res	MPEG-4 Part 2 Simple Profile with HE-AAC audio, encapsulated in MP4.	video/mp4	CIF30	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by Cellular Phones, PDAs, Portable Video Players, and PCs.

5.15 AV Class: MPEG-4 Part 10 (AVC) profiles

Table 19 describes the MPEG-4 Part 10 profiles of the DLNA AV Class.

Table 19 – AV Class: MPEG-4 Part 10 (AVC) profiles

Profile ID	Description	MIME type	Label	Usage scenarios
AVC_TS_MP_SD_AAC_MULT5	AVC wrapped in MPEG-2 transport stream main profile standard def with AAC audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	SD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*. This profile is used by DVB IP-IRD Capability D.
AVC_TS_MP_SD_AAC_MULT5_T	AVC wrapped in MPEG-2 transport stream main profile standard def with AAC audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	SD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*. This profile is used by DVB IP-IRD Capability D.
AVC_TS_MP_SD_AAC_MULT5_ISO	AVC wrapped in MPEG-2 transport stream main profile standard def with AAC audio without a Timestamp field.	video/mpeg	SD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*. This profile is used by DVB IP-IRD Capability D.
AVC_TS_MP_SD_HEAAC_L2	AVC wrapped in MPEG-2 transport stream main profile standard def with HE-AAC L2 audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	SD	This profile is used for IP-based Broadcast Distribution, and recordings of traditional Broadcast TV and Personal Content. This profile is supported by *TVs* and *PCs*. This profile is used by DVB IP-IRD Capability D.
AVC_TS_MP_SD_HEAAC_L2_T	AVC wrapped in MPEG-2 transport stream main profile standard def with HE-AAC L2 audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	SD	This profile is used for IP-based Broadcast Distribution, and recordings of traditional Broadcast TV and Personal Content. This profile is supported by *TVs* and *PCs*. This profile is used by DVB IP-IRD Capability D.
AVC_TS_MP_SD_HEAAC_L2_ISO	AVC wrapped in MPEG-2 transport stream main profile standard def with HE-AAC L2 audio without a timestamp field.	video/mpeg	SD	This profile is used for IP-based Broadcast Distribution, and recordings of traditional Broadcast TV and Personal Content. This profile is supported by *TVs* and *PCs*. This profile is used by DVB IP-IRD Capability D.

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Profile ID	Description	MIME type	Label	Usage scenarios
AVC_TS_MP_SD_ MPEG1_L3	AVC wrapped in MPEG-2 transport stream main profile standard def with MPEG-1 layer 3 audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	SD	
AVC_TS_MP_SD_ MPEG1_L3_T	AVC wrapped in MPEG-2 transport stream main profile standard def with MPEG-1 layer 3 audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	SD	
AVC_TS_MP_SD_ MPEG1_L3_ISO	AVC wrapped in MPEG-2 transport stream main profile standard def with MPEG-1 layer 3 audio without a Timestamp field.	video/mpeg	SD	
AVC_TS_MP_SD_ AC3	AVC wrapped in MPEG-2 transport stream main profile standard def with AC3 audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	SD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*.
AVC_TS_MP_SD_ AC3_T	AVC wrapped in MPEG-2 transport stream main profile standard def with AC3 audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	SD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*.
AVC_TS_MP_SD_ AC3_ISO	AVC wrapped in MPEG-2 transport stream main profile standard def with AC3 audio without a Timestamp field.	video/mpeg	SD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*.
AVC_TS_MP_SD_ AAC_LTP	AVC wrapped in MPEG-2 transport stream main profile standard def with AAC LTP audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	SD	This profile is used for DTV Broadcasting. This profile is supported by *TVs* and *PCs*.
AVC_TS_MP_SD_ AAC_LTP_T	AVC wrapped in MPEG-2 transport stream main profile standard def with AAC LTP audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	SD	This profile is used for DTV Broadcasting. This profile is supported by *TVs* and *PCs*.
AVC_TS_MP_SD_ AAC_LTP_ISO	AVC wrapped in MPEG-2 transport stream main profile standard def with AAC LTP audio without a Timestamp field.	video/mpeg	SD	This profile is used for DTV Broadcasting. This profile is supported by *TVs* and *PCs*.

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Profile ID	Description	MIME type	Label	Usage scenarios
AVC_TS_MP_SD_ AAC_LTP_MULT5	AVC wrapped in MPEG-2 transport stream main profile standard def with AAC LTP audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	SD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*.
AVC_TS_MP_SD_ AAC_LTP_ MULT5_T	AVC wrapped in MPEG-2 transport stream main profile standard def with AAC_LTP audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	SD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*.
AVC_TS_MP_SD_ AAC_LTP_ MULT5_ISO	AVC wrapped in MPEG-2 transport stream main profile standard def with AAC_LTP audio without a timestamp field.	video/mpeg	SD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*.
AVC_TS_MP_SD_ AAC_LTP_MULT7	AVC wrapped in MPEG-2 transport stream main profile standard def with AAC LTP audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	SD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*.
AVC_TS_MP_SD_ AAC_LTP_ MULT7_T	AVC wrapped in MPEG-2 transport stream main profile standard def with AAC LTP audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	SD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*.
AVC_TS_MP_SD_ AAC_LTP_ MULT7_ISO	AVC wrapped in MPEG-2 transport stream main profile standard def with AAC LTP audio without a timestamp field.	video/mpeg	SD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*.
AVC_TS_MP_ SD_BSAC	AVC wrapped in MPEG-2 transport stream main profile standard def with BSAC audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	SD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, *Mobile handheld Players*, and *PCs*.
AVC_TS_MP_SD_ BSAC_T	AVC wrapped in MPEG-2 transport stream main profile standard def with BSAC audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	SD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, *Mobile handheld Players*, and *PCs*.
AVC_TS_MP_SD_ BSAC_ISO	AVC wrapped in MPEG-2 transport stream main profile standard def with BSAC audio without a timestamp field.	video/mpeg	SD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, *Mobile handheld Players*, and *PCs*.

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Profile ID	Description	MIME type	Label	Usage scenarios
AVC_MP4_MP_SD_AAC_MULT5	AVC main profile standard def with AAC audio encapsulated in MP4.	video/mp4	SD	This profile is used for DTV Broadcasting and recordings of Broadcast TV and Personal Content. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*. It is expected to be supported in the future by ISMA.
AVC_MP4_MP_SD_HEAAC_L2	AVC main profile standard def with HE-AAC L2 audio encapsulated in MP4	video/mp4	SD	A profile utilized to create recording of Broadcast TV and Personal Content. This profile is supported by *TVs* and *PCs*. It is expected to be supported in the future by ISMA.
AVC_MP4_MP_SD_MPEG1_L3	AVC main profile standard def with MPEG-1 L3 audio encapsulated in MP4.	video/mp4	SD	
AVC_MP4_MP_SD_AC3	AVC main profile standard def with AC3 audio encapsulated in MP4.	video/mp4	SD	
AVC_MP4_MP_SD_AAC_LTP	AVC main profile standard def with AAC_LTP audio encapsulated in MP4.	video/mp4	SD	This profile is used for DTV Broadcasting. This profile is supported by *TVs* and *PCs*.
AVC_MP4_MP_SD_AAC_LTP_MULT5	AVC main profile standard def with AAC LTP audio encapsulated in MP4.	video/mp4	SD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*.
AVC_MP4_MP_SD_AAC_LTP_MULT7	AVC main profile standard def with AAC LTP audio encapsulated in MP4.	video/mp4	SD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*.
AVC_MP4_MP_SD_ATRAC3plus	AVC main profile standard def with ATRAC3plus audio encapsulated in MP4.	video/mp4	SD	A profile utilized to create recordings of Personal Content. This profile is supported by *Portable Video Players*, *TVs*, *Home Theatre Systems*, *Home Theatre Systems*, and *PCs*.
AVC_MP4_BL_L3L_SD_AAC	AVC baseline profile SD/VGA with AAC audio encapsulated in MP4.	video/mp4	SD	A profile utilized for multimedia capture. This profile can be supported by *Cellular Phones* and *PDAs*.
AVC_MP4_BL_L3L_SD_HEAAC	AVC baseline profile SD/VGA with HE-AAC audio encapsulated in MP4.	video/mp4	SD	A profile utilized for multimedia capture. This profile can be supported by *Cellular Phones* and *PDAs*.
AVC_MP4_BL_L3_SD_AAC	AVC baseline profile standard def with AAC audio encapsulated in MP4.	video/mp4	SD	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by *TVs* and *PCs*.

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Profile ID	Description	MIME type	Label	Usage scenarios
AVC_MP4_MP_SD_BSAC	AVC baseline profile standard def with BSAC audio encapsulated in MP4.	video/mp4	SD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, *Mobile handheld Players*, and *PCs*.
AVC_TS_BL_CIF30_AAC_MULT5	AVC wrapped in MPEG-2 transport stream baseline profile CIF30 with AAC audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *TVs*, *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*. This profile is used by DVB IP-IRD Capability C.
AVC_TS_BL_CIF30_AAC_MULT5_T	AVC wrapped in MPEG-2 transport stream baseline profile CIF30 with AAC audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *TVs*, *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*. This profile is used by DVB IP-IRD Capability C.
AVC_TS_BL_CIF30_AAC_MULT5_ISO	AVC wrapped in MPEG-2 transport stream baseline profile CIF30 with AAC audio without a Timestamp field.	video/mpeg	CIF30	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *TVs*, *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*. This profile is used by DVB IP-IRD Capability C.
AVC_TS_BL_CIF30_HEAAC_L2	AVC wrapped in MPEG-2 transport stream baseline profile CIF30 with HE-AAC audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *TVs*, *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*. This profile is used by DVB IP-IRD Capability C.
AVC_TS_BL_CIF30_HEAAC_L2_T	AVC wrapped in MPEG-2 transport stream baseline profile CIF30 with HE-AAC audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *TVs*, *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*. This profile is used by DVB IP-IRD Capability C.
AVC_TS_BL_CIF30_HEAAC_L2_ISO	AVC wrapped in MPEG-2 transport stream baseline profile CIF30 with HE-AAC audio without a timestamp field.	video/mpeg	CIF30	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *TVs*, *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*. This profile is used by DVB IP-IRD Capability C.

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Profile ID	Description	MIME type	Label	Usage scenarios
AVC_TS_BL_ CIF30_MPEG1_L3	AVC wrapped in MPEG-2 transport stream baseline profile CIF30 with MPEG-1 layer 3 audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *TVs*, *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*.
AVC_TS_BL_ CIF30_MPEG1_ L3_T	AVC wrapped in MPEG-2 transport stream baseline profile CIF30 with MPEG-1 layer 3 audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *TVs*, *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*.
AVC_TS_BL_ CIF30_MPEG1_ L3_ISO	AVC wrapped in MPEG-2 transport stream baseline profile CIF30 with MPEG-1 layer 3 audio without a timestamp field.	video/mpeg	CIF30	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *TVs*, *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*.
AVC_TS_BL_ CIF30_AC3	AVC wrapped in MPEG-2 transport stream baseline profile CIF30 with AC3 audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	
AVC_TS_BL_ CIF30_AC3_T	AVC wrapped in MPEG-2 transport stream baseline profile CIF30 with AC3 audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	
AVC_TS_BL_ CIF30_AC3_ISO	AVC wrapped in MPEG-2 transport stream baseline profile CIF30 with AC3 audio without a timestamp field.	video/mpeg	CIF30	
AVC_TS_BL_ CIF30_AAC_LTP	AVC wrapped in MPEG-2 transport stream baseline profile CIF30 with AAC LTP audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
AVC_TS_BL_ CIF30_AAC_LTP_T	AVC wrapped in MPEG-2 transport stream baseline profile CIF30 with AAC LTP audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.

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Profile ID	Description	MIME type	Label	Usage scenarios
AVC_TS_BL_ CIF30_AAC_LTP_ ISO	AVC wrapped in MPEG-2 transport stream baseline profile CIF30 with AAC LTP audio without a timestamp field.	video/mpeg	CIF30	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
AVC_TS_BL_ CIF30_AAC_LTP_ MULT5	AVC wrapped in MPEG-2 transport stream baseline profile CIF30 with AAC_LTP audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
AVC_TS_BL_ CIF30_AAC_LTP_ MULT5_T	AVC wrapped in MPEG-2 transport stream baseline profile CIF30 with AAC_LTP audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
AVC_TS_BL_ CIF30_AAC_LTP_ MULT5_ISO	AVC wrapped in MPEG-2 transport stream baseline profile CIF30 with AAC_LTP audio without a timestamp field.	video/mpeg	CIF30	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
AVC_TS_BL_ CIF30_AAC_940	AVC wrapped in MPEG-2 transport stream baseline profile CIF30 with AAC audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	A profile utilized to create recordings of Broadcast TV or Personal Content for Mobile Devices. This profile is supported by *TVs*, *Digital Video Recorders*, *PCs*, *Cellular Phones*, *PDAs*, and *Portable Video Players*.
AVC_TS_BL_ CIF30_AAC_940_T	AVC wrapped in MPEG-2 transport stream baseline profile CIF30 with AAC audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	CIF30	A profile utilized to create recordings of Broadcast TV or Personal Content for Mobile Devices. This profile is supported by *TVs*, *Digital Video Recorders*, *PCs*, *Cellular Phones*, *PDAs*, and *Portable Video Players*.
AVC_TS_BL_ CIF30_AAC_940_ ISO	AVC wrapped in MPEG-2 transport stream baseline profile CIF30 with AAC audio without a timestamp field.	video/mpeg	CIF30	A profile utilized to create recordings of Broadcast TV or Personal Content for Mobile Devices. This profile is supported by *TVs*, *Digital Video Recorders*, *PCs*, *Cellular Phones*, *PDAs*, and *Portable Video Players*.
AVC_MP4_BL_ CIF30_AAC_MULT5	AVC wrapped in MP4 baseline profile CIF30 with AAC audio.	video/mp4	CIF30	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *TVs*, *PDAs*, *Portable Video Players*, and *PCs*. It is expected to be supported in the future by ISMA.

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Profile ID	Description	MIME type	Label	Usage scenarios
AVC_MP4_BL_ CIF30_HEAAC_L2	AVC wrapped in MP4 baseline profile CIF30 with HE-AAC audio.	video/mp4	CIF30	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*.
AVC_MP4_BL_ CIF30_MPEG1_L3	AVC wrapped in MP4 baseline profile CIF30 with MPEG-1 layer3 audio.	video/mp4	CIF30	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *TVs*, *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*.
AVC_MP4_BL_ CIF30_AC3	AVC wrapped in MP4 baseline profile CIF30 with AC3 audio.	video/mp4	CIF30	
AVC_MP4_BL_ CIF30_AAC_LTP	AVC wrapped in MP4 baseline profile CIF30 with AAC LTP audio.	video/mp4	CIF30	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
AVC_MP4_BL_ CIF30_AAC_LTP_ MULT5	AVC wrapped in MP4 baseline profile CIF30 with AAC LTP audio.	video/mp4	CIF30	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
AVC_MP4_BL_L2_ CIF30_AAC	AVC wrapped in MP4 baseline profile CIF 30 with AAC audio.	video/mp4	CIF30	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*.
AVC_MP4_BL_ CIF30_BSAC	AVC wrapped in MP4 baseline profile CIF30 with BSAC audio.	video/mp4	CIF30	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *TVs*, *PDAs*, *Portable Video Players*, and *PCs*.
AVC_MP4_BL_ CIF30_BSAC_ MULT5	AVC wrapped in MP4 baseline profile CIF30 with BSAC audio.	video/mp4	CIF30	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *TVs*, *PDAs*, *Portable Video Players*, and *PCs*.
AVC_MP4_BL_ CIF15_HEAAC	AVC wrapped in MP4 baseline profile CIF15 with HE-AAC audio.	video/mp4	CIF15	A profile utilized for multimedia streaming and messaging services in 3GPP. This profile is supported by *Cellular Phones* and *PDAs*.

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Profile ID	Description	MIME type	Label	Usage scenarios
AVC_MP4_BL_ CIF15_AMR	AVC wrapped in MP4 baseline profile CIF15 with AMR audio.	video/mp4	CIF15	A profile utilized for multimedia streaming and messaging services in 3GPP. This profile is supported by *Cellular Phones* and *PDAs*.
AVC_TS_MP_HD_ AAC_MULT5	AVC wrapped in MPEG-2 transport stream main profile HD with AAC audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	HD	A profile utilized to create recordings of Personal Content and for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, *Cellular Phones*, *Portable Video Players*, and *PCs*. This profile is used by DVB IP-IRD Capability E.
AVC_TS_MP_HD_ AAC_MULT5_T	AVC wrapped in MPEG-2 transport stream main profile HD with AAC audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	HD	A profile utilized to create recordings of Personal Content and for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, *Cellular Phones*, *Portable Video Players*, and *PCs*. This profile is used by DVB IP-IRD Capability E.
AVC_TS_MP_HD_ AAC_MULT5_ISO	AVC wrapped in MPEG-2 transport stream main profile HD with AAC audio without a timestamp field.	video/mpeg	HD	A profile utilized to create recordings of Personal Content and for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, *Cellular Phones*, *Portable Video Players*, and *PCs*. This profile is used by DVB IP-IRD Capability E.
AVC_TS_MP_HD_ HEAAC_L2	AVC wrapped in MPEG-2 transport stream main profile HD with HE-AAC audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	HD	This profile is used for DTV Broadcasting. This profile is supported by *TVs* and *PCs*. This profile is used by DVB IP-IRD Capability E.
AVC_TS_MP_HD_ HEAAC_L2_T	AVC wrapped in MPEG-2 transport stream main profile HD with HE-AAC audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	HD	This profile is used for DTV Broadcasting. This profile is supported by *TVs* and *PCs*. This profile is used by DVB IP-IRD Capability E.
AVC_TS_MP_HD_ HEAAC_L2_ISO	AVC wrapped in MPEG-2 transport stream main profile HD with HE-AAC audio without a timestamp field.	video/mpeg	HD	This profile is used for DTV Broadcasting. This profile is supported by *TVs* and *PCs*. This profile is used by DVB IP-IRD Capability E.
AVC_TS_MP_HD_ MPEG1_L3	AVC wrapped in MPEG-2 transport stream main profile HD with MPEG-1 layer 3 audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	HD	

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Profile ID	Description	MIME type	Label	Usage scenarios
AVC_TS_MP_HD_MPEG1_L3_T	AVC wrapped in MPEG-2 transport stream main profile HD with MPEG-1 layer 3 audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	HD	
AVC_TS_MP_HD_MPEG1_L3_ISO	AVC wrapped in MPEG-2 transport stream main profile HD with MPEG-1 layer 3 audio without a timestamp field.	video/mpeg	HD	
AVC_TS_MP_HD_AC3	AVC wrapped in MPEG-2 transport stream main profile HD with AC3 audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	HD	The profile is expected to be supported in the future by Cable TV Applications.
AVC_TS_MP_HD_AC3_T	AVC wrapped in MPEG-2 transport stream main profile HD with AC3 audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	HD	The profile is expected to be supported in the future by Cable TV Applications.
AVC_TS_MP_HD_AC3_ISO	AVC wrapped in MPEG-2 transport stream main profile HD with AC3 audio without a timestamp field.	video/mpeg	HD	The profile is expected to be supported in the future by Cable TV Applications.
AVC_TS_MP_HD_AAC	AVC wrapped in MPEG-2 transport stream main profile HD with AAC audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	HD	A profile utilized to create recordings of Personal Content with a Mobile Recording Device. This profile is supported by *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*.
AVC_TS_MP_HD_AAC_T	AVC wrapped in MPEG-2 transport stream main profile HD with AAC audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	HD	A profile utilized to create recordings of Personal Content with a Mobile Recording Device. This profile is supported by *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*.
AVC_TS_MP_HD_AAC_ISO	AVC wrapped in MPEG-2 transport stream main profile HD with AAC audio without a timestamp field.	video/mpeg	HD	A profile utilized to create recordings of Personal Content with a Mobile Recording Device. This profile is supported by *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*.
AVC_TS_MP_HD_AAC_LTP	AVC wrapped in MPEG-2 transport stream main profile HD with AAC LTP audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	HD	This profile is used for DTV Broadcasting. This profile is supported by *TVs* and *PCs*.

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Profile ID	Description	MIME type	Label	Usage scenarios
AVC_TS_MP_HD_ AAC_LTP_T	AVC wrapped in MPEG-2 transport stream main profile HD with AAC LTP audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	HD	This profile is used for DTV Broadcasting. This profile is supported by *TVs* and *PCs*.
AVC_TS_MP_HD_ AAC_LTP_ISO	AVC wrapped in MPEG-2 transport stream main profile HD with AAC LTP audio without a timestamp field.	video/mpeg	HD	This profile is used for DTV Broadcasting. This profile is supported by *TVs* and *PCs*.
AVC_TS_MP_HD_ AAC_LTP_MULT5	AVC wrapped in MPEG-2 transport stream main profile HD with AAC LTP audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	HD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*.
AVC_TS_MP_HD_ AAC_LTP_ MULT5_T	AVC wrapped in MPEG-2 transport stream main profile HD with AAC LTP audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	HD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*.
AVC_TS_MP_HD_ AAC_LTP_MULT5_ ISO	AVC wrapped in MPEG-2 transport stream main profile HD with AAC LTP audio without a timestamp field.	video/mpeg	HD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*.
AVC_TS_MP_HD_ AAC_LTP_MULT7	AVC wrapped in MPEG-2 transport stream main profile HD with AAC LTP audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	HD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*.
AVC_TS_MP_HD_ AAC_LTP_ MULT7_T	AVC wrapped in MPEG-2 transport stream main profile HD with AAC LTP audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	HD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*.
AVC_TS_MP_HD_ AAC_LTP_MULT7_ ISO	AVC wrapped in MPEG-2 transport stream main profile HD with AAC LTP audio without a timestamp field.	video/mpeg	HD	This profile is used for DTV Broadcasting. This profile is supported by *TVs*, *Home Theatre Systems*, and *PCs*.
AVC_TS_BL_ CIF15_AAC	AVC wrapped in MPEG-2 transport stream transport stream baseline profile CIF15 with AAC audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	CIF15	A profile utilized to create recordings of Broadcast TV or Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*. This profile is used by DVB IP-IRD Capability A.

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Profile ID	Description	MIME type	Label	Usage scenarios
AVC_TS_BL_ CIF15_AAC_T	AVC wrapped in MPEG-2 transport stream baseline profile CIF15 with AAC audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	CIF15	A profile utilized to create recordings of Broadcast TV or Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*. This profile is used by DVB IP-IRD Capability A.
AVC_TS_BL_ CIF15_AAC_ISO	AVC wrapped in MPEG-2 transport stream baseline profile CIF15 with AAC audio without a timestamp field.	video/mpeg	CIF15	A profile utilized to create recordings of Broadcast TV or Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*. This profile is used by DVB IP-IRD Capability A.
AVC_TS_BL_ CIF15_AAC_540	AVC wrapped in MPEG-2 transport stream baseline profile CIF15 with AAC audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	CIF15	A profile utilized to create recordings of Broadcast TV or Personal Content for Mobile Devices. This profile is supported by *TVs*, *Digital Video Recorders*, *PCs*, *Cellular Phones*, *PDAs*, and *Portable Video Players*.
AVC_TS_BL_ CIF15_AAC_540_T	AVC wrapped in MPEG-2 transport stream baseline profile CIF15 with AAC audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	CIF15	A profile utilized to create recordings of Broadcast TV or Personal Content for Mobile Devices. This profile is supported by *TVs*, *Digital Video Recorders*, *PCs*, *Cellular Phones*, *PDAs*, and *Portable Video Players*.
AVC_TS_BL_ CIF15_AAC_540_ ISO	AVC wrapped in MPEG-2 transport stream baseline profile CIF15 with AAC audio without a timestamp field.	video/mpeg	CIF15	A profile utilized to create recordings of Broadcast TV or Personal Content for Mobile Devices. This profile is supported by *TVs*, *Digital Video Recorders*, *PCs*, *Cellular Phones*, *PDAs*, and *Portable Video Players*.
AVC_TS_BL_ CIF15_AAC_LTP	AVC wrapped in MPEG-2 transport stream baseline profile CIF15 with AAC LTP audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	CIF15	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
AVC_TS_BL_ CIF15_AAC_LTP_T	AVC wrapped in MPEG-2 transport stream baseline profile CIF15 with AAC LTP audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	CIF15	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
AVC_TS_BL_ CIF15_AAC_LTP_ ISO	AVC wrapped in MPEG-2 transport stream baseline profile CIF15 with AAC LTP audio without a timestamp field.	video/mpeg	CIF15	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.

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Profile ID	Description	MIME type	Label	Usage scenarios
AVC_TS_BL_ CIF15_BSAC	AVC wrapped in MPEG-2 transport stream baseline profile CIF15 with BSAC audio with zero timestamp field.	video/vnd.dlna.mpeg-tts	CIF15	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *TVs*, *PDAs*, *Portable Video Players*, and *PCs*.
AVC_TS_BL_ CIF15_BSAC_T	AVC wrapped in MPEG-2 transport stream baseline profile CIF15 with BSAC audio with valid timestamp field.	video/vnd.dlna.mpeg-tts	CIF15	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *TVs*, *PDAs*, *Portable Video Players*, and *PCs*.
AVC_TS_BL_ CIF15_BSAC_ISO	AVC wrapped in MPEG-2 transport stream transport stream baseline profile CIF15 with BSAC audio without a timestamp field.	video/mpeg	CIF15	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *TVs*, *PDAs*, *Portable Video Players*, and *PCs*.
AVC_MP4_BL_ CIF15_AAC	AVC wrapped in MP4 baseline profile CIF15 with AAC audio.	video/mp4	CIF15	A profile utilized to create recordings of Broadcast TV or Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
AVC_MP4_BL_ CIF15_AAC_520	AVC wrapped in MP4 baseline profile CIF15 with AAC LC audio.	video/mp4	CIF15	This profile is used for Broadcast services, Mobile services (for example 3GPP services), and Commercial A/V content services and to create recordings of Personal Content with a Mobile Recording Device. This profile is supported by all devices in the MHD category that implement the AV Media Class.
AVC_MP4_BL_ CIF15_AAC_LTP	AVC wrapped in MP4 baseline profile CIF15 with AAC LTP audio.	video/mp4	CIF15	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
AVC_MP4_BL_ CIF15_AAC_LTP_ 520	AVC wrapped in MP4 baseline profile CIF15 with AAC LTP audio.	video/mp4	CIF15	This profile is used for 3GPP services and to create recordings of Personal Content with a Mobile Recording Device. This profile is supported by *Cellular Phones*, *PDAs*, *Portable Video Players*, and *PCs*.
AVC_MP4_BL_ CIF15_BSAC	AVC wrapped in MP4 baseline profile CIF 15 with BSAC audio	video/mp4	CIF15	A profile utilized to create recordings of Personal Content with a Mobile Recording Device and for DTV Broadcasting. This profile is supported by *TVs*, *PDAs*, *Portable Video Players*, and *PCs*.

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AVC_MP4_BL_ L12_CIF15_HEAAC	AVC wrapped in MP4 baseline profile CIF 15 with HE-AAC L2 audio.	video/mp4	CIF15	A profile utilized to create recordings of Broadcast TV or Personal Content with a Mobile Recording Device. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
AVC_MP4_BL_ L1B_QCIF15_ HEAAC	AVC wrapped in MP4 baseline profile QCIF with HE-AAC L2 audio.	video/mp4	QCIF 15	A profile utilized to create recordings of Broadcast TV and Personal Content with a Mobile Recording Device. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
AVC_3GPP_BL_ CIF30_AMR_ WBplus	AVC wrapped in 3GPP baseline profile CIF30 with AMR-WB+ audio.	video/3gpp	CIF30	This profile is used for 3GPP services. This profile is supported by Cellular Phones.
AVC_3GPP_BL_ CIF15_AMR_ WBplus	AVC wrapped in 3GPP baseline profile CIF15 with AMR-WB+ audio.	video/3gpp	CIF15	This profile is used for 3GPP services. This profile is supported by *Cellular Phones*.
AVC_3GPP_BL_ QCIF15_AAC	AVC wrapped in 3GPP baseline profile QCIF15 with AAC audio.	video/3gpp	QCIF 15	A profile utilized to create recordings of Broadcast TV and Personal Content with a Mobile Recording Device. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
AVC_3GPP_BL_ QCIF15_AAC_LTP	AVC wrapped in 3GPP baseline profile QCIF15 with AAC LTP audio.	video/3gpp	QCIF 15	A profile utilized to create recordings of Personal Content with a Mobile Recording Device. This profile is supported by *Cellular Phones*, *PDAs*, and *Portable Video Players*.
AVC_3GPP_BL_ QCIF15_HEAAC	AVC wrapped in 3GPP baseline profile QCIF15 with HE-AAC audio.	video/3gpp video/mp4	QCIF 15	A profile utilized for multimedia streaming and messaging services in 3GPP. This profile is supported by *Cellular Phones* and *PDAs*.
AVC_3GPP_BL_ QCIF15_AMR_ WBplus	AVC wrapped in 3GPP baseline profile QCIF15 with AMR-WB+ audio.	video/3gpp	QCIF 15	This profile is used for 3GPP services. This profile is supported by *Cellular Phones*.
AVC_3GPP_BL_ QCIF15_AMR	AVC wrapped in 3GPP baseline profile QCIF15 with AMR audio.	video/3gpp video/mp4	QCIF 15	A profile utilized for multimedia streaming and messaging services in 3GPP. This profile is supported by *Cellular Phones* and *PDAs*.
AVC_3GPP_BL_ CIF15_AMR_ WBplus_res	AVC wrapped in 3GPP baseline profile CIF15 with AMR-WB+ audio.	video/3gpp	CIF15	A profile utilized for Broadcast TV to Mobile devices, 3GPP services and to create recordings of those or Personal Content with a Mobile Recording Device. This profile is supported by *Cellular Phones, PDAs, and Portable Video Players*.

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Profile ID	Description	MIME type	Label	Usage scenarios
AVC_3GPP_BL_ CIF30_AMR_ WBplus_res	AVC wrapped in 3GPP baseline profile CIF30 with AMR-WB+ audio.	video/3gpp	CIF30	A profile utilized for Broadcast TV to Mobile devices, 3GPP services and to create recordings of those or Personal Content with a Mobile Recording Device. This profile is supported by *Cellular Phones, PDAs, and Portable Video Players*.
AVC_3GPP_BL_ L1B_QCIF15_AMR	AVC wrapped in 3GPP baseline profile QCIF with AMR audio.	video/3gpp	QCIF 15	This profile is used for 3GPP services. This profile is supported by *Cellular Phones*.
AVC_3GPP_BL_ L1B_QCIF15_ AMR_WBplus	AVC wrapped in 3GPP baseline profile QCIF with AMR-WB+ audio.	video/3gpp	QCIF 15	This profile is used for 3GPP services. This profile is supported by *Cellular Phones*.
AVC_MP4_BL_ CIF15_HEAACv2_ L2	AVC wrapped in MP4 baseline profile CIF15 with HE-AACv2 L2 audio.	video/mp4	CIF15	A profile utilized for Broadcast TV to Mobile devices and to create recordings of Broadcast TV or Personal Content with a Mobile Recording Device. This profile is supported by *Cellular Phones, PDAs, and Portable Video Players*.
AVC_MP4_BL_ CIF30_HEAACv2_ L2	AVC wrapped in MP4 baseline profile CIF30 with HE-AACv2 L2 audio.	video/mp4	CIF30	A profile utilized for Broadcast TV to Mobile devices and to create recordings of Broadcast TV or Personal Content with a Mobile Recording Device. This profile is supported by *Cellular Phones, PDAs, and Portable Video Players*.
AVC_MP4_HP_ HD_HEAACv2_L4	AVC high profile HD with HE-AACv2 audio encapsulated in MP4.	video/mp4	HD	This profile is used for IPTV and DTV content delivery, recordings thereof and Personal Content. This profile is supported by *TVs, Home Theatre System, and PCs*.
AVC_MP4_HP_SD_ HEAACv2_L4	AVC high profile standard def with HE-AACv2 audio encapsulated in MP4.	video/mp4	SD	This profile is used for IPTV and DTV content delivery, recordings thereof and Personal Content. This profile is supported by *TVs, Home Theatre System, and PCs*.
AVC_TS_HP_HD_ HEAACv2_L4_ISO	AVC wrapped in MPEG-2 TS high profile high def with HE-AACv2 audio without a timestamp field.	video/mpeg	HD	This profile is used for IPTV and DTV broadcasting. This profile is supported by *TVs, Home Theatre System, and PCs*.
AVC_TS_HP_HD_ HEAACv2_L4_T	AVC wrapped in MPEG-2 TS high profile HD with HE-AACv2 audio with valid TTS.	video/vnd.dlna.mpeg-tts	HD	This profile is used for IPTV and DTV broadcasting. This profile is supported by *TVs, Home Theatre System, and PCs*.
AVC_TS_HP_SD_ HEAACv2_L4_ISO	AVC wrapped in MPEG-2 TS high profile standard def with HE-AACv2 audio without a timestamp field.	video/mpeg	SD	This profile is used for IPTV and DTV broadcasting. This profile is supported by *TVs, Home Theatre System, and PCs*.

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AVC_TS_HP_SD_ HEAACv2_L4_T	AVC wrapped in MPEG-2 TS high profile standard def with HE-AACv2 audio with valid TTS.	video/vnd.dlna.mpeg-tts	SD	This profile is used for IPTV and DTV broadcasting. This profile is supported by *TVs, Home Theatre System, and PCs*.
MPEG4_H263_ MP4_P0_L45_ HEAACv2_L2	H.263 Profile 0 Level 45 with HE-AACv2 audio, encapsulated in 3GPP.	video/mp4	QCIF 15	This profile is used for 3GPP services. This profile is supported by *Cellular Phones*.
MPEG4_P2_3GPP_ SP_L0B_AMR_ WBplus	MPEG-4 P2 L0b with AMR-WB+ audio, encapsulated in 3GPP.	video/3gpp	QCIF 15	This profile is used for 3GPP services. This profile is supported by *Cellular Phones*.
MPEG4_P2_3GPP_ SP_L3_AMR_ WBplus	MPEG-4 P2 L3 with AMR-WB+ audio, encapsulated in 3GPP.	video/3gpp	CIF15	This profile is used for 3GPP services. This profile is supported by *Cellular Phones*.
MPEG4_P2_MP4_ NDSD	MPEG4 Part 2 Advanced Simple Profile, Standard Definition, with AC-3 or MPEG-1 Layer 3 audio, encapsulated in MP4.	video/mp4	SD	Profile utilized for A/V content that is compliant with the Nero Digital Standard format. This profile is supported by *A/V players, STBs and PCs*.
MPEG4_P2_MP4_ SP_L0B_ HEAACv2_L2	MPEG-4 P2 L0b with HE-AACv2 audio, encapsulated in 3GPP.	video/mp4	QCIF 15	This profile is used for 3GPP services. This profile is supported by *Cellular Phones*.
MPEG4_P2_MP4_ SP_L3_HEAACv2_ L2	MPEG-4 P2 L3 with HE-AACv2 audio, encapsulated in 3GPP.	video/mp4	CIF15	This profile is used for 3GPP services. This profile is supported by *Cellular Phones*.
MPEG4_P2_MP4_ SP_L6_AAC	MPEG-4 Part 2 Simple Profile with AAC LC audio, encapsulated in MP4.	video/mp4	HD	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by *Cellular Phones, PDAs, Portable Video Players, and PCs*.
MPEG4_P2_MP4_ SP_L6_AAC_LTP	MPEG-4 Part 2 Simple Profile with AAC LTP audio, encapsulated in MP4.	video/mp4	HD	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by *Cellular Phones, PDAs, Portable Video Players, and PCs*.
MPEG4_P2_MP4_ SP_L6_HEAAC_L2	MPEG-4 Part 2 Simple Profile with HE-AAC audio, encapsulated in MP4.	video/mp4	HD	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by *Cellular Phones, PDAs, Portable Video Players, and PCs*.
MPEG4_P2_MP4_ SP_VGA_AAC_res	MPEG-4 Part 2 Simple Profile with AAC LC audio, encapsulated in MP4.	video/mp4	CIF30	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by *Cellular Phones, PDAs, Portable Video Players, and PCs*.

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Profile ID	Description	MIME type	Label	Usage scenarios
MPEG4_P2_MP4_SP_VGA_HEAAC_res	MPEG-4 Part 2 Simple Profile with HE-AAC audio, encapsulated in MP4.	video/mp4	CIF30	A profile utilized to create recordings of Broadcast TV and Personal Content. This profile is supported by *Cellular Phones, PDAs, Portable Video Players, and PCs*.
AVC_TS_HD_60_AC3	AVC HD/SD video for a 60 Hz system, wrapped in MPEG-2 transport stream, with AC-3 audio, with a zero value timestamp field.	video/vnd.dlna.mpeg-tts	HD	A profile utilized to create recordings of Personal content or Broadcast TV. This profile is supported by *PCs, TVs, Digital Movie Cameras, and STBs*.
AVC_TS_HD_60_AC3_T	AVC HD/SD video for a 60 Hz system, wrapped in MPEG-2 transport stream, with AC-3 audio, with a valid non-zero timestamp field.	video/vnd.dlna.mpeg-tts	HD	A profile utilized to create recordings of Personal content or Broadcast TV. This profile is supported by *PCs, TVs, Digital Movie Cameras, and STBs*.
AVC_TS_HD_60_AC3_ISO	AVC HD/SD video for a 60 Hz system, wrapped in MPEG-2 transport stream, with AC-3 audio, without a timestamp field.	video/mpeg	HD	A profile utilized to create recordings of Personal content or Broadcast TV. This profile is supported by *PCs, TVs, Digital Movie Cameras, and STBs*.
AVC_TS_HD_50_AC3	AVC HD/SD video for a 50 Hz system, wrapped in MPEG-2 transport stream, with AC-3 audio, with a zero value timestamp field.	video/vnd.dlna.mpeg-tts	HD	A profile utilized to create recordings of Personal content or Broadcast TV. This profile is supported by *PCs, TVs, Digital Movie Cameras, and STBs*.
AVC_TS_HD_50_AC3_T	AVC HD/SD video for a 50 Hz system, wrapped in MPEG-2 transport stream, with AC-3 audio, with a valid non-zero timestamp field.	video/vnd.dlna.mpeg-tts	HD	A profile utilized to create recordings of Personal content or Broadcast TV. This profile is supported by *PCs, TVs, Digital Movie Cameras, and STBs*.
AVC_TS_HD_50_AC3_ISO	AVC HD/SD video for a 50 Hz system, wrapped in MPEG-2 transport stream, with AC-3 audio, without a timestamp field.	video/mpeg	HD	A profile utilized to create recordings of Personal content or Broadcast TV. This profile is supported by *PCs, TVs, Digital Movie Cameras, and STBs*.
AVC_TS_HD_24_AC3	AVC HD/SD video for a 24 Hz system, wrapped in MPEG-2 transport stream, with AC-3 audio, with a zero value timestamp field.	video/vnd.dlna.mpeg-tts	HD	A profile utilized to create recordings of Personal content or Broadcast TV. This profile is supported by *PCs, TVs, Digital Movie Cameras, and STBs*.

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AVC_TS_HD_24_AC3_T	AVC HD/SD video for a 24 Hz system, wrapped in MPEG-2 transport stream, with AC-3 audio, with a valid non-zero timestamp field.	video/vnd.dlna.mpeg-tts	HD	A profile utilized to create recordings of Personal content or Broadcast TV. This profile is supported by *PCs, TVs, Digital Movie Cameras, and STBs*.
AVC_TS_HD_24_AC3_ISO	AVC HD/SD video for a 24 Hz system, wrapped in MPEG-2 transport stream, with AC-3 audio, without a timestamp field.	video/mpeg	HD	A profile utilized to create recordings of Personal content or Broadcast TV. This profile is supported by *PCs, TVs, Digital Movie Cameras, and STBs*.
AVC_TS_JP_AAC_T	AVC wrapped in MPEG-2 transport stream, Main/High profile, with MPEG-2 AAC audio, with a valid non-zero timestamp field.	video/vnd.dlna.mpeg-tts	HD	A profile utilized to create recordings of Personal content or Broadcast TV. This profile is supported by *PCs, TVs, Digital Movie Cameras, and STBs*.
AVC_TS_SD_EU	European region profile for SD resolution. AVC wrapped in MPEG-2 transport stream, with MPEG-1 Layer 1, MPEG-1 Layer 2, MPEG-2 Layer 2 or AC-3 audio, with a zero value timestamp field.	video/vnd.dlna.mpeg-tts	SD	A profile used for digital television broadcasting, and for storing digital video streams. This profile applies to DVB (terrestrial, cable, and satellite) systems. It is supported by *DTVs, STBs, and PCs with DTV tuner cards*.
AVC_TS_SD_EU_T	European region profile for SD resolution. AVC wrapped in MPEG-2 transport stream, with MPEG-1 Layer 1, MPEG-1 Layer 2, MPEG-2 Layer 2, or AC-3 audio, with a valid non-zero timestamp field.	video/vnd.dlna.mpeg-tts	SD	A profile used for digital television broadcasting, and for storing digital video streams. This profile applies to DVB (terrestrial, cable, and satellite) systems. It is supported by *DTVs, STBs, and PCs with DTV tuner cards*.
AVC_TS_SD_EU_ISO	European region profile for SD resolution. AVC wrapped in MPEG-2 transport stream, with MPEG-1 Layer 1, MPEG-1 Layer 2, MPEG-2 Layer 2 or AC-3 audio, without a timestamp field.	video/mpeg	SD	A profile used for digital television broadcasting, and for storing digital video streams. This profile applies to DVB (terrestrial, cable, and satellite) systems. It is supported by *DTVs, STBs, and PCs with DTV tuner cards*.

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Profile ID	Description	MIME type	Label	Usage scenarios
AVC_TS_HD_EU	European region profile for HD/SD resolution. AVC wrapped in MPEG-2 transport stream, with MPEG-1 Layer 1, MPEG-1 Layer 2, MPEG-2 Layer 2 or AC-3 audio, with a zero value timestamp field.	video/vnd.dlna.mpeg-tts	HD	A profile used for digital television broadcasting, and for storing digital video streams. This profile applies to DVB (terrestrial, cable, and satellite) systems. It is supported by *DTVs, STBs, and PCs with DTV tuner cards*.
AVC_TS_HD_EU_T	European region profile for HD/SD resolution. AVC wrapped in MPEG-2 transport stream, with MPEG-1 Layer 1, MPEG-1 Layer 2, MPEG-2 Layer 2 or AC-3 audio, with a zero value timestamp field.	video/vnd.dlna.mpeg-tts	HD	A profile used for digital television broadcasting, and for storing digital video streams. This profile applies to DVB (terrestrial, cable, and satellite) systems. It is supported by *DTVs, STBs, and PCs with DTV tuner cards*.
AVC_TS_HD_EU_ ISO	European region profile for HD/SD resolution. AVC wrapped in MPEG-2 transport stream, with MPEG-1 Layer 1, MPEG-1 Layer 2, MPEG-2 Layer 2 or AC-3 audio, with a zero value timestamp field.	video/mpeg	HD	A profile used for digital television broadcasting, and for storing digital video streams. This profile applies to DVB (terrestrial, cable, and satellite) systems. It is supported by *DTVs, STBs, and PCs with DTV tuner cards*.
AVC_MP4_BL_ CIF30_HEAAC_ MPS	AVC baseline profile CIF30 with HE-AAC and MPS audio, encapsulated in MP4.	video/mp4	CIF30	A profile utilized for Broadcast TV to Mobile devices and to play back broadcasted or stored audio content with a Mobile Device. This profile is supported by *Cellular Phones, PDAs, and Portable Video Players*.
AVC_MP4_MP_ SD_AAC_MPS	AVC main profile SD with AAC and MPS audio, encapsulated in MP4.	video/mp4	SD	This profile is used for IPTV and DTV content delivery, recordings thereof and Personal Content. This profile is supported by *TVs, Home Theatre Systems, and PCs*.
AVC_MP4_MP_ SD_HEAAC_MPS	AVC main profile SD with AAC and MPS audio, encapsulated in MP4.	video/mp4	SD	This profile is used for IPTV and DTV content delivery, recordings thereof and Personal Content. This profile is supported by *TVs, Home Theatre Systems, and PCs*.
AVC_MP4_MP_ SD_HEAAC_L4	AVC main profile SD with HE-AAC L4 audio, encapsulated in MP4.	video/mp4	SD	This profile is used for IPTV and DTV content delivery, recordings thereof and Personal Content. This profile is supported by *TVs, Home Theatre Systems, and PCs*.

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AVC_MP4_MP_HD_AAC_MPS	AVC main profile HD with AAC and MPS audio, encapsulated in MP4.	video/mp4	HD	This profile is used for IPTV and DTV content delivery, recordings thereof and Personal Content. This profile is supported by *TVs, Home Theatre Systems, and PCs*.
AVC_MP4_MP_HD_HEAAC_MPS	AVC main profile HD with HE-AAC and MPS audio, encapsulated in MP4.	video/mp4	HD	This profile is used for IPTV and DTV content delivery, recordings thereof and Personal Content. This profile is supported by *TVs, Home Theatre Systems, and PCs*.
AVC_TS_HP_SD_AC3_T	AVC wrapped in MPEG-2 transport stream High Profile Standard Definition with AC3 audio with a valid non-zero timestamp field.	video/vnd.dlna.mpeg-tts	SD	This profile is used for DTV broadcasting. This profile is supported by *TVs, Home Theatre Systems,* and *PCs*
AVC_TS_HP_SD_AC3_ISO	AVC wrapped in MPEG-2 transport stream High Profile Standard Definition with AC3 audio without a timestamp field.	video/mpeg	SD	This profile is used for DTV broadcasting. This profile is supported by *TVs, Home Theatre Systems,* and *PCs*
AVC_TS_HP_SD_EAC3_T	AVC wrapped in MPEG-2 transport stream High Profile Standard Definition with AC3 audio with a valid non-zero timestamp field.	video/vnd.dlna.mpeg-tts	SD	This profile is used for DTV broadcasting. This profile is supported by *TVs, Home Theatre Systems,* and *PCs*
AVC_TS_HP_SD_EAC3_ISO	AVC wrapped in MPEG-2 transport stream High Profile Standard Definition with AC3 audio without a timestamp field.	video/mpeg	SD	This profile is used for DTV broadcasting. This profile is supported by *TVs, Home Theatre Systems,* and *PCs*
AVC_TS_HP_HD_AC3_T	AVC wrapped in MPEG-2 transport stream High profile High Definition with AC-3 audio, with a valid non-zero timestamp field.	video/vnd.dlna.mpeg-tts	HD	This profile is used for DTV broadcasting. This profile is supported by *TVs, Home Theatre Systems,* and *PCs.*
AVC_TS_HP_HD_AC3_ISO	AVC wrapped in MPEG-2 transport stream High profile High Definition with AC-3 audio, without a timestamp field.	video/mpeg	HD	This profile is used for DTV broadcasting. This profile is supported by *TVs, Home Theatre Systems,* and *PCs.*
AVC_TS_HP_HD_EAC3_T	AVC wrapped in MPEG-2 transport stream High profile High Definition with Enhanced AC-3 audio, with a valid non-zero timestamp field.	video/vnd.dlna.mpeg-tts	HD	This profile is used for DTV broadcasting. This profile is supported by *TVs, Home Theatre Systems,* and *PCs.*

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AVC_TS_HP_HD_EAC3_ISO	AVC wrapped in MPEG-2 transport stream High profile High Definition with Enhanced AC-3 audio with out a timestamp field.	video/mpeg	HD	This profile is used for DTV broadcasting. This profile is supported by *TVs, Home Theatre Systems,* and *PCs.*
AVC_TS_HP_SD_MPEG1_L2_T	AVC wrapped in MPEG-2 transport stream, High Profile, Standard Definition with MPEG-1 L1 and L2 audio, with a valid non-zero timestamp field.	video/vnd.dlna.mpeg-tts	SD	This profile is used for DTV broadcasting. This profile is supported by *TVs, Home Theatre Systems,* and *PCs.*
AVC_TS_HP_SD_MPEG1_L2_ISO	AVC wrapped in MPEG-2 transport stream High Profile Standard Definition with MPEG-1 L1 and L2 audio, without a timestamp field.	video/mpeg	SD	This profile is used for DTV broadcasting. This profile is supported by *TVs, Home Theatre Systems,* and *PCs.*
AVC_TS_HP_HD_MPEG1_L2_T	AVC wrapped in MPEG-2 transport stream High profile High Definition with MPEG-1 L1 and L2 audio with a valid non-zero timestamp field.	video/vnd.dlna.mpeg-tts	HD	This profile is used for DTV broadcasting. This profile is supported by *TVs, Home Theatre Systems,* and *PCs.*
AVC_TS_HP_HD_MPEG1_L2_ISO	AVC wrapped in MPEG-2 transport stream High profile High Definition with MPEG-1 L1 and L2 audio without a timestamp field.	video/mpeg	HD	This profile is used for DTV broadcasting. This profile is supported by *TVs, Home Theatre Systems,* and *PCs.*
AVC_TS_HD_60_AC3_X_T	AVC HD/SD video with AC-3 audio including dual-mono channel mode, wrapped in MPEG-2 TS with valid timestamp for 60 Hz system.	video/vnd.dlna.mpeg-tts	HD SD	A profile utilized to create recordings of Personal content or Broadcast TV. This profile is supported by *PCs, TVs, Digital Movie Cameras, and STBs*.
AVC_TS_HD_50_AC3_X_T	AVC HD/SD video with AC-3 audio including dual-mono channel mode, wrapped in MPEG-2 TS with valid timestamp for 50 Hz system.	video/vnd.dlna.mpeg-tts	HD SD	A profile utilized to create recordings of Personal content or Broadcast TV. This profile is supported by *PCs, TVs, Digital Movie Cameras, and STBs*.
AVC_TS_HD_24_AC3_X_T	AVC HD/SD video with AC-3 audio including dual-mono channel mode, wrapped in MPEG-2 TS with valid timestamp for 24 Hz system.	video/vnd.dlna.mpeg-tts	HD SD	A profile utilized to create recordings of Personal content or Broadcast TV. This profile is supported by *PCs, TVs, Digital Movie Cameras, and STBs.*

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Profile ID	Description	MIME type	Label	Usage scenarios
AVC_TS_HD_60_ LPCM_T	AVC HD/SD video with LPCM audio, wrapped in MPEG-2 TS with valid timestamp for 60 Hz system.	video/vnd.dlna.mpeg-tts	HD SD	A profile utilized to create recordings of Personal content or Broadcast TV. This profile is supported by *PCs, TVs, Digital Movie Cameras, and STBs.*
AVC_TS_HD_50_ LPCM_T	AVC HD/SD video with LPCM audio, wrapped in MPEG-2 TS with valid timestamp for 50 Hz system.	video/vnd.dlna.mpeg-tts	HD SD	A profile utilized to create recordings of Personal content or Broadcast TV. This profile is supported by *PCs, TVs, Digital Movie Cameras, and STBs.*
AVC_TS_HD_24_ LPCM_T	AVC HD/SD video with LPCM audio, wrapped in MPEG-2 TS with valid timestamp for 24 Hz system.	video/vnd.dlna.mpeg-tts	HD SD	A profile utilized to create recordings of Personal content or Broadcast TV. This profile is supported by *PCs, TVs, Digital Movie Cameras, and STBs.*
AVC_MP4_BL_ L2_CIF15_ HEAACv2_350	AVC baseline profile CIF with HE-AAC v2 audio, encapsulated in MP4.	video/mp4	CIF15	This profile is used for 3GPP services. This profile is supported by *Cellular Phones*.
AVC_MP4_BL_ CIF15_AAC_350	AVC wrapped in MP4 baseline profile CIF15 with AAC LC audio.	video/mp4	CIF15	This profile is used for Broadcast services, Mobile services (for example 3GPP services), and Commercial A/V content services and to create recordings of Personal Content with a Mobile Recording Device. This profile is supported by *all devices in the MHD category* that implement the AV Media Class. Table 5-14 AV Class: MPEG-4 Part 10 (AVC) Profiles (Continued) Profile ID Description MIME Type Label Usage Scenarios.
AVC_MP4_BL_ CIF15_HEAAC_350	AVC wrapped in MP4 baseline profile CIF15 with HE-AAC audio.	video/mp4	CIF15	A profile utilized for multimedia streaming and messaging services in 3GPP. This profile is supported by *Cellular Phones and PDAs*.
AVC_MP4_MP_ SD_AAC_LC	AVC main profile standard def with AAC_LC audio encapsulated in MP4.	video/mp4	SD	This profile is used for IPTV and DTV content delivery, recordings thereof and Personal Content. This profile is supported by *TVs, Home Theatre System, and PCs*.
AVC_MP4_BL_ L31_HD_AAC	AVC baseline profile HD with AAC LC audio, encapsulated in MP4.	video/mp4	HD	This profile is utilized to create recordings of Personal Content. This profile is supported by *Digital Video Movie Cameras, Cellular phones, TVs and PCs*.
AVC_MP4_BL_ L32_HD_AAC	AVC baseline profile HD with AAC LC audio, encapsulated in MP4.	video/mp4	HD	This profile is utilized to create recordings of Personal Content. This profile is supported by *Digital Video Movie Cameras, Cellular phones, TVs and PCs*.

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Profile ID	Description	MIME type	Label	Usage scenarios
AVC_TS_NA_T	AVC video wrapped in MPEG-2 transport stream, as constrained by SCTE standards, with AC-3, Enhanced AC-3, MPEG-4 HE-AAC v2 or MPEG-1 Layer II audio, with a valid non-zero timestamp field.	video/vnd.dlna.mpeg-tts	HD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to SCTE (cable), satellite and IPTV systems. It is supported by DTVs, STBs, and PCs with DTV tuner cards.
AVC_TS_NA_ISO	AVC video wrapped in MPEG-2 transport stream, as constrained by SCTE standards, with AC-3, Enhanced AC-3, MPEG-4 HE-AAC v2 or MPEG-1 Layer II audio, without a timestamp field.	video/mpeg	HD	A profile derived from digital television broadcasting, and also used for storing digital video streams. This profile applies to SCTE (cable), satellite and IPTV systems. It is supported by DTVs, STBs, and PCs with DTV tuner cards.
AVC_TS_EU_ISO	AVC video wrapped in MPEG-2 TS transport stream as constrained by DVB standards, with AC-3, Enhanced AC-3 and MPEG-4 HE-AAC v2 audio.	video/mpeg	HD	A profile used for Terrestrial, Satellite and IPTV Broadcast Distribution in Europe.
AVC_TS_MP_SD_DTS_ISO	AVC video wrapped in MPEG-2 transport stream with DTS audio without timestamp field.	video/mpeg	SD	A profile used for digital television broadcasting, and for storing digital video streams. It is supported by DTVs, STBs, and PCs with DTV tuner cards.
AVC_TS_MP_SD_DTSHD_ISO	AVC video wrapped in MPEG-2 transport stream with DTS-HD audio without timestamp field.	video/mpeg	SD	A profile used for digital television broadcasting, and for storing digital video streams. It is supported by DTVs, STBs, and PCs with DTV tuner cards.
AVC_TS_HP_HD_DTS_ISO	AVC video wrapped in MPEG-2 transport stream with DTS audio, without a timestamp field.	video/mpeg	HD	A profile used for digital television broadcasting, and for storing digital video streams. It is supported by DTVs, STBs, and PCs with DTV tuner cards.
AVC_TS_HP_HD_DTSHD_ISO	AVC video wrapped in MPEG-2 transport stream with DTS-HD audio, without a timestamp field.	video/mpeg	HD	A profile used for digital television broadcasting, and for storing digital video streams. It is supported by DTVs, STBs, and PCs with DTV tuner cards.
AVC_TS_HP_HD_L41_DTS_ISO	AVC video wrapped in MPEG-2 transport stream with DTS audio, without a timestamp field.	video/mpeg	HD	A profile used for digital television broadcasting, and for storing digital video streams. It is supported by DTVs, STBs, and PCs with DTV tuner cards.

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Profile ID	Description	MIME type	Label	Usage scenarios
AVC_TS_SD_EU_ DTS_ISO	European region profile for SD resolution. AVC video wrapped in MPEG-2 transport stream with DTS audio, without a timestamp field.	Video/mpeg	SD	A profile used for digital television broadcasting, and for storing digital video streams. This profile applies to DVB (terrestrial, cable, and satellite) systems. It is supported by DTVs, STBs, and PCs with DTV tuner cards.
AVC_TS_HD_EU_ DTS_ISO	European region profile for HD/SD resolution. AVC video wrapped in MPEG-2 transport stream with DTS audio, without a timestamp field.	video/mpeg	HD	A profile used for digital television broadcasting, and for storing digital video streams. This profile applies to DVB (terrestrial, cable, and satellite) systems. It is supported by DTVs, STBs, and PCs with DTV tuner cards.
AVC_TS_SHP_ HD_EU_AC3_T	European region profile for HD/SD resolution. AVC video using the Scalable High Profile (SVC) wrapped in MPEG-2 Transport Stream with AC-3 audio, with a valid non-zero timestamp field.	video/vnd.dlna.mpeg-tts		A profile used for digital television broadcasting, and for storing digital video streams. This profile applies to DVB (terrestrial, cable, and satellite) systems. It is supported by DTVs, STBs, and PCs with DTV tuner cards.
AVC_TS_SHP_ HD_EU_ HEAACv2_L4_T	European region profile for HD/SD resolution. AVC video using the Scalable High Profile (SVC) wrapped in MPEG-2 Transport Stream with MPEG-4 HE-AAC v2 Level 4 audio, with a valid non-zero timestamp field.	video/vnd.dlna.mpeg-tts	HD SD	A profile used for digital television broadcasting, and for storing digital video streams. This profile applies to DVB (terrestrial, cable, and satellite) systems. It is supported by DTVs, STBs, and PCs with DTV tuner cards.
AVC_MP4_EU	AVC video with MPEG-4 HE-AAC v2 and Enhanced AC-3 audio, encapsulated in MP4.	video/mp4	HD	A profile used for Storage of Terrestrial, Satellite and IPTV Recording in Europe.
AVC_MP4_BL_DTS	AVC Baseline Profile video with DTS audio, encapsulated in MP4.	video/mp4	CIF30	A profile used for digital television broadcasting, and for storing digital video streams. It is supported by DTVs, STBs, and PCs with DTV tuner cards.
AVC_MP4_BL_ DTSHD	AVC Baseline Profile video with DTS-HD audio, encapsulated in MP4.	video/mp4	CIF30	A profile used for digital television broadcasting, and for storing digital video streams. It is supported by DTVs, STBs, and PCs with DTV tuner cards.
AVC_MP4_MP_ SD_DTS	AVC Main Profile video with DTS audio, encapsulated in MP4.	video/mp4	SD	A profile used for digital television broadcasting, and for storing digital video streams. It is supported by DTVs, STBs, and PCs with DTV tuner cards.

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Profile ID	Description	MIME type	Label	Usage scenarios
AVC_MP4_MP_SD_DTSHD	AVC Main Profile video with DTS-HD audio, encapsulated in MP4.	video/mp4	SD	A profile used for digital television broadcasting, and for storing digital video streams. It is supported by DTVs, STBs, and PCs with DTV tuner cards.
AVC_MP4_HP_HD_DTS	AVC High Profile video with DTS audio, encapsulated in MP4.	video/mp4	HD	A profile used for digital television broadcasting, and for storing digital video streams. It is supported by DTVs, STBs, and PCs with DTV tuner cards.
AVC_MP4_HP_HD_DTSHD	AVC High Profile video with DTS-HD audio, encapsulated in MP4.	video/mp4	HD	A profile used for digital television broadcasting, and for storing digital video streams. It is supported by DTVs, STBs, and PCs with DTV tuner cards.
AVC_MP4_MP_SD_EAC3	AVC Main Profile video with Enhanced AC-3 audio, encapsulated in MP4.	video/mp4	SD	A profile used for online content delivery and for storing online content.
AVC_MP4_HP_HD_EAC3	AVC High Profile video with Enhanced AC-3 audio, encapsulated in MP4.	video/mp4	HD	A profile used for online content delivery and for storing online content.
AVC_MKV_MP_HD_AAC_MULT5	AVC Main Profile video with MPEG-4 AAC audio, encapsulated in MKV.	video/x-matroska	HD	This profile is used for HDTV content delivery, recordings thereof and Personal Content. This profile is supported by TVs, Home Theatre Systems, and PCs.
AVC_MKV_MP_HD_HEAAC_L4	AVC Main Profile video with MPEG-4 HE-AAC audio, encapsulated in MKV.	video/x-matroska	HD	This profile is used for HDTV content delivery, recordings thereof and Personal Content. This profile is supported by TVs, Home Theatre Systems, and PCs.
AVC_MKV_MP_HD_AC3	AVC Main Profile video with AC-3 audio, encapsulated in MKV.	video/x-matroska	HD	This profile is used for HDTV content delivery, recordings thereof and Personal Content. This profile is supported by TVs, Home Theatre Systems, and PCs.
AVC_MKV_MP_HD_MPEG1_L3	AVC Main Profile video with MP3 audio, encapsulated in MKV.	video/x-matroska	HD	This profile is used for HDTV content delivery, recordings thereof and Personal Content. This profile is supported by TVs, Home Theatre Systems, and PCs.
AVC_MKV_HP_HD_AAC_MULT5	AVC High Profile video with MPEG-4 AAC audio, encapsulated in MKV.	video/x-matroska	HD	This profile is used for HDTV content delivery, recordings thereof and Personal Content. This profile is supported by TVs, Home Theatre Systems, and PCs.
AVC_MKV_HP_HD_HEAAC_L4	AVC High Profile video with MPEG-4 HE-AAC audio, encapsulated in MKV.	video/x-matroska	HD	This profile is used for HDTV content delivery, recordings thereof and Personal Content. This profile is supported by TVs, Home Theatre Systems, and PCs.

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Profile ID	Description	MIME type	Label	Usage scenarios
AVC_MKV_HP_HD_AC3	AVC High Profile video with AC-3 audio, encapsulated in MKV.	video/x-matroska	HD	This profile is used for HDTV content delivery, recordings thereof and Personal Content. This profile is supported by TVs, Home Theatre Systems, and PCs.
AVC_MKV_HP_HD_MPEG1_L3	AVC High Profile video with MP3 audio, encapsulated in MKV.	video/x-matroska	HD	This profile is used for HDTV content delivery, recordings thereof and Personal Content. This profile is supported by TVs, Home Theatre Systems, and PCs.

5.16 AV Class: WMV9 profiles

Table 20 describes the WMV9 profiles of the DLNA AV Class.

Table 20 – AV Class: WMV9 profiles

Profile ID	Description	MIME type	Label	Usage scenarios
WMVMED_BASE	Medium resolution video (Main Profile at Medium Level) with baseline WMA audio.	video/x-ms-wmv	SD	A profile utilized for IP and Web-based video distribution of content. This profile is supported by Personal Video Players and *PCs*.
WMVMED_FULL	Medium resolution video (Main Profile at Medium Level) with full WMA audio.	video/x-ms-wmv	SD	A profile utilized for IP and Web-based video distribution of content. This profile is supported by Personal Video Players and *PCs*.
WMVMED_PRO	Medium resolution video (Main Profile at Medium Level) with WMA professional audio.	video/x-ms-wmv	SD	A profile utilized for IP and Web-based video distribution of content. This profile is supported by Personal Video Players and *PCs*.
WMVHIGH_FULL	High resolution video (Main Profile at High Level) with full WMA audio.	video/x-ms-wmv	HD	A profile utilized for IP and Web-based video distribution of content. This profile is supported by Personal Video Players and *PCs*.
WMVHIGH_PRO	High resolution video (Main Profile at High Level) with WMA professional audio.	video/x-ms-wmv	HD	A profile utilized for IP and Web-based video distribution of content. This profile is supported by Personal Video Players and *PCs*.
WMVHM_BASE	HighMAT profile.	video/x-ms-wmv	SD	A profile utilized for distribution of content using Optical Media and the HightMAT format. This profile is supported by Optical disk devices, *Portable Video Players*, and *PCs*.
WMVSPLL_BASE	Low resolution video (Simple Profile at Low Level) with baseline WMA audio.	video/x-ms-wmv	QCIF 15	A profile used in the context of Internet-based video and *small-screen devices*. This profile is supported in Personal Video Players, *Cellular Phones*, *PDAs*, and *PCs*.

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Profile ID	Description	MIME type	Label	Usage scenarios
WMVSPML_BASE	Low resolution video (Simple profile at Medium Level) with baseline WMA audio.	video/x-ms-wmv	CIF15	A profile used in the context of Internet-based video and *small-screen devices*. This profile is supported in Personal Video Players, *Cellular Phones*, *PDAs*, and *PCs*.
WMVSPML_MP3	Low resolution video (Simple Profile at Medium Level) with MP3 audio.	video/x-ms-wmv	CIF15	A profile used in the context of DLNA *small-screen devices*. This profile is supported by *PCs* and will be supported by some DLNA mobile devices.

5.17 Media collection profiles

Table 21 describes the Media collection profiles.

Table 21 – Media collection profiles

Profile ID	Description	MIME type	Label	Usage scenarios
DIDL_S	Profile derived from DIDL-Lite to be used for describing media collections.	text/xml	N/A	A profile used for exchanging information on a collection of media items. This profile can be supported by home networked devices.
DIDL_V	Profile derived from DIDL-Lite to be used for describing media collections.	text/xml	N/A	A profile used for exchanging information on a collection of media items. This profile can be supported by home networked devices.

5.18 Printer XHTML document profiles

Table 22 describes the XHTML profiles of the DLNA Printer Class.

Table 22 – Printer XHTML document profiles

Profile ID	Description	MIME type	Label	Usage scenarios
XHTML_ALL	An unlimited profile for images.	text/xml	n/a	A profile used for Printer Layouts by printer devices.
XHTML_Complex	A profile with up to 100 images.	text/xml	n/a	A profile used for Printer Layouts by printer devices.
XHTML_PT	A profile with up to 8 images.	text/xml	n/a	A profile used for Printer Layouts by printer devices.
XHTML_Baseline	A profile with a single image.	text/xml	n/a	A profile used for Printer Layouts by printer devices.

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5.19 Image Class: GIF profiles

Table 23 describes the GIF profiles of the DLNA Image Class.

Table 23 – Image Class: GIF profiles

Profile ID	Description	MIME type	Label	Usage scenarios
GIF_LRG	Profile for image media class content of high resolution.	Image/GIF	Picture	A profile used for images in compressed format. This profile is supported by multiple types of devices.

5.20 Audio Class: DTS Digital Surround profiles

Table 24 describes the DTS Digital Surround profiles of the DLNA Audio Class.

Table 24 – Audio Class: DTS Digital Surround profiles

Profile ID	Description	MIME type	Label	Usage scenarios
DTS	Profile for audio media class content with up to 5.1 channels	audio/vnd.dts	2-ch multi	A profile utilized for creating multi-channel audio tracks. This profile is supported by Personal Audio Players, PCs, and devices in the home-entertainment ecosystem.

5.21 Audio Class: DTS-HD profiles

Table 25 describes the DTS HD profiles of the DLNA Audio Class.

Table 25 – Audio Class: DTS-HD profiles

Profile ID	Description	MIME type	Label	Usage scenarios
DTSHD_HRA	Profile for audio media class content with up to 7.1 channels.	audio/vnd.dts-hd-hra	2-ch multi	A profile utilized for creating multi-channel audio tracks. This profile is supported by Personal Audio Players, PCs, and devices in the home-entertainment ecosystem.
DTSHD_LBR	Profile for audio media class content with up to 5.1 channels.	audio/vnd.dts-hd-lbr	2-ch multi	A profile utilized for creating multi-channel audio tracks. This profile is supported by Personal Audio Players, PCs, and devices in the home-entertainment ecosystem.
DTSHD_MA	Profile for audio media class content with up to 7.1 or 8.0 channels.	audio/vnd.dts-hd-ma	2-ch multi	A profile utilized for creating multi-channel audio tracks. This profile is supported by Personal Audio Players, PCs, and devices in the home-entertainment ecosystem.

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5.22 Audio Class: Enhanced AC-3 profiles

Table 26 describes the Enhanced AC-3 profiles of the DLNA Audio Class.

Table 26 – Audio Class: Enhanced AC-3 profiles

Profile ID	Description	MIME type	Label	Usage scenarios
EAC3	Profile for audio media class content.	audio/eac3	2-ch multi	A Profile used for audio content, including multichannel audio content.

5.23 Audio Class: MLP profiles

Table 27 describes the MLP profiles of the DLNA Audio Class.

Table 27 – Audio Class: MLP profiles

Profile ID	Description	MIME type	Label	Usage scenarios
MLP	Profile for audio media class content.	audio/vnd.dolby.mlp	2-ch multi	A profile used for audio content, including multichannel audio content.

5.24 Audio Class: MPEG-1/2 profiles

Table 28 describes the MPEG 1/2 profiles of the DLNA Audio Class.

Table 28 – Audio Class: MPEG-1/2 profiles

Profile ID	Description	MIME type	Label	Usage scenarios
MP2_MPS	Profile for audio media class content with up to 7.1 channels.	audio/mpeg	multi	A profile utilized to create recordings of Personal Content and Digital Radio Broadcasting. This profile is supported by Home Theatre Systems, Stereos, Car Radios and PCs.

5.25 AV Class: VC-1 profiles

Table 29 describes the VC-1 profiles of the DLNA AV Class.

Table 29 – AV Class: VC-1 profiles

Profile ID	Description	MIME type	Label	Usage scenarios
VC1_ASF_AP_L1_WMA	VC-1 video with WMA audio, encapsulated in ASF.	video/x-ms-asf	SD	A profile used in the context of linear and on-demand distribution of Digital TV streams.
VC1_ASF_AP_L2_WMA	VC-1 video with WMA audio, encapsulated in ASF.	video/x-ms-asf	HD	A profile used in the context of linear and on-demand distribution of Digital TV streams.
VC1_PS_HD_DTS	VC1 wrapped in MPEG-2 program stream, with DTS Digital Surround Audio.	video/mpeg	HD	A profile for creating AV content. This profile is supported by Personal AV Players, PCs, and all devices in the home-entertainment eco-system.

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Profile ID	Description	MIME type	Label	Usage scenarios
VC1_PS_HD_ DTSHD	VC1 wrapped in MPEG-2 program stream, with DTS-HD Audio.	video/mpeg	HD	A profile for creating AV content. This profile is supported by Personal AV Players, PCs, and all devices in the home-entertainment eco-system.
VC1_PS_HD_ DTSHD_HRA	VC1 wrapped in MPEG-2 program stream, with DTS-HD High Resolution Audio.	video/mpeg	HD	A profile for creating AV content. This profile is supported by Personal AV Players, PCs, and all devices in the home-entertainment eco-system.
VC1_PS_HD_ DTSHD_MA	VC1 wrapped in MPEG-2 program stream, with DTS-HD Master Audio.	video/mpeg	HD	A profile for creating AV content. This profile is supported by Personal AV Players, PCs, and all devices in the home-entertainment eco-system.
VC1_TS_AP_L1_ AC3_ISO	VC-1 wrapped in MPEG-2 transport stream, with AC3 audio, without a timestamp field.	video/mpeg	SD	A profile used in the context of linear and on-demand distribution of Digital TV streams.
VC1_TS_AP_L1_ WMA_ISO	VC-1 wrapped in MPEG-2 transport stream, with WMA audio, without a timestamp field.	video/mpeg	SD	A profile used in the context of linear and on-demand distribution of Digital TV streams.
VC1_TS_AP_L2_ AC3_ISO	VC-1 wrapped in MPEG-2 transport stream, with AC3 audio, without a timestamp field.	video/mpeg	HD	A profile used in the context of linear and on-demand distribution of Digital TV streams.
VC1_TS_AP_L2_ WMA_ISO	VC-1 wrapped in MPEG-2 transport stream, with WMA audio, without a timestamp field.	video/mpeg	HD	A profile used in the context of linear and on-demand distribution of Digital TV streams.
VC1_TS_HD_DTS_ ISO	VC1 wrapped in MPEG-2 transport stream, with DTS Digital Surround Audio, without a timestamp field.	video/mpeg	HD	A profile for creating AV content. This profile is supported by Personal AV Players, PCs, and all devices in the home-entertainment eco-system.
VC1_TS_HD_ DTS_T	VC1 wrapped in MPEG-2 transport stream, with DTS Digital Surround Audio, with a zero value timestamp field.	video/vnd.dlna.mpeg-tts	HD	A profile for creating AV content. This profile is supported by Personal AV Players, PCs, and all devices in the home-entertainment eco-system.
VC1_TS_HD_ DTSHD_HRA_ISO	VC1 wrapped in MPEG-2 transport stream, with DTS-HD High Resolution Audio, without a timestamp field.	video/mpeg	HD	A profile for creating AV content. This profile is supported by Personal AV Players, PCs, and all devices in the home-entertainment eco-system.
VC1_TS_HD_ DTSHD_HRA_T	VC1 wrapped in MPEG-2 transport stream, with DTS-HD High Resolution Audio, with a zero value timestamp field.	video/vnd.dlna.mpeg-tts	HD	A profile for creating AV content. This profile is supported by Personal AV Players, PCs, and all devices in the home-entertainment eco-system.

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Profile ID	Description	MIME type	Label	Usage scenarios
VC1_TS_HD_ DTSHD_MA_ISO	VC1 wrapped in MPEG-2 transport stream, with DTS-HD Master Audio without a timestamp field.	video/mpeg	HD	A profile for creating AV content. This profile is supported by Personal AV Players, PCs, and all devices in the home-entertainment eco-system.
VC1_TS_HD_ DTSHD_MA_T	VC1 wrapped in MPEG-2 transport stream, with DTS-HD Master Audio, with a zero value timestamp field.	video/vnd.dlna.mpeg-tts	HD	A profile for creating AV content. This profile is supported by Personal AV Players, PCs, and all devices in the home-entertainment eco-system.

6 Media Format interoperability model

6.1 Media interoperability guidelines

6.1.1 General

In order to provide a media interoperability model between various types of DLNA devices, DLNA media format profiles are classified into mandatory and optional. Media format profiles are mandatory or optional for a given Device Category. This clause defines conditions for overall interoperability, and 6.2 defines the specific set of media profiles that comprise the mandatory profiles.

Within one of the DLNA Device Categories, a Content Receiver that supports a given Media Class has to support all mandatory media format profiling for that Media Class in the corresponding Device Category as defined in subsequent guidelines. However, such a device could implement additional partial profiling of another Media Class. Such a partial profiling can include just a subset of mandatory profiles or just a subset of profile parameter sets. Such a device would not be able to claim support for that additional Media Class. For example, a DLNA Rendering Endpoint in the HND category that supports an Audio Media Class has to implement all mandatory guidelines for LPCM, but could also provide support for rendering video profiled by an optional AV media class format profile (for example, MPEG_TS_SD_EU – profiled video).

Each Media Format Profile is described using a "Profile ID" text token. As described in Guideline 7.4.1.3.17 (GUN T43WJ) in IEC 62481-1:2013, this text token is always exposed as one of the parameters associated with any content resource in the network. The Profile ID uniquely identifies the characteristics of a Media Format Profile. Future versions of the Guidelines will add new Profile IDs but will preserve the uniqueness. Consequently, devices built to comply with a certain version of the DLNA Guidelines could, if so desired, include support for Media Format Profiles defined in subsequent guideline versions and addendums.

6.1.2 MF mandatory media formats: support guidelines

6.1.2.1

[GUIDELINE] Rendering Endpoints of a DLNA Device Category that claim to support a particular DLNA Media Class shall be capable of decoding and rendering all mandatory DLNA media format profiles for that Media Class and that DLNA Device Category.

[ATTRIBUTES]

M	C	DMP DMR DMPr	M-DMP M-DMD	n/a	ISO/IEC 13818-7	V86M9	

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[COMMENT] Examples of when this is not required:

- a Rendering Endpoint designed to support only the DLNA Audio Media Class for the Device Category of Home Network Devices (HND) is not required to support mandatory DLNA AV media format profiles;
- the same Rendering Endpoint is not required to support mandatory audio profiles for a different Device Category.

6.1.2.2

[GUIDELINE] Serving Endpoints of a DLNA Device Category that claim to support a particular DLNA Media Class shall be capable of exposing at least one of the mandatory DLNA media format profiles for that Media Class and that DLNA Device Category.

[ATTRIBUTES]

M	C	DMS	M-DMS	n/a	ISO/IEC 13818-7	VEJX7	

[COMMENT] A Serving Endpoint that cannot expose content in any mandatory DLNA media format profile for its corresponding Device Category is not compliant with this guideline.

Examples of compliant Serving Endpoint implementations include the following.

- A Serving Endpoint implementation on a PC belonging to the HND category that allows the user or application acting on the user's behalf to provide content in at least one of the mandatory DLNA media format profiles for the media classes the Serving Endpoint implementation claims to support in the HND category. The content can be exposed and transferred by the Serving Endpoint implementation to other DLNA devices.
- A Serving Endpoint device that allows the encoding of content to be user selectable in at least one of the mandatory DLNA media format profiles of the corresponding device category for the DLNA media classes it claims to support. A Digital Video Recorder might by default support MPEG-4 encoding of captured video content, but either convert it to a mandatory DLNA AV media format profile for on-demand streaming to DLNA devices or else allow the user to change the content capture encoding to a mandatory DLNA AV media format profile. Such a device would also be compliant if the user can insert a memory card into it with content in a mandatory DLNA AV media format profile and the device then is able to expose and transfer it to other DLNA devices.
- A Serving Endpoint which is not capable of storing files in a mandatory media format profile of its device category, but which can provide a transcoded version of some items originally stored in an optional profile, when the transcoded version is in the mandatory profile for its device category.

6.1.2.3

[GUIDELINE] This guideline is left intentionally blank.

[ATTRIBUTES]

						WIFTQ	

6.1.3 MF optional media formats: support guidelines

[GUIDELINE] Serving Endpoints and Rendering Endpoints that claim to support a particular DLNA Media Class may support any of the optional DLNA media format profiles for that DLNA Device Category and for that Media Class.

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[ATTRIBUTES]

O	C	DMS DMP DMR DMPr	M-DMS M-DMD M-DMP	n/a	ISO/IEC 13818-7	L6LR8	

6.1.4 MF optional media formats: content availability

[GUIDELINE] If a Serving Endpoint exposes a content item encoded to an optional DLNA media format profile of the Serving Endpoint's Device Category in a CDS with the DLNA.ORG_PN parameter in res@protocolInfo, then the Serving Endpoint should also expose this content in a mandatory DLNA media format profile for the relevant Media Class of the Serving Endpoint's Device Category. All content available on Serving Endpoints should be exposed in a mandatory DLNA media format profile of each of the Serving Endpoint's Device Categories regardless of its native format.

[ATTRIBUTES]

S	C	DMS	M-DMS	n/a	IEC 62481-1	86M9R	

[COMMENT] Since Rendering Endpoints such as a DMP are required to support content in mandatory media format profiles, this guideline recommends that all content available in optional media format profiles on Serving Endpoints also be made available and exposed in a mandatory media format profile. If a device implements both a DMS and M-DMS, this guideline recommends that all content available in optional DLNA media format profiles on such a device also be made available and exposed in the mandatory profiles for the two different Device Categories (HND and MHD). This can be achieved by a variety of means including storing copies of a content item in different formats or by conversion on demand for a content item.

6.1.5 MF optional media formats: user indications

6.1.5.1

[GUIDELINE] For any content item in an optional DLNA media format profile, an indication should be given to the user of the following condition at the time content items are exposed to the user for selection:

- if the selected Rendering Endpoint is not *capable of rendering* the content item.

The form of this user indication is implementation dependent and can be user selectable.

[ATTRIBUTES]

S	C	DMP DMC +PR1+ +PR2+ +PU+	M-DMP M-DMD M-DMC	n/a	ISO/IEC 13818-7	JX7J8	

[COMMENTS]

a) Optional media profiles are defined for each DLNA Device Category.
Examples of implementations that comply with this guideline include:
   – Not displaying a content item that meets the condition to the user.
   – Graying out a content item that meets the condition and preventing its selection for playback by the user.

b) User selectable means that an implementation can allow users to turn this indication feature on or off, or to select among multiple indication alternatives. The actual methods for providing these options to users and the default values for these options are implementation dependent.

c) In the 3-Box System Usage, the DMC and M-MDC provide an indication of the DMR's capabilities. In the 2-Box Pull and Download System usages, the DMP, M-DMP, and M-DMD provide an indication of their capabilities respectively.

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6.1.5.2

[GUIDELINE] For any content item in a DLNA media format profile an indication should be given to the user of the following condition at the time content items are exposed to the user for selection:

- if the content item is not available in a mandatory format for the device category of the selected renderer.

The form of this user indication is implementation dependent and can be user selectable.

[ATTRIBUTES]

S	C	DMP DMC +PR1+ +PR2+ +PU+	M-DMP M-DMD M-DMC	n/a	ISO/IEC 13818-7	6M9RD	

[COMMENTS]

a) Examples of implementations that comply with this guideline include:
   – Not displaying a content item that meets the condition to the user.
   – A textual statement for the user indicating a content item that meets the condition is not available in a mandatory DLNA format profile of the corresponding DLNA Device Category.
   – A visual mark for the user such as a '-' or '*' displayed alongside a content item that meets the condition and explanatory text elsewhere (e.g. a product manual or help file).

b) User selectable means that an implementation can allow users to turn this indication feature on or off, or to select among multiple indication alternatives. The actual methods for providing these options to users and the default values for these options are implementation dependent.

6.1.6 MF media format overlap

6.1.6.1

[GUIDELINE] If a content binary is conformant to a mandatory media format profile of any Device Category, Serving Endpoints should expose the content binary in this mandatory media format profile.

[ATTRIBUTES]

S	A	DMS	M-DMS	n/a	n/a	EJX7J	

[COMMENT] Serving Endpoints can provide multiple <res> elements with different Media Format Profile IDs.
If the guidelines in 6.1.6 result in two or more separate Media Format Profile IDs being recommended, each can be exposed as a separate <res> element.

6.1.6.2

[GUIDELINE] If a content binary is conformant to multiple DLNA media format profiles, Serving Endpoints should expose the content binary in one or more of the media format profiles to provide a high level of interoperability.

A high level of interoperability can be achieved, for example, by choosing a profile with the most restrictive parameter set range(s), or by choosing to expose the content using all of the profiles to which the content binary conforms using multiple <res> elements.

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[ATTRIBUTES]

S	A	DMS	M-DMS	n/a	n/a	IFTQR	

6.1.7 MF Profile Parameter Sets

6.1.7.1

[GUIDELINE] Serving Endpoints that expose content identified with a particular Profile ID shall use one of the permitted Profile Parameter Sets of such a Profile ID.

[ATTRIBUTES]

M	A	DMS	M-DMS	MIU	n/a	6LR87	

[COMMENT] This guideline defines the baseline rendering requirements for a DLNA Rendering Endpoint device for all media format profiles the device claims support for.

6.1.7.2

[GUIDELINE] Rendering Endpoints that claim to decode content identified with a particular Profile ID shall be *capable of rendering* any of the defined Profile Parameter Sets of such a Profile ID.

[ATTRIBUTES]

M	A	DMP DMR DMPr	M-DMP M-DMD	n/a	n/a	WFSJT	

[COMMENT] Rendering endpoints can choose to render optional parameters.
Since Rendering requires producing an output for all parameter sets of a profile, this implies that the Rendering Endpoint tolerate parameters defined for the profile.

[GUIDELINE] This guideline is left intentionally blank.

[ATTRIBUTES]

						FTQRY	

6.1.7.3

[GUIDELINE] This guideline is left intentionally blank.

[ATTRIBUTES]

						LR872	

6.1.8 MF audio rendering guidelines

[GUIDELINE] Rendering Endpoints that support DLNA Media Format Profiles with multichannel, stereo, or mono audio parameter sets shall be *capable of rendering* the audio bitstream by outputing all of the channels or converting all multichannel, stereo, or mono information into an implementation-dependent single-channel audio output at a minimum.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	n/a	6WFSJ	

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6.2 Mandatory and optional profile guidelines

6.2.1 MF mandatory image format profile for HND and MHD Device Categories

[GUIDELINE] The mandatory media format profile applicable to the DLNA HND and MHD Device Categories for the Image Media Class is:

- JPEG_SM

[ATTRIBUTES]

M	A	All HND	All MHD	n/a	n/a	69K5T	

6.2.2 MF optional image format profile for HND and MHD Device Categories

[GUIDELINE] All image profiles other than the one listed in 6.2.1 are optional image format profiles for DLNA HND and MHD devices as defined in IEC 62481-1:2013, Clause 5.

[ATTRIBUTES]

O	A	All HND	All MHD	n/a	n/a	9K5TB	

6.2.3 MF mandatory audio format profile for the HND Device Category

[GUIDELINE] The mandatory media format profile applicable to the DLNA HND Device Category for the Audio Media Class is:

- LPCM

[ATTRIBUTES]

M	A	All HND	n/a	n/a	n/a	Q77AY	

6.2.4 MF optional audio format profile for the HND Device Category

[GUIDELINE] All audio profiles other than the one listed in 6.2.3 are optional audio format profiles for DLNA HND devices.

[ATTRIBUTES]

O	A	All HND	n/a	n/a	n/a	LQ77A	

6.2.5 MF mandatory audio format profiles for the MHD Device Category

[GUIDELINE] The mandatory media format profiles applicable to the DLNA MHD Device Category for the Audio Media Class are:

- AAC_ISO_320
- MP3

[ATTRIBUTES]

M	A	n/a	All MHD	n/a	n/a	OSMM7	

6.2.6 MF optional audio format profiles for the MHD Device Category

[GUIDELINE] All audio profiles other than the ones listed in 6.2.5 are optional audio format profiles for DLNA MHD devices.

[ATTRIBUTES]

O	A	n/a	All MHD	n/a	n/a	4ZVVW	

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6.2.7 MF mandatory AV format profiles for the HND Device Category

[GUIDELINE] The mandatory media format profiles applicable to the HND Device Category for the AV Media Class shall be those defined in Table 30.

[ATTRIBUTES]

M	A	All HND	n/a	n/a	n/a	QOSMM	

[COMMENT] Table 30 defines the required Media Format Profiles for the HND Device Category according to Region and Device Class.
The requirements in Table 30 are compliant with 6.1.2.1 and 6.1.2.2.

6.2.8 MF optional AV format profiles for the HND Device Category

[GUIDELINE] All AV profiles other than the ones required by 6.2.7 are optional AV format profiles for DLNA HND devices.

[ATTRIBUTES]

O	A	All HND	n/a	n/a	n/a	AO6AX	

6.2.9 MF mandatory AV format profiles for the MHD Device Category

[GUIDELINE] The mandatory media format profile applicable to the DLNA MHD Device Category for the AV Media Class is:

- AVC_MP4_BL_CIF15_AAC_520

[ATTRIBUTES]

M	A	n/a	All MHD	n/a	n/a	44ZVV	

6.2.10 MF optional AV format profiles for the MHD Device Category

[GUIDELINE] All AV profiles other than the one listed in 6.2.9 are optional AV format profiles for DLNA MHD devices.

[ATTRIBUTES]

O	A	n/a	All MHD	n/a	n/a	M6SXD	

6.2.11 MF optional Media Collection Profile for the HND and MHD Device Categories

6.2.11.1

[PROFILES]

DIDL_S, DIDL_V

6.2.11.2

[GUIDELINE] The optional Media Collection Profile ID values applicable to the DLNA HND and MHD Device Categories are:

- DIDL_S
- DIDL_V

Serving Endpoints of any Device Category may be capable of exposing and transferring items identified with these Profile ID values.

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Uploading Endpoint devices of any Device Category may be capable of transferring items identified with these Profile ID values.

Rendering Endpoints of any Device Category may be capable of decoding and processing items identified with these Profile ID values.

[ATTRIBUTES]

O	A	All HND	All MHD	n/a	n/a	O6AXL	

[COMMENT] These optional profiles are used to signal a content item that actually constitutes a collection of media content items.

6.2.12 MF mandatory print format profile for DMPr Device Class

6.2.12.1

[GUIDELINE] As long as the XHTML_PT profile can be supported, a Printing Device need not use the RANGE header to print the document. For example, if a Printer Device has enough buffer, it may print the XHTML_PT documents without the RANGE header. In other words, a DMPr need not support the RANGE header, but it shall support the XHTML_PT profile.

NOTE Supported profiles are exposed in the device description document as defined by guidline 7.4.2.3.5.1 (GUN I6YXT) in IEC 62481-1:2013.

6.2.12.2

[GUIDELINE] A Printing Device shall be able to *correctly print* an XHTML document that conforms to the XHTML_Baseline profile, regardless of whether the RANGE header is supported by any of the images referenced in the XHTML document.

Correctly print means that images and layout used in the XHTML-Print document is rendered by the Printing Device, as defined in XHTML-Print Test.

[ATTRIBUTES]

M	A	DMPr	n/a	n/a	XHTML-Print Test	VM6SX	E

6.2.12.3

[GUIDELINE] A Printing Device shall be able to correctly print an XHTML document that conforms to the XHTML_PT profile if the RANGE header is supported by all of the images referenced in the XHTML document.

[ATTRIBUTES]

M	A	DMPr	n/a	n/a	n/a	96OFW	

Table 30 below specifies the Media Format requirements for the HND Device Category.

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Table 30 – Required Media Format Profiles for the HND Device Category

Device Class	Japan	US	Korea	EU
DMS	MPEG_PS_NTSC or MPEG_TS_JP_T	MPEG_PS_NTSC or MPEG_TS_SD_NA or MPEG_TS_SD_NA_T or MPEG_TS_SD_NA_ISO	MPEG_PS_NTSC or MPEG_TS_SD_KO or MPEG_TS_SD_KO_T or MPEG_TS_SD_KO_ISO	MPEG_PS_PAL or MPEG_TS_SD_EU or MPEG_TS_SD_EU_T or MPEG_TS_SD_EU_ISO
DMP DMR	MPEG_PS_NTSC and MPEG_TS_JP_T	MPEG_PS_NTSC and MPEG_TS_SD_NA and MPEG_TS_SD_NA_T and MPEG_TS_SD_NA_ISO	MPEG_PS_NTSC and MPEG_TS_SD_KO and MPEG_TS_SD_KO_T and MPEG_TS_SD_KO_ISO	MPEG_PS_PAL and MPEG_TS_SD_EU and MPEG_TS_SD_EU_T and MPEG_TS_SD_EU_ISO
Additional factors:	➢ Device vendors may choose to support one or more geographical regions for any device.			

7 Image Class Media Format Profiles

7.1 JPEG profiling guidelines

7.1.1 JPEG SM format profile

7.1.1.1

[PROFILES]

JPEG_SM

7.1.1.2

[GUIDELINE] The DLNA JPEG_SM shall comply with the following requirements.

File Format:

- ➢ EXIF Ver.1.x or later
- ➢ JFIF 1.02

Image compression

The *primary* image data compression (even in JFIF or EXIF 1.x file format) shall be conformant to EXIF Ver.2.21 JEITA CP-3451-1 with the following additional constraints:

Maximum resolution

the resolution of the image shall not exceed 640 pixels in the ImageWidth field and shall not exceed 480 pixels in the ImageHeight field;

Huffman table

the typical Huffman table defined by JPEG standard;

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Color space

- sRGB
- Uncalibrated color space.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 10918-1 JEITA CP-3451 JEITA CP-3451-1 JPEG File Interchange Format JEITA CP-3461	U96OF	

[COMMENTS]

a) The constraints to JPEG compression is equivalent to those of DCF.
Digital still camera creates image compliant to DCF JEITA CP-3461.
The maximum resolution, 640 × 480 is selected for a resource-constrained Rendering Endpoint.

b) Dedicated photo players (e.g. HDTV photo player) are encouraged to decode higher-resolution images if a DMS provides DLNA JPEG_MED or DLNA JPEG_LRG – formatted images in addition to DLNA JPEG-SM.

c) Serving Endpoint is allowed to expose images file-formatted according to earlier versions of EXIF (i.e., EXIF 1.x), due to backward compatibility of those file formats. The compression aspects of such images are not covered by this relaxation rule.

7.1.2 JPEG MED format profile

7.1.2.1

[PROFILES]

JPEG_MED

7.1.2.2

[GUIDELINE] The DLNA JPEG_MED media format shall follow the requirement of 7.1.1.2 DLNA JPEG_SM profile except for the following image resolution requirements.

Maximum resolution

the resolution of the image shall not exceed 1 024 pixels in the ImageWidth field and shall not exceed 768 pixels in the ImageHeight field.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 10918-1 JEITA CP-3451 JEITA CP-3451-1 JPEG File Interchange Format JEITA CP-3461	6OFWY	

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7.1.3 JPEG LRG format profile

7.1.3.1

[PROFILES]

JPEG_LRG

7.1.3.2

[GUIDELINE] The DLNA JPEG_LRG media format shall follow the requirements of 7.1.1.2 DLNA JPEG_SM profile except for the following image resolution requirements.

Maximum resolution

the resolution of the image shall not exceed 4 096 pixels in the ImageWidth field and shall not exceed 4 096 pixels in the ImageHeight field.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 10918-1 JEITA CP-3451 JEITA CP-3451-1 JPEG File Interchange Format JEITA CP-3461	SXDYL	

7.1.4 JPEG format profile

7.1.4.1

[PROFILES]

JPEG_LRG
JPEG_MED

7.1.4.2

[GUIDELINE] If a Serving Endpoint exposes a content item in JPEG_LRG or JPEG_MED, the content item shall be converted into the JPEG_SM profile and exposed as such to other devices in the home network.

[ATTRIBUTES]

M	A	DMS	M-DMS	n/a	n/a	ZVVWJ	

[COMMENT] Vendors can choose any suitable decimation algorithm for the conversion of large and medium-sized images into small ones.

7.1.5 JPEG_RES_<H>_<V> format profile

7.1.5.1

[PROFILE]

JPEG_RES_<**H**>_<**V**>

7.1.5.2

[GUIDELINE] The JPEG_RES_<H>_<V> profile shall conform to all aspects of the JPEG_SM profile, as specified in 7.1.1.2, except as noted here:

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Image resolution

- the image can have any resolution. The resolution is exposed explicitly as part of the profile using the following syntax,
- <H> represents the horizontal resolution (ImageWidth field) measured in pixels,
- <V> represents the vertical resolution (ImageHeight field) measured in pixels.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 10918-1 JEITA CP-3451 JEITA CP-3451-1 JPEG File Interchange Format JEITA CP-3461	5Y4UT	N

[COMMENTS]

a) The use of this profile requires indicating explicitly the horizontal and vertical resolution of an image as part of the Profile ID. For example, if a JPEG image has a size of 2 048 (width) and 740 (height), then the Profile ID is JPEG_2048_740.

b) This profile is used mainly by UPnP AV MediaRenderer devices. A UPnP AV MediaRenderer always renders JPEG_SM content, but it can choose to support a number of larger resolutions. An UPnP AV MediaRenderer can use this profile to declare the set of preferred resolutions that it renders. For example, a picture frame that renders the mandatory JPEG_SM profile could also render larger pictures of sizes 800 × 600 and 1 024 × 768. This device can advertise support for JPEG_SM, JPEG_800_600, and JPEG_1024_768.

7.1.6 Use of JPEG_RES_<H>_<V> in a <res> element

7.1.6.1

[PROFILES]

JPEG_RES_<H>_<V>

7.1.6.2

[GUIDELINE] If a Content Source exposes an image resource in a <res> element with a profile ID of JPEG_RES_<H>_<V>, the same resource shall include a res@resolution field with matching horizontal and vertical resolution values.

[ATTRIBUTES]

M	R	DMS +PU+	M-DMS	n/a	ISO/IEC 29341-3-12	OBQJU	N

[COMMENTS]

a) If a profile of the form JPEG_RES_<H>_<V> is used in the CDS, the UPnP AV MediaServer needs to include the resolution information using the res@resolution property. If the profile is used in a DIDL-Lite fragment exposed by a Push Controller (+PU+), the controller needs to also include re@resolution in addition to the Profile ID. This requirement improves backward compatibility with Content Receivers that do not understand the new profile.

b) This JPEG profile is valuable mostly for use in a UPnP AV MediaRenderer. In this case, the profile provides the actual horizontal and vertical resolution of images that can be renderered by the device.

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7.1.6.3

[GUIDELINE] If a UPnP AV MediaRenderer declares support for JPEG_RES_<H>_<V> in response to a CMS:GetProtocolInfo() action, and the horizontal and vertical resolutions are such that they match either the JPEG_MED or JPEG_LRG profiles, the device may additionally declare support for the corresponding profile (JPEG_MED or JPEG_LRG).

[ATTRIBUTES]

O	R	DMR	n/a	n/a	ISO/IEC 29341-3-12	MYQZ2	N

[COMMENTS]

a) If a profile of the form JPEG_RES_<H>_<V> is used by a UPnP AV MediaRenderer, this device does not need to declare support for JPEG_MED or JPEG_LRG. This functionality helps small rendering devices that can receive pictures but cannot easily scale pictures to match the screen size. This functionality also helps rendering devices that implement partial support for JPEG_LRG or JPEG_MED but are unable to support the whole range of sizes.

b) JPEG_SM is a mandatory profile that necessarily appears in the response to CMS:GetProtocolInfo() for devices that render the image class.

7.1.6.4

[GUIDELINE] If a Content Source exposes an image resource in a <res> element with a profile ID of JPEG_RES_<H>_<V>, and the horizontal and vertical resolution values are such that the content can be described as JPEG_SM, JPEG_MED, or JPEG_LRG, the Content Source shall simultaneously expose an alternative <res> element for the same item using one of these three profiles.

[ATTRIBUTES]

M	R	DMS +PU+	M-DMS	n/a	ISO/IEC 29341-3-12	XFWTM	N

[COMMENT] This guideline ensures backward compatibility with receiving devices that only understand the JPEG_SM, JPEG_MED, or JPEG_LRG profiles.

7.1.6.5

[GUIDELINE] If a Content Source exposes an image resource in a <res> element with a profile ID of JPEG_RES_<H>_<V>, and the horizontal and vertical resolution values are such that the content cannot be described as JPEG_SM, the Content Source shall expose simultaneously an alternative <res> element for the same item using the JPEG_SM profile.

[ATTRIBUTES]

M	R	DMS +PU+	M-DMS	n/a	ISO/IEC 29341-3-12	BHM2E	N

[COMMENT] This guideline describes a requirement similar to guideline 7.1.4.2. Any image whose size is larger than JPEG_SM has to be converted into an image of size JPEG_SM. The converted image is exposed as an alternative <res> element within the same item in the CDS.

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7.1.6.6

[GUIDELINE] A UPnP AV MediaRenderer that renders JPEG content should declare its preferred resolutions using profile JPEG_RES_<H>_<V>. A UPnP AV MediaRenderer declares support for media format profiles in the response to the CMS:GetProtocolInfo() action.

[ATTRIBUTES]

S	R	DMR	n/a	n/a	n/a	2EDUM	N

[COMMENT] This guideline defines the main use of profile JPEG_RES_<H>_<V>. If a UPnP AV MediaRenderer declares the preferred resolution, the device pushing an image can resize the image to match exactly the renderer's preferred resolution.

7.1.7 JPEG TN format profile

7.1.7.1

[PROFILES]

JPEG_TN

7.1.7.2

[GUIDELINE] The DLNA JPEG_TN media format shall follow the requirements of 7.1.1.2 DLNA JPEG_SM baseline format except for the following requirements.

In an EXIF file a thumbnail image can be stored as a thumbnail component in addition to the *primary* image. However, in the JPEG_TN format profile, the thumbnail image shall be stored as the *primary* image data of the file.

Maximum resolution

the resolution of the image shall not exceed 160 pixels in the ImageWidth field and shall not exceed 160 pixels in the ImageHeight field.

The DLNA JPEG_TN profile shall be used only for a thumbnail representation of some content.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 10918-1 JEITA CP-3451 JEITA CP-3451-1 JPEG File Interchange Format JEITA CP-3461 IEC 62481-1	6SXDY	

[COMMENT] A thumbnail representation of a content item is exposed in the CDS as described in 7.4.1.4.6 of IEC 62481-1:2013.

7.1.8 JPEG SM ICO format profile

7.1.8.1

[PROFILES]

JPEG_SM_ICO

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7.1.8.2

[GUIDELINE] The JPEG_SM_ICO media format profile shall follow the requirements of 7.1.1.2 DLNA JPEG_SM profile, except for the following requirements.

Required resolution

the resolution of the image shall be 48 pixels in the ImageWidth field and shall be 48 pixels in the ImageHeight field.

NOTE This media format profile is for use with guideline IEC 62481-1:2013, 7.3.2.28 and other guidelines in the future that call for an icon image media format profile.

A CDS Object shall not contain a <res> element which specifies a content binary conforming to this Profile ID.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 10918-1 JEITA CP-3451 JEITA CP-3451-1 JPEG File Interchange Format JEITA CP-3461 IEC 62481-1	OFWYD	

[COMMENT] This media format profile is essentially the same as the JPEG_SM profile, except it specifies a very small image size for use in scenarios involving small icons.

7.1.9 JPEG LRG ICO format profile

7.1.9.1

[PROFILES]

JPEG_LRG_ICO

7.1.9.2

[GUIDELINE] The JPEG_LRG_ICO media format profile shall follow the requirements of 7.1.1.2 DLNA JPEG_SM profile, except for the following requirements.

Required resolution

the resolution of the image shall be 120 pixels in the ImageWidth field and shall be 120 pixels in the ImageHeight field.

NOTE This media format profile is for use with guideline IEC 62481-1:2013, 7.3.2.28 and other guidelines in the future that call for an icon image media format profile.

A CDS Object shall not contain a <res> element which specifies a content binary conforming to this Profile ID.

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 10918-1 JEITA CP-3451 JEITA CP-3451-1 JPEG File Interchange Format JEITA CP-3461 IEC 62481-1	VVWJZ	

[COMMENT] This media format profile is essentially the same as the JPEG_SM profile, except it specifies a smaller image size for use in scenarios involving large icons.

7.1.10 JPEG format profile: MIME type defintion

7.1.10.1

[PROFILES]

JPEG_SM
JPEG_MED
JPEG_LRG
JPEG_TN
JPEG_RES_<**H**>_<**V**>

7.1.10.2

[GUIDELINE] MIME type "image/jpeg" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	AXLTY	

7.2 PNG profiling guidelines

7.2.1 PNG TN format profile

7.2.1.1

[PROFILES]

PNG_TN

7.2.1.2

[GUIDELINE] The PNG_TN profile shall follow the requirements of 7.2.2 PNG_SM_ICO profile specification, except for the following requirements.

Maximum resolution

the resolution of the image shall not exceed 160 pixels in the Width field and shall not exceed 160 pixels in the Height field.

DLNA MF profileID "PNG_TN" shall be used to identify content of this profile.

The PNG_TN media format profile shall be used only for a thumbnail representation of some content.

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 15948 W3C PNG IEC 62481-1	MM785	

[COMMENT] A thumbnail representation of a content item is exposed in the CDS as described in 7.4.1.4.6 of IEC 62481-1:2013.

7.2.2 PNG SM ICO format profile

7.2.2.1

[PROFILES]

PNG_SM_ICO

7.2.2.2

[GUIDELINE] The PNG_SM_ICO profile shall follow the requirements of ISO/IEC 15948 recommendations as well as the following restrictions and guidelines described in the entries below.

Maximum resolution

the resolution of the image shall be 48 pixels in the Width field and shall be 48 pixels in the Height field.

The MIME type for this image profile shall be "image/png".

The image shall use one of the following color types, defined in ISO/IEC 15948:2004, 6.1.

- Greyscale (with or without tRNS chunks)
- Truecolor (with or without tRNS chunks)
- Indexed-color (with or without tRNS chunks)
- Greyscale with alpha
- Truecolor with alpha

The total number of bits (excluding alpha channel bits) needed to represent a color shall not exceed 24 bits, as described below.

- Greyscale: 8 bit or 16 bit
- Truecolor: 24 bit (triplet of 8 bit R/G/B samples)
- Indexed-color: 24 bit (palette entry is a triplet 8 bit R/G/B samples)
- Greyscale with alpha: 8 bit or 16 bit (with matching alpha channel depth)
- Truecolor with alpha: 24 bit (triplet of 8 bit R/G/B samples, alpha channel shall be 8 bit)

The image shall use "interlace method 0" (also known as the null method), as described in ISO/IEC 15948:2004, 8.2.

NOTE This media format profile is for use with guideline IEC 62481-1:2013, 7.3.2.28 and other guidelines in the future that call for an icon image media format profile.

A CDS Object shall not contain a <res> element which specifies a content binary conforming to this Profile ID.

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 15948 W3C PNG IEC 62481-1	6AXLT	

[COMMENTS]

a) The W3C PNG Recommendation W3C PNG has also been made an International Standard, ISO/IEC 15948:2004. The purpose of this media format profile is to define a subset of the PNG specification for UPnP device icons and image thumbnails. PNG's capability for lossless compression and transparency makes it ideal for extremely small image sizes.

b) Rendering Endpoints for this media profile do not need to claim full compliance with the PNG renderer per W3C PNG:2003, 13.1. PNG decoder implementations can be built specifically for this media format profile and not claim full compliance to the PNG specification. This guideline allows for transparency.

c) This guideline specifies the bit-depth individual sampling channels as well as the total bit depth for a color.

d) Since the home network generally has higher bandwidth and lower latency than the Internet, "interlace method 1" (also known as Adam7) is less useful.

7.2.3 PNG LRG ICO format profile

7.2.3.1

[PROFILES]

PNG_LRG_ICO

7.2.3.2

[GUIDELINE] The PNG_LRG_ICO profile shall follow the requirements of 7.2.2 PNG_SM_ICO profile, except for the following requirements.

Maximum resolution

the resolution of the image shall be 120 pixels in the Width field and shall be 120 pixels in the Height field.

NOTE This media format profile is for use with guideline IEC 62481-1:2013, 7.3.2.28 and other guidelines in the future that call for an icon image media format profile.

A CDS Object shall not contain a <res> element which specifies a content binary conforming to this Profile ID.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 15948 W3C PNG IEC 62481-1	SMM78	

7.2.4 PNG LRG format profile

7.2.4.1

[PROFILES]

PNG_LRG

7.2.4.2

[GUIDELINE] PNG_LRG media format profile shall follow media format profiling requirements of PNG_SM_ICO, except for the following distinctive profiling elements.

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The resolution of the image shall not exceed 4 096 pixels in the Width field and shall not exceed 4 096 pixels in the Height field.

Interlace 0 method only. (Interlaced images are not supported.)

The following bit depths are supported by PNG_LRG. (Bit depths not supported by PNG_SM_ICO and PNG_LRG_ICO are in Bold.)

Greyscale:

- 1
- 2
- 4
- 8
- 16

True color:

- 8 (24 bit total. Triplet of 8 bit R/G/B)

Indexed color:

- 1
- 2
- 4
- 8

Grayscale with alpha:

- 8
- 16

True color with alpha:

- 8

The following chunks shall be supported:

- IHDR
- PLTE
- IDAT
- IEND

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 15948 W3C PNG	K5TBN	

7.2.5 PNG format profile: ancillary chunks

7.2.5.1

[PROFILES]

PNG_LRG

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7.2.5.2

[GUIDELINE] A bitstream conformant with this profile may include the following ancillary chunks:

- bKGD
- tRNS
- sRGB

[ATTRIBUTES]

O	A	n/a	n/a	n/a	ISO/IEC 15948 W3C PNG	77AY8	

7.2.5.3

[GUIDELINE] UPnP Printer devices should be capable of decoding and rendering PNG_LRG content items that include the following ancillary chunks:

- bKGD
- tRNS
- sRGB

[ATTRIBUTES]

S	A	DMPr	n/a	n/a	n/a	5TBNT	

7.2.6 PNG format profile: MIME type definition

7.2.6.1

[PROFILES]

PNG_LRG
PNG_TN

7.2.6.2

[GUIDELINE] MIME type "image/png" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	7AY8C	

7.3 GIF profiling guidelines

7.3.1 GIF LRG format profile

7.3.1.1

[PROFILES]

GIF_LRG

7.3.1.2

[GUIDELINE] The DLNA GIF_LRG profile shall follow the requirements of GIF 89a ARIB STD B-1, and the following restrictions and guidelines described in the entries below.

File format:

GIF

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Maximum resolution

the resolution of the image shall not exceed 1 600 pixels in the Width field and shall not exceed 1 200 pixels in the Height field.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	3GPP TS 26.140 3GPP TS 26.234 ARIB STD B-1 3GPP TS 26.140 3GPP TS 26.234 3GPP TS 26.346 3GPP TS 26.346 OMA	YAJVS	

7.3.2 GIF format profile: MIME type definition

7.3.2.1

[PROFILES]

GIF_LRG

7.3.2.2

[GUIDELINE] MIME type “image/gif” shall be used for this Media Format Profile.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	IETF RFC 2046	S7HER	

[COMMENT] A thumbnail representation of a content item is exposed in the CDS as described in 7.4.1.4.6 of IEC 62481-1:2013.

8 Audio class media format profiles

8.1 AC-3 profiling guidelines

8.1.1 AC-3 audio format

8.1.1.1

[PROFILES]

AC3

8.1.1.2

[GUIDELINE] Main characteristics of Dolby AC-3 audio stream are defined in ATSC Standard A/52A.

Sampling rate

- 32 kHz
- 44,1 kHz
- 48 kHz

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Content audio channel modes

A bitstream conformant to this Media Format Profile may contain the following AC-3 formats

- 1/0 (Mono)
- 2/0 (Stereo)
- 3/0 (Multichannel)
- 2/1 (Multichannel)
- 3/1 (Multichannel)
- 2/2 (Multichannel)
- 3/2 (Multichannel)

Changing audio channels among mono and stereo is allowed.

Bit rates (variable)

- 64 kbit/s to 640 kbit/s.

Payload format

Payload format is raw bitstream.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ATSC Standard A/52A	FSJTK	

8.1.2 AC-3 audio format: MIME type definition

8.1.2.1

[PROFILES]

AC3

8.1.2.2

[GUIDELINE] MIME type "audio/vnd.dolby.dd-raw" shall be used for this Media Format Profile.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	8727Z	

8.2 AMR profiling guidelines

8.2.1 AMR audio format

8.2.1.1

[PROFILES]

AMR_3GPP

8.2.1.2

[GUIDELINE] This is a single channel multi-mode codec with encoding defined in 3GPP TS 26.090.

Sampling rate:

- 8 kHz

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Bit rates (CBR):

- 4,75 kbit/s
- 5,15 kbit/s
- 5,9 kbit/s
- 6,7 kbit/s
- 7,4 kbit/s
- 7,95 kbit/s
- 10,2 kbit/s
- 12,2 kbit/s

[ATTRIBUTES]

M	R	n/a	n/a	n/a	3GPP TS 26.090 3GPP TS 26.101	R8727	

[COMMENT] The AMR speech codec is a mandatory codec in 3GPP cellular systems.

8.2.2 AMR audio format: MIME type definition

8.2.2.1

[PROFILES]

AMR_3GPP

8.2.2.2

[GUIDELINE] MIME type "audio/3gpp" or "audio/mp4" shall be used for this Media Format depending on the Audio Interchange Format used.

MIME subtype of "AMR" shall be used for this profile as referenced in 3GPP TS 26.140 and 3GPP TS 26.234 and defined in 3GPP TS 26.244.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	3GPP TS 26.244 3GPP TS 26.140 3GPP TS 26.234	SJTKS	

8.2.3 AMR audio format

8.2.3.1

[PROFILES]

AMR_Wbplus

8.2.3.2

[GUIDELINE] The characteristics of AMR_WBplus audio stream are the same as specified in 3GPP TS 26.290.

AMR_WBplus audio media format shall abide by the following baseline characteristics:

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Audio encoding shall be AMR_WBplus as defined in 3GPP TS 26.290.

Sampling rates:

- 8 kHz
- 16 kHz
- 24 kHz
- 32 kHz
- 48 kHz

Bit rates (variable):

- 5,2 kbit/s to 48 kbit/s

Encoding types:

- Constant Bit Rate (CBR)
- Variable Bit Rate (VBR)

Conent audio channel modes:

A bitstream conformant to this media format profile may contain the following formats

- Mono (1/0)
- Stereo (2/0)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	3GPP TS 26.244 3GPP TS 26.290	QRY72	

8.2.4 AMR audio format: systems portion profiling

8.2.4.1

[PROFILES]

AMR_WBplus

8.2.4.2

[GUIDELINE] A bitstream conformant to this profile shall be in of the two 3GPP file formats that are specified in 3GPP TS 26.244:

- Progressive profile
- Basic profile

The following constraints shall also be applied:

- All the provisions of 8.6.37 apply.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	3GPP TS 26.244	B4OZ2	

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8.2.4.3

[GUIDELINE] Between the Basic and Progressive profiles, the Progressive profile should be used.

When the Progressive profile is used then file brand "3gr6" should be used.

When the Basic profile is used then file brand "3gp6" should be used.

[ATTRIBUTES]

S	R	n/a	n/a	n/a	3GPP TS 26.244	VF7Q8	

8.2.5 AMR audio format: MIME type definition

8.2.5.1

[PROFILES]

AMR_WBplus

8.2.5.2

[GUIDELINE] The MIME type "audio/3gpp" shall be used for this Media Format Profile.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	QE3YY	

8.3 ATRAC3plus profiling guidelines

8.3.1 ATRAC3plus audio format

8.3.1.1

[PROFILES]

ATRAC3plus

8.3.1.2

[GUIDELINE] The audio file format and codec shall conform to ATRAC3plus as defined in ATRAC3plus specification.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ATRAC3plus specification	5FAYW	

8.3.2 ATRAC3plus audio format: MIME type definition

8.3.2.1

[PROFILES]

ATRAC3plus

8.3.2.2

[GUIDELINE] MIME type "audio/x-sony-oma" shall be used for this Media Format Profile.

MIME parameters and their usage rules for this mime type are defined in ATRAC3plus specification.

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[ATTRIBUTES]

M	R	n/a	n/a	n/a	ATRAC3plus specification	4OZ2W	

8.4 LPCM profiling guidelines

8.4.1 General

Table 31 below identifies the LPCM profile hierarchy.

Table 31 – LPCM profile hierarchy

		Content items in this profile		
		LPCM_low	LPCM	LPCM_MPS
DMP renders this profile	LPCM_low	X		
	LPCM		X	
	LPCM_MPS	X	X	X

8.4.2 LPCM audio format

8.4.2.1

[PROFILES]

LPCM

8.4.2.2

[GUIDELINE] This audio format specification shall follow profiling of IETF RFC 3555, which defines the MIME encapsulation for the LPCM DLNA media format and uses the "L16" audio media format defined by IETF RFC 3551. "L16" denotes uncompressed audio data, using 16 bit signed representation in two's-complement notation and network byte order.

There are the following parameter constraints to "L16" as defined by DLNA.

Sampling rates:

- 44,1 kHz
- 48 kHz

Content audio channel modes:

A bitstream conformant with this media format profile may contain the following formats

- Mono (1)
- Stereo (2)

Quantization:

- 16 bit

[ATTRIBUTES]

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M	L	n/a	n/a	n/a	IETF RFC 3555 IETF RFC 3551	F7Q8T	

[COMMENT] Sample rate and the number of channels parameters are provided in the MIME type header. The "channels" parameter is not required by IETF RFC 3555.
The default channel ordering for 2 channel content is:

Channel 1: Left

Channel 2: Right

as indicated by IETF RFC 3555.

8.4.3 LPCM audio format: Transport Alignment Position

8.4.3.1

[PROFILES]

LPCM
LPCM_low
LPCM_MPS

8.4.3.2

[GUIDELINE] The Transport Alignment Position for bitstreams conformant to this profile shall be the sample boundary. For monaural streams this is a 16 bit sample, and for stereo streams this is a pair of 16 bit samples, one for each channel.

[ATTRIBUTES]

M	C	n/a	n/a	n/a	n/a	7Q8TS	

[COMMENT] Channel order for Stereo bitstreams is defined in 8.4.2.

8.4.4 TLPCM audio format: MIME type definition

8.4.4.1

[PROFILES]

LPCM
LPCM_low
LPCM_MPS

8.4.4.2

[GUIDELINE] MIME type "audio/L16" shall be used for this Media Format Profile.

The "channels" parameter should be included in MIME type header exposed by a Serving Endpoint.

The value of the "channels" parameter directly corresponds to the number of channels of the core LPCM stream, i.e. either 1 for Mono or 2 for Stereo.

If a MIME type Serving Endpoint does not include the "channels" parameter in a content description, the default value assumed by the Rendering Endpoint shall be 1.

The "rate" parameter shall be included in MIME type header exposed by the Serving Endpoint.

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For LPCM_MPS content, the value of the "channels" parameter directly corresponds to the number of channels of the core LPCM stream, i.e. either 1 for Mono or 2 for Stereo.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	TD65Y	

[COMMENT] An example MIME type for stereo core LPCM with MPS and 48 kHz sampling rate is:

audio/L16;channels=2;rate=48000

8.4.5 LPCM audio format: Rendering Endpoint capabilities

8.4.5.1

[PROFILES]

LPCM_MPS

8.4.5.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also be able to render content indicated by the following profiles:

- LPCM
- LPCM_low

[ATTRIBUTES]

M	L	DMP DMR	M-DMP	n/a	n/a	WY4QH	

8.4.6 LPCM audio format: MPS signaling

8.4.6.1

[PROFILES]

LPCM_MPS

8.4.6.2

[GUIDELINE] A bitstream conformant with this profile shall follow the transport and signaling requirements for MPEG Surround as Buried Data in a PCM bitstream as specified in ISO/IEC 23003-1:2007, 7.3.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 23003-1	DPOPF	

8.4.7 LPCM audio format: low

8.4.7.1

[PROFILES]

LPCM_low

8.4.7.2

[GUIDELINE] The DLNA LPCM_low audio format profile shall conform to all aspects of the LPCM profile except as noted here:

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Sampling rates:

- 8 kHz
- 11,025 kHz
- 12 kHz
- 16 kHz
- 22,05 kHz
- 24 kHz
- 32 kHz

[ATTRIBUTES]

M	L	n/a	n/a	n/a	IETF RFC 3555 IETF RFC 3551	KWY4Q	

8.4.8 LPCM audio format: MPS

8.4.8.1

[PROFILES]

LPCM_MPS

8.4.8.2

[GUIDELINE] A bitstream conformant with the DLNA LPCM_MPS audio format profile shall conform to all aspects of the LPCM profile as specified in 8.4.2 or the LPCM_low profile as specified in 8.4.7.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	YZDPO	

8.4.8.3

[GUIDELINE] MPS encoding shall match the provisions for one of the following levels in the MPS profile as defined in ISO/IEC 23003-1.

- MPS Baseline Profile at Level 1
- MPS Baseline Profile at Level 2
- MPS Baseline Profile at Level 3
- MPS Baseline Profile at Level 4

Maximum sampling rate

- 48 kHz

Content audio channel modes

- Mono (1)
- Stereo (2)
- Multichannel (3)
- Multichannel (4)
- Multichannel (5)
- Multichannel (5.1)

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- Multichannel (7.1)

Maximum bit rate (informative)

- 1 536 kbit/s

Quantization

- 16 bit

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 23003-1	WSTD6	

[COMMENT] PCM is used for up to 2 core channels. MPS Levels 1 to 4 allow different numbers of input and output channels, and a different bandwidth of the residual signal decoding. The inherent bitstream level compatibility of MPEG Surround makes it possible for decoders of level 1, 2, 3 and 4 to decode bitstreams of all levels, though at a possibly slightly reduced quality due to the limitations of the decoder. This means that the highest possible reproduction quality is only ensured when the level of the decoder is equal to or larger than the level of the bitstream.

8.5 MP3 profiling guidelines

8.5.1 MP3 audio format

8.5.1.1

[PROFILES]

MP3

8.5.1.2

[GUIDELINE] MP3 audio media format shall abide by the following baseline characteristics:

Audio encoding shall be MPEG-1 Layer 3 audio as defined in ISO/IEC 11172-3.

Content audio channel modes:

A bitstream conformant to this media format profile may contain the following formats

- Mono (1)
- Stereo (2)

Sampling rates:

- 32 kHz
- 44,1 kHz
- 48 kHz

Bit rates:

- 32 kbit/s
- 40 kbit/s
- 48 kbit/s
- 56 kbit/s
- 64 kbit/s

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- 80 kbit/s
- 96 kbit/s
- 112 kbit/s
- 128 kbit/s
- 160 kbit/s
- 192 kbit/s
- 224 kbit/s
- 256 kbit/s
- 320 kbit/s

Encoding types:

- Constant Bit Rate (CBR)
- Variable Bit Rate (VBR)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 11172-3	5QE3Y	

[COMMENT] The bit rates list represents the maximum rate for VBR audio encoding type.

8.5.2 MP3 audio format: ID3 tag tolerance

8.5.2.1

[PROFILES]

MP3

8.5.2.2

[GUIDELINE] A bitstream conformant with this profile may contain ID3 tags as defined in ID3 tag.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ID3 tag	9B4OZ	

8.5.3 MP3 audio format: ID3 tag placement

8.5.3.1

[PROFILES]

MP3

8.5.3.2

[GUIDELINE] If MP3 ID3v2 tag ID3 tag , the tag with the ID3v2 header should be prepended to the MPEG-1 Layer3 audio bit stream ISO/IEC 11172-3. That is, the ID3v2 header is positioned at the beginning of the content binary.

[ATTRIBUTES]

S	L	n/a	n/a	n/a	ISO/IEC 11172-3 ID3 tag	75FAY	

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8.5.4 MP3 audio format: MIME type definition

8.5.4.1

[PROFILES]

MP3
MP3X

8.5.4.2

[GUIDELINE] MIME type "audio/mpeg" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	Y5QE3	

8.5.5 MP3 audio format

8.5.5.1

[PROFILES]

MP3X

8.5.5.2

[GUIDELINE] The MP3X audio format profile shall conform to all aspects of the MP3 profile with the following extension of ISO/IEC 11172-3 to Lower Sampling Frequencies defined in ISO/IEC 13818-3.

Main characteristics of MP3X audio format profile are as follows.

Audio encoding shall match the provisions for one of the following MPEG audio formats:

- MPEG1 layer3
- MPEG2 layer3

Content audio channel modes:

A bitstream conformant to this media format profile may contain the following formats

- Mono (1)
- Stereo(2)

Sampling rates:

- 16 kHz
- 22,05 kHz
- 24 kHz
- 32 kHz
- 44,1 kHz
- 48 kHz

Bit rates:

- 8 kbit/s
- 16 kbit/s
- 24 kbit/s

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- 32 kbit/s
- 40 kbit/s
- 48 kbit/s
- 56 kbit/s
- 64 kbit/s
- 80 kbit/s
- 96 kbit/s
- 112 kbit/s
- 128 kbit/s
- 160 kbit/s
- 192 kbit/s
- 224 kbit/s
- 256 kbit/s
- 320 kbit/s

Encoding types:

- Constant Bit Rate (CBR)
- Variable Bit Rate (VBR)

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	35K7X	

8.5.5.3

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also render content indicating following profile:

- MP3

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	QUA3H	

8.6 MPEG-4 profiling guidelines

8.6.1 General

The DLNA-defined profiles of MPEG-4 are based on MPEG-2/4 AAC, MPEG-4 High Efficiency AAC, MPEG-4 High Efficiency AAC v2, MPEG-4 AAC-LTP, MPEG-4 ALS and MPEG-4 BSAC. There are guidelines for both stereo and multichannel audio and several supported file formats. Many of the audio profiles incorporating AAC have a hierarchical relationship to each other. A DMP capable of rendering any of the multichannel AAC profiles is also capable of rendering the corresponding profiles with fewer channels. In addition, some profiles differ only in whether a bit rate restriction is imposed. A hierarchical relationship exists here, too, where a DMP capable of rendering a non-restricted bit rate profile is also capable of rendering the corresponding profile with a bit rate restriction. Furthermore, the "HE-AAC" profiles, "HE-AACv2" profiles and the "LTP" profiles are each a superset of a corresponding "AAC" profile because they all use the AAC-LC audio object. The "HE-AACv2" profiles are also a superset of a corresponding "HE-AAC" profile. The "LTP" profiles include both the ISO-based file formats and the ADTS format, so these profiles are each a superset of both corresponding "AAC" profiles.

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Additionally, similar hierarchical relationships exist between profiles using MPEG Surround. MPS profiles are a superset of their corresponding core audio profile, and a DMP capable of rendering any of the PMS profiles is also capable of rendering the core audio profile that the MPS profile is based upon. The hierarchical relationship between HE-AAC and AAC profiles as described above is also maintained when MPS information is included, for example, in the case of the HEAAC_MPS profile.

Finally, the “BSAC” and “ALS” profiles do not include the ADTS format. Table 32 and Table 33 show the relationships between MPEG-4 and MPEG-4-related audio profiles.

Table 32 – MPEG-4 audio profile hierarchy

		Content items in this profile																								
	X = DMP is required to render content	AAC_ISO	AAC_ISO_320	AAC_ADTS	AAC_ADTS_320	AAC_MULT5_ISO	AAC_MULT5_ADTS	HEAAC_L2_ISO	HEAAC_L2_ISO_320	HEAAC_L2_ADTS	HEAAC_L2_ADTS_320	HEAAC_L3_ISO	HEAAC_L3_ADTS	HEAAC_MULT5_ISO	HEAAC_MULT5_ADTS	AAC_LTP_ISO	AAC_LTP_MULT5_ISO	AAC_LTP_MULT7_ISO	BSAC_ISO	BSAC_MULT5_ISO	HEAACv2_L2	HEAACv2_L2_320	HEAACv2_L3	HEAACv2_MULT5	ALS_ ISO	ALS_MULT5_ISO
DMP renders this profile	AAC_ISO	X	X	X	X																					
	AAC_ISO_320		X		X																					
	AAC_ADTS			X	X																					
	AAC_ADTS_ 320				X																					
	AAC_MULT5_ ISO	X	X	X	X	X	X																			
	AAC_MULT5_ ADTS			X	X		X																			
	HEAAC_L2_ ISO	X	X	X	X			X	X	X	X															
	HEAAC_L2_ ISO_320		X		X				X		X															
	HEAAC_L2_ ADTS			X	X					X	X															
	HEAAC_L2_ ADTS_320				X						X															
	HEAAC_L3_ ISO	X	X	X	X			X	X	X	X	X	X													
	HEAAC_L3_ ADTS			X	X					X	X		X													
	HEAAC_ MULT5_ISO	X	X	X	X	X	X	X	X	X	X	X	X	X	X											
	HEAAC_ MULT5_ADTS			X	X		X			X	X		X		X											
	AAC_LTP_ISO	X	X	X	X											X										
	AAC_LTP_ MULT5_ISO	X	X	X	X	X	X									X	X									
	AAC_LTP_ MULT7_ISO	X	X	X	X	X	X									X	X	X								

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		Content items in this profile																						
	X = DMP is required to render content	AAC_ISO	AAC_ISO_320	AAC_ADTS	AAC_ADTS_320	AAC_MULT5_ISO	AAC_MULT5_ADTS	HEAAC_L2_ISO	HEAAC_L2_ISO_320	HEAAC_L2_ADTS	HEAAC_L2_ADTS_320	HEAAC_L3_ISO	HEAAC_L3_ADTS	HEAAC_MULT5_ISO	HEAAC_MULT5_ADTS	AAC_LTP_ISO	AAC_LTP_MULT5_ISO	AAC_LTP_MULT7_ISO	BSAC_ISO	BSAC_MULT5_ISO	HEAACv2_L2	HEAACv2_L2_320	HEAACv2_L3	HEAACv2_MULT5	ALS_ISO	ALS_MULT5_ISO
	BSAC_ISO																		X							
	BSAC_MULT5_ISO																		X	X						
	HEAACv2_L2_320		X		X				X		X											X				
	HEAACv2_L2	X	X	X	X			X	X	X	X										X	X				
	HEAACv2_L3	X	X	X	X			X	X	X	X	X	X								X	X	X			
	HEAACv2_MULT5	X	X	X	X	X	X	X	X	X	X	X	X	X	X						X	X	X	X		
	ALS_ISO																								X	
	ALS_MULT5_ISO																								X	X

Table 33 – MPEG-4 audio profile hierarchy

		Content items in this profile																												
		MPEG2_AAC_MPS	AAC_ADTS_192	AAC_ISO_192	AAC_ADTS_320	AAC_ISO_320	AAC_ADTS	AAC_ISO	AAC_MULT5_ADTS	AAC_MULT5_ISO	AAC_MPS	HEAAC_L2_ADTS_320	HEAAC_L2_ADTS	HEAAC_L2_ISO_128	HEAAC_L2_ISO_320	HEAAC_L2_ISO	HEAAC_L3_ADTS	HEAAC_L3_ISO	HEAAC_L4	HEAAC_MULT5_ADTS	HEAAC_MULT5_ISO	HEAAC_MULT7	HEAAC_MPS	HEAACv2_L2_320	HEAACv2_L2_128	HEAACv2_L2	HEAACv2_L3	HEAACv2_L4	HEAACv2_MULT5	HEAACv2_MULT7	HEAACv2_L2_MPS_DAB
DMP renders this profile	MPEG2_AAC_MPS	X																												
	AAC_ADTS_192		X																											
	AAC_ISO_192		X	X																										
	AAC_ADTS_320		X		X																									
	AAC_ISO_320		X	X	X	X																								
	AAC_ADTS		X		X		X																							
	AAC_ISO		X	X	X	X	X	X																						
	AAC_MULT5_ADTS		X		X		X		X																					
	AAC_MULT5_ISO		X	X	X	X	X	X	X	X																				
	AAC_MPS	X	X	X	X	X	X	X			X																			

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	Content items in this profile	MPEG2_AAC_MPS	AAC_ADTS_192	AAC_ISO_192	AAC_ADTS_320	AAC_ISO_320	AAC_ADTS	AAC_ISO	AAC_MULT5_ADTS	AAC_MULT5_ISO	AAC_MPS	HEAAC_L2_ADTS_320	HEAAC_L2_ADTS	HEAAC_L2_ISO_128	HEAAC_L2_ISO_320	HEAAC_L2_ISO	HEAAC_L3_ADTS	HEAAC_L3_ISO	HEAAC_L4	HEAAC_MULT5_ADTS	HEAAC_MULT5_ISO	HEAAC_MULT7	HEAAC_MPS	HEAACv2_L2_320	HEAACv2_L2_128	HEAACv2_L2	HEAACv2_L3	HEAACv2_L4	HEAACv2_MULT5	HEAACv2_MULT7	HEAACv2_L2_MPS_DAB
	HEAAC_L2_ADTS_320		X		X							X																			
	HEAAC_L2_ADTS		X		X		X					X	X																		
	HEAAC_L2_ISO_128													X																	
	HEAAC_L2_ISO_320		X	X	X	X						X		X	X																
	HEAAC_L2_ISO											X	X	X	X	X															
	HEAAC_L3_ADTS		X		X		X					X	X				X														
	HEAAC_L3_ISO		X	X	X	X	X	X				X	X	X	X	X	X	X													
	HEAAC_L4		X	X	X	X	X	X				X	X	X	X	X	X	X	X												
	HEAAC_MULT5_ADTS		X		X		X		X			X	X				X			X											
	HEAAC_MULT5_ISO		X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X											
	HEAAC_MULT7		X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X										
	HEAAC_MPS	X	X	X	X	X	X	X			X	X	X	X	X	X							X									
	HEAACv2_L2_320		X	X	X	X						X		X	X									X	X						
	HEAACv2_L2_128													X											X						
	HEAACv2_L2		X	X	X	X	X	X				X	X	X	X	X								X	X	X					
	HEAACv2_L3		X	X	X	X	X	X				X	X	X	X	X	X	X						X	X	X	X				
	HEAACv2_L4		X	X	X	X	X	X				X	X	X	X	X	X	X	X					X	X	X	X	X			
	HEAACv2_MULT5		X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X		
	HEAACv2_MULT7		X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	
	HEAACv2_L2_MPS_DAB																														X

8.6.2 AAC audio format: baseline (1)

8.6.2.1

[PROFILES]

AAC_ADTS
AAC_ISO

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8.6.2.2

[GUIDELINE] AAC audio media format shall abide by the following baseline characteristics.

Audio encoding shall match the provisions for one of these levels in the (MPEG-4) AAC Profile as defined in ISO/IEC 14496-3. The appropriate parameter in the file format shall be set to the profile and level.

Profiles and levels:

- AAC Profile at Level 1
- AAC Profile at Level 2

Sampling rate:

- 8 kHz
- 11,025 kHz
- 12 kHz
- 16 kHz
- 22,05 kHz
- 24 kHz
- 32 kHz
- 44,1 kHz
- 48 kHz

Maximum bit rate (informative):

- 576 kbit/s.

NOTE The maximum bit rate is defined by the following equation in ISO/IEC 14496-3, maximum bit rate = (6 144 / 1 024) * maximum sampling rate * number of channels.

Content audio channel modes:

A bitstream conformant to this media format profile may contain the following formats

- Mono (1)
- Stereo (2)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-3 ISO/IEC 14496-3	5K7XN	

[COMMENTS]

a) The MPEG-4 AAC Profile specified in ISO/IEC 14496-3 includes only the AAC-LC Audio Object Type.

b) Rendering Endpoint meeting the guidelines of the AAC_ISO or AAC_ADTS profiles is capable of a partial bandwidth decode of content using the MPEG-4 SBR coding tool if that content uses one of the implicit signaling modes in 1.6.5 of ISO/IEC 14496-3:2001 and uses the DLNA MF profileID "AAC_ISO" or "AAC_ADTS".

c) The number of channels can change during a content item.

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8.6.3 AAC audio format: exception (1)

8.6.3.1

[PROFILES]

AAC_ISO_320

8.6.3.2

[GUIDELINE] Bitstreams compliant with this profile shall conform to all aspects of the AAC_ISO profile, except as noted here:

Maximum bit rate (normative):

- 320 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	BSDY3	

[COMMENT] In addition to all the provisions defined for AAC_ISO, this profile requires a maximum content bitrate of 320 kbit/s.

8.6.4 AAC audio format: exception (2)

8.6.4.1

[PROFILES]

AAC_ADTS_320

8.6.4.2

[GUIDELINE] Bitstreams compliant with this profile shall conform to all aspects of the AAC_ADTS profile, except as noted here:

Maximum bit rate (normative):

- 320 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	36YPU	

[COMMENT] In addition to all the provisions defined for AAC_ADTS, this profile requires a maximum content bitrate of 320 kbit/s.

8.6.5 AAC audio format: content (1)

8.6.5.1

[PROFILES]

AAC_ISO_320

8.6.5.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also render content indicating following profile:

- AAC_ADTS_320

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[ATTRIBUTES]

M	A	DMP DMR	M-DMD M-DMP	n/a	n/a	S8PBS	

8.6.6 AAC audio format: baseline (2)

8.6.6.1

[PROFILES]

AAC_MULT5_ADTS
AAC_MULT5_ISO

8.6.6.2

[GUIDELINE] AAC audio media format shall abide by the following baseline characteristics.

Audio encoding shall match the provisions for this level in the (MPEG-4) AAC Profile as defined in ISO/IEC 14496-3. The appropriate parameter in the file format shall be set to the profile and level.

Profile and level:

- AAC Profile at Level 4

Sampling rate:

- 8 kHz
- 11,025 kHz
- 12 kHz
- 16 kHz
- 22,05 kHz
- 24 kHz
- 32 kHz
- 44,1 kHz
- 48 kHz

Maximum bit rate (informative):

- 1 440 kbit/s

NOTE The maximum bit rate is defined by the following equation in ISO/IEC 14496-3: maximum bit rate = (6 144 / 1 024) * maximum sampling rate * number of channels.

Content audio channel modes:

A bitstream conformant to this media format profile may contain the following formats

- Mono (1)
- Stereo (2)
- Multichannel (3)
- Multichannel (4)
- Multichannel (5)
- Multichannel (5.1)

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-3 ISO/IEC 14496-3	AS8PB	

[COMMENTS]

a) The MPEG-4 AAC Profile specified in ISO/IEC 14496-3 includes only the AAC-LC Audio Object Type.

b) Rendering Endpoints meeting the guidelines of the AAC_ISO or AAC_ADTS profiles is capable of a partial bandwidth decode of content using the MPEG-4 SBR coding tool if that content uses one of the implicit signaling modes in 1.6.5 of ISO/IEC 14496-3:2001 and uses the DLNA MF profileID "AAC_ISO" or "AAC_ADTS".

c) The MPEG-4 AAC Profile specified in ISO/IEC 14496-3 has no Level 3.

d) The number of channels can change during a content item.

8.6.7 AAC audio format: content (2)

8.6.7.1

[PROFILES]

AAC_MULT5_ADTS

8.6.7.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also render content indicated by following profiles:

- AAC_ADTS
- AAC_ADTS_320

[ATTRIBUTES]

M	L	DMP DMR	M-DMP M-DMD	n/a	n/a	RDZSE	

8.6.8 AAC audio format: content (3)

8.6.8.1

[PROFILES]

AAC_MULT5_ISO

8.6.8.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also render content indicated by following profiles:

- AAC_ADTS
- AAC_ADTS_320
- AAC_ISO
- AAC_ISO_320
- AAC_MULT5_ADTS

[ATTRIBUTES]

M	L	DMP DMR	M-DMP M-DMD	n/a	n/a	65B4N	

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8.6.9 AAC audio format: baseline (3)

8.6.9.1

[PROFILES]

HEAAC_L2_ADTS
HEAAC_L2_ISO

8.6.9.2

[GUIDELINE] HE-AAC audio media format shall abide by the following baseline characteristics:

Audio encoding shall match the provisions for this level in the (MPEG-4) High Efficiency (HE) AAC Profile as defined in ISO/IEC 14496-3. The appropriate parameter in the file format shall be set to the profile and level, as listed below.

Profile and level:

- HE-AAC Profile at Level 2

AAC sampling rate (SBR present):

- 8 kHz
- 11,025 kHz
- 12 kHz
- 16 kHz
- 22,05 kHz
- 24 kHz

AAC sampling rate (SBR not present):

- 8 kHz
- 11,025 kHz
- 12 kHz
- 16 kHz
- 22,05 kHz
- 24 kHz
- 32 kHz
- 44,1 kHz
- 48 kHz

Maximum bit rate (informative):

- 576 kbit/s

NOTE The maximum bit rate is defined by the following equation in ISO/IEC 14496-3, maximum bit rate = (6 144 / 1 024) * maximum sampling rate * number of channels

Content audio channel modes:

A bitstream conformant to this media format profile may contain the following formats

- Mono (1)
- Stereo (2)

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-3 ISO/IEC 14496-3	X65B4	

[COMMENT] The MPEG-4 High Efficiency (HE) AAC Profile specified in ISO/IEC 14496-3 includes the AAC LC and the SBR Audio Object Types.
The MPEG-4 HE-AAC Profile specified in ISO/IEC 14496-3 has no Level 1.
The number of channels can change during a content item.

8.6.10 AAC audio format: content (4)

8.6.10.1

[PROFILES]

HEAAC_L2_ADTS

8.6.10.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also render content indicated by following profiles:

- AAC_ADTS
- AAC_ADTS_320
- HEAAC_L2_ADTS_320

[ATTRIBUTES]

M	L	DMP DMR	M-DMP M-DMD	n/a	n/a	6YPUT	

8.6.11 AAC audio format: content (5)

8.6.11.1

[PROFILES]

HEAAC_L2_ISO

8.6.11.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also render content indicated by following profiles:

- AAC_ADTS
- AAC_ADTS_320
- AAC_ISO
- AAC_ISO_320
- HEAAC_L2_ADTS
- HEAAC_L2_ADTS_320
- HEAAC_L2_ISO_320

[ATTRIBUTES]

M	L	DMP DMR	M-DMP M-DMD	n/a	n/a	K7XN4	

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8.6.12 AAC audio format: exception (3)

8.6.12.1

[PROFILES]

HEAAC_L2_ADTS_320

8.6.12.2

[GUIDELINE] Bitstreams compliant with this profile shall conform to all aspects of the HEAAC_L2_ADTS profile, except as noted below.

Maximum bit rate (normative):

- 320 kbit/s

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	YLY5Q	

8.6.13 AAC audio format: Rendering Endpoint capabilities

8.6.13.1

[PROFILES]

HEAAC_L2_ADTS_320
AAC_MPS

8.6.13.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also render content indicated by following profiles:

- AAC_ADTS_320
- AAC_ISO_320
- AAC_ADTS
- AAC_ISO

[ATTRIBUTES]

M	L	DMP DMR	M-DMP M-DMD	n/a	n/a	72UWR	

8.6.14 AAC audio format: exception (4)

8.6.14.1

[PROFILES]

HEAAC_L2_ISO_320

8.6.14.2

[GUIDELINE] Bitstreams compliant with this profile shall conform to all aspects of the HEAAC_L2_ISO profile except as noted below.

Maximum bit rate (normative):

- 320 kbit/s

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	W7QVX	

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8.6.15 AAC audio format: Rendering Endpoints capabilities.

8.6.15.1

[PROFILES]

HEAAC_L2_ISO_320

8.6.15.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also render content indicated by following profiles:

- AAC_ADTS_320
- AAC_ISO_320
- HEAAC_L2_ADTS_320

[ATTRIBUTES]

M	L	DMP DMR	M-DMP M-DMD	n/a	n/a	G786Q	

8.6.16 AAC audio format: baseline (4)

8.6.16.1

[PROFILES]

HEAAC_L3_ADTS
HEAAC_L3_ISO

8.6.16.2

[GUIDELINE] Bitstreams compliant with the HE-AAC audio media format shall abide by the following baseline characteristics.

Audio encoding shall match the provisions for this level in the (MPEG-4) High Efficiency (HE) AAC Profile as defined in ISO/IEC 14496-3. The appropriate parameter in the file format shall be set to the profile and level, as listed below.

Profile and level:

- HE-AAC Profile at Level 3

AAC sampling rate (with and without SBR):

- 8 kHz
- 11,025 kHz
- 12 kHz
- 16 kHz
- 22,05 kHz
- 24 kHz
- 32 kHz
- 44,1 kHz
- 48 kHz

Maximum bit rate (informative):

- 576 kbit/s

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NOTE The maximum bit rate is defined by the following equation in ISO/IEC 14496-3, maximum bit rate = (6 144 / 1 024) * maximum sampling rate * number of channels

Content audio channel modes:

A bitstream conformant to this media format profile may contain the following formats

- Mono (1)
- Stereo (2)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-3 ISO/IEC 14496-3	VX65B	

[COMMENT] The MPEG-4 High Efficiency (HE) AAC Profile specified in ISO/IEC 14496-3 includes the AAC Low Complexity (LC) and the Spectral Band Replication (SBR) Audio Object Types.
The number of channels can change during a content item.

8.6.17 AAC audio format: content (6)

8.6.17.1

[PROFILES]

HEAAC_L3_ADTS

8.6.17.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also render content indicated by following profiles:

- AAC_ADTS
- AAC_ADTS_320
- HEAAC_L2_ADTS
- HEAAC_L2_ADTS_320

[ATTRIBUTES]

M	L	DMP DMR	M-DMP M-DMD	n/a	n/a	786QR	

8.6.18 AAC audio format: content (7)

8.6.18.1

[PROFILES]

HEAAC_L3_ISO

8.6.18.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also render content indicated by following profiles:

- AAC_ADTS
- AAC_ADTS_320
- AAC_ISO
- AAC_ISO_320
- HEAAC_L2_ADTS

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- HEAAC_L2_ADTS_320
- HEAAC_L2_ISO
- HEAAC_L2_ISO_320
- HEAAC_L3_ADTS

[ATTRIBUTES]

M	L	DMP DMR	M-DMP M-DMD	n/a	n/a	7QVX6	

8.6.19 AAC audio format: baseline (5)

8.6.19.1

[PROFILES]

HEAAC_MULT5_ADTS
HEAAC_MULT5_ISO

8.6.19.2

[GUIDELINE] Bitstreams compliant with the HE-AAC audio media format shall abide by the following baseline characteristics.

Audio encoding shall match the provisions for one of these levels in the (MPEG-4) High Efficiency (HE) AAC Profile as defined in ISO/IEC 14496-3. The appropriate parameter in the file format shall be set to the profile and level as listed below.

Profiles and Levels:

- HE-AAC Profile at Level 4
- HE-AAC Profile at Level 5

AAC sampling rate (with and without SBR):

- 8 kHz
- 11,025 kHz
- 12 kHz
- 16 kHz
- 22,05 kHz
- 24 kHz
- 32 kHz
- 44,1 kHz
- 48 kHz

Maximum bit rate (informative):

- 1 440 kbit/s

NOTE The maximum bit rate is defined by the following equation in ISO/IEC 14496-3, maximum bit rate = (6 144 / 1 024) * maximum sampling rate * number of channels.

Content audio channel modes:

A bitstream conformant to this media format profile may contain the following formats

- Mono (1)
- Stereo (2)

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- Multichannel (3)
- Multichannel (4)
- Multichannel (5)
- Multichannel (5.1)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-3 ISO/IEC 14496-3	2UWRD	

[COMMENT] The MPEG-4 High Efficiency (HE) AAC Profile specified in ISO/IEC 14496-3 and ISO/IEC 14496-3 includes the AAC LC and the SBR Audio Object Types.
The number of channels can change during a content item.

8.6.20 AAC audio format: content (8)

8.6.20.1

[PROFILES]

HEAAC_MULT5_ADTS

8.6.20.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also render content indicated by following profiles:

- AAC_ADTS
- AAC_ADTS_320
- AAC_MULT5_ADTS
- HEAAC_L2_ADTS
- HEAAC_L2_ADTS_320
- HEAAC_L3_ADTS

[ATTRIBUTES]

M	L	DMP DMR	M-DMP M-DMD	n/a	n/a	QVX65	

8.6.21 AAC audio format: content (9)

8.6.21.1

[PROFILES]

HEAAC_MULT5_ISO

8.6.21.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also render content indicated by following profiles:

- AAC_ADTS
- AAC_ADTS_320
- AAC_ISO
- AAC_ISO_320
- AAC_MULT5_ADTS

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- AAC_MULT5_ISO
- HEAAC_L2_ADTS
- HEAAC_L2_ADTS_320
- HEAAC_L2_ISO
- HEAAC_L2_ISO_320
- HEAAC_L3_ADTS
- HEAAC_L3_ISO
- HEAAC_MULT5_ADTS

[ATTRIBUTES]

M	L	DMP DMR	M-DMP M-DMD	n/a	n/a	86QRU	

8.6.22 AAC audio format: baseline (6)

8.6.22.1

[PROFILES]

AAC_LTP_ISO

8.6.22.2

[GUIDELINE] Bitstreams compliant with the AAC audio media format shall abide by the following baseline characteristics.

Audio encoding shall match the provisions for one or both of these MPEG AOT as defined in ISO/IEC 14496-3.

- AAC LC
- AAC LTP

Audio encoding shall not indicate any existing MPEG-4 AAC profile in ISO/IEC 14496-3.

Sampling rate:

- 8 kHz
- 11,025 kHz
- 12 kHz
- 16 kHz
- 22,05 kHz
- 24 kHz
- 32 kHz
- 44,1 kHz
- 48 kHz

Maximum bit rate (informative):

- 576 kbit/s

NOTE The maximum bit rate is defined by the following equation in ISO/IEC 14496-3, maximum bit rate = (6 144 / 1 024) * maximum sampling rate * number of channels.

Content audio channel modes:

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A bitstream conformant to this media format profile may contain the following formats

- Mono (1)
- Stereo (2)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-3	ZCYAS	

[COMMENT] Expose content containing only AAC LC audio object types by a proper AAC LC-based profile.
The number of channels can change during a content item.

8.6.23 AAC audio format: content (10)

8.6.23.1

[PROFILES]

AAC_LTP_ISO

8.6.23.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also render content indicated by following profiles:

- AAC_ADTS
- AAC_ADTS_320
- AAC_ISO
- AAC_ISO_320

[ATTRIBUTES]

M	L	DMP DMR	M-DMP M-DMD	n/a	n/a	S7736	

8.6.24 AAC audio format: baseline (7)

8.6.24.1

[PROFILES]

AAC_LTP_MULT5_ISO

8.6.24.2

[GUIDELINE] Bitstreams compliant with the AAC audio media format shall abide by the following baseline characteristics.

Audio encoding shall match the provisions for one or both of these MPEG AOT as defined in ISO/IEC 14496-3:

- AAC LC
- AAC LTP

Audio encoding shall not indicate any existing MPEG-4 AAC profile in ISO/IEC 14496-3.

Sampling rate:

- 8 kHz
- 11,025 kHz

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- 12 kHz
- 16 kHz
- 22,05 kHz
- 24 kHz
- 32 kHz
- 44,1 kHz
- 48 kHz
- 88,2 kHz
- 96 kHz

Maximum bit rate (informative):

- 2 880 kbit/s

NOTE The maximum bit rate is defined by the following equation in ISO/IEC 14496-3, maximum bit rate = (6 144 / 1 024) * maximum sampling rate * number of channels.

Content audio channel modes:

A bitstream conformant to this media format profile may contain the following formats

- Mono (1)
- Stereo (2)
- Multichannel (3)
- Multichannel (4)
- Multichannel (5)
- Multichannel (5.1)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-3	UWRDZ	

[COMMENT] Expose content containing only AAC LC audio object types by a proper AAC LC-based profile.
The number of channels can change during a content item.

8.6.25 AAC audio format: content (11)

8.6.25.1

[PROFILES]

AAC_LTP_MULT5_ISO

8.6.25.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also render content indicated by the following profiles:

- AAC_ADTS
- AAC_ADTS_320
- AAC_ISO
- AAC_ISO_320

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- AAC_LTP_ISO
- AAC_MULT5 ADTS
- AAC_MULT5 ISO

[ATTRIBUTES]

M	L	DMP DMR	M-DMP M-DMD	n/a	ISO/IEC 14496-3	2BSDY	

8.6.26 AAC audio format: baseline (8)

8.6.26.1

[PROFILES]

AAC_LTP_MULT7_ISO

8.6.26.2

[GUIDELINE] A Bitstream compliant with the AAC audio media format shall abide by the following baseline characteristics.

Audio encoding shall match the provisions for one or both of these MPEG AOT as defined in ISO/IEC 14496-3.

- AAC LC
- AAC LTP

Audio encoding shall not indicate any existing MPEG-4 AAC profile in ISO/IEC 14496-3.

Sampling rate:

- 8 kHz
- 11,025 kHz
- 12 kHz
- 16 kHz
- 22,05 kHz
- 24 kHz
- 32 kHz
- 44,1 kHz
- 48 kHz
- 88,2 kHz
- 96 kHz

Maximum bit rate (informative):

- 4 032 kbit/s

NOTE The maximum bit rate is defined by the following equation in ISO/IEC 14496-3, maximum bit rate = (6 144 / 1 024) * maximum sampling rate * number of channels.

Content audio channel modes:

A bitstream conformant to this media format profile may contain the following formats

- Mono (1)

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- Stereo (2)
- Multichannel (3)
- Multichannel (4)
- Multichannel (5)
- Multichannel (7)
- Multichannel (5.1)
- Multichannel (7.1)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-3	CYAS8	

[COMMENT] Expose content containing only AAC LC audio object types by a proper AAC LC-based profile.
The number of channels can change during a content item.

8.6.27 AAC audio format: content (12)

8.6.27.1

[PROFILES]

AAC_LTP_MULT7_ISO

8.6.27.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also render content indicated by following profiles:

- AAC_ADTS
- AAC_ADTS_320
- AAC_ISO
- AAC_ISO_320
- AAC_LTP_ISO
- AAC_LTP_MULT5_ISO
- AAC_MULT5 ADTS
- AAC_MULT5 ISO

[ATTRIBUTES]

M	L	DMP DMR	M-DMP M-DMD	n/a	ISO/IEC 14496-3	WRDZS	

8.6.28 AAC audio format: audio interchange formats

8.6.28.1

[PROFILES]

AAC_ISO AAC_ISO_320
AAC_MULT5_ISO
HEAAC_L2_ISO
HEAAC_L2_ISO_320
HEAAC_L3_ISO
HEAAC_MULT5_ISO

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8.6.28.2

[GUIDELINE] AAC audio format encoding shall use one of the following audio interchange formats.

- MP4 file format
- 3GPP file format

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 14496-14 ISO/IEC 14496-12 3GPP TS 26.244	7736Y	

8.6.29 AAC audio format: audio interchange formats

8.6.29.1

[PROFILES]

AAC_ADTS
AAC_ADTS_320
AAC_MULT5_ADTS
HEAAC_L2_ADTS
HEAAC_L2_ADTS_320
HEAAC_L3_ADTS
HEAAC_MULT5_ADTS

8.6.29.2

[GUIDELINE] AAC audio format encoding shall use the following audio interchange format.

- ADTS

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 14496-3	736YP	

8.6.30 AAC audio format: audio interchange formats

8.6.30.1

[PROFILES]

AAC_LTP_ISO
AAC_LTP_MULT5_ISO
AAC_LTP_MULT7_ISO
MPEG2_AAC_MPS
AAC_MPS
HEAAC_L4
HEAAC_MULT7
HEAAC_MPS
HEAACv2_L4
HEAACv2_MULT7
HEAACv2_L2_320
HEAACv2_L2
HEAACv2_L3
HEAACv2_MULT5

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8.6.30.2

[GUIDELINE] AAC audio format encoding shall use one of the following audio interchange formats.

- MP4 file format
- 3GPP file format
- ADTS

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 14496-3 ISO/IEC 14496-14 ISO/IEC 14496-12 3GPP TS 26.244	22BSD	

8.6.31 AAC audio format: audio interchange formats

8.6.31.1

[PROFILES]

AAC_ISO AAC_ISO_320
AAC_LTP_ISO
AAC_LTP_MULT5_ISO
AAC_LTP_MULT7_ISO
HEAAC_L2_ISO
HEAAC_L2_ISO_32O
HEAAC_L3_ISO
AAC_MULT5_ISO
HEAAC_MULT5_ISO
MPEG2_AAC_MPS
AAC_MPS
HEAAC_L4
HEAAC_MULT7
HEAAC_MPS
HEAACv2_L4
HEAACv2_MULT7
HEAACv2_L2_320
HEAACv2_L2
HEAACv2_L3
HEAACv2_MULT5

8.6.31.2

[GUIDELINE] Rendering Endpoints compliant with these AAC audio formats profiles shall render the following audio interchange formats.

- MP4 file format
- 3GPP file format

[ATTRIBUTES]

M	R	DMP DMR	M-DMP M-DMD	n/a	ISO/IEC 14496-14 ISO/IEC 14496-12 3GPP TS 26.244	WQUA3	

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8.6.32 AAC audio format: audio interchange formats

8.6.32.1

[PROFILES]

AAC_ADTS
AAC_ADTS_320
AAC_ISO
AAC_ISO_320
AAC_LTP_ISO
AAC_LTP_MULT5_ISO
AAC_LTP_MULT7_ISO
AAC_MULT5_ADTS
AAC_MULT5_ISO
HEAAC_L2_ADTS
HEAAC_L2_ADTS_320
HEAAC_L2_ISO
HEAAC_L2_ISO_320
HEAAC_L3_ADTS
HEAAC_L3_ISO
HEAAC_MULT5_ADTS
HEAAC_MULT5_ISO
MPEG2_AAC_MPS
AAC_MPS
HEAAC_L4
HEAAC_MULT7
HEAAC_MPS
HEAACv2_L4
HEAACv2_MULT7
HEAACv2_L2_320
HEAACv2_L2
HEAACv2_L3
HEAACv2_MULT5

8.6.32.2

[GUIDELINE] Rendering Endpoints compliant with these AAC audio formats profiles shall render the following audio interchange format:

- ADTS

[ATTRIBUTES]

M	R	DMP DMR	M-DMP M-DMD	n/a	ISO/IEC 14496-3	535K7	

8.6.33 2 AAC audio format: audio interchange formats

8.6.33.1

[PROFILES]

AAC_ADTS
AAC_ADTS_320
AAC_MULT5_ADTS HEAAC_L2_ADTS
HEAAC_L2_ADTS_320
HEAAC_L3_ADTS
HEAAC_MULT5_ADTS

8.6.33.2

[GUIDELINE] Rendering Endpoints compliant with these AAC audio formats profiles should render the following audio interchange formats.

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- MP4 file format
- 3GPP file format

[ATTRIBUTES]

S	R	DMP DMR	M-DMP M-DMD	n/a	ISO/IEC 14496-3 ISO/IEC 14496-14 ISO/IEC 14496-12 3GPP TS 26.244	D75FA	

8.6.34 AAC audio format: ADTS audio interchange formats

8.6.34.1

[PROFILES]

AAC_ADTS
AAC_ADTS_320
AAC_LTP_ISO
AAC_LTP_MULT5_ISO
AAC_LTP_MULT7_ISO
AAC_MULT5_ADTS
HEAAC_L2_ADTS
HEAAC_L2_ADTS_320
HEAAC_L3_ADTS
HEAAC_MULT5_ADTS

8.6.34.2

[GUIDELINE] For a bitstream compliant with the ADTS audio interchange format, the following constraints on adts_fixed_header and adts_variable_header shall be applied.

The constraints on adts_fixed_header are as follows.

ID:

- 0 (MPEG-4)

protection_absent:

- 0 (crc_check field is always present)

profile_ObjectType:

- 0x1

  (For AAC_ADTS profile,
  AAC_MULT5_ADTS profile,
  AAC_ADTS_320 profile,
  HEAAC_L2_ADTS profile,
  HEAAC_L2_ADTS_320 profile,
  HEAAC_L3_ADTS profile,
  HEAAC_MULT5_ADTS profile)
- 0x3

  (For AAC_LTP_ISO profile,
  AAC_LTP_MULT5_ISO profile,

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AAC_LTP_MULT7_ISO profile)

sampling_frequency_index:

- 0 × b (8 kHz)
- 0 × a (11,025 kHz)
- 0 × 9 (12 kHz)
- 0 × 8 (16 kHz)
- 0 × 7 (22,05 kHz)
- 0 × 6 (24 kHz)
- 0 × 5 (32 kHz)
- 0 × 4 (44,1 kHz)
- 0 × 3 (48 kHz)
- 0 × 2 (64 kHz)
- 0 × 1 (88,2 kHz)
- 0 × 0 (96 kHz)

The constraints on adts_variable_header are as follows.

adts_buffer_fullness:

- 0 × 7FF (VBR)

number_of_raw_data_blocks_in_frame:

- 0 (One ADTS frame has only one raw_data_block)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-3	SDY3V	E

[COMMENT] This guideline defines the list of sampling frequencies that can be used with the ADTS audio interchange format. An audio format that uses ADTS can restrict further the set of sampling frequencies. For example, guideline 8.6.2.2 indicates that the AAC_ADTS profile uses only 9 of the 12 sampling frequencies defined in this guideline.

8.6.35 AAC audio format: MP4 audio interchange format

8.6.35.1

[PROFILES]

AAC_ISO
AAC_ISO_320
AAC_LTP_ISO
AAC_LTP_MULT5_ISO
AAC_LTP_MULT7_ISO
AAC_MULT5_ISO
HEAAC_L2_ISO
HEAAC_L2_ISO_320
HEAAC_L3_ISO
HEAAC_MULT5_ISO MPEG2_AAC_MPS
AAC_MPS
HEAAC_L4
HEAAC_MULT7

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HEAAC_MPS
HEAACv2_L4
HEAACv2_MULT7
HEAACv2_L2_320
HEAACv2_L2
HEAACv2_L3
HEAACv2_MULT5

8.6.35.2

[GUIDELINE] MP4 system portion profile shall match the provision about MPEG-4 Part 14 with the constraints described below.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	A3HZN	

[COMMENT] The MP4 file format is based on ISO file format.

8.6.35.3

[GUIDELINE] One default audio track shall be present.

The default audio track shall contain Audio Elementary Stream for this media format profile.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 14496-12	FAYWK	

8.6.35.4

[GUIDELINE] The Rendering Endpoint shall be able to render at least the default audio track.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	ISO/IEC 14496-12	OZ2WS	

[COMMENT] In addition to the default audio track, the Rendering Endpoint can support the rendering of additonal tracks as defined in 8.6.35.7. The rendering of additional tracks is vendor dependent.

8.6.35.5

[GUIDELINE] The default audio track shall have the lowest track ID among the audio tracks contained in the content binary.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 14496-12	8TSR7	

[COMMENT] This guideline defines a DLNA normative method to identify an audio track for default representation instead of using the Object Descriptor Box.

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8.6.35.6

[GUIDELINE] For the default audio track, "Track_enabled" shall be set to the value of 1 in the "flags" field of Track Header Box of the track.

[ATTRIBUTES]

M	C	n/a	n/a	n/a	ISO/IEC 14496-12	Z2WST	

8.6.35.7

[GUIDELINE] A bitstream conformant with these profiles may contain additional tracks, other than the default audio tracks.

NOTE Additional tracks might not be compliant to the Elementary Streams for the media format profile.

[ATTRIBUTES]

O	R	n/a	n/a	n/a	ISO/IEC 14496-12	Q8TSR	

[COMMENT] Additional tracks can be BIFS track, optional audio tracks, optional video tracks, text track, and hint track.

8.6.35.8

[GUIDELINE] When a group of multiple tracks that contain alternate data for one another exists as part of a content binary, the value of the alternate_group field for each of these tracks should be the same non-zero value. When multiple instances of such groups exist, each group should have a distinct alternate_group value.

[ATTRIBUTES]

S	R	n/a	n/a	n/a	ISO/IEC 14496-12	E3YYZ	

[COMMENT] For example, this indicates that the multiple audio tracks are alternatives to each other (and are not intended to be mixed).

8.6.35.9

[GUIDELINE] A 'moov' box shall be positioned after 'ftyp' and before the first 'mdat'. If a 'moof' box is present, each 'moof' box shall be positioned before the corresponding 'mdat'.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-12	3YYZD	

[COMMENT] For streaming, moov is retrieved at first in consideration of streaming playback.

8.6.35.10

[GUIDELINE] Within a track media data chunks within a media data box 'mdat' shall be in decoding time order.

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[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 14496-12	7XN44	

8.6.35.11

[GUIDELINE] Audio tracks shall be organized as interleaved chunks. The duration of samples stored in a chunk shall not exceed 1 s.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-12	AYWKW	

[COMMENT] A resource constrained system cannot process a big chunk.

8.6.35.12

[GUIDELINE] If the size of 'moov' box becomes bigger than 1 MB, the MPEG-4 movie shall be fragmented by using 'moof' box.

The size of 'moov' boxes shall be equal to or less than 1 MB.

The size of 'moof' boxes shall be equal to or less than 300 KiB.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-12	3HZNX	

[COMMENTS]

a) A resource constrained system cannot process a big moov box in case of streaming.

b) The 300 KiB value is calculated in the AV streaming guideline 9.4.4.3.11. This value is also adopted for audio.

8.6.35.13

[GUIDELINE] The sample size box ('stsz') shall be used.The compact sample size box ('stz2') shall not be used in MP4 files.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-12	DY3VB	

8.6.35.14

[GUIDELINE] Only Media Data Box (mdat) is allowed to have size 1. Only the last Media Data Box (mdat) in the file is allowed to have size 0. Other boxes shall not have size 1.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-12	DZSES	

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8.6.36 AAC audio format: MP4 audio interchange format

8.6.36.1

[PROFILES]

AAC_ISO_320
HEAAC_L2_ISO_320

8.6.36.2

[GUIDELINE] The maximum system bitrate, which is defined as the maximum of cumulative bitrate of streams in media data, shall be the following.

System bitrate:

- Up to 340 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	YPUT9	

8.6.37 AAC audio format: 3GP audio interchange formats

8.6.37.1

[PROFILES]

AAC_ISO
AAC_LTP_ISO
AAC_LTP_MULT5_ISO
AAC_LTP_MULT7_ISO
AAC_MULT5_ISO
HEAAC_L2_ISO
HEAAC_L3_ISO
HEAAC_MULT5_ISO
MPEG2_AAC_MPS
AAC_MPS
HEAAC_L4
HEAAC_MULT7
HEAAC_MPS
HEAACv2_L4
HEAACv2_MULT7
HEAACv2_L2_320
HEAACv2_L2
HEAACv2_L3
HEAACv2_MULT5

8.6.37.2

[GUIDELINE] If 3GPP file format is selected as the audio interchange format, the following constraints shall be applied.

All the provisions 8.6.35 apply.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	3GPP TS 26.244	8PBSF	

8.6.38 AAC audio format: MIME type definition

8.6.38.1

[PROFILES]

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AAC_ADTS
AAC_ADTS_320
AAC_MULT5_ADTS
HEAAC_L2_ADTS
HEAAC_L2_ADTS_320
HEAAC_L3_ADTS
HEAAC_MULT5_ADTS

8.6.38.2

[GUIDELINE] MIME type "audio/vnd.dlna.adts" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 14496-12	ZSESD	

8.6.39 AAC audio format: MIME type definition

8.6.39.1

[PROFILES]

AAC_ISO
AAC_ISO_320
AAC_MULT5_ISO
HEAAC_L2_ISO
HEAAC_L2_ISO_320
HEAAC_L3_ISO
HEAAC_MULT5_ISO

8.6.39.2

[GUIDELINE] MIME type "audio/mp4"or "audio/3gpp" shall be used for these Media Format Profiles, depending on the audio interchange format used.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 14496-12 3GPP TS 26.244	QRUUV	

8.6.40 AAC audio format: MIME type definition

8.6.40.1

[PROFILES]

AAC_LTP_ISO
AAC_LTP_MULT5_ISO
AAC_LTP_MULT7_ISO
MPEG2_AAC_MPS
AAC_MPS
HEAAC_L4
HEAAC_MULT7
HEAAC_MPS
HEAACv2_L4
HEAACv2_MULT7
HEAACv2_L2_320
HEAACv2_L2
HEAACv2_L3
HEAACv2_MULT5

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8.6.40.2

[GUIDELINE] MIME type "audio/mp4", "audio/3gpp", or "audio/vnd.dlna.adts" shall be used for these Media Format Profiles, depending on the Audio Interchange Format used.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 14496-12 3GPP TS 26.244	5B4NF	

[COMMENT] Unlike other AAC_ISO profiles, the AAC_LTP_ISO profiles include the ADTS file format.

8.6.41 AAC audio format: baseline (9)

8.6.41.1

[PROFILES]

BSAC_ISO

8.6.41.2

[GUIDELINE] BSAC audio media format shall abide by the following baseline characteristics.

Audio encoding shall match the provisions for ER-BSAC Object as defined in ISO/IEC 14496-3. The appropriate parameter in the file format shall set be set as follows.

Sampling rate:

- 16 kHz
- 22,05 kHz
- 24 kHz
- 32 kHz
- 44,1 kHz
- 48 kHz

Maximum bit rate:

- 128 kbit/s

Content audio channel modes:

A bitstream conformant to this media format profile may contain the following formats

- Mono (1)
- Stereo (2)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-3	UUVIT	

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8.6.42 AAC audio format: BSAC_ISO encoding

8.6.42.1

[PROFILES]

BSAC_MULT5_ISO

8.6.42.2

[GUIDELINE] Bitstreams comformant with this profile shall conform to all aspects of the BSAC_ISO encoding features defined in 8.6.41, with the following additions.

Content audio channel modes:

A bitstream conformant to this media format profile may contain the following formats

- Multichannel (3)
- Multichannel (4)
- Multichannel (5)
- Multichannel (5.1)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	6QRUU	

8.6.43 AAC audio format: audio interchange formats

8.6.43.1

[PROFILES]

BSAC_ISO
BSAC_MULT5_ISO

8.6.43.2

[GUIDELINE] BSAC audio format encoding shall use one of the following audio interchange formats:

- MP4 file format
- 3GPP file format

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 14496-14 ISO/IEC 14496-12 3GPP TS 26.244	RUUVI	

8.6.44 AAC audio format: MIME type definitions

8.6.44.1

[PROFILES]

BSAC_ISO
BSAC_MULT5_ISO

8.6.44.2

[GUIDELINE] MIME type "audio/mp4"or "audio/3gpp" shall be used for these Media Format Profiles, depending on the Audio Interchange Format used.

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[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 14496-12 3GPP TS 26.244	B4NFK	

8.6.45 AAC audio format: baseline

8.6.45.1

[PROFILES]

MPEG2_AAC_MPS

8.6.45.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the AAC_MPS profile as specified in 8.6.2, except as noted below.

Profile and level:

- AAC Low Complexity 2.0.0.0

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-7	POPFT	

8.6.46 AAC audio format: baseline

8.6.46.1

[PROFILES]

HEAAC_L4

8.6.46.2

[GUIDELINE] Audio encoding shall match the provisions for Level 4 in the (MPEG-4) High Efficiency (HE) AAC profile as defined in ISO/IEC 14496-3. The appropriate parameter in the file format shall be set to the profile and level as listed below.

Profile and level:

- HE-AAC Profile at Level 4

Sampling rate (with and without SBR):

- 8 kHz
- 11,025 kHz
- 12 kHz
- 16 kHz
- 22,05 kHz
- 24 kHz
- 32 kHz
- 44,1 kHz
- 48 kHz

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Maximum bit rate (informative):

- 1 440 kbit/s

NOTE The maximum bit rate is defined by the following equation in ISO/IEC 14496-3, maximum bit rate = (6 144 / 1 024) * maximum sampling rate * number of channels.

Content audio channel modes:

A bitstream conformant to this media format profile may contain the following formats

- Mono (1)
- Stereo (2)
- Multichannel (3)
- Multichannel (4)
- Multichannel (5)
- Multichannel (5.1)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-3	D65YS	

[COMMENT] The MPEG-4 High Efficiency AAC profile specified in ISO/IEC 14496-3 includes the AAC LC and the SBR Audio Object Types.

8.6.47 AAC audio format: Rendering Endpoint capabilities

8.6.47.1

[PROFILES]

HEAAC_L4

8.6.47.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also be able to render content indicated by following profiles:

- AAC_ADTS_320
- AAC_ISO_320
- AAC_ADTS
- AAC_ISO
- HEAAC_L2_ADTS
- HEAAC_L2_ADTS_320
- HEAAC_L2_ISO
- HEAAC_L2_ISO_320
- HEAAC_L3_ADTS
- HEAAC_L3_ISO

[ATTRIBUTES]

M	L	DMP DMR	M-DMP	n/a	n/a	JJ49S	

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8.6.48 AAC audio format: baseline

8.6.48.1

[PROFILES]

HEAAC_MULT7

8.6.48.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the HEAAC_MULT5_ISO Profile as specified in 8.6.19, except as noted below.

Profile and level:

- HE-AAC Profile at Level 5

Maximum sampling rate (without SBR):

- 96 kHz

Maximum bit rate (informative):

- 4 032 kbit/s

Content audio channel modes:

- The maximum number of channels is extended to 7.1.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-3	4QHVY	

8.6.49 AAC audio format: Rendering Endpoint capabilities

8.6.49.1

[PROFILES]

HEAAC_MULT7

8.6.49.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also be able to render content indicated by the following profiles.

- AAC_ADTS_320
- AAC_ISO_320
- AAC_ADTS
- AAC_ISO
- AAC_MULT5_ADTS
- AAC_MULT5_ISO
- HEAAC_L2_ADTS
- HEAAC_L2_ADTS_320
- HEAAC_L2_ISO
- HEAAC_L2_ISO_320
- HEAAC_L3_ADTS
- HEAAC_L3_ISO

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- HEAAC_L4
- HEAAC_MULT5_ADTS
- HEAAC_MULT5_ISO

[ATTRIBUTES]

M	L	DMP DMR	M-DMP	n/a	n/a	65YS5	

8.6.50 AAC audio format: baseline

8.6.50.1

[PROFILES]

HEAAC_MPS

8.6.50.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the HEAAC_L2_ISO Profile as specified in 8.6.9.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	OPFTB	

8.6.50.3

[GUIDELINE] Audio encoding shall match the provisions for one of the following levels in the MPS Profile as defined in ISO/IEC 23003-1. The appropriate parameters in the file format shall be set to the profile and level:

Profiles and levels

- MPS Baseline Profile at Level 1
- MPS Baseline Profile at Level 2
- MPS Baseline Profile at Level 3
- MPS Baseline Profile at Level 4

Maximum sampling rate

- 48 kHz

Content audio channel modes

- Mono (1)
- Stereo (2)
- Multichannel (3)
- Multichannel (4)
- Multichannel (5)
- Multichannel (5.1)
- Multichannel (7.1)

Maximum bit rate (informative)

- 576 kbit/s

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	S597Z	

[COMMENT] HE-AAC is used for encoding of up to 2 core channels. MPS Levels 1 to 4 allow different numbers of input and output channels, and a different bandwidth of the residual signal decoding. The inherent bitstream level compatibility of MPEG Surround enables decoders of level 1, 2, 3 and 4 to decode bitstreams of all levels, though at a possibly slightly reduced quality due to the limitations of the decoder. This means that the highest possible reproduction quality is only ensured when the level of the decoder is equal to or larger than the level of the bitstream.

8.6.51 AAC audio format: Rendering Endpoint capabilities

8.6.51.1

[PROFILES]

HEAAC_MPS

8.6.51.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also be able to render content indicated by following profiles:

- AAC_ADTS_320
- AAC_ISO_320
- AAC_ADTS
- AAC_ISO
- HEAAC_L2_ADTS
- HEAAC_L2_ISO

[ATTRIBUTES]

M	L	DMP DMR	M-DMP	n/a	n/a	49SRC	

8.6.52 AAC audio format: baseline

8.6.52.1

[PROFILES]

HEAACv2_L4

8.6.52.2

[GUIDELINE] Audio encoding shall match the provisions for Level 4 in the (MPEG-4) High Efficiency (HE) AAC v2 Profile as defined in ISO/IEC 14496-3. The appropriate parameter in the file format shall be set to the profile and level as listed below.

Profile and level:

- HE-AAC Profile at Level 4 and HE-AAC v2 Profile at Level 2

Sampling rate (with and without SBR):

- 8 kHz
- 11,025 kHz
- 12 kHz
- 16 kHz

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- 22,05 kHz
- 24 kHz
- 32 kHz
- 44,1 kHz
- 48 kHz

Maximum bit rate (informative):

- 1 440 kbit/s

Content audio channel modes

A bitstream conformant with this media format profile may contain the following formats:

- Mono (1)
- Stereo (2)
- Multichannel (3)
- Multichannel (4)
- Multichannel (5)
- Multichannel (5.1)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-3 ISO/IEC 14496-3	QHVYQ	

[COMMENT] The MPEG-4 High Efficiency AAC v2 Profile specified in ISO/IEC 14496-3 includes the AAC LC, SBR and PS audio object types.

8.6.53 AAC audio format: Rendering Endpoint capabilities

8.6.53.1

[PROFILES]

HEAACv2_L4

8.6.53.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also be able to render content indicated by following profiles:

- AAC_ADTS_320
- AAC_ISO_320
- AAC_ADTS
- AAC_ISO
- HEAAC_L2_ADTS
- HEAAC_L2_ADTS_320
- HEAAC_L2_ISO
- HEAAC_L2_ISO_320
- HEAAC_L3_ADTS

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- HEAAC_L3_ISO
- HEAACv2_L2
- HEAACv2_L2_320
- HEAAC_L3

[ATTRIBUTES]

M	L	DMP DMR	M-DMP	n/a	n/a	PFTBU	

8.6.54 AAC audio format: baseline

8.6.54.1

[PROFILES]

HEAACv2_MULT7

8.6.54.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the HEAACv2_MULT5 Profile as specified in 8.6.8.2, except as noted below.

Profile and level:

- HE-AAC Profile at Level 5 and HE-AAC v2 Profile at Level 2

Maximum sampling rate (without SBR):

- 96 kHz

Maximum bit rate (informative):

- 4 032 kbit/s

Content audio channel modes

- The maximum number of channels is extended to 7.1.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-3	HVYQ8	

[COMMENT] The MPEG-4 High Efficiency AAC v2 Profile specified in ISO/IEC 14496-3 includes the AAC LC, SBR and PS audio object types.

8.6.55 AAC audio format: Rendering Endpoint capabilities

8.6.55.1

[PROFILES]

HEAACv2_MULT7

8.6.55.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also be able to render content indicated by following profiles:

- AAC_ADTS_320
- AAC_ISO_320
- AAC_ADTS

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- AAC_ISO
- AAC_MULT5_ADTS
- AAC_MULT5_ISO
- HEAAC_L2_ADTS
- HEAAC_L2_ADTS_320
- HEAAC_L2_ISO
- HEAAC_L2_ISO_320
- HEAAC_L3_ADTS
- HEAAC_L3_ISO
- HEAAC_L4
- HEAAC_MULT5_ADTS
- HEAAC_MULT5_ISO
- HEAAC_MULT7
- HEAACv2_L2
- HEAACv2_L2_320
- HEAACv2_L3
- HEAACv2_L4
- HEAACv2_MULT5

[ATTRIBUTES]

M	L	DMP DMR	M-DMP	n/a	n/a	FTBUK	

8.6.56 AAC audio format: baseline

8.6.56.1

[PROFILES]

HEAACv2_L2_MPS_DAB

8.6.56.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the HEAACv2_L2 Profile as specified in 8.6.65, except as noted below.

Frame Length:

- 1 920 Samples when SBR present (HE-AAC)
- 960 Samples when SBR not present (AAC)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-3 ISO/IEC 14496-3	5YS59	

8.6.56.3

[GUIDELINE] Audio encoding shall match the provisions as defined in DAB+ ETSI TS 102 563 and for one of the following levels in the MPS Profile as defined in ISO/IEC 23003-1. The appropriate parameters in the system portion shall be set to the profile and level as listed below.

Profiles and Levels:

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- MPS Baseline Profile at Level 2
- MPS Baseline Profile at Level 3

Sampling rate (normative):

- 32 kHz
- 48 kHz

Content audio channel modes:

- Mono (1)
- Stereo (2)
- Parametric Stereo (2) as defined in ISO/IEC 14496-3
- Multichannel (5.1)

Maximum bit rate (normative):

- 192 kbit/s

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 14496-3 ISO/IEC 23003-1 ETSI TS 102 563	VYQ8R	

[COMMENT] HE-AACv2 is used for encoding of up to 2 core channels. MPS Levels 1 to 4 allow different numbers of input and output channels, and a different bandwidth of the residual signal decoding. The inherent bitstream level compatibility of MPEG Surround enables decoders of level 1, 2, 3 and 4 to decode bitstreams of all levels, though at a possibly slightly reduced quality due to the limitations of the decoder. This means that the highest possible reproduction quality is only ensured when the level of the decoder is equal to or larger than the level of the bitstream.

8.6.57 AAC audio format: MPS signaling

8.6.57.1

[PROFILES]

MPEG2_AAC_MPS
AAC_MPS
HEAAC_MPS

8.6.57.2

[GUIDELINE] The AAC audio format shall follow the transport and signaling requirements for MPEG Surround in an MPEG-4 Audio/Systems Environment as specified in ISO/IEC 23003-1:2007, 7.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 23003-1	YS597	

8.6.58 AAC audio format: DAB audio super frame

8.6.58.1

[PROFILES]

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HEAACv2_L2_MPS_DAB

8.6.58.2

[GUIDELINE] The system portion of this profile shall conform to ETSI TS 102 563:2007, 5.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ETSI TS 102 563	TBUKT	

8.6.59 AAC audio format: MIME type definition

8.6.59.1

[PROFILES]

HEAACv2_L2_MPS_DAB

8.6.59.2

[GUIDELINE] The MIME type “audio/x-dab” shall be used for this Media Format Profile.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	9SRC3	

8.6.60 AAC audio format: ADTS audio interchange formats

8.6.60.1

[PROFILES]

MPEG2_AAC_MPS
AAC_MPS
HEAAC_L4
HEAAC_MULT7
HEAAC_MPS
HEAACv2_L4
HEAACv2_MULT7

8.6.60.2

[GUIDELINE] A bitstream compliant with the ADTS audio interchange format shall conform to all aspects of 8.6.34, except as noted below.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	YQ8RV	

8.6.61 AAC audio format: baseline

8.6.61.1

[PROFILES]

HEAACv2_L2

8.6.61.2

[GUIDELINE] Main characteristics of this HEAACv2_L2 audio stream are defined in ISO/IEC 14496-3 and ISO/IEC 14496-3.

Audio encoding shall match the provisions for this level in the (MPEG-4) High Efficiency AAC v2 Profile Level 2 as defined in ISO/IEC 14496-3. The appropriate parameter in the file format shall be set to the profile and level as listed below.

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Profile and level:

- High Efficiency AAC v2 Profile at Level 2

AAC sampling rate (SBR present):

- 8 kHz
- 11,025 kHz
- 12 kHz
- 16 kHz
- 22,05 kHz
- 24 kHz

AAC sampling rate (SBR not present):

- 8 kHz
- 11,025 kHz
- 12 kHz
- 16 kHz
- 22,05 kHz
- 24 kHz
- 32 kHz
- 44,1 kHz
- 48 kHz

Content Audio Channel Modes:

- Mono (1)
- Stereo (2)
- Parametric Stereo (2) as defined in ISO/IEC 14496-3

Maximum bit rate (informative):

- 576 kbit/s

NOTE The maximum bit rate is defined by the following equation in ISO/IEC 14496-3 and ISO/IEC 14496-3: maximum bit rate = (6 144/1 024) * maximum sampling rate * number of channels.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-3 ISO/IEC 14496-3	5L956	

[COMMENTS]

a) The MPEG-4 High Efficiency AAC v2 Profile specified in ISO/IEC 14496-3 includes the AAC LC, the SBR, and the PS audio object types.

b) The MPEG-4 High Efficiency AAC v2 Profile specified in ISO/IEC 14496-3 has no Level 1.

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8.6.62 Audio format: Rendering Endpoints capabilities

8.6.62.1

[PROFILES]

HEAACv2_L2

8.6.62.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also be able to render content indicated by following profiles:

- AAC_ADTS_320
- AAC_ISO_320
- AAC_ADTS
- AAC_ISO
- HEAAC_L2_ADTS_320
- HEAAC_L2_ISO_320
- HEAAC_L2_ADTS
- HEAAC_L2_ISO
- HEAACv2_L2_320

[ATTRIBUTES]

M	L	DMP DMR	M-DMP M-DMD	n/a	n/a	39VJ6	

8.6.63 Audio format: baseline

8.6.63.1

[PROFILES]

HEAACv2_L2_320

8.6.63.2

[GUIDELINE] Bitstreams compliant with this profile shall conform to all aspects of the HEAACv2_L2 profile, except as noted below.

Maximum bit rate (normative)

- 320 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	9P4NZ	

8.6.64 Audio format: Rendering Endpoints capabilities

8.6.64.1

[PROFILES]

HEAACv2_L2_320

8.6.64.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also be able to render content indicated by following profiles:

- AAC_ADTS_320

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- AAC_ISO_320
- HEAAC_L2_ADTS_320
- HEAAC_L2_ISO_320

[ATTRIBUTES]

M	L	DMP DMR	M-DMP M-DMD	n/a	n/a	9VJ6M	

8.6.65 AAC audio format: audio interchange formats

8.6.65.1

[PROFILES]

HEAACv2_L2_320

8.6.65.2

[GUIDELINE] The maximum system bitrate, which is defined as the maximum of cumulative bitrate of streams in media data, shall be the following.

System bitrate

- Up to 340 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	L956X	

8.6.66 Audio format: baseline

8.6.66.1

[PROFILES]

HEAACv2_L3

8.6.66.2

[GUIDELINE] Main characteristics of this HEAACv2_L3 audio stream are defined in ISO/IEC 14496-3 and ISO/IEC 14496-3.

Audio encoding shall match the provisions for this level in the (MPEG-4) High Efficiency AAC v2 Profile Level 2 as defined in ISO/IEC 14496-3. The appropriate parameter in the file format shall be set to the profile and level as listed below.

- High Efficiency AAC v2 Profile at Level 3

AAC sampling rate (SBR and PS present):

- 8 kHz
- 11,025 kHz
- 12 kHz
- 16 kHz
- 22,05 kHz
- 24 kHz

AAC sampling rate (with and without SBR, PS not present):

- 8 kHz

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- 11,025 kHz
- 12 kHz
- 16 kHz
- 22,05 kHz
- 24 kHz
- 32 kHz
- 44,1 kHz
- 48 kHz

Content audio channel modes

- Mono (1)
- Stereo (2)
- Parametric Stereo (2) as defined in ISO/IEC 14496-3

Maximum bit rate (informative):

- 576 kbit/s

NOTE Maximum bit rate is defined by the following equation in ISO/IEC 14496-3, ISO/IEC 14496-3, maximum bit rate = (6 144/1 024) * maximum sampling rate * number of channels.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-3 ISO/IEC 14496-3	VJ6MB

[COMMENT] The MPEG-4 High Efficiency AAC v2 Profile specified in ISO/IEC 14496-3 includes the AAC LC, the SBR, and the PS audio object types. MPEG-4 High Efficiency AAC v2 Profile specified in ISO/IEC 14496-3 has no Level 1.

8.6.67 AAC audio format: Rendering Endpoints capabilities

8.6.67.1

[PROFILES]

HEAACv2_L3

8.6.67.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also be able to render content indicated by following profiles:

- AAC_ADTS_320
- AAC_ISO_320
- AAC_ADTS
- AAC_ISO
- HEAAC_L2_ADTS_320
- HEAAC_L2_ISO_320
- HEAAC_L2_ADTS
- HEAAC_L2_ISO

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- HEAACv2_L2_320
- HEAACv2_L2

[ATTRIBUTES]

M	L	DMP DMR	M-DMP M-DMD	n/a	n/a	P4NZQ	

8.6.68 AAC audio format: baseline

8.6.68.1

[PROFILES]

HEAACv2_MULT5

8.6.68.2

[GUIDELINE] The main characteristics of this HEAACv2_MULT5 audio stream are defined in ISO/IEC 14496-3 and ISO/IEC 14496-3.

Audio encoding shall match the provisions for this level in the (MPEG-4) High Efficiency AAC v2 Profile Level 2 as defined in ISO/IEC 14496-3. The appropriate parameter in the file format shall be set to the profile and level as listed below.

Profiles and Levels:

- High Efficiency AAC v2 Profile at Level 4
- High Efficiency AAC v2 Profile at Level 5

AAC sampling rates (SBR not present):

- 8 kHz
- 11,025 kHz
- 12 kHz
- 16 kHz
- 22,05 kHz
- 24 kHz
- 32 kHz
- 44,1 kHz
- 48 kHz
- 64 kHz (only in High Efficiency AAC v2 Profile at Level 5)
- 88,2 kHz (only in High Efficiency AAC v2 Profile at Level 5)
- 96 kHz (only in High Efficiency AAC v2 Profile at Level 5)

AAC sampling rates (SBR present):

- 8 kHz
- 11,025 kHz
- 12 kHz
- 16 kHz
- 22,05 kHz
- 24 kHz

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- 32 kHz (only for Level 5, or for Level 4 with at most 2 channels)
- 44,1 kHz (only for Level 5, or for Level 4 with at most 2 channels)
- 48 kHz (only for Level 5, or for Level 4 with at most 2 channels)

Content audio channel modes

A bitstream conformant with these media format profiles shall include one of the following modes:

- Mono (1)
- Stereo (2)
- Parametric Stereo (2) as defined in ISO/IEC 14496-3
- Multichannel (3)
- Multichannel (4)
- Multichannel (5)

The channel modes listed above may include an LFE channel.
The channel mode may change within the bitstream.

Maximum bit rate (informative):

- 1 440 kbit/s
- 2 880 kbit/s (only in High Efficiency AAC v2 Profile at Level 5)

NOTE Maximum bit rate is defined by the following equation in ISO/IEC 14496-3, ISO/IEC 14496-3: maximum bit rate = (6 144/1 024) * maximum sampling rate * number of channels.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-3 ISO/IEC 14496-3	7WSI9	

[COMMENTS]

a) The MPEG-4 High Efficiency AAC v2 Profile specified in ISO/IEC 14496-3 includes the AAC LC, the SBR, and the PS Audio Object Types.

b) The MPEG-4 High Efficiency AAC v2 Profile specified in ISO/IEC 14496-3 has no Level 1.

8.6.69 Audio format: Rendering Endpoints capabilities

8.6.69.1

[PROFILES]

HEAACv2_MULT5

8.6.69.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also be able to render content indicated by the following profiles:

- AAC_ADTS_320
- AAC_ISO_320
- AAC_ADTS
- AAC_ISO

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- AAC_MULT5_ADTS
- AAC_MULT5_ISO
- HEAAC_L2_ADTS_320
- HEAAC_L2_ISO_320
- HEAAC_L2_ADTS
- HEAAC_L2_ISO
- HEAAC_L3_ADTS
- HEAAC_L3_ISO
- HEAAC_MULT5_ADTS
- HEAAC_MULT5_ISO
- HEAACv2_L2_320
- HEAACv2_L2
- HEAACv2_L3

[ATTRIBUTES]

M	L	DMP DMR	M-DMP M-DMD	n/a	n/a	956XY	

8.6.70 ALS audio format: ALS_ISO profile

8.6.70.1

[PROFILES]

ALS_ISO

8.6.70.2

[GUIDELINE] Audio encoding shall be MPEG-4 ALS as defined in ISO/IEC 14496-3 and ISO/IEC 14496-3.

Sampling rate

- 32 kHz
- 44,1 kHz
- 48 kHz

Content audio channel modes

- Mono (1)
- Stereo (2)

Bit rate

- Variable Bit Rate

Payload format

- MPEG-4 file format ISO/IEC 14496-14

The following constraints shall also be applied to the parameters defined in ISO/IEC 14496-3 and ISO/IEC 14496-3.

- The original sample resolution shall be 16 bit integer
- The RLSLMS tool and the MCC tool shall not be enabled

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- The frame length shall not exceed 8 192
- The maximum prediction order shall not exceed 31.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-3 ISO/IEC 14496-3	6XYQY	

8.6.71 AAC audio format: ADTS audio interchange formats

8.6.71.1

[PROFILES]

HEAACv2_L2_320
HEAACv2_L2
HEAACv2_L3
HEAACv2_MULT5

8.6.71.2

[GUIDELINE] The ADTS Audio Interchange Formats to these profiles shall be according to 8.6.34 except as noted below.

- The profile_ObjectType in the adts_fixed_header in that requirement 8.6.34 shall be set to 0x1 for the aforenamed profiles.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 14496-14 ISO/IEC 14496-12 3GPP TS 26.244 ISO/IEC 14496-3	J6MBQ	

8.6.72 ALS audio format: ALS_MULT5_ISO profile

8.6.72.1

[PROFILES]

ALS_MULT5_ISO

8.6.72.2

[GUIDELINE] Audio encoding shall be MPEG-4 ALS as defined in ISO/IEC 14496-3 and ISO/IEC 14496-3.

Sampling rate

- 32 kHz
- 44,1 kHz
- 48 kHz

Content audio channel modes

A bitstream conformant with this media format profile shall include one of the following modes.

- Mono (1)

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- Stereo (2)
- Multichannel (3)
- Multichannel (4)
- Multichannel (5)

The channel modes listed above may include an LFE channel.
The channel mode may change within the bitstream.

Bit rates

- Variable Bit Rate

Payload format

- MPEG-4 file format ATRAC3plus specification.

The following constraints shall also be applied to the parameters defined in ISO/IEC 14496-3 and ISO/IEC 14496-3.

- The original sample resolution shall be 16 bit integer
- The RLSLMS tool and the MCC tool shall not be enabled
- The frame length shall not exceed 8 192
- The maximum prediction order shall not exceed 31

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-3 ISO/IEC 14496-3	6MBQ4	

8.6.73 ALS audio format: MIME type definition

8.6.73.1

[PROFILES]

ALS_ISO
ALS_MULT5_ISO

8.6.73.2

[GUIDELINE] The MIME Type "audio/mp4" shall be used to these profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	I9H3D	

8.6.74 AAC audio format: baseline(9)

8.6.74.1

[PROFILES]

AAC_MPS

8.6.74.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the AAC_ISO profile as specified in 8.6.2, except as noted below.

Profile and level

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- AAC Profile at Level 2

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	7JJ49	

8.6.74.3

[GUIDELINE] Audio encoding shall match the provisions for one of the following levels in the MPS profile as defined in ISO/IEC 23003-1. The appropriate parameters in the file format shall be set to the profile and level.

Profiles and Levels:

- MPS Baseline Profile at Level 1
- MPS Baseline Profile at Level 2
- MPS Baseline Profile at Level 3
- MPS Baseline Profile at Level 4

Maximum sampling rate:

- 48 kHz

Content audio channel modes

- Mono (1)
- Stereo (2)
- Multichannel (3)
- Multichannel (4)
- Multichannel (5)
- Multichannel (5.1)
- Multichannel (7.1)

Maximum bit rate (informative)

- 576 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 23003-1	Y4QHV	

[COMMENT] AAC is used for encoding of up to 2 core channels. MPS Levels 1 to 4 allow different numbers of input and output channels, and a different bandwidth of the residual signal decoding. The inherent bitstream level compatibility of MPEG Surround enables decoders of level 1, 2, 3 and 4 to decode bitstreams of all levels, though at a possibly slightly reduced quality due to the limitations of the decoder. This means that the highest possible reproduction quality is only ensured when the level of the decoder is equal to or larger than the level of the bitstream.

8.6.75 AAC format profile: baseline

8.6.75.1

[PROFILES]

AAC_ADTS_192

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8.6.75.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the AAC_ADTS profile as specified in 8.6.2.2, except as indicated below.

Maximum bit rate (normative)

- 192 kbit/s.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	7DWUR	

[COMMENT] This profile is a subset of the AAC_ADTS_320 profile with a reduced bit rate of 192 kbit/s. Content that matches both this profile and the (mandatory – for Mobile Devices) AAC_ADTS_320 profile (see 6.1.6.1 and 6.1.6.2) are urged to be exposed with this profile via an additional <res> element.

8.6.76 AAC audio format profile: baseline

8.6.76.1

[PROFILES]

AAC_ISO_192

8.6.76.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the AAC_ISO profile as specified in 8.6.2.2, except as indicated below.

Maximum bit rate (normative)

- 192 kbit/s.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	RS9FK	

[COMMENT] This profile is a subset of the AAC_ISO_320 profile with a reduced bit rate of 192 kbit/s. Content that matches both this profile and the (mandatory – for Mobile Devices) AAC_ISO_320 profile (see 6.1.6.1 and 6.1.6.2) are urged to be exposed with this profile via an additional <res> element.

8.6.77 AAC audio format: Rendering Endpoint capabilities

8.6.77.1

[PROFILES]

AAC_ISO_192

8.6.77.2

[GUIDELINE] Rendering Endpoints compliant with this DLNA media format profile shall also render content indicating the following profile:

- AAC_ADTS_192.

[ATTRIBUTES]

M	L	DMP DMR	M-DMP M-DMD	n/a	n/a	Z3X6I	

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8.6.78 AAC audio format maximum system bit rate

8.6.78.1

[PROFILES]

AAC_ISO_192

8.6.78.2

[GUIDELINE] The maximum system bit rate, which is defined as the maximum bit rate of all streams in the media data, shall be

- Less than or equal to 204 kbit/s.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	3QSQ5	

[COMMENT] The system bit rate limit adds a 6 % overhead to the audio bit rate limit.

8.6.79 AAC audio format: baseline

8.6.79.1

[PROFILES]

HEAAC_L2_ISO_128

8.6.79.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the HEAAC_L2_ISO profile as specified in 8.6.9.2, except as indicated below.

Maximum bit rate (normative)

- 128 kbit/s.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	DWUR7	

[COMMENT] This profile is a subset of the HEAAC_L2_ISO and HEAAC_L2_ISO_320 profiles with a reduced bit rate of 128 kbit/s. Content that matches this profile and the HEAAC_L2_ISO profile or HEAAC_L2_ISO_320 profile, or both (see 6.1.6.2), are urged to be exposed with this profile via an additional <res> element.

8.6.80 AAC audio format: baseline

8.6.80.1

[PROFILES]

HEAACv2_L2_128

8.6.80.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the HEAACv2_L2 profile as specified in 8.2.1.2, except as indicated below.

Maximum bit rate (normative)

- 128 kbit/s.

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	S9FKT	

[COMMENT] This profile is a subset of the HEAACv2_L2 and HEAACv2_L2_320 profiles with a reduced bit rate of 128 kbit/s. Content that matches this profile and the HEAACv2_L2 profile or HEAACv2_L2_320 profile, or both (see 6.1.6.2), are urged to be exposed with this profile via an additional <res> element.

8.6.81 AAC audio format: MIME type definition: ADTS

8.6.81.1

[PROFILES]

AAC_ADTS_192

8.6.81.2

[GUIDELINE] The MIME type "audio/vnd.dlna.adts" shall be used for this Media Format Profile.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	3X6IX	

8.6.82 AAC audio format: MIME type definition: ISO

8.6.82.1

[PROFILES]

AAC_ISO_192
HEAAC_L2_ISO_128

8.6.82.2

[GUIDELINE] The MIME type used for these profiles shall be one of the MIME types specified in 8.6.39.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	QSQ5H	

8.6.83 AAC audio format: MIME type definition

8.6.83.1

[PROFILES]

HEAACv2_L2_128

8.6.83.2

[GUIDELINE] The MIME type used for this profile shall be one of the MIME types specified in 8.6.40.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	WUR75	

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8.6.84 AAC audio format: ADTS audio interchange formats

8.6.84.1

[PROFILES]

AAC_ADTS_192
HEAACv2_L2_128

8.6.84.2

[GUIDELINE] A bitstream compliant with the ADTS audio interchange format shall conform to all aspects of 8.6.34, except as indicated below.

- The profile_ObjectType field in the adts_fixed_header shall be set to 0x1.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	9FKTS	

8.6.85 AAC audio format: MP4 audio interchange formats

8.6.85.1

[PROFILES]

AAC_ISO_192
HEAAC_L2_ISO_128
HEAACv2_L2_128

8.6.85.2

[GUIDELINE] A bitstream conformant to the MP4 audio interchange format shall conform to all aspects of .8.6.36

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	X6IXB	

8.6.86 AAC audio format: 3GPP audio interchange formats

8.6.86.1

[PROFILES]

AAC_ISO_192
HEAAC_L2_ISO_128
HEAACv2_L2_128

8.6.86.2

[GUIDELINE] A bitstream conformant to the 3GPP audio interchange format shall conform to all aspects of 8.6.37.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	SQ5HE	

8.7 WMA profiling guidelines

8.7.1 General

Table 34 summarizes the Windows Media Audio (WMA) profiles and describes their relation with WMA specifications. Audio Media Class profile guidelines for WMA are listed in this subclause.

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Table 34 – List of WMA profiles for the Audio Media Class

Profile ID	Profile description	Relation to WMA specifications
WMABASE	Baseline Profile	WMA with bit rates up to 192 999 bit/s
WMAFULL	Full Profile	WMA with no bit rate constraints
WMAPRO	Professional Profile	WMA Professional version

8.7.2 WMA format

8.7.2.1

[PROFILES]

WMABASE
WMAFULL
WMAPRO

8.7.2.2

[GUIDELINE] The WMA format shall be profiled according to the audio guidelines defined in this subclause. Table 34 summarizes the features of the WMA profiles defined for DLNA.

[ATTRIBUTES]

M	C	n/a	n/a	n/a	WMA Specifications	UVITX	

8.7.3 WMA format: Baseline profile

8.7.3.1

[PROFILES]

WMABASE

8.7.3.2

[GUIDELINE] WMA audio format shall abide by the following characteristics.

The encoded audio matches the provisions for WMA defined in WMA Specifications with the following constraint:

Maximum bit rate of

- 192 999 bit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	WMA Specifications HighMAT specifications	SESDO	

[COMMENT] WMA Baseline Profile defines support for stereo signals with bit rates up to 193 kbit/s and sampling rates up to 48 kHz.

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8.7.4 WMA format: Full profile

8.7.4.1

[PROFILES]

WMAFULL

8.7.4.2

[GUIDELINE] WMA audio format shall abide by the following characteristics.

The encoded audio matches the provisions for WMA defined in WMA Specifications.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	WMA Specifications	PBSF9	

[COMMENT] WMA Full profile defines support for stereo signals with bit rates up to 385 kbit/s, sampling rates of up to 48 kHz.

8.7.5 WMA format: Professional profile

8.7.5.1

[PROFILES]

WMAPRO

8.7.5.2

[GUIDELINE] WMA audio format shall abide by the following characteristics.

The encoded audio matches the provisions for WMA Professional defined in WMA Specifications.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	WMA Specifications	4NFKR	

[COMMENT] WMA Professional profile defines support for up to 7.1 channels with bit rates up to 1,5 Mbit/s, and sampling rates up to 96 kHz.

8.7.6 WMA format: encapsulation file format for HTTP Media Transport

8.7.6.1

[PROFILES]

WMABASE
WMAFULL
WMAPRO

8.7.6.2

[GUIDELINE] A WMA audio format bitstream exchanged with the HTTP Media Transport shall use the ASF encapsulation interchange format defined in ASF.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ASF	TX7RD	

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[COMMENT] ASF is the file interchange format for WMA streams when content is exchanged over the HTTP Media Transport.

8.7.7 WMA format: ASF operational procedures

8.7.7.1

[PROFILES]

WMABASE
WMAFULL
WMAPRO

8.7.7.2

[GUIDELINE] Rendering Endpoints that support ASF-encapsulated WMA audio format decoding over the HTTP Media Transport should follow the recommendations for ASF operational procedures described in ASF.

[ATTRIBUTES]

S	C	DMP DMR	M-DMP M-DMD	n/a	ASF	ESDOU	

[COMMENT] Annex A describes seek operations with ASF files. It also describes buffering operations for the decoding of ASF files. These recommendations apply to the exchange of ASF encapsulated files using the HTTP Media Transport.

8.7.8 WMA format: minimal implementation

8.7.8.1

[PROFILES]

WMABASE
WMAFULL
WMAPRO

8.7.8.2

[GUIDELINE] A Rendering Endpoint that supports the WMA Format shall be capable of decoding the Baseline profile (WMABASE) in addition to any other profile that it so chooses.

[ATTRIBUTES]

M	L	DMP DMR	M-DMP M_DMD	n/a	WMA Specifications	BSF9I	

[COMMENT] This guideline defines the minimal implementation expected from DLNA players that support WMA.

8.7.9 WMA format: MIME type definition

8.7.9.1

[PROFILES]

WMABASE
WMAFULL
WMAPRO

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8.7.9.2

[GUIDELINE] MIME type "audio/x-ms-wma" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	WMA Specifications	VITX7	

8.8 DTS Digital Surround Profiling guidelines

8.8.1 DTS Digital Surround audio format

8.8.1.1

[PROFILES]

DTS

8.8.1.2

[GUIDELINE] Main characteristics of this DTS audio stream are defined in ETSI TS 102 114.

Sampling rate

- 44,1 kHz
- 48 kHz
- 88,2 kHz
- 96 kHz

Content audio channel modes

- Mono (1)
- Stereo (2)
- Multi-channel (3)
- Multi-channel (4)
- Multi-channel (5)
- Multichannel (5.1)
- Multichannel (6.1)

Bit rates

- CBR: 192 kbit/s to 1 509 kbit/s

Payload format

Payload format is raw elementary bitstream.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ETSI TS 102 114	97ZQ7	

8.8.2 DTS Digital Surround audio format: MIME type definition

8.8.2.1

[PROFILES]

DTS

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8.8.2.2

[GUIDELINE] MIME type "audio/vnd-dts" shall be used for this Media Format Profile.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	Q8RVV	

8.9 DTS-HD Profiling guidelines

8.9.1 DTS-HD High Resolution audio format

8.9.1.1

[PROFILES]

DTSHD_HRA

8.9.1.2

[GUIDELINE] Main characteristics of the DTSHD_HRA audio stream are defined in BDA and DVD Forum.

Sampling rate

- 44,1 kHz
- 48 kHz
- 88,2 kHz
- 96 kHz
- 176,4 kHz
- 192 kHz

Content audio channel modes

- Mono (1)
- Stereo (2)
- Multi-channel (3)
- Multi-channel (4)
- Multi-channel (5)
- Multi-channel (5.1)
- Multi-channel (6.1)
- Multi-channel (7.1)

Bit rates

- CBR: up to 6 Mbit/s: CBR (core sub-stream of 192 kbit/s to 1 509 kbit/s) + CBR (high resolution extension sub-stream)

Payload format

- Payload format is raw elementary bitstream.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	BDA DVD Forum	C36X3	

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8.9.2 DTS-HD Master audio format

8.9.2.1

[PROFILES]

DTSHD_MA

8.9.2.2

[GUIDELINE] Main characteristics of this DTSHD_MA audio stream are defined in BDA and DVD Forum.

Sampling rate

- 44,1 kHz
- 48 kHz
- 88,2 kHz
- 96 kHz
- 176,4 kHz
- 192 kHz

Content audio channel modes

- Mono (1)
- Stereo (2)
- Multi-channel (3)
- Multi-channel (4)
- Multi-channel (5)
- Multi-channel (5.1)
- Multi-channel (6.1)
- Multi-channel (7.1)
- Multi-channel (8.0)

Bit rates

- VBR: up to 24,5 Mbit/s: CBR (core sub-stream of 192 kbit/s to 1 509 kbit/s) + VBR (lossless extension sub-stream)

Payload format

- Payload format is raw elementary bitstream.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	BDA DVD Forum	KTS5L	

8.9.3 DTS-HD LBR audio format

8.9.3.1

[PROFILES]

DTSHD_LBR

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8.9.3.2

[GUIDELINE] Main characteristics of this DTSHD_LBR audio stream are defined in BDA and DVD Forum.

Sampling rate

- 12 kHz
- 22,05 kHz
- 24 kHz
- 44,1 kHz
- 48 kHz

Content audio channel modes

- Mono (1)
- Stereo (2)
- Multi-channel (3)
- Multi-channel (4)
- Multi-channel (5)
- Multi-channel (5.1)

Bit rates

- CBR: 24 kbit/s to 256 kbit/s

Payload format

- Payload format is raw elementary bitstream.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	BDA DVD Forum	36X39	

8.9.4 DTS-HD audio format: MIME type definition

8.9.4.1

[PROFILES]

DTSHD_HRA
DTSHD_MA
DTSHD_LBR

8.9.4.2

[GUIDELINE] MIME type "audio/vnd.dts.hd" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	7ZQ79	

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8.10 Enhanced AC-3 Profiling guidelines

8.10.1 Enhanced AC-3 audio format

8.10.1.1

[PROFILES]

EAC3

8.10.1.2

[GUIDELINE] Main characteristics of the Enhanced AC-3 audio stream are defined in ETSI TS 102 366.

Sampling rate

- 32 kHz
- 44,1 kHz
- 48 kHz

Content audio channel modes

- I/O (Mono)
- Dual Monaural (1 + 1)
- 2/0 (Stereo)
- 3/0 (Multichannel)
- 2/1 (Multichannel)
- 3/1 (Multichannel)
- 2/2 (Multichannel)
- 3/2 (Multichannel)
- > 3/2 (Multichannel)

The channel modes listed above may include an LFE channel.

The channel mode may change within the bitstream.

Substream usage

- All substreams shall be encoded at the same sample rate
- All substreams shall be encoded with the same number of audio data blocks per syncframe

Bit rates

- CBR or VBR: 32 kbit/s to 6 144 kbit/s

Payload format

- Payload format is raw bitstream.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ETSI TS 102 366	ZQ79P	

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8.10.2 Enhanced AC-3 audio format: MIME type definition

8.10.2.1

[PROFILES]

EAC3

8.10.2.2

[GUIDELINE] MIME type "audio/eac3" shall be used for this Media Format Profile.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	VVE7W	

8.11 MLP Profiling guidelines

8.11.1 MLP audio format

8.11.1.1

[PROFILES]

MLP

8.11.1.2

[GUIDELINE] Main characteristics of the MLP audio stream are defined in DVD Specifications.

Sampling rate

- 44,1 kHz
- 48 kHz
- 88,2 kHz
- 96 kHz
- 176,4 kHz
- 192 kHz

Content audio channel modes

- 1/0 (Mono)
- 2/0 (Stereo)
- 3/0 (Multichannel)
- 2/1 (Multichannel)
- 2/2 (Multichannel)
- 3/2 (Multichannel)
- >3/2 (Multichannel)

The channel modes listed above may include an LFE channel.

The channel mode may change within the bitstream.

Bit rates

- VBR: Maximum of 18,0 Mbit/s

Payload format

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- Payload format is raw bitstream.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	DVD Specifications	6X39V	

8.11.2 MLP audio format: MIME type definition

8.11.2.1

[PROFILES]

MLP

8.11.2.2

[GUIDELINE] MIME type "audio/vnd.dolby.mlp" shall be used for this Media Format Profile.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	Q79P4	

8.12 MPEG-1/2 Profiling guidelines

8.12.1 MPEG-1/2 Layer 2 audio format

8.12.1.1

[PROFILES]

MP2_MPS

8.12.1.2

[GUIDELINE] Audio encoding shall match the provisions for MPEG-1/2 Audio Layer 2 as defined in ISO/IEC 11172-3.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 11172-3	S5L95	

8.12.1.3

[GUIDELINE] Audio encoding shall match the provisions for one of the following levels in the MPS Profile as defined in ISO/IEC 23003-1. The appropriate parameters shall be set for level and profile.

Profiles and levels:

- MPS Baseline Profile at Level 1
- MPS Baseline Profile at Level 2
- MPS Baseline Profile at Level 3
- MPS Baseline Profile at Level 4

Sampling rate (normative):

- 32 kHz
- 44,1 kHz
- 48 kHz

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Content audio channel modes:

- Mono (1)
- Stereo (2)
- Multichannel (3)
- Multichannel (4)
- Multichannel (5)
- Multichannel (5.1)
- Multichannel (7.1)

Maximum bit rate (normative):

- 384 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 23003-1	X39VJ	

[COMMENT] MPEG1 Layer 2 is used for encoding of up to 2 core channels. MPS Levels 1 to 4 allow different numbers of input and output channels, and a different bandwidth of the residual signal decoding. The inherent bitstream level compatibility of MPEG Surround enables decoders of level 1, 2, 3 and 4 to decode bitstreams of all levels, though at a possibly slightly reduced quality due to the limitations of the decoder. This means that the highest possible reproduction quality is only ensured when the level of the decoder is equal to or larger than the level of the bitstream.

8.12.2 MPEG-1/2 Layer 2 audio format: MPS signaling

8.12.2.1

[PROFILES]

MP2_MPS

8.12.2.2

[GUIDELINE] The MP2_MPS media format shall follow the transport and signaling requirements for MPEG Surround as defined in ISO/IEC 23003-1:2007, 7.2.4.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 23003-1	VE7WS	

8.12.3 MPEG-1/2 Layer 2 audio format: MIME type definition

8.12.3.1

[PROFILES]

MP2_MPS

8.12.3.2

[GUIDELINE] MIME type "audio/mpeg" shall be used for this Media Format Profile.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	79P4N	

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8.13 WMA Lossless Profiling guidelines

8.13.1 WMA Lossless: stereo profile

8.13.1.1

[PROFILES]

WMALSL

8.13.1.2

[GUIDELINE] WMA audio format shall abide by the following characteristics: The encoded audio matches the provisions for WMA Lossless defined in WMA Specifications.

Profile and level

- N1

[ATTRIBUTES]

M	R	n/a	n/a	n/a	WMA Specifications	UR754	

8.13.2 WMA Lossless: multichannel profile

8.13.2.1

[PROFILES]

WMALSL_MULT5

8.13.2.2

[GUIDELINE] WMA audio format shall abide by the following characteristics: The encoded audio matches the provisions for WMA Lossless defined in WMA Specifications.

Profile and level

- N2

[ATTRIBUTES]

M	R	n/a	n/a	n/a	WMA Specifications	FKTSV	

8.13.3 WMA Lossless: MIME type definition

8.13.3.1

[PROFILES]

WMALSL
WMALSL_MULT5

8.13.3.2

[GUIDELINE] MIME type "audio/x-ms-wma" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	WMA Specifications	6IXB5	

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9 AV Media Class format profiles

9.1 General

This clause specifies the set of format profiles applicable to the AV Media Class.

According to the requirements defined in Table 30, particular profiles of the MPEG-2 format become mandatory for HND devices depending on the applicable region. Table 30 currently defines four regions. Other regions might be incorporated in the future.

A number of the guidelines in this clause refer to the TV systems: PAL and NTSC. These guidelines do not refer to the analog part of the respective TV system, but only to the related relevant digital encoding characteristics like frame rates, frame resolutions, etc. For example:

a) "TV System PAL" in the DLNA context refers to 25 Hz video frame rate.

b) "TV System NTSC" in the DLNA context refers to 29,97 Hz video frame rate.

In addition to MPEG-2 profiles, this clause also defines profiles for MPEG-4 Part 2 (including profiles based on the H.263 version), MPEG-4 Part 10 (also known as AVC or H.264), and Windows Media Video Version 9 (WMV9).

Note that this clause defines four Elementary Stream profiles, namely MPEG_ES_PAL, MPEG_ES_NTSC, MPEG_ES_PAL_XAC3, MPEG_ES_NTSC_XAC3, which provide an alternate way for encapsulating AV stream content consistent with the traditional methods of RTP streaming. The four profiles define a set of additional media format profiles to signal the use of ES encapsulation. In this way the MF profile mechanism can be re-used for RTP payload negotiation between Serving and Rendering Endpoints.

9.2 MPEG-1 Profiling guidelines

9.2.1 MPEG-1 AV format: system portion profiling

9.2.1.1

[PROFILES]

MPEG1

9.2.1.2

[GUIDELINE] The MPEG1 AV format profile shall conform to MPEG1 system defined in ISO/IEC 11172-1.

System bitrate:

- 1 411 200 bit/s (CBR)

Pack size:

- 2 324

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 11172-1	ITX7R	

[COMMENTS]

a) VBR is not permitted for this media format profile.

b) The system bitrate 1 411 200 bit/s means that mux_rate is 3 528 (= 2 352 × 75/50).

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c) If actual pack size is less than 2 324, then zeros are filled to meet the required Pack size as defined in ISO/IEC 11172-1.

9.2.2 MPEG-1 AV format: video portion profiling

9.2.2.1

[PROFILES]

MPEG1

9.2.2.2

[GUIDELINE] The MPEG1 AV format profile shall conform to MPEG1 video defined in ISO/IEC 11172-2.

Main characteristics of MPEG1 video are as indicated in Table 35.

Table 35 – MPEG-1 AV format resolutions

Resolution	Frame rate
➢ 352 × 288	25 Hz
➢ 352 × 240	29,97 Hz
➢ 352 × 240	23,976 Hz

Video Bitrate:

- ➢ 1 151 929,1 bit/s (CBR)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	XHTML-Print/CSS-Print Guidelines ISO/IEC 11172-2	NFKRR	

[COMMENT] This media format profile contains video formats for both NTSC and PAL TV systems.

9.2.3 MPEG-1 AV format: audio portion profiling

9.2.3.1

[PROFILES]

MPEG1

9.2.3.2

[GUIDELINE] The MPEG1 AV format profile shall conform to MPEG1 audio defined in ISO/IEC 11172-3 with the following constraints.

Main characteristics of MPEG1 audio are as follows.

Layer:

- ➢ Layer 2

Sample Frequency:

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- 44,1 kHz

Audio channels:

- 2

Audio Bitrate:

- 224 kbit/s (CBR)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 11172-3	SDOUD	

[COMMENT] VBR and "free format" mode are not permitted.

9.2.4 MPEG-1 AV format: MIME type definition

9.2.4.1

[PROFILES]

MPEG1

9.2.4.2

[GUIDELINE] MIME type "video/mpeg" shall be used for this Media Format Profile.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	X7RDA	

9.3 MPEG-2 Profiling guidelines

9.3.1 MPEG -2 profiles

Table 36 below provides a summary of the MPEG-2 AV Profiles.

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Table 36 – Summary of MPEG-2 profiles for the AV Media Class

DLNA Profile ID	Video portion profile			Audio portion profile					System portion profile			
	MP @ ML	MP @ HL	MP @ H-14	AC3	DTS	DTSHD_HRA	DTSHD_MA	MPEG1_L2	ITU BO 1516 B	MPEG-2 PS	MPEG2-TS_T	MPEG2-TS_ISO
MPEG_PS_SD_DTS	X				X					X		
MPEG_PS_HD_DTS		X			X					X		
MPEG_PS_HD_DTSHD_HRA		X				X				X		
MPEG_PS_HD_DTSHD_MA		X					X			X		
MPEG_PS_HD_DTSHD		X			X	X	X			X		
DIRECTV_TS_SD		X		X				X	X			
MPEG_TS_SD_NA_MPEG1_L2_T		X						X			X	
MPEG_TS_SD_NA_MPEG1_L2_ISO		X						X				X
MPEG_TS_HD_NA_MPEG1_L2_T		X						X			X	
MPEG_TS_HD_NA_MPEG1_L2_ISO		X						X				X
MPEG_TS_SD_EU_AC3_T	X			X							X	
MPEG_TS_SD_EU_AC3_ISO	X			X								X
MPEG_TS_SD_JP_MPEG1_L2_T	X							X			X	
MPEG_TS_DTS_T	X				X						X	
MPEG_TS_DTS_ISO	X				X							X
MPEG_TS_DTSHD_HRA_T		X				X					X	
MPEG_TS_DTSHD_HRA_ISO		X				X						X
MPEG_TS_DTSHD_MA_T		X					X				X	
MPEG_TS_DTSHD_MA_ISO		X					X					X
MPEG_TS_HD_X_60_L2_T		X	X					X			X	
MPEG_TS_HD_X_60_L2_ISO		X	X					X				X
MPEG_TS_HD_X_50_L2_T		X	X					X			X	
MPEG_TS_HD_X_50_L2_ISO		X	X					X				X
MPEG_DIRECTV_SD_MPEG1_L2	X							X	X			
MPEG_DIRECTV_SD_MPEG1_L2_T	X							X		X		
MPEG_TS_NA_ISO	X	X		X								X
MPEG_TS_SD_DTS_ISO	X				X							X
MPEG_TS_HD_DTS_ISO		X			X							X
MPEG_TS_SD_EU_DTS_ISO	X				X							X

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9.3.2 General format system-level guidelines

9.3.2.1 MPEG-2 AV format: Program Stream profiling

9.3.2.1.1

[PROFILES]

MPEG_PS_NTSC
MPEG_PS_PAL

9.3.2.1.2

[GUIDELINE] The Program Streams (PS) shall be profiled according to the video format-specific guidelines 9.3.2.2 through 9.3.3.3 and at least one of the following audio profile parameters: LPCM 9.3.3.4, AC-3 9.3.3.5, and MPEG Audio Layer 9.3.3.6.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ATSC Standard A/52A ISO/IEC 11172-3 ISO/IEC 13818-3 ISO/IEC 13818-1 ISO/IEC 13818-2	FKRRV	

9.3.2.1.3

[GUIDELINE] Rendering Endpoints shall render the MPEG-2 Program Stream (PS) profiled according to all video format-specific profile parameter sets listed in 9.3.2.2 through 9.3.3.3 and all audio portion profiles (i.e., LPCM, MPEG-1/2-Layer 2, and AC-3) specified in the entries 9.3.3.4 through 9.3.3.6.

The following are the exceptions to the rules.

TV system (NTSC / PAL)

Either NTSC or PAL may be supported.

MPEG-2 L2 extension stream

A bitstream conformant to these guidelines may contain multichannel audio information in the extension stream.

[ATTRIBUTES]

M	L	DMP DMR	M-DMP M-DMD	n/a	ATSC Standard A/52A ISO/IEC 11172-3 ISO/IEC 13818-3 ISO/IEC 13818-1 ISO/IEC 13818-2	7RDA5	

[COMMENT] The number of audio output channels for Rendering Endpoints is specified in guideline 6.1.8.

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9.3.2.2 MPEG-2 AV format: Program Stream profiling

9.3.2.2.1

[PROFILES]

MPEG_PS_NTSC
MPEG_PS_PAL

9.3.2.2.2

[GUIDELINE] The PS bit stream shall consist of a sequence of MPEG-2 Packs, as defined in ISO/IEC 13818-1, each of which may carry audio, video, or other data.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 13818-1	SF9IT	

9.3.2.3 MPEG-2 AV format: PS Stream and Substream IDs

9.3.2.3.1

[PROFILES]

MPEG_PS_NTSC
MPEG_PS_PAL

9.3.2.3.2

[GUIDELINE] A bitstream compliant with these profiles shall utilize the stream_id and sub_stream_id field to identify video and audio elementary streams as defined in this standard according to DVD Specifications, and not in the Program Stream Map (PSM) or Directory structures of ISO/IEC 13818-1.

[ATTRIBUTES]

M	C	n/a	n/a	n/a	ISO/IEC 13818-1 DVD Specifications	DOUDJ	

9.3.2.4 MPEG-2 AV format: Program Stream structure: data packs

9.3.2.4.1

[PROFILES]

MPEG_PS_NTSC
MPEG_PS_PAL

9.3.2.4.2

[GUIDELINE] A bitstream compliant with these profiles may have RDI and sub-picture packs in agreement to the provisions defined in DVD Specifications.

[ATTRIBUTES]

O	C	n/a	n/a	n/a	DVD Specifications	RRV63	

[COMMENT] This entry makes navigation and sub-picture packs optional. They will not be generated for example in cases of TS to PS conversions.

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9.3.2.5 MPEG-2 AV format: Program Stream structure: private packs

9.3.2.5.1

[PROFILES]

MPEG_PS_NTSC
MPEG_PS_PAL

9.3.2.5.2

[GUIDELINE] A bitstream compliant with these profiles may contain additional private packs recognized by the use of private stream_id and/or substream_id values.

[ATTRIBUTES]

O	C	n/a	n/a	n/a	ISO/IEC 13818-11 DVD Specifications	KRRV6	

[COMMENT] This entry clarifies that proprietary information can exist in the stream. It recommends the preferred MPEG-2 method to add private information without overloading stream_id values.

9.3.2.5.3

[GUIDELINE] A bitstream compliant with these profiles should contain private packs that use the stream_id extensions defined in ISO/IEC 13818-11 to avoid potential conflicts with future usage of stream_id and substream_id fields.

[ATTRIBUTES]

S	C	n/a	n/a	n/a	ISO/IEC 13818-11 DVD Specifications	OUDJL	

9.3.2.6 MPEG-2 AV format: mandatory Transport Alignment element

9.3.2.6.1

[PROFILES]

MPEG_PS_NTSC
MPEG_PS_PAL

9.3.2.6.2

[GUIDELINE] The Transport Alignment Position for bitstreams conformant to these profiles shall be the MPEG-2 pack boundary.

[ATTRIBUTES]

M	C	n/a	n/a	n/a	ISO/IEC 13818-1 DVD Specifications IETF RFC 1945	9IT8C	

[COMMENT] This entry clarifies the transport stream alignment of MPEG-2 Program Streams.

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9.3.2.7 MPEG-2 AV format: recommended Decoder Friendly Alignment position

9.3.2.7.1

[PROFILES]

MPEG_PS_NTSC
MPEG_PS_PAL

9.3.2.7.2

[GUIDELINE] The Decoder Friendly Alignment Element for bitstreams conformant with these profiles should be the MPEG-2 GOP boundary.

[ATTRIBUTES]

S	L	n/a	n/a	n/a	n/a	UDJLP	

[COMMENT] This entry clarifies the transport alignment of MPEG-2 Program Streams when a Time Seek is performed.

9.3.2.8 MPEG-2 AV format: PS best effort source streams

9.3.2.8.1

[PROFILES]

MPEG_PS_NTSC
MPEG_PS_PAL

9.3.2.8.2

[GUIDELINE] Elementary Streams at the Serving Endpoint prior to transmission shall conform to the constraints imposed by the Buffer Reference Models defined in DVD Specifications.

[ATTRIBUTES]

M	C	DMS	M-DMS	n/a	DVD Specifications	IT8C6	

[COMMENT] The network might introduce jitter due to best effort traffic characteristics when sending packets across the network.

9.3.2.9 MPEG-2 AV format: PS best effort destination streams

9.3.2.9.1

[PROFILES]

MPEG_PS_NTSC
MPEG_PS_PAL

9.3.2.9.2

[GUIDELINE] On arrival, Rendering Endpoints may reconstruct the original program multiplex typically using buffers that compensate for network jitter, delays, etc. The rate for the program multiplex shall be obtained from the program_mux_rate field of a pack header. The reconstruction process is implementation-dependent.

[ATTRIBUTES]

M	C	DMP DMR	M-DMP M-DMD	n/a	DVD Specifications	RDA5X	

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[COMMENT] This statement says that Rendering Endpoints will rely on the information from one particular field to reconstruct the program mux before decoding.

9.3.2.10 MPEG-2 AV format: MIME type definition

9.3.2.10.1

[PROFILES]

MPEG_PS_NTSC
MPEG_PS_PAL
MPEG_PS_SD_DTS MPEG_PS_HD_DTS
MPEG_PS_HD_DTSHD_MA
MPEG_PS_HD_DTSHD_HRA
MPEG_PS_HD_DTSHD

9.3.2.10.2

[GUIDELINE] MIME type "video/mpeg" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	A	n/a	n/a	n/a		V6344	

9.3.2.11 MPEG-2 AV format: usage of Profile IDs

9.3.2.11.1

[PROFILES]

MPEG_PS_NTSC
MPEG_PS_PAL

9.3.2.11.2

[GUIDELINE] The following Profile ID values shall be used for this media format.

- If the TV System is NTSC:
  DLNA profile=MPEG_PS_NTSC
- If the TV System is PAL:
  DLNA profile=MPEG_PS_PAL

[ATTRIBUTES]

M	A	n/a	n/a	n/a		RV634	

[COMMENT] If the TV system supports both NTSC and PAL, it can be exposed using both MPEG_PS_NTSC and MPEG_PS_PAL DLNA profiles.

9.3.3 Format compression-level guidelines

9.3.3.1 MPEG-2 AV format: system stream specification

9.3.3.1.1

[PROFILES]

MPEG_PS_NTSC
MPEG_PS_PAL

9.3.3.1.2

[GUIDELINE] Main characteristics of MPEG-2 system stream are the following.

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System

Program Stream

Number of video streams

1 video stream only

Number of audio stream

Up to 2 audio streams

System bit rate

Up to 10,08 Mbit/s

Pack size

Shall be 2 048 B per each Pack

Pack Header

Shall match the provisions defined in Table 5.3.1-2: Pack Header in DVD Specifications.

Audio Pack

Audio Pack Structure shall match the provisions in Figure 5.3.3-1: Structure of Audio Pack in DVD Specifications.

Video Pack

Video Pack Structure shall match the provisions in Figure 5.3.2-1: Structure of Video Pack in DVD Specifications.

System header

Shall match the provisions defined in Table 5.3.2-1: System header in DVD Specifications.

Content length

Shall not exceed 1/90 000 × 4 294 967 295 s if the content has no corresponding IFO file.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 13818-1 DVD Specifications	DJLPY	

[COMMENTS]

a) Stuffing up to 2 048 B pack size is done at the packet header or with padding packet.

$2^{32}-1$ = 4 294 967 295

b) If the content has a corresponding IFO file, the content length limitation corresponds to that in the IFO file.

9.3.3.2 MPEG-2 AV format: optional system stream elements

9.3.3.2.1

[PROFILES]

MPEG_PS_NTSC
MPEG_PS_PAL

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9.3.3.2.2

[GUIDELINE] A bitstream conformant to these media format profiles may contain the follow characteristics.

Program End Code

Program end code may be included at the end of stream.

[ATTRIBUTES]

O	A	n/a	n/a	n/a	n/a	T8C6E	

9.3.3.3 MPEG-2 AV format: Video Elementary Stream specification

9.3.3.3.1

[PROFILES]

MPEG_PS_NTSC
MPEG_PS_PAL

9.3.3.3.2

[GUIDELINE] Video Elementary Stream shall match the provisions about MPEG-2 Video Stream in DVD Specifications, 1.2 , 5.1 , 5.2.1 , 5.3.2 and 5.5.1.2. Main characteristics of MPEG-2 video stream are:

Profile:

MP@ML

Stream ID in MPEG-2 System

0xE0. (defined in Table 5.1-3 of DVD Specifications: stream_id).

Sequence_header

Sequence_header followed by GOP_header shall be set at the beginning of video data in video pack at the intervals between 0,4 s and 1,0 s (defined in 5.2.1 Movie VOB in DVD Specifications).

Video bit rate

CBR: less than or equal to 9,80 Mbit/s

VBR: maximum bit rate less than or equal to 9,80 Mbit/s

(defined in Table 5.5.1.2-1: Constraints on MPEG-2 video in DVD Specifications).

TV System

NTSC or PAL with the following characteristics as shown in Table 37.

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Table 37 – MPEG-2 AV format resolutions

	➢ NTSC	➢ PAL
Resolution	➢ 720 × 480 ➢ 704 × 480 ➢ 544 × 480 ➢ 480 × 480 ➢ 352 × 480 ➢ 352 × 240	➢ 720 × 576 ➢ 704 × 576 ➢ 544 × 576 ➢ 480 × 576 ➢ 352 × 576 ➢ 352 × 288
	The resolution may be changed during a single content streaming session. When this happens, and there is no associated IFO file, then the sequence_end_code shall be set to the boundary of resolution change.	
Frame rate	➢ 29,97 Hz	➢ 25 Hz
Number of Pictures in GOP	➢ 36 display fields or less 18 frames or less (progressive)	➢ 30 display fields or less 15 frames or less (progressive)

(These constraints are defined in Table 5.5.1.2-1: Constraints on MPEG-2 Video in DVD Specifications.)

Display aspect ratio

- ➢ 4:3
- ➢ 16:9

Aspect ratio may be changed. When this happens, and there is no associated IFO file, then the sequence_end_code shall be set to the boundary of aspect ratio change.

(Defined in 5.5.1.2 MPEG-2 video data for one GOP and Table C-2: Relation between Presentation Data of Video and the Player in DVD Specifications.)

"low_delay"

0b i.e. "low_delay" sequences are not permitted. (Defined in Table 5.5.1.2-1: Constraints on MPEG-2 video in DVD Specifications.)

PTS, DTS in Video Packet

PTS and DTS are mandatory in each Video Pack containing the first byte of the picture start code of any MPEG-2 I-picture encoded as a frame picture or any first MPEG-2 I-picture of a pair of two encoded field pictures.

PTS ISO/IEC 11172-2 and DTS ISO/IEC 11172-2 shall be set to zero. (Defined in Table 5.3.2-2: Video Packet in DVD Specifications.)

Video Packet Header

Video Packet Header shall match the provisions defined in Table 5.3.2-2: Video packet in DVD Specifications.

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[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 13818-1 ISO/IEC 13818-2 DVD Specifications	DA5X9	

[COMMENT] E.g., PTS ISO/IEC 11172-2 means the specific bit (i.e., MSB in this case) of the PTS field.

9.3.3.4 MPEG-2 AV format: Audio portion profiling: LPCM

[PROFILES]

MPEG_PS_NTSC
MPEG_PS_PAL

[GUIDELINE] LPCM Audio stream shall match the provisions about LPCM Audio in 1.2 General Specifications of Presentation Data, 5.1 Definition of VOB, 5.3.3 Audio Pack and 5.5.2.1 Linear PCM audio in DVD Specifications. Main characteristics of LPCM audio stream are:

Scheme to combine the LPCM elementary stream to MPEG-2 Program Stream.

LPCM Audio bit stream is multiplexed as private_stream_1.

Stream_id for main audio is 0xBD (indicating to the private_stream_1).

Sub_stream_id to distinguish the LPCM audio stream is 0b1010_000*. (The first byte in data area of each packet is assigned as sub_stream_id).

0b1010_000*: * corresponds to audio stream number. *=0 for main language. *=1 corresponds to auxiliary language.

(Defined in 5.1 Definition of VOB in DVD Specifications.)

Sampling rate

48 kHz (defined in Table 5.5.2.1-1 Linear PCM coding basics in DVD Specifications.)

Content audio channel modes:

A bitstream conformant to these media format profiles may contain the following formats

- Mono (1/0)
- Stereo (2/0)
- Dual Monoaural (1/0 + 1/0)

(These are defined in Table 5.5.2.1-2: Linear PCM data size in a packet in DVD Specifications.)

Quantization

16 bit (defined in Table 5.5.2.1-1 Linear PCM coding basics in DVD Specifications.)

Audio bit rate

1,536 Mbit/s per one stream (2 channels).

768 kbit/s per stream (mono)

Emphasis

May be applied (zero point: 50 µs, Pole: 15 µs) (defined in Table 5.5.2.1-1 Linear PCM coding basics in DVD Specifications.)

Channel assignment

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In the stereo presentation mode, the descriptions of channels, ACH0 and ACH1 correspond to Left channel (L-ch) and Right channel (R-ch) respectively, (defined in F5.5.2.1 Linear PCM audio in DVD Specifications).

PTS in Audio Packet

PTS shall be described in every Audio packet in which the first sample of audio frame is included.

PTS ISO/IEC 11172-2 shall be set to ZERO.(defined in Table 5.3.3-1 Audio Packet of Linear PCM in DVD Specifications)

Packet header

Packet header shall match the provisions defined in Table 5.3.3-1: Audio packet of Linear PCM in DVD Specifications

[ATTRIBUTES]

M	C	n/a	n/a	n/a	DVD Specifications	JLPYM

9.3.3.5 MPEG-2 AV format: audio portion profiling: AC-3

9.3.3.5.1

[PROFILES]

MPEG_PS_NTSC
MPEG_PS_PAL

9.3.3.5.2

[GUIDELINE] AC-3 Audio Stream shall match the provisions about AC-3 Audio in 1.2 General Specifications of Presentation Data, 5.1 Definition of VOB, 5.3.3 Audio Pack and 5.5.2.2 AC-3 audio in DVD Specifications.

Main characteristics of AC-3 audio stream are:

Scheme to combine the AC-3 elementary stream to MPEG-2 Program Stream.

AC-3 Audio bit stream is multiplexed as private_stream_1

Stream_id for main audio is 0xBD (indicating the private_stream_1)

Sub_stream_id to distinguish the AC-3 audio stream is 0b1000_000*. (The first byte in data area of each packet is assigned as sub_stream_id).

0b1000_000*: * corresponds to audio stream number. *=0 for main language. *=1 corresponds to auxiliary language.

(Defined in 5.1 Definition of VOB in DVD Specifications.)

Sampling rate

48 kHz (defined in Table 5.5.2.2-1: Restricted Items for AC-3 of audio in DVD Specifications).

Content audio channel modes:

A bitstream conformant to these media format profiles may contain the following formats

- Mono (1/0)
- Dual Monaural (1/0 + 1/0)
- Stereo (2/0)
- Multichannel (3/0)

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- Multichannel (2/1)
- Multichannel (3/1)
- Multichannel (2/2)
- Multichannel (3/2)

Changing audio channels among mono, dual-mono and stereo is allowed, (defined in Table 5.5.2.2-1: Restricted Items for AC-3 of audio and Table C-4: Relation between Presentation Data of Audio and the Player in DVD Specifications).

Audio bit rate

64 kbit/s to 448 kbit/s. (defined in Table 5.5.2.2-1: Restricted Items for AC-3 of audio in DVD Specifications)

PTS in Audio Packet

PTS shall be described in every audio packet in which the first sample of audio frame is included.

PTS ISO/IEC 11172-2 shall be set to zero.(defined in Table 5.3.3-2 Audio Packet of AC-3 in DVD Specifications)

Packet Header

Packet Header shall match the provisions defined in Table 5.3.3-2: Audio packet of AC-3 in DVD Specifications.

[ATTRIBUTES]

M	C	n/a	n/a	n/a	ATSC Standard A/52A DVD Specifications	8C6E8	

9.3.3.6 MPEG-2 AV format: audio portion profiling: MPEG-1 L2, MPEG-2 L2

9.3.3.6.1

[PROFILES]

MPEG_PS_NTSC
MPEG_PS_PAL

9.3.3.6.2

[GUIDELINE] MPEG-1 and MPEG-2 Audio Layer 2 Stream shall match the provisions about MPEG Audio in 1.2 General Specifications of Presentation Data, 5.1 Definition of VOB, 5.3.3 Audio Pack and 5.5.2.3 MPEG audio in DVD Specifications. Main characteristics of MPEG Audio Layer 2 stream are:

Stream ID in MPEG-2 System

0b1100_000* for main audio stream

0b1101_000* for MEPG-2 extension audio stream

The bit identified by * corresponds to audio stream number with values: 0 (main language), or 1 (auxiliary language), as defined in Table 5.3.3-3 of DVD Specifications (Audio packet of MPEG audio).

Sampling rate

48 kHz. (Defined in Table 5.5.2.3-1: Restricted Items for MPEG coding of audio in DVD Specifications.)

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Protection

CRC check always on. (Defined in Table 5.5.2.3-1: Restricted Items for MPEG coding of audio in DVD Specifications.)

If bad (invalid) CRC is detected, DMP can mute the audio or deploy implementation-dependent error-concealment techniques.

Content audio channel modes:

A bitstream conformant to these media format profiles may contain the following formats

- Mono (1/0)
- Dual Monoaural (1/0 + 1/0)
- Stereo (2/0)

Within a bitstream, the audio channel modes may change (defined in Table 5.5.2.3-1: Restricted Items for MPEG coding of audio and Table C-4: Relation between Presentation Data of Audio and the Player in DVD Specifications).

Audio bit rate:

- MPEG-1 Audio Layer 2
- 1 channel (mono):

from 64 kbit/s to 192 kbit/s

- 2 channel (stereo, dual mono)

from 64 kbit/s to 384 kbit/s

- MPEG-2 Audio Layer 2

Main stream:

- 1 channel (mono):

from 64 kbit/s to 192 kbit/s

- 2 channel (stereo, dual mono)

from 64 kbit/s to 384 kbit/s

Extension stream:

Up to 528 kbit/s

(defined in Table 5.5.2.3-1: Restricted Items for MPEG coding of audio in DVD Specifications).

Emphasis:

Always no emphasis (defined in Table 5.5.2.3-1: Restricted Items for MPEG coding of audio in DVD Specifications).

Private bit

0 (defined in Table 5.5.2.3-1: Restricted Items for MPEG coding of audio in DVD Specifications).

Number of multilingual channels

0 (defined in Table 5.5.2.3-1: Restricted Items for MPEG coding of audio in DVD Specifications).

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mc_prediction_on

0 (use of prediction excluded). (defined in Table 5.5.2.3-1: Restricted Items for MPEG coding of audio in DVD Specifications).

Number of bits reserved for "dynamic_range_control" in ancillary data

16 (defined in Table 5.5.2.3-1: Restricted Items for MPEG coding of audio in DVD Specifications).

PTS in audio packet

PTS shall be described in every audio packet in which the first sample of audio frame is included.

PTS ISO/IEC 11172-2 shall be set to zero (defined in Table 5.3.3-3 Audio Packet of MPEG Audio in DVD Specifications).

Audio Packet Header

Packet Header shall match the provisions defined in Table 5.3.3-3: Audio packet of MPEG Audio in DVD Specifications.

[ATTRIBUTES]

M	C	n/a	n/a	n/a	ISO/IEC 13818-3 ISO/IEC 11172-3 DVD Specifications	A5X9F	

9.3.3.7 MPEG-2 AV format: IFO file format

9.3.3.7.1

[PROFILES]

MPEG_PS_NTSC
MPEG_PS_PAL

9.3.3.7.2

[GUIDELINE] If the IFO file is used, then the format of an IFO file shall conform to the DVD-VR IFO format except for the following provision.

An IFO file shall include the information only for one piece of the corresponding to this IFO file DLNA PS-formatted content.

The maximum size of the IFO file shall not exceed 512 KiB.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	DVD Specifications	6344H	

[COMMENT] For media management-related guideline entry, see guideline 7.4.1.4.8 in IEC 62481-1:2013.

9.3.3.8 MPEG2 AV format: field values in IFO file and their treatment

9.3.3.8.1

[PROFILES]

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MPEG_PS_NTSC
MPEG_PS_PAL

9.3.3.8.2

[GUIDELINE] An IFO file shall conform to the field values specified in Table B.1.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	DVD Specifications	LPYM3	

[COMMENT] "Correct value" in DVD Specifications means the value is specified according to the DVD-VR specifications. "Ignorable" in Annex B means that Rendering Endpoints don't care about the value in the field.

9.3.3.8.3

[GUIDELINE] While interpreting the information in the IFO file, Rendering Endpoints shall treat the fields according to Annex B. If the treatment in Table B.2 is "SHALL check", then Rendering Endpoints shall check the value and treat it according to what is specified in its comments column.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	DVD Specifications	C6E86	

9.3.3.8.4

[GUIDELINE] If the treatment in Annex B is "SHOULD use", then Rendering Endpoint should use the information specified in the field to handle the SCR/PTS discontinuous PS stream.

[ATTRIBUTES]

S	A	DMP DMR	M-DMP M-DMD	n/a	DVD Specifications	5X9FQ	

9.3.3.9 MPEG2 AV format: IFO file MIME type

9.3.3.9.1

[PROFILES]

MPEG_PS_NTSC
MPEG_PS_PAL

9.3.3.9.2

[GUIDELINE] The following MIME type shall be used in indicating the IFO file resource

application/octet-stream.

[ATTRIBUTES]

M	A	DMS	M-DMS	n/a	DVD Specifications	344H9	

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9.3.4 General format guidelines for Transport Stream: MPEG-2 AV Format: MPEG-2 MIME type definition

9.3.4.1

[PROFILES]

MPEG_TS_SD_NA
MPEG_TS_SD_NA_T
MPEG_TS_SD_NA_ISO
MPEG_TS_HD_NA
MPEG_TS_HD_NA_T
MPEG_TS_HD_NA_ISO
MPEG_TS_SD_EU
MPEG_TS_SD_EU_T
MPEG_TS_SD_EU_ISO
MPEG_TS_SD_KO
MPEG_TS_SD_KO_T
MPEG_TS_SD_KO_ISO
MPEG_TS_HD_KO
MPEG_TS_HD_KO_T
MPEG_TS_HD_KO_ISO
MPEG_TS_SD_NA_MPEG1_L2_T
MPEG_TS_SD_EU_AC3_T
MPEG_TS_SD_JP_MPEG1_L2_T
MPEG_TS_HD_NA_MPEG1_L2_T
MPEG_TS_HD_DTS_T
MPEG_TS_HD_DTSHD_HRA_T
MPEG_TS_HD_DTSHD_MA_T

9.3.4.2

[GUIDELINE] DLNA defines three MPEG TS packet formats as described below:

- 192 B DLNA Transport Packet with a valid 4 B timestamp field and a 188 B MPEG Transport Stream Packet
- 192 B DLNA Transport Packet with zeros in a 4 B timestamp field and a 188 B MPEG Transport Stream Packet
- 188 B DLNA Transport Packet without a 4 B timestamp field and a 188 B MPEG Transport Stream Packet

The MIME type "video/vnd.dlna.mpeg-tts" shall be used for Media Format Profiles which utilize a 192 B DLNA Transport Packet format. The MIME type "video/mpeg" shall be used for Media Format Profiles which utilize the 188 B DLNA Transport Packet format.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	PYM37	

9.3.5 Common format specific guidelines

9.3.5.1 MPEG-2 AV format: System Stream specification

9.3.5.1.1

[PROFILES]

MPEG_TS_SD_NA
MPEG_TS_SD_NA_T
MPEG_TS_SD_NA_ISO
MPEG_TS_HD_NA
MPEG_TS_HD_NA_T
MPEG_TS_HD_NA_ISO

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MPEG_TS_SD_EU
MPEG_TS_SD_EU_T
MPEG_TS_SD_EU_ISO
MPEG_TS_SD_KO
MPEG_TS_SD_KO_T
MPEG_TS_SD_KO_ISO
MPEG_TS_HD_KO
MPEG_TS_HD_KO_T
MPEG_TS_HD_KO_ISO
MPEG_TS_SD_NA_MPEG1_L2_ISO
MPEG_TS_SD_EU_AC3_ISO
MPEG_TS_HD_NA_MPEG1_L2_ISO
MPEG_TS_HD_DTS_ISO
MPEG_TS_HD_DTSHD_HRA_ISO
MPEG_TS_HD_DTSHD_MA_ISO

9.3.5.1.2

[GUIDELINE] Main characteristics of MPEG-2 Transport system stream are

System

System Stream is Full or Partial Single Program Transport Stream (SPTS). It shall contain only one program from the original broadcasted TS according to the PAT and PMT tables. A Full SPTS shall be fully compliant with ISO/IEC 13818-1 while a Partial SPTS shall be fully compliant with ISO/IEC 13818-1 except for requirements related to the T-STD model.

Number of programs

1 as defined for a Single Program Transport Stream

Packet size

188 B per transport packet

PSI information

PAT and PMT are required in the multiplexed stream

Additional information (e.g. PSI, PSIP, SI, etc.) may exist in the multiplexed stream.

Rendering Endpoints shall tolerate any additional information in the multiplexed stream.

The insertion intervals for PSI tables are implementation-dependent.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 11172-3 ISO/IEC 13818-3 ATSC Standard A/53C ISO/IEC 13818-2 ETSI TSR 101 154	6E863	

[COMMENTS]

a) A partial SPTS can be created from MPTS by removing packets corresponding to other programs, or from another SPTS stream (by removing some components).
A full or partial SPTS can have multiple audio and video components in it.

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b) For Media Format Profiles IDs which don't contain an "_ISO" suffix, the 188 B DLNA Transport Packet specified in this guideline will be preceded by a 32 bit timestamp making a 192 B DLNA Transport Packet, as described in ARIB B 24 for Media Format Profiles IDs which don't contain an "_ISO" suffix.

c) Rendering Endpoints require PSI tables to initiate decoding. Therefore, it is encouraged that PSI tables be inserted as early in the stream as possible. Note that PSI tables can change, or not be present in the stream.

9.3.5.2 MPEG-2 AV format: Rendering guidelines

9.3.5.2.1

[PROFILES]

MPEG_TS_SD_NA
MPEG_TS_SD_NA_T
MPEG_TS_SD_NA_ISO
MPEG_TS_HD_NA
MPEG_TS_HD_NA_T
MPEG_TS_HD_NA_ISO
MPEG_TS_SD_EU
MPEG_TS_SD_EU_T
MPEG_TS_SD_EU_ISO MPEG_TS_SD_KO
MPEG_TS_SD_KO_T
MPEG_TS_SD_KO_ISO
MPEG_TS_HD_KO
MPEG_TS_HD_KO_T
MPEG_TS_HD_KO_ISO
MPEG_TS_SD_NA_MPEG1_L2_T
MPEG_TS_SD_NA_MPEG1_L2_ISO
MPEG_TS_HD_NA_MPEG1_L2_T
MPEG_TS_HD_NA_MPEG1_L2_ISO

9.3.5.2.2

[GUIDELINE] A Rendering Endpoint shall tolerate but not necessarily render all audio, video and data components that belong to the (selected) program in a full or partial SPTS according to the PAT/PMT tables.

At a minimum, a Rendering Endpont shall render one elementary video stream and one corresponding elementary audio stream as present in TS.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	ISO/IEC 11172-3 ISO/IEC 13818-3 ATSC Standard A/53C ISO/IEC 13818-1 ISO/IEC 13818-2 ETSI TSR 101 154	X9FQ4	

[COMMENT] AV device supporting AV media class content, support rendering of both audio and video components.

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9.3.5.3 MPEG-2 AV format: Video Elementary Stream specification

9.3.5.3.1

[PROFILES]

MPEG_TS_SD_NA
MPEG_TS_SD_NA_T
MPEG_TS_SD_NA_ISO
MPEG_TS_SD_EU
MPEG_TS_SD_EU_T
MPEG_TS_SD_EU_ISO
MPEG_TS_SD_KO
MPEG_TS_SD_KO_T
MPEG_TS_SD_NA_MPEG1_L2_T
MPEG_TS_SD_NA_MPEG1_L2_ISO
MPEG_TS_SD_KO_ISO
MPEG_TS_SD_EU_AC3_T
MPEG_TS_SD_EU_AC3_ISO

9.3.5.3.2

[GUIDELINE] Main characteristics of MPEG-2 video stream are

Profile:

- MP@ML

Chroma:

- 4:2:0

Video bit rate:

- CBR: Equal to or less than 15 Mbit/s
- VBR: maximum bit rate equal to or less than 15 Mbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-3 ATSC Standard A/53C ISO/IEC 13818-1 ISO/IEC 13818-2 ETSI TSR 101 154	44H9S	

[COMMENT] Some profiles also utilize MP@HL MPEG-2 profile, as will be described in subsequent guideline entries.

9.3.5.4 MPEG-2 AV format: 192 B timestamped TS packet format

9.3.5.4.1

[PROFILES]

MPEG_TS_SD_NA
MPEG_TS_SD_NA_T
MPEG_TS_HD_NA
MPEG_TS_HD_NA_T
MPEG_TS_SD_EU
MPEG_TS_SD_EU_T

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MPEG_TS_SD_KO
MPEG_TS_SD_KO_T
MPEG_TS_HD_KO
MPEG_TS_HD_KO_T
MPEG_TS_SD_NA_MPEG1_L2_T
MPEG_TS_SD_EU_AC3_T
MPEG_TS_SD_JP_MPEG1_L2_T
MPEG_TS_HD_NA_MPEG1_L2_T
MPEG_TS_HD_DTS_T
MPEG_TS_HD_DTSHD_HRA_T
MPEG_TS_HD_DTSHD_MA_T
MPEG_TS_SD_NA_MPEG1_L2_ISO
MPEG_TS_HD_NA_MPEG1_L2_T
MPEG_TS_HD_NA_MPEG1_L2_ISO

9.3.5.4.2

[GUIDELINE] When an MPEG-2 TS bitstream conformant with these profiles is transmitted, each MPEG MPEG-2 TS packet shall be preceded by a 32 bit timestamp making 192 B packet (4 B timestamp + 188 B transport packet) as defined in ARIB B 24. The Timestamp format is uimsbf (unsigned integer most significant bit first) as defined in ISO/IEC 13818-1.

This 32 bit field is a 27 MHz clock binary counter value to control the relative input timing to the decoder of the following transport packet. The 27 MHz clock is synchronized to the MPEG-2 system clock, but this counter value might not be equal to the STC counter value (i.e. they may have a consistant offset). A bitstream which is conformant with the Profile IDs that do not have "_T" suffix shall contain 0x00000000 in the timestamp field of the all packets in the stream. If the Rendering Endpoint observes zero-valued timestamp in the first 2 packets of the stream, the Rendering Endpoint shall treat the timestamp as not available for the stream.

When the timestamp is provided, the accuracy of the timestamp should be within ±500 ns.

Corresponding Profile IDs have "_T" appended as part of their Profile Identifier (e.g. MPEG_TS_SD_NA_T etc.) to indicate the content stream has valid timestamp values.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ARIB B 24	YM377	

[COMMENT] A conformant bitstream might not include a valid timestamp. TTS timestamp and PCR are different in the following aspects:

- PCR consists of 9 bit 27 MHz MPEG STC extension part and 33 bit 90 kHz base part. TTS timestamp is 32 bit binary 27 MHz counter.
- PCR can have discontinuities. The TTS timestamp is continuous over the duration of the stream.
- PCR is present with an interval of 100 ms or less. The TTS timestamp is present in every TS packet.

9.3.5.5 MPEG-2 AV format: Transport Alignment Position

9.3.5.5.1

[PROFILES]

MPEG_TS_SD_NA
MPEG_TS_SD_NA_T
MPEG_TS_SD_NA_ISO
MPEG_TS_HD_NA
MPEG_TS_HD_NA_T

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MPEG_TS_HD_NA_ISO
MPEG_TS_SD_EU
MPEG_TS_SD_EU_T
MPEG_TS_SD_EU_ISO MPEG_TS_SD_KO
MPEG_TS_SD_KO_T
MPEG_TS_SD_KO_ISO
MPEG_TS_HD_KO
MPEG_TS_HD_KO_T
MPEG_TS_HD_KO_ISO
MPEG_TS_SD_NA_MPEG1_L2_T
MPEG_TS_SD_NA_MPEG1_L2_ISO
MPEG_TS_HD_NA_MPEG1_L2_T
MPEG_TS_HD_NA_MPEG1_L2_ISO

9.3.5.5.2

[GUIDELINE] The Transport Alignment Position for bitstreams conformant to these profiles shall be the DLNA Transport Packet boundary.

[ATTRIBUTES]

M	A	DMS	M-DMS	n/a	n/a	E8638	

9.3.6 US region specific TS Profiling guidelines: MPEG_TS_SD_NA, MPEG_TS_SD_NA_T, MPEG_TS_HD_NA, and MPEG_TS_HD_NA_T Profiles

9.3.6.1 MPEG-2 AV format: MPEG-2 AV stream

9.3.6.1.1

[PROFILES]

MPEG_TS_SD_NA
MPEG_TS_SD_NA_T
MPEG_TS_SD_NA_ISO
MPEG_TS_SD_NA_MPEG1_L2_T
MPEG_TS_SD_NA_MPEG1_L2_ISO

9.3.6.1.2

[GUIDELINE] A bitstream conformant with these profiles shall have the following System bit rate characteristics.

System bit rate:

- CBR or VBR up to 19,392 7 Mbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ATSC Standard A/53C	9FQ48	

9.3.6.2 MPEG-2 AV format: MPEG-2 Closed Caption Stream

9.3.6.2.1

[PROFILES]

MPEG_TS_SD_NA
MPEG_TS_SD_NA_T
MPEG_TS_SD_NA_ISO
MPEG_TS_HD_NA
MPEG_TS_HD_NA_T
MPEG_TS_HD_NA_ISO

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MPEG_TS_SD_NA_MPEG1_L2_T
MPEG_TS_SD_NA_MPEG1_L2_ISO
MPEG_TS_HD_NA_MPEG1_L2_T
MPEG_TS_HD_NA_MPEG1_L2_ISO

9.3.6.2.2

[GUIDELINE] A bitstream conformant with these profiles may include Closed Caption Streams with syntax, semantics, and usage rules defined in ATSC Standard A/53C.

[ATTRIBUTES]

O	R	n/a	n/a	n/a	ATSC Standard A/53C	M3774	

9.3.6.3 MPEG-2 AV format: MPEG-2 video format

9.3.6.3.1

[PROFILES]

MPEG_TS_SD_NA
MPEG_TS_SD_NA_T
MPEG_TS_SD_NA_MPEG1_L2_T
MPEG_TS_SD_NA_MPEG1_L2_ISO
MPEG_TS_SD_NA_ISO

9.3.6.3.2

[GUIDELINE] A bitstream conformant to these profiles shall adhere to the following video encoding parameters as shown in Table 38.

Table 38 – MPEG_TS_SD_NA, MPEG_TS_SD_NA_T

Resolution	Aspect ratio	Field (interlaced) or Frame (progressive) rate
➢720 × 480	16:9	29,97p
➢720 × 480	16:9	59,94i
➢720 × 480	4:3	29,97p
➢720 × 480	4:3	59,94i
➢704 × 480	16:9	59,94i and 60i
➢704 × 480	16:9	29,97p and 30p
➢704 × 480	16:9	23,976p and 24p
➢704 × 480	4:3	59,94i and 60i
➢704 × 480	4:3	29,97p and 30p
➢704 × 480	4:3	23,976p and 24p
➢640 × 480	4:3	59,94i and 60i
➢640 × 480	4:3	29,97p and 30p
➢640 × 480	4:3	23,976p and 24p
➢640 × 480	Square	59,94i and 60i
➢640 × 480	Square	29,97p and 30p

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Resolution	Aspect ratio	Field (interlaced) or Frame (progressive) rate
➢640 × 480	Square	23,976p and 24p
➢544 × 480	16:9	59,94i
➢544 × 480	4:3	29,97p
➢544 × 480	4:3	59,94i
➢480 × 480	16:9	59,94i
➢480 × 480	4:3	29,97p
➢480 × 480	4:3	59,94i
➢352 × 480	16:9	59,94i
➢352 × 480	4:3	29,97p
➢352 × 480	4:3	59,94i

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-1 ISO/IEC 13818-2 ISO/IEC 13818-3 ATSC Standard A/53C CEA-849A SCTE 54 2002	4H9SU	

[COMMENT] 60i means interlaced sequence of 30 fps frame rate.

9.3.6.4 MPEG-2 AV format: ATSC EDTV stream format

9.3.6.4.1

[PROFILES]

MPEG_TS_SD_NA
MPEG_TS_SD_NA_T
MPEG_TS_SD_NA_ISO
MPEG_TS_SD_NA_MPEG1_L2_T
MPEG_TS_SD_NA_MPEG1_L2_ISO

9.3.6.4.2

[GUIDELINE] Main characteristics of MPEG-2 video stream are

Profile:

MP@HL

Chroma:

4:2:0

Video bit rate

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- CBR: less than or equal to (19,392 7 Mbit/s minus the sum of audio, close caption data, other SI tables and TS overhead)
- VBR: maximum bit rate less than or equal to (19,392 7 Mbit/s minus the sum of audio, close caption data other SI tables and TS overhead)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-1 ISO/IEC 13818-2 ISO/IEC 13818-3 ATSC Standard A/53C	8638X	

[COMMENT] This is an additional profiling of MPEG_TS_SD_NA format profile that specifies different MPEG-2 Profile (i.e. MP@HL).

9.3.6.5 MPEG-2 AV format: ATSC EDTV video format

9.3.6.5.1

[PROFILES]

MPEG_TS_SD_NA
MPEG_TS_SD_NA_T
MPEG_TS_SD_NA_ISO
MPEG_TS_SD_NA_MPEG1_L2_T
MPEG_TS_SD_NA_MPEG1_L2_ISO

9.3.6.5.2

[GUIDELINE] Video encoding parameters as shown below in Table 39.

Table 39 – Additional parameters for MPEG_TS_SD_NA, MPEG_TS_SD_NA_T

Resolution	Aspect ratio	Field (interlaced) or Frame (progressive) rate
➢704 × 480	16:9	59,94p and 60p
➢704 × 480	4:3	59,94p and 60p
➢640 × 480	4:3	59,94p and 60p
➢640 × 480	Square	59,94p and 60p

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-1 ISO/IEC 13818-2 ISO/IEC 13818-3 ATSC Standard A/53C	FQ485	

[COMMENT] This is an additional profiling of MPEG_TS_SD_NA format profile that specifies different MPEG-2 Profile (i.e. MP@HL) to support Enhanced Definition TV.

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9.3.6.6 MPEG-2 AV format: audio portion profiling: AC-3

9.3.6.6.1

[PROFILES]

MPEG_TS_SD_NA
MPEG_TS_SD_NA_T
MPEG_TS_SD_NA_ISO
MPEG_TS_HD_NA
MPEG_TS_HD_NA_T
MPEG_TS_HD_NA_ISO

9.3.6.6.2

[GUIDELINE] Main characteristics of ATSC AC-3 audio stream are

Sampling rate:

48 kHz

Content audio channel modes:

A bitstream conformant to these media format profiles may contain the following AC-3 formats

- Mono (1/0)
- Stereo (2/0)
- Multi-channels (3/0)
- Multi-channels (2/1)
- Multi-channels (3/1)
- Multi-channels (2/2)
- Multi-channels (3/2)

A bitstream conformant to these media format profiles shall be conformant with the requirements of ATSC Standard A/53C.

Audio bit rate

- Main audio service up to 448 kbit/s per one stream.

The combined bit rate of a main service and an associated service which are intended to be decoded simultaneously shall be up to 576 kbit/s.

[ATTRIBUTES]

M	R /L	n/a	n/a	n/a	ATSC Standard A/52A ATSC Standard A/53C	H9SUL	

[COMMENT] 32 kHz and 44,1 kHz AC-3 audio sampling rates were removed from the ATSC A/53B.
576 kbit/s is the maximum ATSC AC-3 audio bit rate instead of 640 kbit/s per ATSC A/53B.

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9.3.6.7 MPEG-2 AV format: system stream

9.3.6.7.1

[PROFILES]

MPEG_TS_HD_NA
MPEG_TS_HD_NA_T
MPEG_TS_HD_NA_ISO
MPEG_TS_HD_NA_MPEG1_L2_T
MPEG_TS_HD_NA_MPEG1_L2_ISO

9.3.6.7.2

[GUIDELINE] A bitstream conformant with these profiles shall have the following System bit rate characteristics.

System bit rate:

- CBR or VBR up to 19,392 7 Mbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ATSC Standard A/53C	638XC	

9.3.6.8 MPEG-2 AV format: Stream format

9.3.6.8.1

[PROFILES]

MPEG_TS_HD_NA
MPEG_TS_HD_NA_T
MPEG_TS_HD_NA_ISO
MPEG_TS_HD_NA_MPEG1_L2_T
MPEG_TS_HD_NA_MPEG1_L2_ISO

9.3.6.8.2

[GUIDELINE] Main characteristics of MPEG-2 video stream are

Profile:

MP@HL

Chroma:

4:2:0

Video bit rate:

- CBR: less than or equal to (19,392 7 Mbit/s minus the sum of audio, close caption data, other SI tables and TS overhead)
- VBR: maximum bit rate less than or equal to (19,392 7 Mbit/s minus the sum of audio, close caption data other SI tables and TS overhead)

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-1 ISO/IEC 13818-2 ISO/IEC 13818-3 ATSC Standard A/53C	3774E	

9.3.6.9 MPEG-2 AV format: video format

9.3.6.9.1

[PROFILES]

MPEG_TS_HD_NA
MPEG_TS_HD_NA_T
MPEG_TS_HD_NA_ISO
MPEG_TS_HD_NA_MPEG1_L2_T
MPEG_TS_HD_NA_MPEG1_L2_ISO

9.3.6.9.2

[GUIDELINE] A bitstream conformant to these profiles shall adhere to the following video encoding parameters as shown in Table 40.

Table 40 – Video MPEG-2 AV encoding parameters

MPEG_TS_HD_NA, MPEG_TS_HD_NA_T MPEG_TS_HD_NA, MPEG_TS_HD_NA_T		
Resolution	**Aspect ratio**	**Field (interlaced) or Frame (progressive) rate**
➢1 920 × 1 080	16:9	59,94i and 60i
➢1 920 × 1 080	16:9	29,97p and 30p
➢1 920 × 1 080	16:9	23,976p and 24p
➢1 920 × 1 080	Square	59,94i and 60i
➢1 920 × 1 080	Square	29,97p and 30p
➢1 920 × 1 080	Square	23,976p and 24p
➢1 280 × 720	16:9	59,94p and 60p
➢1 280 × 720	16:9	29,97p and 30p
➢1 280 × 720	16:9	23,976p and 24p
➢1 280 × 720	Square	59,94p and 60p
➢1 280 × 720	Square	29,97p and 30p
➢1 280 × 720	Square	23,976p and 24p
➢1 440 × 1 080	16:9	29,97p and 30p
➢1 440 × 1 080	16:9	23,976p and 24p
➢1 440 × 1 080	16:9	59,94i and 60i
➢1 280 × 1 080	16:9	29,97p and 30p
➢1 280 × 1 080	16:9	23,976p and 24p

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MPEG_TS_HD_NA, MPEG_TS_HD_NA_T MPEG_TS_HD_NA, MPEG_TS_HD_NA_T		
Resolution	**Aspect ratio**	**Field (interlaced) or Frame (progressive) rate**
➢1 280 × 1 080	16:9	59,94i and 60i

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-1 ISO/IEC 13818-2 ISO/IEC 13818-3 ATSC Standard A/53C CEA-849A SCTE 54 2002	Q485T	

9.3.7 Korean region specific TS Profiling guidelines: MPEG_TS_SD_KO, MPEG_TS_SD_KO_T, MPEG_TS_HD_KO, and MPEG_TS_HD_KO_T profiles

9.3.7.1 MPEG-2 AV format: MPEG-2 AV stream

9.3.7.1.1

[PROFILES]

MPEG_TS_SD_KO
MPEG_TS_SD_KO_T
MPEG_TS_SD_KO_ISO

9.3.7.1.2

[GUIDELINE] A bitstream conformant with these profiles shall have the following System bit rate characteristics.

System bit rate:

- ➢ CBR or VBR up to 19,392 7 Mbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ATSC Standard A/53C	9SUL5	

9.3.7.2 MPEG-2 AV format: Closed Caption

9.3.7.2.1

[PROFILES]

MPEG_TS_SD_KO
MPEG_TS_SD_KO_T
MPEG_TS_SD_KO_ISO
MPEG_TS_HD_KO
MPEG_TS_HD_KO_T
MPEG_TS_HD_KO_ISO

9.3.7.2.2

[GUIDELINE] A bitstream conformant with these profiles may include Closed Caption Streams with syntax, semantics, and usage rules defined in ATSC Standard A/53C.

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[ATTRIBUTES]

M	R	n/a	n/a	n/a	ATSC Standard A/53C	774E9	

9.3.7.3 MPEG-2 AV format: audio portion profiling AC-3

9.3.7.3.1

[PROFILES]

MPEG_TS_SD_KO
MPEG_TS_SD_KO_T
MPEG_TS_SD_KO_ISO
MPEG_TS_HD_KO
MPEG_TS_HD_KO_T
MPEG_TS_HD_KO_ISO

9.3.7.3.2

[GUIDELINE] Main characteristics of ATSC AC-3 audio stream are

Sampling rate:

48 kHz

Content audio channel modes:

Rendering Endpoints shall tolerate the following AC-3 formats

- Mono (1/0)
- Stereo (2/0)
- Multi-channels (3/0)
- Multi-channels (2/1)
- Multi-channels (3/1)
- Multi-channels (2/2)
- Multi-channels (3/2)

A bitstream conformant to these media format profiles shall be conformant with the requirements of ATSC Standard A/53C.

Audio bit rate:

Main audio service up to 448 kbit/s per one stream.

The combined bit rate of a main service and an associated service which are intended to be decoded simultaneously shall be up to 576 kbit/s.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ATSC Standard A/52A ATSC Standard A/53C	38XC3	

[COMMENT] 32 kHz and 44,1 kHz AC-3 audio sampling rates were removed from the ATSC A/53B Annex B normative standard.
576 kbit/s is the maximum ATSC AC-3 audio bit rate instead of 640 kbit/s per ATSC A/53B Annex B normative standard.

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9.3.7.4 MPEG-2 AV format: video format

9.3.7.4.1

[PROFILES]

MPEG_TS_SD_KO
MPEG_TS_SD_KO_T
MPEG_TS_SD_KO_ISO

9.3.7.4.2

[GUIDELINE] A bitstream conformant to these profiles shall adhere to the following video encoding parameters as shown in Table 41.

Table 41 – MPEG_TS_SD_KO, MPEG_TS_SD_KO_T

Resolution	Aspect ratio	Field (interlaced) or Frame (progressive) rate
➢704 × 480	16:9	29,97p and 30p
➢704 × 480	16:9	23,976p and 24p
➢704 × 480	16:9	59,94i and 60i
➢704 × 480	4:3	29,97p and 30p
➢704 × 480	4:3	23,976p and 24p
➢704 × 480	4:3	59,94iand 60i
➢640 × 480	4:3	29,97p and 30p
➢640 × 480	4:3	23,976p and 24p
➢640 × 480	4:3	59,94i and 60i

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-1 ISO/IEC 13818-2 ISO/IEC 13818-3 ATSC Standard A/53C	485TR	

9.3.7.5 MPEG-2 AV format: video stream specification

9.3.7.5.1

[PROFILES]

MPEG_TS_HD_KO
MPEG_TS_HD_KO_T
MPEG_TS_HD_KO_ISO

9.3.7.5.2

[GUIDELINE] A bitstream conformant with these profiles shall have the following System bit rate characteristics.

System bit rate:

- ➢ CBR or VBR up to 19,392 7 Mbit/s

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	ATSC Standard A/53C	SUL5D	

9.3.7.6 MPEG-2 AV format: video stream format

9.3.7.6.1

[PROFILES]

MPEG_TS_HD_KO
MPEG_TS_HD_KO_T
MPEG_TS_HD_KO_ISO

9.3.7.6.2

[GUIDELINE] Main characteristics of MPEG-2 video stream are

Profile:

MP@HL

Chroma

4:2:0

Video bit rate

- CBR: less than or equal to (19,392 7 Mbit/s minus the sum of audio, close caption data, other SI tables and TS overhead)
- VBR: maximum bit rate less than or equal to (19,392 7 Mbit/s minus the sum of audio, close caption data other SI tables and TS overhead).

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-1 ISO/IEC 13818-2 ISO/IEC 13818-3 ATSC Standard A/53C	74E9R	

9.3.7.7 MPEG-2 AV format: video format

9.3.7.7.1

[PROFILES]

MPEG_TS_HD_KO
MPEG_TS_HD_KO_T
MPEG_TS_HD_KO_ISO

9.3.7.7.2

[GUIDELINE] A bitstream conformant to these profiles shall adhere to the following video encoding parameters as shown in Table 42.

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Table 42 – MPEG_TS_HD_KO, MPEG_TS_HD_KO_T

Resolution	Aspect ratio	Field (interlaced) or Frame (progressive) rate
➢1 920 × 1 080	16:9	59,94i and 60i
➢1 280 × 720	16:9	59,94p and 60p
➢704 × 480	16:9	59,94p and 60p
➢704 × 480	4:3	59,94p and 60p
➢640 × 480	4:3	59,94p and 60p

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-1 ISO/IEC 13818-2 ISO/IEC 13818-3 ATSC Standard A/53C	8XC3R

9.3.8 DVB-European region specific TS Profiling guidelines MPEG_TS_SD_EU and MPEG_TS_SD_EU_T profiles

9.3.8.1 MPEG-2 AV format: Europe region: compliance

9.3.8.1.1

[PROFILES]

MPEG_TS_SD_EU
MPEG_TS_SD_EU_T
MPEG_TS_SD_EU_ISO
MPEG_TS_SD_EU_AC3_T
MPEG_TS_SD_EU_AC3_ISO

9.3.8.1.2

[GUIDELINE] A bitstream complaint with these profiles shall comply with the following.

- In ETSI TSR 101 154, 4.1 defining the use of ISO/IEC 13818-1 for IRDs and bit streams in DVB.
- In ETSI TSR 101 154, 5.1 defining the use of ISO/IEC 13818-2 for 25 Hz SDTV IRDs and bit streams in DVB.
- In ETSI TSR 101 154, Clause 6 defining the use of ISO/IEC 13818-3 and ISO/IEC 11172-3 for IRDs and bit streams in DVB.

All requirements for the MPEG_TS_SD_EU profile defined in this standard that further specify, limit or otherwise modify the requirements for 25 Hz SDTV IRDs and bit streams in DVB as defined in ETSI TSR 101 154.

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-1 ISO/IEC 13818-2 ISO/IEC 13818-3 ISO/IEC 11172-3 ETSI TSR 101 154	85TRQ	

[COMMENT] 30 Hz systems and HDTV are out of scope of this guideline.

9.3.8.2 MPEG-2 AV format: subtitles for TS

9.3.8.2.1

[PROFILES]

MPEG_TS_SD_EU
MPEG_TS_SD_EU_T
MPEG_TS_SD_EU_ISO

9.3.8.2.2

[GUIDELINE] A bitstream compliant with these profiles may contain DVB subtitles as specified in ETSI EN 300 743.

[ATTRIBUTES]

O	R	n/a	n/a	n/a	ETSI EN 300 743	UL5D5	

9.3.8.2.3

[GUIDELINE] Rendering Endpoints shall tolerate but not necessarily render DVB subtitles as specified in ETSI EN 300 743.

[ATTRIBUTES]

M	R	DMP DMR	M-DMP M-DMD	n/a	ETSI EN 300 743	4E9RL	

9.3.8.2.4

[GUIDELINE] A Rendering Endpoint should be *capable of rendering* DVB subtitles as specified in ETSI EN 300 743 if they are present.

[ATTRIBUTES]

S	A	DMP DMR	M-DMP M-DMD	n/a	ETSI EN 300 743	XC3R8	

[COMMENT] If DVB subtitles are not used in the country in which the device is sold, this recommendation is not applicable.

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9.3.8.3 MPEG-2 AV format: teletext for TS

9.3.8.3.1

[PROFILES]

MPEG_TS_SD_EU
MPEG_TS_SD_EU_T
MPEG_TS_SD_EU_ISO

9.3.8.3.2

[GUIDELINE] A bitstream compliant with these profiles may contain DVB teletext as specified in ETSI EN 300 472.

[ATTRIBUTES]

O	R	n/a	n/a	n/a	ETSI EN 300 472	L5D5A	

9.3.8.3.3

[GUIDELINE] Rendering Endpoints shall tolerate but not necessarily render teletext as specified in ETSI EN 300 472.

[ATTRIBUTES]

M	R	DMP DMR	M-DMP M-DMD	n/a	ETSI EN 300 472	5TRQE	

9.3.8.4 MPEG-2 AV format: DVB SDTV systems

9.3.8.4.1

[PROFILES]

MPEG_TS_SD_E
MPEG_TS_SD_EU_T
MPEG_TS_SD_EU_ISO

9.3.8.4.2

[GUIDELINE] Main characteristics of the MPEG-2 European DVB Full Transport Stream are

- TS format with PSI and SI tables as specified in ETSI TSR 101 154, 4.1, ETSI EN 300 468. Other program-related data may be present as per ETSI ES 201 812.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ETSI TSR 101 154 ETSI EN 300 468 ETSI ES 201 812	C3R8D	

[COMMENT] The intent of this guideline is to ensure that TS complies with relevant DVB specifications.

9.3.8.4.3

[GUIDELINE] A partial SPTS format is a TS with gaps of variable length between the TS packets. It shall contain only one program from the original broadcast TS. A partial SPTS shall carry at least the following PSI and SI tables as defined in ISO/IEC 13818-1, ETSI TSR 101 154, and ETSI EN 300 468:

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PAT and PMT.

SIT and the corresponding partial TS descriptor.

DIT whenever there is a discontinuity in the SI information.

[ATTRIBUTES]

M	F	n/a	n/a	n/a	ISO/IEC 13818-1 ETSI TSR 101 154 ETSI EN 300 468 ETSI ES 201 812	5KMGT	A

[COMMENT] A Full SPTS is fully compliant with ISO/IEC 13818-1.
A Partial SPTS is fully compliant with ISO/IEC 13818-1 except for the T-STD buffer model.

9.3.8.4.4

[GUIDELINE] A Rendering Endpoint may process a DIT as defined in ETSI EN 300 468 in a partial SPTS.

[ATTRIBUTES]

O	A	DMP DMR	M-DMP M-DMD	n/a	ETSI EN 300 468	5D5A3	

9.3.8.4.5

[GUIDELINE] A bitstream compliant with these profiles is strongly recommended to contain a partial SPTS with all of the SI tables as defined in ETSI EN 300 468 that were part of the original broadcast TS as well as all audio, video and data components that belong to the (selected) program according to the PAT/PMT tables, and CAT, if need be. This includes components that contain DVB defined data that belong to that program such as teletext as defined in ETSI EN 300 472, other VBI data as defined in ETSI EN 301 775, object carrousels as defined in ETSI EN 301 192, or MHP data as defined in ETSI ES 201 812.

[ATTRIBUTES]

S	A	n/a	n/a	n/a	ETSI EN 300 468 ETSI EN 301 775 ETSI EN 300 472 ETSI EN 301 192 ETSI ES 201 812	3R8DR	

[COMMENT] Even though content protection is out of scope of this standard, it is allowed to insert the CAT table to accommodate a DMP that is capable of decryption.

9.3.8.4.6

[GUIDELINE] A Rendering Endpoint shall tolerate all audio, video and data components that belong to the (selected) program in a full or partial SPTS according to the PAT/PMT tables.

This includes components that contain DVB defined data that belong to that program such as teletext as defined in ETSI EN 300 472, other VBI data as defined in ETSI EN 301 775, object

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carrousels as defined in ETSI EN 301 192, or MHP data as defined in ETSI ES 201 812 and others.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	ETSI EN 300 468 ETSI EN 301 775 ETSI EN 300 472 ETSI EN 301 192 ETSI ES 201 812	TRQEX	

9.3.8.4.7

[GUIDELINE] When the SI tables of a partial SPTS refer to programs that are not present in the partial SPTS or otherwise conflict with data in the SIT table of that partial SPTS, the Rendering Endpoint shall ignore this SI data.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	ETSI EN 300 468	9RLIX	

9.3.8.4.8

[GUIDELINE] A Rendering Endpoint that is *capable of rendering* both audio and video shall be able to render a full or partial SPTS containing a program with one Video ES up to 15 Mbit/s and one stereo (2/0) Audio ES.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	n/a	RQEXI	

9.3.8.5 MPEG-2 AV format: audio portion profiling: MPEG-1/2 audio

9.3.8.5.1

[PROFILES]

MPEG_TS_SD_EU
MPEG_TS_SD_EU_T
MPEG_TS_SD_EU_ISO

[GUIDELINE] Main characteristics of the MPEG-2 TS Format / European DVB Profile for MPEG-1 or MPEG-2 audio streams, according to ETSI TSR 101 154, Clause 6, defining the use of ISO/IEC 13818-3 and ISO/IEC 11172-3:

Coding

- MPEG-1 Layer 1
- MPEG-1 Layer 2

A bitstream compliant with these profiles may contain a joint stereo encoded audio stream.

No mc-prediction.

MPEG-1 backwards compatible multi-channel mode:

- MPEG-2 Layer 2 mc (multi-channel), dematrix procedure 0, 1 or 2

Content audio channel mode:

A bitstream conformant to these media format profiles may contain the following formats

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- Mono (1/0)
- Dual Monaural (1/0+1/0)
- Stereo (2/0)
- Multichannel (2/2)
- Multichannel (2/1)
- Multichannel (3/2)
- Multichannel (3/1)
- Multichannel (3/0)
- Multichannel (3/0+2/0)
- Multichannel (2/0+2/0)
- Multichannel ([1/0+1/0])+2/0)
- Multichannel (1/0+2/0)

A bitstream compliant with these profiles may contain an extension stream and ancillary data fields of the audio stream

No multilingual channels in multi-channel mode

CRC check shall be included

Sample rates:

- 32 kHz
- 44,1 kHz
- 48 kHz

Bitrates:

- Layer 1: from 32 kbit/s to 448 kbit/s
- Layer 2: from 32 kbit/s to 384 kbit/s

Extension stream (optional):

- From 0 kbit/s to 682 kbit/s

No emphasis

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 13818-3 ISO/IEC 11172-3 ETSI TSR 101 154	D5A3H	

[COMMENT] Serving Endpoints output one of the three basic content audio channel modes. The optional multi-channel modes use the ancillary data fields and optionally an extension stream, thereby preserving backwards compatibility to basic stereo decoders. Decoding of all multi-channel modes is optional.

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9.3.8.6 MPEG-2 AV format: audio portion profiling: MPEG-1/2 audio

9.3.8.6.1

[PROFILES]

MPEG_TS_SD_EU
MPEG_TS_SD_EU_T
MPEG_TS_SD_EU_ISO

9.3.8.6.2

[GUIDELINE] A bitstream compliant with these profiles may contain the following additional sample rates for secondary sound services:

- 16 kHz
- 22,05 kHz
- 24 kHz

[ATTRIBUTES]

O	A	n/a	n/a	n/a	ETSI TSR 101 154	RLIXS	

[COMMENT] European broadcasters expect DMPs to support this.

9.3.8.6.3

[GUIDELINE] Rendering Endpoint shall be able to play bitstreams which contain the following additional sample rates for secondary sound services:

- 16 kHz
- 22,05 kHz
- 24 kHz

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a		5A3HD	

9.3.8.7 MPEG-2 AV format: optional audio portion profiling: AC-3

9.3.8.7.1

[PROFILES]

MPEG_TS_SD_EU
MPEG_TS_SD_EU_T
MPEG_TS_SD_EU_ISO

9.3.8.7.2

[GUIDELINE] The audio portion in the contents of an AV media class may be profiled according to the Optional Audio Portion Profiling, AC-3, as indicated in the entries 9.3.8.7.3 and 9.3.8.8.2.

[ATTRIBUTES]

O	A	n/a	n/a	n/a	n/a	QEXIS	

9.3.8.7.3

[GUIDELINE] Main characteristics of the MPEG-2 TS Format / European DVB Profile AC-3 audio stream (i.e., optional audio portion profiling) are:

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The coding and decoding of an AC-3 elementary stream is based upon ITU-R Rec BS.1196-11:2001, Annex 2. However, ITU-R Rec BS.1196-11, Appendix 1 to Annex 2, should be disregarded, as it is not applicable to the DVB system.

Sample rates:

- 32 kHz
- 44,1 kHz
- 48 kHz

Content audio channel mode:

A bitstream conformant to these media format profiles may contain the following formats that optionally include a Low Frequency Effects (LFE) channel

- Mono (1/0)
- Dual Monoaural (1+1)
- Stereo (2/0)
- Multichannel (3/0)
- Multichannel (2/1)
- Multichannel (3/1)
- Multichannel (2/2)
- Multichannel (3/2)

Bit rates:

from 32 kbit/s to 640 kbit/s

AC-3 transmission in a full or partial SPTS according to Annex C of ETSI TSR 101 154:

The AC-3 packetized elementary stream shall conform to the requirements of a user private stream type 1, as described in ISO/IEC 13818-1.

AC-3 descriptor to distinguish the AC-3 audio stream is defined in ETSI TSR 101 154 and ETSI EN 300 468.

The AC-3 elementary stream shall be byte-aligned within the MPEG-2 full or partial SPTS. This means the initial 8 bit of an AC-3 frame shall reside in a single byte, which is carried in the MPEG-2 full or partial SPTS.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 13818-1 ITU-R Rec BS. 1196-11 ETSI TSR 101 154 ETSI EN 300 468	LIXST	

9.3.8.8 MPEG-2 AV format: audio portion profiling: AC-3 Annex C

9.3.8.8.1

[PROFILES]

MPEG_TS_SD_EU MPEG_TS_SD_EU_T
MPEG_TS_SD_EU_ISO

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9.3.8.8.2

[GUIDELINE] A bitstream that conforms to these profiles shall comply with Annex C of ETSI TSR 101 154.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ETSI TSR 101 154	R8DRB	

[COMMENT] ETSI TSR 101 154 only recommends Annex C to support AC-3.

9.3.8.9 MPEG-2 AV format: video portion profiling

9.3.8.9.1

[PROFILES]

MPEG_TS_SD_EU
MPEG_TS_SD_EU_T MPEG_TS_SD_EU_AC3_T
MPEG_TS_SD_EU_AC3_ISO
MPEG_TS_SD_EU_ISO

9.3.8.9.2

[GUIDELINE] Main characteristics of the MPEG-2 TS Format / European DVB SDTV Profile video stream are:

A bitstream conformant to these profiles shall contain any of the following full-screen resolutions:

- 720 × 576 50I
- 544 × 576 50I
- 480 × 576 50I
- 352 × 576 50I
- 352 × 288 50I

A Serving Endpoint may output and a Rendering Endpoint shall be *capable of rendering* the following aspect ratios:

- 4:3
- 16:9

A Serving Endpoint may output and a Rendering Endpoint shall accept but not necessarily render the following aspect ratios:

- 2,21:1

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 13818-2 ETSI TSR 101 154	8DRBU	

[COMMENT] 50i means 50 fields per second interlaced rate.

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9.3.9 Subset of DLNA profiles that use MPEG-2 MP@LL, MPEG-2 TS encapsulation

9.3.9.1 MPEG-2 AV format: video portion profiling

9.3.9.1.1

[PROFILES]

MPEG_TS_MP_LL_AAC
MPEG_TS_MP_LL_AAC_T
MPEG_TS_MP_LL_AAC_ISO

9.3.9.1.2

[GUIDELINE] Main characteristics of the video stream are

Profile and level:

- MP@LL

Chroma:

- 4:2:0

Video bit rate:

- Less than 4 Mbit/s

Table 43 shows the format resolutions supported for MPEG-2 AV

Table 43 – MPEG-2 AV format resolutions

	Resolution	Pixel Aspect ratio	Display Aspect ratio	Max. Frame rate
CIF	➢352 × 288	12:11	4:3	30
	➢352 × 288	16:11	16:9	30

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-2	YDWNB	

9.3.9.2 MPEG-2 AV format: audio portion profiling

9.3.9.2.1

[PROFILES]

MPEG_TS_MP_LL_AAC
MPEG_TS_MP_LL_AAC_T
MPEG_TS_MP_LL_AAC_ISO

9.3.9.2.2

[GUIDELINE] Main characteristics of the audio portion shall align with the AAC Audio Format as outlined in 8.6.2, except as indicated below.

Maximum bit rate:

- 256 kbit/s

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	NTF5X	

9.3.9.3 MPEG-2 AV format: MIME type definition

9.3.9.3.1

[PROFILES]

MPEG_TS_MP_LL_AAC
MPEG_TS_MP_LL_AAC_T
MPEG_TS_MP_LL_AAC_ISO

9.3.9.3.2

[GUIDELINE] MIME type of "video/vnd.dlna.mpeg-tts" shall be used for the MPEG_TS_MP_LL_AAC and MPEG_TS_MP_LL_AAC_T Media Format Profiles. The MIME type "video/mpeg" shall be used for the MPEG_TS_MP_LL_AAC_ISO Media Format Profile.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	YFJD9	

9.3.9.4 MPEG-2 AV format: systems portion profiling

9.3.9.4.1

[PROFILES]

MPEG_TS_MP_LL_AAC
MPEG_TS_MP_LL_AAC_T
MPEG_TS_MP_LL_AAC_ISO

9.3.9.4.2

[GUIDELINE] Main characteristics of the MPEG-2 system stream are

System:

- MPEG-2 Transport Stream

Number of programs:

1 as defined for a Single Program Transport Stream

Packet size:

- 188 B per transport packet

System bit rate:

- Up to 5 Mbit/s (video up to 4 Mbit/s)

PSI information:

PAT and PMT are required in the multiplexed stream.

Additional information (e.g. PSI, PSIP, SI, etc.) may exist in the multiplexed stream.

A bitstream conformant with these guidelines may contain additional information in the multiplexed stream.

The insertion intervals for PSI tables are implementation-dependent.

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-1	WEY8Z	

9.3.10 AC-3 extension for AV format profiles

9.3.10.1 MPEG-2 AV format: audio bit rate

9.3.10.1.1

[PROFILES]

MPEG_PS_NTSC_XAC3

9.3.10.1.2

[GUIDELINE] A bitstream that is conformant to this profile shall conform to all aspects of the MPEG_PS_NTSC profile, except as indicated below.

AC-3 Audio bit rate

- 64 kbit/s to 640 kbit/s.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ATSC Standard A/52A	DRBU6	E

[COMMENT] See 9.3.3.5.2.

9.3.10.2 MPEG-2 AV format: audio bit rate

9.3.10.2.1

[PROFILES]

MPEG_PS_PAL_XAC3

9.3.10.2.2

[GUIDELINE] A bitstream that is conformant to this profile shall conform to all aspects of the MPEG_PS_PAL profile, except as noted here:

AC-3 Audio bit rate

- 64 kbit/s to 640 kbit/s.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ATSC Standard A/52A	RBU64	E

[COMMENT] See 9.3.3.5.2.

9.3.10.3 MPEG-2 AV format: audio bit rate

9.3.10.3.1

[PROFILES]

MPEG_TS_SD_NA_XAC3
MPEG_TS_SD_NA_XAC3_T
MPEG_TS_SD_NA_XAC3_ISO

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9.3.10.3.2

[GUIDELINE] A bitstream that is conformant to this profile shall conform to all aspects of the MPEG_TS_SD_NA, MPEG_TS_SD_NA_T, and MPEG_TS_SD_NA_ISO profiles respectively, except as indicated below.

AC-3 Audio bit rate

- Main audio service up to 640 kbit/s per one stream.

The combined bit rate of a main service and an associated service which are intended to be decoded simultaneously is not constrained.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ATSC Standard A/52A	BU64X	E

[COMMENT] See 9.3.6.6.2.
The constraint from ATSC A/53B Annex B on the combined bit rate is not used in this profile.

9.3.10.4 MPEG-2 AV format: audio bit rate

9.3.10.4.1

[PROFILES]

MPEG_TS_HD_NA_XAC3
MPEG_TS_HD_NA_XAC3_T
MPEG_TS_HD_NA_XAC3_ISO

9.3.10.4.2

[GUIDELINE] A bitstream that is conformant to this profile shall conform to all aspects of the MPEG_TS_HD_NA, MPEG_TS_HD_NA_T, and MPEG_TS_HD_NA_ISO profiles respectively, except as indicated below.

AC-3 Audio bit rate

- Main audio service up to 640 kbit/s per one stream.

The combined bit rate of a main service and an associated service which are intended to be decoded simultaneously is not constrained.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ATSC Standard A/52A	IYDWN	E

[COMMENT] See 9.3.6.6.2.
The constraint from ATSC A/53B Annex A on the combined bit rate is not used in this profile.

9.3.10.5 MPEG-2 AV format: audio bit rate

9.3.10.5.1

[PROFILES]

MPEG_TS_SD_KO_XAC3
MPEG_TS_SD_KO_XAC3_T
MPEG_TS_SD_KO_XAC3_ISO

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9.3.10.5.2

[GUIDELINE] A bitstream that is conformant to this profile shall conform to all aspects of the MPEG_TS_SD_KO, MPEG_TS_SD_KO_T, and MPEG_TS_SD_KO_ISO profiles respectively, except as indicated below.

AC-3 Audio bit rate

- Main audio service up to 640 kbit/s per one stream.

The combined bit rate of a main service and an associated service which are intended to be decoded simultaneously is not constrained.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ATSC Standard A/52A	U64XR	E

[COMMENT] See 9.3.7.3.2.
The constraint from ATSC A/53B Annex B on the combined bit rate is not used in this profile.

9.3.10.6 MPEG-2 AV format: audio bit rate

9.3.10.6.1

[PROFILES]

MPEG_TS_HD_KO_XAC3
MPEG_TS_HD_KO_XAC3_T
MPEG_TS_HD_KO_XAC3_ISO

9.3.10.6.2

[GUIDELINE] A bitstream that is conformant to this profile shall conform to all aspects of the MPEG_TS_HD_KO, MPEG_TS_HD_KO_T, and MPEG_TS_HD_KO_ISO profiles respectively, except as indicated below.

AC-3 Audio bit rate

- Main audio service up to 640 kbit/s per one stream.

The combined bit rate of a main service and an associated service which are intended to be decoded simultaneously is not constrained.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ATSC Standard A/52A	PIYDW	E

[COMMENT] See 9.3.7.3.2.
The constraint from ATSC A/53B Annex B on the combined bit rate is not used in this profile.

9.3.11 ES encapsulated MPEG-2 AV Stream for RTP

9.3.11.1 MPEG-2 AV format: general compliance

9.3.11.1.1

[PROFILES]

MPEG_ES_PAL

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9.3.11.1.2

[GUIDELINE] This profile is for elementary streams, and includes 2 elementary streams (i.e., video and audio). The MPEG_ES_PAL AV format profile shall conform to all aspects of the MPEG_PS_PAL profile, except for those aspects referring to the system layer (i.e. the Program Stream multiplex itself).

[ATTRIBUTES]

M	R	n/a	n/a	n/a	IEC 62481-1	64XRD	

[COMMENT] Video and audio elementary streams are profiles as given in the MPEG_PS_PAL profile, but multiplex requirements are omitted. RTP will encapsulate both elementary streams separately, without any system layer in between.
This profile is intended for RTP transport only.

9.3.11.2 MPEG-2 AV format: general compliance

9.3.11.2.1

[PROFILES]

MPEG_ES_NTSC

9.3.11.2.2

[GUIDELINE] This profile is for elementary streams and includes 2 elementary streams (i.e. video and audio). The MPEG_ES_NTSC AV format profile shall conform to all aspects of the MPEG_PS_NTSC profile, except for those aspects referring to the system layer (i.e. the Program Stream multiplex itself).

[ATTRIBUTES]

M	R	n/a	n/a	n/a	IEC 62481-1	4XRD3	

[COMMENT] Video and audio elementary streams are profiles as defined in the MPEG_PS_NTSC profile, but multiplex requirements are omitted. RTP will encapsulate both elementary streams separately, without any system layer in between.
This profile is intended for RTP transport only.

9.3.11.3 MPEG-2 AV format: general compliance

9.3.11.3.1

[PROFILES]

MPEG_ES_PAL_XAC3

9.3.11.3.2

[GUIDELINE] This profile is for elementary streams and includes 2 elementary streams (i.e. video and audio). The MPEG_ES_PAL_XAC3 AV format profile shall conform to all aspects of the MPEG_PS_PAL_XAC3 profile, except for those aspects referring to the system layer (i.e. the Program Stream multiplex itself).

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	3PIYD	

[COMMENT] Video and audio elementary streams are profiles as defined in the MPEG_PS_PAL_XAC3 profile, but multiplex requirements are omitted. RTP will encapsulate

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both elementary streams separately, without any system layer in between.
This profile is intended for RTP transport only.

9.3.11.4 MPEG-2 AV format: general compliance

9.3.11.4.1

[PROFILES]

MPEG_ES_NTSC_XAC3

9.3.11.4.2

[GUIDELINE] This profile is for elementary streams and includes 2 elementary streams (i.e. video and audio). The MPEG_ES_NTSC_XAC3 AV format profile shall conform to all aspects of the MPEG_PS_NTSC_XAC3 profile, except for those aspects referring to the system layer (i.e. the Program Stream multiplex itself).

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	D3PIY	

[COMMENT] Video and audio elementary streams are profiles as defined in the MPEG_PS_NTSC_XAC3 profile, but multiplex requirements are omitted. RTP will encapsulate both elementary streams separately, without any system layer in between.
Intended for RTP transport only.

9.3.12 MPEG-2 AV format, system portion profile: PS_SD

9.3.12.1

[PROFILES]

MPEG_PS_SD_DTS

9.3.12.2

[GUIDELINE] Main characteristics of this MPEG_PS_SD stream are defined in DVD Forum. Main characteristics of MPEG-2 system stream are

System:

- System Stream is MPEG-2 Program Stream.

Number of programs:

- 1

System bit rate:

- Up to 10,08 Mbit/s

[ATTRIBUTES]

M	R	n/a	n/a	n/a	DVD Forum	ZQQN9	

9.3.13 MPEG-2 AV format, video portion profile: PS_SD

9.3.13.1

[PROFILES]

MPEG_PS_SD_DTS

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9.3.13.2

[GUIDELINE] Main characteristics of video shall be conformant to DVD Forum. Main characteristics of MPEG-2 video streams are

Profile and level:

- Main Profile at Main Level.

Table 44 specifies the video encoding parameters for MPEG-2 Video (PS_SD).

Table 44 – MPEG-2 video encoding parameters (PS_SD)

Resolution	Aspect ratio	Field (interlaced) or Frame (progressive) rate
➢ 720 × 576	4:3, 16:9	➢ 25p/50i
➢ 720 × 480	4:3, 16:9	➢ 29,97p/59,94i
➢ 704 × 576	4:3	➢ 25p/50i
➢ 704 × 480	4:3	➢ 29,97p/59,94i
➢ 352 × 576	4:3	➢ 25p/50i
➢ 352 × 480	4:3	➢ 29,97p/59,94i
➢ 352 × 288	4:3	➢ 25p
➢ 352 × 240	4:3	➢ 29,97p

[ATTRIBUTES]

M	R	n/a	n/a	n/a	DVD Forum	XYQYS	

9.3.14 MPEG-2 AV format, system portion profile: PS_HD

9.3.14.1

[PROFILES]

MPEG_PS_HD_DTS
MPEG_PS_HD_DTSHD_MA
MPEG_PS_HD_DTSHD_HRA
MPEG_PS_HD_DTSHD

9.3.14.2

[GUIDELINE] Main characteristics of this MPEG_PS_HD stream are defined in DVD Forum.

Main characteristics of MPEG-2 system stream are

System:

- MPEG-2 Program Stream

Number of programs:

- 1

System bit rate:

- Up to 30,24 Mbit/s

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[ATTRIBUTES]

M	R	n/a	n/a	n/a	DVD Forum	MBQ44	

9.3.15 MPEG-2 AV format, video portion profile: PS_HD

9.3.15.1

[PROFILES]

MPEG_PS_HD_DTS
MPEG_PS_HD_DTSHD
MPEG_PS_HD_DTSHD_MA
MPEG_PS_HD_DTSHD_HRA

9.3.15.2

[GUIDELINE] Main characteristics of video shall be conformant to DVD Forum.

Main characteristics of MPEG-2 video streams are

Profiles and Levels:

- Main Profile at Main Level (SD)
- Main Profile at High Level (HD).

Table 45 specifies the video encoding parameters for MPEG-2 Video (PS_HD).

Table 45 – MPEG-2 video encoding parameters (PS_HD)

Resolution	Aspect ratio	Field (interlaced) or Frame (progressive) rate
➢ 1 920 × 1 080	16:9	➢ 25p/50i ➢ 29,97p/59,94i
➢ 1 440 × 1 080	16:9	➢ 25p/50i ➢ 29,97p/59,94i
➢ 1 280 × 1 080	16:9	➢ 25p/50i ➢ 29,97p/59,94i
➢ 1 280 × 720	16:9	➢ 50p ➢ 59,94p
➢ 960 × 1 280	16:9	➢ 25p/50i ➢ 29,97p/59,94i
➢ 720 × 576	4:3, 16:9	➢ 25p/50i/50p
➢ 720 × 480	4:3, 16:9	➢ 29,97p/59,94i/59,94p
➢ 704 × 576	4:3, 16:9	➢ 25p/50i/50p
➢ 704 × 480	4:3, 16:9	➢ 29,97p/59,94i/59,94p
➢ 544 × 576	4:3, 16:9	➢ 25p/50i
➢ 544 × 480	4:3, 16:9	➢ 29,97p/59,94i
➢ 480 × 576	4:3, 16:9	➢ 25p/50i/

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Resolution	Aspect ratio	Field (interlaced) or Frame (progressive) rate
➢ 480 × 480	4:3, 16:9	➢ 29,97p/59,94i
➢ 352 × 576	4:3, 16:9	➢ 25p/50i/50p
➢ 352 × 576	4:3, 16:9	➢ 25p/50i
➢ 352 × 480	4:3, 16:9	➢ 29,97p/59,94i
➢ 352 × 288	4:3, 16:9	➢ 25p
➢ 352 × 240	4:3, 16:9	➢ 29,97p

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	YSSB4	

9.3.16 MPEG-2 AV format, audio portion profile: PS_SD_DTS, PS_HD_DTS

9.3.16.1

[PROFILES]

MPEG_PS_SD_DTS
MPEG_PS_HD_DTS

9.3.16.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the DTS Digital Surround Audio Format as specified in 8.8.1.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	N94E9	

9.3.17 MPEG-2 AV format, audio portion profile: PS_HD_DTSHD_HRA

9.3.17.1

[PROFILES]

MPEG_PS_HD_DTSHD_HRA

9.3.17.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the DTS-HD High Resolution Audio Format as specified in 8.9.1 except as indicated below.

Sampling rates

- ➢ 44,1 kHz
- ➢ 48 kHz
- ➢ 88,2 kHz
- ➢ 96 kHz

Bit rates

- Up to 3,019 5 Mbit/s

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	DVD Forum	YQYSS	

9.3.18 MPEG-2 AV format, audio portion profile: PS_HD_DTSHD_MA

9.3.18.1

[PROFILES]

MPEG_PS_HD_DTSHD_MA

9.3.18.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the DTS-HD Master Audio Format as specified in 8.9.2, except as indicated below.

Content Audio Channel Modes

- Maximum of 2 channels at a sampling rate of 176,4 kHz or 192 kHz

Bit rates

- Up to 18,432 Mbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	DVD Forum	QYSSB	

9.3.19 MPEG-2 AV format, audio portion profile: PS_HD_DTSHD

9.3.19.1

[PROFILES]

MPEG_PS_HD_DTSHD

9.3.19.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of 9.3.16, 9.3.17, or 9.3.18.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	44XYG	

9.3.20 MPEG-2 AV format, system portion profile: DIRECTV_SD

9.3.20.1

[PROFILES]

MPEG_DIRECTV_SD

9.3.20.2

[GUIDELINE] Main characteristics of this MPEG_DIRECTV_SD stream are defined in ITU-R Rec BO.1516.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ITU-R Rec BO.1516	H3DXT	

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9.3.21 MPEG-2 AV format, system portion profile: SD_EU

9.3.21.1

[PROFILES]

MPEG_TS_SD_EU_AC3_T
MPEG_TS_SD_EU_AC3_ISO

9.3.21.2

[GUIDELINE] A bitstream conformant with the MPEG_TS_SD_EU_AC3_T or MPEG_TS_SD_EU_AC3_ISO profile shall conform to all aspects of the system portion of the MPEG_TS_SD_EU_T or MPEG_TS_SD_EU_ISO profile respectively, as specified in 9.3.28, 9.3.29, 9.3.31, 9.3.32, 9.3.8.1, 9.3.8.2, 9.3.8.3, and 9.3.8.4, except as indicated below.

AC-3 packetization

- The presence of the AC-3 audio PES in the multiplex shall be signaled in accordance with Annex C of ETSI TS 101 154.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ETSI TS 101 154	DXT3F	

9.3.22 MPEG-2 AV format, system portion profile: SD_JP

9.3.22.1

[PROFILES]

MPEG_TS_SD_JP_MPEG1_L2_T

9.3.22.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the system portion of the MPEG_TS_JP_T profile as specified in 9.3.28 and 9.3.29.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	SSB4C	

9.3.23 MPEG-2 AV format, system portion profile: HD_NA

9.3.23.1

[PROFILES]

MPEG_TS_HD_NA_MPEG1_L2_T
MPEG_TS_HD_NA_MPEG1_L2_ISO

9.3.23.2

[GUIDELINE] A bitstream conformant with the MPEG_TS_HD_NA_MPEG1_L2_T or MPEG_TS_HD_NA_MPEG1_L2_ISO profile shall conform to all aspects of the system portion of the MPEG_TS_HD_NA_T or MPEG_TS_HD_NA_ISO profile respectively, as specified in 9.3.5.1, 9.3.5.2, 9.3.5.4, 9.3.5.5, 9.3.6.2, and 9.3.6.7.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	IVXYW	

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9.3.24 MPEG-2 AV format, system portion profile: TS_HD_DTS

9.3.24.1

[PROFILES]

MPEG_TS_HD_DTS_T
MPEG_TS_HD_DTS_ISO
MPEG_TS_HD_DTSHD_HRA_T
MPEG_TS_HD_DTSHD_HRA_ISO
MPEG_TS_HD_DTSHD_MA_T
MPEG_TS_HD_DTSHD_MA_ISO

9.3.24.2

[GUIDELINE] Main characteristics of this MPEG_TS_HD stream are defined in BDA.

Main characteristics of MPEG-2 system stream are

System:

- MPEG-2 Partial Transport Stream

Stream structure:

- The PAT of streams shall contain a single program map PID
- The PMT of streams shall contain a single program at one time

System bit rate:

- Up to 48 Mbit/s

[ATTRIBUTES]

M	R	n/a	n/a	n/a	BDA	QN94E	

9.3.25 MPEG-2 AV Format, MPEG-2 Video Format: DIRECTV_SD

9.3.25.1

[PROFILES]

MPEG_DIRECTV_SD

9.3.25.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the video portion of the MPEG_TS_SD_NA profile as specified in 9.3.30 and 9.3.35, except as indicated below.

Table 46 specifies the video encoding parameters for MPEG-2 Video (DIRECTV_SD).

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Table 46 – MPEG-2 video encoding parameters (DIRECTV_SD)

Resolution	Aspect ratio	Field (interlaced) or Frame (progressive) rate
➢ 720 × 480	4:3	➢ 59,94i
➢ 544 × 480	4:3	➢ 59,94i
➢ 480 × 480	4:3	➢ 59,94i
➢ 352 × 480	4:3	➢ 59,94i

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	94E9T	

9.3.26 MPEG-2 AV format, MPEG-2 video format: SD_JP

9.3.26.1

[PROFILES]

MPEG_TS_SD_JP_MPEG1_L2_T

9.3.26.2

[GUIDELINE] Main characteristics of video shall be conformant to ISO/IEC 13818-2.

Main characteristics of MPEG-2 video streams are

Profile and level:

- Main Profile at Main Level

Chroma:

- 4:2:0

Video bit rate:

➢ Maximum bit rate less than or equal to 15 Mbit/s.

Table 47 specifies the video encoding parameters for MPEG-2 Video (SD_JP).

Table 47 – MPEG-2 video encoding parameters (SD_JP)

Resolution	Aspect ratio	Field (interlaced) or Frame (progressive) rate
➢ 720 × 480	4:3, 16:9	➢ 59,94i
➢ 544 × 480	4:3, 16:9	➢ 59,94i
➢ 480 × 480	4:3, 16:9	➢ 59,94i

The frame rate shall not change in a stream.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-2	4XYGR	

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9.3.27 MPEG-2 AV format, MPEG-2 video format: TS_HD_DTS

9.3.27.1

[PROFILES]

MPEG_TS_HD_DTS_T
MPEG_TS_HD_DTS_ISO
MPEG_TS_HD_DTSHD_HRA_T
MPEG_TS_HD_DTSHD_HRA_ISO
MPEG_TS_HD_DTSHD_MA_T
MPEG_TS_HD_DTSHD_MA_ISO

9.3.27.2

[GUIDELINE] Main characteristics of video shall be conformant to BDA.

Main characteristics of MPEG-2 video streams are

Profiles and levels:

- Main Profile at Main Level
- Main Profile at High Level

Table 48 specifies the video encoding parameters for MPEG-2 Video (TS_HD_DTS).

Table 48 – MPEG-2 video encoding parameters (TS_HD_DTS)

Resolution	Aspect ratio	Field (interlaced) or frame (progressive) rate
➢ 1 920 × 1 080	16:9	➢ 23,976p ➢ 24p ➢ 50i ➢ 59,94i
➢ 1 280 × 720	16:9	➢ 23,976p ➢ 24p ➢ 50i ➢ 59,94i
➢ 720 × 576	4:3, 16:9	➢ 50i
➢ 720 × 480	4:3, 16:9	➢ 59,94i

[ATTRIBUTES]

M	L	n/a	n/a	n/a	BDA	4E9TD	

9.3.28 MPEG-2 AV format, audio portion profile: MPEG1_L2

9.3.28.1

[PROFILES]

MPEG_DIRECTV_SD

9.3.28.2

[GUIDELINE] Main characteristics of this MPEG_DIRECTV_SD audio stream are defined in ISO/IEC 11172-3.

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Sampling rate

- 48 kHz

Content audio channel modes

- 1/0 (Mono)
- 2/0 (Stereo)
- A bitstream conformant with this profile may contain a joint stereo encoded audio stream.

Bit rates

- CBR: 56 kbit/s to 384 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 11172-3	T3FW8	

9.3.29 MPEG-2 AV format, audio portion profile: MPEG1_L2

9.3.29.1

[PROFILES]

MPEG_TS_SD_NA_MPEG1_L2_T
MPEG_TS_SD_NA_MPEG1_L2_ISO
MPEG_TS_HD_NA_MPEG1_L2_T
MPEG_TS_HD_NA_MPEG1_L2_ISO

9.3.29.2

[GUIDELINE] Main characteristics of this audio stream are defined in ISO/IEC 11172-3.

Sampling rate

- 32 kHz
- 44,1 kHz
- 48 kHz

Content audio channel modes

- 1/0 (Mono)
- 2/0 (Stereo)
- A bitstream conformant with these profiles may contain a joint stereo encoded audio stream

Bit rates

- CBR or VBR: Up to 384 kbit/s

Emphasis

- 0 (No emphasis)

Error protection

- CRCC shall be included

Private bit

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- Shall always be set to 0

Padding

- No padding is permitted

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 11172-3	SB4C5

9.3.30 MPEG-2 AV format, audio portion profile: MPEG1_L2

9.3.30.1

[PROFILES]

MPEG_TS_SD_JP_MPEG1_L2_T

9.3.30.2

[GUIDELINE] Main characteristics of this audio stream are defined in ISO/IEC 11172-3.

Coding

- MPEG-1 L2

Sampling rate

- 32 kHz
- 44,1 kHz
- 48 kHz

Content audio channel modes

- 1/0 (Mono)
- 1+1 (Dual monaural)
- 2/0 (Stereo)

Bit rates

- Up to 384 kbit/s

Emphasis

- 0 (No emphasis)

Error protection

- CRCC shall be included

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 11172-3	XT3FW

9.3.31 MPEG-2 AV format, audio portion profile: AC3

9.3.31.1

[PROFILES]

MPEG_DIRECTV_SD

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9.3.31.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the audio portion of the MPEG_TS_SD_NA profile as specified in 9.3.5.1.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	E9TDZ	

9.3.32 MPEG-2 AV format, audio portion profile: AC3

9.3.32.1

[PROFILES]

MPEG_TS_SD_EU_AC3_T
MPEG_TS_SD_EU_AC3_ISO

9.3.32.2

[GUIDELINE] A bitstream conformant with these profiles shall comply with Annex C of ETSI TS 101 154:2005.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ETSI TS 101 154	YGR9J	

9.3.33 MPEG-2 AV format, audio portion profile: TS_HD_DTS

9.3.33.1

[PROFILES]

MPEG_TS_HD_DTS_T
MPEG_TS_HD_DTS_ISO

9.3.33.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the DTS Digital Surround Audio Format as specified in 8.8.1, except as indicated below.

Sampling rate

- 48 kHz
- 96 kHz

[ATTRIBUTES]

M	L	n/a	n/a	n/a	BDA	B4C56	

9.3.34 MPEG-2 AV format, audio portion profile: TS_HD_DTSHD_HRA

9.3.34.1

[PROFILES]

MPEG_TS_HD_DTSHD_HRA_T
MPEG_TS_HD_DTSHD_HRA_ISO

9.3.34.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the DTS-HD High Resolution Audio Format as specified in 8.9.1, except as indicated below.

Sampling rate

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- 48 kHz
- 96 kHz

[ATTRIBUTES]

M	L	n/a	n/a	n/a	BDA	GR9JO	

9.3.35 MPEG-2 AV format, audio portion profile: TS_HD_DTSHD_MA

9.3.35.1

[PROFILES]

MPEG_TS_HD_DTSHD_MA_T
MPEG_TS_HD_DTSHD_MA_ISO

9.3.35.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the DTS-HD Master Audio Format as specified in 8.9.2, except as indicated below.

Sampling rate

- 48 kHz
- 96 kHz
- 192 kHz

Content audio channel modes

- Maximum of 6 channels at a sampling rate of 192 kHz.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	BDA	4C56O	

9.3.36 MPEG-2 AV format, MIME type definition: DIRECTV_SD

9.3.36.1

[PROFILES]

MPEG_DIRECTV_SD

9.3.36.2

[GUIDELINE] MIME type video/x-mpeg2-directv shall be used for this Media Format Profile.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	FW8SX	

9.3.37 MPEG-2 AV format: system stream specification

9.3.37.1

[PROFILES]

MPEG_TS_SD_60_L2_T
MPEG_TS_SD_60_AC3_T
MPEG_TS_SD_50_L2_T
MPEG_TS_SD_50_AC3_T

9.3.37.2

[GUIDELINE] Main characteristics of MPEG-2 Transport system stream shall be:

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System

- System Stream is Partial Single Program Transport Stream (SPTS).

Number of programs

- 1 as defined for a Partial Single Program Transport Stream.

Packet size

- 192 B. Refer to 9.3.4.2.

PSI information

- PAT and PMT are required in the multiplexed stream.
- The maximum time interval for the PAT and PMT is 100 ms.
- Additional PSI information may exist in the multiplexed stream.
- Rendering Endpoints shall tolerate any additional information in the multiplexed stream.
- The insertion intervals for PSI tables except PAT and PMT are implementation-dependent.

Video ES

- 0 or 1

Audio ES

- 1 or 2

Other ES

- Other ES may be contained

Closed Caption

- Closed Caption Streams may be included in picture user data as specified in Annex-A, Section 5.2 of ATSC Standard A/53C.

DIT

- The bit stream may be discontinuous with respect to any of the SI information. DIT shall be inserted at the transition point (i.e. changing format type of registration_descriptor or timestamp discontinuity).

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-1	XYWBQ	

9.3.38 MPEG-2 AV format: Transport Alignment Position

9.3.38.1

[PROFILES]

MPEG_TS_SD_60_L2_T
MPEG_TS_SD_60_AC3_T
MPEG_TS_SD_50_L2_T
MPEG_TS_SD_50_AC3_T

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9.3.38.2

[GUIDELINE] The Transport Alignment Position for bitstreams conformant to these profiles shall be according to 9.3.5.5.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	58IUY	

9.3.39 MPEG-2 AV format: video portion profiling

9.3.39.1

[PROFILES]

MPEG_TS_SD_60_L2_T
MPEG_TS_SD_60_AC3_T
MPEG_TS_SD_50_L2_T
MPEG_TS_SD_50_AC3_T

9.3.39.2

[GUIDELINE] The video stream for bitstreams conformant to these profiles shall be according to 9.3.5.3.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	4S9FT	

9.3.40 MPEG-2 AV format: MPEG-2 video format

9.3.40.1

[PROFILES]

MPEG_TS_SD_60_L2_T
MPEG_TS_SD_60_AC3_T

9.3.40.2

[GUIDELINE] Video Encoding Parameters:

The resolution is specified in Table 49.

Table 49 – MPEG_TS_SD_60_L2_T, MPEG_TS_SD_60_AC3_T

Resolution	Field rate
➢720 × 480	59,94i
➢704 × 480	59,94i
➢544 × 480	59,94i
➢480 × 480	59,94i
➢352 × 480	59,94i
➢352 × 240	59,94i

Aspect ratio:

- ➢ 4:3

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- 16:9

The horizontal_size or vertical_size or aspect_ratio_information value in sequence headers may change in an AV stream file. If horizontal_size or vertical_size or aspect_ratio_information value changes between the two consecutive sequence headers, the prior video sequence header shall terminate with sequence_end_code and the the posterior video sequence shall start. The frame_rate_code value in sequence headers shall not change in an AV stream file.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-2	**SV7M7**	

9.3.41 MPEG-2 AV format: video format

9.3.41.1

[PROFILES]

MPEG_TS_SD_50_L2_T
MPEG_TS_SD_50_AC3_T

9.3.41.2

[GUIDELINE] Video Encoding Parameters:

The resolution is specified in Table 50.

Table 50 – MPEG_TS_SD_50_L2_T, MPEG_TS_SD_50_AC3_T

Resolution	Field rate
➢720 × 576	50i
➢704 × 576	50i
➢544 × 576	50p
➢480 × 576	50i
➢352 × 576	50i
➢352 × 288	25p

Aspect ratio:

- 4:3
- 16:9

The horizontal_size or vertical_size or aspect_ratio_information value in sequence headers may change in an AV stream file. If horizontal_size or vertical_size or aspect_ratio_information value changes between the two consecutive sequence headers, the prior video sequence header shall terminate with sequence_end_code and the the posterior video sequence shall start. The frame_rate_code value in sequence headers shall not change in an AV stream file.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-2	LK7B5	

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9.3.42 MPEG-2 AV format: audio portion profiling: MPEG-1 L2

9.3.42.1

[PROFILES]

MPEG_TS_SD_60_L2_T
MPEG_TS_SD_50_L2_T

9.3.42.2

[GUIDELINE] Main characteristics of MPEG-1 Audio Layer 2 stream are

Coding:

- MPEG-1 Layer 2

Sampling rate:

- 48 kHz

Content audio channel modes

A bitstream conformant with these media format profiles may contain the follow modes:

- Mono (1)
- Dual Monaural (1+1)
- Stereo (2)
- Joint Stereo (2)

Bit rates:

- 32 kbit/s to 384 kbit/s (CBR or VBR)

Emphasis:

- 0 (Always no emphasis)

Protection:

- CRC check shall be included

Private bit:

- 0

Padding:

- 0 (No padding)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 11172-3	DKU9S	

9.3.43 MPEG-2 AV format: audio portion profiling: AC-3

9.3.43.1

[PROFILES]

MPEG_TS_SD_60_AC3_T
MPEG_TS_SD_50_AC3_T

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9.3.43.2

[GUIDELINE] Main characteristics of AC-3 stream are

Sampling rate:

- 48 kHz

Content audio channel modes

A bitstream conformant with these media format profiles shall include one of the following modes:

- Mono (1/0)
- Dual monaural (1+1)
- Stereo (2/0)
- Multi-channels (3/0)
- Multi-channels (2/1)
- Multi-channels (3/1)
- Multi-channels (2/2)
- Multi-channels (3/2)

The channel modes listed above may include an LFE channel. The channel mode may change within the bitstream.

Bit rates

- 64 kbit/s to 448 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ATSC Standard A/52A ISO/IEC 11172-3	4L9VW	

9.3.44 MPEG-2 AV format: MIME type definition

9.3.44.1

[PROFILES]

MPEG_TS_SD_60_L2_T
MPEG_TS_SD_60_AC3_T
MPEG_TS_SD_50_L2_T
MPEG_TS_SD_50_AC3_T

9.3.44.2

[GUIDELINE] MIME type "video/vnd.dlna.mpeg-tts" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	B524U	

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9.3.45 MPEG-2 AV format: system stream specification

9.3.45.1

[PROFILES]

MPEG_TS_HD_60_L2_T
MPEG_TS_HD_60_L2_ISO
MPEG_TS_HD_50_L2_T
MPEG_TS_HD_50_L2_ISO

9.3.45.2

[GUIDELINE] Main characteristics of MPEG-2 Transport system stream shall be:

System

- System Stream is Partial Single Program Transport Stream (SPTS).

Number of programs

- 1 as defined for a Partial Single Program Transport Stream.

System bit rate

- Average 27 Mbit/s, Peak 33 Mbit/s

Packet size

- 192 B. Refer to 9.3.5.1.2.

PSI information

- PAT and PMT are required in the multiplexed stream
- The maximum time interval for the PAT and PMT is 120 ms
- Additional PSI information may exist in the multiplexed stream
- Rendering Endpoints shall tolerate any additional information in the multiplexed stream.

Video ES

- One Video ES is allowed.

Audio ES

- One Audio ES is allowed.

Other ES

- Other ES may be contained.

DIT

- The bit stream may be discontinuous with respect to any of the SI information. DIT shall be inserted at the transition point (i.e. changing format type of registration_descriptor or timestamp discontinuity).

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-1	7TOVH	

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9.3.46 MPEG-2 AV format: Transport Alignment Position

9.3.46.1

[PROFILES]

MPEG_TS_HD_60_L2_T
MPEG_TS_HD_60_L2_ISO
MPEG_TS_HD_50_L2_T
MPEG_TS_HD_50_L2_ISO

9.3.46.2

[GUIDELINE] The Transport Alignment Position for bitstreams conformant to these profiles shall be according to 9.3.5.5.

[ATTRIBUTES]

M	A	DMS	M-DMS	n/a	n/a	7TXLY	

9.3.47 MPEG-2 AV format: video portion profiling

9.3.47.1

[PROFILES]

MPEG_TS_HD_60_L2_T
MPEG_TS_HD_60_L2_ISO
MPEG_TS_HD_50_L2_T
MPEG_TS_HD_50_L2_ISO

9.3.47.2

[GUIDELINE] The main characteristics of video stream shall be conformant to ISO/IEC 13818-2.

Main characteristics of MPEG-2 video streams shall be:

Profile and level

- MP@H-14

Chroma

- 4:2:0

Video bit rate

- 25 Mbit/s (CBR only)

Emphasis

- 0 (Always no emphasis)

Protection

- 0

Padding

- 0 (No padding)

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-2	VM7JZ	

9.3.48 MPEG-2 AV format: video portion profiling

9.3.48.1

[PROFILES]

MPEG_TS_HD_60_L2_T
MPEG_TS_HD_60_L2_ISO

9.3.48.2

[GUIDELINE] Video Encoding Parameters shall be as indicated in Table 51.

Table 51 – MPEG_TS_HD_60_L2_T, MPEG_TS_HD_60_L2_ISO

Resolution	Aspect ratio	Field rate
➢1 440 × 1 080	16:9	59,94i

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-2	KTSV7	

9.3.49 MPEG-2 AV format: video format

9.3.49.1

[PROFILES]

MPEG_TS_HD_50_L2_T
MPEG_TS_HD_50_L2_ISO

9.3.49.2

[GUIDELINE] Video Encoding Parameters shall be as indicated in Table 52.

Table 52 – MPEG_TS_HD_60_L2_T, MPEG_TS_HD_60_L2_ISO

Resolution	Aspect ratio	Field rate
➢1 440 × 1 080	16:9	50i

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-2	UCVSA	

9.3.50 MPEG-2 AV format: audio portion profiling: MPEG-1 L2

9.3.50.1

[PROFILES]

MPEG_TS_HD_60_L2_T
MPEG_TS_HD_60_L2_ISO
MPEG_TS_HD_50_L2_T
MPEG_TS_HD_50_L2_ISO

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9.3.50.2

[GUIDELINE] Main characteristics of MPEG-1 Audio Layer 2 stream shall be:

Coding

- MPEG-1 Layer 2

Sampling rate

- 48 kHz

Content audio channel modes

A bitstream conformant with these media format profiles may contain the follow modes:

- Stereo

Bit rates

- 384 kbit/s (CBR only)

Emphasis

- 0 (Always no emphasis)

[ATTRIBUTES]

M	n/a	n/a	n/a	n/a	ISO/IEC 11172-3	R7TOV	

9.3.51 MPEG-2 AV format: MIME type definition

9.3.51.1

[PROFILES]

MPEG_TS_HD_60_L2_T
MPEG_TS_HD_50_L2_T

9.3.51.2

[GUIDELINE] MIME type "video/vnd.dlna.mpeg-tts" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	MT5IV	

9.3.52 MPEG-2 AV format: MIME type definition

9.3.52.1

[PROFILES]

MPEG_TS_HD_60_L2_ISO
MPEG_TS_HD_50_L2_ISO

9.3.52.2

[GUIDELINE] MIME type "video/mpeg" shall be used for these Media Format Profiles.

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[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	IDKU9	

9.3.53 MPEG-2 AV format: system stream specification

9.3.53.1

[PROFILES]

MPEG_TS_JP_T

9.3.53.2

[GUIDELINE] Main characteristics of MPEG-2 Transport system stream are:

System

- System Stream is Partial Single Program Transport Stream (SPTS).

Number of programs

- 1 as defined for a Partial Single Program Transport Stream.

Packet size

- 192 B. Refer to 9.3.4.2.

Additional encapsulation

- The sequence of 192 B DLNA Transport Packets shall be encapsulated in Content Packets as defined in ARIB STD B-21.

PSI information

- PAT and PMT are required in the multiplexed stream
- The maximum time interval for the PAT and PMT is 120 ms.
- Additional PSI information may exist in the multiplexed stream
- Rendering Endpoints shall tolerate any additional information in the multiplexed stream.
- The insertion intervals for PSI tables except PAT and PMT are implementation-dependent.

DIT

- DIT shall be inserted at the discontinuous point defined in ARIB TR B-14, chapter 2, 8.2.3 and in ARIB TR B-15, chapter 2, 6.2.3.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 13818-1 ARIB STD B-32 ARIB STD B-21 ARIB TR B-14 ARIB TR B-15	8IUYZ	C

9.3.54 MPEG-2 AV format: Transport Alignment Position

9.3.54.1

[PROFILES]

MPEG_TS_JP_T

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9.3.54.2

[GUIDELINE] The Transport Alignment Position for bitstreams conformant to these profiles shall be the beginning of a Content Packet according to 9.2.2.2 in ARIB STD B-21.

[ATTRIBUTES]

M	A	DMS +PU+	M-DMS	n/a	ARIB STD B-21	75VDD	C

[COMMENTS]

a) A HTTP Server Endpoint that responds to a time-range seek request always responds with a stream that satisfies this alignment requirement. A time-range seek request always provides an initial time value from where the response starts. In order to satisfy this guideline, the endpoint could use one of two strategies:

   1) the endpoint starts streaming from the closest Content Packet to the requested initial time value, or

   2) the endpoint responds from the requested initial time value re-encapsulating the stream into a new series of Content Packets and ensuring that the response starts with a Content Packet.

b) This requirement also applies to conventional HTTP GET requests for content. However, if the HTTP Server Endpoint responds to byte-seek requests, it needs to comply also with guideline 9.3.54.3.

9.3.54.3

[GUIDELINE] An HTTP Server Endpoint that receives an HTTP GET request with a Range HTTP header (byte-seek request) shall respond with a stream where the Content Packets are aligned with the 192 byte DLNA Transport Packet.

[ATTRIBUTES]

M	A	DMS +PU+	M-DMS	n/a	n/a	DWASR	N

[COMMENT] There is alignment between Content Packets and 192 byte DLNA Transport Packets when the first byte after a Content Packet header is the first byte of the 192 byte DLNA Transport Packet.

9.3.55 MPEG-2 AV format: video portion profiling

9.3.55.1

[PROFILES]

MPEG_TS_JP_T

9.3.55.2

[GUIDELINE] The main characteristics of video stream shall be conformant to ISO/IEC 13818-2.

Main characteristics of MPEG-2 video streams shall be:

Profile and level

- MP@HL
- MP@H-14
- MP@ML

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Chroma

- 4:2:0

Video bit rate

- CBR or VBR
- 1,5 Mbit/s to 15 Mbit/s (MP@ML)
- 4 Mbit/s to 24 Mbit/s (MP@H-14)
- 8 Mbit/s to 24 Mbit/s (MP@HL)

Table 53 lists additional characteristics of the MPEG_TS_JP_T video stream.

Table 53 – MPEG_TS_JP_T

Resolution	Field (interlaced) or frame (progressive) rate	Applicable profile and level
➢1 920 × 1 080	59,94i	MP@HL
➢1 440 × 1 080	59,94i	MP@HL
➢1 280 × 720	59,94p	MP@HL
➢720 × 480	59,94p	MP@H-14
➢720 × 480	59,94i	MP@ML
➢544 × 480	59,94i	MP@ML
➢480 × 480	59,94i	MP@ML

Aspect ratio

- 4:3
- 16:9

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 13818-2 ARIB STD B-32 ARIB STD B-21 ARIB TR B-14 ARIB TR B-15	547GM	

[COMMENT] In ARIB TR B-14 and ARIB TR B-15, a part of combination of resolution and aspect ratio is allowed only when using sequence_display_extension.

9.3.56 MPEG-2 AV format: audio portion profiling: MPEG-2 AAC

9.3.56.1

[PROFILES]

MPEG_TS_JP_T

9.3.56.2

[GUIDELINE] Main characteristics of MPEG-2 AAC stream are the following.

Main characteristics of MPEG-2 video streams shall be:

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Profile

- Low Complexity profile

Bit stream format

- ADTS

Sampling rate

- 48 kHz
- 44,1 kHz
- 32 kHz

Content audio channel modes

A bitstream conformant with this media format profile shall include one of the following modes:

- Mono (1)
- Stereo (2)
- Dual Monaural (1+1)
- Multichannel (3/1)
- Multichannel (3/2)

The channel modes listed above may include an LFE channel.

The channel mode may change within the bitstream.

Bit rates

- CBR only
- Up to 384 kbit/s

ADTS parameters

- ID = 1 (MPEG-2 AAC)
- protection_absent = 0 (CRC check is always included)
- adts_buffer_fullness = 0x7FF is prohibited. (This means VBR is prohibited)
- no_raw_data_blocks_in_frame = 0 (One ADTS frame has only one raw_data_block)

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 13818-7 ISO/IEC 13818-7 ARIB STD B-32 ARIB STD B-21 ARIB TR B-14 ARIB TR B-15	OVH8T	

9.3.57 MPEG-2 AV format: MIME type definition

9.3.57.1

[PROFILES]

MPEG_TS_JP_T

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9.3.57.2

[GUIDELINE] MIME type "video/vnd.dlna.mpeg-tts" shall be used for this Media Format Profile.

[ATTRIBUTES]

M	A	DMS	M-DMS	n/a	ARIB STD B-21	XB524	C

[COMMENT] The MIME type defined in this guideline has to be used when exchanging content of this profile over DLNA networks. Notice that ARIB defines a related but different MIME type in ARIB STD B-21.

9.3.58 MPEG-2 AV format: system portion profile: TS_HD_X

9.3.58.1

[PROFILES]

MPEG_TS_HD_X_60_L2_T
MPEG_TS_HD_X_60_L2_ISO
MPEG_TS_HD_X_50_L2_T
MPEG_TS_HD_X_50_L2_ISO

9.3.58.2

[GUIDELINE] Main characteristics of MPEG-2 Transport system stream are:

System

- System Stream is Partial Single Program Transport Stream (SPTS).

Number of programs

- 1 as defined for a Partial Single Program Transport Stream.

System bit rate

- up to 30 Mbit/s

Packet size

- 192 B or 188 B (refer to 9.3.4.2)

PSI information

- PAT and PMT are required in the multiplexed stream.
- The maximum time interval for the PAT and PMT is 100 ms.
- Additional PSI information may exist in the multiplexed stream.
- Rendering Endpoints shall tolerate any additional information in the multiplexed stream.

Video ES

- One Video ES is allowed.

Audio ES

- One Audio ES is allowed.

Other ES

- Other ES may be contained.

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DIT

- The bit stream may be discontinuous with respect to any of the SI information. DIT shall be inserted at the transition point (i.e. changing format type of registration_descriptor or timestamp discontinuity).

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-1	8XAOV	

9.3.59 MPEG-2 AV format: Transport Alignment Position: TS_HD_X

9.3.59.1

[PROFILES]

MPEG_TS_HD_X_60_L2_T
MPEG_TS_HD_X_60_L2_ISO
MPEG_TS_HD_X_50_L2_T
MPEG_TS_HD_X_50_L2_ISO

9.3.59.2

[GUIDELINE] The Transport Alignment Position for bitstreams conformant to these profiles shall be according to 9.3.5.5.

[ATTRIBUTES]

M	R	DMS	M-DMS	n/a	n/a	UYZ9Y	

9.3.60 MPEG-2 AV format: video portion profile: MPEG_TS_HD

9.3.60.1

[PROFILES]

MPEG_TS_HD_X_60_L2_T
MPEG_TS_HD_X_60_L2_ISO
MPEG_TS_HD_X_50_L2_T
MPEG_TS_HD_X_50_L2_ISO

9.3.60.2

[GUIDELINE] Main characteristics of video shall be conformant to ISO/IEC 13818-2.

Main characteristics of MPEG-2 video streams shall be:

Profile and level

- MP@HL
- MP@H-14

Chroma

- 4:2:0

Video bit rate

- VBR up to 28 Mbit/s

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-2	244GS	

9.3.61 MPEG-2 AV format: video format: MPEG_TS_HD_X_60

9.3.61.1

[PROFILES]

MPEG_TS_HD_X_60_L2_T
MPEG_TS_HD_X_60_L2_ISO

9.3.61.2

[GUIDELINE] Video Encoding Parameters shall be as indicated in Table 54.

Table 54 – MPEG_TS_HD_60_L2_T, MPEG_TS_HD_X_60_L2_ISO

Resolution	Aspect ratio	Field rate
➢1 920 × 1 080	16:9	59,94i
➢1 440 × 1 080	16:9	59,94i

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-2	WBQOU	

9.3.62 MPEG-2 AV format: video format: MPEG_TS_HD_X_50

9.3.62.1

[PROFILES]

MPEG_TS_HD_X_50_L2_T
MPEG_TS_HD_X_50_L2_ISO

9.3.62.2

[GUIDELINE] Video Encoding Parameters shall be as indicated in Table 55.

Table 55 – MPEG_TS_HD_X_50_L2_T, MPEG_TS_HD_X_50_L2_ISO

Resolution	Aspect ratio	Field rate
➢1 920 × 1 080	16:9	50i
➢1 440 × 1 080	16:9	50i

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-2	IEV28	

9.3.63 MPEG-2 AV format: audio portion profile: L2

9.3.63.1

[PROFILES]

MPEG_TS_HD_X_60_L2_T
MPEG_TS_HD_X_60_L2_ISO

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MPEG_TS_HD_X_50_L2_T
MPEG_TS_HD_X_50_L2_ISO

9.3.63.2

[GUIDELINE] Main characteristics of MPEG-1 Audio Layer 2 stream shall be:

Coding

- MPEG-1 Layer 2

Sampling rate

- 48 kHz

Content audio channel modes

- Stereo

Bit rates

- up to 384 kbit/s (CBR only)

Emphasis

- 0 (Always no emphasis)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 11172-3	**47GMT**	

9.3.64 MPEG-2 AV format: MIME type definition: TS_T

9.3.64.1

[PROFILES]

MPEG_TS_HD_X_60_L2_T
MPEG_TS_HD_X_50_L2_T

9.3.64.2

[GUIDELINE] MIME type "video/vnd.dlna.mpeg-tts" shall be used for this Media Format Profile.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	7IEV2	

9.3.65 MPEG-2 AV format: MIME type definition: TS_ISO

9.3.65.1

[PROFILES]

MPEG_TS_HD_X_60_L2_ISO
MPEG_TS_HD_X_50_L2_ISO

9.3.65.2

[GUIDELINE] MIME type "video/mpeg" shall be used for this Media Format Profile.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	DDMR8	

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9.3.66 MPEG-2 AV format: system portion profile, DIRECTV_SD

9.3.66.1

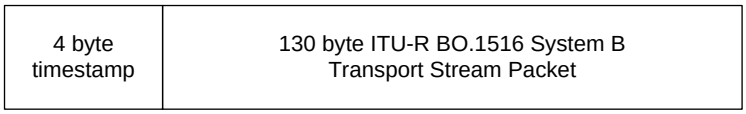
[PROFILES]

MPEG_DIRECTV_SD_MPEG1_L2
MPEG_DIRECTV_SD_MPEG1_L2_T

9.3.66.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the system portion of the MPEG_DIRECTV_SD profile as defined in 9.3.20 except as indicated below.

Streams with MPEG_DIRECTV_SD System Profiles that have a "T" (denoting TTS for timestamped transport stream) appended as part of their Profile ID shall be preceded by a 32 bit timestamp to form 134 byte packets as illustrated in
Figure 4. The Timestamp format is uimsbf (unsigned integer most significant bit first) as defined in ISO/IEC 13818-1.



IEC 2418/13

Figure 4 – ITU-R Rec. BO.1516 SYSTEM B Transport Stream Packet with TTS support

The 4 byte timestamp field shall represent the 27 MHz clock binary counter value to control the relative input timing to the decoder of the transport stream. The 27 MHz clock shall have the same accuracy and precision requirements of an MPEG-2 system clock as defined in ISO/IEC 13818-1.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 13818-1 ITU-R Rec BO.1516	JFJDG	N

9.3.67 MPEG-2 AV format: video portion profile, DIRECTV_SD

9.3.67.1

[PROFILES]

MPEG_DIRECTV_SD_MPEG1_L2
MPEG_DIRECTV_SD_MPEG1_L2_T

9.3.67.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to the video portion of the MPEG_TS_SD_NA profile as defined in 9.3.5.3 and 9.3.6.3, except as indicated in Table 56.

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Table 56 – MPEG-2 video encoding parameters

Resolution	Aspect ratio	Allowed frame rates
➢ 720 × 480	4:3	59,94i
➢ 704 × 480	4:3	59,94i
➢ 544 × 480	4:3	59,94i
➢ 480 × 480	4:3	59,94i
➢ 352 × 480	4:3	59,94i
➢ 352 × 240	4:3	59,94i

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 13818-1 ITU-R Rec BO.1516	S5D9T	N

9.3.67.3

[GUIDELINE] A bitstream conformant with these profiles may contain closed caption information stored in picture header user data according to the syntax shown in Table 57, Table 58 and Table 59.

Table 57 – MPEG-2 video picture header user data

Syntax	No. of bits	Format
user_data() {		
user_data_start_code	32	0x000001B2
while(nextbits() != '0000 0000 0000 0000 0000 0001') {		
user_data_length	8	Uimsbf
user_data_type	8	Uimsbf
if (user_data_type==0xFF)		
ext_user_data_type	8	Uimsbf
user_data_info()	(user_data_length-1)*8	Uimsbf
}		
next_start_code()		
}		

Table 58 – MPEG-2 video user data type

user_data_type value	Type	user_data_length (bytes)
0 × 02	presentation_time_stamp	1+5
0 × 04	decode_time_stamp	1+5
0 × 09	closed_caption	1+2
0 × 0A	extended_data_services	1+2

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Table 59 – MPEG-2 video user data info

Syntax	No. of bits	Format
user_data_info() {		
switch (user_data_type){		
case presentation_time_stamp:		
six_bit_pad	6	"000000"
presentation_time_stamp[31 ..30]	2	bslbf
marker_bit	1	"1"
presentation_time_stamp[29..15]	15	bslbf
marker_bit	1	"1"
presentation_time_stamp[14..0]	15	bslbf
break		
case decode_time_stamp:		
six_bit_pad	6	"000000"
decode_time_stamp[31 ..30]	2	bslbf
marker_bit	1	"1"
decode_time_stamp[29..15]	15	bslbf
marker_bit	1	"1"
decode_time_stamp[14..0]	15	bslbf
case closed_caption:		
closed_caption_byte1	8	uimsbf
closed_caption_byte2	8	uimsbf
break		
case extended_data_services:		
extended_data_services_byte1	8	uimsbf
extended_data_services_byte2	8	uimsbf
break		
}		

[ATTRIBUTES]

O	L	n/a	n/a	n/a	ISO/IEC 13818-2	4CY67	N

9.3.68 MPEG-2 AV format: audio portion profile, DIRECTV_SD_MPEG1_L2

9.3.68.1

[PROFILES]

MPEG_DIRECTV_SD_MPEG1_L2
MPEG_DIRECTV_SD_MPEG1_L2_T

9.3.68.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the audio portion of the MPEG_DIRECTV_SD profile specified in 9.3.28.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	79GC4	N

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9.3.69 MPEG-2 AV format: MIME type definition, DIRECTV_SD

9.3.69.1

[PROFILES]

MPEG_DIRECTV_SD_MPEG1_L2
MPEG_DIRECTV_SD_MPEG1_L2_T

9.3.69.2

[GUIDELINE] MIME type "video/vnd.directv.mpeg" shall be used for the MPEG_DIRECTV_SD_MPEG1_L2 media format profile. The MIME type "video/vnd.directv.mpeg-tts shal be used for the MPEG_DIRECTV_SD_MPEG1_L2_T media format profile.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	J7RS8	N

9.3.70 MPEG-2 AV format: system portion profile, TS_NA

9.3.70.1

[PROFILES]

MPEG_TS_NA_ISO

9.3.70.2

[GUIDELINE] Main characteristics of this MPEG_TS_NA_ISO stream are defined in SCTE 54 2002 and ATSC Standard A/53 with additional constraints as defined in 9.3.5.1.2 and 9.3.5.5.2.

Main characteristics of MPEG_TS_NA_ISO system stream are:

System

System Stream is Full or Partial Single Program Transport Stream (SPTS). It shall contain only one program from the original broadcasted TS according to the PAT and PMT tables. A Full SPTS shall be fully compliant with ISO/IEC 13818-1 while a Partial SPTS shall be fully compliant with ISO/IEC 13818-1 except for requirements related to the T-STD model.

Number of programs

- 1 as defined for a Single Program Transport Stream

Packet size

- 188 B per transport packet

System bit rate

➢ CBR or VBR up to 19,392 7 Mbit/s

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 13818-1 SCTE 54 2002 ATSC Standard A/53	JHBLK	N

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[COMMENT] A MPEG transport stream as defined in SCTE 54 2002 and ATSC Standard A/53, and constrained to SPTS. This profile is better aligned with the technical requirements of the cable and broadcast industry in North America than the MPEG_TS_SD_NA and MPEG_TS_HD_NA profiles defined in this standard.

9.3.70.3

[GUIDELINE] A bitstream conformant with this profile may include Closed Caption services information in the caption_services_descriptor in the PMT as defined in ANSI/SCTE 65 and ATSC Standard A/6. The presence of the caption_services_descriptor indicates that one or more closed caption services are present in the bitstream.

[ATTRIBUTES]

O	A	n/a	n/a	n/a	ANSI/SCTE 65 ATSC Standard A/6	LIFHM	N

9.3.70.4

[GUIDELINE] A bitstream conformant with this profile may include Content Advisory information in the content_advisory_descriptor in the PMT as defined in ANSI/SCTE 65 and ATSC Standard A/6.

[ATTRIBUTES]

O	A	n/a	n/a	n/a	ANSI/SCTE 65 ATSC Standard A/6	5IAYU	N

9.3.70.5

[GUIDELINE] A bitstream conformant with this profile may include a RRT as defined in in ANSI/SCTE 65 and ATSC Standard A/6.

[ATTRIBUTES]

O	A	n/a	n/a	n/a	ANSI/SCTE 65 ATSC Standard A/6	53J8V	N

9.3.70.6

[GUIDELINE] A Rendering Endpoint shall be able to tolerate Content Advisory information in the RRT and the content_advisory_descriptor in the PMT as defined in ANSI/SCTE 65 and ATSC Standard A/6.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	ANSI/SCTE 65 ATSC Standard A/6	XCEI4	N

9.3.70.7

[GUIDELINE] A Rendering Endpoint should be capable of enforcing Content Advisory information, if present and requested by a user.

[ATTRIBUTES]

S	A	DMP DMR	M-DMP M-DMD	n/a	n/a	GGVPH	N

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9.3.70.8

[GUIDELINE] Rendering Endpoints shall conform to guideline 9.3.5.2.2.

[ATTRIBUTES]

M	R	DMP DMR	M-DMP M-DMD	n/a	n/a	TDX84	N

9.3.71 MPEG-2 AV format: video portion profile, TS_NA_ISO

9.3.71.1

[PROFILES]

MPEG_TS_NA_ISO

9.3.71.2

[GUIDELINE] Main characteristics of video shall be conformant to ISO/IEC 13818-2 as constrained by ANSI/SCTE 43 and Part 4 of ANSI/SCTE-128, with further constraints as specified below.

Main characteristics of MPEG-2 video streams are:

Profile and level

- Main Profile at High Level

Chroma

- 4:2:0

Video bit rate

- CBR: less than or equal to 19,392 7 Mbit/s minus the sum of audio, close caption data, other SI tables and TS overhead
- VBR: maximum bit rate less than or equal to 19,392 7 Mbit/s minus the sum of audio, close caption data other SI tables and TS overhead.

Table 60 lists additional characteristics of the MPEG-2 video stream.

Table 60 – MPEG-2 AV format resolution

Resolution	Aspect Ratio	Allowed Frame Rates
1 920 × 1 080	1:1, 16:9	60i, 59,94i, 30p, 29,97p, 24p, 23,98p
1 440 × 1 080	16:9	60i, 59,94i, 30p, 29,97p, 24p, 23,98p
1 280 × 720	1:1, 16:9	60p, 59,94p, 30p, 29,97p, 24p, 23,98p
720 × 480	4:3, 16:9	60p, 59,94p, 60i, 59,94i, 30p, 29,97p, 24p, 23,98p
704 × 480	4:3, 16:9	60p, 59,94p, 60i, 59,94i, 30p, 29,97p, 24p, 23,98p
640 × 480	1:1, 4:3	60p, 59,94p, 60i, 59,94i, 30p, 29,97p, 24p, 23,98p
544 × 480	4:3	59,94i, 23,98p
528 × 480	4:3	59,94i, 23,98p
352 × 480	4:3	59,94i, 23,98p

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[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 13818-2 ANSI/SCTE 43 ATSC Standard A/53	7UQB8	N

9.3.71.3

[GUIDELINE] A Rendering Endpoint shall be able to render video for bit streams with stream_type code of 0×02 and 0×80 as specified in section 5.8.2.1 of SCTE 54 2002.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	SCTE 54 2002	IBW5S	N

[COMMENT] As specified in SCTE 54 2002, content sourced by cable industry in North America uses both stream types of 0 × 02 and 0 × 80. This requirement clarifies that the Rendering Endpoints are required to display video for both stream types of 0 × 02 and 0 × 80.

9.3.71.4

[GUIDELINE] A bitstream conformant with this profile may include Closed Caption Streams with syntax, semantics, and usage rules defined in section 5.2.1 of ANSI/SCTE 43.

[ATTRIBUTES]

O	A	n/a	n/a	n/a	ANSI/SCTE 43	4VUIQ	N

9.3.71.5

[GUIDELINE] A Rendering Endpoint shall be able to tolerate Closed Caption Streams with syntax, semantics, and usage rules defined in section 5.2.1 of ANSI/SCTE 43.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	ANSI/SCTE 43	L5AGA	N

9.3.71.6

[GUIDELINE] A Rendering Endpoint should be capable of displaying Closed Captions Streams with syntax, semantics, and usage rules defined in section 5.2.1 of ANSI/SCTE 43, if present and requested by a user.

[ATTRIBUTES]

S	A	DMP DMR	M-DMP M-DMD	n/a	ANSI/SCTE 43	UP3YZ	N

9.3.72 MPEG-2 AV format: audio portion profile, TS_NA_ISO

9.3.72.1

[PROFILES]

MPEG_TS_NA_ISO

9.3.72.2

[GUIDELINE] Main characteristics of this MPEG_TS_NA_ISO audio stream are defined in ATSC Standard A/53C.

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Sampling rate

- 48 kHz

Content audio channel modes

- Mono (1/0)
- Stereo (2/0)
- Multi-channel (3/0)
- Multi-channel (2/1)
- Multi-channel (3/1)
- Multi-channel (2/2)
- Multi-channel (3/2)

Bit rates

- Main audio service up to 640 kbit/s per one stream.
- The combined bit rate of a main service and an associated service which are intended to be decoded simultaneously shall be up to 576 kbit/s (448 kbit/s Main, 192 kbit/s Associated).

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ATSC Standard A/53C	9IRQZ	N

9.3.72.3

[GUIDELINE] A Rendering Endpoint shall be able to render audio from bit streams with a stream_type code of 0x81 as specified in section 5.8.2.2 of SCTE 54 2002.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	SCTE 54 2002	4TORC	N

9.3.73 MPEG-2 AV format: system portion profile, TS_SD_DTS, TS_HD_DTS

9.3.73.1

[PROFILES]

MPEG_TS_SD_DTS_ISO
MPEG_TS_HD_DTS_ISO

9.3.73.2

[GUIDELINE] A bitstream conformant with the MPEG_TS_SD_DTS_ISO or MPEG_TS_HD_DTS_ISO profiles shall conform to the definition in 9.3.5.1, except as indicated below.

Bitstream packetization

- DTS bitstreams shall be packed into PES packets as “private_stream_1”.

Bitstream identification

- The presence of the DTS audio PES in the multiplex shall be signaled as defined in DTS 9302J85300.

DTS registration descriptor

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In a transport stream environment, a registration descriptor with a registered format identifier is required to identify the DTS format. The syntax of the DTS registration descriptor is shown in Table 61.

Table 61 – DTS registration descriptor syntax

Syntax	No. of bits	Value
registration_descriptor() {		
descriptor_tag	8	0x05
descriptor_length	8	0x04
format_identifier	32	see Table 62
}		

This descriptor SHALL be included in the descriptor loop immediately following the ES_info_length field in the TS_program_map_section describing the DTS or DTS-HD elementary stream.

For the DTS format, unique format_identifier values have been assigned to represent different audio frame durations. See Table 62 for a list of these codecs.

Table 62 – DTS Format Identifier Values

Label	format_identifier	Audio frame duration (samples)
DTS1	0x44545331	512
DTS2	0x44545332	1 024
DTS3	0x44545333	2 048
DTSH	0x44545348	Various, see audio stream identifier

Audio stream descriptors

The DTS audio stream descriptor is defined in DTS 9302J85300, and contains information on sample rate, bit rate, frame size, surround mode and so on. This descriptor is associated with formats indicated by DTS1, DTS2, and DTS3 format identifiers in the DTS registration descriptor. The DTSH format identifier may be used when only a core substream of a DTS-HD audio stream is present.

The appropriate audio stream descriptor shall be included in the TS_program_map_section descriptor loop immediately following the DTS registration_descriptor.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	DTS 9302J85300	JE553	N

9.3.74 MPEG-2 AV format: video portion profile, TS_SD_DTS

9.3.74.1

[PROFILES]

MPEG_TS_SD_DTS_ISO

9.3.74.2

[GUIDELINE] Main characteristics of video shall be conformant to ISO/IEC 13818-2.

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Main characteristics of video shall be:

Profile and level

- Main Profile at Main Level

Video bitrate

- Up to 15 Mbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-2	WFDTB	N

9.3.75 MPEG-2 AV format: video portion profile, TS_HD_DTS

9.3.75.1

[PROFILES]

MPEG_TS_HD_DTS_ISO

9.3.75.2

[GUIDELINE] Main characteristics of video shall be conformant to ISO/IEC 13818-2.

Main characteristics of video shall be:

Profile and level

- Main Profile at High Level

Video bitrate

- Up to 30 Mbit/s

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 13818-2	6BCB8	N

9.3.76 MPEG-2 AV format: audio portion profile, TS_DTS

9.3.76.1

[PROFILES]

MPEG_TS_SD_DTS_ISO
MPEG_TS_HD_DTS_ISO

9.3.76.2

[GUIDELINE] A bitstream conformant with these profiles shall comply with ETSI TS 102 114, and may also contain DTS-HD audio data that complies with DTS 9302F30400.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ETSI TS 102 114 DTS 9302F30400	XS6Z5	N

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9.3.76.3

[GUIDELINE] Rendering Endpoints that are conformant with these profiles may ignore any DTS-HD audio data present in the bitstream.

[ATTRIBUTES]

O	A	DMP DMR	M-DMP M-DMD	n/a	n/a	IUXQH	N

9.3.77 MPEG-2 AV format: system portion profile, TS_SD_EU_DTS

9.3.77.1

[PROFILES]

MPEG_TS_SD_EU_DTS_ISO

9.3.77.2

[GUIDELINE] A bitstream conformant with the MPEG_TS_SD_EU_DTS_ISO profile shall conform to the system portion of the MPEG_TS_SD_EU_ISO profile as defined in this standard, except as indicated below.

DTS packetization

- The presence of the DTS audio PES in the multiplex shall be signaled in accordance with ETSI TS 101 154.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ETSI TS 101 154	PQH7Z	N

9.3.78 MPEG-2 AV format: videopPortion profile, TS_SD_EU_DTS

9.3.78.1

[PROFILES]

MPEG_TS_SD_EU_DTS_ISO

9.3.78.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the video portion of the MPEG_TS_SD_EU_T profile as defined in 9.3.8.9.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	BH3AY	N

9.3.79 MPEG-2 AV format: audio portion profile, TS_SD_EU_DTS

9.3.79.1

[PROFILES]

MPEG_TS_SD_EU_DTS_ISO

9.3.79.2

[GUIDELINE] A bitstream conformant with this profile shall comply with ETSI TS 102 114

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[ATTRIBUTES]

M	R	n/a	n/a	n/a	ETSI TS 102 114	35TOI	N

9.3.80 MPEG-2 AV format: MIME type definition, TS_ISO

9.3.80.1

[PROFILES]

MPEG_TS_NA_ISO
MPEG_TS_SD_DTS_ISO
MPEG_TS_HD_DTS_ISO
MPEG_TS_SD_EU_DTS_ISO

9.3.80.2

[GUIDELINE] MIME type “video/mpeg” shall be used for this Media Format Profile.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	92RER	N

9.4 MPEG-4 Part 2 profiling guidelines

9.4.1 General

Table 63 is a summary of MPEG-4 Part 2 profiles.

Table 63 – Summary of MPEG-4 Part 2 profiles for the AV Media Class

DLNA Profile ID	Video portion profile										Audio portion profile										System portion profile					
	SP_L0B	SP_L2	SP_L3	SP_L3_VGA	ASP_L5	ASP_L5_SO	ASP_L4_SO	H263_P0_L10	H263_P3_L10	CO	AAC	HEAAC	HEAAC_MULT5	ATRAC3plus	AAC_LTP_STEREO	MPEG1_L3	MPEG2_L2	AC3	G726	AMR	AMR_WBplus	MP4	MPEG2_TS	MPEG2_TS_T	MPEG2_TS_ISO	ASF	3GPP
MPEG4_P2_3GPP_SP_L0B_AAC	X										X																X
MPEG4_P2_3GPP_SP_L0B_AMR	X																			X							X
MPEG4_P2_MP4_SP_L2_AAC		X									X											X					
MPEG4_P2_MP4_SP_L2_AMR		X																		X		X					
MPEG4_P2_MP4_SP_AAC			X								X											X					
MPEG4_P2_MP4_SP_HEAAC			X									X										X					
MPEG4_P2_MP4_SP_ATRAC3plus			X											X								X					
MPEG4_P2_MP4_SP_AAC_LTP			X												X							X					
MPEG4_P2_TS_SP_AAC			X								X												X				
MPEG4_P2_TS_SP_AAC_T			X								X													X			
MPEG4_P2_TS_SP_AAC_ISO			X								X														X		

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DLNA Profile ID	Video portion profile										Audio portion profile										System portion profile					
	SP_L0B	SP_L2	SP_L3	SP_L3_VGA	ASP_L5	ASP_L5_SO	ASP_L4_SO	H263_P0_L10	H263_P3_L10	CO	AAC	HEAAC	HEAAC_MULT5	ATRAC3plus	AAC_LTP_STEREO	MPEG1_L3	MPEG2_L2	AC3	G726	AMR	AMR_WBplus	MP4	MPEG2_TS	MPEG2_TS_T	MPEG2_TS_ISO	ASF	3GPP
MPEG4_P2_TS_SP_MPEG1_L3			X													X							X				
MPEG4_P2_TS_SP_MPEG1_L3_T			X													X								X			
MPEG4_P2_TS_SP_MPEG1_L3_ISO			X													X									X		
MPEG4_P2_TS_SP_MPEG2_L2			X														X						X				
MPEG4_P2_TS_SP_MPEG2_L2_T			X														X							X			
MPEG4_P2_TS_SP_MPEG2_L2_ISO			X														X								X		
MPEG4_P2_TS_SP_AC3			X															X					X				
MPEG4_P2_TS_SP_AC3_T			X															X						X			
MPEG4_P2_TS_SP_AC3_ISO			X															X							X		
MPEG4_P2_ASF_SP_G726			X																X							X	
MPEG4_P2_MP4_SP_VGA_AAC				X							X											X					
MPEG4_P2_MP4_SP_VGA_HEAAC				X								X										X					
MPEG4_P2_MP4_ASP_AAC					X						X											X					
MPEG4_P2_MP4_ASP_HEAAC					X							X										X					
MPEG4_P2_MP4_ASP_HEAAC_MULT5					X								X									X					
MPEG4_P2_MP4_ASP_ATRAC3plus					X									X								X					
MPEG4_P2_TS_ASP_AAC					X						X												X				
MPEG4_P2_TS_ASP_AAC_T					X						X													X			
MPEG4_P2_TS_ASP_AAC_ISO					X						X														X		
MPEG4_P2_TS_ASP_MPEG1_L3					X											X							X				
MPEG4_P2_TS_ASP_MPEG1_L3_T					X											X								X			
MPEG4_P2_TS_ASP_MPEG1_L3_ISO					X											X									X		
MPEG4_P2_TS_ASP_AC3					X													X					X				
MPEG4_P2_TS_ASP_AC3_T					X													X						X			
MPEG4_P2_TS_ASP_AC3_ISO					X													X							X		
MPEG4_P2_MP4_ASP_L5_SO_AAC						X					X											X					
MPEG4_P2_MP4_ASP_L5_SO_HEAAC						X						X										X					
MPEG4_P2_MP4_ASP_L5_SO_ HEAAC_MULT5						X							X									X					
MPEG4_P2_ASF_ASP_L5_SO_G726						X													X							X	
MPEG4_P2_MP4_ASP_L4_SO_AAC							X				X											X					

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DLNA Profile ID	Video portion profile										Audio portion profile											System portion profile					
	SP_L0B	SP_L2	SP_L3	SP_L3_VGA	ASP_L5	ASP_L5_SO	ASP_L4_SO	H263_P0_L10	H263_P3_L10	CO	AAC	HEAAC	HEAAC_MULT5	ATRAC3plus	AAC_LTP_STEREO	MPEG1_L3	MPEG2_L2	AC3	G726	AMR	AMR_WBplus	MP4	MPEG2_TS	MPEG2_TS_T	MPEG2_TS_ISO	ASF	3GPP
MPEG4_P2_MP4_ASP_L4_SO_HEAAC							X					X										X					
MPEG4_P2_MP4_ASP_L4_SO_ HEAAC_MULT5							X						X									X					
MPEG4_P2_ASF_ASP_L4_SO_G726							X												X							X	
MPEG4_H263_MP4_P0_L10_AAC								X			X											X					
MPEG4_H263_MP4_P0_L10_AAC_LTP								X							X							X					
MPEG4_H263_3GPP_P0_L10_ AMR_WBplus								X													X						X
MPEG4_H263_3GPP_P3_L10_AMR									X											X							X
MPEG4_P2_TS_CO_AC3										X								X					X				
MPEG4_P2_TS_CO_AC3_T										X								X						X			
MPEG4_P2_TS_CO_AC3_ISO										X								X							X		
MPEG4_P2_TS_CO_MPEG2_L2										X							X						X				
MPEG4_P2_TS_CO_MPEG2_L2_T										X							X							X			
MPEG4_P2_TS_CO_MPEG2_L2_ISO										X							X										

Table 63 and Table 64 are informative. The guidelines below are the normative reference for the definition of these Media Format Profiles.

Table 64 is a continuation summary of MPEG-4 Part 2 profiles

Table 64 – Summary of MPEG-4 Part 2 profiles for the AV Media Class

DLNA Profile ID	Video portion profile						Audio portion profile							System portion profile	
	H263_P0_L45	SP_LOB	SP_L3	SP_L3_VGA_QHD	SP_L6	ASP_L5	AAC	AAC_LTP	HEAAC	HEAAC_V2	AC3	AMR_WBplus	MPEG1_L3	MP4	3GPP
MPEG4_H263_MP4_P0_L45_HEAACv2_L2	X										X				X
MPEG4_P2_3GPP_SP_L0B_AMR_WBplus		X											X		
MPEG4_P2_MP4_SP_L0B_HEAACv2_L2		X									X				X

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DLNA Profile ID	Video portion profile						Audio portion profile							System portion profile	
	H263_P0_L45	SP_LOB	SP_L3	SP_L3_VGA_QHD	SP_L6	ASP_L5	AAC	AAC_LTP	HEAAC	HEAAC_V2	AC3	AMR_WBplus	MPEG1_L3	MP4	3GPP
MPEG4_P2_3GPP_SP_L3_AMR_WBplus			X										X		
MPEG4_P2_MP4_SP_L3_HEAACv2_L2			X								X				X
MPEG4_P2_MP4_SP_VGA_HEAAC_res				X						X					X
MPEG4_P2_MP4_SP_VGA_AAC_res				X				X							X
MPEG4_P2_MP4_SP_L6_AAC					X			X							X
MPEG4_P2_MP4_SP_L6_AAC_LTP					X				X						X
MPEG4_P2_MP4_SP_L6_HEAAC_L2					X					X					X
MPEG4_P2_MP4_NDSD							X					X		X	X

9.4.2 MPEG-4 Part 2 video portion profiles

9.4.2.1 MPEG-4 Part 2 AV format, video portion profile: SP_L3

9.4.2.1.1

[PROFILES]

MPEG4_P2_ASF_SP_G726
MPEG4_P2_MP4_SP_AAC
MPEG4_P2_MP4_SP_HEAAC
MPEG4_P2_MP4_SP_AAC_LTP
MPEG4_P2_TS_SP_AAC
MPEG4_P2_TS_SP_AAC_ISO
MPEG4_P2_TS_SP_AAC_T
MPEG4_P2_TS_SP_MPEG1_L3
MPEG4_P2_TS_SP_MPEG2_L2 MPEG4_P2_TS_SP_AC3
MPEG4_P2_TS_SP_AC3_ISO
MPEG4_P2_TS_SP_AC3_T
MPEG4_P2_TS_SP_MPEG1_L3_T
MPEG4_P2_TS_SP_MPEG1_L3_ISO
MPEG4_P2_TS_SP_MPEG2_L2_T
MPEG4_PS_TS_SP_MPEG2_L2_ISO
MPEG4_P2_MP4_SP_ATRAC3plus
MPEG4_P2_3GPP_SP_L3_AMR_WBplus
MPEG4_P2_MP4_SP_L3_HEAACv2_L2

9.4.2.1.2

[GUIDELINE] Main characteristics of SP_L3 video stream are

Profile and level:

- SP@L0
- SP@L0b

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- SP@L1
- SP@L2
- SP@L3

Chroma:

- 4:2:0

Video bit rate:

- CBR: less than or equal to the maximum bit rate of the following bitrates in Table 65.
- VBR: the maximum bit rate less than or equal to the following bitrates in Table 65.

Table 65 – MPEG SP_L3 bit rates

Bit rate	Profile and level
➢64 kbit/s	SP@L0
➢128 kbit/s	SP@L0b
➢64 kbit/s	SP@L1
➢128 kbit/s	SP@L2
➢384 kbit/s	SP@L3

Table 66 lists all resolutions for SP_L3.

Table 66 – MPEG SP_L3 resolutions

Type	Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)
CIF, 625SIF	➢352 × 288	12:11	4:3
	➢352 × 288	16:11	16:9
525SIF	➢352 × 240	10:11	4:3
	➢352 × 240	40:33	16:9
QVGA 4:3	➢320 × 240	1:1	4:3
QVGA 16:9	➢320 × 180	1:1	16:9
1/7VGA 4:3	➢240 × 180	1:1	4:3
1/9VGA 4:3	➢208 × 160	1:1	4:3
QCIF,625QSIF	➢176 × 144	12:11	4:3
	➢176 × 144	16:11	16:9
525QSIF	➢176 × 120	10:11	4:3
	➢176 × 120	40:33	16:9
SQVGA 4:3	➢160 × 120	1:1	4:3
1/16 VGA 4:3	➢160 × 112	1:1	4:3
SQVGA 16:9	➢160 × 90	1:1	16:9

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Type	Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)
SQCIF	➢128 × 96	12:11	4:3
	➢128 × 96	16:11	16:9

a Pixel aspect ratio is informative and it indicates a typical aspect ratio for each resolution.

b Display aspect ratio of which a video stream is rendered is informative, and it indicates a display aspect ratio with a resolution and the typical aspect ratio for the resolution.

Pixel Aspect Ratio:

- ➢1:1
- ➢12:11
- ➢10:11
- ➢16:11
- ➢40:33

A bitstream compliant with these media format profiles may utilize any of these pixel aspect ratios regardless of resolutions.

The Rendering Endpoint may ignore the pixel aspect ratio for rendering. Rendering Endpoint can shrink, stretch and crop an image to the display aspect ratio dependent on vendor implementations.

Frame rate:

Frame rate is less than equal to 30 fps.

Both fixed frame rate and variable frame rate are allowed, i.e. fixed_vop_rate=1 or 0.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-2 ISO/IEC 14496-2 ISO/IEC 14496-2	XRD3P	

9.4.2.2 MPEG-4 Part 2 AV format, video portion profile: SP_L3_VGA

9.4.2.2.1

[PROFILES]

MPEG4_P2_MP4_SP_VGA_AAC
MPEG4_P2_MP4_SP_VGA_HEAAC

9.4.2.2.2

[GUIDELINE] Main characteristics of the video stream are

Profile and level:

- ➢ SP@L0
- ➢ SP@L0b
- ➢ SP@L1
- ➢ SP@L2
- ➢ SP@L3

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Chroma:

- 4:2:0

Video bit rate:

- The maximum video bit rate is 3 Mbit/s.

Table 67 lists all resolutions for SP_L3_VGA.

Table 67 –SP_L3_VGA resolutions

	Resolution	Pixel aspect ratio	Display aspect ratio	Max. frame rate
VGA	➢640 × 480	1:1	4:3	30
VGA 16:9	➢640 × 360	1:1	16:9	30

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	RD3PI	

[COMMENT] This profile extends upon the MPEG-4 simple profile tools at level 3 to provide VGA resolution. At this profile and level, the MPEG-4 standards define a maximum resolution of CIF. However, VGA is a de facto resolution at this profile and level.

9.4.2.3 MPEG-4 Part 2 AV format, video portion profile: SP_L2

9.4.2.3.1

[PROFILES]

MPEG4_P2_MP4_SP_L2_AAC
MPEG4_P2_MP4_SP_L2_AMR

9.4.2.3.2

[GUIDELINE] Main characteristics of the video stream are

Profile and level:

- SP@L0
- SP@L0b
- SP@L1
- SP@L2

Chroma:

- 4:2:0

Video bit rate:

- Maximum video bit rate for L2 is 128 kbit/s.

Table 68 lists all resolutions for SP_L2.

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Table 68 –SP_L2 resolutions

Type	Resolution	Pixel aspect ratio	Display aspect ratio	Max. frame rate
CIF	➢352 × 288	12:11	4:3	15
	➢352 × 288	16:11	16:9	15
QVGA	➢320 × 240	1:1	4:3	15
	➢320 × 180	1:1	16:9	15
QCIF	➢176 × 144	12:11	4:3	30
	➢176 × 144	16:11	16:9	30
SQCIF	➢128 × 96	12:11	4:3	30
	➢128 × 96	16:11	16:9	30

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	ZNTF5	

9.4.2.4 MPEG-4 Part 2 AV format, video portion profile: SP_L0B

9.4.2.4.1

[PROFILES]

MPEG4_P2_3GPP_SP_L0B_AAC
MPEG4_P2_3GPP_SP_L0B_AMR
MPEG4_P2_3GPP_SP_L0B_AMR_WBplus
MPEG4_P2_MP4_SP_L0B_HEAACv2_L2

9.4.2.4.2

[GUIDELINE] The main characteristics of the video stream shall be conformant to 3GPP TS 26.140.

Profile and level:

- SP@L0
- SP@L0b

Chroma:

- 4:2:0

Video bit rate:

- Maximum bitrate for L0 is 64 kbit/s and for L0b is 128 kbit/s.

Table 69 lists video bit rates for SP_L0B.

Table 69 – SP_L0B video bit rate

Type	Resolution	Pixel aspect ratio	Display aspect ratio	Max. frame rate
QCIF	➢176 × 144	12:11	4:3	15
SQCIF	➢128 × 96	12:11	4:3	15

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[ATTRIBUTES]

M	R	n/a	n/a	n/a	3GPP TS 26.140 3GPP TS 26.234	6WEY8	

[COMMENT] This profile is predominantely used in 3GPP multimedia messaging, multimedia streaming, and multimedia conferencing applications.

9.4.2.5 MPEG-4 Part 2 AV format, video portion profile: ASP_L5

9.4.2.5.1

[PROFILES]

MPEG4_P2_MP4_ASP_AAC
MPEG4_P2_MP4_ASP_HEAAC
MPEG4_P2_MP4_ASP_HEAAC_MULT5
MPEG4_P2_MP4_ASP_ATRAC3plus
MPEG4_P2_TS_ASP_AAC
MPEG4_P2_TS_ASP_AAC_T
MPEG4_P2_TS_ASP_AAC_ISO
MPEG4_P2_TS_ASP_MPEG1_L3
MPEG4_P2_TS_ASP_MPEG1_L3_T
MPEG4_P2_TS_ASP_MPEG1_L3_ISO
MPEG4_P2_TS_ASP_AC3
MPEG4_P2_TS_ASP_AC3_T
MPEG4_PS_TS_ASP_AC3_ISO

9.4.2.5.2

[GUIDELINE] Main characteristics of ASP_L5 video stream are

Profile and level:

- ASP@L0
- ASP@L1
- ASP@L2
- ASP@L3
- ASP@L3b
- ASP@L4
- ASP@L5

Chroma (informative):

- 4:2:0

Video bit rate (informative):

- CBR: less than or equal to the maximum bit rate of the following bitrates, see Table 70.
- VBR: the maximum bit rate less than or equal to the following bitrates, see Table 70.

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Table 70 – ASP_L5 bit rates

Bit rate	Profile and level
➢128 kbit/s	ASP@L0
➢128 kbit/s	ASP@L1
➢384 kbit/s	ASP@L2
➢768 kbit/s	ASP@L3
➢1 500 kbit/s	ASP@L3b
➢3 000 kbit/s	ASP@L4
➢8 000 kbit/s	ASP@L5

Table 71 lists all resolutions for ASP_L5.

Table 71 – ASP_L5 resolutions

Type	Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)
625 D1	➢720 × 576	12:11	4:3
	➢720 × 576	16:11	16:9
525 D1	➢720 × 480	10:11	4:3
	➢720 × 480	40:33	16:9
625 4SIF	➢704 × 576	12:11	4:3
	➢704 × 576	16:11	16:9
525 4SIF	➢704 × 480	10:11	4:3
	➢704 × 480	40:33	16:9
VGA	➢640 × 480	1:1	4:3
VGA 16:9	➢640 × 360	1:1	16:9
625 3/4D1	➢544 × 576	16:11	4:3
	➢544 × 576	64:33	16:9
525 3/4D1	➢544 × 480	44:33	4:3
	➢544 × 480	160:99	16:9
625 2/3D1	➢480 × 576	18:11	4:3
	➢480 × 576	24:11	16:9
525 2/3D1	➢480 × 480	15:11	4:3
	➢480 × 480	60:33	16:9
9/16VGA 4:3	➢480 × 360	1:1	4:3
9/16VGA 16:9	➢480 × 270	1:1	16:9
625 1/2D1	➢352 × 576	24:11	4:3

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Type	Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)
	➢352 × 576	32:11	16:9
525 1/2D1	➢352 × 480	20:11	4:3
	➢352 × 480	80:33	16:9
CIF, 625SIF	➢352 × 288	12:11	4:3
	➢352 × 288	16:11	16:9
525SIF	➢352 × 240	10:11	4:3
	➢352 × 240	40:33	16:9
QVGA 4:3	➢320 × 240	1:1	4:3
QVGA 16:9	➢320 × 180	1:1	16:9
1/7VGA 4:3	➢240 × 180	1:1	4:3
1/9VGA 4:3	➢208 × 160	1:1	4:3
QCIF,625QSIF	➢176 × 144	12:11	4:3
	➢176 × 144	16:11	16:9
525QSIF	➢176 × 120	10:11	4:3
	➢176 × 120	40:33	16:9
SQVGA 4:3	➢160 × 120	1:1	4:3
1/16 VGA 4:3	➢160 × 112	1:1	4:3
SQVGA 16:9	➢160 × 90	1:1	16:9
SQCIF	➢128 × 96	12:11	4:3
	➢128 × 96	16:11	16:9

[a] Pixel aspect ratio is informative and it indicates a typical aspect ratio for each resolution.

[b] Display aspect ratio of which a video stream is rendered is informative, and it indicates a display aspect ratio with a resolution and the typical aspect ratio for the resolution.

Pixel aspect ratio:

1:1
12:11
10:11
16:11
40:33
44:33
64:33
160:99
18:11
15:11
24:11
60:33

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20:11

32:11

80:33

The Serving Endpoint may use any pixel aspect ratios regardless of resolutions.

The Rendering Endpoint may ignore the pixel aspect ratio for rendering. Rendering Endpoint can shrink, stretch and crop image to the display aspect ratio dependent on vendor implementations.

Frame rate:

Frame rate is less than equal to 30 fps.

Both fixed frame rate and variable frame rate are allowed, i.e. fixed_vop_rate=1 or 0.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-2 ISO/IEC 14496-2 ISO/IEC 14496-2	ZYFJD	

9.4.2.6 MPEG-4 Part 2 AV format, video portion profile: ASP_L5_SO

9.4.2.6.1

[PROFILES]

MPEG4_P2_MP4_ASP_L5_SO_AAC
MPEG4_P2_MP4_ASP_L5_SO_HEAAC
MPEG4_P2_MP4_ASP_L5_SO_HEAAC_MULT5
MPEG4_P2_ASF_ASP_L5_SO_G726

9.4.2.6.2

[GUIDELINE] The main characteristics of ASP_L5_SO video stream are the same as ASP_L5 with the following constraints.

Object type:

- Only simple object type shall be used.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	EXIS7	

9.4.2.7 MPEG-4 Part 2 AV format, video portion profile: ASP_L4_SO

9.4.2.7.1

[PROFILES]

MPEG4_P2_MP4_ASP_L4_SO_AAC
MPEG4_P2_MP4_ASP_L4_SO_HEAAC
MPEG4_P2_MP4_ASP_L4_SO_HEAAC_MULT5
MPEG4_P2_ASF_ASP_L4_SO_G726

9.4.2.7.2

[GUIDELINE] Main characteristics of ASP_L4_SO video are

Profile and level:

- ASP@L0

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- ASP@L1
- ASP@L2
- ASP@L3
- ASP@L3b
- ASP@L4

Object type:

Only simple object type shall be used.

Chroma (informative):

- 4:2:0

Video bit rate (informative):

- CBR: less than or equal to the maximum bit rate of the following bitrates, see Table 72.
- VBR: the maximum bit rate less than or equal to the following bitrates, see Table 72.

Table 72 – ASP_L4_SO bit rates

Bitrate	Profile and level
128 kbit/s	ASP@L0
128 kbit/s	ASP@L1
384 kbit/s	ASP@L2
768 kbit/s	ASP@L3
1 500 kbit/s	ASP@L3b
2 000 kbit/s	ASP@L4

Table 73 lists all resolutions for ASP_L4_SO.

Table 73 – ASP_L4_SO resolutions

Type	Resolution	Pixel aspect ratio[a] (informative)	Display aspect ratio[b] (informative)
625 1/2D1	352 × 576	24:11	4:3
	352 × 576	32:11	16:9
525 1/2D1	352 × 480	20:11	4:3
	352 × 480	32:11	16:9
CIF, 625SIF	352 × 288	12:11	4:3
	352 × 288	16:11	16:9
525SIF	352 × 240	10:11	4:3
	352 × 240	40:33	16:9
QVGA 4:3	320 × 240	1:1	4:3

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Type	Resolution	Pixel aspect ratio[a] (informative)	Display aspect ratio[b] (informative)
QVGA 16:9	➢320 × 180	1:1	16:9
1/7VGA 4:3	➢240 × 180	1:1	4:3
1/9VGA 4:3	➢208 × 160	1:1	4:3
QCIF,625QSIF	➢176 × 144	12:11	4:3
	➢176 × 144	16:11	16:9
525QSIF	➢176 × 120	10:11	4:3
	➢176 × 120	40:33	16:9
SQVGA 4:3	➢160 × 120	1:1	4:3
1/16 VGA 4:3	➢160 × 112	1:1	4:3
SQVGA 16:9	➢160 × 90	1:1	16:9
SQCIF	➢128 × 96	12:11	4:3
	➢128 × 96	16:11	16:9

a Pixel aspect ratio is informative and it indicates a typical aspect ratio for each resolution.

b Display aspect ratio of which a video stream is rendered is informative, and it indicates a display aspect ratio with a resolution and the typical aspect ratio for the resolution.

Pixel aspect ratio:

1:1

12:11

10:11

16:11

40:33

24:11

20:11

32:11

80:33

The Serving Endpoint may use any pixel aspect ratios regardless of resolutions.

The Rendering Endpoint may ignore the pixel aspect ratio for rendering. Rendering Endpoint can shrink, stretch and crop image to the display aspect ratio dependent on vendor implementations.

Frame rate:

Frame rate is less than equal to 30 fps.

Both fixed frame rate and variable frame rate are allowed, i.e. fixed_vop_rate=1 or 0.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-2 ISO/IEC 14496-2 ISO/IEC 14496-2	A3HDV	

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9.4.2.8 MPEG-4 Part 2 AV format, video portion profile: H263_P0_L10

9.4.2.8.1

[PROFILES]

MPEG4_H263_MP4_P0_L10_AAC
MPEG4_H263_MP4_P0_L10_AAC_LTP
MPEG4_H263_3GPP_P0_L10_AMR_WBplus
MPEG4_H263_3GPP_P0_L10_AMR

9.4.2.8.2

[GUIDELINE] Main characteristics of H263_P0_L10 video stream shall be conformant to ITU-T Rec H.263.

Profile and level:

- H.263 Profile 0 Level 10 as defined in ITU-T Rec H.263 Annex X shall be supported.

NOTE H.263 Profile 0 is a subset of MPEG-4 Visual Simple Profile, see ISO/IEC 14496-2.

Chroma:

- 4:2:0

Video bit rate:

- CBR: less than or equal to the maximum bit rate 64 kbit/s.
- VBR: the maximum bit rate less than or equal to 64 kbit/s

Table 74 lists all resolutions for H263_P0_L10.

Table 74 – H263_P0_L10 resolutions

Type	Resolution	Pixel aspect ratio[a] (informative)	Display aspect ratio[b] (informative)
QCIF,625QSIF	176 × 144	12:11	4:3
	176 × 144	16:11	16:9
SQCIF	128 × 96	12:11	4:3
	128 × 96	16:11	16:9

a Pixel aspect ratio is informative and it indicates a typical aspect ratio for each resolution

b Display aspect ratio of which a video stream is rendered is informative, and it indicates a display aspect ratio with a resolution and a typical aspect ratio for the resolution.

Pixel aspect ratio:

- 12:11
- 16:11

A bitstream conformant to these media format profiles may utilize any of these pixel aspect ratios regardless of resolutions.

The Rendering Endpoint may ignore the pixel aspect ratio for rendering. Rendering Endpoint can shrink, stretch and crop image to the display aspect ratio dependent on vendor implementations.

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Frame rate:

➢Frame rate is less than or equal to 15 fps.

Both fixed frame rate and variable frame rate are allowed, i.e. fixed_vop_rate=1 or 0.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-2 ITU-T Rec H.263 ITU-T Rec H.263 Annex X	IXST3

9.4.2.9 MPEG-4 Part 2 AV format, video portion profile: H263_P3_L10

9.4.2.9.1

[PROFILES]

MPEG4_H263_3GPP_P3_L10_AMR

9.4.2.9.2

[GUIDELINE] Main characteristics of the video stream shall be conformant to ITU-T Rec H.263.

Profile and level:

- H.263 Profile 3, Level 10 as defined in ITU-T Rec H.263 Annex X shall be supported. H.263 Profile 3 is the interactive and streaming wireless profile and consists of the H.263 baseline profile and Annex I, J, K, and T of ITU-T Rec H.263:2005.

Chroma

- 4:2:0

Video bit rate:

- Less than or equal to 64 kbit/s

Table 75 lists all resolutions for H263_P3_L10.

Table 75 – H263_P3_L10 resolutions

	Resolution	Pixel aspect ratio	Display aspect ratio	Max. frame rate
QCIF	➢176 × 144	12:11	4:3	15
SQCIF	➢128 × 96	12:11	4:3	15

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ITU-T Rec H.263 ITU-T Rec H.263 Annex X	XST3T

9.4.2.10 MPEG-4 Part 2 AV format, video portion profile: CO

9.4.2.10.1

[PROFILES]

MPEG4_P2_TS_CO_AC3
MPEG4_P2_TS_CO_AC3_T

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MPEG2_P2_TS_CO_AC3_ISO
MPEG4_P2_TS_CO_MPEG2_L2
MPEG4_P2_TS_CO_MPEG2_L2_T
MPEG4_P2_TS_CO_MPEG2_L2_ISO

9.4.2.10.2

[GUIDELINE] Main characteristics of CO video stream shall be conformant to ISO/IEC 14496-2.

Profile and level:

- CO@L1
- CO@L2

Chroma:

- 4:2:0

Video bit rate (informative):

- CBR: less than or equal to the maximum bit rate of the following bitrates.
- VBR: the maximum bit rate less than or equal to the following bitrates.

Bitrate Profile and level

- 384 kbit/s for CO@L1
- 2 000 kbit/s for CO@L2

Table 76 lists all resolutions for CO.

Table 76 – CO resolutions

	Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)
CIF, 625SIF	➢352 × 288	12:11	4:3
	➢352 × 288	16:11	16:9
525SIF	➢352 × 240	10:11	4:3
	➢352 × 240	40:33	16:9
QVGA 4:3	➢320 × 240	1:1	4:3
QVGA 16:9	➢320 × 180	1:1	16:9
1/7VGA 4:3	➢240 × 180	1:1	4:3
1/9VGA 4:3	➢208 × 160	1:1	4:3
QCIF,625QSIF	➢176 × 144	12:11	4:3
	➢176 × 144	16:11	16:9
525QSIF	➢176 × 120	10:11	4:3
	➢176 × 120	40:33	16:9
SQVGA 4:3	➢160 × 120	1:1	4:3
1/16 VGA 4:3	➢160 × 112	1:1	4:3
SQVGA 16:9	➢160 × 90	1:1	16:9

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	Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)
SQCIF	➢128 × 96	12:11	4:3
	➢128 × 96	16:11	16:9

a Pixel aspect ratio is informative and it indicates a typical aspect ratio for each resolution

b Display aspect ratio of which the video stream is rendered is informative, and it indicates a display aspect ratio with a resolution and the typical aspect ratio for the resolution.

Pixel aspect ratio:

- ➢1:1
- ➢12:11
- ➢10:11
- ➢16:11
- ➢40:33

A bitstream conformant to these media format profiles may utilize use any of these pixel aspect ratios regardless of resolutions.

The Rendering Endpoint may ignore the pixel aspect ratio for rendering. Rendering Endpoint can shrink, stretch and crop image to the display aspect ratio dependent on vendor implementations.

Frame rate:

- ➢Frame rate is less than or equal to 30 fps.

Both fixed frame rate and variable frame rate are allowed, i.e. fixed_vop_rate=1 or 0.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-2	3HDV4	

9.4.3 MPEG-4 Part2 audio portion profiles

9.4.3.1 MPEG-4 Part 2 AV format, audio portion profile: AAC

9.4.3.1.1

[PROFILES]

MPEG4_P2_MP4_SP_AAC
MPEG4_P2_TS_SP_AAC
MPEG4_P2_TS_SP_AAC_T
MPEG4_P2_TS_SP_AAC_ISO
MPEG4_P2_MP4_ASP_AAC
MPEG4_P2_TS_ASP_AAC
MPEG4_P2_TS_ASP_AAC_T
MPEG4_P2_TS_ASP_AAC_ISO
MPEG4_P2_MP4_ASP_L5_SO_AAC
MPEG4_P2_MP4_ASP_L4_SO_AAC
MPEG4_H263_MP4_P0_L10_AAC

9.4.3.1.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the AAC Audio Format, as specified in 8.6.2.

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	XIS78	

9.4.3.2 MPEG-4 Part 2 AV format, audio portion profile: AAC

9.4.3.2.1

[PROFILES]

MPEG4_P2_MP4_SP_L2_AAC
MPEG4_P2_3GPP_SP_L0B_AAC

9.4.3.2.2

[GUIDELINE] The main characteristics of the audio portion shall align with the AAC Audio Format as outlined in 8.6.2, except as indicated below.

Maximum bit rate:

- 128 kbit/s

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	ST3T7	

9.4.3.3 MPEG-4 Part 2 AV format, audio portion profile: AAC

9.4.3.3.1

[PROFILES]

MPEG4_P2_MP4_SP_VGA_AAC
MPEG4_P2_MP4_SP_VGA_AAC_res

9.4.3.3.2

[GUIDELINE] The main characteristics of the audio portion shall align with the AAC Audio Format as outlined in 8.6.2, except as indicated below.

Maximum bit rate:

- 256 kbit/s

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	HDV4W	

9.4.3.4 MPEG-4 Part 2 AV format, audio portion profile: HEAAC_L2

9.4.3.4.1

[PROFILES]

MPEG4_P2_MP4_SP_HEAAC
MPEG4_P2_MP4_ASP_HEAAC
MPEG4_P2_MP4_ASP_L5_SO_HEAAC
MPEG4_P2_MP4_ASP_L4_SO_HEAAC
MPEG4_P2_MP4_SP_VGA_HEAAC_res

9.4.3.4.2

[GUIDELINE] The main characteristic of the audio portion shall align with the HEAAC_L2 Audio Format as specified in 8.6.9.

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	76WEY	

9.4.3.5 MPEG-4 Part 2 AV format, audio portion profile: HEAAC_L2

9.4.3.5.1

[PROFILES]

MPEG4_P2_MP4_SP_VGA_HEAAC

9.4.3.5.2

[GUIDELINE] The main characteristics of the audio portion shall align with the HEAAC_L2 Audio Format as outlined in 8.6.9, except as indicated below.

Maximum bit rate:

- 256 kbit/s

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	3ZYFJ	

9.4.3.6 MPEG-4 Part 2 AV format, audio portion profile: HEAAC_MULT5

9.4.3.6.1

[PROFILES]

MPEG4_P2_MP4_SP_HEAAC_MULT5
MPEG4_P2_MP4_ASP_HEAAC_MULT5
MPEG4_P2_MP4_ASP_L5_SO_HEAAC_MULT5
MPEG4_P2_MP4_ASP_L4_SO_HEAAC_MULT5

9.4.3.6.2

[GUIDELINE] The main characteristics of the audio portion shall align with HEAAC_MULT5 Audio Format as specified in 8.6.19.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	E76WE	

9.4.3.7 MPEG-4 Part 2 AV format, audio portion profile: ATRAC3plus

9.4.3.7.1

[PROFILES]

MPEG4_P2_MP4_SP_ATRAC3plus
MPEG4_P2_MP4_ASP_ATRAC3plus

9.4.3.7.2

[GUIDELINE] The main characteristics of the audio portion shall align with the ATRAC3plus audio portion as defined in ATRAC3plus specification.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ATRAC3plus specification	6KXNZ	

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9.4.3.8 MPEG-4 Part 2 AV format, audio portion profile: AAC_LTP

9.4.3.8.1

[PROFILES]

MPEG4_P2_MP4_SP_AAC_LTP
MPEG4_H263_MP4_P0_L10_AAC_LTP

9.4.3.8.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the AAC_LTP Audio Format as specified in 8.6.22.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	NZNTF	

9.4.3.9 MPEG-4 Part 2 AV format, audio portion profile: MPEG1_L3

9.4.3.9.1

[PROFILES]

MPEG4_P2_TS_SP_MPEG1_L3
MPEG4_P2_TS_SP_MPEG1_L3_T
MPEG4_P2_TS_SP_MPEG1_L3_ISO
MPEG4_P2_TS_ASP_MPEG1_L3
MPEG4_P2_TS_ASP_MPEG1_L3_T
MPEG4_P2_TS_ASP_MPEG1_L3_ISO

9.4.3.9.2

[GUIDELINE] MPEG1_L3 audio portion profile shall abide by the following baseline characteristics:

Audio encoding shall be MPEG-1 Layer 3 audio as defined in ISO/IEC 11172-3.

Number of channels:

- 1 (if the content is mono)
- 2 (if the content is stereo)

Sampling Rates:

- 32 kHz
- 44,1 kHz
- 48 kHz

Bit rates (kbit/s):

- 32
- 40
- 48
- 56
- 64
- 80
- 96

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- 112
- 128
- 160
- 192
- 224
- 256
- 320

Encoding types:

- Constant Bit Rate (CBR)
- Variable Bit Rate (VBR)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 11172-3	XNZNT	

9.4.3.10 MPEG-4 Part 2 AV format, audio portion profile: MPEG2_L2

9.4.3.10.1

[PROFILES]

MPEG4_P2_TS_SP_MPEG2_L2
MPEG4_P2_TS_SP_MPEG2_L2_T
MPEG4_P2_TS_SP_MPEG2_L2_ISO
MPEG4_P2_TS_ASP_MPEG2_L2
MPEG4_P2_TS_ASP_MPEG2_L2_T
MPEG4_P2_TS_ASP_MPEG2_L2_ISO
MPEG4_P2_TS_CO_MPEG2_L2
MPEG4_P2_TS_CO_MPEG2_L2_T
MPEG4_P2_TS_CO_MPEG2_L2_ISO

9.4.3.10.2

[GUIDELINE] MPEG2_L2 audio portion profile shall match the provisions about MPEG Audio in ISO/IEC 11172-3 and ISO/IEC 13818-3.

Main characteristics of MPEG2_L2 audio stream are

Coding

- MPEG-1 Layer 1
- MPEG-1 Layer 2

A Serving Endpoint may output, and a Rendering Endpoint shall be *capable of rendering* a joint stereo encoded audio stream.

No mc-prediction.

MPEG-1 backwards compatible multi-channel mode:

MPEG-2 Layer 2 mc (multi-channel), dematrix procedure 0, 1 or 2.

A bitstream conformant with these media format profiles may contain the following.

Content audio channel modes:

A bitstream conformant with these media format profiles may contain the follow formats that may optionally include a Low Frequency Enhancement (LFE) channel.

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- Mono (1/0)
- Dual Monaural (1/0+1/0)
- Stereo (2/0)
- Multichannel (2/2)
- Multichannel (2/1)
- Multichannel (3/2)
- Multichannel (3/1)
- Multichannel (3/0)
- Multichannel (3/0+2/0)
- Multichannel (2/0+2/0)
- Multichannel ([1/0+1/0)+2/0]
- Multichannel (1/0+2/0)

No multilingual channels in multi-channel mode

CRC check shall be included

Sample rates:

- 32 kHz
- 44,1 kHz
- 48 kHz

Bitrates:

- Layer 1: from 32 kbit/s to 448 kbit/s
- Layer 2: from 32 kbit/s to 384 kbit/s

Extension stream (optional):

- From 0 kbit/s to 682 kbit/s
- No emphasis

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 11172-3 ISO/IEC 13818-3	U3ZYF	

9.4.3.10.3

[GUIDELINE] A bitstream compliant with these media format profiles may contain additional sample rates for secondary sound services:

- 16 kHz
- 22,05 kHz
- 24 kHz

[ATTRIBUTES]

O	A	n/a	n/a	n/a	ISO/IEC 13818-3	KXNZN	

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9.4.3.11 MPEG-4 Part 2 AV format, audio portion profile: AC3

9.4.3.11.1

[PROFILES]

MPEG4_P2_TS_SP_AC3
MPEG4_P2_TS_SP_AC3_T
MPEG4_P2_TS_SP_AC3_ISO
MPEG4_P2_TS_ASP_AC3
MPEG4_P2_TS_ASP_AC3_T
MPEG4_P2_TS_ASP_AC3_ISO
MPEG4_P2_TS_CO_AC3
MPEG4_P2_TS_CO_AC3_T
MPEG4_P2_TS_CO_AC3_ISO

9.4.3.11.2

[GUIDELINE] The main characteristics of Dolby AC-3 audio stream are defined in ATSC Standard A/53C.

Sampling Frequency:

- 32 kHz
- 44,1 kHz
- 48 kHz

Content audio channel modes:

A bitstream conformant to these media format profiles may contain the following formats

- Mono (1/0)
- Stereo (2/0)
- Multichannel (3/0)
- Multichannel (2/1)
- Multichannel (3/1)
- Multichannel (2/2)
- Multichannel (3/2)

Changing audio channels among mono and stereo is allowed.

Audio bit rate:

- 32 kbit/s to 640 kbit/s.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ATSC Standard A/53C	76KXN	

9.4.3.12 MPEG-4 Part 2 AV format, audio portion profile: G.726

9.4.3.12.1

[PROFILES]

MPEG4_P2_ASF_SP_G726
MPEG4_P2_ASF_ASP_L5_SO_G726
MPEG4_P2_ASF_ASP_L4_SO_G726

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9.4.3.12.2

[GUIDELINE] The main characteristics of the ITU-T Rec. G.726 audio portion profile are

Sampling frequency:

- 8 kHz

Number of channel:

- Mono (1)

Bit rate:

- 32 kbit/s

[ATTRIBUTES]

M	L	DMS DMP	n/a	n/a	ITU-T Rec G.726	9U3ZY	

9.4.3.13 MPEG-4 Part 2 AV format, audio portion profile: AMR_WBplus

9.4.3.13.1

[PROFILES]

MPEG4_H263_3GPP_P0_L10_AMR_WBplus

9.4.3.13.2

[GUIDELINE] The main characteristics of the audio portion of this profile are similar to the AMR_WBplus audio profile defined in the audio 8.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	TT9U3	

9.4.3.14 MPEG-4 Part 2 AV format, audio portion profile: AMR

9.4.3.14.1

[PROFILES]

MPEG4_H263_3GPP_P3_L10_AMR
MPEG4_P2_MP4_SP_L2_AMR
MPEG4_P2_3GPP_SP_L0B_AMR

9.4.3.14.2

[GUIDELINE] The main characteristics of the audio portion shall align with the AMR_3GPP audio portion profile as outlined in 8.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	QE76W	

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9.4.4 MPEG-4 Part2 system portion profiles

9.4.4.1 MPEG-4 Part 2 AV format, system portion profile: MPEG2-TS MPEG2-TS_T MPEG2-TS_ISO

9.4.4.1.1

[PROFILES]

MPEG4_P2_TS_SP_AAC
MPEG4_P2_TS_SP_AAC_T
MPEG4_P2_TS_SP_AAC_ISO
MPEG4_P2_TS_SP_MPEG1_L3
MPEG4_P2_TS_SP_MPEG1_L3_T
MPEG4_P2_TS_SP_MPEG1_L3_ISO
MPEG4_P2_TS_SP_AC3
MPEG4_P2_TS_SP_AC3_T
MPEG4_PS_TS_SP_AC3_ISO
MPEG4_P2_TS_SP_MPEG2_L2
MPEG4_P2_TS_SP_MPEG2_L2_T
MPEG4_P2_TS_SP_MPEG2_L2_ISO
MPEG4_P2_TS_ASP_AAC
MPEG4_P2_TS_ASP_AAC_T
MPEG4_P2_TS_ASP_AAC_ISO
MPEG4_P2_TS_ASP_MPEG1_L3
MPEG4_P2_TS_ASP_MPEG1_L3_T
MPEG4_P2_TS_ASP_MPEG1_L3_ISO
MPEG4_P2_TS_ASP_AC3
MPEG4_P2_TS_ASP_AC3_T
MPEG4_P2_TS_ASP_AC3_ISO
MPEG4_P2_TS_CO_AC3
MPEG4_P2_TS_CO_AC3_T
MPEG4_P2_TS_CO_AC3_ISO
MPEG4_P2_TS_CO_MPEG2_L2
MPEG4_P2_TS_CO_MPEG2_L2_T
MPEG4_P2_TS_CO_MPEG2_L2_ISO
MPEG4_P2_TS_CO_AC3
MPEG4_P2_TS_CO_AC3 _T
MPEG4_P2_TS_CO_AC3_ISO

9.4.4.1.2

[GUIDELINE] The main characteristics of MPEG2_TS system stream are

System:

- System Stream is Full or Partial Single Program Transport Stream (SPTS). It shall contain only one program from the original broadcasted TS according to the PAT and PMT tables.

Number of programs:

- 1 as defined for a Single Program Transport Stream

Packet size:

- 188 B per transport packet

PSI information:

- PAT and PMT are required to be present in the stream. It shall tolerate any other tables.
- PSI insertion interval should be implementation-dependent.

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Maximum system bitrate (includes video, audio, etc.) shown in Table 77.

Table 77 – MPEG2 _TS maximum system bitrate

Bitrate	Video portion profile
➢600 kbit/s	SP_L3
➢10 000 kbit/s	ASP_L5
➢3 000 kbit/s	CO

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-1	4QE76	

9.4.4.1.3

[GUIDELINE] The main characteristics of MPEG2_TS, MPEG2_TS_T, and MPEG2_TS_ISO system stream are

System:

- System Stream is Full or Partial Single Program Transport Stream (SPTS). It shall contain only one program from the original broadcasted TS according to the PAT and PMT tables.

Number of programs:

1 as defined for a Single Program Transport Stream

Packet size:

- 188 B per transport packet

PSI information:

- ➢PAT and PMT are required.
- ➢PSI insertion interval should be implementation-dependent.

A compliant bitstream may include additional PSI information.

Maximum system bitrate (includes video, audio, etc.) as shown in Table 78.

Table 78 – MPEG2_TS, MPEG2_TS_T, and MPEG2_TS_ISO bit rates

Bitrate	Video portion profile
➢600 kbit/s	SP_L3
➢10 000 kbit/s	ASP_L5
➢3 000 kbit/s	CO

DLNA Transport Packets

- A bitstream conformant to these media format profiles shall contain DLNA Transport Packets as defined in 9.3.4.2 and 9.3.5.4.2.

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-1	T3T76	

[COMMENT] A partial SPTS can be created from MPTS by removing packets corresponding to other programs, or from another SPTS stream (by removing some components).
A full or partial SPTS can have multiple audio and video components in it.
Full SPTS is fully compliant with ISO/IEC 13818-1.
Partial SPTS is fully compliant with ISO/IEC 13818-1 except for the T-STD buffer model.

9.4.4.1.4

[GUIDELINE] A Rendering Endpoint shall accept (tolerate) but not necessarily render all audio, video and data components that belong to the (selected) program in a full or partial SPTS according to the PAT/PMT tables.

At a minimum, a Rendering Endpont shall render one elementary video stream and one corresponding elementary audio stream as present in the TS.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	ISO/IEC 13818-1	V4W4Q	

[COMMENT] AV devices supporting AV media class content support rendering of both, audio and video components.

9.4.4.1.5

[GUIDELINE] 1 VOP should be contained in 1 PES.

[ATTRIBUTES]

S	C	n/a	n/a	n/a	ISO/IEC 13818-1	DV4W4	

9.4.4.1.6

[GUIDELINE] Configuration information should be sent every 5 s or less.

[ATTRIBUTES]

S	L	n/a	n/a	n/a	ISO/IEC 13818-1	IS78T	

[COMMENT] MPEG-4-Visual Configuration Information includes: Visual Object Sequence Header, Visual Object Header, Video Object Header, Video Object Layer Header.

9.4.4.1.7

[GUIDELINE] VOP should be sent every 0,7 s or less

[ATTRIBUTES]

S	L	n/a	n/a	n/a	ISO/IEC 13818-1	S78TT	

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[COMMENT] This period comes from calculating 1001/vop_time_increment_resolution.

9.4.4.2 MPEG-4 Part 2 AV format

9.4.4.2.1

[PROFILES]

MPEG4_P2_MP4_SP_AAC
MPEG4_P2_MP4_SP_HEAAC
MPEG4_P2_MP4_SP_ATRAC3plus
MPEG4_P2_MP4_SP_AAC_LTP
MPEG4_P2_MP4_ASP_AAC
MPEG4_P2_MP4_ASP_HEAAC
MPEG4_P2_MP4_ASP_HEAAC_MULT5
MPEG4_P2_MP4_ASP_ATRAC3plus
MPEG4_P2_MP4_ASP_L5_SO_AAC
MPEG4_P2_MP4_ASP_L5_SO_HEAAC
MPEG4_P2_MP4_ASP_L5_SO_HEAAC_MULT5
MPEG4_P2_MP4_ASP_L4_SO_AAC
MPEG4_P2_MP4_ASP_L4_SO_HEAAC
MPEG4_P2_MP4_ASP_L4_SO_HEAAC_MULT5
MPEG4_H263_MP4_P0_L10_AAC
MPEG4_H263_MP4_P0_L10_AAC_LTP
MPEG4_P2_MP4_SP_L2_AMR
MPEG4_P2_MP4_SP_L2_AAC
MPEG4_P2_MP4_SP_VGA_AAC
MPEG4_P2_MP4_SP_VGA_HEAAC

9.4.4.2.2

[GUIDELINE] The MP4 system portion profile shall match the provisions of MPEG-4 Part 14 ISO/IEC 14496-14 with the constraints defined below in guideline 9.4.4.3.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-14	3T76K	

9.4.4.3 MPEG-4 Part 2 AV format, systems portion profile: Constraints on the MP4 file format

9.4.4.3.1

[PROFILES]

MPEG4_P2_MP4_SP_AAC
MPEG4_P2_MP4_SP_HEAAC
MPEG4_P2_MP4_SP_ATRAC3plus
MPEG4_P2_MP4_SP_AAC_LTP
MPEG4_P2_MP4_ASP_AAC
MPEG4_P2_MP4_ASP_HEAAC
MPEG4_P2_MP4_ASP_HEAAC_MULT5
MPEG4_P2_MP4_ASP_ATRAC3plus
MPEG4_P2_MP4_ASP_L5_SO_AAC
MPEG4_P2_MP4_ASP_L5_SO_HEAAC
MPEG4_P2_MP4_ASP_L5_SO_HEAAC_MULT5
MPEG4_P2_MP4_ASP_L4_SO_AAC
MPEG4_P2_MP4_ASP_L4_SO_HEAAC
MPEG4_P2_MP4_ASP_L4_SO_HEAAC_MULT5
MPEG4_H263_MP4_P0_L10_AAC
MPEG4_H263_MP4_P0_L10_AAC_LTP
MPEG4_P2_MP4_SP_L2_AMR

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MPEG4_P2_MP4_SP_L2_AAC
MPEG4_P2_MP4_SP_VGA_AAC
MPEG4_P2_MP4_SP_VGA_HEAAC

9.4.4.3.2

[GUIDELINE] One default video track and one default audio track shall be present.

The default video track shall contain Video Elementary Stream for this media format profile.

The default audio track shall contain Audio Elementary Stream for this media format profile.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-12	4W4QE	

9.4.4.3.3

[GUIDELINE] The Rendering Endpoint shall be able to render at least the default video track and the default audio track.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	ISO/IEC 14496-12	T76KX	

[COMMENT] In addition to the default video track and the default audio track, the Rendering Endpoint might support the rendering of additonal tracks as defined in 9.4.4.3.13. The rendering of additional tracks is vendor dependent.

9.4.4.3.4

[GUIDELINE] The default video track shall have the lowest track ID among the video tracks contained in the content object.

The default audio track shall have the lowest track ID among the audio tracks contained in the content binary.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 14496-12	8TT9U	

[COMMENT] This guideline defines a DLNA normative method to identify a video track and an audio track for default representation instead of using the Object Descriptor Box.

9.4.4.3.5

[GUIDELINE] For the default video track and the default audio track, "Track_enabled" shall be set to the value of 1 in the "flags" field of Track Header Box of the track.

[ATTRIBUTES]

M	C	n/a	n/a	n/a	ISO/IEC 14496-12	T9U3Z	

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[COMMENT] See ISO/IEC 14496-14:2003, 5.3. "The track header flags track_in_movie and track_in_preview are not used in MP4 and must [shall] be set to the default value of 1 in all files".

9.4.4.3.6

[GUIDELINE] Tracks other than the default video and audio tracks may be present in the content object.

NOTE Additional tracks might not be compliant to the Elementary Streams for the media format profile.

[ATTRIBUTES]

O	R	n/a	n/a	n/a	ISO/IEC 14496-12	W4QE7	

[COMMENT] Additional tracks can be BIFS track, optional audio tracks, optional video tracks, text track, and hint track.

9.4.4.3.7

[GUIDELINE] The Rendering Endpoint shall be tolerant of additional tracks other than the default video and audio tracks.

[ATTRIBUTES]

M	L	DMP DMR	M-DMP M-DMD	n/a	ISO/IEC 14496-12	78TT9	

9.4.4.3.8

[GUIDELINE] The 'moov' box shall be positioned after the 'ftyp' box before the first 'mdat'. If a 'moof' box is present, it shall be positioned before the corresponding 'mdat' box.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-12	PUT9K	

[COMMENT] For streaming, moov is retrieved at first in consideration of streaming playback.

9.4.4.3.9

[GUIDELINE] Within a track, chunks shall be in decoding time order within the media-data box mdat.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 14496-12	Y3VBW	

9.4.4.3.10

[GUIDELINE] Video and audio tracks shall be organized as interleaved chunks.

The duration of samples stored in a chunk shall not exceed 1 s.

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-12	XN44B	

[COMMENT] A resource constrained system cannot process a big chunk.

9.4.4.3.11

[GUIDELINE] If the size of moov box becomes bigger than 1 MiB, the MPEG-4 movie shall be fragmented by using moof box.

The size of moov boxes shall be equal to or less than 1 MiB

The size of moof boxes shall be equal to or less than 300 KiB.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-12	HZNXQ	

[COMMENTS]

a) A resource constrained system cannot process a big moov box in case of streaming. The 300 KiB moof box can store the sample table box corresponding to about 20 min AV stream if each video picture stored as a chunk.

b) A big moov box can cause an initial delay to start rendering the AV stream.

c) A small movie fragment can cause slow random access when the downloaded file is playback locally.

9.4.4.3.12

[GUIDELINE] For video, random accessible samples should be stored as the first sample of each 'traf'. In the case of gradual decoder refresh, a random accessible sample and the corresponding recovery point should be stored in the same movie fragment. In case of audio, samples having the closest presentation time for every video random accessible sample should be stored as the first sample of each traf. Hence, the first samples of each media in the moof have the approximately equal presentation times.

[ATTRIBUTES]

S	L	n/a	n/a	n/a	ISO/IEC 14496-12	ZNXQ4	

9.4.4.3.13

[GUIDELINE] The sample size box (stsz) shall be used. The compact sample size box (stz2) shall not be used.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-12	NXQ47	

9.4.4.3.14

[GUIDELINE] Only Media Data Box (mdat) is allowed to have size 1. Only the last Media Data Box (mdat) in the file is allowed to have size 0. Other boxes shall not have size 1.

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-12	XQ47Q	

[COMMENT] ISO/IEC 14496-12:2003, 4.2 implies this requirement as follows; "size is an integer that specifies the number of bytes in this box, including all its fields and contained boxes; if size is 1, then the actual size is in the field largesize. If size is 0, then this box is the last one in the file, and its contents extend to the end of the file (normally only used for a Media Data Box)".

9.4.4.3.15

[GUIDELINE] When a group of multiple tracks that contain alternate data for one another exists as part of a content binary, the value of the alternate_group field for each of these tracks should be the same non-zero value. When multiple instances of such groups exist, each group should have a distinct alternate_group value.

[ATTRIBUTES]

S	R	n/a	n/a	n/a	ISO/IEC 14496-12	8Q9RH	

[COMMENT] For example, this indicates that the multiple audio or video tracks are alternatives to each other (and are not intended to be mixed).

9.4.4.4 MPEG-4 Part 2 AV format, system portion profiling: system bit rates

9.4.4.4.1

[PROFILES]

MPEG4_P2_MP4_SP_AAC
MPEG4_P2_MP4_SP_HEAAC
MPEG4_P2_MP4_SP_ATRAC3plus
MPEG4_P2_MP4_SP_AAC_LTP
MPEG4_P2_MP4_ASP_AAC
MPEG4_P2_MP4_ASP_HEAAC
MPEG4_P2_MP4_ASP_HEAAC_MULT5
MPEG4_P2_MP4_ASP_ATRAC3plus
MPEG4_P2_MP4_ASP_L5_SO_AAC
MPEG4_P2_MP4_ASP_L5_SO_HEAAC
MPEG4_P2_MP4_ASP_L5_SO_HEAAC_MULT5
MPEG4_P2_MP4_ASP_L4_SO_AAC
MPEG4_P2_MP4_ASP_L4_SO_HEAAC
MPEG4_P2_MP4_ASP_L4_SO_HEAAC_MULT5
MPEG4_H263_MP4_P0_L10_AAC
MPEG4_H263_MP4_P0_L10_AAC_LTP
MPEG4_P2_MP4_SP_L2_AMR
MPEG4_P2_MP4_SP_L2_AAC
MPEG4_P2_MP4_SP_VGA_AAC
MPEG4_P2_MP4_SP_VGA_HEAAC

9.4.4.4.2

[GUIDELINE] The maximum system bite rate, which is defined as the maximum of cumulative bitrate of streams in media data, shall be as follows. (They are constrained by the video portion profile which is used in the media format profile.)

The maximum system bitrate is as shown in Table 79.

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Table 79 – Maximum system bitrate

Bitrate	Video portion profile
➢ 150 kbit/s	H263_P0_L10
➢ 300 kbit/s	SP_L2
➢ 600 kbit/s	SP_L3
➢ 4 000 kbit/s	SP_L3_VGA
➢ 4 000 kbit/s	ASP_L4_SO
➢ 10 000 kbit/s	ASP_L5_SO
➢ 1 000 kbit/s	ASP_L5

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-12	Q47QZ	

9.4.4.5 MPEG-4 Part 2 AV format, system portion profile: ASF

9.4.4.5.1

[PROFILES]

MPEG4_P2_ASF_SP_G726
MPEG4_P2_ASF_ASP_L5_SO_G726
MPEG4_P2_ASF_ASP_L4_SO_G726

9.4.4.5.2

[GUIDELINE] ASF system portion profile shall match the provisions of ASF defined in ASF.

Main characteristics of ASF system portion profile are

Number of Video Streams:

- ➢ 1 video stream only

Number of Audio Streams:

- ➢ 1 audio stream only

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ASF	47QZA	

9.4.4.6 MPEG-4 Part 2 AV format, system portion profile: 3GPP

9.4.4.6.1

[PROFILES]

MPEG4_H263_3GPP_P0_L10_AMR_WBplus
MPEG4_H263_3GPP_P3_L10_AMR
MPEG4_P2_3GPP_SP_L0B_AMR
MPEG4_P2_3GPP_SP_L0B_AAC

9.4.4.6.2

[GUIDELINE] The video and audio elementary streams shall be encapsulated into one of the following two 3GPP file formats as specified in 3GPP TS 26.244.

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- Progressive profile
- Basic profile

The following constraints shall also be applied.

- All the provisions of 9.4.4.3 apply.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	3GPP TS 26.244	7QZAF	

9.4.4.6.3

[GUIDELINE] Between the Basic and Progressive profiles, the Progressive profile should be used.

When the Progressive profile is used then file brand "3gr6" should be used.

When the Basic profile is used then file brand "3gp6" should be used.

[ATTRIBUTES]

S	R	n/a	n/a	n/a	3GPP TS 26.244	QZAF3	

9.4.5 MPEG-4 Part 2 AV ormat, video portion profile: H263_P0_L45

9.4.5.1

[PROFILES]

MPEG4_H263_MP4_P0_L45_HEAACv2_L2

9.4.5.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the H263_P0_L45 video format, as specified in 9.4.2.1.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ITU-T Rec H.263 ITU-T Rec H.263 Annex X 3GPP TS 26.140 3GPP TS 26.234 3GPP TS 26.140 3GPP TS 26.234	3FW8S	

9.4.6 MPEG-4 Part 2 AV format, video portion profile: SP_L3_VGA_QHD

9.4.6.1

[PROFILES]

MPEG4_P2_MP4_SP_VGA_AAC_res
MPEG4_P2_MP4_SP_VGA_HEAAC_res

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9.4.6.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the SP_L3 video format as specified in 9.4.2.1, except as indicated in Table 80.

Table 80 – Additional MPEG-4 Part 2 AV format resolutions

Resolution	Pixel aspect ratio	Disp. aspect ratio	Max. frame rate
➢ 640 × 352	1:1	16:9	30

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	W8SX3	

9.4.7 MPEG-4 Part 2 AV format, video portion profile: SP_L6

9.4.7.1

[PROFILES]

MPEG4_P2_MP4_SP_L6_AAC
MPEG4_P2_MP4_SP_L6_AAC_LTP
MPEG4_P2_MP4_SP_L6_HEAAC_L2

9.4.7.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the SP_L5 video format as specified in 9.4.2.10, except as indicated below.

Additional Profiles and levels:

- Simple Profile at Level 4a
- Simple Profile at Level 6

Video bit rate:

- ➢ CBR or VBR: less than or equal to a maximum bit rate of 4 000 kbit/s at Level 4a
- ➢ CBR or VBR: less than or equal to a maximum bit rate of 12 000 kbit/s at Level 6.

Table 81 lists additional resolutions for MPEG-4 Part-2.

Table 81 – Additional MPEG-4 Part 2 AV format resolutions

Resolution	Pixel aspect ratio	Disp. aspect ratio	Max. frame rate
➢ 1 280 × 720	1:1	16:9	30p

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 14496-2	C56O5	

9.4.8 MPEG-4 Part 2 AV format, video portion profile: MP4_NDSD

9.4.8.1

[PROFILES]

MPEG4_P2_MP4_NDSD

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9.4.8.2

[GUIDELINE] Main characteristics of video shall be conformant to ISO/IEC 14496-2, ISO/IEC 14496-2, ISO/IEC 14496-2 and Nero Digital Format.

Main characteristics of MPEG-4 Part 2 video stream are

Profile:

- Advanced Simple Profile at Level 5

Resolution:

- Minimum: 176 × 144
- Maximum: 720 × 576 at 25 fps or 720 × 480 at 30 fps

Frame rates:

- 15p
- 23,976p
- 24p
- 25p/50i
- 29,97p/59,94i
- 30p

Video bit rate:

- Maximum: 8 000 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-2 ISO/IEC 14496-2 ISO/IEC 14496-2 Nero Digital Format	R9JOZ	

9.4.9 MPEG-4 Part 2 AV format, audio portion profile: AAC

9.4.9.1

[PROFILES]

MPEG4_P2_MP4_SP_L6_AAC

9.4.9.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the AAC Audio Format as specified in 8.6.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	5CIWS	

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9.4.10 MPEG-4 Part 2 AV format, audio portion profile: AAC_LTP

9.4.10.1

[PROFILES]

MPEG4_P2_MP4_SP_L6_AAC_LTP

9.4.10.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the AAC_LTP Audio Format as specified in 8.6.22.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	8SX38	

9.4.11 MPEG-4 Part 2 AV format, audio portion profile: HEAAC_L2

9.4.11.1

[PROFILES]

MPEG4_P2_MP4_SP_L6_HEAAC_L2

9.4.11.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the HEAAC_L2 Audio Format as specified in 8.6.9.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	6O5CI	

9.4.12 MPEG-4 Part 2 AV format, audio portion profile: HEAACv2_L2

9.4.12.1

[PROFILES]

MPEG4_H263_MP4_P0_L45_HEAACv2_L2

9.4.12.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the HEAACv2_L2 audio format as specified in 8.6.61, except as indicated below.

Maximum bit rate (normative):

- 96 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	3GPP TS 26.140 3GPP TS 26.234 3GPP TS 26.140 3GPP TS 26.234	O5CIW	

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9.4.13 MPEG-4 Part 2 AV format, audio portion profile: HEAACv2_L2

9.4.13.1

[PROFILES]

MPEG4_P2_MP4_SP_L0B_HEAACv2_L2
MPEG4_P2_MP4_SP_L3_HEAACv2_L2

9.4.13.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the HEAACv2_L2 audio format as specified in 8.6.65, except as indicated below.

Maximum bit rate (normative):

- 128 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	SX38W	

9.4.14 MPEG-4 Part 2 AV format, audio portion profile: AMR_WBplus

9.4.14.1

[PROFILES]

MPEG4_P2_3GPP_SP_L0B_AMR_WBplus
MPEG4_P2_3GPP_SP_L3_AMR_WBplus

9.4.14.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the AMR_WBplus audio format as specified in 8.2.3.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	9JOZE	

9.4.15 MPEG-4 Part 2 AV format, audio portion profile: NDSD

9.4.15.1

[PROFILES]

MPEG4_P2_MP4_NDSD

9.4.15.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the AC-3 audio format as specified in 8.1.1, or the MP3 audio format as specified in 8.5.1.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	JOZEV	

9.4.16 MPEG-4 Part 2 AV format, system portion profile: MP4

9.4.16.1

[PROFILES]

MPEG4_H263_MP4_P0_L45_HEAACv2_L2
MPEG4_P2_MP4_SP_L0B_HEAACv2_L2
MPEG4_P2_MP4_SP_L3_HEAACv2_L2
MPEG4_P2_MP4_SP_VGA_AAC_res

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MPEG4_P2_MP4_SP_VGA_HEAAC_res
MPEG4_P2_MP4_SP_L6_AAC
MPEG4_P2_MP4_SP_L6_AAC_LTP
MPEG4_P2_MP4_SP_L6_HEAAC_L2
MPEG4_P2_MP4_NDSD

9.4.16.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the MP4 file format as specified in 9.4.4.3.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	OZEVW	

9.4.17 MPEG-4 Part 2 AV format, system portion profile: 3GPP

9.4.17.1

[PROFILES]

MPEG4_P2_3GPP_SP_L0B_AMR_WBplus
MPEG4_P2_3GPP_SP_L3_AMR_WBplus

9.4.17.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the 3GPP file format as specified in 9.4.4.6, except as indicated below.

File branding:

- When the Progressive profile is used then major brand "3gr6" and compatible brand "3gr7" should be used.
- When the Basic profile is used then major brand "3gp6" and compatible brand "3gp7" should be used.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	XLX9Z	

9.4.17.3

[GUIDELINE] Between the Basic and Progressive profiles, the Progressive profile should be used.

When the Progressive profile is used then major brand "3gr6" and compatible brand "3gr7" should be used.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	3GPP TS 26.244	ZEVWY	

9.4.18 MPEG-4 Part 2 AV format, system portion profile: system bit rate

9.4.18.1

[PROFILES]

MPEG4_P2_MP4_SP_L0B_HEAACv2_L2

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9.4.18.2

[GUIDELINE] A bitstream conformant with this profile shall have the maximum system bit rate as specified below.

Maximum system bit rate (normative)

- 256 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	X38WB	

9.4.19 MPEG-4 Part 2 AV format, system portion profile: system bit rate

9.4.19.1

[PROFILES]

MPEG4_P2_3GPP_SP_L3_AMR_WBplus

9.4.19.2

[GUIDELINE] A bitstream conformant with this profile shall have the maximum system bit rate as specified below.

Maximum system bit rate:

- 520 kbit/s

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	CIWSU	

9.4.20 MPEG-4 Part 2 AV format, system portion profile: system bit rate

9.4.20.1

[PROFILES]

MPEG4_P2_MP4_SP_L3_HEAACv2_L2

9.4.20.2

[GUIDELINE] A bitstream conformant with this profile shall have the maximum system bit rate as specified below.

Maximum system bit rate:

- 600 kbit/s

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	LX9Z6	

9.4.21 MPEG-4 Part 2: AV format, system portion profile: MP4_SP_VGA_res

9.4.21.1

[PROFILES]

MPEG4_P2_MP4_SP_VGA_AAC_res
MPEG4_P2_MP4_SP_VGA_HEAAC_res

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9.4.21.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to the system portion of the MPEG4_P2_MP4_SP_AAC profile as defined in 9.4.4.4.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	38WBC	

9.4.22 MPEG-4 Part 2: AV format, system portion profile: MP4_SP_L6

9.4.22.1

[PROFILES]

MPEG4_P2_MP4_SP_L6_AAC
MPEG4_P2_MP4_SP_L6_AAC_LTP
MPEG4_P2_MP4_SP_L6_HEAAC_L2

9.4.22.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to the system portion of the MPEG4_P2_MP4_SP_AAC profile as defined in 9.4.4.4, except as indicated below.

System bit rate:

- Maximum of 14 000 kbit/s

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	EVWYV	

9.4.23 MPEG-4 Part 2: AV format, system portion profile: MP4_NDSD

9.4.23.1

[PROFILES]

MPEG4_P2_MP4_NDSD

9.4.23.2

[GUIDELINE] Main characteristics of this MPEG4_P2_MP4_NDSD stream are defined in ISO/IEC 14496-14, ISO/IEC 14496-12, ISO/IEC 14496-1 and Nero Digital Format.

Main characteristics of MPEG-4 Part 2 system stream are

System bit rate:

- ➢ The maximum bitrate is 8 896 kbit/s.

Chapter Points:

- ➢ Chapter points (markers) as defined in Nero Digital Format shall be supported.

Video ES:

- A bitstream conformant with this profile shall contain a maximum of one video stream

Audio ES:

- A bitstream conformant with this profile shall contain a maximum of two audio streams.
- A Rendering Endpoint that supports this profile shall be able to accept two audio tracks and shall be able to switch between audio tracks.

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Subtitle tracks:

- A bitstream conformant with this profile shall contain a maximum of two subtitle tracks.
- A Rendering Endpoint that supports this profile shall be able to render two subtitle tracks and shall be able to switch between subtitle tracks.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-14 ISO/IEC 14496-12 ISO/IEC 14496-1 Nero Digital Format	V244G	

9.4.24 MPEG-4 Part 2 AV format, MIME type definition: MP4

9.4.24.1

[PROFILES]

MPEG4_H263_MP4_P0_L45_HEAACv2_L2
MPEG4_P2_MP4_SP_L0B_HEAACv2_L2
MPEG4_P2_MP4_SP_L3_HEAACv2_L2
MPEG4_P2_MP4_SP_VGA_AAC_res
MPEG4_P2_MP4_SP_VGA_HEAAC_res
MPEG4_P2_MP4_SP_L6_AAC
MPEG4_P2_MP4_SP_L6_AAC_LTP
MPEG4_P2_MP4_SP_L6_HEAAC_L2
MPEG4_P2_MP4_NDSD

9.4.24.2

[GUIDELINE] MIME type "video/mp4" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	ACYWI	

9.4.25 MPEG-4 Part 2 AV format, MIME type definition: 3GPP

9.4.25.1

[PROFILES]

MPEG4_P2_3GPP_SP_L0B_AMR_WBplus
MPEG4_P2_3GPP_SP_L3_AMR_WBplus

9.4.25.2

[GUIDELINE] MIME type "video/3gpp" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	X9Z6O	

Table 82 is the informative summary of MPEG-4 Part 2 Profiles for the AV Media Class.

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Table 82 – Informative summary of MPEG-4 Part 2 Profiles for the AV Media Class

DLNA Profile ID	Video portion profile			Audio portion profile			System portion profile	
	SP_L5	H263_P0_L10	H263_P0_L45	AAC	AMR	AMR_WBplus	MP4	3GPP
MPEG4_H263_3GPP_P0_L10_AMR		X			X			X
MPEG4_H263_3GPP_P0_L45_AMR			X		X			X
MPEG4_H263_3GPP_P0_L45_AMR_WBplus			X			X		X
MPEG4_P2_MP4_SP_L5_AAC	X			X			X	

9.4.26 MPEG-4 Part 2 AV format: video portion profile: H263_P0_L45

9.4.26.1

[PROFILES]

MPEG4_H263_3GPP_P0_L45_AMR

9.4.26.2

[GUIDELINE] Main characteristics of H263_P0_L45 video shall be conformant to ITU-T Rec H.263.

Profile and level

- H.263 Profile 0 Level 45 as defined in ITU-T Rec H.263 Annex X shall be supported.

NOTE H.263 Profile 0 is a subset of MPEG-4 Visual Simple Profile.

Chroma

- 4:2:0

Video bit rate

- CBR: less than or equal to 128 kbit/s.
- VBR: less than or equal to 128 kbit/s

Table 83 shows the format resolutions for H263_P0_L45

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Table 83 – Resolutions for video portion profile H263_P0_L45

Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)
(QCIF, 625QSIF) ➢ 176 × 144	12:11	4:3
(SQCIF) ➢ 128 × 96	12:11	4:3

[a] Pixel aspect ratio is informative and it indicates a typical aspect ratio for each resolution.

[b] Display aspect ratio of which the video stream is rendered is informative, and it indicates a display aspect ratio with a resolution and the typical aspect ratio for the resolution.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ITU-T Rec H.263 ITU-T Rec H.263 Annex X	7M75V	

9.4.27 MPEG-4 Part 2 AV format, video portion profile: H263_P0_L10

9.4.27.1

[PROFILES]

MPEG4_H263_3GPP_P0_L10_AMR

9.4.27.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the H263_P0_L10 video format as specified in 9.4.2.8.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ITU-T Rec H.263 ITU-T Rec H.263 Annex X	NSV24	

9.4.28 MPEG-4 Part 2 AV format, video portion profile: H263_P0_L45

9.4.28.1

[PROFILES]

MPEG4_H263_3GPP_P0_L45_AMR_WBplus

9.4.28.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the H263_P0_L45 Video Format as specified for MPEG4_H263_3GPP_P0_L45_AMR in 9.4.2.1.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ITU-T Rec H.263 ITU-T Rec H.263 Annex X	XAOVA	

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9.4.29 MPEG-4 Part 2 AV format, audio portion profile: AMR

9.4.29.1

[PROFILES]

MPEG4_H263_3GPP_P0_L10_AMR
MPEG4_H263_3GPP_P0_L45_AMR

9.4.29.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the AMR_3GPP audio format as specified in 8.2.1.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	3GPP TS 26.090	LY3XT	

9.4.30 MPEG-4 Part 2 AV format, audio portion profile: AMR_WBplus

9.4.30.1

[PROFILES]

MPEG4_H263_3GPP_P0_L45_AMR_WBplus

9.4.30.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the AMR_WBplus audio format as specified in 8.2.3.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	3GPP TS 26.290	QN7DW	

9.4.31 MPEG-4 Part 2 AV format, audio portion profile: 3GPP

9.4.31.1

[PROFILES]

MPEG4_H263_3GPP_P0_L10_AMR
MPEG4_H263_3GPP_P0_L45_AMR
MPEG4_H263_3GPP_P0_L45_AMR_WBplus

9.4.31.2

[GUIDELINE] A bitstream which is conformant with these profiles shall conform to all aspects of the 3GPP system portion profile defined in 9.4.4.6.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	8UDUL	

9.4.32 MPEG-4 Part 2 AV format, system portion profile: system bit rates

9.4.32.1

[PROFILES]

MPEG4_H263_3GPP_P0_L10_AMR

9.4.32.2

[GUIDELINE] A bitstream conformant with this profile shall have the maximum system bit rate as specified in 9.4.4.4 for video portion profile H263_P0_L10.

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[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	QZ4L9	

9.4.33 MPEG-4 Part 2 AV format, system portion profile: system bit rates

9.4.33.1

[PROFILES]

MPEG4_H263_3GPP_P0_L45_AMR
MPEG4_H263_3GPP_P0_L45_AMR_WBplus

9.4.33.2

[GUIDELINE] A bitstream conformant with these profiles shall have the maximum system bit rate as speficied below.

Maximum system bitrate:

- 200 kbit/s

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	T5IVX	

9.4.34 MPEG-4 Part 2 AV format, system portion profile: MIME type definition

9.4.34.1

[PROFILES]

MPEG4_H263_3GPP_P0_L10_AMR
MPEG4_H263_3GPP_P0_L45_AMR
MPEG4_H263_3GPP_P0_L45_AMR_WBplus

9.4.34.2

[GUIDELINE] MIME type "video/3gpp" shall be used for this Media Format Profile.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	3GPP TS 26.244	7GMT5	

9.4.35 MPEG-4 Part 2 AV format, video portion profile: SP_L5

9.4.35.1

[PROFILES]

MPEG4_P2_MP4_SP_L5_AAC

9.4.35.2

[GUIDELINE] Main characteristics of SP_L5 video stream are

Profile and level:

- SP@L0
- SP@L0b
- SP@L1
- SP@L2
- SP@L3

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- SP@L5

Chroma:

- 4:2:0

Video bit rate:

- CBR: less than or equal to the maximum bit rate of the following bitrates, see Table 84.
- VBR: the maximum bit rate less than or equal to the following bitrates,see Table 84.

Table 84 – MPEG4_P2_MP4_SP_L5_AAC

Bitrate	Profile and level
➢64 kbit/s	SP@L0
➢128 kbit/s	SP@L0b
➢64 kbit/s	SP@L1
➢128 kbit/s	SP@L2
➢384 kbit/s	SP@L3
➢8 000 kbit/s	SP@L5

Table 85 shows the format resolutions for SP_L5.

Table 85 – Resolutions for video portion profile SP_L5

Type	Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)	Max. frame rate
VGA	➢640 × 480	1:1	4:3	
VGA 16:9	➢640 × 360	1:1	16:9	
625 D1	➢720 × 576	12:11	4:3	
625 D1	➢720 × 576	16:11	16:9	
525 D1	➢720 × 480	12:11	4:3	
525 D1	➢720 × 480	16:11	16:9	
CIF, 625SIF	➢352 × 288	12:11	4:3	
CIF, 625SIF	➢352 × 288	16:11	16:9	
525SIF	➢352 × 240	10:11	4:3	
525SIF	➢352 × 240	40:33	16:9	
QVGA 4:3	➢320 × 240	1:1	4:3	
QVGA 16:9	➢320 × 180	1:1	16:9	
1/7VGA 4:3	➢240 × 180	1:1	4:3	
1/9VGA 4:3	➢208 × 160	1:1	4:3	
QCIF, 625QSIF	➢176 × 144	12:11	4:3	
QCIF, 625QSIF	➢176 × 144	16:11	16:9	

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Type	Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)	Max. frame rate
525QSIF	➢176 × 120	10:11	4:3	
525QSIF	➢176 × 120	40:33	16:9	
SQVGA 4:3	➢160 × 120	1:1	4:3	
1/16 VGA 4:3	➢160 × 112	1:1	4:3	
SQVGA 16:9	➢160 × 90	1:1	16:9	

[a] Pixel aspect ratio is informative and it indicates a typical aspect ratio for each resolution.

[b] Display aspect ratio of which a video stream is rendered is informative, and it indicates a display aspect ratio with a resolution and the typical aspect ratio for the resolution.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 14496-2 ISO/IEC 14496-2	ME8ZF	A

9.4.36 MPEG-4 Part 2 AV format, system portion profile

9.4.36.1

[PROFILES]

MPEG4_P2_MP4_SP_L5_AAC

9.4.36.2

[GUIDELINE] Main characteristics of system portion profile shall be conformant to System portion profile of MPEG4_P2_MP4_SP_AAC, except as indicated below.

Additional maximum system bit rate is shown in Table 86.

Table 86 – MPEG4_P2_MP4_SP_L5_AAC bit rate

Bitrate	Video portion profile
➢10 000 kbit/s	SP_L5

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	HENID	

9.4.37 MPEG-4 Part 2 AV format, audio portion profile

9.4.37.1

[PROFILES]

MPEG4_P2_MP4_SP_L5_AAC

9.4.37.2

[GUIDELINE] A bitstream conformant with this profile shall follow the requirements of MPEG4_P2_MP4_SP_AAC profile for AAC Audio Format as specified in 9.4.3.1.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	BQOU8	

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9.4.38 MPEG-4 Part 2 AV format, MIME type definition

9.4.38.1

[PROFILES]

MPEG4_P2_MP4_SP_L5_AAC

9.4.38.2

[GUIDELINE] MIME type "video/mp4" shall be used for this Media Format Profile.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	4ULN7	

9.5 MPEG-4 Part 10 (AVC) profiling guidelines

9.5.1 General

Table 87 is a summary of MPEG-4 Part 10 profiles for the AV Media Class.

Table 87 – Summary of MPEG-4 Part 10 (AVC) profiles for the AV Media Class

DLNA Profile ID	Video portion profiling									Audio portion profiling										System portion profiling							
	MP_HD	MP_SD	BL_L3_SD	BL_L3L_SD	BL_CIF30	BL_L2_CIF30	BL_CIF15	BL_L12_CIF15	BL_L1B_QCIF	BL_QCIF15	AAC	AAC_MULT5	HEAAC_L2	MPEG1_L3	AC3	AAC_LTP	AAC_LTP_MULT5	AAC_LTP_MULT7	BSAC	BSAC_MULT5	ATRAC3plus	AMR	AMR_WBplus	MP4	3GPP	MPEG2-TS	MPEG2-TS_T	MPEG2-TS_ISO
AVC_TS_MP_HD_AAC_MULT5	X											X														X		
AVC_TS_MP_HD_AAC_MULT5_T	X											X															X	
AVC_TS_MP_HD_AAC_MULT5_ISO	X											X																X
AVC_TS_MP_HD_HEAAC_L2	X												X													X		
AVC_TS_MP_HD_HEAAC_L2_T	X												X														X	
AVC_TS_MP_HD_HEAAC_L2_ISO	X												X															X
AVC_TS_MP_HD_MPEG1_L3	X													X												X		
AVC_TS_MP_HD_MPEG1_L3_T	X													X													X	
AVC_TS_MP_HD_MPEG1_L3_ISO	X													X														X
AVC_TS_MP_HD_AC3	X														X											X		
AVC_TS_MP_HD_AC3_T	X														X												X	
AVC_TS_MP_HD_AC3_ISO	X														X													X
AVC_TS_MP_HD_AAC_LTP	X															X										X		
AVC_TS_MP_HD_AAC_LTP_T	X															X											X	
AVC_TS_MP_HD_AAC_LTP_ISO	X															X												X
AVC_TS_MP_HD_AAC_LTP_MULT5	X																X									X		
AVC_TS_MP_HD_AAC_LTP_MULT5_T	X																X										X	
AVC_TS_MP_HD_AAC_LTP_MULT5_ISO	X																X											X

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DLNA Profile ID	Video portion profiling									Audio portion profiling										System portion profiling							
	MP_HD	MP_SD	BL_L3_SD	BL_L3L_SD	BL_CIF30	BL_L2_CIF30	BL_CIF15	BL_L12_CIF15	BL_L1B_QCIF	BL_QCIF15	AAC	AAC_MULT5	HEAAC_L2	MPEG1_L3	AC3	AAC_LTP	AAC_LTP_MULT5	AAC_LTP_MULT7	BSAC	BSAC_MULT5	ATRAC3plus	AMR	AMR_WBplus	MP4	3GPP	MPEG2-TS	MPEG2-TS_T	MPEG2-TS_ISO
AVC_TS_MP_HD_AAC_LTP_MULT7	X																	X								X		
AVC_TS_MP_HD_AAC_LTP_MULT7_T	X																	X									X	
AVC_TS_MP_HD_AAC_LTP_MULT7_ISO	X																	X										X
AVC_TS_MP_SD_AAC_MULT5		X										X														X		
AVC_TS_MP_SD_AAC_MULT5_T		X										X															X	
AVC_TS_MP_SD_AAC_MULT5_ISO		X										X																X
AVC_TS_MP_SD_HEAAC_L2		X											X													X		
AVC_TS_MP_SD_HEAAC_L2_T		X											X														X	
AVC_TS_MP_SD_HEAAC_L2_ISO		X											X															X
AVC_TS_MP_SD_BSAC		X																	X							X		
AVC_TS_MP_SD_BSAC_T		X																	X								X	
AVC_TS_MP_SD_BSAC_ISO		X																	X									X
AVC_TS_MP_SD_MPEG1_L3		X												X												X		
AVC_TS_MP_SD_MPEG1_L3_T		X												X													X	
AVC_TS_MP_SD_MPEG1_L3_ISO		X												X														X
AVC_TS_MP_SD_AC3		X													X											X		
AVC_TS_MP_SD_AC3_T		X													X												X	
AVC_TS_MP_SD_AC3_ISO		X													X													X
AVC_TS_MP_SD_AAC_LTP		X														X										X		
AVC_TS_MP_SD_AAC_LTP_T		X														X											X	
AVC_TS_MP_SD_AAC_LTP_ISO		X														X												X
AVC_TS_MP_SD_AAC_LTP_MULT5		X															X									X		
AVC_TS_MP_SD_AAC_LTP_MULT5_T		X															X										X	
AVC_TS_MP_SD_AAC_LTP_MULT5_ISO		X															X											X
AVC_TS_MP_SD_AAC_LTP_MULT7		X																X								X		
AVC_TS_MP_SD_AAC_LTP_MULT7_T		X																X									X	
AVC_TS_MP_SD_AAC_LTP_MULT7_ISO		X																X										X
AVC_MP4_MP_SD_AAC_MULT5		X										X												X				
AVC_MP4_MP_SD_HEAAC_L2		X											X											X				
AVC_MP4_MP_SD_MPEG1_L3		X												X										X				
AVC_MP4_MP_SD_AC3		X													X									X				
AVC_MP4_MP_SD_AAC_LTP		X														X								X				
AVC_MP4_MP_SD_AAC_LTP_MULT5		X															X							X				

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DLNA Profile ID	Video portion profiling										Audio portion profiling										System portion profiling								
	MP_HD	MP_SD	BL_L3_SD	BL_L3L_SD	BL_CIF30	BL_L2_CIF30	BL_CIF15	BL_L12_CIF15	BL_L1B_QCIF	BL_QCIF15	AAC	AAC_MULT5	HEAAC_L2	MPEG1_L3	AC3	AAC_LTP	AAC_LTP_MULT5	AAC_LTP_MULT7	BSAC	BSAC_MULT5	ATRAC3plus	AMR	AMR_WBplus	MP4	3GPP	MPEG2-TS	MPEG2-TS_T	MPEG2-TS_ISO
AVC_MP4_MP_SD_AAC_LTP_MULT7		X																X						X					
AVC_MP4_MP_SD_ATRAC3plus		X																			X			X					
AVC_MP4_MP_SD_BSAC		X																	X					X					
AVC_MP4_BL_L3_SD_AAC			X								X													X					
AVC_MP4_BL_L3L_SD_AAC				X							X													X					
AVC_MP4_BL_L3L_SD_HEAAC				X									X											X					
AVC_TS_BL_CIF30_AAC_MULT5					X							X														X			
AVC_TS_BL_CIF30_AAC_MULT5_T					X							X															X		
AVC_TS_BL_CIF30_AAC_MULT5_ISO					X							X																X	
AVC_TS_BL_CIF30_HEAAC_L2					X								X													X			
AVC_TS_BL_CIF30_HEAAC_L2_T					X								X														X		
AVC_TS_BL_CIF30_HEAAC_L2_ISO					X								X															X	
AVC_TS_BL_CIF30_MPEG1_L3					X									X												X			
AVC_TS_BL_CIF30_MPEG1_L3_T					X									X													X		
AVC_TS_BL_CIF30_MPEG1_L3_ISO					X									X														X	
AVC_TS_BL_CIF30_AC3					X										X											X			
AVC_TS_BL_CIF30_AC3_T					X										X												X		
AVC_TS_BL_CIF30_AC3_ISO					X										X													X	
AVC_TS_BL_CIF30_AAC_940					X						X															X			
AVC_TS_BL_CIF30_AAC_940_T					X						X																X		
AVC_TS_BL_CIF30_AAC_940_ISO					X						X																	X	
AVC_TS_BL_CIF30_AAC_LTP					X											X										X			
AVC_TS_BL_CIF30_AAC_LTP_T					X											X											X		
AVC_TS_BL_CIF30_AAC_LTP_ISO					X											X												X	
AVC_TS_BL_CIF30_AAC_LTP_MULT5					X												X									X			
AVC_TS_BL_CIF30_AAC_LTP_MULT5_T					X												X										X		
AVC_TS_BL_CIF30_AAC_LTP_MULT5_ISO					X												X											X	
AVC_MP4_BL_L2_CIF30_AAC						X					X													X					
AVC_MP4_BL_CIF30_AAC_MULT5					X							X												X					
AVC_MP4_BL_CIF30_HEAAC_L2					X								X											X					
AVC_MP4_BL_CIF30_MPEG1_L3					X									X										X					
AVC_MP4_BL_CIF30_AC3					X										X									X					
AVC_MP4_BL_CIF30_AAC_LTP					X											X								X					

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DLNA Profile ID	Video portion profiling									Audio portion profiling										System portion profiling							
	MP_HD	MP_SD	BL_L3_SD	BL_L3L_SD	BL_CIF30	BL_L2_CIF30	BL_CIF15	BL_L12_CIF15	BL_L1B_QCIF	BL_QCIF15	AAC	AAC_MULT5	HEAAC_L2	MPEG1_L3	AC3	AAC_LTP	AAC_LTP_MULT5	AAC_LTP_MULT7	BSAC	BSAC_MULT5	ATRAC3plus	AMR	AMR_WBplus	MP4	3GPP	MPEG2-TS	MPEG2-TS_T	MPEG2-TS_ISO
AVC_MP4_BL_CIF30_AAC_LTP_MULT5					X												X							X				
AVC_MP4_BL_CIF30_BSAC					X														X					X				
AVC_MP4_BL_CIF30_BSAC_MULT5					X															X				X				
AVC_TS_BL_CIF15_AAC							X				X															X		
AVC_TS_BL_CIF15_AAC_T							X				X																X	
AVC_TS_BL_CIF15_AAC_ISO							X				X																	X
AVC_TS_BL_CIF15_AAC_540							X				X															X		
AVC_TS_BL_CIF15_AAC_540_T							X				X																X	
AVC_TS_BL_CIF15_AAC_540_ISO							X				X																	X
AVC_TS_BL_CIF15_AAC_LTP							X									X										X		
AVC_TS_BL_CIF15_AAC_LTP_T							X									X											X	
AVC_TS_BL_CIF15_AAC_LTP_ISO							X									X												X
AVC_TS_BL_CIF15_BSAC							X												X							X		
AVC_TS_BL_CIF15_BSAC_T							X												X								X	
AVC_TS_BL_CIF15_BSAC_ISO							X												X									X
AVC_MP4_BL_CIF15_AAC							X				X													X				
AVC_MP4_BL_CIF15_AAC_520							X				X													X				
AVC_MP4_BL_CIF15_AAC_LTP							X									X								X				
AVC_MP4_BL_CIF15_AAC_LTP_520							X									X								X				
AVC_MP4_BL_CIF15_HEAAC							X						X											X				
AVC_MP4_BL_L12_CIF15_HEAAC								X					X											X				
AVC_MP4_BL_CIF15_BSAC							X												X					X				
AVC_MP4_BL_CIF15_AMR							X															X		X				
AVC_MP4_BL_L1B_QCIF15_HEAAC									X				X											X				
AVC_3GPP_BL_QCIF15_AAC										X	X														X			
AVC_3GPP_BL_QCIF15_AAC_LTP										X						X									X			
AVC_3GPP_BL_QCIF15_HEAAC										X			X												X			
AVC_3GPP_BL_QCIF15_AMR										X												X			X			
AVC_3GPP_BL_QCIF15_AMR_WBplus										X													X		X			
AVC_3GPP_BL_CIF15_AMR_WBplus							X																X		X			
AVC_3GPP_BL_CIF30_AMR_WBplus					X																		X		X			

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Table 88, Table 89, Table 90 and Table 91 are a summary of additional MPEG-4 Part 10 profiles for the AV Media Class.

Table 88 – Summary of additional MPEG-4 Part 10 (AVC) profiles for the AV Media Class – Part 1

DLNA Profile ID	Video portion profiling									Audio portion profiling												System portion profiling					
	BL_L1B_QCIF15	BL_L12_CIF15	BL_CIF30	MP_L3	MP_L3.1	MP_L4	HP_L3	HP_L4		MPEG-2 AAC	AAC	AAC_LTP	HEAAC	HEAACv2	MPS	AMR_WBplus	AC3	EAC3	DTS	DTSHD_HRA	DTSHD_MA	MPEG1_L2	MP4	3GP	MPEG-2 PS	MPEG2-TS	MPEG2-TS_T	MPEG2-TS_ISO
AVC_PS_HD_DTS									X										X						X			
AVC_PS_HD_DTSHD_HRA									X											X					X			
AVC_PS_HD_DTSHD_MA									X												X				X			
AVC_PS_HD_DTSHD									X										X	X	X				X			
AVC_TS_MP_SD_EAC3_T				X														X								X		
AVC_TS_MP_SD_EAC3_ISO				X														X										X
AVC_TS_HP_SD_MPEG1_L2_T							X															X				X		
AVC_TS_HP_SD_MPEG1_L2_ISO							X															X						X
AVC_TS_HP_SD_AC3_T							X										X									X		
AVC_TS_HP_SD_AC3_ISO							X										X											X
AVC_TS_HP_SD_EAC3_T							X											X								X		
AVC_TS_HP_SD_EAC3_ISO							X											X										X
AVC_TS_SD_EU							X										X					X			X			
AVC_TS_SD_EU_T							X										X					X				X		
AVC_TS_SD_EU_ISO							X										X					X						X
AVC_TS_MP_HD_EAC3_T																		X								X		
AVC_TS_MP_HD_EAC3_ISO																		X										X
AVC_TS_HP_HD_MPEG1_L2_T								X														X				X		
AVC_TS_HP_HD_MPEG1_L2_ISO								X														X						X
AVC_TS_HP_HD_AC3_T								X									X									X		
AVC_TS_HP_HD_AC3_ISO								X									X											X
AVC_TS_HP_HD_EAC3_T								X										X								X		
AVC_TS_HP_HD_EAC3_ISO								X										X										X
AVC_TS_HD_EU								X									X					X			X			
AVC_TS_HD_EU_T								X									X					X				X		
AVC_TS_HD_EU_ISO								X									X					X						X
AVC_TS_JP_AAC_T								X		X																	X	
AVC_TS_HD_60_AC3									X								X								X			

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DLNA Profile ID	Video portion profiling									Audio portion profiling												System portion profiling					
	BL_L1B_QCIF15	BL_L12_CIF15	BL_CIF30	MP_L3	MP_L3.1	MP_L4	HP_L3	HP_L4		MPEG-2 AAC	AAC	AAC_LTP	HEAAC	HEAACv2	MPS	AMR_WBplus	AC3	EAC3	DTS	DTSHD_HRA	DTSHD_MA	MPEG1_L2	MP4	3GP	MPEG-2 PS	MPEG2-TS	MPEG2-TS_T	MPEG2-TS_ISO
AVC_TS_HD_60_AC3_T									X								X										X	
AVC_TS_HD_60_AC3_ISO									X								X											X
AVC_TS_HD_50_AC3									X								X									X		
AVC_TS_HD_50_AC3_T									X								X										X	
AVC_TS_HD_50_AC3_ISO									X								X											X
AVC_TS_HD_24_AC3									X								X									X		
AVC_TS_HD_24_AC3_T									X								X										X	
AVC_TS_HD_24_AC3_ISO									X								X											X
AVC_TS_HD_DTS_T									X										X								X	
AVC_TS_HD_DTS_ISO									X										X									X
AVC_TS_HD_DTSHD_HRA_T									X											X							X	
AVC_TS_HD_DTSHD_HRA_ISO									X											X								X
AVC_TS_DTSHD_MA_T									X												X						X	
AVC_TS_DTSHD_MA_ISO									X												X							X
AVC_MP4_BL_L1B_QCIF15_HEAACv2	X													X									X					
AVC_MP4_BL_L12_CIF15_HEAACv2		X												X									X					
AVC_MP4_BL_CIF30_HEAAC_MPS			X										X		X								X					
AVC_MP4_MP_SD_AAC_MPS				X							X				X								X					
AVC_MP4_MP_SD_HEAAC_MPS				X									X		X								X					
AVC_MP4_MP_SD_HEAAC_L4				X									X										X					
AVC_MP4_MP_HD_AAC_MPS						X					X				X								X					
AVC_MP4_MP_HD_HEAAC_MPS						X							X		X								X					
AVC_MP4_MP_HD_720p_AAC					X						X												X					
AVC_MP4_MP_HD_1080i_AAC						X					X												X					
AVC_MP4_HP_HD_AAC								X			X												X					
AVC_MP4_HP_HD_AAC_LTP								X				X											X					
AVC_MP4_HP_HD_HEAAC_L2								X					X										X					
AVC_MP4_HP_HD_HEAAC_MULT7								X					X										X					
AVC_MP4_NDHD									X				X				X						X					
AVC_3GPP_BL_L12_CIF15_AMR_WBplus		X														X								X				

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Table 89 – Summary of additional MPEG-4 Part 10 (AVC) profiles for the AV Media Class – Part 2

DLNA Profile ID	Video portion profiling					Audio portion profiling					System portion profiling	
	BL_CIF15	BL_L3.1	BL_L3.2	MP_L3	HP_L4.1	AAC	HEAAC	HEAACv2	AC3_X	LPCM	MP4	MPEG2-TS_T
AVC_TS_HD_60_AC3_X_T					X				X			X
AVC_TS_HD_50_AC3_X_T					X				X			X
AVC_TS_HD_24_AC3_X_T					X				X			X
AVC_TS_HD_60_LPCM_T					X					X		X
AVC_TS_HD_50_LPCM_T					X					X		X
AVC_TS_HD_24_LPCM_T					X					X		X
AVC_MP4_BL_L12_CIF15_HEAACv2_350	X							X			X	
AVC_MP4_BL_CIF15_AAC_350	X					X					X	
AVC_MP4_BL_CIF15_HEAAC_350	X						X				X	
AVC_MP4_MP_SD_AAC_LC				X		X					X	
AVC_MP4_BL_L31_HD_AAC		X				X					X	
AVC_MP4_BL_L32_HD_AAC		X	X			X					X	

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Table 90 – Summary of additional MPEG-4 Part 10 (AVC) Profiles for the AV Media Class – Part 3

DLNA Profile ID	System portion profile				Video portion profile					Audio portion profile								
	MPEG2-TS_T	MPEG2-TS_ISO	MP4	MKV	BL_L2	MP_L3	HP_L4	HP_L4.1	SHP_L4.2	AAC	HEAAC	HEAACv2	AC3	EAC3	DTS	DTSHD	MPEG1_L2	MPEG1_L3
AVC_TS_NA_ISO		X				X	X			X	X	X	X	X			X	
AVC_TS_NA_T	X					X	X			X	X	X	X	X			X	
AVC_TS_EU_ISO		X				X	X			X	X	X	X	X				
AVC_TS_MP_SD_DTS_ISO		X				X									X			
AVC_TS_MP_SD_DTSHD_ISO		X				X										X		
AVC_TS_HP_HD_DTS_ISO		X					X								X			
AVC_TS_HP_HD_DTSHD_ISO		X					X									X		
AVC_TS_HP_HD_L41_DTS_ISO		X						X							X			
AVC_TS_SD_EU_DTS_ISO		X					X								X			
AVC_TS_HD_EU_DTS_ISO		X					X								X			
AVC_TS_SHP_HD_EU_AC3_T	X					X	X		X				X					
AVC_TS_SHP_HD_EU_ HEAACv2_L4_T	X					X	X		X	X	X	X						

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Table 91 – Summary of additional MPEG-4 Part 10 (AVC) profiles for the AV Media Class – Part 4

DLNA Profile ID	System portion profile				Video portion profile						Audio portion profile								
	MPEG2-TS_T	MPEG2-TS_ISO	MP4	MKV	BL_L2	MP_L3	MP_L4	HP_L4	HP_L4.1	SHP_L4.2	AAC	HEAAC	HEAACv2	AC3	EAC3	DTS	DTSHD	MPEG1_L2	MPEG1_L3
AVC_MP4_EU			X								X	X	X	X	X				
AVC_MP4_BL_DTS			X		X											X			
AVC_MP4_BL_DTSHD			X		X												X		
AVC_MP4_MP_SD_DTS			X			X										X			
AVC_MP4_MP_SD_DTSHD			X			X											X		
AVC_MP4_HP_HD_DTS			X					X								X			
AVC_MP4_HP_HD_DTSHD			X					X									X		
AVC_MP4_MP_SD_EAC3			X			X					X	X	X	X	X				
AVC_MP4_HP_HD_EAC3			X					X			X	X	X	X	X				
AVC_MKV_MP_HD_AAC_MULT5				X			X				X								
AVC_MKV_MP_HD_HEAAC_L4				X			X					X							
AVC_MKV_MP_HD_AC3				X			X							X					
AVC_MKV_MP_HD_MPEG1_L3				X			X												X
AVC_MKV_HP_HD_AAC_MULT5				X				X			X								
AVC_MKV_HP_HD_HEAAC_L4				X				X				X							
AVC_MKV_HP_HD_AC3				X				X						X					
AVC_MKV_HP_HD_MPEG1_L3				X				X											X

Table 92 shows the Pixel aspect ratio for AVC_TS_BL_CIF15_AAC_xxx and AVC_TS_MP_SD_xxx profiles.

Table 92 – Pixel aspect ratio for AVC_TS_BL_CIF15_AAC_xxx and AVC_TS_MP_SD_xxx profiles

➢0001	1:1 (Square)	3/4 SAR	2/3 SAR	1/2 SAR
➢0010	12:11 (625 for 4:3)	➢16:11	➢18:11	➢24:11
➢0011	10:11 (525 for 4:3)	➢44:33	➢15:11	➢20:11
➢0100	16:11 (625 for 16:9)	➢64:33	➢24:11	➢32:11
➢0101	40:33 (525 for 16:9)	➢160:99	➢60:33	➢80:33

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9.5.2 Subset of DLNA profiles for AVC MP @ L3, SD resolutions, MPEG-2 TS encapsulation

9.5.2.1 MPEG-4 Part 10 AV format: systems portion profiling

9.5.2.1.1

[PROFILES]

AVC_TS_MP_SD_AAC_MULT5
AVC_TS_MP_SD_AAC_MULT5_T
AVC_TS_MP_SD_AAC_MULT5_ISO
AVC_TS_MP_SD_HEAAC_L2
AVC_TS_MP_SD_HEAAC_L2_T
AVC_TS_MP_SD_HEAAC_L2_ISO
AVC_TS_MP_SD_MPEG1_L3
AVC_TS_MP_SD_MPEG1_L3_T
AVC_TS_MP_SD_MPEG1_L3_ISO
AVC_TS_MP_SD_AC3
AVC_TS_MP_SD_AC3_T
AVC_TS_MP_SD_AC3_ISO
AVC_TS_MP_SD_AAC_LTP
AVC_TS_MP_SD_AAC_LTP_T
AVC_TS_MP_SD_AAC_LTP_ISO
AVC_TS_MP_SD_AAC_LTP_MULT5
AVC_TS_MP_SD_AAC_LTP_MULT5_T
AVC_TS_MP_SD_AAC_LTP_MULT5_ISO
AVC_TS_MP_SD_AAC_LTP_MULT7
AVC_TS_MP_SD_AAC_LTP_MULT7_T
AVC_TS_MP_SD_AAC_LTP_MULT7_ISO
AVC_TS_MP_SD_BSAC
AVC_TS_MP_SD_BSAC_T
AVC_TS_MP_SD_BSAC_ISO

9.5.2.1.2

[GUIDELINE] The main characteristics of video stream shall be conformant to ISO/IEC 13818-1.

Main characteristics of MPEG-4 part 10 system stream are

System

- MPEG-2 Transport Stream

Number of programs

1 as defined for a Single Program Transport Stream

Packet size

- 188 B per transport packet

System bit rate

- Up to 12 Mbit/s (video up to 10 Mbit/s)

PSI information

- PAT and PMT are required.
- PSI insertion interval should be implementation-dependent.

Bitstreams comformant with these profiles may contain additional PSI information.

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DLNA Transport Packets

- A bitstream conformant to these media format profiles shall contain DLNA Transport Packets as defined in 9.3.4.2 and 9.3.5.4.2.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 13818-1	UT9K3	C

[COMMENT] A full or partial SPTS can have multiple audio and video components in it.

9.5.2.2 MPEG-4 Part 10 AV format, video portion profiling: GOP structure

9.5.2.2.1

[PROFILES]

AVC_TS_MP_SD_AAC_MULT5
AVC_TS_MP_SD_AAC_MULT5_T
AVC_TS_MP_SD_AAC_MULT5_ISO
AVC_TS_MP_SD_HEAAC_L2
AVC_TS_MP_SD_HEAAC_L2_T
AVC_TS_MP_SD_HEAAC_L2_ISO
AVC_TS_MP_SD_MPEG1_L3
AVC_TS_MP_SD_MPEG1_L3_T
AVC_TS_MP_SD_MPEG1_L3_ISO
AVC_TS_MP_SD_AC3
AVC_TS_MP_SD_AC3_T
AVC_TS_MP_SD_AC3_ISO
AVC_TS_MP_SD_AAC_LTP
AVC_TS_MP_SD_AAC_LTP_T
AVC_TS_MP_SD_AAC_LTP_ISO
AVC_TS_MP_SD_AAC_LTP_MULT5
AVC_TS_MP_SD_AAC_LTP_MULT5_T
AVC_TS_MP_SD_AAC_LTP_MULT5_ISO
AVC_TS_MP_SD_AAC_LTP_MULT7
AVC_TS_MP_SD_AAC_LTP_MULT7_T
AVC_TS_MP_SD_AAC_LTP_MULT7_ISO
AVC_TS_MP_SD_BSAC
AVC_TS_MP_SD_BSAC_T
AVC_TS_MP_SD_BSAC_ISO

9.5.2.2.2

[GUIDELINE] The Frame Rate and Number of Pictures in a GOP structure of bitstreams conformant to these profiles should be as indicated in Table 93.

Table 93 – MPEG-4 Part 10 AV format frame rate

	➢NTSC	➢PAL
Max. frame rate of the content	➢30	➢25
Number of pictures in GOP	➢36 display fields or less (interlaced)	➢30 display fields or less (interlaced)
	➢18 frames or less (progressive)	➢15 frames or less (progressive)

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[ATTRIBUTES]

S	L	n/a	n/a	n/a	ISO/IEC 14496-10	T9K33	

9.5.2.3 MPEG-4 Part 10 AV format: video portion profiling

9.5.2.3.1

[PROFILES]

AVC_TS_MP_SD_AAC_MULT5
AVC_TS_MP_SD_AAC_MULT5_T
AVC_TS_MP_SD_AAC_MULT5_ISO
AVC_TS_MP_SD_HEAAC_L2
AVC_TS_MP_SD_HEAAC_L2_T
AVC_TS_MP_SD_HEAAC_L2_ISO
AVC_TS_MP_SD_MPEG1_L3
AVC_TS_MP_SD_MPEG1_L3_T
AVC_TS_MP_SD_MPEG1_L3_ISO
AVC_TS_MP_SD_AC3
AVC_TS_MP_SD_AC3_T
AVC_TS_MP_SD_AC3_ISO
AVC_TS_MP_SD_AAC_LTP
AVC_TS_MP_SD_AAC_LTP_T
AVC_TS_MP_SD_AAC_LTP_ISO
AVC_TS_MP_SD_AAC_LTP_MULT5
AVC_TS_MP_SD_AAC_LTP_MULT5_T
AVC_TS_MP_SD_AAC_LTP_MULT5_ISO
AVC_TS_MP_SD_AAC_LTP_MULT7
AVC_TS_MP_SD_AAC_LTP_MULT7_T
AVC_TS_MP_SD_AAC_LTP_MULT7_ISO
AVC_TS_MP_SD_BSAC
AVC_TS_MP_SD_BSAC_T
AVC_TS_MP_SD_BSAC_ISO
AVC_TS_MP_SD_EAC3_T
AVC_TS_MP_SD_EAC3_ISO

9.5.2.3.2

[GUIDELINE] The main characteristics of video stream shall be conformant to ISO/IEC 14496-10.

Main characteristics of MPEG-4 part 10 video streams are

Profile and level:

- MP at the following levels
- L1
- L1.1
- L1.2
- L1.3
- L2
- L2.1
- L2.2
- L3

Chroma:

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- 4:2:0

Video bit rate:

- ➢ Main Profile
- Constant bit rate equal to or less than 10 Mbit/s
- Variable-maximum bit rate equal to or less than 10 Mbit/s.

TV System with the following characteristics.

MPEG-4 Part 10 Main Profile

Table 94 shows the format resolutions for MPEG-4 Part 10.

Table 94 – MPEG-4 Part 10 AV format resolutions

Type	Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)
625 D1	➢720 × 576	12:11	4:3
	➢720 × 576	16:11	16:9
525 D1	➢720 × 480	10:11	4:3
	➢720 × 480	40:33	16:9
625 4SIF	➢704 × 576	12:11	4:3
	➢704 × 576	16:11	16:9
525 4SIF	➢704 × 480	10:11	4:3
	➢704 × 480	40:33	16:9
VGA	➢640 × 480	1:1	4:3
VGA 16:9	➢640 × 360	1:1	16:9
625 3/4D1	➢544 × 576	16:11	4:3
	➢544 × 576	64:33	16:9
525 3/4D1	➢544 × 480	44:33	4:3
	➢544 × 480	160:99	16:9
625 2/3D1	➢480 × 576	18:11	4:3
	➢480 × 576	24:11	16:9
525 2/3D1	➢480 × 480	15:11	4:3
	➢480 × 480	60:33	16:9
9/16VGA 4:3	➢480 × 360	1:1	4:3
9/16VGA 16:9	➢480 × 270	1:1	16:9
625 1/2D1	➢352 × 576	24:11	4:3
	➢352 × 576	32:11	16:9
525 1/2D1	➢352 × 480	20:11	4:3
	➢352 × 480	80:33	16:9

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Type	Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)
CIF, 625SIF	➢352 × 288	12:11	4:3
	➢352 × 288	16:11	16:9
525SIF	➢352 × 240	10:11	4:3
	➢352 × 240	40:33	16:9
QVGA 4:3	➢320 × 240	1:1	4:3
QVGA 16:9	➢320 × 180	1:1	16:9
1/7VGA 4:3	➢240 × 180	1:1	4:3
1/9VGA 4:3	➢208 × 160	1:1	4:3
QCIF,625QSIF	➢176 × 144	12:11	4:3
	➢176 × 144	16:11	16:9
525QSIF	➢176 × 120	10:11	4:3
	➢176 × 120	40:33	16:9
SQVGA 4:3	➢160 × 120	1:1	4:3
1/16 VGA 4:3	➢160 × 112	1:1	4:3
SQVGA 16:9	➢160 × 90	1:1	16:9
SQCIF	➢128 × 96	12:11	4:3
	➢128 × 96	16:11	16:9

[a] Pixel aspect ratio is informative and it indicates a typical aspect ratio for each resolution.

[b] Display aspect ratio of which a video stream is rendered is informative, and it indicates a display aspect ratio with a resolution and the typical aspect ratio for the resolution.

Pixel aspect ratio:

- 1:1
- 12:11
- 10:11
- 16:11
- 40:33
- 44:33
- 64:33
- 160:99
- 18:11
- 15:11
- 24:11
- 60:33
- 20:11
- 32:11

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- 80:33

A bitstream conformant to these media format profiles may utilize any of these pixel aspect ratios regardless of resolutions.

The Rendering Endpoint may ignore the pixel aspect ratio for rendering. Rendering Endpoint can shrink, stretch and crop image to the display aspect ratio dependent on vendor implementations.

The resolution shall not change in a video stream.

Frame rate is less than or equal to 30 fps. Both fixed frame rate and variable frame rate are allowed.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	3VBWH	

[COMMENTS]

a) The Serving Endpoint can stream with any of the pixel aspect ratio from Table 92.
The Rendering Endpoint tolerates any of the pixel aspect ratio that it receives from a serving Endpoint.
Accuracy of aspect ratio rendering is up to the implementer.

b) The Rendering Endpoint accepts all frame rates equal to or below 30 frames per second. The manufacturers can decide how they process the frame rate conversion to output the required frame rate to the output device.

9.5.2.4 MPEG-4 Part 10 AV format: MIME type definition

9.5.2.4.1

[PROFILES]

AVC_TS_MP_SD_AAC_MULT5
AVC_TS_MP_SD_AAC_MULT5_T
AVC_TS_MP_SD_HEAAC_L2
AVC_TS_MP_SD_HEAAC_L2_T
AVC_TS_MP_SD_MPEG1_L3
AVC_TS_MP_SD_MPEG1_L3_T
AVC_TS_MP_SD_AC3
AVC_TS_MP_SD_AC3_T
AVC_TS_MP_SD_AAC_LTP
AVC_TS_MP_SD_AAC_LTP_T
AVC_TS_MP_SD_AAC_LTP_MULT5
AVC_TS_MP_SD_AAC_LTP_MULT5_T
AVC_TS_MP_SD_AAC_LTP_MULT7
AVC_TS_MP_SD_AAC_LTP_MULT7_T
AVC_TS_MP_SD_BSAC
AVC_TS_MP_SD_BSAC_T
AVC_TS_MP_SD_EAC3_T
AVC_TS_HP_SD_MPEG1_L2_T
AVC_TS_HP_SD_AC3_T
AVC_TS_HP_SD_EAC3_T
AVC_TS_SD_EU
AVC_TS_SD_EU_T

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9.5.2.4.2

[GUIDELINE] MIME type "video/vnd.dlna.mpeg-tts" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	N44BQ	

9.5.2.5 MPEG-4 Part 10 AV format: MIME type definition

9.5.2.5.1

[PROFILES]

AVC_TS_MP_SD_AAC_MULT5_ISO
AVC_TS_MP_SD_HEAAC_L2_ISO
AVC_TS_MP_SD_MPEG1_L3_ISO
AVC_TS_MP_SD_AC3_ISO
AVC_TS_MP_SD_AAC_LTP_ISO
AVC_TS_MP_SD_AAC_LTP_MULT5_ISO
AVC_TS_MP_SD_AAC_LTP_MULT7_ISO
AVC_TS_MP_SD_BSAC_ISO
AVC_TS_MP_SD_EAC3_ISO
AVC_TS_HP_SD_MPEG1_L2_ISO
AVC_TS_HP_SD_AC3_ISO
AVC_TS_HP_SD_EAC3_ISO
AVC_TS_SD_EU_ISO

9.5.2.5.2

[GUIDELINE] MIME type "video/mpeg" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	44BQW	

9.5.3 Subset of DLNA profiles for AVC MP@L4, HD resolutions, and MPEG-2 TS encapsulation

9.5.3.1 MPEG-4 Part 10 AV format: systems portion profiling

9.5.3.1.1

[PROFILES]

AVC_TS_MP_HD_AAC_MULT5
AVC_TS_MP_HD_AAC_MULT5_T
AVC_TS_MP_HD_AAC_MULT5_ISO
AVC_TS_MP_HD_HEAAC_L2
AVC_TS_MP_HD_HEAAC_L2_T
AVC_TS_MP_HD_HEAAC_L2_ISO
AVC_TS_MP_HD_MPEG1_L3
AVC_TS_MP_HD_MPEG1_L3_T
AVC_TS_MP_HD_MPEG1_L3_ISO
AVC_TS_MP_HD_AC3
AVC_TS_MP_HD_AC3_T
AVC_TS_MP_HD_AC3_ISO
AVC_TS_MP_HD_AAC_LTP
AVC_TS_MP_HD_AAC_LTP_T
AVC_TS_MP_HD_AAC_LTP_ISO

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AVC_TS_MP_HD_AAC_LTP_MULT5
AVC_TS_MP_HD_AAC_LTP_MULT5_T
AVC_TS_MP_HD_AAC_LTP_MULT5_ISO
AVC_TS_MP_HD_AAC_LTP_MULT7
AVC_TS_MP_HD_AAC_LTP_MULT7_T
AVC_TS_MP_HD_AAC_LTP_MULT7_ISO

9.5.3.1.2

[GUIDELINE] The main characteristics of video stream shall be conformant to ISO/IEC 13818-1.

Main characteristics of MPEG-4 part 10 system stream are

System

MPEG-2 Transport Stream

Number of programs

1 as defined for a Single Program Transport Stream

Packet size

188 B per transport packet

System bit rate

Up to 25 Mbit/s (video up to 20 Mbit/s)

PSI information

PAT and PMT are required. It shall tolerate any other tables.

PSI insertion interval should be implementation-dependent.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 13818-1	VBWHK	

[COMMENT] A full or partial SPTS can have multiple audio and video components in it.

9.5.3.2 MPEG-4 Part 10 AV format: video portion profiling: GOP structure

9.5.3.2.1

[PROFILES]

AVC_TS_MP_HD_AAC_MULT5
AVC_TS_MP_HD_AAC_MULT5_T
AVC_TS_MP_HD_AAC_MULT5_ISO
AVC_TS_MP_HD_HEAAC_L2
AVC_TS_MP_HD_HEAAC_L2_T
AVC_TS_MP_HD_HEAAC_L2_ISO
AVC_TS_MP_HD_MPEG1_L3
AVC_TS_MP_HD_MPEG1_L3_T
AVC_TS_MP_HD_MPEG1_L3_ISO
AVC_TS_MP_HD_AC3
AVC_TS_MP_HD_AC3_T
AVC_TS_MP_HD_AC3_ISO
AVC_TS_MP_HD_AAC_LTP
AVC_TS_MP_HD_AAC_LTP_T
AVC_TS_MP_HD_AAC_LTP_ISO

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AVC_TS_MP_HD_AAC_LTP_MULT5
AVC_TS_MP_HD_AAC_LTP_MULT5_T
AVC_TS_MP_HD_AAC_LTP_MULT5_ISO
AVC_TS_MP_HD_AAC_LTP_MULT7
AVC_TS_MP_HD_AAC_LTP_MULT7_T
AVC_TS_MP_HD_AAC_LTP_MULT7_ISO

9.5.3.2.2

[GUIDELINE] The Frame Rate and Number of Pictures in a GOP structure of bitstreams conformant to these profiles should be as indicated in Table 95.

Table 95 – Frame rate and number of pictures in a GOP structure

	➢NTSC	➢PAL
Max Frame Rate of the content	➢ 30	➢ 25
Number of pictures in GOP	➢ 36 display fields or less (interlaced)	➢ 30 display fields or less (interlaced)
	➢ 18 frames or less (progressive)	➢ 15 frames or less (progressive)

[ATTRIBUTES]

S	L	n/a	n/a	n/a	ISO/IEC 14496-10	XZAHO	

9.5.3.3 MPEG-4 Part 10 AV format: video portion profiling

9.5.3.3.1

[PROFILES]

AVC_TS_MP_HD_AAC_MULT5
AVC_TS_MP_HD_AAC_MULT5_T
AVC_TS_MP_HD_AAC_MULT5_ISO
AVC_TS_MP_HD_HEAAC_L2
AVC_TS_MP_HD_HEAAC_L2_T
AVC_TS_MP_HD_HEAAC_L2_ISO
AVC_TS_MP_HD_MPEG1_L3
AVC_TS_MP_HD_MPEG1_L3_T
AVC_TS_MP_HD_MPEG1_L3_ISO
AVC_TS_MP_HD_AC3
AVC_TS_MP_HD_AC3_T
AVC_TS_MP_HD_AC3_ISO
AVC_TS_MP_HD_AAC_LTP
AVC_TS_MP_HD_AAC_LTP_T
AVC_TS_MP_HD_AAC_LTP_ISO
AVC_TS_MP_HD_AAC_LTP_MULT5
AVC_TS_MP_HD_AAC_LTP_MULT5_T
AVC_TS_MP_HD_AAC_LTP_MULT5_ISO
AVC_TS_MP_HD_AAC_LTP_MULT7
AVC_TS_MP_HD_AAC_LTP_MULT7_T
AVC_TS_MP_HD_AAC_LTP_MULT7_ISO

9.5.3.3.2

[GUIDELINE] The main characteristics of video stream shall be conformant to ISO/IEC 14496-10.

Main characteristics of MPEG-4 part 10 video streams are

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Profile and level:

- MP at the following levels
  - L4

Chroma:

- 4:2:0

Video bit rate:

- Main Profile
  - Constant bit rate equal to or less than 20 Mbit/s
  - Variable-maximum bit rate equal to or less than 20 Mbit/s

MPEG-4 part 10 Main Profile L4

Table 96 shows the format resolutions for MPEG-4 Part 10.

Table 96 – MPEG-4 Part 10 AV format resolutions

Resolution	Aspect ratio	Allowed frame rates
Up to 1 920 × 1 080	16:9	59,94i/60i
		29,97p/30p
		23,976p/24p
Up to 1 280 × 720	16:9	59,94p/60p
		29,97p/30p
		23,976p/24p
Up to 1 920 × 1 152	16:9	50p
		50i
		25p

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	77OY3	

9.5.3.4 MPEG-4 Part 10 AV format: MIME type definition

9.5.3.4.1

[PROFILES]

AVC_TS_MP_HD_AAC_MULT5
AVC_TS_MP_HD_AAC_MULT5_T
AVC_TS_MP_HD_HEAAC_L2
AVC_TS_MP_HD_HEAAC_L2_T
AVC_TS_MP_HD_MPEG1_L3
AVC_TS_MP_HD_MPEG1_L3_T
AVC_TS_MP_HD_AC3
AVC_TS_MP_HD_AC3_T
AVC_TS_MP_HD_AAC_LTP
AVC_TS_MP_HD_AAC_LTP_T

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AVC_TS_MP_HD_AAC_LTP_MULT5
AVC_TS_MP_HD_AAC_LTP_MULT5_T
AVC_TS_MP_HD_AAC_LTP_MULT7
AVC_TS_MP_HD_AAC_LTP_MULT7_T
AVC_TS_MP_HD_EAC3_T
AVC_TS_HP_HD_MPEG1_L2_T
AVC_TS_HP_HD_AC3_T
AVC_TS_HP_HD_EAC3_T
AVC_TS_HD_EU
AVC_TS_HD_EU_T
AVC_TS_JP_AAC_T
AVC_TS_HD_60_AC3
AVC_TS_HD_60_AC3_T
AVC_TS_HD_50_AC3
AVC_TS_HD_50_AC3_T
AVC_TS_HD_24_AC3
AVC_TS_HD_24_AC3_T
AVC_TS_HD_DTS_T
AVC_TS_HD_DTSHD_HRA_T
AVC_TS_HD_DTSHD_MA_T

9.5.3.4.2

[GUIDELINE] MIME type "video/vnd.dlna.mpeg-tts" shall be used for this subset of DLNA profiles.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	53XRI	

9.5.3.5 MPEG-4 Part 10 AV format: MIME type definition

9.5.3.5.1

[PROFILES]

AVC_TS_MP_HD_AAC_MULT5_ISO
AVC_TS_MP_HD_HEAAC_L2_ISO
AVC_TS_MP_HD_MPEG1_L3_ISO
AVC_TS_MP_HD_AAC_LTP_ISO
AVC_TS_MP_HD_AAC_LTP_MULT5_ISO
AVC_TS_MP_HD_AAC_LTP_MULT7_ISO
AVC_TS_MP_HD_AC3_ISO
AVC_PS_HD_DTS
AVC_PS_HD_DTSHD_MA
AVC_PS_HD_DTSHD
AVC_PS_HD_DTSHD_HRA
AVC_TS_MP_HD_EAC3_ISO
AVC_TS_HP_HD_MPEG1_L2_ISO
AVC_TS_HP_HD_AC3_ISO
AVC_TS_HP_HD_EAC3_ISO
AVC_TS_HD_EU_ISO
AVC_TS_HD_60_AC3_ISO
AVC_TS_HD_50_AC3_ISO
AVC_TS_HD_24_AC3_ISO
AVC_TS_HD_DTS_ISO
AVC_TS_HD_DTSHD_HRA_ISO
AVC_TS_HD_DTSHD_MA_ISO

9.5.3.5.2

[GUIDELINE] MIME type "video/mpeg" shall be used for this subset of DLNA profiles.

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[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	CUZTB	

9.5.4 Subset of DLNA profiles for AVC BP @ L3, SD resolutions, MP4 encapsulation

9.5.4.1 MPEG-4 Part 10 AV format: systems portion profiling

9.5.4.1.1

[PROFILES]

AVC_MP4_BL_L3_SD_AAC
AVC_MP4_BL_L3L_SD_AAC
AVC_MP4_BL_L3L_SD_HEAAC

9.5.4.1.2

[GUIDELINE] A bitstream conformant to these profiles shall conform to the provisions defined by MPEG Part 14, ISO/IEC 14496-14, and Part 15, ISO/IEC 14496-15, and the additional constraints defined in guideline 9.4.4.3.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 14496-14 ISO/IEC 14496-15	N53XR	

9.5.4.2 MPEG-4 Part 10 AV format: systems portion profiling: system bit rate

9.5.4.2.1

[PROFILES]

AVC_MP4_BL_L3_SD_AAC
AVC_MP4_BL_L3L_SD_AAC
AVC_MP4_BL_L3L_SD_HEAAC

9.5.4.2.2

[GUIDELINE] A bitstream conformant to these profiles shall meet the following requirements.

Maximum system bit rate:

- 5 Mbit/s

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	AXZAH	

9.5.4.3 MPEG-4 Part 10 AV format: video portion profiling

9.5.4.3.1

[PROFILES]

AVC_MP4_BL_L3_SD_AAC

9.5.4.3.2

[GUIDELINE] The main characteristics of video stream shall be conformant to ISO/IEC 14496-10.

Main characteristics of MPEG-4 part 10 video streams are

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Profile:

Baseline Profile

Level:

L3

Chroma:

4:2:0

Video bit rate:

- Constant bit rate equal to or less than 4 Mbit/s
- Variable-maximum bit rate equal to or less than 4 Mbit/s.

Video resolution with the following characteristics, as shown in Table 97.

Table 97 – MPEG-4 Part 10 AV format resolutions

	Resolution	Pixel aspect ratio[a] (informative)	Display aspect ratio[b] (informative)	Max. frame rate
625 D1	➢720 × 576	12:11	4:3	25
	➢720 × 576	16:11	16:9	25
525 D1	➢720 × 480	10:11	4:3	29,97
	➢720 × 480	40:33	16:9	29,97
VGA	➢640 × 480	1:1	4:3	30
VGA 16:9	➢640 × 360	1:1	16:9	30

a Pixel aspect ratio is informative and it indicates a typical aspect ratio for each resolution.

b Display aspect ratio of which a video stream is rendered is informative, and it indicates a display aspect ratio with a resolution and the typical aspect ratio for the resolution.

Pixel aspect ratio:

- ➢1:1
- ➢12:11
- ➢10:11
- ➢16:11
- ➢40:33
- ➢44:33
- ➢64:33
- ➢160:99
- ➢18:11
- ➢15:11
- ➢24:11
- ➢60:33

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- 20:11
- 32:11
- 80:33

A bitstream conformant to these media format profiles may utilize any of the pixel aspect ratios regardless of resolutions.

The Rendering Endpoint may ignore the pixel aspect ratio for rendering. Rendering Endpoint can shrink, stretch and crop image to the display aspect ratio dependent on vendor implementations.

The resolution shall not change in a video stream.

Both fixed frame rate and variable frame rate are allowed when constrained_set1_flag = 1.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	BWHKQ	

[COMMENT] This profile is for Progressive frames only.

9.5.4.4 MPEG-4 Part 10 AV format, video portion profiling: constraints for certain profiles

9.5.4.4.1

[PROFILES]

AVC_MP4_BL_L3L_SD_AAC
AVC_MP4_BL_L3L_SD_HEAAC

9.5.4.4.2

[GUIDELINE] The video portion profiling for these profiles shall be as described in 9.5.4.3 with the following exceptions.

Profile and level:

- BP at level L3 and below

Constraint Set1 Flag value shall be 1.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	9K33R	

[COMMENT] A Constraint Set1 Flag of 1 indicates that the video stream might be decoded by a Main profile decoder.

9.5.4.5 MPEG-4 Part 10 AV format, video portion profiling: DPB buffer constraints for certain profiles

9.5.4.5.1

[PROFILES]

AVC_MP4_BL_L3L_SD_AAC
AVC_MP4_BL_L3L_SD_HEAAC

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9.5.4.5.2

[GUIDELINE] The decoded picture buffer (DPB) size shall be restricted to no more than three times (3×) the display resolution

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	4BQW3	

[COMMENT] This allows for one DPB and two reference frames, thus limiting the memory requirements of handheld devices.

9.5.4.6 MPEG-4 Part 10 AV format: MIME type definition

9.5.4.6.1

[PROFILES]

AVC_MP4_BL_L3_SD_AAC
AVC_MP4_BL_L3L_SD_AAC
AVC_MP4_BL_L3L_SD_HEAAC

9.5.4.6.2

[GUIDELINE] MIME type "video/mp4" shall be used for these Media Format Profiles.

[ATTRIBUTES]

n/a	n/a	n/a	n/a			BQW3Z	

9.5.5 Subset of DLNA profiles for AVC BP @ L2 , CIF30 resolutions, MPEG-2 TS encapsulation

9.5.5.1 MPEG-4 Part 10 AV format: system portion profiling

9.5.5.1.1

[PROFILES]

AVC_TS_BL_CIF30_AAC_MULT5
AVC_TS_BL_CIF30_AAC_MULT5_T
AVC_TS_BL_CIF30_AAC_MULT5_ISO
AVC_TS_BL_CIF30_HEAAC_L2
AVC_TS_BL_CIF30_HEAAC_L2_T
AVC_TS_BL_CIF30_HEAAC_L2_ISO
AVC_TS_BL_CIF30_AAC_LTP
AVC_TS_BL_CIF30_AAC_LTP_T
AVC_TS_BL_CIF30_AAC_LTP_ISO
AVC_TS_BL_CIF30_AAC_LTP_MULT5
AVC_TS_BL_CIF30_AAC_LTP_MULT5_T
AVC_TS_BL_CIF30_AAC_LTP_MULT5_ISO

9.5.5.1.2

[GUIDELINE] The main characteristics of video stream shall be conformant to ISO/IEC 13818-1.

Main characteristics of MPEG-4 part 10 system stream are

System

- MPEG-2 Transport Stream

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Number of programs

- 1 as defined for a Single Program Transport Stream

Packet size

- 188 B per transport packet

System bit rate

- Up to 3 Mbit/s

PSI information

- PAT and PMT are required. It shall tolerate any other tables.
- PSI insertion interval should be implementation-dependent.

DLNA Transport Packets

- A bitstream conformant to these media format profiles shall contain DLNA Transport Packets as defined in 9.3.4.2 and 9.3.5.4.2.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	WHKQS	C

[COMMENT] A full or partial SPTS can have multiple audio and video components in it.

9.5.5.2 MPEG-4 Part 10 AV format: system portion profiling

9.5.5.2.1

[PROFILES]

AVC_TS_BL_CIF30_AAC_940
AVC_TS_BL_CIF30_AAC_940_T
AVC_TS_BL_CIF30_AAC_940_ISO

9.5.5.2.2

[GUIDELINE] System stream specifications for these profiles shall conform to the guidelines 9.5.5.1.2, except as indicated below.

Maximum system bitrate (normative):

- 940 kbit/s

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	K33RA	

9.5.5.3 MPEG-4 Part 10 AV format: video portion profiling: Constraint Set1 Flag

9.5.5.3.1

[PROFILES]

AVC_TS_BL_CIF30_AAC_MULT5
AVC_TS_BL_CIF30_AAC_MULT5_T
AVC_TS_BL_CIF30_AAC_MULT5_ISO
AVC_TS_BL_CIF30_HEAAC_L2
AVC_TS_BL_CIF30_HEAAC_L2_T
AVC_TS_BL_CIF30_HEAAC_L2_ISO
AVC_TS_BL_CIF30_AAC_LTP

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AVC_TS_BL_CIF30_AAC_LTP_T
AVC_TS_BL_CIF30_AAC_LTP_ISO
AVC_TS_BL_CIF30_AAC_LTP_MULT5
AVC_TS_BL_CIF30_AAC_LTP_MULT5_T
AVC_TS_BL_CIF30_AAC_LTP_MULT5_ISO
AVC_TS_BL_CIF30_AAC_940
AVC_TS_BL_CIF30_AAC_940_T
AVC_TS_BL_CIF30_AAC_940_ISO

9.5.5.3.2

[GUIDELINE] A bitstream conformant to these profiles shall meet the following requirements.

Constraint Set1 Flag:

1

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	PCUZT	

[COMMENT] The constraint_set1_flag is used to signal that even though the content conforms to Baseline profile. It will also be decodable by a Main profile decoder.
When this flag is set to 1, do not use encoding features that are allowed in Baseline profile but not in the Main profile.

9.5.5.4 MPEG-4 Part 10 AV format: video portion profiling

9.5.5.4.1

[PROFILES]

AVC_TS_BL_CIF30_AAC_MULT5
AVC_TS_BL_CIF30_AAC_MULT5_T
AVC_TS_BL_CIF30_AAC_MULT5_ISO
AVC_TS_BL_CIF30_HEAAC_L2
AVC_TS_BL_CIF30_HEAAC_L2_T
AVC_TS_BL_CIF30_HEAAC_L2_ISO
AVC_TS_BL_CIF30_AAC_LTP
AVC_TS_BL_CIF30_AAC_LTP_T
AVC_TS_BL_CIF30_AAC_LTP_ISO
AVC_TS_BL_CIF30_AAC_LTP_MULT5
AVC_TS_BL_CIF30_AAC_LTP_MULT5_T
AVC_TS_BL_CIF30_AAC_LTP_MULT5_ISO
AVC_TS_BL_CIF30_AAC_940
AVC_TS_BL_CIF30_AAC_940_T
AVC_TS_BL_CIF30_AAC_940_ISO

9.5.5.4.2

[GUIDELINE] The main characteristics of video stream shall be conformant to ISO/IEC 14496-10.

Main characteristics of MPEG-4 part 10 video streams are

Profile and level

- BP at the following levels
- L2 and below

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Chroma

- 4:2:0

Video bit rate

- ➢ Baseline Profile
- Constant bit rate equal to or less than 2 Mbit/s
- Variable-maximum bit rate equal to or less than 2 Mbit/s.

Table 98 shows the format resolutions for MPEG-4 Part 10.

Table 98 – MPEG-4 Part 10 AV format resolutions

	Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)
CIF, 625SIF	➢352 × 288	12:11	4:3
	➢352 × 288	16:11	16:9
525SIF	➢352 × 240	10:11	4:3
	➢352 × 240	40:33	16:9
QVGA 4:3	➢320 × 240	1:1	4:3
QVGA 16:9	➢320 × 180	1:1	16:9
1/7VGA 4:3	➢240 × 180	1:1	4:3
1/7VGA 16:9	➢240 × 135	1:1	16:9
1/9VGA 4:3	➢208 × 160	1:1	4:3
QCIF,625QSIF	➢176 × 144	12:11	4:3
	➢176 × 144	16:11	16:9
525QSIF	➢176 × 120	10:11	4:3
	➢176 × 120	40:33	16:9
SQVGA 4:3	➢160 × 120	1:1	4:3
1/16 VGA 4:3	➢160 × 112	1:1	4:3
SQVGA 16:9	➢160 × 90	1:1	16:9
SQCIF	➢128 × 96	12:11	4:3
	➢128 × 96	16:11	16:9

[a] Pixel aspect ratio is informative and it indicates a typical aspect ratio for each resolution.

[b] Display aspect ratio of which a video stream is rendered is informative, and it indicates a display aspect ratio with a resolution and the typical aspect ratio for the resolution.

Pixel aspect ratio:

- ➢1:1
- ➢12:11
- ➢10:11
- ➢16:11

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- 40:33
- 44:33
- 64:33
- 160:99
- 18:11
- 15:11
- 24:11
- 60:33
- 20:11
- 32:11
- 80:33

A bitstream conformant to these media format profiles may utilize any of the pixel aspect ratios regardless of resolutions.

The Rendering Endpoint may ignore the pixel aspect ratio for rendering. Rendering Endpoint can shrink, stretch and crop image to the display aspect ratio dependent on vendor implementations.

The resolution shall not change in a video stream

The frame rate is less than or equal to 30 fps.

Both fixed frame rate and variable frame rate are allowed

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	R77OY	

[COMMENT] Progressive only, no interlace allowed.
Maximum allowed Frame rate is 30 fps.
Serving Endpoints can stream with any of the pixel aspect ratios from Table 92.
Rendering Endpoints need to tolerate any pixel aspect ratio that it receives from DMS.
The accuracy of aspect ratio rendering is up to the implementer.

9.5.5.5 MPEG-4 Part 10 AV format: MIME type definition

9.5.5.5.1

[PROFILES]

AVC_TS_BL_CIF30_AAC_MULT5
AVC_TS_BL_CIF30_AAC_MULT5_T
AVC_TS_BL_CIF30_HEAAC_L2
AVC_TS_BL_CIF30_HEAAC_L2_T
AVC_TS_BL_CIF30_AAC_LTP AVC_TS_BL_CIF30_AAC_LTP_T
AVC_TS_BL_CIF30_AAC_LTP_MULT5
AVC_TS_BL_CIF30_AAC_LTP_MULT5_T
AVC_TS_BL_CIF30_AAC_940
AVC_TS_BL_CIF30_AAC_940_T
AVC_MP4_BL_CIF30_HEAAC_MPS

9.5.5.5.2

[GUIDELINE] MIME type "video/vnd.dlna.mpeg-tts" shall be used for these Media Format Profiles.

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[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	33RA4	

9.5.5.6 MPEG-4 Part 10 AV format: MIME type definition

9.5.5.6.1

[PROFILES]

AVC_TS_BL_CIF30_AAC_MULT5_ISO
AVC_TS_BL_CIF30_HEAAC_L2_ISO
AVC_TS_BL_CIF30_AAC_LTP_ISO
AVC_TS_BL_CIF30_AAC_LTP_MULT5_ISO
AVC_TS_BL_CIF30_AAC_940_ISO

9.5.5.6.2

[GUIDELINE] MIME type "video/mpeg" shall be used for this Media Format Profile.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	QW3ZW	

9.5.6 Subset of DLNA profiles for AVC BP @ L1.2, CIF 15 resolutions, MPEG-2 TS encapsulation

9.5.6.1 MPEG-4 Part 10 AV format: systems portion profiling

9.5.6.1.1

[PROFILES]

AVC_TS_BL_CIF15_AAC
AVC_TS_BL_CIF15_AAC_T
AVC_TS_BL_CIF15_AAC_ISO
AVC_TS_BL_CIF15_AAC_LTP
AVC_TS_BL_CIF15_AAC_LTP_T
AVC_TS_BL_CIF15_AAC_LTP_ISO
AVC_TS_BL_CIF15_BSAC
AVC_TS_BL_CIF15_BSAC_T
AVC_TS_BL_CIF15_BSAC_ISO

9.5.6.1.2

[GUIDELINE] The main characteristics of video stream shall be conformant to ISO/IEC 13818-1.

Main characteristics of MPEG-4 part 10 system stream are

System:

- MPEG-2 Transport Stream

Number of programs:

- 1 as defined for a Single Program Transport Stream

Packet size:

- 188 B per transport packet

System bit rate:

- Up to 600 kbit/s

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- Video up to 384 kbit/s

PSI information:

- ➢ PAT and PMT are required. It shall tolerate any other tables.
- ➢ PSI insertion interval should be implementation-dependent.

Serving end point may choose to provide additional PSI information.

DLNA Transport Packets

➢ A bitstream conformant to these media format profiles shall contain DLNA Transport Packets as defined in 9.3.4.2 and 9.3.5.4.2.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 13818-1	HKQSR	C

[COMMENT] A full or partial SPTS can have multiple audio and video components in it.

9.5.6.2 MPEG-4 Part 10 AV format: systems portion profiling

9.5.6.2.1

[PROFILES]

AVC_TS_BL_CIF15_AAC_540
AVC_TS_BL_CIF15_AAC_540_T
AVC_TS_BL_CIF15_AAC_540_ISO

9.5.6.2.2

[GUIDELINE] System stream specifications for these profiles shall conform to the previous guideline, except as indicated below.

Maximum system bitrate (normative):

- ➢ 540 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	W3ZW6	

9.5.6.3 MPEG-4 Part 10 AV format: video portion profiling: Constraint Set1 Flags

9.5.6.3.1

[PROFILES]

AVC_TS_BL_CIF15_AAC
AVC_TS_BL_CIF15_AAC_T
AVC_TS_BL_CIF15_AAC_ISO
AVC_TS_BL_CIF15_AAC_LTP
AVC_TS_BL_CIF15_AAC_LTP_T
AVC_TS_BL_CIF15_AAC_LTP_ISO
AVC_TS_BL_CIF15_BSAC
AVC_TS_BL_CIF15_BSAC_T
AVC_TS_BL_CIF15_BSAC_ISO
AVC_TS_BL_CIF15_AAC_540
AVC_TS_BL_CIF15_AAC_540_T
AVC_TS_BL_CIF15_AAC_540_ISO

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9.5.6.3.2

[GUIDELINE] A bitstream conformant to these profiles shall meet the following requirements.

Constraint Set1 Flag:

1

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	3N53X	

[COMMENT] The constraint_set1_flag is used to signal that even though the content conforms to Baseline profile; it will also be decodable by a Main profile decoder.
When this flag is set to 1, do not use encoding features that are allowed in Baseline profile but not in theMain profile.

9.5.6.4 MPEG-4 Part 10 AV format: video portion profiling

9.5.6.4.1

[PROFILES]

AVC_TS_BL_CIF15_AAC
AVC_TS_BL_CIF15_AAC_T
AVC_TS_BL_CIF15_AAC_ISO
AVC_TS_BL_CIF15_AAC_LTP
AVC_TS_BL_CIF15_AAC_LTP_T
AVC_TS_BL_CIF15_AAC_LTP_ISO
AVC_TS_BL_CIF15_BSAC
AVC_TS_BL_CIF15_BSAC_T
AVC_TS_BL_CIF15_BSAC_ISO

9.5.6.4.2

[GUIDELINE] The main characteristics of video stream shall be conformant to ISO/IEC 14496-10

Main characteristics of MPEG-4 part 10 video streams are

Profile and level:

- BP at the following levels
- L1.2 and below

Chroma:

- 4:2:0

Video bit rate:

- Baseline Profile
- Constant bit rate equal to or less than 384 kbit/s
- Variable-maximum bit rate equal to or less than 384 kbit/s.

Table 99 shows the format resolutions for MPEG-4 Part 10.

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Table 99 – MPEG-4 Part 10 AV format resolutions

	Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)	Max. frame rate
CIF, 625SIF	➢352 × 288	12:11	4:3	15
	➢352 × 288	16:11	16:9	15
525SIF	➢352 × 240	10:11	4:3	18
	➢352 × 240	40:33	16:9	18
QVGA 4:3	➢320 × 240	1:1	4:3	20
QVGA 16:9	➢320 × 180	1:1	16:9	26
1/7VGA 4:3	➢240 × 180	1:1	4:3	30
1/9VGA 4:3	➢208 × 160	1:1	4:3	30
QCIF,625QSIF	➢176 × 144	12:11	4:3	30
	➢176 × 144	16:11	16:9	30
525QSIF	➢176 × 120	10:11	4:3	30
	➢176 × 120	40:33	16:9	30
SQVGA 4:3	➢160 × 120	1:1	4:3	30
1/16 VGA 4:3	➢160 × 112	1:1	4:3	30
SQVGA 16:9	➢160 × 90	1:1	16:9	30
SQCIF	➢128 × 96	12:11	4:3	30
	➢128 × 96	16:11	16:9	30

[a] Pixel aspect ratio is informative and it indicates a typical aspect ratio for each resolution.

[b] Display aspect ratio of which a video stream is rendered is informative, and it indicates a display aspect ratio with a resolution and the typical aspect ratio for the resolution.

Pixel aspect ratio:

- ➢1:1
- ➢12:11
- ➢10:11
- ➢16:11
- ➢40:33
- ➢44:33
- ➢64:33
- ➢160:99
- ➢18:11
- ➢15:11
- ➢24:11
- ➢60:33

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- 20:11
- 32:11
- 80:33

A bitstream conformant to these media format profiles may utilize any of these pixel aspect ratios regardless of resolutions.

The Rendering Endpoint may ignore the pixel aspect ratio for rendering. Rendering Endpoint can shrink, stretch and crop image to the display aspect ratio dependent on vendor implementations.

The resolution shall not change in a video stream.

The frame rate is less than or equal to 30 fps.

Both fixed frame rate and variable frame rate are allowed.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	6OAXZ	

[COMMENT] Progressive only, no interlace allowed.
Maximum allowed frame rate is 30 fps.
A Serving Endpoint can stream with any of the pixel aspect ratios from Table 92.
A Rendering Endpoint needs to tolerate any pixel aspect ratio that it receives from a Serving Endpoint.
The accuracy of aspect ratio rendering is up to the implementer.

9.5.6.5 MPEG-4 Part 10 AV format: video portion profiling

9.5.6.5.1

[PROFILES]

AVC_TS_BL_CIF15_AAC_540
AVC_TS_BL_CIF15_AAC_540_T
AVC_TS_BL_CIF15_AAC_540_ISO

9.5.6.5.2

[GUIDELINE] System stream specifications for these profiles shall conform to 9.5.6.4, except as indicated below, in Table 100.

Additional resolution:

Table 100 – MPEG-4 Part 10 AV format resolutions

	Resolution	Pixel aspect ratio	Disp. aspect ratio	Max. frame rate
1/7VGA 16:9	240 × 135	1:1	16:9	30

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	SPCUZ	

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9.5.6.6 MPEG-4 Part 10 AV format: MIME type definition

9.5.6.6.1

[PROFILES]

AVC_TS_BL_CIF15_AAC
AVC_TS_BL_CIF15_AAC_T
AVC_TS_BL_CIF15_AAC_LTP
AVC_TS_BL_CIF15_AAC_LTP_T
AVC_TS_BL_CIF15_BSAC
AVC_TS_BL_CIF15_BSAC_T
AVC_TS_BL_CIF15_AAC_540
AVC_TS_BL_CIF15_AAC_540_T

9.5.6.6.2

[GUIDELINE] MIME type "video/vnd.dlna.mpeg-tts" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	3RA46	

9.5.6.7 MPEG-4 Part 10 AV format: MIME type definition

9.5.6.7.1

[PROFILES]

AVC_TS_BL_CIF15_AAC_ISO
AVC_TS_BL_CIF15_AAC_LTP_ISO
AVC_TS_BL_CIF15_BSAC_ISO
AVC_TS_BL_CIF15_AAC_540_ISO

9.5.6.7.2

[GUIDELINE] MIME type "video/mpeg" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	KQSRD	

9.5.7 Subset of DLNA profiles for AVC BP@ L2, CIF30 resolutions, MP4 encapsulation

9.5.7.1 MPEG-4 Part 10 AV format: systems portion profiling

9.5.7.1.1

[PROFILES]

AVC_MP4_BL_L2_CIF30_AAC
AVC_MP4_BL_CIF30_AAC_MULT5
AVC_MP4_BL_CIF30_HEAAC_L2
AVC_MP4_BL_CIF30_MPEG1_L3
AVC_MP4_BL_CIF30_AC3 AVC_MP4_BL_CIF30_AAC_LTP
AVC_MP4_BL_CIF30_AAC_LTP_MULT5
AVC_MP4_BL_CIF30_BSAC
AVC_MP4_BL_CIF30_BSAC_MULT5
AVC_MP4_BL_CIF30_AAC_940
AVC_MP4_BL_CIF30_HEAAC_MPS

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9.5.7.1.2

[GUIDELINE] A bitstream that is conformant with these profiles shall conform to the provisions defined by MPEG-4 Part 14, ISO/IEC 14496-14, and Part 15, ISO/IEC 14496-15, and the additional constraints defined in guideline 9.4.4.3.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-14 ISO/IEC 14496-15	RA46O	

9.5.7.2 MPEG-4 Part 10 AV format, systems portion profiling: system bit rate

9.5.7.2.1

[PROFILES]

AVC_MP4_BL_CIF30_HEAAC_L2
AVC_MP4_BL_CIF30_MPEG1_L3
AVC_MP4_BL_CIF30_AC3
AVC_MP4_BL_CIF30_AAC_LTP AVC_MP4_BL_CIF30_AAC_MULT5
AVC_MP4_BL_CIF30_AAC_LTP_MULT5
AVC_MP4_BL_CIF30_BSAC
AVC_MP4_BL_CIF30_BSAC_MULT5
AVC_MP4_BL_CIF30_HEAAC_MPS

9.5.7.2.2

[GUIDELINE] A bitstream conformant to these profiles shall meet the following requirements.

Maximum system bit rate:

- 3 Mbit/s

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	6SPCU	

9.5.7.3 MPEG-4 Part 10 AV Format, systems portion profiling: system bit rate

9.5.7.3.1

[PROFILES]

AVC_MP4_BL_CIF30_AAC_940

[GUIDELINE] A bitstream conformant to this profile shall meet the following requirements.

Maximum system bit rate:

- 940 kbit/s

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	F3N53	

9.5.7.4 MPEG-4 Part 10 AV format, system portion profiling: System bit rate

9.5.7.4.1

[PROFILES]

AVC_MP4_BL_L2_CIF30_AAC

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9.5.7.4.2

[GUIDELINE] A bitstream conformant to this profile shall meet the following requirements.

Maximum system bit rate:

- 1,3 Mbit/s

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	RDTR7	

9.5.7.5 MPEG-4 Part 10 AV format, video portion profiling

9.5.7.5.1

[PROFILES]

AVC_MP4_BL_CIF30_AAC_MULT5
AVC_MP4_BL_CIF30_HEAAC_L2
AVC_MP4_BL_CIF30_MPEG1_L3
AVC_MP4_BL_CIF30_AC3 AVC_MP4_BL_CIF30_AAC_LTP
AVC_MP4_BL_CIF30_AAC_LTP_MULT5
AVC_MP4_BL_CIF30_BSAC
AVC_MP4_BL_CIF30_BSAC_MULT5
AVC_MP4_BL_CIF30_HEAAC_MPS

9.5.7.5.2

[GUIDELINE] The main characteristics of video stream shall be conformant to ISO/IEC 14496-10

Main characteristics of MPEG-4 part 10 video streams are

Profile and level:

- BP at the following levels
- L2 and below

Chroma:

- 4:2:0

Video bit rate:

- Baseline Profile
- Constant bit rate equal to or less than 2 Mbit/s
- Variable-maximum bit rate equal to or less than 2 Mbit/s

Table 101 shows the format resolutions for MPEG-4 Part 10.

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Table 101 – MPEG-4 Part 10 AV format resolutions

	Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)
CIF, 625SIF	➢352 × 288	12:11	4:3
	➢352 × 288	16:11	16:9
525SIF	➢352 × 240	10:11	4:3
	➢352 × 240	40:33	16:9
QVGA 4:3	➢320 × 240	1:1	4:3
QVGA 16:9	➢320 × 180	1:1	16:9
1/7VGA 4:3	➢240 × 180	1:1	4:3
1/9VGA 4:3)	➢208 × 160	1:1	4:3
QCIF,625QSIF	➢176 × 144	12:11	4:3
	➢176 × 144	16:11	16:9
525QSIF	➢176 × 120	10:11	4:3
	➢176 × 120	40:33	16:9
SQVGA 4:3	➢160 × 120	1:1	4:3
1/16 VGA 4:3	➢160 × 112	1:1	4:3
SQVGA 16:9	➢160 × 90	1:1	16:9
SQCIF	➢128 × 96	12:11	4:3
	➢128 × 96	16:11	16:9

[a] Pixel aspect ratio is informative and it indicates a typical aspect ratio for each resolution.

[b] Display aspect ratio of which a video stream is rendered is informative, and it indicates a display aspect ratio with a resolution and the typical aspect ratio for the resolution.

Pixel aspect ratio:

- ➢1:1
- ➢12:11
- ➢10:11
- ➢16:11
- ➢40:33
- ➢44:33
- ➢64:33
- ➢160:99
- ➢18:11
- ➢15:11
- ➢24:11
- ➢60:33

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- 20:11
- 32:11
- 80:33

A bitstream conformant with these media format profiles may utilize any of these pixel aspect ratios regardless of resolutions.

The Rendering Endpoint may ignore the pixel aspect ratio for rendering. Rendering Endpoint can shrink, stretch and crop image to the display aspect ratio dependent on vendor implementations.

The resolution shall not change in a video stream.

The frame rate is less than or equal to 30 fps.

Both fixed frame rate and variable frame rate are allowed.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	DTR77	

9.5.7.6 MPEG-4 Part 10 AV format , video portion profiling: Constraint Set1 Flags

9.5.7.6.1

[PROFILES]

AVC_MP4_BL_CIF30_AAC_MULT5
AVC_MP4_BL_CIF30_HEAAC_L2
AVC_MP4_BL_CIF30_MPEG1_L3
AVC_MP4_BL_CIF30_AC3
AVC_MP4_BL_CIF30_AAC_LTP
AVC_MP4_BL_CIF30_AAC_LTP_MULT5
AVC_MP4_BL_CIF30_BSAC
AVC_MP4_BL_CIF30_BSAC_MULT5
AVC_MP4_BL_CIF30_AAC_940
AVC_MP4_BL_CIF30_HEAAC_MPS

9.5.7.6.2

[GUIDELINE] A bitstream conformant to these profiles shall meet the following requirements.

Constraint Set1 Flag:

1

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	OAXZA	

[COMMENT] The constraint_set1_flag is used to signal that even though the content conforms to the Baseline profile, it will also be decodable by a Main profile decoder. When this flag is set to 1, do not use encoding features that are allowed in the Baseline profile but not the Main profile.

9.5.7.7 MPEG-4 Part 10 AV format, video portion profiling

9.5.7.7.1

[PROFILES]

AVC_MP4_BL_CIF30_AAC_940

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9.5.7.7.2

[GUIDELINE] A bitstream that conforms to this profile shall conform to all aspects of the video portion definition of guideline 9.5.7.5, except as indicated below.

Video bit rate:

- ➢ Baseline Profile
- Constant bit rate equal to or less than 768 kbit/s
- Variable-maximum bit rate equal to or less than 768 kbit/s.

An additional resolution is indicated in Table 102.

Table 102 – MPEG-4 Part 10 AV format resolutions

	Resolution	Pixel aspect ratio	Disp. aspect ratio	Max. frame rate
1/7VGA 16:9	➢240 × 135	1:1	16:9	30

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	TR77O	

9.5.7.8 MPEG-4 Part 10 AV format, video portion profiling

9.5.7.8.1

[PROFILES]

AVC_MP4_BL_L2_CIF30_AAC

9.5.7.8.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the video portion profile BL_CIF30 as specified in guideline 9.5.7.5 except as indicated below.

Level:

L2

Video bit rate:

- ➢ Constant bit rate equal to or less than 1 Mbit/s
- ➢ Variable-maximum bit rate equal to or less than 1 Mbit/s.

Table 103 shows the format resolutions for MPEG-4 Part 10.

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Table 103 – MPEG-4 Part 10 AV format resolutions

	Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)	Max. frame rate
CIF, 625SIF	➢352 × 288	12:11	4:3	30
525SIF	➢352 × 240	10:11	4:3	30
QVGA4:3	➢320 × 240	1:1	4:3	30

[a] Pixel aspect ratio is informative and it indicates a typical aspect ratio for each resolution.

[b] Display aspect ratio of which a video stream is rendered is informative, and it indicates a display aspect ratio with a resolution and the typical aspect ratio for the resolution.

constrained_set1_flag = 1

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	AF3N5	

[COMMENT] This profile is Progressive frame only.

9.5.7.9 MPEG-4 Part 10 AV format, MIME type definition

9.5.7.9.1

[PROFILES]

AVC_MP4_BL_L2_CIF30_AAC
AVC_MP4_BL_CIF30_AAC_MULT5
AVC_MP4_BL_CIF30_HEAAC_L2
AVC_MP4_BL_CIF30_MPEG1_L3
AVC_MP4_BL_CIF30_AC3
AVC_MP4_BL_CIF30_AAC_LTP
AVC_MP4_BL_CIF30_AAC_LTP_MULT5
AVC_MP4_BL_CIF30_BSAC
AVC_MP4_BL_CIF30_BSAC_MULT5
AVC_MP4_BL_CIF30_AAC_940

9.5.7.9.2

[GUIDELINE] MIME type "video/mp4" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	A	DMS DMP	n/a	n/a	n/a	W6SPC	

9.5.8 Subset of DLNA profiles for AVC BP@ L1.2, CIF15 resolutions, MPEG-2 TS encapsulation

9.5.8.1 MPEG-4 Part 10 AV format: systems portion profiling

9.5.8.1.1

[PROFILES]

AVC_TS_BL_CIF15_AAC
AVC_TS_BL_CIF15_AAC_T
AVC_TS_BL_CIF15_AAC_ISO

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AVC_TS_BL_CIF15_AAC_LTP
AVC_TS_BL_CIF15_AAC_LTP_T
AVC_TS_BL_CIF15_AAC_LTP_ISO

9.5.8.1.2

[GUIDELINE] Main characteristics of video stream shall be conformant to ISO/IEC 13818-1.

Main characteristics of MPEG-4 part 10 system stream are

System:

- MPEG-2 Transport Stream

Number of programs:

- 1 as defined for a Single Program Transport Stream

Packet size:

- 188 B per transport packet

System bit rate:

- Up to 600 kbit/s
- Video up to 384 kbit/s

PSI information:

- PAT and PMT are required. It shall tolerate any other tables.
- PSI insertion interval should be implementation-dependent.

Serving end point may choose to provide additional PSI information.

DLNA Transport Packets

- A bitstream conformant to these media format profiles shall contain DLNA Transport Packets as defined in 9.3.4.2 and 9.3.5.4.2.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 13818-1	46OAX	C

[COMMENT] A full or partial SPTS can have multiple audio and video components in it.

9.5.8.2 MPEG-4 Part 10 AV format, video portion profiling: Constraint set1 flags

9.5.8.2.1

[PROFILES]

AVC_TS_BL_CIF15_AAC
AVC_TS_BL_CIF15_AAC_T
AVC_TS_BL_CIF15_AAC_ISO
AVC_TS_BL_CIF15_AAC_LTP
AVC_TS_BL_CIF15_AAC_LTP_T
AVC_TS_BL_CIF15_AAC_LTP_ISO

9.5.8.2.2

[GUIDELINE] A bitstream conformant to these profiles shall meet the following requirements.

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Constraint Set1 Flag:

1

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	SRDTR	

[COMMENT] The constraint_set1_flag is used to signal that even though the content conforms to the Baseline profile, it will also be decodable by a Main profile decoder.
When this flag is set to 1, do not use encoding features that are allowed in the Baseline profile but not in the Main profile.

9.5.8.3 MPEG-4 Part 10 AV format: video portion profiling

9.5.8.3.1

[PROFILES]

AVC_TS_BL_CIF15_AAC
AVC_TS_BL_CIF15_AAC_T
AVC_TS_BL_CIF15_AAC_T
AVC_TS_BL_CIF15_AAC_LTP
AVC_TS_BL_CIF15_AAC_LTP_T
AVC_TS_BL_CIF15_AAC_LTP_ISO

9.5.8.3.2

[GUIDELINE] The main characteristics of video stream shall be conformant to ISO/IEC 14496-10.

Main characteristics of MPEG-4 part 10 video streams are

Profile and level:

- BP at the following levels
- L1.2 and below

Chroma:

- 4:2:0

Video bit rate:

- Baseline Profile
- Constant bit rate equal to or less than 384 kbit/s
- Variable-maximum bit rate equal to or less than 384 kbit/s.

Table 104 shows the format resolutions for MPEG-4 Part 10.

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Table 104 – MPEG-4 Part 10 AV format resolutions

	Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)	Max frame rate
CIF, 625SIF	➢352 × 288	12:11	4:3	15
	➢352 × 288	16:11	16:9	15
525SIF	➢352 × 240	10:11	4:3	18
	➢352 × 240	40:33	16:9	18
QVGA 4:3	➢320 × 240	1:1	4:3	20
QVGA 16:9	➢320 × 180	1:1	16:9	26
1/7VGA 4:3	➢240 × 180	1:1	4:3	30
1/9VGA 4:3	➢208 × 160	1:1	4:3	30
QCIF,625QSIF	➢176 × 144	12:11	4:3	30
	➢176 × 144	16:11	16:9	30
525QSIF	➢176 × 120	10:11	4:3	30
	➢176 × 120	40:33	16:9	30
SQVGA 4:3	➢160 × 120	1:1	4:3	30
1/16 VGA 4:3	➢160 × 112	1:1	4:3	30
SQVGA 16:9	➢160 × 90	1:1	16:9	30
SQCIF	➢128 × 96	12:11	4:3	30
	➢128 × 96	16:11	16:9	30

[a] Pixel aspect ratio is informative and it indicates a typical aspect ratio for each resolution.

[b] Display aspect ratio of which a video stream is rendered is informative, and it indicates a display aspect ratio with a resolution and the typical aspect ratio for the resolution.

Pixel aspect ratio:

- ➢1:1
- ➢12:11
- ➢10:11
- ➢16:11
- ➢40:33
- ➢44:33
- ➢64:33
- ➢160:99
- ➢18:11
- ➢15:11
- ➢24:11
- ➢60:33

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- 20:11
- 32:11
- 80:33

The serving endpoint may use any pixel aspect ratios regardless of resolutions.

The Rendering Endpoint may ignore the pixel aspect ratio for rendering. Rendering Endpoint can shrink, stretch and crop image to the display aspect ratio dependent on vendor implementations.

The resolution shall not change in a video stream.

The frame rate is less than or equal to 30 fps.

Both fixed frame rate and variable frame rate are allowed.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	QSRDT	

[COMMENT] Progressive only, no interlace allowed.
Maximum allowed Frame rate is 30 fps.
A Serving Endpoint can stream with any of the pixel aspect ratio from Table 92.
A Rendering Endpoint needs to tolerate any pixel aspect ratio that it receives from the Serving Endpoint.
Accuracy of aspect ratio rendering is up to the implementer.

9.5.8.4 MPEG-4 Part 10 AV format: MIME type definition

9.5.8.4.1

[PROFILES]

AVC_TS_BL_CIF15_AAC
AVC_TS_BL_CIF15_AAC_T
AVC_TS_BL_CIF15_AAC_LTP
AVC_TS_BL_CIF15_AAC_LTP_T

9.5.8.4.2

[GUIDELINE] MIME type "video/vnd.dlna.mpeg-tts" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	ZW6SP	

9.5.8.5 MPEG-4 Part 10 AV format: MIME type definition

9.5.8.5.1

[PROFILES]

AVC_TS_BL_CIF15_AAC_ISO
AVC_TS_BL_CIF15_AAC_LTP_ISO

9.5.8.5.2

[GUIDELINE] MIME type "video/mpeg" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	3ZW6S	

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9.5.9 Subset of DLNA profiles for AVC BP@ L1.2 , CIF15 resolutions, MP4 encapsulation

9.5.9.1 MPEG-4 Part 10 AV format: systems portion profiling

9.5.9.1.1

[PROFILES]

AVC_MP4_BL_L12_CIF15_HEAAC
AVC_MP4_BL_CIF15_AAC
AVC_MP4_BL_CIF15_AAC_520
AVC_MP4_BL_CIF15_AAC_LTP AVC_MP4_BL_CIF15_AAC_LTP_520
AVC_MP4_BL_CIF15_BSAC
AVC_MP4_BL_CIF15_AMR
AVC_MP4_BL_CIF15_HEAAC
AVC_MP4_BL_L12_CIF15_HEAACv2

9.5.9.1.2

[GUIDELINE] A bitstream conformant to these profiles shall conform to the provisions defined by MPEG-4 Part 14, ISO/IEC 14496-14, and Part 15, ISO/IEC 14496-15, and the additional constraints defined in guideline 9.4.4.3.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 14496-14 ISO/IEC 14496-15	A46OA	

9.5.9.2 MPEG-4 Part 10 AV format, systems portion profiling: system bit rate

9.5.9.2.1

[PROFILES]

AVC_MP4_BL_CIF15_AAC
AVC_MP4_BL_CIF15_AAC_LTP AVC_MP4_BL_CIF15_BSAC
AVC_MP4_BL_CIF15_AMR
AVC_MP4_BL_CIF15_HEAAC

9.5.9.2.2

[GUIDELINE] A bitstream conformant to these profiles shall meet the following requirements.

Maximum bit rate:

- 600 kbit/s.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	ZAF3N	

9.5.9.3 MPEG-4 Part 10 AV format, systems portion profiling: system bitrate

9.5.9.3.1

[PROFILES]

AVC_MP4_BL_CIF15_AAC_520
AVC_MP4_BL_CIF15_AAC_LTP_520
AVC_MP4_BL_L12_CIF15_HEAAC
AVC_MP4_BL_L12_CIF15_HEAACv2

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9.5.9.3.2

[GUIDELINE] A bitstream conformant to these profiles shall meet the following requirements.

Maximum bit rate

- 520 kbit/s.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	TPACY	

9.5.9.4 MPEG-4 Part 10 AV format, systems portion profiling: system bitrate

9.5.9.4.1

[PROFILES]

AVC_MP4_BL_L1B_QCIF15_HEAAC
AVC_MP4_BL_L1B_QCIF15_HEAACv2

9.5.9.4.2

[GUIDELINE] A bitstream conformant to these profiles shall meet the following requirements.

Maximum bit rate:

- 256 kbit/s.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	PACYW	

9.5.9.5 MPEG-4 Part 10 AV format: video portion profiling

9.5.9.5.1

[PROFILES]

AVC_MP4_BL_CIF15_AAC
AVC_MP4_BL_CIF15_AAC_LTP AVC_MP4_BL_CIF15_BSAC
AVC_MP4_BL_CIF15_AMR
AVC_MP4_BL_CIF15_HEAAC

9.5.9.5.2

[GUIDELINE] The main characteristics of video stream shall be conformant to ISO/IEC 14496-10.

Main characteristics of MPEG-4 part 10 video streams are

Profile and level:

- BP at the following levels
- L1.2 and below.

Chroma:

- 4:2:0

Video bit rate:

- Baseline Profile

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- Constant bit rate equal to or less than 384 kbit/s
- Variable-maximum bit rate equal to or less than 384 kbit/s.

Table 105 shows the format resolutions for MPEG-4 Part 10.

Table 105 – MPEG-4 Part 10 AV format resolutions

	Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)	Max. frame rate
CIF, 625SIF	➢352 × 288	12:11	4:3	15
	➢352 × 288	16:11	16:9	15
525SIF	➢352 × 240	10:11	4:3	18
	➢352 × 240	40:33	16:9	18
QVGA 4:3	➢320 × 240	1:1	4:3	20
QVGA 16:9	➢320 × 180	1:1	16:9	26
1/7VGA 4:3	➢240 × 180	1:1	4:3	30
1/9VGA 4:3	➢208 × 160	1:1	4:3	30
QCIF, 625QSIF	➢176 × 144	12:11	4:3	30
	➢176 × 144	16:11	16:9	30
525QSIF	➢176 × 120	10:11	4:3	30
	➢176 × 120	40:33	16:9	30
SQVGA 4:3	➢160 × 120	1:1	4:3	30
1/16 VGA 4:3	➢160 × 112	1:1	4:3	30
SQVGA 16:9	➢160 × 90	1:1	16:9	30
SQCIF	➢128 × 96	12:11	4:3	30
	➢128 × 96	16:11	16:9	30

[a] Pixel aspect ratio is informative and it indicates a typical aspect ratio for each resolution.

[b] Display aspect ratio of which a video stream is rendered is informative, and it indicates a display aspect ratio with a resolution and the typical aspect ratio for the resolution.

Pixel aspect ratio:

- ➢1:1
- ➢12:11
- ➢10:11
- ➢16:11
- ➢40:33
- ➢44:33
- ➢64:33
- ➢160:99
- ➢18:11

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- 15:11
- 24:11
- 60:33
- 20:11
- 32:11
- 80:33

A bitstream conformant with these media format profiles may utilize any of these pixel aspect ratios regardless of resolutions.

The Rendering Endpoint may ignore the pixel aspect ratio for rendering. Rendering Endpoint can shrink, stretch and crop image to the display aspect ratio dependent on vendor implementations.

The resolution shall not change in a video stream.

The frame rate is less than or equal to 30 fps.

Both fixed frame rate and variable frame rate are allowed.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	XTPAC	

9.5.9.6 MPEG-4 Part 10 AV format: video portion profiling

9.5.9.6.1

[PROFILES]

AVC_MP4_BL_CIF15_AAC_520
AVC_MP4_BL_CIF15_AAC_LTP_520

9.5.9.6.2

[GUIDELINE] A bitstream conformant to these profiles shall conform to all aspects of the video portion profiling described in 9.5.9.5, except as indicated below.

Maximum video bitrate (normative):

- 384 kbit/s

An additional video resolution shown in Table 106.

Table 106 – MPEG-4 Part 10 AV format resolutions

	Resolution	Pixel aspect ratio	Disp. aspect ratio	Max. frame rate
1/7VGA 16:9	240 × 135	1:1	16:9	30

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	9XTPA	

9.5.9.7 MPEG-4 Part 10 AV format: video portion profiling: Constraint Set1 Flags

9.5.9.7.1

[PROFILES]

AVC_MP4_BL_CIF15_AAC
AVC_MP4_BL_CIF15_AAC_520

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AVC_MP4_BL_CIF15_AAC_LTP
AVC_MP4_BL_CIF15_AAC_LTP_520
AVC_MP4_BL_CIF15_BSAC
AVC_MP4_BL_CIF15_AMR
AVC_MP4_BL_CIF15_HEAAC

9.5.9.7.2

[GUIDELINE] A bitstream conformant to these profiles shall meet the following requirements.

Constraint Set1 Flag:

1

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	3XRI7	

[COMMENT] The constraint_set1_flag is used to signal that even though the content conforms to the Baseline profile, it will also be decodable by a Main profile decoder. When this flag is set to 1, do not use encoding features that are allowed in the Baseline profile but not the Main profile.

9.5.9.8 MPEG-4 Part 10 AV format: video portion profiling

9.5.9.8.1

[PROFILES]

AVC_MP4_BL_L12_CIF15_HEAAC

9.5.9.8.2

[GUIDELINE] A bitstream conformant to this profile shall conform to all aspects of the video portion profile BL_CIF15 as specified in guideline 9.5.9.5, except that for this Profile ID the only level and resolution are defined as follows.

Level:

L1.2

Table 107 shows the format resolutions for MPEG-4 Part 10.

Table 107 – MPEG-4 Part 10 AV format resolutions

	Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)	Max. frame rate
QVGA4:3	➢320 × 240	1:1	4:3	15

[a] Pixel aspect ratio is informative and it indicates a typical aspect ratio for each resolution.

[b] Display aspect ratio of which a video stream is rendered is informative, and it indicates a display aspect ratio with a resolution and the typical aspect ratio for the resolution.

Constrained_Set1_Flag:

1

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	XRI7L	

[COMMENT] This profile is for a Progressive frame only.

9.5.9.9 MPEG-4 Part 10 AV format: MIME type definition

9.5.9.9.1

[PROFILES]

AVC_MP4_BL_L12_CIF15_HEAAC
AVC_MP4_BL_CIF15_AAC
AVC_MP4_BL_CIF15_AAC_520
AVC_MP4_BL_CIF15_AAC_LTP AVC_MP4_BL_CIF15_AAC_LTP_520
AVC_MP4_BL_CIF15_BSAC
AVC_MP4_BL_CIF15_AMR
AVC_MP4_BL_CIF15_HEAAC
AVC_MP4_BL_L12_CIF15_HEAACv2

9.5.9.9.2

[GUIDELINE] MIME type "video/mp4" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	A9XTP	

9.5.10 Subset of DLNA profiles forAVC BP@ L1b, QCIF15 resolutions, MP4 encapsulation

9.5.10.1 MPEG-4 Part 10 AV format: systems portion profiling

9.5.10.1.1

[PROFILES]

AVC_MP4_BL_L1B_QCIF15_HEAAC
AVC_MP4_BL_L1B_QCIF15_HEAACv2

9.5.10.1.2

[GUIDELINE] A bitstream which is conformant with these profiles shall conform to the provisions defined by MPEG-4 Part 14, ISO/IEC 14496-14, and Part 15, ISO/IEC 14496-15, and the additional constraints defined in guideline 9.4.4.3.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-14 ISO/IEC 14496-15	UA9XT	

9.5.10.2 MPEG-4 Part 10 AV format: video portion profiling

9.5.10.2.1

[PROFILES]

AVC_MP4_BL_L1B_QCIF15_HEAAC
AVC_MP4_BL_L1B_QCIF15_HEAACv2

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9.5.10.2.2

[GUIDELINE] The main characteristics of video stream shall be conformant to ISO/IEC 14496-10.

Main characteristics of MPEG-4 part 10 video streams are

Profile:

Baseline Profile

Level:

- L1b

Chroma:

- 4:2:0

Video bit rate:

- Constant bit rate equal to or less than 128 kbit/s
- Variable-maximum bit rate equal to or less than 128 kbit/s.

Video resolution with the following characteristics as shown in Table 108.

Table 108 – MPEG-4 Part 10 AV format resolutions

	Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)	Max. frame rate
(QCIF)	➢176 × 144	12:11	4:3	15

[a] Pixel aspect ratio is informative and it indicates a typical aspect ratio for each resolution.

[b] Display aspect ratio of which a video stream is rendered is informative, and it indicates a display aspect ratio with a resolution and the typical aspect ratio for the resolution.

Pixel aspect ratio:

- ➢1:1
- ➢12:11
- ➢10:11
- ➢16:11
- ➢40:33
- ➢44:33
- ➢64:33
- ➢160:99
- ➢18:11
- ➢15:11
- ➢24:11
- ➢60:33

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- 20:11
- 32:11
- 80:33

A bitstream conformant with these media format profiles may utilize any of these pixel aspect ratios regardless of resolutions.

The Rendering Endpoint may ignore the pixel aspect ratio for rendering. Rendering Endpoint can shrink, stretch and crop image to the display aspect ratio dependent on vendor implementations.

The resolution shall not change in a video stream.

Both fixed frame rate and variable frame rate are allowed.

Constrained_Set1_Flag:

1

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	75LWY	

[COMMENT] This profile is for a Progressive frame only.

9.5.10.3 MPEG-4 Part 10 AV format:MIME type definition

9.5.10.3.1

[PROFILES]

AVC_MP4_BL_L1B_QCIF15_HEAAC
AVC_MP4_BL_L1B_QCIF15_HEAACv2

9.5.10.3.2

[GUIDELINE] MIME type "video/mp4" shall be used for this Media Format Profile.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	WYCUA	

9.5.11 Subset of DLNA profiles for AVC MP@ L3, SD resolutions, MP4 encapsulation

9.5.11.1 MPEG-4 Part 10 AV format: systems portion profiling

9.5.11.1.1

[PROFILES]

AVC_MP4_MP_SD_AAC_MULT5
AVC_MP4_MP_SD_HEAAC_L2
AVC_MP4_MP_SD_MPEG1_L3
AVC_MP4_MP_SD_AAC_LTP
AVC_MP4_MP_SD_AAC_LTP_MULT5
AVC_MP4_MP_SD_AAC_LTP_MULT7
AVC_MP4_MP_SD_AC3
AVC_MP4_MP_SD_ATRAC3plus
AVC_MP4_MP_SD_BSAC
AVC_MP4_MP_SD_AAC_MPS
AVC_MP4_MP_SD_HEAAC_MPS
AVC_MP4_MP_SD_HEAAC_L4

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9.5.11.1.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to the provisions defined by MPEG-4 Part 14, ISO/IEC 14496-14, and Part 15, ISO/IEC 14496-15, and the additional constraints defined in guideline 9.4.4.3.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 14496-14 ISO/IEC 14496-15	5KZRE	

9.5.11.2 MPEG-4 Part 10 AV format: systems portion profiling: system bit rate

9.5.11.2.1

[PROFILES]

AVC_MP4_MP_SD_AAC_MULT5
AVC_MP4_MP_SD_AC3
AVC_MP4_MP_SD_HEAAC_L2
AVC_MP4_MP_SD_MPEG1_L3
AVC_MP4_MP_SD_AAC_LTP_MULT5
AVC_MP4_MP_SD_AAC_LTP_MULT7
AVC_MP4_MP_SD_AAC_LTP
AVC_MP4_MP_SD_ATRAC3plus
AVC_MP4_MP_SD_BSAC
AVC_MP4_MP_SD_AAC_MPS
AVC_MP4_MP_SD_HEAAC_MPS
AVC_MP4_MP_SD_HEAAC_L4

9.5.11.2.2

[GUIDELINE] A bitstream conformant to these profiles shall meet the following requirements.

Maximum bit rate:

- 13 Mbit/s (Video up to 10 Mbit/s)

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	C47XZ	

9.5.11.3 MPEG-4 Part 10 AV format: video portion profiling: GOP structure

9.5.11.3.1

[PROFILES]

AVC_MP4_MP_SD_AAC_MULT5
AVC_MP4_MP_SD_HEAAC_L2
AVC_MP4_MP_SD_MPEG1_L3
AVC_MP4_MP_SD_AAC_LTP
AVC_MP4_MP_SD_AAC_LTP_MULT5
AVC_MP4_MP_SD_AAC_LTP_MULT7
AVC_MP4_MP_SD_AC3
AVC_MP4_MP_SD_ATRAC3plus
AVC_MP4_MP_SD_BSAC
AVC_MP4_MP_SD_HEAAC_L4
AVC_MP4_MP_SD_AAC_MPS
AVC_MP4_MP_SD_HEAAC_MPS

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9.5.11.3.2

[GUIDELINE] A bitstream conformant to these profiles shall meet the requirements as indicated in Table 109.

Table 109 – MPEG-4 Part 10 AV format resolutions

	➢NTSC	➢PAL
Max Frame Rate of the content	➢30	➢25
Number of pictures in GOP	➢36 display fields or less (interlaced)	➢30 display fields or less (interlaced)
	➢18 frames or less (progressive)	➢15 frames or less (progressive)

[ATTRIBUTES]

S	L	n/a	n/a	n/a	ISO/IEC 14496-10	5LWYC	

9.5.11.4 MPEG-4 Part 10 AV format: video portion profiling

9.5.11.4.1

[PROFILES]

AVC_MP4_MP_SD_AAC_MULT5
AVC_MP4_MP_SD_HEAAC_L2
AVC_MP4_MP_SD_MPEG1_L3
AVC_MP4_MP_SD_AC3
AVC_MP4_MP_SD_AAC_LTP_MULT5
AVC_MP4_MP_SD_AAC_LTP_MULT7
AVC_MP4_MP_SD_AAC_LTP
AVC_MP4_MP_SD_ATRAC3plus
AVC_MP4_MP_SD_BSAC
AVC_MP4_MP_SD_HEAAC_L4
AVC_MP4_MP_SD_AAC_MPS
AVC_MP4_MP_SD_HEAAC_MPS

9.5.11.4.2

[GUIDELINE] The main characteristics of video stream shall be conformant to ISO/IEC 14496-10.

Main characteristics of MPEG-4 part 10 video streams are

Profile and level:

- ➢ MP at the following levels
- L3

Chroma:

- ➢ 4:2:0

Video bit rate:

- ➢ Main Profile
- Constant bit rate equal to or less than 10 Mbit/s
- Variable-maximum bit rate equal to or less than 10 Mbit/s.

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TV System with the following characteristics.

MPEG-4 Part 10 Main Profile

Table 110 shows the format resolutions for MPEG-4 Part 10.

Table 110 – MPEG-4 Part 10 AV format resolutions

	Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)
625 D1	➢720 × 576	12:11	4:3
	➢720 × 576	16:11	16:9
525 D1	➢720 × 480	10:11	4:3
	➢720 × 480	40:33	16:9
625 4SIF	➢704 × 576	12:11	4:3
	➢704 × 576	16:11	16:9
525 4SIF	➢704 × 480	10:11	4:3
	➢704 × 480	40:33	16:9
VGA	➢640 × 480	1:1	4:3
VGA 16:9	➢640 × 360	1:1	16:9
625 3/4D1	➢544 × 576	16:11	4:3
	➢544 × 576	64:33	16:9
525 3/4D1	➢544 × 480	44:33	4:3
	➢544 × 480	160:99	16:9
625 2/3D1	➢480 × 576	18:11	4:3
	➢480 × 576	24:11	16:9
525 2/3D1	➢480 × 480	15:11	4:3
	➢480 × 480	60:33	16:9
9/16VGA 4:3	➢480 × 360	1:1	4:3
9/16VGA 16:9	➢480 × 270	1:1	16:9
625 1/2D1	➢352 × 576	24:11	4:3
	➢352 × 576	32:11	16:9
525 1/2D1	➢352 × 480	20:11	4:3
	➢352 × 480	80:33	16:9
CIF, 625SIF	➢352 × 288	12:11	4:3
	➢352 × 288	16:11	16:9
525SIF	➢352 × 240	10:11	4:3
	➢352 × 240	40:33	16:9
QVGA 4:3	➢320 × 240	1:1	4:3

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	Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)
QVGA 16:9	➢320 × 180	1:1	16:9
1/7VGA 4:3	➢240 × 180	1:1	4:3
1/9VGA 4:3	➢208 × 160	1:1	4:3
QCIF,625QSIF	➢176 × 144	12:11	4:3
	➢176 × 144	16:11	16:9
525QSIF	➢176 × 120	10:11	4:3
	➢176 × 120	40:33	16:9
SQVGA 4:3	➢160 × 120	1:1	4:3
1/16 VGA 4:3	➢160 × 112	1:1	4:3
SQVGA 16:9	➢160 × 90	1:1	16:9
SQCIF	➢128 × 96	12:11	4:3
	➢128 × 96	16:11	16:9

[a] Pixel aspect ratio is informative and it indicates a typical aspect ratio for each resolution.

[b] Display aspect ratio of which a video stream is rendered is informative, and it indicates a display aspect ratio with a resolution and the typical aspect ratio for the resolution.

Pixel aspect ratio:

- ➢1:1
- ➢12:11
- ➢10:11
- ➢16:11
- ➢40:33
- ➢44:33
- ➢64:33
- ➢160:99
- ➢18:11
- ➢15:11
- ➢24:11
- ➢60:33
- ➢20:11
- ➢32:11
- ➢80:33

A bitstream conformant with these media format profiles may utilize any of these pixel aspect ratios regardless of resolutions.

The Rendering Endpoint may ignore the pixel aspect ratio for rendering. Rendering Endpoint can shrink, stretch and crop image to the display aspect ratio dependent on vendor implementations.

The resolution shall not change in a video stream.

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The frame rate is less than or equal to 30 fps.

Both fixed frame rate and variable frame rate are allowed.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	UZTBX	

[COMMENT] MPEG-4 part 10 Main profile at Level 3.

9.5.11.5 MPEG-4 Part 10 AV format: MIME type definition

9.5.11.5.1

[PROFILES]

AVC_MP4_MP_SD_AAC_MULT5
AVC_MP4_MP_SD_HEAAC_L2
AVC_MP4_MP_SD_MPEG1_L3
AVC_MP4_MP_SD_AC3
AVC_MP4_MP_SD_AAC_LTP
AVC_MP4_MP_SD_AAC_LTP_MULT5
AVC_MP4_MP_SD_AAC_LTP_MULT7
AVC_MP4_MP_SD_ATRAC3plus
AVC_MP4_MP_SD_BSAC
AVC_MP4_MP_SD_AAC_MPS
AVC_MP4_MP_SD_HEAAC_MPS
AVC_MP4_MP_SD_HEAAC_L4
AVC_MP4_MP_HD_720p_AAC
AVC_MP4_MP_HD_1080i_AAC
AVC_MP4_MP_HD_AAC_MPS
AVC_MP4_MP_HD_HEAAC_MPS
AVC_MP4_HP_HD_AAC
AVC_MP4_HP_HD_AAC_LTP
AVC_MP4_HP_HD_HEAAC_L2
AVC_MP4_HP_HD_HEAAC_MULT7
AVC_MP4_NDHD

9.5.11.5.2

[GUIDELINE] MIME type "video/mp4" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	CUA9X	

9.5.12 Subset of DLNA profiles for AVC BP, QCIF15, CIF15, and CIF30 resolutions 3GPP encapsulation

9.5.12.1 MPEG-4 Part 10 AV format: systems portion profiling

9.5.12.1.1

[PROFILES]

AVC_3GPP_BL_QCIF15_AAC
AVC_3GPP_BL_QCIF15_AAC_LTP
AVC_3GPP_BL_QCIF15_HEAAC
AVC_3GPP_BL_QCIF15_AMR
AVC_3GPP_BL_QCIF15_AMR_WBplus
AVC_3GPP_BL_CIF15_AMR_Wbplus
AVC_3GPP_BL_CIF30_AMR_Wbplus

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9.5.12.1.2

[GUIDELINE] The video and audio elementary streams shall be encapsulated into one of the following two 3GPP file formats as specified in 3GPP TS 26.244.

- Progressive profile
- Basic profile

The following constraints shall be also applied:

- All the provisions of 9.4.4.3 apply.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	3GPP TS 26.244	R75LW	

9.5.12.1.3

[GUIDELINE] Between the Basic and Progressive profiles, the Progressive profile should be used.

When the Progressive profile is used then file brand "3gr6" should be used.

When the Basic profile is used then file brand "3gp6" should be used.

[ATTRIBUTES]

S	R	n/a	n/a	n/a	3GPP TS 26.244	YCUA9	

9.5.12.2 MPEG-4 Part 10 AV format: systems portion profiling

9.5.12.2.1

[PROFILES]

AVC_3GPP_BL_QCIF15_AAC
AVC_3GPP_BL_QCIF15_AAC_LTP
AVC_3GPP_BL_QCIF15_HEAAC
AVC_3GPP_BL_QCIF15_AMR
AVC_3GPP_BL_QCIF15_AMR_Wbplus
AVC_3GPP_BL_CIF15_AMR_Wbplus
AVC_3GPP_BL_CIF30_AMR_Wbplus

9.5.12.2.2

[GUIDELINE] The rendering endpoints shall support the following two 3GPP file formats that are specified in 3GPP TS 26.244:

- Progressive profile
- Basic profile.

The following constraints shall be also applied:

- All the provisions of 9.4.4.3 apply.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	3GPP TS 26.244	7LR75	

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9.5.12.3 This guideline no longer applies

9.5.12.4 MPEG-4 Part 10 AV format: video portion profiling: chroma type

9.5.12.4.1

[PROFILES]

AVC_3GPP_BL_QCIF15_AAC
AVC_3GPP_BL_QCIF15_AAC_LTP
AVC_3GPP_BL_QCIF15_HEAAC
AVC_3GPP_BL_QCIF15_AMR

9.5.12.4.2

[GUIDELINE] Main characteristics of video stream shall be conformant to ISO/IEC 14496-10.

Chroma:

- 4:2:0

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	LR75L	

9.5.12.5 MPEG-4 Part 10 AV format: systems portion profiling: system bitrate

9.5.12.5.1

[PROFILES]

AVC_3GPP_BL_QCIF15_AAC
AVC_3GPP_BL_QCIF15_AAC_LTP
AVC_3GPP_BL_QCIF15_HEAAC
AVC_3GPP_BL_QCIF15_AMR
AVC_3GPP_BL_QCIF15_AMR_Wbplus

9.5.12.5.2

[GUIDELINE] A bitstream conformant to these profiles shall meet the following requirements.

Maximum system bitrate:

- 256 kbit/s

Maximum video bitrate:

- 128 kbit/s

Maximum frame rate:

- 15 fps

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	I7LR7	

9.5.12.6 MPEG-4 Part 10 AV format: video portion profiling

9.5.12.6.1

[PROFILES]

AVC_3GPP_BL_QCIF15_AMR_Wbplus

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9.5.12.6.2

[GUIDELINE] A bitstream which is conformant with this profile shall conform to all aspects of the video portion of the AVC_3GPP_BL_QCIF15_AAC profile.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	RI7LR	

9.5.12.7 MPEG-4 Part 10 AV format: video portion profiling

9.5.12.7.1

[PROFILES]

AVC_3GPP_BL_CIF15_AMR_Wbplus

9.5.12.7.2

[GUIDELINE] A bitstream which is conformant with this profile shall conform to all aspects of the video portion of the AVC_MP4_BL_CIF15_AAC profile, except as indicated below.

Additional video resolutions are shown in Table 111.

Table 111 – MPEG-4 Part 10 AV format resolutions

	Resolution	Pixel aspect ratio	Display aspect ratio	Max. frame rate
1/7VGA 16:9	➢240 × 135	1:1	16:9	30

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	CL4ZA	

9.5.12.8 MPEG-4 Part 10 AV format: video portion profiling

9.5.12.8.1

[PROFILES]

AVC_3GPP_BL_CIF30_AMR_Wbplus

9.5.12.8.2

[GUIDELINE] A bitstream which is conformant with this profile shall conform to all aspects of the video portion of the AVC_MP4_BL_CIF30_AAC_LTP profile, except as indicated below.

Additional video resolutions are shown in Table 112.

Table 112 – MPEG-4 Part 10 AV format resolutions

	Resolution	Pixel aspect ratio	Display aspect ratio	Max. frame rate
1/7VGA 16:9	➢240 × 135	1:1	16:9	30

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	ML577	

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9.5.12.9 MPEG-4 Part 10 AV format: MIME type definition

9.5.12.9.1

[PROFILES]

AVC_3GPP_BL_QCIF15_AAC
AVC_3GPP_BL_QCIF15_AAC_LTP
AVC_3GPP_BL_QCIF15_AMR
AVC_3GPP_BL_QCIF15_HEAAC
AVC_3GPP_BL_L12_CIF15_AMR_WBplus

9.5.12.9.2

[GUIDELINE] MIME type "video/3gpp" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	3GPP TS 26.244	E7TXL	

9.5.13 Audio portion profiling for MPEG-4 Part 10 (AVC) profiles

9.5.13.1 MPEG-4 Part 10 AV format, audio portion profiling: MPEG1_L3 (MP3)

9.5.13.1.1

[PROFILES]

AVC_TS_MP_SD_MPEG1_L3
AVC_TS_MP_SD_MPEG1_L3_T
AVC_TS_MP_SD_MPEG1_L3_ISO
AVC_MP4_MP_SD_MPEG1_L3
AVC_TS_BL_CIF30_MPEG1_L3
AVC_TS_BL_CIF30_MPEG1_L3_T
AVC_TS_BL_CIF30_MPEG1_L3_ISO
AVC_MP4_BL_CIF30_MPEG1_L3
AVC_TS_MP_HD_MPEG1_L3
AVC_TS_MP_HD_MPEG1_L3_T
AVC_TS_MP_HD_MPEG1_L3_ISO

9.5.13.1.2

[GUIDELINE] The encoded audio matches the provisions for DLNA's MP3 profile defined in guideline 8.5.1.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 11172-3	ZAHO3	

9.5.13.2 MPEG-4 Part 10 AV format, audio portion profiling: Dolby AC-3

9.5.13.2.1

[PROFILES]

AVC_TS_MP_SD_AC3
AVC_TS_MP_SD_AC3_T
AVC_TS_MP_SD_AC3_ISO
AVC_MP4_MP_SD_AC3
AVC_TS_BL_CIF30_AC3
AVC_TS_BL_CIF30_AC3_T
AVC_TS_BL_CIF30_AC3_ISO
AVC_MP4_BL_CIF30_AC3
AVC_TS_MP_HD_AC3

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AVC_TS_MP_HD_AC3_T
AVC_TS_MP_HD_AC3_ISO

9.5.13.2.2

[GUIDELINE] Main characteristics of AC-3 audio stream are

Sampling frequency:

- 32 000 (i.e. 32 kHz)
- 44 100 (i.e. 44,1 kHz)
- 48 000 (i.e. 48 kHz)

Content audio channel modes:

A bitstream conformant to these media format profiles may contain the following AC-3 formats

- Mono (1/0)
- Stereo (2/0)
- Multi-channels (3/0)
- Multi-channels (2/1)
- Multi-channels (3/1)
- Multi-channels (2/2)
- Multi-channels (3/2)

A bitstream conformant to these media format profiles shall be conformant with the requirements of 8.1.1.

Audio bit rate:

Main audio service up to 448 kbit/s per one stream. The combined bit rate of a main service and an associated service, which are intended to be decoded simultaneously, shall be up to 576 kbit/s

Encoding types:

- Constant Bit Rate (CBR)
- Variable Bit Rate (VBR)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ATSC Standard A/53C	7OY35	

9.5.13.3 MPEG-4 Part 10 AV format, audio portion profiling: AAC

9.5.13.3.1

[PROFILES]

AVC_TS_BL_CIF15_AAC
AVC_TS_BL_CIF15_AAC_T
AVC_TS_BL_CIF15_AAC_ISO
AVC_MP4_BL_CIF15_AAC
AVC_3GPP_BL_QCIF15_AAC

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9.5.13.3.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the AAC Audio Format as specified in 8.6.2.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	ZTBX5	

9.5.13.4 MPEG-4 Part 10 AV format, audio portion profiling: AAC

9.5.13.4.1

[PROFILES]

AVC_MP4_BL_CIF15_AAC_520

9.5.13.4.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the AAC Audio Format as specified in 8.6.2, except as indicated below.

Maximum audio bit rate (normative):

- 128 kbit/s.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	AHO3X	

9.5.13.5 MPEG-4 Part 10 AV format, audio portion profiling: BSAC

9.5.13.5.1

[PROFILES]

AVC_TS_MP_SD_BSAC
AVC_TS_MP_SD_BSAC_T
AVC_TS_MP_SD_BSAC_ISO
AVC_TS_BL_CIF15_BSAC
AVC_TS_BL_CIF15_BSAC_T
AVC_TS_BL_CIF15_BSAC_ISO
AVC_MP4_BL_CIF30_BSAC
AVC_MP4_BL_CIF15_BSAC
AVC_MP4_MP_SD_BSAC

9.5.13.5.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the audio portion profiling for BSAC_ISO as specified in 8.6.41.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	OY35W	

9.5.13.6 MPEG-4 Part 10 AV format, audio portion profiling: BSAC MULT5

9.5.13.6.1

[PROFILES]

AVC_MP4_BL_CIF30_BSAC_MULT5

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9.5.13.6.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the audio portion profiling for BSAC_MULT5_ISO as specified in 8.6.42.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	3ML57	

9.5.13.7 MPEG-4 Part 10 AV format, audio portion profiling: AAC

9.5.13.7.1

[PROFILES]

AVC_MP4_BL_L3_SD_AAC
AVC_MP4_BL_L3L_SD_AAC

9.5.13.7.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the AAC audio format as specified in 8.6.2, except as indicated below.

Maximum bit rate (normative):

- 256 kbit/s.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	TE7TX	

9.5.13.8 MPEG-4 Part 10 AV format, audio portion profile: HEAAC_L2

9.5.13.8.1

[PROFILES]

AVC_MP4_BL_L3L_SD_HEAAC

9.5.13.8.2

[GUIDELINE] Main characteristics of the audio portion shall align with the HEAAC_L2 audio format as outlined in 8.6.9, except as indicated below.

Maximum bit rate:

- 256 kbit/s.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	S9TZA	

9.5.13.9 MPEG-4 Part 10 AV format, audio portion profiling: AAC

9.5.13.9.1

[PROFILES]

AVC_MP4_BL_L2_CIF30_AAC
AVC_MP4_BL_CIF30_AAC_940
AVC_TS_BL_CIF15_AAC_540
AVC_TS_BL_CIF15_AAC_540_T
AVC_TS_BL_CIF15_AAC_540_ISO
AVC_TS_BL_CIF30_AAC_940
AVC_TS_BL_CIF30_AAC_940_T
AVC_TS_BL_CIF30_AAC_940_ISO

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9.5.13.9.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the AAC audio format as specified in 8.6.2, except as indicated below.

Maximum bit rate:

- 128 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	ECL4Z	

9.5.13.10 MPEG-4 Part 10 AV format, audio portion profiling: AAC_MULT5

9.5.13.10.1

[PROFILES]

AVC_TS_MP_SD_AAC_MULT5
AVC_TS_MP_SD_AAC_MULT5_T
AVC_TS_MP_SD_AAC_MULT5_ISO
AVC_MP4_MP_SD_AAC_MULT5
AVC_TS_BL_CIF30_AAC_MULT5
AVC_TS_BL_CIF30_AAC_MULT5_T
AVC_TS_BL_CIF30_AAC_MULT5_ISO
AVC_MP4_BL_CIF30_AAC_MULT5
AVC_TS_MP_HD_AAC_MULT5
AVC_TS_MP_HD_AAC_MULT5_T
AVC_TS_MP_HD_AAC_MULT5_ISO

9.5.13.10.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the AAC_MULT5 audio format as specified in 8.6.6.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	VECL4	

9.5.13.11 MPEG-4 Part 10 AV format, audio portion profiling: HEAAC_L2

9.5.13.11.1

[PROFILES]

AVC_TS_MP_SD_HEAAC_L2
AVC_TS_MP_SD_HEAAC_L2_T
AVC_TS_MP_SD_HEAAC_L2_ISO
AVC_MP4_MP_SD_HEAAC_L2
AVC_TS_BL_CIF30_HEAAC_L2
AVC_TS_BL_CIF30_HEAAC_L2_T
AVC_TS_BL_CIF30_HEAAC_L2_ISO
AVC_TS_MP_HD_HEAAC_L2
AVC_TS_MP_HD_HEAAC_L2_T
AVC_TS_MP_HD_HEAAC_L2_ISO

9.5.13.11.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the HEAAC_L2 audio format as specified in 8.6.9.

[ATTRIBUTES]

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M	L	n/a	n/a	n/a	n/a	9TE7T	

9.5.13.12 MPEG-4 Part 10 AV format, audio portion profiling: HEAAC_L2

9.5.13.12.1

[PROFILES]

AVC_MP4_BL_L12_CIF15_HEAAC
AVC_MP4_BL_L1B_QCIF15_HEAAC

9.5.13.12.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the HEAAC_L2 audio format as specified in 8.6.9, except as indicated below.

Maximum bit rate (normative):

- 96 kbit/s.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	33ML5	

9.5.13.13 MPEG-4 Part 10 AV format, audio portion profiling: AAC_LTP

9.5.13.13.1

[PROFILES]

AVC_TS_MP_SD_AAC_LTP
AVC_TS_MP_SD_AAC_LTP_T
AVC_TS_MP_SD_AAC_LTP_ISO
AVC_MP4_MP_SD_AAC_LTP
AVC_TS_BL_CIF30_AAC_LTP
AVC_TS_BL_CIF30_AAC_LTP_T
AVC_TS_BL_CIF30_AAC_LTP_ISO
AVC_MP4_BL_CIF15_AAC_LTP
AVC_MP4_BL_CIF30_AAC_LTP
AVC_TS_BL_CIF15_AAC_LTP
AVC_TS_BL_CIF15_AAC_LTP_T
AVC_TS_BL_CIF15_AAC_LTP_ISO
AVC_3GPP_BL_QCIF15_AAC_LTP
AVC_TS_MP_HD_AAC_LTP
AVC_TS_MP_HD_AAC_LTP_T
AVC_TS_MP_HD_AAC_LTP_ISO

9.5.13.13.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the AAC_LTP audio format as specified in 8.6.22.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	TBX5K	

9.5.13.14 MPEG-4 Part 10 AV format, audio portion profiling: AAC_LTP

9.5.13.14.1

[PROFILES]

AVC_MP4_BL_CIF15_AAC_LTP_520

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9.5.13.14.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the AAC_LTP_ISO audio format as specified in 8.6.22, except as indicated below.

Maximum audio bit rate (normative):

- 128 kbit/s.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	AVECL	

9.5.13.15 MPEG-4 Part 10 AV format, audio portion profiling: AAC_LTP_MULT5

9.5.13.15.1

[PROFILES]

AVC_TS_MP_SD_AAC_LTP_MULT5
AVC_TS_MP_SD_AAC_LTP_MULT5_T
AVC_TS_MP_SD_AAC_LTP_MULT5_ISO
AVC_MP4_MP_SD_AAC_LTP_MULT5
AVC_TS_BL_CIF30_AAC_LTP_MULT5
AVC_TS_BL_CIF30_AAC_LTP_MULT5_T
AVC_TS_BL_CIF30_AAC_LTP_MULT5_ISO
AVC_MP4_BL_CIF30_AAC_LTP_MULT5
AVC_TS_MP_HD_AAC_LTP_MULT5
AVC_TS_MP_HD_AAC_LTP_MULT5_T
AVC_TS_MP_HD_AAC_LTP_MULT5_ISO

9.5.13.15.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the AAC_LTP_MULT5 audio format as specified in 8.6.24.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	Z95C3	

9.5.13.16 MPEG-4 Part 10 AV format, audio portion profiling: AAC_LTP_MULT7

9.5.13.16.1

[PROFILES]

AVC_MP4_MP_SD_AAC_LTP_MULT7
AVC_TS_MP_SD_AAC_LTP_MULT7
AVC_TS_MP_SD_AAC_LTP_MULT7_T
AVC_TS_MP_SD_AAC_LTP_MULT7_ISO
AVC_TS_MP_HD_AAC_LTP_MULT7
AVC_TS_MP_HD_AAC_LTP_MULT7_T
AVC_TS_MP_HD_AAC_LTP_MULT7_ISO

9.5.13.16.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the AAC_LTP_MULT7 audio format as specified in 8.6.26.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	ERW8Q	

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9.5.13.17 MPEG-4 Part 10 AV format, audio portion profile: HEAAC_L2

9.5.13.17.1

[PROFILES]

AVC_3GPP_BL_QCIF15_HEAAC
AVC_MP4_BL_CIF15_HEAAC

9.5.13.17.2

[GUIDELINE] The main characteristics of the audio portion shall align with the HEAAC_L2 audio format as outlined in 8.6.29, except as indicated below.

Maximum bit rate:

- 128 kbit/s.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	39TE7	

9.5.13.18 MPEG-4 Part 10 AV format, audio portion profiling: AMR_WBplus

9.5.13.18.1

[PROFILES]

AVC_3GPP_BL_QCIF15_AMR_WBplus
AVC_3GPP_BL_CIF15_AMR_WBplus
AVC_3GPP_BL_CIF30_AMR_WBplus

9.5.13.18.2

[GUIDELINE] All the characteristics of the audio portion of these profiles are similar to the audio profile AMR_WBplus defined in the audio profiling 8.2.3.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	Y33ML	

9.5.13.19 MPEG-4 Part 10 AV format, audio portion profile: AMR

9.5.13.19.1

[PROFILES]

AVC_3GPP_BL_QCIF15_AMR
AVC_MP4_BL_CIF15_AMR

9.5.13.19.2

[GUIDELINE] The main characteristics of the audio portion shall align with the AMR_3GPP audio portion profile as outlined in 8.2.1.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	HO3XY	

9.5.13.20 MPEG-4 Part 10 AV format, audio portion profile: ATRAC3plus

[GUIDELINE] The audio file format and coded for this profile shall conform to ATRAC3plus as defined in ATRAC3plus specification.

[ATTRIBUTES]

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M	R	n/a	n/a	n/a	ATRAC3plus specification	Y35WC	

9.5.14 MPEG-4 Part 10 AV format, system portion profile: PS_HD

9.5.14.1

[PROFILES]

AVC_PS_HD_DTS
AVC_PS_HD_DTSHD_HRA
AVC_PS_HD_DTSHD_MA
AVC_PS_HD_DTSHD

9.5.14.2

[GUIDELINE] Main characteristics of this AVC_PS_HD stream are defined in DVD Forum.

Main characteristics of MPEG-4 Part 10 system stream are

System:

- MPEG-2 Program Stream

Number of programs:

- 1

System bit rate:

- Up to 30,24 Mbit/s.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	DVD Forum	8WBCS	

9.5.15 MPEG-4 Part 10 AV format, video portion profile: PS_HD

9.5.15.1

[PROFILES]

AVC_PS_HD_DTS
AVC_PS_HD_DTSHD_HRA
AVC_PS_HD_DTSHD_MA
AVC_PS_HD_DTSHD

9.5.15.2

[GUIDELINE] Main characteristics of video shall be conformant to DVD Forum.

Main characteristics of MPEG-4 Part 10 video streams are

Profiles and levels:

- High Profile at Level 3.2
- High Profile at Level 4.1l

Table 113 shows the format resolutions for MPEG-4 Part 10.

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Table 113 – MPEG-4 Part 10 AV format resolutions

Resolution	Aspect ratio	Allowed frame rates
➢ 1 920 × 1 080	16:9	➢ 25p/50i ➢ 29,97p/59,94i
➢ 1 440 × 1 080	16:9	➢ 25p/50i ➢ 29,97p/59,94i
➢ 1 280 × 1 080	16:9	➢ 25p/50i ➢ 29,97p/59,94i
➢ 1 280 × 720	16:9	➢ 50p ➢ 59,94p
➢ 960 × 1 280	16:9	➢ 25p/50i ➢ 29,97p/59,94i
➢ 720 × 576	4:3, 16:9	➢ 25p/50i/50p
➢ 720 × 480	4:3, 16:9	➢ 29,97p/59,94i/59,94p
➢ 704 × 576	4:3, 16:9	➢ 25p/50i/50p
➢ 704 × 480	4:3, 16:9	➢ 29,97p/59,94i/59,94p
➢ 544 × 576	4:3, 16:9	➢ 25p/50i
➢ 544 × 480	4:3, 16:9	➢ 29,97p/59,94i
➢ 480 × 576	4:3, 16:9	➢ 25p/50i
➢ 480 × 480	4:3, 16:9	➢ 29,97p/59,94i
➢ 352 × 576	4:3, 16:9	➢ 25p/50i
➢ 352 × 480	4:3, 16:9	➢ 29,97p/59,94i
➢ 352 × 288	4:3, 16:9	➢ 25p
➢ 352 × 240	4:3, 16:9	➢ 29,97p

[ATTRIBUTES]

M	L	n/a	n/a	n/a	DVD Forum	IWSUZ	

9.5.16 MPEG-4 Part 10 AV format, audio portion profile: PS_HD_DTS

9.5.16.1

[PROFILES]

AVC_PS_HD_DTS

9.5.16.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the DTS Digital Surround Audio Format as specified in 8.8.1.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	WBCSF	

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9.5.17 MPEG-4 Part 10 AV format, audio portion profile: PS_HD_DTSHD_HRA

9.5.17.1

[PROFILES]

AVC_PS_HD_DTSHD_HRA

9.5.17.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the DTS-HD High Resolution Audio Format as specified in 8.9.1, except as indicated below.

Sampling rates:

- 44,1 kHz
- 48 kHz
- 88,2 kHz
- 96 kHz

Bit rates:

- Up to 3,019 5 Mbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	DVD Forum	CYWIR	

9.5.18 MPEG-4 Part 10 AV format, audio portion profile: PS_HD_DTSHD_MA

9.5.18.1

[PROFILES]

AVC_PS_HD_DTSHD_MA

9.5.18.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the DTS-HD Master Audio Format as specified in 8.9.2, except as indicated below.

Content audio channel modes:

- Maximum of 2 channels at a sampling rate of 176,4 kHz or 192 kHz

Bit rates:

- Up to 18,432 Mbit/s.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	DVD Forum	WSUZK	

9.5.19 MPEG-4 Part 10 AV format, audio portion profile: PS_HD_DTSHD

9.5.19.1

[PROFILES]

AVC_PS_HD_DTSHD

9.5.19.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of 9.5.2.3, 9.5.2.4, or 9.5.2.5.

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[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	9Z6OQ	

9.5.20 MPEG-4 Part 10 AV format, system portion profile: TS_MP_SD_EAC3

9.5.20.1

[PROFILES]

AVC_TS_MP_SD_EAC3_T
AVC_TS_MP_SD_EAC3_ISO

9.5.20.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the system portion of the AVC_TS_MP_SD profile as specified in 9.5.2.1, except as indicated below.

System bit rate:

- Up to 17 Mbit/s (video up to 12 Mbit/s)

Enhanced AC-3 packetization:

- Enhanced AC-3 transmission in a full or partial SPTS shall be according to Annex C of ETSI TS 101 154.
- The Enhanced AC-3 packetized elementary stream shall conform to the requirements of a user stream type 1, as described in ISO/IEC 13818-1.
- An Enhanced AC-3 Descriptor to distinguish the Enhanced AC-3 audio stream as defined in Annex C of ETSI TS 101 154 shall be included.
- The Enhanced AC-3 elementary stream shall be byte-aligned within the MPEG-2 full or partial SPTS. This means the initial 8 bit of an Enhanced AC-3 syncframe shall reside in a single byte which is carried in the MPEG-2 full or partial SPTS.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 13818-1 ETSI TS 101 154	VWYVN	

9.5.21 MPEG-4 Part 10 AV format, system portion profile: TS_HP_SD_MPEG1_L2

9.5.21.1

[PROFILES]

AVC_TS_HP_SD_MPEG1_L2_T
AVC_TS_HP_SD_MPEG1_L2_ISO

9.5.21.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of 9.5.2.1, except as indicated below.

System bit rate:

- Up to 17 Mbit/s (video up to 15 Mbit/s)

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ETSI TS 101 154	Z6OQ4	

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9.5.22 MPEG-4 Part 10 AV format, system portion profile: TS_HP_SD_AC3

9.5.22.1

[PROFILES]

AVC_TS_HP_SD_AC3_T
AVC_TS_HP_SD_AC3_ISO

9.5.22.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the system portion of the AVC_TS_MP_SD profile as specified in 9.5.2.1, except as indicated below.

System bit rate:

- Up to 17 Mbit/s (video up to 15 Mbit/s)

AC-3 packetization:

- AC-3 transmission in a full or partial SPTS shall be according to Annex C of ETSI TS 101 154.
- The AC-3 packetized elementary stream shall conform to the requirements of a user stream type 1, as described in ISO/IEC 13818-1.
- An AC-3 Descriptor to distinguish the AC-3 audio stream as defined in Annex C of ETSI TS 101 154 shall be included.
- The AC-3 elementary stream shall be byte-aligned within the MPEG-2 full or partial SPTS. This means the initial 8 bits of an AC-3 syncframe shall reside in a single byte which is carried in the MPEG-2 full or partial SPTS.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 13818-1 ETSI TS 101 154	6OQ4M	

9.5.23 MPEG-4 Part 10 AV format, system portion profile: TS_HP_SD_EAC3

9.5.23.1

[PROFILES]

AVC_TS_HP_SD_EAC3_T
AVC_TS_HP_SD_EAC3_ISO

9.5.23.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the system portion of the AVC_TS_MP_SD profile as specified in 9.5.2.1, except as indicated below.

System bit rate:

- Up to 20 Mbit/s (video up to 15 Mbit/s)

Enhanced AC-3 packetization

- Enhanced AC-3 transmission in a full or partial SPTS shall be according to Annex C of ETSI TS 101 154.
- The Enhanced AC-3 packetized elementary stream shall conform to the requirements of a user stream type 1, as described in ISO/IEC 13818-1.
- An Enhanced AC-3 Descriptor to distinguish the Enhanced AC-3 audio stream as defined in Annex C of ETSI TS 101 154 shall be included.

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- The Enhanced AC-3 elementary stream shall be byte-aligned within the MPEG-2 full or partial SPTS. This means the initial 8 bit of an Enhanced AC-3 syncframe shall reside in a single byte which is carried in the MPEG-2 full or partial SPTS.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 13818-1 ETSI TS 101 154	YWIRX	

9.5.24 MPEG-4 Part 10 AV format, system portion profile: TS_SD_EU

9.5.24.1

[PROFILES]

AVC_TS_SD_EU
AVC_TS_SD_EU_T
AVC_TS_SD_EU_ISO

9.5.24.2

[GUIDELINE] A bitstream conformant with the AVC_TS_SD_EU, AVC_TS_SD_EU_T or AVC_TS_SD_EU_ISO profiles shall conform to all aspects of the system portion of the MPEG_TS_SD_EU, MPEG_TS_SD_EU_T or MPEG_TS_SD_EU_ISO profiles respectively, as specified in 9.3.8.1 and 9.3.8.4.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ETSI TS 101 154	CSFRU	

9.5.25 MPEG-4 Part 10 AV format, video portion profile: TS_HP_SD

9.5.25.1

[PROFILES]

AVC_TS_HP_SD_MPEG1_L2_T
AVC_TS_HP_SD_MPEG1_L2_ISO
AVC_TS_HP_SD_AC3_T
AVC_TS_HP_SD_AC3_ISO
AVC_TS_HP_SD_EAC3_T
AVC_TS_HP_SD_EAC3_ISO

9.5.25.2

[GUIDELINE] The main characteristics of video shall be conformant to ISO/IEC 14496-10. Additionally, these video streams shall conform to the specifications for MPEG-4 AVC SDTV bit streams as defined in ETSI TS 101 154:2005, Clause 5.

Main characteristics of MPEG-4 Part 10 video streams are

Profiles and levels:

- Main Profile at Level 3
- High Profile at Level 3

Video bit rates:

- Up to a maximum of 12 Mbit/s for L3 Main
- Up to a maximum of 15 Mbit/s for L3 High, as NAL

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Chroma:

- 4:2:0

Resolution:

- Any luminance resolution allowed by the applied H.264/AVC Profile and level may be used.
- Any sample and picture aspect ratio allowed by the applied H.264/AVC Profile and level may be used.
- A bit stream conformant with these media format profiles may utilize any of these pixel aspect ratios regardless of resolutions.

The Rendering Endpoint may ignore the pixel aspect ratio for rendering.

The Rendering Endpoint may map the image to the display dependent on the vendor implementations.

Resolution may change in a video stream.

Frame rate:

- 23,976 (progressive)
- 24 (progressive)
- 25 (interlaced or progressive)
- 29,97 (interlaced or progressive)
- 30 (interlaced or progressive)

Frame rate may change in a video stream.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 14496-10 ETSI TS 101 154	WYVNS	

9.5.26 MPEG-4 Part 10 AV format, video portion profile: TS_SD_EU

9.5.26.1

[PROFILES]

AVC_TS_SD_EU
AVC_TS_SD_EU_T
AVC_TS_SD_EU_ISO

9.5.26.2

[GUIDELINE] Main characteristics of video shall be conformant to ETSI TS 101 154:2005, 5.5, 5.6.1 and 5.6.2.

Main characteristics of MPEG-4 Part 10 video streams are

Profiles and levels:

- Main Profile at Level 3
- High Profile at Level 3

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Video bit rate:

- Up to a maximum of 12 Mbit/s for L3 Main, as NAL
- Up to a maximum of 15 Mbit/s for L3 High, as NAL

Table 114 shows the format resolutions for MPEG-4 Part 10.

Table 114 – MPEG-4 Part 10 AV format resolutions

Resolution	Aspect ratio	Allowed frame rates
➢ 720 × 576	4:3, 16:9	➢ 25p/50i
➢ 544 × 576	4:3, 16:9	➢ 25p/50i
➢ 480 × 576	4:3, 16:9	➢ 25p/50i
➢ 352 × 576	4:3, 16:9	➢ 25p/50i
➢ 352 × 288	4:3, 16:9	➢ 25p/50i
A Serving Endpoint may output other resolutions (lower than 720 × 576) for less than full-screen display. Rendering of these resolutions in full-screen format is optional for a DMP. If a DMP is not capable of rendering these resolutions in full-screen format, it shall be able to render them on part of the screen.		

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 14496-10 ETSI TS 101 154	YVNSV	

9.5.27 MPEG-4 Part 10 AV format, system portion profile: TS_MP_HD_EAC3

9.5.27.1

[PROFILES]

AVC_TS_MP_HD_EAC3_T
AVC_TS_MP_HD_EAC3_ISO

9.5.27.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the system portion of the AVC_TS_MP_HD profile as specified in 9.5.3.1, except as indicated below.

System bit rate:

- Up to 29 Mbit/s (video up to 24 Mbit/s)

Enhanced AC-3 packetization:

- Enhanced AC-3 transmission in a full or partial SPTS shall be according to Annex C of ETSI TS 101 154:2005.
- The Enhanced AC-3 packetized elementary stream shall conform to the requirements of a user stream type 1, as described in ISO/IEC 13818-1.
- An Enhanced AC-3 Descriptor to distinguish the Enhanced AC-3 audio stream as defined in Annex C of ETSI TS 101 154:2005 shall be included.
- The Enhanced AC-3 elementary stream shall be byte-aligned within the MPEG-2 full or partial SPTS. This means the initial 8 bit of an Enhanced AC-3 syncframe shall reside in a single byte which is carried in the MPEG-2 full or partial SPTS.

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[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 13818-1 ETSI TS 101 154	WIRXU	

9.5.28 MPEG-4 Part 10 AV format, system portion profile: TS_HP_HD_MPEG1_L2

9.5.28.1

[PROFILES]

AVC_TS_HP_HD_MPEG1_L2_T
AVC_TS_HP_HD_MPEG1_L2_ISO

9.5.28.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the system portion of the AVC_TS_MP_HD profile as specified in 9.5.3.1, except as indicated below.

System bit rate:

- Up to 33 Mbit/s (video up to 30 Mbit/s)

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	UZK59	

9.5.29 MPEG-4 Part 10 AV format, system portion profile: TS_HP_HD_AC3

9.5.29.1

[PROFILES]

AVC_TS_HP_HD_AC3_T
AVC_TS_HP_HD_AC3_ISO

9.5.29.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the system portion of the AVC_TS_MP_HD profile as specified in 9.5.3.1, except as indicated below.

System bit rate:

- Up to 33 Mbit/s (video up to 30 Mbit/s)

AC-3 packetization:

- AC-3 transmission in a full or partial SPTS shall be according to Annex C of ETSI TS 101 154:2005.
- The AC-3 packetized elementary stream shall conform to the requirements of a user stream type 1, as described in ISO/IEC 13818-1.
- An AC-3 Descriptor to distinguish the AC-3 audio stream as defined in Annex C of ETSI TS 101 154:2005 shall be included.
- The AC-3 elementary stream shall be byte-aligned within the MPEG-2 full or partial SPTS. This means the initial 8 bit of an AC-3 syncframe shall reside in a single byte which is carried in the MPEG-2 full or partial SPTS.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC	VNSV2	

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					13818-1 ETSI TS 101 154		

9.5.30 MPEG-4 Part 10 AV format, system portion profile: TS_HP_HD_EAC3

9.5.30.1

[PROFILES]

AVC_TS_HP_HD_EAC3_T
AVC_TS_HP_HD_EAC3_ISO

9.5.30.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the system portion of the AVC_TS_MP_HD profile as specified in 9.5.3.1, except as indicated below.

System Bit rate:

- Up to 36 Mbit/s (video up to 30 Mbit/s)

Enhanced AC-3 packetization:

- Enhanced AC-3 transmission in a full or partial SPTS shall be according to Annex C of ETSI TS 101 154:2005.
- The Enhanced AC-3 packetized elementary stream shall conform to the requirements of a user stream type 1, as described in ISO/IEC 13818-1.
- An Enhanced AC-3 Descriptor to distinguish the Enhanced AC-3 audio stream as defined in Annex C of ETSI TS 101 154:2005 shall be included.
- The Enhanced AC-3 elementary stream shall be byte-aligned within the MPEG-2 full or partial SPTS. This means the initial 8 bit of an Enhanced AC-3 syncframe shall reside in a single byte which is carried in the MPEG-2 full or partial SPTS.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 13818-1 ETSI TS 101 154	FJD9K	

9.5.31 MPEG-4 Part 10 AV format, system portion profile: TS_HD_EU

9.5.31.1

[PROFILES]

AVC_TS_HD_EU
AVC_TS_HD_EU_T
AVC_TS_HD_EU_ISO

9.5.31.2

[GUIDELINE] A bitstream conformant with the AVC_TS_HD_EU, AVC_TS_HD_EU_T or AVC_TS_HD_EU_ISO profiles shall conform to all aspects of the system portion of the MPEG_TS_SD_EU, MPEG_TS_SD_EU_T or MPEG_TS_SD_EU_ISO profiles respectively, as specified in 9.3.8.1 and 9.3.8.4.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ETSI TS 101 154	TF5XS	

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9.5.32 MPEG-4 Part 10 AV format, system portion profile: TS_JP

9.5.32.1

[PROFILES]

AVC_TS_JP_AAC_T

9.5.32.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the system portion of the MPEG_TS_JP_T profile, as specified in 9.3.53 and 9.3.54.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	DWNBY	

9.5.33 MPEG-4 Part 10 AV format, system portion profile: TS_HD_60, TS_HD_50, TS_HD_24

9.5.33.1

[PROFILES]

AVC_TS_HD_60_AC3
AVC_TS_HD_60_AC3_T
AVC_TS_HD_60_AC3_ISO
AVC_TS_HD_50_AC3
AVC_TS_HD_50_AC3_T
AVC_TS_HD_50_AC3_ISO
AVC_TS_HD_24_AC3
AVC_TS_HD_24_AC3_T
AVC_TS_HD_24_AC3_ISO

9.5.33.2

[GUIDELINE] Main characteristics of this AVC_TS_HD stream are defined in BDA, 4.4 or BDA, Clause 13.

Main characteristics of MPEG-4 Part 10 system stream are

System:

- Partial Single Program Transport Stream (SPTS).

Number of programs:

- 1 as defined for a Partial Single Program Transport Stream.

Number of ES:

- Video ES: 1
- Audio ES: Max 4. 2 or lower value is recommended.

Other ES:

- Other ES may be included in the multiplexed stream (e.g., data streams, etc).

System bit rate:

- Up to 24 Mbit/s

Packet format:

- As specified in 9.3.4.2

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PSI and SI tables:

- PAT, PMT and SIT are required in the multiplexed stream.
- The maximum time interval for the PAT and PMT is 100 ms.

DIT

DIT shall be inserted at the following discontinuous point:

- PCR/SCR discontinuity
- Change in video resolution
- Change in content audio channel mode

[ATTRIBUTES]

M	R	n/a	n/a	n/a	BDA BDA	A96V6	

9.5.34 MPEG-4 Part 10 AV format, system portion profile: TS_HD_DTS

9.5.34.1

[PROFILES]

AVC_TS_HD_DTS_T
AVC_TS_HD_DTS_ISO
AVC_TS_HD_DTSHD_HRA_T
AVC_TS_HD_DTSHD_HRA_ISO
AVC_TS_HD_DTSHD_MA_T
AVC_TS_HD_DTSHD_MA_ISO

9.5.34.2

[GUIDELINE] Main characteristics of this AVC_TS_HD stream are defined in BDA.

Main characteristics of MPEG-4 Part 10 system stream are

System:

- MPEG-2 Partial Transport Stream

Stream structure:

- The PAT of streams shall contain a single program map PID
- The PMT of streams shall contain a single program at one time

System bit rate:

- Up to 48 Mbit/s

[ATTRIBUTES]

M	R	n/a	n/a	n/a	BDA	D2ZHA	

9.5.35 MPEG-4 Part 10 AV format, video portion profile: TS_MP_HD

9.5.35.1

[PROFILES]

AVC_TS_MP_HD_EAC3_T
AVC_TS_MP_HD_EAC3_ISO

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9.5.35.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the MP_HD Video Format as specified in 9.5.3.3, except as indicated in Table 115.

Table 115 – MPEG-4 Part 10 AV format resolutions

Resolution	Aspect ratio	Allowed frame rates
➢ Up to 1 920 × 1 080	16:9	➢ 59,94i/60i ➢ 50i ➢ 29,97p/30p ➢ 25p ➢ 23,976p/24p
➢ Up to 1 280 × 720	16:9	➢ 59,94p/60p ➢ 50p ➢ 29,97p/30p ➢ 25p ➢ 23,976p/24p
➢ Up to 1 920 × 1 152	16:9	➢ 50p ➢ 50i ➢ 25p

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ETSI TS 101 154	LY67D	

9.5.36 MPEG-4 Part 10 AV format, video portion profile: TS_HP_HD

9.5.36.1

[PROFILES]

AVC_TS_HP_HD_MPEG1_L2_T
AVC_TS_HP_HD_MPEG1_L2_ISO
AVC_TS_HP_HD_AC3_T
AVC_TS_HP_HD_AC3_ISO
AVC_TS_HP_HD_EAC3_T
AVC_TS_HP_HD_EAC3_ISO

9.5.36.2

[GUIDELINE] Main characteristics of video shall be conformant to ISO/IEC 14496-10. Additionally, these video streams shall conform to the specifications for MPEG-4 AVC HDTV bit streams as defined in ETSI TS 101 154:2005, Clause 5, except that Main Profile streams are also permitted.

Main characteristics of MPEG-4 Part 10 video streams are

Profiles and levels:

- Main Profile at Level 3, 3.1, 3.2 or 4
- High Profile at Level 3, 3.1, 3.2 or 4

Video bit rate:

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- Up to a maximum of 24 Mbit/s for L4 Main
- Up to a maximum of 30 Mbit/s for L4 High, as NAL

Chroma:

- 4:2:0

Resolution:

- Any luminance resolution allowed by the applied H.264/AVC Profile and level may be used.
- Any sample and picture aspect ratio allowed by the applied H.264/AVC Profile and level may be used.
- A bit stream conformant with these media format profiles may utilize any of these pixel aspect ratios regardless of resolutions.

The Rendering Endpoint may ignore the pixel aspect ratio for rendering.

The Rendering Endpoint may map the image to the display dependent on the vendor implementations.

Resolution may change in a video stream.

Frame rate

- 23,976 (progressive)
- 24 (progressive)
- 25 (interlaced or progressive)
- 29,97 (interlaced or progressive)
- 30 (interlaced or progressive)
- 50 (progressive)
- 59,94 (progressive)
- 60 (progressive)

The frame rate may change in a video stream.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 14496-10 ETSI TS 101 154	QZU3N	

9.5.37 MPEG-4 Part 10 AV format, video portion profile: TS_HD_EU

9.5.37.1

[PROFILES]

AVC_TS_HD_EU
AVC_TS_HD_EU_T
AVC_TS_HD_EU_ISO

9.5.37.2

[GUIDELINE] Main characteristics of video shall be conformant to ETSI TS 101 154:2005, 5.5, 5.6.1, 5.6.2, 5.7.1 and 5.7.2.

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Main characteristics of MPEG-4 Part 10 video streams are

Profiles and levels:

- Main at Level 3, 3.1, 3.2 or 4
- High at Level 3, 3.1, 3.2 or 4

Video bit rate:

- Up to a maximum of 24 Mbit/s for L4 Main, as NAL
- Up to a maximum of 30 Mbit/s for L4 High, as NAL

Table 116 shows the format resolutions for MPEG-4 Part 10.

Table 116 – MPEG-4 Part 10 AV format resolutions

Resolution	Aspect ratio	Allowed frame rates
1 920 × 1 080	16:9	25p/50i
1 440 × 1 080	16:9	25p/50i
1 280 × 1 080	16:9	25p/50i
960 × 1 080	16:9	25p/50i
1 280 × 720	16:9	25p/50i/50p
960 × 720	16:9	25p/50i/50p
640 × 720	16:9	25p/50i/50p
720 × 576	4:3, 16:9	25p/50i
544 × 576	4:3, 16:9	25p/50i
480 × 576	4:3, 16:9	25p/50i
352 × 576	4:3, 16:9	25p/50i
352 × 288	4:3, 16:9	25p/50i

A Serving Endpoint may output other resolutions (lower than 1 920 × 1 080) for less than full-screen display. Rendering of these resolutions in full-screen format is optional for a DMP. If a DMP is not capable of rendering these resolutions in full-screen format, it shall be able to render them on part of the screen.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ETSI TS 101 154	ZU3NH	

9.5.38 MPEG-4 Part 10 AV format, video portion profile: TS_JP

9.5.38.1

[PROFILES]

AVC_TS_JP_AAC_T

9.5.38.2

[GUIDELINE] Main characteristics of video shall be conformant to Addition-C in Part-2 of ARIB STD B-1, except as indicated below.

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Main characteristics of MPEG-4 Part 10 video streams are

Profiles and levels:

- Main at Level 3, 3.1, 3.2 or 4
- High at Level 3, 3.1, 3.2 or 4

Chroma:

- 4:2:0

Video bit rate:

- Up to a maximum of 20 Mbit/s for L4 Main and High, as NAL

Table 117 shows the format resolutions for MPEG-4 Part 10.

Table 117 – MPEG-4 Part 10 AV format resolutions

Resolution	Aspect ratio	Allowed frame rates
1 920 × 1 080	16:9	59,94i
1 440 × 1 080	16:9	59,94i
1 280 × 720	16:9	59,94p
720 × 480	4:3, 16:9	59,94i/59,94p

Frame rate shall not be changed in a stream.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ARIB STD B-1	Y67DP	

9.5.39 MPEG-4 Part 10 AV format, video portion profile: TS_HD_60

9.5.39.1

[PROFILES]

AVC_TS_HD_60_AC3
AVC_TS_HD_60_AC3_T
AVC_TS_HD_60_AC3_ISO

9.5.39.2

[GUIDELINE] Main characteristics of video shall be conformant to BDA, 4.4 or BDA, Clause 13.

Main characteristics of MPEG-4 Part 10 video streams are

Profiles and levels:

- High Profile at Level 3, 3.1, 3.2, 4, or 4.1
- Main Profile at Level 3, 3.1, 3.2, 4, or 4.1

Chroma:

- 4:2:0

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Recovery Point SEI:

- Recovery Point SEI should be inserted at the first Access Unit in a GOP. The position of Recovery Point SEI data within a GOP structure is defined in BDA, 4.4 or BDA, Clause 13.

User data unregistered SEI:

- User data unregistered SEI may exist in a stream. Rendering Endpoints shall tolerate the presence of any user data unregistered SEI in the stream.

Table 118 shows the format resolutions for MPEG-4 Part 10.

Table 118 – MPEG-4 Part 10 AV format resolutions

Resolution	Aspect ratio	Allowed frame rates
➢ 1 920 × 1 080	16:9	➢ 59,94i
➢ 1 440 × 1 080	16:9	➢ 59,94i
➢ 1 280 × 720	16:9	➢ 59,94p
➢ 720 × 480	16:9	➢ 59,94i
➢ 720 × 480	4:3	➢ 59,94i

The frame rate shall not change within a stream.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	BDA BDA	2ZHAY	

9.5.40 MPEG-4 Part 10 AV format, video portion profile: TS_HD_50

9.5.40.1

[PROFILES]

AVC_TS_HD_50_AC3
AVC_TS_HD_50_AC3_T
AVC_TS_HD_50_AC3_ISO

9.5.40.2

[GUIDELINE] Main characteristics of video shall be conformant to BDA, 4.4 or BDA, Clause 13.

Main characteristics of MPEG-4 Part 10 video streams are

Profiles and levels:

- ➢ High Profile at Level 3, 3.1, 3.2, 4, or 4.1
- ➢ Main Profile at Level 3, 3.1, 3.2, 4, or 4.1

Chroma:

- 4:2:0

Recovery Point SEI:

- Recovery Point SEI should be inserted at the first Access Unit in a GOP. The position of Recovery Point SEI data within a GOP structure is defined in BDA, 4.4 or BDA, Clause 13.

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User data unregistered SEI:

- User data unregistered SEI may exist in a stream. Rendering Endpoints shall tolerate the presence of any user data unregistered SEI in the stream.

Table 119 shows the format resolutions for MPEG-4 Part 10.

Table 119 – MPEG-4 Part 10 AV format resolutions

Resolution	Aspect ratio	Allowed frame rates
➢ 1 920 × 1 080	16:9	➢ 50i
➢ 1 440 × 1 080	16:9	➢ 50i
➢ 1 280 × 720	16:9	➢ 50i
➢ 720 × 576	16:9	➢ 50i
➢ 720 × 576	4:3	➢ 50i

The frame rate shall not change within a stream.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	BDA BDA	96V68	

9.5.41 MPEG-4 Part 10 AV format, video portion profile: TS_HD_24

9.5.41.1

[PROFILES]

AVC_TS_HD_24_AC3
AVC_TS_HD_24_AC3_T
AVC_TS_HD_24_AC3_ISO

9.5.41.2

[GUIDELINE] Main characteristics of video shall be conformant to to BDA, 4.4 or BDA, Clause 13.

Main characteristics of MPEG-4 Part 10 video streams are

Profiles and levels:

- ➢ High Profile at Level 3, 3.1, 3.2, 4, or 4.1
- ➢ Main Profile at Level 3, 3.1, 3.2, 4, or 4.1

Chroma:

- 4:2:0

Recovery Point SEI:

- Recovery Point SEI should be inserted at the first Access Unit in a GOP. The position of Recovery Point SEI data within a GOP structure is defined in to BDA, 4.4 or BDA, Clause 13.

User data unregistered SEI:

- User data unregistered SEI may exist in a stream. Rendering Endpoints shall tolerate the presence of any user data unregistered SEI in the stream.

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Table 120 shows the format resolutions for MPEG-4 Part 10.

Table 120 – MPEG-4 Part 10 AV format resolutions

Resolution	Aspect ratio	Allowed frame rates
➢ 1 920 × 1 080	16:9	➢ 24p
➢ 1 920 × 1 080	16:9	➢ 23,976p
➢ 1 440 × 1 080	16:9	➢ 24p
➢ 1 440 × 1 080	16:9	➢ 23,976p
➢ 1 280 × 720	16:9	➢ 24p
➢ 1 280 × 720	16:9	➢ 23,976p

The frame rate shall not change within a stream.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	BDA BDA	U3NHJ	

9.5.42 MPEG-4 Part 10 AV format, video portion profile: TS_HD_DTS

9.5.42.1

[PROFILES]

AVC_TS_HD_DTS_T
AVC_TS_HD_DTS_ISO
AVC_TS_HD_DTSHD_HRA_T
AVC_TS_HD_DTSHD_HRA_ISO
AVC_TS_HD_DTSHD_MA_T
AVC_TS_HD_DTSHD_MA_ISO

9.5.42.2

[GUIDELINE] Main characteristics of video shall be conformant to BDA.

Main characteristics of MPEG-4 Part 10 video streams are

Profiles:

- ➢ High Profile
- ➢ Main Profile

Levels:

- ➢ Level 4.1 or 4 in case of 1 920 × 1 080, 1 440 × 1 080, and 1 280 × 720
- ➢ Level 4.1, 4, 3.2, 3.1 or 3 in case of 720 × 480 and 720 × 576

Table 121 shows the format resolutions for MPEG-4 Part 10.

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Table 121 – MPEG-4 Part 10 AV format resolutions

Resolution	Aspect ratio	Allowed frame rates
➢ 1 920 × 1 080	16:9	➢ 23,976p ➢ 24p ➢ 50i ➢ 59,94i
➢ 1 440 × 1 080	16:9	➢ 23,976p ➢ 24p ➢ 50i ➢ 59,94i
➢ 1 280 × 720	16:9	➢ 23,976p ➢ 24p ➢ 50p ➢ 59,94p
➢ 720 × 576	4:3, 16:9	➢ 50i
➢ 720 × 480	4:3, 16:9	➢ 59,94i

[ATTRIBUTES]

M	R	n/a	n/a	n/a	BDA	67DP7	

9.5.43 MPEG-4 Part 10 AV format: Transport Alignment Element

9.5.43.1

[PROFILES]

AVC_TS_HD_60_AC3
AVC_TS_HD_60_AC3_T
AVC_TS_HD_60_AC3_ISO
AVC_TS_HD_50_AC3 AVC_TS_HD_50_AC3_T
AVC_TS_HD_50_AC3_ISO
AVC_TS_HD_24_AC3
AVC_TS_HD_24_AC3_T
AVC_TS_HD_24_AC3_ISO

9.5.43.2

[GUIDELINE] The Transport Alignment Element for bitstreams conformant to this profile shall be the DLNA Transport Packet boundary.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	3NHJU	

9.5.44 MPEG-4 Part 10 AV format: Decoder Friendly Alignment Position

9.5.44.1

[PROFILES]

AVC_TS_HD_60_AC3
AVC_TS_HD_60_AC3_T

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AVC_TS_HD_60_AC3_ISO
AVC_TS_HD_50_AC3 AVC_TS_HD_50_AC3_T
AVC_TS_HD_50_AC3_ISO
AVC_TS_HD_24_AC3
AVC_TS_HD_24_AC3_T
AVC_TS_HD_24_AC3_ISO

9.5.44.2

[GUIDELINE] The Decoder Friendly Alignment Position for bitstreams conformant with this profile should be the GOP boundary.

[ATTRIBUTES]

S	L	n/a	n/a	n/a	n/a	HAYC7	

9.5.45 MPEG-4 Part 10 AV format, system portion profile: MP4_MP_HD_720p_AAC

9.5.45.1

[PROFILES]

AVC_MP4_MP_HD_720p_AAC

9.5.45.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the system portion of the AVC_MP4_MP_SD profile as specified in 9.5.11.1, except as indicated below.

Maximum system bit rate:

- 15,0 Mbit/s

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	68U4Q	

9.5.46 MPEG-4 Part 10 AV format, system portion profile: MP4_MP_HD

9.5.46.1

[PROFILES]

AVC_MP4_MP_HD_AAC_MPS
AVC_MP4_MP_HD_HEAAC_MPS
AVC_MP4_MP_HD_1080i_AAC

9.5.46.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the system portion of the AVC_MP4_MP_SD profile as specified in 9.5.11.1, except as indicated below.

Maximum system bit rate:

- 21,0 Mbit/s

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	NHJUV	

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9.5.47 MPEG-4 Part 10 AV format, system portion profile: MP4_HP_HD

9.5.47.1

[PROFILES]

AVC_MP4_HP_HD_AAC
AVC_MP4_HP_HD_AAC_LTP
AVC_MP4_HP_HD_HEAAC_L2
AVC_MP4_HP_HD_HEAAC_MULT7

9.5.47.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the AVC_MP4_HP_HD profile as specified in 9.5.88.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	HJUVD	

9.5.48 MPEG-4 Part 10 AV format, system portion profile: MP4_NDHD

9.5.48.1

[PROFILES]

AVC_MP4_NDHD

9.5.48.2

[GUIDELINE] Main characteristics of this AVC_MP4_NDHD stream are defined in ISO/IEC 14496-14, ISO/IEC 14496-12, ISO/IEC 14496-1, ISO/IEC 14496-15 and Nero Digital Format.

Main characteristics of MPEG-4 Part 10 system stream are

System bit rate:

- The maximum bitrate is 42 000 kbit/s.

Chapter Points:

- Chapter points (markers) as defined in Nero Digital Format shall be supported.

Video ES:

- A bitstream conformant with this profile shall contain a maximum of one video stream.

Audio ES:

- A bitstream conformant with this profile shall contain a maximum of two audio streams.
- A Rendering Endpoint that supports this profile shall be able to accept two audio tracks and shall be able to switch between audio tracks.

Subtitle tracks:

- A bitstream conformant with this profile shall contain a maximum of two subtitle tracks.
- A Rendering Endpoint that supports this profile shall be able to render two subtitle tracks and shall be able to switch between subtitle tracks.

Movie Fragments:

- A Rendering Endpoint conformant with this profile shall support movie fragments as specified in 9.4.4.3.11.

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-14 ISO/IEC 14496-12 ISO/IEC 14496-1 ISO/IEC 14496-15 Nero Digital Format	8U4Q9	

9.5.49 MPEG-4 Part 10 AV format, system portion profile: MPS Transport and Signaling

9.5.49.1

[PROFILES]

AVC_MP4_BL_CIF30_HEAAC_MPS
AVC_MP4_MP_SD_AAC_MPS
AVC_MP4_MP_SD_HEAAC_MPS
AVC_MP4_MP_HD_AAC_MPS
AVC_MP4_MP_HD_HEAAC_MPS

9.5.49.2

[GUIDELINE] A bitstream conformant with these profiles shall follow the transport and signaling requirements for MPEG Surround in an MPEG-4 Audio/Systems Environment as specified in ISO/IEC 23003-1:2007, 7.2.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 23003-1	P7ZQU	

9.5.50 MPEG-4 Part 10 AV format, video portion profile: MP4_BL_L12_CIF15

9.5.50.1

[PROFILES]

AVC_MP4_BL_L12_CIF15_HEAACv2

9.5.50.2

[GUIDELINE] Main characteristics of video shall be conformant to ISO/IEC 14496-10.

Main characteristics of MPEG-4 Part 10 video streams are

Profile:

- Baseline Profile

Level:

- Level 1.2 and below

Chroma:

- 4:2:0

Video bit rate:

- CBR or VBR: less than or equal to 384 kbit/s.

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Table 122 shows the format resolutions for MPEG-4 Part 10.

Table 122 – MPEG-4 Part 10 AV format resolutions

	Resolution	Pixel aspect ratio (informative)	Display aspect ratio (informative)	Maximum frame rate
QVGA 4:3	➢ 320 × 240	1:1	4:3	20
QVGA 16:9	➢ 320 × 180	1:1	16:9	26
1/7VGA 4:3	➢ 240 × 180	1:1	4:3	30
1/9VGA 4:3	➢ 208 × 160	1:1	4:3	30
QCIF, 625QSIF	➢ 176 × 144	12:11	4:3	30
QCIF, 625QSIF	➢ 76 × 144	16:11	16:9	30
525QSIF	➢ 176 × 120	10:11	4:3	30
525QSIF	➢ 176 × 120	40:33	16:9	30
SQVGA 4:3	➢ 160 × 120	1:1	4:3	30
1/16 VGA 4:3	➢ 160 × 112	1:1	4:3	30
SQVGA 16:9	➢ 160 × 90	1:1	16:9	30
SQCIF	➢ 128 × 96	12:1‘	4:3	30
SQCIF	➢ 128 × 96	16:11	16:9	30

- A bitstream conformant with these profiles may utilize any of these pixel aspect ratios regardless of resolution.
- The Rendering Endpoint may ignore the pixel aspect ratio for rendering. Rendering Endpoint may shrink, stretch and crop the image to the display aspect ratio required by a vendor's implementations.
- The resolution may change in a video stream.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	JUVD6	

[COMMENT] The video portion of this profile is based on the video portion of the AVC_MP4_BL_CIF15 profile as specified in 9.5.9.5, except that the highest resolution is limited to QVGA.

9.5.51 MPEG-4 Part 10 AV format, video portion profile: MP4_MP_HD_720p_AAC

9.5.51.1

[PROFILES]

AVC_MP4_MP_HD_720p_AAC

9.5.51.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the video portion of the AVC_MP4_MP_SD profile as specified in 9.5.11.3 and 9.5.11.4, except as indicated below.

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Profile and level:

- Main Profile at Level 3.1

Video bit rate:

- CBR or VBR: Up to a maximum of 14,0 Mbit/s.

Table 123 shows the format resolutions for MPEG-4 Part 10.

Table 123 – MPEG-4 Part 10 AV format resolutions

Resolution	Pixel aspect ratio (informative)	Display aspect ratio (informative)	Maximum frame rate
➢ 1 280 × 720	1:1	16:9	30p
➢ 640 × 480	1:1	4:3	60p

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 14496-10	U4Q92

9.5.52 MPEG-4 Part 10 AV format, video portion profile: MP4_MP_HD_1080i_AAC

9.5.52.1

[PROFILES]

AVC_MP4_MP_HD_1080i_AAC

9.5.52.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of 9.5.51, except as indicated below.

Additional Profiles and levels:

- Main Profile at Level 3.2
- Main Profile at Level 4

Video bit rate:

- CBR or VBR: Up to a maximum of 20 000 kbit/s.

Table 124 shows the format resolutions for MPEG-4 Part 10.

Table 124 – Additional MPEG-4 Part 10 AV format resolutions

Resolution	Pixel aspect ratio (informative)	Display aspect ratio (informative)	Maximum frame rate
➢ 1 920 × 1 080	1:1	16:9	60i
➢ 1 280 × 720	1:1	16:9	60p

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC	7MMCO

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					14496-10		

9.5.53 MPEG-4 Part 10 AV format, video portion profile: MP4_MP_HD

9.5.53.1

[PROFILES]

AVC_MP4_MP_HD_AAC_MPS
AVC_MP4_MP_HD_HEAAC_MPS

9.5.53.2

[GUIDELINE] Main characteristics of video shall be conformant to ISO/IEC 14496-10.

Main characteristics of MPEG-4 Part 10 video streams are

Profile and level:

- Main Profile at Level 4

Chroma:

- 4:2:0

Video bit rate:

➢ CBR or VBR: Up to a maximum of 20 Mbit/s

Resolution:

- As specified in 9.5.3.3.2

GOP structure:

- As specified in 9.5.3.2.2

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	4Q92Q	

9.5.54 MPEG-4 Part 10 AV format, video portion profile: MP4_HP_HD

9.5.54.1

[PROFILES]

AVC_MP4_HP_HD_AAC
AVC_MP4_HP_HD_AAC_LTP
AVC_MP4_HP_HD_HEAAC_L2
AVC_MP4_HP_HD_HEAAC_MULT7

9.5.54.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the video portion of the AVC_MP4_HP_HD profile as specified in 9.5.2.1.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	ZQU4G	

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9.5.55 MPEG-4 Part 10 AV format, video portion profile: MP4_NDHD

9.5.55.1

[PROFILES]

AVC_MP4_NDHD

9.5.55.2

[GUIDELINE] Main characteristics of video shall be conformant to ISO/IEC 14496-10 and Nero Digital Format.

Main characteristics of MPEG-4 Part 10 video streams are

Profile:

- High Profile at Level 4.1

Resolution:

- Minimum: 176 × 144
- Maximum: 1 920 × 1 080

Frame rates:

- 15 fps
- 23,976 fps
- 24 fps
- 25 fps (50 fps interlaced)
- 29,97 fps (59,94 fps interlaced)
- 30 fps
- 50 fps (Maximum resolution of 1 280 × 720)
- 59,94 fps (Maximum resolution of 1 280 × 720)

Video bit rate

- Maximum: 40 Mbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10 Nero Digital Format	UVD6A	

9.5.56 MPEG-4 Part 10 AV format, system portion profile: 3GPP_BL_L12_CIF15

9.5.56.1

[PROFILES]

AVC_3GPP_BL_L12_CIF15_AMR_WBplus

9.5.56.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the system portion of the AVC_3GPP_BL_CIF15_AMR_WBplus profile as defined in 9.5.12.1 and 9.5.12.2, except as noted here.

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Maximum system bit rate:

- 520 kbit/s

File branding:

- When the Progressive profile is used then major brand "3gr6" and compatible brand "3gr7" should be used.
- When the Basic profile is used then major brand "3gp6" and compatible brand "3gp7" should be used.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	Q92QX	

9.5.57 MPEG-4 Part 10 AV format, video portion profile: 3GPP_BL_L12_CIF15

9.5.57.1

[PROFILES]

AVC_3GPP_BL_L12_CIF15_AMR_WBplus

9.5.57.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the video portion of the AVC_MP4_BL_L12_CIF15_HEAACv2 profile as specified in 9.5.50.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	D6AQE	

9.5.58 MPEG-4 Part 10 AV format, audio portion profile: MPEG-2 AAC

9.5.58.1

[PROFILES]

AVC_TS_JP_AAC_T

9.5.58.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the audio portion of the MPEG_TS_JP_T profile, as specified in 9.3.3.9.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	QU4G9	

9.5.59 MPEG-4 Part 10 AV format, audio portion profile: AAC

9.5.59.1

[PROFILES]

AVC_MP4_MP_HD_720p_AAC
AVC_MP4_MP_HD_1080i_AAC
AVC_MP4_HP_HD_AAC

9.5.59.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the AAC Audio Format as specified in 8.6.2.

[ATTRIBUTES]

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M	R	n/a	n/a	n/a	n/a	MCO5S	

9.5.60 MPEG-4 Part 10 AV format, audio portion profile: HEAAC_MULT5

9.5.60.1

[PROFILES]

AVC_MP4_NDHD

9.5.60.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the HEAAC_MULT5 Audio Format as specified in 8.6.19.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	92QX9	

9.5.61 MPEG-4 Part 10 AV format, audio portion profile: AAC_LTP

9.5.61.1

[PROFILES]

AVC_MP4_HP_HD_AAC_LTP

9.5.61.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the AAC Audio Format as specified in 8.6.22.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	U4G9Q	

9.5.62 MPEG-4 Part 10 AV format, audio portion profile: AAC_MPS

9.5.62.1

[PROFILES]

AVC_MP4_MP_SD_AAC_MPS
AVC_MP4_MP_HD_AAC_MPS

9.5.62.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the AAC_MPS Profile as specified in 8.6.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	6AQEQ	

9.5.63 MPEG-4 Part 10 AV format, audio portion profile: HEAAC_L2

9.5.63.1

[PROFILES]

AVC_MP4_HP_HD_HEAAC_L2

9.5.63.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the HEAAC_L2 Audio Format as specified in 8.6.9.

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[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	4G9QR	

9.5.64 MPEG-4 Part 10 AV format, audio portion profile: HEAAC_MPS

9.5.64.1

[PROFILES]

AVC_MP4_BL_CIF30_HEAAC_MPS
AVC_MP4_MP_SD_HEAAC_MPS
AVC_MP4_MP_HD_HEAAC_MPS

9.5.64.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the HEAAC_MPS Profile as specified in 8.6.50.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	CO5S8	

9.5.65 MPEG-4 Part 10 AV format, audio portion profile: HEAAC_L4

9.5.65.1

[PROFILES]

AVC_MP4_MP_SD_HEAAC_L4

9.5.65.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the HEAAC_L4 Profile as specified in 8.6.46.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	O5S85	

9.5.66 MPEG-4 Part 10 AV format, audio portion profile: HEAAC_MULT7

9.5.66.1

[PROFILES]

AVC_MP4_HP_HD_HEAAC_MULT7

9.5.66.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the HEAAC_MULT7 Profile as specified in 8.6.48.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	2QX95	

9.5.67 MPEG-4 Part 10 AV format, audio portion profile: HEAACv2_L2

9.5.67.1

[PROFILES]

AVC_MP4_BL_L1B_QCIF15_HEAACv2
AVC_MP4_BL_L12_CIF15_HEAACv2

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9.5.67.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the HEAACv2_L2 Audio Format as specified in 8.6.61, except as indicated below.

Maximum bit rate (normative):

- 96 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	X95SZ	

9.5.68 MPEG-4 Part 10 AV format, audio portion profile: AC3

9.5.68.1

[PROFILES]

AVC_TS_HD_60_AC3
AVC_TS_HD_60_AC3_T
AVC_TS_HD_60_AC3_ISO
AVC_TS_HD_50_AC3 AVC_TS_HD_50_AC3_T
AVC_TS_HD_50_AC3_ISO
AVC_TS_HD_24_AC3
AVC_TS_HD_24_AC3_T
AVC_TS_HD_24_AC3_ISO

9.5.68.2

[GUIDELINE] Main characteristics of this AVC_TS_HD_AC3 audio stream are defined in BDA, 4.4 or BDA, Clause 13.

Sampling rate:

- 48 kHz

Content audio channel modes:

A bitstream conformant to these media format profiles may contain the following formats that may also include a Low Frequency Effects (LFE) channel

- 1/0 (Mono)
- 2/0 (Stereo)
- 3/0 (Multichannel)
- 2/1 (Multichannel)
- 3/1 (Multichannel)
- 2/2 (Multichannel)
- 3/2 (Multichannel)

Bit rates

- 64 kbit/s to 640 kbit/s

[ATTRIBUTES]

M	R	n/a	n/a	n/a	BDA BDA	G9QR8	

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9.5.69 MPEG-4 Part 10 AV format, audio portion profile: AC3

9.5.69.1

[PROFILES]

AVC_TS_HP_SD_AC3_T
AVC_TS_HP_SD_AC3_ISO
AVC_TS_HP_HD_AC3_T
AVC_TS_HP_HD_AC3_ISO

9.5.69.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to the requirements for AC-3 audio streams as specified in Annex C of ETSI TS 101 154: 2005.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ETSI TS 101 154	QX95S	

9.5.70 MPEG-4 Part 10 AV format, audio portion profile: AC3

9.5.70.1

[PROFILES]

AVC_TS_SD_EU
AVC_TS_SD_EU_T
AVC_TS_SD_EU_ISO
AVC_TS_HD_EU
AVC_TS_HD_EU_T
AVC_TS_HD_EU_ISO

9.5.70.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the AC 3 audio portion of the MPEG_TS_SD_EU profile as specified in 9.3.8.7 and 9.3.8.8, except as indicated below.

- Audio codec shall not change in a stream.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	AQEQS	

9.5.71 MPEG-4 Part 10 AV format, audio portion profile: AC3

9.5.71.1

[PROFILES]

AVC_MP4_NDHD

9.5.71.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the AC3 audio format as specified in 8.1.1.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	5S85B	

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9.5.72 MPEG-4 Part 10 AV format, audio portion profile: AMR_WBplus

9.5.72.1

[PROFILES]

AVC_3GPP_BL_L12_CIF15_AMR_WBplus

9.5.72.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the AMR_WBplus audio format as specified in 8.2.1.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	9QR8U	

9.5.73 MPEG-4 Part 10 AV format, audio portion profile: TS_HD_DTS

9.5.73.1

[PROFILES]

AVC_TS_HD_DTS_T
AVC_TS_HD_DTS_ISO

9.5.73.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the DTS digital surround audio format as specified in 8.8.1, except as indicated below.

Sampling rate

- 48 kHz
- 96 kHz

[ATTRIBUTES]

M	L	n/a	n/a	n/a	BDA	QEQSV	

9.5.74 MPEG-4 Part 10 AV format, audio Portion Profile: TS_HD_DTSHD_HRA

9.5.74.1

[PROFILES]

AVC_TS_HD_DTSHD_HRA_T
AVC_TS_HD_DTSHD_HRA_ISO

9.5.74.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the DTS-HD High Resolution audio format as specified in 8.9.1, except as indicated below.

Sampling rate:

- 48 kHz
- 96 kHz

[ATTRIBUTES]

M	L	n/a	n/a	n/a	BDA	UDULW	

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9.5.75 MPEG-4 Part 10 AV Format, Audio Portion Profile: TS_HD_DTSHD_MA

9.5.75.1

[PROFILES]

AVC_TS_DTSHD_MA_T
AVC_TS_DTSHD_MA_ISO

9.5.75.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the DTS-HD Master audio format as specified in 8.9.2, except as indicated below.

Sampling rate:

- 48 kHz
- 96 kHz
- 192 kHz

Content audio channel modes:

- Maximum of 6 channels at a sampling rate of 192 kHz

[ATTRIBUTES]

M	L	n/a	n/a	n/a	BDA	QR8UD	

9.5.76 MPEG-4 Part 10 AV format, audio portion profile: EAC3

9.5.76.1

[PROFILES]

AVC_TS_HP_SD_EAC3_T
AVC_TS_HP_SD_EAC3_ISO
AVC_TS_HP_HD_EAC3_T
AVC_TS_HP_HD_EAC3_ISO
AVC_TS_MP_SD_EAC3_T
AVC_TS_MP_SD_EAC3_ISO
AVC_TS_MP_HD_EAC3_T
AVC_TS_MP_HD_EAC3_ISO

9.5.76.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the Enhanced AC-3 audio format as specified in 8.10.1, except as indicated below.

Content audio channel modes:

- Dual-monaural (1+1) mode is prohibited

Bit rates:

- CBR or VBR: 32 kbit/s to 3 024 kbit/s

Substream usage:

- The Enhanced AC-3 bitstream shall contain a maximum of four independent substreams
- Additional information on substream configuration for the delivery of associated audio services can be found in Annex C of ETSI TS 101 154:2005.

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	ETSI TS 101 154	95SZ7	

9.5.77 MPEG-4 Part 10 AV format, audio portion profile: MPEG1_L2

9.5.77.1

[PROFILES]

AVC_TS_HP_SD_MPEG1_L2_T
AVC_TS_HP_SD_MPEG1_L2_ISO
AVC_TS_HP_HD_MPEG1_L2_T
AVC_TS_HP_HD_MPEG1_L2_ISO

9.5.77.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the provisions for MPEG-1 or MPEG-2 layer 2 backward compatible audio as defined in ETSI TS 101 154:2005, Clause 6.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ETSI TS 101 154	EQSVV	

9.5.78 MPEG-4 Part 10 AV format, audio portion profile: MPEG-1/2

9.5.78.1

[PROFILES]

AVC_TS_SD_EU
AVC_TS_SD_EU_T
AVC_TS_SD_EU_ISO
AVC_TS_HD_EU
AVC_TS_HD_EU_T
AVC_TS_HD_EU_ISO

9.5.78.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the MPEG-1/2 audio portion of the MPEG_TS_SD_EU profile as specified in 9.3.8.5 and 9.3.8.6, except as indicated below.

- Audio codec shall not change in a stream.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	5SZ7S	

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Table 125 provides an informative summary of MPEG-4 Part 10 (AVC) profiles.

Table 125 – Informative summary of MPEG-4 Part 10 (AVC) profiles for the AV Media Class

DLNA Profile ID	Video portion profiling					Audio portion profiling				System portion profiling			
	HP_HD	HP_SD	BL_CIF30	BL_CIF15	BL_L1B_QCIF	HEACC_L4	HEACC_L2	AMR_WBplus	AMR	MP4	3GPP	MPEG2-TS_T	MPEG2-TS_ISO
AVC_TS_HP_HD_HEAACv2_L4_T	X					X						X	
AVC_TS_HP_HD_HEAACv2_L4_ISO	X					X							X
AVC_MP4_HP_HD_HEAACv2_L4	X					X				X			
AVC_TS_HP_SD_HEAACv2_L4_T		X				X						X	
AVC_TS_HP_SD_HEAACv2_L4_ISO		X				X							X
AVC_MP4_HP_SD_HEAACv2_L4		X				X				X			
AVC_MP4_BL_CIF30_HEAACv2_L2			X				X			X			
AVC_3GPP_BL_CIF30_AMR_WBplus_res			X					X			X		
AVC_MP4_BL_CIF15_HEAACv2_L2				X			X			X			
AVC_3GPP_BL_CIF15_AMR_WBplus_res				X				X			X		
AVC_3GPP_BL_ L1B_QCIF15_AMR_WBplus					X			X			X		
AVC_3GPP_BL_L1B_QCIF15_AMR					X				X		X		

9.5.79 MPEG-4 Part 10 AV format, video portion profiling: HP_HD_L4

9.5.79.1

[PROFILES]

AVC_TS_HP_HD_HEAACv2_L4_T
AVC_TS_HP_HD_HEAACv2_L4_ISO
AVC_MP4_HP_HD_HEAACv2_L4

9.5.79.2

[GUIDELINE] Main characteristics of video shall be conformant to ISO/IEC 14496-10.

Main characteristics of MPEG-4 Part 10 video streams are

Profile and level:

- ➢ HP at the following levels
- L1
- L1.1
- L1.2
- L1.3

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- L2
- L2.1
- L2.2
- L3
- L3.1
- L3.2
- L4

Chroma:

- 4:2:0

Video bit rate:

- High Profile
- Constant bit rate equal to or less than 20 Mbit/s
- Variable-maximum bit rate equal to or less than 20 Mbit/s

Resolution:

- Any luminance resolution allowed by the applied H.264/AVC Profile and level may be used.

Any sample and picture aspect ratio allowed by the applied H.264/AVC Profile and level may be used.

A bitstream conformant with these media format profiles may utilize any of these pixel aspect ratios regardless resolutions.

The Rendering Endpoint may ignore the pixel aspect ratio for rendering. Rendering Endpoint can shrink, stretch and crop image to the display aspect ratio dependent on vendor implementations.

Resolution may change in a video stream.

Frame rate shall be any of these:

- 23,976 (progressive)
- 24 (progressive)
- 25 (interlaced or progressive)
- 29,97 (interlaced or progressive)
- 30 (interlaced or progressive)
- 50 (progressive)
- 59,94 (progressive)
- 60 (progressive)

The frame rate may change in a video stream.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	FT879	

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9.5.80 MPEG-4 Part 10 AV format, video portion profiling: HP_SD_L3

9.5.80.1

[PROFILES]

AVC_TS_HP_SD_HEAACv2_L4_T
AVC_TS_HP_SD_HEAACv2_L4_ISO
AVC_MP4_HP_SD_HEAACv2_L4

9.5.80.2

[GUIDELINE] Main characteristics of video shall be conformant to ISO/IEC 14496-10.

Main characteristics of MPEG-4 Part 10 video streams are

Profile and level:

- ➢ HP at the following levels
- L1
- L1.1
- L1.2
- L1.3
- L2
- L2.1
- L2.2
- L3

Chroma:

- ➢ 4:2:0

Video bit rate:

- ➢ High Profile
- Constant bit rate equal to or less than 10 Mbit/s
- Variable-maximum bit rate equal to or less than 10 Mbit/s

Resolution:

- ➢ Any luminance resolution allowed by the applied H.264/AVC Profile and level may be used.

Any sample and picture aspect ratio allowed by the applied H.264/AVC Profile and level may be used.

A bitstream conformant with these media format profiles may utilize any of these pixel aspect ratios regardless of resolutions.

The Rendering Endpoint may ignore the pixel aspect ratio for rendering. Rendering Endpoint can shrink, stretch and crop image to the display aspect ratio dependent on vendor implementations.

The resolution may change in a video stream.

The frame rate shall be any of these:

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- 23,976 (progressive)
- 24 (progressive)
- 25 (interlaced or progressive)
- 29,97 (interlaced or progressive)
- 30 (interlaced or progressive)

The frame rate may change in a video stream.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	XLY3X	

9.5.81 MPEG-4 Part 10 AV format, audio portion profiling: HEAACv2_L4

9.5.81.1

[PROFILES]

AVC_TS_HP_HD_HEAACv2_L4_T
AVC_TS_HP_HD_HEAACv2_L4_ISO
AVC_MP4_HP_HD_HEAACv2_L4
AVC_TS_HP_SD_HEAACv2_L4_T
AVC_TS_HP_SD_HEAACv2_L4_ISO
AVC_MP4_HP_SD_HEAACv2_L4

9.5.81.2

[GUIDELINE] Main characteristics of this HEAACv2_L4 audio stream are defined in ISO/IEC 14496-3 and ISO/IEC 14496-3.

Audio encoding shall match the provisions for Level 4 in the (MPEG-4) High Efficiency (HE) AACv2 Profile as defined in ISO/IEC 14496-3. The appropriate parameter in the file format shall be set to the profile and level:

- High Efficiency AAC v2 Profile at Level 4.

Additionally the MPEG-4 AAC Dynamic Range Control (DRC) tool ISO/IEC 14496-3 shall be supported as required in ETSI TS 101 154:2005, H.5 and ETSI TS 102 005:2006, 6.1.5.

AAC sampling rate (SBR present):

- 8 kHz
- 11,025 kHz
- 12 kHz
- 16 kHz
- 22,05 kHz
- 24 kHz
- 32 kHz (mono/stereo only)
- 44,1 kHz (mono/stereo only)
- 48 kHz (mono/stereo only)

AAC sampling rate (SBR not present):

- 8 kHz

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- 11,025 kHz
- 12 kHz
- 16 kHz
- 22,05 kHz
- 24 kHz
- 32 kHz
- 44,1 kHz
- 48 kHz

Maximum bit rate (informative):

- 1 440 kbit/s

Content audio channel modes:

- Mono (1)
- Stereo (2)
- Parametric Stereo (2) as defined in XHTML-Print/CSS-Print Guidelines
- Multichannel (3)
- Multichannel (4)
- Multichannel (5)

The channel modes listed above may include an LFE channel.

The channel mode may change within the bitstream.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 14496-3	M75VD	

[COMMENTS]

a) The number of channels can change during a content item.

b) The maximum bit rate is defined by the following equation in ISO/IEC 14496-3, ISO/IEC 14496-3: maximum bit rate = (6 144/1 024) * maximum sampling rate * number of channels.

9.5.82 MPEG-4 Part 10 AV format, MIME type definition

9.5.82.1

[PROFILES]

AVC_TS_HP_HD_HEAACv2_L4_T
AVC_TS_HP_SD_HEAACv2_L4_T

9.5.82.2

[GUIDELINE] MIME type "video/vnd.dlna.mpeg-tts" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	ZGLK7	

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9.5.83 MPEG-4 Part 10 AV format, MIME type definition

9.5.83.1

[PROFILES]

AVC_TS_HP_HD_HEAACv2_L4_ISO
AVC_TS_HP_SD_HEAACv2_L4_ISO

9.5.83.2

[GUIDELINE] MIME type "video/mpeg" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	VDDMR	

9.5.84 MPEG-4 Part 10 AV format, MIME type definition

9.5.84.1

[PROFILES]

AVC_MP4_HP_HD_HEAACv2_L4
AVC_MP4_HP_SD_HEAACv2_L4
AVC_MP4_BL_CIF15_HEAACv2_L2
AVC_MP4_BL_CIF30_HEAACv2_L2

9.5.84.2

[GUIDELINE] MIME type "video/mp4" shall be used for this Media Format Profile.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	AX8ZV	

9.5.85 MPEG-4 Part 10 AV format, MIME type definition

9.5.85.1

[PROFILES]

AVC_3GPP_BL_CIF15_AMR_WBplus_res
AVC_3GPP_BL_CIF30_AMR_WBplus_res

9.5.85.2

[GUIDELINE] MIME type "video/3gpp" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	SV244	

9.5.86 MPEG-4 Part 10 AV Format, AVC_TS_HP_HD_HEAACv2_L4_T

9.5.86.1

[PROFILES]

AVC_TS_HP_HD_HEAACv2_L4_T

9.5.86.2

[GUIDELINE] The DLNA AVC_TS_HP_HD_HEAACv2_L4_T media format shall follow the system requirement of AVC_TS_MP_HD_AAC_MULT5_T as specified in 9.5.3.1.

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[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	YWBQO	

9.5.87 MPEG-4 Part 10 AV format, AVC_TS_HP_HD_HEAACv2_L4_ISO

9.5.87.1

[PROFILES]

AVC_TS_HP_HD_HEAACv2_L4_ISO

9.5.87.2

[GUIDELINE] The DLNA AVC_TS_HP_HD_HEAACv2_L4_ISO media format shall follow the system requirement of AVC_TS_MP_HD_AAC_MULT5_ ISO profile as specified in 9.5.3.1.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	VXYWB	

9.5.88 MPEG-4 Part 10 AV format, system portion profile

9.5.88.1

[PROFILES]

AVC_MP4_HP_HD_HEAACv2_L4

9.5.88.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the provisions defined by MPEG-4 Part 14, ISO/IEC 14496-14, and Part 15, ISO/IEC 14496-15, and the additional constraints defined in guideline 9.4.4.3.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	MR8XA	

9.5.88.3

[GUIDELINE] A bitstream conformant with this profile shall meet the following requirement.

Maximum system bit rate:

- 25 Mbit/s (video up to 20 Mbit/s)

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	ULN7I	

9.5.89 MPEG-4 Part 10 AV format, AVC_TS_HP_SD_HEAACv2_L4_T

9.5.89.1

[PROFILES]

AVC_TS_HP_SD_HEAACv2_L4_T

9.5.89.2

[GUIDELINE] The AVC_TS_HP_SD_HEAACv2_L4_T media format shall follow the system requirement of profile AVC_TS_MP_SD_AAC_MULT5_T as specified in 9.5.2.1.

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[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	FTR8V	

9.5.90 MPEG-4 Part 10 AV format, AVC_TS_HP_SD_HEAACv2_L4_ISO

9.5.90.1

[PROFILES]

AVC_TS_HP_SD_HEAACv2_L4_ISO

9.5.90.2

[GUIDELINE] The AVC_TS_HP_SD_HEAACv2_L4_ISO media format shall follow the system requirement of profile AVC_TS_MP_SD_AAC_MULT5_ISO as specified in 9.5.2.1.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	9S58I	

9.5.91 MPEG-4 Part 10 AV format, AVC_MP4_HP_SD_HEAACv2_L4

9.5.91.1

[PROFILES]

AVC_MP4_HP_SD_HEAACv2_L4

9.5.91.2

[GUIDELINE] The AVC_MP4_HP_SD_HEAACv2_L4 media format shall follow the system requirement of profile AVC_MP4_MP_SD_AAC_MULT5 as specified in 9.5.11.1 and 9.5.11.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	7QZ4L	

9.5.92 MPEG-4 Part 10 AV format, AVC_MP4_BL_CIF15_HEAACv2_L2

9.5.92.1

[PROFILES]

AVC_MP4_BL_CIF15_HEAACv2_L2

9.5.92.2

[GUIDELINE] The DLNA AVC_MP4_BL_CIF15_HEAACv2_L2 media format shall follow the system requirement of AVC_MP4_BL_CIF15_HEAAC profile as specified in 9.5.9.1 and 9.5.9.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	TXLY3	

9.5.93 MPEG-4 Part 10 AV format, video portion profile

9.5.93.1

[PROFILES]

AVC_MP4_BL_CIF15_HEAACv2_L2
AVC_3GPP_BL_CIF15_AMR_WBplus_res

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9.5.93.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the video portion of the AVC_MP4_BL_CIF15_AAC profile as specified in 9.5.9.5 and 9.5.9.7, except for having these additional video resolutions, indicated in Table 126.

Table 126 – Additional resolutions for AVC_MP4_BL_CIF15_HEAACv2_L2 and AVC_3GPP_BL_CIF15_AMR_WBplus_res

Type	Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)	Max. frame rate
QVGA 16:9	➢320 × 176	1:1	16:9	26
QCIF, 625QSIF	➢176 × 144	1:1	1.22:1	30
WSQCIF 16:9	➢144 × 80	1:1	16:9	30
SQCIF	➢128 × 96	1:1	4:3	30

a Pixel aspect ratio is informative and it indicates a typical aspect ratio for each resolution.

b Display aspect ratio of which a video stream is rendered is informative, and it indicates a display aspect ratio with a resolution and the typical aspect ratio for the resolution.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	S58IU	

9.5.94 MPEG-4 Part 10 AV format, audio portion profile

9.5.94.1

[PROFILES]

AVC_MP4_BL_CIF15_HEAACv2_L2
AVC_MP4_BL_CIF30_HEAACv2_L2

9.5.94.2

[GUIDELINE] A bitstream which is conformant with these profiles shall conform to all aspects of the audio portion of the HEAACv2_L2 profile with the following exceptions.

- The MPEG-4 AAC Dynamic Range Control (DRC) tool ISO/IEC 14496-3 shall be supported as required in ETSI TS 102 005:2006, 6.1.5.
- The maximum bit-rate of the encoded audio shall not exceed 128 kbit/s for a stereo pair.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	28Q9R	

9.5.95 MPEG-4 Part 10 AV format, AVC_MP4_BL_CIF30_HEAACv2_L2

9.5.95.1

[PROFILES]

AVC_MP4_BL_CIF30_HEAACv2_L2

9.5.95.2

[GUIDELINE] The DLNA AVC_MP4_BL_CIF30_HEAACv2_L2 media format shall follow the system requirement of AVC_MP4_BL_CIF30_HEAAC profile as specified in 9.5.7.1 and 9.5.7.2.

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[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	SZJXO	

9.5.96 MPEG-4 Part 10 AV format, video portion profile

9.5.96.1

[PROFILES]

AVC_MP4_BL_CIF30_HEAACv2_L2
AVC_3GPP_BL_CIF30_AMR_WBplus_res

9.5.96.2

[GUIDELINE] A bitstream which is conformant with these profiles shall conform to all aspects of the video portion of the AVC_MP4_BL_CIF30_HEAAC_L2 profile as specified in 9.5.7.5 and 9.5.7.6, except for having these additional video resolutions, indicated in Table 127.

Table 127 – Additional resolutions for AVC_MP4_BL_CIF30_HEAACv2_L2 and AVC_3GPP_BL_CIF30_AMR_WBplus_res

Type	Resolution	Pixel aspect ratio [a] (informative)	Display aspect ratio [b] (informative)	Max. frame rate
WQVGA 16:9	➢400 × 224	1:1	16:9	30
QVGA 16:9	➢320 × 176	1:1	16:9	30
WSQCIF 16:9	➢144 × 80	1:1	16:9	30
QCIF, 625QSIF	➢176 × 144	1:1	4:3	30
SQCIF	➢128 × 96	1:1	4:3	30

a Pixel aspect ratio is informative and it indicates a typical aspect ratio for each resolution.

b Display aspect ratio of which a video stream is rendered is informative, and it indicates a display aspect ratio with a resolution and the typical aspect ratio for the resolution.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	IUYZ9	

9.5.97 MPEG-4 Part 10 AV format, AVC_3GPP_BL_CIF15_AMR_WBplus_res

9.5.97.1

[PROFILES]

AVC_3GPP_BL_CIF15_AMR_WBplus_res

9.5.97.2

[GUIDELINE] System portion profiling as specified for AVC_3GPP_BL_CIF15_AMR_WBplus profile in 9.5.12.1 and 9.5.12.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	A4S9F	

9.5.97.3

[GUIDELINE] Audio portion profile as specified in 9.5.13.18.

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[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	R7547	

9.5.98 MPEG-4 Part 10 AV format, AVC_3GPP_BL_CIF30_AMR_WBplus_res

9.5.98.1

[PROFILES]

AVC_3GPP_BL_CIF30_AMR_WBplus_res

9.5.98.2

[GUIDELINE] System portion profiling as specified for AVC_3GPP_BL_CIF30_AMR_WBplus profile in 9.5.12.1 and 9.5.12.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	5VDDM	

9.5.98.3

[GUIDELINE] Audio portion profile as specified in 9.5.13.18.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	W7C6J	

9.5.99 MPEG-4 Part 10 AV format, video portion profiling

9.5.99.1

[PROFILES]

AVC_3GPP_BL_L1B_QCIF15_AMR
AVC_3GPP_BL_L1B_QCIF15_AMR_WBplus

9.5.99.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the video portion of the AVC_MP4_BL_L1B_QCIF15_HEAAC profile as specified in 9.5.10.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 14496-10	5HENI	

9.5.100 MPEG-4 Part 10 AV format, audio portion profiling: AMR

9.5.100.1

[PROFILES]

AVC_3GPP_BL_L1B_QCIF15_AMR

9.5.100.2

[GUIDELINE] The main characteristics of the audio portion of this profile shall align with the AMR_3GPP audio portion profile as specified in 8.2.1.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	3GPP TS 26.090	LN7IE	

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9.5.101 MPEG-4 Part 10 AV format, audio portion profiling: AMR_WBplus

9.5.101.1

[PROFILES]

AVC_3GPP_BL_L1B_QCIF15_AMR_WBplus

9.5.101.2

[GUIDELINE] The main characteristics of the audio portion of this profile shall align with the AMR_WBplus audio portion profile as specified in 8.2.3.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	3GPP TS 26.290	EV28Q	

9.5.102 MPEG-4 Part 10 AV format, system portion profile

9.5.102.1

[PROFILES]

AVC_3GPP_BL_L1B_QCIF15_AMR
AVC_3GPP_BL_L1B_QCIF15_AMR_WBplus

9.5.102.2

[GUIDELINE] A bitstream which is conformant with these profiles shall conform to all aspects of the system portion of the 3GPP profile.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	S9FT8	

9.5.103 MPEG-4 Part 10 AV format, system bit rate

9.5.103.1

[PROFILES]

AVC_3GPP_BL_L1B_QCIF15_AMR
AVC_3GPP_BL_L1B_QCIF15_AMR_WBplus

9.5.103.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the system bit rate as specified in 9.5.12.5.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	U9S58	

9.5.104 MPEG-4 Part 10 AV format: MIME type definition

9.5.104.1

[PROFILES]

AVC_3GPP_BL_L1B_QCIF15_AMR
AVC_3GPP_BL_L1B_QCIF15_AMR_WBplus

9.5.104.2

[GUIDELINE] MIME type for these Media Format Profiles shall be according to 9.5.12.9.

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[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	5IVXY	

9.5.105 MPEG-4 Part 10 AV format: system portion profile: TS_HD_T

9.5.105.1

[PROFILES]

AVC_TS_HD_60_AC3_X_T
AVC_TS_HD_50_AC3_X_T
AVC_TS_HD_24_AC3_X_T
AVC_TS_HD_60_LPCM_T
AVC_TS_HD_50_LPCM_T
AVC_TS_HD_24_LPCM_T

9.5.105.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the system portion of the AVC_TS_HD_60_AC3_T, AVC_TS_HD_50_AC3_T or AVC_TS_HD_24_AC3_T profile as defined in 9.5.5.6, except as indicated below.

DIT

- DIT shall be inserted at the discontinuous point defined in ARIB TR B-14, chapter 2, 8.2.3 and in ARIB TR B-15, chapter 2, 6.2.3.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ARIB TR B-14 ARIB TR B-15	GMT5I	

9.5.106 MPEG-4 Part 10 AV format: system portion profile: MP4_BL_L12_CIF15_HEAACv2_350

9.5.106.1

[PROFILES]

AVC_MP4_BL_L12_CIF15_HEAACv2_350

9.5.106.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the provisions defined by MPEG-4 Part 14, ISO/IEC 14496-14, and Part 15, ISO/IEC 14496-15, and the additional constraints defined in 9.4.4.3, except as indicated below.

Maximum system bit rate:

- 350 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-14 ISO/IEC 14496-15	IXB52	

[COMMENT] This profile is a subset of the AVC_MP4_BL_L12_CIF15_HEAACv2 profile with a reduced parameter set. Content that matches both this profile and the AVC_MP4_BL_L12_CIF15_HEAACv2 profile (see 6.1.6.2) is urged to be exposed with this profile via an additional <res> element.

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9.5.107 MPEG-4 Part 10 AV format: system portion profile: MP4_BL_CIF15_AAC_350

9.5.107.1

[PROFILES]

AVC_MP4_BL_CIF15_AAC_350

9.5.107.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the provisions defined by MPEG-4 Part 14, ISO/IEC 14496-14, and Part 15, ISO/IEC 14496-15, and the additional constraints defined in 9.4.4.3 except as indicated below.

Maximum system bit rate:

- 350 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-14 ISO/IEC 14496-15	IAT3Q

[COMMENT] This profile is a subset of the AVC_MP4_BL_CIF15_AAC_520 profile with a reduced parameter set. Content that matches this profile and the (mandatory – for Mobile Devices) AVC_MP4_BL_CIF15_AAC_520 profile (see 6.1.6.1 and 6.1.6.2) is urged to be exposed with this profile via an additional <res> element.

9.5.108 MPEG-4 Part 10 AV format: MP4_BL_CIF15_HEAAC_350

9.5.108.1

[PROFILES]

AVC_MP4_BL_CIF15_HEAAC_350

9.5.108.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the provisions defined by MPEG-4 Part 14, ISO/IEC 14496-14, and Part 15, ISO/IEC 14496-15, and the additional constraints defined in 9.4.4.3 except as indicated below.

Maximum system bit rate:

- 350 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-14 ISO/IEC 14496-15	7QN7D

[COMMENT] This profile is a subset of the AVC_MP4_BL_CIF15_HEAAC profile with a reduced parameter set. Content that matches this profile and the AVC_MP4_BL_CIF15_HEAAC profile (see 6.1.6.2) is urged to be exposed with this profile via an additional <res> element.

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9.5.109 MPEG-4 Part 10 AV format: system portion profile: MP4_MP_SD_AAC_LC

9.5.109.1

[PROFILES]

AVC_MP4_MP_SD_AAC_LC

9.5.109.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the system portion of the AVC_MP4_MP_SD_AAC_MULT5 profile as defined in 9.5.11.1 and 9.5.11.2.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-14 ISO/IEC 14496-15	V7M75	

9.5.110 MPEG-4 Part 10 AV format: system portion profile: MP4_BL_L31_HD

9.5.110.1

[PROFILES]

AVC_MP4_BL_L31_HD_AAC

9.5.110.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the system portion of the AVC_MP4_BL_L3_SD_AAC profile as defined in 9.5.4.1, except as indicated below.

Maximum system bit rate:

- 15,0 Mbit/s

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	R8XAO	

9.5.111 MPEG-4 Part 10 AV format: MP4_BL_L32_HD

9.5.111.1

[PROFILES]

AVC_MP4_BL_L32_HD_AAC

9.5.111.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the system portion of the AVC_MP4_BL_L31_HD_AAC profile as defined in 9.5.3.1, except as indicated below.

Maximum system bit rate:

- 21,0 Mbit/s

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	8S4RF	

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9.5.112 MPEG-4 Part 10 AV format: video portion profile: BL_L12_CIF15

9.5.112.1

[PROFILES]

AVC_MP4_BL_L12_CIF15_HEAACv2_350

9.5.112.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the video portion of the AVC_MP4_BL_L12_CIF15_HEAACv2 profile as defined in 9.5.9.3, except as indicated below.

Maximum video bit rate:

- 296 kbit/s

Maximum video frame rate:

- 25 fps

Table 128 shows the format resolutions for MPEG-4 Part 10.

Table 128 – Format resolutions

Resolution	
➢ QCIF, 625QSIF	➢ 176 × 144
➢ 525QSIF	➢ 176 × 120
➢ SQVGA 4:3	➢ 160 × 120
➢ 1/16 VGA 4:3	➢ 160 × 112
➢ SQVGA 16:9	➢ 160 × 90
➢ SQCIF	➢ 128 × 96

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	QX4RS	

9.5.113 MPEG-4 Part 10 AV format: video portion profile: BL_CIF15

9.5.113.1

[PROFILES]

AVC_MP4_BL_CIF15_AAC_350

9.5.113.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the video portion of the AVC_MP4_BL_CIF15_AAC as defined in 9.5.9.5, except indicated below.

Maximum video bit rate:

- 296 kbit/s

Maximum video frame rate:

- 25 fps

Table 129 shows the format resolutions for MPEG-4 Part 10.

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Table 129 – Format resolutions

Resolution	
➢ QCIF, 625QSIF	➢ 176 × 144
➢ 525QSIF	➢ 176 × 120
➢ SQVGA 4:3	➢ 160 × 120
➢ 1/16 VGA 4:3	➢ 160 × 112
➢ SQVGA 16:9	➢ 160 × 90
➢ SQCIF	➢ 128 × 96

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	T3QSQ	

9.5.114 MPEG-4 Part 10 AV format: video portion profile: BL_CIF15

9.5.114.1

[PROFILES]

AVC_MP4_BL_CIF15_HEAAC_350

9.5.114.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the video portion of the AVC_MP4_BL_CIF15_HEAAC profile as defined in 9.5.9.5, except as indicated below.

Maximum video bit rate:

- ➢ 296 kbit/s

Maximum Video Frame Rate:

- ➢ 25 fps

Table 130 shows the format resolutions for MPEG-4 Part 10.

Table 130 – Format resolutions

Resolution	
➢ QCIF, 625QSIF	➢ 176 × 144
➢ 525QSIF	➢ 176 × 120
➢ SQVGA 4:3	➢ 160 × 120
➢ 1/16 VGA 4:3	➢ 160 × 112
➢ SQVGA 16:9	➢ 160 × 90
➢ SQCIF	➢ 128 × 96

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	TSV7M	

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9.5.115 MPEG-4 Part 10 AV format: video portion profile: MP_SD

9.5.115.1

[PROFILES]

AVC_MP4_MP_SD_AAC_LC

9.5.115.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the video portion of the AVC_MP4_MP_SD_AAC_MULT5 as defined in 9.5.11.3 and 9.5.11.4.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	9FT87	

[COMMENT] MPEG-4 part 10 Main profile @ Level 3.

9.5.116 MPEG-4 Part 10 AV format: video portion profile: BL_L31_HD

9.5.116.1

[PROFILES]

AVC_MP4_BL_L31_HD_AAC

9.5.116.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the video portion of the MP4_BL_L3_SD profile as defined in 9.5.4.3, except as indicated below.

Profile:

- Baseline Profile

Levels:

- 3.1
- 3.0
- 1.3

Video bit rate:

- CBR or VBR: up to maximum of 14,0 Mbit/s

Table 131 shows the format resolutions for MPEG-4 Part 10.

Table 131 – Resolutions

Resolution	Pixel aspect ratio (informative)	Disp. aspect ratio (informative)	Maximum frame rate
➢ 1 280 × 720	1:1	16:9	30p
➢ 640 × 480	1:1	4:3	60p
➢ 640 × 480	1:1	4:3	30p
➢ 320 × 240	1:1	4:3	30p

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[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	6ZGLK	

9.5.117 MPEG-4 Part 10 AV format: video portion profile: BL_L32_HD

9.5.117.1

[PROFILES]

AVC_MP4_BL_L32_HD_AAC

9.5.117.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the video portion of the BL_L31_HD profile as defined in 9.5.4.2, except as indicated below.

Additional level:

- 3.2

Video bit rate:

- CBR or VBR: up to maximum of 20,0 Mbit/s

Table 132 shows the format resolutions for MPEG-4 Part 10.

Table 132 – Additional resolutions

Resolution	Pixel aspect ratio (informative)	Disp. aspect ratio (informative)	Maximum frame rate
➢ 1 280 × 720	1:1	16:9	60p

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 14496-10	NIDKU	

9.5.118 MPEG-4 Part 10 AV format: audio portion profile: AAC

9.5.118.1

[PROFILES]

AVC_MP4_BL_L31_HD_AAC
AVC_MP4_BL_L32_HD_AAC

9.5.118.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the AAC profile as specified in 8.6.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	DMR8X	

9.5.119 MPEG-4 Part 10 AV format: audio portion profile: AAC_LC

9.5.119.1

[PROFILES]

AVC_MP4_MP_SD_AAC_LC

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9.5.119.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the AAC_ISO profile as specified in 8.6.2.2.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-3	KU9S5	

[COMMENT] The MPEG-4 AAC Profile specified in ISO/IEC 14496-3 includes only the AAC-LC Audio Object Type.

9.5.120 MPEG-4 Part 10 AV format: audio portion profile: AAC_350

9.5.120.1

[PROFILES]

AVC_MP4_BL_CIF15_AAC_350

9.5.120.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the AAC audio format as specified in 8.6.2, except as indicated below.

Maximum audio bit rate (normative):

- 128 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	Q5HEN	

9.5.121 MPEG-4 Part 10 AV format: audio portion profile: HEAAC_350

9.5.121.1

[PROFILES]

AVC_MP4_BL_CIF15_HEAAC_350

9.5.121.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the HE-AAC Audio Format as specified in 8.6.9, except as indicated below.

Maximum audio bit rate (normative):

128 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	7547G	

9.5.122 MPEG-4 Part 10 AV format: audio portion profile: HEAACv2_350

9.5.122.1

[PROFILES]

AVC_MP4_BL_L12_CIF15_HEAACv2_350

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9.5.122.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the HEAACv2_L2 audio format as specified in 8.2.1, except as indicated below.

Maximum audio bit rate (normative):

128 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	524UL	

9.5.123 MPEG-4 Part 10 AV format: audio portion profile: AC3_X

9.5.123.1

[PROFILES]

AVC_TS_HD_60_AC3_X_T
AVC_TS_HD_50_AC3_X_T
AVC_TS_HD_24_AC3_X_T

9.5.123.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the audio portion of the AVC_TS_HD_60_AC3_T, AVC_TS_HD_50_AC3_T or AVC_TS_HD_24_AC3_T profile as specified in 9.5.12.8, except as indicated below.

Content audio channel modes:

A bitstream conformant to these media format profiles may contain the following formats that may also include a Low Frequency Effects (LFE) channel.

- 1/0 (Mono)
- 2/0 (Stereo)
- 1+1/0 (Dual Monaural)
- 3/0 (Multichannel)
- 2/1 (Multichannel)
- 3/1 (Multichannel)
- 2/2 (Multichannel)
- 3/2 (Multichannel)

[ATTRIBUTES]

M	A	n/a	n/a	n/a	BDA BDA	GLK7B	

9.5.124 MPEG-4 Part 10 AV format: audio portion profile: LPCM

9.5.124.1

[PROFILES]

AVC_TS_HD_60_LPCM_T
AVC_TS_HD_50_LPCM_T
AVC_TS_HD_24_LPCM_T

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9.5.124.2

[GUIDELINE] Main characteristics of this AVC_TS_HD_60_LPCM_T, AVC_TS_HD_50_LPCM_T and AVC_TS_HD_24_LPCM_T audio stream shall be conformant to the stream portion of "RREF" in BDA or "HDMV compatible TS mode" in BDA. In addition, the permitted combination of Sampling Rate, Bits per Sample and Content Audio Channel Modes are defined in "RREF" in BDA or "HDMV compatible TS mode" in BDA and restricted by the maximum bit rates specified in this guideline.

Sampling rate

- 48 kHz
- 96 kHz
- 192 kHz

Bits per sample

- 16 bits
- 20 bits
- 24 bits

Content audio channel modes

- 1/0 (Mono)
- 2/0 (Stereo)
- 3/0 (Multichannel)
- 2/1 (Multichannel)
- 3/1 (Multichannel)
- 2/2 (Multichannel)
- 3/2 (Multichannel)
- 3/4 (Multichannel)

Bit rates

- Up to 14 Mbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	BDA BDA	24ULN	

9.5.125 MPEG-4 Part 10 AV format: MIME type definition: TS_T

9.5.125.1

[PROFILES]

AVC_TS_HD_60_AC3_X_T
AVC_TS_HD_50_AC3_X_T
AVC_TS_HD_24_AC3_X_T
AVC_TS_HD_60_LPCM_T
AVC_TS_HD_50_LPCM_T
AVC_TS_HD_24_LPCM_T

9.5.125.2

[GUIDELINE] MIME type "video/vnd.dlna.mpeg-tts" shall be used for this Media Format Profile.

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[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	M7JZ3	

9.5.126 MPEG-4 Part 10 AV format: MIME type definition: MP4

9.5.126.1

[PROFILES]

AVC_MP4_BL_CIF15_AAC_350
AVC_MP4_BL_CIF15_HEAAC_350
AVC_MP4_BL_L12_CIF15_HEAACv2_350
AVC_MP4_BL_L31_HD_AAC
AVC_MP4_BL_L32_HD_AAC
AVC_MP4_MP_SD_AAC_LC

9.5.126.2

[GUIDELINE] MIME type "video/mp4" shall be used for this Media Format Profile.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	V28Q9	

9.5.127 MPEG-4 Part 10 AV format: system portion profile, TS_NA

9.5.127.1

[PROFILES]

AVC_TS_NA_T
AVC_TS_NA_ISO

9.5.127.2

[GUIDELINE] Main characteristics of this stream are defined in SCTE 54 2002 with additional constraints as defined below.

System

- MPEG-2 Transport Stream

Numer of programs

- 1 as defined for a Single Program Transport Stream

System bit rate

- Up to 35 Mbit/s (video up to 30 Mbit/s)

Packet size

- 188 B per transport packet

PSI information

- PAT and PMT are required. Any other tables shall be tolerated.
- PSI insertion interval should be implementation-dependent.

AC-3 and Enhanced AC-3 packetization

- AC-3 and Enhanced AC-3 transmission in a full or partial SPTS shall be according to Part 3 of ATSC Standard A/53.

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- AC-3 and Enhanced AC-3 packetized elementary streams shall conform to the requirements of a private_stream_1, as defined in ISO/IEC 13818-1 and shall have a stream_id value of 0xBD.
- An AC-3 packetized elementary stream shall have a stream_type value of 0x81.
- AC-3 and Enhanced AC-3 elementary streams shall be byte-aligned within the MPEG-2 full or partial SPTS. This means the initial 8 bit of an AC-3 or Enhanced AC-3 frame shall reside in a single byte which is carried in the MPEG-2 full or partial SPTS.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-1 SCTE 54 2002 ATSC Standard A/53	E48JX	N

9.5.127.3

[GUIDELINE] A bitstream conformant with this profile may include Closed Caption services information in the caption_services_descriptor in the PMT as defined in ANSI/SCTE 65. The presence of the caption_services_descriptor indicates that one or more closed caption services are present in the bitstream.

[ATTRIBUTES]

O	A	n/a	n/a	n/a	ANSI/SCTE 65	PMBMN	N

9.5.127.4

[GUIDELINE] A bitstream conformant with this profile may include Content Advisory information in the content_advisory_descriptor in the PMT as defined in ANSI/SCTE 65.

[ATTRIBUTES]

O	A	n/a	n/a	n/a	ANSI/SCTE 65	WEHDI	N

9.5.127.5

[GUIDELINE] A bitstream conformant with this profile may include a RRT as defined in ANSI/SCTE 65.

[ATTRIBUTES]

O	A	n/a	n/a	n/a	ANSI/SCTE 65	7BM3K	N

9.5.127.6

[GUIDELINE] A Rendering Endpoint shall be able to tolerate Content Advisory information in the RRT and the content_advisory_descriptor in the PMT as defined in ANSI/SCTE 65.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	ANSI/SCTE 65	46K8D	N

9.5.127.7

[GUIDELINE] A Rendering Endpoint should be capable of enforcing Content Advisory information, if present and requested by a user.

[ATTRIBUTES]

S	A	DMP DMR	M-DMP M-DMD	n/a	ANSI/SCTE 65	GY9YD	N

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9.5.127.8

[GUIDELINE] A bitstream conformant with this profile may include private data in the adaptation field of the transport stream packets as specified in ISO/IEC 13818-1.

[ATTRIBUTES]

O	A	n/a	n/a	n/a	ISO/IEC 13818-1	P7556	N

9.5.127.9

[GUIDELINE] A Rendering Endpoint shall be able to tolerate the presence of private data in the adaptation field of transport stream packets within the bitstream.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	n/a	E9SN2	N

9.5.127.10

[GUIDELINE] A Rendering Endpoint shall tolerate but not necessarily render all audio, video and data components that belong to the (selected) program in a full or partial SPTS according to the PAT/PMT tables. At a minimum, a Rendering Endpoint shall render one elementary video stream and one corresponding elementary audio stream as present in TS.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	n/a	5ZWR8	N

[COMMENT] This guideline states a minimum rendering requirement.

9.5.128 MPEG-4 Part 10 AV format: video portion profile, TS_NA

9.5.128.1

[PROFILES]

AVC_TS_NA_T
AVC_TS_NA_ISO

9.5.128.2

[GUIDELINE] Main characteristics of video shall be conformant to ISO/IEC 14496-10 as constrained by ANSI/SCTE-128, with further constraints as specified below.

Profiles and levels:

- Main Profile at Level 3
- High Profile at Level 3
- Main Profile at Level 4
- High Profile at Level 4

Chroma:

- 4:2:0

Video bit rate:

- Main Profile

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- CBR or VBR: Up to a maximum of 12 Mbit/s for Level 3 Main, as NAL
- CBR or VBR: Up to a maximum of 24 Mbit/s for Level 4 Main, as NAL

- Main Profile:
  - CBR or VBR: Up to a maximum of 15 Mbit/s for Level 3 High, as NAL
  - CBR or VBR: Up to a maximum of 30 Mbit/s for Level 4 High, as NAL

Table 133 shows the format resolutions for MPEG-4 Part 10.

Table 133 – MPEG-4 Part 10 AV format resolution

Resolution	Aspect ratio	Allowed frame rates
➢ 1 920 × 1 080	16:9	➢ 60i, 59,94i, 30p, 29,97p, 24p, 23,98p
➢ 1 440 × 1 080	16:9	➢ 60i, 59,94i, 30p, 29,97p, 24p, 23,98p
➢ 1 280 × 720	16:9	➢ 60p, 59,94p, 30p, 29,97p, 24p, 23,98p
➢ 720 × 480	16:9, 4:3	➢ 60i, 59,94i, 30p, 29,97p, 24p, 23,98p
➢ 704 × 480	16:9, 4:3	➢ 60i, 59,94i, 30p, 29,97p, 24p, 23,98p
➢ 640 × 480	4:3	➢ 60i, 59,94i, 30p, 29,97p, 24p, 23,98p
➢ 544 × 480	4:3	➢ 59,94i, 29,97p, 23,98p
➢ 528 × 480	4:3	➢ 59,94i, 29,97p, 23,98p
➢ 352 × 480	4:3	➢ 59,94i, 29,97p, 23,98p

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10 ANSI/SCTE-128	FWMYQ	N

[COMMENT] Section 7.2 of ANSI/SCTE-128 specifies bit streams compliant to a constrained set of High or Main Profile at Level 3.0, 4.0, or 4.2. This guideline requires complete compliance with definitions in SCTE 128 except the level is constrained to 3.0 and 4.0. Support for level 4.2 is optional.

9.5.128.3

[GUIDELINE] A bitstream conformant with this profile may include Closed Caption data with syntax, semantics, and usage rules defined in section 8 of ANSI/SCTE-128, and as shown in Table 134.

Table 134 – ATSC/SCTE AVC SEI syntax for Closed Caption data

Syntax	Value	Bits	Format
user_data_registered_itu_t_t35 () {			
itu_t_t35_country_code	0xB5	8	bslbf
itu_t_t35_provider_code	0x0031	16	bslbf
user identifier	0x47413934	32	bslbf
user_data_type_code	0x03	8	uimbsf
cc_data()		var	
}			

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If the itu_t_t35_provider_code is 0x002F, the user identifier and user_structure() of the ATSC/SCTE AVC SEI syntax shall be replaced with the syntax that conforms to Table 135.

Table 135 – AVC Caption Transport Syntax following provider_code = 0x002F

Syntax	Bits	Format
for(i=0; i<N; i++){		
user_data_type_code	8	bslbf
user_data_code_length	8	bslbf
if(user_data_type_code == ‘0x03’)		
cc_data()	var	
else if(user_data_type_code == ‘0x06’)		
bar_data()	var	
}		
}		

[ATTRIBUTES]

O	L	n/a	n/a	n/a	ANSI/SCTE-128	L3FUI	N

9.5.128.4

[GUIDELINE] A Rendering Endpoint shall tolerate any Closed Caption data within the bitstream that conforms to the syntax shown in Table 134 or Table 135.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	n/a	668LS	N

9.5.128.5

[GUIDELINE] A Rendering Endpoint should be capable of displaying Closed Captions Streams with syntax as defined in Table 134 or Table 135 and semantics and usage rules as defined in section 8 of ANSI/SCTE-128, if present and requested by a user.

[ATTRIBUTES]

S	A	DMP DMR	M-DMP M-DMD	n/a	ANSI/SCTE-128	LJZ9H	N

9.5.129 MPEG-4 Part 10 AV format: audio portion profile, TS_NA

9.5.129.1

[PROFILES]

AVC_TS_NA_T
AVC_TS_NA_ISO

9.5.129.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of AC-3 audio as specified in 9.5.129.3, or Enhanced AC-3 audio as specified in 9.5.129.4, or MPEG-4 HE-AAC v2 audio as specified in 9.5.129.6, or MPEG-1 Layer II audio as specified in 9.5.129.6.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	WL9FR	N

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9.5.129.3

[GUIDELINE] An AC-3 audio bitstream conformant with this profile shall conform to all aspects of the audio portion of the MPEG_TS_SD_NA profile as specified in 9.3.6.6.2,

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	GSNVA	N

9.5.129.4

[GUIDELINE] An Enhanced AC-3 audio bitstream conformant with this profile shall conform to all aspects of the EAC3 profile as specified in 8.10 except as indicated below.

Sampling rate:

- 48 kHz

Content audio channel modes:

- 1+1 (Dual Monaural)
- 1/0 (Mono)
- 2/0 (Stereo)
- 3/0 (Multichannel)
- 2/1 (Multichannel)
- 3/1 (Multichannel)
- 2/2 (Multichannel)
- 3/2 (Multichannel)
- 6.1 (Multichannel)
- 7.1 (Multichannel)

The channel modes listed above may include an LFE channel.

Substream usage:

- All substreams shall be encoded at the same sample rate
- All substreams shall be encoded with the same number of audio data blocks per syncframe

Bit rates:

- CBR or VBR: 32 kbit/s to 3 024 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	49YK3	N

[COMMENT] The 3/2 configuration shown above is commonly referred to as 5.1. Enhanced AC-3 supports multiple 6.1 and 7.1-channel configurations. The most common 6.1 channel configuration is 3/3, with an additional rear surround channel. The most common 7.1 channel configuration is 3/4, with two additional rear surround channels.

9.5.129.5

[GUIDELINE] An MPEG-4 HE-AAC v2 audio bitstream conformant with this profile shall conform to all aspects of the HEAACv2_L2 profile as specified in 8.6.61.2, except as indicated below.

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Elementary stream format

- The encoded audio data shall be encapsulated in LATM/LOAS format as defined in 1.7 of ISO/IEC 14496-3:2005.

Sampling rate

- 48 kHz

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-3	EKX6Z	N

9.5.129.6

[GUIDELINE] An MPEG-1 Layer II audio bitstream conformant with this profile shall conform to all aspects of the audio portion of the MPEG_TS_SD_NA_MPEG1_L2 profile as specified in 9.3.29.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	3QYFJ	N

9.5.130 MPEG-4 Part 10 AV format: system portion profile, TS_EU_ISO

9.5.130.1

[PROFILES]

AVC_TS_EU_ISO

9.5.130.2

[GUIDELINE] A bitstream conformant with this profile shall comply with 4.1 of ETSI TS 101 154:2009, defining the use of ISO/IEC 13818-1 for IRDs and bitstreams in DVB, and with 9.3.8.4, except for guideline 9.3.8.4.8.

System

- MPEG-2 Transport Stream

Numer of programs

- 1 as defined for a Single Program Transport Stream

System bit rate

- Up to 24 Mbit/s

Packet size

- 188 B per transport packet

AC-3 and Enhanced AC-3 packetization

- AC-3 and Enhanced AC-3 transmission in a full or partial SPTS shall be according to Part 3 of ETSI TS 101 154.
- AC-3 and Enhanced AC-3 packetized elementary streams shall conform to the requirements of a private_stream_1, as defined in ISO/IEC 13818-1 and shall have a stream_id value of 0xBD.
- AC-3 and Enhanced AC-3 packetized elementary streams shall have a stream_type value of 0x06.

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- AC-3 and Enhanced AC-3 elementary streams shall be byte-aligned within the full or partial SPTS. This means the initial 8 bit of an AC-3 or Enhanced AC-3 frame shall reside in a single byte which is carried in the full or partial SPTS.

AC-3 and Enhanced AC-3 bitstream identification

- An AC-3_descriptor as defined in Annex D of ETSI EN 300 468 shall be present in the PMT for each AC-3 packetized elementary stream present in the SPTS.
- Enhanced_AC-3_descriptor as defined in Annex D of ETSI EN 300 468:2009 shall be present in the PMT for each Enhanced AC-3 packetized elementary streams present in the SPTS.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-1 ETSI TS 101 154 ETSI EN 300 468	BM3EJ	N

9.5.130.3

[GUIDELINE] A Rendering Endpoint shall tolerate, but not necessarily render all audio, video and data components that belong to the (selected) program in a full or partial SPTS according to the PAT/PMT tables. At a minimum, a Rendering Endpoint shall render one elementary video stream and one corresponding elementary audio stream as present in TS.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	n/a	S5MR8	N

9.5.130.4

[GUIDELINE] A bitstream conformant with this profile may include Parental Rating information in the Parental Rating Descriptor in the EIT and/or SIT as defined in 6.2.28 of ETSI EN 300 468:2009.

[ATTRIBUTES]

O	R	n/a	n/a	n/a	ETSI EN 300 468	GGBPU	N

9.5.130.5

[GUIDELINE] A Rendering Endpoint should be capable of enforcing Parental Rating information, if present and requested by a user.

[ATTRIBUTES]

S	A	DMP DMR	M-DMP M-DMD	n/a	ETSI EN 300 468	UCWPY	N

9.5.130.6

[GUIDELINE] A bitstream conformant with this profile may contain subtitles as defined in ETSI EN 300 743.

[ATTRIBUTES]

O	R	n/a	n/a	n/a	ETSI EN 300 743	BU347	N

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9.5.130.7

[GUIDELINE] Rendering Endpoints shall tolerate but not necessarily render DVB subtitles as specified in ETSI EN 300 743.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	ETSI EN 300 743	68A3X	N

9.5.130.8

[GUIDELINE] A Rendering Endpoint should be capable of rendering DVB subtitles as specified in ETSI EN 300 743 if they are present.

[ATTRIBUTES]

S	A	DMP DMR	M-DMP M-DMD	n/a	ETSI EN 300 743	QOUQ9	N

9.5.130.9

[GUIDELINE] A bitstream conformant with this profile may contain DVB teletext as defined in ETSI EN 300 472.

[ATTRIBUTES]

O	C	n/a	n/a	n/a	ETSI EN 300 472	RFMPC	N

9.5.130.10

[GUIDELINE] Rendering Endpoints shall tolerate but not necessarily render teletext as specified in ETSI EN 300 472.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	ETSI EN 300 472	74OR7	N

9.5.131 MPEG-4 Part 10 AV format: video portion profile, TS_EU_ISO

9.5.131.1

[PROFILES]

AVC_TS_EU_ISO

9.5.131.2

[GUIDELINE] Main characteristics of video shall be conformant to ISO/IEC 14496-10 as constrained by 5.5, 5.6, and 5.7 of ETSI TS 101 154:2009.

Profiles and levels:

- Main Profile at Level 3
- High Profile at Level 3
- Main Profile at Level 4
- High Profile at Level 4

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Chroma:

- 4:2:0

Video bit rate:

- Main Profile
  - CBR or VBR: Up to a maximum of 10 Mbit/s for Level 3 Main, as NAL
  - CBR or VBR: Up to a maximum of 20 Mbit/s for Level 4 Main, as NAL
- High Profile
  - CBR or VBR: Up to a maximum of 12,5 Mbit/s for Level 3 High, as NAL
  - CBR or VBR: Up to a maximum of 20 Mbit/s for Level 4 High, as NAL

Table 136 shows the format resolutions for MPEG-4 Part 10.

Table 136 – MPEG-4 Part 10 AV format resolution

Resolution	Aspect ratio	Allowed frame rates
1 920 × 1 080	16:9	50i, 25p
1 440 × 1 080	16:9	50i, 25p
1 280 × 720	16:9	50p, 50i, 25p
960 × 720	16:9	50i, 25p
720 × 576	16:9, 4:3	50i, 25p
704 × 576	16:9, 4:3	50i, 25p
544 × 576	50i, 25p	50i, 25p
480 × 576	50i, 25p	50i, 25p

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10 ETSI TS 101 154	DGM4M	N

9.5.131.3

[GUIDELINE] A Serving Endpoint may output resolutions (lower than 1 920 × 1 080) other than those shown in Table 133.

[ATTRIBUTES]

O	A	DMS	M-DMS	n/a	n/a	SUEQ8	N

9.5.131.4

[GUIDELINE] If a Rendering Endpoint is not capable of rendering certain resolutions in full-screen format, it shall be able to render them on part of the screen.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	n/a	IRL33	N

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9.5.132 MPEG-4 Part 10 AV format: audio portion profile, TS_EU_ISO

9.5.132.1

[PROFILES]

AVC_TS_EU_ISO

9.5.132.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of AC-3 audio as specified in 9.5.70.2, or Enhanced AC-3 audio as specified in 9.5.76.2 and 6.2.1 of ETSI TS 101 154:2009, or MPEG-4 HE-AAC v2 L4 audio as specified in 8.6.52.2, except as indicated below.

Elementary stream encapsulation format:

- The MPEG-4 HE-AAC v2 encoded audio data shall be encapsulated in LATM/LOAS format as specified in section 6.4.1 of ETSI TS 101 154:2009.

Sampling rate

- 32 kHz
- 44,1 kHz
- 48 kHz

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ETSI TS 101 154	OA64K	N

9.5.133 MPEG-4 Part 10 AV format: system portion profile, TS_MP_SD_DTS(HD)

9.5.133.1

[PROFILES]

AVC_TS_MP_SD_DTS_ISO
AVC_TS_MP_SD_DTSHD_ISO

9.5.133.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the system portion of the profiles specified in 9.5.2.1, except as indicated below.

Bitstream packetization

- DTS and DTS-HD bitstreams shall be packed into PES packets as “private_stream_1”.

Bitdstream identification

- The presence of DTS and DTS-HD audio PESs in the multiplex shall be signaled as defined in DTS 9302J85300.

DTS registration descriptor

In a transport stream environment, a registration descriptor with a registered format identifier is required to identify the DTS and DTS-HD formats. The syntax of the DTS registration descriptor is shown in Table 137.

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Table 137 – DTS registration descriptor syntax

Syntax	No. of bits	Value
registration_descriptor() {		
descriptor_tag	8	0x05
descriptor_length	8	0x04
format_identifier	32	see Table 138
}		

This descriptor shall be included in the descriptor loop immediately following the ES_info_length field in the TS_program_map_section describing the DTS or DTS-HD elementary stream.

For the DTS and DTS-HD formats, unique format_identifier values have been assigned to represent different audio frame durations. See Table 138 for a list of these codecs.

Table 138 – DTS and DTS-HD format identifier values

Label	format_identifier	Audio frame duration (samples)
DTS1	0x44545331	512
DTS2	0x44545332	1 024
DTS3	0x44545333	2 048
DTSH	0x44545348	Various, see audio stream identifier

Audio stream descriptors

The DTS audio stream descriptor is defined in DTS 9302J85300, and contains information on sample rate, bit rate, frame size, surround mode and so on. This descriptor is associated with formats indicated by DTS1, DTS2, and DTS3 format identifiers in the DTS registration descriptor. This format may be used when only a core substream is present.

The DTS-HD audio stream descriptor is defined in DTS 9302J85300, and contains information on sample rate, bit rate, frame size, surround mode and so on for core and substreams. This descriptor is associated with the DTSH format identifier. This format shall be used for all audio streams consisting of a core and extension, such as DTS-HD Master Audio, and streams containing only an extension substream, such as DTS Express. Since DTS audio is a subset of DTS-HD, DTS formats may also use DTS-HD descriptor.

The appropriate audio stream descriptor shall be included in the TS_program_map_section descriptor loop immediately following the DTS registration_descriptor.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	DTS 9302J85300	BPGRC	N

9.5.134 MPEG-4 Part 10 AV format: video portion profile, TS_MP_SD_DTS(HD)

9.5.134.1

[PROFILES]

AVC_TS_MP_SD_DTS_ISO
AVC_TS_MP_SD_DTSHD_ISO

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9.5.134.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to the video portion of the profiles defined in 9.5.2.3.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	YWDIT	N

9.5.135 MPEG-4 Part 10 AV format: system portion profile, TS_HP_HD_(L41)_DTS(HD)

9.5.135.1

[PROFILES]

AVC_TS_HP_HD_DTS_ISO
AVC_TS_HP_HD_DTSHD_ISO
AVC_TS_HP_HD_L41_DTS_ISO

9.5.135.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the system portion of the profiles specified in 9.5.3.1, except as indicated below.

Bitstream packetization

- DTS and DTS-HD bitstreams shall be packed into PES packets as “private_stream_1”.

Bitdstream identification

- The presence of DTS and DTS-HD audio PESs in the multiplex shall be signaled as defined in DTS 9302J85300.

DTS registration descriptor

In a transport stream environment, a registration descriptor with a registered format identifier is required to identify the DTS and DTS-HD formats. The syntax of the DTS registration descriptor is shown in Table 139.

Table 139 – DTS registration descriptor syntax

Syntax	No. of bits	Value
registration_descriptor() {		
descriptor_tag	8	0x05
descriptor_length	8	0x04
format_identifier	32	see Table 140
}		

This descriptor shall be included in the descriptor loop immediately following the ES_info_length field in the TS_program_map_section describing the DTS or DTS-HD elementary stream.

For the DTS and DTS-HD formats, unique format_identifier values have been assigned to represent different audio frame durations. See Table 140 for a list of these codecs.

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Table 140 – DTS and DTS-HD format identifier values

Label	format_identifier	Audio frame duration (samples)
DTS1	0x44545331	512
DTS2	0x44545332	1 024
DTS3	0x44545333	2 048
DTSH	0x44545348	Various, see audio stream identifier

Audio Stream Descriptors

The DTS audio stream descriptor is defined in DTS 9302J85300, and contains information on sample rate, bit rate, frame size, surround mode and so on. This descriptor is associated with formats indicated by DTS1, DTS2, and DTS3 format identifiers in the DTS registration descriptor. This format may be used when only a core substream is present.

The DTS-HD audio stream descriptor is defined in DTS 9302J85300, and contains information on sample rate, bit rate, frame size, surround mode and so on for core and substreams. This descriptor is associated with the DTSH format identifier. This format shall be used for all audio streams consisting of a core and extension, such as DTS-HD Master Audio, and streams containing only an extension substream, such as DTS Express. Since DTS audio is a subset of DTS-HD, DTS formats may also use DTS-HD descriptor.

The appropriate audio stream descriptor shall be included in the TS_program_map_section descriptor loop immediately following the DTS registration_descriptor.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	DTS 9302J85300	WMNXI	N

9.5.136 MPEG-4 Part 10 AV format: video portion profile, TS_HP_HD_DTS(HD)

9.5.136.1

[PROFILES]

AVC_TS_HP_HD_DTS_ISO
AVC_TS_HP_HD_DTSHD_ISO

9.5.136.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to the video portion of the profiles as defined in 9.5.36.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	J8MCF	N

9.5.137 MPEG-4 Part 10 AV format: video portion profile, TS_HP_HD_L41_DTS

9.5.137.1

[PROFILES]

AVC_TS_HP_HD_L41_DTS_ISO

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9.5.137.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to the video portion of the profiles as defined in 9.5.36.2 with addition of:

Profile and level

- Up to High Profile at Level 4.1

Video bitrate

- Up to 30 Mbit/s for High Profile at Level 4.1

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	LRCCJ	N

9.5.138 MPEG-4 Part 10 AV format: audio portion profile, TS_DTS

9.5.138.1

[PROFILES]

AVC_TS_MP_SD_DTS_ISO
AVC_TS_HP_HD_DTS_ISO
AVC_TS_HP_HD_L41_DTS_ISO

9.5.138.2

[GUIDELINE] A bitstream conformant with these profiles shall comply with ETSI TS 102 114, and may also contain DTSHD audio data that complies with DTS 9302F30400.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ETSI TS 102 114 DTS 9302F30400	B6WJB	N

9.5.138.3

[GUIDELINE] Rendering Endpoints that are conformant to these profiles may ignore any DTSHD audio data present in the bitstream.

[ATTRIBUTES]

O	A	DMP DMR	M-DMP M-DMD	n/a	n/a	NYMBB	N

9.5.139 MPEG-4 Part 10 AV format: audio portion profile, TS_DTSHD

9.5.139.1

[PROFILES]

AVC_TS_MP_SD_DTSHD_ISO
AVC_TS_HP_HD_DTSHD_ISO

9.5.139.2

[GUIDELINE] A bitstream conformant with this profile shall comply with DTS 9302F30400.

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[ATTRIBUTES]

M	R	n/a	n/a	n/a	DTS 9302F30400	5CNWY	N

9.5.140 MPEG-4 Part 10 AV format: system portion profile, TS_SD_EU_DTS

9.5.140.1

[PROFILES]

AVC_TS_SD_EU_DTS_ISO

9.5.140.2

[GUIDELINE] A bitstream conformant with the AVC_TS_SD_EU_DTS_ISO profile shall conform to all aspects of the system portion of the AVC_TS_SD_EU_ISO profile, except as indicated below.

DTS packetization

- The presence of the DTS audio PES in the multiplex shall be signaled in accordance with ETSI TS 101 154.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ETSI TS 101 154	KXZIT	N

9.5.141 MPEG-4 Part 10 AV format: video portion profile, TS_SD_EU_DTS

9.5.141.1

[PROFILES]

AVC_TS_SD_EU_DTS_ISO

9.5.141.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the video portion of the AVC_TS_SD_EU_ISO profile.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	CQ5MZ	N

9.5.142 MPEG-4 Part 10 AV format: audio portion profile, TS_SD_EU_DTS

9.5.142.1

[PROFILES]

AVC_TS_SD_EU_DTS_ISO

9.5.142.2

[GUIDELINE] A bitstream conformant with this profile shall comply with ETSI TS 102 114.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ETSI TS 102 114	YAS2C	N

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9.5.143 MPEG-4 Part 10 AV format: system portion profile, TS_HD_EU_DTS

9.5.143.1

[PROFILES]

AVC_TS_HD_EU_DTS_ISO

9.5.143.2

[GUIDELINE] A bitstream conformant with the AVC_TS_HD_EU_DTS_ISO profile shall conform to all aspects of the system portion of the AVC_TS_HD_EU_ISO profile, except as indicated below.

DTS packetization

- The presence of the DTS audio PES in the multiplex shall be signaled in accordance with ETSI TS 101 154.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ETSI TS 101 154	DXU4A	N

9.5.144 MPEG-4 Part 10 AV format: video portion profile, TS_HD_EU_DTS

9.5.144.1

[PROFILES]

AVC_TS_HD_EU_DTS_ISO

9.5.144.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the video portion of the AVC_TS_HD_EU_ISO profile.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	H84FY	N

9.5.145 MPEG-4 Part 10 AV format: audio portion profile, TS_HD_EU_DTS

9.5.145.1

[PROFILES]

AVC_TS_HD_EU_DTS_ISO

9.5.145.2

[GUIDELINE] A bitstream conformant with this profile shall comply with ETSI TS 102 114.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ETSI TS 102 114	CFNPL	N

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9.5.146 MPEG-4 Part 10 AV format: system portion profile, TS_SHP_HD_EU

9.5.146.1

[PROFILES]

AVC_TS_SHP_HD_EU_AC3_T
AVC_TS_SHP_HD_EU_HEAACv2_L4_T

9.5.146.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to the system portion of the AVC_TS_HD_EU_T profile as defined in 9.5.31.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	X972P	N

9.5.147 MPEG-4 Part 10 AV format: video portion profile, TS_SHP_HD_EU

9.5.147.1

[PROFILES]

AVC_TS_SHP_HD_EU_AC3_T
AVC_TS_SHP_HD_EU_HEAACv2_L4_T

9.5.147.2

[GUIDELINE] Main characteristics of video shall be conformant to ISO/IEC 14496-10 and sections 5.8.1, 5.8.2 and 5.8.4 of ETSI TS 101 154:2009. Video bitstreams shall be compliant with Class S Bitstreams, as specified in section 5.8.1.1 of ETSI TS 101 154:2009.

Main characteristics of MPEG-4 Part 10 AV Format video streams are

Profiles and levels:

- Scalable High Profile at Level 4 (according to definitions in Annex G.10 of ISO/IEC 14496-10:2003)
- Scalable High Profile at Level 4.2 (according to definitions in Annex G.10 of ISO/IEC 14496-10:2003)

Chroma:

- 4:2:0

Video bit rate:

- As specified in Annex G.10 of ISO/IEC 14496-10:2003.

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Table 141 shows the format resolutions for MPEG-4 Part 10.

Table 141 – MPEG-4 Part 10 AV format resolution

Resolution	Aspect Ratio	Allowed Frame Rates
➢ 1 920 × 1 080	16:9	➢ 25p/50i/50p
➢ 1 440 × 1 080	16:9	➢ 25p/50i
➢ 1 280 × 1 080	16:9	➢ 25p/50i
➢ 960 × 1 080	16:9	➢ 25p/50i
➢ 1 280 × 720	16:9	➢ 25p/50i/50p
➢ 960 × 720	16:9	➢ 25p/50i/50p
➢ 640 × 720	16:9	➢ 25p/50i/50p
➢ 720 × 576	➢ 4:3, 16:9	➢ 25p/50i
➢ 544 × 576	➢ 4:3, 16:9	➢ 25p/50i
➢ 480 × 576	➢ 4:3, 16:9	➢ 25p/50i
➢ 352 × 576	➢ 4:3, 16:9	➢ 25p/50i
➢ 352 × 288	➢ 4:3, 16:9	➢ 25p/50i

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ISO/IEC 14496-10 ETSI TS 101 154	7TF3X	N

[COMMENTS]

a) Base Layer bitstreams are backward compatible and compliant with 9.5.37.2 and with sections 5.8.2 and 5.8.4 of ETSI TS 101 154:2009. Hence the allowed resolutions are 25 Hz H.264/AVC SDTV and 25Hz H.264/AVC HDTV as specified in section 5.8.2.2 and section 5.8.4.2 of ETSI TS 101 154:2009. H.264/AVC bitstreams for the Base Layer are compliant with H.264/AVC High Profile at Level 4 as specified in ISO/IEC 14496-10.

b) Enhancement Layer bitstreams are compliant with specifications of 5.8.2.1 and 5.8.4.1 of ETSI TS 101 154:2009. Hence the allowed resolutions are 25 Hz H.264/AVC HDTV and 50 Hz H.264/AVC HDTV.

9.5.148 MPEG-4 Part 10 AV format: audio portion profile, TS_SHP_HD_EU_AC3

9.5.148.1

[PROFILES]

AVC_TS_SHP_HD_EU_AC3_T

9.5.148.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the audio portion of the AVC_TS_SD_EU profile as defined in 9.5.70.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	TAPQP	N

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9.5.149 MPEG-4 Part 10 AV format: audio portion profile, TS_SHP_HD_EU_HEAACv2_L4

9.5.149.1

[PROFILES]

AVC_TS_SHP_HD_EU_HEAACv2_L4_T

9.5.149.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the audio portion of the AVC_TS_HP_HD_HEAACv2_L4_T profile as defined in 9.5.81.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	7RITW	N

9.5.150 MPEG-4 Part 10 AV format: MIME type definition, TS_T

9.5.150.1

[PROFILES]

AVC_TS_NA_T
AVC_TS_SHP_HD_EU_AC3_T
AVC_TS_SHP_HD_EU_HEAACv2_L4_T

9.5.150.2

[GUIDELINE] MIME type “video/vnd.dlna.mpeg-tts” shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	5HTAK	N

9.5.151 MPEG-4 Part 10 AV format: MIME type definition, TS_ISO

9.5.151.1

[PROFILES]

AVC_TS_NA_ISO
AVC_TS_EU_ISO
AVC_TS_MP_SD_DTS_ISO
AVC_TS_MP_SD_DTSHD_ISO
AVC_TS_HP_HD_DTS_ISO
AVC_TS_HP_HD_DTSHD_ISO
AVC_TS_HP_HD_L14_DTS_ISO
AVC_TS_SD_EU_DTS_ISO
AVC_TS_HD_EU_DTS_ISO

9.5.151.2

[GUIDELINE] MIME type “video/mpeg” shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	342QX	N

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9.5.152 MPEG-4 Part 10 AV format: system portion profile, MP4_EU

9.5.152.1

[PROFILES]

AVC_MP4_EU

9.5.152.2

[GUIDELINE] A bitstream conformant with this profile shall comply with ISO/IEC 14496-14, ISO/IEC 14496-12, ISO/IEC 14496-15, Annex F of ETSI TS 102 366:2005, and the constraints defined in 9.4.4.3, except for 9.4.4.3.4. The following additional constraints also apply.

- The largesize defined in 4.2 of ISO/IEC 14496-12:2003 shall not be used.
- The stco box defined in 8.19 of ISO/IEC 14496-12:2003 shall be used.
- The co64 box defined in 8.19 of ISO/IEC 14496-12:2003 shall not be used.
- Use of the pdin box defined in 8.43 of ISO/IEC 14496-12:2003 is recommended.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-14 ISO/IEC 14496-12 ISO/IEC 14496-15 ETSI TS 102 366	2J3RC	N

9.5.153 MPEG-4 Part 10 AV format: video portion profile, MP4_EU

9.5.153.1

[PROFILES]

AVC_MP4_EU

9.5.153.2

[GUIDELINE] Main characteristics of video shall be conformant to ISO/IEC 14496-10 as constrained by sections 5.5, 5.6, and 5.7 of ETSI TS 101 154:2009, and the additional constraints defined below.

Profiles and levels:

- Main Profile at Level 3
- High Profile at Level 3
- Main Profile at Level 4
- High Profile at Level 4

Chroma:

- 4:2:0

Video bit rate:

- Constrained Profile
  - CBR or VBR: Up to a maximum of 768 kbit/s for Level 1.3
- Main Profile

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- CBR or VBR: Up to a maximum of 10 Mbit/s for Level 3 Main
- CBR or VBR: Up to a maximum of 20 Mbit/s for Level 4 Main

- High Profile
  - CBR or VBR: Up to a maximum of 12.5 Mbit/s for Level 3 High
  - CBR or VBR: Up to a maximum of 20 Mbit/s for Level 4 High

Table 142 shows the format resolutions for MPEG-4 Part 10.

Table 142 – MPEG-4 Part 10 AV format resolution

Resolution	Aspect Ratio	Allowed Frame Rates
➢ 1 920 × 1 080	16:9	50i,
➢ 1 440 × 1 080	16:9	➢ 50i, 25p
➢ 1 280 × 720	16:9	➢ 50p, 50i, 25p
➢ 960 × 720	16:9	➢ 50i, 25p
➢ 720 × 576	➢ 16:9, 4:3	➢ 50i, 25p
➢ 704 × 576	➢ 16:9, 4:3	➢ 50i, 25p
➢ 544 × 576	➢ 50i, 25p	➢ 50i, 25p
➢ 480 × 576	➢ 50i, 25p	➢ 50i, 25p
➢ 320 × 240	4:3	25p

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10 ETSI TS 101 154	OTQPY	N

9.5.153.3

[GUIDELINE] A Serving Endpoint may output resolutions (lower than 1 920 × 1 080) other than those shown in Table 142.

[ATTRIBUTES]

O	A	DMS	M-DMS	n/a	n/a	VAZS2	N

9.5.153.4

[GUIDELINE] If a Rendering Endpoint is not capable of rendering certain resolutions in full-screen format, it shall be able to render them on part of the screen.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	n/a	K9I4E	N

9.5.154 MPEG-4 Part 10 AV format: audio portion profile, MP4_EU

9.5.154.1

[PROFILES]

AVC_MP4_EU

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9.5.154.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of Enhanced AC-3 audio as specified in 9.5.76.2 and 6.2.1 of ETSI TS 101 154:2009, or MPEG-4 HE-AAC v2 L4 audio as specified in 8.6.52.2, except as indicated below.

Sampling rate

- 32 kHz
- 44,1 kHz
- 48 kHz

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ETSI TS 101 154	YRWG4	N

[COMMENT] For Multichannel content the HEAACv2_L4 Audio Format is identical to the HEAAC_L4 Audio Format. The only difference between those two Formats is the Parametric Stereo (PS) audio coding tool of HE-AAC v2 that only applies to stereo content.

9.5.155 MPEG-4 Part 10 AV format: system portion profile, MP4_DTS, MP4_DTSHD

9.5.155.1

[PROFILES]

AVC_MP4_BL_DTS
AVC_MP4_BL_DTSHD
AVC_MP4_MP_SD_DTS
AVC_MP4_MP_SD_DTSHD
AVC_MP4_HP_HD_DTS
AVC_MP4_HP_HD_DTSHD

9.5.155.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to the provisions defined by ISO/IEC 14496-14, ISO/IEC 14496-12, ISO/IEC 14496-15, and the additional constraints defined below.

Bitstream signaling

- The presence of DTS or DTS-HD audio bitstream in the file shall be signaled as defined in DTS 9302J81100.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-14 ISO/IEC 14496-12 ISO/IEC 14496-15 DTS 9302J81100	K7LUA	N

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9.5.156 MPEG-4 Part 10 AV format: video portion profile, MP4_BL_DTS, MP4_BL_DTSHD

9.5.156.1

[PROFILES]

AVC_MP4_BL_DTS
AVC_MP4_BL_DTSHD

9.5.156.2

[GUIDELINE] The main characteristics of video stream shall be conformant to ISO/IEC 14496-10.

Main characteristics of MPEG-4 Part 10 video streams of this profile are

Profile and level:

- Up to Baseline Profile at Level 2

Resolution:

- Up to 416 × 240

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	LP5MA	N

9.5.157 MPEG-4 Part 10 AV format: video portion profile, MP4_MP_DTS, MP4_MP_DTSHD

9.5.157.1

[PROFILES]

AVC_MP4_MP_SD_DTS
AVC_MP4_MP_SD_DTSHD

9.5.157.2

[GUIDELINE] The main characteristics of video stream shall be conformant to ISO/IEC 14496-10.

Main characteristics of MPEG-4 Part 10 video streams of this profile are

Profile and level:

- Up to Baseline Profile at Level 3

Resolution:

- Up to 864 × 480 and/or 720 × 576

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	SZQY8	N

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9.5.158 MPEG-4 Part 10 AV format: video portion profile, MP4_HP_DTS, MP4_HP_DTSHD

9.5.158.1

[PROFILES]

AVC_MP4_HP_HD_DTS
AVC_MP4_HP_HD_DTSHD

9.5.158.2

[GUIDELINE] The main characteristics of video stream shall be conformant to ISO/IEC 14496-10.

Main characteristics of MPEG-4 Part 10 video streams of this profile are

Profile and level:

- Up to Baseline Profile at Level 4

Resolution:

- Up to 1 920 × 1 080

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	ONKNA	N

9.5.159 MPEG-4 Part 10 AV format: audio portion profile, MP4_DTS

9.5.159.1

[PROFILES]

AVC_MP4_BL_DTS
AVC_MP4_MP_SD_DTS
AVC_MP4_HP_HD_DTS

9.5.159.2

[GUIDELINE] A bitstream conformant with these profiles shall comply with ETSI TS 102 114, and may also contain DTSHD audio data that complies with DTS 9302F30400.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ETSI TS 102 114 DTS 9302F30400	76AJ2	N

9.5.159.3

[GUIDELINE] Rendering Endpoints that are conformant with these profiles may ignore any DTSHD audio data present in the bitstream.

[ATTRIBUTES]

O	A	DMP DMR	M-DMP M-DMD	n/a	n/a	QUUM2	N

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9.5.160 MPEG-4 Part 10 AV format: audio portion profile, MP4_DTSHD

9.5.160.1

[PROFILES]

AVC_MP4_BL_DTSHD
AVC_MP4_MP_SD_DTSHD
AVC_MP4_HP_HD_DTSHD

9.5.160.2

[GUIDELINE] A bitstream conformant with this profile shall comply with DTS 9302F30400.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	DTS 9302F30400	F5SKR	N

9.5.161 MPEG-4 Part 10 AV format: system portion profile, MP4_MP_SD_EAC3

9.5.161.1

[PROFILES]

AVC_MP4_MP_SD_EAC3

9.5.161.2

[GUIDELINE] Main characteristics of this AVC_MP4_MP_SD_EAC3 stream are defined in ISO/IEC 14496-14, ISO/IEC 14496-12, ISO/IEC 14496-15 and Annex F of ETSI TS 102 366:2008. The system portion profile shall also follow all requirements defined in 9.4.4.3, except for requirement 9.4.4.3.10.

Main characteristics of the AVC_MP4_MP_SD_EAC3 system stream are

System bit rate:

- The maximum system bit rate, which is defined as the maximum of cumulative bit rate of streams of media data, shall not exceed 14 Mbit/s

Number of video streams:

- One video stream only

Number of audio streams:

- ➢ One audio stream encoded according to 9.5.162.2.
- ➢ Optionally, an audio stream encoded according to 9.5.163.3 may also be included.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-14 ISO/IEC 14496-12 ISO/IEC 14496-15 ETSI TS 102 366	NU9TJ	N

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9.5.162 MPEG-4 Part 10 AV format: video portion profile, HP4_MP_SD_EAC3

9.5.162.1

[PROFILES]

AVC_MP4_MP_SD_EAC3

9.5.162.2

[GUIDELINE] The main characteristics of video stream shall be conformant to ISO/IEC 14496-10.

Main characteristics of MPEG-4 Part 10 video streams of this profile are

Profile and level:

- Main Profile at Level 3.0

Chroma:

- 4:2:0

Video bit rate:

- Maximum bit rate of 10 Mbit/s

Table 143 shows the format resolutions for MPEG-4 Part 10.

Table 143 – MPEG-4 Part 10 AV format resolutions

Resolution	Aspect ratio	Allowed frame rates
864 × 480	16:9	25p, 23,98p
720 × 576	16:9, 4:3	50i, 25p
720 × 480	16:9, 4:3	59,94i, 29,97p, 23,98p
640 × 480	4:3	29,97p, 25p, 23,98p

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	8PHMQ	N

9.5.162.3

[GUIDELINE] A Serving Endpoint may output resolutions (lower than 864 × 480) other than those shown in Table 143.

[ATTRIBUTES]

O	A	DMS	M-DMS	n/a	n/a	ND9P4	N

9.5.162.4

[GUIDELINE] If a Rendering Endpoint is not capable of rendering certain resolutions in full-screen format, it shall be able to render them on part of the screen.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	n/a	9X842	N

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9.5.163 MPEG-4 Part 10 AV format: audio portion profile, MP4_MP_SD_EAC3

9.5.163.1

[PROFILES]

AVC_MP4_MP_SD_EAC3

9.5.163.2

[GUIDELINE] Main characteristics of this AVC_MP4_MP_SD_EAC3 audio stream are defined in ETSI TS 102 366.

Sampling rate

- 44,1 kHz
- 48 kHz

Content audio channel modes

- 1/0 (Mono)
- 2/0 (Stereo)
- 3/0 (Multichannel)
- 2/1 (Multichannel)
- 3/1 (Multichannel)
- 2/2 (Multichannel)
- 3/2 (Multichannel)

Substream usage

- All substreams shall be encoded at the same sample rate
- All substreams shall be encoded with the same number of audio data blocks per syncframe

Bit rates

- CBR or VBR: 32 kbit/s to 3 024 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ETSI TS 102 366	M54IC	N

9.5.163.3

[GUIDELINE] An MPEG-4 HE-AAC v2 audio stream may be included in addition to the Enhanced AC-3 audio stream. If an MPEG-4 HE-AAC v2 audio stream is included, it shall meet the requirements specified in 8.6.63.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	22KZG	N

9.5.164 MPEG-4 Part 10 AV format: system portion profile, MP4_HP_HD_EAC3

9.5.164.1

[PROFILES]

AVC_MP4_HP_HD_EAC3

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9.5.164.2

[GUIDELINE] Main characteristics of this AVC_MP4_HP_HD_EAC3 stream are defined in ISO/IEC 14496-14, ISO/IEC 14496-12, ISO/IEC 14496-15 and Annex F of ETSI TS 102 366:2008. The system portion profile shall also follow all requirements defined in 9.4.4.3, except for requirement 9.4.4.3.10.

Main characteristics of the AVC_MP4_HP_HD_EAC3 system stream are

System bit rate:

- The maximum system bit rate, which is defined as the maximum of cumulative bit rate of streams of media data, shall not exceed 29 Mbit/s.

Number of video streams:

- One video stream only

Number of audio streams:

  - One audio stream encoded according to 9.5.166.2.
  - Optionally, an audio stream encoded according to 9.5.166.3 may also be included.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-14 ISO/IEC 14496-12 ISO/IEC 14496-15 ETSI TS 102 366	SO3FH	N

9.5.165 MPEG-4 Part 10 AV format: video portion profile, HP4_HP_HD_EAC3

9.5.165.1

[PROFILES]

AVC_MP4_HP_HD_EAC3

9.5.165.2

[GUIDELINE] The main characteristics of video stream shall be conformant to ISO/IEC 14496-10.

Main characteristics of MPEG-4 Part 10 video streams of this profile are

Profile and level:

- Main Profile at Level 4.0

Chroma:

- 4:2:0

Video bit rate:

  - Maximum bit rate of 25 Mbit/s

Table 144 shows the format resolutions for MPEG-4 Part 10.

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Table 144 – MPEG-4 Part 10 AV format resolutions

Resolution	Aspect ratio	Allowed frame rates
➢ 1 920 × 1 080	16:9	➢ 59,94i, 50i, 29,97p, 25p, 23,98p
➢ 1 440 × 1 080	16:9	➢ 59,94i, 50i, 29,97p, 25p, 23,98p
➢ 1 280 × 1 080	16:9	➢ 59,94i, 50i, 29,97p, 25p, 23,98p
➢ 1 280 × 720	16:9	➢ 59,94p, 50p, 23,98p
➢ 960 × 720	16:9	➢ 59,94p, 50p, 23,98p

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	5YLJW	N

9.5.165.3

[GUIDELINE] A Serving Endpoint may output resolutions (lower than 1 920 × 1 080) other than those shown in Table 144.

[ATTRIBUTES]

O	A	DMS	M-DMS	n/a	n/a	BYQPH	N

9.5.165.4

[GUIDELINE] If a Rendering Endpoint is not capable of rendering certain resolutions in full-screen format. It shall be able to render them on part of the screen.

[ATTRIBUTES]

M	A	DMP DMR	M-DMP M-DMD	n/a	n/a	3QUTN	N

9.5.166 MPEG-4 Part 10 AV format: audio portion profile, MP4_HP_HD_EAC3

9.5.166.1

[PROFILES]

AVC_MP4_HP_HD_EAC3

9.5.166.2

[GUIDELINE] Main characteristics of this AVC_MP4_HP_HD_EAC3 audio stream are defined in ETSI TS 102 366.

Sampling rate

- 44,1 kHz
- 48 kHz

Content audio channel modes

- 1/0 (Mono)
- 2/0 (Stereo)
- 3/0 (Multichannel)
- 2/1 (Multichannel)

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- 3/1 (Multichannel)
- 2/2 (Multichannel)
- 3/2 (Multichannel)
- 6.1 (Multichannel)
- 7.1 (Multichannel)

The channel modes listed above may include an LFE channel.

Substream usage

- All substreams shall be encoded at the same sample rate
- All substreams shall be encoded with the same number of audio data blocks per syncframe.

Bit rates:

- CBR or VBR: 32 kbit/s to 3 024 kbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ETSI TS 102 366	SKAXD	N

9.5.166.3

[GUIDELINE] An MPEG-4 HE-AAC v2 audio stream may be included in addition to the Enhanced AC-3 audio stream. If an MPEG-4 HE-AAC v2 audio stream is included, it shall meet the requirements specified in 8.6.63.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	OBOHN	N

9.5.167 MPEG-4 Part 10 AV format: audio portion profile, MIME type definition, MP4

9.5.167.1

[PROFILES]

AVC_MP4_EU
AVC_MP4_BL_DTS
AVC_MP4_BL_DTSHD
AVC_MP4_MP_SD_DTS
AVC_MP4_MP_SD_DTSHD
AVC_MP4_MP_SD_EAC3
AVC_MP4_HP_HD_DTS
AVC_MP4_HP_HD_DTSHD
AVC_MP4_HP_HD_EAC3

9.5.167.2

[GUIDELINE] MIME type “video/mp4” shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	8BJYV	N

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9.5.168 MPEG-4 Part 10 AV format: system portion profile, MKV_MP_HD

9.5.168.1

[PROFILES]

AVC_MKV_MP_HD_AAC_MULT5
AVC_MKV_MP_HD_HEAAC_L4
AVC_MKV_MP_HD_AC3
AVC_MKV_MP_HD_MPEG1_L3

9.5.168.2

[GUIDELINE] A bitstream conformant to these profiles shall conform to the provisions defined by the Matroska format Matroska.

System bit rate

- Maximum system bitrate shall be 21 Mbit/s.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	Matroska	C3EGO	N

9.5.169 MPEG-4 Part 10 AV format: video portion profile, MKV_MP_HD

9.5.169.1

[PROFILES]

AVC_MKV_MP_HD_AAC_MULT5
AVC_MKV_MP_HD_HEAAC_L4
AVC_MKV_MP_HD_AC3
AVC_MKV_MP_HD_MPEG1_L3

9.5.169.2

[GUIDELINE] Main characteristics of video shall be conformant to ISO/IEC 14496-10.

Main characteristics of MPEG-4 part 10 video streams are

Profiles and levels:

- Main Profile at Level 3.0
- Main Profile at Level 3.1
- Main Profile at Level 3.2
- Main Profile at Level 4

Chroma:

- 4:2:0

Video bit rates:

- Constant bit rate equal to or less than 20 Mbit/s
- Variable-maximum bit rate equal to or less than 20 Mbit/s

Table 145 shows the format resolutions for MPEG-4 Part 10.

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Table 145 – MPEG-4 Part 10 AV format resolution

Resolution	Aspect ratio	Allowed frame rates
➢ Up to 1 280 × 720	16:9	➢ 60p, 59,94p, 30p, 29,97p, 24p, 23,98p
➢ Up to 1 920 × 1 080	16:9	➢ 60i, 59,94i, 30p, 29,97p, 24p, 23,976p
➢ Up to 1 920 × 1 152	16:9	➢ 50i, 25p

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	VRYJN	N

9.5.170 MPEG-4 Part 10 AV format: system portion profile, MKV_HP_HD

9.5.170.1

[PROFILES]

AVC_MKV_HP_HD_AAC_MULT5
AVC_MKV_HP_HD_HEAAC_L4
AVC_MKV_HP_HD_AC3
AVC_MKV_HP_HD_MPEG1_L3

9.5.170.2

[GUIDELINE] A bitstream conformant to these profiles shall conform to the provisions defined by the Matroska format Matroska.

System bit rate

- ➢ Maximum system bitrate shall be 33 Mbit/s.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	Matroska	WWUMU	N

9.5.171 MPEG-4 Part 10 AV format: video portion profile, MKV_HP_HD

9.5.171.1

[PROFILES]

AVC_MKV_HP_HD_AAC_MULT5
AVC_MKV_HP_HD_HEAAC_L4
AVC_MKV_HP_HD_AC3
AVC_MKV_HP_HD_MPEG1_L3

9.5.171.2

[GUIDELINE] Main characteristics of video shall be conformant to ISO/IEC 14496-10.

Main characteristics of MPEG-4 part 10 video streams are

Profiles and levels:

- ➢ High Profile at Level 3.0
- ➢ High Profile at Level 3.1
- ➢ High Profile at Level 3.2

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- ➢ High Profile at Level 4

Chroma:

- 4:2:0

Video bit rates:

- ➢ Constant bit rate equal to or less than 30 Mbit/s
- ➢ Variable-maximum bit rate equal to or less than 30 Mbit/s

Table 146 shows the format resolutions for MPEG-4 Part 10.

Table 146 – MPEG-4 Part 10 AV format resolution

Resolution	Aspect ratio	Allowed frame rates
➢ Up to 1 280 × 720	16:9	➢ 60p, 59,94p, 30p, 29,97p, 24p, 23,98p
➢ Up to 1 920 × 1 080	16:9	➢ 60i, 59,94i, 30p, 29,97p, 24p, 23,976p
➢ Up to 1 920 × 1 152	16:9	➢ 50i, 25p

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 14496-10	SWGHS	N

9.5.172 MPEG-4 Part 10 AV format: audio portion profile, MKV_HD_ACC_MULT5

9.5.172.1

[PROFILES]

AVC_MKV_MP_HD_AAC_MULT5
AVC_MKV_HP_HD_ACC_MULT5

9.5.172.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the AAC_MULT5 audio format profile as specified in 8.6.6.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	DROAW	N

9.5.173 MPEG-4 Part 10 AV format: audio portion profile, MKV_HD_HEAAC_L4

9.5.173.1

[PROFILES]

AVC_MKV_MP_HD_HEACC_L4
AVC_MKV_HP_HD_HEACC_L4

9.5.173.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the HEAAC_L4 audio format profile as specified in 8.6.46.2.

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[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	7BEHS	N

9.5.174 MPEG-4 Part 10 AV format: audio portion profile, MKV_HD_AC3

9.5.174.1

[PROFILES]

AVC_MKV_MP_HD_AC3
AVC_MKV_HP_HD_AC3

9.5.174.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the AC3 audio format profile as specified in 8.1.1.2, except as indicated below.

Content audio channel modes:

- 1/0 (Mono)
- 2/0 (Stereo)
- 3/0 (Multichannel)
- 2/1 (Multichannel)
- 3/1 (Multichannel)
- 2/2 (Multichannel)
- 3/2 (Multichannel)

The channel modes listed above may include an LFE channel.

Bit rates:

Main audio service up to 640 kbit/s per one stream.

Encoding types:

- Constant Bit Rate (CBR)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	2FM2U	N

9.5.175 MPEG-4 Part 10 AV format: audio portion profile, MKV_HD_MPEG1_L3

9.5.175.1

[PROFILES]

AVC_MKV_MP_HD_MPEG1_L3
AVC_MKV_HP_HD_MPEG1_L3

9.5.175.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the MP3 audio format profile as specified in section 8.5.1.2.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	P6JEX	N

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9.5.176 MPEG-4 Part 10 AV format: MIME type definition, MKV

9.5.176.1

[PROFILES]

AVC_MKV_MP_HD_AAC_MULT5
AVC_MKV_MP_HD_HEAAC_L4
AVC_MKV_MP_HD_AC3
AVC_MKV_MP_HD_MPEG1_L3
AVC_MKV_HP_HD_AAC_MULT5
AVC_MKV_HP_HD_HEAAC_L4
AVC_MKV_HP_HD_AC3
AVC_MKV_HP_HD_MPEG1_L3

9.5.176.2

[GUIDELINE] MIME type “video/x-matroska” shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	EK5LP	N

9.6 WMV9 profiling guidelines

9.6.1 General

Table 147 lists the WMV9 profiles:

Table 147 – List of WMV9 profiles for the AV Media Class

Profile ID (DLNA.ORG_PN)	Profile description	WMV specification reference	WMA specification reference
WMVMED_BASE	Medium Resolution Video with Baseline Audio	WMV v9 Main Profile at Medium Level	WMA with constraints defined for the WMABASE Profile
WMVMED_FULL	Medium Resolution Video with Full Audio	WMV v9 Main Profile at Medium Level	WMA
WMVMED_PRO	Medium Resolution Video with Professional Audio	WMV v9 Main Profile at Medium Level	WMA Professional
WMVHIGH_FULL	High Resolution Video with Full Audio	WMV v9 Main Profile at High Level	WMA
WMVHIGH_PRO	High Resolution Video with Professional Audio	WMV v9 Main Profile at High Level	WMA Professional
WMVHM_BASE	HighMAT	WMV v9 profiles as defined by HighMAT	WMA with constraints defined for the WMABASE Profile
WMVSPLL_BASE	Simple Profile Low Level Video with Baseline Audio	WMV v9 Simple Profile at Medium Level	WMA with constraints defined for the WMABASE profile
WMVSPML_BASE	Simple Profile Medium Level Video with Baseline Audio	WMV v9 Simple Profile at Medium Level	WMA with constraints defined for the WMABASE profile
WMVSPML_MP3	Simple Profile Medium Level Video with MP3 Audio	WMV v9 Simple Profile at Medium Level	This profile does not use WMA. Instead, it uses MP3 with bitrate constraints

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9.6.2 WMV AV format

9.6.2.1

[PROFILES]

WMVMED_BASE
WMVMED_FULL
WMVMED_PRO
WMVHIGH_FULL
WMVHIGH_PRO
WMVHM_BASE
WMVSPLL_BASE
WMVSPML_BASE
WMVSPML_MP3

9.6.2.2

[GUIDELINE] The WMV format shall be profiled according to the video and audio guidelines defined in 9.5.127.3. Table 147 summarizes the features of each of the WMV profiles defined for DLNA.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	R39TE	

9.6.3 WMV AV format: Medium Resolution Video with Baseline Audio

9.6.3.1

[PROFILES]

WMVMED_BASE

9.6.3.2

[GUIDELINE] WMV audiovisual format shall abide by the following baseline characteristics.

Video profile:

- The encoded video matches the provisions for WMV v9 Main Profile at Medium Level WMV9 specifications.

Audio profile:

- The encoded audio matches the provisions for the WMABASE Profile defined in the audio 8.7.3 of these guidelines.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	WMV9 specifications	O3XY8	

9.6.4 WMV AV format: Medium Resolution Video with Full Audio

9.6.4.1

[PROFILES]

WMVMED_FULL

9.6.4.2

[GUIDELINE] WMV audiovisual format shall abide by the following baseline characteristics.

Video profile:

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- The encoded video matches the provisions for WMV v9 Main Profile at Medium Level WMV9 specifications.

Audio profile:

- The encoded audio matches the provisions for the WMAFULL Profile defined in the audio 8.7.4 of these guidelines.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	WMV9 specifications	XY8Y9	

9.6.5 WMV AV format: Medium Resolution Video with Professional Audio

9.6.5.1

[PROFILES]

WMVMED_PRO

9.6.5.2

[GUIDELINE] WMV audiovisual format shall abide by the following baseline characteristics.

Video profile:

- The encoded video matches the provisions for WMV v9 Main Profile at Medium Level WMV9 specifications.

Audio profile:

- The encoded audio matches the provisions for the WMAPRO Profile defined in the audio 8.7.5 of these guidelines.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	WMV9 specifications	5WC47	

9.6.6 WMV AV format: High Resolution Video with Full Audio

9.6.6.1

[PROFILES]

WMVHIGH_FULL

9.6.6.2

[GUIDELINE] WMV audiovisual format shall abide by the following baseline characteristics.

Video profile:

- The encoded video matches the provisions for WMV v9 Main Profile at High Level WMV9 specifications.

Audio profile:

- The encoded audio matches the provisions for the WMAFULL Profile defined in the audio 8.7.4 of these guidelines.

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[ATTRIBUTES]

M	R	n/a	n/a	n/a	WMV9 specifications	BX5KZ	

9.6.7 WMV AV format: High Resolution Video with Professional Audio

9.6.7.1

[PROFILES]

WMVHIGH_PRO

9.6.7.2

[GUIDELINE] WMV audiovisual format shall abide by the following baseline characteristics.

Video profile:

- The encoded video matches the provisions for WMV v9 Main Profile at High Level WMV9 specifications.

Audio profile:

- The encoded audio matches the provisions for the WMAPRO Profile defined in the audio 8.7.5 of these guidelines.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	WMV9 specifications	Y9WS9	

9.6.8 WMV AV format: HighMAT Profile

9.6.8.1

[PROFILES]

WMVHM_BASE

9.6.8.2

[GUIDELINE] WMV audiovisual format shall abide by the following baseline characteristics.

Video profile:

- The encoded video matches the provisions for the WMV HighMAT profile defined in HighMAT specifications.

Audio profile:

- The encoded audio matches the provisions for the WMABASE Profile defined in the audio 8.7.3 of these guidelines.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	HighMAT specifications	47XZ9	

9.6.9 WMV AV format: Simple Profile at Medium Level with WMA

9.6.9.1

[PROFILES]

WMVSPML_BASE

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9.6.9.2

[GUIDELINE] WMV audiovisual format shall abide by the following baseline characteristics.

Video profile:

- The encoded video matches the provisions for WMV Simple Profile at Medium Level WMV9 specifications.

Audio profile:

- The encoded audio matches the provisions for the WMABASE Profile defined in the audio 8.7.3 of these guidelines.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	WMV9 specifications	KZRER	

9.6.10 WMV AV format: Simple Profile at Medium Level with MP3

9.6.10.1

[PROFILES]

WMVSPML_MP3

9.6.10.2

[GUIDELINE] WMV audiovisual format shall abide by the following baseline characteristics.

Video profile:

- The encoded video matches the provisions for WMV Simple Profile at Low Level WMV9 specifications.

Audio profile:

- The encoded audio matches the provisions for DLNA's MP3 profile defined in guideline 8.5.1, except for a maximum bitrate constraint of 128 kbit/s.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	WMV9 specifications	TZAVE	

9.6.11 WMV AV format: Simple Profile at Low Level with WMA

9.6.11.1

[PROFILES]

WMVSPLL_BASE

9.6.11.2

[GUIDELINE] WMV audiovisual format shall abide by the following baseline characteristics.

Video profile:

- The encoded video matches the provisions for WMV Simple Profile at Low Level WMV9 specifications.

Audio profile:

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- The encoded audio matches the provisions for the WMABASE Profile defined in the audio 8.7.3 of these guidelines.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	WMV9 specifications	5C3Y3	

9.6.12 WMV AV format: ASF encapsulation and multiplex format for HTTP transfer

9.6.12.1

[PROFILES]

WMVMED_BASE
WMVMED_FULL
WMVMED_PRO
WMVHIGH_FULL
WMVHIGH_PRO
WMVHM_BASE
WMVSPLL_BASE
WMVSPML_BASE
WMVSPML_MP3

9.6.12.2

[GUIDELINE] For HTTP transfer a bitstream that is conformant to these profiles shall use the ASF encapsulation and multiplex interchange format defined in ASF.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ASF	C3Y33	

[COMMENT] ASF is the file interchange format for HTTP transfers of WMV content items.

9.6.13 WMV AV format: ASF operational procedures

9.6.13.1

[PROFILES]

WMVMED_BASE
WMVMED_FULL
WMVMED_PRO
WMVHIGH_FULL
WMVHIGH_PRO
WMVHM_BASE
WMVSPLL_BASE
WMVSPML_BASE
WMVSPML_MP3

9.6.13.2

[GUIDELINE] Rendering Endpoints that support WMV audiovisual format decoding should follow the recommendations for ASF operational procedures described in ASF for content transfer via HTTP.

[ATTRIBUTES]

S	C	DMP DMR	M-DMP M-DMD	n/a	ASF	35WC4	

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[COMMENT] ASF describes seek operations with ASF files. It also describes buffering operations for the decoding of ASF files.

9.6.14 WMV AV format: discovery of WMV version

9.6.14.1

[PROFILES]

WMVMED_BASE
WMVMED_FUL
L WMVMED_PRO
WMVHIGH_FULL
WMVHIGH_PRO
WMVHM_BASE
WMVSPLL_BASE
WMVSPML_BASE
WMVSPML_MP3

9.6.14.2

[GUIDELINE] A bitstream conformant with these profiles should contain the version of the ASF-encapsulated Windows Media Video content object in the "Compression ID" field in the "Stream Properties Object" of ASF headers. For example, a value of WMV3 indicates WMV v9 as defined in ASF and WMV9 specifications.

[ATTRIBUTES]

S	C	n/a	n/a	n/a	ASF WMV9 specifications	3XY8Y	

[COMMENT] For video streams the ASF Stream Properties Object carries data and headers to specify stream features, including a field called "Compression ID" which indicates the WMV version number.
For example, a value of WMV3 indicates WMV v9 as defined in ASF and WMV9 specifications.

9.6.15 WMV AV format: minimal implementation

9.6.15.1

[PROFILES]

WMVMED_BASE
WMVMED_FULL
WMVMED_PRO
WMVHIGH_FULL
WMVHIGH_PRO
WMVHM_BASE

9.6.15.2

[GUIDELINE] A Rendering Endpoint that supports the WMV Format Profiles listed in this entry shall be capable of decoding the WMVMED_BASE Profile in addition to any other Profile that it so chooses.

[ATTRIBUTES]

M	L	DMP DMR	M-DMP M-DMD	n/a	WMV9 specifications	X5KZR	

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[COMMENT] This guideline defines the minimal implementation expected from Rendering Endpoints that support WMV9.

9.6.16 WMV AV format: MIME type definition

9.6.16.1

[PROFILES]

WMVMED_BASE
WMVMED_FULL
WMVMED_PRO
WMVHIGH_FULL
WMVHIGH_PRO
WMVHM_BASE
WMVSPLL_BASE
WMVSPML_BASE
WMVSPML_MP3

9.6.16.2

[GUIDELINE] MIME type "video/x-ms-wmv" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	WMV9 specifications	RERW8	

9.7 VC-1 profiling guidelines

9.7.1 VC-1 AV format, system portion profile: PS_HD

9.7.1.1

[PROFILES]

VC1_PS_HD_DTS
VC1_PS_HD_DTSHD_HRA
VC1_PS_HD_DTSHD_MA
VC1_PS_HD_DTSHD

9.7.1.2

[GUIDELINE] Main characteristics of this VC1_PS_HD stream are defined in DVD Forum.

Main characteristics of VC-1 system stream are

System:

- MPEG-2 Program Stream.

Number of programs:

- 1

System bit rate:

- Up to 30,24 Mbit/s

[ATTRIBUTES]

M	R	n/a	n/a	n/a	DVD Forum	IRXUE	

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9.7.2 VC-1 AV format, video portion profile: PS_HD

9.7.2.1

[PROFILES]

VC1_PS_HD_DTS
VC1_PS_HD_DTSHD_HRA
VC1_PS_HD_DTSHD_MA
VC1_PS_HD_DTSHD

9.7.2.2

[GUIDELINE] Main characteristics of video shall be conformant to DVD Forum.

Main characteristics of VC-1 video streams are

Profiles and levels:

- Advanced Profile at L3 (HD)
- Advanced Profile at L2 (SD)

Table 148 shows the format resolutions for VC-1 AV.

Table 148 – VC-1 AV format resolutions

Resolution	Aspect ratio	Allowed frame rates
➢ 1 920 × 1 080	16:9	➢ 25p/50i ➢ 29,97p/59,94i
➢ 1 440 × 1 080	16:9	➢ 25p/50i ➢ 29,97p/59,94i
➢ 1 280 × 1 080	16:9	➢ 25p/50i ➢ 29,97p/59,94i
➢ 1 280 × 720	16:9	➢ 50p ➢ 59,94p
➢ 960 × 1 280	16:9	➢ 25p/50i ➢ 29,97p/59,94i
➢ 720 × 576	4:3, 16:9	➢ 25p/50i/50p
➢ 720 × 480	4:3, 16:9	➢ 29,97p/59,94i/59,94p
➢ 704 × 576	4:3, 16:9	➢ 25p/50i/50p
➢ 704 × 480	4:3, 16:9	➢ 29,97p/59,94i/59,94p
➢ 544 × 576	4:3, 16:9	➢ 25p/50i
➢ 544 × 480	4:3, 16:9	➢ 29,97p/59,94i
➢ 480 × 576	4:3, 16:9	➢ 25p/50i
➢ 480 × 480	4:3, 16:9	➢ 29,97p/59,94i
➢ 352 × 576	4:3, 16:9	➢ 25p/50i
➢ 352 × 480	4:3, 16:9	➢ 29,97p/59,94i

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Resolution	Aspect ratio	Allowed frame rates
➢ 352 × 288	4:3, 16:9	➢ 25p
➢ 352 × 240	4:3, 16:9	➢ 29,97p

[ATTRIBUTES]

M	R	n/a	n/a	n/a	DVD Forum	SFRUE	

9.7.3 VC-1 AV format, audio portion profile: PS_HD_DTS

9.7.3.1

[PROFILES]

VC1_PS_HD_DTS

9.7.3.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the DTS Digital Surround audio format profile as specified in 8.8.1.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	OQ4MT	

9.7.4 VC-1 AV format, audio portion profile: PS_HD_DTSHD_HRA

9.7.4.1

[PROFILES]

VC1_PS_HD_DTSHD_HRA

9.7.4.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the DTS-HD High Resolution audio format profile as specified in 8.9.1, except as indicated below.

Sampling rate:

- ➢ 44,1 kHz
- ➢ 48 kHz
- ➢ 88,2 kHz
- ➢ 96 kHz

Bit rates:

- Up to 3,019 5 Mbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	DVD Forum	ZK594	

9.7.5 VC-1 AV format, audio portion profile: PS_HD_DTSHD_MA

9.7.5.1

[PROFILES]

VC1_PS_HD_DTSHD_MA

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9.7.5.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of the DTS-HD Master audio format profile as specified in 8.9.2, except as indicated below.

Content audio channel modes:

- Maximum of 2 channels at a sampling rate of 176,4 kHz or 192 kHz

Bit rates:

- Up to 18,432 Mbit/s

[ATTRIBUTES]

M	L	n/a	n/a	n/a	DVD Forum	K594S	

9.7.6 VC-1 AV format, audio portion profile: PS_HD_DTSHD

9.7.6.1

[PROFILES]

VC1_PS_HD_DTSHD

9.7.6.2

[GUIDELINE] A bitstream conformant with this profile shall conform to all aspects of 9.7.3, 9.7.4, or 9.7.5.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	RXUE9	

9.7.7 VC-1 AV format, MIME type definition: PS_HD

9.7.7.1

[PROFILES]

VC1_PS_HD_DTS
VC1_PS_HD_DTSHD_HRA
VC1_PS_HD_DTSHD_MA
VC1_PS_HD_DTSHD

9.7.7.2

[GUIDELINE] MIME type "video/mpeg" shall be used for this Media Format Profile.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	FRUEL	

9.7.8 VC-1 AV format, system portion profile: TS_AP

9.7.8.1

[PROFILES]

VC1_TS_AP_L1_WMA_ISO
VC1_TS_AP_L2_WMA_ISO
VC1_TS_AP_L1_AC3_ISO
VC1_TS_AP_L2_AC3_ISO

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9.7.8.2

[GUIDELINE] Main characteristics of this VC1_AP_TS stream are defined in ISO/IEC 13818-1 and SMPTE RP227.

Main characteristics of VC-1 system stream are

System:

- Partial Single Program Transport Stream (SPTS)

Number of programs:

- 1 as defined for a Partial Single Program Transport Stream.

Number of ES

- Video ES: 1
- Audio ES: less than or equal to 4.

Other ES

- Other ES may be included in the multiplexed stream (e.g., data streams, etc.).

System bit rate:

- Up to 24 Mbit/s

Packet format:

- 188 B packets as defined in ISO/IEC 13818-1

PSI and SI tables:

- PAT and PMT are required in the multiplexed stream.
- The maximum time interval for the PAT and PMT is 200 ms.

DIT

- DIT shall be inserted if the bit stream includes PCR/SCR discontinuities

[ATTRIBUTES]

M	L	n/a	n/a	n/a	ISO/IEC 13818-1 SMPTE RP227	Q4MTE	

[COMMENT] The actual system bitrate of an instance of this profile depends on the source from which the multiplexed DTV stream originates (the maximum bit rate is defined by each of the different DTV standards).

9.7.9 VC-1 AV format, system portion profile: TS_HD

9.7.9.1

[PROFILES]

VC1_TS_HD_DTS_T
VC1_TS_HD_DTS_ISO
VC1_TS_HD_DTSHD_HRA_T
VC1_TS_HD_DTSHD_HRA_ISO

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VC1_TS_HD_DTSHD_MA_T
VC1_TS_HD_DTSHD_MA_ISO

9.7.9.2

[GUIDELINE] Main characteristics of this VC1_TS_HD stream are defined in BDA.

Main characteristics of VC-1 system stream are

System:

- MPEG-2 Partial Transport Stream.

Stream Structure:

- The PAT of streams shall contain a single program map PID.
- The PMT of streams shall contain a single program at one time.

System bit rate:

- Up to 48 Mbit/s

[ATTRIBUTES]

M	R	n/a	n/a	n/a	BDA	XUE92	

9.7.10 VC-1 AV format, system portion profile: ASF_AP

9.7.10.1

[PROFILES]

VC1_ASF_AP_L1_WMA
VC1_ASF_AP_L2_WMA

9.7.10.2

[GUIDELINE] For HTTP transfers, bit streams conformant with these profiles shall use the ASF encapsulation and interchange format defined in ASF.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	ASF	RUEL9	

9.7.11 VC-1 AV format: video portion profile: AP_L1

9.7.11.1

[PROFILES]

VC1_TS_AP_L1_AC3_ISO
VC1_TS_AP_L1_WMA_ISO
VC1_ASF_AP_L1_WMA

9.7.11.2

[GUIDELINE] Main characteristics of video shall be conformant to SMPTE 421M.

Main characteristics of VC-1 video streams are

Profile and level:

- Advanced Profile at Level 1

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Chroma:

- 4:2:0

[ATTRIBUTES]

M	R	n/a	n/a	n/a	SMPTE 421M	4MTET	

9.7.12 VC-1 AV format, video portion profile: TS_HD

9.7.12.1

[PROFILES]

VC1_TS_HD_DTS_T
VC1_TS_HD_DTS_ISO
VC1_TS_HD_DTSHD_HRA_T
VC1_TS_HD_DTSHD_HRA_ISO
VC1_TS_HD_DTSHD_MA_T
VC1_TS_HD_DTSHD_MA_ISO

9.7.12.2

[GUIDELINE] Main characteristics of video shall be conformant to BDA.

Main characteristics of VC-1 video streams are

Profile:

- Advanced Profile

Level:

- Level 3 in case of 1 920 × 1 080, 1 440 × 1 080, and 1 280 × 720
- Level 2 in case of 720 × 480 and 720 × 576

Table 149 shows the format resolutions for VC-1 AV.

Table 149 – VC-1 AV format resolutions

Resolution	Aspect ratio	Allowed frame rates
➢ 1 920 × 1 080	16:9	➢ 23,976p ➢ 24p ➢ 50i ➢ 59,94i
➢ 1 440 × 1 080	16:9	➢ 23,976p ➢ 24p ➢ 50i ➢ 59,94i
➢ 1 280 × 720	16:9	➢ 23,976p ➢ 24p ➢ 50p ➢ 59,94p
➢ 720 × 576	4:3, 16:9	➢ 50i
➢ 720 × 480	4:3, 16:9	➢ 59,94i

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[ATTRIBUTES]

M	R	n/a	n/a	n/a	BDA	UEL9J	

9.7.13 VC-1 AV format: video portion profile: AP_L2

9.7.13.1

[PROFILES]

VC1_TS_AP_L2_AC3_ISO
VC1_TS_AP_L2_WMA_ISO
VC1_ASF_AP_L2_WMA

9.7.13.2

[GUIDELINE] Main characteristics of video shall be conformant to SMPTE 421M.

Main characteristics of VC-1 video streams are

Profile and level:

- Advanced Profile at Level 2

Chroma:

- 4:2:0

[ATTRIBUTES]

M	R	n/a	n/a	n/a	SMPTE 421M	594SM	

9.7.14 VC-1 AV format: audio portion profile: AC3

9.7.14.1

[PROFILES]

VC1_TS_AP_L1_AC3_ISO
VC1_TS_AP_L2_AC3_ISO

9.7.14.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the AC 3 Audio Format, as specified in 8.1.1.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	MTETV	

9.7.15 VC-1 AV format: audio portion profile: TS_HD_DTS

9.7.15.1

[PROFILES]

VC1_TS_HD_DTS_T
VC1_TS_HD_DTS_ISO

9.7.15.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the DTS Digital Surround audio format as specified in 8.1.1, except as indicated below.

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Sampling rate

- 48 kHz
- 96 kHz

[ATTRIBUTES]

M	L	n/a	n/a	n/a	BDA	UE928	

9.7.16 VC-1 AV format: audio portion profile: TS_HD_DTSHD_HRA

9.7.16.1

[PROFILES]

VC1_TS_HD_DTSHD_HRA_T
VC1_TS_HD_DTSHD_HRA_ISO

9.7.16.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the DTS-HD High Resolution audio format as specified in 8.9.1, except as indicated below.

Sampling rate

- 48 kHz
- 96 kHz

[ATTRIBUTES]

M	L	n/a	n/a	n/a	BDA	94SM7	

9.7.17 VC-1 AV format, audio portion profile: TS_HD_DTSHD_MA

9.7.17.1

[PROFILES]

VC1_TS_HD_DTSHD_MA_T
VC1_TS_HD_DTSHD_MA_ISO

9.7.17.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the DTS-HD Master Audio Format as specified in 8.9.2, except as indicated below.

Sampling rate

- 48 kHz
- 96 kHz
- 192 kHz

Content audio channel modes

- Maximum of 6 channels at a sampling rate of 192 kHz.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	BDA	E928R	

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9.7.18 VC-1 AV format: audio portion profile: WMA

9.7.18.1

[PROFILES]

VC1_TS_AP_L1_WMA_ISO
VC1_TS_AP_L2_WMA_ISO
VC1_ASF_AP_L1_WMA
VC1_ASF_AP_L2_WMA

9.7.18.2

[GUIDELINE] A bitstream conformant with these profiles shall conform to all aspects of the WMA Format: Full Profile, as specified in 8.7.4.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	4SM76	

9.7.19 VC-1 AV format, MIME type definition: TS, TS_T

9.7.19.1

[PROFILES]

VC1_TS_HD_DTS_T
VC1_TS_HD_DTSHD_HRA_T
VC1_TS_HD_DTSHD_MA_T

9.7.19.2

[GUIDELINE] MIME type "video/vnd.dlna.mpeg-tts" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	EL9J7	

9.7.20 VC-1 AV format, MIME type definition: TS_ISO

9.7.20.1

[PROFILES]

VC1_TS_AP_L1_WMA_ISO
VC1_TS_AP_L2_WMA_ISO
VC1_TS_AP_L1_AC3_ISO
VC1_TS_AP_L2_AC3_ISO
VC1_TS_HD_DTS_ISO
VC1_TS_HD_DTSHD_HRA_ISO
VC1_TS_HD_DTSHD_MA_ISO

9.7.20.2

[GUIDELINE] MIME type "video/mpeg" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	TETV6	

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9.7.21 VC-1 AV format: system portion profile

9.7.21.1

[PROFILES]

ADA_VC1_ASF_AP_L2_WMA

9.7.21.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the system portion of the VC1_ASF_AP_L2_WMA profile as defined in 9.7.10.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	RDTDP	N

9.7.22 VC-1 AV format: video portion profile: Adaptive AP_L2

9.7.22.1

[PROFILES]

ADA_VC1_ASF_AP_L2_WMA

9.7.22.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the video portion of the VC1_ASF_AP_L2_WMA profile (called the nominal profile) as defined in 9.7.13, except as indicated below.

Dynamic range for video bitrates

- The bitrate for this profile can change dynamically over time between a minimum bitrate of 100 kbit/s and the maximum bitrate defined for the nominal profile.

Dynamic range for frame rates

- The frame rate for this profile can change dynamically with time between a minimum frame rate of 1 fps and the maximum frame rate defined for the nominal profile.

Frame encoding mode

- The frame encoding mode (progressive or interlaced) for this profile is the same as the one defined for the nominal profile. The frame encoding mode shall not change with time.

Dynamic range for resolutions

- The frame resolution for this profile can change dynamically with time between a minimum resolution of 176 × 144 (QCIF) and the maximum resolution defined for the nominal profile.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	n/a	8PUZE	N

[COMMENT] The primary difference of this profile (compared to other VC-1 profiles) is that the magnitude of the bitrate change can be much greater. Adaptive profiles like the one described here are used in the context of network congestion. A source device that sends a bitstream can adjust the bitrate, frame rate, and resolution to compensate for bandwidth fluctuations in the network. In this way, a receiving device can acquire the content without congestion delays. The content can be rendered as soon as the packets arrive for immediate consumption. The bitrate changes are an encoder-side decision, and bitrate changes occur at GOP boundaries.

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9.7.22.3

[GUIDELINE] A Rendering Endpoint may not be capable of providing seamless rendering of content at bitrate changes within the content bitstream.

[ATTRIBUTES]

O	A	DMP DMR	M-DMP M-DMD	n/a	n/a	OD8L9	N

[COMMENT] This guideline provides implementation guidance to Rendering Endpoint vendors that decoding content at bitrate changes could lead to a momentary hiccup in picture and/or audio quality in the bitstream playback. Obviously, it is desirable for Rendering Endpoints to provide seamless rendering of content at bitrate changes, but it is not a mandated requirement.

9.7.23 VC-1 AV format: audio portion profile: WMA

9.7.23.1

[PROFILES]

ADA_VC1_ASF_AP_L2_WMA

9.7.23.2

[GUIDELINE] A bitstream conformant with this profile shall conform to the audio portion of the VC1_ASF_AP_L2_WMA profile as specified in section 9.7.18.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	2BK3D	N

9.7.24 VC-1 AV Format, MIME Type Definition: ASF

9.7.24.1

[PROFILES]

VC1_ASF_AP_L1_WMA
VC1_ASF_AP_L2_WMA
ADA_VC1_ASF_AP_L2_WMA

9.7.24.2

[GUIDELINE] MIME type "video/x-ms-asf" shall be used for these Media Format Profiles.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	n/a	L9J7L	

10 Printing Class Media Format Profiles

10.1 General

Printer devices are classified as Rendering Endpoints that support the Image Media Class. These devices belong to the Home Network Device (HND) category. As such, the DLNA interoperability model described in Clause 6 applies well to these devices. In addition to the minimal content interoperability guidelines described in Clause 6, printer devices require additional features to enable the exchange of content for the purpose of printing.

This clause describes the additional features as well as additional media format guidelines that improve the functionality of home networked printers.

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10.2 Generic Printing profiling guidelines
MF Printing Class: profile parameter sets

10.2.1

[PROFILES]

All XHTML Printing Profiles

10.2.2

[GUIDELINE] Serving Endpoints that serve XHTML-Print documents shall use the correct Profile ID for the XHTML-Print document.

[ATTRIBUTES]

M	A	+PR1+ +PR2+	n/a	n/a	n/a	X7J8W	

[COMMENT] For +PR1+ and +PR2+, this means that the proper profile ID needs to be used (in the contentFeatures.dlna.org HTTP header) for the XHTML-Print document.

For more information, see the following guidelines in IEC 62481-1:2013.

- Subclause 7.4.1.3.17
- Subclause 7.5.4.3.2.10.1.

DLNA guidelines only define the scenarios where a Printer controller, either +PR1+ or +PR2+, is the source of XHTML-Print documents. XHTML-Print documents from other sources are not prohibited but out of scope of this standard.

PNG/JPEG images referred in the XHTML-Print document will be managed by either a UPnP Printer control point (+PR1+) or a DMS. DLNA guidelines only define the scenarios where the images are thus managed. Images from other sources are not prohibited but are out of scope of this standard.

10.2.3

[GUIDELINE] Rendering Endpoints that claim to decode content identified with a particular Profile ID shall be *capable of rendering* any of the defined Profile Parameter Sets of such a Profile ID.

Capable of rendering means that images and layout used in the XHTML-Print document is rendered by the Printing Device, as defined in XHTML-Print Test.

This guideline only applies to the referenced images that belong to the restricted set of DLNA image format profiles. Specifically, the Rendering Endpoints are only required to properly render images that are listed explicitly as the normative image format profiles for an XHTML profile definition.

[ATTRIBUTES]

M	A	DMPr	n/a	n/a	XHTML-Print Test	TQRY7	E

[COMMENT] For DMPr devices this means that the printer needs to properly print an XHTML layout if the printer claims support for the layout.

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10.2.4

[GUIDELINE] Rendering Endpoints shall tolerate images that are not part of the normative image format profiles for a given XHTML profile definition that allows additional image format profiles.

Tolerate is defined as either "parse and print" or "parse and ignore" behavior.

[ATTRIBUTES]

M	A	DMPr	n/a	n/a	n/a	M9RDG	

10.2.5

[GUIDELINE] Rendering Endpoints that support rendering an XHTML-Print document profile shall also support rendering all less complex XHTML-Print document profiles.

The complexity ordering (listed from most complex to least complex) is defined as follows: XHMTL_ALL, XHMTL_Complex, XHTML_PT, XHTML_Baseline.

[ATTRIBUTES]

M	A	DMPr	n/a	n/a	n/a	7J8W7	

10.2.6

[GUIDELINE] An Endpoint that assigns a DLNA XHTML format profile ID to a document should assign the ID for the least complex format profile to which the document conforms. The complexity ordering is the same as in guideline 10.2.5.

[ATTRIBUTES]

S	A	+PR1+ +PR2+	n/a	n/a	n/a	9RDG7	

[COMMENT] A ContentFeature.dlna.org header preferably has the profile that the Printer Controller intends to use. For example, when a Printer Controller is going to generate the document in a 1-up layout, and if the referenced image supports the RANGE header, it can assign the XHTML_PT profile to the document without examining if the image size is larger than 4 MiB.

10.3 XHTML profiling guidelines

10.3.1 XHTML format

10.3.1.1

[PROFILES]

XHTML_ALL

10.3.1.2

[GUIDELINE] An XHTML document that conforms to the XHTML_ALL profile shall conform to the following guidelines.

- The XHTML document shall conform to the requirements specified in W3C XHTML-Print.
- In XHTML_ALL there is no limit placed on the number of images that the printer shall support.
- The normative image format profiles for this XHTML profile are: JPEG_SM, JPEG_MED, JPEG_LRG, PNG_LRG, and any image permitted by Test Assertion 68, in XHTML-Print Test.

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  - Using PNG_LRG shall be governed by restrictions in 7.4.2.3.5 in IEC 62481-1:2013.
- All absolute URIs within the document shall use IP addresses (not host names).
- The length of the XHTML-Print document shall be less than or equal to 262144 B (256 KiB)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	W3C XHTML-Print IEC 62481-1 XHTML-Print Test	RDG78	C

[COMMENTS]

a) This profile represents the entire set of layouts and printing possibilities for XHTML-Print. Testing for adherence to this profile will be by running the test suite specified in XHTML-Print Test.

b) In addition to requiring support for the JPEG_SM, JPEG_MED, and JPEG_LRG image format profiles, XHTML-Print Test also requires printers to support additional variants of the JPEG family of images. These additional variants are not defined by the DLNA guidelines at this time, but a DMPr needs to pass all test assertions, as required by this guideline. Future XHTML profiles should inherit from this profile.

c) According to guideline 7.4.2.3.5.3 (GUN 5I6YX) in IEC 62481-1:2013, before using a PNG image, the printer controller is required to test the printer for support of PNG.

10.3.1.3

[GUIDELINE] An XHTML_ALL may reference images that do not conform to a DLNA media format profiles or DLNA media format profiles that are defined in a newer set of guidelines.

This guideline works in conjunction with 10.2.3 (Profile Parameter Sets), meaning that rendering devices are only required to properly print the images that match one of the normative image format profiles listed in 10.3.1.2. Tolerance of unsupported images is required by 10.2.4 for all XHTML profiles.

[ATTRIBUTES]

O	C	n/a	n/a	n/a	n/a	J8W7Q	E

[COMMENT] In other words, XHTML_ALL can reference images that do not conform to a media format profile that a DMPr is able to support. The DMPr is only required to print the JPEG_SM, JPEG_MED, JPEG_LRG, and any images that are covered by Test Assertion 68, as defined in XHTML-Print Test. In scenarios involving PNG images, the DMPr is only required to print those images if it claims support for PNG, as described in 7.4.2.3.5 of IEC 62481-1:2013.

10.3.1.4

[GUIDELINE] The CSS size property shall conform to CSS3 Paged Media Module.

[ATTRIBUTES]

M	R	n/a	n/a	n/a	CSS3 Paged Media Module	RY72U	

[COMMENT] The CSS size property needs to follow the definition in CSS3 Paged Media Module which is referred to by CSS Print Profile. Note that the definition of size property in CSS3 Paged Media Module 3.3.2 is more precise than the definition in CSS Print Profile.

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The following CSS size property values are defined in CSS3 Paged Media Module,

A5, A4, A3, B5, B4, letter, legal and ledger.

The other media sizes such as na_index-4x6_4x6in are declared using width-height specification, e.g. "@page { size: 4in 6in; }".

10.3.1.5

[GUIDELINE] The CSS size property for the landscape media size in the CSS shall be as follows.

- If the size literal for the media size is defined in CSS3 Paged Media Module, the landscape media size shall be described as the size literal followed by the landscape literal. e.g. "@page { size:letter landscape; }".
- Otherwise, the landscape media size shall be described so that the width has the height value of the original media size and vice versa, e.g. "@page { size: 148mm 100mm; }".

[ATTRIBUTES]

M	C	n/a	n/a	n/a	CSS3 Paged Media Module	DG786	

10.3.1.6

[GUIDELINE] The landscape media size in the CSS should be used if using landscape media size would decrease the number of images whose image-orientation values are 180 ° or 270 °.

For example, to print a landscape image data into a letter medium in a 1in1 fashion as defined in the Photo Template#1 XHTML Photo Templates, using "@page { size:letter landscape; }" is recommended since the image DIV box in the CSS would not have 270 ° image-orientation.

[ATTRIBUTES]

S	L	n/a	n/a	n/a	CSS3 Paged Media Module	727ZC	

[COMMENT] Some photo templates are intended to be viewed in a landscape fashion. Template #1: Borderless 8-1/2 × 11 in (Landscape) and Template #8: 4-up Landscape 3-1/2 × 5 in defined in XHTML Photo Templates are good examples. In order to achieve those layouts, there are two approaches of specifying page orientation in an XHTML-Print document.

Assume a landscape photo is printed on a Letter size paper:

- to print as a portrait-oriented page, use the following combination of page orientation and image orientation
  - "size" property: "letter",
  - "image-orientation" of the image: 270deg;

(By default the page orientation is "portrait" if it is not explicitly defined in the "size" property.)

- to print as a landscape-oriented page , use the following combination of page orientation and image orientation
  - "size" property: "letter landscape",
  - image-orientation: 0deg (Note that a DMPr might rotate the image clockwise 90 ° in it.).

In most cases, the printed outputs of the above two approaches make no difference to the user. All Photo Templates defined in XHTML Photo Templates take the first approach. However, it

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would often take a longer time to finish a printing job in the first way since rotating a JPEG image by +270 ° is less efficient than rotating it by 90 ° for JPEG image decoding due to the JPEG data structure.

In general, in order to increase efficiency, for the portrait media size, 0 ° or 90 ° image-orientation is preferable, and for the landscape media size, 0 ° or 270 ° image-orientation is preferable.

Therefore, it is urged to utilize the second approach in this example.

This rule is applied to 1-up and 4-up photo layouts: (identified numbers) 1-3, 8, 11-14, 16-21, 28, 30-32, 34-37, 43, 45-47, 49-51, 53-54 of XHTML Photo Templates.

10.3.2 XHTML format

10.3.2.1

[PROFILES]

XHTML_Complex

10.3.2.2

[GUIDELINE] An XHTML document that conforms to the XHTML_Complex profile shall conform to the following guidelines.

The XHTML document shall conform to all requirements of XHTML_ALL with the following additional constraints:

- the XHTML document shall contain only references to JPEG_SM, JPEG_MED, JPEG_LRG, and PNG_LRG images. All other image profiles are prohibited.
  - Using PNG_LRG shall be governed by restrictions in 7.4.2.3.5 of IEC 62481-1:2013;
- the number of image references per page shall be between 1 and 100 references, inclusive if the images are non-overlapping;
- if any two or more images overlap then the number of images on a page is limited to 20.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	JTKS7	

[COMMENTS]

a) XHTML_Complex is intended to be a robust set of document layouts, while still constraining the set of options to only DLNA JPEG or PNG image formats and to a maximum of 100 non-overlapping images.
The non-overlapping case is intended to cover applications that want to print thumbnails of several images on a page.
The overlapping case covers more artistic page layouts where images on the page are intentionally overlapping.

b) Before using a PNG image, the printer controller tests the printer for support of PNG – see guideline 7.4.2.3.5.3 (GUN 5I6YX) in IEC 62481-1:2013.

10.3.3 XHTML format

10.3.3.1

[PROFILES]

XHTML_PT

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10.3.3.2

[GUIDELINE] An XHTML document that conforms to the XHTML_PT profile shall conform to the following guidelines.

The XHTML document shall conform to all requirements of XHMTL_Complex with the following additional constraints defined.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	TBNT2	

[COMMENT] The XHTML_PT defines a profile definition that generalizes the photo templates available in XHTML Photo Templates for arbitrary paper sizes.
Furthermore, Printer controllers are also permitted to deviate from the photo templates, so long as the guidelines restrictions are not violated. In such scenarios, a DMPr is also expected to print those types of layouts.

10.3.3.3

[GUIDELINE] This guideline no longer applies.

[ATTRIBUTES]

						AY8C5	

10.3.3.4

[GUIDELINE] This guideline no longer applies.

[ATTRIBUTES]

						M785W	

10.3.3.5

[GUIDELINE] This guideline no longer applies.

[ATTRIBUTES]

						XLTYD	

10.3.3.6

[GUIDELINE] This guideline no longer applies.

[ATTRIBUTES]

						WKWY4	

10.3.3.7

[GUIDELINE] This guideline no longer applies.

[ATTRIBUTES]

						VWJZ9	

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10.3.3.8

[GUIDELINE] This guideline no longer applies.

[ATTRIBUTES]

						785WQ	

10.3.3.9

[GUIDELINE] This guideline no longer applies.

[ATTRIBUTES]

						Y8C53	

10.3.3.10

[GUIDELINE] This guideline no longer applies.

[ATTRIBUTES]

						WJZ9B	

10.3.3.11

[GUIDELINE] This guideline no longer applies.

[ATTRIBUTES]

						FWYDV	

10.3.3.12

[GUIDELINE] The margin shall not be specified beyond the capability of the printing.

[ATTRIBUTES]

M	C	n/a	n/a	n/a	CSS Print Profile	DYLY5	

[COMMENTD]

a) XHTML_PT does not define minimum margins.
DMPr does not have to guarantee margins defined in CSS Print Profile. E.g. some printers might not support FullBleed printing. The Print Controller has to adjust margins into acceptable values for the printer.

b) Zero-margin in a 1 up layout is available if PE:GetMargins returns FullBleedSupported "1", even if it also returns non-zero margins as repeated in 7.4.2.3.12 of IEC 62481-1:2013.

10.3.3.13

[GUIDELINE] This guideline no longer applies.

[ATTRIBUTES]

						XDYLY	

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10.3.3.14

[GUIDELINE] This guideline no longer applies.

[ATTRIBUTES]

						WYDVF	

10.3.3.15

[GUIDELINE] This guideline no longer applies.

[ATTRIBUTES]

						DVF7Q	

10.3.3.16

[GUIDELINE] This guideline no longer applies.

[ATTRIBUTES]

						Z9B4O	

10.3.3.17

[GUIDELINE] The number of images per page shall be less than or equal to 8. This is further constrained by guideline 10.3.3.22.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	CSS Print Profile XHTML Photo Templates	JZ9B4	

[COMMENT] 0-8-up is always guaranteed if a media size is supported. For example, if A6 paper is supported, 4-up in the A6 paper is allowed though only 1-up and 2-up are described in the photo template specification XHTML Photo Templates.

10.3.3.18

[GUIDELINE] This guideline no longer applies.

[ATTRIBUTES]

						LY5QE	

10.3.3.19

[GUIDELINE] This guideline no longer applies.

[ATTRIBUTES]

						YDVF7	

10.3.3.20

[GUIDELINE] This guideline no longer applies.

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[ATTRIBUTES]

						5WQUA	

10.3.3.21

[GUIDELINE] This guideline no longer applies.

[ATTRIBUTES]

						TYD75	

10.3.3.22

[GUIDELINE] Photo placement shall adhere to the following guidelines.

- Given any point, x_pos, along the *x*-axis of the page, the number of images that cross vert_line shall be same or less than that of the used photo template. The vert_line is a vertical line that crosses the *x*-axis at x_pos.
- Given any point, y_pos, along the y-axis of the page, the number of images that cross horiz_line shall be the same or less than that of the used photo template. The horiz_line is a horizontal line that crosses the *y*-axis at y_pos.

The *x*-axis and *y*-axis mentioned in the above bullets shall apply to a page that is viewed in portrait orientation, even if the photos themselves are rotated. (i.e. the long edge of the page is always considered the *y*-axis, regardless of image rotations, page size, XHTML/CSS directives that specify portrait or landscape orientations, and how the paper is fed into the printer.)

[ATTRIBUTES]

M	L	n/a	n/a	n/a	CSS Print Profile XHTML Photo Templates	85WQU	

10.3.3.23

[GUIDELINE] This guideline no longer applies.

[ATTRIBUTES]

						YD75F	

10.3.3.24

[GUIDELINE] This guideline no longer applies.

[ATTRIBUTES]

						8C535	

10.3.3.25

[GUIDELINE] This guideline no longer applies.

[ATTRIBUTES]

						NT22B	

10.3.3.26

[GUIDELINE] This guideline no longer applies.

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[ATTRIBUTES]

						C535K	

10.3.3.27

[GUIDELINE] This guideline no longer applies.

[ATTRIBUTES]

						T22BS	

10.3.3.28

[GUIDELINE] This guideline no longer applies.

[ATTRIBUTES]

						7ZCYA	

10.3.3.29

[GUIDELINE] This guideline no longer applies.

[ATTRIBUTES]

						Y72UW	

10.3.4 XHTML format

10.3.4.1

[PROFILES]

XHTML_Baseline

10.3.4.2

[GUIDELINE] An XHTML document that conforms to the XHTML_Baseline profile shall conform to the following guidelines.

The XHTML document shall conform to all requirements of XHMTL_PT with the following additional constraints

- the XHTML document shall contain exactly one image reference.

[ATTRIBUTES]

M	L	n/a	n/a	n/a	n/a	TKS77	

[COMMENT] XHTML_Baseline is the simplest format profile, a single image positioned on a page in any rotation and scaling matching these 1 up photo printing templates (identified by number): 1-3, 11-14, 16-21, 30-32, 34-37, 45-47, 49-51, 53-54 of XHTML Photo Templates.

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11 Media Collection profile guidelines: DIDL-Lite Playlist format

11.1 DIDL_S Media Collection format profile

[GUIDELINE] A content object conformant with this profile shall adhere to the following requirements. The MIME type shall be "text/xml". The DLNA Media Format Profile ID shall be "DIDL_S".

Encoding:

XML document with UTF-8 encoding

Schema:

Complies with the DIDL-Lite schema

Allowed tags (all other XML elements shall not be used):

<DIDL-Lite>

Shall be the top-level element

Exactly one <DIDL-Lite> in a playlist file

<container>

Minimum of zero <container> elements

Maximum of one <container> element

Element shall be a child of <DIDL-Lite>

<item>

Shall be a child of <DIDL-Lite> or <container>

<dc:title>

<dc:creator>

<upnp:class>

<upnp:album>

<res>

URI shall not be for another media collection

URI shall not be a DLNA PlayContainer URI

URI is allowed to be for audio, audio/video, or image content

URI shall not be a DLNA PlaySingle URI

<dlna:lifetime>

Minimum of zero <dlna:lifetime> elements

Maximum of one <dlna:lifetime> element

This element shall be used as defined by requirement 11.1.3.

NOTE 1 This profile allows all XML attributes (of the allowed tags listed above) that are defined by DIDL-Lite or by DLNA.

NOTE 2 The encoding restrictions and maximum length of each metadata element or attribute value is determined by IEC 62481-1:2013, 7.4:

guideline 7.4.1.3.3,

guideline 7.4.1.4.1,

guideline 7.4.1.3.10.

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NOTE 3 Each object ID is a unique value within the DIDL_S media collection file (i.e. the scope of the uniqueness on object ID defined in this guideline is only within the DIDL_S media collection file, so there can be the same object ID in the CDS metadata hierarchy or other media collection files.)

NOTE 4 Each <item> is allowed to have one or more <res> elements to accommodate multiple content conversions and/or transport protocols.

NOTE 5 Each <item> is allowed to have one or more <res> elements with URI values associated with different IP address than the media collection file (e.g. an <item> can have two <res> elements for the same content with different IP addresses).

NOTE 6 Unless specified otherwise, DIDL_S inherits all mandatory, recommended, and optional DLNA guidelines that govern the syntax, semantics, and usage of metadata properties (XML elements and attributes) and DIDL-Lite. Any guidelines specific to DIDL_S apply only in the context of DIDL_S documents.

NOTE 7 If a Rendering Endpoint supports DIDL_S and a given DLNA media format profile (for image, audio-only, or audio/video), then the Rendering Endpoint shall be able to render such content when referenced in a DIDL_S file.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 14496-2	KS773	C

[COMMENTS]

a) This is the simplest profile of the DIDL-Lite media format profiles defined by DLNA. This profile essentially restricts the media collection file to a flat list of <item> elements with a limited subset of user metadata for title, creator, and album.
In general, DIDL_S inherits all of the rules that apply to CDS metadata. There are a few exceptions, including:

   CDS:Search and CDS:Browse responses are flat lists of <item> and <container> elements. DIDL_S allows for a single top-level <container> element with child <item> elements. This allows the DIDL_S document to have title and creator metadata for the media collection itself.

   DIDL_S is generally restrictive. This means that DIDL_S does not allow the full syntax for metadata that is allowed by ContentDirectory responses.

   DIDL_S allows for multiple <res> elements to handle the scenario when content is available on multiple IP addresses. This is similar to the behavior enabled by the ALLIP Filter value when calling CDS:Browse or CDS:Search.

b) Rendering Endpoints are not required to support the playback of the DIDL_S file format. Rendering Endpoints that do support playback of the DIDL_S media format profile are only required to render content if the Rendering Endpoint claims support for the DLNA media format profile.

11.2 DIDL_V Media Collection format profile

[GUIDELINE] A content object conformant with this profile shall adhere to the following requirements. The MIME type shall be "text/xml". The DLNA Media Format Profile ID shall be "DIDL_V".

Encoding:

   XML document with UTF-8 encoding

Schema:

   Complies with the DIDL-Lite schema

Allowed tags:

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<DIDL-Lite>

Shall be the top-level element

Exactly one <DIDL-Lite> in a playlist file

<container>

Minimum of zero <container> elements

Maximum of one <container> element

Element shall be a child of <DIDL-Lite>

<item>

Shall be a child of <DIDL-Lite> or <container>

<res>

URI shall not be for another media collection

URI shall not be a DLNA PlayContainer URI

URI is allowed to be for audio, audio/video, or image content

URI is allowed to be a DLNA PlaySingle URI

<dlna:lifetime>

Minimum of zero <dlna:lifetime> elements

Maximum of one <dlna:lifetime> element

This element shall be used as defined by requirement 11.3.1.

<dlna:NextPlaylist>

Minimum of zero <dlna:NextPlaylist>

Maximum of one <dlna:NextPlaylist>

Presence of this element does not imply the presence of <dlna:PreviousPlaylist>

The value shall be a non-empty URI, with a maximum length of 1 024 B. The URI shall point to another DIDL_V playlist file.

Shall be the last child element under <DIDL-Lite>

This element instructs the Rendering Endpoint to replace the current *AVT.AVTransportURI* value to the specified playlist value. In general, Rendering Endpoints interpret this element as an instruction to unload the current playlist (when finished rendering the current playlist) and to load the playlist indicated by the URI.

The namespace of the element shall be declared and it shall be "urn:schemas-dlna-org:metadata-1-0/"

<dlna:PreviousPlaylist>

Minimum of zero <dlna:PreviousPlaylist>

Maximum of one <dlna:PreviousPlaylist>

Presence of this element does not imply the presence of <dlna:NextPlaylist>

The value shall be a non-empty URI, with a maximum length of 1 024 B. TheURI shall point to another DIDL_V playlist file.

Shall be the first child element under <DIDL-Lite>

This element instructs the Rendering Endpoint to replace the current *AVT.AVTransportURI* value to the specified playlist value. In general, Rendering Endpoints interpret this element as an instruction to unload the current playlist (when attempting to render content from the previous playlist) and to load the playlist indicated by the URI.

The namespace of the element shall be declared and it shall be "urn:schemas-dlna-org:metadata-1-0/"

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All other XML element or attributes are allowed, so long as the namespace is properly declared and the usage does not conflict with the DIDL_V restrictions for using the above tags.

NOTE 1 The encoding restrictions and maximum length of each metadata element or attribute value is determined by IEC 62481-1:2013, 7.4.

guideline 7.4.1.3.3,

guideline 7.4.1.4.1,

guideline 7.4.1.3.10.

NOTE 2 Each object ID is a unique value within the DIDL_V media collection file (i.e. the scope of the uniqueness on object ID defined in this guideline is only within the DIDL_V media collection file, so there can be the same object ID in the CDS metadata hierarchy or other media collection files).

NOTE 3 Each <item> is allowed to have one or more <res> elements to accommodate multiple content conversions and/or transport protocols.

NOTE 4 Each <item> is allowed to have one or more <res> elements with URI values associated with different IP address than the media collection file (e.g. an <item> can have two <res> elements for the same content with different IP addresses).

NOTE 5 Unless specified otherwise, DIDL_V inherits all mandatory, recommended, and optional DLNA guidelines that govern the syntax, semantics, and usage of metadata properties (XML elements and attributes) and DIDL-Lite. Any guidelines specific to DIDL_V apply only in the context of DIDL_V documents.

NOTE 6 If a Rendering Endpoint supports DIDL_V and a given DLNA media format profile (for image, audio-only, or audio/video), then the Rendering Endpoint is able to render such content when referenced in a DIDL_V file.

NOTE 7 If a Rendering Endpoints support DIDL_V, then it is able to dereference a DLNA PlaySingle URI and render the content if the res@protocolInfo value identifies a DLNA media format profile that is supported by the Rendering Endpoint.

NOTE 8 If a Rendering Endpoint supports DIDL_V, then it is able to load DIDL_V playlist files when referenced in <dlna:NextPlaylist> and <dlna:PreviousPlaylist>. If present, <dlna:NextPlaylist> is loaded when

a) attempting to seek to a track index that is greater than the total number of items in the DIDL_V file

b) attempting to do a Next track operation beyond the last playlist item, or

c) the Rendering Endpoint finishes playing all items in the playlist file.

If present, <dlna:PreviousPlaylist> is loaded when attempting to do a Previous track operation beyond the first playlist item.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 14496-2	27ZCY	C

[COMMENTS]

a) DIDL_V shares some similarities with DIDL_S.
DIDL_V has the same rules as DIDL_S for use of the <DIDL-Lite>, <container>, and <item> elements.
DIDL_V has the same rules as DIDL_S for using multiple <res> elements for content that is available on multiple IP addresses.
The major differences between DIDL_V and DIDL_S are as follows.

- DIDL_V allows all XML elements and attributes. This means that vendors can use normative metadata properties that are prohibited in DIDL_S documents. Vendors can also use vendor-defined metadata properties in DIDL_V if the namespaces are properly declared.
- DIDL_V permits use of DLNA PlaySingle URIs. Rendering Endpoints are required to dereference and render the DLNA PlaySingle URIs that identify DLNA media format profiles that are supported by the Rendering Endpoint.

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- DIDL_V defines the <dlna:NextPlaylist> and <dlna:PreviousPlaylist> for facilitating infinitely long playlists. For example, use of the <dlna:NextPlaylist> can simulate radio station playback experience. The <dlna:PreviousPlaylist> tag can also be used to provide the ability to load the previous playlist.

b) Rendering Endpoints are not required to support the playback of the DIDL_V file format. Rendering Endpoints that do support playback of the DIDL_V media format profile are only required to render content if the Rendering Endpoint claims support for the DLNA media format profile.

11.3 Lifetime element for the image Class

11.3.1

[GUIDELINE] If an <item> element describes an item of the Image Media Class, then it may contain a <dlna:lifetime> element.

[ATTRIBUTES]

O	A	n/a	n/a	n/a	n/a	2RFEH	N

11.3.2

[GUIDELINE] If the <dlna:lifetime> element is explicitly present in a media collection file within the <item> element for an item of the Image Media Class, then it shall indicate the display duration for the corresponding image. The value of this element shall follow the syntax defined for res@duration in IEC 62481-1.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	IEC 62481-1	LF49F	N

11.3.3

[GUIDELINE] If the <dlna:lifetime> element is not present in a media collection file within the <item> element for an item of the Image Media Class, then the display duration of such image shall be any value from 5 s to 15 s. This value is the implicit lifetime of an image.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	IEC 62481-1	W76QS	N

11.3.4

[GUIDELINE] If a UPnP endpoint renders the media collection that includes an image resource, then the total display time of the image shall be the sum of the display duration of the image (as defined in 11.3.2 and 11.3.3 and the duration(s) in which the UPnP endpoint is in the paused state (if any).

[ATTRIBUTES]

M	A	n/a	n/a	n/a	IEC 62481-1	DA2PO	N

[COMMENT] An image item in a media collection file has either an implicit or explicit lifetime value. If this value is *T*, the playback device ensures that the image will be displayed for *T* s. If the playback device supports the Pause operation for images, then a pause request will suspend the timer until the user resumes playback. In other words, images in media collections behave in a manner similar to audio or A/V entries in the media collection.

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Annex A
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ASF Recommended Procedures

A.1 Seek operations

A.1.1 General

If the HTTP server does not support time-based seek extensions (such as timeseekrange.dlna.org, for example), seeking within a partially downloaded ASF file is still possible by using the "Range" header (which is defined in IETF RFC 2616 and constrained in the Transport Guidelines in IEC 62481-1:2013, 7.5.

The data packets in an ASF file have a fixed size, which is specified in the ASF file header. Using knowledge about the bit rate of each stream and the size of the ASF packets, it is possible to compute a byte offset for seeking. Note that this approach does not guarantee that the ASF packet located at the byte offset contains a video key frame.

An ASF file which contains video streams, can have one or more Index Objects located at the end of the file. The ASF Index Objects map time codes to the byte offset of a video key frame at, or before, the specified time code.

Because a video key frame is normally required after seeking, the ASF Index Objects should be used for seeking whenever practical.

Steps A.1.2 through A.1.11, below, describe how a client can determine if ASF Index Objects are present in the ASF file, and how the ASF Index Objects can be downloaded.

Steps A.2.2 and A.2.3, below, describe how to compute the seek position for ASF files which do not have any ASF Index Objects.

A.1.2 Begin downloading the ASF file

The ASF file header consists of the ASF Header Object, a variable size binary data structure located at the beginning of the ASF file. Since it is located at the start of the file, a regular HTTP GET request can be used to download the ASF file header.

A.1.3 Determine the size of the ASF file header

The size of the ASF file header is given by the value of the "Object Size" field in the ASF Header Object. See ASF, 3.1.

A.1.4 Download the beginning of the ASF Data Object

The client continues downloading an amount corresponding to the size of the ASF Header Object, plus 24 B. These 24 B belong to the beginning of the ASF Data Object.

A.1.5 Determine the size of the ASF Data Object

The ASF Data Object directly follows the end of the ASF Header Object. The size of the ASF Data Object is given by the value of the "Object Size" field in the ASF Data Object. See ASF, 5.1.

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A.1.6 Calculate the byte offset to the end of the ASF Data Object

The byte offset to the end of the ASF Data Object is calculated by adding the size of the ASF Header Object to the size of the ASF Data Object. Note that if the size of the ASF Data Object is 0, it means that its size is unknown. Such ASF files do not have ASF Index Objects.

A.1.7 Determine the size of the entire ASF file

The size of the ASF file can be determined from the HTTP "Content-Length" header, in the response to an HTTP GET request for the entire file. However, if the "Content-Length" header is not available, the size of the ASF file can be determined from the value of the "File Size" field in the ASF File Properties Object. The ASF File Properties Object is located inside the ASF Header Object. See ASF, 3.2.

If the value of the "File Size" field is 0, and the HTTP "Content-Length" header is not available, it is not possible to determine the size of the ASF file until the file has been fully downloaded.

A.1.8 Determine if an ASF Index Object might be available

If the size of the entire ASF file is greater than the byte offset to the end of the ASF Data Object, then one or more ASF Index Objects might be present in the ASF file, located after the end of the ASF Data Object.

If no ASF Index Objects are available, it might still be possible to seek in the file, using the method described in step A.2.2.

A.1.9 Download the ASF Index Object

The client now has sufficient information to download the ASF Index Objects. The client should send an HTTP GET request with a "Range" header to request the ASF Index Objects. The header should follow the syntax defined in IETF RFC 2616, 14.35 with the additional constraints defined in the Transport Guidelines in IEC 62481-1:2013, 7.5 with the bytes-unit parameter specified as "bytes". The first-byte-pos parameter in the "Range" header should be set to the byte offset to the end of the ASF Data Object. The last-byte-pos parameter can be omitted, or set to the size of the entire ASF file.

The client should cache the ASF Index Objects while this ASF is being played back, to avoid having to download them multiple times.

A.1.10 Determine the byte offset to the desired seek position

The response from the server can contain one or more ASF Index Objects, as described in ASF , Clause 6. There are different kinds of ASF Index Objects, the Simple Index Object being the most common one. The Simple Index Object maps presentation times to ASF packet numbers. It allows the time code that the user wants to seek to, to be converted to an ASF packet number. To convert an ASF packet number to a byte offset, multiply the ASF packet number by the value of the "Maximum ASF Data Packet Size" field in the ASF File Properties Object. Add to this result the size of the ASF Header Object (which was determined in step A.1.3), plus 50.

A.1.11 Seek to the desired position

Once the byte offset that the client should seek to has been determined, the client can instruct the server to seek to that position by sending an HTTP GET request with a "Range" header.

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A.2 Seek operations in files that do not have an ASF Index Object

A.2.1 General

This clause describes how to compute a seek position in an ASF file that does not have any ASF Index Objects. Note that if the ASF file contains a video stream, there is no guarantee that an ASF packet containing a video key frame will be available at the seek position.

A.2.2 Determine the average bit rate of the ASF file

If the ASF file header contains a Stream Bitrate Properties Object, then the average bit rate of the ASF file is computed as the sum of the bit rates for the individual streams which are listed in the ASF Stream Bitrate Properties Object. See ASF, 3.12.

Otherwise, the average bit rate of the ASF file is determined as follows. If an ASF Header Extension Object exists, the client should compute the sum of the values of the "Data Bitrate" field in each instance of the Extended Stream Properties Object which appears inside the ASF Header Extension Object. If no ASF Header Extension Object exists, the sum is considered to be zero. The average bit rate of the ASF file is the previously computed sum plus the value of the "Maximum Bitrate" field of the ASF File Properties Object.

A.2.3 Calculate seek position

The client can calculate the byte offset which corresponds to the desired seek time as follows:

Divide the average bit rate of the ASF file by 8, to obtain a number of bytes per second. Multiply by the desired seek time. Divide the result by the ASF packet size, which is obtained from the "Maximum ASF Data Packet Size" field in the ASF File Properties Object. The integer part of the result is the ASF packet number corresponding to the seek time. Step A.1.10 describes how to convert the ASF packet number into a byte offset in the ASF file. The client can use this byte offset to seek in the file, as described in step A.1.11.

A.3 Buffering procedures

A.3.1 General

This clause describes how the client can determine how much data to download before it can safely start playing back the contents of the file.

A.3.2 Collect information from the ASF File Properties Object

The client should record the value of the "Maximum Bitrate" field and the "Preroll" field in the ASF File Properties Object.

A.3.3 Determine the peak bit rate of the ASF file

If an ASF Header Extension Object exists, the client should compute the sum of the values of the "Alternate Data Bitrate" field in each instance of the Extended Stream Properties Object which appears inside the ASF Header Extension Object. If the field is 0, the value of the "Data Bitrate" field should be used instead. If no ASF Header Extension Object exists, the sum is considered to be zero. The peak bit rate of the ASF file is the previously computed sum plus the value of the "Maximum Bitrate" field of the ASF File Properties Object. However, the peak bit rate cannot be less than the average bit rate. (How to compute the average bit rate is described in A.2.2.)

A.3.4 Compute buffering amount

The amount of data to download is computed by multiplying the value of the "Preroll" field in the ASF File Properties Object, represented as a number of seconds, by the peak bit rate of the ASF

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file. Divide the result by 8 to obtain the number of bytes to download. This result is valid as long as the HTTP download speed is greater, or equal to, the peak bit rate of the ASF file.

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Annex B
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IFO file format: field values

Clarifications of the field values and their treatment within an IFO file are included in this annex. References to these tables, Table B.1 and Table B.2, are found in 9.3.3.8.

Table B.1 – Fields within an IFO file Supplied by Serving Endpoint

Field Name	Contents	Value Serving Endpoints shall fill with	Comments
RTR_VMGI	RTR Video Manager Information		
VMGI_MAT	Video Manager Information Management Table		
VMG_ID	VMG Identifier	DLNA.ORG	Serving endpoint shall fill VMG_ID field with the string DLNA.ORG.
RTR_VMG_EA		End address of RTR_VGM	Correct value
VMGI_EA		End Address of RTR_VGMI	Correct value
VERN	Version Number of the Book	1.0	Serving Endpoints shall fill the second byte of VERN field with the value 0001 0000b as version 1.0. The version number is to be managed by DLNA.
TM_ZONE	Time Zone	Correct value	
STILL_TM	Still Time for Still Picture	Correct value	
CHRS	Character Set Code for Primary Text	Correct value	
RSM_MRKI	Resume Maker Information	Correct value	
DISC_REP_PICTI	Disc Representative Picture Info	Correct value	
DISC_REO_NM	Disc Representative Name	Correct value	
M_AVFIT_SA	Start Address of M_AVFIT	Correct value	
S_AVFIT_SA	Start Address of S_AVFIT	Correct value	
ETKI	Encrypted Title Key Information	0	Serving Endpoints shall fill the ETKI field with value 0.
CPSI	Copy Protection Scheme Information	0	Serving endpoints shall fill the CPSI field with value 0.
ORG_PGCI_SA	Start Address of ORG_PGCI	Correct value	
UD_PGCI_SA	Start Address of UD_PGCIT (contents of Play List)	Correct value	

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Field Name	Contents	Value Serving Endpoints shall fill with	Comments
TXTDT_MG_SA	Start Address of TXTDT_MG (Text set of Title)	Correct value	
MNFIT_SA	Start Address of MNFIT	Correct value	
PL_SRPT	Play List Search Pointer Table		
PL_SRPTI	PL_SRPT Information		
PL_SRP_Ns	Number of PL_SRPs	Correct value	
PL_SRPT_EA	End address of PL_SRPT	Correct value	
PL_SRP#n	Play List Search Pointer	Correct value	
M_AVFIT	Movie AV File Information Table		
M_AVFITI	M_AVFIT Information		
M_AVFI_Ns	Number of M_AVFIs	1	Serving endpoint shall fill the M_AVFI_Ns field with the value 1, i.e., the number of files is restricted to 1.
M_VOB_STI_Ns	Number of M_VOB_STIs	Correct value	
M_AVFIT_EA	End address of M_AVFIT	Correct value	
M_VOB_STI#n	Movie VOB Stream Information #n	Correct value	This field has the Aspect ratio/Resolution information.
M_AVFI	Movie AV File Information		
M_AVFI_GI	M_AVFI General Information	Correct value	
M_VOBI_SPR#n	M_VOBI Search Pointer #n	Correct value	
M_VOBI#n	Movie VOB Information #n		
M_VOB_GI	Movie VOB General Information	Correct value	This field has the PTS information to handle the PTS discontinuous PS stream.
SMLI	Seamless Information	Correct value	This field has the first SCR of video to handle the SCR discontinuous PS stream.
AGAPI	Audio Gap Information	Correct value	
TMAPI	Time Map Information	Correct value	
S_AVFIT	Still Picture AV File Information Table		
S_AVFITI	S_AVFIT Information	Correct value	
S_VOB_STI#n	Still Picture VOB Stream Information #n	Correct value	
S_AVFI	Still Picture AV File Information	Correct value	
S_AA_STI#n	Still Picture Additional Audio Stream #n	Correct value	
S_AAFI	Still Picture Additional Audio File Information	Correct value	
ORG_PGCI	Original PGC Information		
PGC_GI	PGC General Information		

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Field Name	Contents	Value Serving Endpoints shall fill with	Comments
PG_Ns	Number of PGs	1	Serving endpoint shall fill the PG_Ns field with the value 1, i.e., the number of program is restricted to 1.
CI_SRP_Ns	Number of CI_SRPs	Correct value	
PGI#n	PG Information #n		
PG_TY	Program Type	Correct value	
C_Ns	Number of Cells in this PG	Correct value	
ORN_TXTI	Primary Text Information	Correct value	
IT_TXT_SRPN	IT_TXT Search Pointer number	Correct value	
REP_PICTI	Representative Picture Information	Correct value	
CI_SRP#n	CI Search Pointer #n	Correct value	
CI #n	Cell Information		There are two types of Cell: Movie cells and Still Picture Cells.
C_GI	Cell General Information		There are two types of C_GI: M_C_GI (Movie C_GI) and S_C_GI (Still Picture C_GI).
C_TY	Cell Type	Correct value	
C_EPI #n	Cell Entry Point Information #n	Correct value	There are two types of C_EPI: M_C_EPI (Movie C_EPI) and S_C_EPI (Still Picture C_EPI).
UD_PGCIT	User Defined PGC Information Table		
UD_PGCITI	UD_PGCIT Information	Correct value	
UD_PGCI_SRP #n	UD_PCGI Search Pointer #n	Correct value	
UD_PCGI #n	User Defined PGC Information #n	Correct value	
TXTDT_MG	Text Data Manager		
TXTDTI	Text Data Information	Correct value	
IT_TXT_SRP #n	IT_TXT Search Pointer #n	Correct value	
IT_TXT	Item Text	Correct value	
MNFIT	Manufacturer's Information Table	Correct value	

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Table B.2 – IFO file fields treatment by Rendering Endpoints

Field Name	Contents	Treatment by Rendering Endpoint	Comments
RTR_VMGI	RTR Video Manager Information		
VMGI_MAT	Video Manager Information Management Table		
VMG_ID	VMG Identifier	SHALL check	Rendering Endpoints shall check the value of VMG_ID field to verify the ID of the IFO file. If the ID is not DLNA.ORG, Rendering Endpoints may skip this field.
RTR_VMG_EA	End address of RTR_VGM	SHOULD use	
VMGI_EA	End Address of RTR_VGMI	SHOULD use	
VERN	Version Number of the Book	SHALL check	Rendering Endpoint shall check the value of VERN field to verify the version of the IFO file. If the version is not 1.0, Rendering Endpoint may skip this field.
TM_ZONE	Time Zone	SHOULD use	
STILL_TM	Still Time for Still Picture	Ignorable	
CHRS	Character Set Code for Primary Text	SHOULD use	
RSM_MRKI	Resume Maker Information	Ignorable	
DISC_REP_PICTI	Disc Representative Picture Info	Ignorable	
DISC_REO_NM	Disc Representative Name	Ignorable	
M_AVFIT_SA	Start Address of M_AVFIT	SHOULD use	
S_AVFIT_SA	Start Address of S_AVFIT	Ignorable	
ETKI	Encrypted Title Key Information	Ignorable	
CPSI	Copy Protection Scheme Information	Ignorable	
ORG_PGCI_SA	Start Address of ORG_PGCI	SHOULD use	
UD_PGCI_SA	Start Address of UD_PGCIT (contents of Play List)	Ignorable	
TXTDT_MG_SA	Start Address of TXTDT_MG (Text set of Title)	Ignorable	
MNFIT_SA	Start Address of MNFIT	Ignorable	
PL_SRPT	Play List Search Pointer Table		
PL_SRPTI	PL_SRPT Information		
PL_SRP_Ns	Number of PL_SRPs	Ignorable	
PL_SRPT_EA	End address of PL_SRPT	Ignorable	

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Field Name	Contents	Treatment by Rendering Endpoint	Comments
PL_SRP#n	Play List Search Pointer	Ignorable	
M_AVFIT	Movie AV File Information Table		
M_AVFITI	M_AVFIT Information		
M_AVFI_Ns	Number of M_AVFIs	SHOULD use	
M_VOB_STI_Ns	Number of M_VOB_STIs	SHOULD use	
M_AVFIT_EA	End address of M_AVFIT	SHOULD use	
M_VOB_STI#n	Movie VOB Stream Information #n	SHOULD use	This field has the Aspect ratio/ Resolution information.
M_AVFI	Movie AV File Information		
M_AVFI_GI	M_AVFI General Information	SHOULD use	
M_VOBI_SPR#n	M_VOBI Search Pointer #n	SHOULD use	
M_VOBI#n	Movie VOB Information #n		
M_VOB_GI	Movie VOB General Information	SHOULD use	This field has the PTS information to handle the PTS discontinuous PS stream.
SMLI	Seamless Information	SHOULD use	This field has the first SCR of video to handle the SCR discontinuous PS stream.
AGAPI	Audio Gap Information	SHOULD use	
TMAPI	Time Map Information	SHOULD use	
S_AVFIT	Still Picture AV File Information Table		
S_AVFITI	S_AVFIT Information		Ignorable
S_VOB_STI#n	Still Picture VOB Stream Information #n		Ignorable
S_AVFI	Still Picture AV File Information		Ignorable
S_AA_STI#n	Still Picture Additional Audio Stream #n		Ignorable
S_AAFI	Still Picture Additional Audio File Information		Ignorable
ORG_PGCI	Original PGC Information		
PGC_GI	PGC General Information		
PG_Ns	Number of PGs	SHALL check	Rendering Endpoints shall check the value of the PG_Ns field to verify the number of programs. If the number of PG is more than 1 which is not supported by DLNA Interoperability Guidelines Version v1.0, Rendering Endpoints shall render at least the first program.
CI_SRP_Ns	Number of CI_SRPs	SHOULD use	
PGI#n	PG Information #n		
PG_TY	Program Type	Ignorable	

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Field Name	Contents	Treatment by Rendering Endpoint	Comments
C_Ns	Number of Cells in this PG	SHOULD use	
ORN_TXTI	Primary Text Information	SHOULD use	
IT_TXT_SRPN	IT_TXT Search Pointer number	Ignorable	
REP_PICTI	Representative Picture Information	SHOULD use	
CI_SRP#n	CI Search Pointer #n	SHOULD use	
CI #n	Cell Information		
C_GI	Cell General Information		
C_TY	Cell Type	SHALL check	Rendering Endpoints shall check the value of C_TY field to verify the Cell Type. If the Cell Type is not supported, e.g., Still Picture Cells in the DLNA Interoperability Guidelines Version v1.0, Rendering Endpoints may ignore the information corresponding to this Cell.
C_EPI #n	Cell Entry Point Information #n	SHOULD use	
UD_PGCIT	User Defined PGC Information Table		
UD_PGCITI	UD_PGCIT Information	Ignorable	
UD_PGCI_SRP #n	UD_PCGI Search Pointer #n	Ignorable	
UD_PCGI #n	User Defined PGC Information #n	Ignorable	
TXTDT_MG	Text Data Manager		
TXTDTI	Text Data Information	Ignorable	
IT_TXT_SRP #n	IT_TXT Search Pointer #n	Ignorable	
IT_TXT	Item Text	Ignorable	
MNFIT	Manufacturer's Information Table	Ignorable	

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