
**Information technology — Coding of
audio-visual objects —**

Part 4:
Conformance testing

AMENDMENT 4: IPMPX conformance
extensions

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Technologies de l'information — Codage des objets audiovisuels —
Partie 4: Essai de conformité
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AMENDEMENT 4: Extensions de conformité IPMPX

ISO/IEC 14496-4:2004/Amd 4:2005

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

Amendment 4 to ISO/IEC 14496-4:2004 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

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Information technology — Coding of audio-visual objects —

Part 4: Conformance testing

AMENDMENT 4: IPMPX conformance extensions

Add the following clauses at the end of SNHC section:

9 Conformance for MPEG-4 IPMP Extension

9.1 Introduction

This clause is specified for the conformance test of ISO/IEC 14496-1. In this clause, except where stated otherwise, the following terms are used for practical purposes:

The term “System bitstream” means the multiplexed MPEG-4 system stream which has at least IOD and OD stream as specified in ISO/IEC 14496-1.

The term ‘IPMP bitstream’ means an MPEG-4 system bitstream with information of IPMP Extension protection, including IPMP Descriptor, IPMP Stream, IPMP Tool List.

The term ‘IPMP Information’ means IPMP Descriptor, IPMP Tool List, and IPMP Stream that come from the IPMP bitstream.

The term ‘IPMP Data’ means these IPMP data extended from IPMP_Data_BaseClass or other specific IPMP data to assist IPMP protection, these IPMP Data can be carried in either IPMP Descriptor, IPMP Stream, or IPMP Messages.

The term “IPMP Message” means the IPMP messages passed between terminal and IPMP tools via a non-normative messaging interface.

The term ‘IPMP terminal’ means a MPEG-4 terminal with IPMP Extension capability as specified in ISO/IEC 14496-1.

If any statement stated in this sub-clause accidentally contradicts a statement or requirement defined in , the text of ISO/IEC 14496-1 prevails.

The following sub-clauses specify the normative tests for verifying compliance of IPMP bitstream, IPMP Data and IPMP Message. Those normative tests make use of test suites and the reference software decoders specified in ISO/IEC 14496-5:2001/AMD4 (MPEG-4 IPMPX reference software) with source code available in electronic format.

9.2 Specification of test IPMP bitstreams

9.2.1 Conformance Requirements

IPMP bitstreams shall comply with the specifications in ISO/IEC 14496-1.

9.2.2 Tolerance

There is no tolerance for IPMP bitstream syntax checking. The diagnosis is pass or fail.

9.2.3 Terminal conformance

Each compliant IPMP terminal shall be able to parse and process all compliant IPMP bitstreams. As the implementation of IPMP terminals differs from each other depending on the implementers, the bit-wise comparison of the terminal output with a reference output may not work. The judgment should be done from the total behavior of the terminal.

9.2.4 Tool conformance

Not applicable.

9.2.5 Test IPMP Bitstream

9.2.5.1 #IPMPBS1

BitStream: MPEG-4 system stream with IOD, BIFS, OD stream, one H.263 visual stream, and one G.723.1 audio stream and IPMP information.

Specification: The IPMP information includes:

- Tool List, containing one IPMP Tool ID.
- IPMP Descriptor. The IPMP Tool specified therein is to be loaded before H.263 video decoder.

Purpose:

- Verify that the IPMP terminal handles IPMP Tool List, makes sure all required tools are present before attempting to play the MPEG-4 system stream.
- Verify that the IPMP terminal handles IPMP Descriptor and IPMP Descriptor pointer, and launches the IPMP Tool according to information given in the IPMP Descriptor.

9.2.5.2 #IPMPBS2

BitStream: MPEG-4 system stream with IOD, BIFS, OD stream, one H.263 visual stream, and one G.723.1 audio stream and IPMP information.

Specification: The IPMP information includes:

- Tool List, containing two IPMP Tool IDs.
- Two IPMP Descriptors, one for each IPMP Tool. The IPMP Tools are to be loaded before H.263 video decoder and after G.723.1 audio decoder respectively.

Purpose:

- Verify that the IPMP terminal handles IPMP Tool List, makes sure all required tools are present before attempting to play the MPEG-4 system stream.
- Verify that the IPMP terminal handles IPMP Descriptor and IPMP Descriptor pointer, and launches the two IPMP Tools according to information given in the IPMP Descriptor.

9.2.5.3 #IPMPBS3

BitStream: MPEG-4 system stream with IOD, BIFS, OD stream, one H.263 visual stream, and one G.723.1 audio stream and IPMP information.

Specification: The IPMP information includes:

- Tool List, containing two IPMP Tool IDs.
- IPMP Tool ES, containing one binary tool.
- Two IPMP Descriptors, one for each IPMP Tool. The IPMP Tools are to be loaded before H.263 video decoder and after G.723.1 audio decoder respectively.

Purpose:

- Verify that the IPMP terminal handles IPMP Tool List, makes sure all required tools are present before attempting to play the MPEG-4 system stream.
- Verify that the IPMP terminal handles IPMP Tool ES, makes sure the carried tool can be assembled and launched correctly.
- Verify that the IPMP terminal handles IPMP Descriptor and IPMP Descriptor pointer, and launches the two IPMP Tools according to information given in the IPMP Descriptor.

9.2.5.4 #IPMPBS4

BitStream: MPEG-4 system stream with IOD, BIFS, OD stream, one H.263 visual stream, and one G.723.1 audio stream and IPMP information.

Specification: The IPMP information includes:

- Tool List, containing one IPMP Tool ID.
- IPMP Descriptor. The IPMP Tool specified therein is to be loaded at a global scope (control point=0). The IPMP Descriptor contains IPMP_RightsData.

Purpose:

- Verify that the IPMP terminal handles IPMP Tool List, makes sure all required tools are present before attempting to play the MPEG-4 system stream.
- Verify that the IPMP terminal handles IPMP Descriptor and IPMP Descriptor pointer, and launches the IPMP Tool according to information given in the IPMP Descriptor. The launched IPMP Tool gets its IPMP Descriptor, and processes the contained IPMP_RightsData.

9.2.5.5 #IPMPBS5

BitStream: MPEG-4 system stream with IOD, BIFS, OD stream, one H.263 visual stream, and one G.723.1 audio stream and IPMP information.

Specification: The IPMP information includes:

- Tool List, containing two IPMP Tool IDs.
- Two IPMP Descriptors, one for each IPMP Tool.
- An IPMP Stream carrying IPMP information (In the form of IPMP_Message) for the above two IPMP Tools.

Purpose:

- Verify that the IPMP terminal handles IPMP Tool List, makes sure all required tools are present before attempting to play the MPEG-4 system stream.
- Verify that the IPMP terminal handles IPMP Descriptor and IPMP Descriptor pointer, and launches the two IPMP Tools according to information given in the IPMP Descriptor.
- Verify that the IPMP terminal can route the information carried in IPMP Stream to the targeted IPMP Tool in a timely manner.

9.2.5.6 #IPMPBS6

BitStream: MPEG-4 system stream with IOD, BIFS, OD stream, one H.263 visual stream, and one G.723.1 audio stream and IPMP information.

Specification: The IPMP information includes,

- Tool List, containing two IPMP Tool IDs.
- IPMP Descriptors. The IPMP Tools specified therein are to be loaded at a global scope (control point=0). The IPMP Descriptor of IPMP_MasterTool contains IPMP_ConnectTool which refers to IPMP_RELTool, and The IPMP Descriptor of IPMP_RELTool contains IPMP_RightsData.

Purpose:

- Verify that the IPMP terminal handles IPMP Tool List
- Verify that the IPMP terminal handles IPMP Descriptors and IPMP Descriptor pointers, and launches the IPMP Tools according to information given in the IPMP Descriptors. The launched IPMP_RELTool gets its IPMP Descriptor, and processes the contained IPMP_RightsData.

9.2.5.7 #IPMPBS7

BitStream: MPEG-4 system stream with IOD, BIFS, OD stream, one H.263 visual stream, and one G.723.1 audio stream and IPMP information.

Specification: The IPMP information includes,

- Tool List. containing three IPMP Tool IDs
- Three IPMP Descriptors, one for each IPMP Tool. One IPMP Tool specified therein is to be loaded at t=0 before the video decoder, and the rest two tools containing IPMP_RightsData are to be loaded at t=5sec with a global scope. The IPMP Descriptor of REL Tool contains IPMP_RightsData.

Purpose:

- Verify that the IPMP terminal handles IPMP Tool List
- Verify that the IPMP terminal handles IPMP Descriptors and IPMP Descriptor pointers, and launches different IPMP Tools at different time according to information given in the IPMP Descriptors. The launched IPMP_RELTool gets its IPMP Descriptor, and processes the contained IPMP_RightsData.

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9.2.5.8 #IPMPBS8

BitStream: MPEG-4 system stream with IOD, BIFS, OD stream, one H.263 visual stream, one G.723.1 audio stream, one IPMP Tool Elementary Stream and IPMP information.

Specification: The IPMP information includes,

- Tool List. containing one IPMP Tool ID
- IPMP Tool ES, containing one binary tool.
- One IPMP Descriptors. The IPMP Tool is to be loaded before H.263 video decoder

Purpose:

- Verify that the IPMP terminal handles IPMP Tool List, makes sure all required tools are present before attempting to play the MPEG-4 system stream.
- Verify that the IPMP terminal handles IPMP Tool ES, makes sure the carried tool can be assembled and launched correctly.

9.2.5.9 #IPMPBS9

BitStream: MPEG-4 system stream with IOD, BIFS, OD stream, one H.263 visual stream, and one G.723.1 audio stream and IPMP information.

Specification: The IPMP information includes:

- Tool List, containing one IPMP Tool ID.
- One IPMP Descriptor. The IPMP Tool is to be loaded before G.723 audio decoder
- An IPMP Stream carrying IPMP information (In the form of IPMP_Message) for the above IPMP Tool

Purpose:

- Verify that the IPMP terminal handles IPMP Tool List, makes sure all required tools are present before attempting to play the MPEG-4 system stream.
- Verify that the IPMP terminal handles IPMP Descriptor and IPMP Descriptor pointer, and launches the IPMP Tool according to information given in the IPMP Descriptor.
- Verify that the IPMP terminal can route the information carried in IPMP Stream to the targeted IPMP Tool in a timely manner.

9.3 Specification of test IPMP data

9.3.1 Conformance Requirements

IPMP Data shall comply with the specifications in ISO/IEC 14496-1.

9.3.2 Tolerance

There is no tolerance for IPMP data syntax checking. The diagnosis is pass or fail.

9.3.3 Terminal conformance (standards.iteh.ai)

Some IPMP data is meant to be carried in messages passed between terminal and IPMP Tool, some IPMP data is meant to be carried in IPMP bitstream, while some of them can be carried in both messages between terminal and IPMP Tool, as well as IPMP bitstream.

Hence a compliant IPMP terminal is not required to be able to parse all IPMP data. The IPMP Data that a compliant IPMP terminal should be able to parse and process is marked as "TM".

Some IPMP data does not require an output; the judgment should be done from the total behavior of the terminal.

9.3.4 Tool conformance

A compliant IPMP Tool is not required to be able to parse all IPMP data, as some IPMP data are meant to be carried in the IPMP bitstream and to let IPMP terminal parse. The IPMP Data that is meant for IPMP Tool is marked as "TO". However, depending on the functionalities, a compliant IPMP Tool does NOT need to be able to parse and process all IPMP Data marked as "TO". For example, a decryption tool does not need to understand IPMP_VideoWatermarkingInit.

Some IPMP data does not require an output; the judgment should be done from the total behavior of the IPMP Tool.