INTERNATIONAL STANDARD

ISO/IEC 23003-2

Information technology — MPEG audio technologies —

Part 2:
Spatial Audio Object Coding (SAOC)

AMENDMENT 1: SAOC conformance

Technologies de l'information — Technologies audio MPEG —

Partie 2: Codage d'objet audio spatial (SAOC)

AMENDEMENT 1: Conformité SAOC

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/IEC 23003-2:2010/Amd 1:2015
https://standards.iteh.ai/catalog/standards/sist/77bf5a20-dcf6-4a90-8c63-
6c89d1e99b22/iso-iec-23003-2-2010-amd-1-2015

COPYRIGHT PROTECTED DOCUMENT

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/IEC JTC 1, *Information technology*, SC 29, *Coding of audio, picture, multimedia and hypermedia information.*

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Information technology — MPEG audio technologies —

Part 2:
Spatial Audio Object Coding (SAOC)

AMENDMENT 1: SAOC conformance

Add Clause 10, Conformance testing:

10 Conformance testing

10.1 Introduction

This Clause specifies conformance criteria for both bitstreams and decoders compliant with the SAOC standard as defined in Clauses 1 to 9. This is done to assist implementers and to ensure interoperability.

10.2 Terms and definitions

The terms and definitions as stated in Clause 3 apply. Furthermore, the following terms and definitions will be used throughout this Clause.

Bitstream   data encoded according to the SAOC standard

conformance test bitstream   bitstream used for testing the conformance of an SAOC

10.3 SAOC conformance testing

Subclause 5.5 defines the SAOC profiles and levels. Some conformance criteria apply to SAOC in general, while others are specific to the specific SAOC profile and its levels. Conformance shall be tested for the level of the profile with which a given bitstream or decoder/transcoder claims to comply.

10.4 Bitstreams

10.4.1 Characteristics

The SAOC audio object type (AOT) can be used in combination with various AOTs.

10.4.2 Test procedure

10.4.2.1 Introduction

An SAOC bitstream shall have the syntax and semantics as specified in Clauses 1 to 9. The present subclause defines the conformance criteria that shall be fulfilled by a compliant bitstream. These criteria are specified for the syntactic elements of the bitstream and for some parameters decoded from the SAOC bitstream payload.

10.4.2.2 Configuration header

10.4.2.2.1   SAOCSpecificConfig()

bsSamplingFrequencyIndex	Shall be in the range 0x0..0xc or 0xf. For further restrictions, see 10.4.2.5
bsSamplingFrequency	For restrictions, see 10.4.2.5
bsLowDelayMode	For restrictions, see 10.4.2.5
bsFreqRes	Shall not be encoded with a value of 0. For further restrictions, see 10.4.2.5
bsFrameLength	For restrictions, see 10.4.2.5
bsNumObjects	For restrictions, see 10.4.2.5
bsRelatedTo[i][j]	No restrictions apply
bsTransmitAbsNrg	No restrictions apply
bsNumDmxChannels	For restrictions, see 10.4.2.5
bsTttDualMode	No restrictions apply
bsTttBandsLow	Shall not be encoded with a value larger than the value of numBands as given by Table 33
bsPdgFlag	No restrictions apply
bsOneIOC	No restrictions apply
bsDcuFlag	No restrictions apply
bsDcuMandatory	No restrictions apply
bsDcuDynamic	No restrictions apply
bsDcuMode	No restrictions apply
bsDcuParam	No restrictions apply

10.4.2.2.2   SAOCExtensionConfigData()

bsSaocExtType   No restrictions apply. Note that in case of values indicated as "Reserved" in Table 43, the parsing function SAOCExtensionConfigData(bsSaocExtType) shall return the value 0, such that possibly present data is read as bsFillBits (i.e., skipped) and correct parsing of the bitstream can continue.

bsSaocExtLen	No restrictions apply
bsSaocExtLenAdd	No restrictions apply
bsSaocExtLenAddAdd	No restrictions apply
bsFillBits	No restrictions apply

10.4.2.2.3   SAOCExtensionConfigData(0)

The syntactic element SAOCExtensionConfigData(0) shall not be present in case of LD profile and baseline profile level 1. Furthermore, this syntactic element shall not be present if the helper variable numSlots

has a value that is not listed in Table 55 in ISO/IEC 23003-1:2007. Furthermore, if this syntactic element is present, the bitstream shall fulfil the requirements outlined in 6.1.13 in ISO/IEC 23003-1:2007. For further restrictions, see 10.4.2.5.

bsDcuFlag2   No restrictions apply

bsDcuMode2   No restrictions apply

bsDcuParam2   No restrictions apply

10.4.2.2.3.1 ResidualConfig()

bsResidualSamplingFrequencyIndex   Shall fulfil the requirements outlined in 6.1.13 and Table 88 in ISO/IEC 23003-1:2007

bsResidualFramesPerSAOCFrame   Shall fulfil the requirements outlined in 6.1.13 and Table 87 in ISO/IEC 23003-1:2007

bsNumGroupsFGO   For restrictions, see 10.4.2.5

bsResidualPresent[i]   No restrictions apply

bsResidualBands[i]   Shall not be encoded with a value larger than the value of **bsTtnBandsLow**[i]

bsTtnDualMode[i]   No restrictions apply

bsTtnBandsLow[i]   Shall not be encoded with a value larger than the value of numBands as given by Table 33

10.4.2.2.4   SAOCExtensionConfigData(1)

None

10.4.2.2.5   SAOCExtensionConfigData(2)

Shall fulfil the requirements outlined in Table 51.

10.4.2.2.6   SAOCExtensionConfigData(3)

None

10.4.2.2.7   SAOCExtensionConfigData(8)

10.4.2.2.7.1 ObjectMetaData()

bsNumByteMetaData[i]   No restrictions apply

bsMetaData[i][j]   Shall be encoded in UTF-8 encoding format

10.4.2.2.8   SAOCExtensionConfigData(9)

10.4.2.2.8.1 PresetConfig()

bsNumPresets	No restrictions apply
bsNumBytePresetLabel[i]	No restrictions apply
bsPresetLabel[i][j]	Shall be encoded in UTF-8 encoding format
bsPresetMatrix	No restrictions apply

10.4.2.2.8.2 PresetMatrixData()

bsPresetMatrixType	Shall not be encoded with a value of 3
bsPresetMatrixElements[i][j]	No restrictions apply

10.4.2.2.8.3 PresetMatrixData()

bsPresetUserDataIdentifier[i]	Shall be encoded in UTF-8 encoding format
bsPresetUserDataLen	No restrictions apply

10.4.2.2.9   SAOCExtensionConfigData(10)

10.4.2.2.9.1 SeparationMetaData()

bsNumSeparationPairs	No restrictions apply
bsSeparationMainObjectID[i]	No restrictions apply
bsSeparationSubObjectID[i]	No restrictions apply

10.4.2.3   Bitstream payload

10.4.2.3.1   SAOCFrame()

bsIndependencyFlag	No restrictions apply

10.4.2.3.1.1 SAOCFramingInfo()

bsFramingType	No restrictions apply
bsNumParamSets	For restrictions, see 10.4.2.5
bsParamSlot[i]	Shall be in the range 0...bsFrameLength

10.4.2.3.1.2 EcDataSaoc()

bsXXXdataMode[i][j]   Shall fulfil the requirements outlined in 6.1.13. Shall not be encoded with the value 2 if EAO mode (residual coding) is applied

bsDataPairXXX[i][j]   Shall have the value 0 if setIdx == dataSets-1. No further restrictions apply

bsQuantCoarseXXX[i][j]   No restrictions apply

bsFreqResStrideXXX[i][j]   No restrictions apply

10.4.2.3.1.3 SAOCEcDataPair()

bsPcmCodingXXX[i][j]   No restrictions apply

10.4.2.3.1.4 SAOCDiffHuffData()

bsDiffType   No restrictions apply

bsCodingScheme   No restrictions apply

10.4.2.3.1.5 SAOCHuffData1D()

hcodFirstBand_XXX   **bsCodeW** shall have a value out of a set of values as defined by column 'code-word' of Tables A.2 and A.3, respectively, and shall have a length as defined by the corresponding entry in column 'length'

hcod1D_XXX_YY   **bsCodeW** shall have a value out of a set of values as defined by column 'code-word' of Tables A.4 and A.5, respectively, and shall have a length as defined by the corresponding entry in column 'length'

bsSign   No restrictions apply

10.4.2.3.1.6   SAOCHuffData2DFreqPair()

hcodLavIdx	**bsCodeW** shall have a value out of a set of values as defined by column 'code-word' of Table A.24, and shall have a length as defined by the corresponding entry in column 'length'
hcodFirstBand_XXX	**bsCodeW** shall have a value out of a set of values as defined by column 'code-word' of Tables A.2 and A.3, respectively, and shall have a length as defined by the corresponding entry in column 'length'
hcod2D_XXX_YY_FP_LL	**bsCodeW** shall have a value out of a set of values as defined by column 'code-word' of the applicable table out of Tables A.11 to A.22, and shall have a length as defined by the corresponding entry in column 'length'
hcod1D_XXX_YY	**bsCodeW** shall have a value out of a set of values as defined by column 'code-word' of Tables A.4 and A.5, respectively, and shall have a length as defined by the corresponding entry in column 'length'
bsSign	No restrictions apply

10.4.2.3.2   SAOCExtensionFrame()

No restrictions apply. Note that in case of bsSaocExtType having values indicated as "reserved" in Table 54, the parsing function SAOCExtensionFrameData(bsSaocExtType) shall return the value 0, such that possibly present data is read as bsFillBits (i.e., skipped) and correct parsing of the bitstream can continue.

bsSaocExtLen	No restrictions apply
bsSaocExtLenAdd	No restrictions apply
bsFillBits	No restrictions apply

10.4.2.3.3   SAOCExtensionFrameData(0)

bsDcuDynamicUpdate2	No restrictions apply
bsDcuMode2	No restrictions apply
bsDcuParam2	No restrictions apply

10.4.2.4   Transport of SAOC data

10.4.2.4.1   Transport in an MPEG environment

10.4.2.4.1.1   Introduction

In case of transport of SAOC data in an MPEG-4 environment, the following restrictions apply. In case of SAOCSpecificConfig() is conveyed out-of-band, any in-band SAOCSpecificConfig() shall be identical to the out-of-band one.

In case of embedding of MPEG SAOC data in MPEG-2/4 AAC payloads, the following restrictions apply. There must be at least one extension_payload() element with extension_type==EXT_SAOC_DATA in each AAC frame in order to enable immediate implicit signalling.

In case of embedding of MPEG SAOC data in MPEG-1/2 Layer I/II/III bistreams, the following restrictions apply. The first bit of the ancSyncword must be byte-aligned with respect to the first bit of the 0xFFF syncword of the MPEG-1/2 frame header. The AncDataElement() must be completely included in the ancillary data of a single MPEG-1/2 frame. There must be at least one AncDataElement() in the ancillary data of each MPEG-1/2 frame in order to enable immediate implicit signalling.

10.4.2.4.1.2 AncDataElement()

ancSyncword	Shall be 0x473
ancType	No restrictions apply
ancStart	No restrictions apply
ancStop	No restrictions apply
ancLenBytes	No restrictions apply
ancLenBytesAdd	No restrictions apply
ancCrcWord	Shall have the value as determined by the procedure specified in 8.2.4
ancDataSegmentByte	A data block formed by concatenation of ancDataSegmentByte as specified in 8.2.4 shall, if ancType==0x0 or ancType==0x1, constitute one SaocDataFrame() syntax element, padded at the end to obtain an integer number of bytes

10.4.2.4.1.3 SaocDataFrame(saocHeaderFlag)

saocHeaderFlag	No restrictions apply
saocHeaderLen	No restrictions apply
saocHeaderLenAdd	No restrictions apply
bsFillBits	No restrictions apply
saocTimeAlignFlag	No restrictions apply
saocTimeAlign	Shall have an absolute value no larger than two times the number of samples in the MPEG SAOC PCM frame as defined by **bsFrameLength** and **bsSamplingFrequencyIndex** or **bsSamplingFrequency**

10.4.2.4.2 Transport over PCM channels

10.4.2.4.2.1 Introduction

In case of transport of SAOC data over PCM channels, the following restrictions apply. The BuriedData() data shall be embedded in the LSBs of the PCM channels. Typically, 16 bit PCM samples are used. However, also other sample precisions shall be supported, e.g. 20 and 24 bits.