

ISO/IEC 23008-9:2019 (E)

Information technology — High efficiency coding and media delivery in heterogeneous environments — Part 9: 3D Audio conformance testing

Contents

	Foreword
	Introduction
1	Scope
2	Normative references
3	Terms, definitions and abbreviated terms
3.1	Terms and definitions
3.2	Abbreviated terms
4	MPEG-H 3D audio conformance testing
4.1	General
4.2	Profiles
4.3	Test procedure
4.3.1	General
4.3.2	Naming convention
4.3.3	Conformance test tools
4.3.3.1	RMS/LSB measurement
4.3.3.2	Segmental SNR
5	MPEG-H 3D audio bitstreams
5.1	Characteristics, test procedure
5.2	MPEG-H 3D audio general configuration
5.2.1	mpegh3daConfig()
5.2.2	FrameworkConfig3d()
5.2.3	Signals3d()
5.2.4	SpeakerConfig3d()
5.2.5	mpegh3daFlexibleSpeakerConfig()
5.2.6	mpegh3daSpeakerDescription()
5.3	MPEG-H 3D core audio configuration
5.3.1	mpegh3daDecoderConfig()
5.3.2	mpegh3daSingleChannelElementConfig()
5.3.3	mpegh3daChannelPairElementConfig()
5.3.4	mpegh3daCoreConfig()
5.3.5	mpegh3daLfeElementConfig()
5.3.6	mpegh3daExtElementConfig()
5.3.7	mpegh3daConfigExtension()
5.3.8	SbrConfig()
5.3.9	Mps212Config()
5.4	MPEG-H 3D core audio frame
5.4.1	mpegh3daFrame()
5.4.2	mpegh3daSingleChannelElement()
5.4.3	mpegh3daChannelPairElement()
5.4.4	mpegh3daLfeElement()
5.4.5	mpegh3daExtElement()
5.4.6	ics_info()
5.4.7	mpegh3daCoreCoderData()
5.4.8	StereoCoreToolInfo()
5.4.9	fd_channel_stream()
5.4.10	lpd_channel_stream()
5.4.11	acelp_coding()

5.4.12 tcx_coding ()
 5.4.13 lpd_stereo_stream()
 5.4.14 igf_stereo_pred_data()
 5.4.15 igf_data()
 5.4.16 tbe_data()
 5.4.17 tw_data()
 5.4.18 scale_factor_data()
 5.4.19 tns_data()
 5.4.20 ac_spectral_data()
 5.4.21 arith_data()
 5.4.22 fac_data()
 5.4.23 code_book_indices()
 5.4.24 UsacSbrData()
 5.4.25 Mps212Data()
 5.5 Fill element
 5.6 MPEG surround configuration, SpatialSpecificConfig()
 5.7 MPEG surround frame, SpatialFrame()
 5.8 SAOC configuration, SAOCSpecificConfig()
 5.9 SAOC frame, SAOCFrame()
 5.10 AudioPreRoll
 5.10.1 Recursive presence of AudioPreRoll extension payload
 5.10.2 AudioPreRoll()
 5.11 Dynamic range control configuration
 5.11.1 mpeg3daUniDrcConfig()
 5.11.2 mpeg3daUniDrcChannelLayout()
 5.11.3 drcCoefficientsUniDrc()
 5.11.4 drclInstructionsUniDrc()
 5.11.5 uniDrcConfigExtension()
 5.12 Dynamic range control frame, uniDrcGain()
 5.13 Object metadata configuration, ObjectMetadataConfig()
 5.14 Object metadata frame
 5.14.1 object_metadata_efficient()
 5.14.2 object_metadata()
 5.14.3 object_metadata_efficient()
 5.14.4 intracoded_object_metadata_efficient()
 5.14.5 differential_object_metadata()
 5.14.6 offset_data()
 5.14.7 object_metadata_low_delay()
 5.14.8 intracoded_object_metadata_low_delay()
 5.14.9 dynamic_object_metadata()
 5.14.10 single_dynamic_object_metadata()
 5.15 EnhancedObjectMetadataConfig()
 5.16 EnhancedObjectMetadataFrame()
 5.17 SAOC 3D Config
 5.17.1 SAOC3DSpecificConfig()
 5.17.2 SAOC3DgetNumChannels()
 5.17.3 SAOC3DExtensionConfig()
 5.17.4 SAOC3DExtensionConfigData()
 5.17.5 SAOCExtensionConfig()
 5.18 SAOC 3D frame
 5.18.1 Saoc3DFrame()
 5.18.2 SAOC3DFramingInfo()
 5.18.3 EcDataSaoc()
 5.18.4 ByteAlign()
 5.18.5 SAOC3DExtensionFrame()
 5.18.6 SAOC3DExtensionFrameData()
 5.18.7 SAOCExtensionFrame()
 5.18.8 HOAConfig()
 5.18.9 HOADecoderConfig()
 5.18.10 HOAEnhConfig()
 5.18.11 HOADecoderEnhConfig ()
 5.18.12 getSubbandWidths ()
 5.19 HOA frame
 5.19.1 HOAFrame()

5.19.2 HOAEnhFrame ()
 5.19.3 ChannelSideInfoData()
 5.19.4 AddAmbHoalInfoChannel()
 5.19.5 HOAGainCorrectionData()
 5.19.6 VVectorData()
 5.19.7 HOAPredictionInfo()
 5.19.8 HOADirectionalPredictionInfo()
 5.19.9 readDirPredDiffValues()
 5.19.10 HOAParInfo ()
 5.19.11 readParDiffValues ()
 5.20 FMT converter frame, FormatConverterFrame()
 5.21 Multi-channel coding tool config, MCTConfig ()
 5.22 Multi-channel coding tool frame
 5.22.1 MultichannelCodingBoxRotation ()
 5.22.2 MultichannelCodingBoxPrediction ()
 5.22.3 MultichannelCodingFrame()
 5.23 Tonal component coding configuration, TccConfig ()
 5.24 Tonal component coding frame
 5.24.1 General
 5.24.2 TccGroupOfSegments()
 5.25 HREP config, HREPConfig()
 5.26 HREP frame, HREPFrame()
 5.27 ICG config, ICGConfig ()
 5.28 SignalGroupInformation Config, SignalGroupInformation ()
 5.29 DownmixMatrix
 5.29.1 downmixConfig()
 5.29.2 DownmixMatrixSet()
 5.29.3 DownmixMatrix()
 5.29.4 DecoderGainValue()
 5.29.5 ReadRange()
 5.29.6 EqualizerConfig()
 5.30 Loudness info
 5.30.1 mpeg3daLoudnessInfoSet()
 5.30.2 loudnessInfo()
 5.30.3 loudnessInfoSetExtension()
 5.31 Audioscene info
 5.31.1 mae_AudioSceneInfo
 5.31.2 mae_Data()
 5.31.3 mae_GroupDefinition()
 5.31.4 mae_SwitchGroupDefinition()
 5.31.5 mae_Description()
 5.31.6 mae_ContentData()
 5.31.7 mae_CompositePair()
 5.31.8 mae_GroupPresetDefinition()
 5.31.9 mae_ProductionScreenSizeData()
 5.31.10 mae_LoudnessCompensationData ()
 5.31.11 mae_ProductionScreenSizeDataExtension()
 5.31.12 mae_GroupPresetDefinitionExtension()
 5.31.13 mae_DrcUserInterfaceInfo()
 5.32 HOA matrix
 5.32.1 HoaRenderingMatrixSet()
 5.32.2 HoaRenderingMatrix()
 5.32.3 DecoderHoaMatrixData()
 5.32.4 DecoderHoaGainValue()
 5.33 Restrictions depending on profiles and levels
 5.33.1 General
 5.33.2 Low complexity profile
 5.33.2.1 General
 5.33.2.2 mpeg3daConfig()
 5.33.2.3 mpeg3daDecoderConfig()
 5.33.2.4 Mpeg3daChannelPairElementConfig()
 5.33.2.5 mpeg3daCoreConfig()
 5.33.2.6 StereoCoreToolInfo()
 5.33.2.7 MultichannelCodingFrame()

- 5.33.2.8 mpeg3daExtElement() for extension payload type ID_EXT_ELE_AUDIOPREROLL
 - 5.33.2.9 AudioPreRoll()
 - 5.33.2.10 mpeg3daUniDrcConfig()
 - 5.33.2.11 drcCoefficientsUniDrc()
 - 5.33.2.12 drclInstructionsUniDrc()
 - 5.33.2.13 ObjectMetadataConfig() in extension config type ID_EXT_ELE_OBJ_METADATA
 - 5.33.2.14 HOAConfig()
 - 5.33.2.15 HOADecoderConfig()
 - 5.33.2.16 HOADecoderEnhConfig()
 - 5.33.2.17 mae_AudioSceneInfo()
 - 5.33.2.18 mae_GroupPresetDefinition()
 - 5.33.2.19 mae_Description()
 - 5.33.2.20 mae_GroupPresetDefinitionExtension()
 - 5.33.2.21 downmixConfig()
 - 5.33.2.22 EnhancedObjectMetadataConfig
- 6 MPEG-H 3D audio interfaces to the MPEG-H 3D audio decoder**
- 6.1 Characteristics and test procedure
 - 6.2 Interface for local setup information
 - 6.2.1 mpeg3daLocalSetupInformation()
 - 6.2.2 LoudspeakerRendering()
 - 6.2.3 BinauralRendering()
 - 6.2.4 LocalScreenSizeInformation()
 - 6.3 Interface for user interaction
 - 6.3.1 mpeg3daElementInteraction()
 - 6.3.2 ElementInteractionData ()
 - 6.3.3 ei_GroupInteractivityStatus ()
 - 6.3.4 LocalZoomAreaSize()
 - 6.4 Interface for loudness normalization and dynamic range control
 - 6.5 Interface for scene displacement data, mpeg3daSceneDisplacementData()
- 7 MPEG-H 3D audio decoders**
- 7.1 General
 - 7.2 Basic conformance test conditions
 - 7.2.1 Element configuration test condition
 - 7.2.1.1 General
 - 7.2.1.2 Test sequences
 - 7.2.2 Sampling rate
 - 7.2.2.1 General
 - 7.2.2.2 Test sequences
 - 7.2.3 Core mode tests [Fd|Lpd|Cct]
 - 7.2.3.1 General
 - 7.2.3.2 Test sequences
 - 7.3 Additional test conditions
 - 7.3.1 3D audio core (FD)
 - 7.3.1.1 Basic FD window test condition [Win]
 - 7.3.1.1.1 General
 - 7.3.1.1.2 Test sequences
 - 7.3.1.1.3 Default behaviour
 - 7.3.1.2 Non-meaningful FD window switching test condition [Nmf]
 - 7.3.1.2.1 General
 - 7.3.1.2.2 Test sequences
 - 7.3.1.2.3 Default behaviour
 - 7.3.1.3 Aliasing symmetries test condition [Asy]
 - 7.3.1.3.1 General
 - 7.3.1.3.2 Test sequences
 - 7.3.1.3.3 Default behaviour
 - 7.3.1.4 Noise filling test condition [Nf]
 - 7.3.1.4.1 General
 - 7.3.1.4.2 Test sequences
 - 7.3.1.4.3 Default behaviour
 - 7.3.1.5 Varying max_sfb test condition [Sfb]
 - 7.3.1.5.1 General
 - 7.3.1.5.2 Test sequences

- 7.3.1.5.3 Default behaviour
- 7.3.1.6 TNS test condition [Tns]
 - 7.3.1.6.1 General
 - 7.3.1.6.2 Test sequences
 - 7.3.1.6.3 Default behaviour
- 7.3.1.7 M/S stereo test condition [Ms]
 - 7.3.1.7.1 General
 - 7.3.1.7.2 Test sequences
 - 7.3.1.7.3 Default behaviour
- 7.3.1.8 Complex prediction stereo test condition [Cp]
 - 7.3.1.8.1 General
 - 7.3.1.8.2 Test sequences
 - 7.3.1.8.3 Default behaviour
- 7.3.1.9 Multichannel coding tool (MCT)
 - 7.3.1.9.1 General
 - 7.3.1.9.2 MCT global configuration
 - 7.3.1.9.3 MCT channel signalling [M-chM-<x>]
 - 7.3.1.9.3.1 General
 - 7.3.1.9.3.2 Test sequences
 - 7.3.1.9.3.3 Default behaviour
 - 7.3.1.9.4 MCT payload
 - 7.3.1.9.4.1 MCT signalling Type [M-Typ-<x>]
 - 7.3.1.9.4.2 MCT stereo filling [M-SFi-<x>]
 - 7.3.1.9.4.3 MCT mechanics [M-Mec]
 - 7.3.1.9.4.4 MCT rotation content [M-Rot]
 - 7.3.1.9.4.5 MCT prediction content [M-Pre]
- 7.3.2 3D audio core (LPD)
 - 7.3.2.1 LPC coding test condition [Lpc]
 - 7.3.2.1.1 General
 - 7.3.2.1.2 Test sequences
 - 7.3.2.1.3 Default behaviour
 - 7.3.2.2 ACELP core mode test condition [Ace]
 - 7.3.2.2.1 General
 - 7.3.2.2.2 Test sequences
 - 7.3.2.2.3 Default behaviour
 - 7.3.2.3 TCX and noise filling test condition [Tcx]
 - 7.3.2.3.1 General
 - 7.3.2.3.2 Test sequences
 - 7.3.2.3.3 Default behaviour
 - 7.3.2.4 fullband LPD test condition [fbL-<x1>-<x2>-..]
 - 7.3.2.4.1 General
 - 7.3.2.4.2 Test sequences
 - 7.3.2.4.3 Default behaviour
 - 7.3.2.5 LPD mode coverage and FAC test condition [Lpd]
 - 7.3.2.5.1 General
 - 7.3.2.5.2 Test sequences
 - 7.3.2.5.3 Default behaviour
 - 7.3.2.6 AVQ test condition [Avq]
 - 7.3.2.6.1 General
 - 7.3.2.6.2 Test sequences
 - 7.3.2.6.3 Default behaviour
 - 7.3.2.7 Stereo LPD test condition [sLP-<x1>-<x2>-..]
 - 7.3.2.7.1 General
 - 7.3.2.7.2 Test sequences
 - 7.3.2.7.3 Default behaviour
 - 7.3.2.8 Time domain bandwidth extension test condition [Tbe]
 - 7.3.2.8.1 General
 - 7.3.2.8.2 Test sequences
 - 7.3.2.8.3 Default behaviour
- 7.3.3 3D audio core (FD and LPD)
 - 7.3.3.1 Frequency domain prediction test condition [Fdp]
 - 7.3.3.1.1 General
 - 7.3.3.1.2 Test sequences
 - 7.3.3.1.3 Default behaviour

- 7.3.3.2 Long-term postfilter test condition [Lpf]
 - 7.3.3.2.1 General
 - 7.3.3.2.2 Test sequences
 - 7.3.3.2.3 Default behaviour
- 7.3.3.3 Bass-post filter test condition [Bpf]
 - 7.3.3.3.1 General
 - 7.3.3.3.2 Test sequences
 - 7.3.3.3.3 Default behaviour
- 7.3.3.4 Enhanced noise filling test conditions
 - 7.3.3.4.1 General
 - 7.3.3.4.2 IGF range signalling [E-ran-<x>-<y>]
 - 7.3.3.4.2.1 General
 - 7.3.3.4.2.2 Test sequences
 - 7.3.3.4.2.3 Default behaviour
 - 7.3.3.4.3 IGF tiling [E-Cti]
 - 7.3.3.4.3.1 General
 - 7.3.3.4.3.2 Test sequences
 - 7.3.3.4.3.3 Default behaviour
 - 7.3.3.4.4 IGF whitening [E-Wht]
 - 7.3.3.4.4.1 General
 - 7.3.3.4.4.2 Test sequences
 - 7.3.3.4.4.3 Default behaviour
 - 7.3.3.4.5 IGF envelope noise flattening [E-Enf]
 - 7.3.3.4.5.1 General
 - 7.3.3.4.5.2 Test sequences
 - 7.3.3.4.5.3 Default behaviour
 - 7.3.3.4.6 IGF After TNS Synth [E-Ats]
 - 7.3.3.4.6.1 General
 - 7.3.3.4.6.2 Test sequences
 - 7.3.3.4.6.3 Default behaviour
 - 7.3.3.4.7 IGF no high resolution [E-Nhr]
 - 7.3.3.4.7.1 General
 - 7.3.3.4.7.2 Test sequences
 - 7.3.3.4.7.3 Default behaviour
 - 7.3.3.4.8 IGF no independent tiling [E-Nit]
 - 7.3.3.4.8.1 General
 - 7.3.3.4.8.2 Test sequences
 - 7.3.3.4.8.3 Default behaviour
 - 7.3.3.4.9 Stereo filling [E-SFi]
 - 7.3.3.4.9.1 General
 - 7.3.3.4.9.2 Test sequences
 - 7.3.3.4.9.3 Default behaviour for stereo filling
- 7.3.3.5 Channel pair element configuration [cpc-<x1>-<x2>-...]
 - 7.3.3.5.1 General
 - 7.3.3.5.2 Test sequences
 - 7.3.3.5.3 Default behaviour
- 7.3.3.6 Tonal component coding [Tcc-<x1>-<x2>-...]
 - 7.3.3.6.1 General
 - 7.3.3.6.2 Test sequences
 - 7.3.3.6.3 Default behaviour
- 7.3.4 Object rendering
 - 7.3.4.1 General
 - 7.3.4.2 OAM position and gain test condition [O-Pos]
 - 7.3.4.2.1 General
 - 7.3.4.2.2 Test sequences
 - 7.3.4.2.3 Default behaviour
 - 7.3.4.3 OAM transmission rate [O-rat-<x>]
 - 7.3.4.3.1 General
 - 7.3.4.3.2 Test sequences
 - 7.3.4.3.3 Default behaviour
 - 7.3.4.4 OAM spread modes (Uniform spread 2D non-uniform spread) [O-spr-<x>]
 - 7.3.4.4.1 General
 - 7.3.4.4.2 Test sequences
 - 7.3.4.4.3 Default behaviour

7.3.5	Higher order ambisonics (HOA)
7.3.5.1	General
7.3.5.2	HOA ChannelType allocation [H-Tca]
7.3.5.2.1	General
7.3.5.2.2	Test sequences
7.3.5.2.3	Default behaviour
7.3.5.3	HOA inverse decorrelation [H-idec-<x>]
7.3.5.3.1	General
7.3.5.3.2	Test sequences
7.3.5.3.3	Default behaviour
7.3.5.4	Vector-based predominant sounds [H-VVec-<x>]
7.3.5.4.1	General
7.3.5.4.2	Test sequences
7.3.5.4.3	Default behaviour
7.3.5.5	Directional predominant sounds [H-Dir-<x>]
7.3.5.5.1	General
7.3.5.5.2	Test sequences
7.3.5.5.3	Default behaviour
7.3.5.6	Gain correction [H-Gain-<x>]
7.3.5.6.1	General
7.3.5.6.2	Test sequences
7.3.5.6.3	Default behaviour
7.3.5.7	Predominant sound prediction [H-PSP-<x>]
7.3.5.7.1	General
7.3.5.7.2	Test sequences
7.3.5.7.3	Default behaviour
7.3.6	Signalling of HOA rendering matrix [Hmx]
7.3.6.1	General
7.3.6.2	Test sequences
7.3.6.3	Default behaviour
7.3.7	Downmix matrix test condition (dwx)
7.3.7.1	General
7.3.7.2	Test sequences
7.3.7.2.1	General requirements
7.3.7.2.2	Test sequence dwx01
7.3.7.2.3	Test sequence dwx02
7.3.7.2.4	Test sequence dwx03
7.3.7.2.5	Test sequence dwx04
7.3.8	Dynamic range and loudness control
7.3.8.1	General
7.3.8.2	Loudness normalization test condition [D-Ln-Lay-<x0-x1-...>-Gr-<y0-y1-...>-Pr-<z0-z1-...>]
7.3.8.2.1	General
7.3.8.2.2	Test sequences
7.3.8.2.3	Default behaviour
7.3.8.3	Dynamic range control test condition [D-Drc-<w0-w1-...>-Lay-<x0-x1-...>-Gr-<y0-y1-...>-Pr-<z0-z1-...>]
7.3.8.3.1	General
7.3.8.3.2	Test sequences
7.3.8.3.3	Default behaviour
7.3.8.4	Ducking test condition [D-Duck-Gr-<x0-x1-...>-Pr-<y0-y1-...>]
7.3.8.4.1	General
7.3.8.4.2	Test sequences
7.3.8.4.3	Default behaviour
7.3.9	AudioPreRoll() condition, immediate playout frame (IPF)
7.3.9.1	General
7.3.9.2	IPF frequency of occurrence [I-foo-<x>]
7.3.9.2.1	General
7.3.9.2.2	Test sequences [I-foo-<x>]
7.3.9.2.3	Default behaviour
7.4	Decoder settings
7.4.1	Target layout (Lay-<x>)
7.4.1.1	General
7.4.1.2	Decoder settings description

7.4.1.3	Default behaviour
7.4.2	Target loudness (Lou-<x>)
7.4.2.1	General
7.4.2.2	Decoder settings description
7.4.2.3	Default behaviour
7.4.3	DRC effect type request (Eff-<x>)
7.4.3.1	General
7.4.3.2	Decoder settings description
7.4.3.3	Default behaviour
7.4.4	Group preset request (Pr-<x>)
7.4.4.1	General
7.4.4.2	Decoder settings description
7.4.4.3	Default behaviour
7.4.5	Conformance point (Cpo-<x>)
7.4.5.1	General
7.4.5.2	Decoder settings description
7.4.5.3	Default behaviour

Page count: 88