



ATSC Standard: A/331:2025-06 Amendment No. 3, “MPEG-H Audio”

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Revision History

Version	Date
Amendment approved	16 October 2025

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1. OVERVIEW

1.1 Definition

An Amendment is generated to document an enhancement, an addition or a deletion of functionality to previously agreed technical provisions in an existing ATSC document. Amendments shall be published as attachments to the original ATSC document. Distribution by ATSC of existing documents shall include any approved Amendments.

1.2 Scope

This document describes changes to the Bit Stream Syntax for the Audio Stream Properties Descriptor and the accompanying semantics to accommodate use of a new MPEG-H 3D Audio profile specified in a recent amendment to the MPEG-H audio standard. This amendment is in response to New Project Proposal N-082, “Aligning ATSC’s MPEG-H Audio to Brazil TV 3.0.”

1.3 Rationale for Changes

The changes described in this document are being proposed because the MPEG-H 3D Audio system has been updated by MPEG to provide additional, backward compatible operating modes, and it is desired by new adopters of ATSC 3.0 to be able to make use of the new modes of operation. The changes will enable adoption by implementers of ATSC 3.0 of the latest version of the MPEG audio coding system when they desire to do so.

1.4 Compatibility Considerations

The changes described in this document are backward-compatible relative to the currently published version of the standard to which this Amendment pertains and any previously approved Amendments for that standard. Since the A/331 document is about signaling and control of various aspects of higher layer elements of the broadcast signal and since the tables in A/331 were designed from the start for extensibility, the changes described herein will permit the addition of new signaling states without interference with signaling of earlier-defined states included in such signaling.

2. LIST OF CHANGES

Change instructions are given below in *italics*. Unless otherwise noted, inserted text, tables, and drawings are shown in **blue**; deletions of existing text are shown in **red-strikeout**. The text “[ref]” indicates that a cross reference to a cited referenced document should be inserted.

2.1 Normative References

- [9] ATSC: “ATSC Standard: MPEG-H System,” Doc. A/342-3:~~2024-04-2025-XX~~ Advanced Television Systems Committee, Washington, DC, ~~3-April-2024~~<Date>.
- [40] ISO/IEC: “Information technology – High efficiency coding and media delivery in heterogeneous environments – Part 3: 3D audio,” Doc. 23008-3:~~2015~~**2022**, ~~with Amendment 2:2016 and Amendment 3:2017~~. International Organization for Standardization/International Electrotechnical Commission, Geneva, Switzerland.

2.2 Informative References

2.3 Acronyms and Abbreviations

2.4 Terms

2.5 Change Instructions

In Section 7.2.3.4.1, “Syntax and Semantics,” make the following changes, including the addition of a tab in front of “if (profile_channel_config_present) {” (highlighted in yellow):

The syntax for the audio_stream_properties_descriptor() shall conform to Table 7.22. The semantics of the fields in the audio_stream_properties_descriptor() shall be as given immediately below the table.

Table 7.22 Bit Stream Syntax for the Audio Stream Properties Descriptor

Syntax	No. of Bits	Format
audio_stream_properties_descriptor() {		
descriptor_tag	16	uimbsf
descriptor_length	16	uimbsf
number_of_assets	8	uimbsf
for (i=0; i<number_of_assets; i++) {		
asset_id_length	32	uimbsf
for (j=0; j<asset_id_length; j++) {		
asset_id_byte	8	uimbsf
}		
codec_code	4*8	uimbsf
num_presentations	8	uimbsf
multi_stream_info_present	1	bslbf
emergency_info_time_present	1	bslbf
reserved	6	‘111111’
for (j=0; j<num_presentations; j++) {		
presentation_id	8	uimbsf
interactivity_enabled	1	bslbf
profile_channel_config_present	1	bslbf
profile_long	1	bslbf
channel_config_long	1	bslbf
audio_rendering_info_present	1	bslbf
language_present	1	bslbf
accessibility_role_present	1	bslbf
label_present	1	bslbf
if (profile_channel_config_present) {		
if (profile_long == 1) {		
profile_level_indication	3*8	uimbsf
} else {		
profile_level_indication	8	uimbsf
}		
if (channel_config_long == 1) {		
audio_channel_config	3*8	uimbsf
} else {		

audio_channel_config	8	uimbsf
}		
}		
if (audio_rendering_info_present) {		
audio_rendering_indication	8	uimbsf
}		
if (language_present) {		
num_languages_minus1	8	uimbsf
for(k=0; k< num_languages_minus1+1; k++) {		
language_length	8	uimbsf
for (l=0; l< language_length; l++) {		
language_byte	8	uimbsf
}		
}		
}		
if (accessibility_role_present) {		
for(k=0; k< num_languages_minus1+1; k++) {		
accessibility	8	uimbsf
}		
role	8	uimbsf
}		
if (label_present) {		
label_length	8	uimbsf
for(k=0; k< label_length; k++) {		
label_data_byte	8	uimbsf
}		
}		
if (multi_stream_info_present) {		
presentation_aux_stream_info()		Table 7.30
}		
/* end of for num_presentations loop*/		
if (multi_stream_info_present) {		
multi_stream_info()		Table 7.29
}		
if (emergency_info_time_present) {		
emergency_information_time_info()		Table 7.28
}		
}		
}		

descriptor_tag – A 16-bit unsigned integer field that shall have the value 0x0009, identifying this descriptor as the audio_stream_properties_descriptor().

descriptor_length – A 16-bit unsigned integer field that shall specify the length (in bytes) immediately following this field up to the end of this descriptor.

number_of_assets – An 8-bit unsigned integer field that shall specify the number of audio assets described by this descriptor.

asset_id_length – An 32-bit unsigned integer field that shall specify the length in bytes of the audio asset id.

asset_id_byte – An 8-bit unsigned integer field that shall contain a byte of the audio asset id.

codec_code – A 32-bit unsigned integer field that shall specify a 4-character code for a codec. For AC-4 Audio [8], the value of this element shall be created according to the syntax described in RFC6381 [30] and consists of the “fourCC” ‘ac-4’. For MPEG-H Audio [9], the value of these four characters shall be one of ‘mhm1’ or ‘mhm2’ with semantic meaning for these codes as specified in ISO/IEC 23008-3 [40] ~~as amended~~.

multi_stream_info_present – A 1-bit Boolean flag that shall indicate, when set to ‘1’, that the elements in the multi_stream_info() structure are present and that the stream is part of a bundle of streams that together form an audio program. When set to ‘0’, this flag shall indicate that the elements in the multi_stream_info() structure are not present and that the audio stream is a complete main stream that contains all audio Components of all presentations.

emergency_info_time_present – A 1-bit Boolean flag that, when set to ‘1’, shall indicate that the elements in the emergency_information_time_info() structure are present. This field, when set to ‘0’, shall be an indication that the elements in the emergency_information_time_info() structure are not present. The value of this field shall be equal to ‘0’ when none of the Presentations in the audio asset contain an audio/aural representation of the emergency information.

num_presentations – An 8-bit unsigned integer field that shall indicate the number of Presentations that are available within the main stream and all auxiliary streams. The minimum number of num_presentations shall be ‘1’ for the main stream. For auxiliary streams num_presentations shall have the value ‘0’ so that for auxiliary streams no presentation information is present in the descriptor.

In the case of AC-4 Audio [8], this field shall contain the value of the n_presentations field from the ac4_dsi_v1 structure as specified in Annex E.6 of ETSI TS 103 190-2 [13].

In the case of MPEG-H Audio [9], this field contains a ‘mae_numGroupPresets’ field as specified in ISO/IEC 23008-3 subclause 15.3 [40] ~~as amended~~.

presentation_id – An 8-bit unsigned integer field that shall identify the ID of this Presentation. The first presentation in the loop shall have the lowest presentation_id and shall be the default Presentation.

In the case of AC-4 Audio [8] this field shall contain the value of the presentation_group_index in the ac4_presentation_v1_dsi associated with an AC-4 presentation as specified in Annex E.10 of ETSI TS 103 190-2 [13].

In the case of MPEG-H Audio [9], this field contains a ‘mae_GroupPresetID’ field as specified in ISO/IEC 23008-3 subclause 15.3 [40] ~~as amended~~.

interactivity_enabled – A 1-bit Boolean flag that shall indicate, when set to ‘1’, that the audio presentation contains elements with associated metadata, which enable user interactivity. When set to ‘0’, the flag shall indicate that no user interactivity of any kind is available. This flag may be used to determine the need for initializing a user interface for audio interactivity.

profile_channel_config_present – A 1-bit Boolean flag that shall indicate, when set to ‘1’, that profile and channel configuration information for this Presentation is present. When set to ‘0’, this flag shall indicate that no profile and channel configuration information for this Presentation is present.

The profile_channel_config_present flag shall be always set to ‘1’ for the default presentation.

profile_long – A 1-bit Boolean flag that shall indicate, when set to ‘1’, that profile level information for this Presentation is signaled using 3 bytes (“long format”). When set to ‘0’, this flag shall indicate that profile level information for this Presentation is signaled using 1 byte (“short

format”). In the case of AC-4 Audio [8] this field shall be set to ‘1’. In the case of MPEG-H Audio [9] this field shall be set to ‘1’ if the [CompatibleProfileLevelSet\(\) config extension element specified in ISO/IEC 23008-3, Clause 4.8.2.7 \[40\]](#) is present, or to ‘0’ otherwise.

channel_config_long – A 1-bit Boolean flag that shall indicate, when set to ‘1’, that channel configuration information for this Presentation is signaled using 3 bytes (“long format”). When set to ‘0’, this flag shall indicate that channel configuration information for this Presentation is signaled using 1 byte (“short format”). In the case of AC-4 Audio [8] this field shall be set to ‘1’. In the case of MPEG-H Audio [9] this field shall be set to ‘0’.

audio_rendering_info_present – A 1-bit Boolean flag that shall indicate, when set to ‘1’, that additional audio rendering info for this Presentation is present. When set to ‘0’, this flag shall indicate that no additional audio rendering info for this Presentation is present.

language_present – A 1-bit Boolean flag that shall indicate, when set to ‘1’, that language information for this Presentation is present. When set to ‘0’, this flag shall indicate that no language information for this Presentation is present.

accessibility_role_present – A 1-bit Boolean flag that shall indicate, when set to ‘1’, that accessibility and role information for this Presentation is present. When set to ‘0’, this flag shall indicate that no accessibility and role information for this Presentation is present.

label_present – A 1-bit Boolean flag that shall indicate, when set to ‘1’, that a text label for this Presentation is present. When set to ‘0’, this flag shall indicate that the text label for this Presentation is not present.

profile_level_indication – This field shall indicate the audio profile and level of the associated presentation, i.e. it indicates the complexity and decoder requirements.

If profile_long is set to ‘1’, this field is a 3*8bit unsigned integer field. In the case of AC-4 Audio [8], this field shall contain the values of the bitstream_version, presentation_version, and mdcompat fields of the presentation from the ac4_dsi_v1 structure as specified in Annex E of ETSI TS 103 190-2 [13]. The syntax of the profile_level_indication field shall be as specified in Table 7.23.

Table 7.23 Syntax for AC-4 profile_level_indication()

Syntax	No. of Bits	Format
profile_level_indication() {		
bitstream_version	7	uimbsf
presentation_version	8	uimbsf
mdcompat	3	uimbsf
reserved	6	‘111111’
}		

In the case of MPEG-H Audio [9], this field shall contain the values of the [‘mpeg3daProfileLevelIndication’](#) and [‘CompatibleSetIndication’](#) fields as specified in ISO/IEC 23008-3 subclause 5.3.2 [40]. The syntax of the profile_level_indication field shall be as specified in Table 7.24.

Table 7.24 Syntax for MPEG-H Audio `profile_level_indication()`

Syntax	No. of Bits	Format
<code>profile_level_indication() {</code>		
<code>mpegh3daProfileLevelIndication</code>	8	uimbsf
<code>CompatibleSetIndication</code>	8	uimbsf
<code>reserved</code>	8	'111111'
<code>}</code>		

If `profile_long` is set to '0', this field is an 8-bit unsigned integer field. In the case of MPEG-H Audio [9], this field shall contain an '`mpegh3daProfileLevelIndication`' field as specified in ISO/IEC 23008-3 subclause 5.3.2 [40] ~~as amended~~.

Following new Table 7.24, renumber all subsequent tables in Section 7.

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