

CTA Bulletin

Recommended Practice for ATSC 3.0 Television Sets, Audio

CTA-CEB32.5

June 2017

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(Formulated under the cognizance of the CTA **R4 Video Systems Committee**.)

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FOREWORD

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CONTENTS

1 Scope	1
2 References.....	1
2.1 Informative References	1
2.1.1 Informative Reference List	1
2.1.2 Informative Reference Acquisition	1
2.2 Compliance Notation	2
2.3 Definitions	2
2.4 Symbols and Abbreviations.....	2
2.5 Glossary of Common Terms	3
2.6 Mapping of Common Terms to Specific Audio System Terms.....	5
2.7 Relationship of Terms to Audio Stream Elements	6
3 ATSC 3.0 Audio System Overview	6
3.1 General Features.....	6
3.2 ATSC 3.0 Audio Systems	6
4 ATSC 3.0 General Television Set Recommendations	7
4.1 General.....	7
4.2 Audio Presentations	8
4.3 User Setup	8
4.4 Automatic Selection	9
4.5 User Interface	9
4.6 Seamless Processing	9
4.7 Loudness Control	9
4.8 Audio Outputs	10
5 AC-4 Audio System Television Set Recommendations	10
5.1 System Overview	10
5.2 Features	10
5.3 Metadata Structure	10
5.4 System Recommendations	13
5.4.1 Decoder Levels.....	13
5.4.2 Audio Frame Rates.....	13
5.4.3 Loudness Management and DRC	13
5.4.4 Dialog Enhancement.....	13
5.4.5 Presentation Selection.....	14
5.5 User Interface Recommendations	14
5.5.1 Downmix Mode	14
6 MPEG-H Audio System Television Set Recommendations	14
6.1 System Overview	14
6.2 Metadata Structure	14
6.3 MPEG-H Audio Stream Packet format	14
6.4 System Recommendations	15
6.4.1 General	15
6.4.2 Decoder behavior	15
6.4.3 Loudness and DRC	16
6.4.4 Audio Presentation Selection.....	16

6.4.5 Multi-stream considerations.....	16
6.4.6 User Interface Recommendations	16
User Operation	16
User Interface for Interactivity.....	17

FIGURES

Figure 1 Relationship of key audio terms (adapted from A/342, Part 1)	6
Figure 2 Example of encoding Broadcast Operating Profiles (based on A/342, Part 1 [1], Annex A)	8
Figure 3 High-Level Metadata Structure	11
Figure 4 Example of AC-4 frame with several Presentations and Substream Groups.....	12
Figure 5: MPEG-H Audio Decoder Interface for user interactivity	18
Figure 6: Interface on systems level for user interactivity	18

TABLES

Table 1 Common Terms as they Apply to this Recommended Practice	4
Table 2 Mapping of Alternative Terms to Audio Glossary Common Terms.....	5
Table 3 Audio Characteristics Signaled by ATSC 3.0 Delivery Layer	7

Recommended Practice for ATSC 3.0 Television Sets, Audio

1 Scope

This bulletin makes recommendations related to the audio capabilities of ATSC 3.0 Television Sets.

2 References

2.1 Informative References

The following documents contain provisions that, through reference in this text, constitute informative provisions of this document. At the time of publication, the editions indicated were valid. For dated references, only the edition cited applies. For undated references the latest edition of the referenced document (including any amendments) applies. All documents are subject to revision. Users of this document are cautioned that newer editions of the referenced documents might or might not be compatible.

2.1.1 Informative Reference List

1. ATSC A/342 Part 1:2017, "Audio Common Elements", 24 January 2017.
2. ATSC A/342 Part 2:2017, "AC-4 System", 23 February 2017. □
3. ATSC A/342 Part 3:2017, "MPEG-H System", 3 March 2017. □
4. ATSC Candidate Standard, A/331 Signaling, Delivery, Synchronization, and Error Protection, 21 September 2016.
5. ISO/IEC 23008-3:2015: "Information technology – High efficiency coding and media delivery in heterogeneous environments – Part 3: 3D audio", including ISO/IEC 23008-3:2016/Amd 2: "Amendment 2: Part 3: 3D audio - MPEG-H 3D Audio File Format Support", ISO/IEC 23008-3:2015/Amd 3 2017: "Information technology -- High efficiency coding and media delivery in heterogeneous environments - Part 3: 3D audio - Amendment 3".
6. ISO/IEC 23003-4:2015: "MPEG audio technologies - Part 4: Dynamic Range Control".
7. ETSI TS 103 190-1, Digital Audio Compression (AC-4) Standard Part 1: Channel-based coding, June 2015.
8. ETSI TS 103 190-2, Digital Audio Compression (AC-4) Standard Part 2: Immersive and personalized audio, September 2015.
9. ATSC Doc. A/85:2013, ATSC Recommended Practice: Techniques for Establishing and Maintaining Audio Loudness for Digital Television, 12 March 2013.
10. Guidelines for Implementation: DASH-IF Interoperability Point for ATSC 3.0
11. CTA-CEB32.4, Recommended Practice for ATSC 3.0 Television Sets, Video, 2017
12. Recommendation ITU-R BS.1770-4 (10/2015) "Algorithms to measure audio programme loudness and true-peak audio level".
13. ATSC Candidate Standard A/300: "ATSC 3.0 System", 28 February 2017.

2.1.2 Informative Reference Acquisition

ATSC Standards

- Advanced Television Systems Committee, 1776 K Street NW, Washington, DC, 20006-2340, +1 202-872-9160, <http://www.atsc.org>

CTA Standards and Bulletins:

- Techstreet, 3916 Ranchero Drive, Ann Arbor, MI, USA 48108; Phone 800-699-9277; Fax 734-780-2046; Internet <http://www.techstreet.com>; Email techstreet.service@thomsonreuters.com

CTA Standards

- Consumer Technology Association, 1919 S. Eads St., Arlington, VA 22202, +1 202-872-9160, <http://www.cta.tech>

ETSI Standards

- European Telecommunications Standards Institute, 650, route des Lucioles, 06921 Sophia-Antipolis Cedex, France ; Phone +33 (0)4 92 94 42 00 ; Fax +33 (0)4 93 65 47 16 ; <http://www.etsi.org>

DASH-IF Standard

- DASH Industry Forum; <http://dashif.org>

ISO Standards

- Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva Switzerland, +41 22 749 01 11, Email: central@iso.org; <https://www.iso.org/store.html>

ITU Standards

- Place des Nations 1211, Geneva 20 Switzerland, +41 22 730 5111, Email: [euregion\(@\)itu.int](mailto:euregion(@)itu.int); <http://www.itu.int>

2.2 Compliance Notation

As used in this document “should” denotes a provision that is recommended but not mandatory. “May” denotes a feature whose presence does not preclude compliance, and implementation of which is optional. “Optional” denotes items that may or may not be present in a compliant device. This document does not contain any normative elements.

2.3 Definitions

ATSC 3.0 Television Set	A product capable of receiving an ATSC 3.0 transmission, producing a visible image from such a transmission, powered from the mains, and not including a main battery.
Immersive Audio	An audio system that enables high spatial resolution in sound source localization in azimuth, elevation and distance, and provides an increased sense of sound envelopment.

2.4 Symbols and Abbreviations

ATSC	Advanced Television Systems Committee
C	Center (audio channel)
DASH	Dynamic Adaptive Streaming over HTTP
DASH-IF	DASH Industry Forum
GUI	Graphical User Interface