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S T A N D A R D S

Digital Video Subcommittee

AMERICAN NATIONAL STANDARD

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**Digital Video Service Multiplex and Transport System
Standard for Cable Television**

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140 Philips Road
Exton, PA 19341

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1. Introduction

1.1. Scope

This document describes the transport subsystem characteristics and normative specifications of the in-band Service Multiplex and Transport Subsystem Standard for Cable Television.¹

2. Normative References

The following documents contain provisions, which, through reference in this text, constitute provisions of this document. At the time of Subcommittee approval, the editions indicated were valid. All documents are subject to revision; and while parties to any agreement based on this document are encouraged to investigate the possibility of applying the most recent editions of the documents listed below, they are reminded that newer editions of those documents might not be compatible with the referenced version.

2.1. SCTE References

1. SCTE 128-1 (2020) AVC Video Constraints for Cable Television Part 1: Coding
2. ANSI/SCTE 194-1 (2018) DTS-HD Audio System – Part 1: Coding Constraints for Cable Television
3. SCTE 193-1 (2020) MPEG-4 AAC Family Audio System – Part 1 Coding Constraints for Cable Television
4. ANSI/SCTE 242-1 (2017) Next Generation Audio Coding Constraints for Cable Systems: Part 1 – Introduction and Common Constraints
5. ANSI/SCTE 242-2 (2017) Next Generation Audio Coding Constraints for Cable Systems: Part 2 – AC-4 Audio Coding Constraints
6. ANSI/SCTE 242-3 (2017) Next Generation Audio Coding Constraints for Cable Systems: Part 3 – MPEG-H Audio Carriage Constraints
7. ANSI/SCTE 242-4 (2018) Next Generation Audio Coding Constraints for Cable Systems: Part 4 – DTS-UHD Audio Coding Constraints

2.2. Standards from Other Organizations

8. ATSC A/52:2018, Digital Audio Compression (AC-3, E-AC-3) Standard.
9. ATSC A/53 Part 3:2013, Service Multiplex and Transport Subsystem Characteristics
10. ATSC A/53 Part 4:2009, MPEG-2 Video System Characteristics
11. ATSC A/65: 2013, Program and System Information Protocol (PSIP) for Terrestrial Broadcast and Cable.
12. ISO/IEC 13818-1, (2019), “Information Technology—Generic coding of moving pictures and associated audio—Part 1: Systems.”
13. ISO/IEC IS 13818-2, (2013), “Information Technology—Generic coding of moving pictures and associated audio—Part 2: Video.”
14. ANSI-J-STD-42-C-2018, Emergency Alert Messaging for Cable.
15. ATSC A/53 Part 5:2014, AC-3 Audio System Characteristics
16. ATSC A/53 Part 6:2013, Enhanced AC-3 Audio System Characteristics

¹ Informative note: This standard applies only to Transport Streams transmitted on cable using 64-QAM or 256-QAM in accordance with ANSI/SCTE 07 [17] *Digital Video Transmission Standard for Cable Television*.

2.3. Published Materials

- No normative references are applicable.

3. Informative References

The following documents might provide valuable information to the reader but are not required when complying with this document.

3.1. SCTE References

17. ANSI/SCTE 07 2018, Digital Video Transmission Standard for Cable Television
18. SCTE 128-2 2018 AVC Video Constraints for Cable Television Part 2: Transport
19. SCTE 193-2 (2020) MPEG-4 AAC Family Audio System – Part 2 Constraints for Carriage over MPEG-2 Transport
20. ANSI/SCTE 194-2 (2018) DTS-HD Audio System – Part 2: Constraints for Carriage over MPEG-2 Transport
21. SCTE 215-1 2020 HEVC Video Constraints for Cable Television Part 1- Coding
22. SCTE 215-1-1 2020 HEVC Video Constraints for Cable Television Part 1-1 HDR10 Coding
23. ANSI/SCTE 215-2 2018 HEVC Video Constraints for Cable Television Part 2- Transport
24. ANSI/SCTE 243-1 2017 Next Generation Audio Carriage Constraints for Cable Systems: Part 1 – Common Transport Signaling
25. ANSI/SCTE 243-2 2017 Next Generation Audio Carriage Constraints for Cable Systems: Part 2 – AC-4 Audio Carriage Constraints
26. ANSI/SCTE 243-3 2017 Next Generation Audio Carriage Constraints for Cable Systems: Part 3 – MPEG-H Audio Carriage Constraints
27. ANSI/SCTE 243-4 2018 Next Generation Audio Carriage Constraints for Cable Systems: Part 4 – DTS-UHD Audio Carriage Constraints

3.2. Standards from Other Organizations

28. ANSI/CEA-766-D (2013), U.S. and Canadian Rating Region Tables (RRT) and Content Advisory Descriptors for Transport of Content Advisory Information Using ATSC Program and System Information Protocol (PSIP).
29. ATSC A/71:2012 Parameterized Services Standard
30. ATSC Code Point Registry, available at <https://www.atsc.org/standards/code-point-registry/>
31. ETSI TS 103 190-2 V1.2.1 Digital Audio Compression (AC-4) Standard; Part 2: Immersive and personalized audio (2018-02).

3.3. Published Materials

- No informative references are applicable.

4. Compliance Notation

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5. Abbreviations and Definitions

5.1. Abbreviations

64-QAM	64-state quadrature amplitude modulation
256-QAM	256-state quadrature amplitude modulation
AAC	advanced audio coding
AC-3	Audio Codec 3 or Advanced Codec 3 (also Dolby Digital)
ADTS	audio data transport stream
ANSI	American National Standards Institute
ASCII	American Standard Code for Information Interchange
ATSC	Advanced Television Systems Committee
AVC	advanced video coding
bps	bits per second
CA	conditional access
CEA	Consumer Electronics Association (now known as CTA, see below)
CM	complete main [audio service]
CRC	cyclic redundancy check
CTA	Consumer Technology Association (formerly known as CEA, see above) URL https://www.cta.tech/
CVCT	cable virtual channel table
E-AC-3	Enhanced AC-3 (also Dolby Digital Plus)
ECM	entitlement control message
e.g.	for example (exempli gratia)
EIT	event information table
ES	elementary stream

ETT	extended text table
ID	identifier
i.e.	that is (id est)
IEC	International Electrotechnical Commission
ITU-T	ITU Telecommunication Standardization Sector
IS	international standard
ISO	International Organization for Standardization
LATM	low overhead audio transport multiplex
LBR	low bit rate
LLC	limited liability company
LOAS	low overhead audio stream
Mbps	megabits per second
ME	music and effects
MGT	master guide table
MPEG	Moving Picture Experts Group
MRD	MPEG-2 Registration Descriptor
ms	millisecond
Msps	megasymbols per second
PAT	program association table
PES	packetized elementary stream
PID	packet identifier
PMT	program map table (more properly, TS program map section())
PSI	program specific information
PSIP	program and system information protocol
PTS	presentation time stamp
QAM	quadrature amplitude modulation
RRT	rating region table
SCTE	Society of Cable Telecommunications Engineers
SI	service information
SMPTE	Society of Motion Picture and Television Engineers
STT	system time table
TS	Transport Stream
T-STD	Transport Stream system target decoder
TVCT	terrestrial virtual channel table

5.2. Definitions

MPEG-2 program	As defined by ISO/IEC 13818-1 [12] Section 2.1.59 “A program is a collection of program elements,” and may be further constrained by the terms of this present document. The word “program” may or may not be capitalized but means the same regardless.
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6. System Overview

The transport format and protocol for the Service Multiplex and Transport Subsystem Standard for Cable Television is a compatible subset of the MPEG-2 Systems specification defined in ISO/IEC 13818-1 [12]. It is based on a fixed-length packet Transport Stream approach which has been defined and optimized for digital television delivery applications.