

SCTE | **STANDARDS**

Digital Video Subcommittee

AMERICAN NATIONAL STANDARD

ANSI/SCTE 281-2 2023

**VVC Video Constraints for Cable Television
Part 2- Transport**

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Document Types and Tags

Document Type: Specification

Document Tags:

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| ☐ Test or Measurement | ☐ Checklist | ☐ Facility |
| ☐ Architecture or Framework | ☐ Metric | ☐ Access Network |
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Document Release History

Release	Date
SCTE 281-2 2023	3/1/2023

Note: Standards that are released multiple times in the same year use: a, b, c, etc. to indicate normative balloted updates and/or r1, r2, r3, etc. to indicate editorial changes to a released document after the year.

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1. Introduction

1.1. Executive Summary

This document describes the constraints of carriage of a single VVC coded video elementary stream over an MPEG-2 transport stream.

1.2. Scope

This document defines the transport constraints on ITU-T Rec. H.266 | ISO/IEC 23090-3 [MPEG-VVC] video compression (hereafter called "VVC") for cable television. In particular, this document describes the transmission of a single VVC coded video elementary stream constrained per [SCTE 281-1] over MPEG-2 transport (ISO/IEC 13818-1 [MPEG-2 TS]) for linear delivery systems supporting ad insertion services [SCTE 35]. Beyond linear delivery with DPI, signaling is provided for segmentation of contents for xDVR applications.

NOTE 1: The carriage of video in the MPEG-2 service multiplex is described in [SCTE 54] .

1.3. Background (Informative)

This document specifies the transport of an VVC coded video elementary stream constrained per [SCTE 281-1] intended for cable video services. There are other applications such as time-shifting (e.g., PVR/DVR service), Video-on-Demand services, and splicing (e.g., Ad-insertion) that could employ the specifications in this document. However, constraints specific to those applications are outside of the scope of this document at this time.

2. Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this document. The editions indicated were valid at the time of subcommittee approval. 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

[SCTE 35]	ANSI/SCTE 35 2022, Digital Program Insertion Cueing Message for Cable.
[SCTE 54]	ANSI/SCTE 54 2020, Digital Video Service Multiplex and Transport System Standard for Cable Television.
[SCTE 128-1]	ANSI/SCTE 128-1 2020, AVC Video Constraints for Cable Television Part 1 – Coding.
[SCTE 128-2]	ANSI/SCTE 128-2 2018, AVC Video Constraints for Cable Television Part 2 – Transport.
[SCTE 281-1]	SCTE 281-1 2023, VVC Video Constraints for Cable Television Part 1 – Coding.

2.2. Standards from other Organizations

[ATSC A/65]	ATSC A/65:2013 Program and System Information Protocol for Terrestrial Broadcast and Cable; Section 6.9.2.
[CICP 23091-2]	ITU-T H.273 ISO/IEC 23091-2:2022, Information technology-Coding independent code points – Part 2: Video
[CICP 23091-4]	ITU-T H. Supplemental 19 ISO/IEC TR 23091-4 : 2021, Information technology-Coding independent code points – Part 4: Usage of video signal type code points.
[DVB-TS]	ETSI TS 101 154 V2.7.1 Digital Video Broadcasting (DVB): Specification for the use of Video and Audio Coding in Broadcasting Applications based on the MPEG-2 Transport Stream, 2022.
[MPEG-2 TS]	ISO/IEC 13818-1:2022, “Information Technology – Generic coding of moving pictures and associated audio – Part 1: Systems
[MPEG-2 TS/AMD1]	ISO/IEC 13818-1:AMD1 Carriage of LCEVC and other improvements.
[MPEG-VSEI]	ITU-T Rec. H.274 ISO/IEC 23002-7:2022 – Versatile supplemental enhancement information messages for coded video bitstreams
[MPEG-VVC]	ITU-T Rec. H.266 ISO/IEC 23090-3:2022 – MPEG-I Part 3: Versatile Video Coding

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

[SCTE 07]	ANSI/SCTE 07 2018, Digital Transmission Standard for Cable Television.
[SCTE 21]	ANSI/SCTE 21 2017 (R2022), Standard for Carriage of NTSC VBI Data in Cable Digital Transport Streams.
[SCTE 43]	ANSI/SCTE 43 2015 (R2021), Digital Video Systems Characteristics Standard for Cable Television.
[SCTE 67]	ANSI/SCTE 67 2017, Recommended Practice for SCTE 35 Digital Program Insertion Cueing Message for Cable.
[SCTE 172]	ANSI/SCTE 172 2017, Constraints on AVC Video Coding for Digital Program Insertion.

3.2. Standards from other Organizations

[ATSC A/53]	ATSC A/53, Part 3, “Service Multiplex and Transport Subsystem Characteristics”.
[CTA-CEB16]	CTA-CEB16: Active Format Description (AFD) & Bar Data Recommended Practice.