SCTE | STANDARDS

Data Standards Subcommittee

AMERICAN NATIONAL STANDARD

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DOCSIS 3.1 Part 1: Physical Layer Specification

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Document Type: Specification

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1. Introduction

1.1. Executive Summary

The present document provides the SCTE endorsement of CableLabs specification: CM-SP-PHYv3.1-I19-211110.

1.2. Scope

This specification is part of the DOCSIS family of specifications developed by Cable Television Laboratories (CableLabs). In particular, this specification is part of a series of specifications that defines the fifth generation of high-speed data-over-cable systems, commonly referred to as the DOCSIS 3.1 specifications. This specification was developed for the benefit of the cable industry, and includes contributions by operators and vendors from North and South America, Europe and Asia.

This generation of the DOCSIS specifications builds upon the previous generations of DOCSIS specifications (commonly referred to as the DOCSIS 3.0 and earlier specifications), leveraging the existing Media Access Control (MAC) and Physical (PHY) layers, but with the addition of a new PHY layer designed to improve spectral efficiency and provide better scaling for larger bandwidths (and appropriate updates to the MAC and management layers to support the new PHY layer). It includes backward compatibility for the existing PHY layers in order to enable a seamless migration to the new technology.

There are differences in the cable spectrum planning practices adopted for different networks in the world. For the new PHY layer defined in this specification, there is flexibility to deploy the technology in any spectrum plan; therefore, no special accommodation for different regions of the world is required for this new PHY layer.

However, due to the inclusion of the DOCSIS 3.0 PHY layers for backward compatibility purposes, there is still a need for different region-specific physical layer technologies. Therefore, three options for physical layer technologies are included in this specification, which have equal priority and are not required to be interoperable. One technology option is based on the downstream channel identification plan that is deployed in North America using 6 MHz spacing. The second technology option is based on the corresponding European multi-program television distribution. The third technology option is based on the corresponding Chinese multi-program television distribution. All three options have the same status, notwithstanding that the document structure does not reflect this equal priority. The first of these options is defined in Sections 5 and 6, whereas the second is defined by replacing the content of those sections with the content of Annex C. The third is defined by replacing the content of those sections with the content of Annex D. Correspondingly, [ITU-T J.83-B] and [CEA-542] apply only to the first option, and [EN 300 429] applies to the second and third. Compliance with this document requires compliance with one of these implementations, but not with all three. It is not required that equipment built to one option interoperate with equipment built to the other.

Compliance with frequency planning and EMC requirements is not covered by this specification and remains the operators' responsibility. In this respect, [FCC15] and [FCC76] are relevant to the USA; [CAN/CSA CISPR 22-10] and [ICES 003 Class A] to Canada; [EG 201 212], [EN 50083-1], [EN 50083-2], [EN 50083-7], [EN 61000-6-1], and [EN 61000-6-3] are relevant to the European Union; [GB 8898-2011] and [GB/T 11318.1-1996] are relevant to China.

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

- No normative references are applicable.

2.2. Standards from Other Organizations

[1] Physical Layer Specification, CM-SP-PHYv3.1-I19-211110, November 10, 2021, Cable Television Laboratories, Inc. www.cablelabs.com

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

- No informative references are applicable.

3.2. Standards from Other Organizations

- No informative references are applicable.

3.3. Published Materials

- No informative references are applicable.

4. Compliance Notation

shall	This word or the adjective "***required***" means that the item is an absolute requirement of this document.
shall not	This phrase means that the item is an absolute prohibition of this document.
forbidden	This word means the value specified shall never be used.
should	This word or the adjective "*recommended*" means that there may exist valid reasons in particular circumstances to ignore this item, but the full implications should be understood and the case carefully weighted before choosing a different course.
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deprecated	Use is permissible for legacy purposes only. Deprecated features may be removed from future versions of this document. Implementations should avoid use of deprecated features.

5. Abbreviations and Definitions

5.1. Abbreviations

For the purposes of the present document, the abbreviations given in CableLabs specification: CM-SP-PHYv3.1-I19-211110, [1] apply.

5.2. Definitions

For the purposes of the present document, the definitions given in CableLabs specification: CM-SP-PHYv3.1-I19-211110, [1] apply.

6. Endorsement Notice

All elements of CableLabs specification: CM-SP-PHYv3.1-I19-211110, [1] ***shall*** apply without modifications.