Society of Cable Telecommunications Engineers

ENGINEERING COMMITTEE
Data Standards Subcommittee

AMERICAN NATIONAL STANDARD

ANSI/SCTE 137-2 2017

Modular Head End Architecture
Part 2: M-CMTS Downstream External PHY Interface

NOTICE

The Society of Cable Telecommunications Engineers (SCTE) Standards and Operational Practices (hereafter called "documents") are intended to serve the public interest by providing specifications, test methods and procedures that promote uniformity of product, interchangeability, best practices and ultimately the long term reliability of broadband communications facilities. These documents shall not in any way preclude any member or non-member of SCTE from manufacturing or selling products not conforming to such documents, nor shall the existence of such standards preclude their voluntary use by those other than SCTE members.

SCTE assumes no obligations or liability whatsoever to any party who may adopt the documents. Such adopting party assumes all risks associated with adoption of these documents, and accepts full responsibility for any damage and/or claims arising from the adoption of such documents.

Attention is called to the possibility that implementation of this document may require the use of subject matter covered by patent rights. By publication of this document, no position is taken with respect to the existence or validity of any patent rights in connection therewith. If a patent holder has filed a statement of willingness to grant a license under these rights on reasonable and nondiscriminatory terms and conditions to applicants desiring to obtain such a license, then details may be obtained from the standards developer. SCTE shall not be responsible for identifying patents for which a license may be required or for conducting inquiries into the legal validity or scope of those patents that are brought to its attention.

Patent holders who believe that they hold patents which are essential to the implementation of this document have been requested to provide information about those patents and any related licensing terms and conditions. Any such declarations made before or after publication of this document are available on the SCTE web site at *http://www.scte.org*.

Contents

List of Figures

List of Tables

1 SCOPE

1.1 Scope and Purpose

NOTE: This document is identical to SCTE 137-2 2010 except for informative components which may have been updated such as the title page, NOTICE text, headers and footers. No normative changes have been made to this document.

This specification is part of the DOCSIS® family of specifications, and in particular, is part of a series of specifications that define a Modular Cable Modem Termination System (M-CMTS™) architecture for head-end components that comply with DOCSIS. This specification was developed for the benefit of the cable industry, and includes contributions by operators and vendors from North America, Europe, and other regions.

The DOCSIS Specifications [RFI2.0] define the requirements for the two fundamental components that comprise a high-speed data-over-cable system: the cable modem (CM) and the cable modem termination system (CMTS). The M-CMTS architecture was designed as an extension to the DOCSIS Specifications to allow for flexibility and independent scaling of certain CMTS functions, and to allow operators to more efficiently use available network resources.

One of the key elements of the M-CMTS architecture is the separation of the downstream physical layer QAM modulation and up-conversion functions from the CMTS, and the placement of that functionality into an "Edge-QAM" (EQAM) device. This separation allows for the development of EQAM products that support both video and DOCSIS, which in turn allows operators to use the same network resources to support multiple types of services such as data, voice, and video.

This document defines an interface known as the Downstream External PHY Interface (DEPI) and associated protocol requirements for the transport of downstream user data between the "M-CMTS Core" and the EQAM. It describes the characteristics of the DEPI interface, provides requirements that must be met by the M-CMTS Core and the EQAM, and also describes various aspects of technical issues that are involved in the implementation and deployment of a DOCSIS system using the M-CMTS architecture.

A list of the documents in the Modular CMTS Interface Specifications family is provided below.

Designation	Title
SCTE 137-2 2010	M-CMTS Downstream External PHY Interface (this document)
SCTE 137-1 2010	DOCSIS Timing Interface
SCTE 137-4 2010	Edge Resource Manager Interface
SCTE 137-3 2010	M-CMTS Operations Support System Interface

1.2 Requirements and Conventions

In this specification the following convention applies any time a bit field is displayed in a figure. The bit field should be interpreted by reading the figure from left to right, then from top to bottom, with the MSB being the first bit so read and the LSB being the last bit so read.