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

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1 SCOPE

1.1 Scope and Purpose

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
ANSI/SCTE 137-2 2010	M-CMTS Downstream External PHY Interface (this document)
ANSI/SCTE 137-1 2010	DOCSIS Timing Interface
ANSI/SCTE 137-4 2010	Edge Resource Manager Interface
ANSI/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.