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**IPCablecom 1.5 Part 14: Embedded MTA Analog Interface and
Powering**

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1 INTRODUCTION

1.1 Purpose

This standard defines the embedded MTA (E-MTA) requirements for the analog interface and for powering of the E-MTA. An embedded MTA is a DOCSIS cable modem (CM) integrated with an IPCablecom multimedia terminal adapter (MTA).

The purpose of this specification is to define a set of requirements that will enable a service that is sufficiently reliable to meet an assumed consumer expectation of essentially constant availability, including, specifically, availability during power failure at the customer's premises, and (assuming the service is used to connect to the PSTN), access to emergency services (911, etc.).

1.2 Scope

This document covers requirements for the E-MTA analog interface and for powering of the E-MTA. It is the intention of this document to address requirements only for the E-MTA. See Section 5.3.1 for a complete description of the E-MTA.

To enable a service that meets the assumed customer expectations described in Section 1.1, three E-MTA interfaces have been identified: (1) powering the E-MTA, (2) telemetry support, and (3) the analog POTS interface.

Powering the E-MTA is critical for the service to function during periods when utility power fails. Consequently, the power consumption characteristics of the E-MTA will enable service providers to offer alternate powering techniques.

Telemetry support enables the service provider to remotely monitor the status of the E-MTA. The first application of telemetry enables remote monitoring of the E-MTA power source.

The analog POTS interface requirements ensure that CPE that meets telephone industry interoperability requirements (normal telephones, answering machines, etc.) will also operate in the IPCablecom environment. Note that the voice-grade analog transmission requirements are dependent on the compression algorithm utilized to transport the packetized voice signal in the IPCablecom architecture. These requirements are derived from existing PSTN requirements that are based on a full 64 kbps voice channel. Therefore, the requirements specified are relevant only for the G.711 audio codec. Other audio codec compression algorithms specified by IPCablecom [2] are not addressed in this specification.

Note also that the telemetry interface specified in this document is between the E-MTA and an external local uninterruptible power supply (UPS). The UPS itself is not within the scope of this document, so specific requirements for the UPS are not included here. Nonetheless, requirements for the E-MTA telemetry interface may have certain design implications on the UPS.

1.3 Motivation

IPCablecom interface specifications define a system architecture to allow vendors to develop interoperable equipment capable of providing packet-based voice, video and other high-speed multimedia services over hybrid fiber coax (HFC) cable systems utilizing the DOCSIS protocol. IP-based voice telephony services are one possible service application.

From time to time this document refers to the voice communications capabilities of an IPCablecom network in terms of "IP Telephony." The legal/regulatory classification of IP-based voice communications provided over cable networks and otherwise, and the legal/regulatory obligations, if any, borne by providers of such voice communications, are not yet fully defined by appropriate legal and regulatory authorities. Nothing in this specification is addressed to, or intended to affect, those issues. In particular, while this document uses standard terms such as "call," "call signaling," "telephony," etc., it should be recalled that, while an IPCablecom network performs activities analogous to these PSTN functions, the manner by which it does so differs considerably from the manner in which they are performed in the PSTN by telecommunications carriers, and that these differences may be significant for legal/regulatory purposes. Moreover, while reference is made here to "IP Telephony," it should be

recognized that this term embraces a number of different technologies and network architecture, each with different potential associated legal/regulatory obligations. No particular legal/regulatory consequences are assumed or implied by the use of this term.

1.4 Document Overview

This specification is organized as follows:

- Section 5 presents an overview of the IPCablecom reference architecture.
- Section 6 defines the powering requirements of the E-MTA.
- Section 7 defines the analog port (POTS) requirements of the E-MTA.

1.5 Requirements and Conventions

Throughout this document, the words that are used to define the significance of particular requirements are capitalized. These words are:

“MUST”	This word or the adjective “REQUIRED” means that the item is an absolute requirement of this specification.
“MUST NOT”	This phrase means that the item is an absolute prohibition of this specification.
“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 weighed before choosing a different course.
“SHOULD NOT”	This phrase means that there may exist valid reasons in particular circumstances when the listed behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label.
“MAY”	This word or the adjective “OPTIONAL” means that this item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because it enhances the product, for example; another vendor may omit the same item.

2 REFERENCES

The following documents contain provisions which, through reference in this text, constitute provisions of this standard. At the time of Subcommittee approval, the editions indicated were valid. All documents are subject to revision, and while parties to agreement based on this standard 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 Normative References

In order to claim compliance with this standard, it is necessary to conform to the following standards and other works as indicated, in addition to the other requirements of this standard. Intellectual property rights may be required to implement these references.

- [1] ANSI/SCTE 165-03 2016, IP-Cablecom 1.5 Part 3: Network-Based Call Signaling Protocol.
- [2] ANSI/SCTE 165-02 2016, IP-Cablecom 1.5 Part 2: Audio/Video Codecs.
- [3] ANSI/SCTE 23-01 2017, DOCSIS 1.1 Part 1: Radio Frequency Interface
- [4] ANSI/SCTE 23-03 2017, DOCSIS 1.1 Part 3: Operations Support System Interface
- [5] Telcordia (Bellcore) GR-499-CORE, Issue 2, December 1998, Transport Systems Generic Requirements (TSGR): Common Requirements.
- [6] Telcordia (Bellcore) TR-NWT-000303, Issue 2, December 1992, Integrated Digital Loop Carrier System Generic Requirements, Objectives, and Interface.
- [7] Telcordia (Bellcore) GR-1089-CORE, Issue 2, December 1997, update rev 01, February 1999, Generic Requirements for Electronic Equipment Cabinets, Electromagnetic Compatibility and Electrical Safety Generic Criteria for Network Telecommunications Equipment.
- [8] Telcordia (Bellcore) TA-NWT-000909, Issue 2, December 1993, Generic Requirements and Objectives for Fiber in the Loop (FITL) Systems.
- [9] Telcordia (Bellcore) GR-517-CORE, Issue 1, December 1998, LEC Traffic Environment Characteristics.
- [10] ANSI/SCTE 165-16 2016, IP-Cablecom 1.5 Part 16: Management Event Mechanism.

2.2 Informative References

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

- [11] ANSI/SCTE 165-01 2019, IP-Cablecom 1.5 Part 1: Architecture Framework Technical Report.
- [12] ANSI/SCTE 135-05 2017, DOCSIS 3.0 Part 5: Cable Modem to Customer Premise Equipment Interface.
- [13] P. Key and D. Smith (editors). 1999. The Internet & The Public Switched Telephone Network – A Troubled Marriage. In Teletraffic Engineering in a Competitive World. Edinberg: Elsevier.

3 TERMS AND DEFINITIONS

This document uses the following terms:

- | | |
|-----------------------------|---------------------------------------|
| Bellcore (Telcordia) | PSTN research/standards organization. |
| Telcordia (Bellcore) | PSTN research/standards organization. |