



***Society of Cable
Telecommunications
Engineers***

**ENGINEERING COMMITTEE
Interface Practices Subcommittee**

AMERICAN NATIONAL STANDARD

ANSI/SCTE 174 2010

**Radio Frequency over Glass
Fiber-to-the-Home Specification**

NOTICE

The Society of Cable Telecommunications Engineers (SCTE) Standards are intended to serve the public interest by providing specifications, test methods and procedures that promote uniformity of product, interchangeability 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, whether used domestically or internationally.

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

Attention is called to the possibility that implementation of this standard may require the use of subject matter covered by patent rights. By publication of this standard, no position is taken with respect to the existence or validity of any patent rights in connection therewith. 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 standard 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>.

All Rights Reserved

© Society of Cable Telecommunications Engineers, Inc. 2010
140 Philips Road
Exton, PA 19341

TABLE OF CONTENTS

1.0	SCOPE AND DEFINITIONS.....	2
2.0	NORMATIVE REFERENCES	5
3.0	INFORMATIVE REFERENCES.....	6
4.0	REFERENCE ARCHITECTURE	7
5.0	SYSTEM SPECIFICATIONS	9
6.0	DOWNSTREAM R-ONU SPECIFICATIONS.....	11
7.0	UPSTREAM R-ONU SPECIFICATIONS.....	12
8.0	R-ONU POWER.....	18
9.0	PHYSICAL AND ENVIRONMENTAL.....	18
10.0	IMPLEMENTATION NOTES.....	22
11.0	APPENDIX A: SYSTEM LOSS SPECIFICATION.....	25
12.0	APPENDIX B: UPSTREAM RECEIVER	28
13.0	APPENDIX C: FM SPECIFICATION CLARIFICATION	28

1.0 SCOPE AND DEFINITIONS

1.1 Scope

This document defines a fiber-to-the-home system optimized for compatibility with hybrid fiber-coax (HFC) plant, using the same end equipment at both the home and at the headend or hub. The RFoG system is defined to begin where the plant becomes passive, extending from that point to the home. This interface is referred to as the Optical Hub. There are many possible variations on the structure of the optical hub, depending on the needs of the system. The RFoG system is defined to terminate at the subscriber-side interface of an RFoG Optical Network Unit (R-ONU) at the home.

The specifications in this document apply to the R-ONU and are designed to allow interoperability between R-ONUs from various manufacturers.

The following system parameters and devices are NOT specified by this document:

- Downstream transmitter and optical amplifier
- Upstream receiver
- System carrier-to-noise and distortion

Additionally, the following items are not specified for the R-ONU. The user is cautioned that there may well be variations between manufacturers.

- Physical mounting arrangement
- Weight
- Fiber management
- Element management
- Service disconnect
- Extended reach
- The optical front-end need not reject a 1577 nm 10G-EPON or a 1577 nm XG-PON downstream carrier

This document contains specifications for systems that use amplitude modulation (AM) in the upstream path and systems that use frequency modulation (FM) in the upstream path. Unless otherwise noted, this document details the requirements for AM systems. The sections that apply specifically to FM systems are so noted and do not apply to AM systems. Portions of the AM specifications that do not apply to FM systems are also noted. AM and FM systems cannot be mixed in the same optical distribution network (ODN).