

SCTE | **STANDARDS**

Interface Practices Subcommittee

AMERICAN NATIONAL STANDARD

ANSI/SCTE 265 2021

**Broadband Radio Frequency Hardline Passives for
Cable Systems**

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, interoperability, interchangeability, best practices, and 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.

NOTE: The user’s attention is called to the possibility that compliance with this document may require the use of an invention covered by patent rights. By publication of this document, no position is taken with respect to the validity of any such claim(s) or 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 <https://scte.org>.

All Rights Reserved
©2021 Society of Cable Telecommunications Engineers, Inc.
140 Philips Road
Exton, PA 19341

Document Types and Tags

Document Type: Specification

Document Tags:

- | | | |
|---|------------------------------------|--|
| ☐ Test or Measurement | ☐ Checklist | ☐ Facility |
| ☐ Architecture or Framework | ☐ Metric | ☒ Access Network |
| ☐ Procedure, Process or Method | ☐ Cloud | ☐ Customer Premises |

Table of Contents

Title	Page Number
NOTICE.....	2
Document Types and Tags.....	3
Table of Contents.....	4
1. Introduction.....	6
1.1. Executive Summary.....	6
1.2. Scope.....	6
1.3. Benefits.....	6
1.4. Intended Audience.....	6
1.5. Areas for Further Investigation or to be Added in Future Versions.....	6
2. Normative References.....	6
2.1. SCTE References.....	7
2.2. Standards from Other Organizations.....	7
2.3. Published Materials.....	7
3. Informative References.....	7
3.1. SCTE References.....	7
3.2. Standards from Other Organizations.....	7
3.3. Published Materials.....	7
4. Compliance Notation.....	8
5. Abbreviations.....	8
6. Definitions.....	8
7. Mechanical and Power.....	9
7.1. AC Interruption.....	9
7.2. Power Pass Capability.....	9
7.3. AC Power Steering.....	9
7.4. Assembled Dimensions.....	10
7.5. Form Factor.....	11
7.6. RF Ports.....	11
7.7. Plug-ins.....	11
7.8. Attachment Method To Strand & Pedestal.....	11
7.9. Labeling Designations.....	12
8. RF.....	13
8.1. RF Performance of Housing.....	13
8.2. RF Performance of Passive.....	13
8.2.1. Passband Response.....	15
8.2.2. Group Delay.....	15
8.3. Hum Modulation.....	15
8.4. Shielding Effectiveness.....	16
8.5. Surge Withstand.....	16
8.6. Second Harmonic Distortion.....	16
8.7. Common Path Distortion.....	16
9. Environmental.....	17
9.1. Salt Spray.....	17
9.2. Temperature.....	17
9.3. Galvanic Compatibility.....	17
9.4. Ultraviolet B (UVB) Rays.....	17
9.5. Pressure Testing.....	17
9.6. Vacuum Testing.....	17
9.7. Chemical Resistance.....	17
9.8. Highly Accelerated Life-cycle Testing (HALT).....	17
9.9. Restriction of Hazardous Substances (RoHS).....	18
9.10. Unboxed Drop Test.....	18

9.11. Transportation Mechanical Vibration	18
---	----

List of Figures

Title	Page Number
Figure 1 - Mechanical, Passive Front	10
Figure 2 - Mechanical, Passive Bottom	10
Figure 3 - Housing Bandwidth Test Diagram	13

List of Tables

Title	Page Number
Table 1 - Dimension Table	11
Table 2 - Port Branding	12
Table 3 - Frequency Points for Insertion Loss	14
Table 4 - Shielding Effectiveness	16

1. Introduction

1.1. Executive Summary

The purpose of this document is to identify common characteristics of hardline passives used in hardline broadband HFC Plant networks.

1.2. Scope

The purpose of this document is to recommend mechanical, environmental and electrical standards hardline passives. This specification addresses passives capable of at least 1794 MHz with a housing capable of 3000 MHz.

Products covered by this specification include hardline splitters, directional couplers, equalizers and power inserters. Hardline passives pass RF and AC to some or all of the ports.

A hardline splitter divides an input RF signal to 2 or 3 outputs.

A hardline directional coupler divides an input RF signal to two outputs with a fixed division ratio.

A hardline equalizer provides RF tilt compensation.

A hardline power inserter combines the AC output of a power supply to the RF network.

The devices are intended for an outdoor rated environment.

The standard is not intended to apply to specialty devices, nor is it intended to limit or restrict any manufacturer's innovation and improvement.

1.3. Benefits

Hardline passive devices are an integral component of a broadband network that provides a uniform method of interconnecting on hardline.

1.4. Intended Audience

This document is intended as a technical guide for the minimum device requirements for proper operation on hardline plant network.

1.5. Areas for Further Investigation or to be Added in Future Versions

- 3 GHz faceplates
- Intermodulation distortion requirements with full spectral loading

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.