SCTE · ISBE

STANDARDS

Interface Practices Subcommittee

AMERICAN NATIONAL STANDARD

ANSI/SCTE 99 2019

Test Method for Axial Pull Connector/Drop Cable

NOTICE

The Society of Cable Telecommunications Engineers (SCTE) / International Society of Broadband Experts (ISBE) 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•ISBE 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•ISBE members.

SCTE•ISBE 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. SCTE•ISBE 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•ISBE web site at http://www.scte.org.

140 Philips Road
Exton, PA 19341

Table of Contents

List of Figures

List of Tables

1. Introduction

This test procedure applies a method to determine the retention force of the connector to cable interface.

1.1. Scope

The purpose of this document is to provide a test method for measuring the axial force required to cause one or more of the following conditions; cable structural failure, connector structural failure, separation due to slip at the connector/ cable interface.

1.2. Benefits

This test procedure provides a common method that can be used by both manufacturers and end users to test the connector to cable interface. Without such a common test procedure, the testing used to measure can vary and lead to added uncertainty.

1.3. Intended Audience

The intended audience for this test procedure are manufacturers, evaluation laboratories, and end user technician and engineers with the proper equipment to perform this testing.

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

At this time, there are no areas for further investigation for this test procedure.

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.

2.1. SCTE References

- ANSI/SCTE 33 2016: Test Method for Diameter of Drop Cable

2.2. Standards from Other Organizations

- No normative references are applicable.

2.3. Published Materials

- No normative references are applicable.

3. Informative References

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

3.1. SCTE References

- No informative references are applicable.

3.2. Standards from Other Organizations

- No informative references are applicable.

3.3. Published Materials

- No informative references are applicable.

4. Compliance Notation

shall	This word or the adjective "***required***" means that the item is an absolute requirement of this document.
shall not	This phrase means that the item is an absolute prohibition of this document.
forbidden	This word means the value specified shall never be used.
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 weighted 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.
deprecated	Use is permissible for legacy purposes only. Deprecated features may be removed from future versions of this document. Implementations should avoid use of deprecated features.

5. Abbreviations and Definitions

5.1. Abbreviations

ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
in	inch
in/min	Inch per minute
ISBE	International Society of Broadband Experts
lbs	pounds
mm	millimeter
Rc	Rockwell Hardness measured on the C scale
SCTE	Society of Cable Telecommunications Engineers

6. Equipment

6.1. A “tensile test machine” (Instron Model 1122 or equivalent) with a means of recording the test data and appropriate grips (as required). It may be desirable to have an automatic “cut-off” feature that can be activated by a “maximum excursion limit” setting and/or “maximum force limit”. The machine should have a 500 pound load capability with a system accuracy of ±0.5 percent over the range in use.

6.2. Machinist’s outside micrometer or dial caliper calibrated to read directly to at least 0.001 inch or 0.01 mm, with each division of a width that facilitates estimation of each measurement to 0.0005 inch or 0.0127 mm.

6.3. Test adapters as shown in Figure 1, or equivalent.

NOTE: There are alternative methods for attaching the test fixture to various devices. The intent of the diagram is to provide a uniform dimensional “F” Female port.

6.4. “F” Connectors of interest

6.5. Cable of interest

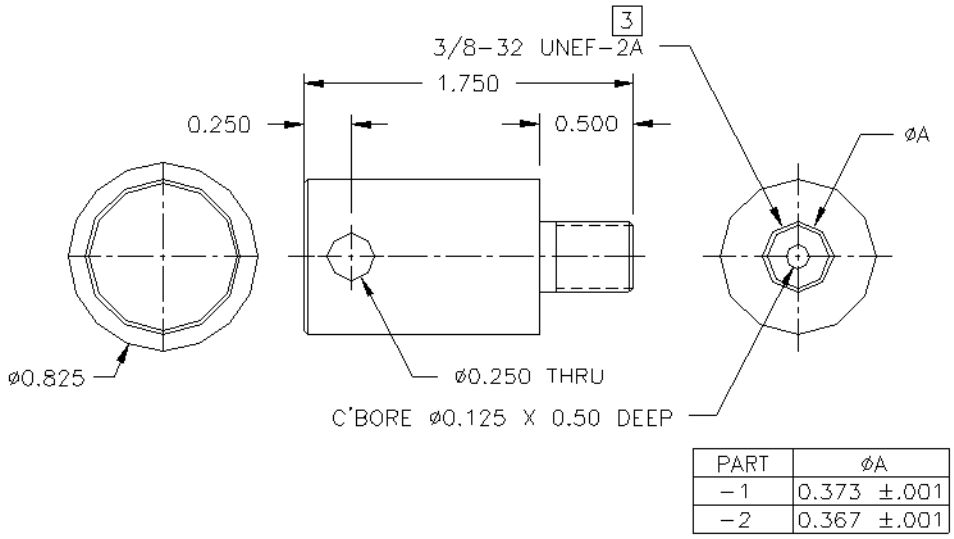
6.6. Tools

6.6.1. Cable preparation tool

6.6.2. Connector attachment tool

6.7. Temperature chamber capable of maintaining a temperature range of -40 °F to 140°F (-40 °C to 60 °C)

NOTE: Environmental enclosures may be used to surround the test samples and test adapter assemblies to maintain test temperature.



PART	øA
-1	0.373 ±.001
-2	0.367 ±.001

NOTES:
1. MATERIAL: DRILL ROD PER ASTM A681-94(1999) TYPE 01
2. HEAT TREAT TO Rc 50-54
3. 0.375 MINIMUM FULL THREADS.
4. ALL DIMENSIONS AND TOLERANCES ARE IN INCHES
5. DRAWING NOT TO SCALE

Figure 1 - Test Adapter

7. Test Samples

7.1. Cable dimensions should be recorded per ANSI/SCTE 33 2016

7.2. Cut the cable in suitable lengths for the test device and attachment method

7.3. Prepare the cable ends per connector manufacturer's instructions using cable preparation tool

7.4. Install connectors to the cable ends and attach per connector manufacturer's installation instructions

7.5. A minimum of 5 samples are prepared

8. Test Procedure

8.1. Samples are prepared per section 7.0 and each sample shall be at the test temperature of interest for at least 30 minutes prior to performing the test.

Note: To achieve consistent results, at other than room temperature, a cold/hot chamber may surround the test sample and adapters.

8.2. Secure test adapters to the tensile test machine ensuring the distance between the test adapters do not place stress on the test assembly during installation.

8.3. Affix test assembly to the test adapters and firmly tighten.

8.4. Operate tensile test machine to take “slack” out of test assembly.

8.4.1. If applicable, close and activate temperature enclosure for test temperatures other than ambient ensuring temperature stabilization of test assembly.

8.5. Ensure that equipment data recording feature is operational and set for expected range.

8.6. Measurements are taken using a crosshead speed of 2 in/min.

8.7. Operate the tensile test equipment per the manufacturer’s recommended procedure.

8.8. Conclude test when either the load indication drops to zero or failure is observed.

8.9. The X/Y display obtained from the recording indicates the actual forces and deflections of the connector and cable assembly. Record the maximum tensile strength peak value as indicated by the recording device.

9. Documentation

9.1. Data sheet should contain:

9.1.1. Title of test

9.1.2. Cable sample description, manufacturer and part number

9.1.3. Connector sample description, manufacturer and part number

9.1.4. Cable preparation dimensions

9.1.5. Type and size of tools used

9.1.6. Crosshead separation speed

9.1.7. Full scale load range

9.1.8. Test temperature

9.1.9. Maximum tensile strength recorded

10. Test Results Documentation

Tensile pull test documentation for connector/drop cable assembly:

10.1. Cable Description

10.1.1. Cable Manufacturer/Part Number: _____

10.1.2. Cable Type: _____

10.1.3. Jacket Material: _____

10.1.4. Jacket Outside Diameter: _____

10.2. Connector Description

10.2.1. Connector Manufacturer/Part Number: _____

10.3. Preparation Description

10.3.1. Prep Tool Used: _____

10.3.2. Prep Dimensions

10.3.2.1. Braid: _____

10.3.2.2. Dielectric: _____

10.3.2.3. Center Conductor: _____

10.3.3. Connector to Cable Tool Used: _____

10.4. Test Setup Description

Crosshead Speed	Full Scale Load	Test Temperature

10.5. Axial Load

Sample	Maximum Load
1	
2	
3	
4	
5	
Average	