

# **SCTE** | **STANDARDS**

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**Interface Practices Subcommittee**

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**AMERICAN NATIONAL STANDARD**

**ANSI/SCTE 269 2021**

**Test Procedure for “F” Port Center Conductor  
Retention Force**

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## 1. Introduction

### 1.1. Executive Summary

This test procedure is designed to stress the center conductor contact of a female “F” port with a large center conductor and then measure the retention force of that same contact with a small center conductor.

### 1.2. Scope

The purpose of this standard is to provide a mechanical retention force test procedure for the “F” female ports defined in SCTE•ISBE standards for 75 ohm broadband telecommunication devices.

### 1.3. Benefits

Assure that “F” connector female ports exert appropriate force onto center conductors.

### 1.4. Intended Audience

Engineers and technicians who are verifying compliance to SCTE•ISBE standards for “F” female ports.

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

None at this time.

## 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

- No normative references are applicable.

### 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

- ANSI/SCTE 01 2020 - Specification for "F" Port, Female, Outdoor
- ANSI/SCTE 02 2020 - Specification for "F" Port, Female, Indoor
- ANSI/SCTE 151 2020 - Mechanical, Electrical, and Environmental Requirements for RF Traps and Filters
- ANSI/SCTE 153 2020 - Drop Passives: Splitters, Couplers and Power Inserters
- ANSI/SCTE 129 2020 - Drop Passives: Bonding Blocks (Without Surge Protection)
- ANSI/SCTE 146 2020 - Outdoor "F" Female to "F" Female Inline Splice
- ANSI/SCTE 155 2020 - Indoor "F" Female to "F" Female Inline Splice

### 3.2. Standards from Other Organizations

- No informative references are applicable.

### 3.3. Published Materials

- No informative references are applicable.

## 4. Compliance Notation

<i>shall</i>	This word or the adjective " <i>required</i> " means that the item is an absolute requirement of this document.
<i>shall not</i>	This phrase means that the item is an absolute prohibition of this document.
<i>forbidden</i>	This word means the value specified shall never be used.
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## 5. Abbreviations

DUT	device under test
ISBE	International Society of Broadband Experts
SCTE	Society of Cable Telecommunications Engineers

## 6. Procedure

The female port *shall* accept male “F” connector conductors with a diameter between 0.030 inches (0.76 mm) and 0.042 inches (1.066 mm).

## 7. Equipment

Ametek Hunter Spring L-250 Mechanical Force Gauge with 5 gram increments or equivalent.

## 8. Test Specimen Preparation

Cut a 6 inch (15.24 cm)  $\pm$  0.25 inch (0.635 cm) length of the appropriate size coaxial cable (defined in section 9). Prepare one end the cable with an industry standard stripping tool that exposes between 0.25 inch (0.635 cm) and 0.375 inch (0.953 cm) of center conductor then use a file to remove any burrs from the conductor. On the opposite end of the cable form a loop as a means to attach the coax to the force gauge. See Figure 1.



Figure 1 – Test Specimen

## 9. Measurement Procedure

The instructions in this section *shall* be performed as described.

### 9.1. Stress the contact with a 0.0403 inch (1.02 mm) 6-series conductor

Prepare a piece of 6-series conductor with a diameter of 0.0403 inch (1.02 mm)  $\pm$  1 percent using the procedure in section 8, “Test Specimen Preparation.”

Insert and extract the 6-series conductor into and out of the device under test (DUT) contact five times.

Inspect the 6-series conductor for damage to the surface of the conductor. Any surface damage *shall* be described in the test report.

Re-prepare the test specimen as described in section 8, “Test Specimen Preparation.” The resulting test specimen will be shorter than the original. (This test specimen re-preparation is performed after every five insertions to ensure that the original conductor diameter is maintained.)

Repeat the above steps until the 6-series conductor has been inserted and removed into the DUT contact a total of 25 times.

### 9.2. Measure the contact with a 0.0250 inch (0.635 mm) wire

Prepare a fresh end on a piece of copper, copper clad steel, or steel wire with a diameter of 0.0250 inch (0.635 mm) +/- 1 percent. If the wire is part of a coaxial cable, preparation should use the procedure in section 8, "Test Specimen Preparation." The prepped end can be marked at 0.25 inch (0.635 cm) intervals to allow for faster prep times.

Insert the prepped wire into the DUT contact. Attach the force gauge and remove the wire from the DUT contact in a smooth and continuous motion. See Figure 2.

Record the retention force. The retention force *should* be a minimum of 50 grams-force.

Inspect the 0.0250 inch wire for damage to the surface of the wire. Any surface damage *shall* be described in the test report.

### 9.3. Measure the contact with a 0.0320 inch (0.812 mm) 59-series conductor

Prepare a piece of 59-series conductor with a diameter 0.0320 inch (0.812mm) +/- 1 percent using the procedure in section 8, "Test Specimen Preparation."

Insert the prepped conductor into the DUT contact. Attach the force gauge and remove the conductor from the DUT contact in a smooth and continuous motion. See Figure 2.

Record the retention force. The retention force *shall* be a minimum of 50 grams-force. The retention force *should* be a minimum of 150 grams-force.

Inspect the 59-series conductor for damage to the surface of the conductor. Any surface damage *shall* be described in the test report.

## 10. Test additional DUT samples

Repeat all the tests in section 9, "Measurement Procedure" for at least four additional DUT samples.

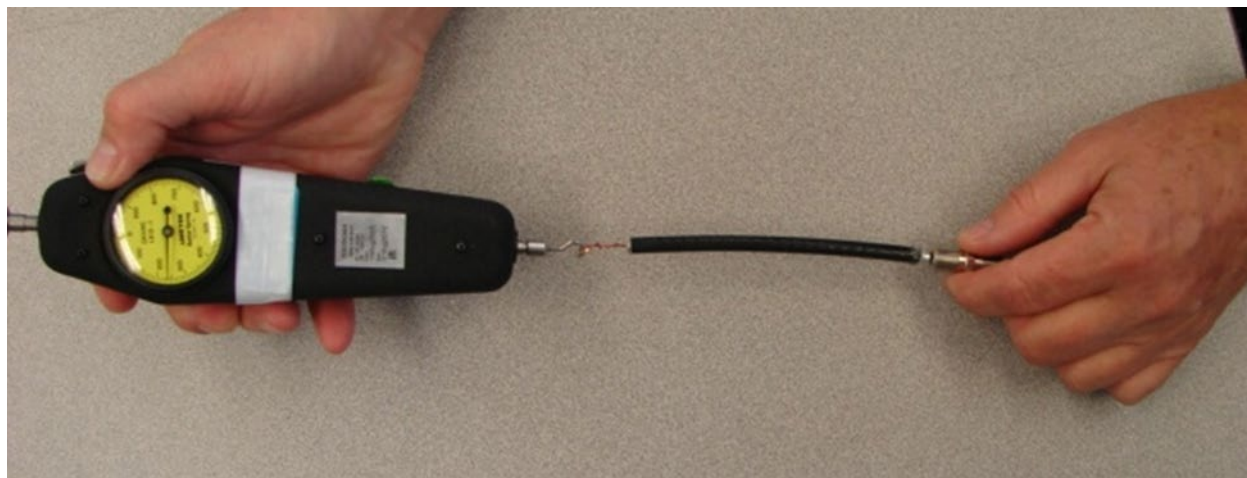


Figure 2 – Retention Force Measurement