ENGINEERING COMMITTEE
Interface Practices Subcommittee

AMERICAN NATIONAL STANDARD

ANSI/SCTE 02 2015

Specification for “F” Port, Female, Indoor
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1. Scope

The purpose of this document is to specify requirements for female indoor “F” ports that are used in the 75-ohm RF broadband communications industry and that interface with “F” Male connectors as defined by ANSI/SCTE 123 and ANSI/SCTE 124.

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 103 2012, Test Method for DC Contact Resistance
- ANSI/SCTE 123 2011, Specification for “F” Connector Male Feed-Through
- ANSI/SCTE 124 2011, Specification for “F” Connector Male Pin Type
- ANSI/SCTE 149 2013, Test Method for Withstand Tightening Torque - ‘F’ Female
- IPS TP 417 R02, Test Method for F Connector Center Conductor Retention

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.

- No informative references are applicable.
4. Compliance Notation

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>shall</strong></td>
<td>This word or the adjective “required” means that the item is an absolute requirement of this document.</td>
</tr>
<tr>
<td><strong>shall not</strong></td>
<td>This phrase means that the item is an absolute prohibition of this document.</td>
</tr>
<tr>
<td><strong>forbidden</strong></td>
<td>This word means the value specified shall never be used.</td>
</tr>
<tr>
<td><strong>should</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>should not</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>may</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>deprecated</strong></td>
<td>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.</td>
</tr>
</tbody>
</table>

5. Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>thread relief</td>
<td>A reduced diameter section of the threaded surface to allow the tool to run out.</td>
</tr>
<tr>
<td>center conductor</td>
<td>The inner conductor of a coaxial cable or pin of mating male connector.</td>
</tr>
<tr>
<td>mating male center conductor clearance</td>
<td>The distance from the reference plane of the female “F” port to which the center conductor of the mating male connector may penetrate without damaging the port or encountering a blockage.</td>
</tr>
<tr>
<td>positive contact point</td>
<td>The distance from the reference plane of the female “F” port to the first point of contact in the female center contact when the installed mating center conductor is centered.</td>
</tr>
<tr>
<td>reference plane</td>
<td>The reference plane on the female indoor “F” port is the mating surface that seats against the male “F” port. It is also the plane from where all horizontal dimensions are taken.</td>
</tr>
</tbody>
</table>
6. Electrical Requirements

6.1. Return Loss, Insertion Loss, Surge Withstand, and Shielding Effectiveness

Refer to the individual equipment specifications for these requirements.

6.2. Center Conductor Contact Resistance

The center conductor junction of the indoor female “F” port to male F center conductor shall have a DC contact resistance of less than 25 milliohms after the testing performed in IPS TP 417 and then tested in accordance to ANSI/SCTE 103.

6.3. Outer Conductor Contact Resistance

The outer conductor junction of the indoor female “F” port to male F connector shall have a DC contact resistance less than 10 milliohms when tightened to 40 lb.-in. and tested to ANSI/SCTE 103.

6.4. Center Conductor Continuous Current

The center conductor junction of the indoor female “F” port to male F center conductor shall be capable of carrying a minimum of 1 ampere DC continuous current at an ambient temperature of 40°C without degradation.

7. Mechanical Requirements

7.1. Physical dimensions

The recommended physical dimensions for female indoor “F” ports shall be as specified in Figure 1, Table 1, and per the notes below.

**Figure 1 – Recommended Indoor Female “F” Port**
Table 1 – Recommended Indoor Female “F” Port Dimensions

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>DIM</th>
<th>mm MIN</th>
<th>mm MAX</th>
<th>inches MIN</th>
<th>inches MAX</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>REF PLANE OPENING DIAMETER</td>
<td>A</td>
<td>4.32</td>
<td>6.10</td>
<td>0.170</td>
<td>0.240</td>
<td></td>
</tr>
<tr>
<td>REF PLANE OUTER DIAMETER</td>
<td>B</td>
<td>7.11</td>
<td>8.00</td>
<td>0.280</td>
<td>0.315</td>
<td></td>
</tr>
<tr>
<td>POSITIVE CONTACT POINT DEPTH</td>
<td>C</td>
<td>-</td>
<td>5.08</td>
<td>-</td>
<td>0.200</td>
<td>5</td>
</tr>
<tr>
<td>FULL THREAD DEPTH</td>
<td>D</td>
<td>8.26</td>
<td>-</td>
<td>0.325</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>MATING MALE CENTER CONDUCTOR CLEARANCE</td>
<td>E</td>
<td>9.65</td>
<td>-</td>
<td>0.380</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>CENTER CONDUCTOR GUIDE INNER DIAMETER</td>
<td>F</td>
<td>-</td>
<td>1.73</td>
<td>-</td>
<td>0.068</td>
<td></td>
</tr>
</tbody>
</table>

NOTES:

1. DRAWING NOT TO SCALE.
3. NO MATERIAL SHALL IMPEDE THE ENTRY OF THE MALE F CONNECTOR.
4. THREAD RELIEF OPTIONAL.
5. DIMENSION TO POINT OF POSITIVE CONTACT OF MALE CENTER CONDUCTOR.
6. MINIMUM CLEARANCE REQUIRED FOR MAXIMUM LENGTH MALE CENTER CONDUCTOR.
7. RECOMMENDED MATING MALE CENTER CONDUCTOR DIAMETER RANGE IS 0.030 in. (0.76 mm) MIN. to 0.042 in. (1.07 mm) MAX.
8. WHEN THE INDOOR FEMALE F CONNECTOR IS USED IN A PANEL OR BULKHEAD MOUNTED APPLICATION, DIMENSION D IS THE LENGTH OF THREAD EXTENDING BEYOND THE MOUNTING HARDWARE.
9. SINGLE “D” FLAT OR DOUBLE “D” FLATS ARE OPTIONAL GEOMETRIES OF THE THREADED PORTION OF THE INDOOR F CONNECTOR.

7.2. Mechanical Strength

7.2.1. Center Conductor Mating

The center conductor contact shall accept male “F” connector center conductors whose diameters are between 0.030” (0.76 mm) diameter and 0.0422” (1.07 mm) diameter. The junction shall have a minimum retention force of 150 grams with a 0.032” (0.81 mm) diameter conductor inserted after the contact is mated 25 times with a center conductor whose diameter is 0.0422” (1.07 mm) when tested in accordance to IPS TP 417, Test Method for F Connector Center Conductor Retention.
7.2.2. **Withstand Tightening Torque**

The indoor female “F” port shall be able to withstand a minimum tightening torque of 40 lb.-in. without damage when measured per ANSI/SCTE 149 2013.

7.2.3. **Axial Pull Strength**

All female “F” ports shall withstand a minimum 60 lbs. of axial pull strength without damage when measured per ANSI/SCTE 191 2013.

7.2.4. **Other**

Refer to the equipment specs for mechanical requirements that affect any material beyond the indoor female “F” ports.

8. **Environmental Requirements**

Indoor female “F” ports shall meet the corrosion requirements of the equipment to which they are attached.