



***Society of Cable
Telecommunications
Engineers***

**ENGINEERING COMMITTEE
Interface Practices Subcommittee**

AMERICAN NATIONAL STANDARD

ANSI/SCTE 146 2008

**Outdoor
“F” Female to “F” Female
Inline Splice**

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1.0 SCOPE

- 1.1 The purpose of this document is to recommend mechanical and electrical standards for 75 ohm broadband radio frequency (RF) devices. Whose purpose is to provide an outdoor inline connection between two type “F” male connectors that conform to ANSI/SCTE 123 2006; Specification for “F” Connector, Male, Feed-Through or ANSI/SCTE 124 2006; Specification for “F” Connector, Male, Pin Type. The mechanical configuration is designed to accommodate sealing rings for external applications.

This specification is not intended to restrict any manufacturer’s innovation and improvement. The specification may be amended in the future as deemed appropriate.

2.0 MECHANICAL

2.1 Dimensions

The physical dimension of the inline splice shall meet the dimensional requirements of Figure 1.

2.2 Center Conductor Mating

Both ends of the inline splice shall accept male “F” connector center conductors whose diameters are between 0.0250 (0.64 mm) diameter and 0.0422" (1.07 mm) diameter.

After each Female contact is mated 25 times with a center conductor whose diameter is 0.0422 (1.07 mm), the retention force of a 0.030 (0.761 mm) center conductor shall be a minimum of 50 grams.

3.0 ELECTRICAL

- 3.1 Bandwidth shall be a minimum of 5 MHz to 1,002 MHz.
Unless otherwise specified, all performance parameters listed shall be tested in this frequency range.
- 3.2 Insertion Loss. Shall not exceed 0.1 dB for frequencies between 5 MHz and 600 MHz inclusive, and for frequencies between 600 MHz up to and including 1,002 MHz, the insertion loss shall not exceed 0.2 dB, when tested in accordance to ANSI/SCTE 144 2007, Procedure for Measuring Transmission and Reflection.
- 3.3 Return Loss. Shall be no worse than 30 dB, when tested in accordance to ANSI/SCTE 04 1997, ANS Test Method for "F" Connector Return Loss or ANSI/SCTE 144 2007, Procedure for Measuring Transmission and Reflection.
- 3.4 Shielding Effectiveness. The shielding effectiveness of the assembled components shall be a minimum of 100dB, when tested in accordance with ANSI/SCTE 48-1 2007, Test Method for Measuring Shielding Effectiveness of Passive and Active Devices Using a GTEM Cell or, ANSI/SCTE 48-2 2008, Test Procedure for Measuring Relative Shielding Properties of Active and Passive Coaxial Cable Devices Using Agilent Magnetic Close Field Probe.
- 3.5 The surge withstand when measured in accordance with ANSI/SCTE 81 2007 shall be a minimum of IEEE C62.41-1991 Category A3 Ring Wave, 6KV, 200 Amps.
- 3.6 The center conductor junction shall have a DC contact resistance less than 25 milliohms after 25 insertion/extractions of a center conductor with a diameter of 0.0422 (1.07 mm), and then tested with a pin whose diameter is 0.030 (0.761 mm) per ANSI/SCTE 103 2004, Test Method for DC Contact Resistance, Drop cable to F-Connectors and F81 Barrels.

The outer conductor junction shall have a DC contact resistance less than 10 milliohms when tightened to 35 in.-lbs. and tested to ANSI/SCTE 103 2004, Test Method for DC Contact Resistance, Drop cable to F-Connectors and F81 Barrels.
- 3.7 The center conductor junction, when tested with a 0.0422 (1.07 mm) diameter male conductor, shall be capable of carrying a minimum of 1 Amp DC continuous current at an ambient temperature of 40°C for 1 hour and meet all performance requirements of this document.

4.0 ENVIRONMENTAL

- 4.1 Salt Spray. Components shall meet the electrical performance as outlined in section 3, after 1000 Hours of the salt spray when tested in accordance to ANSI/SCTE 143 2007.
- 4.2 Temperature. Components shall meet all performance requirements during and after exposure to temperatures ranging from -40°F (-40°C) to +140°F (+60°C) inclusive.

5.0 DIMENSIONS

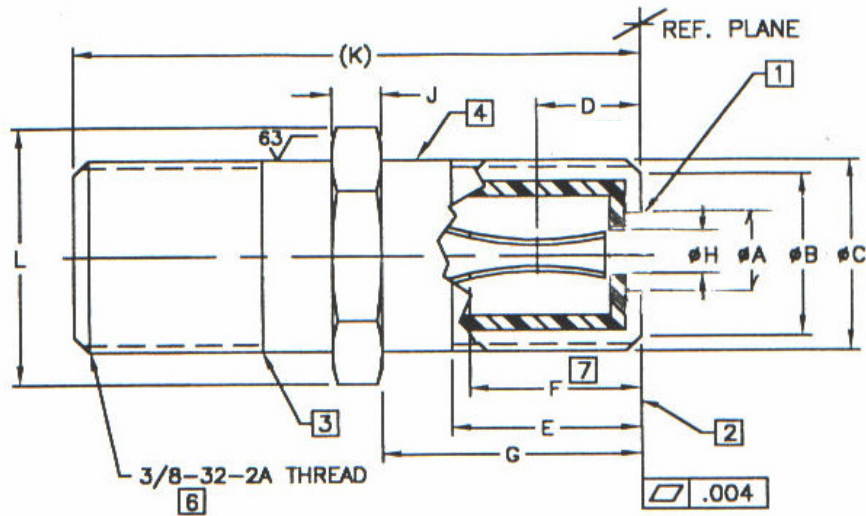


Figure 1.

DESCRIPTION	DIM	mm		INCHES		NOTES
		min	max	Min	max	
Reference Plane Opening Diameter	A	4.32	6.10	0.170	0.240	
Reference Plane Outer Diameter	B	7.11	8.00	0.280	0.315	
Base Outer Diameter	C	9.35	9.65	0.368	0.380	
Positive Contact Point Depth	D	-	5.08	-	0.200	5
Full Thread Depth	E	8.26	8.89	0.325	0.350	
Mating Male Center Conductor Clearance	F	9.65	-	0.380	-	7
Port Length	G	12.07	13.21	0.475	0.520	
Center Conductor Guide Inner Diameter	H	-	1.73	-	0.068	
Length	J	2.29	-	0.090	-	
Over All Length (Reference)	K	27.67	-	1.090	-	
Maximum Crown Envelope Dimension	L	-	16.58	-	0.653	

- Notes:
1. Dielectric must not protrude beyond Reference Plane
 2. Reference Plane
 3. Thread relief not to exceed 1 full thread.
 4. Finish required for port seal ring.
 5. Dimension to point of positive contact of terminal.
 6. ANSI specification B1.1 (Major DIA 0.368/0.374)
 7. Minimum clearance for maximum center conductor.
 8. Recommended Mating Male Center Conductor Diameter Range is 0.025 in. (0.64mm) Min. to 0.042 in. (1.07 mm) Max.
 9. All Dimensions Typical, unless specified.

6.0 REFERENCE DOCUMENTS

- 6.1 ANSI/SCTE 123 2006, Specification for “F” Connector, Male, Feed-Through
- 6.2 ANSI/SCTE 124 2006, Specification for “F” Connector, Male, Pin Type
- 6.3 ANSI/SCTE 144 2007, Test Procedure for Measuring Transmission and Reflection
- 6.4 ANSI/SCTE 04 2007, Test Method for ”F” Connector Return Loss
- 6.5 ANSI/SCTE 48-1 2007, Test Method for Measuring Shielding Effectiveness of Passive and Active Devices Using a GTEM Cell
- 6.6 ANSI/SCTE 48-2 2008, Test Procedure for Measuring Relative Shielding Properties of Active and Passive Coaxial Cable Devices Using Agilent Magnetic Close Field Probe
- 6.7 ANSI/SCTE 103 2004, Test Method for DC Contact Resistance, Drop Cable to F-Connectors and F81 Barrels
- 6.8 ANSI/SCTE 143 2007, Test Method for Salt Spray
- 6.9 ANSI/SCTE 81 2007, Surge Withstand Test Procedure