



***Society of Cable  
Telecommunications  
Engineers***

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**ENGINEERING COMMITTEE  
Interface Practices Subcommittee**

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**AMERICAN NATIONAL STANDARD**

**ANSI/SCTE 147 2008**

**Specification for 75 ohm, Inline Attenuators**

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## **1.0 SCOPE**

The purpose of this specification is to provide the mechanical, electrical and environmental requirements for 75-ohm “F” type inline attenuators generally used for indoor applications. This specification in no way should limit or restrict any manufacturers from innovative designs and product improvements.

## **2.0 NORMATIVE REFERENCES**

ANSI/SCTE 01 2006, Specification for “F” Port, Female, Outdoor

ANSI/SCTE 124 2006, Specification for “F” Connector, Male, Pin Type

ANSI/SCTE 48-1 2007, Test Method for Measuring Shielding Effectiveness of Passive and Active Devices Using a GTEM Cell.

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

ANSI/SCTE 98 2004, Test Method for Withstand Tightening Torque - 'F' Male

ANSI/SCTE 149 2008, Test Method for Withstand Tightening Torque - “F” Female

ANSI/SCTE 143 2007, Test Method for Salt Spray

ANSI/SCTE 144 2007, Test Procedure for Measuring Transmission and Reflection

ANSI/SCTE 81 2007, Surge Withstand Test Procedure

IEEE C62.41-1991, Recommended Practice for Surge Voltages in low voltage AC Power Circuits

### **3.0 ELECTRICAL REQUIREMENTS**

#### **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 Return Loss**

Shall be  $\geq 20$  dB, when tested in accordance to ANSI/SCTE 144 2007 Test Procedure for Measuring Transmission and Reflection.

#### **3.3 Shielding Effectiveness**

Shall be a minimum of 100dB, when measured in accordance to ANSI/SCTE 48-2 2007, Test Procedure for Measuring Relative Shielding Properties of Active and Passive Coaxial Cable Devices Using Agilent Magnetic Close Field Probe or ANSI/SCTE 48-1 2007, Test Method for Measuring Shielding Effectiveness of Active and Passive Devices Using a GTEM Cell.

#### **3.4 Surge Withstand**

Shall be a minimum of IEEE C62.41-1991 Category A3 Ring Wave, 6kV, 200 Amps at the "F" port, when tested in accordance with ANSI/SCTE 81 2007, Surge Withstand Test Procedure.

### 3.5 Insertion Loss

Shall not exceed the values listed in Table 1, when tested in accordance to ANSI/SCTE 144 2007 Test Procedure for Measuring Transmission and Reflection.

Attenuation Value	Insertion Loss
1	1.0 dB $\pm$ 0.25 dB
2	2.0 dB $\pm$ 0.25 dB
3	3.0 dB $\pm$ 0.25 dB
4	4.0 dB $\pm$ 0.25 dB
5	5.0 dB $\pm$ 0.25 dB
6	6.0 dB $\pm$ 0.25 dB
7	7.0 dB $\pm$ 0.25 dB
8	8.0 dB $\pm$ 0.25 dB
9	9.0 dB $\pm$ 0.25 dB
10	10.0 dB $\pm$ 0.25 dB
11	11.0 dB $\pm$ 0.25 dB
12	12.0 dB $\pm$ 0.25 dB
13	13.0 dB $\pm$ 0.25 dB
14	14.0 dB $\pm$ 0.25 dB
15	15.0 dB $\pm$ 0.40 dB
16	16.0 dB $\pm$ 0.40 dB
17	17.0 dB $\pm$ 0.40 dB
18	18.0 dB $\pm$ 0.50 dB
19	19.0 dB $\pm$ 0.50 dB
20	20.0 dB $\pm$ 0.50 dB

Table 1.

## 4.0 MECHANICAL REQUIREMENTS

### 4.1 Physical dimensions – “F” Male

The physical dimensions for the Male “F” connector shall conform to ANSI/SCTE 124 2006, Specification for “F” Connector, Male Pin Type.

### 4.2 Physical dimensions – “F” Female

The physical dimensions for the “F” Female connector shall conform to ANSI/SCTE 01 2006, Specification for “F” Port, Female, Outdoor

### 4.3 Withstand Tightening Torque – Male “F”

The Male F connector interface shall withstand a minimum tightening torque of 40 in-lbs. without damage when measured per ANSI/SCTE 98 2004, Test Method For Withstand Tightening Torque – ‘F’ Male.

### 4.4 Withstand Tightening Torque – “F” Female

The Female “F” connector interface shall withstand a minimum tightening torque of 40 in-lbs. without damage and there shall be no relative movement of the outer housings to the “F” Female interface when tested per ANSI/SCTE 149 2008, Test Method For Withstand Tightening Torque – ‘F’ Female.

There shall be no relative movement of the outer housings to the “F” Female interface.

### 4.5 Labeling

Each device shall be marked with nominal attenuation value and manufacturer.

### 4.6 Envelope Dimensions

The recommended envelope dimensions are shown in Table 2 and figures 1 and 2.

## 5.0 ENVIRONMENTAL REQUIREMENTS

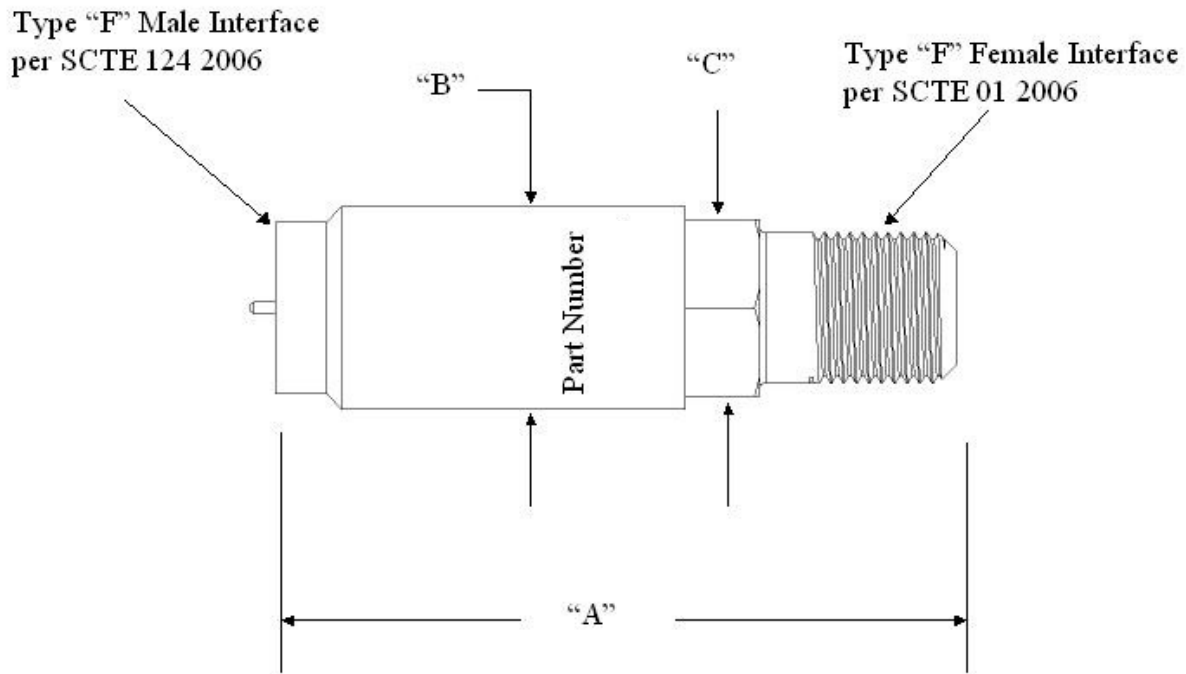
### 5.1 Temperature

The devices shall meet all performance requirements after exposure to temperatures ranging from -40°F (-40°C) to +140°F (+60°C) inclusive.

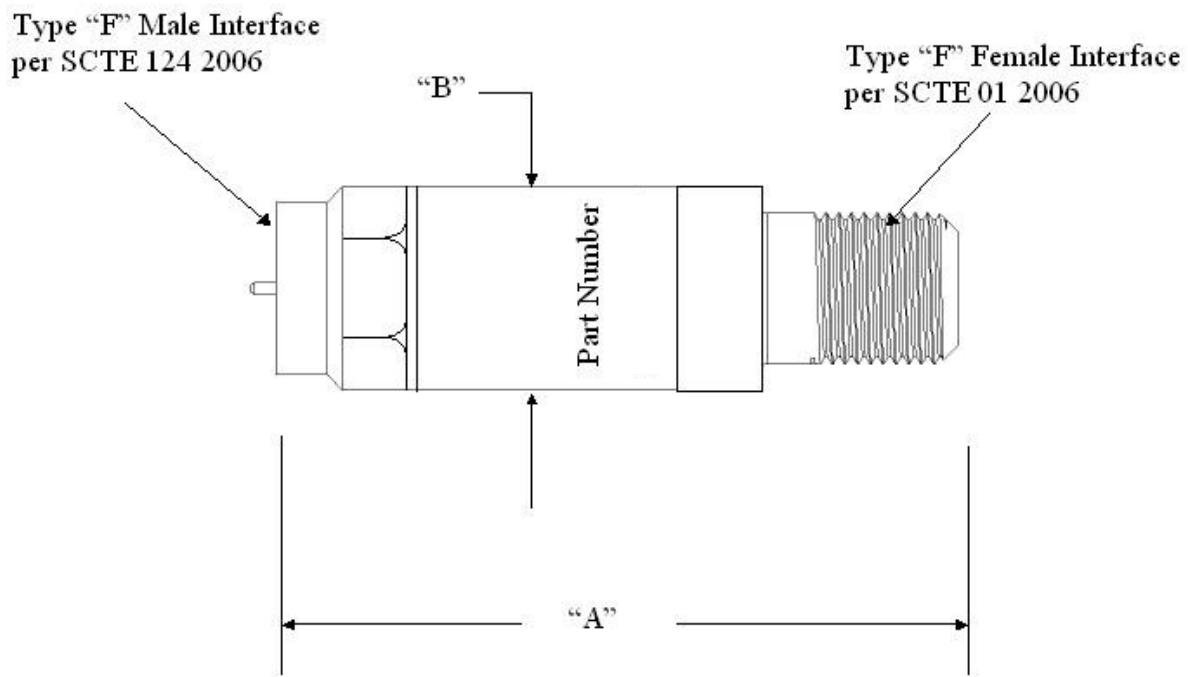
### 5.2 Salt Spray

Devices shall be exposed to 500 hours of continuous salt spray per ANSI/SCTE 143 2007, Test Method For Salt Spray with no degradation in electrical or mechanical performance.

## 6.0 PHYSICAL DIMENSIONS



**Figure 1: Inline Attenuator with fixed nut Envelope Requirements.**



**Figure 2: Inline Attenuator with movable nut Envelope Requirements.**

DESCRIPTION	DIM.	mm		inches		Notes
		min.	max.	min.	max.	
Over All Length	A	-	44.42	-	1.75	
Envelope Dimension	B	-	22.85	-	0.90	
Hex Size	C	-	11.10	-	0.437	Ref.

Table 2