



**SOCIETY OF CABLE
TELECOMMUNICATIONS
ENGINEERS INC**

**ENGINEERING COMMITTEE
Interface Practices Subcommittee**

AMERICAN NATIONAL STANDARD

ANSI/SCTE 151 2008

**Mechanical, Electrical, and Environmental Requirements
for RF Traps and Filters**

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1.0 SCOPE

The purpose of this specification is to provide the mechanical, electrical and environmental requirements for broadband radio frequency (RF) Trap and Filter devices whose primary purpose is to provide a fixed attenuation of RF signal(s) at user defined frequencies while preserving adjacent topology.

This scope is limited to 75-ohm devices with F connectors. This specification is not intended to limit or restrict any manufacturer's innovation and improvement.

2.0 MECHANICAL

2.1 RF Ports

2.1.1 All RF ports shall be type F.

2.1.2 Female ports shall conform to the requirements of ANSI/SCTE 01 2006 Specification for "F" Port, Female, Outdoor.

2.1.3 Male ports shall conform to Figure 1.

2.2 Physical Parameters

2.2.1 The physical limits of the housing are defined in Fig 1.

2.2.2 There shall be no relative movement of the outer housing to the inner housing.

2.2.3 The "F" housings shall be locked internally to not allow end-to-end rotational movement.

2.3 Labeling

Each device shall be permanently marked with product part number, date code and manufacturer.

2.4 Torque Requirements

2.4.1 The Female "F" port shall withstand 40 inch pounds of torque, without damage or permanent deformation to the threads, reference plane or body when tested in accordance to ANSI/SCTE 149 2008, Test Method for Withstand Tightening Torque – "F" Female.

- 2.4.2 The Male “F” plug shall withstand 60 inch pounds of torque, without damage or permanent deformation to the threads, reference plane or body when tested in accordance to ANSI/SCTE 98 2004, Test Method for Withstand Tightening Torque – “F” Male.

3.0 ELECTRICAL

3.1 Frequency Range

All devices shall operate over a Frequency Range of at least 5 MHz to 1,002 MHz.

3.2 Shielding Effectiveness

The shielding effectiveness 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.

3.3 Surge Withstand

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 for devices used indoors and IEEE C62.41-1991 Category B3 Combination Wave, 6KV 3000 amps for devices prior to the demarcation point.

3.4 Adjacent Channel Loss

3.4.1 The upper adjacent Analogue Video Carrier loss shall be no greater than 6dB when tested in accordance to ANSI/SCTE 144 2007, Test Procedure for Measuring Transmission and Reflection.

3.4.2 The lower adjacent Analogue Audio Carrier loss shall be no greater than 10dB when tested in accordance to ANSI/SCTE 144 2007, Test Procedure for Measuring Transmission and Reflection.

3.4.3 The adjacent Digital Carrier loss shall be no greater than 3dB when tested in accordance to ANSI/SCTE 144 2007, Test Procedure for Measuring Transmission and Reflection.

3.5 Pass band Insertion loss

The pass band insertion loss shall be 2dB maximum, when tested in accordance to ANSI/SCTE 144 2007, Test Procedure for Measuring Transmission and Reflection.

3.6 Rejection Band Attenuation

The rejection band attenuation shall be a minimum of 40 dB at the frequencies of interest.

3.6.1 The rejection bandwidth is dependent on band edge slope loss, frequency and filter type, which is determined by manufacturer.

3.7 Group Delay

The group delay shall be less than 20 nano-seconds in the pass band, when tested in accordance per ANSI/SCTE 45 2007, Test Method for Group Delay.

3.8 Return Loss.

3.8.1 Shall be a minimum of 16 dB minimum for the pass bands that reside in the return band, when tested in accordance to ANSI/SCTE 144 2007, Test Procedure for Measuring Transmission and Reflection

3.8.2 Shall be a minimum of 16 dB minimum for the pass bands that reside in the forward band when tested in accordance to ANSI/SCTE 144 2007, Test Procedure for Measuring Transmission and Reflection.

4.0 ENVIRONMENTAL

4.1 Salt Spray

Devices intended for outdoor use shall meet all electrical and mechanical performance requirements after 1,000 hours of conditioning when tested in accordance to ANSI/SCTE 143 2007, Test Method for Salt Spray.

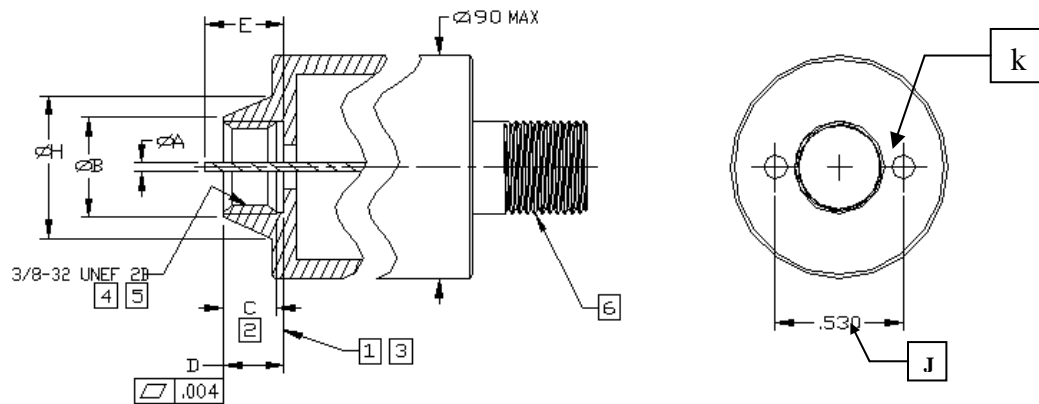
4.2 Interface Moisture Migration

Devices shall be tested in accordance to ANSI/SCTE 60 2004, Test Method for Interface Moisture Migration Double Ended with no degradation in electrical or mechanical performance.

4.3 Temperature

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

5.0 DIMENSIONS



NOTES:

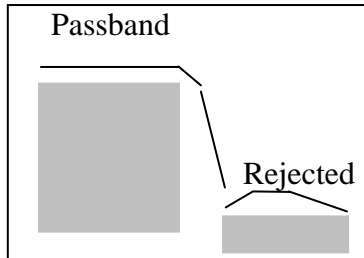
- [1] DIELECTRIC MUST NOT PROTRUDE BEYOND REF. PLANE
- [2] MINIMUM 4 FULL THREADS
- [3] REF. PLANE AFTER INSTALLATION ON STANDARD PORT TIGHTENED TO 40 INCH POUNDS AND REMOVED
- [4] MAXIMUM 1 THREAD LEAD IN
- [5] ANSI SPECIFICATION B14
- [6] *F* PORT TO MEET THE REQUIREMENTS OF ANSI/SCTE 01 2006

Fig. 1

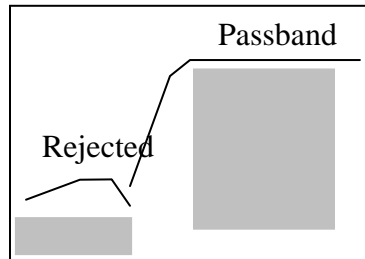
DESCRIPTION	REF	MM		INCHES		NOTES
		MIN	MAX	MIN	MAX	
CENTER CONDUCTOR DIAMETER	A	0.82	1.07	0.032	0.042	
COLLAR NARROW DIAMETER	B	10.29	11.30	0.405	0.445	
COLLAR THREADED LENGTH	C	6.10	-	0.240	-	2
PORT FACE DEPTH TO COLLAR LEADING EDGE	D	5.84	6.86	0.230	0.270	
PORT CENTER CONDUCTOR TO PORT FACE LENGTH	E	7.40	9.10	0.291	0.358	
COLLAR WIDE DIAMETER	H	10.92	15.88	0.430	0.625	
DIMENSION FOR INSTALLATION TOOL (optional)	J	-	13.46	-	0.530	
MINIMUM HOLE SIZE FOR INSTALLATION TOOL (optional)	K	2.39	-	0.094	-	

6.0 DEFINITIONS

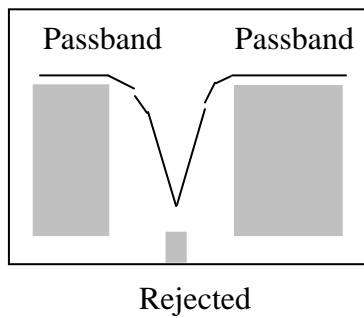
- 6.1 **Lowpass** – passes from a certain frequency and lower, while rejecting unwanted carriers above the certain frequency.



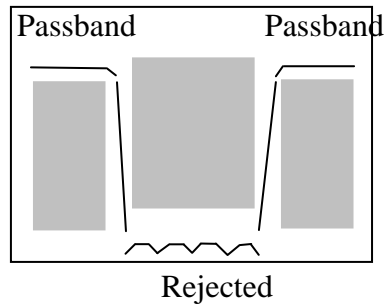
- 6.2 **Highpass** – passes from a certain frequency and higher, while rejecting unwanted carriers below a certain frequency.



- 6.3 **Notch** – removes a very small segment of band while passing frequencies above and below the band.



- 6.4 **Bandstop** – removes a larger segment of band than a notch filter and passes frequencies above and below the band.



7.0 Normative references

The following documents contain provisions, which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreement based on this standard are encouraged to investigate the possibility of applying the most recent editions of the documents listed below.

7.1 SCTE References

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

ANSI/SCTE 45 2007, Test Method for Group Delay

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 60 2004, Test Method for Interface Moisture Migration Double Ended

ANSI/SCTE 81 2007, Surge Withstand Test Procedure

ANSI/SCTE 98 2004, Test Method for Withstand Tightening Torque – “F” Male

ANSI/SCTE 143 2007, Test Method for Salt Spray

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

7.2 Other References

IEEE C 62.41-1991, IEEE Recommended Practice for Surge Voltage in Low-Voltage AC Power Circuits