SBCA Industry Standards Subcommittee

Document: SBCA Connector Recommended Practices
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"F" Male DBS Connector
Dimensional and Performance Specification

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1.0 INTRODUCTION

1.1 This specification is intended to apply to the “F” male, 75 Ohm DBS feed-thru connectors used in the satellite broadcast industry.

1.2 This specification requires that all “F” male connectors used in the DBS industry are compression style “F” male feed-thru connectors.

2.0 SCOPE

2.1 This specification provides dimensional, mechanical performance, electrical performance and environmental specifications for the “F” male DBS connectors and their attachment to both the “F” Female ports and 75 Ohm coaxial cable used in the satellite broadcast industry.

2.2 Any tests within this specification that require coaxial cable shall utilize coaxial cable that meets SBCA specifications.

2.3 All tests regarding frequencies are for DBS frequencies, which extend from 5 MHz through 2300 MHz

3.0 PHYSICAL DIMENSIONS

3.1 The physical dimensions for the “F” Male DBS connector shall be as specified in Figure 1.

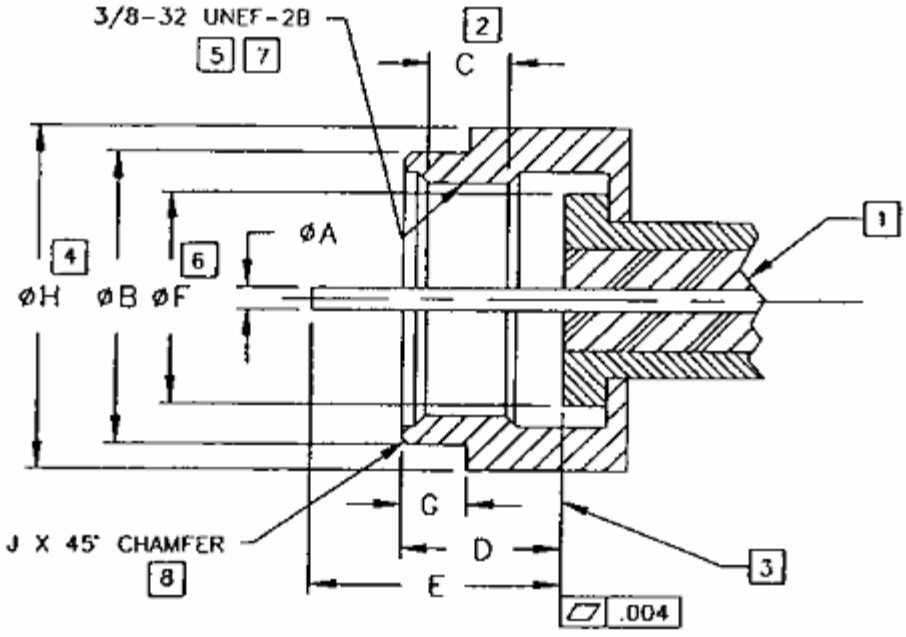

Figure 1.

Description	DIM	MM		IN		Notes
		Min	Max	Min	Max	
Cable Center Conductor Diameter	A	-	1.06	-	.042	
Nut Outer Diameter	B	10.41	11.05	.410	.435	
Nut Threaded Length	C					2
Mandrel Face Depth To Nut Leading Edge	D	4.45	6.10	.169	.240	
Center Conductor To Mandrel Face Length	E	6.35	9.53	.250	.375	
Mandrel Face Outer Diameter	F	.711	-	.280	-	6
Nut To Sealing Sleeve Interface Length	G	1.78	4.45	.070	.175	
Maximum Envelope Dimension	H	-	12.9	-	.508	4
Chamfer Break	J	-	.025	-	.010	8

NOTES:

1) Dielectric Must not protrude beyond reference plane
2) Minimum 4 full threads
3) Reference plane after installation on standard port tightened to 30 inch pounds and removed
4) Maximum envelope dimension
5) Maximum 1 thread lead-in
6) Minimum diameter of reference plane
7) ANSI specification B1.1
8) Radius optional

4.0 MECHANICAL PERFORMANCE

4.1 The “F” Male interface shall withstand, without damage or rotation due to the tightening torque, as shown in table 1, when tested in accordance to SCTE IPS-TP-400.

4.2 The “F” Male DBS Cable interface shall meet the minimum axial pull force requirements as shown in table 1 when connected to SBCA compliant cable, when tested in accordance to SCTE IPS-TP-401.

4.3 The “F” male DBS connector shall not exceed the maximum installation force as shown in table 1, when tested in accordance to SCTE IPS-TP-004.

Table 1: Mechanical Performance

Test	Specification
SCTE IPS-TP-400 “F” Male Withstand Tightening Torque	≥ 60 inch pounds (note this does not imply the force used in the field. Female F-ports may fail at an inch pound much less than the F-male connector).
SCTE IPS-TP-401 Axial Pull Force	≥ 40 pounds
SCTE IPS-TP-004 Connector / Cable Insertion Force	≤ 25 pounds

5.0 ELECTRICAL PERFORMANCE

5.1 The “F” Male DBS connector shall not degrade the shielding effectiveness of the cable as shown in table 2, when tested in accordance to SCTE IPS-TP-403B1.

5.2 The “F” Male DBS connector shall not degrade the minimum return loss as show in table 2, when tested in accordance to ANSI/SCTE 04 1997 C (Formerly SCTE IPS-TP-407)

Table 2: Electrical Performance

Test	Specification
SCTE IPS-TP-403B2 Screening Attenuation of Cable / Connectors	≥70 dB from 54 – 950 MHz, ≥ 75 dB from 950 – 2300 MHz.
ANSI/SCTE 04 1997 C (Formerly SCTE IPS-TP-407) “F” Connector Return Loss	≥25.0 dB to 2.3 GHz .

6.0 ENVIRONMENTAL PERFORMANCE

6.1 All tests shall be performed on connectors that are installed following manufacturers specifications and mounted on a female F-port meeting requirements stated in section 2.3.1 of SCTE IPS-TP-013.

6.2 The “F” Male DBS connector shall meet the requirements as shown in table 3, when tested in accordance to SCTE IPS-TP-013, Interface Moisture Migration test.

6.3 The “F” Male DBS connector shall meet the requirements as shown in table 3, when tested in accordance to the ASTM 117B.

6.4 The “F” Male DBS connector shall meet the requirements as shown in table 3, when tested in accordance to ASTM D1171 Method B.

6.5 The “F” Male DBS connector shall meet the requirements as shown in table 3, when tested in accordance to ASTM G53.

Table 3: Environmental Performance	
Test	**Specification**
SCTE IPS-TP-013 Interface Moisture Migration	No moisture shall be present within the cable and or nut interface, including all threaded areas.
ASTM 117B Salt Spray	Using 5% salt spray solution, the connectors shall meet the environmental performance and electrical specifications after 1000 hours of salt spray as stated in this document.
ASTM D1171 Method B Ozone	By visual inspection, no cracking, deep hazing or severe discoloration shall be present.
ASTM G53	After 500 hours using a UVB-313 lamp, visual inspection shows no signs of cracking or brittleness of the material.

7.0 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.

SCTE IPS-TP-400; Test Method for Withstand Tightening Torque - "F" Male, in rewrite

SCTE IPS-TP-401; ANS Test Method for Axial Pull Connector/Cable, in rewrite

ANSI/SCTE 73 2002 (formerly IPS TP 004); Test Method for Insertion Force of Connector to Drop Cable Interface, and is available on the SCTE website.

IPS-TP-403B1; Test Method for Shielding Effectiveness of Coaxial Cable and Connectors Using GTEM Cell, in rewrite

ANSI/SCTE 04 1997 (formerly IPS-TP-407); ANS Test Method for "F" Connector Return Loss, in ANSI rewrite

SCTE IPS-TP-013; Test Method for Interface Moisture Migration (double ended), Preliminary