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**Modular, High Density, RF Backplane, Connection System with Compliant Pin Terminations**

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**1. SCOPE**

## 1.1. Content

This specification covers performance, tests and quality requirements for the TE Connectivity (TE) modular, high density, blind-mate RF coaxial backplane connection system with compliant pin terminations combining a high performance, broad bandwidth multi-position RF coaxial interconnect in a customer configurable platforms like as specified in the VITA 67.0, 67.1 and 67.2 documents.

## 1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 1 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

Successful qualification testing on the subject product line was completed on 04SEPT14. The Qualification Test Report number for this testing is 501-748-1. This documentation is on file at and available from Engineering Practices and Standards (EPS).

**2. APPLICABLE DOCUMENTS AND FORMS**

The following documents and forms constitute a part of this specification to the extent specified herein. Unless otherwise indicated, the latest edition of the document applies.

## 2.1. TE Connectivity Documents

- [408-10373](#): (Instruction Sheet) SMPM Floating Panel Mount, Cable Jacks (Direct Solder Attachment) 1996390-1, 1996771-1
- [501-748-1](#): (Qualification Test Report) Modular, High Density, RF Backplane Connection System with Compliant Pin Terminations
- [108-2443](#): (Product Specification) Modular, High Density, RF Connection System
- [501-748](#): (Qualification Test Report) Modular, High Density, RF Connection System

## 2.2. Industry Documents

- ASTM G85: Standard Practice for Modified Salt Spray (Fog) Testing
- EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications
- VITA 67.0: Coaxial Interconnect on VPX
- VITA 67.1: Coaxial Interconnect , 3U, 4 Position SMPM Configuration
- VITA 67.2: Coaxial Interconnect, 6U, 8 position SMPM Configuration)

## 2.3. Government Document

- MIL-STD-810: Department of Defense Test Method Standard for Environmental Engineering Considerations and Laboratory Tests

## 2.4. Reference Documents

- [109-197](#): Test Specification (TE Test Specifications vs EIA and IEC Test Methods)
- VITA 47: Environmental, Design and Construction, Safety, and Quality for Plug-In Units
- MIL-STD-202: Test Method Standard, Electronic and Electrical Component Parts

**3. REQUIREMENTS**

3.1. Design and Construction

Product shall be of the design, materials, construction and physical dimensions specified on the applicable product drawing.

3.2. Ratings (per VITA requirements)

- Operating Voltage: 200 volts AC
- Temperature Range: -55 to 105°C
- Characteristic Impedance: 50 ohms
- Frequency Range: DC to 26.5 GHz
- Current: RF power (C.W. Ave.): VHF/UHF/SHF (30 MHz to 30 GHz): >20 dBm  
HF (3 to 30 MHz): >30 dBm

3.3. Test Requirements and Procedures Summary

Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

Test Description	Requirements	Procedures
Initial examination of product	Meets requirements of product drawing	EIA-364-18. Visual and dimensional (C of C) inspection per product drawing.
Final examination of product	Meets visual requirements	EIA-364-18. Visual inspection.
<b>ELECTRICAL</b>		
Low Level Contact Resistance (LLCR).	8 milliohms maximum initial for center contact. 2 milliohms maximum initial for outer contact. $\Delta R$ 5 milliohms maximum.	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage.
<b>MECHANICAL</b>		
Vibration, Class V3.	One hour per axis. No discontinuities of 10 nanoseconds or greater using an energizing current of 100 milliamperes. See Note.	MIL-STD-810, Method 514, Procedure I. 5 to 100 Hz PSD increasing at 3 dB per octave. 100 to 1000 Hz PSD = 0.1 g <sup>2</sup> /Hz 1000 to 2000 Hz PSD decreasing at 6 dB per octave. Three mutually perpendicular axes, 1 hour per axis. Cables shall be secured to the vibrating surface no more than 25.4 mm from the module end.

**Figure 1 (cont)**

Test Description	Requirements	Procedures
Mechanical shock, Class OS2.	No discontinuities of 10 nanoseconds or greater using an energizing current of 100 milliamperes. See Note.	MIL-STD-810, Method 516, Procedure I. Plug-in unit shall withstand 40 g, 11 millisecond, terminal sawtooth shock pulses in all 3 axes. Cables shall be secured to the vibrating surface no more than 25.4 mm from the module end.
Durability.	See Note.	EIA-364-9. Mate and unmate specimens for 500 cycles at a maximum rate of 600 cycles per hour.

**ENVIRONMENTAL**

Thermal shock (non-operating).	See Note.	EIA-364-32. Subject mated specimens to 5 cycles between -55 and 125°C with 1 hour minimum dwells at temperature extremes and 1 minute maximum transition between temperatures.
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**NOTE**

Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the Product Qualification and Requalification Test Sequence as shown in Figure 2.

**Figure 1 (end)**

Test or Examination	Test Group (a)		
	1	2	3
	Test Sequence (b)		
Initial examination of product	1	1	1
LLCR	2,4	2,4	
Vibration, Class V3			2
Mechanical shock, Class OS2			3
Durability	3		
Thermal shock (non-operating)		3	
Final examination of product	5	5	4



**NOTE**

(a) Specimens shall be prepared in accordance with applicable Instruction Sheet and shall be selected at random from current production. Test Groups 1, 2 and 3 shall consist of a minimum of 5 specimens each. Specimens are individual RF contacts with backplane compliant pin terminations.

(b) Numbers indicate sequence in which tests are performed.

**Figure 2**