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**SMA In-Series Adapters**

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**1. SCOPE**

## 1.1. Content

This specification covers performance, tests and quality requirements for the TE Connectivity (TE) SMA In-Series Adapters.

## 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.

## 1.3. Successful qualification testing on the subject product line was completed on 05May83. The Qualification Test Report number for this testing is 501-739. This documentation is on file at and available from Engineering Practices and Standards (EPS).

**2. APPLICABLE DOCUMENTS**

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

## 2.1. TE Connectivity (TE) Document

501-739: Qualification Test Report (SMA In-Series Adapters)

## 2.2. Government Document

MIL-STD-202: Test Method Standard Electronic and Electrical Component Parts

**3. REQUIREMENTS**

## 3.1. Design and Construction

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

## 3.2. Materials

Materials used in the construction of this product shall be as specified on the applicable product drawing.

## 3.3. Ratings

- Voltage: 335 volts AC
- Temperature: -65 to 165°C
- Nominal Impedance: 50 ohms
- Frequency Range: DC to 18 GHz

3.4. Performance and Test Description

Product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Visual examination.	Meets visual requirements.	Visual inspection.
Dimensional examination.	Meets requirements of product drawing.	Dimensional inspection per product drawing.
Center contact retention with axial rotation.	There shall be no axial movement of the center contact when subjected to an axial force of 6 pounds minimum. There shall be no rotation of the center contact when subjected to a radial torque of 4 in•oz.	Apply specified axial force to the center contact at a maximum rate of 1 pound per second and hold for 5 seconds. Apply specified radial torque to the center contact and hold for 10 seconds.
Center contact retention without axial rotation.	There shall be no axial movement of the center contact when subjected to an axial force of 6 pounds minimum.	Apply specified axial force to the center contact at a maximum rate of 1 pound per second and hold for 5 seconds.
Insulation resistance.	5000 megohms minimum.	MIL-STD-202, Method 302, Test Condition B. Test between the center contact and housing.
Voltage Standing Wave Ratio (VSWR).	1.05 maximum for right angle product. 1.10 maximum for straight product.	Measure VSWR between 0.5 and 18 GHz.
RF leakage.	-60 dB minimum.	Measure RF leakage at 2 to 3 GHz.
RF insertion loss.	$dB\ maximum = .05 \times \sqrt{Frequency\ (GHz)}$	Measure RF insertion loss at 6 GHz.
Dielectric Withstanding Voltage (DWV).	One minute hold with no breakdown or flashover.	MIL-STD-202, Method 301. 1500 volts rms at sea level.
Durability.	See Note.	Mate and unmate specimens 500 times at a maximum rate of 12 cycles per minute.
Engaging/disengaging force.	2.0 in•lb maximum.	Measure force necessary to completely engage and disengage the specimen from its mating part.
Coupling proof torque.	The coupling mechanism shall not be dislodged from the adapter when subjected to a radial torque of 15 in•lb maximum.	Apply specified radial torque to the coupling nut of the mated specimen and hold for 1 minute.

Figure 1 (continued)

Test Description	Requirement	Procedure
Insertion/withdrawal force.	3 pound maximum insertion force. 1 ounce minimum withdrawal force.	Size 3 times using a .0375 +.0001 inch diameter pin inserted to a minimum depth of .030 to .045 inch. After sizing, measure the force necessary to insert a .0370 +.0001 inch diameter pin to a minimum depth of .050 to .075 inch. Measure the force necessary to withdraw a .0355 -.0001 inch diameter pin from a minimum depth of .050 to .075 inch.
Contact resistance.	4 milliohms maximum for the center contact. 2 milliohms maximum for the outer contact.	MIL-STD-202, Method 307. Subject specimens to 100 milliamperes maximum and 50 millivolts maximum open circuit voltage.

**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 shown in Figure 2.*

Figure 1 (end)

3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)			
	1	2	3	4
	Test Sequence (b)			
Visual examination	1	1	1	1
Dimensional examination	2	2	2	2
Center contact retention with axial rotation	3			
Center contact retention without axial rotation		3	3	3
Insulation resistance	4	4	4	4
VSWR	5	5	5	5
RF leakage		6	6	6
RF insertion loss	6	7	7	7
DWV	7	8	8	8
Durability	8	9	9	9
Engaging/disengaging force	9	10	10	10
Coupling proof torque	10	11	11	11
Insertion/withdrawal force	11	12	12	12
Contact resistance	12	13	13	13

**NOTE** (a) See paragraph 4.1.A.  
 (b) Numbers indicate sequence in which tests are performed.

Figure 2

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#### 4. QUALITY ASSURANCE PROVISIONS

##### 4.1. Qualification Testing

###### A. Specimen Selection

Specimens shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. Each test group shall consist of 6 specimens.

###### B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 2.

##### 4.2. Requalification Testing

If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

##### 4.3. Acceptance

Acceptance is based on verification that the product meets the requirements of Figure 1. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken and specimens resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

##### 4.4. Quality Conformance Inspection

The applicable quality inspection plan shall specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.