
Locking SMA Series Coaxial Connectors

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the Tyco Electronics Locking SMA Series Coaxial Connectors.

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. Qualification Test Results

Successful qualification testing on the subject product line was completed on 19Apr07. The Qualification Test Report number for this testing is 501-654. 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. Tyco Electronics Documents

- 109 Series: Test Specifications as indicated in Figure 1
- 109-197: Test Specification (AMP Test Specifications vs EIA and IEC Test Methods)
- 501-654: Qualification Test Report (Locking SMA Series Coaxial Connectors)
- 502-1225: Engineering Report (Supplemental Testing of Locking SMA Series Coaxial Connectors)

2.2. Industry Standard

EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications

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 rms at sea level
- Temperature: -65 to 165°C when used with cable having polytetrafluorethylene (PTFE) dielectric
- Nominal Impedance: 50 ohms
- Frequency Range: 0 to 6 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 per EIA-364.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
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.
ELECTRICAL		
Low Level Contact Resistance (LLCR).	ΔR 3 milliohms maximum for center contact. ΔR 2 milliohms maximum for outer contact.	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage. See Figure 3.
Voltage Standing Wave Ratio (VSWR).	1.25 maximum for straight plug. 1.38 maximum for right angle plug.	EIA-364-108. Measure VSWR between 0 and 6 GHz.
Insulation resistance.	5000 megohms minimum.	EIA-364-21. 500 volts DC, 2 minute hold. Test between center contact and outer shell of unmated specimens.
Withstanding voltage.	One minute hold with no breakdown or flashover.	EIA-364-20, Condition I. 1000 volts AC at sea level. Test between center contact and outer shell of unmated specimens.
RF leakage.	-60 dB maximum.	AMP Spec 109-182. Measure RF leakage between 2 and 3 GHz.
Insertion loss.	Test not performed as part of qualification testing.	See Engineering Report 502-1225.

Figure 1 (continued)

Test Description	Requirement	Procedure
MECHANICAL		
Vibration, random.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-28, Test Condition VII, Condition D. Subject mated specimens to 3.10 G's rms between 20 to 500 Hz. Fifteen minutes in each of 3 mutually perpendicular planes.
Mechanical shock.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-27, Method H. Subject mated specimens to 30 G's half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.
Durability.	See Note.	EIA-364-9. Manually mate and unmate specimens for 100 cycles.
Mating force.	66.7 N [15 lbf] maximum.	EIA-364-13. Measure force necessary to mate specimens at a maximum rate of 12.7 mm [.5 in] per minute.
Unmating force.	4.4 N [1 lbf] minimum.	EIA-364-13. Measure force necessary to unmate specimens at a maximum rate of 12.7 mm [.5 in] per minute.
Cable retention.	89.0 N [20 lbf] minimum.	EIA-364-08. Apply specified load at a maximum rate of 25.4 mm [1 in] minute.
Interface retention force.	66.7 N [15 lbf] minimum.	EIA-364-13. Apply specified load to the plug at a maximum rate of 25.4 mm [1 in] minute in a direction intended to unmate the plug from the jack.

Figure 1 (continued)

Test Description	Requirement	Procedure
ENVIRONMENTAL		
Thermal shock.	See Note.	EIA-364-32. Subject unmated specimens to 5 cycles between -65 and 85°C. Thirty minute dwells at temperature extremes, 1 minute transition time between temperature extremes.
Humidity, steady state.	See Note.	EIA-364-31, Method II, Condition B. Subject unmated specimens to 60°C and 90 to 95% RH for 240 hours.
Mixed flowing gas.	See Note.	EIA-364-65, Class IIA (4 gas). Subject mated specimens to environmental Class IIA for 20 days, 10 days mated, 10 days unmated.

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	5	6
	Test Sequence (b)					
Initial examination of product	1	1	1	1	1	1
LLCR	3,7	2,4				
VSWR				2		
Insulation resistance			2,6			
Withstanding voltage			3,7			
RF leakage						2
Vibration, random	5					
Mechanical shock	6					
Durability	4					
Mating force	2					
Unmating force	8					
Cable retention					2	
Interface retention force	9					
Thermal shock			4			
Humidity, steady state			5			
Mixed flowing gas		3				
Final examination of product	10	5	8	3	3	3

NOTE (a) see paragraph 4.1.A.
 (b) Numbers indicate sequence in which test were performed.

Figure 2

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. All test groups shall each consist of a minimum of 5 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.

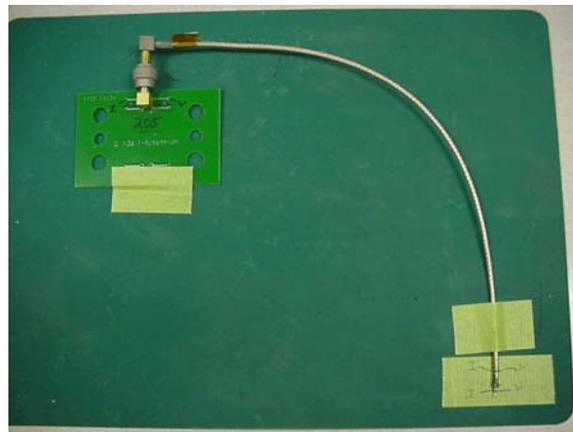


Figure 3
Low Level Contact Resistance Measurement Points