
SMA For Flexible Cable RF Connector

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for SMA Flexible Cable RF 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.

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

- 109-1: General Requirement for Test Specification.
- 109-197: Test Specification (Tyco Electronics Test Specifications vs EIA and IEC Test Methods)
- 114 Series: Application Specifications as required
- 501-112002: Qualification Test Report (SMA RF Coaxial Connectors for flexible cable)

2.2. Industry Document

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 V RMS at sea level

Temperature: -65 to 165 °C when used with cable having Teflon dielectric.

Temperature: -55 to 85 °C when used with cable having polyethylene dielectric.

Characteristic Impedance: 50 ohms

Frequency Range: 0~12.4 GHz (Depend on connected cable ability)

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 |
|---|---|---|
| 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) | Center Contact: 3 milliohms maximum initial. 5 milliohms maximum final Outer Contact: 2 milliohms maximum initial. 4 milliohms maximum final | EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage. See Figure 3. |
| Insulation resistance. | 5000 megohms minimum | EIA-364-21. 500 volts DC, 2 minute hold. Test between adjacent contacts. |
| Withstanding voltage. | 1000 volts AC dielectric withstanding voltage. One minute hold with no breakdown or flashover. | EIA-364-20, Condition I. 1000 volts AC (rms) at sea level |
| Voltage Standing Wave Ratio (VSWR) | 1.15+.02f(GHz) maximum for straight type 1.18+.02f(GHz) maximum for right angle type Not applicable for PWB product | EIA-364-108 Measure between 50M Hz to 3GHz |
| RF Insertion Loss | 0.06* \sqrt{f} (GHz) db maximum at 3 GHz for straight plugs and jacks. 0.15* \sqrt{f} (GHz) db maximum at 3 GHz for right angle plugs and jacks. | EIA-364-108 Measure RF insertion loss at 3GHz |

Figure 1 (continued)

| Test Description | Requirement | Procedure |
|------------------------------|--|---|
| MECHANICAL | | |
| Sinusoidal vibration. | No discontinuities of 1 microsecond or longer duration. See Note. | EIA-364-28, Test Condition IV, Subject mated specimens to 20 G's between 10 to 2000 Hz. 20 minutes in each of 3 mutually perpendicular planes. |
| Mechanical shock. | No discontinuities of 1 microsecond or longer duration. See Note. | EIA-364-27, Condition G. Subject mated specimens to 100 G's sawtooth shock pulses of 6 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. |
| Durability. | See Note. | EIA-364-9. Mate and unmate specimens for 500 cycles at a maximum rate of 600 cycles per hour. |
| Mating Torque | See Note | EIA-364-13B Torque samples to 8 inch pounds. |
| Unmating Torque | 6 inch ounces minimum | EIA-364-13B Measure torque necessary to unmate samples. |
| ENVIRONMENTAL | | |
| Thermal shock | See note | EIA-364-32C Subject mate samples 5 cycles between -55 °C and 85 °C |
| Humidity-temperature cycling | See note | EIA-364-31B, Test Condition III Subject mate samples 10 cycles between 25 °C and 65 °C at 95% RH. |
| Temperature life | See note | EIA-364-17B Samples temperature life at 85 °C for 1000 hours. |
| Mixed flowing gas | See note | EIA-364-65A Subject mated samples to environmental class II for 14 days. |

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 1.*
Figure 1 (end)

3.6. Product Qualification and Requalification Test Sequence

| Test or Examination | Test Group (a) | | | | |
|--------------------------------|-------------------|-----|-----|-----|---|
| | 1 | 2 | 3 | 4 | 5 |
| | Test Sequence (b) | | | | |
| Initial examination of product | 1 | 1 | 1 | 1 | 1 |
| LLCR | 3,7 | 2,4 | 2,4 | | |
| Insulation resistance | | | | 2,6 | |
| Withstanding voltage | | | | 3,7 | |
| RF insertion loss | | | | | 2 |
| Voltage standing wave ratio | | | | | 3 |
| Sinusoidal Vibration | 5 | | | | |
| Mechanical shock | 6 | | | | |
| Durability | 4 | | | | |
| Mating torque | 2 | | | | |
| Unmating torque | 8 | | | | |
| Thermal shock | | | | 4 | |
| Humidity-temperature cycling | | | | 5 | |
| Temperature life | | 3 | | | |
| Mixed flowing gas | | | 3 | | |
| Final examination of product | 9 | 5 | 5 | 8 | 4 |

NOTE

- (a) See paragraph 4.1.A.
 (b) Numbers indicate sequence in which tests are 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 group shall consist of 5 jacks and 5 plugs.

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 resubmitted.

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.

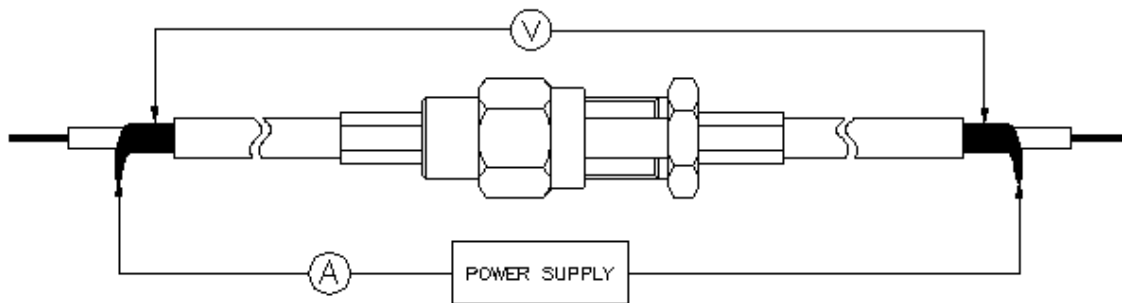


Figure 3
Typical LLCR Measurement Points