
Ultraminiature Coax Connector (UMCC) and Cable Assemblies

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the Tyco Electronics Ultraminiature Coax Connector (UMCC) and Cable Assemblies.

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 21Nov05. The Qualification Test Report number for this testing is 501-649. 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

- 109-197: Test Specification (AMP Test Specifications vs EIA and IEC Test Methods)
- 501-649: Qualification Test Report (Ultraminiature Coax Connector (UMCC) and Cable Assemblies)

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: 60 volts AC (rms)
- Temperature: -40 to 90°C
- Characteristic Impedance: 50 ohms
- Frequency Range: 0 to 6.0 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
Examination of product.	Meets requirements of product drawing.	EIA-364-18. Visual and dimensional (C of C) inspection per product drawing.
ELECTRICAL		
Low level contact resistance.	15 milliohms maximum.	EIA-364-23. Subject mated specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage.
Voltage standing wave ratio.	1.3:1 0.5 to 3 GHz. 1.4:1 3 to 6 GHz.	EIA-364-108. Measure VSWR of unmated plug of cable assembly between 0.5 and 6 GHz.
Insulation resistance.	1000 megohms minimum initial. 500 megohms minimum final.	EIA-364-21. 100 volts DC, 1 minute hold. Test between ground contact and signal pin of mated specimens.
Withstanding voltage.	One minute hold with no breakdown or flashover.	EIA-364-20, Condition I. 200 volts AC at sea level. Test between ground contact and signal pin of mated specimens.
MECHANICAL		
Vibration, random.	No discontinuities of 1 microsecond or longer duration. See Note.	Subject mated specimens to 10-100-10 Hz, single amplitude of 1.5 mm, acceleration of 59 m/s ² (6 G's). Seven sweeps in each of 3 mutually perpendicular planes, 35 minutes per axis.
Mechanical shock.	No discontinuities of 1 microsecond or longer duration. See Note.	Subject mated specimens to an acceleration of 735 m/s ² (75 G's), 11 milliseconds duration, half-sine waveform. Six cycles in each of 3 mutually perpendicular planes.

Figure 1 (continued)

Test Description	Requirement	Procedure
Repetitive operation (durability).	See Note.	EIA-364-9. Subject specimens to 30 manual insertion/disengagement cycles.
Female contact holding force (withdrawal force).	0.15 N minimum using a 0.475 mm gage pin.	EIA-364-29. Apply force at a maximum rate of 12.5 mm per minute.
Three axis unmating force.	Upward: 2 N minimum. Horizontal: 4 N minimum. Downward: 2 N minimum.	EIA-364-13. Measure force necessary to unmate specimens at a maximum rate of 12.7 mm per minute. See Figure 5.
ENVIRONMENTAL		
Thermal shock.	See Note.	EIA-364-32. Subject mated specimens to 5 cycles of the following: -40°C for 30 minutes; 25°C for 5 minutes; 90°C for 30 minutes; 25°C for 5 minutes.
Humidity, steady state.	See Note.	EIA-364-31, Method II, Test Condition A. Subject mated specimens to 40°C and 95% RH for 96 hours.
Salt spray.	See Note.	EIA-364-26, Test Condition A. Subject mated specimens to 5% salt concentration for 48 hours with a spray volume of 1 to 2 ml per hour.

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	7A	7B	8	9
	Sample Group (b)									
	C,E	C,E	C,E	C	C,E	C,F	C,E	C,E	C,E	C,E
Test Sequence (c)										
Examination of product	1,5	1,5	1,5	1,3	1,4	1,3	1,3	1,3	1,3	1,3
Low level contact resistance	2,4		2		3					
Voltage standing wave ratio									2	
Insulation resistance		2,4	3							
Withstanding voltage			4							
Vibration, random							2			
Mechanical shock								2		
Repetitive operation	3									
Female contact holding force				2						
Three axis unmating force										2
Thermal shock					2					
Humidity, steady state		3								
Salt spray						2				

NOTE (a) See paragraph 4.1.A.
 (b) See Figures 3 and 4.
 (c) 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 per Figure 3.

Specimen Type	Specimen Description
C	Cable Assembly, UMCC Series Plug
E	PCB Assembly, with one UMCC Series Receptacle
F	UMCC Series Receptacle

Figure 3

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.

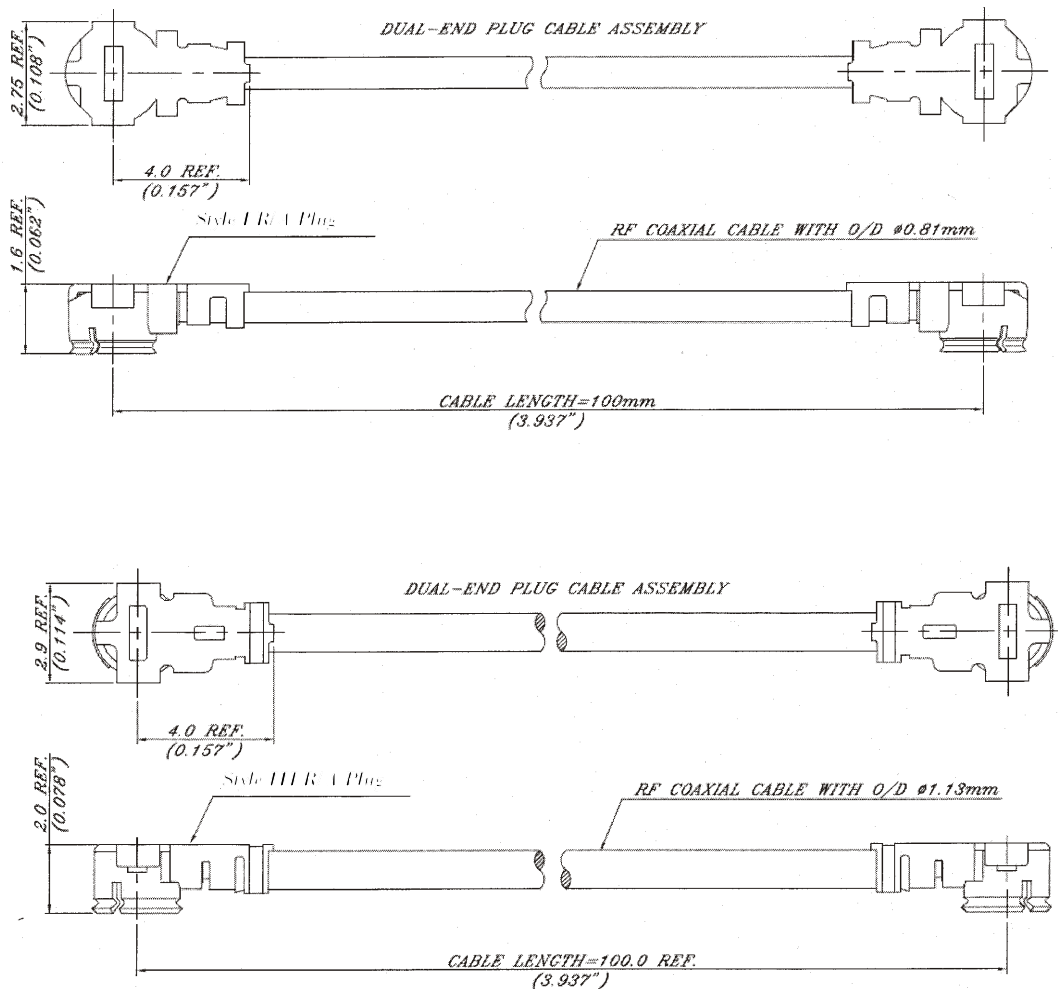


Figure 4
RF Connector Plug Cables Assemblies

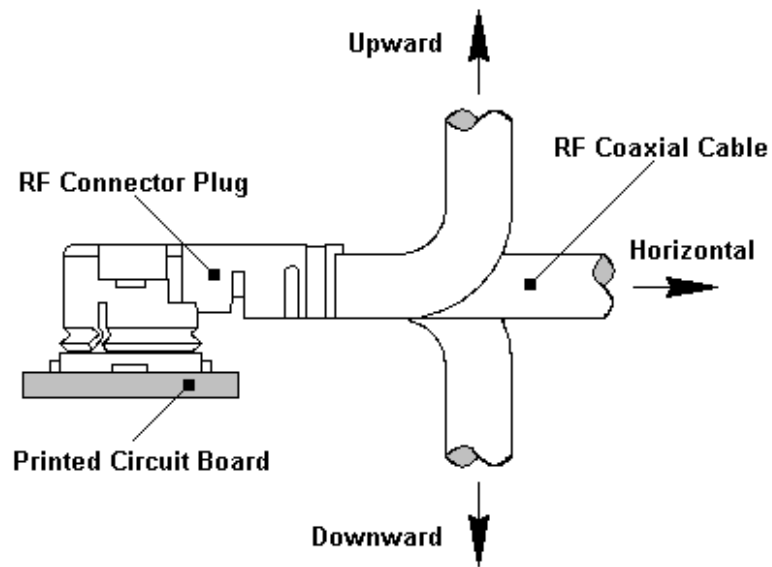


Figure 5
Three Axis Unmating Force