
Mini-UHF and BNC Right Angle PCB Jacks

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the TE Connectivity (TE) Mini-UHF (part number 2016167-1) and BNC right angle PCB jacks (part number 2016166-1) used in mobile communications equipment.

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 09Mar11. The Qualification Test Report number for this testing is 501-744. 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 Documents

- 109 Series: Test Specifications as indicated in Figure 1
- 501-744: Qualification Test Report (Mini-UHF and BNC Right Angle PCB Jacks)
- 502-TBD: Engineering Report (TBD)

2.2. Industry Documents

- EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications
- IEC-60529: Degrees of Protection Provided by Enclosures (IP Code)

2.3. Reference Document

109-197: Test Specification (TE Test Specifications vs EIA and IEC Test Methods)

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
- Power: 100 watts
- Temperature:
 - Storage: -55 to 85°C
 - Operating: -30 to 60°C
- Characteristic Impedance: 50 ohms
- Frequency Range: DC to 2.5 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
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).	10 milliohms maximum for signal (center) contact. 2.5 milliohms maximum for shield (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.	EIA-364-108. Measure VSWR between 0 and 2.5 GHz.
Insulation resistance.	5000 megohms minimum.	EIA-364-21. 500 volts DC, 2 minute hold. Test between signal and shield contacts of unmated jacks.
Withstanding voltage.	One minute hold with no breakdown or flashover.	EIA-364-20, Condition I. 1000 volts AC at sea level. Test between signal and shield contacts of unmated jacks.
RF insertion loss.	BNC: 0.1 dB, 0 to 1 GHz, 0.2 dB, 1 to 2.5 GHz both before and after 500 mating cycles. Mini-UHF: 0.1 dB, 0 to 530 MHz, Equation: $0.18 + 0.22f(\text{GHz})^{2.5} - 0.14e^{-f(\text{GHz})}$, 530 MHz to 2.5 GHz Both before and after 500 mating cycles.	EIA-364-101, Method A.

Figure 1 (continued)

Test Description	Requirement	Procedure
MECHANICAL		
Component heat resistance to lead-free reflow soldering.	See Note.	TEC-109-201, Condition B. One pass with no measurements or preconditioning.
Random vibration.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-28, Test Condition VII, Condition E. Subject mated specimens to 4.90 G's rms between 20 to 500 Hz. Fifteen minutes in each of 3 mutually perpendicular planes. See Figure 4.
Mechanical shock.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-27, Method A. Subject mated specimens to 50 G's half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. See Figure 4.
Durability.	See Note.	EIA-364-9. Manually mate and unmate specimens for 500 cycles.
ENVIRONMENTAL		
Thermal shock.	See Note.	EIA-364-32 Subject mated specimens to 5 cycles between -55 and 85°C with 30 minute dwells at temperature extremes and 1 minute transition between temperatures.
Humidity/temperature cycling.	See Note.	EIA-364-31, Method III. Subject mated specimens to 10 cycles (10 days) between 25 and 65°C at 80 to 100% RH.
Temperature life.	See Note.	EIA-364-17, Method A, Test Time Condition C. Subject mated specimens to 80°C for 500 hours.
Ingress protection.	No ingress of dust or water. See Note.	IEC-60529, IP-67.

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	2,6	2,4				
VSWR				2,4		
Insulation resistance			2,6			
Withstanding voltage			3,7			
RF insertion loss					2,4	
Resistance to reflow soldering						2
Random vibration	4					
Mechanical shock	5					
Durability	3			3	3	
Thermal shock			4			
Humidity/temperature cycling			5			
Temperature life		3(c)				
Ingress protection						3
Final examination of product	7	5	8	5	5	4

- NOTE**
- (a) See paragraph 4.1.A.
 - (b) Numbers indicate sequence in which tests are performed.
 - (c) Precondition specimens with 10 durability cycles.

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. Each test group shall 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.

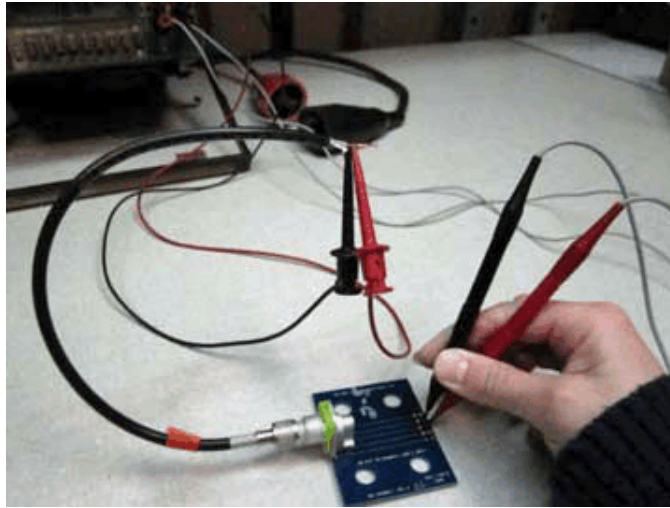
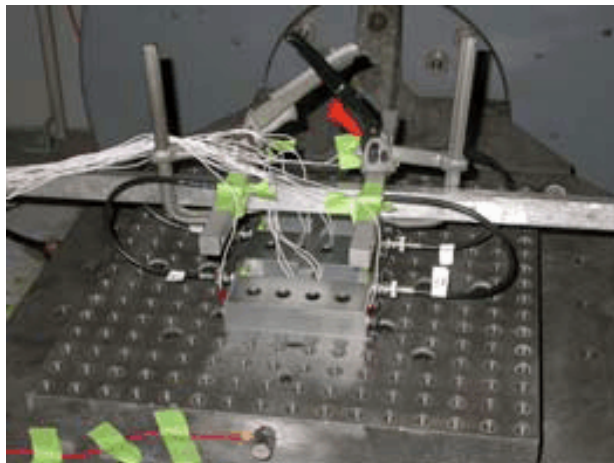
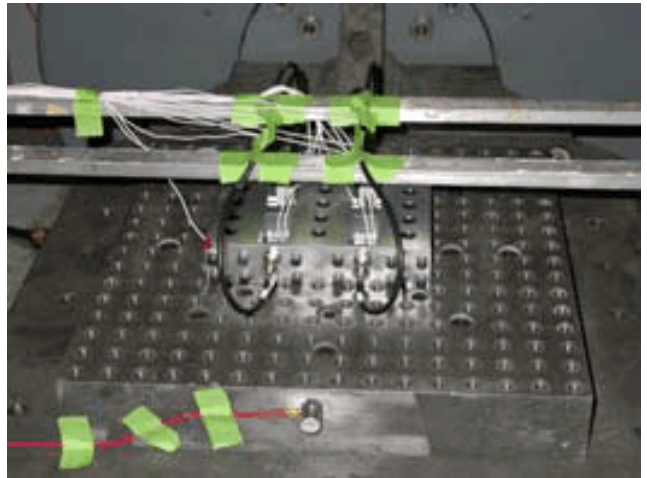
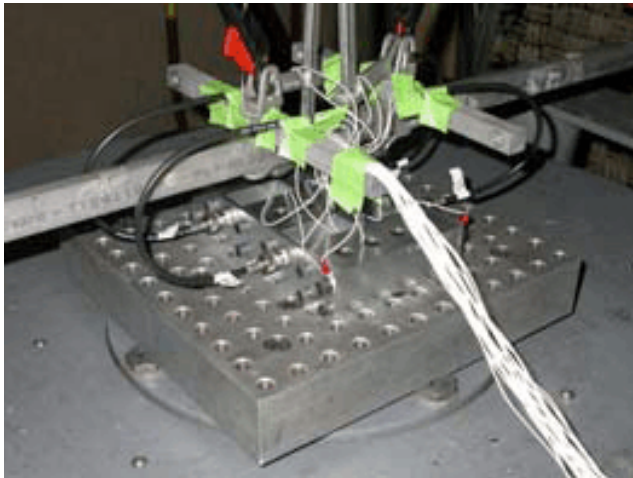
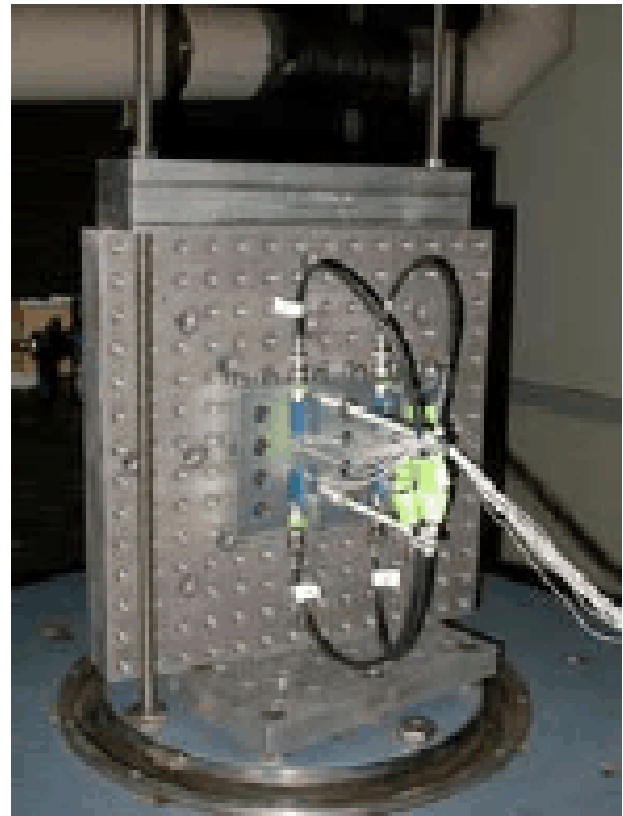
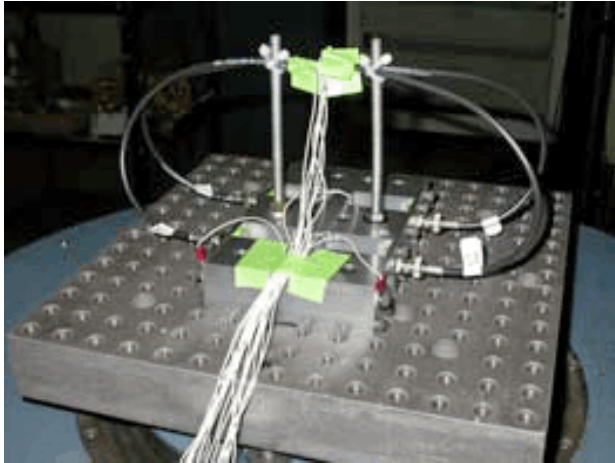


Figure 3
LLCR Measurement Points



Vibration
Figure 4 (continued)



Mechanical Shock

Figure 4 (end)
Vibration & Mechanical Shock Mounting Fixtures