

---

**Coaxial BNC Solder Receptacle Connector**

---

**1. SCOPE**

## 1.1. Content

This specification covers the performance, tests and quality requirements for the TE Connectivity (TE) coaxial BNC solder receptacle connector.

## 1.2. Qualification

When tests are performed on the subject product line, the 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. TE Documents

- 109-1: General Requirements for Test Specifications
- 109 Series: Test Specifications as indicated in Figure 1
- 110-12037: Qualification Test Report

## 2.2. Government Specification

MIL-C-17: Cables, Radio Frequency, Flexible and Semirigid, General Specification for

**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. Material

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

## 3.3. Ratings

- Current Rating: 500 volts AC RMS
- Operating Temperature: -65 to 165°C
- Nominal Impedance: 50 or 75 ohms
- Frequency Range: 0 to 4 GHz for 50 ohm product, 0 to 2 GHz for 75 ohm product

3.4. Performance and Test Description

Product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure																					
Examination of product.	Meets requirements of product drawing.	Visual, dimensional and functional per applicable quality inspection plan.																					
<b>ELECTRICAL</b>																							
Termination resistance.	<table border="1"> <thead> <tr> <th>Contact Type</th> <th colspan="2">Resistance Milliohms Maximum</th> </tr> <tr> <td></td> <th>Initial</th> <th>Final</th> </tr> </thead> <tbody> <tr> <td>Center</td> <td></td> <td></td> </tr> <tr> <td>Gold</td> <td>2.0</td> <td>2.5</td> </tr> <tr> <td>Silver</td> <td>2.5</td> <td>3.5</td> </tr> <tr> <td>Tin</td> <td>2.75</td> <td>4.75</td> </tr> <tr> <td>Outer</td> <td>1.0</td> <td>1.6</td> </tr> </tbody> </table>	Contact Type	Resistance Milliohms Maximum			Initial	Final	Center			Gold	2.0	2.5	Silver	2.5	3.5	Tin	2.75	4.75	Outer	1.0	1.6	TE Spec 109-25. Measure potential drop of mated contacts at 1 ampere maximum. See Figure 3.
Contact Type	Resistance Milliohms Maximum																						
	Initial	Final																					
Center																							
Gold	2.0	2.5																					
Silver	2.5	3.5																					
Tin	2.75	4.75																					
Outer	1.0	1.6																					
Insulation resistance.	5000 megohms minimum initial.	TE Spec 109-28-4. Test between center contact and outer shell of unmated samples.																					
Dielectric withstanding voltage.	1500 volts AC (rms) between center conductor and outer shell. 1 minute hold with no evidence of breakdown or flashover.	TE Spec 109-29-1. Test between center contact and outer shell.																					
RF high potential.	1000 volts (rms) at 5 MHz. No breakdown or flashover. 1 minute hold.	TE Spec 109-29-1, except 5 MHz. Subject mated samples to 1000 volts instantaneously applied between center contact and outer shell.																					
Corona.	No evidence of sustained corona discharge in excess of 5 picocoulombs with 375 volts (rms) and 60 Hz applied.	TE Spec 109-40. Place mated samples in a vacuum chamber at a simulated altitude of 70,000 feet for 10 minutes. Use cable shields on exposed cable ends. At the end of this period, and while still at 70,000 feet, a 60 Hz test voltage shall be increased until the detector indicates a sustained corona discharge.																					
Permeability.	Shall not exceed 2 $\mu$ .	TE Spec 109-88. Measure magnetic permeability using 2 $\mu$ pellet.																					

Figure 1 (continued)

Test Description	Requirement	Procedure
<b>MECHANICAL</b>		
Solderability.	Samples shall have a solder coverage of 95% minimum.	TE Spec 109-11-1. Subject samples to solderability.
Vibration.	No discontinuities greater than 1 microsecond. See Note.	TE Spec 109-21-3. Subject mated samples to 15 G's, 10-2000 Hz with 100 milliampere current applied.
Physical shock.	No discontinuities greater than 1 microsecond. See Note	TE Spec 109-26-9. Subject mated samples to 100 G's sawtooth in 6 milliseconds. 3 shocks in each direction applied along the 3 mutually perpendicular planes. Total 18 shocks.
Durability.	Meets requirements of subsequent tests.	TE Spec 109-27. Mate and unmate samples for 500 cycles at a maximum rate of 12 cycles per minute.
Contact retention.	No movement or dislodging of contact.	TE Spec 109-30. Apply axial load of 10 pounds to the center contact in the direction in which the mating plug would be inserted and hold for 10 seconds.
Contact engaging force.	32 ounces maximum.	TE Spec 109-35. Measure force necessary to engage Gage 1 to a depth of 0.125 inch. See Figure 4.
Contact separating force.	2 ounces minimum.	TE Spec 109-35. Size 3 times using Gage 1, insert Gage 2 and measure force necessary to separate from a depth of 0.125 inch.
Mating/unmating force.	3 pounds maximum longitudinal force. 2.5 inch pounds maximum torque.	Measure force necessary to initiate mating of coupling nut of the plug. Also measure torque required to fully couple and uncouple the sample.
<b>ENVIRONMENTAL</b>		
Thermal shock.	Dielectric withstanding voltage. Termination resistance. No physical damage.	TE Spec 109-22. Subject unmated samples to 5 cycles between -65 and 165°C.
Humidity-temperature cycling.	200 megohms minimum final insulation resistance tested within 5 minutes after removal from humidity. Dielectric withstanding voltage after 24 hours drying at ambient.	TE Spec 109-23-3, Condition B. Subject mated samples to 10 cycles between 25 and 65°C at 95% R.H.

Figure 1 (continued)

Test Description	Requirement	Procedure
Salt spray corrosion.	No base metal exposure on the interface or mating surface of the receptacle.	TE Spec 109-24, Condition B. Subject unmated samples to 5% salt concentration for 48 hours.

**NOTE** *Shall remain mated and show no evidence of damage, cracking or chipping.*

Figure 1 (end)

Test or Examination	Test Group (a)			
	1	2	3	4
	Test Sequence (b)			
Examination of product	1	1	1	1
Termination resistance		7,11,14		
Insulation resistance	7,9	6,16	6	
Dielectric withstanding voltage	10	8,13,17		
RF high potential		19		
Corona		18		
Permeability	6	5	5	
Solderability				2
Vibration		9		
Physical shock		10		
Durability	8			
Contact retention	5			
Contact engaging force	3,12	3	3	
Contact separating force	4,13	4	4	
Mating/unmating force	2,11	2,20	2,8	
Thermal shock		12		
Humidity-temperature cycling		15		
Salt spray corrosion			7	

**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. Sample Selection

Samples shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. Each test group shall consist of 3 receptacles. All receptacles shall be tested uncabled. Standard mating plugs shall be terminated to 11 inch lengths of RG-58 c/u coaxial cable conforming to MIL-C-17. Current equalizers shall be placed from the back of the connector, 10 inches on the braid and 10.5 inches on the center conductor as shown in Figure 3.

###### B. Test Sequence

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

##### 4.2. Requalification Testing

If changes significantly affecting form, fit, or function are made to the product or the 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. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

##### 4.4. Quality Conformance Inspection

The applicable quality inspection plan will 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.

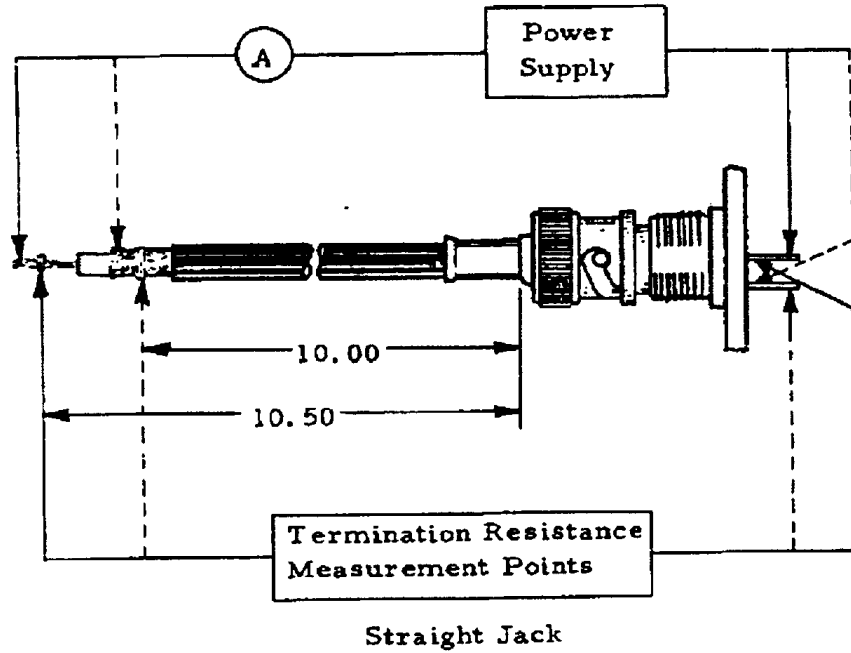
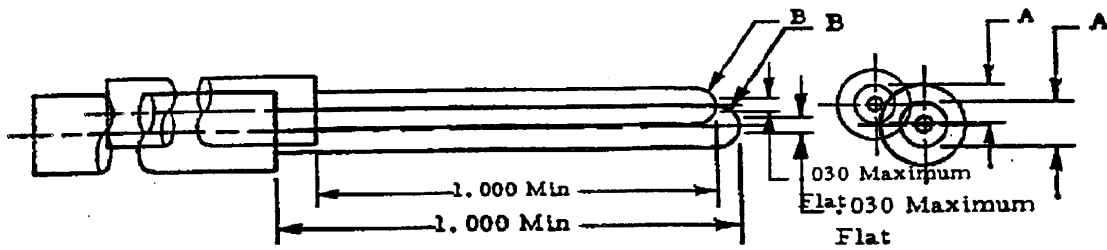


Figure 3  
Termination Resistance Measurement Points



Gage Number	"A" Dimension
1	.0540 +.0000/-.0001
2	.0520 +.0001/-.0000

Figure 4  
Engaging & Separating Gages