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**BNC PCB Straight and Right Angle Connectors**

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**1. SCOPE**

## 1.1. Content

This specification covers the performance, tests and quality requirements for the TE Connectivity (TE) BNC printed circuit board straight and right angle connectors.

## 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
- 501-132: 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

- Operating Temperature: -55 to 85°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
- Operating Voltage: 500 volts (rms) sea level

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.	12 milliohms maximum initial, 16 milliohms maximum final for center contact. 6 milliohms maximum initial, 9 milliohms maximum final for outer contact.	TE Spec 109-6-1. Measure potential drop of mated contacts at 100 milliamperes dc. See Figure 3.
Insulation resistance.	5000 megohms minimum.	TE Spec 109-28-4. Test between center contact and outer shell of unmated samples.
Dielectric withstanding voltage.	1500 volts AC (rms) dielectric withstanding voltage. 1 minute hold with no evidence of breakdown or flashover.	TE Spec 109-29-1. Test between adjacent contacts of unmated samples.
RF high potential.	No evidence of dielectric breakdown or flashover.	TE Spec 109-29-1. Apply a frequency stabilized R.F. potential of 1000 volts (rms) and 0.5 MHz between center contact and body of mated sample, hold for 1 minute. Sine wave output shall have minimum harmonic content.
Permeability.	Shall not exceed 2 $\mu$ .	TE Spec 109-88. Measure magnetic permeability using 2 $\mu$ pellet.
<b>MECHANICAL</b>		
Solderability.	Tabs shall have a solder coverage of 95% minimum.	TE Spec 109-11-2. Subject samples to solderability.
Vibration.	No discontinuities greater than 1 microsecond. No physical damage.	TE Spec 109-21-1. Subject mated samples to 10-55-10 Hz traversed in 1 minute at 0.06 inch total excursion. 2 hours in each of 3 mutually perpendicular planes. See Figure 4.

Figure 1 (continued)

Test Description	Requirement	Procedure
Physical shock.	No discontinuities greater than 1 microsecond. No physical damage.	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. See Figure 4.
Durability.	16 milliohms maximum for center contact; 6 milliohms maximum for outer contact termination resistance. Dielectric withstanding voltage.	TE Spec 109-27. Mate and unmate samples for 500 cycles at a maximum rate of 12 cycles per minute.
Contact engaging force.	56 ounces maximum.	TE Spec 109-35. Measure force necessary to engage Gage 1 to a depth of 0.125 inch. See Figure 5.
Contact separating force.	1 ounce 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. See Figure 5.
Connector to board retention.	No evidence of mechanical failure, breaking or loosening of parts or electrical discontinuities.	Apply an axial force of 30 pounds to samples in a direction away from the board, hold for 30 seconds. Test for electrical continuity using a simple low voltage lamp circuit.
<b>ENVIRONMENTAL</b>		
Thermal shock.	See Note.	TE Spec 109-22. Subject unmated samples to 5 cycles between -55 and 85°C.
Humidity-temperature cycling.	See Note.	TE Spec 109-23-3, Condition B. Subject mated samples to 10 cycles between 25 and 65°C at 95% R.H.
Temperature life.	See Note.	TE Spec 109-43. Subject mated samples to temperature life at 55°C for 96 hours.
Mixed flowing gas.	See Note.	TE Spec 109-85-3. Subject mated samples to environmental class III for 20 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 2.*

Figure 1 (end)

3.6. Product Qualification and Requalification Tests and Sequence

Test or Examination	Test Group (a)				
	1	2	3	4	5
	Test Sequence (b)				
Examination of product	1,10	1,5	1,5	1,8	1
Termination resistance	3,7	2,4	2,4		
Insulation resistance				2,6	
Dielectric withstanding voltage				3,7	
RF high potential					3
Permeability					2
Solderability					4
Vibration	5				
Physical shock	6				
Durability	4				
Contact engaging force	2(c)				
Contact separating force	8(c)				
Connector to board retention	9				
Thermal shock				4	
Humidity-temperature cycling				5	
Temperature life		3			
Mixed flowing gas			3		

**NOTE**

- (a) See paragraph 4.1.A.
- (b) Numbers indicate sequence in which tests are performed.
- (c) Test applies to jacks only.

Figure 2

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#### 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. Test groups 1 to 5 except test group 4, shall consist of 10 jacks and 10 plugs. The jacks shall be mounted on 0.125 inch thick printed circuit boards. The plugs shall be crimped to 12 inch lengths of RG-58 c/u coaxial cable with equalizers placed at the center conductor and braid as shown in Figure 3. All coaxial cable shall conform to MIL-C-17.

###### 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.

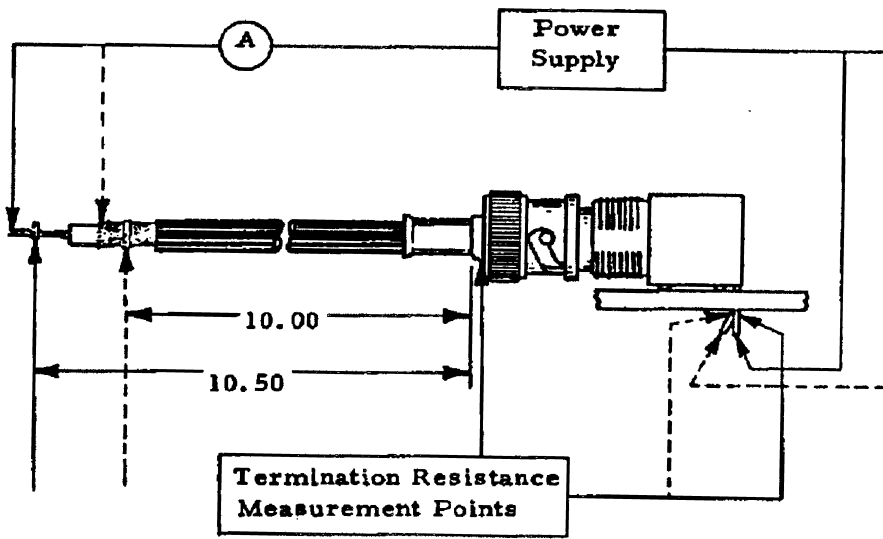
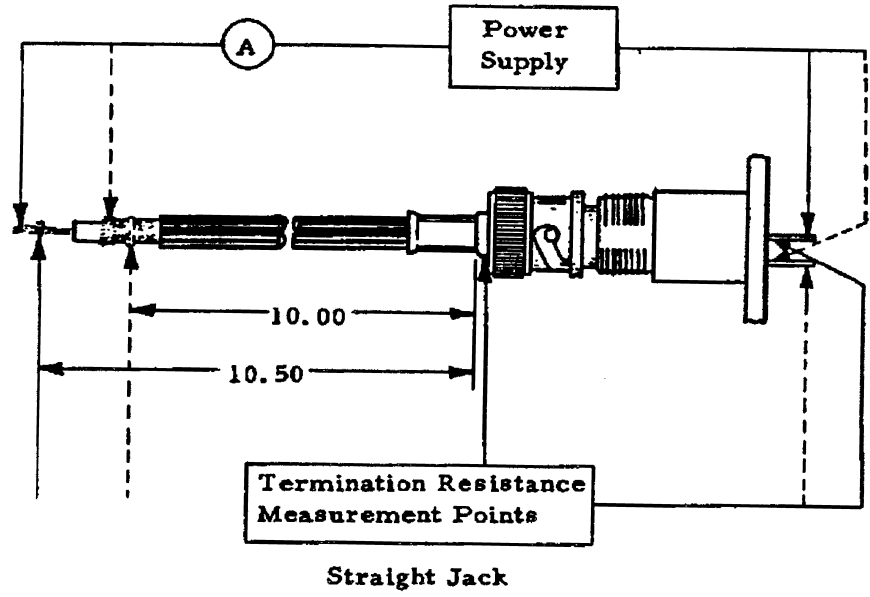


Figure 3  
Termination Resistance Measurement Points

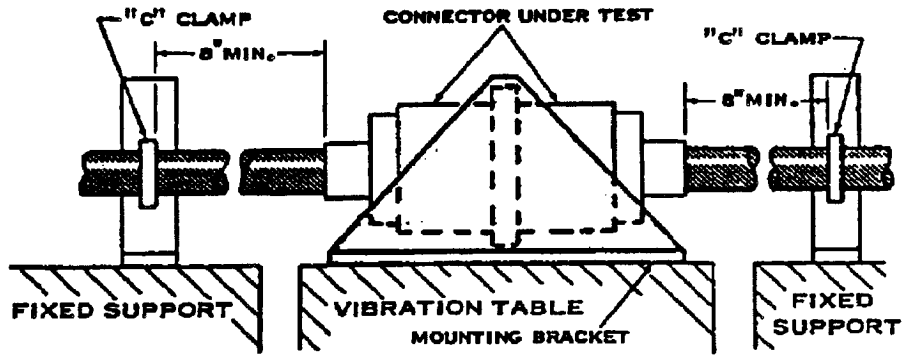
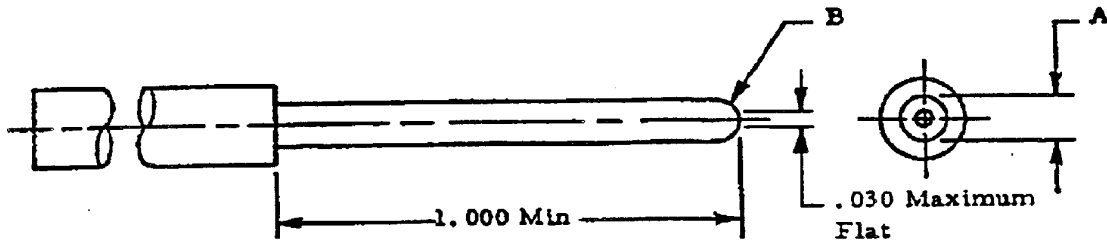


Figure 4  
Vibration & Physical Shock Mounting Fixture



Gage Number	"A" Dimension
1	.0540 +.0000/-0.0001
2	.0520 +.0001/-0.0000

Figure 5  
Engaging & Separating Gages