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**Connector, F Series Jack, PCB, Surface Mount**

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**1. SCOPE**

## 1.1. Content

This specification covers performance, tests and quality requirements for the AMP\* printed circuit board surface mount F Series connector jack used in CATV NID's and cable modems.

## 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 11Jun99. The Qualification Test Report number for this testing is 501-476. This documentation is on file at and available from Engineering Practices and Standards (EPS).

**2. APPLICABLE DOCUMENTS**

The following AMP 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.

- A. 109-1: General Requirements for Test Specifications
- B. 109 Series: Test Specifications as indicated in Figure 1
- C. Corporate Bulletin 401-76: Cross-reference between AMP Test Specifications and Government or Commercial Documents
- D. 501-476: Qualification Test Report

**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

- A. Body: Brass or zinc with tin-lead plating
- B. Contact: Phosphor bronze or beryllium copper with tin-lead plating
- C. Dielectric: Teflon or PCT

## 3.3. Ratings

- A. Voltage: 500 volts DC
- B. Current: Signal application only
- C. Temperature: -40 to 85°C
- D. Characteristic Impedance: 75 ohms
- E. Frequency Range: 1 to 1000 MHz

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 per AMP Specification 109-1.

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.	10 milliohms maximum.	AMP Spec 109-6-6. Subject samples to 20 millivolt maximum open circuit voltage at 100 milliamperes maximum. See Figure 3.
Insulation resistance.	5,000 megohms minimum.	AMP Spec 109-28-4. Test between center and outer contacts of unmated samples.
Dielectric withstanding voltage.	500 volts AC at sea level. 1 minute hold with no breakdown or flashover.	AMP Spec 109-29-1. Test between center and outer contacts of unmated samples.
Voltage standing wave ratio.	1.2 maximum.	AMP Spec 109-181. Measure VSWR between 1 and 1,000 MHz.
<b>MECHANICAL</b>		
Vibration, sinusoidal.	No discontinuities of 1 microsecond or longer duration. See Note.	AMP Spec 109-21-1. Subject mated samples to 10-55-10 Hz traversed in 1 minute with 0.06 inch maximum excursion. 2 hours in each of 3 mutually perpendicular planes.
Mechanical shock, specified pulse.	No discontinuities of 1 microsecond or longer duration. See Note.	AMP Spec 109-26-1, except 30 G's. Subject mated samples to 30 G's half-sine shock pulses of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.
Durability.	See Note.	AMP Spec 109-27. Mate and unmate samples using a 0.042 inch spherical radius gage pin for 50 cycles at a maximum rate of 600 cycles per hour.

Figure 1 (cont)

Test Description	Requirement	Procedure
Contact retention.	Contact shall not dislodge.	AMP Spec 109-30-2. Apply axial load of 64 ounces minimum to contacts at a rate of 5 inches per minute.
Engaging force.	128 ounces maximum.	AMP Spec 109-35. Measure force necessary to engage samples with a 0.042 inch spherical radius gage pin to a depth of 0.380 inch.
Separating force.	0.4 ounce minimum.	AMP Spec 109-35. Measure force necessary to separate a 0.022 inch spherical radius gage pin from a depth of 0.380 inch.
Resistance to soldering heat.	See Note.	AMP Spec 109-63-6. Subject samples to solderability.
Plug to jack retention.	Connector (jack) shall withstand load without damage.	Apply an axial load of 40 pounds between plug and jack at a rate of 5 inches per minute.
Center of gravity.	Center of gravity shall be a minimum of 0.080 inch from the edge of the printed circuit board.	Verify that the center of gravity is located a minimum of 0.080 inch from edge of the printed circuit board.

ENVIRONMENTAL

Thermal shock.	See Note.	AMP Spec 109-22. Subject unmated samples to 5 cycles between -40 and 85°C.
Humidity-temperature cycling.	See Note.	AMP Spec 109-23-3, Condition B. Subject mated (test group 3) and unmated (test group 4) samples to 10 cycles between 25 and 65°C at 95% RH.
Temperature life.	See Note.	AMP Spec 109-43. Subject mated samples to temperature life at 85°C for 500 hours.

**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)					
Examination of product	1,10	1,5	1,5	1,10	1,3	1,3
Termination resistance	3,7	2,4	2,4			
Insulation resistance				3,7		
Dielectric withstanding voltage				4,8		
Voltage standing wave ratio					2	
Vibration	5					
Mechanical shock	6					
Durability	4					
Contact retention				9		
Engaging force	2					
Separating force	8					
Resistance to soldering heat						2
Plug to jack retention	9					
Center of gravity				2		
Thermal shock				5		
Humidity-temperature cycling			3(c)	6(d)		
Temperature life		3(c)				

**NOTE**

- (a) See paragraph 4.1.A.
- (b) Numbers indicate sequence in which tests are performed.
- (c) Precondition samples with 10 cycles of durability using a 0.042 inch spherical radius gage pin.
- (d) Unmated samples.

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. All test groups shall consist of 5 samples mated to F Series plugs terminated to Series 6 cable.

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 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 AMP 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.

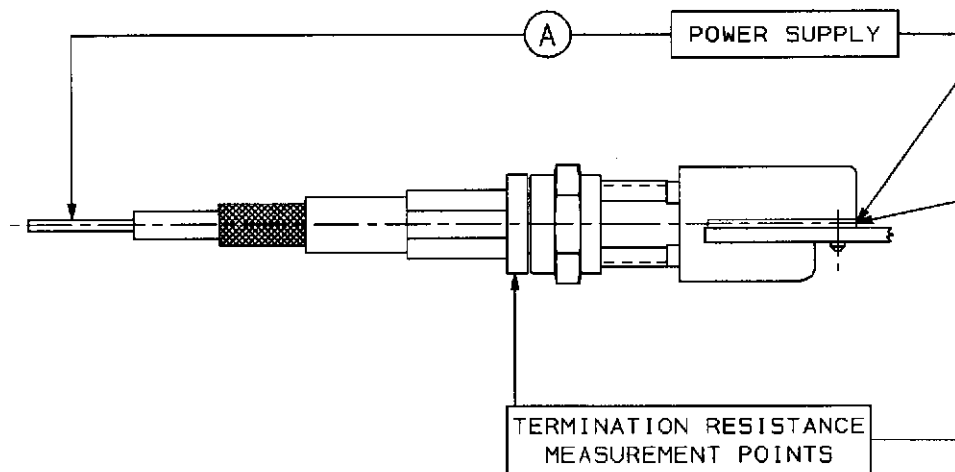


Figure 3  
Termination Resistance Measurement Points