

**Modular Jack, Dual Port, Surface Mount or Thru-Hole, Economy****1. INTRODUCTION**

## 1.1. Purpose

Testing was performed on the AMP\* Dual Port, Surface Mount and Thru-Hole Modular Jacks to determine its conformance to the requirements of AMP Product Specification 108-1689 Rev. B.

## 1.2. Scope

This report covers the electrical, mechanical, and environmental performance of the Dual Port, Surface Mount and Thru-Hole Modular Jacks. Testing was performed at the Americas Regional Laboratory between 26Nov96 and 03Jan97, and between 10Jun97 and 03Oct97.

## 1.3. Conclusion

The Dual Port, Surface Mount and Thru-Hole Modular Jacks, listed in paragraph 1.5., met the electrical, mechanical, and environmental performance requirements of AMP Product Specification 1689 Rev B.

## 1.4. Product Description

The AMP Dual Port, Surface Mount and Thru-Hole Modular Jacks are used for voice, data and signal transmission interconnections. This product conforms to the F.C.C. Rules and Regulations Part 68, subpart 'F'. The contacts are phosphor bronze, nickel plated with selective gold plating on the contact area and tin-lead plating on the solder area. The housing is SPS crystalline polymer, UL 94V-O.

## 1.5. Test Samples

The test samples were representative of normal production lots, and the following part numbers were used for test:

<u>Test Group</u>	<u>Quantity</u>	<u>Part Nbr</u>	<u>Description</u>
1,2,3	28	406393-1	Mod Jack, 6 Pos. Dual Port Surface Mount
1,2,3	28	460550-1	Mod Jack, 6 Pos. Dual Port Thru-Hole
1,2,3	56	5-641337-3	Mod Plug, 6 Pos. For flat oval stranded wire

1.6. Qualification Test Sequence

Test or Examination	Test Groups		
	1	2	3
I Examination of Product	1,7	1,3	1,4
Termination Resistance, Dry Circuit	2,5		
Dielectric Withstanding Voltage		2	
Vibration	4		
Durability	3		
Unmating Force	6		
Plug Retention in Jack			2
I Jack Retention to PCB			3

**NOTE** *The numbers indicate sequence in which tests were performed.*

**2. SUMMARY OF TESTING**

2.1. Examination of Product - All Groups

All samples submitted for testing were representative of normal production lots. A Certificate of Conformance was issued by the Product Assurance Department of the Communications Business Division. Where specified, samples were visually examined and no evidence of physical damage detrimental to product performance was observed.

2.2. Termination Resistance, Dry Circuit - Group 1

All termination resistance measurements, taken at 100 milliamperes maximum and 50 millivolts open circuit voltage had a maximum increase in resistance ( $\Delta R$ ) of 30 milliohms or less.

2.3. Dielectric Withstanding Voltage - Group 2

No dielectric breakdown or flashover occurred.

2.4. Vibration - Group 1

No discontinuities were detected during vibration. Following vibration, no cracks, breaks, or loose parts on the connector assemblies were visible.

2.5. Unmating Force - Group 1

All unmating force measurements were less than 5.0 pounds.

2.6. Durability - Group 1

No physical damage occurred to the samples as a result of mating and unmating the plug and jack a minimum of 250 times.

2.7. Plug Retention in Jack - Group 3

The plug did not dislodge from the jack as a result of applying a 20 pound tensile load to the cable attached to the jack.

2.8. Plug Retention to Printed Circuit Board - Group 3

The jack did not dislodge from the printed circuit board as a result of applying a 10 pound perpendicular load to the jack.

### 3. TEST METHODS

#### 3.1. Examination of Product

Where specified, samples were visually examined for evidence of physical damage detrimental to product performance.

#### 3.2. Termination Resistance, Low Level

Termination resistance measurements at low level current were made using a 4 terminal measuring technique (Figure 1). The test current was maintained at 100 milliamperes maximum with a 50 millivolt open circuit voltage.

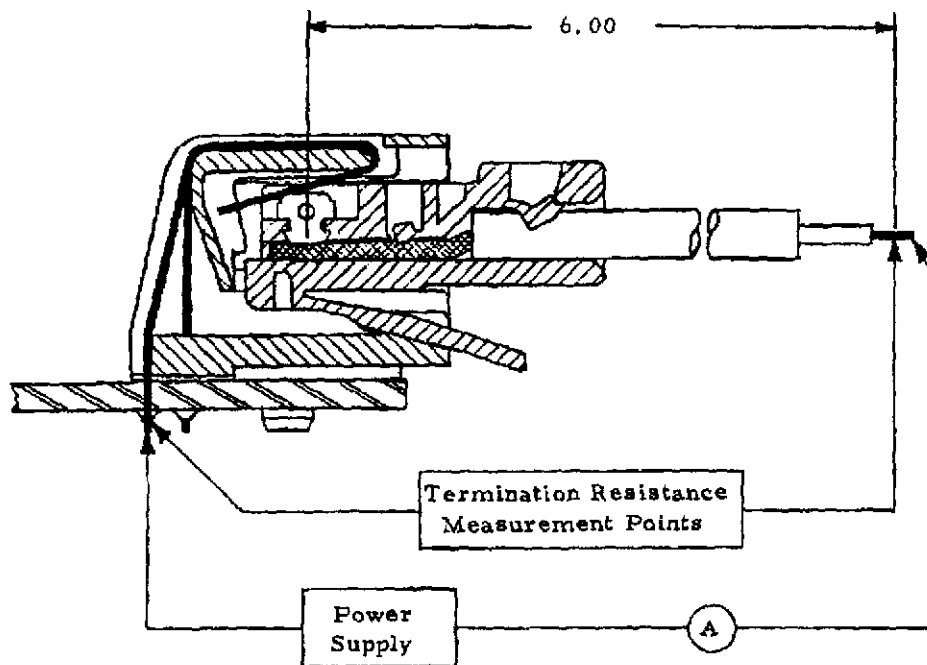


Figure 1  
Typical Termination Resistance Measurement Points

#### 3.3. Dielectric Withstanding Voltage

A test potential of 1000 volts AC was applied between the adjacent contacts. This potential was applied for 1 minute and then returned to zero.

### 3.4. Vibration, Random

Jacks mated with plugs were subjected to a random vibration test, specified by a random vibration spectrum, with excitation frequency bounds of 5 and 500 Hz. The power spectral density at 5 Hz was 0.000312 G<sup>2</sup>/Hz. The spectrum sloped up at 6 dB per octave to a PSD of 0.02 G<sup>2</sup>/Hz at 14 Hz. The spectrum was flat at 0.02 G<sup>2</sup>/Hz from 14 to 500 Hz. The root-mean square amplitude of the excitation was 3.13 GRMS. This was performed for 15 minutes in each of 3 mutually perpendicular planes for a total vibration time of 45 minutes. Connectors were monitored for discontinuities of one microsecond or greater using a current of 100 milliamperes DC.

### 3.5. Unmating Force

The force required to unmate a plug from a jack was measured using a tensile/compression device with the rate of travel at 0.5 inch/minute and a free floating fixture. The latches on the jack were depressed.

### 3.6. Durability

Plugs and jacks were mated and unmated 250 times at a rate of 600 cycles per hour.

### 3.7. Plug Retention in Jack


A tensile load of 20 pounds was applied to the plug wire. This load was applied in a direction which would cause the plug to dislodge from the jack.

### I 3.8. Jack Retention to Printed Circuit Board

I A perpendicular load of 10 pounds was applied to the jack mounted on a .062 inch thick printed circuit board at  
I a maximum rate of 2 inches per minute. This load was applied in a direction which would cause the jack to  
I break the solder joints.

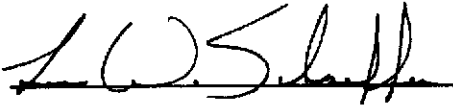
| 4. **VALIDATION**

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