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				CLASSIFICATION	UNRESTRICTED			

1.0 Objective

This specification defines the performance, test, quality and reliability requirements of the A-SMT Modular Jacks product.

2.0 Scope

This specification is applicable to the termination characteristics of the Modular Jack family of products which provides I/O Connection to Telephones.

3.0 General

This document is composed of the following sections:

<u>Paragraph</u>	<u>Title</u>
1.0	OBJECTIVE
2.0	SCOPE
3.0	GENERAL
4.0	APPLICABLE DOCUMENTS
5.0	REQUIREMENTS
5.1	Qualification
5.2	Material
5.3	Finish
5.4	Design and Construction
6.0	ELECTRICAL CHARACTERISTICS
7.0	MECHANICAL CHARACTERISTICS
8.0	ENVIRONMENTAL CONDITIONS

TABLE 1 QUALIFICATION TESTING MATRIX


4.0 Applicable Documents

4.1 Reference Specifications

- 4.1.1 AT&T 842941353 Palladium Nickel Finish
- 4.1.2 AT&T KS-21903 Lubricant
- 4.1.3 AT&T MS-17000 Porosity

4.2 Military Standards

- 4.2.1 MIL-STD-202: Test methods for Electronic Components

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4.3 Federal Specifications

4.3.1 FCC Part 68, Sub Part F Telephone Equipment

4.4 Other Standards and Specifications

4.4.1 UL94-VO: Flammability.

4.4.2 EIA 364: Electrical Connector/Socket Test Procedures Including Environmental Classifications.

4.4.3 ANSI-J-002: Joint Industry Standard, Solderability Test for Component Leads, Terminations, Lugs, and Terminals and Wires.

4.4.4 BATELLE CLASS 2.

4.4.5 BUS-03-601: FCI Specification for Electrical Connectors.

5.0 Design Requirements

5.1 Qualification - All Modular Jacks shall meet these qualifications.

5.2 Material

5.2.1 Housing - Thermoplastic, 94V-0 rated

5.2.2 Contacts - The contact spring shall be made from a material necessary to meet design requirements of Section 7.2.

5.3 Finish


5.3.1 Solder tails - 100 microinch minimum tin lead (90/10) over 100 microinch nickel.

5.3.2 Hold downs - 100 microinch minimum tin lead (90/10) over 100 microinch nickel.

5.3.3 Contact area plating - 30 microinch gold over 100 microinch nickel or, palladium-nickel finish per AT&T's specification 842941353.

The finished contact springs in assemblies supplied for testing to this document must meet AT&T specification 842941353 for:

- a. Lubricant, per KS-21903, issue 3 (Monsanto OS-138)
- b. Porosity, per MS-17000, section 1097, issue 11, method F for gold plated terminals and section 1310, issue 1, method A for palladium nickel plated terminals.
- c. Ductility

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5.4 Design And Construction


- 5.4.1 The jack shall consist of a one-piece molded housing with non-removable contact springs.
- 5.4.2 The jack configuration shall be to the FCI drawing of which customer must approve by signature.
- 5.4.3 Contact spring location - Individual contact spring in the unmated jack shall not touch or cross the plane of the adjacent spring. They may be either free standing or pre-loaded. The spring contact ends shall be located in the slots opposite the face of the jack in the unmated condition.
- 5.4.4 The jack design shall conform to the plug/jack contact specification and all applicable mechanical specifications, including insertion and removal forces given in FCC Part 68, Subpart F.

5.5 Mating Plug

- 5.5.1 Surface Finish: The plug terminal shall be smooth and free of burrs in the contact area when mated with Modular Jacks covered in this specification.
- 5.5.2 Configuration: The plug shall conform to dimensional requirements of FCC Part 68, Subpart F.
- 5.5.3 Plug cable assemblies for testing to this specification shall be supplied by Lucent Technologies.

6.0 Electrical Characteristics

- 6.1 Contact Resistance, Low Level (LLCR) - The low level contact resistance shall not exceed 20 milliohms (30 milliohms after environmental exposure) when measured in accordance with EIA 364-23. The following details shall apply:
 - a. Method of Connection - Attach current and voltage leads as shown in Figure 1.
 - b. Test Voltage - 20 millivolts DC max open circuit.
 - c. Test Current - Not to exceed 100 milliamperes.
 - d. All bulk resistances to be subtracted out of the final measurement, including plug cable.
- 6.2 Insulation Resistance - The insulation resistance of mated connectors shall not be less than 500 megaohms (200 megaohms after environmental exposure) when measured in accordance with EIA 364-21. The following details shall apply:
 - a. Test Voltage - 100 volts DC.
 - b. Electrification Time - 2 minutes, unless otherwise specified.
 - c. Points of Measurement - Between adjacent contacts.


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- 6.3 Dielectric Withstanding Voltage - There shall be no evidence of arc-over, insulation breakdown, or excessive leakage current (> 1 milliampere) when mated connectors are tested in accordance with EIA 364-20. The following details shall apply:
- a. Test Voltage - 1000 volts (RMS AC, 60Hz, or 1400 Volts DC).
 - b. Test Duration - 60 seconds.
 - c. Test Condition - 1 (760 Torr - sea level).
 - d. Points of Measurement:
 1. Between adjacent contacts
 2. Between contacts and an isolated ground plane located under the jack on a host printed wiring board.
 3. Once the conditions for A, B and C have been met, continue to apply increasing voltage until breakdown occurs. Record breakdown voltage in the test report.
- 6.4 Current Rating - The temperature rise above ambient shall not exceed 30 deg C at any point in the system when one contact is powered at 1 ampere. The following details shall apply:
- a. Ambient Conditions - Still air at 25 degrees C.
 - b. Reference - BUS-03-601.
- 6.5 Capacitance - The capacitance of the unmated Modular Jack shall not exceed 10 picofarads. The following details shall apply:
- a. Test Frequency - 100 kilo Hertz
 - b. Polarizing Voltage - none
 - c. Points of Measurement - between adjacent contacts

7.0 Mechanical Characteristics

- 7.1 Modular Jack Retention - There shall be no evidence of mechanical damage to the Modular Jack when the plug or latching mechanism of the plug is mated to the Modular Jack and a static load of 30.0 pounds is applied between the plug and the Modular Jack in the direction of normal plug removal. It is considered a failure only when the Modular Jack fails in this test. See Figure 2
- 7.2 Contact Normal Force - The contact normal force shall meet or exceed 100 grams per contact for 250 cycles when mated with an appropriate plug. (Equal number of positions per plug and jack).

It is also a requirement to mate a 6 position plug into an 8 position Jack, for a maximum of 10 cycles, and still maintain the 100 grams or greater contact force on all 8 contacts when an 8 position plug is then mated with the jack.

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- 7.3 Modular Jack PCB Retention - 4, 6 & 8 position Modular Jacks are to be soldered to a printed circuit board using conventional reflow soldering techniques. The solder attachment is to include all surface mount terminals and both solder pads of the hold down feature.

Each assembly must meet a fifteen pound minimum strip off force. A pull force is to be applied normal to and parallel to the host PCB. Parallel test is to be done on any two perpendicular sides.

Once fifteen pound force is reached, continue applying load until failure. Record failure load in test report.

8.0 Environmental Conditions

After exposure to the following environmental conditions in accordance with the specified test procedure and/or details, the product shall show no physical damage and shall meet the electrical and mechanical requirements per paragraphs 6.0 and 7.0 as specified in the Table 1 test sequences. Unless specified otherwise, assemblies shall be mated during exposure.

8.1 Thermal Shock - EIA 364-32.

- a. Number of Cycles - 5
- b. Temperature Range - Between -40° and +66° C
- c. Time at Each Temperature - 30 minutes
- d. Transfer Time - 5 minutes, maximum

8.2 Humidity, Steady State - EIA 364-31, Method II.

- a. Relative Humidity - 95%
- b. Temperature - +40 deg C
- c. Test Condition - A (96 hours)

8.3 High Temperature Life - EIA 364-17.

- a. Test Temperature - +65° C
- b. Test Duration - 500 hours
- c. Mated Condition


8.4 Industrial Mixed Flowing Gas per EIA 364-65

- a. Class - 2, (3 gas)
- b. Duration - 14 days
- c. Mated condition

8.5 Resistance to Solder Heat - EIA 364-56

- a. Procedure 5 - Level #2: 235 + 10°/ -0°C
- b. There shall be no evidence of physical or mechanical damage

8.6 Resistance to solvents - The housing shall exhibit no deterioration after exposure to various solvents commonly used in post soldering cleaning procedures. The test shall be in accordance with MIL-STD-202, Method 215.

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8.7 Durability - per EIA 364-09B

- a. Number Cycles - 250 cycles
- b. Cycling Rate - 500 cycles per hour \pm 50 (automatic)
- c. Latches disabled
- d. Contact Resistance - 30 milliohms max

8.8 Solderability - ANSI-J-002, Test Condition A

- a. Steam aging - 1 hour
- b. Contact areas evaluated shall meet the ANSI-J-002 requirements.

9.0 Reference Documents

BUS-03-601


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TABLE 1 - QUALIFICATION TESTING

Test	Paragraph	Test Group/Size						
		1/*	2/3	3/3	4/3	5/3	6/*	7/3
Examination of Product	5.4.3	1,7	1,8	1,5	1,4	1,5	1,5	1,4
Contact Resistance Low Level	6.1	2,4 6					2,4	
Insulation Resistance	6.2		2,6					
Dielectric Withstanding Voltage	6.3		3,7					
Current Rating	6.4			3				
Capacitance	6.5			2				
Plug Retention	7.1							3
Contact Normal Force	7.2					2,4		
PCB Retention	7.3			4				
Thermal Shock	8.1		4					
Steady Rate Humidity	8.2		5					
High Temperature Life	8.3						3	
Ind. Mixed Flowing Gas	8.4	5						
Durability	8.7	3				3		
Solderability	8.8							2
Res. to Soldering Heat	8.5				2			
Resistance to Solvents	8.6				3			

* Sample Size = 13 for "4 Position", 9 for "6 Position", 7 for "8 Position" assemblies.


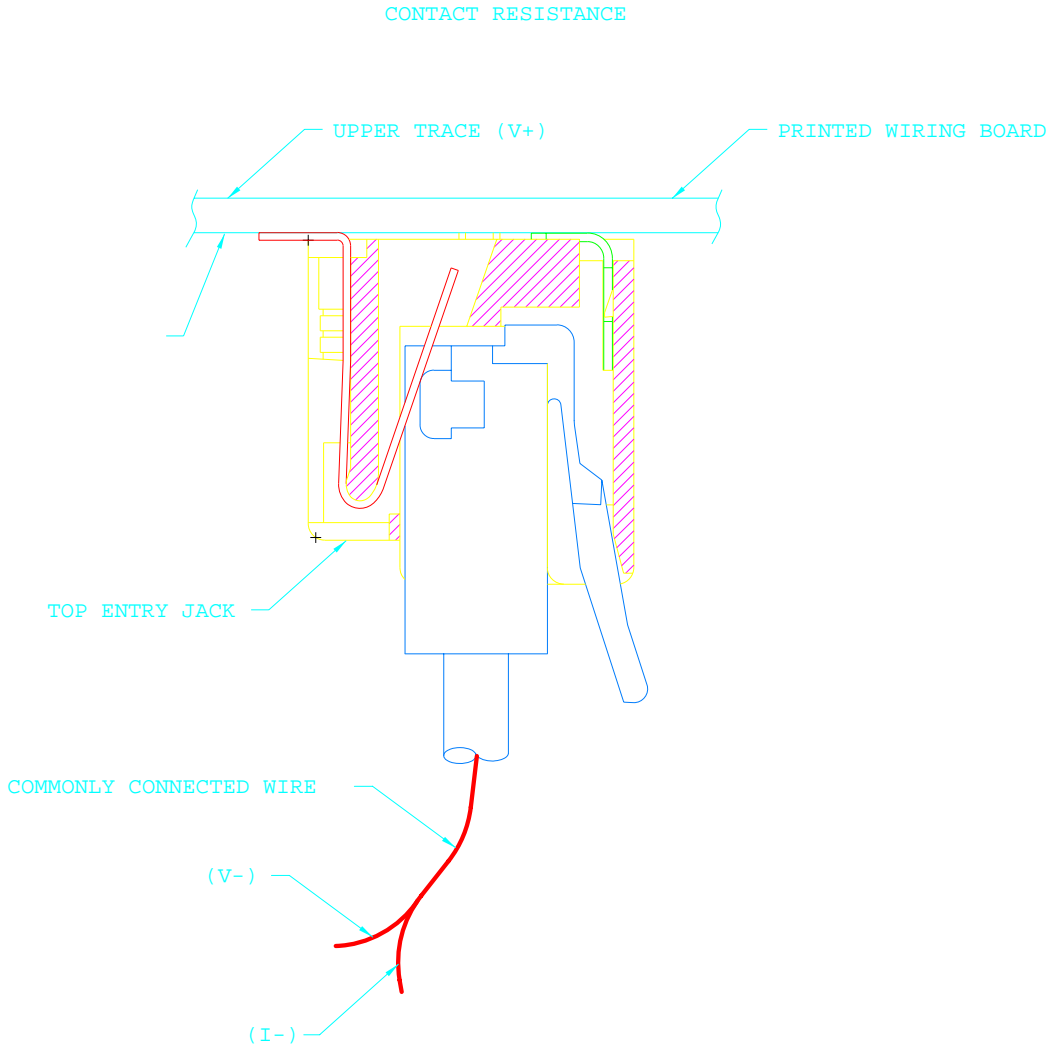
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FIGURE 1




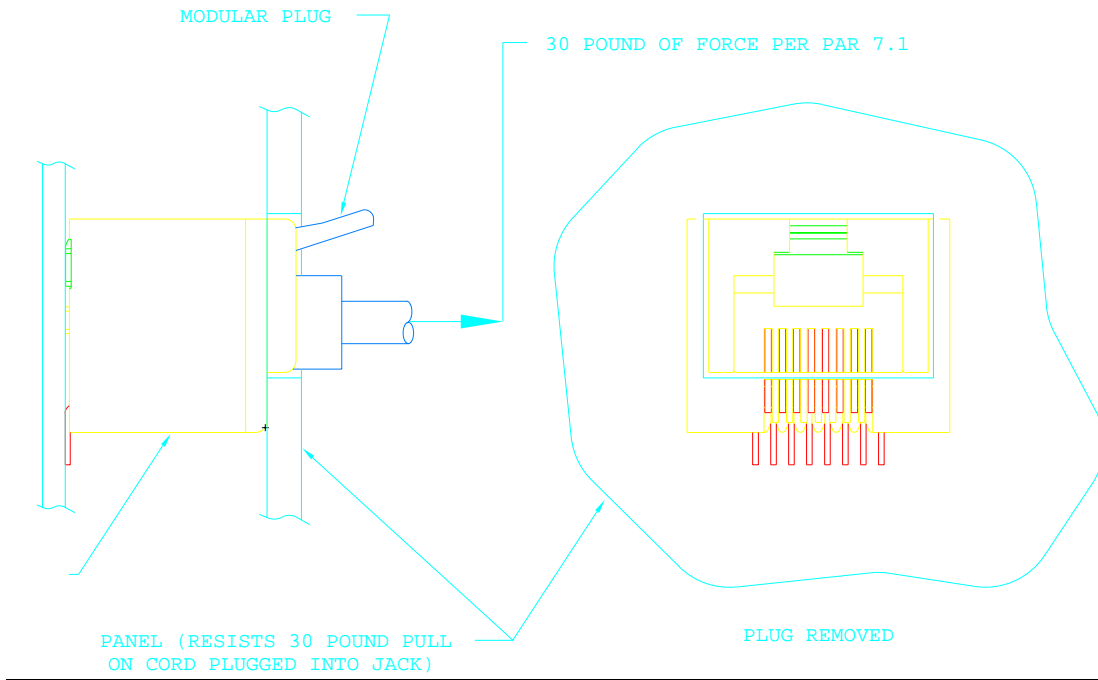

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FIGURE 2



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REVISION RECORD

REV	PAGE	DESCRIPTION	EC #	DATE
A	All	New Release.	V70777	05/19/97
B	7	Added "PCB Retention and Sample Size" to Table 1.	V71015	07/15/97
C	4,5	6.5 - replace "pairs" with "adjacent contacts", 8.5 add "level #2:, 8.3 add "Mated Condition"	V71227	11/03/97
D	All	Revised format to be consistent with GS-01-001, and change BERG, DuPont, etc. references to FCI. Change document number prefix from GES to GS.	V01949	08/16/00
E	All	Change logo	V06-0547	06/07/06