QUALIFICATION TEST REPORT

CONNECTOR, ROUND CONDUCTOR CABLE,
PADDLEBOARD AND PLUG,
AMP-LATCH™

501-332 Rev. O

Product Specification:	108-40013 Rev. O
CTL No.:	CTL5136-100-001
Date:	January 17, 1996
Classification:	Unrestricted
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(R5136TS)

AMP

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CORPORATE TEST LABORATORY

Qualification Test Report

1. Introduction

1.1 Purpose

Testing was performed on AMP™ Paddleboad and Plug, Round Conductor Cable, Connector to determine its conformance to the requirements of AMP Product Specification 108-40013 Rev. O.

1.2 Scope

This report covers the electrical, mechanical, and environmental performance of the Paddleboad and Plug, Round Conductor Cable, Connector manufactured by the Federal Systems Division. The testing was performed between October 23, 1995 and January 12, 1996.

1.3 Conclusion

The Paddleboad and Plug, Round Conductor Cable, Connector meets the electrical, mechanical, and environmental performance requirements of AMP Product Specification 108-40013 Rev. O.

1.4 Product Description

The AMP-LATCH Paddleboard and Plug Connector consisting of pin contacts crimped to .050 inch centerline ribbon cable. The complete assemblies can be plugged or soldered into .100 x .300 or .100 x .600 DIP sockets or printed circuit boards.

1.5 Test Samples

The test samples were randomly selected from normal current production lots, and the following part numbers were used for test:

Test Group	Quantity	Part Nbr	Description
1	6	111036-2	15 Position Connector
1,2,3,4,5	6	1-111036-3	60 Position Connector

1.6 Qualification Test Sequence

	Test Groups				
Test or Examination	1	2	3	4	5
Examination of Product	1,6	1,5	1,5	1,8	1,3
Termination Resistance, Dry Circuit	2,5	2,4	2,4		
Dielectric Withstanding Voltage				3,7	
Insulation Resistance				2,6	
Vibration	3				
Physical Shock	4				
Solderability					2
Thermal Shock				4	
Humidity-Temperature Cycling			3	5	
Temperature Life		3			

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 selected from normal current production lots. They were inspected and accepted by the Product Assurance Department of the Aerospace & Government Systems Sector.

2.2 Termination Resistance, Dry Circuit - Groups 1,2,3

All termination resistance measurements, taken at 100 milliamperes DC and 50 millivolts open circuit voltage were less than 15 milliohms.

Test Group	Nbr of Data points	Condition	Min	Max	Mean
1	60	Initial	1.78	2.07	1.890
		After Mechanical	1.82	3.02	1.971
2	30	Initial	1.78	2.20	1.930
		After Temp Life	1.77	2.21	1.941
3	30	Initial	1.80	2.46	1.953
		After Humidity	1.80	8.25	2.314

All values in milliohms

2.3 Dielectric Withstanding Voltage - Group 4

No dielectric breakdown or flashover occurred when a test voltage was applied between adjacent contacts.

2.4 Insulation Resistance - Group 4

All insulation resistance measurements were greater than 5,000 megohms.

2.5 Vibration - Group 1

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

2.6 Physical Shock - Group 1

No discontinuities of the contacts were detected during physical shock. Following physical shock testing, no cracks, breaks, or loose parts on the connector assemblies were visible.

2.7 Solderability - Group 5

The contact leads had a minimum of 95% solder coverage.

2.8 Thermal Shock - Group 4

No evidence of physical damage to either the contacts or the connector was visible as a result of thermal shock.

2.9 Humidity-Temperature Cycling - Groups 3,4

No evidence of physical damage to either the contacts or the connector was visible as a result of exposure to humidity-temperature cycling.

2.10 Temperature Life - Group 2

No evidence of physical damage to either the contacts or the connector was visible as a result of exposure to an elevated temperature.

3. Test Methods

3.1 Examination of Product

Product drawings and inspection plans were used to examine the samples. They were examined visually and functionally.

3.2 Termination Resistance, Low Level

Termination resistance measurements at low level current were made using a four terminal measuring technique (Figure 1). The test current was maintained at 100 milliamperes DC with an open circuit voltage of 50 millivolts DC.

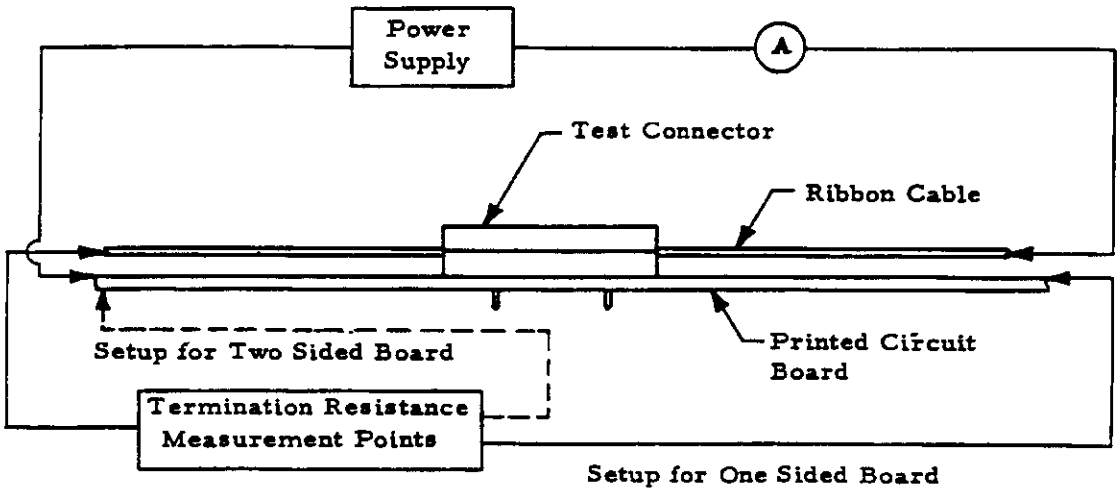

Figure 1
Typical Termination Resistance Measurement Points

3.3 Dielectric Withstanding Voltage

A test potential of 500 volts AC was applied between the adjacent contacts. This potential was applied for one minute and then returned to zero.

3.4 Insulation Resistance

Insulation resistance was measured between adjacent contacts, using a test voltage of 500 volts DC. This voltage was applied for two minutes before the resistance was measured.

3.5 Vibration, Random

Mated connectors were subjected to a random vibration test, specified by a random vibration spectrum, with excitation frequency bounds of 5 and 500 hertz. The power spectral density at 5 Hz is 0.000312 G^2/Hz. The spectrum slopes up at 6 dB per octave to a PSD of 0.04 G^2/Hz at 16 Hz. The spectrum is flat at 0.04 G^2/Hz from 16 to 500 Hz. The root-mean square amplitude of the excitation was 4.41 GRMS. This was performed for 15 minutes in each of three mutually perpendicular planes, for a total vibration time of 45 minutes. Connectors were monitored for discontinuities greater than one microsecond, using a current of 100 milliamperes in the monitoring circuit.

3.6 Physical Shock

Mated connectors were subjected to a physical shock test, having a halfsine waveform of 50 gravity units (g peak) and a duration of 11 milliseconds. Three shocks in each direction were applied along the three mutually perpendicular planes, for a total of 18 shocks. The connectors were monitored for discontinuities greater than one microsecond, using a current of 100 milliamperes in the monitoring circuit.

3.7 Solderability

Connector assembly contact solder tails were subjected to a solderability test by immersing them in a Nonactivated Rosin flux for 5 to 10 seconds, allowed to drain for 10 to 60 seconds, then held over molten solder without contact for 2 seconds. The solder tails were then immersed in the molten solder at a rate of approximately one inch per second, held for 3 to 5 seconds, then withdrawn. After cleaning in isopropyl alcohol, the samples were visually examined for solder coverage. The solder used for testing was 60/40 tin lead composition and was maintained at a temperature of 245°C.

3.8 Thermal Shock

Connectors were subjected to 5 cycles of temperature extremes with each cycle consisting of 30 minutes at each temperature. The temperature extremes were -65° and 105°C. The transition between temperatures was less than one minute.

3.9 Humidity-Temperature Cycling

Connectors were exposed to 10 cycles of humidity-temperature cycling. Each cycle lasted 24 hours and consisted of cycling the temperature between 25°C and 65°C twice while the relative humidity was held at 95%.

3.10 Temperature Life

Mated samples were exposed to a temperature of 105°C for 1000 hours.

4. Validation

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1/17/96

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