QUALIFICATION TEST REPORT

CONNECTOR, AMP-LATCH*, ECONO-LATCH,
FLAT CABLE, ROUND CONDUCTOR

501-301 Rev. O

Product Specification:	108-1529 Rev. 0
CTL No.:	CTL2297-001-001
	CGL0939-017
	CGL0939-019
Date:	April 12, 1995
Classification:	Unrestricted
Prepared By:	William L. Scharff

* Trademark

Corporate Test Laboratory Harrisburg, Pennsylvania

Table of Contents

(R2297WS)

AMP

AMP INCORPORATED

HARRISBURG, PENNSYLVANIA 17105 PHONE: 717-231-3222 FAX: 717-231-3283

CORPORATE TEST LABORATORY

Qualification Test Report

1. Introduction

1.1 Purpose

Testing was performed on AMP* AMPLATCH, Econo-Latch, flat cable round conductor connector to determine its conformance to the requirements of AMP Product Specification 108-1529 Rev. O.

1.2 Scope

This report covers the electrical, mechanical, and environmental performance of the AMP-LATCH Econo-Latch flat cable round conductor connector receptacles manufactured by the Interconnection Components & Assemblies Products Division of the Capitol Goods Business Unit. The testing was performed between 21 June 1994 and 11 April 1995.

1.3 Conclusion

The AMP-LATCH Econo-Latch flat cable round conductor connector meets the electrical, mechanical, and environmental performance requirements of AMP Product Specification 108-1529 Rev. O.

1.4 Product Description

The AMP-LATCH, Econo-Latch flat cable round conductor connector receptacles are designed to be crimped to .050 inch centerline ribbon cable with 28 and 26 AWG solid or stranded conductors. The assemblies mate to .025 inch square or round posts on .100 inch centerline with post lengths of .125 to .323 inch.

* Trademark

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	1-111838-0	50 position Econo-Latch Recept
2	5	1-111838-0	50 position Econo-Latch Recept
3	5	1-111838-0	50 position Econo-Latch Recept
4	6	1-111868-0	50 position Econo-Latch Recept
1,2,3		104319-9	50 position Low Profile Headers used for all mated tests.

1.6 Qualification Test Sequence

	Test Groups			
Test or Examination	1	2	3	4
Examination of Product	1,9	1,5	1,5	1,8
Termination Resistance, Dry Circuit	3,7	2,4	2,4	
Insulation Resistance				2,6
Dielectric Withstanding Voltage				3,7
Vibration	5			
Physical Shock	6			
Durability	4			
Mating Force	2			
Unmating Force	8			
Thermal Shock				4
Humidity-Temperature Cycling				5
Temperature Life		3		
Mixed Flowing Gas			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 Capital Goods Business Unit.

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	30	Initial	3.95	5.01	4.536
	30	After Mechanical	3.91	12.62	6.406
2	250	Initial	4.23	5.85	5.002
	250	After Temp Life	4.31	6.29	5.370
3	250	Initial	4.20	7.89	5.380
	250	After Mixed Gas	4.24	10.17	5.670

All values in milliohms

2.3 Dielectric Withstanding Voltage - Group - 4

No dielectric breakdown or flashover occurred when a test voltage of 500 vdc was applied between adjacent contacts.

2.4 Insulation Resistance - Group - 4

All insulation resistance measurements were greater than 5000 megohms initially and 1000 megohms after the humidity/temperature cycling test.

2.5 Vibration - Group - 1

No discontinuities of the contacts greater than 1.0 microseconds 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 greater than 1.0 microseconds were detected during physical shock. Following physical shock testing, no cracks, breaks, or loose parts on the connector assemblies were visible.

2.7 Mating Force - Group - 1

All mating force measurements were less than 4 ounces per contact. (200 ounces total for a 50 position connector).

2.8 Unmating Force - Group - 1

All unmating force measurements were greater than 1 ounce per contact (50 ounces total for a 50 position connector).

2.9 Durability - Group - 1

No physical damage occurred to the samples as a result of mating and unmating the connector 25 times.

2.10 Thermal Shock - Group - 4

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

2.11 Humidity-Temperature Cycling - Group - 4

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

2.12 Mixed Flowing Gas - Group - 3

No evidence of physical damage to either the contacts or the connector was visible as a result of exposure to the pollutants of mixed flowing gas.

2.13 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.

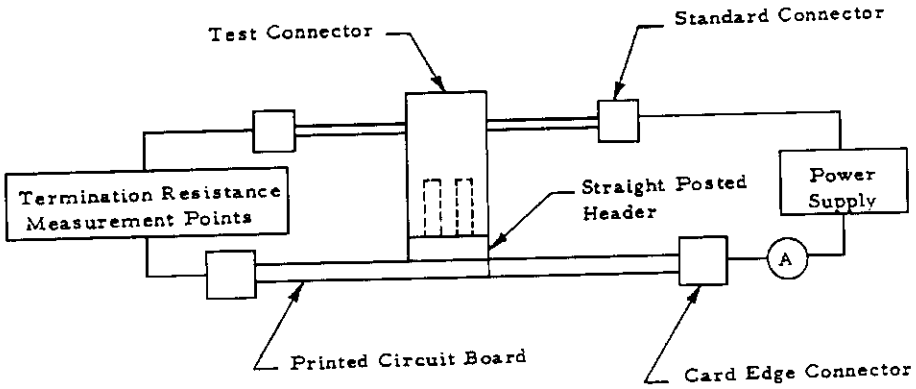

Figure 1
Typical Termination Resistance Measurement Points

3.3 Dielectric Withstanding Voltage

A test potential of 500 vdc 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 50 and 2000 hertz. The power spectral density at 50 hz is 0.10 G^2/Hz. The spectrum slopes up at 6 dB per octave to a PSD of 0.4 G^2/Hz at 100 Hz. The spectrum is flat at 0.4 G^2/Hz from 100 to 1000 Hz. The spectrum slopes down at 6 dB per octave to the upper bound frequency of 2000 Hz, at which the PSD is 0.10 G^2/Hz. The root-mean square amplitude of the excitation was 23.91 G(RMS). The samples were subjected to this test for 20 minutes in each of the three mutually perpendicular axes for a total test time of 60 minutes per sample. 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 sawtooth waveform of 100 gravity units (g peak) and a duration of 6 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 Mating Force

The force required to mate individual connectors was measured using a free floating fixture with the rate of travel at 0.5 inch/minute.

3.8 Unmating Force

The force required to unmate individual connectors was measured using a free floating fixture with the rate of travel at 0.5 inch/minute.

3.9 Durability

Connectors were mated and unmated 25 times at a rate not exceeding 150 cycles per hour.

3.10 Thermal Shock

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

3.11 Humidity-Temperature Cycling

Mated 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%. (During five of the first nine cycles, the connectors were exposed to a cold shock at -10°C for 3 hours.)

3.12 Mixed Flowing Gas, Class II

Mated connectors were exposed for 14 days to a mixed flowing gas Class II exposure. Class II exposure is defined as a temperature of 30°C and a relative humidity of 70% with the pollutants of Cl_2 at 10 ppb, NO_2 at 200 ppb, and H_2S at 10 ppb. Samples were preconditioned with 10 cycles of durability.

3.13 Temperature Life

Mated samples were exposed to a temperature of 105°C for 500 hours.

4. Validation

Prepared by:

William L. Scharff 4/12/95

William L. Scharff
Engineering Assistant
Product Qualification Team
Corporate Test Laboratory

Reviewed by:

Robert S. Druckenmiller 4/12/95

Robert S. Druckenmiller
Supervisor
Product Testing
Corporate Test Laboratory

Approved by:

Edward J. Gill 4/19/95

Edward Gill
Manager
Engineering & Design Assurance
Capital Goods Business Unit