AMP*

QUALIFICATION TEST REPORT

Connector, Receptacles, Pro-G
and Lead Assemblies

501-160 Rev. 0

Product Specification:	108-12088 Rev. 0
CTL No.:	CTL3373-100-012
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Corporate Test Laboratory Harrisburg, Pennsylvania

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(R3373TS)

AMP

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CORPORATE TEST LABORATORY

Qualification Test Report
Connector, Receptacles, Pro-G,
and Lead Assemblies

1. Introduction

1.1 Purpose

Testing was performed on AMP's Pro-G receptacles and lead assemblies to determine its conformance to the requirements of AMP Product Specification 108-12088 Rev.0.

1.2 Scope

This report covers the electrical, mechanical, and environmental performance of the Pro-G receptacles and lead assemblies manufactured by the Advanced Cable System Division of the Interconnection Business Sector. The testing was performed between April 24, 1991 and October 31, 1991.

1.3 Conclusion

The Pro-G receptacle and lead assemblies meet the electrical, mechanical, and environmental performance requirements of AMP Product Specification 108-12088 Rev. 0.

1.4 Product Description

The Pro-G receptacles are intended to provide a reliable electrical and mechanical connection between transmission cable having signal conductors on .050 inch centerlines, with either single or dual ground conductors and .025 inch square post on .100 x .100 inch centerlines. The contacts are Phosphor bronze, gold over nickel plating. The housings are Polyester PBT 15% glass or 30% glass filled.

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 Number	Description
1,2,3,4,6	5 ea.	491188-1	Cable assy w/o ground
5	5 ea.	491231-3	Cable assy w/ ground
1,2,3,4,6	10 ea.	102154-9	[1] AMP-LATCH header

[1] for testing purposes only

1.6 Qualification Test Sequence

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

2.2 Termination Resistance, Dry Circuit - Groups 1,2,3,6

All termination resistance measurements, taken at 100 milliamperes dc. and 50 millivolts open circuit voltage, had a change (ΔR) less than 6.0 milliohms.

Test Group	No. of Samples	Condition	Max.	Mean
1	200	After Mechanical	+5.0	+0.26
2	200	After Temperature Life	+3.6	-0.38
3	[*] 199	After Mixed Flowing Gas	+4.9	+0.52
6	200	After Flexing	+2.8	-0.84

[*] 1 contact initially damaged
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 5000 megohms.

2.5 Digital Crosstalk - Group 5

All near-end crosstalk results were less than 6.0%.

All far-end crosstalk results were less than 7.0%.

2.6 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.

2.7 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.

2.8 Mating Force - Group 1

All mating force measurements were less than 0.5 pounds per contact.

2.9 Unmating Force - Group 1

All unmating force measurements were greater than 0.093 pounds per contact.

2.10 Cable Retention - Group 5

No physical damage occurred to the conductor assemblies as a result of cable retention testing.

2.11 Durability - Group 1

No physical damage occurred to the conductor assemblies as a result of mating and unmating the connector 250 times.

2.12 Flexing - Group 6

No physical damage occurred to the conductor assemblies as a result of bending the cable 6 inches from the rear of the housing 25 times.

2.13 Thermal Shock - Group 4

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

2.14 Humidity-Temperature Cycling - Group 4

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

2.15 Mixed Flowing Gas - Group 3

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

2.16 Temperature Life - Group 2

No evidence of physical damage to the connector assemblies 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.

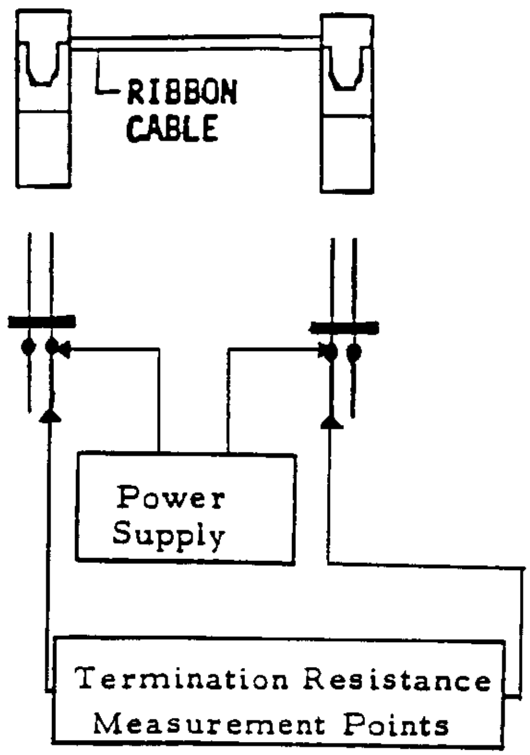

Figure 1
Typical Termination Resistance Measurement Points

3.3 Dielectric Withstanding Voltage

A test potential of 500 vac 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 100 volts dc. This voltage was applied for one minute before the resistance was measured.

3.5 Digital Crosstalk

Pulses with an amplitude of 250 millivolts, and a rise time of 1.0 ns were applied to one end of the "driven line." The "quiet line" was monitored with an oscilloscope to measure any crosstalk signals.

3.6 Vibration, Sine

Connector assemblies were subjected to sinusoidal vibration, having a simple harmonic motion with an amplitude of 0.06 inch, double amplitude. The vibration frequency was varied logarithmically between the limits of 10 and 500 Hz and returned to 10 Hz in 15 minutes. This cycle was performed 12 times in each of three mutually perpendicular planes, for a total vibration time of 9 hours. Connectors were monitored for discontinuities greater than one microsecond, using a current of 100 milliamperes in the monitoring circuit.

3.7 Physical Shock

Connector assemblies 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.

3.8 Mating Force

The force required to mate individual assemblies to a header was measured, using a free floating fixture with the rate of travel at 0.5 inch/minute. The force per contact was calculated.

3.9 Unmating Force

The force required to unmate individual assemblies from a header was measured, using a free floating fixture with the rate of travel at 0.5 inch/minute. The force per contact was calculated.

3.10 Cable Retention

A tensile load of 35 pounds was applied between the connector and cable for 60 seconds, during this hold period the connectors were monitored for discontinuities. This force was applied in two directions 90° apart.

3.11 Durability

Assemblies and headers were mated and unmated 250 times at a rate not exceeding 600 per hour.

3.12 Flexing

With no axial force applied, each cable was bent 90°, then reversed 180° and returned to its original position. the bend was 6 inches from the rear of the assembly. This action was repeated 25 times.

3.13 Thermal Shock

Mated assemblies were subjected to 5 cycles of temperature extremes, with each cycle consisting of 30 minutes at each temperature. The temperature extremes were -55°C and 105°C. The transition between temperatures was less than one minute.

3.13 Humidity-Temperature Cycling

Mated assemblies 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%.

3.14 Mixed Flowing Gas, Class III

Mated assemblies were exposed for 20 days to a mixed flowing gas Class III exposure. Class III exposure is defined as a temperature of 30°C and a relative humidity of 75%, with the pollutants of Cl_2 at 20 ppb, NO_2 at 200 ppb, and H_2S at 100 ppb.

3.15 Temperature Life

Mated assemblies were exposed to a temperature of 85°C for 500 hours.

4. Validation

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