170 Series LGH Micro-Miniature Connector

1. INTRODUCTION

1.1. Purpose

Testing was performed on the AMP* 170 Series Micro-Miniature LGH connector to determine its conformance to the requirements of AMP Product Specification 108-1802 Revision A.

1.2. Scope

This report covers the electrical, mechanical, and environmental performance of the 170 Series Micro-Miniature LGH connector. Testing was performed at the Americas Regional Laboratory between 26Oct98 and 16Dec98. The test file number for this testing is CTL 4728-002. This documentation is on file at and available from the Americas Regional Laboratory.

1.3. Conclusion

The 170 Series Micro-Miniature LGH connectors listed in paragraph 1.5., conformed to the electrical, mechanical, and environmental performance requirements of AMP Product Specification 108-1802 Revision A.

1.4. Product Description

The 170 Series Micro-Miniature LGH plug and receptacle are free hanging lead assemblies. The plug and receptacle are only available already assembled on wire. The plug contains a size 22 socket contact and the receptacle a size 22 pin contact. The plug and receptacle can be used in any application where a small (.170 inch OD), high voltage, in-line connector is needed with a voltage rating of 6,000 Vdc or less.

1.5. Test Samples

The test samples were representative of normal production lots. Samples identified with the following part numbers were used for test:

Test Group	Quantity	Part Number	Description
1,2	5 each	1218147	170 Series Pin
1,2	5 each	1218148	170 Series Socket

Figure 1

1.6. Environmental Conditions

Unless otherwise stated, the following environmental conditions prevailed during testing:

Temperature: 15 to 35°C
Relative Humidity: 20 to 80%

1.7. Qualification Test Sequence

Test or Examination	Test Group (a)	
	1	2
	Test Sequence (b)	
Examination of product	1,11	1,7
Partial discharge	3,9	2,6
Dielectric withstanding voltage (c)	4,8	3,5
Vibration	6	
Mechanical shock	7	
Durability	5	
Mating force	2	
Unmating force	10	
Thermal shock		4

NOTE

(a) See Para 1.5.
(b) Numbers indicate sequence in which tests are performed.
(c) Dielectric withstanding voltage shall be performed as follows: at sea level and at 100000 feet at ambient conditions; at sea level and at 100000 feet at -55°C; and at sea level and at 100000 feet at 125°C.

Figure 2

2. SUMMARY OF TESTING

2.1. Examination of Product - All Test Groups

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

2.2. Partial Discharge - All Test Groups

Partial discharge did not exceed 5 picocoulombs in 1 minute.

2.3. Dielectric Withstanding Voltage - All Test Groups

No dielectric breakdown or flashover occurred.

2.4. Vibration - Test Group 1

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

2.5. Mechanical Shock - Test Group 1

No discontinuities were detected during mechanical shock. Following mechanical shock testing, no cracks, breaks, or loose parts on the samples were visible.

2.6. Durability - Test Group 1

No physical damage occurred to the samples as a result of mating and unmating the samples 50 times.

2.7. Mating Force - Test Group 1

All mating force measurements were less than 3 pounds.

2.8. Unmating Force - Test Group 1

All unmating force measurements were greater than 1 pound.

2.9. Thermal Shock - Test Group 2

No evidence of physical damage was visible as a result of exposure to thermal shock.

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. Partial Discharge

A test voltage of 10,000 Vdc was applied between the center conductor of each sample and foil wrapped around the sample. This voltage was applied for 1 minute. The voltage was then lowered to 6,000 volts DC and maintained for 1 minute. During the 6,000 volt test period partial discharge was measured.

3.3. Dielectric Withstanding Voltage

A test potential of 10,000 Vdc was applied between the adjacent contacts of mated samples. This potential was applied for 1 minute and then returned to zero. The test was performed at both sea level and 100,000 feet and at -55, 23 and 125°C for a total of 6 tests.

3.4. Vibration, Random

Mated samples were subjected to a random vibration test, specified by a random vibration spectrum, with excitation frequency bounds of 50 and 2000 Hz. The power spectral density at 50 Hz was 0.01 G^2/Hz. The spectrum sloped up at 6 dB per octave to a PSD of 0.04 G^2/Hz at 100 Hz. The spectrum was flat at 0.04 G^2/Hz from 100 to 1000 Hz. The spectrum sloped down at 6 dB per octave to the upper bound frequency of 2000 Hz at which the PSD was 0.01 G^2/Hz. The root-mean square amplitude of the excitation was 7.56 GRMS. This was performed for 1 hour in each of 3 mutually perpendicular planes for a total vibration time of 3 hours. Samples were monitored for discontinuities of 1 microsecond or greater using a current of 100 milliamperes in the monitoring circuit.

3.5. Mechanical Shock, Sawtooth

Mated samples were subjected to a mechanical 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 3 mutually perpendicular planes, for a total of 18 shocks. Samples were monitored for discontinuities of 1 microsecond or greater, using a current of 100 milliamperes DC.

3.6. Durability

Samples were mated and unmated 50 times at a maximum rate of 600 cycles per hour.

3.7. Mating Force

The force required to mate individual samples was measured using a tensile/compression device with the rate of travel at 0.5 inch per minute and a free floating fixture.

3.8. Unmating Force

The force required to unmate individual samples was measured using a tensile/compression device with the rate of travel at 0.5 inch per minute and a free floating fixture.

3.9. Thermal Shock

Mated samples were subjected to 5 cycles of thermal shock with each cycle consisting of 30 minute dwells at -55 and 125°C. The transition between temperatures was less than 1 minute.