Connector, 1mm Centerline Straddle Mount Card-Edge

1. INTRODUCTION

1.1. Purpose

Testing was performed on the AMP* 1mm centerline straddle mount Card-Edge Connector to determine its conformance to the requirements of AMP Product Specification 108-1741 Rev. O.

1.2. Scope

This report covers the electrical, mechanical, and environmental performance of the 1mm centerline straddle mount Card-Edge Connector. Testing was performed at the Americas Regional Laboratory between 10Oct97 and 10Dec97.

1.3. Conclusion

The 1mm centerline straddle mount Card-Edge Connector listed in paragraph 1.5., met the electrical, mechanical, and environmental performance requirements of AMP Product Specification 108-1741 Rev O.

1.4. Product Description

The 1mm centerline straddle mount Card-Edge Connector is designed for personal computer applications. This 340 position connector has the contacts staggered vertically on 1mm centerline pitch. The contacts are phosphor bronze with gold plating in the contact area. The housing material is brown thermoplastic UL94V-0.

1.5. Test Samples

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

Test Group	Quantity	Part Nbr	Description
1,2,3,4	5 ea.	145282-1	Straddle mount Card-Edge Connector.

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 Groups			
	1	2	3	4
	Test Sequence (a)			
Examination of product	1,9	1,5	1,5	1,8
Termination resistance	3,7	2,4	2,4	
Insulation resistance				2,6
Dielectric withstanding voltage				3,7
Vibration	5			
Mechanical shock	6			
Mating force	2			
Unmating force	8			
Durability	4			
Thermal shock				4
Humidity -temperature cycling				5
Mixed flowing gas			3(b)	
Temperature life		3(b)		

NOTE

(a) The numbers indicate sequence in which tests were performed.
(b) Precondition with 10 cycles of Durability.

2. SUMMARY OF TESTING

2.1. Examination of Product - All Groups

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

2.2. Termination Resistance - Groups 1, 2, and 3

All termination resistance measurements, taken at 100 milliamperes maximum and 50 millivolts maximum open circuit voltage had a change in resistance (ΔR) of less than 10 milliohms after testing.

Test	Nbr of		Termination Resistance(ΔR)		
Group	Data points	Condition	Min	Max	Mean
1	424	After Mechanical	-4.94	+3.14	+0.002
2	425	After Temp Life	-2.37	+4.12	+0.320
3	422	After Mixed Gas	-1.44	+8.60	+0.326

All values in milliohms

2.3. Dielectric Withstanding Voltage - Group 4

No dielectric breakdown or flashover occurred.

2.4. Insulation Resistance - Group 4

All insulation resistance measurements were greater than 1,000 megohms.

2.5. Vibration - Group 1

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

2.6. Mechanical Shock - Group 1

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

2.7. Mating Force - Group 1

All mating force measurements were less than 3.3 ounces average per contact pair.

2.8. Unmating Force - Group 1

All unmating force measurements were less than 1.98 ounces average per contact pair.

2.9. Durability - Group 1

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

2.10. Thermal Shock - Group 4

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

2.11. Humidity-temperature Cycling - Group 4

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

2.12. Mixed Flowing Gas - Group 3

No evidence of physical damage 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 was visible as a result of exposure to temperature life.

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. Termination Resistance

Termination resistance measurements at low level current were made using a 4 terminal measuring technique. The test current was maintained at 100 milliamperes maximum with a 50 millivolt maximum open circuit voltage.

3.3. Dielectric Withstanding Voltage

A test potential of 500 volts AC was applied between the adjacent contacts of unmated samples. This potential was applied for 1 minute and then returned to zero.

3.4. Insulation Resistance

Insulation resistance was measured between adjacent contacts of unmated samples. A test voltage of 500 volts DC was applied for 1 minute before the resistance was measured.

3.5. Vibration, Random

Mated samples were subjected to a random vibration test, specified by a random vibration spectrum, with excitation frequency bounds of 5 and 500 Hz. The power spectral density at 5 Hz was 0.000312 G^2/Hz. The spectrum sloped up at 6 dB per octave to a PSD of 0.02 G^2/Hz at 14 Hz. The spectrum was flat at 0.02 G^2/Hz from 14 to 500 Hz. The root-mean square amplitude of the excitation was 3.13 GRMS. This was performed for 15 minutes in each of 3 mutually perpendicular planes for a total vibration time of 45 minutes. Samples were monitored for discontinuities of 1 microsecond or greater using a current of 100 milliamperes DC.

3.6. Mechanical Shock, Half-sine

Mated samples were subjected to a mechanical shock test having a half-sine waveform of 30 gravity units (g peak) and a duration of 11 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.

3.7. 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/minute and a free floating fixture. The maximum average force per contact pair was calculated.

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/minute and a free floating fixture. The maximum average force per contact pair was calculated.

3.9. Durability

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

3.10. Thermal Shock

Unmated samples were subjected to 5 cycles of thermal shock with each cycle consisting of 30 minute dwells at 0 and 85°C. The transition between temperatures was less than 1 minute.

3.11. Humidity-temperature Cycling

Unmated samples were exposed to 10 cycles of humidity-temperature cycling. Each cycle lasted 24 hours and consisted of cycling the temperature between 25 and 65°C twice while maintaining high humidity. (Figure 1)

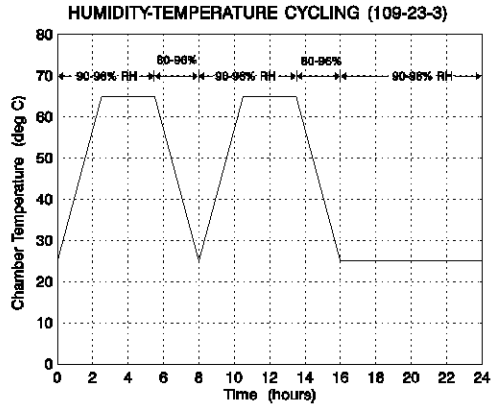

Figure 1
Typical Humidity-Temperature Cycling Profile

3.12. Mixed Flowing Gas, Class II

Mated samples 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 85°C for 500 hours. Samples were preconditioned with 10 cycles of durability.

4. VALIDATION

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