AMP*

QUALIFICATION TEST REPORT

Connector System, AMPLIMITE*, Cassette HD-20

501-85 Rev. 0

Product Specification: 108-40016
CTL No.: 5886-021-003
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Qualification Test Report
Connector System, AMPLIMITE, Cassette HD-20

1. Introduction

1.1 Purpose

Testing was performed on AMP's AMPLIMITE HD-20 Cassette Connector System to determine if it meets the requirements of AMP Specification 108-40016.

1.2 Scope

This report covers the electrical, mechanical and environmental performance of the AMPLIMITE HD-20 Cassette Connector System made by Interconnection Components Division. The testing was performed between September 12, 1988 and December 19, 1988.

1.3 Conclusion

The AMPLIMITE HD-20 Cassette Connector System meets the electrical, mechanical and environmental performance requirements of Product Specification 108-40016.

1.4 Product Description

The AMPLIMITE HD-20 Cassette Connector System consists of a cassette and holder assembly. The cassette assembly includes a 33 position right angle AMPLIMITE socket connector, and the holder assembly includes a 33 position right angle AMPLIMITE pin holder.

1.5 Test Samples

Samples were taken randomly from current production. The following samples were used:

Test Group	Quantity	Part Number	Description
1,2,3,4,5	3 ea	745538-5	Cartridge Kit
1,2,3,4,5	3 ea	745539-5	Holder Kit

1.6 Qualification Test Sequence

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

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 production lots. They were inspected and accepted by the Product Assurance Department of the Interconnection Components Division.

2.2 Termination Resistance, Dry Circuit - Group 1,3,4

All termination resistance measurements met the specification requirement of 35.0 milliohms maximum. (figure #1)

Group	Condition	Nun of contacts	Min.	Max.	Mean
1	Initial	64	11.15	12.21	11.63
	Final	64	11.24	27.99	13.66
3	Initial	96	11.14	12.76	11.64
	Final	96	11.15	13.16	11.66
4	Initial	96	11.21	12.27	11.72
	Final	96	11.21	12.50	11.76

all values in milliohms

2.3 Dielectric Withstanding Voltage - Group 2

There was no dielectric breakdown or flashover when the test voltage was applied between adjacent mated contacts.

2.4 Insulation Resistance - Group 2

All initial insulation resistance measurements were greater than the 5000 megohm specification minimum. All samples were greater than the 1000 megohm specification minimum after Humidity-Temperature Cycling.

2.5 Vibration - Group 1

During vibration testing, there were no discontinuities of the contacts greater than one microsecond. Following vibration, there were no cracks, breaks or loose parts on the connector assemblies.

2.6 Physical Shock - Group 1

During physical shock testing, there were no discontinuities of the contacts greater than one microsecond. Following physical shock testing, there were no cracks, breaks or loose parts on the connector assemblies.

2.7 Mating Force - Group 1

All mating forces were less than the 16.5 pound specification maximum.

2.8 Unmating Force - Group 1

All unmating forces were greater than the 1.5 pound specification minimum.

2.9 Durability - Group 1,3,4

There was no physical damage to the samples as a result of durability cycling.

2.10 Solderability - Group 5

All solderable areas tested had a solder coverage of 95% minimum.

2.11 Thermal Shock - Group 2

After thermal shock, there was no evidence of physical damage.

2.12 Humidity-Temperature Cycling - Group 2,3

After Humidity-Temperature cycling, there was no evidence of physical damage.

2.13 Industrial Mixed Flowing Gas - Group 4

After Industrial Mixed Flowing Gas testing, there was no evidence of physical damage.

3. Test Methods

3.1 Examination of Product

The product drawings and inspection plans were used to examine the samples. They were examined visually, dimensionally and functionally.

3.2 Termination Resistance, Dry Circuit

A four-terminal measuring technique was used. The current was maintained at 100 milliamperes, with an open circuit voltage of 50 millivolts.

3.3 Dielectric Withstanding Voltage

A test potential of 1000 VAC was applied between adjacent contacts of mated connector assemblies and maintained for one minute.

3.4 Insulation Resistance

Insulation Resistance was measured between adjacent contacts of mated connector assemblies. A voltage of 500 VDC was applied for 1.0 minutes, and the insulation resistance was measured.

3.5 Vibration, Sine

Mated connectors were subjected to vibration having sinusoidal motion. The amplitude was 0.06 inch, double amplitude. The vibration frequency was varied between the limits of 10 and 2000 Hz and returned to 10 Hz in 20 minutes. This cycle was performed 12 times in each of three mutually perpendicular planes. 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 physically shocked having a half-sine waveform of 50 gravity units and a duration of 11 milliseconds. Six 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 contacts was measured. A free floating fixture was used, and the rate of travel was 1.0 inch/minute.

3.8 Unmating Force

The force required to unmate individual contacts was measured. The rate of travel was 1.0 inch/minute.

3.9 Durability

Connectors were mated and unmated 2000 times at a rate of approximately 200 cycles per hour. Connectors in Test Groups 3 and 4 had 10 cycles of durability as a precondition to environmental testing only.

3.10 Solderability

Samples were immersed in non-active rosin flux. After drying, the samples were then immersed in molten solder at a rate of 1.0 inch/second. The solder temperature was maintained at 245°C. Samples were immersed for 5.0 seconds, then removed at a rate of 1.0 inch/second. After cooling, the flux was removed with isopropyl alcohol, and the samples were visually evaluated.

3.11 Thermal Shock

Mated connectors were subjected to five cycles of thermal shock. The temperature extremes were -55°C and 95°C. Each cycle consisted of 30 minutes at each temperature. The transition between temperatures was less than two minutes.

3.12 Humidity-Temperature Cycling

Mated connectors were exposed to 10 days 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, connectors were exposed to a cold shock at -10°C for 3 hours.

3.13 Industrial Mixed Flowing Gas, Class III

Mated connectors were exposed for 20 days to a Class III atmosphere in the industrial mixed flowing gas chamber. Class III exposure is defined as a temperature of 30°C and a relative humidity of 75%. Pollutants are Cl_2 at 20 ppb, NO_2 at 200 ppb and H_2S at 100 ppb.

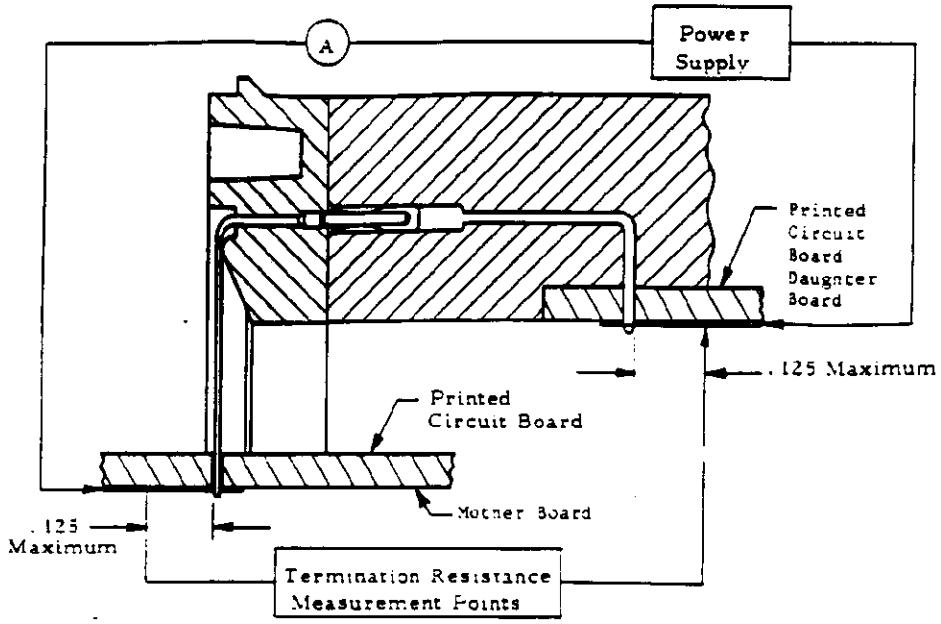

Figure 1
Resistance Measurement Points

4. Validation

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