AMP

QUALIFICATION TEST REPORT

AMP Commercial 50 Ohm
BNC Terminator Plug

501-118 Rev. A

Product Specification:	108-1275, Rev. O
CTL No.:	CTL4166-010-001
Date:	June 28, 1990
Classification:	Unrestricted
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Per EC:	0990-0062-94

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CORPORATE TEST LABORATORY

Qualification Test Report on the
AMP* Commercial 50 Ohm BNC Terminator Plug
Part Number 221629-9

1. Introduction

1.1 Purpose

Testing was performed on AMP's Commercial 50 Ohm BNC Terminator Plug to determine if it meets the requirements of AMP Product Specification 108-1275, Rev. 0.

1.2 Scope

This report covers the electrical, mechanical, and environmental performance of the 50 Ohm BNC Terminator PLug, manufactured by the Signal Transmission and Premise Products Division of the Capital Goods Business Sector. The testing was performed between April 4, 1990 and June 18, 1990.

1.3 Conclusion

The 50 Ohm BNC Terminator Plug meets the electrical, mechanical, and environmental performance requirements of AMP Product Specification 108-1275, Rev. 0.

* Trademark

1.4 Product Description

The AMP 50 Ohm terminator is a BNC plug connector containing a 50 Ohm resistor with one lead crimped to the center contact, and the other lead of the resistor crimped via a ferrule to the body of the BNC Connector. This method of terminating with short lead lengths, thus providing better electrical performance.

These terminators are used for terminating 50 Ohm equipment and cables in their characteristic impedance, thus preventing unwanted reflections which can degrade a system.

1.5 Test Samples

The test samples were randomly selected from current production, and the following part numbers were used for test:

Test Groups	Quantity Per Group	Part Numbers	Description
1 thru 5	5	221629-9	BNC 50 Ohm Term.,Plug
		228979-5	BNC Jack & Cable Assy. (mating purposes only)

1.6 Qualification Test Sequence

	Test Groups				
Test or Examination	1	2	3	4	5
Examination of Product	1,7	1,5	1,5	1,7	1
Resistance	2,6	2,4	2,4	2,6	
Voltage Standing Wave Ratio					3
Permeability					2
Vibration	4				
Physical Shock	5				
Coupling Nut Retention				5	
Durability	3				
Thermal Shock				3	
Humidity-Temperature Cycling				4	
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 - Groups 1 thru 5

All samples submitted for testing were selected from normal production lots. They were inspected and accepted by the Product Assurance Department of the Capital Goods Business Sector.

2.2 Resistance - Groups 1 thru 4

All resistance measurements were within the specified limit of 50 ohms +/-10% (measurements were between 45 and 55 ohms).

All values in ohms

Test Group	No. of Samples	Condition	Minimum	Maximum	Mean
1	5	Initial	50.50	50.64	50.57
	5	After Shock	50.40	52.37	51.29
2	5	Initial	50.47	50.70	50.56
	5	After Temp. Life	50.32	50.50	50.41
3	5	Initial	50.51	50.70	50.57
	5	After MFG	50.48	50.78	50.65
4	5	Initial	50.46	50.75	50.62
	5	Aft. Coup. Nut Ret.	51.56	52.08	51.79

2.3 Voltage Standing Wave Ratio - Group 5

All voltage standing wave ratio measurements were less than the specification requirement of 1.30 maximum from 0 to 500 MHz.

2.4 Permeability - Group 5

All permeability measurements were less than the specification requirement of 2.0 Mμ.

2.5 Vibration - Group 1

Following vibration, the plug and jack remained mated, and there was no evidence of physical damage, cracking, or chipping of the plug terminator.

2.6 Physical Shock - Group 1

Following physical shock, the plug and jack remained mated and there was no evidence of physical damage, cracking, or chipping of the plug terminator.

2.7 Coupling Nut Retention - Group 4

There was no physical damage, and the coupling nut did not dislodge from the connector body, as a result of coupling nut retention.

2.8 Durability - Group 1

There was no physical damage to the samples, as a result of mating and unmating the plug and jack 500 times.

2.9 Thermal Shock - Group 4

There was no evidence of physical damage, cracking, or chipping to plug terminator, as a result of thermal shock.

2.10 Humidity-Temperature Cycling - Group 4

There was no evidence of physical damage, cracking, or chipping to the plug terminator, as a result of exposure to humidity-temperature cycling.

2.11 Mixed Flowing Gas - Group 3

There was no evidence of physical damage, cracking, or chipping to the plug terminator, as a result of exposure to the pollutants of mixed flowing gas.

2.12 Temperature Life - Group 2

There was no evidence of physical damage, cracking, or chipping to the plug terminator, as a result of exposure to a temperature of 85°C for 96 hours.

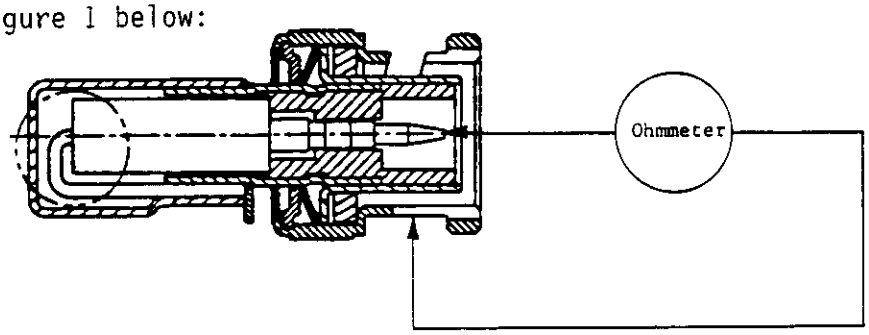
3. Test Methods

3.1 Examination of Product

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

3.2 Resistance

The resistance of the plug terminator was measured, using an ohmmeter. These measurements were recorded, as shown in Figure 1 below:



Resistance Measuring Points, Typical
Figure 1

3.3 Voltage Standing Wave Ratio

VSWR was measured on mated samples, using the Swept Interference Method. The sweep range was from 0 to 500 MHz.

3.4 Permeability

A hand held permeability indicator, using a 2 Mu pellet, was applied to all metallic surfaces of each plug terminator, and the magnet was delicately removed from each sample.

3.5 Vibration, Sine

Mated connectors 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 2000 Hz and returned to 10 Hz in 20 minutes. This cycle was performed 12 times in each of three mutually perpendicular planes, for a total vibration time of 12 hours.

3.6 Physical Shock

Mated connectors were subjected to a physical shock test, having a sawtooth waveform of 50 gravity units (g peak) and a duration of 11 milliseconds. Three shocks in each direction were applied along the three mutually perpendicular planes, for a total of 18 shocks.

3.7 Coupling Nut Retention

Plug terminators were subjected to a 40 pound axial pull at a rate of 60 pounds per minute. The force was applied between the coupling nut and the connector body for a one minute hold period.

3.8 Durability

The plugs and jack assemblies were mated and unmated 500 times, at a rate not exceeding 500 per hour.

3.9 Thermal Shock

Mated connectors were subjected to five cycles of temperature extremes, with each cycle consisting of 30 minutes at each temperature. The temperature extremes were -55°C and 85°C. The transition between temperatures was less than one minute.

3.10 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.

3.11 Mixed Flowing Gas, Class II

Mated connectors were exposed for 20 days in the mixed flowing gas chamber. Class II exposure is defined as a temperature of 30°C and a relative humidity of 70%. Pollutants are Cl_2 at 10 ppb, NO_2 at 200 ppb, and H_2S at 10 ppb.

3.12 Temperature Life

Mated connectors were subjected to 96 hours at an elevated temperature of 85°C.

4. Validation

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