QUALIFICATION TEST REPORT

CABLE, RIBBON
POLYVINYL CHLORIDE INSULATED

501-035 Rev. C

Product Specification: 108-40004 Rev. E.
CTL No.: CTL5647-008
CTL5647-009
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(R5647ts2)

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CORPORATE TEST LABORATORY

Qualification Test Report

1. Introduction

1.1 Purpose

Testing was performed on AMP* PVC, Insulated Ribbon Cable to determine its conformance to the requirements of AMP Product Specification 108-40004 Rev. E.

1.2 Scope

This report covers the electrical, mechanical, and environmental performance of the PVC, Insulated Ribbon Cable manufactured by the Precision Cable Division.

Revision	Testing dates	Cable Type
501-35 Rev. O	7/26 85 to 6/10/86	25 & 100 mil cable
501-35 Rev. B	7/14/93 to 11/11/93	50 mil cable
501-35 Rev. C	9/21/95 to 11/11/95	50 mil cable

1.3 Conclusion

The PVC, Insulated Ribbon Cable meets the electrical, mechanical, and environmental performance requirements of AMP Product Specification 108-40004 Rev. E.

*Trademark

T0910001.101 4/95

1.4 Product Description

Planar ribbon cable is constructed of standard gray polyvinylcloride (PVC) insulation and 28 AWG stranded conductors.

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 Nbr	Description
1,2,3,4,5,6	200 feet	57013-3	Mini-Latch Cable (25 mil)
1,2,3,4,5,6	200 feet	971111-5	Latch Cable (50 mil)
1,2,3,4,5,6	200 feet	971111-6	Latch Cable (50 mil)
1,2,3,4,5,6	200 feet	1-642041-0	MTA Cable (100 mil)

1.6 Qualification Test Sequence

Test or Examination	Test Groups					
	1	2	3	4	5	6
Examination of Product	1	1,4	1,4	1,4	1,4	1,3
Dielectric Withstand Voltage		3	3	3	3	
Bend, Heat aged			2			
Fold, Heat aged				2		
Flexing, unloaded		2				
Resistance to Soldering Heat						2
Thermal Shock					2	
Characteristic Impedance	2					
Propagation Delay	3					
Backward Crosstalk	4					
Forward Crosstalk	5					
Capacitance	6					

The number 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 Cable Interconnections Group.

2.2 Dielectric Withstanding Voltage - Groups 2,3,4,5

No dielectric breakdown or flashover occurred when a test voltage was applied between adjacent conductors.

2.3 Capacitance - Group 1

All capacitance measurements were less than 20 picofarads per foot for 25 mil cable, 15 picofarads per foot for 50 mil cable, and 10 picofarads per foot for 100 mil cable.

2.4 Forward Crosstalk - Group 1

All far-end crosstalk results were less than 12% with a 2 ns risetime and 6% with a 5 ns risetime.

2.5 Backward Crosstalk - Group 1

All near-end crosstalk results were less than 4% with 2 ns and 5 ns risetimes.

2.6 Characteristic Impedance - Group 1

All impedance results were 80 ohm ±5 ohms for 25 mil cable, 105 ohm ±5 ohm for 50 mil cable, and 140 ohm ±5 ohms for 100 mil cable.

2.7 Propagation Delay - Group 1

All propagation delay results were 1.51 ± .02 ns/ft for 25 mil cable, 1.44 ±.02 ns/ft for 50 mil cable, and 1.32 ±.02 ns/ft for 100 mil cable.

2.8 Resistance to Soldering Heat - Group 6

No evidence of physical damage to the cables was visible as a result of soldering heat.

2.9 Bend, Heat aged - Group 3

No evidence of physical damage to the cables was visible as a result of a bend test after 7 days at 105°C.

2.10 Fold, Heat aged - Group 4

No evidence of physical damage to the cables was visible as a result of a fold test after 7 days at 105°C.

2.11 Flexing, unloaded - Group 2

No evidence of physical damage to the cables was visible as a result of flexing the cables 100 times. No discontinuities were observed.

2.12 Thermal Shock - Group 5

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

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 Dielectric Withstanding Voltage

A test potential of 2,000 vac was applied between the adjacent conductors. This potential was applied for one minute and then returned to zero.

3.3 Capacitance

Capacitance was measured between the adjacent conductors, using a test frequency of 1.0 MHz.

3.4 Forward Crosstalk

Each cable assembly was terminated to a crosstalk fixture and a signal line was driven with a 1 MHz, 1 volt 2 ns risetime waveform. Input and output voltages were measured, and an adjacent signal line was monitored for forward crosstalk voltage.

3.5 Backward Crosstalk

Each cable assembly was terminated to a crosstalk fixture and a signal line was driven with a 1 MHz, 1 volt 2 ns risetime waveform. Input and output voltages were measured, and an adjacent signal line was monitored for backward crosstalk voltage.

3.6 Characteristic Impedance

A time domain reflectometer was calibrated with a 50-ohm airline. The sample was then attached and its impedance was measured. The measurement was made between the selected signal line and respective ground lines.

3.7 Propagation Delay

The time domain transmission capabilities (TDT) of a Digital Sampling Oscilloscope were used to measure the propagation delay. The delay of the fixturing and test cables were measured and stored as a reference. The sample was inserted and the pulse at the output of the sample was measured.

3.8 Resistance to Soldering Heat

A quarter inch of insulation was removed from each cable. The cable end was inserted into a solder bath at 260° for 10 seconds.

3.9 Bend, Heat aged

Samples were placed in a forced circulating air oven for 7 days at 105°C. Samples were then bent around a .062 inch diameter mandrel.

3.10 Fold, Heat aged

Samples were placed in a forced circulating air oven for 7 days at 105°C. Samples were then folded twice 90°. (180° total).

3.11 Flexing, unloaded

Samples were placed between two 0.5 inch mandrels. The samples were bent 90° from perpendicular in both direction (180° total). Samples were cycled a total of 100 times. All conductors were series wired to measure discontinuity.

3.12 Thermal Shock

Cables were subjected to 5 cycles of temperature extremes with each cycle consisting of 30 minutes at each temperature. The temperature extremes were -20°C and 105°C. The transition between temperatures was less than one minute.

4. Validation

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10/13/95

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