

ModICE®

**1.5mm SHS Sealed Header
and Harness Connector**

Laboratory Qualification

March 2001



cinch

CONNECTIVITY SOLUTIONS

a bel group

belfuse.com/cinch

PURPOSE

The purpose of this Laboratory Qualification Test is to evaluate the performance of the 1.5mm SHS Sealed Header and Harness Connector System when subjected to the test sequence using the methods defined in Cinch Performance Specification PS-299/NIT.

TABLE OF CONTENTS

Temperature / Humidity	4
High Pressure Wash	5
Salt Spray	6
Vibration	7
Temperature Life	8
Chemical Compatibility	9
Current Cycling	10
Durability Test	11

Temperature / Humidity

Visual Inspection - Initial

All samples were found to be acceptable.

Contact Resistance - Initial

All readings met the 10.0mΩ Max. requirement.

Group Average : 3.14 mΩ

Group Max : 4.48 mΩ

Group Min : 2.10 mΩ

Group Std Dev : 0.57 mΩ

Insulation Resistance - Initial

All samples met the 5000 MegaΩ requirement.

Temperature / Humidity Test

The test was run for 1008 hours between the temperature extremes of -40°C and +125°C and relative humidity of 0 to 85%

Insulation Resistance - Post Temperature/Humidity

All samples met the 1000 MegaΩ requirement.

Contact Resistance - Post Temperature/Humidity

All readings met the 10.0mΩ Max. requirement.

Group Average : 3.61 mΩ

Group Max : 5.41 mΩ

Group Min : 2.51 mΩ

Group Std Dev : 0.60 mΩ

Visual Inspection - Post Temperature/Humidity

All samples were found to be acceptable without any damage.

High Pressure Wash

Visual Inspection - Initial

All samples were found to be acceptable.

Contact Resistance - Initial

All readings met the 10.0mΩ Max. requirement.

Group Average : 3.16 mΩ

Group Max : 4.51 mΩ

Group Min : 2.17 mΩ

Group Std Dev : 0.57 mΩ

Insulation Resistance - Initial

All samples met the 5000 MegaΩ requirement.

High Pressure Washdown

The mated samples were tested per EEF-W4-075. Connectors were subjected to a +200°F steam/detergent spray for 30 seconds with a pressure of 200 psig followed by a 100°F water/detergent spray at 750 psig for 30 seconds at a distance of 8-12 inches from the connectors at all angles.

Insulation Resistance - Post High Pressure Wash

All samples met the 1000 MegaΩ requirement.

Contact Resistance - Post High Pressure Wash

All readings met the 10.0mΩ Max. requirement.

Group Average : 3.69 mΩ

Group Max : 6.86 mΩ

Group Min : 2.58 mΩ

Group Std Dev : 0.69 mΩ

Visual Inspection - Post High Pressure Wash

All samples were found to be acceptable without any damage.

Salt Spray

Visual Inspection - Initial

All samples were found to be acceptable.

Contact Resistance - Initial

All readings met the 10.0mΩ Max. requirement.

Group Average : 3.14 mΩ

Group Max : 4.24 mΩ

Group Min : 2.14 mΩ

Group Std Dev : 0.56 mΩ

Insulation Resistance - Initial

All samples met the 5000 MegaΩ requirement.

Salt Spray Test

The mated samples were exposed to a salt spray environment per ASTM B-117-73 for a period of 96 hours.

Insulation Resistance - Post Salt Spray

All samples met the 1000 MegaΩ requirement.

Contact Resistance - Post Salt Spray

All readings met the 10.0mΩ Max. requirement.

Group Average : 3.33 mΩ

Group Max : 4.49 mΩ

Group Min : 2.30 mΩ

Group Std Dev : 0.55 mΩ

Visual Inspection - Post Salt Spray

All samples were found to be acceptable without any damage.

Vibration

Visual Inspection - Initial

All samples were found to be acceptable.

Contact Resistance - Initial

All readings met the 10.0mΩ Max. requirement.

Group Average : 3.14 mΩ

Group Max : 4.21 mΩ

Group Min : 2.21 mΩ

Group Std Dev : 0.54 mΩ

Vibration Test

Connectors subjected to Mil Std 1344, Method 2005, Condition III. Sinusoidal vibration between frequencies of 10 to 2000 Hz with a peak g level of 15g's. The vibration was applied eight times in three mutually perpendicular planes for a period of eight hours. There was no loss of continuity greater than one microsecond and no mechanical damage to the samples.

Contact Resistance - Post Vibration

All readings met the 10.0mΩ Max. requirement.

Group Average : 2.89 mΩ

Group Max : 4.21 mΩ

Group Min : 2.21 mΩ

Group Std Dev : 0.54 mΩ

Visual Inspection - Post Vibration

All samples were found to be acceptable without any damage.

Temperature Life**Visual Inspection - Initial**

All samples were found to be acceptable.

Contact Resistance - Initial

All readings met the 10.0mΩ Max. requirement.

Group Average : 3.10 mΩ

Group Max : 4.14 mΩ

Group Min : 2.13 mΩ

Group Std Dev : 0.54 mΩ

Temperature Life Test

All samples were exposed to 125°C for 1000 hours.

Retention Force - Post Temperature Life

All samples met requirement: >60N (or 13.5 lb.) with an average retention force of 17.62 lbs

Contact Resistance - Post Temperature Life

All readings met the 10.0mΩ Max. requirement.

Group Average : 3.20 mΩ

Group Max : 4.65 mΩ

Group Min : 2.20 mΩ

Group Std Dev : 0.56 mΩ

Visual Inspection - Post Temperature Life

All samples were found to be acceptable without any damage.

Chemical Compatibility**Visual Inspection - Initial**

All samples were found to be acceptable.

Contact Resistance - Initial

All readings met the 10.0mΩ Max. requirement.

Group Average : 3.15 mΩ

Group Max : 4.56 mΩ

Group Min : 2.19 mΩ

Group Std Dev : 0.54 mΩ

Insulation Resistance - Initial

All samples met the 5000 MegaΩ requirement.

Chemical Compatibility Test

The test samples were immersed completely for 5 minutes into the test fluids listed below at the temperature specified. After immersion, connectors were air dried for 24 hours and tested for insulation resistance.

SAE RM66-04 Brake Fluid @ 50°C

Windshield Washer Fluid @ 25°C

ASTM IRM-902 Oil @ 100°C

ASTM IRM-903 Power Steering Fluid @100°C

ASTM Fuel C Gasoline @25°C

ASTM Fuel F Diesel Fuel @ 25°C

ASTM Fluid 104 Engine Coolant @ 100°C

ASTM Fuel K M85 Methanol Fuel @ 25°C

SAE J311 Auto Transmission Fluid @ 100°C

Insulation Resistance - Post Chemical Compatibility

All samples met the 1000 MegaΩ requirement.

Visual Inspection - Post Chemical Compatibility

All samples were found to be acceptable without any damage.

Current Cycling

Visual Inspection - Initial

All samples were found to be acceptable.

Contact Resistance - Initial

All readings met the 10.0mΩ Max. requirement.

Group Average : 2.17 mΩ

Group Max : 2.37 mΩ

Group Min : 1.92 mΩ

Group Std Dev : 0.12 mΩ

Current Cycling Test

Connectors were cycled for 500 hours (45 minutes "ON" and 15 minute "OFF") using 10 amps of current. All positions were loaded with a wire size of 16 GXL;20 positions were monitored continuously.

Contact Resistance - Post Current Cycle

All readings met the 10.0mΩ Max. requirement.

Group Average : 2.63 mΩ

Group Max : 3.54 mΩ

Group Min : 2.20 mΩ

Group Std Dev : 0.39 mΩ

Visual Inspection - Post Current Cycle

All samples were found to be acceptable without any damage.

Durability Test

Visual Inspection - Initial

All samples were found to be acceptable.

Contact Resistance - Initial

All readings met the 10.0mΩ Max. requirement.

Group Average : 2.17 mΩ

Group Max : 2.37 mΩ

Group Min : 1.92 mΩ

Group Std Dev : 0.12 mΩ

Durability Test

Connectors were mated and unmated for a total of 20 cycles, while being torqued to 17.5 in-lb. in order to simulate actual use in field.

Contact Resistance - Post Durability Test

All readings met the 10.0mΩ Max. requirement.

Group Average : 2.73 mΩ

Group Max : 5.67 mΩ

Group Min : 2.23 mΩ

Group Std Dev : 0.80 mΩ

Visual Inspection - Post Current Cycle

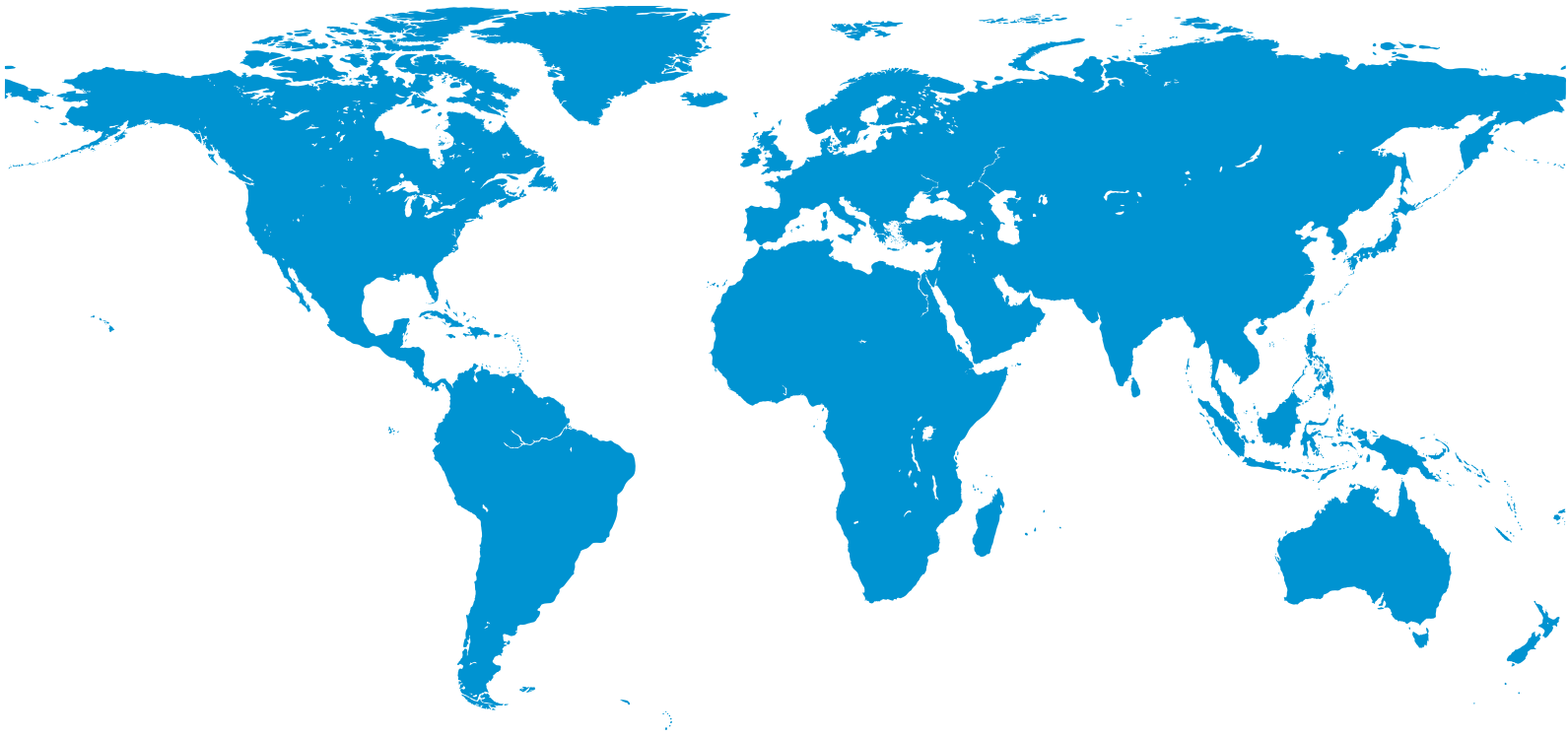
All samples were found to be acceptable without any damage.



About Cinch Connectivity Solutions

In operation since 1917, Cinch supplies high quality, high performance connectors and cables globally to the Aerospace, Military/Defense, Commercial Transportation, Oil & Gas, High End Computer, and other markets. We provide custom solutions with our creative, hands on engineering and end to end approach.

Our diverse product offerings include: connectors, enclosures and cable assemblies utilizing multiple contact technologies including copper and fiber optics. Our product engineering and development activities employ cutting edge technologies for design and modeling, and our various technologies and expertise enable us to deliver custom solutions and products for our strategic partnerships.



For more information, please contact us:

North America

+1 507.833.8822

ccsorders@us.cinch.com

Asia-Pacific

+86 21 5442 7668

ccs.asia.sales@as.cinch.com

Europe, Middle East

+44 (0) 1245 342060

CinchConnectivity@eu.cinch.com



cinch
CONNECTIVITY SOLUTIONS

a bel group

belfuse.com/cinch