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QUALIFICATION TEST REPORT ABSTRACT

FOR

Glenair

VERSALINK MICRO-D

P/N GHS4-M, GVLM-BR, GVLM-BS

REPORT NO. GT-24-017 ABSTRACT



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5/12/25

Date:

Name

Updated by:

Date:

- Product Description/Application

The High-Speed Micro-D achieves its high-speed signal integrity and high data

rate performance through innovative modifications to the standard Micro connector insert, principally in the use of an ultra-low dielectric insulation material, but in addition, with the use of Nano TwistPin contacts, exactly spaced and isolated to eliminate cross-talk and maintain impedance levels through the connector mating interface.

- Purpose

Testing was performed on GHS4-M, GVLM-BS, and GVLM-BR to determine their ability to meet key aspects of MIL-DTL-83513.

- Scope

This report documents the results of the testing performed on the VersaLink Micro-D connector series. The acceptance test criteria referenced in QTP-1003, Rev A, was used to help validate the testing requirements. The tests were performed by Glenair, Inc. and Vertical Laboratories LLC.

Applicable Test Reports		
Test Report Number	Provider	Date Tested
GT-24-017	Glenair	August 6, 2024
21192R1MHV2	Vertical Labs, LLC	January 29, 2024

- Conclusion

GHS4-M, GVLM-BS, and GVLM-BR have been shown to be capable of meeting performance requirements of MIL-DTL-83513.

- Test Specimen

Test Sample Description	
Description	Part Number
Connector, Wired, Micro -D, VersaLink	GHS4-M
Connector, Board Mount, Right Angle, Micro-D, VersaLink	GVLM-BR
Connector, Board Mount, Straight, Micro-D, VersaLink	GVLM-BS

- Inspection Procedure

All tests were performed with the test specimen at standard laboratory conditions and within procedural parameters as defined below.

1. Ambient room temperature: $25^{\circ}\text{C} \pm 10^{\circ}\text{C}$ ($77^{\circ}\text{F} \pm 18^{\circ}\text{F}$)
2. Relative humidity: Room ambient up to 90% relative
3. Barometric pressure: Prevailing room conditions

- Qualification Test Summary

Qualification Test Summary		
Test Description	Abstract Reference	Results
Examination of Product	3.1	Passed
Dielectric Withstanding Voltage 600 Vac	3.2	Passed
Insulation Resistance 500 Vdc, 5GΩ	3.3	Passed
Contact Resistance 80mV max	3.4	Passed
Mating and Unmating Force	3.5	Passed*
Temperature Cycling -55°C to +125°C	3.6	Passed
Humidity 240 hours	3.7	Passed
Sine Vibration 20G	3.8	Passed
Mechanical Shock 50G	3.9	Passed
Durability 2000 Cycles	3.10	Passed

* Appendix D shows the force contributions of the sealing gasket, grounding spring, and contacts. During the testing detailed in Appendix B & C, the mating forces consistently measured higher than expected. This was confirmed to be caused by the compression of the sealing gasket, which was not accounted for when the pass/fail criteria was determined.

- Qualification Testing Details

- **Examination of Test Samples**

Pre-wired test connectors and test cables consist of individual wires or, or flying leads, that may require re-configuration during testing. In addition, board mount test connectors will require mechanical and electrical attachment to test PCVs for certain tests.

- **Dielectric Withstanding Voltage**

- Test Method

EIA-364-21F, paragraph 3.5.4. @ 600 Vac

- Requirement

Dielectric withstanding voltage shall be measured within each pair, and between each contact and the shell. All contacts shall be tested. All

groups shall be tested by using the provided test fixtures.

- Results

PASS. PN GHS4-M, GVLM-BR, and GVLM-BS did not exhibit errors or failures.

- Test Anomalies/Deviations

N/A

- **Insulation Resistance**

- Test Method

EIA-364-20F, paragraph 3.5.5. @ 500 Vdc

- Requirement

A test voltage of 500 Vdc shall be applied to all contact pairs and between each contact and the shell for a dwell time of 60 seconds. The resistance between each combination shall be at least 5,000 megaohms.

- Results

PASS. PN GHS4-M, GVLM-BR, and GVLM-BS did not exhibit errors or failures.

- Test Anomalies/Deviations

N/A

- **Contact Resistance**

- Test Method

Maximum allowed voltage drop is 80mV across each mated contact pair not including allowable wire resistance of flying leads.

- Requirement

Maximum allowed voltage drop is 80mV across each mated contact pair not including allowable wire resistance of flying leads. Pairs 5 & 6 (pins V9 through V12) shall not be measured. Each wire of the 963-043-26 cable averages 38.88 mΩ per foot, the braid averages 14.44 mΩ per foot.

- Results

PASS. PN GHS4-M, GVLM-BR, and GVLM-BS did not exhibit errors or failures.

- Test Anomalies/Deviations

N/A

- **Mating and Unmating Force**

- Test Method

The two samples were gradually brought together until fully mated, and then the axial load was reversed to unmate the connectors.

- Requirement

Connector shall have female hardware removed for this test and be rigidly mounted to align the specimens and allow the connector pairs to be mated. The two samples shall be gradually brought together until fully mated, as shown in Figure 1, and then the axial load shall be reversed to unmate the connectors. The specimens shall be subjected to three mate and unmate cycles and on the next cycle the forces of engagement and disengagement shall be recorded.

- Results

PASS. PN GHS4-M, GVLM-BR, and GVLM-BS did not exhibit errors or failures.

- Test Anomalies/Deviations

N/A

- **Temperature Cycling**

- Test Method

EIA-364-32G, Condition I

- Requirement

Once both cold and hot chambers have reached stabilized temperature, test articles will be placed in the cold chamber. The cold chamber shall be at -55°C (+0, -3°C) and the hot chamber shall be at +125°C (+3, -0°C).

- Results

PASS. PN GHS4-M, GVLM-BR, and GVLM-BS did not exhibit errors or failures.

- Test Anomalies/Deviations

N/A

- **Humidity**

- Test Method

EIA-364-31F, method IV

- Requirement

Specimens shall be placed in the environmental chamber such that they are at least 5 cm from each other and the chamber walls. Subjects will be subjected to insulation resistance testing prior to running the

humidity profile.

- Results

PASS. PN GHS4-M, GVLM-BR, and GVLM-BS did not exhibit errors or failures.

- Test Anomalies/Deviations

N/A

- **Sine Vibration**

- Test Method

IA-364-28F, Condition IV

- Requirement

Board mount connectors shall be mounted and soldered to the PCB boards. A full vibration cycle shall consist of the frequency varied logarithmically from 10 Hz to 2,000 Hz and then back to 10 Hz. This cycle shall take 20 minutes and be performed twelve times in each of three mutually perpendicular axes for each mated pair.

- Results

PASS. PN GHS4-M, GVLM-BR, and GVLM-BS did not exhibit errors or failures.

- Test Anomalies/Deviations

N/A

- **Mechanical Shock**

- Test Method

EIA-364-27C, Condition E

- Requirement

Board mount connectors shall be mounted and soldered to the PCB boards. The test samples shall experience a sawtooth pulse of 50 G with a duration of 11ms. The test pulse shall be applied one time in each of the three mutually perpendicular axes of the mated pair for a total of six shocks.

- Results

PASS. PN GHS4-M, GVLM-BR, and GVLM-BS did not exhibit errors or failures.

- Test Anomalies/Deviations

N/A

- **Durability**

- Test Method

QTP Section 7.10 and MIL-DTL-83513H Paragraph 3.5.14

- Requirement

Mating and unmating forces shall be monitored during testing until force requirements of QTP Section 7.5 (11.25 lbs) are exceeded or 2000 cycles is reached, whichever comes first. Contact resistance per QTP section 7.4 and check for damage every 500 cycles

- Results

PASS. PN GHS4-M, GVLM-BR, and GVLM-BS did not exhibit errors or failures.

- Test Anomalies/Deviations

N/A

