



TEST REPORT
EAR-CONTROLLED DATA

Table with 3 columns: In account with (GIGAFLIGHT CONNECTIVITY INC.), Date (9/22/2022), Page (1 of 5 Pages), W. O. No. (T 62046), P. O. No. (10608), Identification (As noted), Shipper (N/A)

Table with 4 columns: Revision Letter: Original Issue, Issue Date: 9/22/2022, Prepared By: Hosein Shahnazi, Approved by: See Below

- IDENTIFICATION : Two (2) cables, identified as 4 Pair 1000 Base-T Ethernet Cable, GigaFlight P/N GF824A-5E, Lot 0013409, and 24 AWG 120 Ohm Laser Markable CAN Bus Cable, GigaFlight P/N GF120T-24CANB, LOT 0014550 were submitted for testing per GigaFlight Connectivity Inc. Purchase Order No. 10608.
SPECIFICATIONS : ASTM E595-15 (2021), Sect. 1.5
REFERENCES : 1. GigaFlight Connectivity Inc. Purchase Order No. 10608, dated 8/29/2022.
2. Element Los Angeles Quotation No. ELO0030846Q/0, dated 8/4/2022.
3. ASTM E595-15 (2021), "Standard Test Method for Total Mass Loss and Collected Volatile Condensable Materials from Outgassing in a Vacuum Environment"

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TEST METHODS

A. OUTGASSING

The 100-300 mg test specimen was preconditioned at 23°C and 50 % relative humidity for 24 hours in a preformed, degreased preweighed aluminum container. The container with specimen was reweighed following preconditioning and placed into the test apparatus specimen heating compartment. The test apparatus was sealed and the specimen was subjected to a vacuum of at least 7×10^{-3} Pa (5×10^{-5} torr) and a temperature of 125°C. Any evolved gases vaporized from the heated specimen streaming from the specimen compartment are condensed and collected on a preweighed chromium-plated collector plate maintained at 25°C. Each specimen compartment and collector plate combination is physically isolated from other specimens by a compartmented separator plate to prevent cross contamination.

The test apparatus was cooled to ambient laboratory temperature after 24 hours at vacuum and the vacuum chamber was repressurized with dry nitrogen gas. The specimen and the collector plates were removed and weighed. The percentage TML and percentage CVCM were calculated as directed in ASTM E595 using the pre- and post- vacuum exposure specimen mass values.

The WVR was determined following a specimen post- conditioning for 24 hours at 23°C and 50 % relative humidity to permit sorption of water vapor. The specimen mass after the post- exposure was measured and the WVR value was calculated as directed in ASTM E595.

SUMMARY:

Specimen ID	Testing Conducted	Test Value		Requirement	Results
4 Pair 1000 Base-T Ethernet Cable, GigaFlight P/N GF824A-5E, Lot 0013409	ASTM E595-15 (2021) Outgassing (%)	TML	0.05	1.00 MAX	Meets Specification
		CVCM	0.00	0.10 MAX	Meets Specification
		WVR	0.02	REPORT	Information Only
24 AWG 120 Ohm Laser Markable CAN Bus Cable, GigaFlight P/N GF120T-24CANB, LOT 0014550		TML	0.06	1.00 MAX	Meets Specification
		CVCM	0.01	0.10 MAX	Meets Specification
		WVR	0.01	REPORT	Information Only

REMARKS: 1. Test results are submitted herein for client evaluation.

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Page 3 of 5 Pages

Date 9/22/2022

W.O. No. T 62046

Respectfully submitted,

Hosein Shahnazi
Department Manager
Element Materials Technology Los Angeles

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OUTGASSING per ASTM E595

Customer: GigaFlight Connectivity Inc.
Material ID: 4 Pair 1000 Base-T Ethernet Cable
Part Number: GF842A-5E
Lot/Batch No.: 0013409

Order No.: T62046
Date: 9/16/22 - 9/21/22
Serial No.
Other ID:

Specification: ASTM E595-15 (2021)
Method: ASTM E595-15 (2021)
Lab Temp °C: 23

Humidity %RH: 49.1

Technician: ALL

Pre Test Conditioning: 23°C and 50% RH for 24 hours
Post Test Conditioning: 23°C and 50% RH for 24 hours
Drying Chamber Start Date/Time: Thurs 9/15 @ 14:55
Vacuum Chamber Start Date/Time: Mon 9/19 @ 15:15

End Date/Time: Mon 9/19 @ 09:30
End Date/Time: Tues 9/20 @ 15:15

Test Parameters: Outgas for 24 hours at 125°C under vacuum of 5 x 10-5 or less Tor

Collector Plate Parameter: 25°C

Table with 7 columns: Test No., 1, 2, 3, Blank, Average, Required. Rows include Initial Collector Mass, Initial Boat Mass, Initial Boat + Specimen Mass, Pre Test Conditioned Boat + Specimen Mass, Post Outgassing (Cooled to RT) Boat + Specimen Mass, Post Outgassing Collector Plate Mass, Water Vapor Regain Boat + Specimen Mass, Total Mass Loss (% TML), Collected Volatile Condensable Materials (%CVMC), and Water Vapor Regain (% WVR).

The above test results:

Meet requirements of the specification as noted in accordance with

ASTM E595 Section 1.5, "The criteria used for acceptance and rejection of materials shall be determined by the used and based upon specific component and system requirements. Historically, TML of 1.00% and CVMC of 0.10% have been used as screening levels for rejection of spacecraft materials."

Table with 3 columns: EQUIPMENT, EC#, CAL DUE. Rows include Microbalance, Vacuum Gage, Temperature Controller, and Conditioning Chamber Control.

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OUTGASSING per ASTM E595

Customer: GigaFlight Connectivity Inc.
Material ID: 24 AWG 120 Ohm Laser Markable CAN Bus Cable
Part Number: GF120T-24CANB
Lot/Batch No.: 0014550

Order No.: T62046
Date: 9/8/22 - 9/14/22
Serial No.
Other ID:

Specification: ASTM E595-15 (2021)
Method: ASTM E595-15 (2021)
Lab Temp °C: 23

Humidity %RH: 49.5

Technician: ALL

Pre Test Conditioning: 23°C and 50% RH for 24 hours
Post Test Conditioning: 23°C and 50% RH for 24 hours
Drying Chamber Start Date/Time: Fri 9/9 @ 13:30
Vacuum Chamber Start Date/Time: Mon 9/12 @ 13:35

End Date/Time: Mon 9/12 @ 09:15
End Date/Time: Tues 9/12 @ 13:35

Test Parameters: Outgas for 24 hours at 125°C under vacuum of 5 x 10-5 or less Tor

Collector Plate Parameter: 25°C

Table with 7 columns: Test No., 1, 2, 3, Blank, Average, Required. Rows include Initial Collector Mass, Initial Boat Mass, Initial Boat + Specimen Mass, Pre Test Conditioned Boat + Specimen Mass, Post Outgassing (Cooled to RT) Boat + Specimen Mass, Post Outgassing Collector Plate Mass, and Water Vapor Regain Boat + Specimen Mass.

Summary table with 7 columns: Total Mass Loss (% TML), Collected Volatile Condensable Materials (%CVMC), Water Vapor Regain (% WVR). Values: 0.06%, 0.01%, 0.01% respectively.

The above test results:

Meet requirements of the specification as noted in accordance with

ASTM E595 Section 1.5, "The criteria used for acceptance and rejection of materials shall be determined by the used and based upon specific component and system requirements. Historically, TML of 1.00% and CVMC of 0.10% have been used as screening levels for rejection of spacecraft materials."

Table with 3 columns: EQUIPMENT, EC#, CAL DUE. Rows: Microbalance (3071, 03/07/23), Vacuum Gage (3087-3, 05/25/23), Temperature Controller (3089 & 3090, 05/11/23), Conditioning Chamber Control (1554, 12/18/22).

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