

# Test Report

## GHSM Temperature Rise Versus Current Test GT-20-786

Revision B

Revision	Date	Approved	Description
A	02/05/21	K. Howerton	Initial Release
B	01/04/23	K. Howerton	DCN 98837: Add Addendum A



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# Test Report

High Speed Micro-D Temperature Rise Testing  
20247R1PCV2  
Version 2  
1/10/2021

Prepared By: Preston Clover  
Test Engineer

Reviewed By: Brian Morales  
Test Engineer 1/10/2020  
Date

Approved By: Kane Liang  
Quality Manager 1/10/2020  
Date



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## Version History

Version	Date	Comments	Prepared By	Reviewed By	Approved By
1	11/20/2020	Initial release	Preston Clover	Brian Morales	Kane Liang
2	1/10/2020	Formating changes.	Preston Clover	Brian Morales	Kane Liang

**Test Deviations**

Deviation No.	Test Name	Description
-	-	-

<b>Job Name</b>	High Speed Micro-D Temperature Rise Testing
<b>Job No.</b>	20247
<b>Client</b>	Glenair
<b>Address</b>	1211 Air Way, Glendale, CA 91201
<b>Contact Name</b>	Keef Howerton
<b>Telephone No.</b>	(818) 247-6000
<b>Email</b>	khowerton@glenair.com
<b>Controlling Document</b>	Customer Email

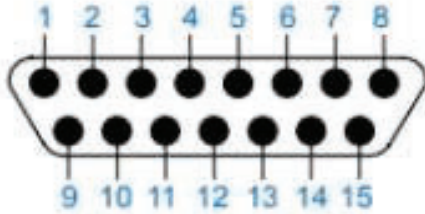
Test Name	Test No.	Start Date	End Date	Pass	Fail	Record
Current vs Temperature Test	1	9/4/2020	10/24/2020	-	-	X
Current vs Temperature Test	2	9/4/2020	10/24/2020	-	-	X
Current vs Temperature Test	3	9/4/2020	10/24/2020	-	-	X
				-	-	-
				-	-	-
				-	-	-

### Summary of Testing

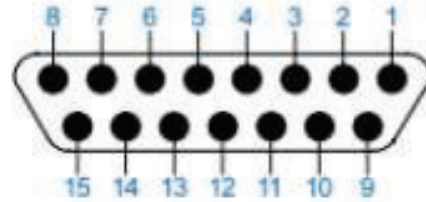
All testing in this report was conducted in accordance with EIA-364-70C "Temperature Rise Versus Current Test for Procedure for Electrical Connectors and Sockets". The intent of this testing is to characterize the relationship between input current and temperature for the test samples provided. All samples successfully completed all the required testing as defined in the test sequence without any visible damage. Information in the "Test Plots" section of this report can be found in order to see the temperature rise as pertains to a certain current for each sample configuration.

<b>Date Received</b>	8/4/2020
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Part Name	Part Description	Serial No.
Glenair High Speed Micro-D (GHSM) 3A Connector Pair	GHSM2R-15P to GHSM2R-15S, Constructed with Micro Contacts (Rated to 3 amps)	001
Glenair High Speed Micro-D (GHSM) 1A Connector Pair	GHSM2R-15P to GHSM2R-15S, Constructed with Nano Contacts (Rated to 1 amps)	002



**15 pin**



**15 socket**

## Test Sequence

#	Test Name	Test Description	Test Units
1	<b>Current vs Temperature Test</b>	Apply DC current (0.5A-6A) through four contact positions in series (1-8-5-4)	Serial No. 001 (3A pair)
2	<b>Current vs Temperature Test</b>	Apply DC Current (0.5A-2A) through ten contact positions in series (2-10-3-11-4-5-12-13-6-14)	Serial No. 002 (1A pair)
3	<b>Current vs Temperature Test</b>	Apply DC current (0.5A-6A) through four contact positions in series (1-8-5-4)	Serial No. 002 (1A pair)

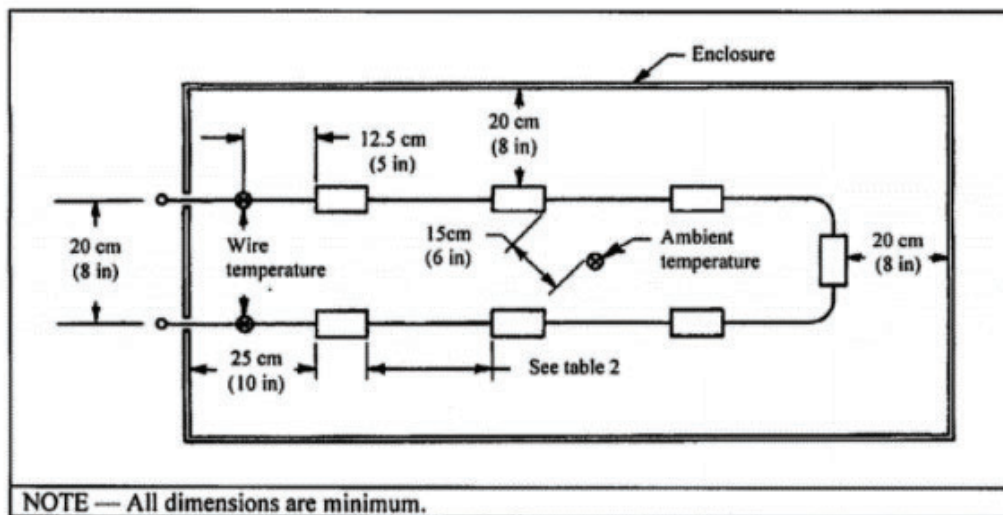


ID No.	Equipment Name	Manufacturer	Model No.	Cal. Date	Cal. Due
EM006	TEMPERATURE CALIBRATOR	FLUKE	724	11/5/2020	11/30/2021
EM031	DUAL OUTPUT AUTORANGING DC POWER SUPPLY (30 VDC, 20 ADC)	KEYSIGHT TECHNOLOGIES	E36233A	12/3/2020	12/31/2021

<b>Test Name</b>	Current vs Temperature Testing
<b>Specification</b>	EIA-364-70
<b>Method / Procedure</b>	Method 2
<b>Figure / Table</b>	None

### Test Requirements

All testing to be performed in accordance with EIA-364-70. Method 2. Each test sample was suspended inside of an enclosure as defined below. The ambient temperature inside the enclosure as well as the temperatures at contacts 1, 4, 5, and 8 were monitored during all testing in one minute intervals. Daisy chained circuits were created by soldering the flying leads of the connectors together as defined by the customer. Current was introduced through the circuit in .5 Volt DC intervals. Each interval was held for 20 minutes to insure temperature stabilization.



**Pre-test sample conditions**

All Test samples passed visual inspection upon receipt.

**Post-test sample conditions**

All test samples passed visual inspection post current vs temperature testing. Nothing during testing changed the appearance or functionality of the test samples.

## Test Results

All test samples were exposed to the tests defined in the Test Sequence. All samples showed no signs of any physical damage when performing post-test visual examination. All current and temperature measurements were performed in accordance with EIA-364-70C whereas the temperature rise is defined by the difference in temperature between the test sample temperature and the ambient temperature. See results below.

Using the results from this test, a relationship can be made to determine the maximum allowable ambient temperature for a given current based on the maximum operating temperature of the connector. For the connectors under test the maximum operating temperature is identified as 150 degrees C.

$$T_{\max}(A) = 125^{\circ}\text{C} - \Delta T(A)$$

Where:

**T<sub>max</sub>** is the allowable ambient temperature for a given current.

**ΔT** is the temperature rise for a given current

**A** is the current applied to the connector

Values in the following tables have been created using data from temperature vs current testing and the formula above.

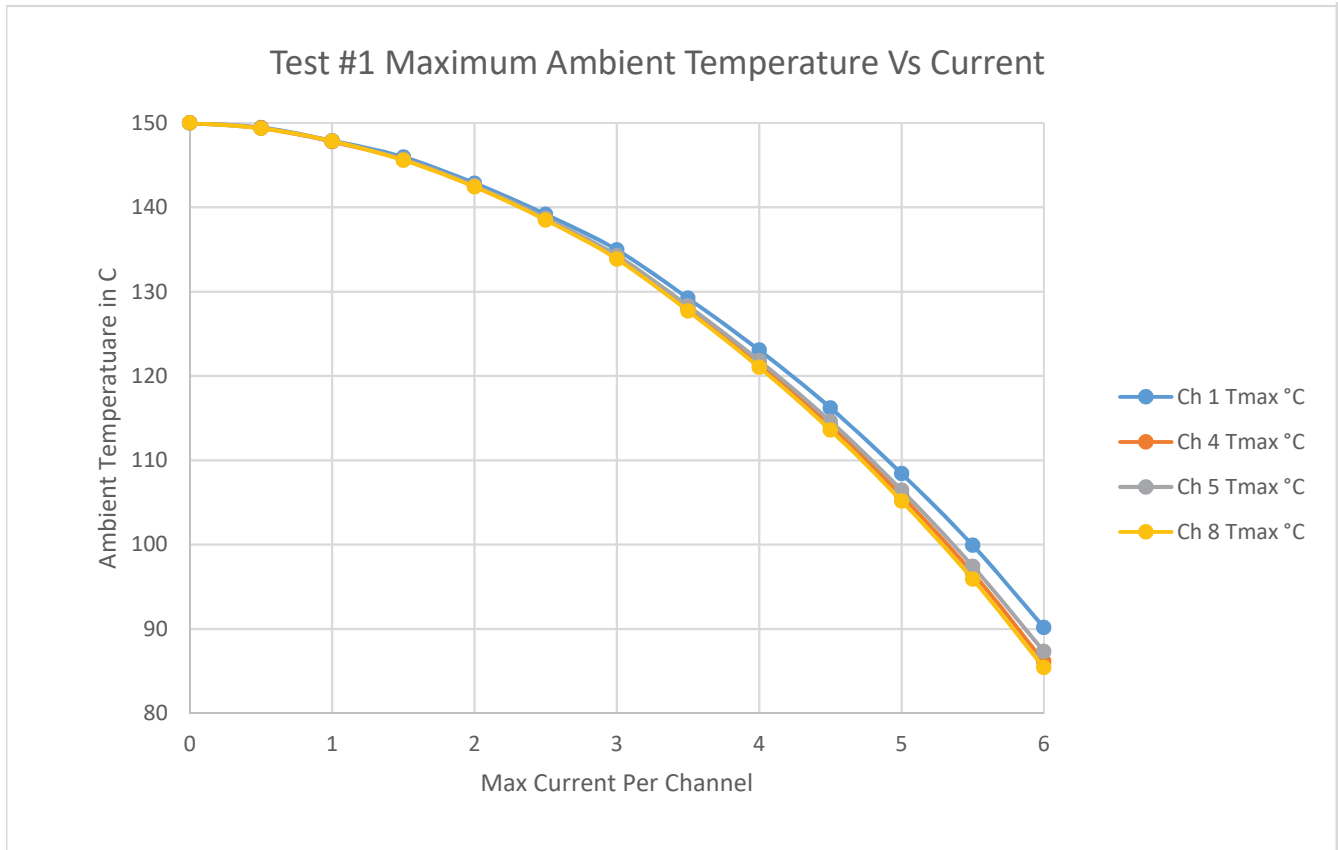
## Test Results

Sample # 001								
Current (A)	Ch 1 Tmax °C	Ch 4 Tmax °C	Ch 5 Tmax °C	Ch 8 Tmax °C	Ch 1 ΔT °C	Ch 4 ΔT °C	Ch 5 ΔT °C	Ch 8 ΔT °C
0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0
0.5	149.4	149.4	149.4	149.4	0.6	0.6	0.6	0.6
1	147.9	147.8	147.8	147.8	2.1	2.2	2.2	2.2
1.5	145.9	145.7	145.7	145.6	4.1	4.3	4.3	4.4
2	142.9	142.5	142.6	142.4	7.1	7.5	7.4	7.6
2.5	139.2	138.6	138.7	138.5	10.8	11.4	11.3	11.5
3	134.9	134.1	134.3	133.9	15.1	15.9	15.7	16.1
3.5	129.2	128.1	128.3	127.7	20.8	21.9	21.7	22.3
4	123.1	121.5	121.8	121.0	26.9	28.5	28.2	29.0
4.5	116.2	114.2	114.6	113.6	33.8	35.8	35.4	36.4
5	108.4	105.8	106.5	105.2	41.6	44.2	43.5	44.8
5.5	99.9	96.6	97.4	95.9	50.1	53.4	52.6	54.1
6	90.2	86.2	87.3	85.4	59.8	63.8	62.7	64.6

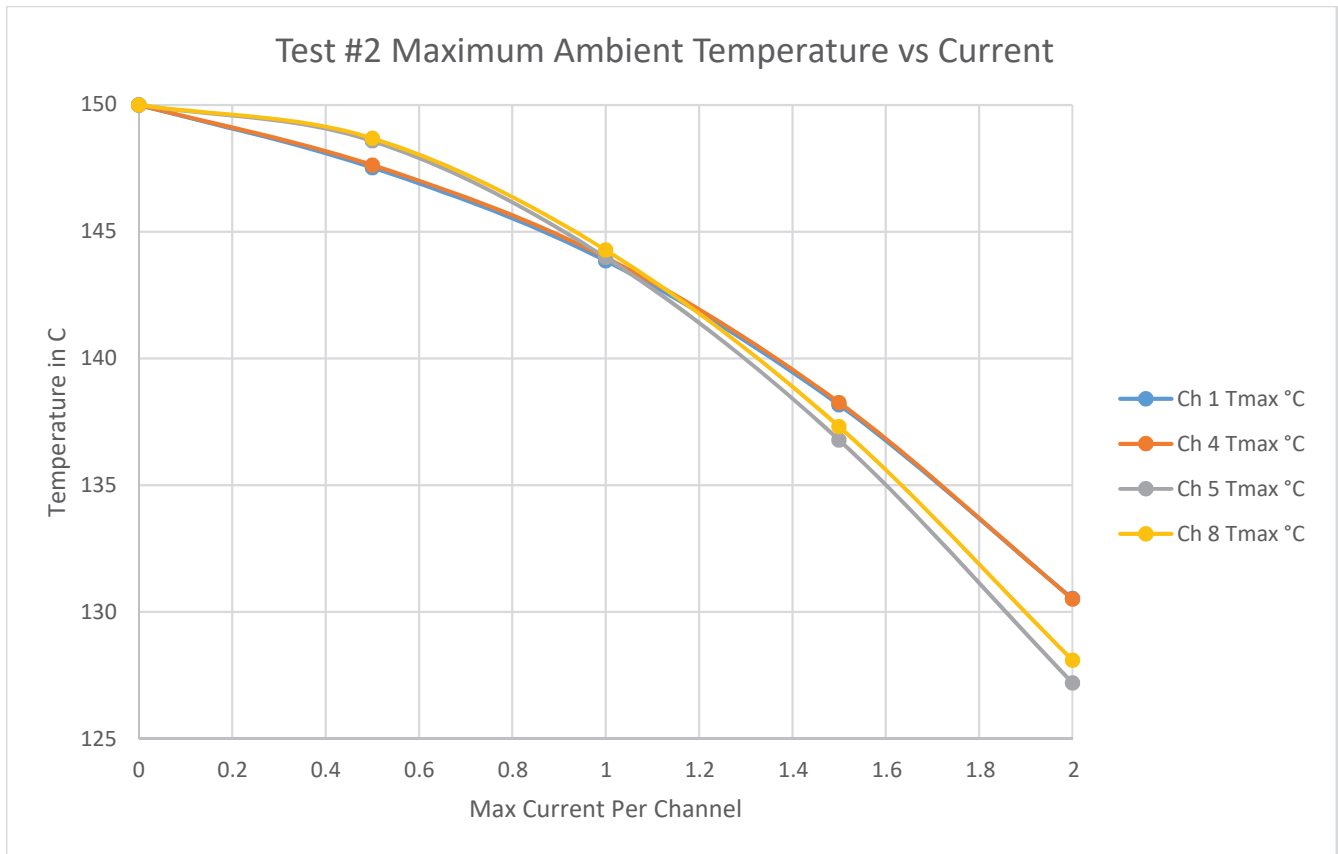
Sample # 002 Configuration 1								
Current (A)	Ch 1 Tmax °C	Ch 4 Tmax °C	Ch 5 Tmax °C	Ch 8 Tmax °C	Ch 1 ΔT °C	Ch 4 ΔT °C	Ch 5 ΔT °C	Ch 8 ΔT °C
0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0
0.5	147.5	147.6	148.6	148.7	2.5	2.4	1.4	1.3
1	143.9	144.0	144.0	144.3	6.1	6.0	6.0	5.7
1.5	138.2	138.3	136.8	137.3	11.8	11.7	13.2	12.7
2	130.5	130.5	127.2	128.1	19.5	19.5	22.8	21.9

Sample # 002 Configuration 2								
Current (A)	Ch 1 Tmax °C	Ch 4 Tmax °C	Ch 5 Tmax °C	Ch 8 Tmax °C	Ch 1 ΔT °C	Ch 4 ΔT °C	Ch 5 ΔT °C	Ch 8 ΔT °C
0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0
0.5	149.1	149.0	149.3	149.2	0.9	1.0	0.7	0.8
1	147.6	147.3	147.1	147.1	2.4	2.7	2.9	2.9
1.5	145.1	144.6	144.0	144.2	4.9	5.4	6.0	5.8
2	141.7	141.2	140.2	140.7	8.3	8.8	9.8	9.3
2.5	137.5	137.0	135.2	136.1	12.5	13.0	14.8	13.9
3	132.8	132.2	129.3	130.6	17.2	17.8	20.7	19.4
3.5	127.4	126.5	122.4	124.3	22.6	23.5	27.6	25.7
4	121.3	120.2	114.6	117.1	28.7	29.8	35.4	32.9
4.5	114.3	113.0	105.7	108.9	35.7	37.0	44.3	41.1
5	106.7	105.0	95.8	99.8	43.3	45.0	54.2	50.2
5.5	98.4	96.3	84.9	89.8	51.6	53.7	65.1	60.2
6	89.3	86.7	72.9	78.6	60.7	63.3	77.1	71.4



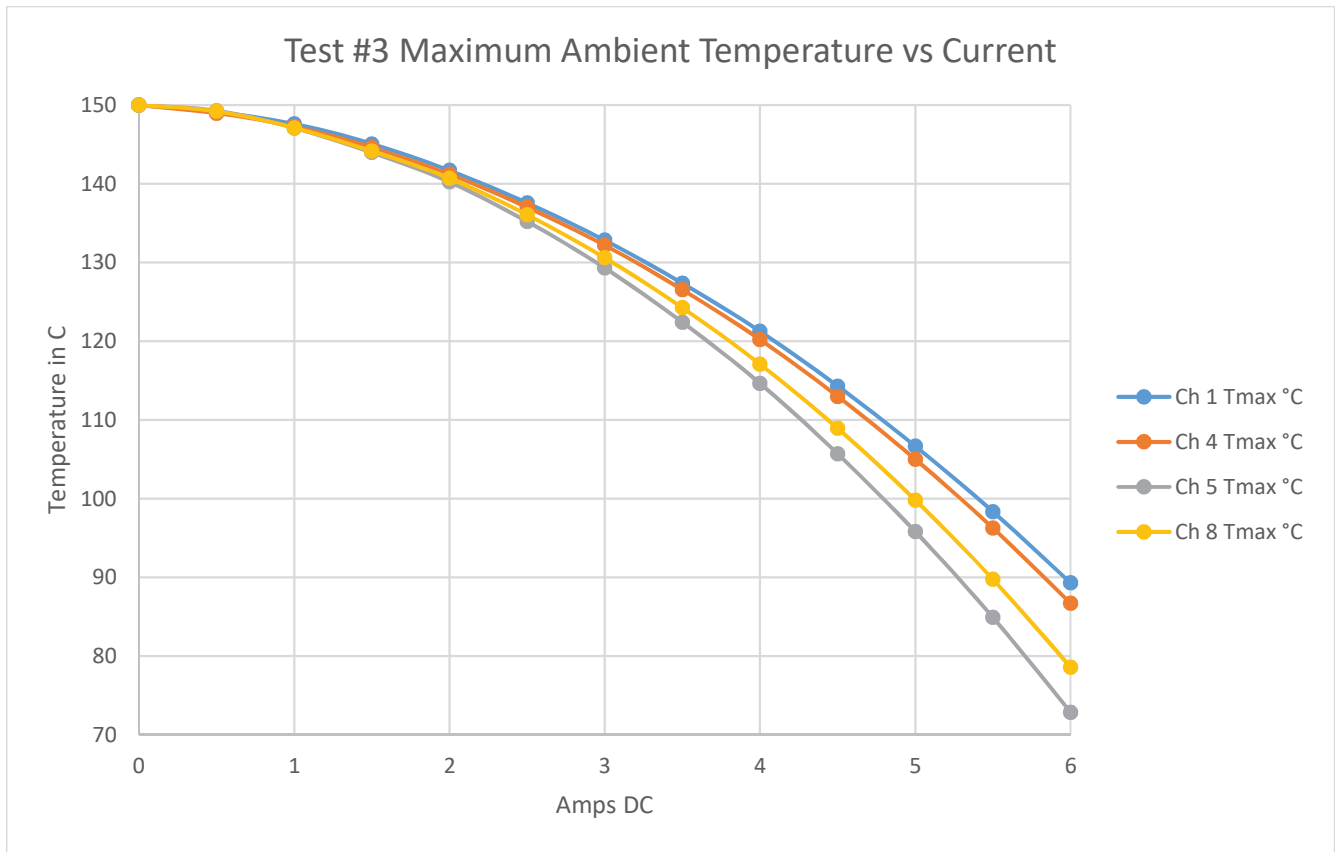


<b>Description</b>	Characterize four (3 Amp) contacts in series
<b>Test Name</b>	Current vs Temperature Test
<b>Part Name</b>	Glenair High Speed Micro-D (GHSM)
<b>Part No.</b>	GHSM2R-15P to GHSM2R-15S
<b>Serial No.</b>	001



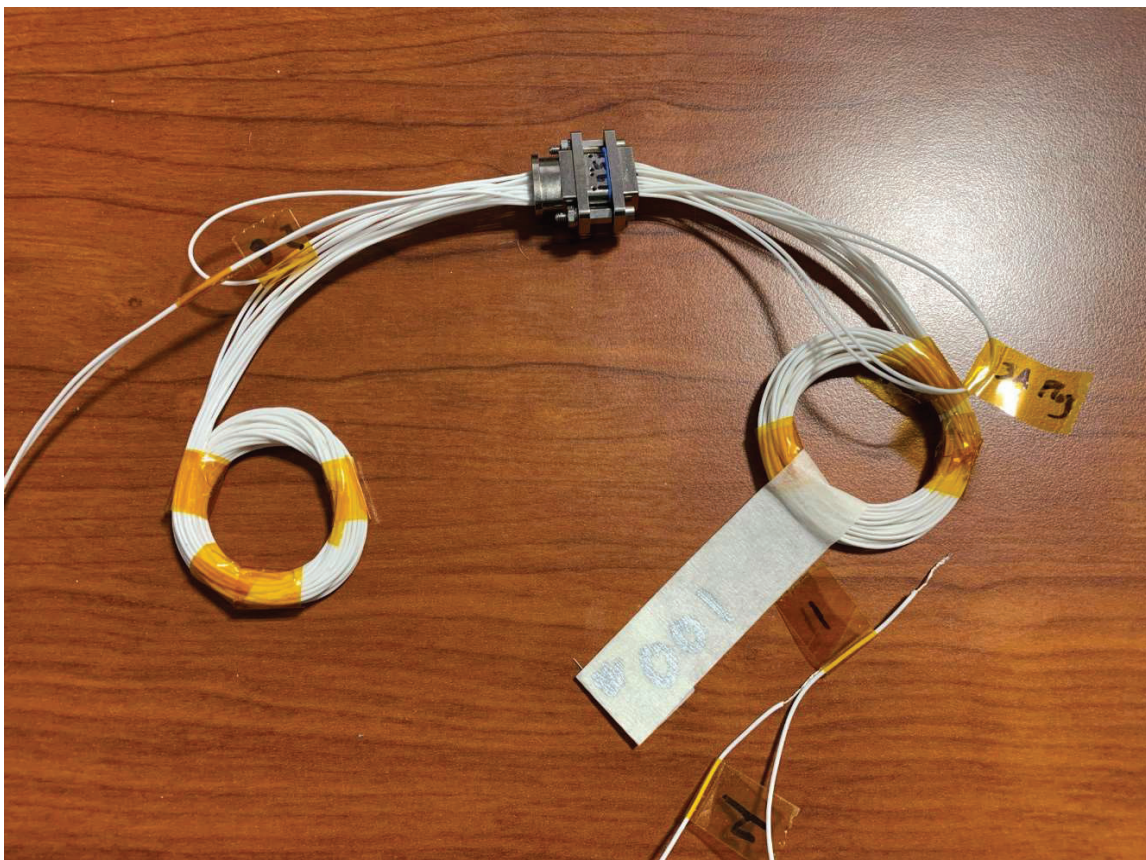
<b>Description</b>	Characterize ten (1 Amp) contacts in series
<b>Test Name</b>	Current vs Temperature Test
<b>Part Name</b>	Glenair High Speed Micro-D (GHSM)
<b>Part No.</b>	GHSM2R-15P to GHSM2R-15S
<b>Serial No.</b>	002





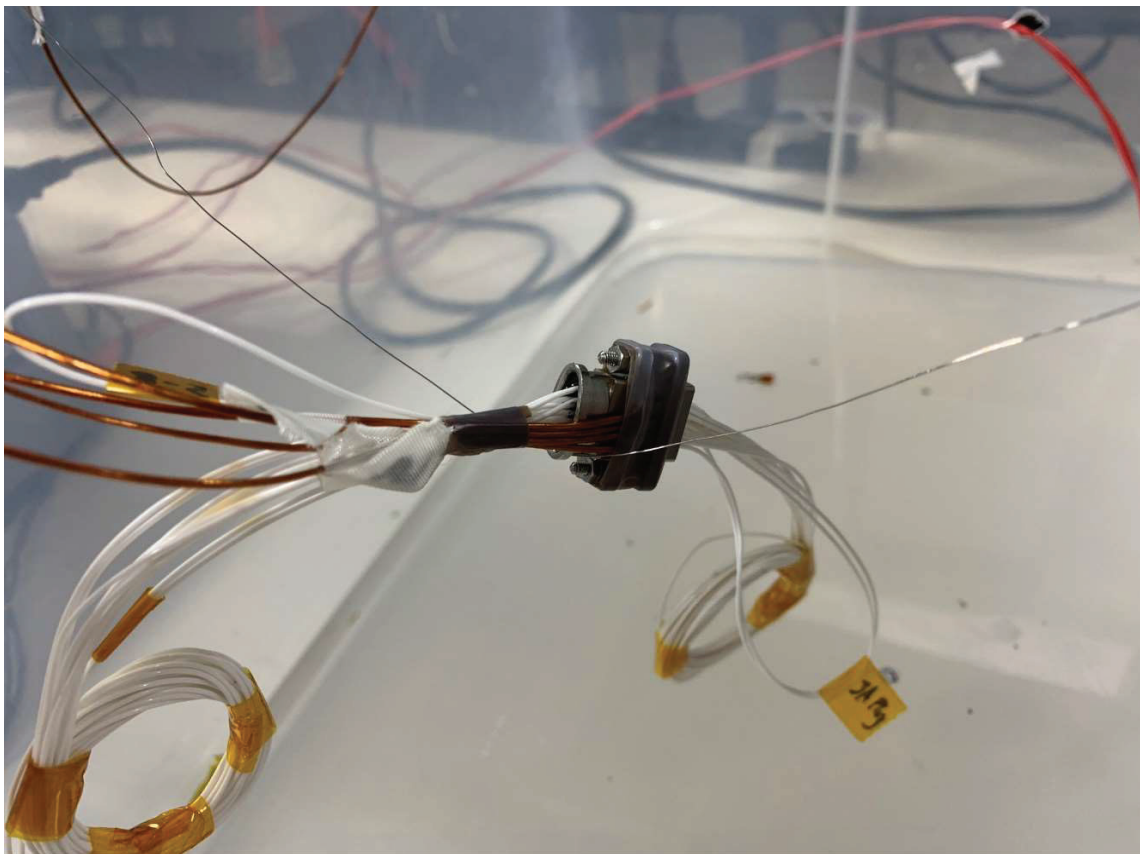
<b>Description</b>	Characterize four (1 Amp) contacts in series
<b>Test Name</b>	Current vs Temperature Test
<b>Part Name</b>	Glenair High Speed Micro-D (GHSM)
<b>Part No.</b>	GHSM2R-15P to GHSM2R-15S
<b>Serial No.</b>	002

### Test Photos



<b>Description</b>	Test Sample 001 as delivered
<b>Image Number</b>	1

### Test Photos



<b>Description</b>	Test Sample 001 in Test enclosure
<b>Image Number</b>	2

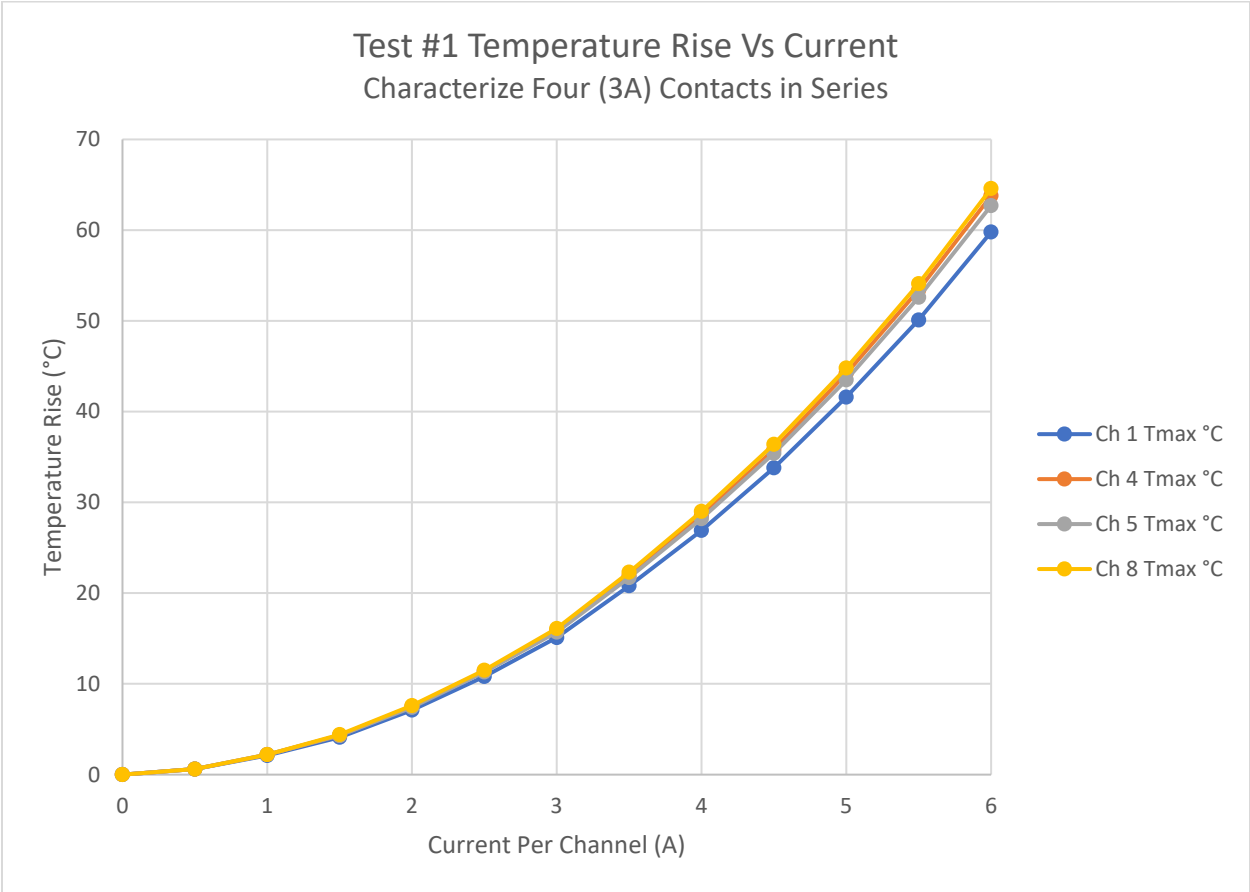
**End of Report**

# ADDENDUM A

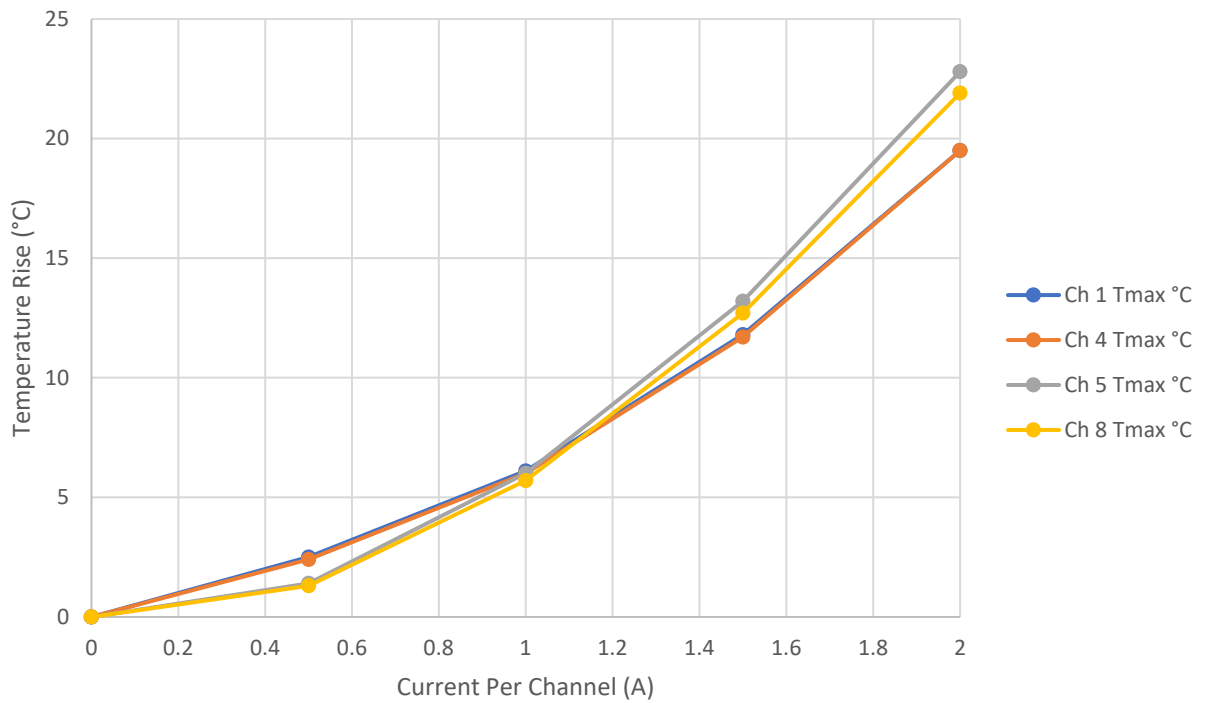
TO

## Test Report GHSM Temperature Rise Versus Current Test GT-20-786

The following three graphs are supplemental to the data provided showing the temperature rise vs. current instead of the maximum ambient temperature vs. current.



Test #2 Temperature Rise Vs Current  
Characterize Ten (1A) Contacts in Series



Test #3 Temperature Rise Vs Current  
Characterize Four (1A) Contacts in Series

