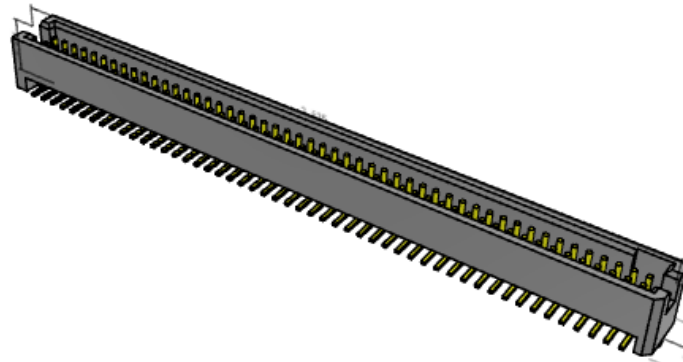
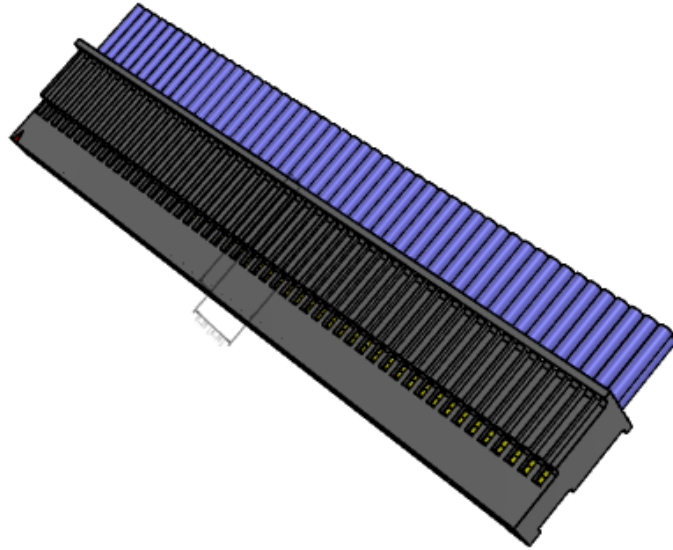




Project Number: Severe Environment Test Report	Tracking Code: CR-732603_Report_Rev_1
Requested by: Chris Wade	Date: 2/25/2024
Part #: SFSDT-50-30-H-12.00-D-NDS\TFM-150-02-S-D	
Part description: SFSDT\TFM	Tech: John Crawford
Test Start: 8/8/2023	Test Completed: 11/1/2023



SEVERE ENVIRONMENT TEST REPORT
SFSDT\TFM
SFSDT-50-30-H-12.00-D-NDS\TFM-150-02-S-D

REVISION HISTORY

DATA	REV.NUM.	DESCRIPTION	ENG
2/25/2024	1	Initial Issue	KH

CERTIFICATION

All instruments and measuring equipment were calibrated to National Institute for Standards and Technology (NIST) traceable standards according to ISO 10012-1 and ANSI/NCSL 2540-1, as applicable.

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SCOPE

To perform the following customer specified tests: Honeywell specified testing per Honeywell Document 56003761 Rev. J. Please see flowcharts.

APPLICABLE DOCUMENTS

Standards: EIA Publication 364, MIL-STD-202G, MIL-STD-810G, VITA 47.1

TEST SAMPLES AND PREPARATION

- 1) All materials were manufactured in accordance with the applicable product specification.
- 2) All test samples were identified and encoded to maintain traceability throughout the test sequences.
- 3) After soldering, the parts to be used for LLCR and DWV/IR testing were cleaned according to TLWI-0001.
- 4) Either an automated cleaning procedure or an ultrasonic cleaning procedure may be used.
- 5) The automated procedure is used with aqueous compatible soldering materials.
- 6) Parts not intended for testing LLCR and DWV/IR are visually inspected and cleaned if necessary.
- 7) Any additional preparation will be noted in the individual test sequences.
- 8) Solder Information: Lead free.
- 9) Samtec Test PCBs used: PCB-112221-TST, PCB-112222-TST

FLOWCHARTS

Mating/Unmating/Durability

Note: With Humidity (Up to 100% RH, 240 hours, 25°C to 65°C)

Note: From MIL-STD-810G: For chamber control purposes, 100% RH implies as close to 100% RH as possible, but not less than 95%.

<u>Group 1</u>		<u>Group 2</u>		<u>Group 3</u>	
SFSDT-50-30-H-12.00-D-NDS TFM-150-02-S-D 8 Assemblies MUD		SFSDT-25-30-H-12.00-D-NDS TFM-125-02-S-D 8 Assemblies MUD		SFSDT-05-30-H-12.00-D-NDS TFM-105-02-S-D 8 Assemblies MUD	
Step	Description	Step	Description	Step	Description
1.	LLCR (2)	1.	Mating/Unmating Force (3)	1.	Mating/Unmating Force (3)
2.	Mating/Unmating Force (3)	2.	Cycles Quantity = 250 Cycles	2.	Cycles Quantity = 250 Cycles
3.	Cycles Quantity = 250 Cycles	3.	Mating/Unmating Force (3)	3.	Mating/Unmating Force (3)
4.	LLCR (2) Max Delta = 15 mOhm				
5.	Thermal Shock (4)				
6.	LLCR (2) Max Delta = 15 mOhm				
7.	Humidity (1) - Non Standard				
8.	LLCR (2) Max Delta = 15 mOhm				
9.	Mating/Unmating Force (3)				

(1) Humidity = Other
240 Hours
+25°C to +65°C @ 95% RH up to 100% RH

(2) LLCR = EIA-364-23
Open Circuit Voltage = 20 mV Max
Test Current = 100 mA Max

(3) Mating/Unmating Force = EIA-364-13

(4) Thermal Shock = EIA-364-32
Exposure Time at Temperature Extremes = 1/2 Hour
Method A, Test Condition = I (-55°C to +85°C)
Test Duration = A-3 (100 Cycles)

FLOWCHARTS Continued**Mechanical Shock/Random Vibration/LLCR**Group 1

SFSDT-50-30-H-12.00-D-NDS

TFM-150-02-S-D

8 Assemblies

VITA 47.1

Step	Description
1.	LLCR ⁽¹⁾
2.	Mechanical Shock ⁽²⁾ - Non Standard
3.	Random Vibration ⁽³⁾ - Non Standard <i>Note: Conditions:</i> 1) 5 Hz to 100 Hz, PSD increasing at 3dB/octave 2) 100 Hz to 1000 Hz 0.10 g ² /Hz 3) 1000 Hz to 2000 Hz PSD decreasing at 3dB/octave
4.	LLCR ⁽¹⁾ Max Delta = 15 mOhm

(1) LLCR = EIA-364-23

Open Circuit Voltage = 20 mV Max

Test Current = 100 mA Max

(2) Mechanical Shock = Other

40G, 11 milliseconds, Half Sine

Number of Shocks = 3 Per Direction, Per Axis, 18 Total

Operating Shock Class OS2

(3) Random Vibration = Other

12 G 'RMS', 5Hz to 2000Hz, 1 Hours/Axis

Vibration Class V3 VITA 47.1

Mechanical Shock/Random Vibration/Event DetectionGroup 1

SFSDT-50-30-H-12.00-D-NDS

TFM-150-02-S-D

8 Assemblies

VITA 47.1

Step	Description
1.	Nanosecond Event Detection (Mechanical Shock) ⁽¹⁾ - Non Standard
2.	Nanosecond Event Detection (Random Vibration) ⁽²⁾ - Non Standard <i>Note: Conditions:</i> 1) 5 Hz to 100 Hz, PSD increasing at 3dB/octave 2) 100 Hz to 1000 Hz 0.10 g ² /Hz 3) 1000 Hz to 2000 Hz PSD decreasing at 3dB/octave

(1) Nanosecond Event Detection (Mechanical Shock) = Other

Use EIA-364-87 for Nanosecond Event Detection:

Test Condition = F (50 nanoseconds at 10 ohms)

40G, 11 milliseconds, Half Sine

(2) Nanosecond Event Detection (Random Vibration) = Other

Use EIA-364-87 for Nanosecond Event Detection:

Test Condition = F (50 nanoseconds at 10 ohms)

Random Vibration: 12 G 'RMS', 5Hz to 2000Hz, 1 Hours/Axis, Vibration Class V3 VITA 47.1

FLOWCHARTS Continued**Temperature Cycling**Group 1

SFSDT-50-30-H-12.00-D-NDS

TFM-150-02-S-D

8 Assemblies

500 Thermal Cycles

*Note: Reference MIL-STD-202G, Method
107, Thermal Shock*

Step Description

1. Continuity (Initial)
2. Temperature Cycles⁽¹⁾ - Non Standard
Cycles = 500 Cycles
Continuity = Monitor for 1 MicroSecond
Interruptions Throughout
3. Continuity (Following Last
Cycle)

(1) Temperature Cycles = Other

Max Temperature = 125° C

Min Temperature = -65° C

Dwell Time = 30 minutes at each extreme

Ramp Rate = 10° C/min

VITA 47.1

Non-Operating Class Temperature**VITA 47.1**Group 1

SFSDT-50-30-H-12.00-D-NDS

TFM-150-02-S-D

8 Assemblies

Non-Operating Class Temperature

Step Description

1. LLCR ⁽¹⁾
Max Delta = 15 mOhm
2. Temperature Cycle
Cycles = 100
Temperature Cycle = -55°C to 105°C
3. LLCR ⁽¹⁾
Max Delta = 15 mOhm
4. Temperature Cycle
Cycles = 100
Temperature Cycles = -65°C to 125°C
5. LLCR ⁽¹⁾
Max Delta = 15 mOhm

(1) LLCR = EIA-364-23

Open Circuit Voltage = 20 mV Max

Test Current = 100 mA Max

FLOWCHARTS Continued**DWV @ Altitude****Pin to Pin**Group 1

SFSDT-50-30-H-12.00-D-NDS
TFM-150-02-S-D
3 Assemblies
Custom Group

Step Description

1. DWV at Test Voltage (1) - Non
Standard
Note: Test Voltage to be 300 VAC

Row to RowGroup 2

SFSDT-50-30-H-12.00-D-NDS
TFM-150-02-S-D
3 Assemblies
Custom Group

Step Description

1. DWV at Test Voltage (2) - Non
Standard
Note: Test Voltage to be 300 VAC

- (1) DWV at Test Voltage = Other
Test Condition IV= 70,000 ft
DWV test voltage is equal to 75% of the lowest breakdown voltage
Test voltage applied for 60 seconds
- (2) DWV at Test Voltage = Other
Test Condition IV= 70,000 ft
DWV test voltage is equal to 75% of the lowest breakdown voltage
Test voltage applied for 60 seconds

Electrostatic Discharge (ESD)Group 1

SFSDT-50-30-H-12.00-D-NDS
TFM-150-02-S-D
8 Assemblies
EN61000-4-2

Step Description

1. Exposure To 5kV, 10kV, 15kV,
Repeat 10 Times
Note: The connector shall not be susceptible to damage by ESD events from 0 to 15kV as discharged from a 150 pf capacitor through a 330 ohm resistor.

ATTRIBUTE DEFINITIONS

The following is a brief, simplified description of attributes.

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

To determine if the sockets can operate at its rated voltage and withstand momentary over potentials due to switching, surges, and similar phenomenon. Separate samples are used to evaluate the effect of environmental stresses so not to influence the readings from arcing that occurs during the measurement process.

- 1) PROCEDURE:
 - a. Reference document: other, *Withstanding Voltage Test Procedure for Electrical Connectors*.
 - b. Test Conditions IV=70000 ft
 - c. Test voltage applied for 60 seconds.

LLCR:

- 1) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
- 2) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
- 3) The following guidelines are used to categorize the changes in LLCR as a result from stressing.
 - a. $\leq +5.0$ mOhms: -----Stable
 - b. $+5.1$ to $+10.0$ mOhms:-----Minor
 - c. $+10.1$ to $+15.0$ mOhms: -----Acceptable
 - d. $+15.1$ to $+50.0$ mOhms: -----Marginal
 - e. $+50.1$ to $+1000$ mOhms: -----Unstable
 - f. $>+1000$ mOhms:-----Open Failure

MATING/UNMATING:

- 1) Reference document: EIA-364-13, *Mating and Unmating Forces Test Procedure for Electrical Connectors*.
- 2) The full insertion position was to within 0.003” to 0.004” of the plug bottoming out in the receptacle to prevent damage to the system under test.
- 3) One of the mating parts is secured to a floating X-Y table to prevent damage during cycling.

ATTRIBUTE DEFINITIONS Continued

The following is a brief, simplified description of attributes.

TEMPERATURE CYCLES:

- 1) MIL-STD-202G, Method 107, *Thermal Shock (Temperature Cycling) Test Procedure for Electrical Connectors*.
- 2) Test Condition: -65°C to +125°C.
- 3) Test Time: ½ hour dwell at each temperature extreme.
- 4) Test Duration: 500 Cycles
- 5) All test samples are pre-conditioned at ambient.
- 6) All test samples are exposed to environmental stressing in the mated condition.

TEMPERATURE CYCLES:

- 1) OTHER, *Thermal Shock (Temperature Cycling) Test Procedure for Electrical Connectors*.
- 2) Test Condition: -55°C to +105°C and -65°C to +125°C.
- 3) Test Time: ½ hour dwell at each temperature extreme.
- 4) Test Duration: 100 Cycles
- 5) All test samples are pre-conditioned at ambient.
- 6) All test samples are exposed to environmental stressing in the mated condition.

MECHANICAL SHOCK (Specified Pulse):

- 1) Other method, *Mechanical Shock Test Procedure for Electrical Connectors*
- 2) Peak Value: 40 G
- 3) Duration: 11 Milliseconds
- 4) Wave Form: Half Sine
- 5) Velocity: Operating Shock Class OS2
- 6) Number of Shocks: 3 Shocks / Direction, 3 Axis (18 Total)

VIBRATION:

- 1) Other method, *Vibration Test Procedure for Electrical Connectors*
- 2) G 'RMS': 12
- 3) Frequency: 5 to 2000 Hz.
- 4) Vibration Class V3 VITA 47.1
- 5) Duration: 1 Hour per axis (3 axis total).

NANOSECOND-EVENT DETECTION:

- 1) Reference document: EIA-364-87, *Nanosecond-Event Detection for Electrical Connectors*
- 2) Prior to test, the samples were characterized to assure the low nanosecond event being monitored will trigger the detector.
- 3) After characterization it was determined the test samples could be monitored for 50 nanosecond events

ELECTROSTATIC DISCHARGE:

- 1) Reference Document: EN61000-4-2.
- 2) Connector shall not be susceptible to damage by electrostatic discharge (ESD) events from 0 to 15kV as discharged from a 150-pf capacitor through a 330-ohm resistor.
- 3) Any damage shall be noted.

RESULTS**Mating-Unmating Force****Group 1**

- **Initial**
 - **Mating**
 - **Min** ----- 9.05 Lbs
 - **Max** ----- 9.81 Lbs
 - **Unmating**
 - **Min** ----- 8.80 Lbs
 - **Max** ----- 9.16 Lbs
- **After 250 Cycles**
 - **Mating**
 - **Min** ----- 8.73 Lbs
 - **Max** ----- 9.35 Lbs
 - **Unmating**
 - **Min** ----- 7.69 Lbs
 - **Max** ----- 8.16 Lbs
- **Humidity**
 - **Mating**
 - **Min** ----- 7.76 Lbs
 - **Max** ----- 10.74 Lbs
 - **Unmating**
 - **Min** ----- 7.63 Lbs
 - **Max** ----- 8.18 Lbs

Group 2

- **Initial**
 - **Mating**
 - **Min** ----- 4.74 Lbs
 - **Max** ----- 5.07 Lbs
 - **Unmating**
 - **Min** ----- 3.87 Lbs
 - **Max** ----- 4.71 Lbs
- **After 250 Cycles**
 - **Mating**
 - **Min** ----- 6.64 Lbs
 - **Max** ----- 7.55 Lbs
 - **Unmating**
 - **Min** ----- 6.03 Lbs
 - **Max** ----- 7.39 Lbs

Group 3

- **Initial**
 - **Mating**
 - **Min** ----- 1.22 Lbs
 - **Max** ----- 1.43 Lbs
 - **Unmating**
 - **Min** ----- 1.11 Lbs
 - **Max** ----- 1.27 Lbs
- **After 250 Cycles**
 - **Mating**
 - **Min** ----- 1.90 Lbs
 - **Max** ----- 2.47 Lbs
 - **Unmating**
 - **Min** ----- 1.80 Lbs
 - **Max** ----- 2.34 Lbs

RESULTS Continued**Temperature Cycling****Continuity Initial**

- No Interruptions -----Passed

Continuity Following 500 Cycles

- No Interruptions -----Passed

DWV @ Altitude**• Minimums**

- Test Voltage -----300 VAC
- Altitude Tested -----70000 ft.

Pin to Pin

- DWV-----Passed

Row to Row

- DWV-----Passed

Electrostatic Discharge**5kV**

- No Damage -----Passed

10kV

- No Damage -----Passed

15kV

- No Damage -----Passed

RESULTS Continued**LLCR Mating/Unmating Durability Group (200 LLCR test points)**

- **Initial** ----- 56.79 mOhms Max
- **Durability, 250 Cycles**
 - **<= +5.0 mOhms**-----200 Points ----- Stable
 - **+5.1 to +10.0 mOhms** -----0 Points ----- Minor
 - **+10.1 to +15.0 mOhms** -----0 Points ----- Acceptable
 - **+15.1 to +50.0 mOhms** -----0 Points ----- Marginal
 - **+50.1 to +1000 mOhms**-----0 Points ----- Unstable
 - **>+1000 mOhms**-----0 Points ----- Open Failure
- **Thermal Shock**
 - **<= +5.0 mOhms**-----198 Points ----- Stable
 - **+5.1 to +10.0 mOhms** -----2 Points ----- Minor
 - **+10.1 to +15.0 mOhms** -----0 Points ----- Acceptable
 - **+15.1 to +50.0 mOhms** -----0 Points ----- Marginal
 - **+50.1 to +1000 mOhms**-----0 Points ----- Unstable
 - **>+1000 mOhms**-----0 Points ----- Open Failure
- **Humidity**
 - **<= +5.0 mOhms**-----198 Points ----- Stable
 - **+5.1 to +10.0 mOhms** -----2 Points ----- Minor
 - **+10.1 to +15.0 mOhms** -----0 Points ----- Acceptable
 - **+15.1 to +50.0 mOhms** -----0 Points ----- Marginal
 - **+50.1 to +1000 mOhms**-----0 Points ----- Unstable
 - **>+1000 mOhms**-----0 Points ----- Open Failure

LLCR Non-Operating Class Temperature Group (200 LLCR test points)

- **Initial** ----- 57.11 mOhms Max
- **Temperature Cycle1 (-55°C to +105°C)**
 - **<= +5.0 mOhms**-----187 Points ----- Stable
 - **+5.1 to +10 mOhms** ----- 12 Points ----- Minor
 - **+10 to +15.0 mOhms**-----1 Points ----- Acceptable
 - **+15.1 to +50.0 mOhms** -----0 Points ----- Marginal
 - **+50.1 to +1000 mOhms**-----0 Points ----- Unstable
 - **>+1000 mOhms**-----0 Points ----- Open Failure
- **Temperature Cycle2 (-65°C to +125°C)**
 - **<= +5.0 mOhms**-----186 Points ----- Stable
 - **+5.1 to +10 mOhms** -----9 Points ----- Minor
 - **+10 to +15.0 mOhms**-----5 Points ----- Acceptable
 - **+15.1 to +50.0 mOhms** -----0 Points ----- Marginal
 - **+50.1 to +1000 mOhms**-----0 Points ----- Unstable
 - **>+1000 mOhms**-----0 Points ----- Open Failure

RESULTS Continued**LLCR Shock & Vibration Group (200 LLCR test points)**

- **Initial** ----- 109.79 mOhms Max
- **Shock & Vibration**
 - **<= +5.0 mOhms**----- 200 Points ----- Stable
 - **+5.1 to +10.0 mOhms** ----- 0 Points ----- Minor
 - **+10.1 to +15.0 mOhms** ----- 0 Points ----- Acceptable
 - **+15.1 to +50.0 mOhms** ----- 0 Points ----- Marginal
 - **+50.1 to +1000 mOhms**----- 0 Points ----- Unstable
 - **>+1000 mOhms**----- 0 Points ----- Open Failure

Mechanical Shock & Random Vibration:

- **Shock**
 - **No Damage**----- Pass
 - **50 Nanoseconds** ----- Pass
- **Vibration**
 - **No Damage**----- Pass
 - **50 Nanoseconds** ----- Pass

DATA SUMMARIES**MATING-UNMATING FORCE:****Group 1**

	Initial				250 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newton	Force (Lbs)	Newton	Force (Lbs)	Newton	Force (Lbs)	Newton	Force (Lbs)
Minimum	40.25	9.05	39.14	8.80	38.83	8.73	34.21	7.69
Maximum	43.63	9.81	40.74	9.16	41.59	9.35	36.30	8.16
Average	42.04	9.45	39.99	8.99	40.63	9.13	35.32	7.94
St Dev	1.01	0.23	0.62	0.14	0.82	0.19	0.75	0.17
Count	8	8	8	8	8	8	8	8

	Humidity			
	Mating		Unmating	
	Newton	Force (Lbs)	Newton	Force (Lbs)
Minimum	34.52	7.76	33.94	7.63
Maximum	47.77	10.74	36.38	8.18
Average	40.30	9.06	35.25	7.93
St Dev	6.24	1.40	1.19	0.27
Count	4	4	4	4

Group 2

	Initial				250 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newton	Force (Lbs)	Newton	Force (Lbs)	Newton	Force (Lbs)	Newton	Force (Lbs)
Minimum	21.08	4.74	17.21	3.87	29.53	6.64	26.82	6.03
Maximum	22.55	5.07	20.95	4.71	33.58	7.55	32.87	7.39
Average	21.82	4.91	19.28	4.34	31.76	7.14	29.25	6.58
St Dev	0.49	0.11	1.09	0.24	1.45	0.33	1.86	0.42
Count	8	8	8	8	8	8	8	8

Group 3

	Initial				250 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newton	Force (Lbs)	Newton	Force (Lbs)	Newton	Force (Lbs)	Newton	Force (Lbs)
Minimum	5.43	1.22	4.94	1.11	8.45	1.90	8.01	1.80
Maximum	6.36	1.43	5.65	1.27	10.99	2.47	10.41	2.34
Average	5.79	1.30	5.24	1.18	10.10	2.27	9.18	2.06
St Dev	0.28	0.06	0.24	0.05	0.90	0.20	0.81	0.18
Count	8	8	8	8	8	8	8	8

DATA SUMMARIES Continued**Temperature Cycling**

Temperature Cycling Event Detection Summary	
Contacts tested	400
Test Conditions	Continuity (Monitor for 1 Microsecond Interruptions Throughout)
Temperature	Min Temp = -65°C / Max Temp = 125°C
Dwell Time	30 Minutes at each Extreme
Ramp Rate	10°C/min
Total Events	No IPC Events Observed On The 8 Samples

DWV @ Altitude

Altitude Tested at = 70,000 feet	
Test Voltage= 300	
Pin to Pin	Row to Row
Mated	Mated
300	300
300	300
300	300

Electrostatic Discharge:

Electrostatic Discharge (ESD) Summary	
Assemblies tested	8
Test Conditions	Exposure to 5kV, 10kV, and 15kV (Repeated 10 Times)
5kV	No Damage
10kV	No Damage
15kV	No Damage
Pass/Fail	Pass

DATA SUMMARIES**LLCR Mating/Unmating Durability Group**

- 1). A total of 200 points were measured.
- 2). EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
- 3). A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
- 4). The following guidelines are used to categorize the changes in LLCR as a result from stressing.
 - a. $\leq +5.0$ mOhms:-----Stable
 - b. $+5.1$ to $+10.0$ mOhms:-----Minor
 - c. $+10.1$ to $+15.0$ mOhms:-----Acceptable
 - d. $+15.1$ to $+50.0$ mOhms:-----Marginal
 - e. $+50.1$ to $+1000$ mOhms-----Unstable
 - f. $> +1000$ mOhms:-----Open Failure

LLCR Measurement Summaries by Pin Type				
Date	2023/8/8	2023/8/10	2023/10/9	2023/10/20
Room Temp (Deg C)	23	22	22	22
Rel Humidity (%)	52	54	38	45
Technician	John Crawford	John Crawford	John Crawford	John Crawford
mOhm values	Actual	Delta	Delta	Delta
	Initial	250 Cycles	Therm Shck	Humidity
Pin Type: Signal 1				
Average	53.76	0.67	1.37	1.39
St. Dev.	1.23	0.62	1.13	1.16
Min	49.76	0	0	0.01
Max	56.79	2.79	6.15	7.36
Summary Count	200	200	200	200
Total Count	200	200	200	200

LLCR Delta Count by Category						
	Stable	Minor	Acceptable	Marginal	Unstable	Open
mOhms	≤ 5	>5 & ≤ 10	>10 & ≤ 15	>15 & ≤ 50	>50 & ≤ 1000	>1000
250 Cycles	200	0	0	0	0	0
Therm Shck	198	2	0	0	0	0
Humidity	198	2	0	0	0	0

DATA SUMMARIES Continued**LLCR Non-Operating Class Temperature Group:**

- 1) A total of 200 points were measured.
- 2) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
- 3) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
- 4) The following guidelines are used to categorize the changes in LLCR as a result from stressing.
 - a. $\leq +5.0$ mOhms: -----Stable
 - b. $+5.1$ to $+10.0$ mOhms: -----Minor
 - c. $+10.1$ to $+15.0$ mOhms: -----Acceptable
 - d. $+15.1$ to $+50.0$ mOhms: -----Marginal
 - e. $+50.1$ to $+1000$ mOhms -----Unstable
 - f. $>+1000$ mOhms: -----Open Failure

LLCR Measurement Summaries by Pin Type				
Date	2023/8/8	2023/10/25	2023/11/1	
Room Temp (Deg C)	22	22	22	
Rel Humidity (%)	50	42	30	
Technician	John Crawford	John Crawford	John Crawford	
mOhm values	Actual	Delta	Delta	
	LLCR Initial	NOCT - Temperature Cycle 1	NOCT - Temperature Cycle 2	
Pin Type: Signal 1				
Average	53.7	1.82	1.94	
St. Dev.	1.22	1.78	2.19	
Min	49.03	0	0.01	
Max	57.11	12.87	12.5	
Summary Count	200	200	200	
Total Count	200	200	200	

LLCR Delta Count by Category						
	Stable	Minor	Acceptable	Marginal	Unstable	Open
mOhms	≤ 5	>5 & ≤ 10	>10 & ≤ 15	>15 & ≤ 50	>50 & ≤ 1000	>1000
NOCT - Temperature Cycle 1	187	12	1	0	0	0
NOCT - Temperature Cycle 2	186	9	5	0	0	0

DATA SUMMARIES Continued**LLCR Shock & Vibration Group**

- 1) A total of 200 points were measured.
- 2) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
- 3) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
- 4) The following guidelines are used to categorize the changes in LLCR as a result from stressing.
 - a. $\leq +5.0$ mOhms:-----Stable
 - b. $+5.1$ to $+10.0$ mOhms:-----Minor
 - c. $+10.1$ to $+15.0$ mOhms:-----Acceptable
 - d. $+15.1$ to $+50.0$ mOhms:-----Marginal
 - e. $+50.1$ to $+1000$ mOhms-----Unstable
 - f. $>+1000$ mOhms:-----Open Failure

LLCR Measurement Summaries by Pin Type			
Date	2024/1/30	2024/2/2	
Room Temp (Deg C)	23	22	
Rel Humidity (%)	32	35	
Technician	John Crawford	John Crawford	
mOhm values	Actual	Delta	
	Initial	Shock-Vib	
Pin Type: Signal 1			
Average	104.54	0.98	
St. Dev.	1.42	0.67	
Min	100.76	0.01	
Max	109.79	3.49	
Summary Count	200	200	
Total Count	200	200	

LLCR Delta Count by Category						
	Stable	Minor	Acceptable	Marginal	Unstable	Open
mOhms	≤ 5	>5 & ≤ 10	>10 & ≤ 15	>15 & ≤ 50	>50 & ≤ 1000	>1000
Shock-Vib	200	0	0	0	0	0

EQUIPMENT AND CALIBRATION SCHEDULES**Equipment #:** TCT-04**Description:** Dillon Quantrol TC21 25-1000 mm/min series test stand**Manufacturer:** Dillon Quantrol**Model:** TC2 I series test stand**Serial #:** 04-1041-04**Accuracy:** Speed Accuracy: +/- 5% of indicated speed; Speed Accuracy: +/- 5% of indicated speed;
... Last Cal: 05/29/2023, Next Cal: 05/29/2024**Equipment #:** MO-11**Description:** Switch/Multimeter**Manufacturer:** Keithley**Model:** 3706**Serial #:** 120169**Accuracy:** See Manual

... Last Cal: 09/11/2023, Next Cal: 09/11/2024

Equipment #: THC-05**Description:** Temperature/Humidity Chamber (Chamber Room)**Manufacturer:** Thermotron**Model:** SM-8-3800**Serial #:** 05 23 00 02**Accuracy:** See Manual

... Last Cal: 11/14/2023, Next Cal: 05/31/2024

Equipment #: TSC-01**Description:** Vertical Thermal Shock Chamber**Manufacturer:** Cincinnati Sub Zero**Model:** VTS-3-6-6-SC/AC**Serial #:** 10-VT14993**Accuracy:** See Manual

... Last Cal: 06/30/2023, Next Cal: 06/30/2024

Equipment #: HPT-01**Description:** Hipot Safety Tester**Manufacturer:** Vitrek**Model:** V73**Serial #:** 019808**Accuracy:**

... Last Cal: 05/15/2023, Next Cal: 05/15/2024

Equipment #: SVC-01**Description:** Shock & Vibration Table**Manufacturer:** Data Physics**Model:** LE-DSA-10-20K**Serial #:** 10037**Accuracy:** See Manual

... Last Cal: 04/22/2023, Next Cal: 04/22/2024

EQUIPMENT AND CALIBRATION SCHEDULES**Equipment #:** ACLM-01**Description:** Accelerometer**Manufacturer:** PCB Piezotronics**Model:** 352C03**Serial #:** 115819**Accuracy:** See Manual

... Last Cal: 07/18/2023, Next Cal: 07/18/2024

Equipment #: ED-03**Description:** Event Detector**Manufacturer:** Analysis Tech**Model:** 32EHD**Serial #:** 1100604**Accuracy:** See Manual

... Last Cal: 10/31/2023, Next Cal: 10/31/2024