



Project Number: Severe Environment Test Report	Tracking Code: CR-971604_Report_Rev_1
Requested by: Tyler Lang	Date: 4/1/2024
Part #: B1SDT-30-28-H-06.0/P1M-30-01-S-D-RA-TR	
Part description: B1SDT/P1M	Tech: John Crawford
Test Start: 8/20/2023	Test Completed: 10/1/2023



SEVERE ENVIRONMENT TEST REPORT
B1SDT/P1M
B1SDT-30-28-H-06.0/P1M-30-01-S-D-RA-TR

Tracking Code: CR-971604_Report_Rev_1	Part #: B1SDT-30-28-H-06.0/P1M-30-01-S-D-RA-TR
Part description: B1SDT/P1M	

REVISION HISTORY

DATA	REV.NUM.	DESCRIPTION	ENG
11/14/2023	1	Initial Issue	PC

Tracking Code: CR-971604_Report_Rev_1	Part #: B1SDT-30-28-H-06.0/P1M-30-01-S-D-RA-TR
Part description: B1SDT/P1M	

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 tests: Severe Environment test. Please see test plan.

APPLICABLE DOCUMENTS

Standards: EIA Publication 364; 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 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 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-111718-TST/PCB-111720-TST/ PCB-112867-TST-XX.

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%.

Group 1

B1SDT-30-28-H-06.0
P1M-30-01-S-D-RA-TR
8 Assemblies
60 Positions

Group 2

B1SDT-10-28-H-06.0
P1M-10-01-S-D-RA-TR
8 Assemblies
20 Positions

Step	Description	Step	Description
1.	LLCR (2)	1.	Mating/Unmating Force (3)
2.	Mating/Unmating Force (3)	2.	Cycles Quantity = 250 Cycles
3.	Cycles Quantity = 250 Cycles	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

B1SDT-30-28-H-12.0

P1M-30-01-S-D-RA-TR

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

B1SDT-30-28-H-12.0

P1M-30-01-S-D-RA-TR

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

B1SDT-30-28-H-06.0-2

P1M-30-01-S-D-RA-TR

8 Assemblies

500 Thermal Cycles

*Note: Follow procedure as described in
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

B1SDT-30-28-H-06.0

P1M-30-01-S-D-RA-TR

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

B1SDT-10-28-H-06.0

P1M-10-01-S-D-RA-TR

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

B1SDT-10-28-H-06.0

P1M-10-01-S-D-RA-TR

3 Assemblies

Custom Group

Step Description

1. DWV at Test Voltage (1) - 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

Electrostatic Discharge (ESD)Group 1

B1SDT-30-28-H-06.0

P1M-30-01-S-D-RA-TR

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.

THERMAL SHOCK:

- 1) OTHER, *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.

THERMAL SHOCK (NON-OPERATING CLASS TEMPERATURE):

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

THERMAL SHOCK:

- 1) EIA-364-32, *Thermal Shock (Temperature Cycling) Test Procedure for Electrical Connectors*.
- 2) Test Condition I: -55°C to +85°C.
- 3) Test Time: ½ hour dwell at each temperature extreme.
- 4) Test Duration: A-3 100 Cycles
- 5) All test samples are pre-conditioned at ambient.
- 6) All test samples are exposed to environmental stressing in the mated condition.

HUMIDITY:

- 1) Reference document: Other, *Humidity Test Procedure for Electrical Connectors*.
- 2) Test Condition, 240 Hours.
- 3) Method, +25° C to + 65° C, 95% to 100% Relative Humidity excluding sub-cycles 7a.
- 4) All samples are pre-conditioned at ambient.
- 5) All test samples are exposed to environmental stressing in the mated condition.

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.

MECHANICAL SHOCK (Specified Pulse):

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

VIBRATION:

- 1) Reference document: other, *Vibration Test Procedure for Electrical Connectors*
- 2) Test Condition: V3 vita 47.1.
- 3) Power Spectral Density: 0.1 G² / Hz
- 4) G ‘RMS’: 12
- 5) Frequency: 5 to 2000 Hz
- 6) Duration: 1 Hours per axis (3 axis total)

ATTRIBUTE DEFINITIONS Continued

The following is a brief, simplified description of attributes.

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

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 $+7.5$ mOhms: -----Minor
 - c. $+7.6$ to $+10.0$ mOhms: -----Acceptable
 - d. $+10.1$ to $+50.0$ mOhms: -----Marginal
 - e. $+50.1$ to $+2000$ mOhms: -----Unstable
 - f. $>+2000$ mOhms: -----Open Failure

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.

ELECTROSTATIC DISCHARGE:

- 1) Reference Document: EN61000-4-2, VITA 47
- 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 Forces

Mating Unmating Durability Group

- **Initial**
 - **Mating**
 - **Min** ----- 8.87 lbs
 - **Max** ----- 9.63 lbs
 - **Unmating**
 - **Min** ----- 9.77 lbs
 - **Max** ----- 10.48 lbs
- **After 250 Cycles**
 - **Mating**
 - **Min** ----- 8.75 lbs
 - **Max** ----- 9.49 lbs
 - **Unmating**
 - **Min** ----- 7.76 lbs
 - **Max** ----- 8.21 lbs
- **After Humidity**
 - **Mating**
 - **Min** ----- 6.83 lbs
 - **Max** ----- 8.04 lbs
 - **Unmating**
 - **Min** ----- 5.77 lbs
 - **Max** ----- 6.62 lbs

Mating Unmating Basic Group (B1SDT-10-28-H-06.0/ P1M-10-01-S-D-RA-TR)

- **Initial**
 - **Mating**
 - **Min** ----- 3.04 lbs
 - **Max** ----- 4.00 lbs
 - **Unmating**
 - **Min** ----- 2.98 lbs
 - **Max** ----- 3.96 lbs
- **After 250 Cycles**
 - **Mating**
 - **Min** ----- 3.77 lbs
 - **Max** ----- 4.77 lbs
 - **Unmating**
 - **Min** ----- 2.92 lbs
 - **Max** ----- 3.82 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 (192 LLCR test points)

- **Initial** ----- 39.36 mOhms Max
- **Durability, 250 Cycles**
 - **<= +5.0 mOhms** ----- 192 Points ----- Stable
 - **+5.1 to +7.5 mOhms** ----- 0 Points ----- Minor
 - **+7.6 to +10.0 mOhms** ----- 0 Points ----- Acceptable
 - **+10.1 to +50.0 mOhms** ----- 0 Points ----- Marginal
 - **+50.1 to +2000 mOhms** ----- 0 Points ----- Unstable
 - **>+2000 mOhms** ----- 0 Points ----- Open Failure
- **Thermal Shock**
 - **<= +5.0 mOhms** ----- 192 Points ----- Stable
 - **+5.1 to +7.5 mOhms** ----- 0 Points ----- Minor
 - **+7.6 to +10.0 mOhms** ----- 0 Points ----- Acceptable
 - **+10.1 to +50.0 mOhms** ----- 0 Points ----- Marginal
 - **+50.1 to +2000 mOhms** ----- 0 Points ----- Unstable
 - **>+2000 mOhms** ----- 0 Points ----- Open Failure
- **Humidity**
 - **<= +5.0 mOhms** ----- 192 Points ----- Stable
 - **+5.1 to +7.5 mOhms** ----- 0 Points ----- Minor
 - **+7.6 to +10.0 mOhms** ----- 0 Points ----- Acceptable
 - **+10.1 to +50.0 mOhms** ----- 0 Points ----- Marginal
 - **+50.1 to +2000 mOhms** ----- 0 Points ----- Unstable
 - **>+2000 mOhms** ----- 0 Points ----- Open Failure

RESULTS Continued

LLCR Vibration and Mechanical Shock Group (192 LLCR test points)

- **Initial** ----- 69.76 mOhms Max
- **Shock and Vibe**
 - <= +5.0 mOhms ----- 187 Points ----- Stable
 - +5.1 to +7.5 mOhms ----- 5 Points ----- Minor
 - +7.6 to +10.0 mOhms ----- 0 Points ----- Acceptable
 - +10.1 to +50.0 mOhms ----- 0 Points ----- Marginal
 - +50.1 to +2000 mOhms ----- 0 Points ----- Unstable
 - >+2000 mOhms ----- 0 Points ----- Open Failure

Mechanical Shock & Random Vibration:

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

LLCR Non-Operating Class Temperature Group (192 LLCR test points)

- **Initial** ----- 39.4 mOhms Max
- **Temperature Cycle1 (-55°C to +105°C)**
 - <= +5.0 mOhms ----- 192 Points ----- Stable
 - +5.1 to +7.5 mOhms ----- 0 Points ----- Minor
 - +7.6 to +10.0 mOhms ----- 0 Points ----- Acceptable
 - +10.1 to +50.0 mOhms ----- 0 Points ----- Marginal
 - +50.1 to +2000 mOhms ----- 0 Points ----- Unstable
 - >+2000 mOhms ----- 0 Points ----- Open Failure
- **Temperature Cycle2 (-65°C to +125°C)**
 - <= +5.0 mOhms ----- 192 Points ----- Stable
 - +5.1 to +7.5 mOhms ----- 0 Points ----- Minor
 - +7.6 to +10.0 mOhms ----- 0 Points ----- Acceptable
 - +10.1 to +50.0 mOhms ----- 0 Points ----- Marginal
 - +50.1 to +2000 mOhms ----- 0 Points ----- Unstable
 - >+2000 mOhms ----- 0 Points ----- Open Failure

DATA SUMMARIES

**MATING/UNMATING:
Mating Unmating Durability Group**

	Initial				250 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newton	Force (Lbs)	Newton	Force (Lbs)	Newton	Force (Lbs)	Newton	Force (Lbs)
Minimum	39.45	8.87	43.46	9.77	38.92	8.75	34.52	7.76
Maximum	42.83	9.63	46.62	10.48	42.21	9.49	36.52	8.21
Average	40.79	9.17	44.46	10.00	40.72	9.15	35.23	7.92
St Dev	1.06	0.24	1.11	0.25	1.29	0.29	0.61	0.14
Count	8	8	8	8	8	8	8	8

	After Humidity			
	Mating		Unmating	
	Newton	Force (Lbs)	Newton	Force (Lbs)
Minimum	30.38	6.83	25.66	5.77
Maximum	35.76	8.04	29.45	6.62
Average	32.72	7.36	27.57	6.20
St Dev	1.85	0.42	1.26	0.28
Count	8	8	8	8

Mating Unmating Basic Group (B1SDT-10-28-H-06.0/ P1M-10-01-S-D-RA-TR)

	Initial				250 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newton	Force (Lbs)	Newton	Force (Lbs)	Newton	Force (Lbs)	Newton	Force (Lbs)
Minimum	13.52	3.04	13.26	2.98	16.77	3.77	12.99	2.92
Maximum	17.79	4.00	17.61	3.96	21.22	4.77	16.99	3.82
Average	15.67	3.52	14.95	3.36	19.30	4.34	15.35	3.45
St Dev	1.49	0.34	1.60	0.36	1.60	0.36	1.31	0.29
Count	8	8	8	8	8	8	8	8

DATA SUMMARIES Continued

Temperature Cycling

File name	Results	Series	Fail
CR-971604	25	B1SDT / P1M	Pass
	26	B1SDT / P1M	Pass
Engineer Tyler Lang	27	B1SDT / P1M	Pass
	28	B1SDT / P1M	Pass
Lab Tech John Crawford	29	B1SDT / P1M	Pass
	30	B1SDT / P1M	Pass
	31	B1SDT / P1M	Pass
	32	B1SDT / P1M	Pass

DWV @ Altitude

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

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 Continued

LLCR Mating Unmating Durability Group:

- 1) A total of 192 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 $+7.5$ mOhms:-----Minor
 - c. $+7.6$ to $+10.0$ mOhms: -----Acceptable
 - d. $+10.1$ to $+50.0$ mOhms:-----Marginal
 - e. $+50.1$ to $+2000$ mOhms-----Unstable
 - f. $>+2000$ mOhms:-----Open Failure

LLCR Measurement Summaries by Pin Type				
Date	8/31/2023	9/11/2023	9/18/2023	9/28/2023
Room Temp (Deg C)	23	22	22	22
Rel Humidity (%)	49	50	50	55
Technician	John Crawford	John Crawford	Aaron McKim	John Crawford
mOhm values	Actual Initial	Delta Cycles	Delta Therm Shck	Delta Humidity
Pin Type: Signal 1				
Average	37.52	0.67	0.71	0.61
St. Dev.	1.06	0.66	0.7	0.45
Min	33.42	0.02	0	0.01
Max	39.36	3.75	4.39	3.67
Summary Count	192	192	192	192
Total Count	192	192	192	192

LLCR Delta Count by Category						
	Stable	Minor	Acceptable	Marginal	Unstable	Open
mOhms	≤ 5	$>5.1 \ \& \ \leq 7.5$	$>7.6 \ \& \ \leq 10$	$>10.1 \ \& \ \leq 50$	$>50 \ \& \ \leq 2000$	>2000
Cycles	192	0	0	0	0	0
Therm Shck	192	0	0	0	0	0
Humidity	192	0	0	0	0	0

DATA SUMMARIES Continued

LLCR Vibration and Mechanical Shock Group:

- 1) A total of 192 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 $+7.5$ mOhms:-----Minor
 - c. $+7.6$ to $+10.0$ mOhms: -----Acceptable
 - d. $+10.1$ to $+50.0$ mOhms:-----Marginal
 - e. $+50.1$ to $+2000$ mOhms-----Unstable
 - f. $>+2000$ mOhms:-----Open Failure

LLCR Measurement Summaries by Pin Type			
Date	9/1/2023	10/2/2023	
Room Temp (Deg C)	22	22	
Rel Humidity (%)	48	51	
Technician	John Crawford	John Crawford	
mOhm values	Actual	Delta	
	Initial	Shock-Vib	
Pin Type: Signal 1			
Average	67.26	1.17	
St. Dev.	1.76	1.46	
Min	60.58	0	
Max	69.76	5.83	
Summary Count	192	192	
Total Count	192	192	

LLCR Delta Count by Category						
	Stable	Minor	Acceptable	Marginal	Unstable	Open
mOhms	≤ 5	>5.1 & ≤ 7.5	>7.6 & ≤ 10	>10.1 & ≤ 50	>50 & ≤ 2000	>2000
Shock-Vib	187	5	0	0	0	0

Nanosecond Event Detection:

Shock and Vibration Event Detection Summary	
Contacts tested	60
Test Condition	OS2, 40g's, 11ms, Half-Sine
Shock Events	0
Test Condition	12G 'RMS', 5Hz to 2000Hz, 1hr/axis
Vibration Events	0
Total Events	0

DATA SUMMARIES Continued

LLCR Non-Operating Class Temperature Group:

- 1) A total of 192 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 $+7.5$ mOhms:-----Minor
 - c. $+7.6$ to $+10.0$ mOhms: -----Acceptable
 - d. $+10.1$ to $+50.0$ mOhms:-----Marginal
 - e. $+50.1$ to $+2000$ mOhms-----Unstable
 - f. $>+2000$ mOhms:-----Open Failure

LLCR Measurement Summaries by Pin Type			
Date	8/31/2023	9/5/2023	9/11/2023
Room Temp (Deg C)	23	22	22
Rel Humidity (%)	47	54	54
Technician	John Crawford	John Crawford	John Crawford
mOhm values	Actual	Delta	Delta
	Initial	Temperature Cycle I	Temperature Cycle II
Pin Type: Signal 1			
Average	37.42	0.43	0.56
St. Dev.	0.91	0.45	0.61
Min	34.1	0.01	0.01
Max	39.4	4.28	4.64
Summary Count	192	192	192
Total Count	192	192	192

LLCR Delta Count by Category						
	Stable	Minor	Acceptable	Marginal	Unstable	Open
mOhms	≤ 5	$>5.1 \ \& \ \leq 7.5$	$>7.6 \ \& \ \leq 10$	$>10.1 \ \& \ \leq 50$	$>50 \ \& \ \leq 2000$	>2000
Temperature Cycle I	192	0	0	0	0	0
Temperature Cycle II	192	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 #: OV-05**Description:** Forced Air Oven, 5 Cu. Ft., 120 V (Chamber Room)**Manufacturer:** Sheldon Mfg.**Model:** CE5F**Serial #:** 02008008**Accuracy:** +/- 5 deg. C

... Last Cal: 02/05/2023, Next Cal: 02/05/2024

EQUIPMENT AND CALIBRATION SCHEDULES

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 #: 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