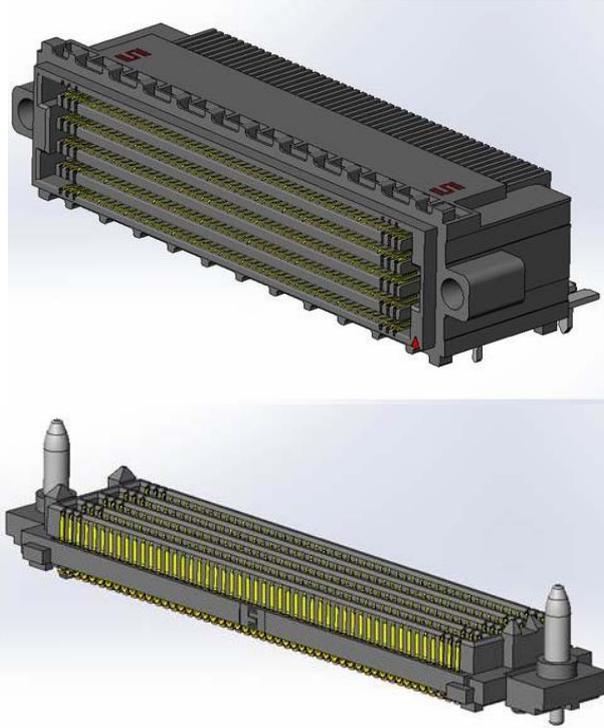




Project Number: Design Qualification Test Report	Tracking Code: 454284_Report_Rev_2
Requested by: Corey Rose	Date: 7/14/2016
Part #: SEAF8-50-1-S-10-2-RA-GP/SEAM8-50-S02.0-S-10-2-GP-K	
Part description: SEAF8/SEAM8	Tech: Troy Cook
Test Start: 1/15/2015	Test Completed: 2/20/2015



**(Actual part not depicted)**

**DESIGN QUALIFICATION TEST REPORT**  
**SEAF8/SEAM8**  
**SEAF8-50-1-S-10-2-RA-GP/SEAM8-50-S02.0-S-10-2-GP**

Tracking Code: 454284 Report Rev 2	Part #: SEAF8-50-1-S-10-2-RA-GP/SEAM8-50-S02.0-S-10-2-GP
Part description: SEAF8/SEAM8	

**REVISION HISTORY**

<b>DATA</b>	<b>REV.NUM.</b>	<b>DESCRIPTION</b>	<b>ENG</b>
3/25/2015	1	Initial Issue	KH
7/14/2016	2	Add the data for ELP 100 cycles	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 tests: Design Qualification test. Please see test plan.

### APPLICABLE DOCUMENTS

Standards: EIA Publication 364

### 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-106684-TST/PCB-106685-TST

## FLOWCHARTS

### Gas Tight

Group 1

SEAF8-50-1-S-10-2-RA-GP

SEAM8-50-S02.0-S-10-2-GP

8 Assemblies

**Step Description**

1. LLCR <sup>(2)</sup>  
Max Delta = 15 mOhm
2. Gas Tight <sup>(1)</sup>
3. LLCR <sup>(2)</sup>  
Max Delta = 15 mOhm

-----  
(1) Gas Tight = EIA-364-36

(2) LLCR = EIA-364-23

Open Circuit Voltage = 20 mV Max

Test Current = 100 mA Max

### Normal Force

<u>Group 1</u>	<u>Group 2</u>	<u>Group 3</u>	<u>Group 4</u>
SEAF8-50-1-S-10-2-RA-GP	SEAF8-50-1-S-10-2-RA-GP SEAM8-50-S02.0-S-10-2-GP	SEAF8-50-1-S-10-2-RA-GP	SEAF8-50-1-S-10-2-RA-GP SEAM8-50-S02.0-S-10-2-GP
8 Contacts Minimum Row 1 Without Thermals	8 Contacts Minimum Row 1 With Thermals	8 Contacts Minimum Row 2 Without Thermals	8 Contacts Minimum Row 2 With Thermals
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<u>Group 5</u>	<u>Group 6</u>	<u>Group 7</u>	<u>Group 8</u>
SEAF8-50-1-S-10-2-RA-GP	SEAF8-50-1-S-10-2-RA-GP SEAM8-50-S02.0-S-10-2-GP	SEAF8-50-1-S-10-2-RA-GP	SEAF8-50-1-S-10-2-RA-GP SEAM8-50-S02.0-S-10-2-GP
8 Contacts Minimum Row 3 Without Thermals	8 Contacts Minimum Row 3 With Thermals	8 Contacts Minimum Row 4 Without Thermals	8 Contacts Minimum Row 4 With Thermals
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## FLOWCHARTS Continued

Group 9	Group 10	Group 11	Group 12																																
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8 Contacts Minimum Row 5 Without Thermals	8 Contacts Minimum Row 5 With Thermals	8 Contacts Minimum Row 6 Without Thermals	8 Contacts Minimum Row 6 With Thermals																																
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(1) Normal Force = EIA-364-04

(2) Thermal Age = EIA-364-17  
Test Condition = 4 (105°C)  
Time Condition = B (250 Hours)

**FLOWCHARTS Continued****Thermal Aging**Group 1

SEAF8-50-1-S-10-2-RA-GP

SEAM8-50-S02.0-S-10-2-GP

8 Assemblies

---

Step	Description
1.	Contact Gaps
2.	Mating/Unmating Force <sup>(2)</sup>
3.	LLCR <sup>(1)</sup> Max Delta = 15 mOhm
4.	Thermal Age <sup>(3)</sup>
5.	LLCR <sup>(1)</sup> Max Delta = 15 mOhm
6.	Mating/Unmating Force <sup>(2)</sup>
7.	Contact Gaps

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-----  
(1) LLCR = EIA-364-23

Open Circuit Voltage = 20 mV Max

Test Current = 100 mA Max

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

(3) Thermal Age = EIA-364-17

Test Condition = 4 (105°C)

Time Condition = B (250 Hours)

**FLOWCHARTS Continued****Mating/Unmating/Durability**Group 1

SEAF8-50-1-S-10-2-RA-GP

SEAM8-50-S02.0-S-10-2-GP

8 Assemblies

Step	Description
1.	Contact Gaps
2.	LLCR <sup>(2)</sup> Max Delta = 15 mOhm
3.	Mating/Unmating Force <sup>(3)</sup>
4.	Cycles Quantity = 25 Cycles
5.	Mating/Unmating Force <sup>(3)</sup>
6.	Contact Gaps
7.	LLCR <sup>(2)</sup> Max Delta = 15 mOhm
8.	Thermal Shock <sup>(4)</sup>
9.	LLCR <sup>(2)</sup> Max Delta = 15 mOhm
10.	Humidity <sup>(1)</sup>
11.	LLCR <sup>(2)</sup> Max Delta = 15 mOhm
12.	Mating/Unmating Force <sup>(3)</sup>

(1) Humidity = EIA-364-31

Test Condition = B (240 Hours)

Test Method = III (+25°C to +65°C @ 90% RH to 98% RH)

Test Exceptions: ambient pre-condition and delete steps 7a and 7b

(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

**IR/DWV****Pin-to-Pin**

Group 1  
SEAF8-50-1-S-10-2-RA-GP  
SEAM8-50-S02.0-S-10-2-GP  
2 Assemblies

Step	Description
1.	DWV Breakdown <sup>(2)</sup>

Group 2  
SEAF8-50-1-S-10-2-RA-GP  
2 Assemblies

Step	Description
1.	DWV Breakdown <sup>(2)</sup>

Group 3  
SEAM8-50-S02.0-S-10-2-GP  
2 Assemblies

Step	Description
1.	DWV Breakdown <sup>(2)</sup>

Group 4  
SEAF8-50-1-S-10-2-RA-GP  
SEAM8-50-S02.0-S-10-2-GP  
2 Assemblies

Step	Description
1.	IR <sup>(4)</sup>
2.	DWV at Test Voltage <sup>(1)</sup>
3.	Thermal Shock <sup>(5)</sup>
4.	IR <sup>(4)</sup>
5.	DWV at Test Voltage <sup>(1)</sup>
6.	Humidity <sup>(3)</sup>
7.	IR <sup>(4)</sup>
8.	DWV at Test Voltage <sup>(1)</sup>

**Row-to-Row**

Group 5  
SEAF8-50-1-S-10-2-RA-GP  
SEAM8-50-S02.0-S-10-2-GP  
2 Assemblies

Step	Description
1.	DWV Breakdown <sup>(2)</sup>

Group 6  
SEAF8-50-1-S-10-2-RA-GP  
2 Assemblies

Step	Description
1.	DWV Breakdown <sup>(2)</sup>

Group 7  
SEAM8-50-S02.0-S-10-2-GP  
2 Assemblies

Step	Description
1.	DWV Breakdown <sup>(2)</sup>

Group 8  
SEAF8-50-1-S-10-2-RA-GP  
SEAM8-50-S02.0-S-10-2-GP  
2 Assemblies

Step	Description
1.	IR <sup>(4)</sup>
2.	DWV at Test Voltage <sup>(1)</sup>
3.	Thermal Shock <sup>(5)</sup>
4.	IR <sup>(4)</sup>
5.	DWV at Test Voltage <sup>(1)</sup>
6.	Humidity <sup>(3)</sup>
7.	IR <sup>(4)</sup>
8.	DWV at Test Voltage <sup>(1)</sup>

(1) DWV at Test Voltage = EIA-364-20

Test Condition = 1 (Sea Level)

DWV test voltage is equal to 75% of the lowest breakdown voltage

Test voltage applied for 60 seconds

(2) DWV Breakdown = EIA-364-20

Test Condition = 1 (Sea Level)

DWV test voltage is equal to 75% of the lowest breakdown voltage

Test voltage applied for 60 seconds

(3) Humidity = EIA-364-31

Test Condition = B (240 Hours)

Test Method = III (+25°C to +65°C @ 90% RH to 98% RH)

Test Exceptions: ambient pre-condition and delete steps 7a and 7b

(4) IR = EIA-364-21

Test Condition = 500 Vdc, 2 Minutes Max

(5) 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****Current Carrying Capacity****Group 1**

SEAF8-50-1-S-10-2-RA-GP  
SEAM8-50-S02.0-S-10-2-GP  
10 Pins Powered  
Signal

Step	Description
1.	CCC <sup>(1)</sup> Rows = 10 Number of Positions = 1

**Group 2**

SEAF8-50-1-S-10-2-RA-GP  
SEAM8-50-S02.0-S-10-2-GP  
20 Pins Powered  
Signal

Step	Description
1.	CCC <sup>(1)</sup> Rows = 10 Number of Positions = 2

**Group 3**

SEAF8-50-1-S-10-2-RA-GP  
SEAM8-50-S02.0-S-10-2-GP  
30 Pins Powered  
Signal

Step	Description
1.	CCC <sup>(1)</sup> Rows = 10 Number of Positions = 3

**Group 4**

SEAF8-50-1-S-10-2-RA-GP  
SEAM8-50-S02.0-S-10-2-GP  
40 Pins Powered  
Signal

Step	Description
1.	CCC <sup>(1)</sup> Rows = 10 Number of Positions = 4

**Group 5**

SEAF8-50-1-S-10-2-RA-GP  
SEAM8-50-S02.0-S-10-2-GP  
500 Pins Powered  
Signal

Step	Description
1.	CCC <sup>(1)</sup> Rows = 10 Number of Positions = 50

(1) CCC = EIA-364-70

Method 2, Temperature Rise Versus Current Curve

(TIN PLATING) - Tabulate calculated current at RT, 65°C, 75°C and 95°C after derating 20% and based on 105°C

(GOLD PLATING) - Tabulate calculated current at RT, 85°C, 95°C and 115°C after derating 20% and based on 125°C

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

SEAF8-50-1-S-10-2-RA-GP

SEAM8-50-S02.0-S-10-2-GP

8 Assemblies

Step	Description
1.	LLCR <sup>(1)</sup> Max Delta = 15 mOhm
2.	Mechanical Shock <sup>(2)</sup>
3.	Random Vibration <sup>(3)</sup>
4.	LLCR <sup>(1)</sup> Max Delta = 15 mOhm

(1) LLCR = EIA-364-23

Open Circuit Voltage = 20 mV Max  
Test Current = 100 mA Max

(2) Mechanical Shock = EIA-364-27

Test Condition = C (100 G Peak, 6 milliseconds, Half Sine)  
Number of Shocks = 3 Per Direction, Per Axis, 18 Total

(3) Random Vibration = EIA-364-28

Condition = VB (7.56 gRMS Average, 2 Hours/Axis)

**Mechanical Shock/Random Vibration/Event Detection**Group 1

SEAF8-50-1-S-10-2-RA-GP

SEAM8-50-S02.0-S-10-2-GP

60 Points

Step	Description
1.	Nanosecond Event Detection (Mechanical Shock) <sup>(1)</sup>
2.	Nanosecond Event Detection (Random Vibration) <sup>(2)</sup>

(1) Nanosecond Event Detection (Mechanical Shock)

Use EIA-364-87 for Nanosecond Event Detection:  
Test Condition = F (50 nanoseconds at 10 ohms)  
Use EIA-364-27 for Mechanical Shock:  
Test Condition = C (100 G Peak, 6 milliseconds, Half Sine)  
Number of Shocks = 3 Per Direction, Per Axis, 18 Total

(2) Nanosecond Event Detection (Random Vibration)

Use EIA-364-87 for Nanosecond Event Detection:  
Test Condition = F (50 nanoseconds at 10 ohms)  
Use EIA-364-28 for Random Vibration:  
Condition = VB (7.56 gRMS Average, 2 Hours/Axis)

**FLOWCHARTS Continued****Extended Life**Group 1

SEAF8-50-01-S-10-2-RA-GP

SEAM8-50-S02.0-S-10-2-GP

8 Assemblies

100 Cycles

Step	Description
1.	Plating Thickness Verification (4)
2.	LLCR (2) Max Delta = 15 mOhm
3.	Cycles Quantity = 100 Cycles
4.	LLCR (2) Max Delta = 15 mOhm
5.	Thermal Shock (5)
6.	LLCR (2) Max Delta = 15 mOhm
7.	Humidity (1)
8.	LLCR (2) Max Delta = 15 mOhm
9.	Photos (3)

(1) Humidity = EIA-364-31

Test Condition = B (240 Hours)

Test Method = III (+25°C to +65°C @ 90% RH to 98% RH)

Test Exceptions: ambient pre-condition and delete steps 7a and 7b

(2) LLCR = EIA-364-23

Open Circuit Voltage = 20 mV Max

Test Current = 100 mA Max

(3) Photos

Attach 2-3 photos of contact area

(4) Plating Thickness Verification

Measure, verify, and document plating thickness on both male and female (one group only)

Plating thickness to be measured on loose pins used during assembly

(5) 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)

**ATTRIBUTE DEFINITIONS**

The following is a brief, simplified description of attributes.

**THERMAL SHOCK:**

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

**THERMAL:**

- 1) EIA-364-17, *Temperature Life with or without Electrical Load Test Procedure for Electrical Connectors*.
- 2) Test Condition 4 at 105° C.
- 3) Test Time Condition B for 250 hours.
- 4) All test samples are pre-conditioned at ambient.
- 5) All test samples are exposed to environmental stressing in the mated condition.

**HUMIDITY:**

- 1) Reference document: EIA-364-31, *Humidity Test Procedure for Electrical Connectors*.
- 2) Test Condition B, 240 Hours.
- 3) Method III, +25° C to + 65° C, 90% to 98% Relative Humidity excluding sub-cycles 7a and 7b.
- 4) All samples are pre-conditioned at ambient.
- 5) All test samples are exposed to environmental stressing in the mated condition.

**MECHANICAL SHOCK (Specified Pulse):**

- 1) Reference document: EIA-364-27, *Mechanical Shock Test Procedure for Electrical Connectors*
- 2) Test Condition C
- 3) Peak Value: 100 G
- 4) Duration: 6 Milliseconds
- 5) Wave Form: Half Sine
- 6) Velocity: 12.3 ft/s
- 7) Number of Shocks: 3 Shocks / Direction, 3 Axis (18 Total)

**VIBRATION:**

- 1) Reference document: EIA-364-28, *Vibration Test Procedure for Electrical Connectors*
- 2) Test Condition V, Letter B
- 3) Power Spectral Density: 0.04 G<sup>2</sup> / Hz
- 4) G 'RMS': 7.56
- 5) Frequency: 50 to 2000 Hz
- 6) Duration: 2.0 Hours 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

**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

**NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):**

- 1) Reference document: EIA-364-04, *Normal Force Test Procedure for Electrical Connectors*.
- 2) The contacts shall be tested in the connector housing.
- 3) If necessary, a "window" shall be made in the connector body to allow a probe to engage and deflect the contact at the same attitude and distance (plus 0.05 mm [0.002"]) as would occur in actual use.
- 4) The connector housing shall be placed in a holding fixture that does not interfere with or otherwise influence the contact force or deflection.
- 5) Said holding fixture shall be mounted on a floating, adjustable, X-Y table on the base of the Dillon TC<sup>2</sup>, computer controlled test stand with a deflection measurement system accuracy of 5.0 μm (0.0002").
- 6) The nominal deflection rate shall be 5 mm (0.2")/minute.
- 7) Unless otherwise noted a minimum of five contacts shall be tested.
- 8) The force/deflection characteristic to load and unload each contact shall be repeated five times.
- 9) The system shall utilize the TC<sup>2</sup> software in order to acquire and record the test data.
- 10) The permanent set of each contact shall be measured within the TC<sup>2</sup> software.
- 11) The acquired data shall be graphed with the deflection data on the X-axis and the force data on the Y-axis and a print out will be stored with the Tracking Code paperwork.

**TEMPERATURE RISE (Current Carrying Capacity, CCC):**

- 1) EIA-364-70, *Temperature Rise versus Current Test Procedure for Electrical Connectors and Sockets*.
- 2) When current passes through a contact, the temperature of the contact increases as a result of  $I^2R$  (resistive) heating.
- 3) The number of contacts being investigated plays a significant part in power dissipation and therefore temperature rise.
- 4) The size of the temperature probe can affect the measured temperature.
- 5) Copper traces on PC boards will contribute to temperature rise:
  - a. Self heating (resistive)
  - b. Reduction in heat sink capacity affecting the heated contacts
- 6) A de-rating curve, usually 20%, is calculated.
- 7) Calculated de-rated currents at four temperature points are reported:
  - a. Ambient
  - b. 85° C
  - c. 95° C
  - d. 115° C
- 8) Typically, neighboring contacts (in close proximity to maximize heat build up) are energized.
- 9) The thermocouple (or temperature measuring probe) will be positioned at a location to sense the maximum temperature in the vicinity of the heat generation area.
- 10) A computer program, *TR 803.exe*, ensures accurate stability for data acquisition.
- 11) Hook-up wire cross section is larger than the cross section of any connector leads/PC board traces, jumpers, etc.
- 12) Hook-up wire length is longer than the minimum specified in the referencing standard.

**ATTRIBUTE DEFINITIONS Continued**

The following is a brief, simplified description of attributes

**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  $+2000$  mOhms: ----- Unstable
  - f.  $>+2000$  mOhms:----- Open Failure

**GAS TIGHT:**

To provide method for evaluating the ability of the contacting surfaces in preventing penetration of harsh vapors which might lead to oxide formation that may degrade the electrical performance of the contact system.

- 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  $+2000$  mOhms:----- Unstable
  - f.  $>+2000$  mOhms:----- Open Failure
- 4) Procedure:
  - a. Reference document: EIA-364-36, *Test Procedure for Determination of Gas-Tight Characteristics for Electrical Connectors, Sockets and/or Contact Systems*.
  - b. Test Conditions:
    - i. Class II--- Mated pairs of contacts assembled to their plastic housings.
    - ii. Reagent grade Nitric Acid shall be used of sufficient volume to saturate the test chamber
    - iii. The ratio of the volume of the test chamber to the surface area of the acid shall be 10:1.
    - iv. The chamber shall be saturated with the vapor for at least 15 minutes before samples are added.
    - v. Exposure time, 55 to 65 minutes.
    - vi. The samples shall be no closer to the chamber walls than 1 inches and no closer to the surface of the acid than 3 inches.
    - vii. The samples shall be dried after exposure for a minimum of 1 hour.
    - viii. Drying temperature  $50^{\circ}$  C
    - ix. The final LLCR shall be conducted within 1 hour after drying.

**ATTRIBUTE DEFINITIONS Continued**

The following is a brief, simplified description of attributes

**INSULATION RESISTANCE (IR):**

To determine the resistance of insulation materials to leakage of current through or on the surface of these materials when a DC potential is applied.

- 1) PROCEDURE:
  - a. Reference document: EIA-364-21, *Insulation Resistance Test Procedure for Electrical Connectors*.
  - b. Test Conditions:
    - i. Between Adjacent Contacts or Signal-to-Ground
    - ii. Electrification Time 2.0 minutes
    - iii. Test Voltage (500 VDC) corresponds to calibration settings for measuring resistances.
- 2) MEASUREMENTS:
- 3) When the specified test voltage is applied (VDC), the insulation resistance shall not be less than 5000 megohms.

**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 other 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: EIA-364-20, *Withstanding Voltage Test Procedure for Electrical Connectors*.
  - b. Test Conditions:
    - i. Between Adjacent Contacts or Signal-to-Ground
    - ii. Barometric Test Condition 1
    - iii. Rate of Application 500 V/Sec
    - iv. Test Voltage (VAC) until breakdown occurs
- 2) MEASUREMENTS/CALCULATIONS
  - a. The breakdown voltage shall be measured and recorded.
  - b. The dielectric withstanding voltage shall be recorded as 75% of the minimum breakdown voltage.
  - c. The working voltage shall be recorded as one-third (1/3) of the dielectric withstanding voltage (one-fourth of the breakdown voltage).

## RESULTS

### Temperature Rise, CCC at a 20% de-rating

- CCC for a 30°C Temperature Rise-----1.00 A per contact with 10 contacts (10x1) powered
- CCC for a 30°C Temperature Rise-----0.76 A per contact with 20 contacts (10x2) powered
- CCC for a 30°C Temperature Rise-----0.59 A per contact with 30 contacts (10x3) powered
- CCC for a 30°C Temperature Rise-----0.55 A per contact with 40 contacts (10x4) powered
- CCC for a 30°C Temperature Rise-----0.20 A per contact with 500 contacts (10x50) powered

### Mating/Unmating Forces:

#### Thermal Aging Group

- Initial
  - Mating
    - Min -----17.85 Lbs
    - Max -----23.43 Lbs
  - Unmating
    - Min -----10.96 Lbs
    - Max -----17.33 Lbs
- After Thermal
  - Mating
    - Min -----12.14 Lbs
    - Max -----14.52 Lbs
  - Unmating
    - Min -----6.89 Lbs
    - Max -----10.16 Lbs

**RESULTS Continued****Mating/Unmating Forces:****Mating/Unmating Durability Group**

- **Initial**
  - **Mating**
    - **Min**-----17.97 Lbs
    - **Max**-----23.41 Lbs
  - **Unmating**
    - **Min**-----11.50 Lbs
    - **Max**-----16.19 Lbs
- **After 25 Cycles**
  - **Mating**
    - **Min**-----19.58 Lbs
    - **Max**-----25.31 Lbs
  - **Unmating**
    - **Min**-----13.08 Lbs
    - **Max**-----14.45 Lbs
- **After 50 Cycles**
  - **Mating**
    - **Min**-----18.18 Lbs
    - **Max**-----21.75 Lbs
  - **Unmating**
    - **Min**-----12.47 Lbs
    - **Max**-----15.99 Lbs
- **After 75 Cycles**
  - **Mating**
    - **Min**-----19.08 Lbs
    - **Max**-----21.23 Lbs
  - **Unmating**
    - **Min**-----12.28 Lbs
    - **Max**-----17.18 Lbs
- **After 100 Cycles**
  - **Mating**
    - **Min**-----18.99 Lbs
    - **Max**-----22.18 Lbs
  - **Unmating**
    - **Min**-----12.45 Lbs
    - **Max**-----17.97 Lbs
- **After Humidity**
  - **Mating**
    - **Min**-----11.87 Lbs
    - **Max**-----14.21 Lbs
  - **Unmating**
    - **Min**-----7.36 Lbs
    - **Max**-----9.06 Lbs

**RESULTS Continued****Normal Force at 0.0060 inch deflection****Row 1**• **Initial**

○ Min-----76.90 gf      Set ---- 0.0000 in  
 ○ Max -----78.40 gf      Set ---- 0.0001 in

• **Thermal**

○ Min----- 68.30 gf      Set---- 0.0007 in  
 ○ Max -----71.70 gf      Set---- 0.0010 in

**Row 2**• **Initial**

○ Min-----70.80 gf      Set ---- 0.0000 in  
 ○ Max -----73.80 gf      Set ---- 0.0001 in

• **Thermal**

○ Min----- 51.30 gf      Set---- 0.0004 in  
 ○ Max -----65.60 gf      Set---- 0.0012 in

**Row 3**• **Initial**

○ Min-----78.40 gf      Set ---- 0.0000 in  
 ○ Max -----80.80 gf      Set ---- 0.0001 in

• **Thermal**

○ Min----- 63.50 gf      Set---- 0.0006 in  
 ○ Max -----76.40 gf      Set---- 0.0012 in

**Row 4**• **Initial**

○ Min-----69.10 gf      Set ---- 0.0000 in  
 ○ Max -----71.90 gf      Set ---- 0.0004 in

• **Thermal**

○ Min----- 57.70 gf      Set---- 0.0006 in  
 ○ Max -----61.50 gf      Set---- 0.0009 in

**Row 5**• **Initial**

○ Min-----76.80 gf      Set ---- 0.0000 in  
 ○ Max -----78.90 gf      Set ---- 0.0001 in

• **Thermal**

○ Min----- 63.40 gf      Set---- 0.0006 in  
 ○ Max -----66.00 gf      Set---- 0.0008 in

**Row 6**• **Initial**

○ Min-----77.10 gf      Set ---- 0.0000 in  
 ○ Max -----79.30 gf      Set ---- 0.0001 in

• **Thermal**

○ Min----- 66.00 gf      Set---- 0.0005 in  
 ○ Max -----70.80 gf      Set---- 0.0006 in

**Row 7**• **Initial**

○ Min-----74.90 gf      Set ---- 0.0000 in  
 ○ Max -----78.00 gf      Set ---- 0.0001 in

• **Thermal**

○ Min----- 64.30 gf      Set---- 0.0007 in  
 ○ Max -----72.80 gf      Set---- 0.0011 in

**Row 8**

- **Initial**
  - **Min**-----72.50 gf      **Set** ---- 0.0000 in
  - **Max** -----74.40 gf      **Set** ---- 0.0001 in
- **Thermal**
  - **Min**----- 65.90 gf      **Set**---- 0.0007 in
  - **Max** -----71.20 gf      **Set**---- 0.0011 in

**Row 9**

- **Initial**
  - **Min**-----70.60 gf      **Set** ---- 0.0000 in
  - **Max** -----71.10 gf      **Set** ---- 0.0001 in
- **Thermal**
  - **Min**----- 61.90 gf      **Set**---- 0.0006 in
  - **Max** -----70.90 gf      **Set**---- 0.0008 in

**Row 10**

- **Initial**
  - **Min**-----79.90 gf      **Set** ---- 0.0000 in
  - **Max** -----82.20 gf      **Set** ---- 0.0001 in
- **Thermal**
  - **Min**----- 66.10 gf      **Set**---- 0.0006 in
  - **Max** -----71.80 gf      **Set**---- 0.0008 in

**RESULTS Continued**

**Insulation Resistance minimums, IR**

**Pin to Pin**

- **Initial**
  - Mated-----45000 Meg  $\Omega$  ----- Passed
  - Unmated -----45000 Meg  $\Omega$  ----- Passed
- **Thermal**
  - Mated-----45000 Meg  $\Omega$  ----- Passed
  - Unmated -----45000 Meg  $\Omega$  ----- Passed
- **Humidity**
  - Mated-----22600 Meg  $\Omega$  ----- Passed
  - Unmated -----45000 Meg  $\Omega$  ----- Passed

**Row to Row**

- **Initial**
  - Mated-----45000 Meg  $\Omega$  ----- Passed
  - Unmated -----45000 Meg  $\Omega$  ----- Passed
- **Thermal**
  - Mated-----45000 Meg  $\Omega$  ----- Passed
  - Unmated -----45000 Meg  $\Omega$  ----- Passed
- **Humidity**
  - Mated-----31000 Meg  $\Omega$  ----- Passed
  - Unmated -----40000 Meg  $\Omega$  ----- Passed

**Dielectric Withstanding Voltage minimums, DWV**

- **Minimums**
  - Breakdown Voltage-----972 VAC
  - Test Voltage-----730 VAC
  - Working Voltage-----240 VAC

**Pin to Pin**

- **Initial DWV**-----Passed
- **Thermal DWV**-----Passed
- **Humidity DWV**-----Passed

**Row to Row**

- **Initial DWV**-----Passed
- **Thermal DWV**-----Passed
- **Humidity DWV**-----Passed

**RESULTS Continued****LLCR Gas Tight (40 pin Row1, 64 pin Row2 and 88 pin Row3 LLCR test points)****Row 1**

- **Initial** ----- 31.31 mOhms Max
- **Gas-Tight**
  - **<= +5.0 mOhms** ----- 40 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 +2000 mOhms** ----- 0 Points ----- Unstable
  - **>+2000 mOhms** ----- 0 Points ----- Open Failure

**Row 2**

- **Initial** ----- 45.85 mOhms Max
- **Gas-Tight**
  - **<= +5.0 mOhms** ----- 61 Points ----- Stable
  - **+5.1 to +10.0 mOhms** ----- 3 Points ----- Minor
  - **+10.1 to +15.0 mOhms** ----- 0 Points ----- Acceptable
  - **+15.1 to +50.0 mOhms** ----- 0 Points ----- Marginal
  - **+50.1 to +2000 mOhms** ----- 0 Points ----- Unstable
  - **>+2000 mOhms** ----- 0 Points ----- Open Failure

**Row 3**

- **Initial** ----- 54.34 mOhms Max
- **Gas-Tight**
  - **<= +5.0 mOhms** ----- 88 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 +2000 mOhms** ----- 0 Points ----- Unstable
  - **>+2000 mOhms** ----- 0 Points ----- Open Failure

**RESULTS Continued****LLCR Thermal Aging (24 pin Row1, 32 pin Row2, 56 pin Row3 and 80 pin Row4 LLCR test points)****Row 1**

- **Initial**----- 26.36 mOhms Max
- **Thermal Aging**
  - **<= +5.0 mOhms**----- 24 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 +2000 mOhms**-----0 Points----- **Unstable**
  - **>+2000 mOhms**-----0 Points----- **Open Failure**

**Row 2**

- **Initial**----- 33.35 mOhms Max
- **Thermal Aging**
  - **<= +5.0 mOhms**----- 32 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 +2000 mOhms**-----0 Points----- **Unstable**
  - **>+2000 mOhms**-----0 Points----- **Open Failure**

**Row 3**

- **Initial**----- 45.94 mOhms Max
- **Thermal Aging**
  - **<= +5.0 mOhms**----- 56 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 +2000 mOhms**-----0 Points----- **Unstable**
  - **>+2000 mOhms**-----0 Points----- **Open Failure**

**Row 4**

- **Initial**----- 55.26 mOhms Max
- **Thermal Aging**
  - **<= +5.0 mOhms**----- 80 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 +2000 mOhms**-----0 Points----- **Unstable**
  - **>+2000 mOhms**-----0 Points----- **Open Failure**

**RESULTS Continued****LLCR Durability (24 pin Row1, 32 pin Row2, 56 pin Row3 and 80 pin Row4 LLCR test points)****Row 1**

- **Initial** ----- 28.90 mOhms Max
- **Durability, 100 Cycles**
  - $\leq +5.0$  mOhms ----- 23 Points ----- Stable
  - $+5.1$  to  $+10.0$  mOhms ----- 1 Points ----- Minor
  - $+10.1$  to  $+15.0$  mOhms ----- 0 Points ----- Acceptable
  - $+15.1$  to  $+50.0$  mOhms ----- 0 Points ----- Marginal
  - $+50.1$  to  $+2000$  mOhms ----- 0 Points ----- Unstable
  - $>+2000$  mOhms ----- 0 Points ----- Open Failure
- **Thermal**
  - $\leq +5.0$  mOhms ----- 23 Points ----- Stable
  - $+5.1$  to  $+10.0$  mOhms ----- 1 Points ----- Minor
  - $+10.1$  to  $+15.0$  mOhms ----- 0 Points ----- Acceptable
  - $+15.1$  to  $+50.0$  mOhms ----- 0 Points ----- Marginal
  - $+50.1$  to  $+2000$  mOhms ----- 0 Points ----- Unstable
  - $>+2000$  mOhms ----- 0 Points ----- Open Failure
- **Humidity**
  - $\leq +5.0$  mOhms ----- 23 Points ----- Stable
  - $+5.1$  to  $+10.0$  mOhms ----- 1 Points ----- Minor
  - $+10.1$  to  $+15.0$  mOhms ----- 0 Points ----- Acceptable
  - $+15.1$  to  $+50.0$  mOhms ----- 0 Points ----- Marginal
  - $+50.1$  to  $+2000$  mOhms ----- 0 Points ----- Unstable
  - $>+2000$  mOhms ----- 0 Points ----- Open Failure

**Row 2**

- **Initial** ----- 34.12 mOhms Max
- **Durability, 100 Cycles**
  - $\leq +5.0$  mOhms ----- 30 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  $+2000$  mOhms ----- 0 Points ----- Unstable
  - $>+2000$  mOhms ----- 0 Points ----- Open Failure
- **Thermal**
  - $\leq +5.0$  mOhms ----- 30 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  $+2000$  mOhms ----- 0 Points ----- Unstable
  - $>+2000$  mOhms ----- 0 Points ----- Open Failure
- **Humidity**
  - $\leq +5.0$  mOhms ----- 30 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  $+2000$  mOhms ----- 0 Points ----- Unstable
  - $>+2000$  mOhms ----- 0 Points ----- Open Failure

**RESULTS Continued****Row 3**

- **Initial**----- 50.74 mOhms Max
- **Durability, 100 Cycles**
  - **<= +5.0 mOhms**----- 52 Points----- Stable
  - **+5.1 to +10.0 mOhms**----- 3 Points----- Minor
  - **+10.1 to +15.0 mOhms**----- 1 Points----- Acceptable
  - **+15.1 to +50.0 mOhms**----- 0 Points----- Marginal
  - **+50.1 to +2000 mOhms**----- 0 Points----- Unstable
  - **>+2000 mOhms**----- 0 Points----- Open Failure
- **Thermal**
  - **<= +5.0 mOhms**----- 51 Points----- Stable
  - **+5.1 to +10.0 mOhms**----- 4 Points----- Minor
  - **+10.1 to +15.0 mOhms**----- 1 Points----- Acceptable
  - **+15.1 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**----- 51 Points----- Stable
  - **+5.1 to +10.0 mOhms**----- 4 Points----- Minor
  - **+10.1 to +15.0 mOhms**----- 1 Points----- Acceptable
  - **+15.1 to +50.0 mOhms**----- 0 Points----- Marginal
  - **+50.1 to +2000 mOhms**----- 0 Points----- Unstable
  - **>+2000 mOhms**----- 0 Points----- Open Failure

**Row 4**

- **Initial**----- 63.22 mOhms Max
- **Durability, 100 Cycles**
  - **<= +5.0 mOhms**----- 74 Points----- Stable
  - **+5.1 to +10.0 mOhms**----- 5 Points----- Minor
  - **+10.1 to +15.0 mOhms**----- 1 Points----- Acceptable
  - **+15.1 to +50.0 mOhms**----- 0 Points----- Marginal
  - **+50.1 to +2000 mOhms**----- 0 Points----- Unstable
  - **>+2000 mOhms**----- 0 Points----- Open Failure
- **Thermal**
  - **<= +5.0 mOhms**----- 68 Points----- Stable
  - **+5.1 to +10.0 mOhms**----- 10 Points----- Minor
  - **+10.1 to +15.0 mOhms**----- 2 Points----- Acceptable
  - **+15.1 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**----- 68 Points----- Stable
  - **+5.1 to +10.0 mOhms**----- 9 Points----- Minor
  - **+10.1 to +15.0 mOhms**----- 3 Points----- Acceptable
  - **+15.1 to +50.0 mOhms**----- 0 Points----- Marginal
  - **+50.1 to +2000 mOhms**----- 0 Points----- Unstable
  - **>+2000 mOhms**----- 0 Points----- Open Failure

**RESULTS Continued****LLCR Shock & Vibration (24 pin Row1, 32 pin Row2, 56 pin Row3 and 80 pin Row4 LLCR test points)****Row 1**

- **Initial** ----- 28.98 mOhms Max
- **Shock &Vibration**
  - **<= +5.0 mOhms** ----- 23 Points ----- Stable
  - **+5.1 to +10.0 mOhms** ----- 1 Points ----- Minor
  - **+10.1 to +15.0 mOhms** ----- 0 Points ----- Acceptable
  - **+15.1 to +50.0 mOhms** ----- 0 Points ----- Marginal
  - **+50.1 to +2000 mOhms** ----- 0 Points ----- Unstable
  - **>+2000 mOhms** ----- 0 Points ----- Open Failure

**Row 2**

- **Initial** ----- 38.43 mOhms Max
- **Shock &Vibration**
  - **<= +5.0 mOhms** ----- 31 Points ----- Stable
  - **+5.1 to +10.0 mOhms** ----- 0 Points ----- Minor
  - **+10.1 to +15.0 mOhms** ----- 1 Points ----- Acceptable
  - **+15.1 to +50.0 mOhms** ----- 0 Points ----- Marginal
  - **+50.1 to +2000 mOhms** ----- 0 Points ----- Unstable
  - **>+2000 mOhms** ----- 0 Points ----- Open Failure

**Row 3**

- **Initial** ----- 54.27 mOhms Max
- **Shock &Vibration**
  - **<= +5.0 mOhms** ----- 54 Points ----- Stable
  - **+5.1 to +10.0 mOhms** ----- 1 Points ----- Minor
  - **+10.1 to +15.0 mOhms** ----- 1 Points ----- Acceptable
  - **+15.1 to +50.0 mOhms** ----- 0 Points ----- Marginal
  - **+50.1 to +2000 mOhms** ----- 0 Points ----- Unstable
  - **>+2000 mOhms** ----- 0 Points ----- Open Failure

**Row 4**

- **Initial** ----- 64.46 mOhms Max
- **Shock &Vibration**
  - **<= +5.0 mOhms** ----- 76 Points ----- Stable
  - **+5.1 to +10.0 mOhms** ----- 3 Points ----- Minor
  - **+10.1 to +15.0 mOhms** ----- 1 Points ----- Acceptable
  - **+15.1 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

**RESULTS Continued****LLCR Extended life 100 cycles Group (40 pin Row1, 64 pin Row2 and 88 pin Row3 LLCR test points)****Row 1**

- **Initial**----- 30.91 mOhms Max
- **Durability, 100 Cycles**
  - $\leq +5.0$  mOhms ----- 38 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  $+2000$  mOhms ----- 0 Points ----- Unstable
  - $>+2000$  mOhms ----- 0 Points ----- Open Failure
- **Thermal**
  - $\leq +5.0$  mOhms ----- 39 Points ----- Stable
  - $+5.1$  to  $+10.0$  mOhms ----- 1 Points ----- Minor
  - $+10.1$  to  $+15.0$  mOhms ----- 0 Points ----- Acceptable
  - $+15.1$  to  $+50.0$  mOhms ----- 0 Points ----- Marginal
  - $+50.1$  to  $+2000$  mOhms ----- 0 Points ----- Unstable
  - $>+2000$  mOhms ----- 0 Points ----- Open Failure
- **Humidity**
  - $\leq +5.0$  mOhms ----- 39 Points ----- Stable
  - $+5.1$  to  $+10.0$  mOhms ----- 1 Points ----- Minor
  - $+10.1$  to  $+15.0$  mOhms ----- 0 Points ----- Acceptable
  - $+15.1$  to  $+50.0$  mOhms ----- 0 Points ----- Marginal
  - $+50.1$  to  $+2000$  mOhms ----- 0 Points ----- Unstable
  - $>+2000$  mOhms ----- 0 Points ----- Open Failure

**Row 2**

- **Initial**----- 44.67 mOhms Max
- **Durability, 100 Cycles**
  - $\leq +5.0$  mOhms ----- 60 Points ----- Stable
  - $+5.1$  to  $+10.0$  mOhms ----- 4 Points ----- Minor
  - $+10.1$  to  $+15.0$  mOhms ----- 0 Points ----- Acceptable
  - $+15.1$  to  $+50.0$  mOhms ----- 0 Points ----- Marginal
  - $+50.1$  to  $+2000$  mOhms ----- 0 Points ----- Unstable
  - $>+2000$  mOhms ----- 0 Points ----- Open Failure
- **Thermal**
  - $\leq +5.0$  mOhms ----- 62 Points ----- Stable
  - $+5.1$  to  $+10.0$  mOhms ----- 1 Points ----- Minor
  - $+10.1$  to  $+15.0$  mOhms ----- 1 Points ----- Acceptable
  - $+15.1$  to  $+50.0$  mOhms ----- 0 Points ----- Marginal
  - $+50.1$  to  $+2000$  mOhms ----- 0 Points ----- Unstable
  - $>+2000$  mOhms ----- 0 Points ----- Open Failure
- **Humidity**
  - $\leq +5.0$  mOhms ----- 63 Points ----- Stable
  - $+5.1$  to  $+10.0$  mOhms ----- 1 Points ----- Minor
  - $+10.1$  to  $+15.0$  mOhms ----- 0 Points ----- Acceptable
  - $+15.1$  to  $+50.0$  mOhms ----- 0 Points ----- Marginal
  - $+50.1$  to  $+2000$  mOhms ----- 0 Points ----- Unstable
  - $>+2000$  mOhms ----- 0 Points ----- Open Failure

**RESULTS Continued****Row 3**

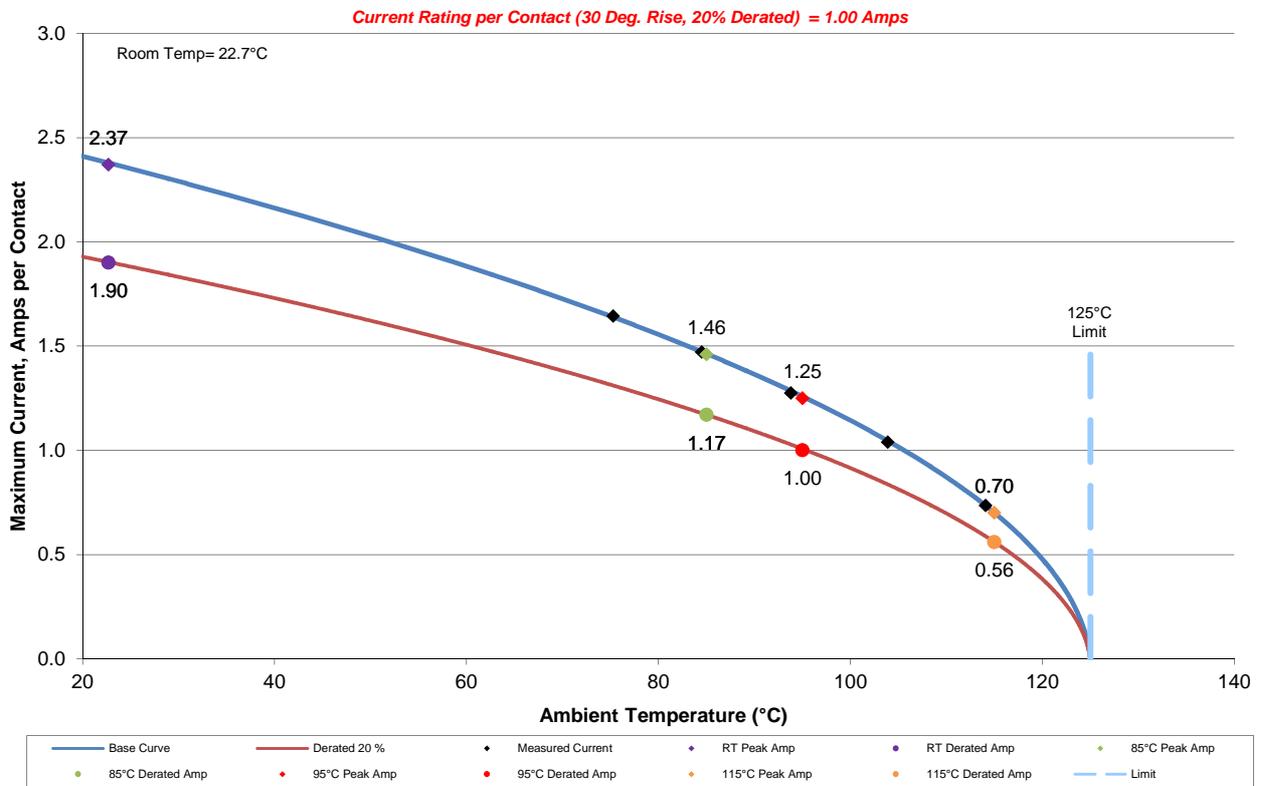
- **Initial** ----- 58.11 mOhms Max
- **Durability, 100 Cycles**
  - **<= +5.0 mOhms** ----- 85 Points ----- Stable
  - **+5.1 to +10.0 mOhms** ----- 3 Points ----- Minor
  - **+10.1 to +15.0 mOhms** ----- 0 Points ----- Acceptable
  - **+15.1 to +50.0 mOhms** ----- 0 Points ----- Marginal
  - **+50.1 to +2000 mOhms** ----- 0 Points ----- Unstable
  - **>+2000 mOhms** ----- 0 Points ----- Open Failure
- **Thermal**
  - **<= +5.0 mOhms** ----- 84 Points ----- Stable
  - **+5.1 to +10.0 mOhms** ----- 4 Points ----- Minor
  - **+10.1 to +15.0 mOhms** ----- 0 Points ----- Acceptable
  - **+15.1 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** ----- 87 Points ----- Stable
  - **+5.1 to +10.0 mOhms** ----- 1 Points ----- Minor
  - **+10.1 to +15.0 mOhms** ----- 0 Points ----- Acceptable
  - **+15.1 to +50.0 mOhms** ----- 0 Points ----- Marginal
  - **+50.1 to +2000 mOhms** ----- 0 Points ----- Unstable
  - **>+2000 mOhms** ----- 0 Points ----- Open Failure

**DATA SUMMARIES**

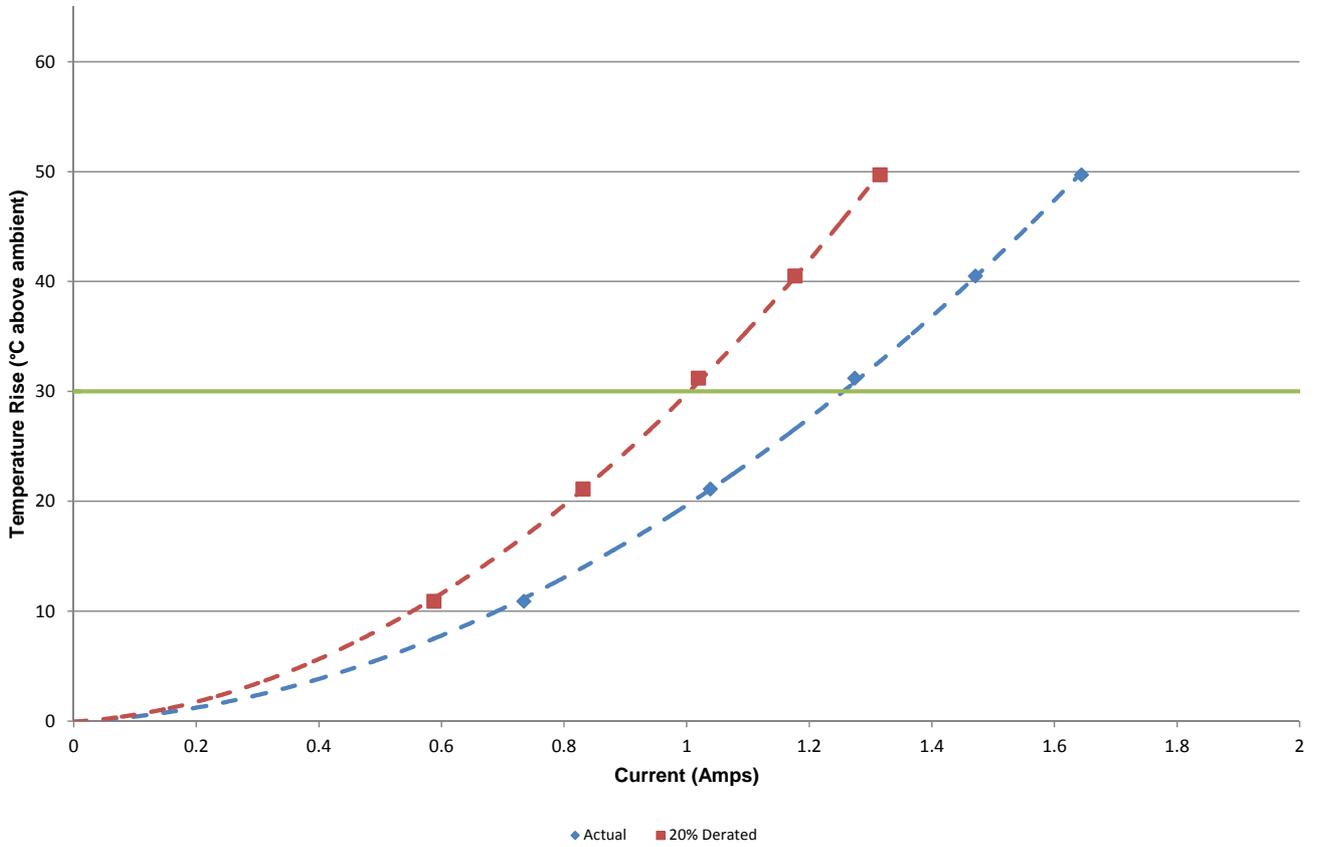
**TEMPERATURE RISE (Current Carrying Capacity, CCC):**

- 1) High quality thermocouples whose temperature slopes track one another were used for temperature monitoring.
- 2) The thermocouples were placed at a location to sense the maximum temperature generated during testing.
- 3) Temperature readings recorded are those for which three successive readings, 15 minutes apart, differ less than 1° C (computer controlled data acquisition).
- 4) Adjacent contacts were powered:
  - a. Linear configuration with 10 adjacent conductors/contacts powered

454284  
 10 (10X1) Contacts in Series  
 Part Numbers: SEAF8-50-1-S-10-2-RA-GP / SEAM8-50-S02.0-S-10-2-GP



454284  
10 (10x1) Contacts in Series  
Part Numbers: SEAF8-50-1-S-10-2-RA-GP / SEAM8-50-S02.0-S-10-2-GP

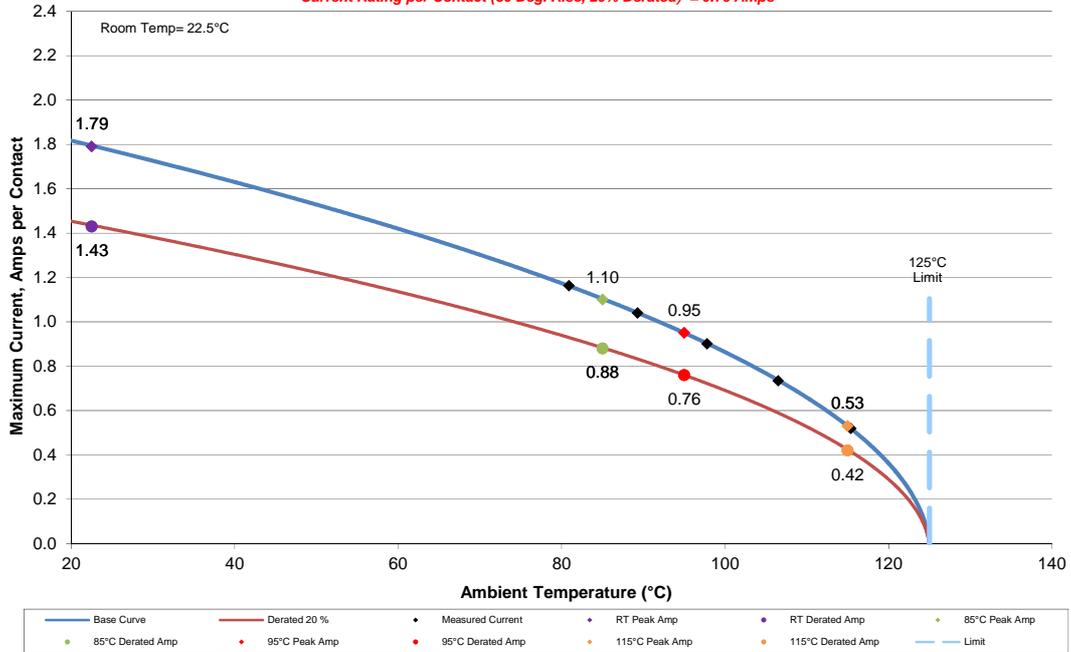


**DATA SUMMARIES Continued**

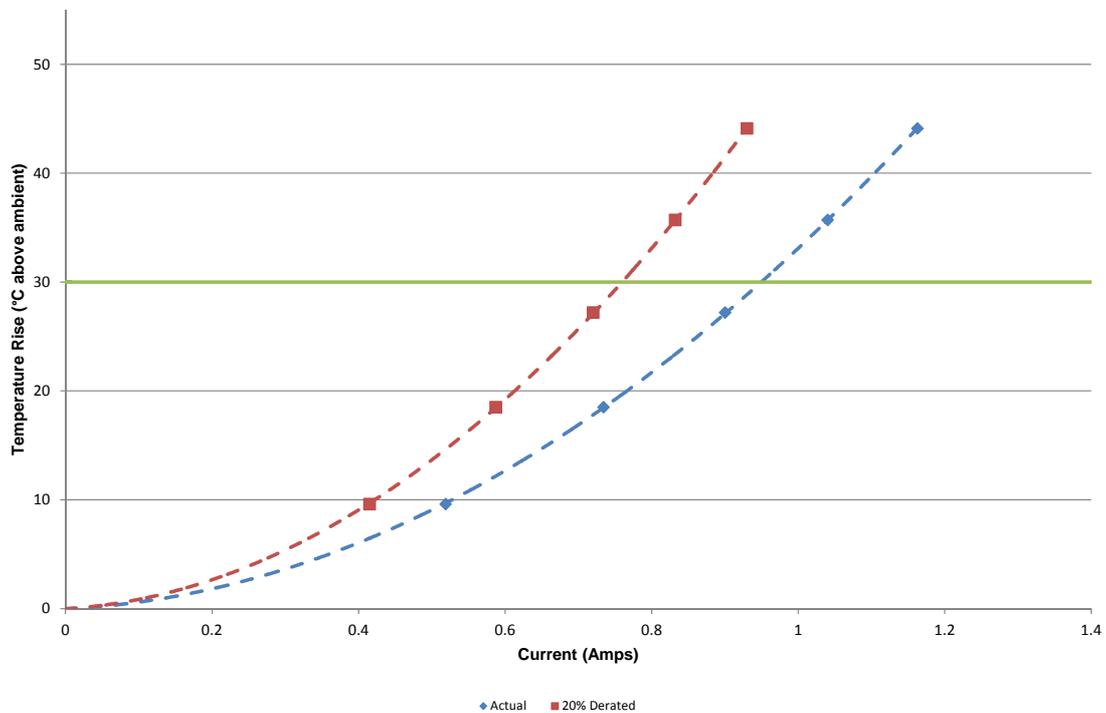
b. Linear configuration with 20 adjacent conductors/contacts powered

454284  
 20 (10X2) Contacts in Series  
 Part Numbers: SEAF8-50-1-S-10-2-RA-GP / SEAM8-50-S02.0-S-10-2-GP

*Current Rating per Contact (30 Deg. Rise, 20% Derated) = 0.76 Amps*



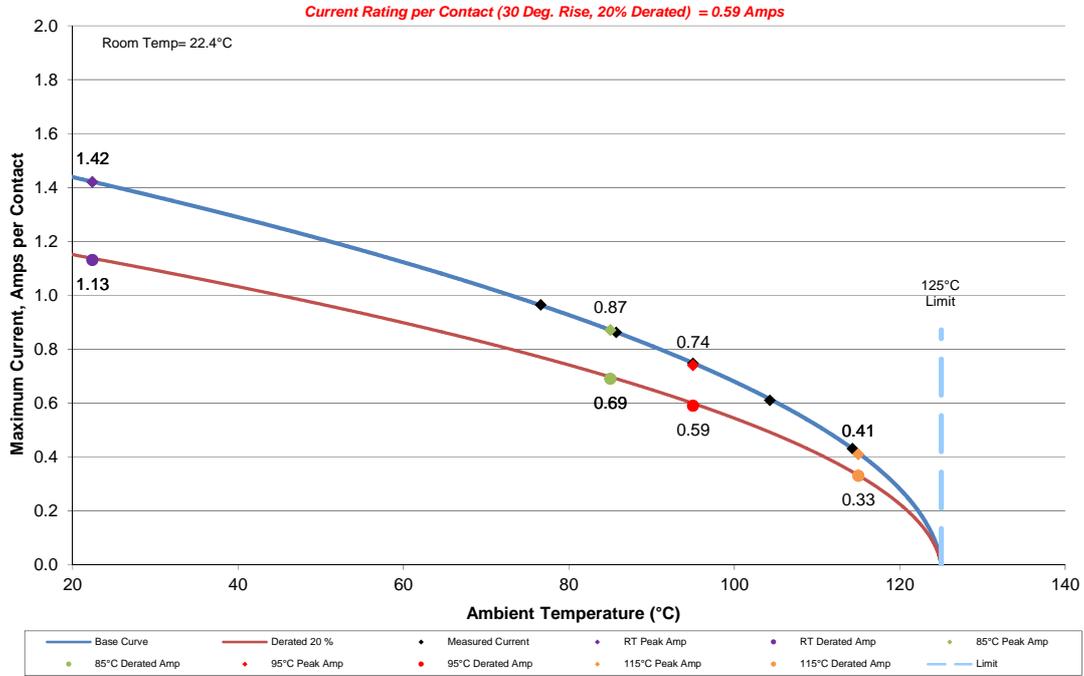
454284  
 20 (10x2) Contacts in Series  
 Part Numbers: SEAF8-50-1-S-10-2-RA-GP / SEAM8-50-S02.0-S-10-2-GP



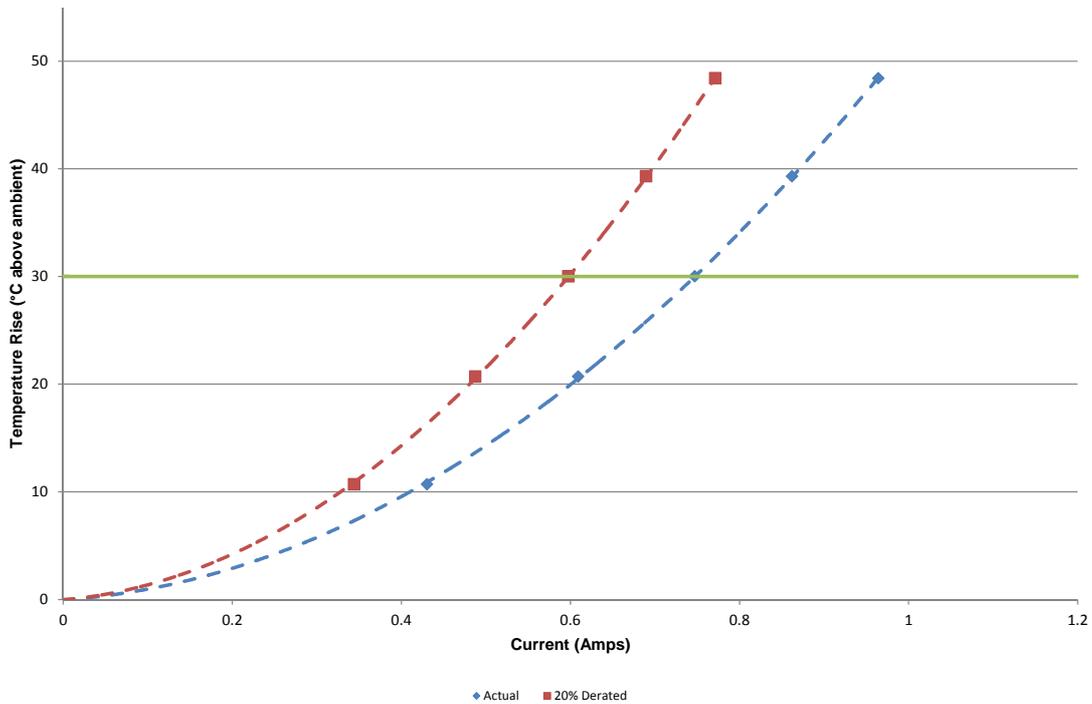
**DATA SUMMARIES Continued**

c. Linear configuration with 30 adjacent conductors/contacts powered

454284  
 30 (10x3) Contacts in Series  
 Part Numbers: SEAF8-50-1-S-10-2-RA-GP / SEAM8-50-S02.0-S-10-2-GP



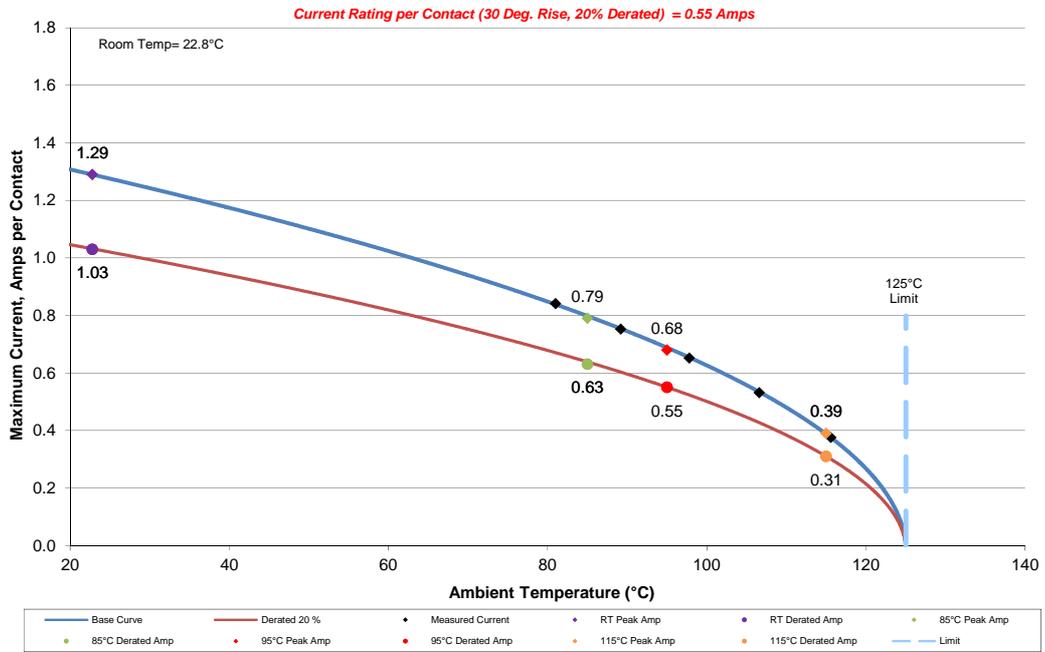
454284  
 30 (10x3) Contacts in Series  
 Part Numbers: SEAF8-50-1-S-10-2-RA-GP / SEAM8-50-S02.0-S-10-2-GP



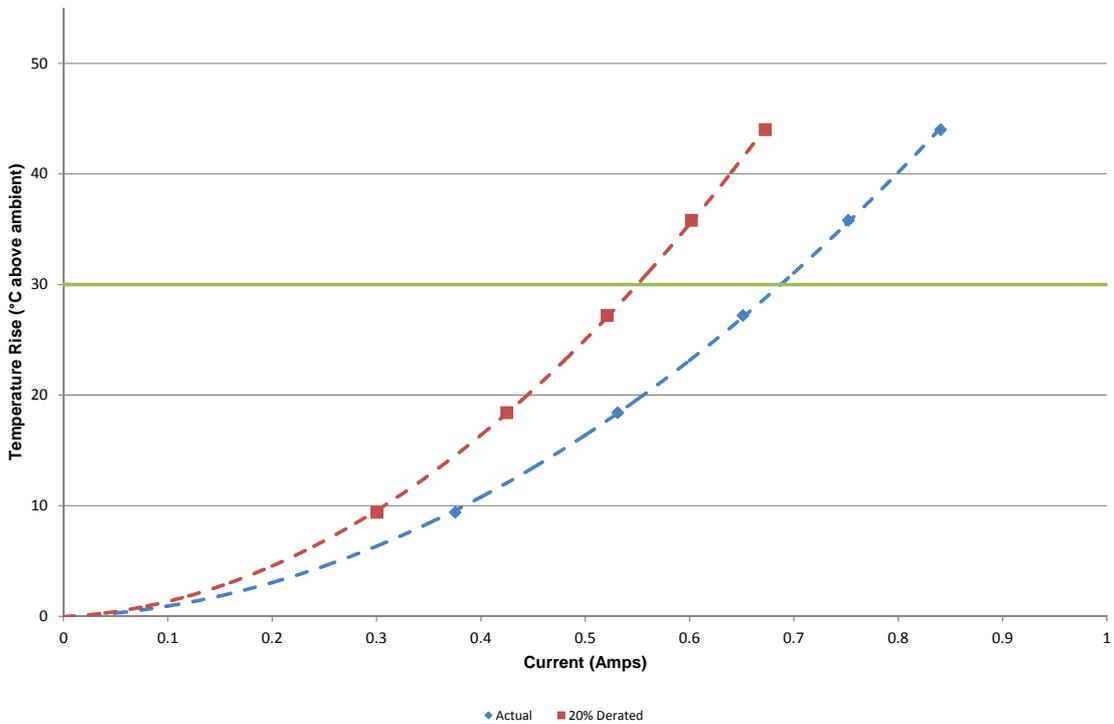
**DATA SUMMARIES Continued**

d. Linear configuration with 40 adjacent conductors/contacts powered

454284  
 40 (10X4) Contacts in Series  
 Part Numbers: SEAF8-50-1-S-10-2-RA-GP / SEAM8-50-S02.0-S-10-2-GP



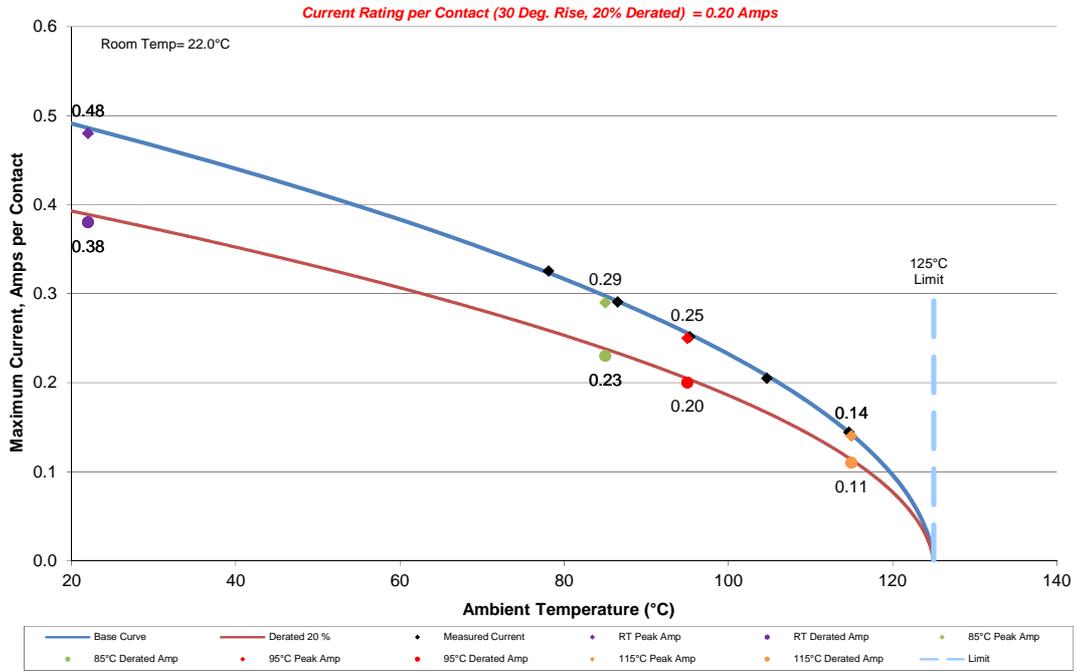
454284  
 40 (10x4) Contacts in Series  
 Part Numbers: SEAF8-50-1-S-10-2-RA-GP / SEAM8-50-S02.0-S-10-2-GP



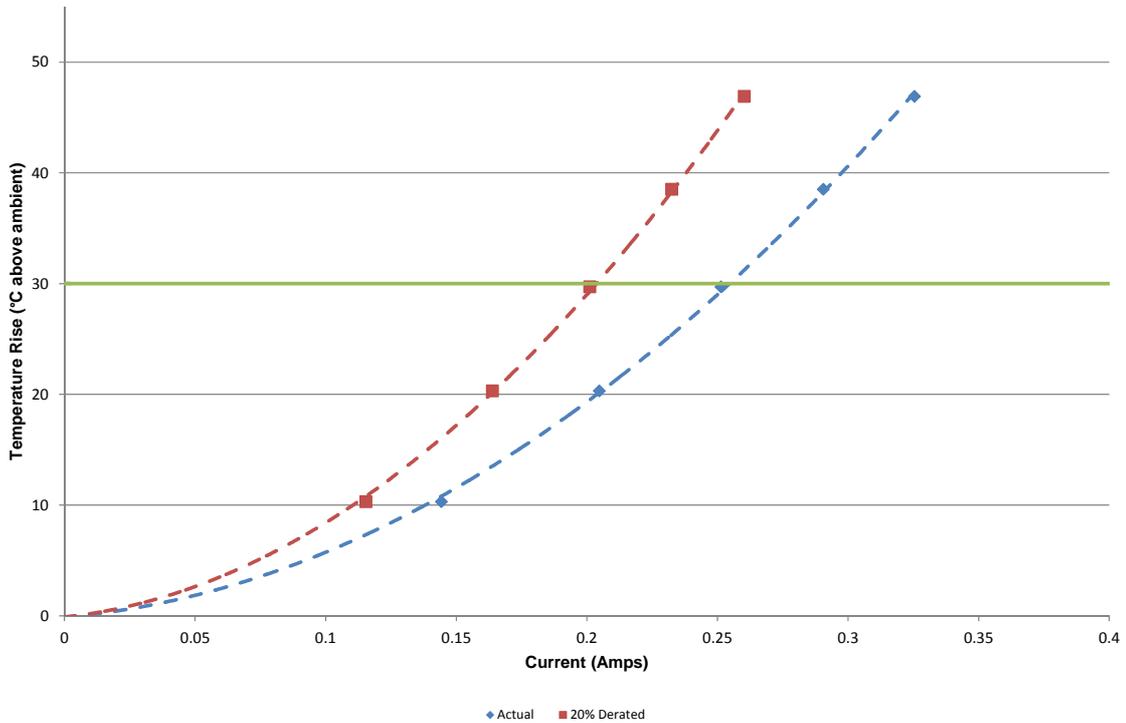
### DATA SUMMARIES Continued

e. Linear configuration with all adjacent conductors/contacts powered

454284  
 500 (All Power)(10x50) Contacts in Series  
 Part Numbers: SEAF8-50-1-S-10-2-RA-GP / SEAM8-50-S02.0-S-10-2-GP



454284  
 500 (All Power)(10x50) Contacts in Series  
 Part Numbers: SEAF8-50-1-S-10-2-RA-GP / SEAM8-50-S02.0-S-10-2-GP



## DATA SUMMARIES Continued

**Mating\Unmating Force:  
Thermal Aging Group**

	Initial				After Thermals			
	Mating		Unmating		Mating		Unmating	
	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)
Minimum	79.41	17.85	48.77	10.96	53.99	12.14	30.66	6.89
Maximum	104.23	23.43	77.10	17.33	64.59	14.52	45.17	10.16
<b>Average</b>	95.79	<b>21.54</b>	66.62	<b>14.98</b>	58.79	<b>13.22</b>	36.62	<b>8.23</b>
St Dev	8.25	1.85	10.09	2.27	4.65	1.04	5.11	1.15
Count	8	8	8	8	8	8	8	8

**Mating\Unmating Durability Group**

	Initial				After 25 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)
Minimum	79.94	17.97	51.13	11.50	87.08	19.58	58.19	13.08
Maximum	104.14	23.41	72.00	16.19	112.59	25.31	64.28	14.45
<b>Average</b>	91.68	<b>20.61</b>	61.49	<b>13.82</b>	97.40	<b>21.90</b>	61.26	<b>13.77</b>
St Dev	7.81	1.76	7.23	1.62	10.79	2.43	1.97	0.44
Count	8	8	8	8	8	8	8	8

	After 50 Cycles				After 75 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)
Minimum	80.88	18.18	55.48	12.47	84.87	19.08	54.62	12.28
Maximum	96.73	21.75	71.11	15.99	94.43	21.23	76.40	17.18
<b>Average</b>	90.31	<b>20.30</b>	62.49	<b>14.05</b>	89.01	<b>20.01</b>	64.40	<b>14.48</b>
St Dev	4.75	1.07	5.08	1.14	3.54	0.80	7.37	1.66
Count	8	8	8	8	8	8	8	8

	After 100 Cycles				After Humidity			
	Mating		Unmating		Mating		Unmating	
	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)
Minimum	84.49	18.99	55.36	12.45	52.79	11.87	32.73	7.36
Maximum	98.67	22.18	79.93	17.97	63.19	14.21	40.32	9.06
<b>Average</b>	89.50	<b>20.12</b>	66.61	<b>14.97</b>	56.77	<b>12.76</b>	37.03	<b>8.33</b>
St Dev	6.08	1.37	8.47	1.90	3.94	0.89	3.17	0.71
Count	8	8	8	8	8	8	8	8

**DATA SUMMARIES Continued**

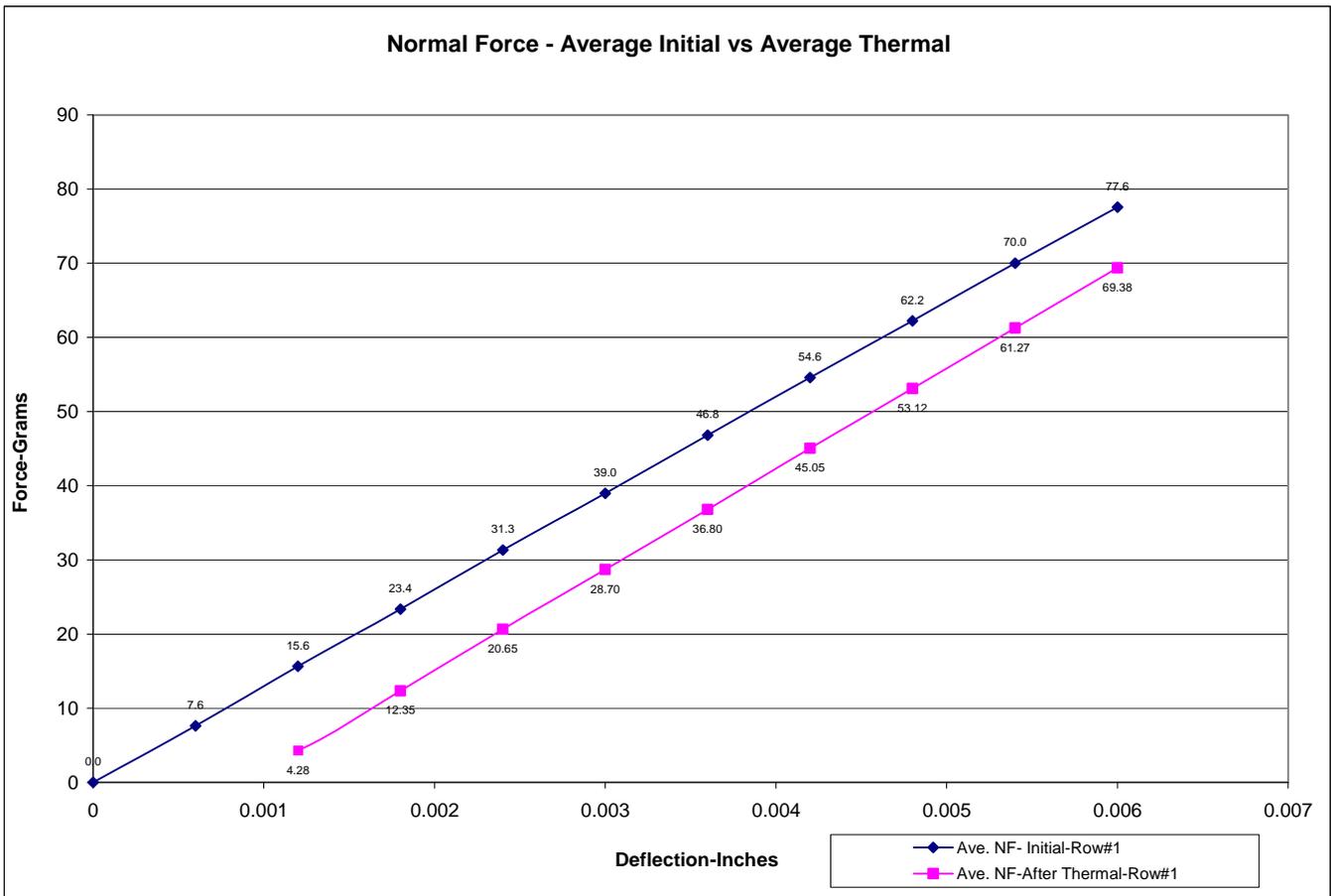
**NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):**

- 1) Calibrated force gauges are used along with computer controlled positioning equipment.
- 2) For Normal force 8-10 measurements are taken and the averages reported.

**Row 1**

Initial	Deflections in inches Forces in Grams										
	0.0006	0.0012	0.0018	0.0024	0.0030	0.0036	0.0042	0.0048	0.0054	0.0060	SET
Averages	7.62	15.63	23.37	31.33	38.98	46.80	54.58	62.23	70.02	77.57	0.0000
Min	7.40	15.40	22.90	30.80	38.40	46.10	53.80	61.30	69.00	76.90	0.0000
Max	8.00	16.00	24.00	31.80	39.40	47.20	55.40	62.90	70.60	78.40	0.0001
St. Dev	0.232	0.234	0.378	0.367	0.371	0.452	0.588	0.565	0.685	0.612	0.0000
Count	6	6	6	6	6	6	6	6	6	6	6

After Thermals	Deflections in inches Forces in Grams										
	0.0006	0.0012	0.0018	0.0024	0.0030	0.0036	0.0042	0.0048	0.0054	0.0060	SET
Averages	0.00	4.28	12.35	20.65	28.70	36.80	45.05	53.12	61.27	69.38	0.0008
Min	0.00	1.80	9.90	18.70	27.00	35.40	43.40	52.00	60.40	68.30	0.0007
Max	0.00	6.70	14.40	22.20	30.30	37.80	46.40	54.30	62.90	71.70	0.0010
St. Dev	0.000	1.993	1.684	1.412	1.310	1.002	1.164	0.842	0.948	1.267	0.0001
Count	6	6	6	6	6	6	6	6	6	6	6



**DATA SUMMARIES Continued**

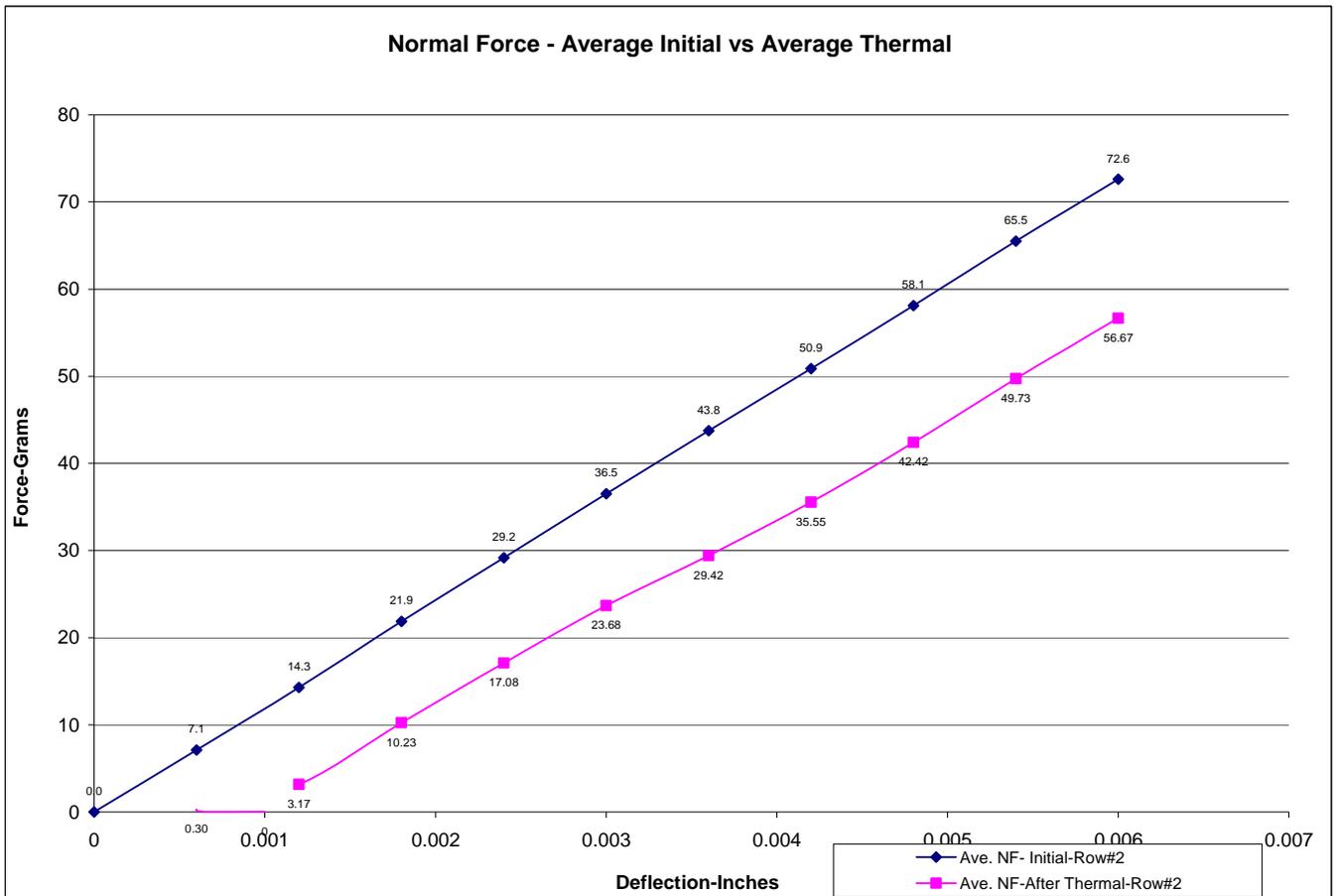
**NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):**

- 1) Calibrated force gauges are used along with computer controlled positioning equipment.
- 2) For Normal force 8-10 measurements are taken and the averages reported.

**Row 2**

Initial	Deflections in inches Forces in Grams										
	0.0006	0.0012	0.0018	0.0024	0.0030	0.0036	0.0042	0.0048	0.0054	0.0060	SET
Averages	7.10	14.28	21.87	29.17	36.52	43.75	50.88	58.12	65.52	72.60	0.0000
Min	6.70	12.50	19.90	27.30	34.70	42.10	48.80	56.20	63.60	70.80	0.0000
Max	7.60	14.70	22.60	29.80	37.20	44.40	52.00	59.40	66.70	73.80	0.0001
St. Dev	0.346	0.877	0.991	0.948	0.924	0.862	1.177	1.116	1.065	1.068	0.0001
Count	6	6	6	6	6	6	6	6	6	6	6

After Thermals	Deflections in inches Forces in Grams										
	0.0006	0.0012	0.0018	0.0024	0.0030	0.0036	0.0042	0.0048	0.0054	0.0060	SET
Averages	0.30	3.17	10.23	17.08	23.68	29.42	35.55	42.42	49.73	56.67	0.0009
Min	0.00	0.10	7.00	14.10	21.00	25.90	31.20	38.00	44.70	51.30	0.0004
Max	1.80	9.10	15.80	22.80	29.60	36.90	44.30	51.50	58.90	65.60	0.0012
St. Dev	0.735	3.412	3.189	3.377	3.453	4.180	5.056	5.304	5.448	5.542	0.0003
Count	6	6	6	6	6	6	6	6	6	6	6



**DATA SUMMARIES Continued**

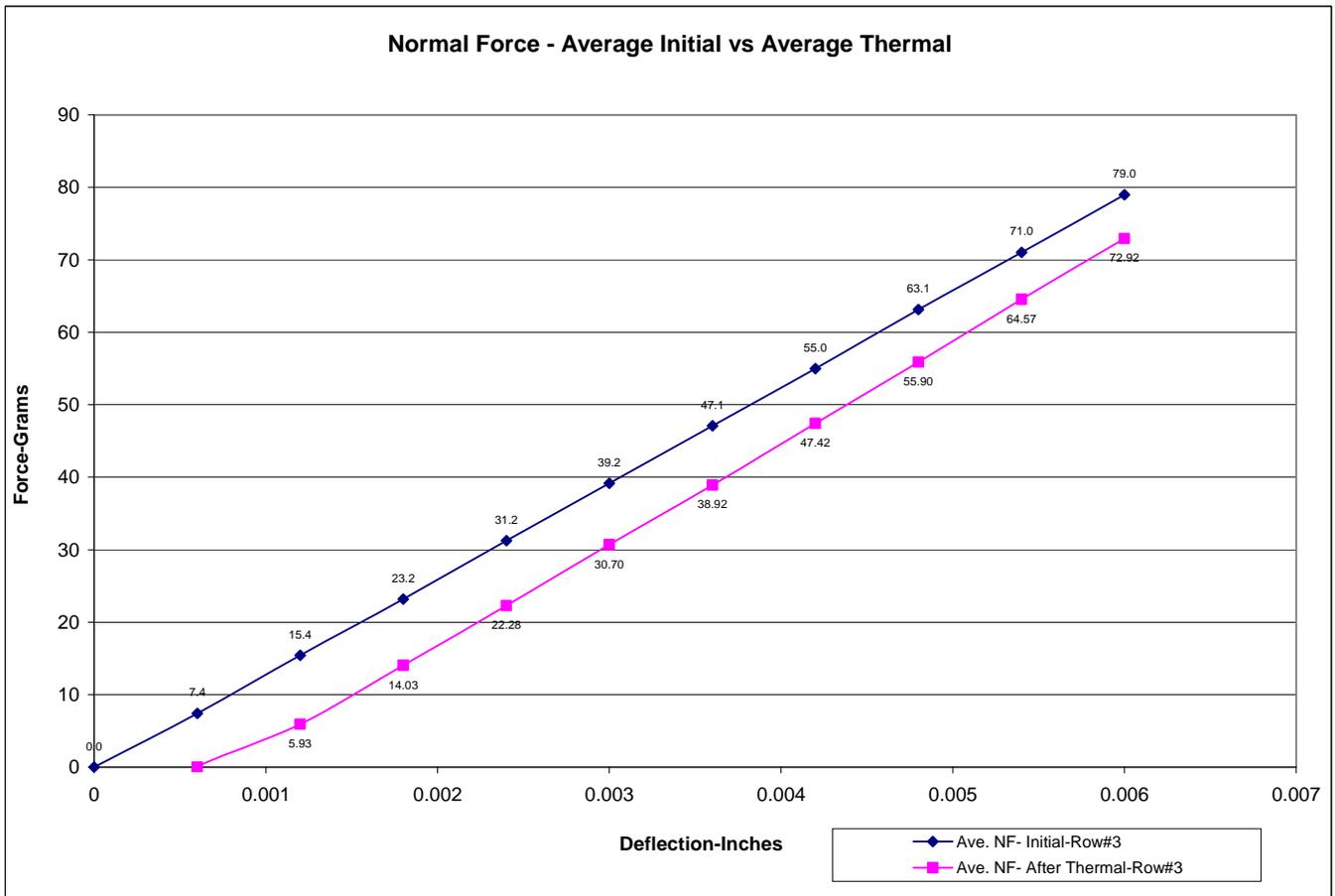
**NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):**

- 1) Calibrated force gauges are used along with computer controlled positioning equipment.
- 2) For Normal force 8-10 measurements are taken and the averages reported.

**Row 3**

Initial	Deflections in inches Forces in Grams										
	0.0006	0.0012	0.0018	0.0024	0.0030	0.0036	0.0042	0.0048	0.0054	0.0060	SET
Averages	7.40	15.42	23.20	31.23	39.18	47.08	55.00	63.13	71.03	78.98	0.0000
Min	6.90	14.60	22.40	30.50	38.10	46.40	54.20	62.40	70.20	78.40	0.0000
Max	7.90	16.60	24.00	32.40	40.10	48.80	56.80	64.40	72.50	80.80	0.0001
St. Dev	0.335	0.668	0.600	0.700	0.649	0.933	0.990	0.731	0.869	0.954	0.0000
Count	6	6	6	6	6	6	6	6	6	6	6

After Thermals	Deflections in inches Forces in Grams										
	0.0006	0.0012	0.0018	0.0024	0.0030	0.0036	0.0042	0.0048	0.0054	0.0060	SET
Averages	0.00	5.93	14.03	22.28	30.70	38.92	47.42	55.90	64.57	72.92	0.0008
Min	0.00	0.00	7.00	15.30	22.80	31.00	39.00	47.10	55.60	63.50	0.0006
Max	0.00	8.40	16.50	24.70	33.60	41.50	50.60	59.30	68.20	76.40	0.0012
St. Dev	0.000	3.099	3.585	3.637	4.063	4.056	4.362	4.566	4.663	4.811	0.0002
Count	6	6	6	6	6	6	6	6	6	6	6



**DATA SUMMARIES Continued**

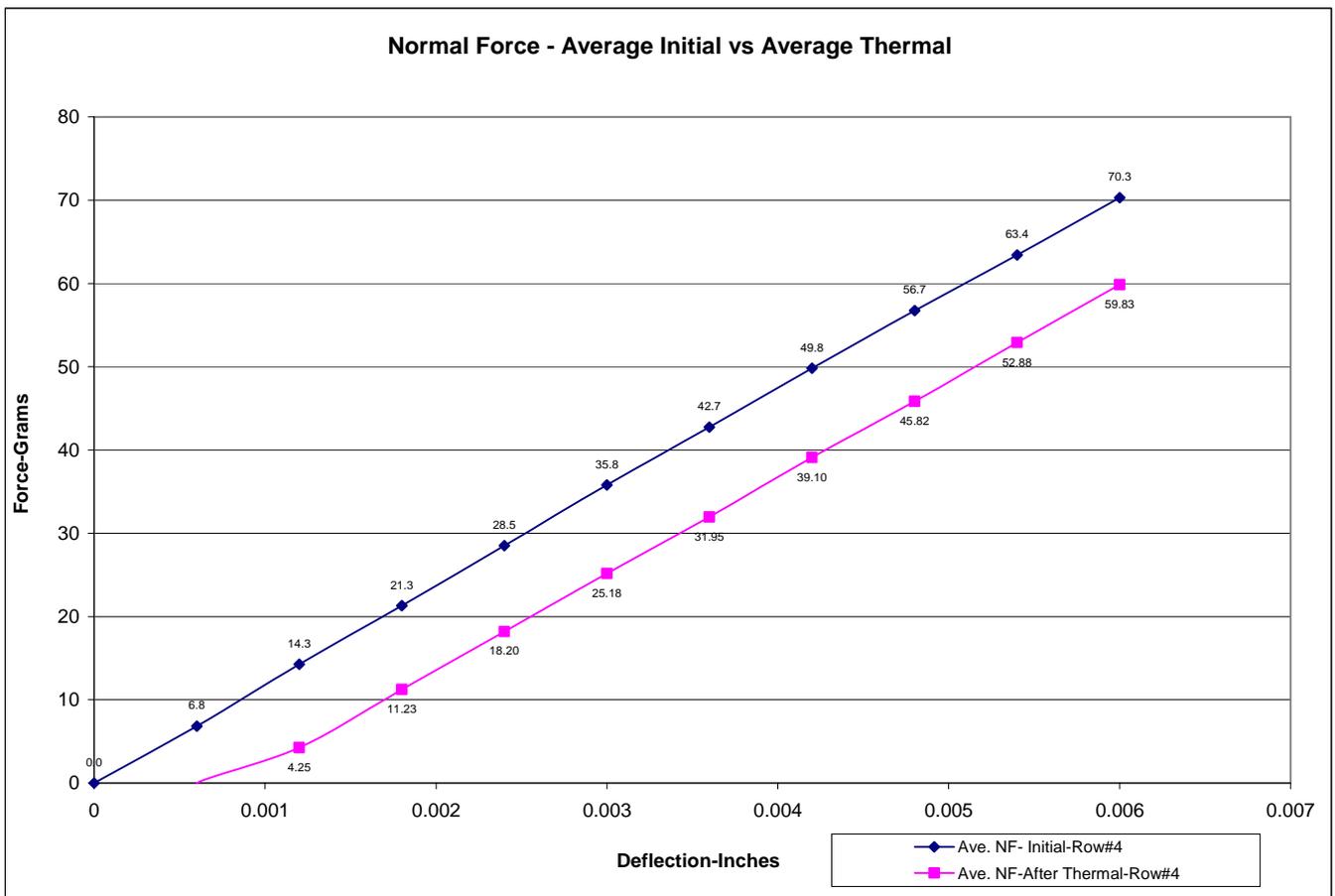
**NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):**

- 1) Calibrated force gauges are used along with computer controlled positioning equipment.
- 2) For Normal force 8-10 measurements are taken and the averages reported.

**Row 4**

Initial	Deflections in inches Forces in Grams										
	0.0006	0.0012	0.0018	0.0024	0.0030	0.0036	0.0042	0.0048	0.0054	0.0060	SET
Averages	6.83	14.27	21.32	28.52	35.78	42.73	49.82	56.73	63.40	70.30	0.0001
Min	6.20	13.60	20.40	27.30	34.50	41.30	48.40	55.40	62.30	69.10	0.0000
Max	7.40	15.10	23.40	31.90	39.60	46.90	53.90	60.50	66.40	71.90	0.0004
St. Dev	0.446	0.484	1.059	1.713	1.911	2.113	2.063	1.950	1.661	1.105	0.0001
Count	6	6	6	6	6	6	6	6	6	6	6

After Thermals	Deflections in inches Forces in Grams										
	0.0006	0.0012	0.0018	0.0024	0.0030	0.0036	0.0042	0.0048	0.0054	0.0060	SET
Averages	0.00	4.25	11.23	18.20	25.18	31.95	39.10	45.82	52.88	59.83	0.0008
Min	0.00	3.20	9.80	16.50	23.40	30.30	37.30	43.70	50.60	57.70	0.0006
Max	0.00	5.80	13.00	19.90	26.80	33.60	40.70	47.40	54.70	61.50	0.0009
St. Dev	0.000	0.860	1.046	1.095	1.087	1.077	1.140	1.232	1.379	1.341	0.0001
Count	6	6	6	6	6	6	6	6	6	6	6



**DATA SUMMARIES Continued**

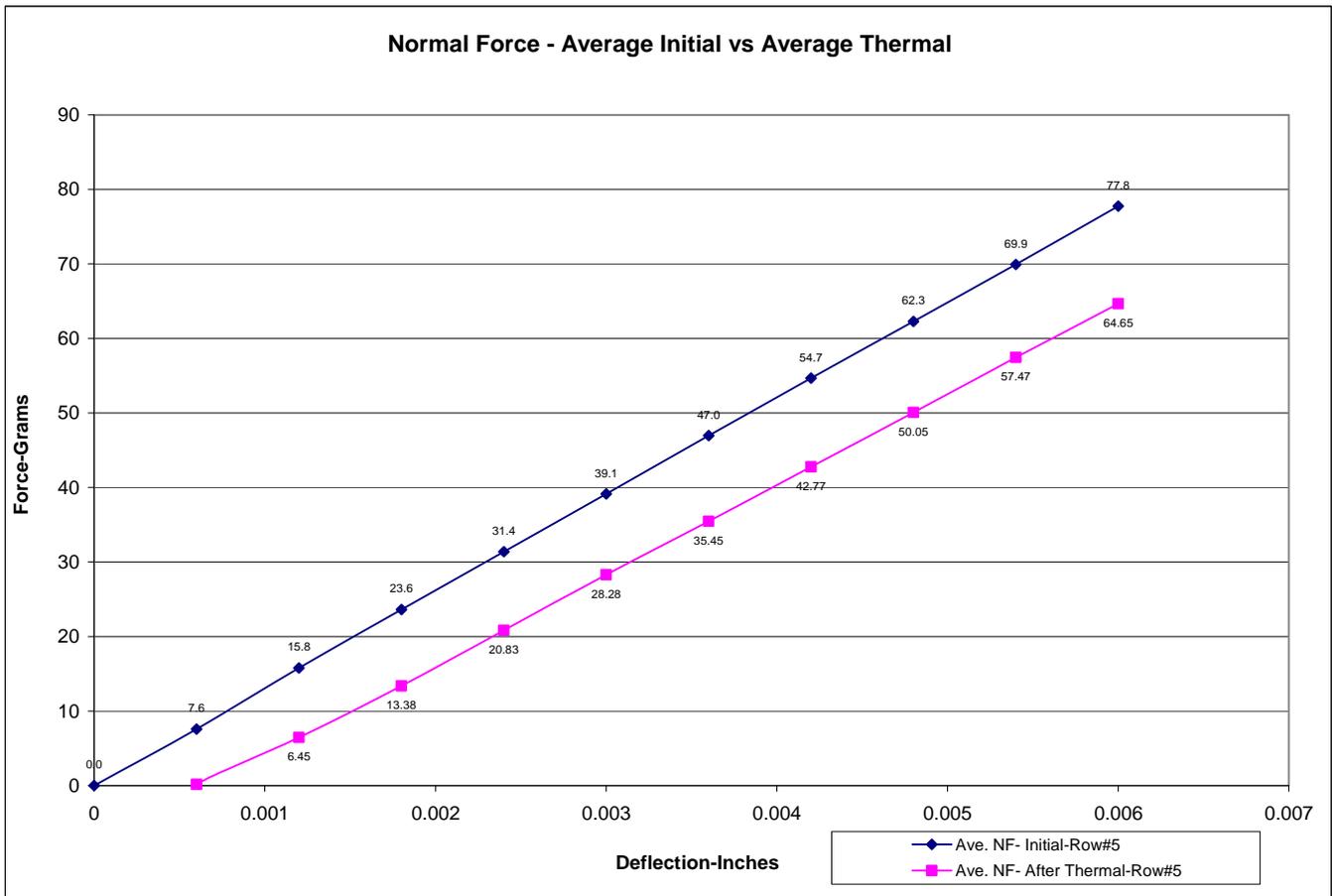
**NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):**

- 1) Calibrated force gauges are used along with computer controlled positioning equipment.
- 2) For Normal force 8-10 measurements are taken and the averages reported.

**Row 5**

Initial	Deflections in inches Forces in Grams										
	<u>0.0006</u>	<u>0.0012</u>	<u>0.0018</u>	<u>0.0024</u>	<u>0.0030</u>	<u>0.0036</u>	<u>0.0042</u>	<u>0.0048</u>	<u>0.0054</u>	<u>0.0060</u>	<i>SET</i>
<b>Averages</b>	<b>7.57</b>	<b>15.78</b>	<b>23.62</b>	<b>31.40</b>	<b>39.13</b>	<b>46.95</b>	<b>54.65</b>	<b>62.28</b>	<b>69.93</b>	<b>77.77</b>	<b>0.0000</b>
<b>Min</b>	7.10	15.50	23.20	31.00	38.50	46.40	53.70	61.70	69.30	76.80	0.0000
<b>Max</b>	7.90	16.10	23.90	31.70	39.70	47.50	55.10	63.00	70.30	78.90	0.0001
<b>St. Dev</b>	0.288	0.204	0.248	0.283	0.468	0.437	0.493	0.527	0.423	0.742	0.0001
<b>Count</b>	6	6	6	6	6	6	6	6	6	6	6

After Thermals	Deflections in inches Forces in Grams										
	<u>0.0006</u>	<u>0.0012</u>	<u>0.0018</u>	<u>0.0024</u>	<u>0.0030</u>	<u>0.0036</u>	<u>0.0042</u>	<u>0.0048</u>	<u>0.0054</u>	<u>0.0060</u>	<i>SET</i>
<b>Averages</b>	<b>0.17</b>	<b>6.45</b>	<b>13.38</b>	<b>20.83</b>	<b>28.28</b>	<b>35.45</b>	<b>42.77</b>	<b>50.05</b>	<b>57.47</b>	<b>64.65</b>	<b>0.0007</b>
<b>Min</b>	0.00	4.30	11.10	18.60	26.40	33.80	41.00	48.50	56.10	63.40	0.0006
<b>Max</b>	1.00	8.40	15.30	22.80	29.90	37.40	44.90	51.80	59.10	66.00	0.0008
<b>St. Dev</b>	0.408	1.449	1.651	1.623	1.412	1.397	1.499	1.322	1.316	1.086	0.0001
<b>Count</b>	6	6	6	6	6	6	6	6	6	6	6



**DATA SUMMARIES Continued**

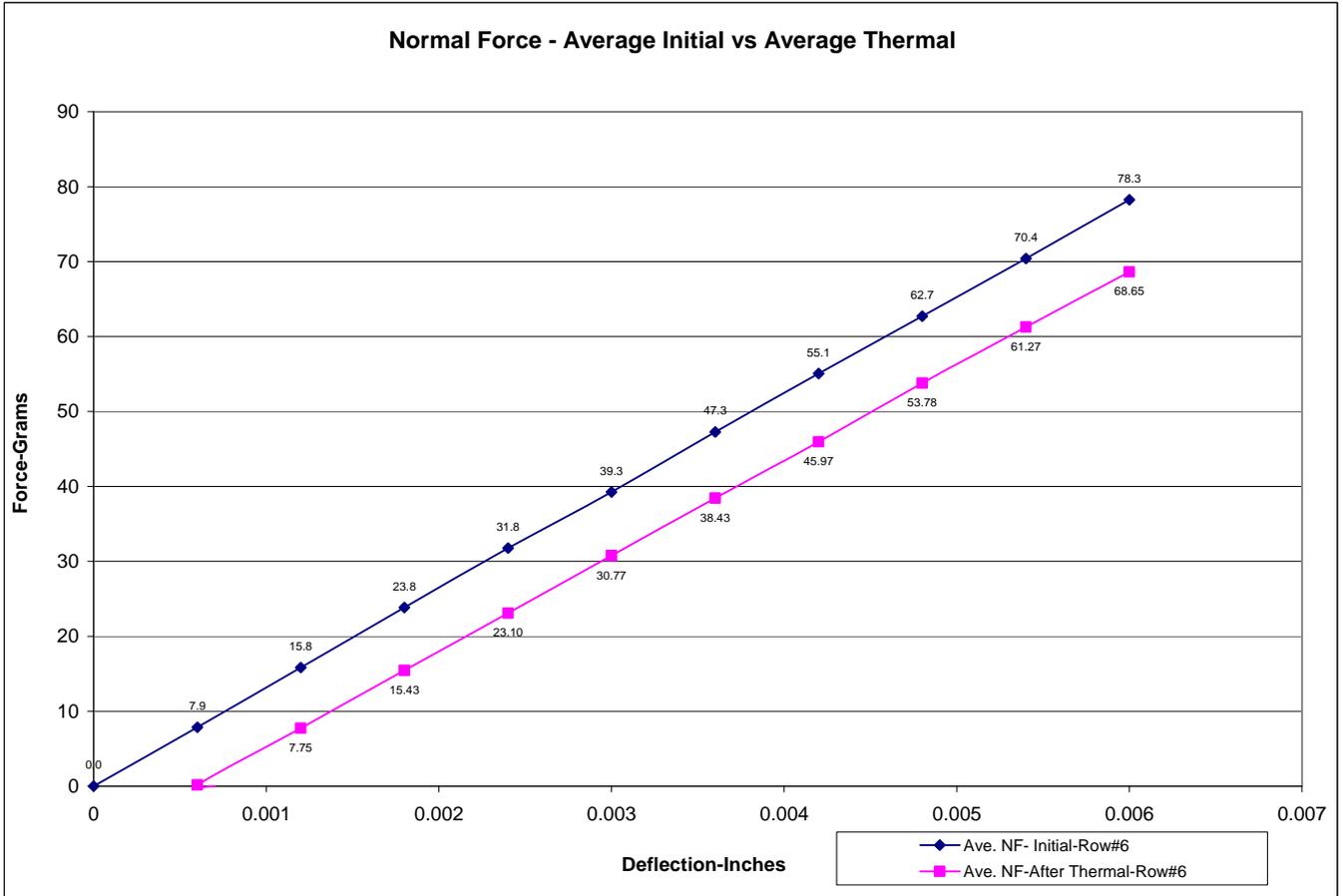
**NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):**

- 1) Calibrated force gauges are used along with computer controlled positioning equipment.
- 2) For Normal force 8-10 measurements are taken and the averages reported.

**Row 6**

Initial	Deflections in inches Forces in Grams										
	0.0006	0.0012	0.0018	0.0024	0.0030	0.0036	0.0042	0.0048	0.0054	0.0060	SET
Averages	7.85	15.83	23.83	31.77	39.25	47.27	55.07	62.70	70.43	78.25	0.0000
Min	7.20	14.80	23.00	31.00	38.20	46.10	54.20	61.70	69.30	77.10	0.0000
Max	8.20	16.30	24.50	32.60	40.40	48.20	56.10	63.50	71.20	79.30	0.0001
St. Dev	0.383	0.539	0.602	0.659	0.782	0.787	0.683	0.660	0.737	0.718	0.0001
Count	6	6	6	6	6	6	6	6	6	6	6

After Thermals	Deflections in inches Forces in Grams										
	0.0006	0.0012	0.0018	0.0024	0.0030	0.0036	0.0042	0.0048	0.0054	0.0060	SET
Averages	0.15	7.75	15.43	23.10	30.77	38.43	45.97	53.78	61.27	68.65	0.0006
Min	0.00	6.90	13.70	21.00	28.90	35.50	43.50	51.00	58.50	66.00	0.0005
Max	0.60	8.20	16.00	24.00	31.60	40.00	47.90	56.20	63.30	70.80	0.0006
St. Dev	0.235	0.513	0.862	1.117	1.019	1.669	1.632	1.901	1.937	1.997	0.0001
Count	6	6	6	6	6	6	6	6	6	6	6



**DATA SUMMARIES Continued**

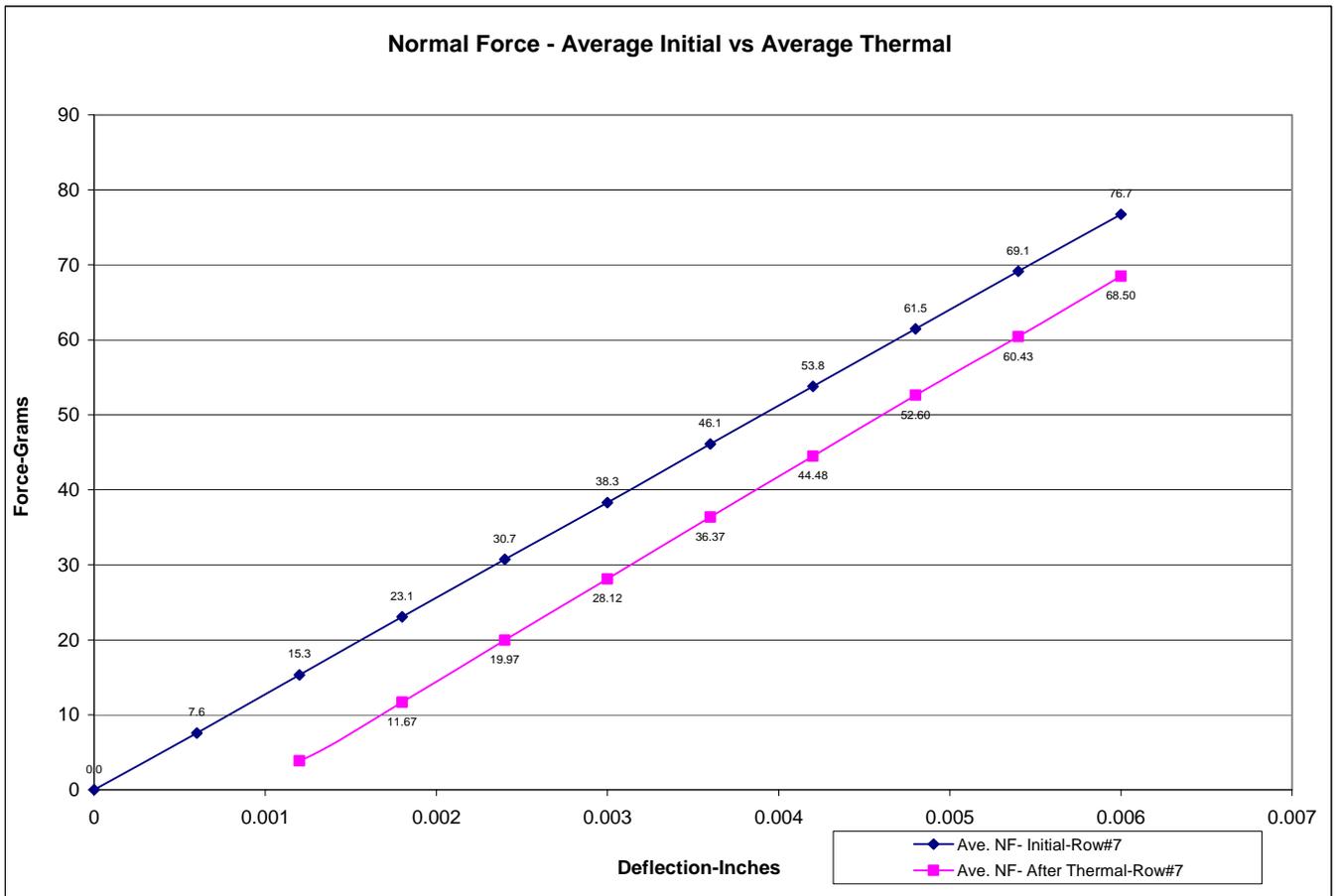
**NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):**

- 1) Calibrated force gauges are used along with computer controlled positioning equipment.
- 2) For Normal force 8-10 measurements are taken and the averages reported.

**Row 7**

Initial	Deflections in inches Forces in Grams										
	0.0006	0.0012	0.0018	0.0024	0.0030	0.0036	0.0042	0.0048	0.0054	0.0060	SET
Averages	7.55	15.32	23.08	30.72	38.30	46.10	53.78	61.47	69.13	76.73	0.0000
Min	7.00	15.00	22.20	29.70	37.30	45.30	52.40	60.20	67.20	74.90	0.0000
Max	8.00	15.60	23.80	31.30	39.50	46.70	54.50	62.40	70.20	78.00	0.0001
St. Dev	0.409	0.232	0.605	0.608	0.738	0.607	0.828	0.838	1.046	1.111	0.0000
Count	6	6	6	6	6	6	6	6	6	6	6

After Thermals	Deflections in inches Forces in Grams										
	0.0006	0.0012	0.0018	0.0024	0.0030	0.0036	0.0042	0.0048	0.0054	0.0060	SET
Averages	0.00	3.87	11.67	19.97	28.12	36.37	44.48	52.60	60.43	68.50	0.0009
Min	0.00	1.20	9.50	17.00	24.50	33.30	41.00	48.80	56.60	64.30	0.0007
Max	0.00	7.80	15.90	24.00	32.00	41.00	48.80	57.10	64.50	72.80	0.0011
St. Dev	0.000	2.421	2.581	2.863	3.085	3.272	3.252	3.530	3.312	3.694	0.0001
Count	6	6	6	6	6	6	6	6	6	6	6



**DATA SUMMARIES Continued**

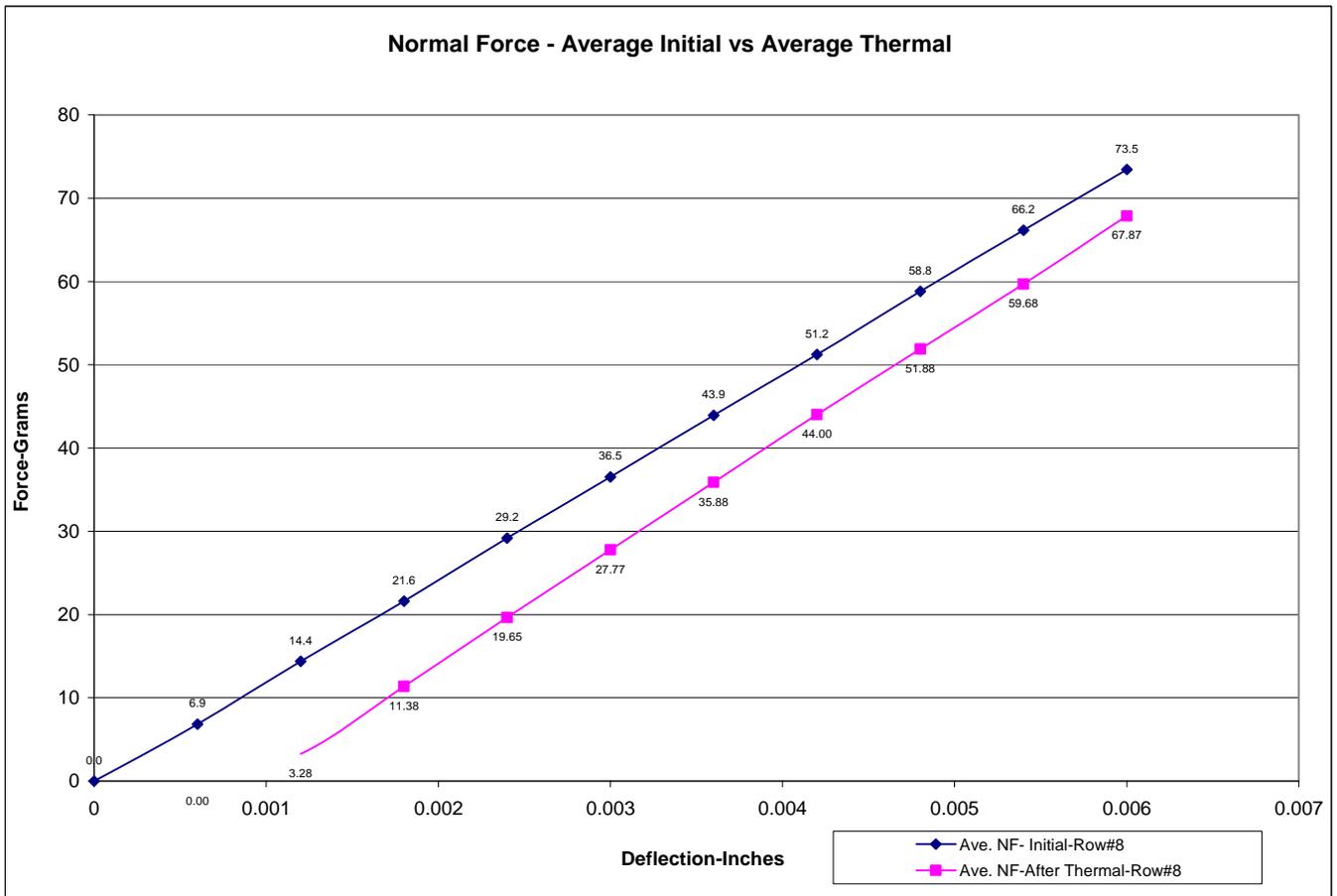
**NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):**

- 1) Calibrated force gauges are used along with computer controlled positioning equipment.
- 2) For Normal force 8-10 measurements are taken and the averages reported.

**Row 8**

Initial	Deflections in inches Forces in Grams										
	0.0006	0.0012	0.0018	0.0024	0.0030	0.0036	0.0042	0.0048	0.0054	0.0060	SET
Averages	6.85	14.38	21.62	29.17	36.52	43.93	51.22	58.82	66.15	73.45	0.0000
Min	6.70	13.60	21.00	28.40	36.10	43.20	50.40	58.30	64.90	72.50	0.0000
Max	7.10	14.90	22.10	29.90	37.00	45.00	52.30	59.90	67.40	74.40	0.0001
St. Dev	0.164	0.449	0.527	0.561	0.392	0.668	0.733	0.665	0.905	0.692	0.0001
Count	6	6	6	6	6	6	6	6	6	6	6

After Thermals	Deflections in inches Forces in Grams										
	0.0006	0.0012	0.0018	0.0024	0.0030	0.0036	0.0042	0.0048	0.0054	0.0060	SET
Averages	0.00	3.28	11.38	19.65	27.77	35.88	44.00	51.88	59.68	67.87	0.0009
Min	0.00	0.70	9.20	17.40	26.00	34.20	42.10	49.90	57.50	65.90	0.0007
Max	0.00	6.60	14.70	22.90	30.90	38.80	47.10	55.00	63.10	71.20	0.0011
St. Dev	0.000	2.447	2.567	2.350	2.318	2.230	2.317	2.354	2.553	2.313	0.0002
Count	6	6	6	6	6	6	6	6	6	6	6



**DATA SUMMARIES Continued**

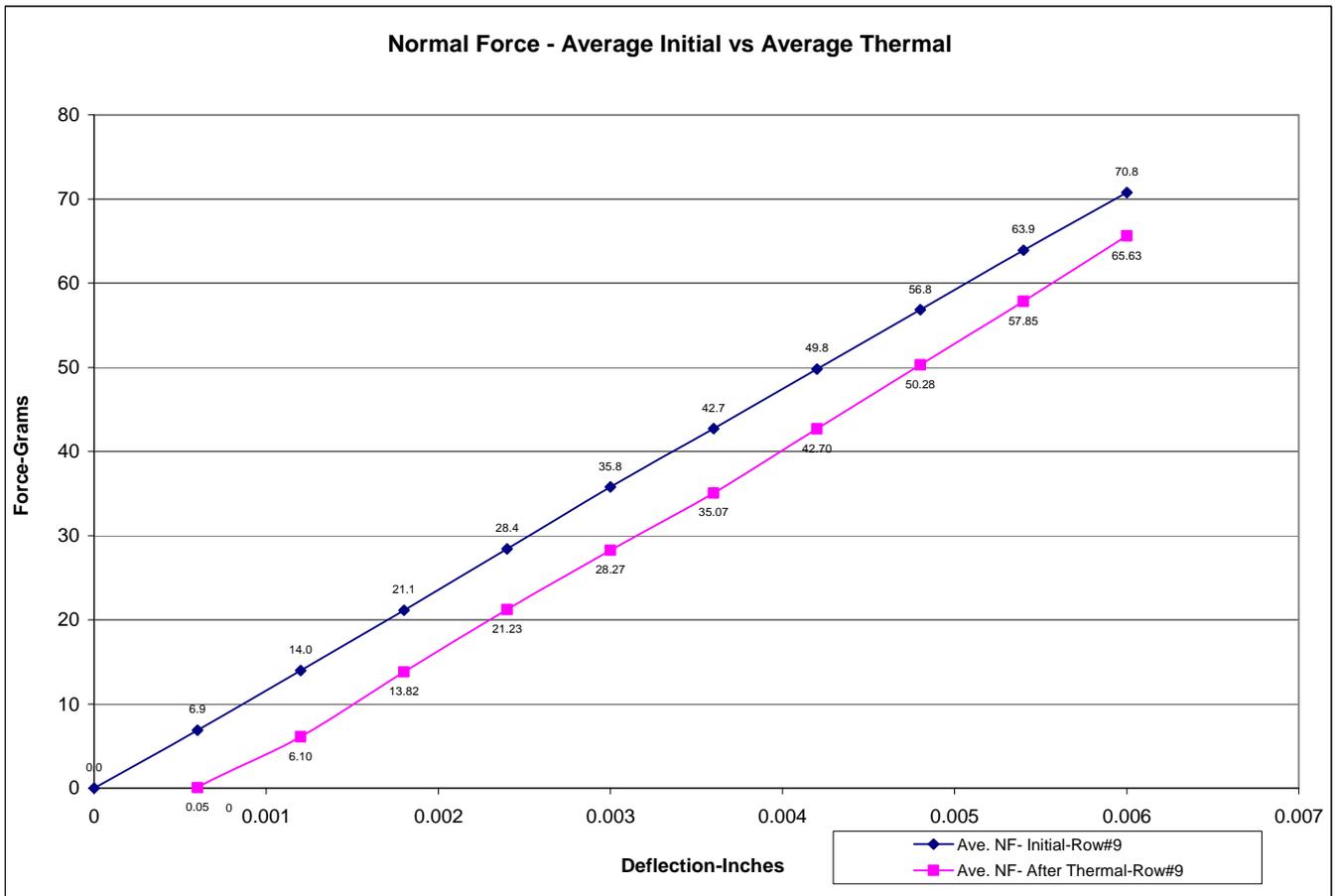
**NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):**

- 1) Calibrated force gauges are used along with computer controlled positioning equipment.
- 2) For Normal force 8-10 measurements are taken and the averages reported.

**Row 9**

Initial	Deflections in inches Forces in Grams										
	0.0006	0.0012	0.0018	0.0024	0.0030	0.0036	0.0042	0.0048	0.0054	0.0060	SET
Averages	6.87	13.98	21.13	28.43	35.78	42.72	49.78	56.83	63.90	70.75	0.0001
Min	6.30	13.70	20.60	28.10	35.30	42.40	49.40	56.50	63.60	70.60	0.0000
Max	7.20	14.20	21.60	29.10	36.30	43.40	50.10	57.10	64.30	71.10	0.0001
St. Dev	0.327	0.183	0.427	0.350	0.337	0.366	0.264	0.250	0.245	0.187	0.0001
Count	6	6	6	6	6	6	6	6	6	6	6

After Thermals	Deflections in inches Forces in Grams										
	0.0006	0.0012	0.0018	0.0024	0.0030	0.0036	0.0042	0.0048	0.0054	0.0060	SET
Averages	0.05	6.10	13.82	21.23	28.27	35.07	42.70	50.28	57.85	65.63	0.0007
Min	0.00	4.70	12.10	19.60	26.00	31.90	39.30	46.60	54.60	61.90	0.0006
Max	0.30	8.10	15.90	24.00	31.40	39.50	47.00	55.60	62.90	70.90	0.0008
St. Dev	0.122	1.313	1.416	1.741	2.107	2.705	2.840	3.218	3.121	3.333	0.0001
Count	6	6	6	6	6	6	6	6	6	6	6



**DATA SUMMARIES Continued**

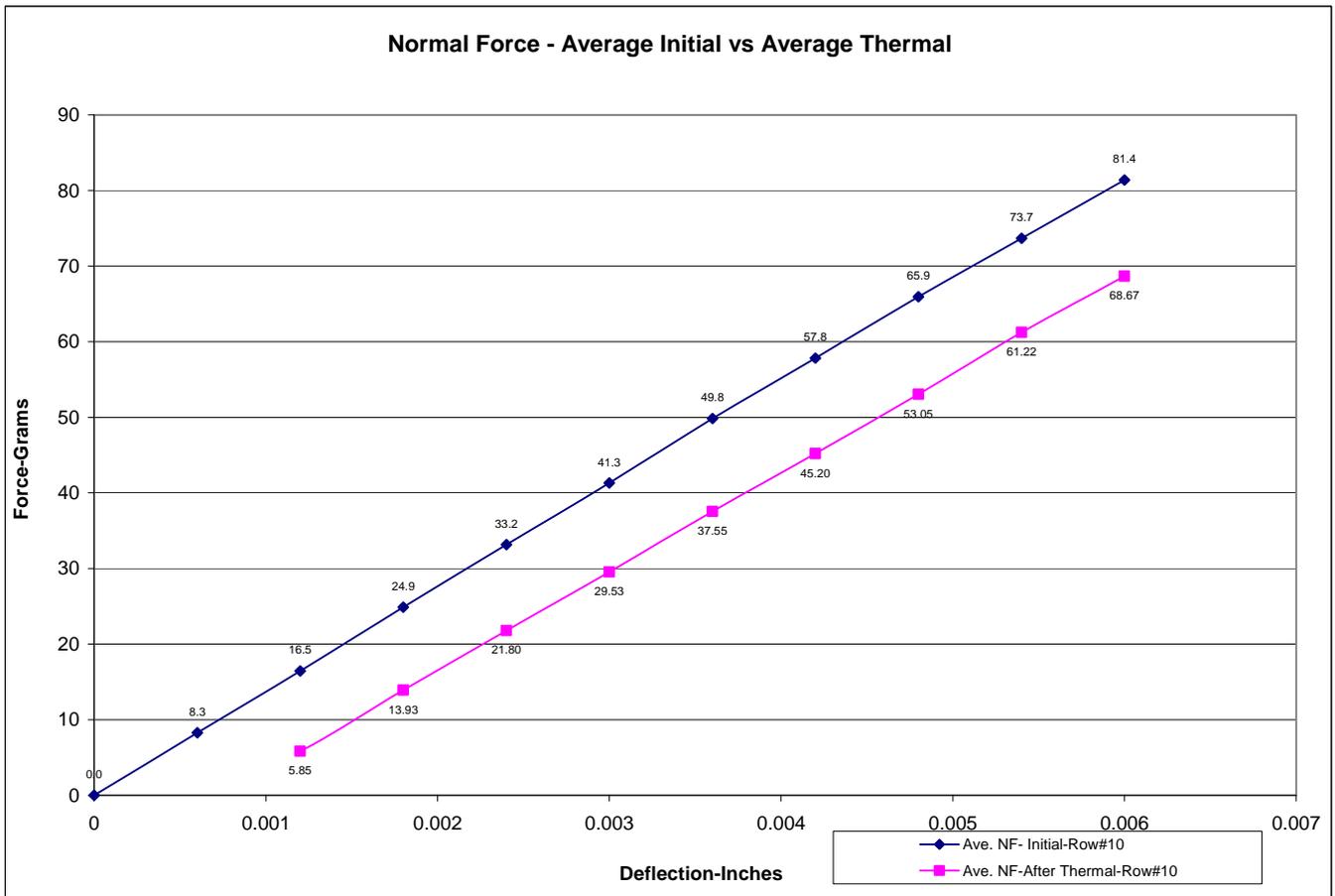
**NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):**

- 1) Calibrated force gauges are used along with computer controlled positioning equipment.
- 2) For Normal force 8-10 measurements are taken and the averages reported.

**Row 10**

Initial	Deflections in inches Forces in Grams										
	0.0006	0.0012	0.0018	0.0024	0.0030	0.0036	0.0042	0.0048	0.0054	0.0060	SET
Averages	8.27	16.47	24.88	33.15	41.32	49.83	57.83	65.93	73.67	81.40	0.0000
Min	8.10	16.10	24.20	32.40	40.40	49.00	57.00	64.60	72.60	79.90	0.0000
Max	8.40	17.00	25.20	33.60	41.80	50.30	58.30	66.50	74.30	82.20	0.0001
St. Dev	0.151	0.388	0.371	0.459	0.504	0.441	0.441	0.712	0.572	0.810	0.0001
Count	6	6	6	6	6	6	6	6	6	6	6

After Thermals	Deflections in inches Forces in Grams										
	0.0006	0.0012	0.0018	0.0024	0.0030	0.0036	0.0042	0.0048	0.0054	0.0060	SET
Averages	0.00	5.85	13.93	21.80	29.53	37.55	45.20	53.05	61.22	68.67	0.0008
Min	0.00	4.90	12.90	21.10	28.80	36.20	43.80	50.90	58.90	66.10	0.0006
Max	0.00	6.70	14.70	22.70	31.00	39.40	47.20	55.40	64.30	71.80	0.0008
St. Dev	0.000	0.766	0.712	0.651	0.991	1.159	1.519	1.767	2.075	2.264	0.0001
Count	6	6	6	6	6	6	6	6	6	6	6



**DATA SUMMARIES Continued****INSULATION RESISTANCE (IR):**

	Pin to Pin		
	Mated	Unmated	Unmated
Minimum	<b>SEAF8-RA/SEAM8-GP</b>	<b>SEAF8-RA</b>	<b>SEAM8-GP</b>
<b>Initial</b>	45000	45000	45000
<b>Thermal</b>	45000	45000	45000
<b>Humidity</b>	22600	45000	45000

	Row to Row		
	Mated	Unmated	Unmated
Minimum	<b>SEAF8-RA/SEAM8-GP</b>	<b>SEAF8-RA</b>	<b>SEAM8-GP</b>
<b>Initial</b>	45000	45000	45000
<b>Thermal</b>	45000	45000	45000
<b>Humidity</b>	31000	40000	45000

**DIELECTRIC WITHSTANDING VOLTAGE (DWV):**

Voltage Rating Summary	
Minimum	<b>SEAF8-RA/SEAM8-GP</b>
<b>Break Down Voltage</b>	972
<b>Test Voltage</b>	730
<b>Working Voltage</b>	240

Pin to Pin	
<b>Initial Test Voltage</b>	Passed
<b>After Thermal Test Voltage</b>	Passed
<b>After Humidity Test Voltage</b>	Passed

Row to Row	
<b>Initial Test Voltage</b>	Passed
<b>After Thermal Test Voltage</b>	Passed
<b>After Humidity Test Voltage</b>	Passed

**DATA SUMMARIES Continued**

**LLCR Durability:**

- 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  $+10.0$  mOhms:----- Minor
  - c.  $+10.1$  to  $+15.0$  mOhms:----- Acceptable
  - d.  $+15.1$  to  $+50.0$  mOhms:----- Marginal
  - e.  $+50.1$  to  $+2000$  mOhms----- Unstable
  - f.  $>+2000$  mOhms:----- Open Failure

LLCR Measurement Summaries by Pin Type					
	Date	2015/1/20	2015/1/23	2015/2/2	2015/2/20
Room Temp (Deg C)		22	22	22	22
Rel Humidity (%)		34	32	35	39
Technician		Troy Cook	Troy Cook	Troy Cook	Troy Cook
<b>mOhm values</b>		<b>Actual Initial</b>	<b>Delta 100 Cycles</b>	<b>Delta Therm Shck</b>	<b>Delta Humidity</b>
<b>Pin Type 1: Row 1</b>					
Average		23.76	1.21	1.23	1.28
St. Dev.		1.37	1.09	1.16	1.12
Min		22.22	0.06	0.02	0.08
Max		28.90	5.50	5.43	5.53
Summary Count		24	24	24	24
Total Count		24	24	24	24
<b>Pin Type 2: Row 2</b>					
Average		30.01	1.28	1.81	1.85
St. Dev.		1.29	1.68	1.87	1.71
Min		27.66	0.01	0.09	0.01
Max		34.12	7.37	8.32	7.68
Summary Count		32	32	32	32
Total Count		32	32	32	32
<b>Pin Type 3: Row 3</b>					
Average		39.82	1.97	2.27	2.31
St. Dev.		3.27	2.27	2.40	2.46
Min		34.74	0.00	0.03	0.13
Max		50.74	13.36	13.69	14.44
Summary Count		56	56	56	56
Total Count		56	56	56	56
<b>Pin Type 4: Row 4</b>					
Average		49.92	1.93	2.41	2.53
St. Dev.		3.57	2.37	2.69	2.69
Min		43.79	0.01	0.06	0.02
Max		63.22	12.86	13.08	13.38
Summary Count		80	80	80	80
Total Count		80	80	80	80

<b>LLCR Delta Count by Category</b>						
	<b>Stable</b>	<b>Minor</b>	<b>Acceptable</b>	<b>Marginal</b>	<b>Unstable</b>	<b>Open</b>
<b>mOhms</b>	<b>&lt;=5</b>	<b>&gt;5 &amp; &lt;=10</b>	<b>&gt;10 &amp; &lt;=15</b>	<b>&gt;15 &amp; &lt;=50</b>	<b>&gt;50 &amp; &lt;=1000</b>	<b>&gt;1000</b>
<b>100 Cycles</b>	<b>179</b>	<b>11</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Therm Shck</b>	<b>172</b>	<b>17</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Humidity</b>	<b>171</b>	<b>17</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>

**DATA SUMMARIES Continued**

**LLCR Thermal Aging:**

- 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  $+10.0$  mOhms: ----- Minor
  - c.  $+10.1$  to  $+15.0$  mOhms: ----- Acceptable
  - d.  $+15.1$  to  $+50.0$  mOhms: ----- Marginal
  - e.  $+50.1$  to  $+2000$  mOhms: ----- Unstable
  - f.  $>+2000$  mOhms: ----- Open Failure

LLCR Measurement Summaries by Pin Type					
	Date	2015/1/21	2015/2/2		
Room Temp (Deg C)		22	22		
Rel Humidity (%)		35	34		
Technician		Troy Cook	Troy Cook		
<b>mOhm values</b>		<b>Actual</b>	<b>Delta</b>	<b>Delta</b>	<b>Delta</b>
		<b>Initial</b>	<b>Thermal</b>		
<b>Pin Type 1: Row 1</b>					
Average		23.65	0.68		
St. Dev.		1.07	0.67		
Min		21.98	0.03		
Max		26.36	2.23		
Summary Count		24	24		
Total Count		24	24		
<b>Pin Type 2: Row 2</b>					
Average		29.10	1.00		
St. Dev.		1.38	0.96		
Min		26.40	0.01		
Max		33.35	4.76		
Summary Count		32	32		
Total Count		32	32		
<b>Pin Type 3: Row 3</b>					
Average		38.49	0.94		
St. Dev.		3.11	0.89		
Min		33.46	0.01		
Max		45.94	4.34		
Summary Count		56	56		
Total Count		56	56		
<b>Pin Type 4: Row 4</b>					
Average		48.31	1.08		
St. Dev.		2.98	0.91		
Min		41.93	0.01		
Max		55.26	4.90		
Summary Count		80	80		
Total Count		80	80		

<b>LLCR Delta Count by Category</b>						
	<b>Stable</b>	<b>Minor</b>	<b>Acceptable</b>	<b>Marginal</b>	<b>Unstable</b>	<b>Open</b>
<b>mOhms</b>	<b>&lt;=5</b>	<b>&gt;5 &amp; &lt;=10</b>	<b>&gt;10 &amp; &lt;=15</b>	<b>&gt;15 &amp; &lt;=50</b>	<b>&gt;50 &amp; &lt;=1000</b>	<b>&gt;1000</b>
<b>Thermal</b>	<b>192</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**DATA SUMMARIES Continued**

**LLCR Gas Tight:**

- 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  $+10.0$  mOhms: ----- Minor
  - c.  $+10.1$  to  $+15.0$  mOhms: ----- Acceptable
  - d.  $+15.1$  to  $+50.0$  mOhms: ----- Marginal
  - e.  $+50.1$  to  $+2000$  mOhms: ----- Unstable
  - f.  $>+2000$  mOhms: ----- Open Failure

LLCR Measurement Summaries by Pin Type				
Date	2015/1/15	2015/1/16		
Room Temp (Deg C)	22	22		
Rel Humidity (%)	35	35		
Technician	Troy Cook	Troy Cook		
<b>mOhm values</b>	<b>Actual Initial</b>	<b>Delta Acid Vapor</b>	<b>Delta</b>	<b>Delta</b>
<b>Pin Type 1: Row 1</b>				
Average	25.88	0.69		
St. Dev.	2.90	0.74		
Min	21.88	0.06		
Max	31.31	3.88		
Summary Count	40	40		
Total Count	40	40		
<b>Pin Type 2: Row 2</b>				
Average	36.14	1.00		
St. Dev.	4.40	1.43		
Min	27.06	0.01		
Max	45.85	7.79		
Summary Count	64	64		
Total Count	64	64		
<b>Pin Type 3: Row 3</b>				
Average	47.97	0.62		
St. Dev.	3.08	0.89		
Min	41.59	0.00		
Max	54.34	4.26		
Summary Count	88	88		
Total Count	88	88		

LLCR Delta Count by Category						
	Stable	Minor	Acceptable	Marginal	Unstable	Open
mOhms	$\leq 5$	$>5 \ \& \ \leq 10$	$>10 \ \& \ \leq 15$	$>15 \ \& \ \leq 50$	$>50 \ \& \ \leq 1000$	$>1000$
<b>Acid Vapor</b>	<b>189</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**DATA SUMMARIES Continued**

**LLCR Shock &Vibration:**

- 1). A total of 192 points were measured.
- 2). EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets.*
- 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  $+2000$  mOhms ----- Unstable
  - f.  $>+2000$  mOhms:----- Open Failure

LLCR Measurement Summaries by Pin Type				
Date	2015/1/21	2015/1/23		
Room Temp (Deg C)	22	22		
Rel Humidity (%)	34	35		
Technician	Troy Cook	Troy Cook		
<b>mOhm values</b>	<b>Actual Initial</b>	<b>Delta Shock-Vib</b>	<b>Delta</b>	<b>Delta</b>
<b>Pin Type 1: Row 1</b>				
Average	23.84	0.76		
St. Dev.	1.53	1.27		
Min	22.11	0.06		
Max	28.98	6.37		
Summary Count	24	24		
Total Count	24	24		
<b>Pin Type 2: Row 2</b>				
Average	29.97	1.37		
St. Dev.	1.97	1.99		
Min	27.41	0.07		
Max	38.43	10.97		
Summary Count	32	32		
Total Count	32	32		
<b>Pin Type 3: Row 3</b>				
Average	39.73	1.73		
St. Dev.	3.70	2.23		
Min	34.52	0.03		
Max	54.27	12.81		
Summary Count	56	56		
Total Count	56	56		
<b>Pin Type 4: Row 4</b>				
Average	48.93	1.52		
St. Dev.	3.58	1.97		
Min	40.40	0.01		
Max	64.46	13.02		
Summary Count	80	80		
Total Count	80	80		

<b>LLCR Delta Count by Category</b>						
	<b>Stable</b>	<b>Minor</b>	<b>Acceptable</b>	<b>Marginal</b>	<b>Unstable</b>	<b>Open</b>
<b>mOhms</b>	<b>&lt;=5</b>	<b>&gt;5 &amp; &lt;=10</b>	<b>&gt;10 &amp; &lt;=15</b>	<b>&gt;15 &amp; &lt;=50</b>	<b>&gt;50 &amp; &lt;=1000</b>	<b>&gt;1000</b>
<b>Shock-Vib</b>	<b>184</b>	<b>5</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Nanosecond Event Detection:**

<b>Shock and Vibration Event Detection Summary</b>	
Contacts tested	60
Test Condition	C, 100g's, 6ms, Half-Sine
Shock Events	0
Test Condition	V-B, 7.56 rms g
Vibration Events	0
<b>Total Events</b>	<b>0</b>

**DATA SUMMARIES Continued**

**LLCR Extended life:**

- 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  $+10.0$  mOhms:----- Minor
  - c.  $+10.1$  to  $+15.0$  mOhms:----- Acceptable
  - d.  $+15.1$  to  $+50.0$  mOhms:----- Marginal
  - e.  $+50.1$  to  $+2000$  mOhms----- Unstable
  - f.  $>+2000$  mOhms:----- Open Failure

LLCR Measurement Summaries by Pin Type				
Date	1/15/2015	1/19/2015	2/2/2015	2/16/2015
Room Temp (Deg C)	22	22	22	22
Rel Humidity (%)	34	35	34	35
Technician	Troy Cook	Troy Cook	Troy Cook	Tony Wagoner
<b>mOhm values</b>	<b>Actual Initial</b>	<b>Delta 100 Cycles</b>	<b>Delta Therm Shck</b>	<b>Delta Humidity</b>
<b>Pin Type 1: Row 1</b>				
Average	26.02	0.98	1.08	1.12
St. Dev.	2.99	1.36	1.12	1.10
Min	22.15	0.00	0.01	0.12
Max	30.91	6.70	6.47	6.42
Summary Count	40	40	40	40
Total Count	40	40	40	40
<b>Pin Type 2: Row 2</b>				
Average	35.87	1.39	1.67	1.40
St. Dev.	4.52	1.79	1.72	1.09
Min	27.11	0.03	0.01	0.02
Max	44.67	9.49	11.51	5.22
Summary Count	64	64	64	64
Total Count	64	64	64	64
<b>Pin Type 3: Row 3</b>				
Average	47.94	1.32	1.54	1.19
St. Dev.	3.16	1.49	1.46	1.15
Min	42.10	0.02	0.03	0.00
Max	58.11	9.03	7.78	8.30
Summary Count	88	88	88	88
Total Count	88	88	88	88

LLCR Delta Count by Category						
	Stable	Minor	Acceptable	Marginal	Unstable	Open
mOhms	$\leq 5$	$>5$ & $\leq 10$	$>10$ & $\leq 15$	$>15$ & $\leq 50$	$>50$ & $\leq 1000$	$>1000$
<b>100 Cycles</b>	<b>183</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Therm Shck</b>	<b>185</b>	<b>6</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Humidity</b>	<b>189</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**EQUIPMENT AND CALIBRATION SCHEDULES****Equipment #:** TCT-07**Description:** Automated Test Stand**Manufacturer:** Chatillon/Lloyd**Model:** LF Plus**Serial #:** LF1310**Accuracy:** See Manual

... Last Cal: 11/14/2014, Next Cal: 11/14/2015

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

... Last Cal: 05/15/2014, Next Cal: 05/15/2015

**Equipment #:** MO-04**Description:** Multimeter /Data Acquisition System**Manufacturer:** Keithley**Model:** 2700**Serial #:** 0798688**Accuracy:** See Manual

... Last Cal: 09/11/2014, Next Cal: 09/11/2015

**Equipment #:** PS-02**Description:** Power Supply**Manufacturer:** Hewlett-Packard**Model:** 6033A**Serial #:** N/A**Accuracy:** See Manual

... Last Cal: NOT CALIBRATED

**Equipment #:** MO-10**Description:** Model 2750 Multimeter/Switch System (Integra Series)**Manufacturer:** Keithley**Model:** 2750**Serial #:** 1215161**Accuracy:** See Manual

... Last Cal: 09/11/2014, Next Cal: 09/11/2015

**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: 11/14/2014, Next Cal: 05/31/2015

**EQUIPMENT AND CALIBRATION SCHEDULES****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: 06/30/2014, Next Cal: 06/30/2015

**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: 02/18/2014, Next Cal: 02/18/2015

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

... Last Cal: 04/22/2014, Next Cal: 04/22/2015

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

... Last Cal: 07/18/2014, Next Cal: 07/18/2015

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

... Last Cal: 10/31/2014, Next Cal: 10/31/2015