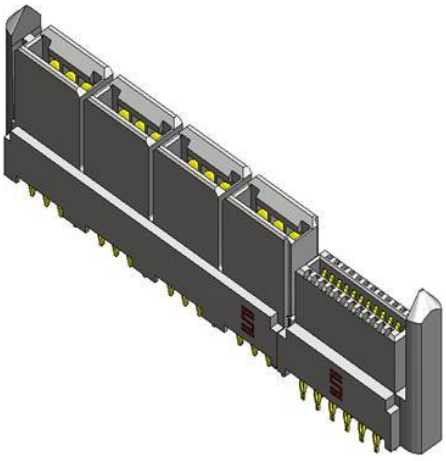
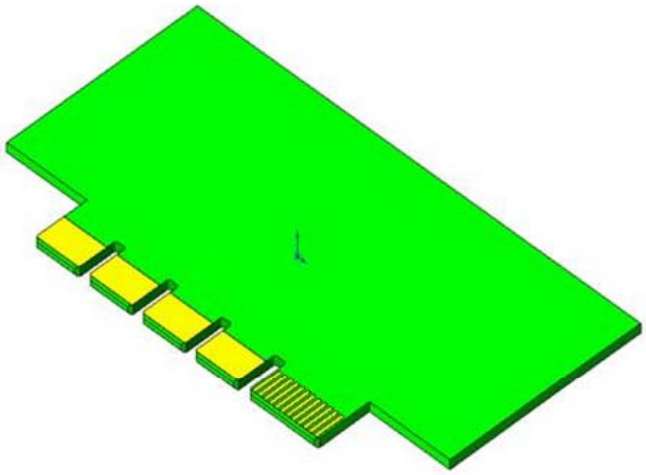
Project Number: Design Qualification Test Report	Tracking Code: 244542_Report_Rev_2
Requested by: Leo lee	Date: 09/4/2015
Part #: LPHS-08-32-L-VP1-GP/Edge card	
Part description: LPHS/Edge card	Tech: Kason He
Test Start: 03/25/2013	Test Completed: 07/04/2013





DESIGN QUALIFICATION TEST REPORT

LPHS/Edge card
LPHS-08-32-L-VP1-GP/Edge card

REVISION HISTORY

DATE	REV.NUM.	DESCRIPTION	ENG
07/06/2013	**1**	**Initial Issue**	**KH**
05/25/2015	**2**	**Add the LPHS-08-32-S-VP1-GP/Edge card ELP test**	**PC**

CERTIFICATION

All instruments and measuring equipment were calibrated to National Institute for Standards and Technology (NIST) traceable standards according to IS0 10012-l and ANSI/NCSL 2540-1, as applicable.

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-104063-TST/ PCB-104064-TST/ PCB-104070-TST/ PCB-104072-TST

FLOWCHARTS

Gas Tight

TEST STEP	GROUP A1 8 Boards 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH
01	LLCR-1
02	Gas Tight
03	LLCR-2

Gas Tight = EIA-364-36A

LLCR = EIA-364-23, LLCR

20 mV Max, 100 mA Max

Use Keithley 580 or 3706 in 4 wire dry circuit mode

Normal Force

TEST STEP	GROUP A1 C-379-01 (Signal) Individual Contacts(10 min) 0.068" thick edge card(Max)	GROUP A2 C-379-01 (Signal) Individual Contacts(10 min) 0.068" thick edge card(Max)	GROUP B1 C-380-01 (Signal) Individual Contacts(10 min) 0.068" thick edge card(Max)	GROUP B2 C-380-01 (Signal) Individual Contacts(10 min) 0.068" thick edge card(Max)
01	Contact Gaps	Contact Gaps	Contact Gaps	Contact Gaps
02	Setup Approved	Thermal Aging (Mated and Undisturbed)	Setup Approved	Thermal Aging (Mated and Undisturbed)
03	Normal Force (in the body and soldered on PCB unless otherwise specified)	Contact Gaps	Normal Force (in the body and soldered on PCB unless otherwise specified)	Contact Gaps
04		Setup Approved		Setup Approved
05		Normal Force (in the body and soldered on PCB unless otherwise specified)		Normal Force (in the body and soldered on PCB unless otherwise specified)

TEST STEP	GROUP C1 C-367-01 (Power) Individual Contacts(10 min) 0.068" thick edge card(Max)	GROUP C2 C-367-01 (Power) Individual Contacts(10 min) 0.068" thick edge card(Max)
01	Contact Gaps	Contact Gaps
02	Setup Approved	Thermal Aging (Mated and Undisturbed)
03	Normal Force (in the body and soldered on PCB unless otherwise specified)	Contact Gaps
04		Setup Approved
05		Normal Force (in the body and soldered on PCB unless otherwise specified)

Thermal Aging = EIA-364-17, Test Condition 4 (105°C)

Time Condition 'B' (250 Hours)

Normal Force = EIA-364-04

(Perpendicular) Displacement Force = 12.7 mm/min ± 6 mm/min

Spec is 50 N @ 1 mm displacement

Contact Gaps / Height - No standard method. Usually measured optically

Gaps to be taken on a minimum of 20% of each part tested

FLOWCHARTS Continued

Thermal Aging

TEST STEP	GROUP A1 8 Boards Thermal Aging (Mated) 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH	GROUP A1 8 Boards Thermal Aging (Mated) 0.068" thick edge card(Max), .0335"/.0422" ENIG PTH
01	Contact Gaps	Contact Gaps
02	Measure & Record PCB Thickness	Measure & Record PCB Thickness
03	Forces - Mating / Unmating	Forces - Mating / Unmating
04	LLCR-1	LLCR-1
05	Thermal Aging (Mated and Undisturbed)	Thermal Aging (Mated and Undisturbed)
06	LLCR-2	LLCR-2
07	Forces - Mating / Unmating	Forces - Mating / Unmating
08	Contact Gaps	Contact Gaps

Thermal Aging = EIA-364-17, Test Condition 4 (105°C)

Time Condition 'B' (250 Hours)

Mating / Unmating Forces = EIA-364-13

Contact Gaps / Height - No standard method. Usually measured optically.

Gaps to be taken on a minimum of 20% of each part tested

LLCR = EIA-364-23, LLCR

20 mV Max, 100 mA Max

Use Keithley 580 or 3706 in 4 wire dry circuit mode

FLOWCHARTS Continued

Durability/Mating/Unmating/Gaps

TEST STEP	GROUP B1 8 Boards (largest position submitted) 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH	GROUP B1 8 Boards (largest position submitted) 0.068" thick edge card(Max), .0335"/.0422" ENIG PTH
01	Contact Gaps	Contact Gaps
02	Measure & Record PCB Thickness	Measure & Record PCB Thickness
03	LLCR-1	LLCR-1
04	Forces - Mating / Unmating	Forces - Mating / Unmating
05	25 Cycles	25 Cycles
06	Forces - Mating / Unmating	Forces - Mating / Unmating
07	25 Cycles (50 Total)	25 Cycles (50 Total)
08	Forces - Mating / Unmating	Forces - Mating / Unmating
09	25 Cycles (75 Total)	25 Cycles (75 Total)
10	Forces - Mating / Unmating	Forces - Mating / Unmating
11	25 Cycles (100 Total)	25 Cycles (100 Total)
12	Forces - Mating / Unmating	Forces - Mating / Unmating
13	Clean w/Compressed Air	Clean w/Compressed Air
14	Contact Gaps	Contact Gaps
15	LLCR-2	LLCR-2
16	Thermal Shock (Mated and Undisturbed)	Thermal Shock (Mated and Undisturbed)
17	LLCR-3	LLCR-3
18	Cyclic Humidity (Mated and Undisturbed)	Cyclic Humidity (Mated and Undisturbed)
19	LLCR-4	LLCR-4
20	Forces - Mating / Unmating	Forces - Mating / Unmating

Thermal Shock = EIA-364-32, Table II, Test Condition I:

-55°C to +85°C 1/2 hour dwell, 100 cycles

Humidity = EIA-364-31, Test Condition B (240 Hours)

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

ambient pre-condition and delete steps 7a and 7b

Mating / Unmating Forces = EIA-364-13

Contact Gaps / Height - No standard method. Usually measured optically.

Gaps to be taken on a minimum of 20% of each part tested

LLCR = EIA-364-23, LLCR

20 mV Max, 100 mA Max

Use Keithley 580 or 3706 in 4 wire dry circuit mode

FLOWCHARTS Continued

IR & DWV

TEST STEP	GROUP A1 2 Mated Sets Break Down Pin-to-Pin (Signal Pin) 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH	GROUP A2 2 Unmated of Part # Being Tested Break Down Pin-to-Pin (Signal Pin) 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH	GROUP A3 2 Unmated of Mating Part # Break Down Pin-to-Pin (Signal Pin) 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH	GROUP B1 2 Mated Sets Pin-to-Pin (Signal Pin) 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH
01	DWV/Break Down Voltage	DWV/Break Down Voltage	DWV/Break Down Voltage	IR & DWV at test voltage (on both mated sets and on each connector unmated)
02				Thermal Shock (Mated and Undisturbed)
03				IR & DWV at test voltage (on both mated sets and on each connector unmated)
04				Cyclic Humidity (Mated and Undisturbed)
05				IR & DWV at test voltage (on both mated sets and on each connector unmated)

DWV on Group B1 to be performed at Test Voltage

DWV test voltage is equal to 75% of the lowest break down voltage from Groups A1, A2 or A3

Thermal Shock = EIA-364-32, Table II, Test Condition I:

-55°C to +85°C 1/2 hour dwell, 100 cycles

Humidity = EIA-364-31, Test Condition B (240 Hours)

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

ambient pre-condition and delete steps 7a and 7b

IR = EIA-364-21

DWV = EIA-364-20, Test Condition 1

TEST STEP	GROUP C1 2 Mated Sets Break Down Row-to-Row (Signal Pin) 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH	GROUP C2 2 Unmated of Part # Being Tested Break Down Row-to-Row (Signal Pin) 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH	GROUP C3 2 Unmated of Mating Part # Break Down Row-to-Row (Signal Pin) 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH	GROUP D1 2 Mated Sets Row-to-Row (Signal Pin) 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH
01	DWV/Break Down Voltage	DWV/Break Down Voltage	DWV/Break Down Voltage	IR & DWV at test voltage (on both mated sets and on each connector unmated)
02				Thermal Shock (Mated and Undisturbed)
03				IR & DWV at test voltage (on both mated sets and on each connector unmated)
04				Cyclic Humidity (Mated and Undisturbed)
05				IR & DWV at test voltage (on both mated sets and on each connector unmated)

FLOWCHARTS Continued

TEST STEP	GROUP E1 2 Mated Sets Break Down Power-to-Power 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH	GROUP E2 2 Unmated of Part # Being Tested Break Down Power-to-Power 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH	GROUP E3 2 Unmated of Mating Part # Break Down Power-to-Power 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH	GROUP F1 2 Mated Sets Power-to-Power 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH
01	DWV/Break Down Voltage	DWV/Break Down Voltage	DWV/Break Down Voltage	IR & DWV at test voltage (on both mated sets and on each connector unmated)
02				Thermal Shock (Mated and Undisturbed)
03				IR & DWV at test voltage (on both mated sets and on each connector unmated)
04				Cyclic Humidity (Mated and Undisturbed)
05				IR & DWV at test voltage (on both mated sets and on each connector unmated)

TEST STEP	GROUP G1 2 Mated Sets Break Down Signal-to-Power 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH	GROUP G2 2 Unmated of Part # Being Tested Break Down Signal-to-Power 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH	GROUP G3 2 Unmated of Mating Part # Break Down Signal-to-Power 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH	GROUP H1 2 Mated Sets Signal-to-Power 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH
01	DWV/Break Down Voltage	DWV/Break Down Voltage	DWV/Break Down Voltage	IR & DWV at test voltage (on both mated sets and on each connector unmated)
02				Thermal Shock (Mated and Undisturbed)
03				IR & DWV at test voltage (on both mated sets and on each connector unmated)
04				Cyclic Humidity (Mated and Undisturbed)
05				IR & DWV at test voltage (on both mated sets and on each connector unmated)

FLOWCHARTS Continued

POWER PINS

Current Carrying Capacity - Power Pins

TEST STEP	GROUP A1 3 Mated Assemblies 2 Contact Powered 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH	GROUP A2 3 Mated Assemblies 4 Contacts Powered 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH	GROUP A3 3 Mated Assemblies 6 Contacts Powered 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH	GROUP A4 3 Mated Assemblies All Contacts Powered 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH
01	CCC	CCC	CCC	CCC

SIGNAL PINS

Current Carrying Capacity - Singal Pins

TEST STEP	GROUP D1 3 Mated Assemblies 2 Pins Powered 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH	GROUP D2 3 Mated Assemblies 4 Pins Powered 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH	GROUP D3 3 Mated Assemblies 6 Pins Powered 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH	GROUP D4 3 Mated Assemblies 8 Pins Powered 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH	GROUP D5 3 Mated Assemblies All Contacts Powered 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH
01	CCC	CCC	CCC	CCC	CCC

POWER & SIGNAL PINS

Current Carrying Capacity - Power and Signal Pins

TEST STEP	GROUP E1 3 Mated Assemblies Signal Pins @ 1/2 rated current from Group D5 Power Pins - All Contacts Powered 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH
01	CCC

(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

CCC, Temp rise = EIA-364-70

FLOWCHARTS Continued

Mechanical Shock / Vibration / LLCR

TEST STEP	GROUP A1 8 Boards 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH	GROUP A1 8 Boards 0.068" thick edge card(Max), .0335"/.0422" ENIG PTH
01	LLCR-1	LLCR-1
02	Shock	Shock
03	Vibration	Vibration
04	LLCR-2	LLCR-2

Mechanical Shock = EIA 364-27 Half Sine,

100 g's, 6 milliSeconds (Condition "C") each axis

Vibration = EIA 364-28, Random Vibration

7.56 g RMS, Condition VB --- 2 hours/axis

LLCR = EIA-364-23, LLCR

20 mV Max, 100 mA Max

Use Keithley 580 or 3706 in 4 wire dry circuit mode

Shock / Vibration / nanoSecond Event Detection

TEST STEP	GROUP A1 60 Points 0.056" thick edge card(Min), .0335"/.0422" ENIG PTH
01	Event Detection, Shock
02	Event Detection, Vibration

Mechanical Shock = EIA 364-27 Half Sine,

100 g's, 6 milliSeconds (Condition "C") each axis

Vibration = EIA 364-28, Random Vibration

7.56 g RMS, Condition VB --- 2 hours/axis

Event detection requirement during Shock / Vibration is 50 nanoseconds minimum

FLOWCHARTS Continued

Extended Life

Group 3

LPHS-08-32-S-VP1-GP

EDGE CARD

8 Assemblies

250 Cycles

Step	Description
1.	Plating Thickness Verification (4)
2.	LLCR (2)
3.	Cycles Quantity = 250 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^2 / 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

ATTRIBUTE DEFINITIONS Continued

The following is a brief, simplified description of attributes.

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. 65^{o} C
    c. 75^{o} C
    d. 95^{o} 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.

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. <= +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

ATTRIBUTE DEFINITIONS Continued

The following is a brief, simplified description of attributes.

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. <= +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^{o} 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

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^2, 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^2 software in order to acquire and record the test data.
10) The permanent set of each contact shall be measured within the TC^2 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.

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

Power pin

- **CCC for a 30°C Temperature Rise ----------28.9 A per contact with 2 contacts (2 x 1) powered**
- **CCC for a 30°C Temperature Rise ----------25.9 A per contact with 4 contacts (2 x 2) powered**
- **CCC for a 30°C Temperature Rise ----------22.4 A per contact with 6 contacts (2 x 3) powered**
- **CCC for a 30°C Temperature Rise ----------21.5 A per contact with 8 contacts (All) powered**

Signal pin

- **CCC for a 30°C Temperature Rise ----------2.8 A per contact with 2 contacts (2 x 1) powered**
- **CCC for a 30°C Temperature Rise ----------2.2 A per contact with 4 contacts (2 x 2) powered**
- **CCC for a 30°C Temperature Rise ----------2.0 A per contact with 6 contacts (2 x 3) powered**
- **CCC for a 30°C Temperature Rise ----------1.8 A per contact with 8 contacts (2 x 4) powered**
- **CCC for a 30°C Temperature Rise ----------1.2 A per contact with 32 contacts (All) powered**

Power pin and signal pin (signal contacts powered @ 1/2 rated current @ 0.75 AMPS.)

- **CCC for a 30°C Temperature Rise----------20.9 A per contact with all adjacent power contacts powered**

Mating – Unmating Forces

Thermal Aging Group (LPHS-08-32-L-VP1-GP/Edge card 0.056")

- **Initial**
  - **Mating**
    - **Min ---------- 6.46 Lbs**
    - **Max---------- 8.13 Lbs**
  - **Unmating**
    - **Min ---------- 3.79 Lbs**
    - **Max---------- 5.72 Lbs**
- **After Thermal**
  - **Mating**
    - **Min ---------- 4.09 Lbs**
    - **Max---------- 5.10 Lbs**
  - **Unmating**
    - **Min ---------- 2.13 Lbs**
    - **Max---------- 2.66 Lbs**

Thermal Aging Group (LPHS-08-32-L-VP1-GP/Edge card 0.068")

- **Initial**
  - **Mating**
    - **Min ----------12.66 Lbs**
    - **Max----------16.06 Lbs**
  - **Unmating**
    - **Min ---------- 5.36 Lbs**
    - **Max---------- 9.67 Lbs**
- **After Thermal**
  - **Mating**
    - **Min ---------- 8.38 Lbs**
    - **Max----------10.31 Lbs**
  - **Unmating**
    - **Min ---------- 4.00 Lbs**
    - **Max---------- 4.89 Lbs**

RESULTS Continued

Mating – Unmating Forces

Mating-Unmating Durability Gaps Group (LPHS-08-32-L-VP1-GP/Edge card 0.056")

- **Initial**
  - **Mating**
    - **Min ---------- 9.79 Lbs**
    - **Max----------12.12 Lbs**
  - **Unmating**
    - **Min ---------- 4.39 Lbs**
    - **Max---------- 6.64 Lbs**
- **After 25 Cycles**
  - **Mating**
    - **Min ---------- 9.97 Lbs**
    - **Max----------12.77 Lbs**
  - **Unmating**
    - **Min ---------- 4.70 Lbs**
    - **Max---------- 6.61 Lbs**
- **After 50 Cycles**
  - **Mating**
    - **Min ----------10.41 Lbs**
    - **Max----------13.34 Lbs**
  - **Unmating**
    - **Min ---------- 5.17 Lbs**
    - **Max---------- 7.29 Lbs**
- **After 75 Cycles**
  - **Mating**
    - **Min ----------10.82 Lbs**
    - **Max----------14.01 Lbs**
  - **Unmating**
    - **Min ---------- 5.36 Lbs**
    - **Max---------- 7.78 Lbs**
- **After 100 Cycles**
  - **Mating**
    - **Min ----------11.30 Lbs**
    - **Max----------14.17 Lbs**
  - **Unmating**
    - **Min ---------- 5.77 Lbs**
    - **Max---------- 8.49 Lbs**
- **Humidity**
  - **Mating**
    - **Min ---------- 6.71 Lbs**
    - **Max---------- 8.67 Lbs**
  - **Unmating**
    - **Min ---------- 3.47 Lbs**
    - **Max---------- 4.78 Lbs**

RESULTS Continued

Mating – Unmating Forces

Mating-Unmating Durability Gaps Group (LPHS-08-32-L-VP1-GP/Edge card 0.068")

- **Initial**
  - **Mating**
    - **Min ----------11.84 Lbs**
    - **Max----------15.39 Lbs**
  - **Unmating**
    - **Min ---------- 4.96 Lbs**
    - **Max---------- 7.56 Lbs**
- **After 25 Cycles**
  - **Mating**
    - **Min ----------11.81 Lbs**
    - **Max----------17.48 Lbs**
  - **Unmating**
    - **Min ---------- 5.43 Lbs**
    - **Max---------- 7.94 Lbs**
- **After 50 Cycles**
  - **Mating**
    - **Min ----------12.06 Lbs**
    - **Max----------18.74 Lbs**
  - **Unmating**
    - **Min ---------- 5.69 Lbs**
    - **Max---------- 8.38 Lbs**
- **After 75 Cycles**
  - **Mating**
    - **Min ----------12.65 Lbs**
    - **Max----------19.42 Lbs**
  - **Unmating**
    - **Min ---------- 5.79 Lbs**
    - **Max---------- 8.92 Lbs**
- **After 100 Cycles**
  - **Mating**
    - **Min ----------13.42 Lbs**
    - **Max----------19.43 Lbs**
  - **Unmating**
    - **Min ---------- 6.13 Lbs**
    - **Max---------- 9.39 Lbs**
- **Humidity**
  - **Mating**
    - **Min ---------- 7.77 Lbs**
    - **Max----------10.64 Lbs**
  - **Unmating**
    - **Min ---------- 4.53 Lbs**
    - **Max---------- 6.83 Lbs**

RESULTS Continued

Mating – Unmating Forces

Mating-Unmating Basic (LPHS-06-24-L-VP1-GP/Edge card)

- **Initial**
  - **Mating**
    - **Min ----------11.69 Lbs**
    - **Max----------14.64 Lbs**
  - **Unmating**
    - **Min ---------- 5.64 Lbs**
    - **Max---------- 8.33 Lbs**
- **After 25 Cycles**
  - **Mating**
    - **Min ----------11.64 Lbs**
    - **Max----------14.25 Lbs**
  - **Unmating**
    - **Min ---------- 6.37 Lbs**
    - **Max---------- 9.50 Lbs**
- **After 50 Cycles**
  - **Mating**
    - **Min ----------12.12 Lbs**
    - **Max----------14.50 Lbs**
  - **Unmating**
    - **Min ---------- 6.79 Lbs**
    - **Max----------10.21 Lbs**
- **After 75 Cycles**
  - **Mating**
    - **Min ----------12.62 Lbs**
    - **Max----------15.00 Lbs**
  - **Unmating**
    - **Min ---------- 7.26 Lbs**
    - **Max----------11.22 Lbs**
- **After 100 Cycles**
  - **Mating**
    - **Min ----------12.85 Lbs**
    - **Max----------14.89 Lbs**
  - **Unmating**
    - **Min ---------- 7.85 Lbs**
    - **Max----------12.25 Lbs**

RESULTS Continued

Mating – Unmating Forces

Mating-Unmating Basic (LPHS-04-20-L-VP1-GP/Edge card)

- **Initial**
  - **Mating**
    - **Min ---------- 8.56 Lbs**
    - **Max---------- 9.50 Lbs**
  - **Unmating**
    - **Min ---------- 3.95 Lbs**
    - **Max---------- 5.66 Lbs**
- **After 25 Cycles**
  - **Mating**
    - **Min ---------- 8.11 Lbs**
    - **Max---------- 9.68 Lbs**
  - **Unmating**
    - **Min ---------- 4.44 Lbs**
    - **Max---------- 6.06 Lbs**
- **After 50 Cycles**
  - **Mating**
    - **Min ---------- 8.20 Lbs**
    - **Max----------10.25 Lbs**
  - **Unmating**
    - **Min ---------- 4.88 Lbs**
    - **Max---------- 6.89 Lbs**
- **After 75 Cycles**
  - **Mating**
    - **Min ---------- 8.32 Lbs**
    - **Max----------10.40 Lbs**
  - **Unmating**
    - **Min ---------- 5.05 Lbs**
    - **Max---------- 7.87 Lbs**
- **After 100 Cycles**
  - **Mating**
    - **Min ---------- 8.29 Lbs**
    - **Max----------10.79 Lbs**
  - **Unmating**
    - **Min ---------- 5.44 Lbs**
    - **Max---------- 8.62 Lbs**

RESULTS Continued

Normal Force at 0.0098 inch deflection

Power pin--Left

- **Initial**
  - **Min ---------- 418.80 gf Set ----- 0.0000 in**
  - **Max ---------- 473.20 gf Set ----- 0.0007 in**
- **Thermal**
  - **Min ---------- 47.00 gf Set ----- 0.0072 in**
  - **Max ---------- 124.30 gf Set ----- 0.0089 in**

Power pin--Middle

- **Initial**
  - **Min ---------- 382.00 gf Set ----- 0.0001 in**
  - **Max ---------- 427.40 gf Set ----- 0.0003 in**
- **Thermal**
  - **Min ---------- 57.20 gf Set ----- 0.0066 in**
  - **Max ---------- 138.50 gf Set ----- 0.0085 in**

Power pin--Right

- **Initial**
  - **Min ---------- 403.00 gf Set ----- 0.0001 in**
  - **Max ---------- 473.90 gf Set ----- 0.0003 in**
- **Thermal**
  - **Min ---------- 53.30 gf Set ----- 0.0072 in**
  - **Max ---------- 139.60 gf Set ----- 0.0089 in**

Normal Force at 0.0141 inch deflection

Signal pin--C-379-01

- **Initial**
  - **Min ---------- 136.20 gf Set ----- 0.0014 in**
  - **Max ---------- 160.40 gf Set ----- 0.0026 in**
- **Thermal**
  - **Min ---------- 75.30 gf Set ----- 0.0046 in**
  - **Max ---------- 101.90gf Set ----- 0.0067 in**

Signal pin--C-380-01

- **Initial**
  - **Min ---------- 168.60 gf Set ----- 0.0000 in**
  - **Max ---------- 194.30 gf Set ----- 0.0001 in**
- **Thermal**
  - **Min ---------- 84.20 gf Set ----- 0.0039 in**
  - **Max ---------- 110.40 gf Set ----- 0.0049 in**

RESULTS Continued

Insulation Resistance minimums, IR

Pin to Pin (Signal pin)

- **Initial**
  - **Mated ---------- 10000Meg Ω ---------- Passed**
  - **Unmated ---------- 10000Meg Ω ---------- Passed**
- **Thermal Shock**
  - **Mated ---------- 10000Meg Ω ---------- Passed**
  - **Unmated ---------- 10000Meg Ω ---------- Passed**
- **Humidity**
  - **Mated ---------- 6970Meg Ω ---------- Passed**
  - **Unmated ---------- 10000Meg Ω ---------- Passed**

Row to Row (Signal pin)

- **Initial**
  - **Mated ---------- 10000Meg Ω ---------- Passed**
  - **Unmated ---------- 10000Meg Ω ---------- Passed**
- **Thermal Shock**
  - **Mated ---------- 10000Meg Ω ---------- Passed**
  - **Unmated ---------- 10000Meg Ω ---------- Passed**
- **Humidity**
  - **Mated ---------- 10000Meg Ω ---------- Passed**
  - **Unmated ---------- 10000Meg Ω ---------- Passed**

Signal pin to Power pin

- **Initial**
  - **Mated ---------- 10000Meg Ω ---------- Passed**
  - **Unmated ---------- 10000Meg Ω ---------- Passed**
- **Thermal Shock**
  - **Mated ---------- 10000Meg Ω ---------- Passed**
  - **Unmated ---------- 10000Meg Ω ---------- Passed**
- **Humidity**
  - **Mated ---------- 10000Meg Ω ---------- Passed**
  - **Unmated ---------- 10000Meg Ω ---------- Passed**

Pin to Pin (Power pin)

- **Initial**
  - **Mated ---------- 10000Meg Ω ---------- Passed**
  - **Unmated ---------- 10000Meg Ω ---------- Passed**
- **Thermal Shock**
  - **Mated ---------- 10000Meg Ω ---------- Passed**
  - **Unmated ---------- 10000Meg Ω ---------- Passed**
- **Humidity**
  - **Mated ---------- 10000Meg Ω ---------- Passed**
  - **Unmated ---------- 10000Meg Ω ---------- Passed**

Row to Row (Power pin)

- **Initial**
  - **Mated ---------- 10000Meg Ω ---------- Passed**
  - **Unmated ---------- 10000Meg Ω ---------- Passed**
- **Thermal Shock**
  - **Mated ---------- 10000Meg Ω ---------- Passed**
  - **Unmated ---------- 10000Meg Ω ---------- Passed**
- **Humidity**
  - **Mated ---------- 10000Meg Ω ---------- Passed**
  - **Unmated ---------- 10000Meg Ω ---------- Passed**

RESULTS Continued

Dielectric Withstanding Voltage minimums, DWV

Signal pin

- **Minimums**
  - **Breakdown Voltage---------- 1125 VAC**
  - **Test Voltage ----------844 VAC**
  - **Working Voltage ----------281 VAC**

Power pin

- **Minimums**
  - **Breakdown Voltage---------- 2300 VAC**
  - **Test Voltage ---------- 1725 VAC**
  - **Working Voltage ----------575 VAC**

Pin to Pin (Signal pin)

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

Row to Row (Signal pin)

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

Signal pin to Power pin

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

Pin to Pin (Power pin)

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

Row to Row (Power pin)

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

RESULTS Continued

LLCR Thermal Aging Group (160 signal pin and 32 power pin LLCR test points)

Edge card 0.056”

Signal pin

- **Initial ---------- 14.67mOhms Max**
- **Thermal**
  - **<= +5.0 mOhms ---------- 159 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**

Power pin

- **Initial ---------- 0.38mOhms Max**
- **Thermal**
  - **<= +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**

Edge card 0.068”

Signal pin

- **Initial ---------- 14.33mOhms Max**
- **Thermal**
  - **<= +5.0 mOhms ---------- 156 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**

Power pin

- **Initial ---------- 0.28mOhms Max**
- **Thermal**
  - **<= +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**

RESULTS Continued

LLCR Mating/Unmating Durability Group (160 signal pin and 32 power pin LLCR test points)

Edge card 0.056"

Signal pin

- **Initial ---------- 13.62mOhms Max**
- **Durability, 30 Cycles**
  - **<= +5.0 mOhms ---------- 160 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**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 151 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms ---------- 9 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 ---------- 131 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms ---------- 27 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**

Power pin

- **Initial ---------- 0.34mOhms Max**
- **Durability, 30 Cycles**
  - **<= +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**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 32Points ---------- 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**
- **Humidity**
  - **<= +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**

RESULTS Continued

LLCR Mating/Unmating Durability Group (160 signal pin and 32 power pin LLCR test points)

Edge card 0.068”

Signal pin

- **Initial ---------- 15.11mOhms Max**
- **Durability, 30 Cycles**
  - **<= +5.0 mOhms ---------- 160 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**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 145 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms ---------- 15 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 ---------- 73 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms ---------- 73 Points ---------- Minor**
  - **+10.1 to +15.0 mOhms ---------- 14 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**

Power pin

- **Initial ---------- 0.32mOhms Max**
- **Durability, 30 Cycles**
  - **<= +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**
- **Thermal Shock**
  - **<= +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**
- **Humidity**
  - **<= +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**

RESULTS Continued

LLCR Gas Tight Group (160 signal pin and 32 power pin LLCR test points)

Edge card 0.056”

Signal pin

- **Initial ---------- 13.60mOhms Max**
- **Gas-Tight**
  - **<= +5.0 mOhms ---------- 160 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**

Power pin

- **Initial ---------- 0.41mOhms Max**
- **Gas-Tight**
  - **<= +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**

RESULTS Continued

LLCR Shock & Vibration Group (160 signal pin and 32 power pin LLCR test points)

Edge card 0.056”

Signal pin

- **Initial ---------- 17.32mOhms Max**
- **Shock &Vibration**
  - **<= +5.0 mOhms ---------- 157 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**

Power pin

- **Initial ---------- 0.56mOhms Max**
- **Shock &Vibration**
  - **<= +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**

Edge card 0.068”

Signal pin

- **Initial ---------- 16.18mOhms Max**
- **Shock &Vibration**
  - **<= +5.0 mOhms ---------- 159 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**

Power pin

- **Initial ---------- 0.33mOhms Max**
- **Shock &Vibration**
  - **<= +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**

Mechanical Shock & Random Vibration:

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

RESULTS Continued

LLCR ELP Group (160 signal pin and 32 power pin LLCR test points)

LPHS-08-32-S-VP1-GP/Edge card

Signal pin

- **Initial ---------- 11.35 mOhms Max**
- **Durability, 250 Cycles**
  - **<= +5.0 mOhms ---------- 160 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**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 157 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**
- **Humidity**
  - **<= +5.0 mOhms ---------- 160 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**

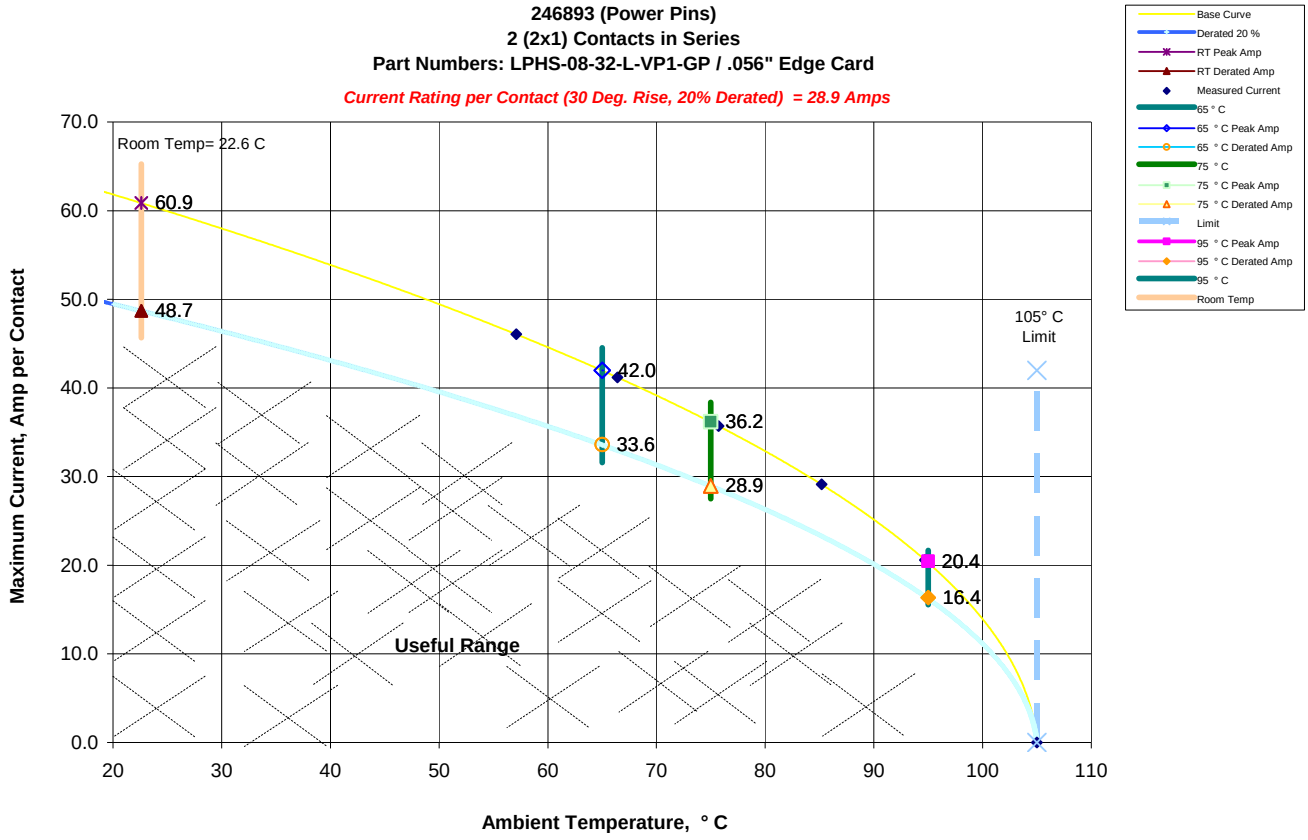
Power pin

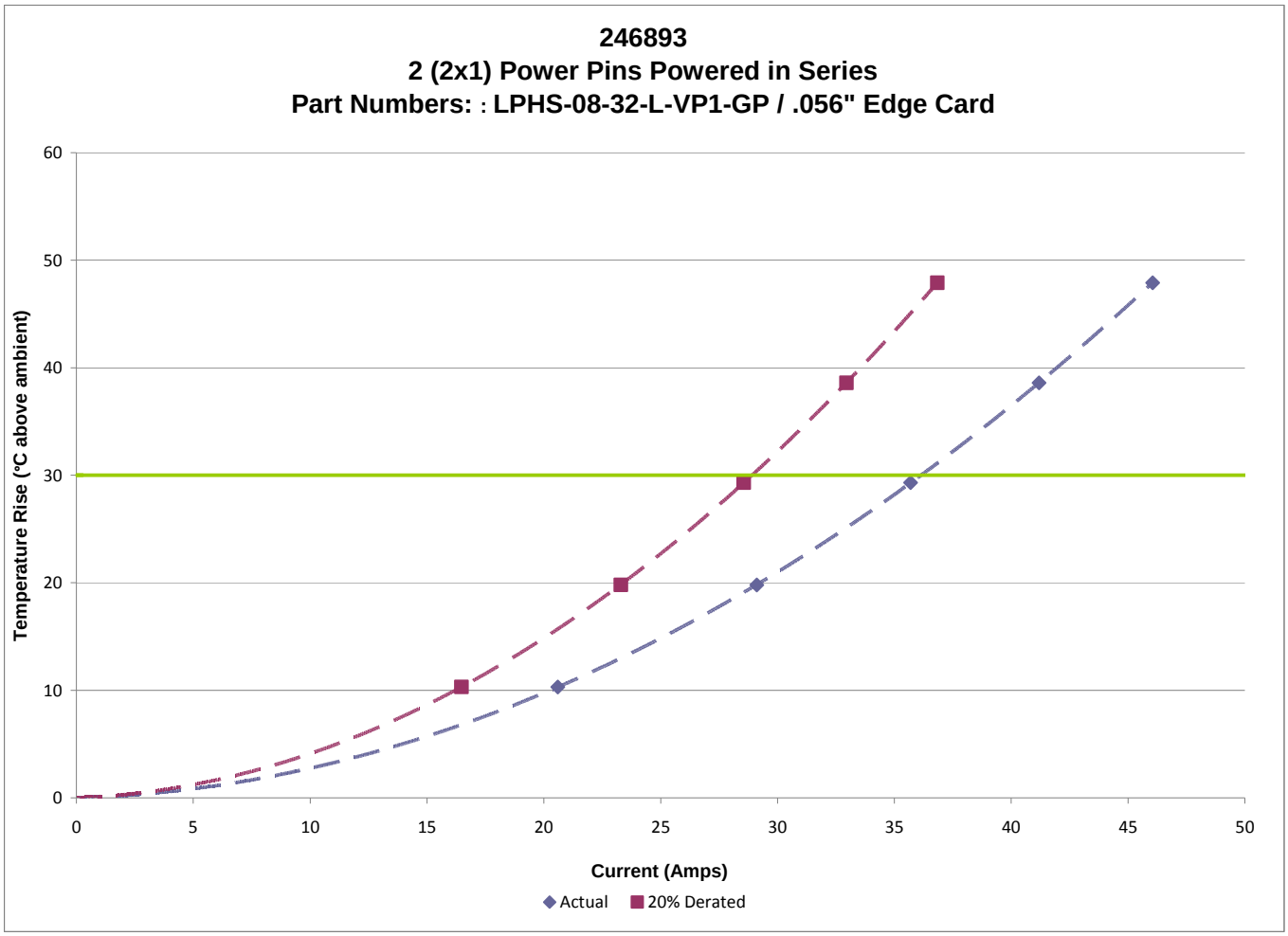
- **Initial ---------- 0.27mOhms Max**
- **Durability, 250 Cycles**
  - **<= +5.0 mOhms ---------- 32 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms ---------- 0 Points ---------- Minor**
  - **+10.1 to +15.0 mOhms ---------- 0 Points ---------- Acceptable**
  - **+15.1 to +50.0 mOhms ---------- 0 Points ---------- Marginal**
  - **+50.1 to +2000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+2000 mOhms ---------- 0 Points ---------- Open Failure**
- **Thermal Shock**
  - **<= +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**
- **Humidity**
  - **<= +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**

DATA SUMMARIES

TEMPERATURE RISE (Current Carrying Capacity, CCC):

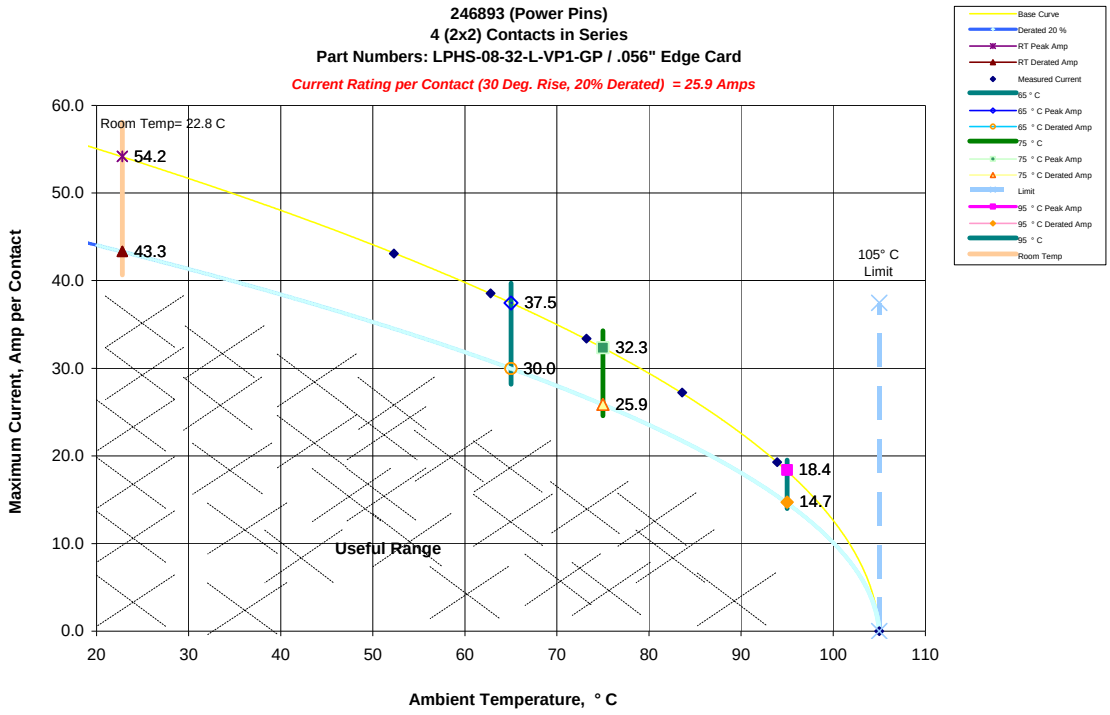
1) High quality thermocouples whose temperature slopes track one another were used for temperature monitoring.
2) The thermocouples were placed at a location to sense the maximum temperature generated during testing.
3) Temperature readings recorded are those for which three successive readings, 15 minutes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

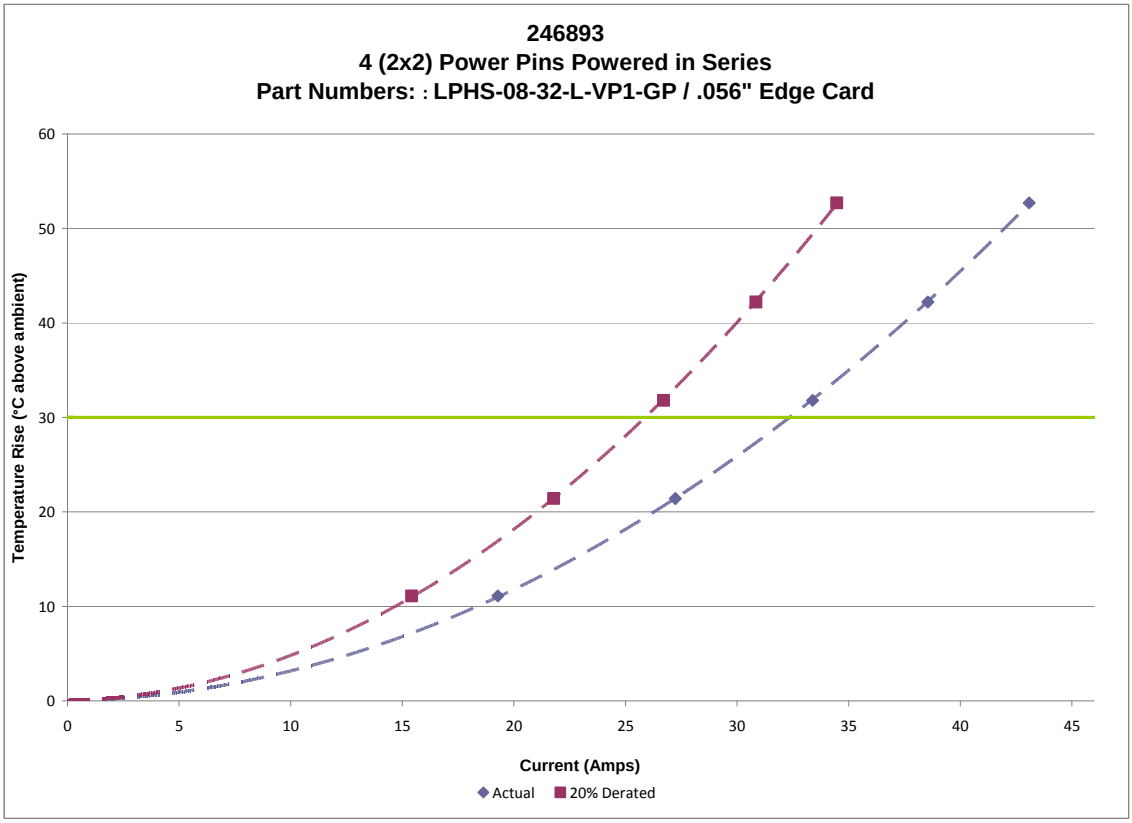



246893
2 (2x1) Power Pins Powered in Series
Part Numbers: : LPHS-08-32-L-VP1-GP / .056" Edge Card
Temperature Rise (°C above ambient)
0
10
20
30
40
50
60
0
5
10
15
20
25
30
35
40
45
50
Current (Amps)
Actual
20% Derated

DATA SUMMARIES Continued

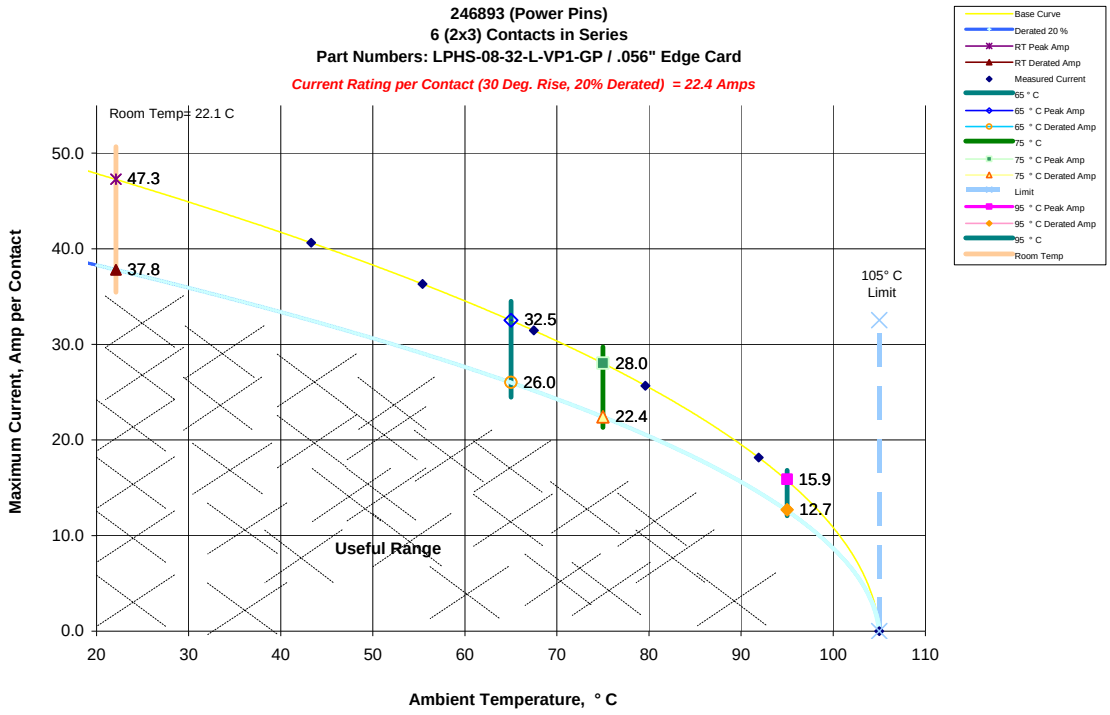
b. Linear configuration with 4 adjacent power conductors/contacts powered

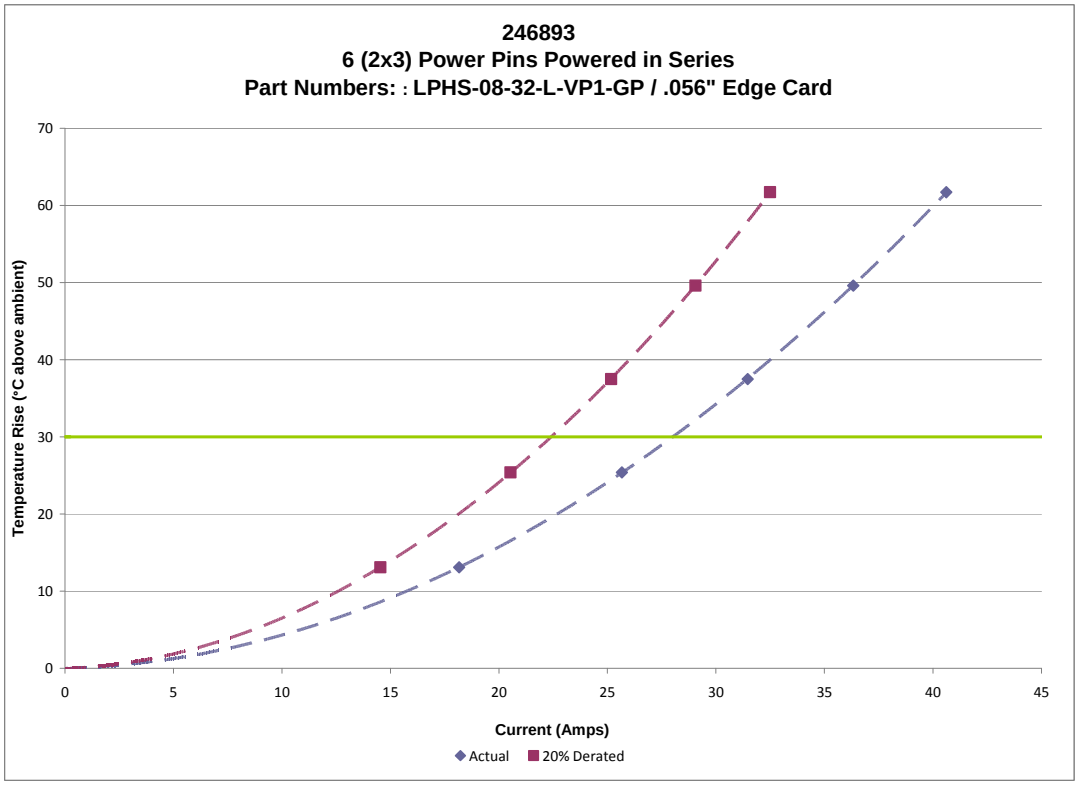




DATA SUMMARIES Continued

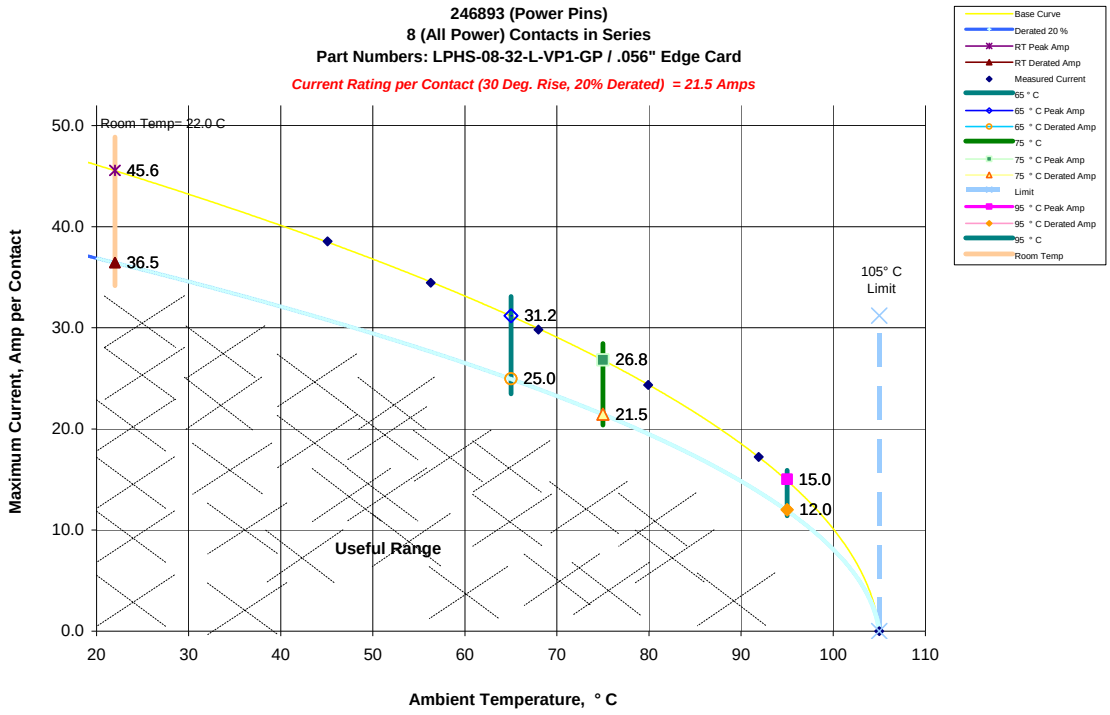
c. Linear configuration with 6 adjacent power conductors/contacts powered

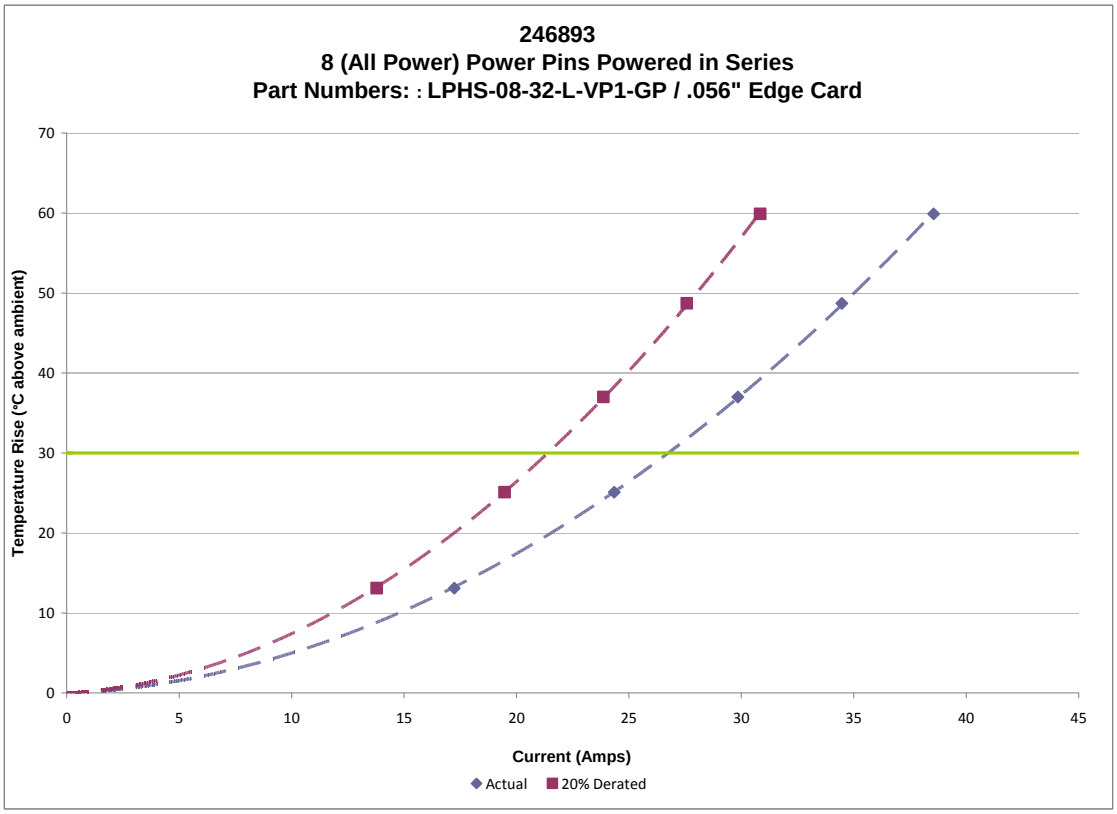




DATA SUMMARIES Continued

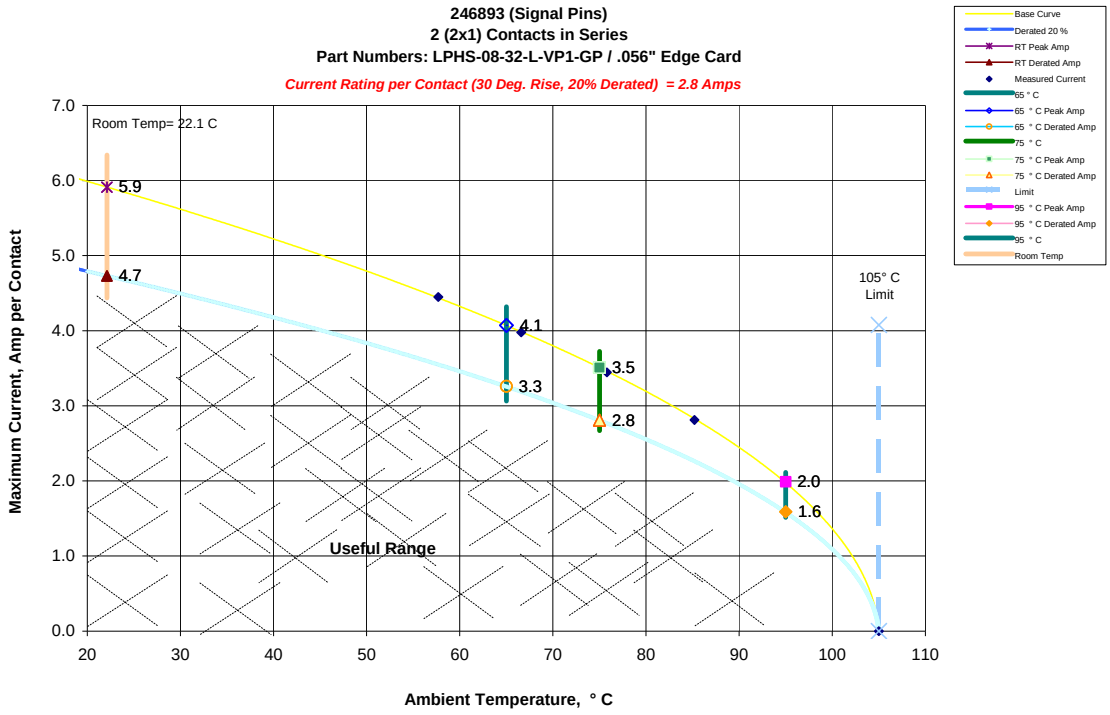
d. Linear configuration with all adjacent power conductors/contacts powered

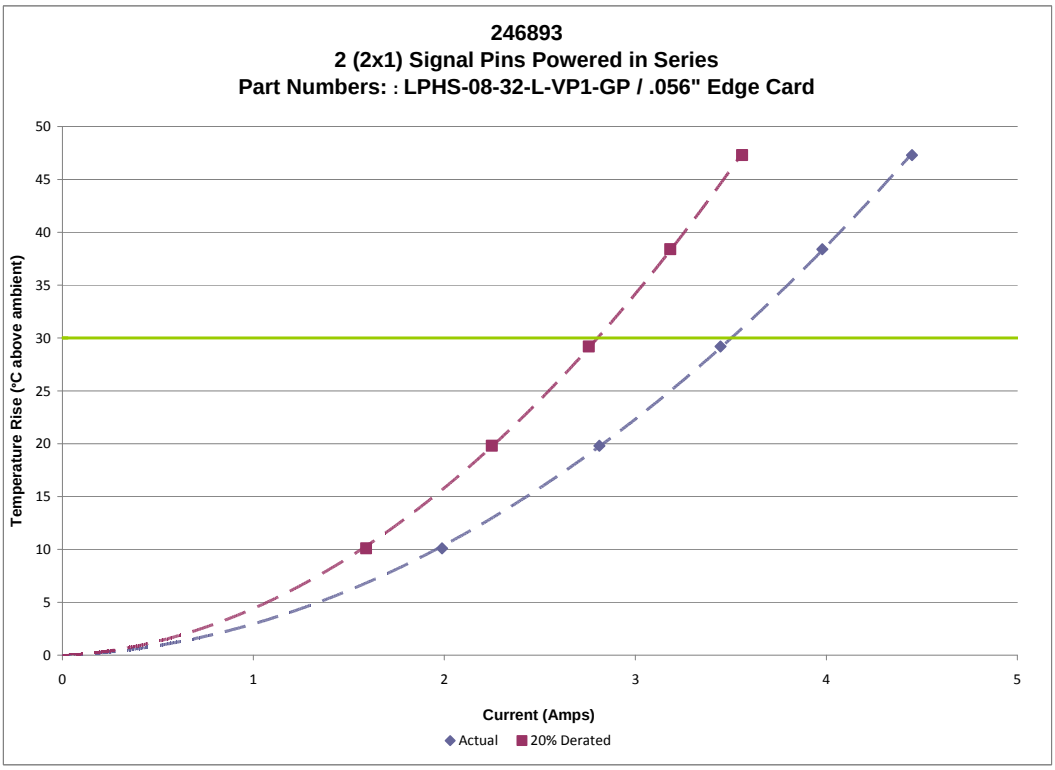




DATA SUMMARIES Continued

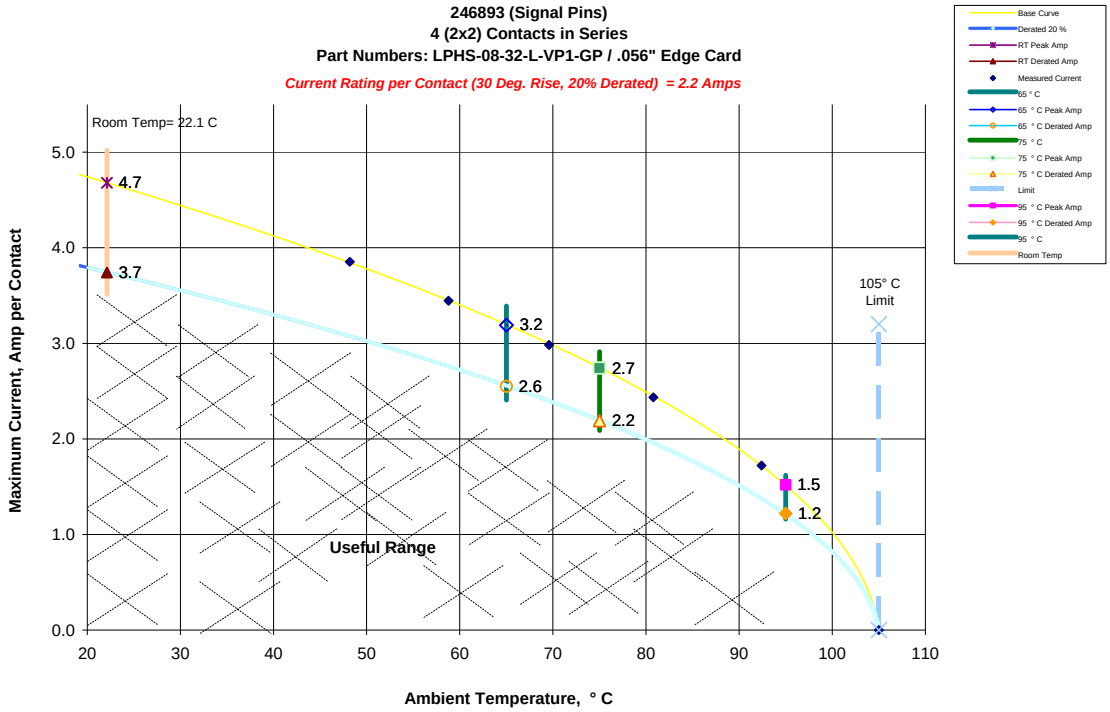
e. Linear configuration with 2 adjacent signal conductors/contacts powered

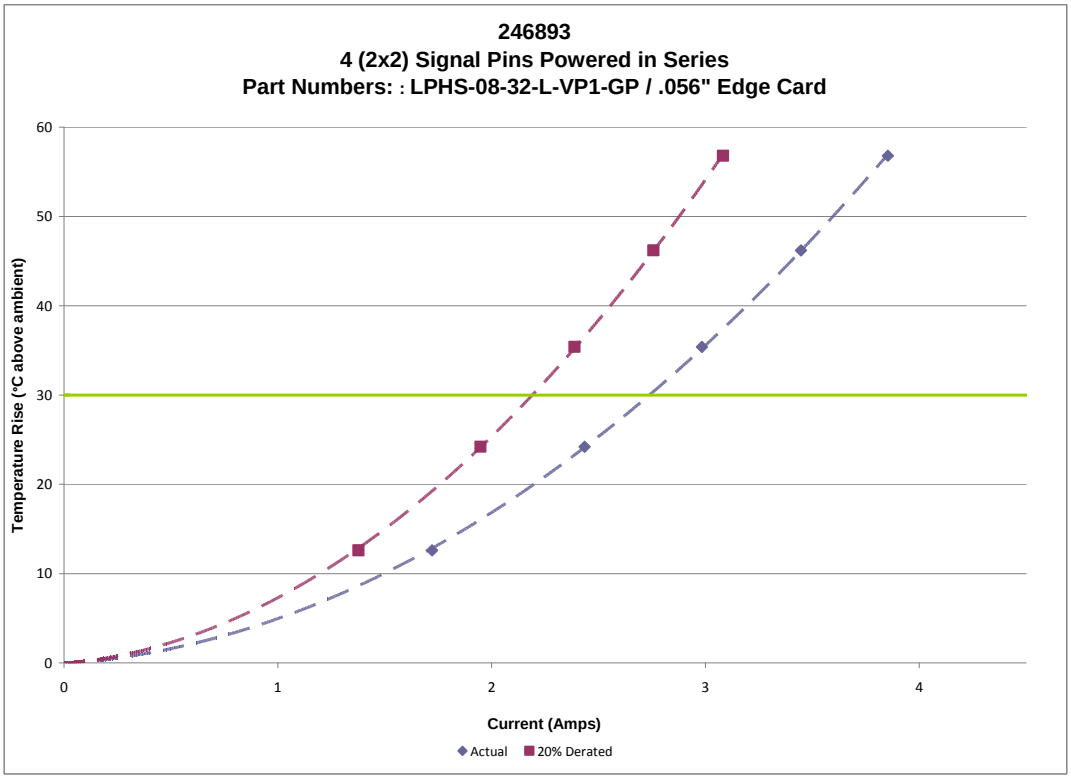




DATA SUMMARIES Continued

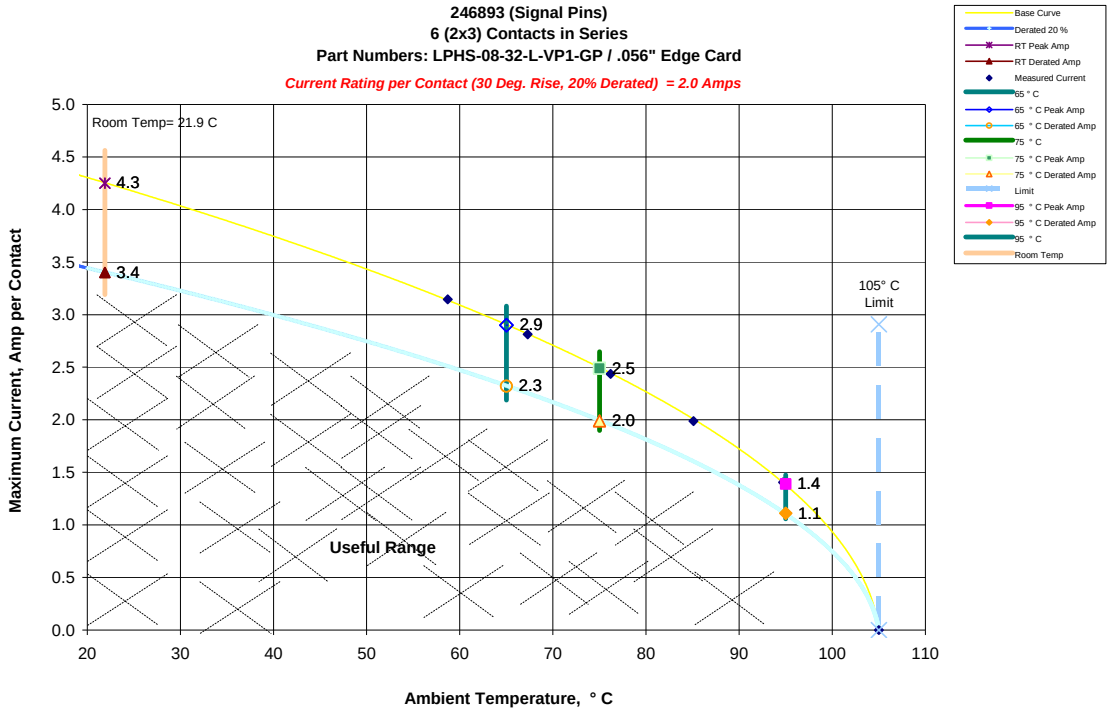
f. Linear configuration with 4 adjacent signal conductors/contacts powered

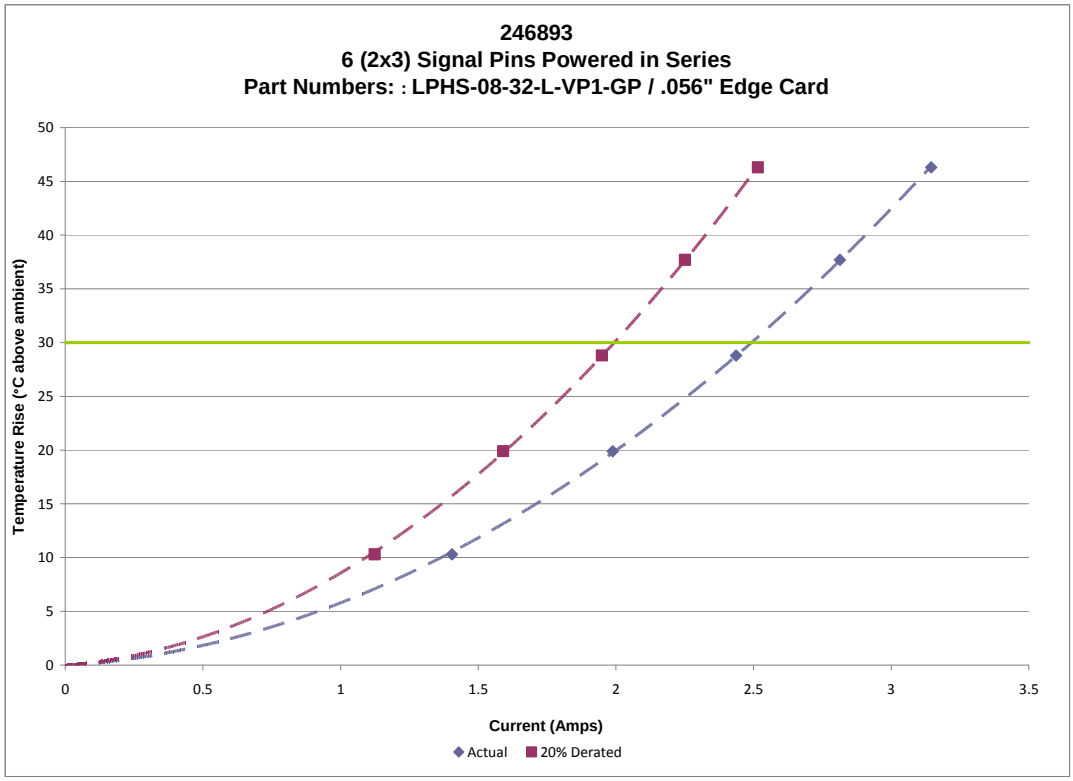




DATA SUMMARIES Continued

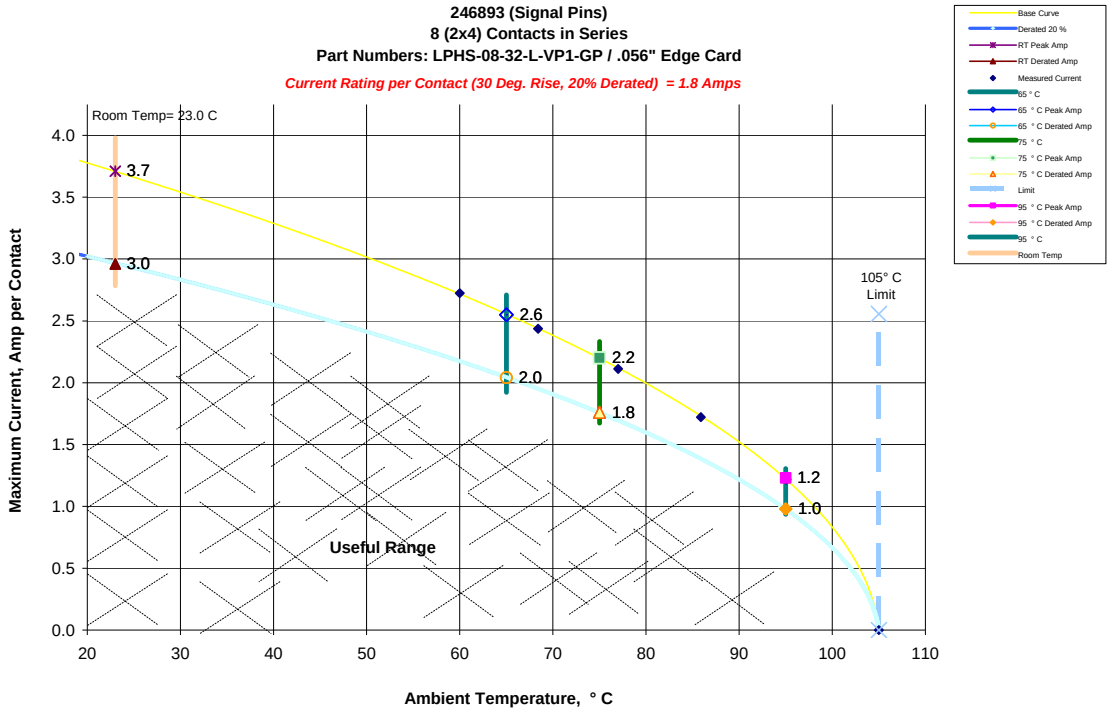
g. Linear configuration with 6 adjacent signal conductors/contacts powered

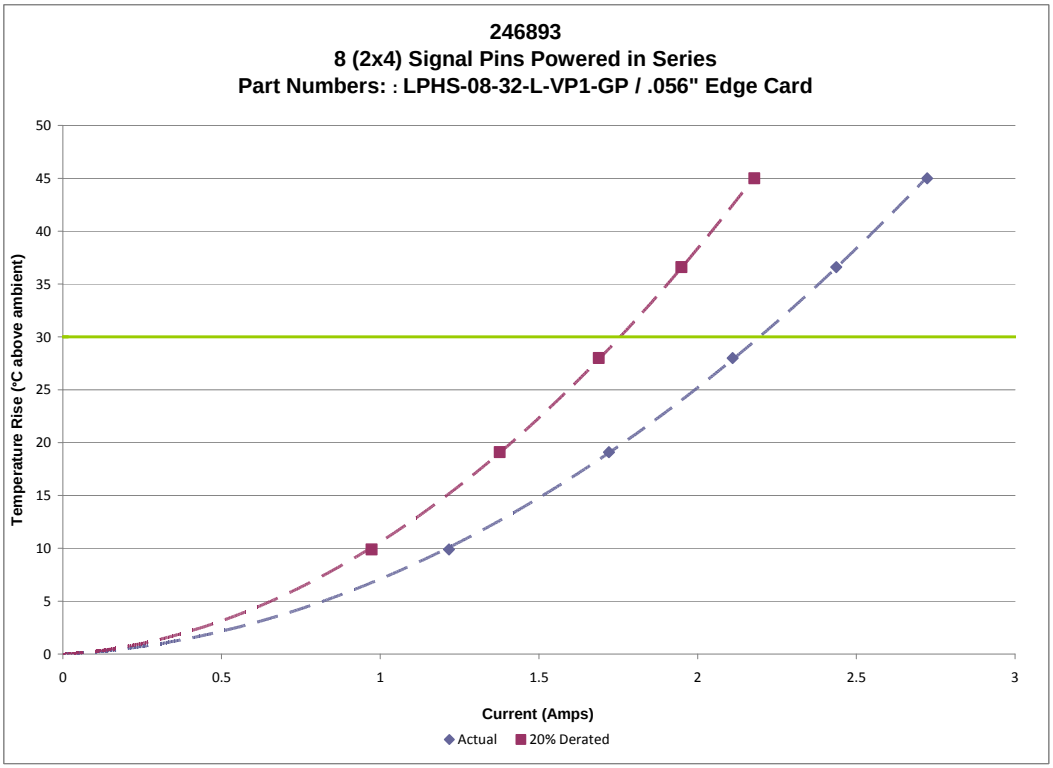




DATA SUMMARIES Continued

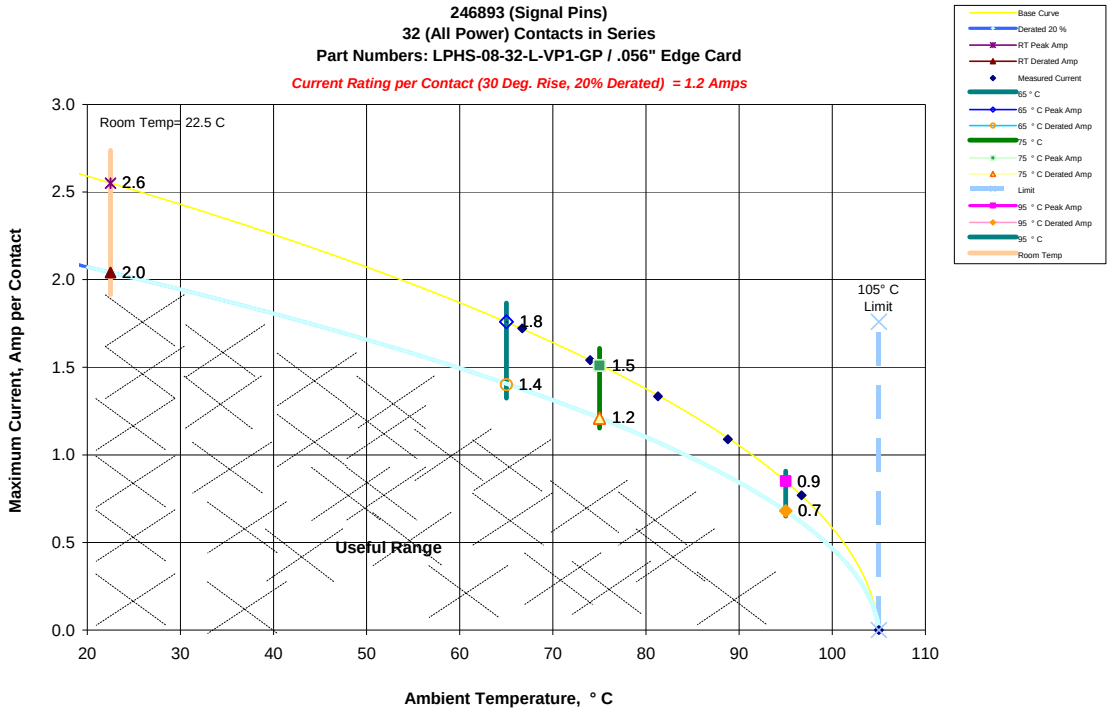
h. Linear configuration with 8 adjacent signal conductors/contacts powered

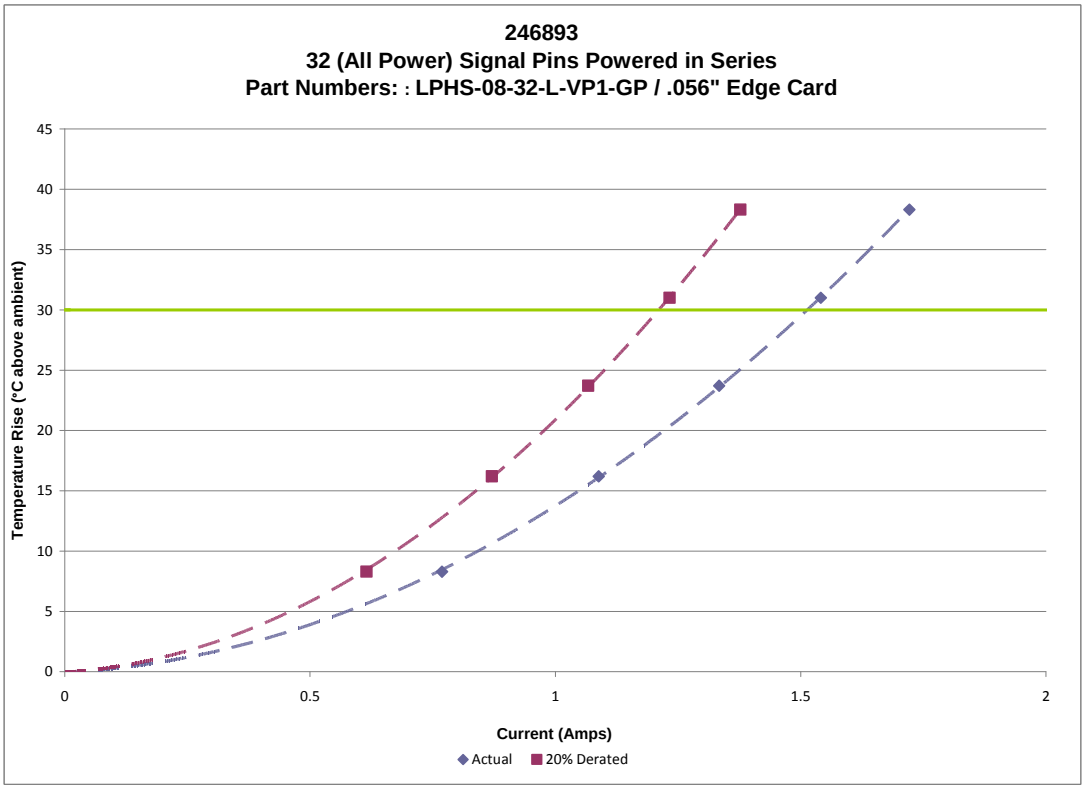




DATA SUMMARIES Continued

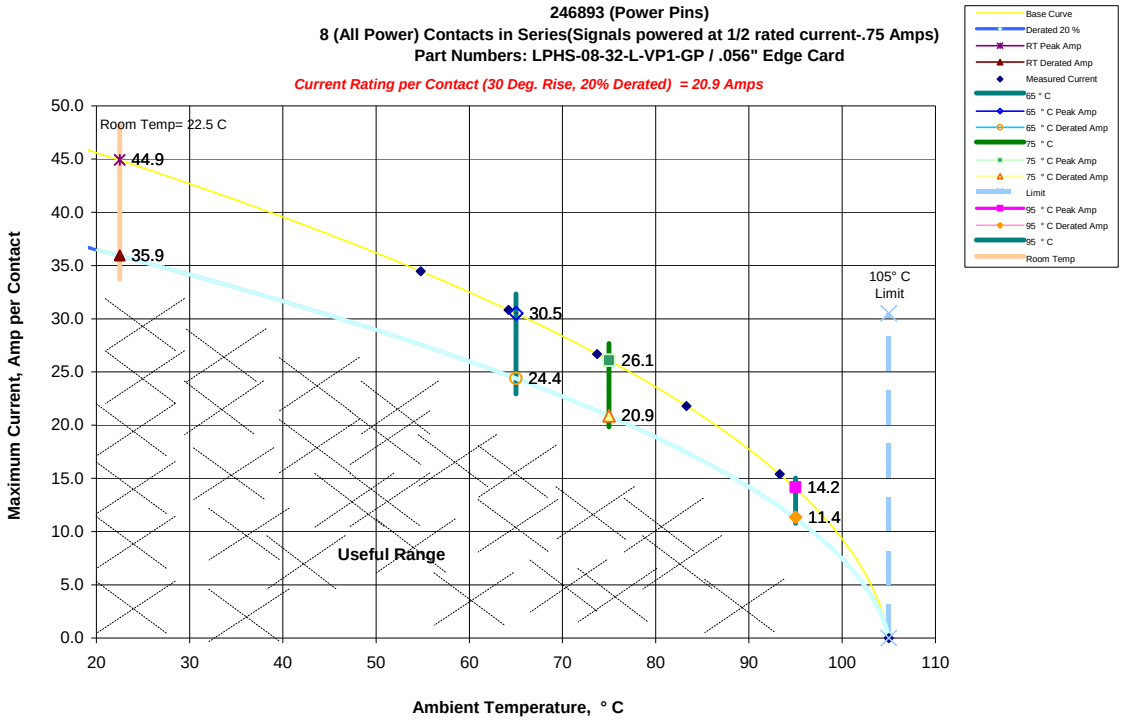
i. Linear configuration with all adjacent signal conductors/contacts powered

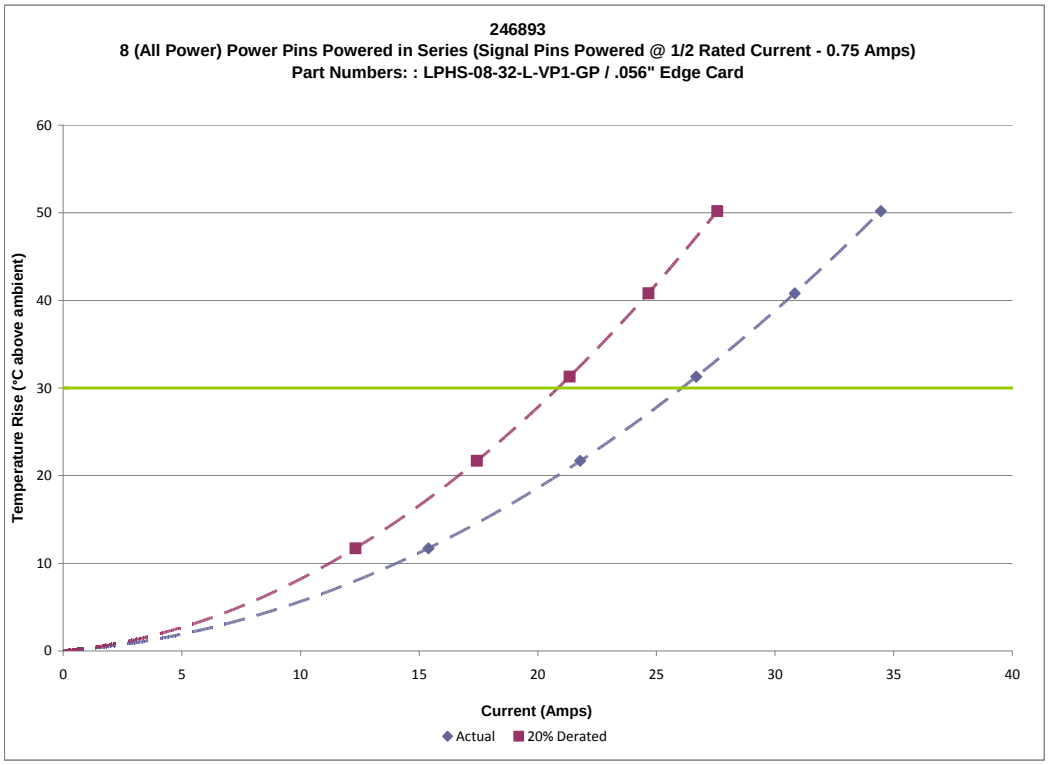




DATA SUMMARIES Continued

j. Linear configuration with all power pins (while signal pin at1/2 rated current 0.75 Amps) contacts powered





DATA SUMMARIES Continued

MATING-UNMATING FORCE:

Thermal Aging Group (LPHS-08-32-L-VP1-GP/Edge card 0.056")

	Initial				After Thermals			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	28.73	6.46	16.86	3.79	18.19	4.09	9.47	2.13
Maximum	36.16	8.13	25.44	5.72	22.68	5.10	11.83	2.66
Average	32.32	**7.27**	19.70	**4.43**	20.74	**4.66**	10.71	**2.41**
St Dev	2.27	0.51	2.72	0.61	1.60	0.36	0.96	0.22
Count	8	8	8	8	8	8	8	8

Thermal Aging Group (LPHS-08-32-L-VP1-GP/Edge card 0.068")

	Initial				After Thermals			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	56.31	12.66	23.84	5.36	37.27	8.38	17.79	4.00
Maximum	71.43	16.06	43.01	9.67	45.86	10.31	21.75	4.89
Average	66.02	**14.84**	33.10	**7.44**	42.23	**9.50**	19.67	**4.42**
St Dev	5.32	1.20	5.86	1.32	3.17	0.71	1.42	0.32
Count	8	8	8	8	8	8	8	8

DATA SUMMARIES Continued

MATING-UNMATING FORCE:

Mating-Unmating Durability Gaps Group (LPHS-08-32-L-VP1-GP/Edge card 0.056")

	Initial				After 25 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	43.55	9.79	19.53	4.39	44.35	9.97	20.91	4.70
Maximum	53.91	12.12	29.53	6.64	56.80	12.77	29.40	6.61
Average	49.56	**11.14**	24.47	**5.50**	52.51	**11.81**	25.74	**5.79**
St Dev	3.64	0.82	3.30	0.74	3.83	0.86	3.14	0.71
Count	8	8	8	8	8	8	8	8

	After 50 Cycles				After 75 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	46.30	10.41	23.00	5.17	48.13	10.82	23.84	5.36
Maximum	59.34	13.34	32.43	7.29	62.32	14.01	34.61	7.78
Average	54.45	**12.24**	27.81	**6.25**	56.14	**12.62**	29.76	**6.69**
St Dev	3.78	0.85	3.41	0.77	3.97	0.89	3.83	0.86
Count	8	8	8	8	8	8	8	8

	After 100 Cycles				After Humidity			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	50.26	11.30	25.66	5.77	29.85	6.71	15.43	3.47
Maximum	63.03	14.17	37.76	8.49	38.56	8.67	21.26	4.78
Average	56.69	**12.75**	31.78	**7.15**	33.12	**7.45**	18.64	**4.19**
St Dev	3.48	0.78	4.25	0.96	2.70	0.61	1.96	0.44
Count	8	8	8	8	8	8	8	8

DATA SUMMARIES Continued

MATING-UNMATING FORCE:

Mating-Unmating Durability Gaps Group (LPHS-08-32-L-VP1-GP/Edge card 0.068")

	Initial				After 25 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	52.66	11.84	22.06	4.96	52.53	11.81	24.15	5.43
Maximum	68.45	15.39	33.63	7.56	77.75	17.48	35.32	7.94
Average	62.50	**14.05**	29.25	**6.58**	67.30	**15.13**	30.71	**6.91**
St Dev	6.12	1.37	3.94	0.89	9.00	2.02	3.52	0.79
Count	8	8	8	8	8	8	8	8

	After 50 Cycles				After 75 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	53.64	12.06	25.31	5.69	56.27	12.65	25.75	5.79
Maximum	83.36	18.74	37.27	8.38	86.38	19.42	39.68	8.92
Average	70.52	**15.85**	32.49	**7.30**	72.75	**16.36**	33.95	**7.63**
St Dev	10.69	2.40	3.82	0.86	10.77	2.42	4.46	1.00
Count	8	8	8	8	8	8	8	8

	After 100 Cycles				After Humidity			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	59.69	13.42	27.27	6.13	34.56	7.77	20.15	4.53
Maximum	86.42	19.43	41.77	9.39	47.33	10.64	30.38	6.83
Average	74.97	**16.86**	35.45	**7.97**	41.87	**9.41**	26.87	**6.04**
St Dev	10.01	2.25	4.78	1.08	4.57	1.03	3.24	0.73
Count	8	8	8	8	8	8	8	8

DATA SUMMARIES Continued

MATING-UNMATING FORCE:

Mating-Unmating Basic (LPHS-06-24-L-VP1-GP/Edge card)

	Initial				After 25 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	52.00	11.69	25.09	5.64	51.77	11.64	28.33	6.37
Maximum	65.12	14.64	37.05	8.33	63.38	14.25	42.26	9.50
Average	58.25	**13.10**	30.70	**6.90**	57.23	**12.87**	36.70	**8.25**
St Dev	4.31	0.97	4.66	1.05	4.16	0.93	4.64	1.04
Count	8	8	8	8	8	8	8	8

	After 50 Cycles				After 75 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	53.91	12.12	30.20	6.79	56.13	12.62	32.29	7.26
Maximum	64.50	14.50	45.41	10.21	66.72	15.00	49.91	11.22
Average	60.02	**13.49**	39.79	**8.95**	62.12	**13.97**	43.40	**9.76**
St Dev	4.23	0.95	5.27	1.19	4.20	0.94	6.33	1.42
Count	8	8	8	8	8	8	8	8

	After 100 Cycles			
	Mating		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	57.16	12.85	34.92	7.85
Maximum	66.23	14.89	54.49	12.25
Average	62.99	**14.16**	46.83	**10.53**
St Dev	3.75	0.84	7.30	1.64
Count	8	8	8	8

DATA SUMMARIES Continued

MATING-UNMATING FORCE:

Mating-Unmating Basic (LPHS-04-20-L-VP1-GP/Edge card)

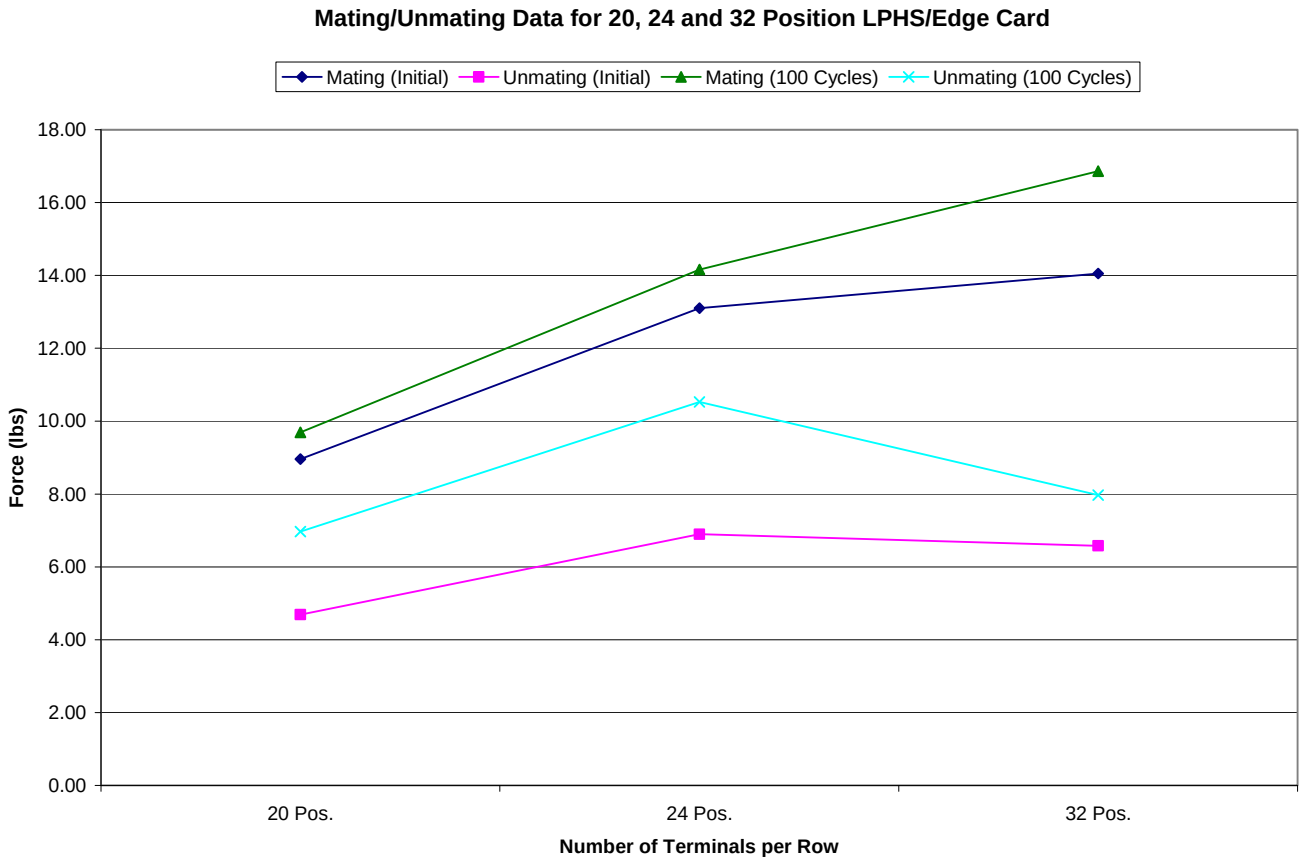
	Initial				After 25 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	38.07	8.56	17.57	3.95	36.07	8.11	19.75	4.44
Maximum	42.26	9.50	25.18	5.66	43.06	9.68	26.95	6.06
Average	39.87	**8.96**	20.86	**4.69**	39.35	**8.85**	23.39	**5.26**
St Dev	1.45	0.33	2.82	0.63	2.35	0.53	2.49	0.56
Count	8	8	8	8	8	8	8	8

	After 50 Cycles				After 75 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	36.47	8.20	21.71	4.88	37.01	8.32	22.46	5.05
Maximum	45.59	10.25	30.65	6.89	46.26	10.40	35.01	7.87
Average	40.90	**9.20**	25.82	**5.80**	42.20	**9.49**	28.54	**6.42**
St Dev	2.87	0.64	2.74	0.61	3.08	0.69	3.82	0.86
Count	8	8	8	8	8	8	8	8

	After 100 Cycles			
	Mating		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	36.87	8.29	24.20	5.44
Maximum	47.99	10.79	38.34	8.62
Average	43.08	**9.69**	31.01	**6.97**
St Dev	3.64	0.82	4.34	0.98
Count	8	8	8	8

DATA SUMMARIES Continued

Mating\Unmating Force Comparison



DATA SUMMARIES Continued

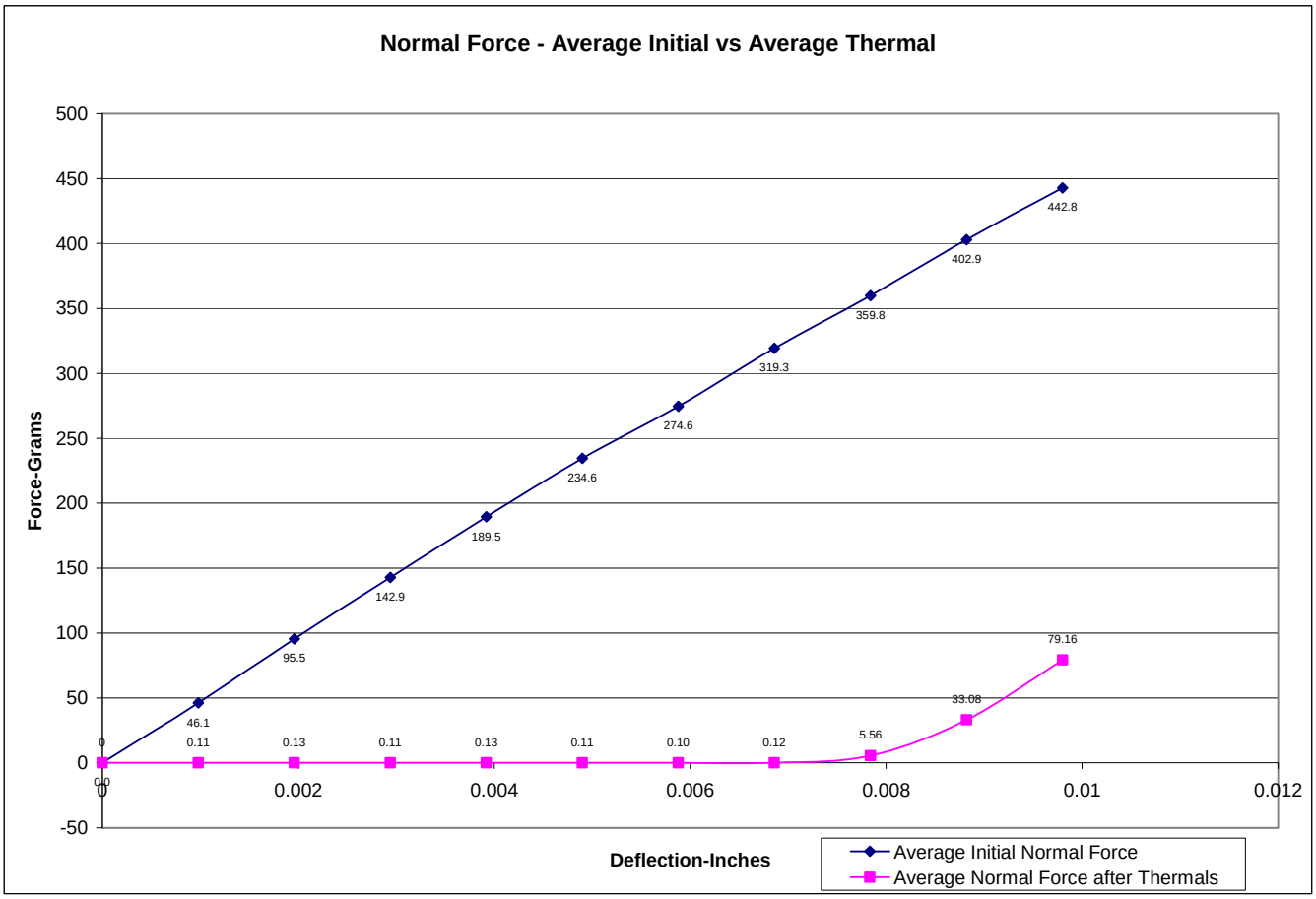
NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):

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.

Power pin C-367-01 Left

	Deflections in inches Forces in Grams										
Initial	**0.0010**	**0.0020**	**0.0029**	**0.0039**	**0.0049**	**0.0059**	**0.0069**	**0.0078**	**0.0088**	**0.0098**	***SET***
Averages	46.12	95.48	142.87	189.50	234.58	274.58	319.27	359.79	402.88	442.77	0.0003
Min	39.30	84.10	131.10	174.50	217.40	256.80	297.40	332.50	379.50	418.80	0.0000
Max	56.50	114.60	160.20	210.90	260.70	301.20	349.20	391.10	432.80	473.20	0.0007
St. Dev	5.133	7.790	8.973	9.751	11.141	11.781	14.036	15.784	14.628	15.660	0.0002
Count	12	12	12	12	12	12	12	12	12	12	12

After Thermals	Deflections in inches Forces in Grams										
	0.0010	**0.0020**	**0.0029**	**0.0039**	**0.0049**	**0.0059**	**0.0069**	**0.0078**	**0.0088**	**0.0098**	***SET***
Averages	0.11	0.13	0.11	0.13	0.11	0.10	0.12	5.56	33.08	79.16	0.0082
Min	-0.30	-0.20	-0.20	-0.20	-0.20	-0.30	-0.30	-0.10	3.90	47.00	0.0072
Max	0.40	0.40	0.40	0.40	0.40	0.40	0.40	35.10	79.40	124.30	0.0089
St. Dev	0.211	0.205	0.207	0.192	0.193	0.222	0.217	11.177	25.180	25.844	0.0005
Count	12	12	12	12	12	12	12	12	12	12	12



DATA SUMMARIES Continued

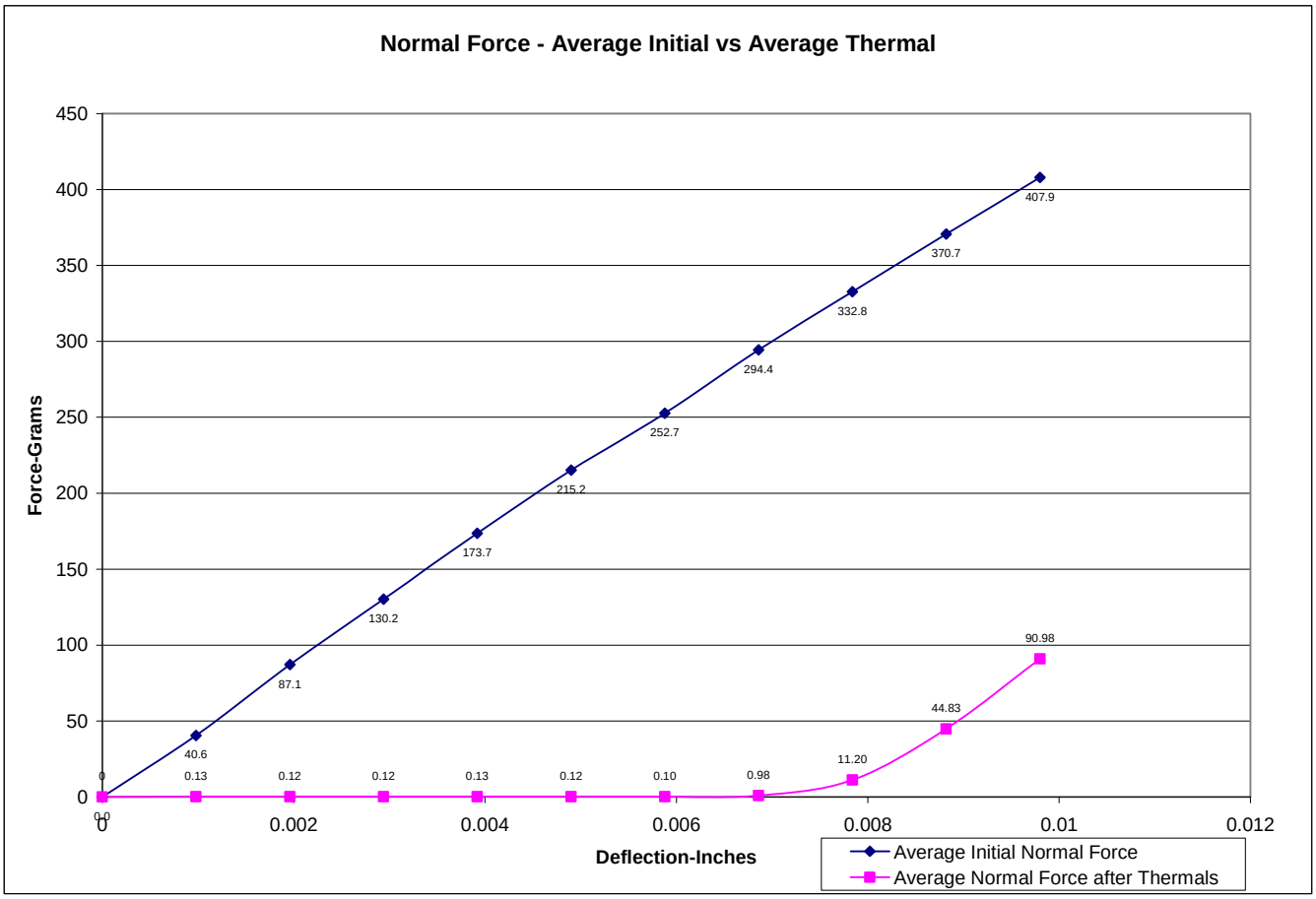
NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):

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.

Power pin C-367-01 Middle

Initial	Deflections in inches Forces in Grams										
	0.0010	**0.0020**	**0.0029**	**0.0039**	**0.0049**	**0.0059**	**0.0069**	**0.0078**	**0.0088**	**0.0098**	***SET***
Averages	40.56	87.08	130.22	173.70	215.20	252.65	294.42	332.83	370.66	407.91	0.0003
Min	37.60	80.20	122.90	165.30	198.90	237.40	276.20	310.20	347.50	382.00	0.0001
Max	43.00	92.10	136.70	181.40	226.20	265.30	306.60	349.30	387.20	427.40	0.0003
St. Dev	1.849	4.104	4.354	4.633	8.037	8.496	9.401	11.328	12.394	13.107	0.0001
Count	12	12	12	12	12	12	12	12	12	12	12

After Thermals	Deflections in inches Forces in Grams										
	0.0010	**0.0020**	**0.0029**	**0.0039**	**0.0049**	**0.0059**	**0.0069**	**0.0078**	**0.0088**	**0.0098**	***SET***
Averages	0.13	0.12	0.12	0.13	0.12	0.10	0.98	11.20	44.83	90.98	0.0078
Min	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.30	8.20	57.20	0.0066
Max	0.40	0.40	0.40	0.40	0.40	0.40	10.30	54.20	93.70	138.50	0.0085
St. Dev	0.260	0.269	0.229	0.263	0.266	0.263	2.944	17.666	26.924	26.717	0.0006
Count	12	12	12	12	12	12	12	12	12	12	12



DATA SUMMARIES Continued

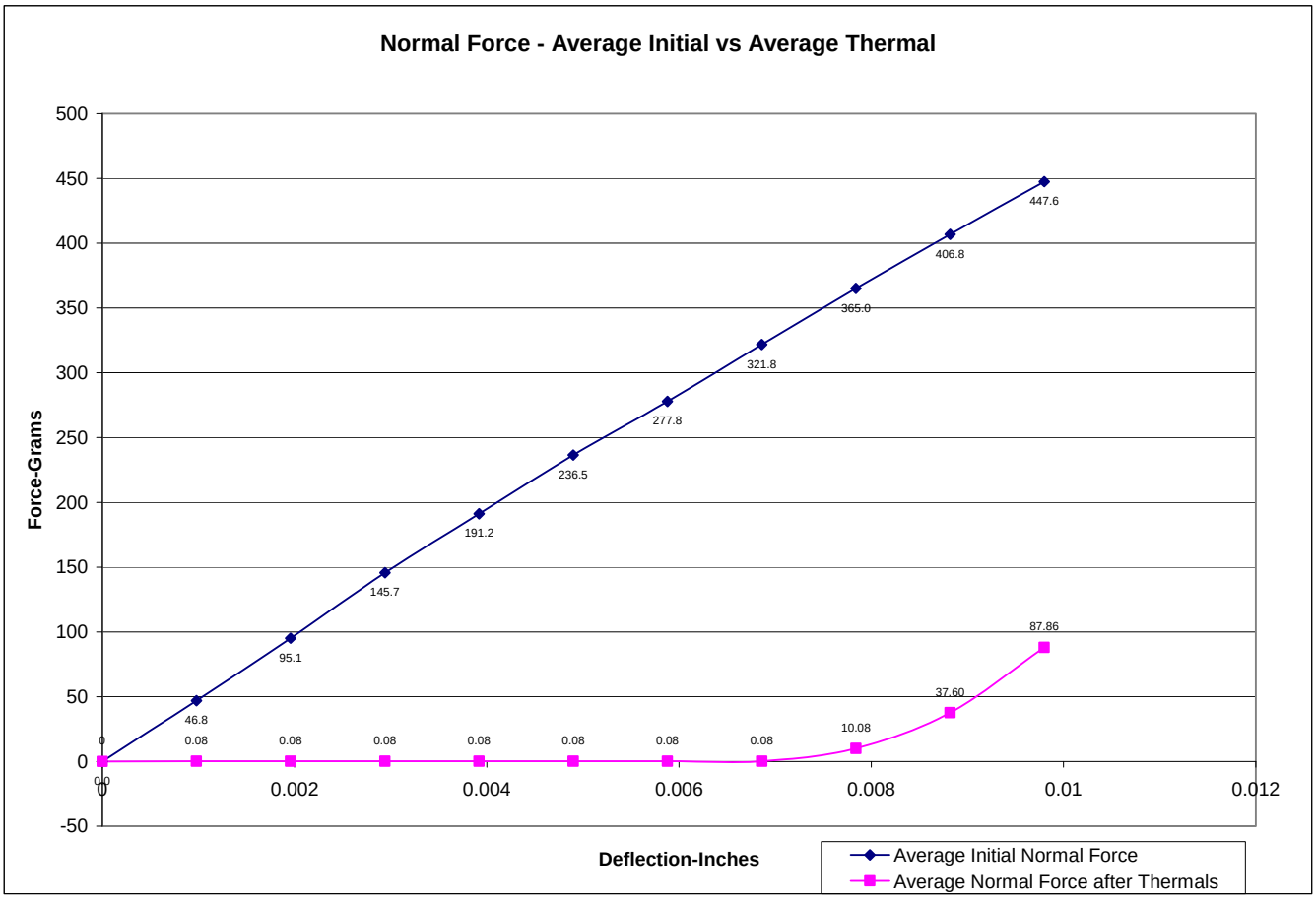
NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):

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.

Power pin C-367-01 Right

Initial	Deflections in inches Forces in Grams										
	0.0010	**0.0020**	**0.0029**	**0.0039**	**0.0049**	**0.0059**	**0.0069**	**0.0078**	**0.0088**	**0.0098**	***SET***
Averages	46.84	95.14	145.68	191.21	236.49	277.78	321.80	365.04	406.79	447.57	0.0002
Min	38.10	79.10	129.30	171.10	213.20	247.00	289.20	329.00	366.60	403.00	0.0001
Max	54.20	103.80	154.70	203.10	250.20	296.30	343.10	387.20	430.90	473.90	0.0003
St. Dev	5.390	6.986	8.740	10.281	12.136	15.544	17.342	19.143	21.147	23.343	0.0001
Count	12	12	12	12	12	12	12	12	12	12	12

After Thermals	Deflections in inches Forces in Grams										
	0.0010	**0.0020**	**0.0029**	**0.0039**	**0.0049**	**0.0059**	**0.0069**	**0.0078**	**0.0088**	**0.0098**	***SET***
Averages	0.08	0.08	0.08	0.08	0.08	0.08	0.08	10.08	37.60	87.86	0.0082
Min	-0.40	-0.30	-0.40	-0.30	-0.30	-0.40	-0.40	-0.40	0.10	53.30	0.0072
Max	0.40	0.40	0.40	0.40	0.40	0.40	0.40	35.80	92.80	139.60	0.0089
St. Dev	0.256	0.242	0.256	0.241	0.242	0.256	0.255	15.060	32.264	28.741	0.0007
Count	12	12	12	12	12	12	12	12	12	12	12



DATA SUMMARIES Continued

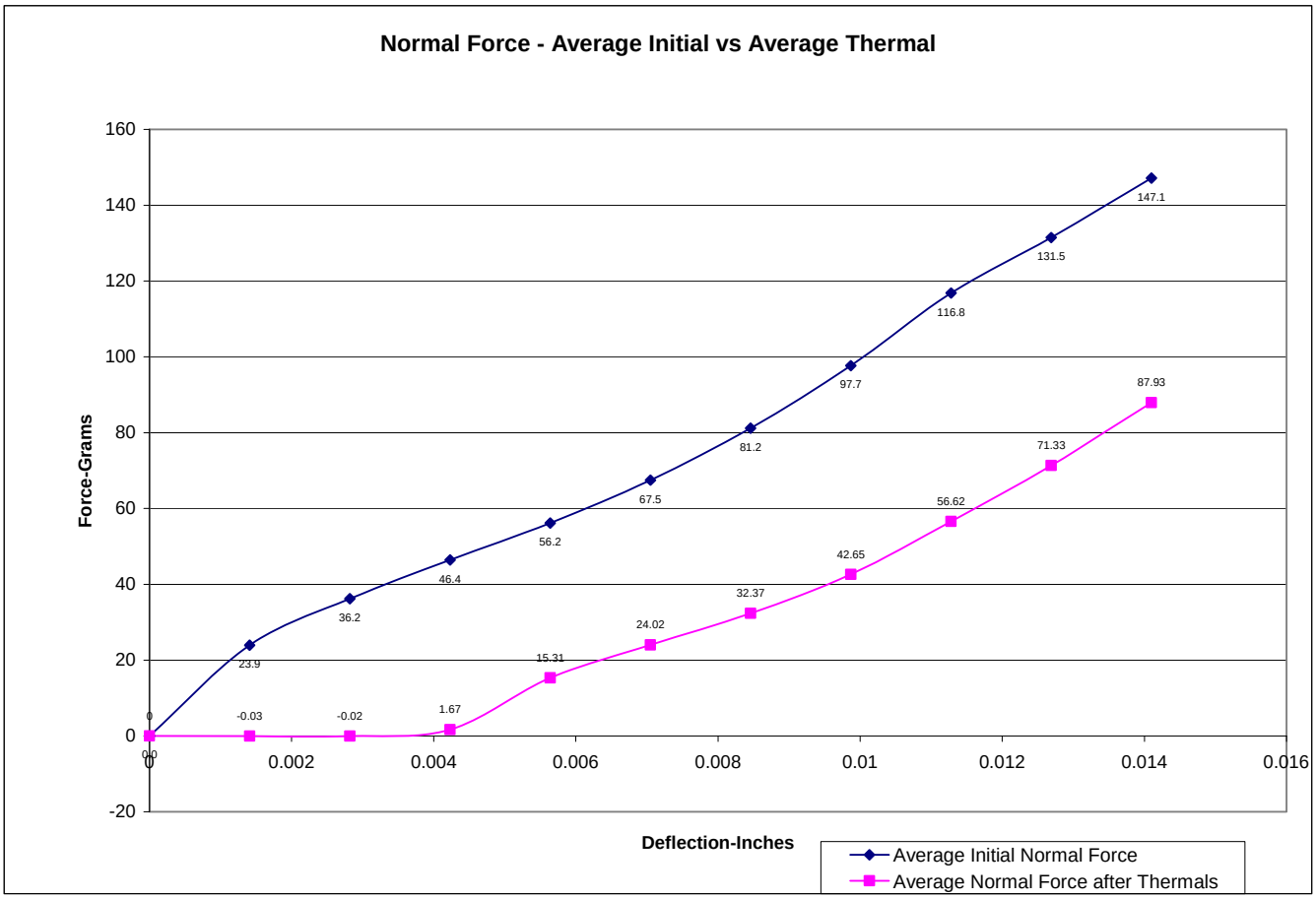
NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):

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.

Signal pin C-379-01

Initial	Deflections in inches Forces in Grams										
	0.0014	**0.0028**	**0.0042**	**0.0056**	**0.0071**	**0.0085**	**0.0099**	**0.0113**	**0.0127**	**0.0141**	***SET***
Averages	23.94	36.23	46.42	56.15	67.49	81.23	97.70	116.84	131.49	147.12	0.0020
Min	19.50	29.50	39.00	47.80	58.70	72.00	86.60	104.60	120.10	136.20	0.0014
Max	29.30	41.80	53.80	67.00	76.70	91.50	108.80	131.20	151.40	160.40	0.0026
St. Dev	3.039	4.007	4.971	6.270	6.664	7.368	7.907	9.010	9.351	8.034	0.0004
Count	12	12	12	12	12	12	12	12	12	12	12

After Thermals	Deflections in inches Forces in Grams										
	0.0014	**0.0028**	**0.0042**	**0.0056**	**0.0071**	**0.0085**	**0.0099**	**0.0113**	**0.0127**	**0.0141**	***SET***
Averages	-0.03	-0.02	1.67	15.31	24.02	32.37	42.65	56.62	71.33	87.93	0.0060
Min	-0.40	-0.40	-0.40	8.50	20.50	28.80	33.70	48.30	58.50	75.30	0.0046
Max	0.30	0.30	11.90	21.30	29.40	38.20	50.20	70.60	85.20	101.90	0.0067
St. Dev	0.249	0.259	3.498	3.789	2.743	2.992	5.240	7.127	7.966	8.221	0.0006
Count	12	12	12	12	12	12	12	12	12	12	12



DATA SUMMARIES Continued

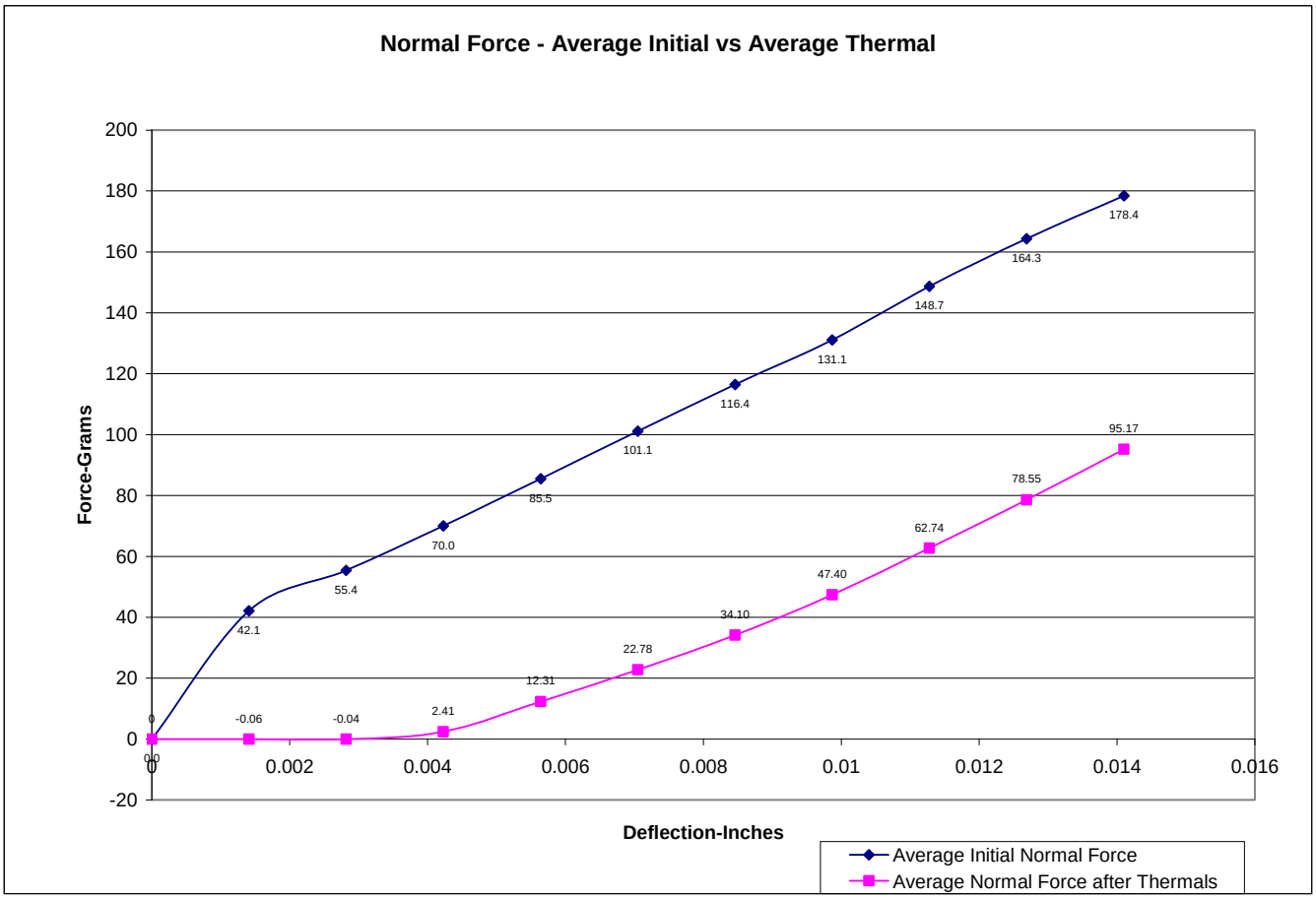
NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):

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.

Signal pin C-380-01

Initial	Deflections in inches Forces in Grams										
	0.0014	**0.0028**	**0.0042**	**0.0056**	**0.0071**	**0.0085**	**0.0099**	**0.0113**	**0.0127**	**0.0141**	***SET***
Averages	42.13	55.38	70.01	85.51	101.13	116.44	131.11	148.70	164.34	178.41	0.0001
Min	37.70	51.10	65.30	81.00	95.90	111.70	126.20	141.80	154.60	168.60	0.0000
Max	51.80	63.70	78.70	94.30	110.80	126.60	140.90	165.30	184.60	194.30	0.0001
St. Dev	4.571	4.168	4.161	4.294	4.488	4.630	4.522	6.653	8.035	7.403	0.0001
Count	12	12	12	12	12	12	12	12	12	12	12

After Thermals	Deflections in inches Forces in Grams										
	0.0014	**0.0028**	**0.0042**	**0.0056**	**0.0071**	**0.0085**	**0.0099**	**0.0113**	**0.0127**	**0.0141**	***SET***
Averages	-0.06	-0.04	2.41	12.31	22.78	34.10	47.40	62.74	78.55	95.17	0.0044
Min	-0.40	-0.40	-0.40	6.50	17.20	27.40	39.80	54.30	68.10	84.20	0.0039
Max	0.30	0.30	12.50	23.50	34.80	48.10	62.70	77.30	93.70	110.40	0.0049
St. Dev	0.215	0.207	4.773	5.470	5.638	6.215	6.741	7.079	7.107	7.200	0.0003
Count	12	12	12	12	12	12	12	12	12	12	12



DATA SUMMARIES Continued

INSULATION RESISTANCE (IR):

	Pin to Pin (Signal Pin)		
	Mated	Unmated	Unmated
Minimum	**LPHS/Edge card**	**LPHS**	**Edge card**
Initial	10000	10000	Not Tested
Thermal	10000	10000	Not Tested
Humidity	6970	10000	Not Tested

	Row to Row (Signal Pin)		
	Mated	Unmated	Unmated
Minimum	**LPHS/Edge card**	**LPHS**	**Edge card**
Initial	10000	10000	Not Tested
Thermal	10000	10000	Not Tested
Humidity	10000	10000	Not Tested

	Signal pin to Power pin		
	Mated	Unmated	Unmated
Minimum	**LPHS/Edge card**	**LPHS**	**Edge card**
Initial	10000	10000	Not Tested
Thermal	10000	10000	Not Tested
Humidity	10000	10000	Not Tested

	Pin to Pin (Power Pin)		
	Mated	Unmated	Unmated
Minimum	**LPHS/Edge card**	**LPHS**	**Edge card**
Initial	10000	10000	Not Tested
Thermal	10000	10000	Not Tested
Humidity	10000	10000	Not Tested

	Row to Row (Power Pin)		
	Mated	Unmated	Unmated
Minimum	**LPHS/Edge card**	**LPHS**	**Edge card**
Initial	10000	10000	Not Tested
Thermal	10000	10000	Not Tested
Humidity	10000	10000	Not Tested

DATA SUMMARIES Continued

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

Signal Pin	
Voltage Rating Summary	
Minimum	**LPHS/Edge card**
Break Down Voltage	1125
Test Voltage	844
Working Voltage	281

Power Pin	
Voltage Rating Summary	
Minimum	**LPHS/Edge card**
Break Down Voltage	2300
Test Voltage	1725
Working Voltage	575

Pin to Pin (Signal Pin)	
Initial Test Voltage	Passed
After Thermal Test Voltage	Passed
After Humidity Test Voltage	Passed

Row to Row (Signal Pin)	
Initial Test Voltage	Passed
After Thermal Test Voltage	Passed
After Humidity Test Voltage	Passed

Signal pin to Power pin	
Initial Test Voltage	Passed
After Thermal Test Voltage	Passed
After Humidity Test Voltage	Passed

Pin to Pin (Power Pin)	
Initial Test Voltage	Passed
After Thermal Test Voltage	Passed
After Humidity Test Voltage	Passed

Row to Row (Power Pin)	
Initial Test Voltage	Passed
After Thermal Test Voltage	Passed
After Humidity Test Voltage	Passed

DATA SUMMARIES Continued

LLCR Thermal Aging 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. <= +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

Edge card 0.056”

LLCR Measurement Summaries by Pin Type				
Date	2013-2-27	2013-3-11		
Room Temp (Deg C)	23	22		
Rel Humidity (%)	60	57		
Technician	Kason He	Kason He		
mOhm values	**Actual Initial**	**Delta Thermal**	**Delta**	**Delta**
Pin Type 1: Signal				
Average	12.26	1.51		
St. Dev.	0.62	1.11		
Min	11.28	0.10		
Max	14.67	7.77		
Summary Count	160	160		
Total Count	160	160		
Pin Type 2: Power				
Average	0.33	0.16		
St. Dev.	0.03	0.06		
Min	0.27	0.07		
Max	0.38	0.35		
Summary Count	32	32		
Total Count	32	32		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Thermal	**191**	**1**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

Edge card 0.068”

	LLCR Measurement Summaries by Pin Type			
Date	2013-2-27	2013-3-11		
Room Temp (Deg C)	23	22		
Rel Humidity (%)	59	57		
Technician	Kason He	Kason He		
mOhm values	**Actual Initial**	**Delta Thermal**	**Delta**	**Delta**
	Pin Type 1: Signal			
Average	12.46	1.69		
St. Dev.	0.68	1.18		
Min	10.64	0.07		
Max	14.33	6.04		
Summary Count	160	160		
Total Count	160	160		
	Pin Type 2: Power			
Average	0.26	0.17		
St. Dev.	0.02	0.06		
Min	0.22	0.07		
Max	0.28	0.35		
Summary Count	32	32		
Total Count	32	32		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Thermal	**188**	**4**	**0**	**0**	**0**	**0**

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. <= +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

Edge card 0.056"

	LLCR Measurement Summaries by Pin Type			
Date	2013-6-5	2013-6-8	2013-6-18	2013-7-10
Room Temp (Deg C)	22	22	27	24
Rel Humidity (%)	58	58	58	56
Technician	kason he	Kason He	Kason He	Kason He
mOhm values	**Actual Initial**	**Delta 100 Cycles**	**Delta Therm Shck**	**Delta Humidity**
	Pin Type 1: Signal			
Average	12.34	0.56	1.85	2.88
St. Dev.	0.51	0.57	1.58	2.22
Min	11.23	0.00	0.08	0.17
Max	13.62	3.26	8.78	11.18
Summary Count	160	160	160	160
Total Count	160	160	160	160
	Pin Type 2: Power			
Average	0.29	0.04	0.11	0.34
St. Dev.	0.03	0.02	0.06	0.18
Min	0.24	0.00	0.03	0.09
Max	0.34	0.08	0.32	0.81
Summary Count	32	32	32	32
Total Count	32	32	32	32

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
100 Cycles	**192**	**0**	**0**	**0**	**0**	**0**
Therm Shck	**183**	**9**	**0**	**0**	**0**	**0**
Humidity	**163**	**27**	**2**	**0**	**0**	**0**

DATA SUMMARIES Continued

Edge card 0.068”

	LLCR Measurement Summaries by Pin Type			
Date	2013-6-5	2013-6-8	2013-6-18	2013-7-9
Room Temp (Deg C)	22	22	27	24
Rel Humidity (%)	58	59	58	56
Technician	Kason He	Kason He	Kason He	Kason He
mOhm values	**Actual Initial**	**Delta 100 Cycles**	**Delta Therm Shck**	**Delta Humidity**
	Pin Type 1: Signal			
Average	12.45	0.60	2.25	5.69
St. Dev.	0.67	0.58	1.83	3.00
Min	11.35	0.00	0.18	0.04
Max	15.11	4.33	9.11	13.59
Summary Count	160	160	160	160
Total Count	160	160	160	160
	Pin Type 2: Power			
Average	0.27	0.02	0.10	0.36
St. Dev.	0.03	0.01	0.06	0.18
Min	0.22	0.00	0.01	0.06
Max	0.32	0.06	0.28	0.63
Summary Count	32	32	32	32
Total Count	32	32	32	32

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
100 Cycles	**192**	**0**	**0**	**0**	**0**	**0**
Therm Shck	**177**	**15**	**0**	**0**	**0**	**0**
Humidity	**105**	**73**	**14**	**0**	**0**	**0**

DATA SUMMARIES Continued

LLCR Gas Tight 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. <= +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

Edge card 0.056”

LLCR Measurement Summaries by Pin Type				
Date	2013-2-25	2013-3-6		
Room Temp (Deg C)	22	23		
Rel Humidity (%)	55	49		
Technician	Kason He	Kason He		
mOhm values	**Actual Initial**	**Delta Acid Vapor**	**Delta**	**Delta**
	Pin Type 1: Signal			
Average	12.29	0.40		
St. Dev.	0.55	0.55		
Min	11.19	0.00		
Max	13.60	3.35		
Summary Count	160	160		
Total Count	160	160		
	Pin Type 2: Power			
Average	0.34	0.04		
St. Dev.	0.03	0.03		
Min	0.29	0.00		
Max	0.41	0.15		
Summary Count	32	32		
Total Count	32	32		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Acid Vapor	**192**	**0**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

LLCR Shock & Vibration 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. <= +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

Edge card 0.056”

LLCR Measurement Summaries by Pin Type				
Date	2013-5-1	2013-5-2		
Room Temp (Deg C)	23	23		
Rel Humidity (%)	40	40		
Technician	Tony_Wagoner	Tony_Wagoner		
mOhm values	**Actual Initial**	**Delta Shock-Vib**	**Delta**	**Delta**
	Pin Type 1: Signal			
Average	12.83	0.88		
St. Dev.	0.90	1.24		
Min	11.20	0.00		
Max	17.32	8.56		
Summary Count	160	160		
Total Count	160	160		
	Pin Type 2: Power			
Average	0.40	0.04		
St. Dev.	0.05	0.03		
Min	0.33	0.00		
Max	0.56	0.10		
Summary Count	32	32		
Total Count	32	32		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Shock-Vib	**189**	**3**	**0**	**0**	**0**	**0**

Nanosecond Event Detection:

Shock and Vibration Event Detection Summary	
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
Total Events	0

DATA SUMMARIES Continued

Edge card 0.068”

	LLCR Measurement Summaries by Pin Type			
Date	2013-4-9	2013-4-11		
Room Temp (Deg C)	22	24		
Rel Humidity (%)	41	41		
Technician	Tony Wagoner	Tony Wagoner		
mOhm values	**Actual Initial**	**Delta Shock-Vib**	**Delta**	**Delta**
	Pin Type 1: Signal			
Average	12.34	0.46		
St. Dev.	0.69	0.84		
Min	11.26	0.00		
Max	16.18	5.32		
Summary Count	160	160		
Total Count	160	160		
	Pin Type 2: Power			
Average	0.27	0.01		
St. Dev.	0.02	0.01		
Min	0.23	0.00		
Max	0.33	0.04		
Summary Count	32	32		
Total Count	32	32		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Shock-Vib	**191**	**1**	**0**	**0**	**0**	**0**

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. <= +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

LPHS-08-32-S-VP1-GP/Edge card

LLCR Measurement Summaries by Pin Type				
Date	4/20/2015	4/22/2015	5/7/2015	5/18/2015
Room Temp (Deg C)	23	23	23	23
Rel Humidity (%)	54	54	54	54
Technician	Peter Chen	Peter Chen	Peter Chen	Peter Chen
mOhm values	**Actual Initial**	**Delta 250 Cycles**	**Delta Therm Shck**	**Delta Humidity**
	Pin Type 1: Signal			
Average	10.10	0.31	1.50	0.96
St. Dev.	0.58	0.49	1.23	1.06
Min	9.12	0.00	0.02	0.00
Max	11.35	4.11	6.30	4.68
Summary Count	160	160	160	160
Total Count	160	160	160	160
	Pin Type 2: Power			
Average	0.22	0.04	0.20	0.23
St. Dev.	0.03	0.05	0.07	0.17
Min	0.12	0.00	0.09	0.02
Max	0.27	0.22	0.34	0.80
Summary Count	32	32	32	32
Total Count	32	32	32	32

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
250 Cycles	**192**	**0**	**0**	**0**	**0**	**0**
Therm Shck	**189**	**3**	**0**	**0**	**0**	**0**
Humidity	**192**	**0**	**0**	**0**	**0**	**0**

EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: HZ-TCT-01
Description: Normal force analyzer
Manufacturer: Mecmesin Multitester
Model: Mecmesin Multitester 2.5-i
Serial #: 08-1049-04
Accuracy: Last Cal: 4/26/2013, Next Cal: 4/25/2014

Equipment #: HZ-OV-01
Description: Oven
Manufacturer: Huida
Model: CS101-1E
Serial #: CS101-1E-B
Accuracy: Last Cal: 12/13/2012, Next Cal: 12/12/2013

Equipment #: HZ-THC-01
Description: Humidity transmitter
Manufacturer: Thermtron
Model: SM-8-8200
Serial #: 38846
Accuracy: Last Cal: 2/28/2013, Next Cal: 2/27/2014

Equipment #: HZ-HPM-01
Description: NA9636H
Manufacturer: Ainuo
Model: 6031A
Serial #: 089601091
Accuracy: Last Cal: 3/7/2013, Next Cal: 3/6/2014

Equipment #: HZ-MO-05
Description: Micro-ohmmeter
Manufacturer: Keithley
Model: 3706
Serial #: 1285188
Accuracy: Last Cal: 11/15/2012, Next Cal: 11/14/2013

Equipment #: HZ-TSC-01
Description: Vertical Thermal Shock Chamber
Manufacturer: Cincinnatti Sub Zero
Model: VTS-3-6-6-SC/AC
Serial #: 10-VT14994
Accuracy: See Manual
… Last Cal: 06/28/2012, Next Cal: 06/27/2013

EQUIPMENT AND CALIBRATION SCHEDULES Continued

Equipment #: MO-04
Description: Multimeter /Data Acquisition System
Manufacturer: Keithley
Model: 2700
Serial #: 0798688
Accuracy: See Manual
… Last Cal: 04/30/2012, Next Cal: 04/30/2013

Equipment #: SVC-01
Description: Shock & Vibration Table
Manufacturer: Data Physics
Model: LE-DSA-10-20K
Serial #: 10037
Accuracy: See Manual
… Last Cal: 11/31/2012, Next Cal: 11/31/2013

Equipment #: ACLM-01
Description: Accelerometer
Manufacturer: PCB Piezotronics
Model: 352C03
Serial #: 115819
Accuracy: See Manual
… Last Cal: 07/09/2012, Next Cal: 07/09/2013

Equipment #: ED-03
Description: Event Detector
Manufacturer: Analysis Tech
Model: 32EHD
Serial #: 1100604
Accuracy: See Manual
… Last Cal: 06/04/2013, Next Cal: 06/04/2014