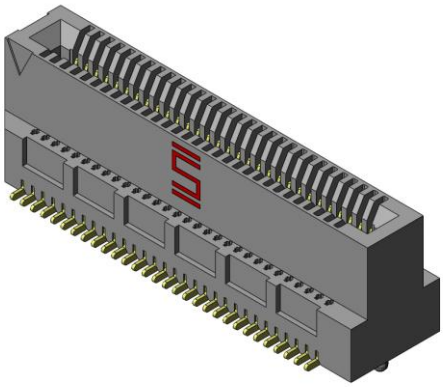
Project Number: Design Qualification Test Report	Tracking Code: 245363-RQ Rev 2
Requested by: Leo Lee	Date: 8/13/2013
Part #: MEC8-140-02-L-DV-A/Edge Card	
Part description: MEC8 /Card	Tech: Peter Chen
Test Start: 05/15/2013	Test Completed: 06/25/2013



Design Qualification Test Report

MEC8 / Card
MEC8-140-02-L-DV-A/Edge Card

REVISION HISTORY

DATA	REV.NUM.	DESCRIPTION	ENG
8/8/2013	**1**	**Initial Issue**	**PC**
8/13/2013	**2**	**Fix Normal Force Graph**	**CE**

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.

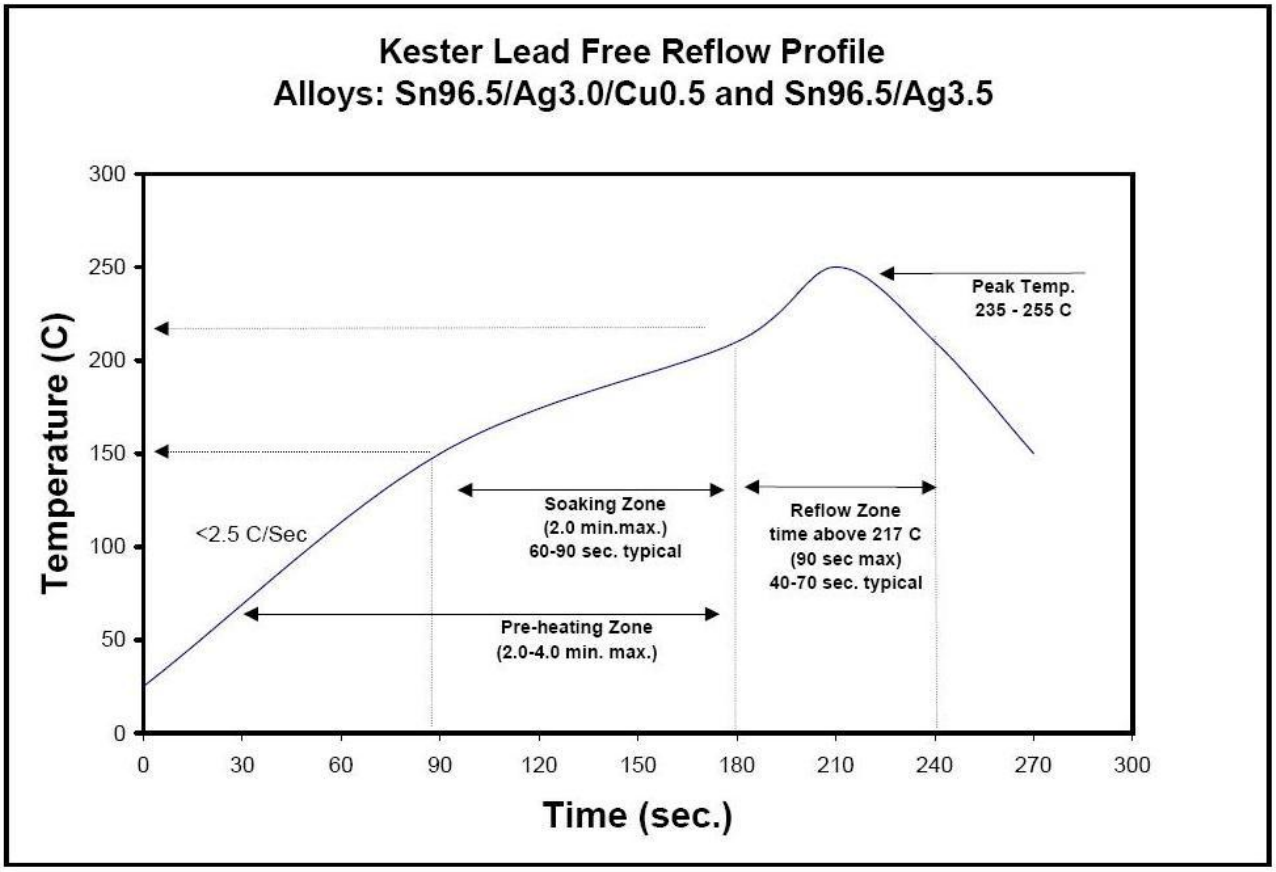
APPLICABLE DOCUMENTS

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 and DWV/IR testing were cleaned according to TLWI-0001.
4) Either an automated cleaning procedure or an ultrasonic cleaning procedure may be used.
5) The automated procedure is used with aqueous compatible soldering materials.
6) Parts not intended for testing LLCR and DWV/IR are visually inspected and cleaned if necessary.
7) Any additional preparation will be noted in the individual test sequences.
8) Solder Information: Lead free
9) Re-Flow Time/Temp: See accompanying profile.
10) Samtec Test PCBs used: PCB-104303-TST

TYPICAL OVEN PROFILE (Soldering Parts to Test Boards)



FLOWCHARTS

Gas Tight

TEST STEP	GROUP A1 8 boards 0.056" thick edge card(Min)
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

Thermal Aging

TEST STEP	GROUP A1 8 Boards Thermal Aging (Mated) 0.056" thick edge card(Min)	GROUP A1 8 Boards Thermal Aging (Mated) 0.068" thick edge card(Max)
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)	GROUP B1 8 Boards (largest position submitted) 0.068" thick edge card(Max)	GROUP B2 8 Boards (middle position submitted) 0.068" thick edge card(Max)	GROUP B3 8 Boards (smallest position submitted) 0.068" thick edge card(Max)
01	Contact Gaps	Contact Gaps	Contact Gaps	Contact Gaps
02	Measure & Record PCB Thickness	Measure & Record PCB Thickness	Measure & Record PCB Thickness	Measure & Record PCB Thickness
03	LLCR-1	LLCR-1	Forces - Mating / Unmating	Forces - Mating / Unmating
04	Forces - Mating / Unmating	Forces - Mating / Unmating	25 Cycles	25 Cycles
05	25 Cycles	25 Cycles	Forces - Mating / Unmating	Forces - Mating / Unmating
06	Forces - Mating / Unmating	Forces - Mating / Unmating	25 Cycles (50 Total)	25 Cycles (50 Total)
07	25 Cycles (50 Total)	25 Cycles (50 Total)	Forces - Mating / Unmating	Forces - Mating / Unmating
08	Forces - Mating / Unmating	Forces - Mating / Unmating	25 Cycles (75 Total)	25 Cycles (75 Total)
09	25 Cycles (75 Total)	25 Cycles (75 Total)	Forces - Mating / Unmating	Forces - Mating / Unmating
10	Forces - Mating / Unmating	Forces - Mating / Unmating	25 Cycles (100 Total)	25 Cycles (100 Total)
11	25 Cycles (100 Total)	25 Cycles (100 Total)	Forces - Mating / Unmating	Forces - Mating / Unmating
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:

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

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

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

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

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

20 mV Max, 100 mA Max

Use Keithley 580 or 3706 in 4 wire dry circuit mode

FLOWCHARTS Continued

IR & DWV

TEST STEP	GROUP 1 2 Mated Sets Break Down Pin-to-Pin	GROUP 2 2 Unmated of Part # Being Tested Break Down Pin-to-Pin	GROUP 3 2 Unmated of Mating Part # Break Down Pin-to-Pin	GROUP 4 2 Mated Sets Pin-to-Pin
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 5 2 Mated Sets Break Down Row-to-Row	GROUP 6 2 Unmated of Part # Being Tested Break Down Row-to-Row	GROUP 7 2 Unmated of Mating Part # Break Down Row-to-Row	GROUP 8 2 Mated Sets Row-to-Row
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 Groups 4 and 8 to be performed at Test Voltage

DWV test voltage is equal to 75% of the lowest break down voltage

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

FLOWCHARTS Continued

Normal Force

TEST STEP	GROUP 1 (8 Contacts Minimum)	GROUP 2 (8 Contacts Minimum) (.068" Thick Mating Card)
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

Current Carrying Capacity - Double Row

TEST STEP	GROUP 1 3 Mated Assemblies (.056" Thick Mating Card)	GROUP 2 3 Mated Assemblies (.056" Thick Mating Card)	GROUP 3 3 Mated Assemblies (.056" Thick Mating Card)
01	CCC - 2 Contacts Powered	CCC - 4 Contacts Powered	CCC - 6 Contacts Powered

TEST STEP	GROUP 4 3 Mated Assemblies (.056" Thick Mating Card)	GROUP 5 3 Mated Assemblies (.056" Thick Mating Card)
01	CCC - 8 Contacts Powered	CCC - All Contacts Powered

(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)	GROUP A1 8 boards 0.068" thick edge card(Max)
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)
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

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

The following is a brief, simplified description of attributes.

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.

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.

ATTRIBUTE DEFINITIONS

The following is a brief, simplified description of attributes.

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

To determine if the sockets can operate at its rated voltage and withstand momentary over potentials due to switching, surges, and 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. Rate of Application 500 V/Sec
        iii. 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)..

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 three temperature points are reported:
    c. Ambient
    d. 80^{o} C
    e. 95^{o} C
    f. 115^{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.

ATTRIBUTE DEFINITIONS

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. <= +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. <= +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:
    g. Reference document: EIA-364-36, *Test Procedure for Determination of Gas-Tight Characteristics for Electrical Connectors, Sockets and/or Contact Systems*.
    h. 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.

RESULTS

Temperature Rise, CCC at a 20% de-rating

- **CCC for a 30°C Temperature Rise ---------- 2.3 A per contact with 2 adjacent signal contacts powered**
- **CCC for a 30°C Temperature Rise ---------- 1.8 A per contact with 4 adjacent signal contacts powered**
- **CCC for a 30°C Temperature Rise ---------- 1.5 A per contact with 6 adjacent signal contacts powered**
- **CCC for a 30°C Temperature Rise ---------- 1.4 A per contact with 8 adjacent signal contacts powered**
- **CCC for a 30°C Temperature Rise ---------- 0.6 A per contact with All adjacent signal contacts powered**
-

Mating & Unmating force

Thermal aging (MEC8-140-02-L-DV-A /0.056" thick card)

- **Initial**
  - **Mating**
    - **Min ---------- 4.50 Lbs**
    - **Max---------- 7.81 Lbs**
  - **Unmating**
    - **Min ---------- 2.70 Lbs**
    - **Max---------- 3.53 Lbs**
- **After thermal aging**
  - **Mating**
    - **Min ---------- 4.00 Lbs**
    - **Max---------- 5.22 Lbs**
  - **Unmating**
    - **Min ---------- 1.78 Lbs**
    - **Max---------- 2.25 Lbs**

Thermal aging (MEC8-140-02-L-DV-A /0.068" thick card)

- **Initial**
  - **Mating**
    - **Min ----------11.68 Lbs**
    - **Max----------13.77 Lbs**
  - **Unmating**
    - **Min ---------- 3.71 Lbs**
    - **Max---------- 4.87 Lbs**
- **After thermal aging**
  - **Mating**
    - **Min ---------- 8.93 Lbs**
    - **Max----------12.55 Lbs**
  - **Unmating**
    - **Min ---------- 3.42 Lbs**
    - **Max---------- 4.48 Lbs**

RESULTS Continued

Mating&Unmating durability (MEC8-140-02-L-DV-A /0.056" thick card):

- **Initial**
  - **Mating**
    - **Min ---------- 4.82 Lbs**
    - **Max---------- 6.38 Lbs**
  - **Unmating**
    - **Min ---------- 2.59 Lbs**
    - **Max---------- 3.80 Lbs**
- **After 25 Cycles**
  - **Mating**
    - **Min ---------- 4.89 Lbs**
    - **Max---------- 6.60 Lbs**
  - **Unmating**
    - **Min ---------- 2.31 Lbs**
    - **Max---------- 3.72 Lbs**
- **After 50 Cycles**
  - **Mating**
    - **Min ---------- 4.58 Lbs**
    - **Max---------- 6.85 Lbs**
  - **Unmating**
    - **Min ---------- 2.42 Lbs**
    - **Max---------- 3.78 Lbs**
- **After 75 Cycles**
  - **Mating**
    - **Min ---------- 4.62 Lbs**
    - **Max---------- 7.25 Lbs**
  - **Unmating**
    - **Min ---------- 2.66 Lbs**
    - **Max---------- 5.51 Lbs**
- **After 100 Cycles**
  - **Mating**
    - **Min ---------- 4.67 Lbs**
    - **Max---------- 6.99 Lbs**
  - **Unmating**
    - **Min ---------- 2.89 Lbs**
    - **Max---------- 4.14 Lbs**
- **After Humidity**
  - **Mating**
    - **Min ---------- 4.42 Lbs**
    - **Max---------- 5.96 Lbs**
  - **Unmating**
    - **Min ---------- 1.67 Lbs**
    - **Max---------- 2.05 Lbs**

RESULTS Continued

Mating&Unmating durability (MEC8-140-02-L-DV-A /0.068" thick card):

- **Initial**
  - **Mating**
    - **Min ----------11.54 Lbs**
    - **Max----------13.81 Lbs**
  - **Unmating**
    - **Min ---------- 3.69 Lbs**
    - **Max---------- 5.24 Lbs**
- **After 25 Cycles**
  - **Mating**
    - **Min ----------12.12 Lbs**
    - **Max----------13.44 Lbs**
  - **Unmating**
    - **Min ---------- 4.03 Lbs**
    - **Max---------- 6.35 Lbs**
- **After 50 Cycles**
  - **Mating**
    - **Min ----------12.06 Lbs**
    - **Max----------14.02 Lbs**
  - **Unmating**
    - **Min ---------- 4.06 Lbs**
    - **Max---------- 7.23 Lbs**
- **After 75 Cycles**
  - **Mating**
    - **Min ----------12.51 Lbs**
    - **Max----------14.32 Lbs**
  - **Unmating**
    - **Min ---------- 4.13 Lbs**
    - **Max---------- 8.26 Lbs**
- **After 100 Cycles**
  - **Mating**
    - **Min ----------12.92 Lbs**
    - **Max----------14.66 Lbs**
  - **Unmating**
    - **Min ---------- 4.48 Lbs**
    - **Max---------- 8.72 Lbs**
- **After Humidity**
  - **Mating**
    - **Min ---------- 8.07 Lbs**
    - **Max----------11.01 Lbs**
  - **Unmating**
    - **Min ---------- 3.44 Lbs**
    - **Max---------- 5.15 Lbs**

RESULTS Continued

Mating&Unmating basic (MEC8-170-02-L-DV-A /0.068" thick card)

- **Initial**
  - **Mating**
    - **Min ----------19.74 Lbs**
    - **Max----------24.24 Lbs**
  - **Unmating**
    - **Min ---------- 6.68 Lbs**
    - **Max---------- 8.85 Lbs**
- **After 25 Cycles**
  - **Mating**
    - **Min ----------19.51 Lbs**
    - **Max----------23.77 Lbs**
  - **Unmating**
    - **Min ---------- 7.43 Lbs**
    - **Max----------10.64 Lbs**
- **After 50 Cycles**
  - **Mating**
    - **Min ----------18.46 Lbs**
    - **Max----------24.01 Lbs**
  - **Unmating**
    - **Min ---------- 7.88 Lbs**
    - **Max----------12.23 Lbs**
- **After 75 Cycles**
  - **Mating**
    - **Min ----------19.12 Lbs**
    - **Max----------25.41 Lbs**
  - **Unmating**
    - **Min ---------- 7.96 Lbs**
    - **Max----------13.55 Lbs**
- **After 100 Cycles**
  - **Mating**
    - **Min ----------20.07 Lbs**
    - **Max----------25.97 Lbs**
  - **Unmating**
    - **Min ---------- 8.64 Lbs**
    - **Max----------15.14 Lbs**

RESULTS Continued

Mating&Unmating basic (MEC8-110-02-L-DV-A /0.068"thick card)

- **Initial**
  - **Mating**
    - **Min ---------- 3.02 Lbs**
    - **Max---------- 3.45 Lbs**
  - **Unmating**
    - **Min ---------- 1.10 Lbs**
    - **Max---------- 1.30 Lbs**
- **After 25 Cycles**
  - **Mating**
    - **Min ---------- 2.98 Lbs**
    - **Max---------- 3.41 Lbs**
  - **Unmating**
    - **Min ---------- 1.13 Lbs**
    - **Max---------- 1.40 Lbs**
- **After 50 Cycles**
  - **Mating**
    - **Min ---------- 2.90 Lbs**
    - **Max---------- 3.56 Lbs**
  - **Unmating**
    - **Min ---------- 1.21 Lbs**
    - **Max---------- 1.59 Lbs**
- **After 75 Cycles**
  - **Mating**
    - **Min ---------- 2.89 Lbs**
    - **Max---------- 3.65 Lbs**
  - **Unmating**
    - **Min ---------- 1.20 Lbs**
    - **Max---------- 1.66 Lbs**
- **After 100 Cycles**
  - **Mating**
    - **Min ---------- 2.94 Lbs**
    - **Max---------- 3.65 Lbs**
  - **Unmating**
    - **Min ---------- 1.24 Lbs**
    - **Max---------- 1.71 Lbs**

RESULTS Continued

Normal force at 0.0153 inch deflection

- **Initial**
  - **Min ---------- 104.30 gf Set-----0.0002 inch**
  - **Max---------- 106.80 gf Set-----0.0004 inch**
- **After thermal**
  - **Min ----------86.70 gf Set-----0.0017 inch**
  - **Max----------95.90 gf Set-----0.0023 inch**

LLCR Gas Tight (192 signal pin LLCR test points)

- **Initial ---------- 19.03 mOhms Max**
- **Gas-Tight**
  - **<= +5.0 mOhms ---------- 191 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**

LLCR Thermal Aging -0.056" thick edge card (192 signal pin LLCR test points)

- **Initial ---------- 17.60 mOhms Max**
- **Thermal Aging**
  - **<= +5.0 mOhms ---------- 192 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**

LLCR Thermal Aging -0.068" thick edge card (192 signal pin LLCR test points)

- **Initial ---------- 15.78 mOhms Max**
- **Thermal Aging**
  - **<= +5.0 mOhms ---------- 192 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-0.056" thick edge card (192 signal pin LLCR test points)

- **Initial ---------- 17.69 mOhms Max**
- **After 100 Cycles**
  - **<= +5.0 mOhms ---------- 192 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**
- **After thermal shock**
  - **<= +5.0 mOhms ---------- 192 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**
- **After humidity**
  - **<= +5.0 mOhms ---------- 176 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms ---------- 16 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**
  - **>+2000 mOhms----------0 Points ---------- Open Failure**

LLCR Durability-0.068" thick edge card (192 signal pin LLCR test points)

- **Initial ---------- 15.69 mOhms Max**
- **After 100 Cycles**
  - **<= +5.0 mOhms ---------- 192 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**
- **After thermal shock**
  - **<= +5.0 mOhms ---------- 191 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**
- **After humidity**
  - **<= +5.0 mOhms ---------- 180 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms ---------- 12 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**
  - **>+2000 mOhms----------0 Points ---------- Open Failure**

RESULTS Continued

LLCR Shock Vib-0.056" thick edge card (192 signal pin LLCR test points)

- **Initial ---------- 17.60 mOhms Max**
- **S&V**
  - **<= +5.0 mOhms ---------- 192 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**

LLCR Shock Vib-0.068" thick edge card (192 signal pin LLCR test points)

- **Initial ---------- 15.78 mOhms Max**
- **S&V**
  - **<= +5.0 mOhms ---------- 192 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---------- ---------- Passed**
  - **50 Nanoseconds---------- ---------- Passed**
- **Vibration**
  - **No Damage---------- ---------- Passed**
  - **50 Nanoseconds---------- ---------- Passed**

RESULTS Continued

Insulation Resistance minimums, IR

Pin- Pin

- **Initial**
  - **Mated ---------- 10000Meg Ω ---------- Pass**
  - **Unmated ---------- 10000Meg Ω ---------- Pass**
- **Thermal**
  - **Mated ---------- 6700Meg Ω ---------- Pass**
  - **Unmated ---------- 10000Meg Ω ---------- Pass**
- **Humidity**
  - **Mated ---------- 10000Meg Ω ---------- Pass**
  - **Unmated ---------- 10000Meg Ω ---------- Pass**

Row- Row

- **Initial**
  - **Mated ---------- 10000Meg Ω ---------- Pass**
  - **Unmated ---------- 10000Meg Ω ---------- Pass**
- **Thermal**
  - **Mated ---------- 10000Meg Ω ---------- Pass**
  - **Unmated ---------- 10000Meg Ω ---------- Pass**
- **Humidity**
  - **Mated ---------- 10000Meg Ω ---------- Pass**
  - **Unmated ---------- 10000Meg Ω ---------- Pass**

Dielectric Withstanding Voltage minimums, DWV

- **Minimums**
  - **Breakdown Voltage ---------- 750VAC**
  - **Test Voltage ---------- 563VAC**
  - **Working Voltage ---------- 188VAC**

Pin- Pin

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

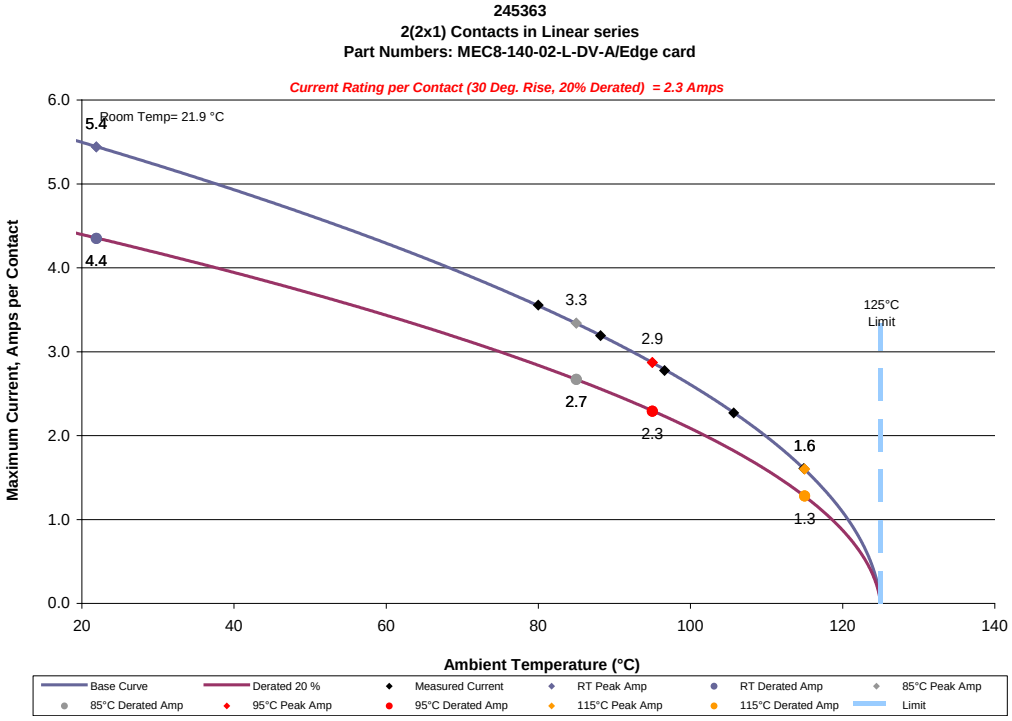
Row- Row

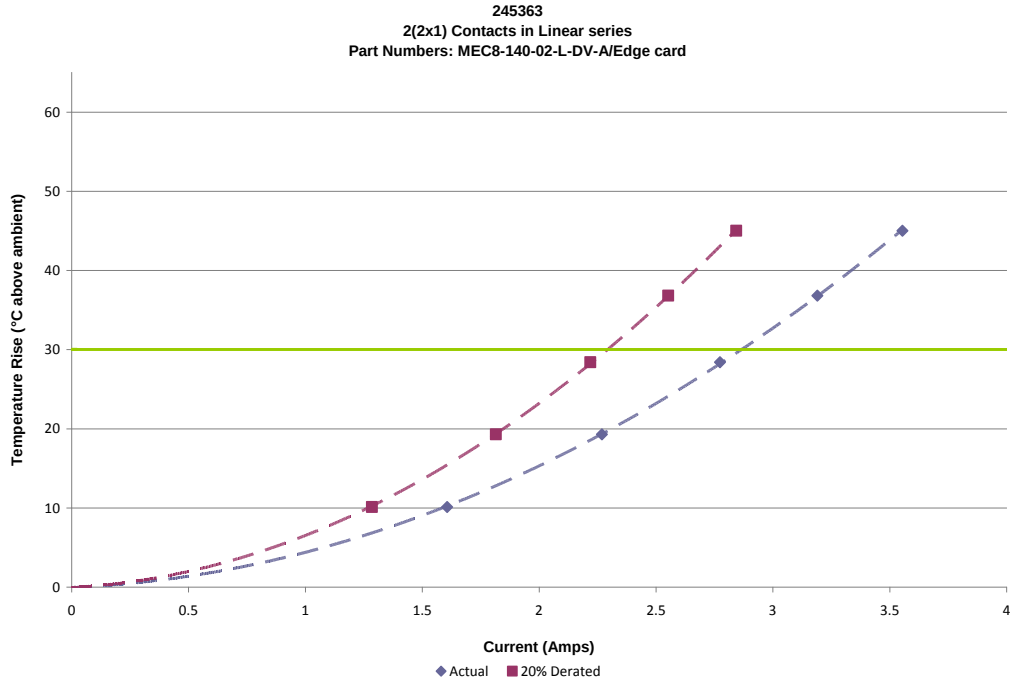
- **Initial DWV ---------- Passed**
- **Thermal DWV ---------- Passed**
- **Humidity DWV ---------- Passed**

DATA SUMMARIES

TEMPERATURE RISE (Current Carrying Capacity, CCC):

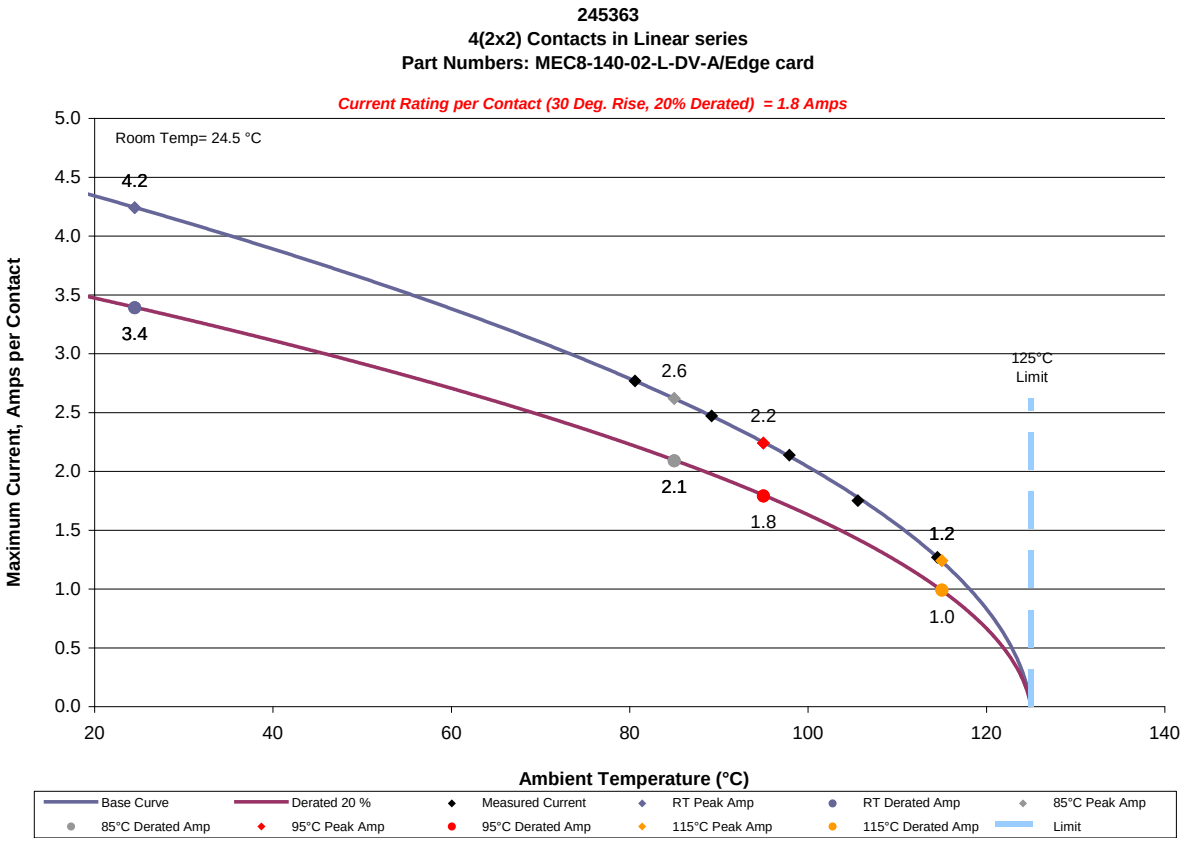
1) High quality thermocouples whose temperature slopes track one another were used for temperature monitoring.
2) The thermocouples were placed at a location to sense the maximum temperature generated during testing.
3) Temperature readings recorded are those for which three successive readings, 15 minutes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

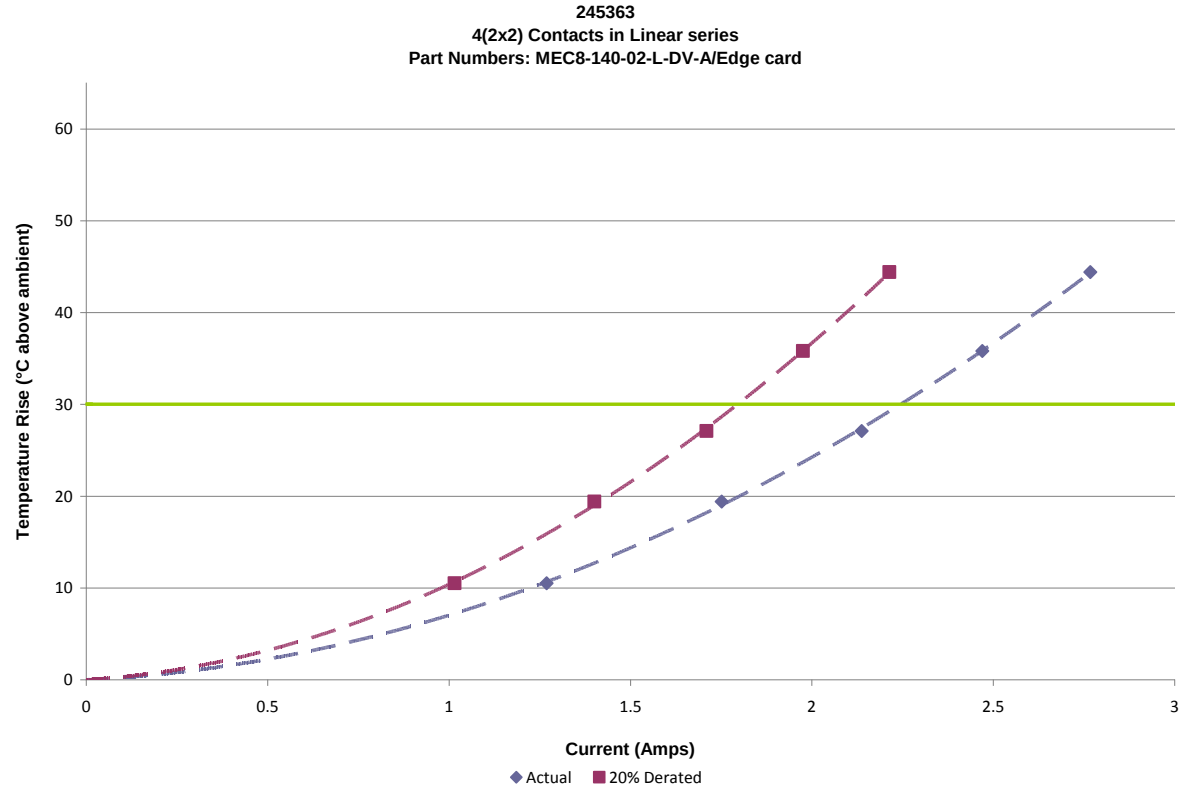




DATA SUMMARIES

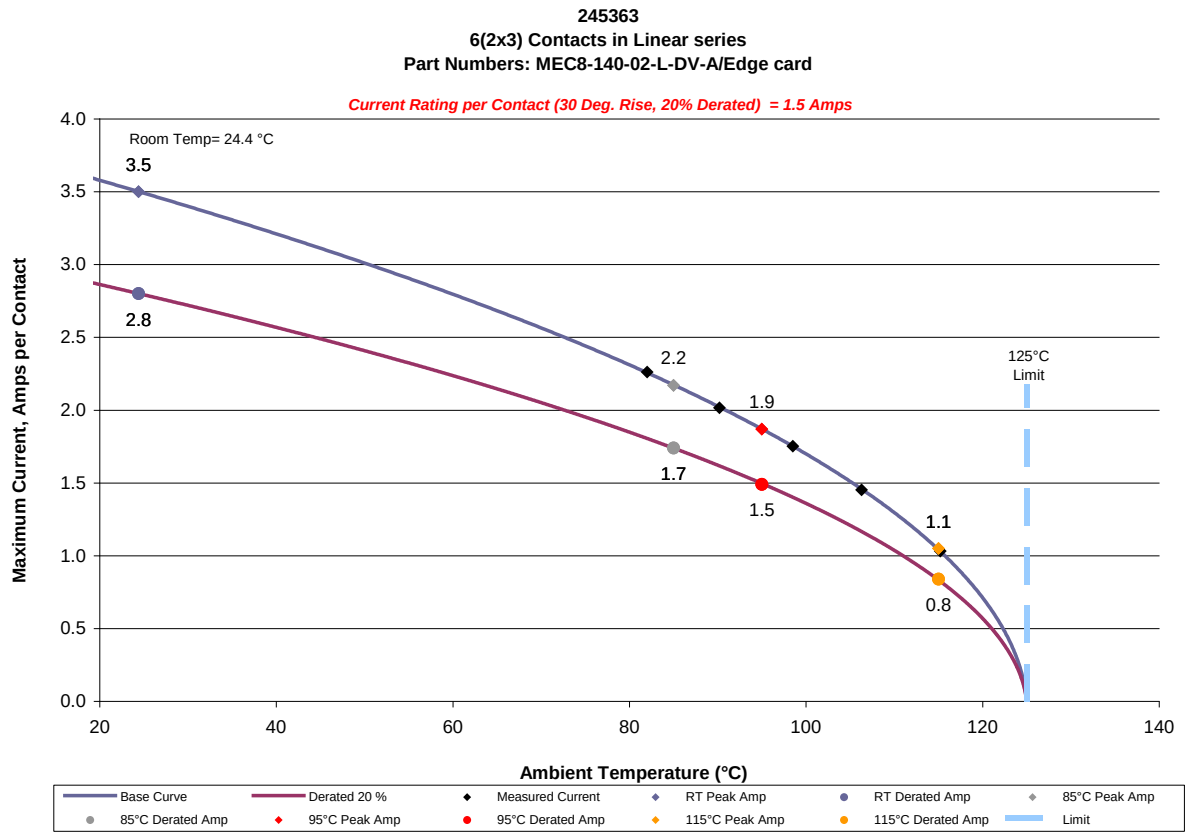
b. Linear configuration with 4 adjacent signal conductors/contacts powered

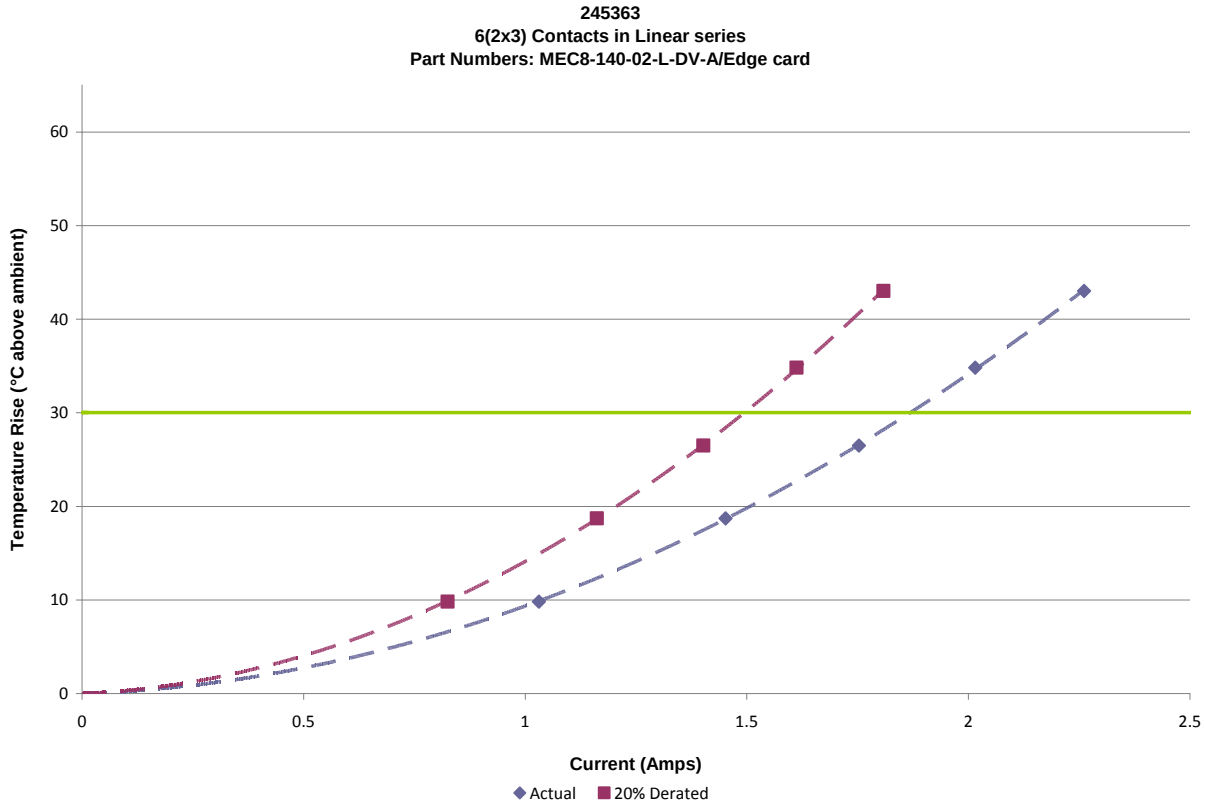




DATA SUMMARIES

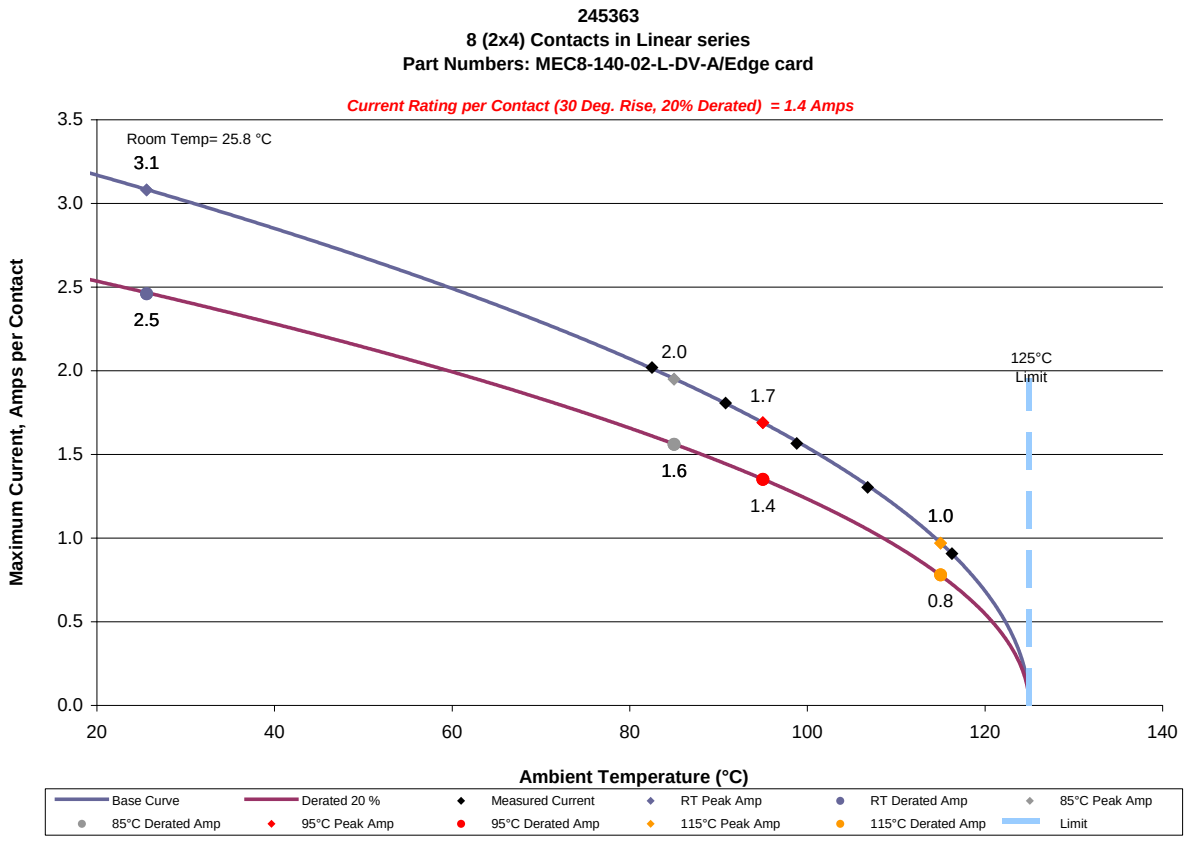
c. Linear configuration with 6 adjacent signal conductors/contacts powered

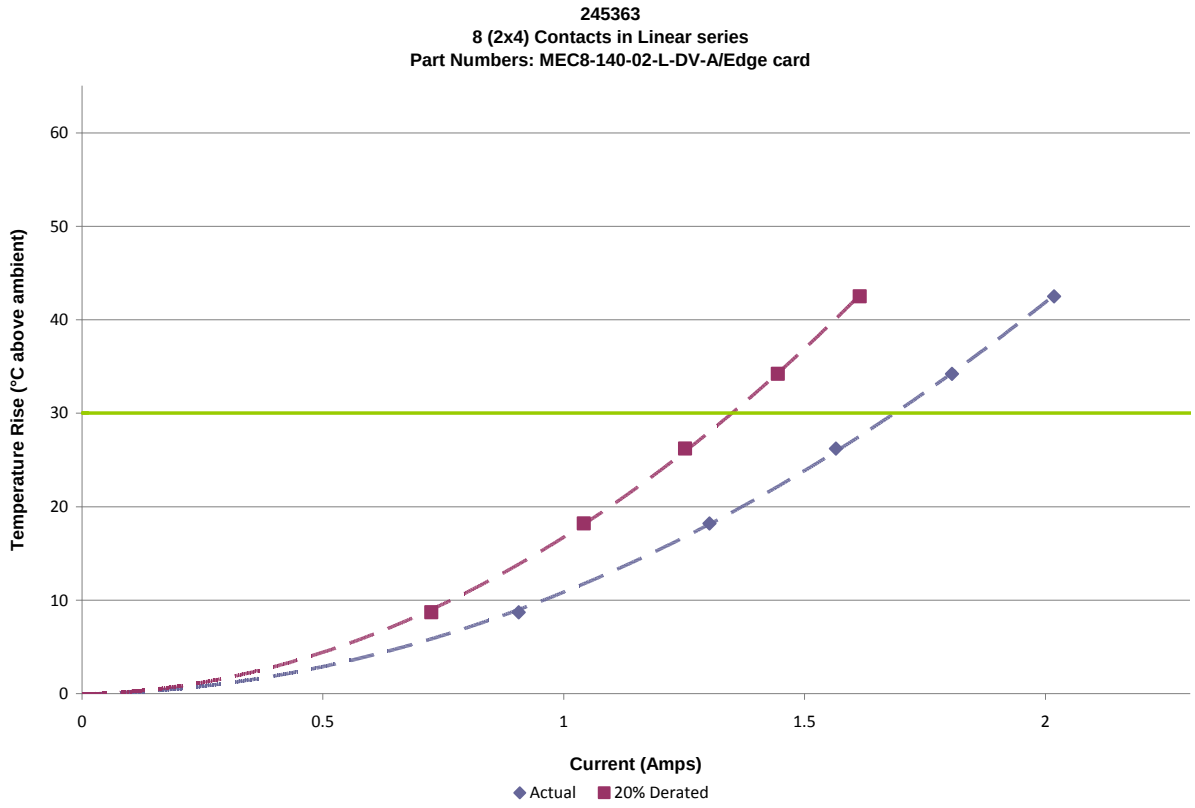




DATA SUMMARIES

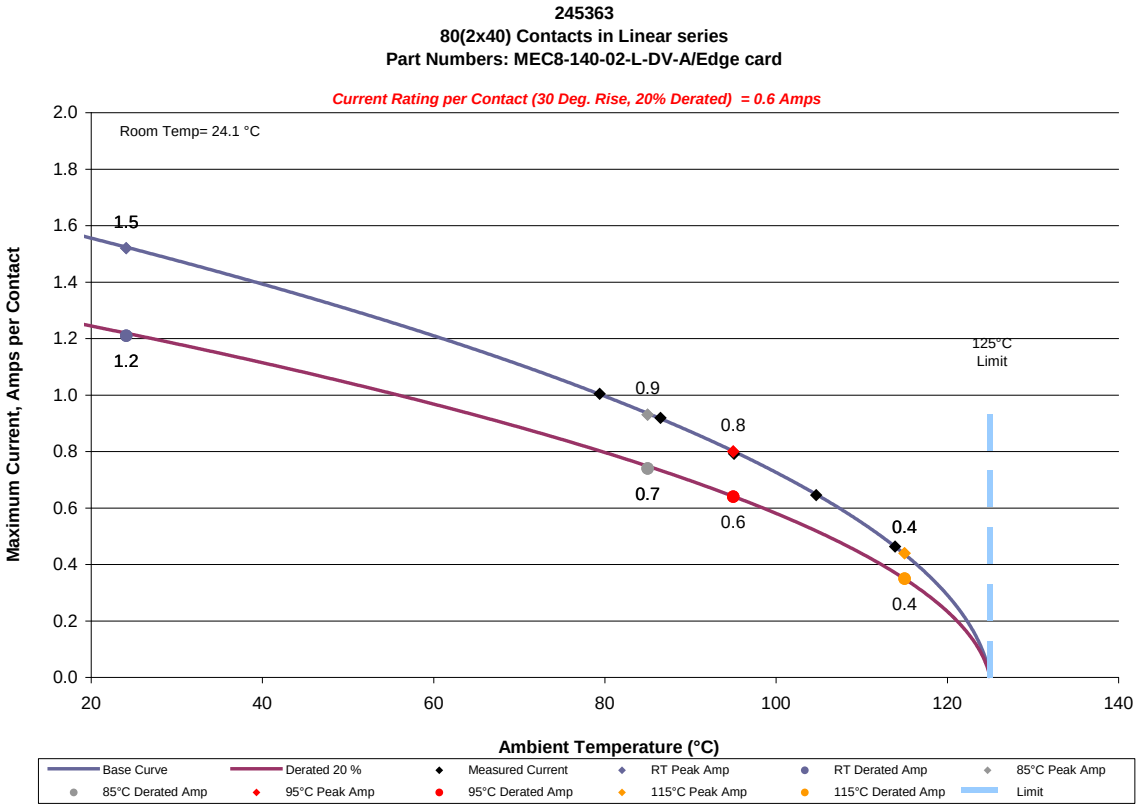
d. Linear configuration with 8 adjacent signal conductors/contacts powered

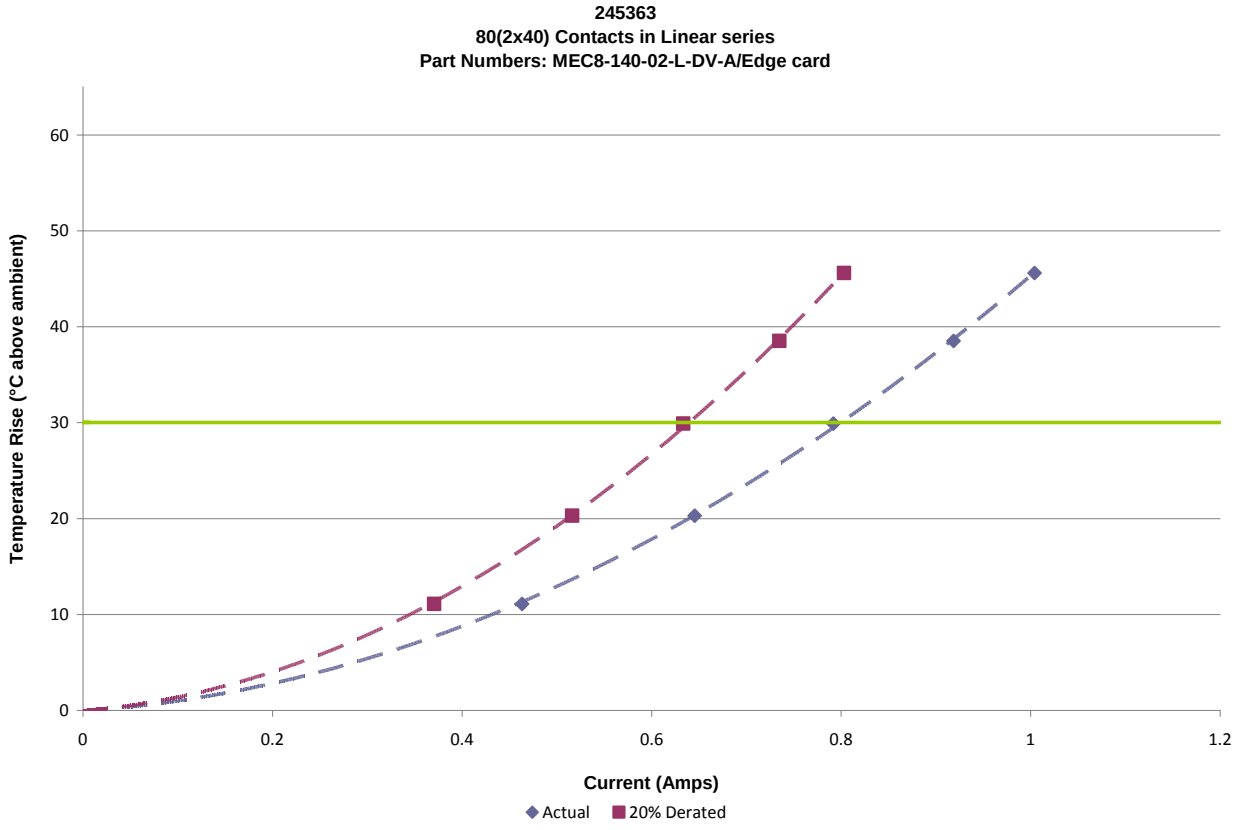




DATA SUMMARIES

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





DATA SUMMARIES

MATING/UNMATING FORCE:

Mating/Unmating durability (MEC8-140-02-L-DV-A/0.056" thick card):

	Initial				After 25 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	21.44	4.82	11.52	2.59	21.75	4.89	10.27	2.31
Maximum	28.38	6.38	16.90	3.80	29.36	6.60	16.55	3.72
Average	24.37	**5.48**	13.88	**3.12**	24.91	**5.60**	13.53	**3.04**
St Dev	2.44	0.55	2.18	0.49	2.63	0.59	2.12	0.48
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	20.37	4.58	10.76	2.42	20.55	4.62	11.83	2.66
Maximum	30.47	6.85	16.81	3.78	32.25	7.25	24.51	5.51
Average	24.71	**5.56**	14.40	**3.24**	25.20	**5.67**	16.41	**3.69**
St Dev	3.21	0.72	2.13	0.48	3.91	0.88	3.94	0.89
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	20.77	4.67	12.85	2.89	19.66	4.42	7.43	1.67
Maximum	31.09	6.99	18.41	4.14	26.51	5.96	9.12	2.05
Average	26.03	**5.85**	16.16	**3.63**	22.21	**4.99**	8.52	**1.92**
St Dev	3.21	0.72	2.00	0.45	2.46	0.55	0.50	0.11
Count	8	8	8	8	8	8	8	8

DATA SUMMARIES Continued

Mating/Unmating durability (MEC8-140-02-L-DV-A /0.068" thick card):

	Initial				After 25 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	51.33	11.54	16.41	3.69	53.91	12.12	17.93	4.03
Maximum	61.43	13.81	23.31	5.24	59.78	13.44	28.24	6.35
Average	55.83	**12.55**	18.73	**4.21**	57.07	**12.83**	21.84	**4.91**
St Dev	3.52	0.79	2.50	0.56	1.84	0.41	3.89	0.87
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	18.06	4.06	55.64	12.51	18.37	4.13
Maximum	62.36	14.02	32.16	7.23	63.70	14.32	36.74	8.26
Average	57.75	**12.98**	24.35	**5.48**	58.84	**13.23**	26.28	**5.91**
St Dev	2.85	0.64	4.51	1.01	3.03	0.68	5.68	1.28
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	57.47	12.92	19.93	4.48	35.90	8.07	15.30	3.44
Maximum	65.21	14.66	38.79	8.72	48.97	11.01	22.91	5.15
Average	60.53	**13.61**	28.57	**6.42**	41.65	**9.36**	18.15	**4.08**
St Dev	2.77	0.62	5.91	1.33	4.79	1.08	2.30	0.52
Count	8	8	8	8	8	8	8	8

DATA SUMMARIES Continued

Mating/Unmating basic (MEC8-170-02-L-DV-A /0.068" thick card)

	Initial				After 25 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	87.80	19.74	29.71	6.68	86.78	19.51	33.05	7.43
Maximum	107.82	24.24	39.36	8.85	105.73	23.77	47.33	10.64
Average	95.95	**21.57**	36.08	**8.11**	95.10	**21.38**	40.75	**9.16**
St Dev	7.38	1.66	3.25	0.73	6.64	1.49	4.43	1.00
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	82.11	18.46	35.05	7.88	85.05	19.12	35.41	7.96
Maximum	106.80	24.01	54.40	12.23	113.02	25.41	60.27	13.55
Average	96.39	**21.67**	43.86	**9.86**	98.29	**22.10**	48.49	**10.90**
St Dev	8.52	1.92	5.79	1.30	8.36	1.88	7.31	1.64
Count	8	8	8	8	8	8	8	8

	After 100 Cycles			
	Mating		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	89.27	20.07	38.43	8.64
Maximum	115.51	25.97	67.34	15.14
Average	100.96	**22.70**	51.89	**11.67**
St Dev	8.05	1.81	8.59	1.93
Count	8	8	8	8

DATA SUMMARIES Continued

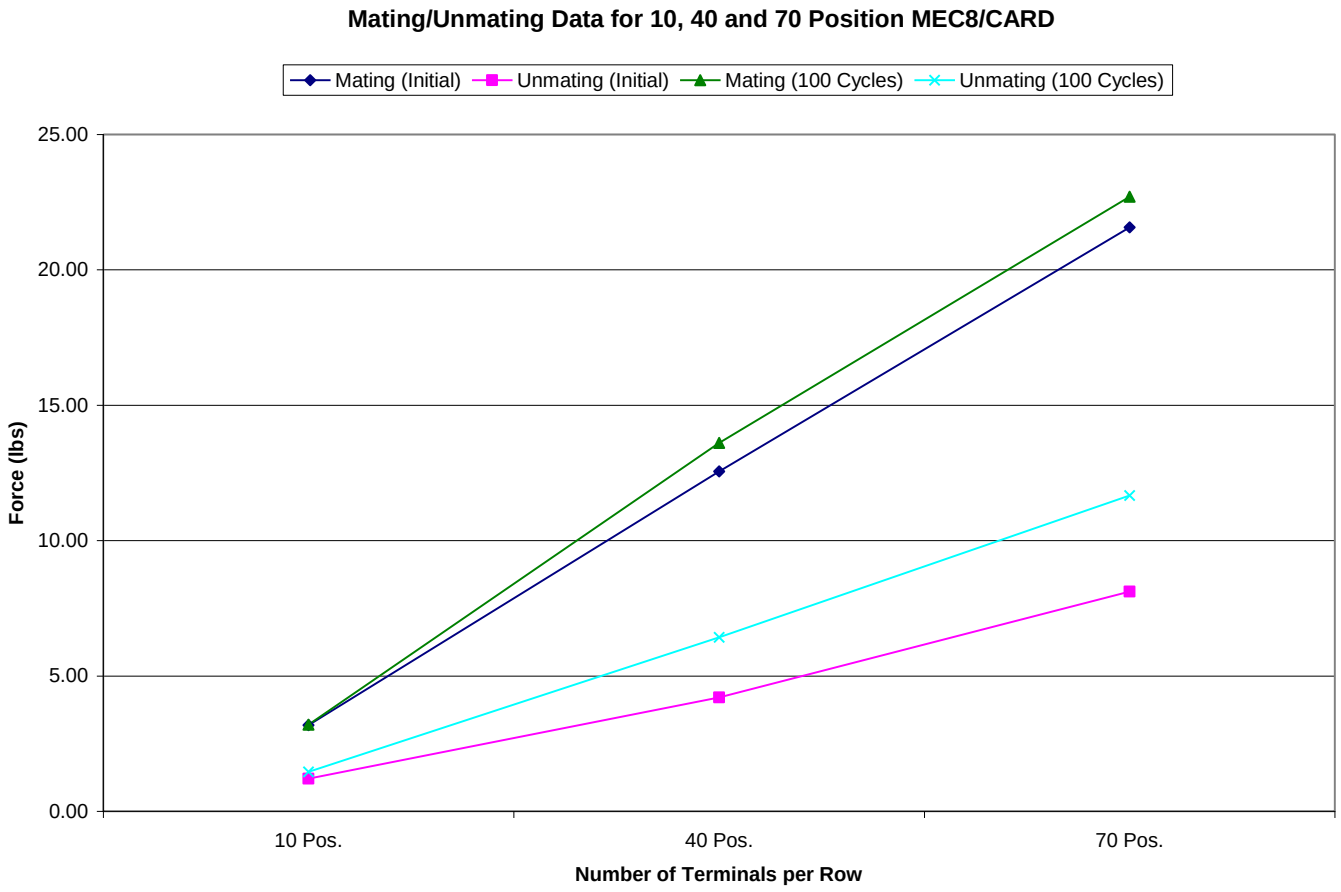
Mating/Unmating basic (MEC8-110-02-L-DV-A /0.068" thick card)

	Initial				After 25 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	13.43	3.02	4.89	1.10	13.26	2.98	5.03	1.13
Maximum	15.35	3.45	5.78	1.30	15.17	3.41	6.23	1.40
Average	14.14	**3.18**	5.37	**1.21**	14.02	**3.15**	5.68	**1.28**
St Dev	0.65	0.15	0.27	0.06	0.67	0.15	0.44	0.10
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	12.90	2.90	5.38	1.21	12.85	2.89	5.34	1.20
Maximum	15.83	3.56	7.07	1.59	16.24	3.65	7.38	1.66
Average	13.76	**3.09**	6.08	**1.37**	14.03	**3.16**	6.27	**1.41**
St Dev	0.98	0.22	0.69	0.16	1.06	0.24	0.80	0.18
Count	8	8	8	8	8	8	8	8

	After 100 Cycles			
	Mating		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	13.08	2.94	5.52	1.24
Maximum	16.24	3.65	7.61	1.71
Average	14.22	**3.20**	6.47	**1.45**
St Dev	1.00	0.22	0.87	0.20
Count	8	8	8	8

DATA SUMMARIES Continued



DATA SUMMARIES Continued

Thermal aging (MEC8-140-02-L-DV-A /0.056" thick card)

	Initial				After Thermals			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	20.02	4.50	12.01	2.70	17.79	4.00	7.92	1.78
Maximum	34.74	7.81	15.70	3.53	23.22	5.22	10.01	2.25
Average	26.99	**6.07**	13.38	**3.01**	20.66	**4.64**	9.38	**2.11**
St Dev	4.63	1.04	1.37	0.31	1.82	0.41	0.68	0.15
Count	8	8	8	8	8	8	8	8

Thermal aging (MEC8-140-02-L-DV-A /0.068" thick card)

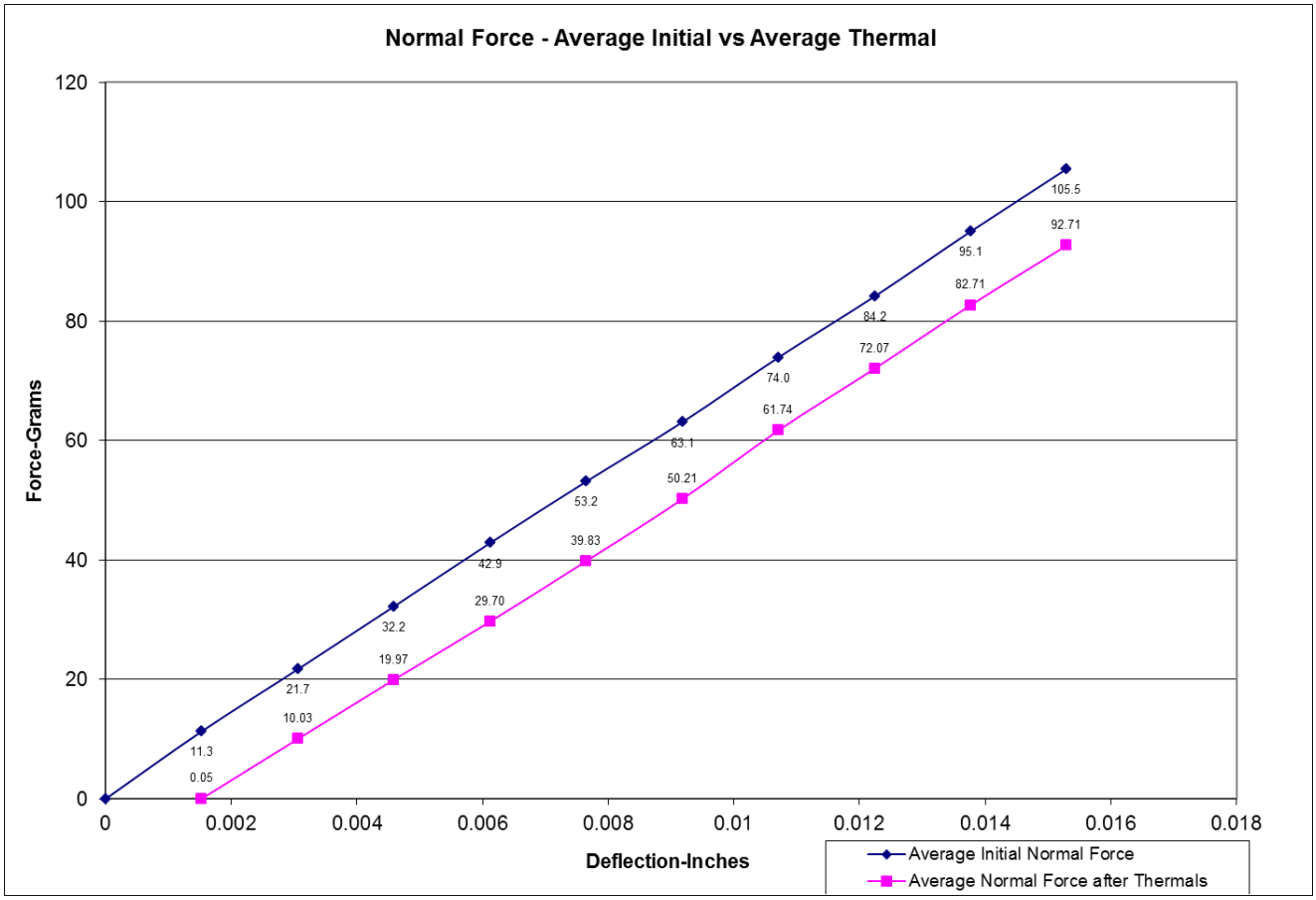
	Initial				After Thermals			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	51.95	11.68	16.50	3.71	39.72	8.93	15.21	3.42
Maximum	61.25	13.77	21.66	4.87	55.82	12.55	19.93	4.48
Average	56.06	**12.60**	18.58	**4.18**	44.11	**9.92**	17.67	**3.97**
St Dev	3.61	0.81	1.94	0.44	5.08	1.14	1.69	0.38
Count	8	8	8	8	8	8	8	8

DATA SUMMARIES Continued

Normal force

Initial	Deflections in inches Forces in Grams										
	0.0015	**0.0031**	**0.0046**	**0.0061**	**0.0077**	**0.0092**	**0.0107**	**0.0122**	**0.0138**	**0.0153**	***SET***
Averages	11.32	21.72	32.23	42.87	53.16	63.10	73.96	84.17	95.05	105.53	0.0003
Min	10.20	20.40	31.70	41.60	51.60	61.30	72.80	81.60	92.90	104.30	0.0002
Max	12.00	22.20	33.00	44.20	54.50	65.80	75.30	85.80	96.30	106.80	0.0004
St. Dev	0.484	0.502	0.431	0.781	0.845	1.328	0.855	1.267	1.034	0.817	0.0001
Count	12	12	12	12	12	12	12	12	12	12	12

After Thermals	Deflections in inches Forces in Grams										
	0.0015	**0.0031**	**0.0046**	**0.0061**	**0.0077**	**0.0092**	**0.0107**	**0.0122**	**0.0138**	**0.0153**	***SET***
Averages	0.05	10.03	19.97	29.70	39.83	50.21	61.74	72.07	82.71	92.71	0.0021
Min	-0.30	7.60	17.50	27.50	37.80	47.70	59.80	69.50	79.60	86.70	0.0017
Max	0.80	11.30	21.50	31.20	41.30	53.30	67.70	79.40	89.20	95.90	0.0023
St. Dev	0.332	1.363	1.256	1.212	1.157	1.611	2.158	2.650	2.407	2.725	0.0002
Count	12	12	12	12	12	12	12	12	12	12	12



DATA SUMMARIES Continued

INSULATION RESISTANCE (IR):

	Pin to Pin		
	Mated	Unmated	Unmated
Minimum	**MEC8/CARD**	**MEC8**	**CARD**
Initial	10000	10000	Not Tested
Thermal	6700	10000	Not Tested
Humidity	10000	10000	Not Tested

	Row to Row		
	Mated	Unmated	Unmated
Minimum	**MEC8/CARD**	**MEC8**	**CARD**
Initial	10000	10000	Not Tested
Thermal	10000	10000	Not Tested
Humidity	10000	10000	Not Tested

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

Voltage Rating Summary	
Minimum	**MEC8/CARD**
Break Down Voltage	750
Test Voltage	563
Working Voltage	188

Pin to Pin	
Initial Test Voltage	Passed
After Thermal Test Voltage	Passed
After Humidity Test Voltage	Passed

Row to Row	
Initial Test Voltage	Passed
After Thermal Test Voltage	Passed
After Humidity Test Voltage	Passed

DATA SUMMARIES Continued

LLCR Durabiltiy-0.056" thick card:

1) A total of 192 points (192 pin LLCR test 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

	LLCR Measurement Summaries by Pin Type			
Date	5/15/2013	5/22/2013	5/28/2013	6/14/2013
Room Temp (Deg C)	23	23	25	23
Rel Humidity (%)	56	56	60	56
Technician	Peter Chen	Peter Chen	Peter Chen	Peter Chen
mOhm values	**Actual Initial**	**Delta 100 Cycles**	**Delta Therm Shck**	**Delta Humidity**
	Pin Type 1: Signal			
Average	15.50	0.92	1.01	2.20
St. Dev.	0.53	0.84	0.76	1.76
Min	14.46	0.01	0.01	0.02
Max	17.69	4.50	3.59	7.03
Summary Count	192	192	192	192
Total Count	192	192	192	192

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
100 Cycles	**192**	**0**	**0**	**0**	**0**	**0**
Therm Shck	**192**	**0**	**0**	**0**	**0**	**0**
Humidity	**176**	**16**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

LLCR Durabiltiy-0.068" thick card:

5) A total of 192 points (192 pin LLCR test points) were measured.
6) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets.*
7) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
8) 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

	LLCR Measurement Summaries by Pin Type			
Date	6/27/2013	7/2/2013	7/9/2013	7/23/2013
Room Temp (Deg C)	23	23	23	23
Rel Humidity (%)	56	56	58	56
Technician	Peter Chen	Peter Chen	Peter Chen	Peter Chen
mOhm values	**Actual Initial**	**Delta 100 Cycles**	**Delta Therm Shck**	**Delta Humidity**
	Pin Type 1: Signal			
Average	14.75	0.63	0.94	2.31
St. Dev.	0.30	0.56	0.91	1.61
Min	14.08	0.01	0.00	0.03
Max	15.69	4.17	5.57	8.48
Summary Count	192	192	192	192
Total Count	192	192	192	192

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
100 Cycles	**192**	**0**	**0**	**0**	**0**	**0**
Therm Shck	**191**	**1**	**0**	**0**	**0**	**0**
Humidity	**180**	**12**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

LLCR thermal aging-0.056" thick card

1) A total of 192 points (192 pin LLCR test 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

LLCR Measurement Summaries by Pin Type				
Date	5/15/2013	5/25/2013		
Room Temp (Deg C)	23	23		
Rel Humidity (%)	56	24		
Technician	Peter Chen	Peter Chen		
mOhm values	**Actual Initial**	**Delta Thermal**	**Delta**	**Delta**
	Pin Type 1: Signal			
Average	16.02	1.79		
St. Dev.	0.74	1.27		
Min	14.74	0.03		
Max	19.01	5.83		
Summary Count	192	192		
Total Count	192	192		

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 thermal aging-0.068" thick card

5) A total of 192 points (192 pin LLCR test points) were measured
6) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets.*
7) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
8) The following guidelines are used to categorize the changes in LLCR as a result from stressing.
   g. <= +5.0 mOhms:---------- Stable
   h. +5.1 to +10.0 mOhms:---------- Minor
   i. +10.1 to +15.0 mOhms: ---------- Acceptable
   j. +15.1 to +50.0 mOhms: ---------- Marginal
   k. +50.1 to +2000 mOhms ---------- Unstable
   l. >+2000 mOhms:---------- Open Failure

	LLCR Measurement Summaries by Pin Type			
Date	6/22/2013	7/2/2013		
Room Temp (Deg C)	23	23		
Rel Humidity (%)	56	56		
Technician	Peter Chen	Peter Chen		
mOhm values	**Actual Initial**	**Delta Thermal**	**Delta**	**Delta**
	Pin Type 1: Signal			
Average	14.97	0.51		
St. Dev.	0.46	0.39		
Min	13.47	0.00		
Max	16.85	2.06		
Summary Count	192	192		
Total Count	192	192		

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

DATA SUMMARIES Continued

LLCR GAS TIGHT:

1) A total of 192 points (192 pin LLCR test 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

LLCR Measurement Summaries by Pin Type				
Date	5/15/2013	5/25/2013		
Room Temp (Deg C)	23	23		
Rel Humidity (%)	58	56		
Technician	Peter Chen	Peter Chen		
mOhm values	**Actual Initial**	**Delta Acid Vapor**	**Delta**	**Delta**
	Pin Type 1: Signal			
Average	15.66	0.71		
St. Dev.	0.69	0.65		
Min	14.34	0.00		
Max	19.03	5.02		
Summary Count	192	192		
Total Count	192	192		

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

DATA SUMMARIES Continued

LLCR Shock Vib-0.056" thick card:

1) A total of 192 points(192 pin LLCR test 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

	LLCR Measurement Summaries by Pin Type			
Date	7/9/2013	7/22/2013		
Room Temp (Deg C)	22	20		
Rel Humidity (%)	56	56		
Technician	Troy Cook	Troy Cook		
mOhm values	**Actual Initial**	**Delta Shock-Vib**	**Delta**	**Delta**
	Pin Type 1: Signal			
Average	15.62	0.47		
St. Dev.	0.52	0.34		
Min	14.43	0.00		
Max	17.60	1.84		
Summary Count	192	192		
Total Count	192	192		

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

DATA SUMMARIES Continued

LLCR Shock Vib-0.068" thick card:

5) A total of 192 points(192 pin LLCR test points) were measured
6) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets.*
7) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
8) The following guidelines are used to categorize the changes in LLCR as a result from stressing.
   g. <= +5.0 mOhms:---------- Stable
   h. +5.1 to +10.0 mOhms:---------- Minor
   i. +10.1 to +15.0 mOhms: ---------- Acceptable
   j. +15.1 to +50.0 mOhms: ---------- Marginal
   k. +50.1 to +2000 mOhms: ---------- Unstable
   l. >+2000 mOhms:---------- Open Failure

	LLCR Measurement Summaries by Pin Type			
Date	7/9/2013	7/22/2013		
Room Temp (Deg C)	22	20		
Rel Humidity (%)	52	56		
Technician	Troy Cook	Troy Cook		
mOhm values	**Actual Initial**	**Delta Shock-Vib**	**Delta**	**Delta**
	Pin Type 1: Signal			
Average	14.77	0.22		
St. Dev.	0.33	0.19		
Min	14.08	0.00		
Max	15.78	0.89		
Summary Count	192	192		
Total Count	192	192		

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

EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: HZ-MO-05
Description: Micro-ohmmeter
Manufacturer: Keithley
Model: 3706
Serial #: 297288
Accuracy: Last Cal: 2012-8-6, Next Cal: 2013-8-5

Equipment #: HZ-HPM-01
Description: IR/DWV Tester
Manufacturer: AN9636H
Model: AN9636H
Serial #: 089601091
Accuracy: Last Cal: 2013-7-6, Next Cal: 2014-7-5

Equipment #: HZ-TCT-01
Description: Normal force analyzer
Manufacturer: Mecmesin Multitester
Model: Mecmesin Multitester 2.5-i
Serial #: 08-1049-04
Accuracy: Last Cal: 2013-4-28, Next Cal: 2014-4-27

Equipment #: HZ-OV-01
Description: Oven
Manufacturer: Huida
Model: CS101-1E
Serial #: CS101-1E-B
Accuracy: Last Cal: 2012-12-14, Next Cal: 2013-12-13

Equipment #: HZ-THC-01
Description: Humidity transmitter
Manufacturer: Thermtron
Model: HMM30C
Serial #: D0240037
Accuracy: Last Cal: 2013-3-3, Next Cal: 2014-3-2

Equipment #: MO-02
Description: Multimeter /Data Acquisition System
Manufacturer: Keithley
Model: 2700
Serial #: 0780546
Accuracy: Last Cal: 2013-6-16, Next Cal: 2014-6-16

EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: PS-01
Description: Power Supply
Manufacturer: Hewlett Packard
Model: 6033A
Serial #: 3329A-07330
Accuracy: Last Cal: 2013-6-12, Next Cal: 2014-6-12

Equipment #: HZ-TSC-01
Description: Thermal Shock transmitter
Manufacturer: CSZ
Model: 10-VT14994
Serial #: VTS-3-6-6-SC/AC
Accuracy: Last Cal: 2012-11-1, Next Cal: 2013-11-1

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

Equipment #: ACLM-01
Description: Accelerometer
Manufacturer: PCB Piezotronics
Model: 352C03
Serial #: 115819
Accuracy: See Manual
… Last Cal: 2013-07-9, Next Cal: 2014-7-9

Equipment #: ED-03
Description: Event Detector
Manufacturer: Analysis Tech
Model: 32EHD
Serial #: 1100604
Accuracy: See Manual
… Last Cal: 2013-06-4, Next Cal: 2014-06-4