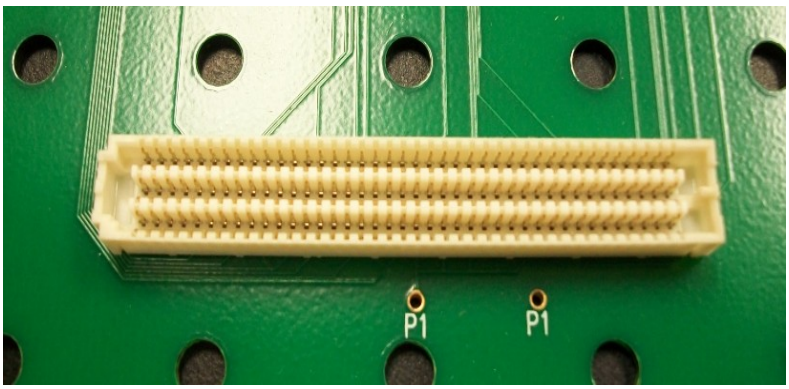
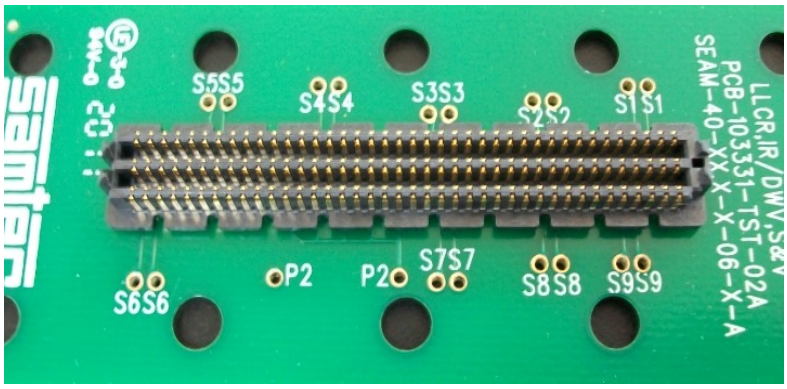
Project Number: Design Qualification Test Report	Tracking Code: 172036_Report_Rev_1			
Requested by: Kevin Meredith	Date: 3/15/2012	Product Rev: 0		
Part #: SEAFP-40-05.0-L-06/SEAM-40-02.0-L-06-2-A	Lot #: N/A	Tech: Aaron McKim	Eng: Eric Mings	
Part description: SEAFP/SEAM		Qty to test: 45		
Test Start: 12/13/2011	Test Completed: 1/15/2012			





Design Qualification Test Report

SEAFP/SEAM
SEAFP-40-05.0-L-06/SEAM-40-02.0-L-06-2-A

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.

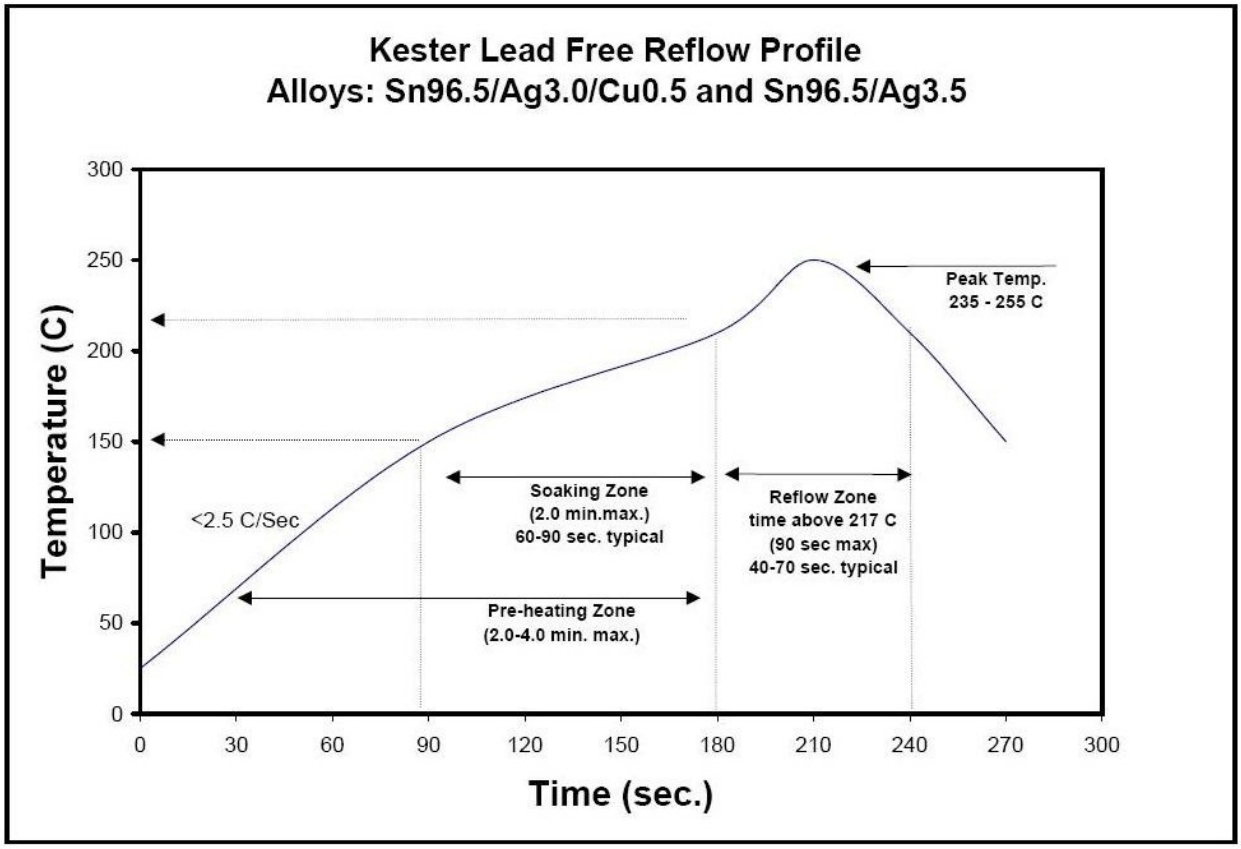
APPLICABLE DOCUMENTS

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.

TYPICAL OVEN PROFILE (Soldering Parts to Test Boards)



FLOWCHARTS

Gas Tight (Use .020 dia PTH)

TEST STEP	GROUP A1 192 Points Connectors	GROUP B1 30 Points (min) Compliant Pin only
01	LLCR-1	LLCR-1
02	Gas Tight	Gas Tight
03	LLCR-2	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 (Use .020 dia PTH)

TEST STEP	GROUP A1 8 Boards Thermal Aging (Mated)	GROUP B1 30 Points (min) Compliant Pin only
01	Contact Gaps	Contact Gaps
02	Forces - Mating / Unmating	Forces - Mating / Unmating
03	LLCR-1	LLCR-1
04	Thermal Aging (Mated and Undisturbed)	Thermal Aging (Mated and Undisturbed)
05	LLCR-2	LLCR-2
06	Forces - Mating / Unmating	Forces - Mating / Unmating
07	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 **Use .020 dia PTH**

TEST STEP	GROUP B1 8 Boards (largest position submitted)	GROUP B2 8 Boards (middle position submitted)	GROUP B3 8 Boards (smallest position submitted)
01	Contact Gaps	Contact Gaps	Contact Gaps
02	LLCR-1	Forces - Mating / Unmating	Forces - Mating / Unmating
03	Forces - Mating / Unmating	25 Cycles	25 Cycles
04	25 Cycles	Forces - Mating / Unmating	Forces - Mating / Unmating
05	Forces - Mating / Unmating	25 Cycles (50 Total)	25 Cycles (50 Total)
06	25 Cycles (50 Total)	Forces - Mating / Unmating	Forces - Mating / Unmating
07	Forces - Mating / Unmating	25 Cycles (75 Total)	25 Cycles (75 Total)
08	25 Cycles (75 Total)	Forces - Mating / Unmating	Forces - Mating / Unmating
09	Forces - Mating / Unmating	25 Cycles (100 Total)	25 Cycles (100 Total)
10	25 Cycles (100 Total)	Forces - Mating / Unmating	Forces - Mating / Unmating
11	Forces - Mating / Unmating		
12	Clean w/Compressed Air		
13	Contact Gaps		
14	LLCR-2		
15	Thermal Shock (Mated and Undisturbed)		
16	LLCR-3		
17	Cyclic Humidity (Mated and Undisturbed)		
18	LLCR-4		
19	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 (Use .020 dia PTH)

TEST STEP	GROUP A1 2 Mated Sets Break Down Pin-to-Pin	GROUP A2 2 Unmated of Part # Being Tested Break Down Pin-to-Pin	GROUP A3 2 Unmated of Mating Part # Break Down Pin-to-Pin	GROUP B1 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)

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

FLOWCHARTS Continued

Normal Force (Use .020 dia PTH)

TEST STEP	GROUP A1 Individual Contacts (8-10 min)	GROUP A2 Individual Contacts (8-10 min)
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 terminated 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

Individual Compliant Pin Insertion/Retention force in PTH

TEST STEP	GROUP A 30 Points Insertion/Retention force Min PTH (016 dia) 1st Cycle	GROUP B 30 Points Insertion/Retention force Max PTH (.020 dia) 1st Cycle	GROUP C 30 Points Insertion/Retention force PTH (ENIG) 1st Cycle
01	Measure Compliant pin size	Measure Compliant pin size	Measure Compliant pin size
02	Measure PTH hole diameter to determine it is smallest diameter permissible.	Measure PTH hole diameter to determine it is largest diameter permissible.	Measure PTH hole diameter to determine it is largest diameter permissible.
03	Fixture and press pin into PTH, Record data	Fixture and press pin into PTH, Record data	Fixture and press pin into PTH, Record data
04	Fixture and remove pin from PTH, Record data	Fixture and remove pin from PTH, Record data	Fixture and remove pin from PTH, Record data
	2nd Cycle (Use new compliant pin, same hole)	**2nd Cycle (Use new compliant pin, same hole)**	**2nd Cycle (Use new compliant pin, same hole)**
05	Measure Compliant pin size	Measure Compliant pin size	Measure Compliant pin size
06	Fixture and press pin into PTH, Record data	Fixture and press pin into PTH, Record data	Fixture and press pin into PTH, Record data
07	Fixture and remove pin from PTH, Record data	Fixture and remove pin from PTH, Record data	Fixture and remove pin from PTH, Record data
	3rd Cycle (Use new compliant pin, same hole)	**3rd Cycle (Use new compliant pin, same hole)**	**3rd Cycle (Use new compliant pin, same hole)**
08	Measure Compliant pin size	Measure Compliant pin size	Measure Compliant pin size
09	Fixture and press pin into PTH, Record data	Fixture and press pin into PTH, Record data	Fixture and press pin into PTH, Record data
10	Fixture and remove pin from PTH, Record data	Fixture and remove pin from PTH, Record data	Fixture and remove pin from PTH, Record data

Insertion/Retention Forces = EIA-364-13

FLOWCHARTS Continued

Compliant Pin buckling in MMC (smallest diameter) plated thru hole

TEST STEP	GROUP A 10 connectors
01	Measure Compliant pin size
02	Measure PTH hole diameter to determine it is smallest diameter. (.016 dia)
03	Press fit connectors onto PCB's
04	Visual inspect for buckling or any other deformation

Current Carrying Capacity - Array (Use .020 dia PTH)

TEST STEP	GROUP D1 3 Mated Assemblies 1 Vertical Row Powered	GROUP D2 3 Mated Assemblies 2 Adjacent Vertical Rows Powered	GROUP D3 3 Mated Assemblies 3 Adjacent Vertical Rows Powered	GROUP D4 3 Mated Assemblies 4 Adjacent Vertical Rows Powered	GROUP D5 3 Mated Assemblies All Contacts Powered
01	CCC	CCC	CCC	CCC	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

Mechanical Shock / Vibration / LLCR

TEST STEP	GROUP A1 192 Points Connector	GROUP B1 30 Points min Compliant only
	Use .020 dia PTH	Use .020 dia 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

FLOWCHARTS Continued

Shock / Vibration / nanoSecond Event Detection

TEST STEP	GROUP A1 60 Points
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.

CONTACT GAPS:

1) Gaps above the surrounding plastic surface were measured before and after stressing the contacts (e.g. thermal aging, mechanical cycling, etc.).
2) Typically, all contacts on the connector are measured.

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:
    a. Ambient
    b. 80^{o} C
    c. 95^{o} C
    d. 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.

8) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
9) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
10) 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
11) 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.

RESULTS

Temperature Rise, CCC at a 20% de-rating

- **CCC for a 30°C Temperature Rise ----------1.89 A per contact with 6 adjacent signal contacts powered**
- **CCC for a 30°C Temperature Rise ----------1.39 A per contact with 12 adjacent signal contacts powered**
- **CCC for a 30°C Temperature Rise ----------1.13 A per contact with 18 adjacent signal contacts powered**
- **CCC for a 30°C Temperature Rise ----------1.11 A per contact with 24 adjacent signal contacts powered**
- **CCC for a 30°C Temperature Rise ----------0.51 A per contact with all adjacent signal contacts powered**

Contact Gaps:

Mating&Unmating durability:

- **Initial**
  - **Min ----------0.0318 Inch**
  - **Max----------0.0378 Inch**
- **After 100 Cycles**
  - **Min ----------0.0332 Inch**
  - **Max----------0.0397 Inch**

Thermal aging:

- **Initial**
  - **Min ----------0.0321 Inch**
  - **Max----------0.0379 Inch**
- **After thermal aging**
  - **Min ----------0.0377 Inch**
  - **Max----------0.0426 Inch**

Normal force:

Outside row feature A

- **Initial**
  - **Min ----------0.0109 Inch**
  - **Max----------0.0208 Inch**
- **After thermal aging**
  - **Min ----------0.0051 Inch**
  - **Max----------0.0058 Inch**

Outside row feature B

- **Initial**
  - **Min ----------0.0164 Inch**
  - **Max----------0.0175 Inch**
- **After thermal aging**
  - **Min ----------0.0188 Inch**
  - **Max----------0.0203 Inch**

Rest of rows

- **Initial**
  - **Min ----------0.0095 Inch**
  - **Max----------0.0203 Inch**
- **After thermal aging**
  - **Min ----------0.0045 Inch**
  - **Max----------0.0182 Inch**

Pin Buckling Gap

- **Initial**
  - **Min ----------0.0319 Inch**
  - **Max----------0.0364 Inch**
- **After Cycles**
  - **Min ----------0.0313 Inch**
  - **Max----------0.0389 Inch**

RESULTS Continued

Mating & Unmating force

Mating&Unmating durability:

- **Initial**
  - **Mating**
    - **Min ---------- 15.11 Lbs**
    - **Max---------- 16.43 Lbs**
  - **Unmating**
    - **Min ----------7.38 Lbs**
    - **Max----------9.89 Lbs**
- **After 25 Cycles**
  - **Mating**
    - **Min ---------- 14.44 Lbs**
    - **Max---------- 16.03 Lbs**
  - **Unmating**
    - **Min ----------7.86 Lbs**
    - **Max---------- 10.19 Lbs**
- **After 50 Cycles**
  - **Mating**
    - **Min ---------- 13.98 Lbs**
    - **Max---------- 15.60 Lbs**
  - **Unmating**
    - **Min ----------8.24 Lbs**
    - **Max---------- 10.50 Lbs**
- **After 75 Cycles**
  - **Mating**
    - **Min ---------- 14.03 Lbs**
    - **Max---------- 16.18 Lbs**
  - **Unmating**
    - **Min ----------8.30 Lbs**
    - **Max---------- 10.63 Lbs**
- **After 100 Cycles**
  - **Mating**
    - **Min ---------- 14.02 Lbs**
    - **Max---------- 16.16 Lbs**
  - **Unmating**
    - **Min ----------8.70 Lbs**
    - **Max---------- 11.08 Lb**
- **After Humidity**
  - **Mating**
    - **Min ---------- 11.01Lbs**
    - **Max---------- 12.73 Lbs**
  - **Unmating**
    - **Min ----------6.31 Lbs**
    - **Max----------8.90 Lbs**

RESULTS Continued

Thermal aging

- **Initial**
  - **Mating**
    - **Min ---------- 16.90 Lbs**
    - **Max ---------- 17.96 Lbs**
  - **Unmating**
    - **Min ----------8.67 Lbs**
    - **Max ---------- 10.48 Lbs**
- **After thermal aging**
  - **Mating**
    - **Min ---------- 10.70 Lbs**
    - **Max ---------- 11..65 Lbs**
  - **Unmating**
    - **Min ----------6.60 Lbs**
    - **Max ----------8.76 Lbs**

Normal Force at 0.0080 inch deflection

- **Initial**
  - **Min ---------- 75.30 gf Set------ 0.0004 inch**
  - **Max---------- 77.20 gf Set------ 0.0004 inch**
- **Thermal**
  - **Min ---------- 41.60 gf Set ----- 0.0029 inch**
  - **Max---------- 47.20 gf Set ----- 0.0030 inch**

Compliant Pin Buckling Test

Visual check ---------- Pass

PCB Hole Sizes

HASL

SMALL HOLE

- **Min ----------0.01662 inch**
- **Max----------0.01760 inch**

BIG HOLE

- **Min ----------0.01885 inch**
- **Max----------0.02043 inch**

ENIG

- **Min ----------0.01949 inch**
- **Max----------0.02011 inch**

RESULTS Continued

Individual Compliant Pin Insertion/Retention force in PTH

Min HASL PTH:

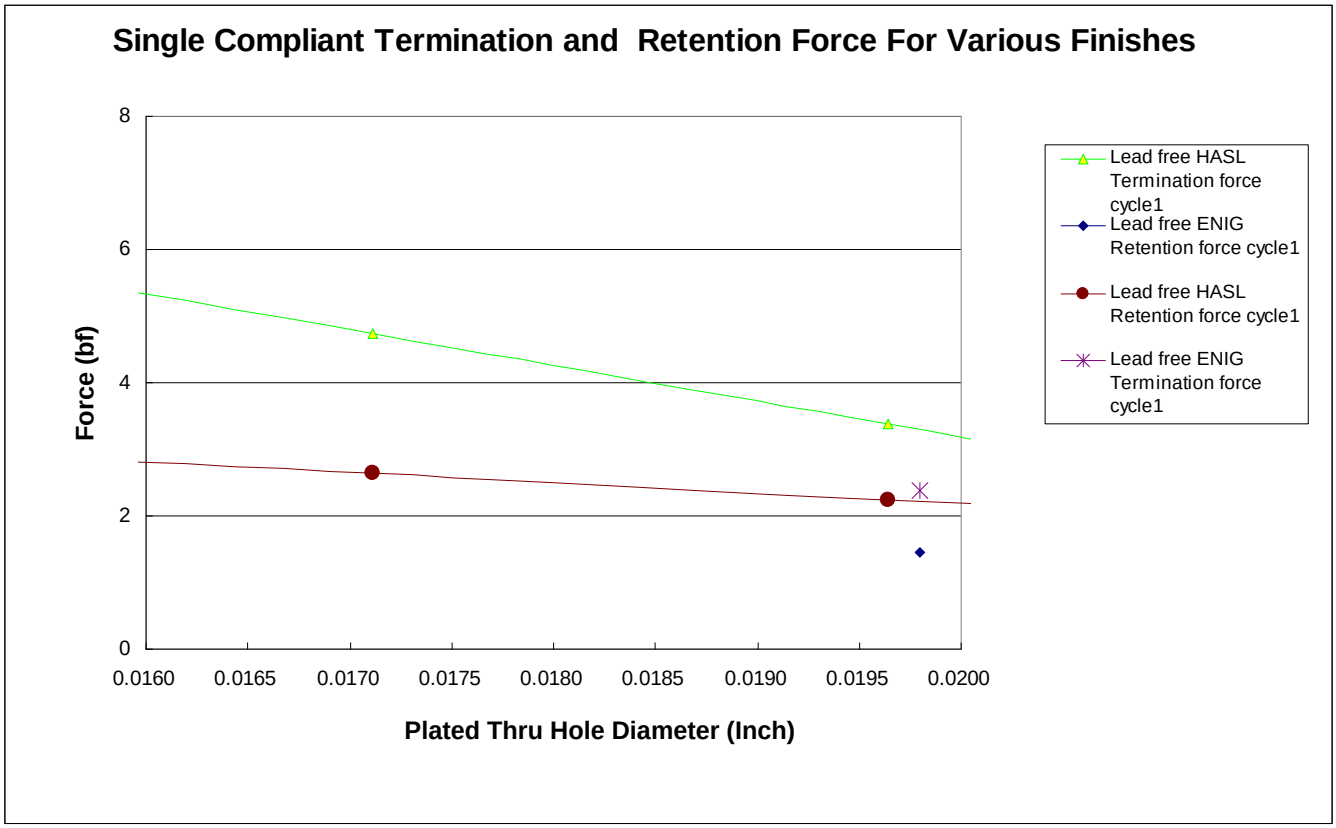
- **Insertion**
  - **Min ----------3.830 Pounds**
  - **Max----------5.660 Pounds**
- **Retention**
  - **Min ----------2.196 Pounds**
  - **Max----------3.071 Pounds**

Max HASL PTH:

- **Insertion**
  - **Min ----------2.715 Pounds**
  - **Max----------4.046 Pounds**
- **Retention**
  - **Min ----------2.005 Pounds**
  - **Max----------2.490 Pounds**

ENIG PTH:

- **Insertion**
  - **Min ----------1.505 Pounds**
  - **Max----------3.245 Pounds**
- **Retention**
  - **Min ----------1.009 Pounds**
  - **Max----------1.918 Pounds**



RESULTS Continued

LLCR Durability (192signal pin LLCR test points)

- **Initial ---------- 9.68 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----------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**
  - **>+2000 mOhms ---------- 0 Points ----------Open Failure**

LLCR Thermal Aging (192 signal pin and 30 compliant pin LLCR test points)
Signal pin:

- **Initial ---------- 10.16 mOhms Max**
- **Thermal Aging**
  - **<= +5.0 mOhms----------190 Points ----------Stable**
  - **+5.1 to +10.0 mOhms ---------- 2 Points ----------Minor**
  - **+10.1 to +15.0 mOhms---------- 0 Points ----------Acceptable**
  - **+15.1 to +50.0 mOhms---------- 0 Points ----------Marginal**
  - **+50.1 to +2000 mOhms---------- 0 Points ----------Unstable**
  - **>+2000 mOhms ---------- 0 Points ----------Open Failure**

Compliant pin:

- **Initial ---------- 0.12 mOhms Max**
- **Thermal Aging**
  - **<= +5.0 mOhms---------- 30 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 (192 signal pin and 30 compliant pin LLCR test points)

Signal Pin:

- **Initial ---------- 9.84 mOhms Max**
- **Gas-Tight**
  - **<= +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**

Compliant Pin:

- **Initial ---------- 0.16 mOhms Max**
- **Gas-Tight**
  - **<= +5.0 mOhms---------- 30 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 (192 signal pin and 30 compliant pin LLCR test points)

Signal Pin:

- **Initial ---------- 10.26 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**

Compliant Pin:

- **Initial ---------- 0.16 mOhms Max**
- **S&V**
  - **<= +5.0 mOhms---------- 30 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 ---------- 100000Meg Ω ----------Pass**
  - **Unmated---------- 100000Meg Ω ----------Pass**
- **Thermal**
  - **Mated ---------- 100000Meg Ω ----------Pass**
  - **Unmated---------- 100000Meg Ω ----------Pass**
- **Humidity**
  - **Mated ----------50000Meg Ω ----------Pass**
  - **Unmated---------- 100000Meg Ω ----------Pass**

Dielectric Withstanding Voltage minimums, DWV

- **Minimums**
  - **Breakdown Voltage ---------- 1020VAC**
  - **Test Voltage ---------- 765VAC**
  - **Working Voltage ---------- 255VAC**

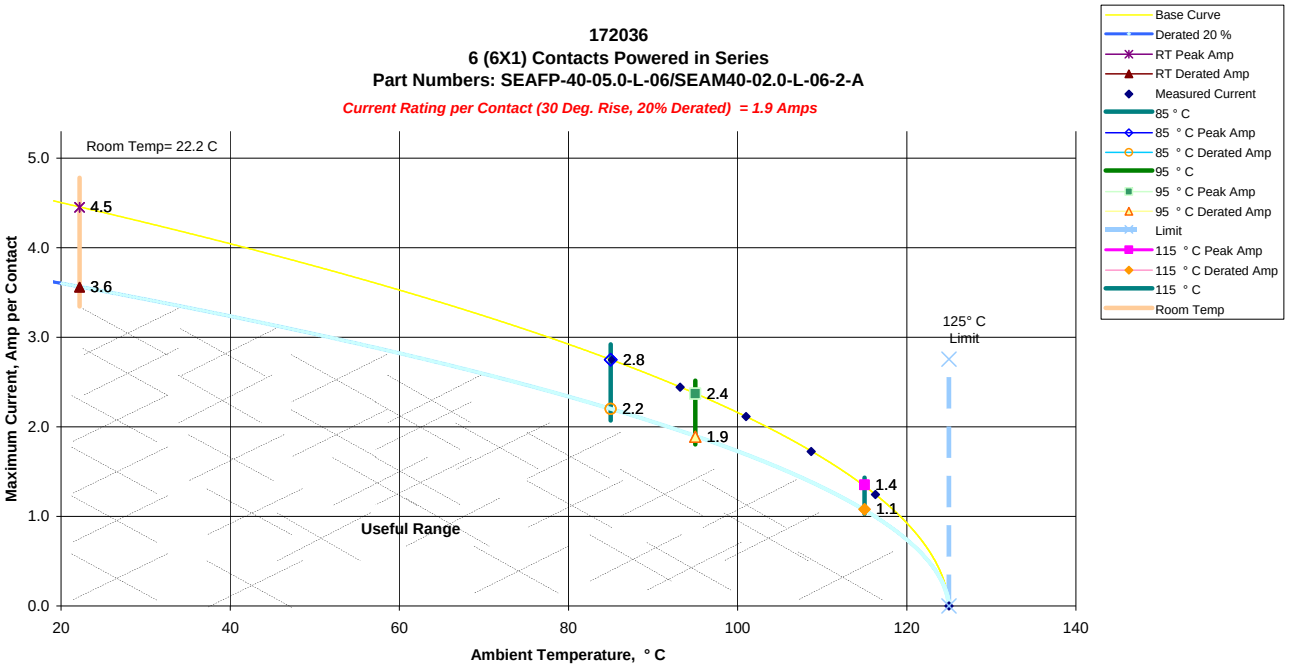
Pin - pin

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

DATA SUMMARIES

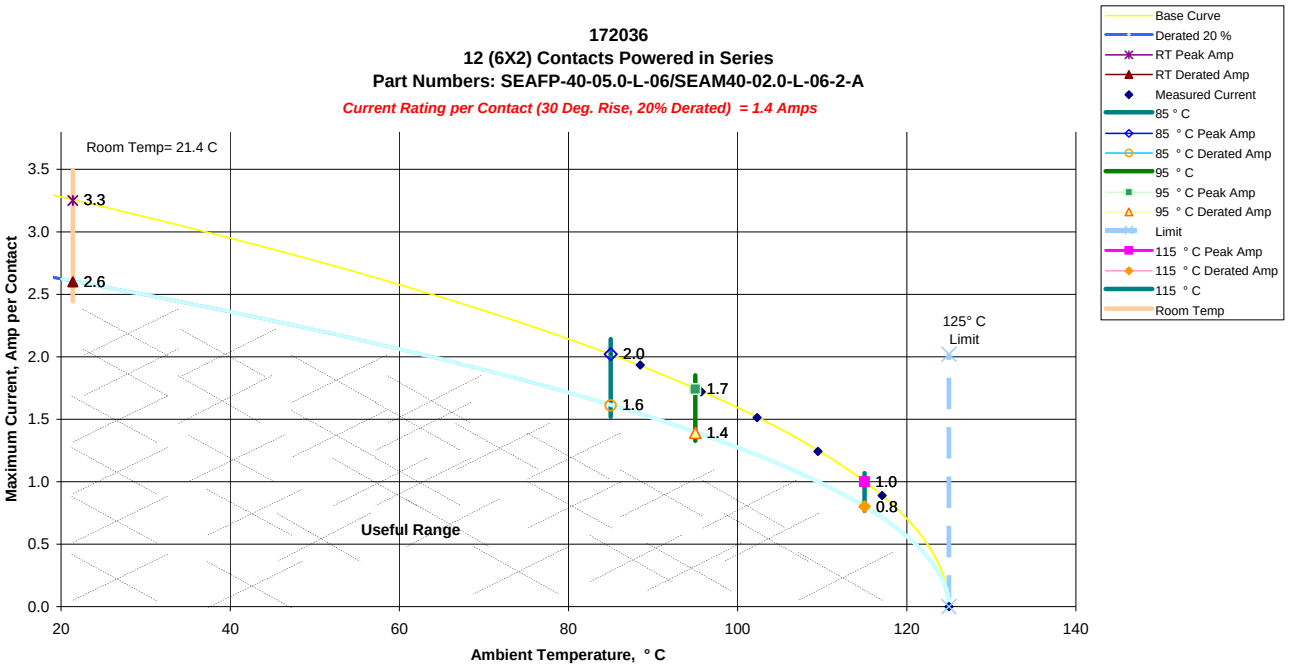
TEMPERATURE RISE (Current Carrying Capacity, CCC):

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 6 adjacent signal conductors/contacts powered

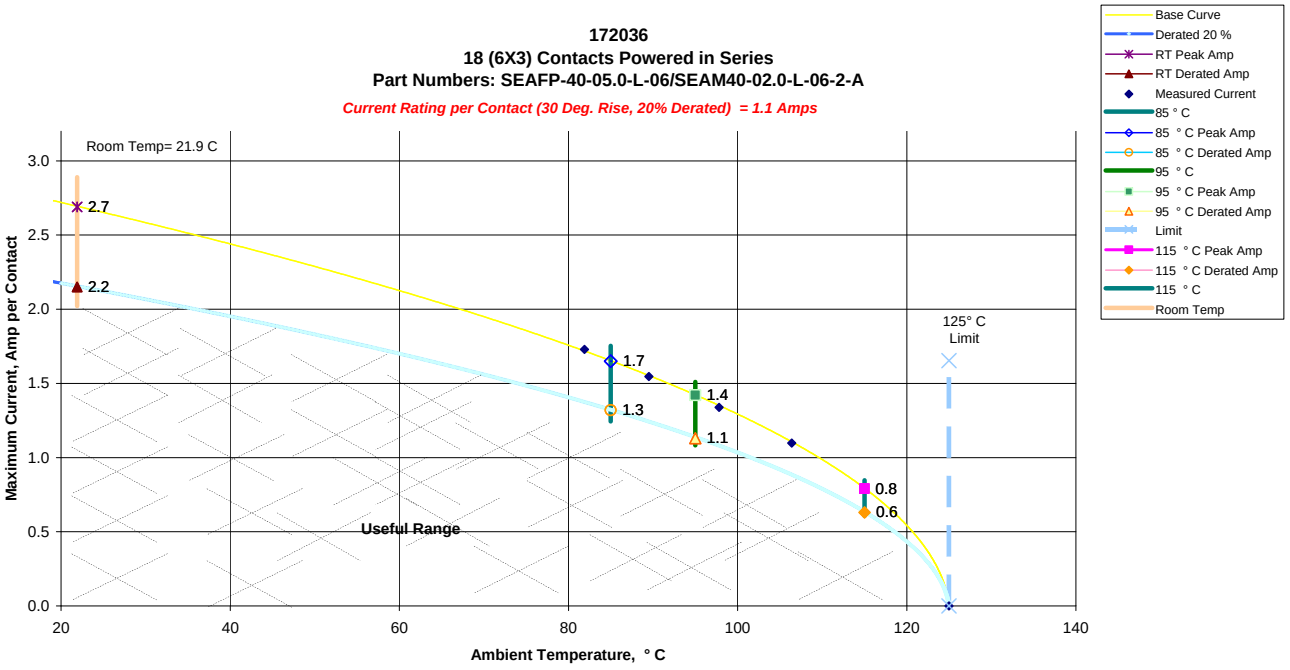


DATA SUMMARIES Continued

b. Linear configuration with 12 adjacent signal conductors/contacts powered

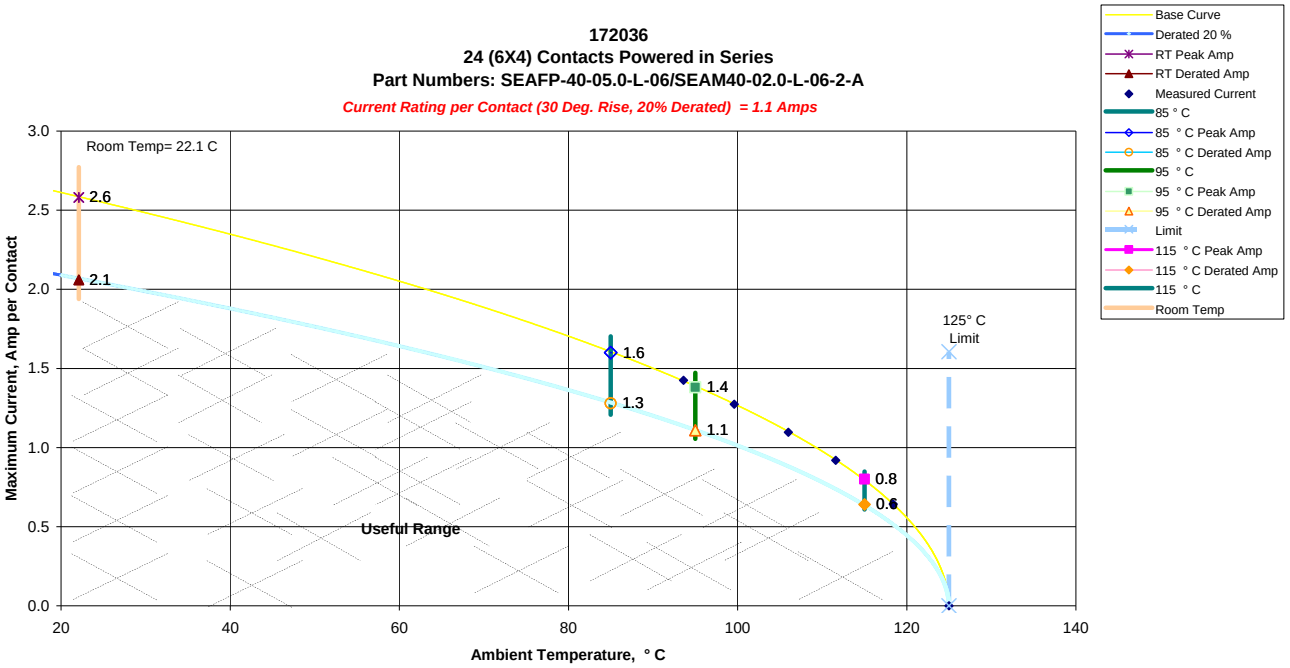


c. Linear configuration with 18 adjacent signal conductors/contacts powered

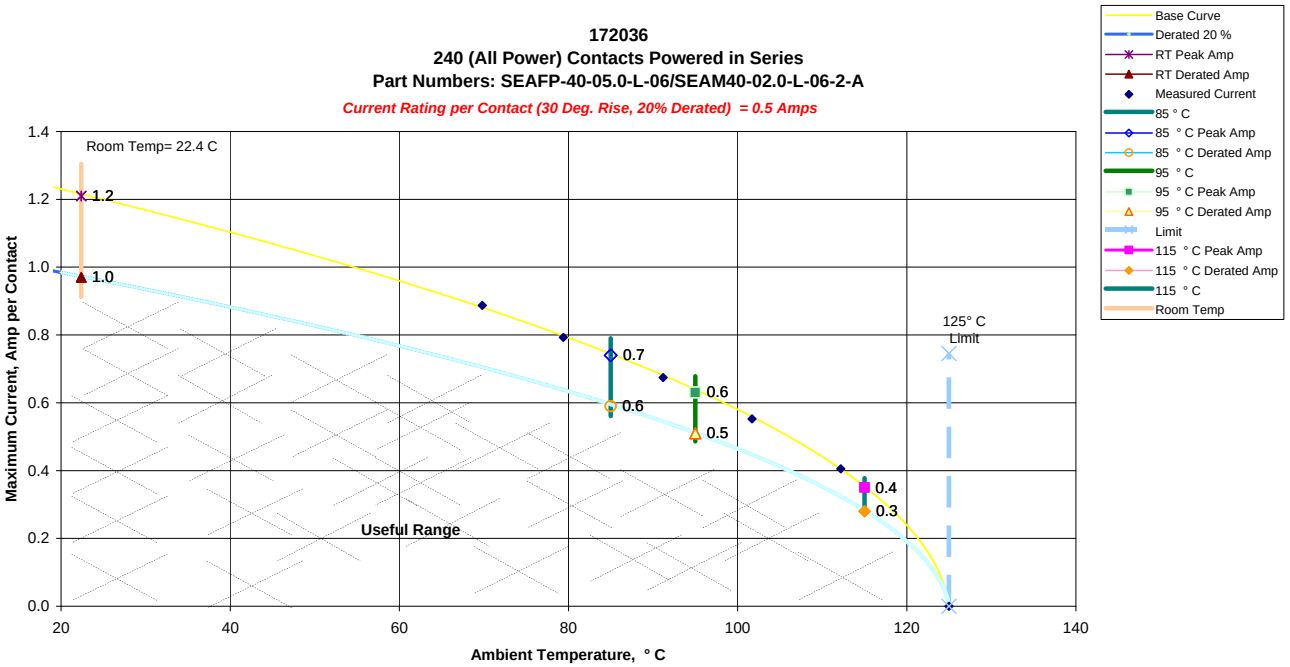


DATA SUMMARIES Continued

d. Linear configuration with 24 adjacent signal conductors/contacts powered



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



DATA SUMMARIES Continued

Contact GAPS:

Mating&Unmating durability

Initial		After 100 Cycles	
Units:	In	Units:	In
Minimum	0.0318	*Minimum*	0.0332
Maximum	0.0378	*Maximum*	0.0397
Average	0.0353	*Average*	0.0365
St. Dev.	0.0012	*St. Dev.*	0.0012
Count	192	*Count*	192

Thermal aging

Initial		After Thermal	
Units:	In	Units:	In
Minimum	0.0321	*Minimum*	0.0377
Maximum	0.0379	*Maximum*	0.0426
Average	0.0354	*Average*	0.0402
St. Dev.	0.0012	*St. Dev.*	0.0009
Count	192	*Count*	192

Normal force:

Out side row feature A

Initial		After Thermal	
Units:	In	Units:	In
Minimum	0.0109	*Minimum*	0.0051
Maximum	0.0208	*Maximum*	0.0058
Average	0.0132	*Average*	0.0054
St. Dev.	0.0043	*St. Dev.*	0.0003
Count	5	*Count*	5

Out side row feature B

Initial		After Thermal	
Units:	In	Units:	In
Minimum	0.0164	*Minimum*	0.0188
Maximum	0.0175	*Maximum*	0.0203
Average	0.0169	*Average*	0.0193
St. Dev.	0.0004	*St. Dev.*	0.0006
Count	5	*Count*	5

Rest of rows

Initial		After Thermal	
Units:	In	Units:	In
Minimum	0.0095	*Minimum*	0.0045
Maximum	0.0203	*Maximum*	0.0182
Average	0.0134	*Average*	0.0086
St. Dev.	0.0038	*St. Dev.*	0.0045
Count	18	*Count*	15

DATA SUMMARIES Continued

Pin Buckling Gap

Initial		After Cycles	
Units:	In	Units:	In
Minimum	0.0319	***Minimum***	0.0313
Maximum	0.0364	***Maximum***	0.0389
Average	0.0346	***Average***	0.0349
St. Dev.	0.0011	***St. Dev.***	0.0013
Count	240	***Count***	240

MATING/UNMATING FORCE:
Mating/Unmating durability:

	Initial				25 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	67.21	15.11	32.83	7.38	64.23	14.44	34.96	7.86
Maximum	73.08	16.43	43.99	9.89	71.30	16.03	45.33	10.19
Average	70.08	**15.76**	38.17	**8.58**	68.19	**15.33**	41.88	**9.42**
St Dev	1.95	0.44	3.55	0.80	2.63	0.59	3.60	0.81
Count	8	8	8	8	8	8	8	8

	50 Cycles				75 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	62.18	13.98	36.65	8.24	62.41	14.03	36.92	8.30
Maximum	69.39	15.60	46.70	10.50	71.97	16.18	47.28	10.63
Average	66.17	**14.88**	42.54	**9.56**	66.44	**14.94**	43.62	**9.81**
St Dev	2.48	0.56	3.60	0.81	3.23	0.73	3.42	0.77
Count	8	8	8	8	8	8	8	8

	100 Cycles				After Humidity			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	62.36	14.02	38.70	8.70	48.97	11.01	28.07	6.31
Maximum	71.88	16.16	49.28	11.08	56.62	12.73	39.59	8.90
Average	67.63	**15.20**	44.97	**10.11**	53.67	**12.07**	36.58	**8.22**
St Dev	3.57	0.80	3.12	0.70	2.24	0.50	3.60	0.81
Count	8	8	8	8	8	8	8	8

DATA SUMMARIES Continued

Thermal aging:

	Initial				After Thermals			
	Mating		Unmating		Mating		Unmating	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	70.74	15.90	38.54	8.67	47.59	10.70	29.36	6.60
Maximum	79.87	17.96	46.61	10.48	51.82	11.65	38.96	8.76
Average	74.78	**16.81**	41.55	**9.34**	49.91	**11.22**	34.82	**7.83**
St Dev	3.03	0.68	3.02	0.68	1.67	0.38	3.52	0.79
Count	8	8	8	8	8	8	8	8

Normal Force:

Initial	Deflections in inches Forces in Grams										
	0.0008	**0.0016**	**0.0024**	**0.0032**	**0.0040**	**0.0048**	**0.0056**	**0.0064**	**0.0072**	**0.0080**	***SET***
Averages	7.64	15.71	23.83	31.93	39.83	47.63	55.18	62.57	69.63	76.43	0.0004
Min	7.30	15.00	23.00	31.00	39.20	47.00	54.60	61.90	68.70	75.30	0.0004
Max	8.20	16.60	24.90	33.00	40.70	48.60	55.90	63.50	70.60	77.20	0.0004
St. Dev	0.247	0.450	0.517	0.526	0.427	0.439	0.426	0.518	0.633	0.683	0.0000
Count	12	12	12	12	12	12	12	12	12	12	12

After Thermals	Deflections in inches Forces in Grams										
	0.0008	**0.0016**	**0.0024**	**0.0032**	**0.0040**	**0.0048**	**0.0056**	**0.0064**	**0.0072**	**0.0080**	***SET***
Averages	0.00	0.00	0.00	2.53	9.15	15.77	22.30	28.88	35.72	42.82	0.0030
Min	0.00	0.00	0.00	2.30	8.60	15.20	21.50	27.90	34.70	41.60	0.0029
Max	0.00	0.00	0.00	3.10	9.60	16.60	23.80	31.20	39.30	47.20	0.0030
St. Dev	0.000	0.000	0.000	0.288	0.399	0.561	0.844	1.207	1.774	2.166	0.0001
Count	6	6	6	6	6	6	6	6	6	6	6

DATA SUMMARIES Continued

Compliant Pin Buckling Test

Sample #	Results	Comments
1	PASSED	Visual inspection showed no Compliant Pin buckling or damage
2	PASSED	Visual inspection showed no Compliant Pin buckling or damage
3	PASSED	Visual inspection showed no Compliant Pin buckling or damage
4	PASSED	Visual inspection showed no Compliant Pin buckling or damage
5	PASSED	Visual inspection showed no Compliant Pin buckling or damage
6	PASSED	Visual inspection showed no Compliant Pin buckling or damage
7	PASSED	Visual inspection showed no Compliant Pin buckling or damage
8	PASSED	Visual inspection showed no Compliant Pin buckling or damage
9	PASSED	Visual inspection showed no Compliant Pin buckling or damage
10	PASSED	Visual inspection showed no Compliant Pin buckling or damage

Individual Compliant Pin Insertion/Retention force in PTH

Min HASL PTH:

	Engagement Force	Separation Force
Measured in Pounds		
minimum:	**3.830**	**2.196**
maximum:	**5.660**	**3.071**
average:	**4.708**	**2.591**

Max HASL PTH:

	Engagement Force	Separation Force
Measured in Pounds		
minimum:	**2.715**	**2.005**
maximum:	**4.046**	**2.490**
average:	**3.308**	**2.225**

ENIG PTH:

	Engagement Force	Separation Force
Measured in Pounds		
minimum:	**1.505**	**1.009**
maximum:	**3.245**	**1.918**
average:	**2.507**	**1.472**

DATA SUMMARIES Continued

INSULATION RESISTANCE (IR):

	Pin to Pin		
	Mated	Unmated	Unmated
Minimum	**SEAFP/SEAM**	**SEAFP**	**SEAM**
Initial	100000	100000	100000
Thermal	100000	100000	100000
Humidity	50000	100000	100000

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

Voltage Rating Summary	
Minimum	**SEAFP/SEAM**
Break Down Voltage	1020
Test Voltage	765
Working Voltage	255

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

DATA SUMMARIES Continued

LLCR Durabiltiy:

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

	LLCR Measurement Summaries by Pin Type			
Date	12/6/2011	12/19/2011	12/27/2011	1/13/2012
Room Temp (Deg C)	22	23	22	22
Rel Humidity (%)	30	32	32	36
Technician	Aaron McKim	Aaron McKim	Troy Cook	Aaron McKim
mOhm values	**Actual Initial**	**Delta 100 Cycles**	**Delta Therm Shck**	**Delta Humidity**
	Pin Type 1: Signal			
Average	8.35	0.37	0.53	0.48
St. Dev.	0.39	0.33	0.34	0.55
Min	7.41	0.00	0.00	0.00
Max	9.68	1.44	1.94	5.80
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	**191**	**1**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

LLCR thermal aging

1) A total of 222 points (192 signal pin and 30 compliant pin) 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

Signal Pin:

	LLCR Measurement Summaries by Pin Type	
Date	12/9/2011	12/20/2011
Room Temp (Deg C)	22	22
Rel Humidity (%)	28	32
Technician	Aaron McKim	Aaron McKim
mOhm values	**Actual Initial**	**Delta Thermal**
	Pin Type 1: Signal	
Average	8.32	0.48
St. Dev.	0.38	0.80
Min	7.48	0.01
Max	10.16	6.68
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	**190**	**2**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

Compliant Pin:

	LLCR Measurement Summaries by Pin Type	
Date	12/8/2011	12/20/2011
Room Temp (Deg C)	23	22
Rel Humidity (%)	28	33
Technician	Aaron McKim	Aaron McKim
mOhm values	**Actual Initial**	**Delta Thermal**
	Pin Type 1: Signal	
Average	0.10	0.01
St. Dev.	0.01	0.01
Min	0.08	0.00
Max	0.12	0.04
Summary Count	30	30
Total Count	30	30

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Thermal	**30**	**0**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

LLCR GAS TIGHT:

1) A total of 222 points (192 signal pin and 30 compliant pin) 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

Signal Pin:

	LLCR Measurement Summaries by Pin Type	
Date	12/6/2011	12/7/2011
Room Temp (Deg C)	22	22
Rel Humidity (%)	30	29
Technician	Aaron McKim	Aaron McKim
mOhm values	**Actual Initial**	**Delta Acid Vapor**
	Pin Type 1: Signal	
Average	8.22	0.06
St. Dev.	0.36	0.12
Min	7.48	0.00
Max	9.84	1.15
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	**192**	**0**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

Compliant Pin:

	LLCR Measurement Summaries by Pin Type	
Date	12/8/2011	12/8/2011
Room Temp (Deg C)	23	23
Rel Humidity (%)	28	29
Technician	Aaron McKim	Aaron McKim
mOhm values	**Actual Initial**	**Delta Acid Vapor**
	Pin Type 1: Signal	
Average	0.13	0.03
St. Dev.	0.02	0.02
Min	0.10	0.00
Max	0.16	0.08
Summary Count	30	30
Total Count	30	30

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Acid Vapor	**30**	**0**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

LLCR Shock Vib:

1) A total of 222 points (192 signal pin and 30 compliant pin) 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

Signal Pin:

	LLCR Measurement Summaries by Pin Type	
Date	12/7/2011	12/12/2011
Room Temp (Deg C)	22	22
Rel Humidity (%)	28	28
Technician	Aaron McKim	Aaron McKim
mOhm values	**Actual Initial**	**Delta Shock-Vib**
	Pin Type 1: Signal	
Average	8.61	0.25
St. Dev.	0.47	0.25
Min	7.59	0.00
Max	10.26	1.67
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

Compliant Pin:

	LLCR Measurement Summaries by Pin Type	
Date	12/8/2011	12/12/2011
Room Temp (Deg C)	23	22
Rel Humidity (%)	28	28
Technician	Aaron McKim	Aaron McKim
mOhm values	**Actual Initial**	**Delta Shock-Vib**
	Pin Type 1: Signal	
Average	0.11	0.03
St. Dev.	0.02	0.02
Min	0.07	0.00
Max	0.16	0.07
Summary Count	30	30
Total Count	30	30

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Shock-Vib	**30**	**0**	**0**	**0**	**0**	**0**

Shock Vibration 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

EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: MO-03
Description: Micro-ohmmeter
Manufacturer: Keithley
Model: 580
Serial #: 297288
Accuracy: Last Cal: 2011-8-06, Next Cal: 2012-8-05

Equipment #: TCT-01
Description: Normal force analyzer
Manufacturer: Mecmesin Multitester
Model: Mecmesin Multitester 2.5-i
Serial #: 08-1049-04
Accuracy: Last Cal: 2011-4-28, Next Cal: 2012-4-27

Equipment #: OV-01
Description: Oven
Manufacturer: Huida
Model: CS101-1E
Serial #: CS101-1E-B
Accuracy: Last Cal: 2011-12-14, Next Cal: 2012-12-13

Equipment #: THC-01
Description: Humidity transmitter
Manufacturer: Thermtron
Model: HMM30C
Serial #: D0240037
Accuracy: Last Cal: 2011-3-3, Next Cal: 2012-3-2

Equipment #: OGP-01
Description: Video measurement system
Manufacturer: OGP
Model: SMARTSCOPE FLASH 200
Serial #: SVW2003632
Accuracy: Last Cal: 2011-6-10, Next Cal: 2012-6-9

Equipment #: MO-01
Description: Micro-ohmmeter
Manufacturer: Keithley
Model: 2700
Serial #: 1199807
Accuracy: Last Cal: 2011-4-28, Next Cal: 2012-4-27

EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: PS-01
Description: Power Supply
Manufacturer: Agilent
Model: 6031A
Serial #: MY41000982
Accuracy: Last Cal: 2011-4-28, Next Cal: 2012-4-27

Equipment #: TSC-01
Description: Thermal Shock transmitter
Manufacturer: Keithley
Model: 10-VT14994
Serial #: VTS-3-6-6-SC/AC
Accuracy: Last Cal: 2011-11-1, Next Cal: 2012-11-1

Equipment #: SVC-01
Description: Shock & Vibration Table
Manufacturer: Data Physics
Model: LE-DSA-10-20K
Serial #: 10037
Accuracy: See Manual
… Last Cal: 2011-11-31, Next Cal: 2012-11-31

Equipment #: ACLM-01
Description: Accelerometer
Manufacturer: PCB Piezotronics
Model: 352C03
Serial #: 115819
Accuracy: See Manual
… Last Cal: 2011-07-9, Next Cal: 2012-7-9

Equipment #: ED-03
Description: Event Detector
Manufacturer: Analysis Tech
Model: 32EHD
Serial #: 1100604
Accuracy: See Manual
… Last Cal: 2011-06-4, Next Cal: 2012-06-4