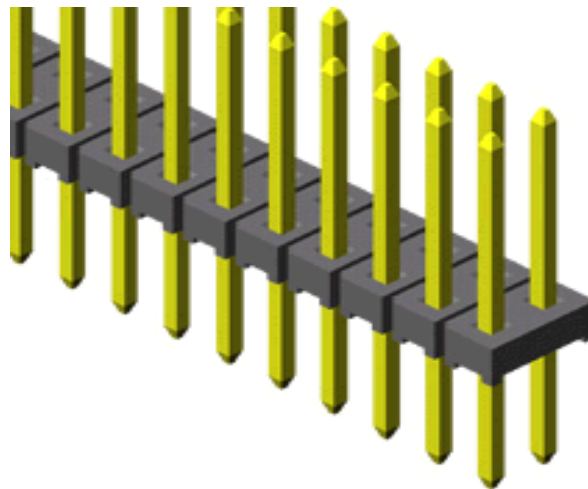
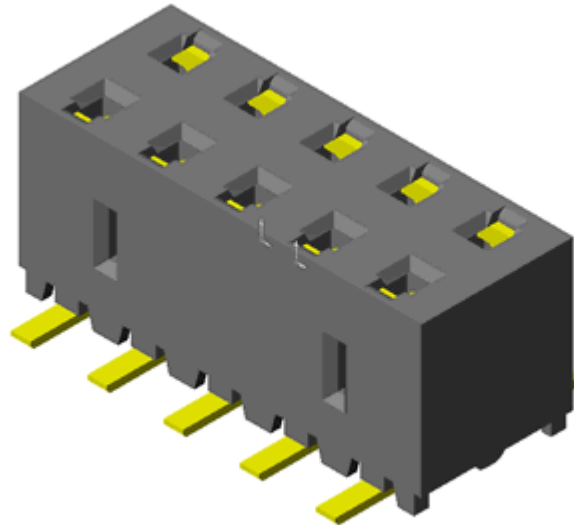




Project Number: Design Qualification Test Report		Tracking Code: 154341_Report_Rev_2	
Requested by: Mark Shireman		Date: 12/7/2011	Product Rev: 0
Part #: MMS-140-02-S-DV-A/TMM-140-01-S-D-SM-A		Lot #: N/A	Tech: Tony Wagoner Eng: Eric Mings
Part description: MMS/TMM			Qty to test: 45
Test Start: 7/15/2011	Test Completed: 8/15/2011		



Design Qualification Test Report

MMS/TMM

MMS-140-02-S-DV-A/TMM-140-01-S-D-SM-A

CERTIFICATION

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

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SCOPE

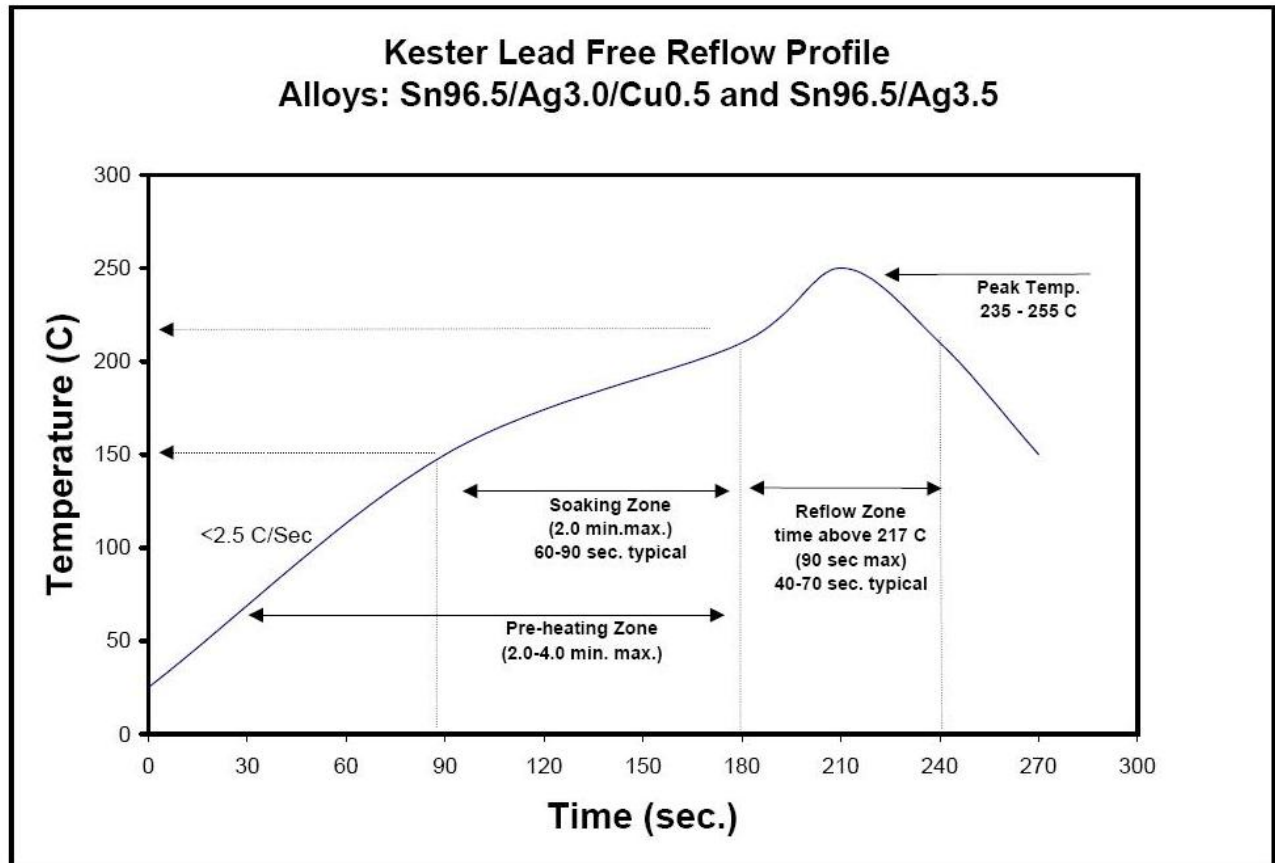
To perform the following tests: Design Qualification Test, Please see test plan.

APPLICABLE DOCUMENTS

Standards: EIA Publication 364

TEST SAMPLES AND PREPARATION

- 1) All materials were manufactured in accordance with the applicable product specification.
- 2) All test samples were identified and encoded to maintain traceability throughout the test sequences.
- 3) After soldering, the parts to be used for LLCR 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**

TEST STEP	GROUP A1 192 Points
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)
01	Forces - Mating / Unmating
02	LLCR-1
03	Thermal Aging (Mated and Undisturbed)
04	LLCR-2
05	Forces - Mating / Unmating

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

Time Condition 'B' (250 Hours)

Mating / Unmating Forces = EIA-364-13

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)	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**

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)

TEST STEP	GROUP C1 2 Mated Sets Break Down Row-to-Row	GROUP C2 2 Unmated of Part # Being Tested Break Down Row-to-Row	GROUP C3 2 Unmated of Mating Part # Break Down Row-to-Row	GROUP D1 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 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**

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 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 $\pm$ 6 mm/min

Spec is 50 N @ 1 mm displacement

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

Current Carrying Capacity - Double Row

TEST STEP	GROUP B1 3 Mated Assemblies 2 Contacts Powered	GROUP B2 3 Mated Assemblies 4 Contacts Powered	GROUP B3 3 Mated Assemblies 6 Contacts Powered
01	CCC	CCC	CCC
TEST STEP	GROUP B4 3 Mated Assemblies 8 Contacts Powered	GROUP B5 3 Mated Assemblies All Contacts Powered	
01	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

FLOWCHARTS Continued**Mechanical Shock / Vibration / LLCR**

TEST STEP	GROUP A1 192 Points
01	LLCR-1
02	Shock
03	Vibration
04	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
01	Event Detection, Shock
02	Event Detection, Vibration

Mechanical Shock = EIA 364-27 Half Sine,

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

Vibration = EIA 364-28, Random Vibration

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

Event detection requirement during Shock / Vibration is 50 nanoseconds minimum

FLOWCHARTS Continued**Extended Life**

TEST STEP	GROUP B1 192 Points 250 Cycles	GROUP C1 192 Points 500 Cycles
01	* Plating Thickness Verification	* Plating Thickness Verification
02	LLCR-1	LLCR-1
03	250 Cycles	500 Cycles
04	Clean Mating Interface	Clean Mating Interface
05	LLCR-2	LLCR-2
06	Thermal Shock (Mated and undisturbed)	Thermal Shock (Mated and undisturbed)
07	LLCR-3	LLCR-3
08	Cyclic Humidity (Mated and undisturbed)	Cyclic Humidity (Mated and undisturbed)
09	LLCR-4	LLCR-4
10	*** Photos of Contact Area	*** Photos of Contact Area

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

LLCR = EIA-364-23, LLCR

20 mV Max, 100 mA Max

Use Keithley 580 or 3706 in 4 wire dry circuit mode

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

** Plating thickness to be measured on loose pins used during assembly. Pins to be provided by requestor.

*** Save 2-3 photos of contact area in project folder for each group

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:

- EIA-364-17, *Temperature Life with or without Electrical Load Test Procedure for Electrical Connectors*.
- Test Condition 4 at 105° C.
- Test Time Condition B for 250 hours.
- All test samples are pre-conditioned at ambient.
- 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 G² / 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 TC², 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 TC² software in order to acquire and record the test data.
- 10) The permanent set of each contact shall be measured within the TC² 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° C
 - c. 95° C
 - d. 115° C
- 8) Typically, neighboring contacts (in close proximity to maximize heat build up) are energized.
- 9) The thermocouple (or temperature measuring probe) will be positioned at a location to sense the maximum temperature in the vicinity of the heat generation area.
- 10) A computer program, *TR 803.exe*, ensures accurate stability for data acquisition.
- 11) Hook-up wire cross section is larger than the cross section of any connector leads/PC board traces, jumpers, etc.
- 12) Hook-up wire length is longer than the minimum specified in the referencing standard.

ATTRIBUTE DEFINITIONS

The following is a brief, simplified description of attributes.

LLCR:

- 1) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
- 2) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
- 3) The following guidelines are used to categorize the changes in LLCR as a result from stressing
 - a. $\leq +5.0$ mOhms: ----- Stable
 - b. $+5.1$ to $+10.0$ mOhms: ----- Minor
 - c. $+10.1$ to $+15.0$ mOhms: ----- Acceptable
 - d. $+15.1$ to $+50.0$ mOhms: ----- Marginal
 - e. $+50.1$ to $+2000$ mOhms: ----- Unstable
 - f. $>+2000$ mOhms: ----- Open Failure

GAS TIGHT:

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

- 1) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
- 2) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
- 3) The following guidelines are used to categorize the changes in LLCR as a result from stressing
 - a. $\leq +5.0$ mOhms: ----- Stable
 - b. $+5.1$ to $+10.0$ mOhms: ----- Minor
 - c. $+10.1$ to $+15.0$ mOhms: ----- Acceptable
 - d. $+15.1$ to $+50.0$ mOhms: ----- Marginal
 - e. $+50.1$ to $+2000$ mOhms: ----- Unstable
 - f. $>+2000$ mOhms: ----- Open Failure
- 4) Procedure:
 - a. Reference document: EIA-364-36, *Test Procedure for Determination of Gas-Tight Characteristics for Electrical Connectors, Sockets and/or Contact Systems*.
 - b. Test Conditions:
 - i. Class II--- Mated pairs of contacts assembled to their plastic housings.
 - ii. Reagent grade Nitric Acid shall be used of sufficient volume to saturate the test chamber
 - iii. The ratio of the volume of the test chamber to the surface area of the acid shall be 10:1.
 - iv. The chamber shall be saturated with the vapor for at least 15 minutes before samples are added.
 - v. Exposure time, 55 to 65 minutes.
 - vi. The samples shall be no closer to the chamber walls than 1 inches and no closer to the surface of the acid than 3 inches.
 - vii. The samples shall be dried after exposure for a minimum of 1 hour.
 - viii. Drying temperature 50° 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-----3.9 A per contact with 2 adjacent contacts powered
- CCC for a 30°C Temperature Rise-----3.1 A per contact with 4 adjacent contacts powered
- CCC for a 30°C Temperature Rise-----2.6 A per contact with 6 adjacent contacts powered
- CCC for a 30°C Temperature Rise-----2.5 A per contact with 8 adjacent contacts powered
- CCC for a 30°C Temperature Rise-----1.6 A per contact with all adjacent contacts powered

Contact Gaps**Durability**

- Initial
 - o Min-----0.0119 inch
 - o Max -----0.0134 inch
- After 100 cycles
 - o Min-----0.0119 inch
 - o Max -----0.0154 inch

Thermal aging

- Initial
 - o Min-----0.0126 inch
 - o Max -----0.0148 inch
- After thermal aging
 - o Min-----0.0133 inch
 - o Max -----0.0151 inch

Normal force initial

- Initial
 - o Min-----0.0132 inch
 - o Max -----0.0140 inch

Normal force after thermal

- Initial
 - o Min-----0.0136 inch
 - o Max -----0.0144 inch
- After thermal aging
 - o Min-----0.0136 inch
 - o Max -----0.0149 inch

RESULTS Continued**Mating /unmating force****Mating&Unmating durability (MMS-140-02-S-DV-A/TMM-140-01-S-D-SM-A):**

- **Initial**
 - **Mating**
 - **Min**-----12.77 Lbs
 - **Max**-----15.03 Lbs
 - **Unmating**
 - **Min**----- 8.37 Lbs
 - **Max**-----10.34 Lbs
- **After 25 Cycles**
 - **Mating**
 - **Min**-----15.89 Lbs
 - **Max**-----20.92 Lbs
 - **Unmating**
 - **Min**-----11.14 Lbs
 - **Max**-----14.04 Lbs
- **After 50 Cycles**
 - **Mating**
 - **Min**-----15.74 Lbs
 - **Max**-----21.59 Lbs
 - **Unmating**
 - **Min**-----12.44 Lbs
 - **Max**-----15.89 Lbs
- **After 75 Cycles**
 - **Mating**
 - **Min**-----15.99 Lbs
 - **Max**-----22.74 Lbs
 - **Unmating**
 - **Min**-----13.48 Lbs
 - **Max**-----16.91 Lbs
- **After 100 Cycles**
 - **Mating**
 - **Min**-----16.35 Lbs
 - **Max**-----23.83 Lbs
 - **Unmating**
 - **Min**-----14.41 Lbs
 - **Max**-----17.66 Lb
- **After Humidity**
 - **Mating**
 - **Min**-----12.61 Lbs
 - **Max**-----15.28 Lbs
 - **Unmating**
 - **Min**----- 9.32 Lbs
 - **Max**-----10.11 Lbs

RESULTS Continued**Mating&Unmating durability (MMS-125-02-S-DV-A/TMM-125-01-S-D-SM-A):**

- **Initial**
 - **Mating**
 - **Min**-----7.98 Lbs
 - **Max**-----10.87 Lbs
 - **Unmating**
 - **Min**-----7.17 Lbs
 - **Max**-----7.74 Lbs
- **After 25 Cycles**
 - **Mating**
 - **Min**-----9.98 Lbs
 - **Max**-----11.15 Lbs
 - **Unmating**
 - **Min**-----6.90 Lbs
 - **Max**-----8.27 Lbs
- **After 50 Cycles**
 - **Mating**
 - **Min**-----9.88 Lbs
 - **Max**-----11.00 Lbs
 - **Unmating**
 - **Min**-----7.53 Lbs
 - **Max**-----8.81 Lbs
- **After 75 Cycles**
 - **Mating**
 - **Min**-----10.18 Lbs
 - **Max**-----11.60 Lbs
 - **Unmating**
 - **Min**-----8.41 Lbs
 - **Max**-----9.48 Lbs
- **After 100 Cycles**
 - **Mating**
 - **Min**-----10.24 Lbs
 - **Max**-----11.94 Lbs
 - **Unmating**
 - **Min**-----8.73 Lbs
 - **Max**-----9.88 Lb

RESULTS Continued**Mating&Unmating durability (MMS-105-02-S-DV-A/TMM-105-01-S-D-SM-A):**

- **Initial**
 - **Mating**
 - **Min**-----1.78 Lbs
 - **Max**-----2.29 Lbs
 - **Unmating**
 - **Min**-----1.34 Lbs
 - **Max**-----1.60 Lbs
- **After 25 Cycles**
 - **Mating**
 - **Min**-----1.98 Lbs
 - **Max**-----2.28 Lbs
 - **Unmating**
 - **Min**-----1.30 Lbs
 - **Max**-----1.60 Lbs
- **After 50 Cycles**
 - **Mating**
 - **Min**-----1.91 Lbs
 - **Max**-----2.26 Lbs
 - **Unmating**
 - **Min**-----1.45 Lbs
 - **Max**-----1.73 Lbs
- **After 75 Cycles**
 - **Mating**
 - **Min**-----1.88 Lbs
 - **Max**-----2.29 Lbs
 - **Unmating**
 - **Min**-----1.60 Lbs
 - **Max**-----1.88 Lbs
- **After 100 Cycles**
 - **Mating**
 - **Min**-----1.91 Lbs
 - **Max**-----2.34 Lbs
 - **Unmating**
 - **Min**-----1.70 Lbs
 - **Max**-----2.00 Lb

Thermal aging

- **Initial**
 - **Mating**
 - **Min**-----8.81 Lbs
 - **Max**-----9.02 Lbs
 - **Unmating**
 - **Min**-----5.94 Lbs
 - **Max**-----7.62 Lbs
- **After thermal aging**
 - **Mating**
 - **Min**-----8.36 Lbs
 - **Max**-----9.98 Lbs
 - **Unmating**
 - **Min**-----7.21 Lbs
 - **Max**-----8.76 Lbs

RESULTS Continued**Normal Force at 0.0045 inch deflection**

- **Initial**
 - o Min-----80.20 gf Set ---- 0.0001 inch
 - o Max -----94.00 gf Set ---- 0.0005 inch
- **Thermal**
 - o Min-----63.00 gf Set---- 0.0002 inch
 - o Max -----81.40 gf Set---- 0.0008 inch

LLCR Durability-100 Cycles (192 pin LLCR test points)

- **Initial**-----8.00 mOhms Max
- **After 100 Cycles**
 - o <= +5.0 mOhms -----192 Points ----- Stable
 - o +5.1 to +10.0 mOhms -----0 Points ----- Minor
 - o +10.1 to +15.0 mOhms -----0 Points ----- Acceptable
 - o +15.1 to +50.0 mOhms -----0 Points ----- Marginal
 - o +50.1 to +2000 mOhms -----0 Points ----- Unstable
 - o >+2000 mOhms -----0 Points ----- Open Failure
- **After thermal shock**
 - o <= +5.0 mOhms -----192 Points ----- Stable
 - o +5.1 to +10.0 mOhms -----0 Points ----- Minor
 - o +10.1 to +15.0 mOhms -----0 Points ----- Acceptable
 - o +15.1 to +50.0 mOhms -----0 Points ----- Marginal
 - o +50.1 to +2000 mOhms -----0 Points ----- Unstable
 - o >+2000 mOhms -----0 Points ----- Open Failure
- **After humidity**
 - o <= +5.0 mOhms -----192 Points ----- Stable
 - o +5.1 to +10.0 mOhms -----0 Points ----- Minor
 - o +10.1 to +15.0 mOhms -----0 Points ----- Acceptable
 - o +15.1 to +50.0 mOhms -----0 Points ----- Marginal
 - o +50.1 to +2000 mOhms -----0 Points ----- Unstable
 - o >+2000 mOhms -----0 Points ----- Open Failure

LLCR Durability-250 Cycles (192 pin LLCR test points)

- **Initial**-----9.00 mOhms Max
- **After 250 Cycles**
 - o <= +5.0 mOhms -----192 Points ----- Stable
 - o +5.1 to +10.0 mOhms -----0 Points ----- Minor
 - o +10.1 to +15.0 mOhms -----0 Points ----- Acceptable
 - o +15.1 to +50.0 mOhms -----0 Points ----- Marginal
 - o +50.1 to +2000 mOhms -----0 Points ----- Unstable
 - o >+2000 mOhms -----0 Points ----- Open Failure
- **After thermal shock**
 - o <= +5.0 mOhms -----192 Points ----- Stable
 - o +5.1 to +10.0 mOhms -----0 Points ----- Minor
 - o +10.1 to +15.0 mOhms -----0 Points ----- Acceptable
 - o +15.1 to +50.0 mOhms -----0 Points ----- Marginal
 - o +50.1 to +2000 mOhms -----0 Points ----- Unstable
 - o >+2000 mOhms -----0 Points ----- Open Failure
- **After humidity**
 - o <= +5.0 mOhms -----192 Points ----- Stable
 - o +5.1 to +10.0 mOhms -----0 Points ----- Minor
 - o +10.1 to +15.0 mOhms -----0 Points ----- Acceptable
 - o +15.1 to +50.0 mOhms -----0 Points ----- Marginal
 - o +50.1 to +2000 mOhms -----0 Points ----- Unstable
 - o >+2000 mOhms -----0 Points ----- Open Failure

RESULTS Continued**LLCR Durability-500 Cycles (192 pin LLCR test points)**

- **Initial** -----7.60 mOhms Max
- **After 500 Cycles**
 - o <= +5.0 mOhms -----192 Points -----Stable
 - o +5.1 to +10.0 mOhms -----0 Points -----Minor
 - o +10.1 to +15.0 mOhms -----0 Points -----Acceptable
 - o +15.1 to +50.0 mOhms -----0 Points -----Marginal
 - o +50.1 to +2000 mOhms -----0 Points -----Unstable
 - o >+2000 mOhms -----0 Points -----Open Failure
- **After thermal shock**
 - o <= +5.0 mOhms -----192 Points -----Stable
 - o +5.1 to +10.0 mOhms -----0 Points -----Minor
 - o +10.1 to +15.0 mOhms -----0 Points -----Acceptable
 - o +15.1 to +50.0 mOhms -----0 Points -----Marginal
 - o +50.1 to +2000 mOhms -----0 Points -----Unstable
 - o >+2000 mOhms -----0 Points -----Open Failure
- **After humidity**
 - o <= +5.0 mOhms -----192 Points -----Stable
 - o +5.1 to +10.0 mOhms -----0 Points -----Minor
 - o +10.1 to +15.0 mOhms -----0 Points -----Acceptable
 - o +15.1 to +50.0 mOhms -----0 Points -----Marginal
 - o +50.1 to +2000 mOhms -----0 Points -----Unstable
 - o >+2000 mOhms -----0 Points -----Open Failure

LLCR Thermal Aging (192 pin LLCR test points)

- **Initial** -----9.35 mOhms Max
- **Thermal Aging**
 - o <= +5.0 mOhms -----192 Points -----Stable
 - o +5.1 to +10.0 mOhms -----0 Points -----Minor
 - o +10.1 to +15.0 mOhms -----0 Points -----Acceptable
 - o +15.1 to +50.0 mOhms -----0 Points -----Marginal
 - o +50.1 to +2000 mOhms -----0 Points -----Unstable
 - o >+2000 mOhms -----0 Points -----Open Failure

LLCR Gas Tight (192 pin LLCR test points)

- **Initial** -----7.91 mOhms Max
- **Gas-Tight**
 - o <= +5.0 mOhms -----192 Points -----Stable
 - o +5.1 to +10.0 mOhms -----0 Points -----Minor
 - o +10.1 to +15.0 mOhms -----0 Points -----Acceptable
 - o +15.1 to +50.0 mOhms -----0 Points -----Marginal
 - o +50.1 to +2000 mOhms -----0 Points -----Unstable
 - o >+2000 mOhms -----0 Points -----Open Failure

RESULTS Continued**LLCR Shock Vib (192 pin LLCR test points)**

- Initial-----9.17 mOhms Max
- S&V
 - o <= +5.0 mOhms -----192 Points-----Stable
 - o +5.1 to +10.0 mOhms-----0 Points-----Minor
 - o +10.1 to +15.0 mOhms-----0 Points-----Acceptable
 - o +15.1 to +50.0 mOhms-----0 Points-----Marginal
 - o +50.1 to +2000 mOhms-----0 Points-----Unstable
 - o >+2000 mOhms-----0 Points-----Open Failure

Mechanical Shock & Random Vibration:

- o Shock
 - No Damage-----Passed
 - 50 Nanoseconds-----Passed
- o Vibration
 - No Damage-----Passed
 - 50 Nanoseconds-----Passed

Insulation Resistance minimums, IR**Pin-Pin**

- Initial
 - o Mated-----100000Meg Ω -----Pass
 - o Unmated-----100000Meg Ω -----Pass
- Thermal
 - o Mated-----100000Meg Ω -----Pass
 - o Unmated-----100000Meg Ω -----Pass
- Humidity
 - o Mated-----100000Meg Ω -----Pass
 - o Unmated-----100000Meg Ω -----Pass

Row-Row

- Initial
 - o Mated-----100000Meg Ω -----Pass
 - o Unmated-----100000Meg Ω -----Pass
- Thermal
 - o Mated-----100000Meg Ω -----Pass
 - o Unmated-----100000Meg Ω -----Pass
- Humidity
 - o Mated-----100000Meg Ω -----Pass
 - o Unmated-----60000Meg Ω -----Pass

Dielectric Withstanding Voltage minimums, DWV

- Minimums
 - o Breakdown Voltage-----1400VAC
 - o Test Voltage-----1050VAC
 - o Working Voltage-----350VAC

Pin - pin

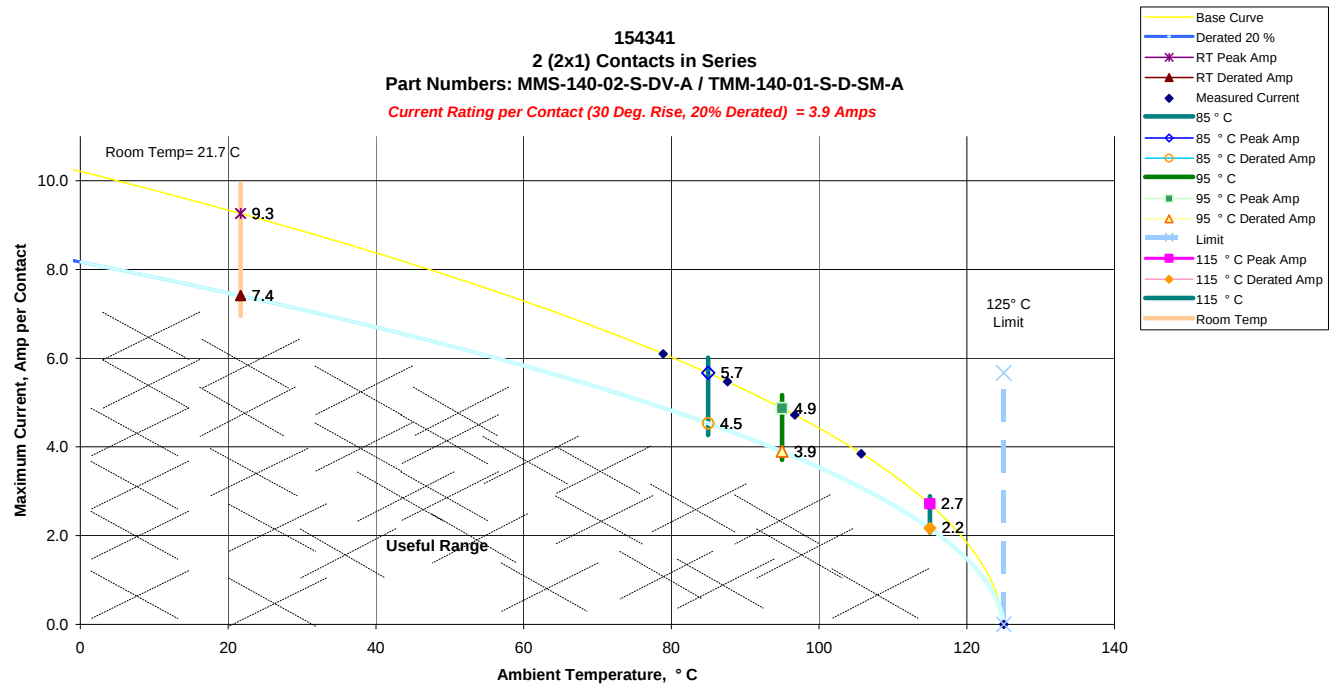
- Initial DWV-----Passed
- Thermal DWV-----Passed
- Humidity DWV-----Passed

Row-Row

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

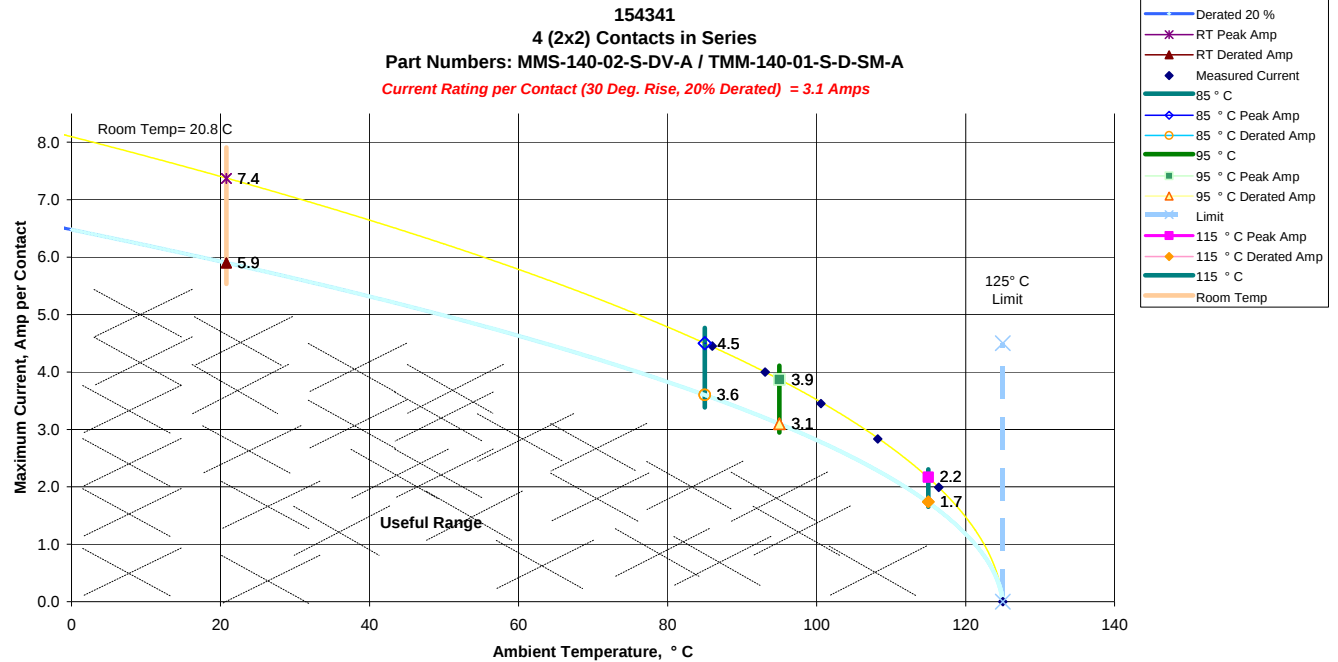
DATA SUMMARIES**TEMPERATURE RISE (Current Carrying Capacity, CCC):**

- 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 conductors/contacts powered

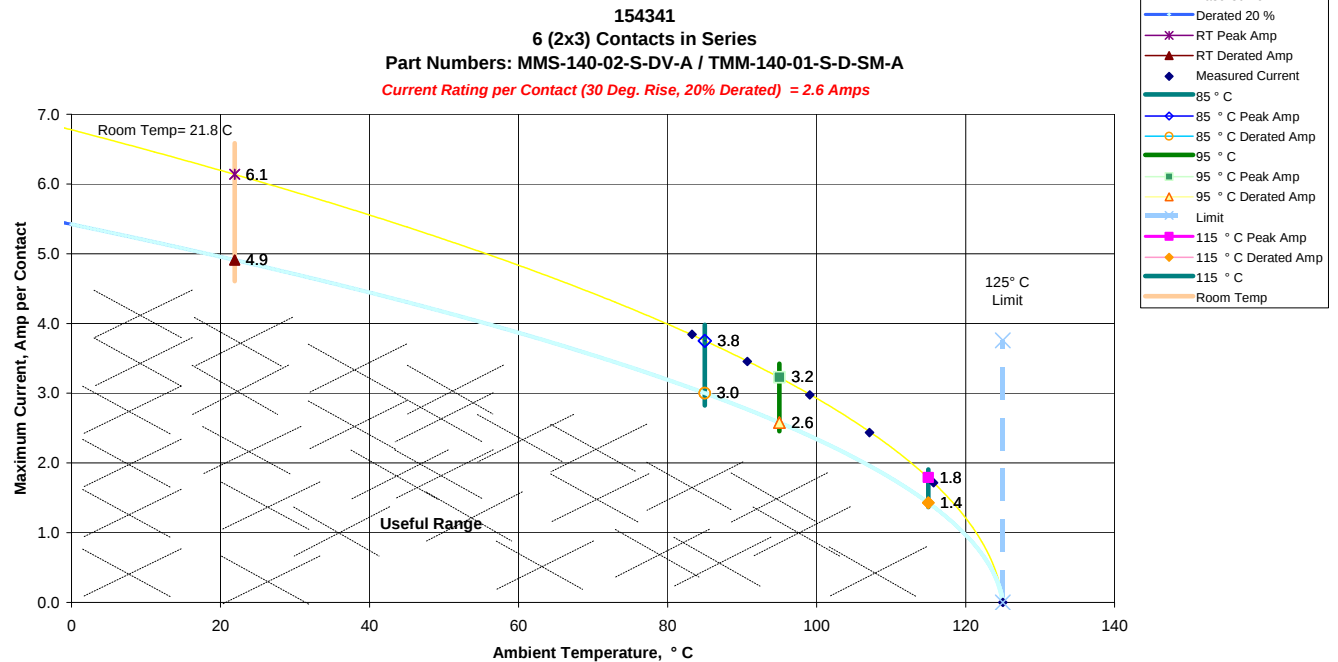


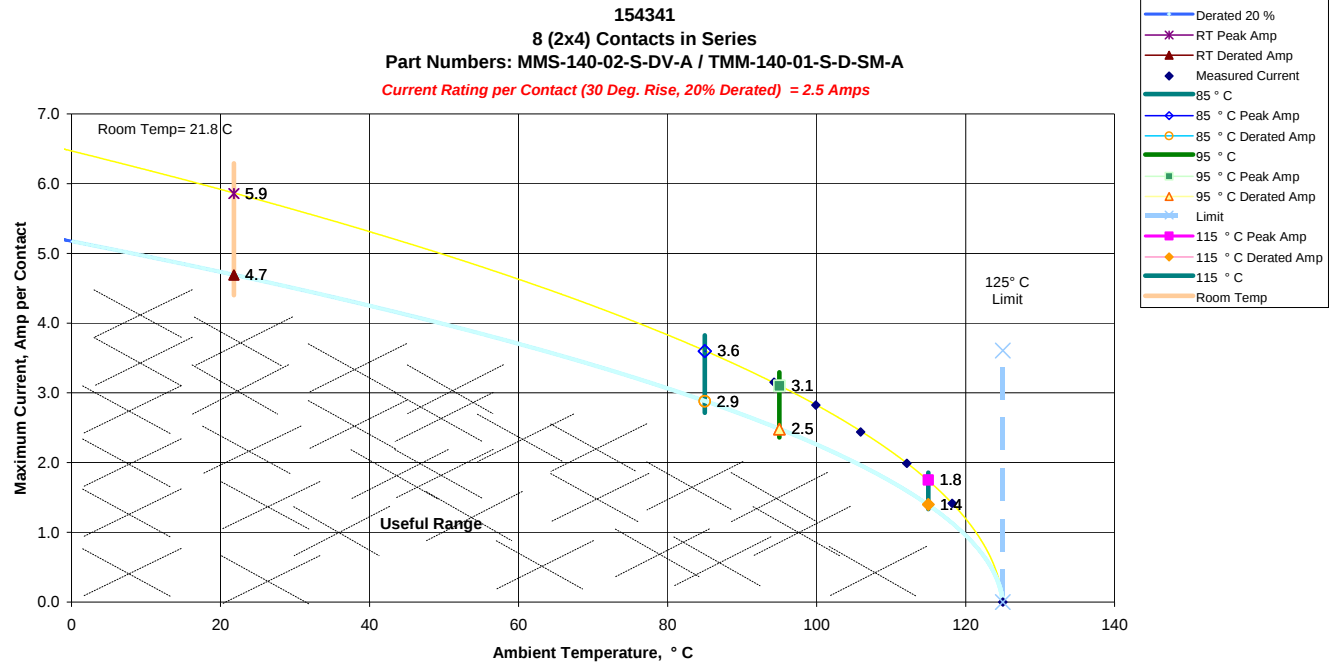
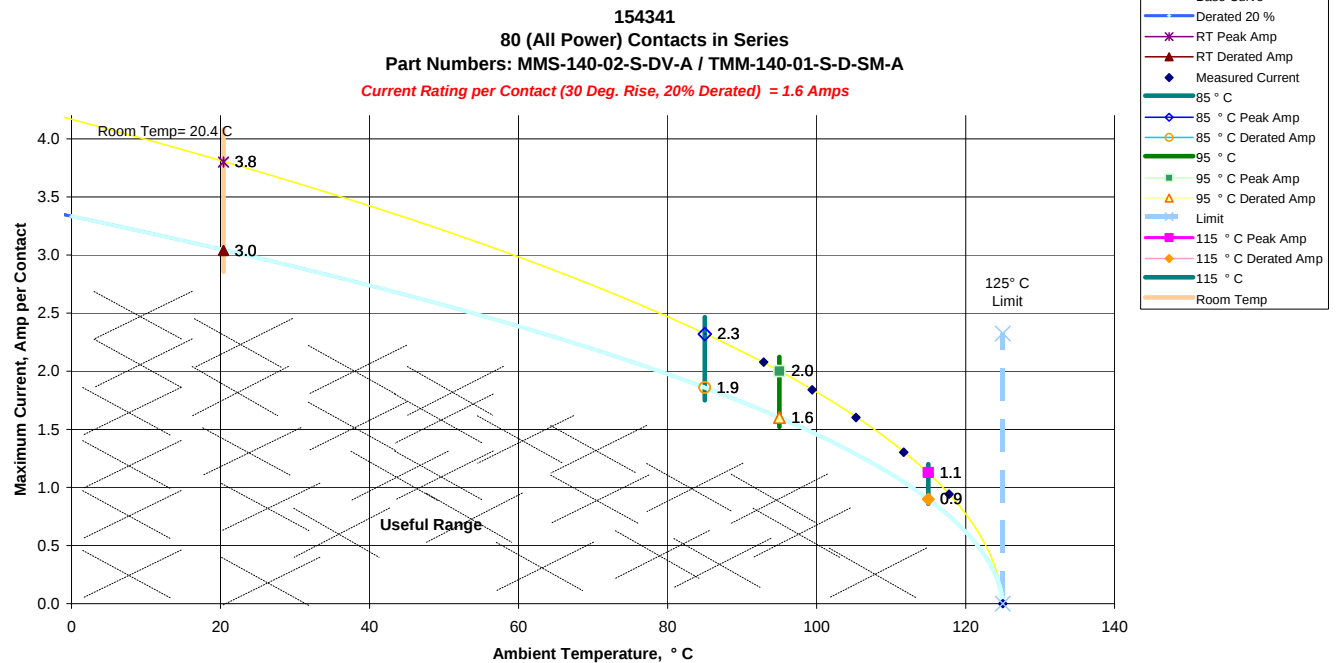
DATA SUMMARIES continued

b. Linear configuration with 4 adjacent conductors/contacts powered



c. Linear configuration with 6 adjacent conductors/contacts powered



DATA SUMMARIES continued**d. Linear configuration with 8 adjacent conductors/contacts powered****e. Linear configuration with all adjacent conductors/contacts powered**

DATA SUMMARIES**CONTACT GAPS:****Durability:**

Initial		After 100 Cycles	
Units:	inch	Units:	inch
<i>Minimum</i>	0.0119	<i>Minimum</i>	0.0119
<i>Maximum</i>	0.0134	<i>Maximum</i>	0.0154
<i>Average</i>	0.0122	<i>Average</i>	0.0129
<i>St. Dev.</i>	0.0005	<i>St. Dev.</i>	0.0006
<i>Count</i>	144	<i>Count</i>	144

Thermal aging:

Initial		After Thermal	
Units:	inch	Units:	inch
<i>Minimum</i>	0.0126	<i>Minimum</i>	0.0133
<i>Maximum</i>	0.0148	<i>Maximum</i>	0.0151
<i>Average</i>	0.0139	<i>Average</i>	0.0144
<i>St. Dev.</i>	0.0004	<i>St. Dev.</i>	0.0004
<i>Count</i>	144	<i>Count</i>	144

Normal force initial:

Initial	
Units:	inch
<i>Minimum</i>	0.0132
<i>Maximum</i>	0.0140
<i>Average</i>	0.0135
<i>St. Dev.</i>	0.0002
<i>Count</i>	18

Normal force after thermal:

Initial		After Thermal	
Units:	inch	Units:	inch
<i>Minimum</i>	0.0136	<i>Minimum</i>	0.0136
<i>Maximum</i>	0.0144	<i>Maximum</i>	0.0149
<i>Average</i>	0.0137	<i>Average</i>	0.0142
<i>St. Dev.</i>	0.0005	<i>St. Dev.</i>	0.0004
<i>Count</i>	36	<i>Count</i>	36

DATA SUMMARIES Continued**MATING/UNMATING FORCE:****Mating/Unmating durability (MMS-140-02-S-DV-A/TMM-140-01-S-D-SM-A):**

	Initial				25 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	56.80	12.77	37.23	8.37	70.68	15.89	49.55	11.14
Maximum	66.85	15.03	45.99	10.34	93.05	20.92	62.45	14.04
Average	61.85	13.91	42.29	9.51	81.48	18.32	57.08	12.83
St Dev	4.04	0.91	3.19	0.72	9.59	2.16	5.13	1.15
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	70.01	15.74	55.33	12.44	71.12	15.99	59.96	13.48
Maximum	96.03	21.59	70.68	15.89	101.15	22.74	75.22	16.91
Average	83.48	18.77	64.18	14.43	86.29	19.40	68.72	15.45
St Dev	10.18	2.29	6.03	1.35	11.44	2.57	6.01	1.35
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	72.72	16.35	64.10	14.41	56.09	12.61	41.46	9.32
Maximum	106.00	23.83	78.55	17.66	67.97	15.28	44.97	10.11
Average	89.55	20.13	72.15	16.22	62.58	14.07	43.58	9.80
St Dev	12.30	2.77	5.62	1.26	4.25	0.96	1.16	0.26
Count	8	8	8	8	8	8	8	8

DATA SUMMARIES Continued**Mating/Unmating Basic (MMS-125-02-S-DV-A/ TMM-125-01-S-D-SM-A):**

	Initial				25 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	35.50	7.98	31.89	7.17	44.39	9.98	30.69	6.90
Maximum	48.35	10.87	34.43	7.74	49.60	11.15	36.78	8.27
Average	41.23	9.27	32.73	7.36	46.94	10.55	33.74	7.59
St Dev	3.88	0.87	0.80	0.18	1.92	0.43	2.01	0.45
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	43.95	9.88	33.49	7.53	45.28	10.18	37.41	8.41
Maximum	48.93	11.00	39.19	8.81	51.60	11.60	42.17	9.48
Average	46.51	10.46	37.05	8.33	47.90	10.77	39.75	8.94
St Dev	1.71	0.38	1.92	0.43	2.01	0.45	1.82	0.41
Count	8	8	8	8	8	8	8	8
	100 Cycles							
	Mating		Unmating					
	Newtons	Force (Lbs)	Newtons	Force (Lbs)				
Minimum	45.55	10.24	38.83	8.73				
Maximum	53.11	11.94	43.95	9.88				
Average	48.99	11.01	41.68	9.37				
St Dev	2.43	0.55	1.90	0.43				
Count	8	8	8	8				

DATA SUMMARIES Continued**Mating/Unmating Basic (MMS-105-02-S-DV-A/ TMM-105-01-S-D-SM-A)**

	Initial				25 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	7.92	1.78	5.96	1.34	8.81	1.98	5.78	1.30
Maximum	10.19	2.29	7.12	1.60	10.14	2.28	7.12	1.60
Average	9.17	2.06	6.44	1.45	9.49	2.13	6.48	1.46
St Dev	0.78	0.18	0.35	0.08	0.42	0.09	0.42	0.09
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	8.50	1.91	6.45	1.45	8.36	1.88	7.12	1.60
Maximum	10.05	2.26	7.70	1.73	10.19	2.29	8.36	1.88
Average	9.19	2.07	7.18	1.62	9.31	2.09	7.73	1.74
St Dev	0.54	0.12	0.46	0.10	0.64	0.14	0.50	0.11
Count	8	8	8	8	8	8	8	8
	100 Cycles							
	Mating		Unmating					
	Newtons	Force (Lbs)	Newtons	Force (Lbs)				
Minimum	8.50	1.91	7.56	1.70				
Maximum	10.41	2.34	8.90	2.00				
Average	9.50	2.14	8.19	1.84				
St Dev	0.73	0.16	0.44	0.10				
Count	8	8	8	8				

Thermal aging:

	Initial				After Thermals			
	Mating		Unmating		Mating		Unmating	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	36.38	8.18	26.42	5.94	37.19	8.36	32.07	7.21
Maximum	40.12	9.02	33.89	7.62	44.39	9.98	38.96	8.76
Average	38.10	8.57	30.02	6.75	41.04	9.23	34.56	7.77
St Dev	1.27	0.29	2.72	0.61	2.54	0.57	2.05	0.46
Count	8	8	8	8	8	8	8	8

DATA SUMMARIES Continued**NORMAL FORCE**

Initial	Deflections in inches Forces in Grams										
	<u>0.0005</u>	<u>0.0009</u>	<u>0.0014</u>	<u>0.0018</u>	<u>0.0023</u>	<u>0.0027</u>	<u>0.0032</u>	<u>0.0036</u>	<u>0.0041</u>	<u>0.0045</u>	<i>SET</i>
Averages	9.88	19.34	28.53	37.74	46.54	55.26	63.73	71.81	79.97	87.73	0.0003
Min	8.40	17.40	26.20	35.10	43.60	52.50	60.60	67.40	74.00	80.20	0.0001
Max	13.30	23.10	33.00	42.30	51.20	60.00	68.50	77.20	85.20	94.00	0.0005
St. Dev	1.418	1.630	2.025	2.208	2.373	2.602	2.740	3.216	3.606	4.380	0.0001
Count	12	12	12	12	12	12	12	12	12	12	12

After Thermals	Deflections in inches Forces in Grams										
	<u>0.0004</u>	<u>0.0008</u>	<u>0.0012</u>	<u>0.0016</u>	<u>0.0020</u>	<u>0.0024</u>	<u>0.0028</u>	<u>0.0032</u>	<u>0.0036</u>	<u>0.0040</u>	<i>SET</i>
Averages	8.31	16.69	24.55	32.38	39.77	46.93	53.83	60.78	67.16	73.71	0.0005
Min	6.20	14.70	21.00	28.00	34.10	40.00	45.90	52.00	57.00	63.00	0.0002
Max	9.30	17.80	27.00	35.70	44.10	52.30	60.00	67.30	74.40	81.40	0.0008
St. Dev	0.830	0.976	1.770	2.331	3.028	3.620	4.240	4.655	5.184	5.610	0.0002
Count	12	12	12	12	12	12	12	12	12	12	12

INSULATION RESISTANCE (IR):

	Pin to Pin		
	Mated	Unmated	Unmated
Minimum	MMS/TMM	MMS	TMM
Initial	100000	100000	100000
Thermal	100000	100000	100000
Humidity	100000	100000	100000

	Row to Row		
	Mated	Unmated	Unmated
Minimum	MMS/TMM	MMS	TMM
Initial	100000	100000	100000
Thermal	100000	100000	100000
Humidity	100000	60000	100000

DATA SUMMARIES Continued**DIELECTRIC WITHSTANDING VOLTAGE (DWV):**

Voltage Rating Summary	
Minimum	MMS/TMM
Break Down Voltage	1400
Test Voltage	1050
Working Voltage	350

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

S&V Event Detection

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

DATA SUMMARIES Continued**LLCR Durability- 100 cycles**

- 1) A total of 192 points were measured.
- 2) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
- 3) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
- 4) The following guidelines are used to categorize the changes in LLCR as a result from stressing.
 - a. $\leq +5.0$ mOhms: ----- Stable
 - b. $+5.1$ to $+10.0$ mOhms: ----- Minor
 - c. $+10.1$ to $+15.0$ mOhms: ----- Acceptable
 - d. $+15.1$ to $+50.0$ mOhms: ----- Marginal
 - e. $+50.1$ to $+2000$ mOhms ----- Unstable
 - f. $>+2000$ mOhms: ----- Open Failure

LLCR Measurement Summaries by Pin Type				
Date	10/10/2011	10/18/2011	10/25/2011	11/4/2011
Room Temp (Deg C)	23	22	22	22
Rel Humidity (%)	38	38	33	34
Technician	Tony Wagoner	Tony Wagoner	Troy Cook	Tony Wagoner
mOhm values	Actual Initial	Delta 100 Cycles	Delta Therm Shck	Delta Humidity
Pin Type 1: Signal				
Average	6.32	0.46	0.77	0.78
St. Dev.	0.60	0.46	0.45	0.48
Min	4.40	0.00	0.01	0.00
Max	8.00	3.25	2.34	2.64
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	$>5 \text{ \& } \leq 10$	$>10 \text{ \& } \leq 15$	$>15 \text{ \& } \leq 50$	$>50 \text{ \& } \leq 1000$	>1000
100 Cycles	192	0	0	0	0	0
Therm Shck	192	0	0	0	0	0
Humidity	192	0	0	0	0	0

DATA SUMMARIES Continued**LLCR Durability- 250 cycles**

- 1) A total of 192 points were measured.
- 2) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
- 3) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
- 4) The following guidelines are used to categorize the changes in LLCR as a result from stressing.
 - a. $\leq +5.0$ mOhms: ----- Stable
 - b. $+5.1$ to $+10.0$ mOhms: ----- Minor
 - c. $+10.1$ to $+15.0$ mOhms: ----- Acceptable
 - d. $+15.1$ to $+50.0$ mOhms: ----- Marginal
 - e. $+50.1$ to $+2000$ mOhms ----- Unstable
 - f. $>+2000$ mOhms: ----- Open Failure

LLCR Measurement Summaries by Pin Type				
Date	10/6/2011	10/11/2011	10/24/2011	11/4/2011
Room Temp (Deg C)	22	22	22	22
Rel Humidity (%)	41	37	33	34
Technician	Tony Wagoner	Tony Wagoner	Aaron McKim	Tony Wagoner
mOhm values	Actual Initial	Delta 250 Cycles	Delta Therm Shck	Delta Humidity
Pin Type 1: Signal				
Average	6.43	0.73	0.98	0.98
St. Dev.	0.72	0.60	0.65	0.67
Min	4.91	0.00	0.01	0.05
Max	9.00	2.85	3.49	3.50
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	$>5 \text{ \& } \leq 10$	$>10 \text{ \& } \leq 15$	$>15 \text{ \& } \leq 50$	$>50 \text{ \& } \leq 1000$	>1000
250 Cycles	192	0	0	0	0	0
Therm Shck	192	0	0	0	0	0
Humidity	192	0	0	0	0	0

DATA SUMMARIES Continued**LLCR Durability- 500 cycles**

- 1) A total of 192 points were measured.
- 2) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
- 3) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
- 4) The following guidelines are used to categorize the changes in LLCR as a result from stressing.
 - a. $\leq +5.0$ mOhms: ----- Stable
 - b. $+5.1$ to $+10.0$ mOhms: ----- Minor
 - c. $+10.1$ to $+15.0$ mOhms: ----- Acceptable
 - d. $+15.1$ to $+50.0$ mOhms: ----- Marginal
 - e. $+50.1$ to $+2000$ mOhms ----- Unstable
 - f. $>+2000$ mOhms: ----- Open Failure

LLCR Measurement Summaries by Pin Type				
Date	10/10/2011	10/14/2011	10/24/2011	11/4/2011
Room Temp (Deg C)	23	22	22	22
Rel Humidity (%)	38	37	33	34
Technician	Tony Wagoner	Aaron McKim	Aaron McKim	Tony Wagoner
mOhm values	Actual Initial	Delta 500 Cycles	Delta Therm Shck	Delta Humidity
Pin Type 1: Signal				
Average	5.93	0.43	0.60	0.51
St. Dev.	0.44	0.36	0.41	0.38
Min	4.36	0.01	0.00	0.01
Max	7.60	2.02	2.46	1.90
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	$>5 \text{ \& } \leq 10$	$>10 \text{ \& } \leq 15$	$>15 \text{ \& } \leq 50$	$>50 \text{ \& } \leq 1000$	>1000
500 Cycles	192	0	0	0	0	0
Therm Shck	192	0	0	0	0	0
Humidity	192	0	0	0	0	0

DATA SUMMARIES Continued**LLCR thermal aging**

- 1) A total of 192 points were measured
- 2) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
- 3) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
- 4) The following guidelines are used to categorize the changes in LLCR as a result from stressing.
 - a. $\leq +5.0$ mOhms: ----- Stable
 - b. $+5.1$ to $+10.0$ mOhms: ----- Minor
 - c. $+10.1$ to $+15.0$ mOhms: ----- Acceptable
 - d. $+15.1$ to $+50.0$ mOhms: ----- Marginal
 - e. $+50.1$ to $+2000$ mOhms ----- Unstable
 - f. $>+2000$ mOhms:----- Open Failure

LLCR Measurement Summaries by Pin Type		
Date	9/2/2011	9/13/2011
Room Temp (Deg C)	23	21
Rel Humidity (%)	49	45
Technician	Tony Wagoner	Tony Wagoner
mOhm values	Actual	Delta
	Initial	Thermal
Pin Type 1: Signal		
Average	6.42	0.33
St. Dev.	0.63	0.34
Min	5.08	0.00
Max	9.35	2.64
Summary Count	192	192
Total Count	192	192

LLCR Delta Count by Category						
	Stable	Minor	Acceptable	Marginal	Unstable	Open
mOhms	≤ 5	$>5 \text{ \& } \leq 10$	$>10 \text{ \& } \leq 15$	$>15 \text{ \& } \leq 50$	$>50 \text{ \& } \leq 1000$	>1000
After Thermal	192	0	0	0	0	0

DATA SUMMARIES Continued**LLCR GAS TIGHT:**

- 1) A total of 192 points were measured
- 2) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
- 3) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
- 4) The following guidelines are used to categorize the changes in LLCR as a result from stressing.
 - a. $\leq +5.0$ mOhms: ----- Stable
 - b. $+5.1$ to $+10.0$ mOhms: ----- Minor
 - c. $+10.1$ to $+15.0$ mOhms: ----- Acceptable
 - d. $+15.1$ to $+50.0$ mOhms: ----- Marginal
 - e. $+50.1$ to $+2000$ mOhms: ----- Unstable
 - f. $>+2000$ mOhms: ----- Open Failure

LLCR Measurement Summaries by Pin Type		
Date	8/31/2011	8/31/2011
Room Temp (Deg C)	22	23
Rel Humidity (%)	47	47
Technician	Tony Wagoner	Tony Wagoner
mOhm values	Actual	Delta
	Initial	Acid Vapor
Pin Type 1: Signal		
Average	6.32	0.11
St. Dev.	0.44	0.06
Min	5.33	0.00
Max	7.91	0.35
Summary Count	192	192
Total Count	192	192

LLCR Delta Count by Category						
	Stable	Minor	Acceptable	Marginal	Unstable	Open
mOhms	≤ 5	$>5 \text{ \& } \leq 10$	$>10 \text{ \& } \leq 15$	$>15 \text{ \& } \leq 50$	$>50 \text{ \& } \leq 1000$	>1000
Acid Vapor	192	0	0	0	0	0

DATA SUMMARIES Continued**LLCR S&V:**

- 1) A total of 192 points were measured
- 2) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
- 3) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
- 4) The following guidelines are used to categorize the changes in LLCR as a result from stressing.
 - a. $\leq +5.0$ mOhms: ----- Stable
 - b. $+5.1$ to $+10.0$ mOhms: ----- Minor
 - c. $+10.1$ to $+15.0$ mOhms: ----- Acceptable
 - d. $+15.1$ to $+50.0$ mOhms: ----- Marginal
 - e. $+50.1$ to $+2000$ mOhms: ----- Unstable
 - f. $>+2000$ mOhms: ----- Open Failure

LLCR Measurement Summaries by Pin Type		
Date	9/16/2011	9/20/2011
Room Temp (Deg C)	22	22
Rel Humidity (%)	32	48
Technician	Tony Wagoner	Tony Wagoner
mOhm values	Actual Initial	Delta Shock-Vib
Pin Type 1: Signal		
Average	6.54	0.48
St. Dev.	0.63	0.39
Min	5.07	0.00
Max	9.17	2.24
Summary Count	192	192
Total Count	192	192

LLCR Delta Count by Category						
	Stable	Minor	Acceptable	Marginal	Unstable	Open
mOhms	≤ 5	$>5 \text{ \& } \leq 10$	$>10 \text{ \& } \leq 15$	$>15 \text{ \& } \leq 50$	$>50 \text{ \& } \leq 1000$	>1000
Shock-Vib	192	0	0	0	0	0

DATA**CONTACT GAPS****Durability:**

Initial								
Units: in								
Gap #	011	012	013	014	015	016	017	018
1	0.0116	0.0115	0.0111	0.0115	0.0123	0.0106	0.0126	0.0123
2	0.0121	0.0121	0.0121	0.0121	0.0116	0.0122	0.0120	0.0124
3	0.0121	0.0118	0.0121	0.0116	0.0129	0.0118	0.0119	0.0127
4	0.0117	0.0115	0.0122	0.0123	0.0126	0.0120	0.0130	0.0117
5	0.0126	0.0125	0.0125	0.0115	0.0124	0.0116	0.0116	0.0119
6	0.0118	0.0116	0.0133	0.0117	0.0125	0.0133	0.0127	0.0114
7	0.0111	0.0126	0.0134	0.0118	0.0117	0.0128	0.0124	0.0127
8	0.0117	0.0119	0.0130	0.0133	0.0117	0.0125	0.0119	0.0122
9	0.0124	0.0124	0.0123	0.0130	0.0130	0.0112	0.0130	0.0130
10	0.0123	0.0127	0.0128	0.0125	0.0117	0.0121	0.0122	0.0124
11	0.0125	0.0130	0.0126	0.0118	0.0132	0.0118	0.0120	0.0132
12	0.0121	0.0119	0.0118	0.0130	0.0127	0.0121	0.0132	0.0122
13	0.0122	0.0122	0.0120	0.0132	0.0124	0.0116	0.0128	0.0119
14	0.0122	0.0125	0.0122	0.0124	0.0128	0.0110	0.0118	0.0130
15	0.0121	0.0126	0.0126	0.0123	0.0123	0.0121	0.0122	0.0117
16	0.0117	0.0117	0.0128	0.0117	0.0126	0.0127	0.0119	0.0116
17	0.0115	0.0122	0.0127	0.0133	0.0121	0.0121	0.0122	0.0119
18	0.0117	0.0122	0.0125	0.0120	0.0113	0.0122	0.0120	0.0127
After 100 cycles								
Units: in								
Gap #	011	012	013	014	015	016	017	018
1	0.0124	0.0122	0.0123	0.0149	0.0130	0.0121	0.0139	0.0132
2	0.0129	0.0131	0.0129	0.0154	0.0123	0.0130	0.0129	0.0130
3	0.0129	0.0124	0.0132	0.0139	0.0132	0.0124	0.0123	0.0134
4	0.0124	0.0121	0.0130	0.0141	0.0127	0.0126	0.0133	0.0119
5	0.0131	0.0133	0.0133	0.0129	0.0135	0.0125	0.0127	0.0126
6	0.0122	0.0124	0.0136	0.0137	0.0128	0.0131	0.0130	0.0125
7	0.0120	0.0129	0.0135	0.0122	0.0124	0.0134	0.0128	0.0129
8	0.0122	0.0126	0.0134	0.0143	0.0122	0.0134	0.0130	0.0128
9	0.0129	0.0125	0.0130	0.0137	0.0135	0.0121	0.0131	0.0130
10	0.0127	0.0124	0.0126	0.0130	0.0124	0.0125	0.0122	0.0131
11	0.0130	0.0136	0.0131	0.0125	0.0136	0.0125	0.0132	0.0134
12	0.0124	0.0123	0.0123	0.0128	0.0134	0.0126	0.0136	0.0130
13	0.0129	0.0122	0.0122	0.0135	0.0129	0.0125	0.0129	0.0125
14	0.0132	0.0137	0.0128	0.0128	0.0133	0.0125	0.0127	0.0131
15	0.0138	0.0135	0.0130	0.0130	0.0126	0.0129	0.0122	0.0124
16	0.0129	0.0128	0.0131	0.0125	0.0134	0.0131	0.0124	0.0120
17	0.0139	0.0129	0.0134	0.0138	0.0129	0.0135	0.0127	0.0141
18	0.0127	0.0128	0.0134	0.0138	0.0125	0.0128	0.0125	0.0148

DATA Continued**Thermal aging:**

Initial								
Units: in								
Gap #	011	012	013	014	015	016	017	018
1	0.0143	0.0137	0.0141	0.0139	0.0141	0.0133	0.0130	0.0141
2	0.0143	0.0134	0.0136	0.0143	0.0144	0.0141	0.0135	0.0136
3	0.0141	0.0133	0.0139	0.0139	0.0147	0.0133	0.0130	0.0144
4	0.0148	0.0133	0.0139	0.0140	0.0147	0.0135	0.0139	0.0140
5	0.0141	0.0136	0.0140	0.0139	0.0144	0.0143	0.0134	0.0139
6	0.0146	0.0132	0.0139	0.0140	0.0137	0.0139	0.0138	0.0142
7	0.0146	0.0135	0.0136	0.0136	0.0143	0.0143	0.0137	0.0139
8	0.0141	0.0135	0.0142	0.0128	0.0142	0.0140	0.0139	0.0143
9	0.0142	0.0138	0.0141	0.0139	0.0140	0.0137	0.0137	0.0134
10	0.0143	0.0138	0.0137	0.0143	0.0133	0.0143	0.0134	0.0138
11	0.0147	0.0136	0.0139	0.0137	0.0142	0.0140	0.0136	0.0144
12	0.0143	0.0136	0.0136	0.0140	0.0143	0.0135	0.0136	0.0141
13	0.0143	0.0134	0.0137	0.0137	0.0143	0.0143	0.0136	0.0139
14	0.0139	0.0132	0.0140	0.0137	0.0143	0.0143	0.0140	0.0147
15	0.0145	0.0134	0.0141	0.0140	0.0141	0.0142	0.0133	0.0133
16	0.0139	0.0130	0.0136	0.0141	0.0134	0.0142	0.0126	0.0139
17	0.0142	0.0131	0.0137	0.0134	0.0140	0.0137	0.0136	0.0147
18	0.0143	0.0130	0.0138	0.0138	0.0136	0.0137	0.0136	0.0141
After thermal								
Units: in								
Gap #	011	012	013	014	015	016	017	018
1	0.0149	0.0146	0.0146	0.0146	0.0149	0.0137	0.0141	0.0141
2	0.0147	0.0140	0.0147	0.0150	0.0150	0.0148	0.0136	0.0142
3	0.0143	0.0147	0.0145	0.0142	0.0144	0.0143	0.0143	0.0151
4	0.0150	0.0144	0.0150	0.0142	0.0149	0.0143	0.0146	0.0148
5	0.0146	0.0148	0.0147	0.0140	0.0142	0.0142	0.0135	0.0140
6	0.0149	0.0141	0.0151	0.0144	0.0143	0.0146	0.0143	0.0150
7	0.0147	0.0144	0.0142	0.0142	0.0144	0.0143	0.0146	0.0147
8	0.0143	0.0144	0.0149	0.0133	0.0144	0.0143	0.0139	0.0149
9	0.0142	0.0146	0.0147	0.0141	0.0138	0.0137	0.0135	0.0135
10	0.0145	0.0144	0.0143	0.0146	0.0143	0.0148	0.0141	0.0141
11	0.0148	0.0143	0.0144	0.0144	0.0144	0.0140	0.0139	0.0144
12	0.0144	0.0144	0.0144	0.0142	0.0144	0.0139	0.0140	0.0142
13	0.0147	0.0144	0.0146	0.0143	0.0148	0.0146	0.0144	0.0146
14	0.0146	0.0145	0.0150	0.0139	0.0146	0.0141	0.0140	0.0148
15	0.0144	0.0143	0.0146	0.0147	0.0140	0.0142	0.0141	0.0139
16	0.0140	0.0141	0.0144	0.0151	0.0147	0.0145	0.0133	0.0142
17	0.0146	0.0144	0.0148	0.0139	0.0143	0.0142	0.0139	0.0142
18	0.0146	0.0142	0.0144	0.0143	0.0145	0.0143	0.0139	0.0148

DATA continued**Normal force initial:**

Initial	
Units: inch	
Pos.#	B1
1	0.0135
2	0.0134
3	0.0139
4	0.0138
5	0.0140
6	0.0135
7	0.0133
8	0.0135
9	0.0137
10	0.0136
11	0.0135
12	0.0133
13	0.0137
14	0.0135
15	0.0132
16	0.0133
17	0.0133
18	0.0133

DATA continued**Normal force thermal aging:**

Initial		After thermal
Units: inch		
Pos.#	B1	B1
1	0.0132	0.0143
2	0.0139	0.0148
3	0.0142	0.0149
4	0.0135	0.0145
5	0.0135	0.0146
6	0.0136	0.0147
7	0.0138	0.0141
8	0.0141	0.0146
9	0.0139	0.0141
10	0.0136	0.0140
11	0.0138	0.0143
12	0.0133	0.0138
13	0.0130	0.0141
14	0.0133	0.0144
15	0.0125	0.0136
16	0.0125	0.0136
17	0.0133	0.0145
18	0.0125	0.0136
19	0.0137	0.0142
20	0.0142	0.0141
21	0.0144	0.0145
22	0.0139	0.0144
23	0.0135	0.0137
24	0.0137	0.0139
25	0.0138	0.0139
26	0.0141	0.0141
27	0.0139	0.0138
28	0.0141	0.0141
29	0.0142	0.0145
30	0.0142	0.0143
31	0.0142	0.0143
32	0.0143	0.0146
33	0.0143	0.0144
34	0.0137	0.0144
35	0.0136	0.0140
36	0.0133	0.0136

DATA continued**MATING/UNMATING FORCE****Mating/Unmating durability: (SMS-150-01-L-D/TMS-150-01-L-D)**

Sample#	Initial		After 25 Cycles		After 50 Cycles		After 75 Cycles		After 100 Cycles		After Humidity	
	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating
1	15.03	10.22	20.92	14.04	21.59	15.89	22.74	16.91	23.83	17.66	14.57	9.72
2	14.47	10.07	20.75	13.77	21.13	15.70	22.08	16.55	22.88	17.19	15.28	9.71
3	14.36	10.34	19.58	13.83	20.47	15.55	20.99	16.67	21.74	17.40	15.12	10.08
4	13.37	9.74	15.89	11.45	15.74	12.44	15.99	13.48	16.35	14.41	13.61	9.32
5	12.82	8.37	16.92	11.14	16.87	12.86	17.04	13.87	17.67	14.87	14.27	9.87
6	12.77	8.71	15.99	11.96	16.67	13.50	17.27	14.42	17.78	15.26	12.61	9.95
7	14.93	9.23	19.82	13.48	20.07	15.17	20.89	16.16	21.77	17.04	14.12	10.11
8	13.49	9.39	16.67	13.00	17.61	14.32	18.19	15.54	19.05	15.94	12.98	9.63

Mating/Unmating Basic (MMS-125-02-S-DV-A/ TMM-125-01-S-D-SM-A):

Sample#	Initial		25 Cycles		50 Cycles		75 Cycles		100 Cycles	
	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating
1	9.02	7.45	10.43	7.61	10.41	8.46	10.78	9.10	11.23	9.43
2	8.80	7.20	9.98	7.41	9.88	8.26	10.18	8.59	10.24	8.99
3	7.98	7.74	10.09	8.27	10.21	8.81	10.45	9.48	10.60	9.87
4	9.09	7.29	10.79	7.91	10.71	8.65	11.02	9.40	11.25	9.88
5	10.03	7.33	11.15	7.92	11.00	8.74	11.60	9.16	11.94	9.68
6	8.88	7.39	10.56	7.09	10.47	7.98	10.80	8.51	11.06	9.03
7	9.48	7.17	10.33	6.90	10.12	7.53	10.34	8.41	10.49	8.73
8	10.87	7.30	11.09	7.58	10.86	8.21	10.99	8.84	11.30	9.36

Mating/Unmating Basic (MMS-105-02-S-DV-A/ TMM-105-01-S-D-SM-A):

Sample#	Initial		25 Cycles		50 Cycles		75 Cycles		100 Cycles	
	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating
1	1.88	1.46	2.13	1.48	2.07	1.62	2.16	1.78	2.22	1.90
2	2.27	1.41	2.16	1.52	2.19	1.69	2.23	1.67	2.30	1.86
3	1.78	1.34	2.18	1.30	1.91	1.45	1.88	1.60	1.91	1.70
4	2.02	1.41	2.18	1.39	2.07	1.51	1.99	1.61	1.98	1.72
5	2.10	1.42	2.02	1.39	1.96	1.54	1.98	1.68	2.01	1.81
6	2.04	1.43	2.13	1.50	2.11	1.73	2.19	1.88	2.26	2.00
7	2.29	1.60	2.28	1.60	2.26	1.71	2.29	1.87	2.34	1.91
8	2.12	1.51	1.98	1.48	1.95	1.67	2.02	1.82	2.07	1.83

DATA Continued**Thermal aging:**

<u>Sample#</u>	Initial		After Thermals	
	<u>Mating</u>	<u>Unmating</u>	<u>Mating</u>	<u>Unmating</u>
1	8.53	6.01	9.23	7.40
2	8.57	7.01	9.98	7.76
3	8.47	6.66	9.32	7.79
4	8.22	6.95	9.87	8.76
5	8.74	7.62	9.38	7.82
6	9.02	7.40	8.51	7.56
7	8.80	6.40	9.16	7.85
8	8.18	5.94	8.36	7.21

NORMAL FORCE

Initial	Deflections in inches, Forces in Grams										
<u>Sample #</u>	<u>0.0005</u>	<u>0.0009</u>	<u>0.0014</u>	<u>0.0018</u>	<u>0.0023</u>	<u>0.0027</u>	<u>0.0032</u>	<u>0.0036</u>	<u>0.0041</u>	<u>0.0045</u>	<u>SET</u>
1	12.1	21.9	31.6	42.3	51.2	60.0	67.9	74.7	83.0	92.2	0.0002
2	9.6	19.0	28.5	38.0	47.1	55.9	64.5	73.5	82.0	89.9	0.0002
3	9.5	19.2	28.9	37.8	47.3	56.4	65.1	74.3	82.6	91.0	0.0002
4	8.4	17.4	26.3	35.2	43.6	52.5	60.6	68.8	77.8	85.4	0.0002
5	9.2	18.5	27.0	36.1	44.2	52.6	60.8	67.4	74.6	80.2	0.0004
6	9.8	19.7	28.7	38.0	46.6	55.7	65.1	73.1	81.8	88.3	0.0002
7	9.8	19.2	28.3	38.7	47.3	56.7	65.1	74.7	83.4	91.6	0.0001
8	9.9	19.4	28.9	38.2	47.0	54.4	61.4	67.7	74.0	80.8	0.0005
9	8.8	18.3	27.0	35.8	44.0	52.6	61.6	69.7	78.1	86.0	0.0003
10	9.2	18.4	28.0	36.7	45.7	54.4	63.1	71.5	79.9	88.4	0.0002
11	13.3	23.1	33.0	41.0	50.1	59.4	68.5	77.2	85.2	94.0	0.0004
12	8.9	18.0	26.2	35.1	44.4	52.5	61.0	69.1	77.2	85.0	0.0004

After Thermals	Deflections in inches, Forces in Grams										
<u>Sample #</u>	<u>0.0004</u>	<u>0.0008</u>	<u>0.0012</u>	<u>0.0016</u>	<u>0.0020</u>	<u>0.0024</u>	<u>0.0028</u>	<u>0.0032</u>	<u>0.0036</u>	<u>0.0040</u>	<u>SET</u>
1	8.5	16.5	24.7	33.0	40.5	47.4	54.4	60.5	67.0	72.3	0.0003
2	8.4	16.8	24.6	32.5	40.8	48.5	56.3	64.1	71.9	79.4	0.0002
3	7.7	15.9	24.2	31.8	39.2	46.7	53.7	60.5	67.0	73.3	0.0003
4	7.9	14.7	21.0	28.2	34.4	40.6	46.2	52.3	58.4	64.7	0.0007
5	8.9	15.8	21.8	28.0	34.1	40.0	45.9	52.0	57.0	63.0	0.0007
6	9.3	17.6	25.5	33.5	41.1	48.7	55.7	62.4	68.8	75.4	0.0006
7	6.2	15.9	23.7	31.6	38.4	45.6	52.3	59.5	65.6	71.8	0.0008
8	8.6	17.0	25.1	32.7	39.5	45.7	52.0	59.2	65.0	71.1	0.0006
9	8.1	16.8	24.4	33.0	40.4	48.4	55.8	64.0	71.3	78.8	0.0003
10	8.6	17.8	27.0	35.2	43.3	50.4	57.5	64.2	70.2	76.9	0.0004
11	8.2	17.7	26.5	35.7	44.1	52.3	60.0	67.3	74.4	81.4	0.0003
12	9.3	17.8	26.1	33.4	41.4	48.9	56.2	63.4	69.3	76.4	0.0003

DATA continued**INSULATION RESISTANCE (IR):**

Initial Insulation Resistance			
Measured In Meg Ohms			
Pin to Pin			
Mated		A	Unmated B
X		X	X
Sample#	MMS/TMM	MMS	TMM
154341-031	100000	100000	100000
154341-032	100000	100000	100000

Row to Row			
Mated		A	Unmated B
X		X	X
Sample#	MMS/TMM	MMS	TMM
154341-037	100000	100000	100000
154341-038	100000	100000	100000

Thermal Insulation Resistance			
Measured In Meg Ohms			
Pin to Pin			
Mated		A	Unmated B
X		X	X
Sample#	MMS/TMM	MMS	TMM
154341-031	100000	100000	100000
154341-032	100000	100000	100000

Row to Row			
Mated		A	Unmated B
X		X	X
Sample#	MMS/TMM	MMS	TMM
154341-037	100000	100000	100000
154341-038	100000	100000	100000

DATA continued**Humidity Insulation Resistance****Measured In Meg Ohms**

Pin to Pin			
Mated		A	Unmated B
X		X	X
Sample#	MMS/TMM	MMS	TMM
154341-031	100000	100000	100000
154341-032	100000	100000	100000

Row to Row			
Mated		A	Unmated B
X		X	X
Sample#	MMS/TMM	MMS	TMM
154341-037	100000	60000	100000
154341-038	100000	100000	100000

DIELECTRIC WITHSTANDING VOLTAGE (DWV):**Initial Breakdown Voltage****Test Voltage *Until Breakdown Occurs***

Pin to Pin			
Mated		A	Unmated B
X		X	X
Sample#	MMS/TMM	MMS	TMM
154341-027	1700	1500	1600
154341-028	1600	1500	1700

Row to Row			
Mated		A	Unmated B
X		X	X
Sample#	MMS/TMM	MMS	TMM
154341-033	1400	1700	1800
154341-034	1700	1800	1800

DATA continued

Initial DWV	
Test Voltage=	1050

Pin to Pin			
	Mated	A	Unmated B
Sample#	MMS/TMM	MMS	TMM
154341-031	1050	1050	1050
154341-032	1050	1050	1050

Row to Row			
	Mated	A	Unmated B
Sample#	MMS/TMM	MMS	TMM
154341-037	1050	1050	1050
154341-038	1050	1050	1050

Thermal Test Voltage	
Test Voltage=	1050

Pin to Pin			
	Mated	A	Unmated B
Sample#	MMS/TMM	MMS	TMM
154341-031	1050	1050	1050
154341-032	1050	1050	1050

Row to Row			
	Mated	A	Unmated B
Sample#	MMS/TMM	MMS	TMM
154341-037	1050	1050	1050
154341-038	1050	1050	1050

DATA continued

Humidity Test Voltage	
Test Voltage=	1050

Pin to Pin			
	Mated	A	Unmated B
Sample#	MMS/TMM	MMS	TMM
154341-031	1050	1050	1050
154341-032	1050	1050	1050

Row to Row			
	Mated	A	Unmated B
Sample#	MMS/TMM	MMS	TMM
154341-037	1050	1050	1050
154341-038	1050	1050	1050

DATA Continued**LLCR Durability-100 cycles:**

	mOhm values	Actual	Delta	Delta	Delta
Board	Position	Initial	100 Cycles	Thermal	Humidity
1	P1	6.95	0.88	1.56	1.57
1	P2	6.17	0.38	1.12	1.11
1	P3	6.15	0.33	0.8	0.77
1	P4	6.22	0.3	0.65	0.79
1	P5	6.07	0.38	0.75	0.91
1	P6	4.74	0.55	0.52	0.4
1	P7	5.65	0.7	0.61	0.89
1	P8	5.67	0.79	0.11	0.35
1	P9	6.6	0.47	1.15	1.29
1	P10	6.23	0.45	0.98	1.03
1	P11	6.05	0.27	0.91	0.76
1	P12	6.23	0.27	0.83	0.8
1	P13	6.41	0.14	0.81	0.67
1	P14	5.82	0.29	0.45	0.51
1	P15	5.77	0.06	0.36	0.35
1	P16	5.57	0.01	0.41	0.43
1	P17	5.74	0.02	0.3	0.34
1	P18	5.78	0.03	0.25	0.3
1	P19	5.32	0.17	0.3	0.31
1	P20	4.4	0.13	0.03	0.33
1	P21	5.53	0.53	0.07	0.24
1	P22	5.71	0.12	0.47	0.55
1	P23	5.93	0.5	0.74	0.66
1	P24	6.01	0.04	0.62	0.6
2	P1	6.13	0.34	0.75	0.35
2	P2	5.88	0.61	0.45	0.41
2	P3	6.38	0.48	0.86	0.73
2	P4	5.89	0.03	0.04	0.1
2	P5	5.86	0.22	0.09	0.06
2	P6	5.05	0.45	0.49	0.78
2	P7	5.27	0.4	0.55	0.41
2	P8	6.21	0.34	0.55	0.37
2	P9	5.98	0.15	0.35	0
2	P10	5.89	0.09	0.52	0.14
2	P11	6.13	0.1	0.89	0.4
2	P12	6.3	0.23	0.96	0.62
2	P13	6.04	0.38	0.78	0.65
2	P14	6.01	0.39	0.82	0.74
2	P15	6.77	0.54	1.42	1.3
2	P16	6.15	0.08	0.82	0.75
2	P17	5.94	0.13	0.53	0.49
2	P18	6.14	0.01	0.52	0.46
2	P19	5.22	0.06	0.19	0.18
2	P20	5.52	0.32	0.22	0.32
2	P21	6.25	0.92	0.47	0.41

2	P22	6.11	0.15	0.64	0.48
2	P23	6.16	0.27	0.71	0.6
2	P24	6.19	0.27	0.74	0.73
3	P1	6.59	0.16	0.53	0.52
3	P2	6.8	0.56	0.92	0.87
3	P3	6.77	0.56	0.75	0.68
3	P4	6.93	0.46	0.75	0.77
3	P5	6.11	0.03	0.01	0.07
3	P6	5.2	0.21	0.1	0.21
3	P7	5.61	0.44	0.39	0.43
3	P8	6.15	0.1	0.21	0.33
3	P9	6.46	0.48	0.66	0.69
3	P10	6.64	0.52	0.85	0.8
3	P11	7.02	0.61	1.06	1.03
3	P12	6.92	0.21	0.95	0.95
3	P13	6.51	0.26	0.64	0.62
3	P14	7.14	0.18	0.92	0.92
3	P15	6.42	0.03	0.47	0.39
3	P16	6.62	0.18	0.68	0.65
3	P17	6.37	0.06	0.46	0.44
3	P18	6.83	0.03	0.48	0.45
3	P19	5.58	0.09	0.02	0.06
3	P20	5.18	0.13	0.18	0.38
3	P21	6.46	0.11	0.44	0.49
3	P22	6.87	0.07	0.72	0.59
3	P23	6.29	0.04	0.57	0.57
3	P24	6.64	0.03	0.65	0.72
4	P1	7.16	0.59	1.56	1.42
4	P2	6.97	0.43	1.39	1.27
4	P3	6.31	0.23	0.41	0.35
4	P4	7.02	0.59	0.9	0.89
4	P5	6.45	0.35	0.65	0.72
4	P6	6.08	0.18	0.31	0.25
4	P7	5.27	0.56	0.68	1.31
4	P8	6.71	0.08	0.64	0.73
4	P9	7.52	0.04	1.4	1.46
4	P10	7	0.38	1.13	1.18
4	P11	6.84	0.7	1.03	0.92
4	P12	7.45	0.19	1.58	1.67
4	P13	6.92	0.74	1.29	1.37
4	P14	6.93	0.6	1.2	1.1
4	P15	7.15	0.1	1.25	1.3
4	P16	7.27	0.78	1.45	1.42
4	P17	6.6	0.19	0.72	0.73
4	P18	6.58	0.58	0.72	0.67
4	P19	4.8	0.3	0.24	0.61
4	P20	5.3	0.44	0.24	0.16
4	P21	6.04	1.86	0.24	0.41
4	P22	6.2	0.53	0.6	0.61
4	P23	6.45	0.42	0.83	0.79

4	P24	6.48	0.19	0.87	0.9
5	P1	6.93	0.62	1.29	1.28
5	P2	7.29	1.55	1.92	1.84
5	P3	7.6	0.47	1.84	1.81
5	P4	6.1	0.45	0.34	0.4
5	P5	6.04	0.09	0.26	0.32
5	P6	6.4	0.82	0.68	0.98
5	P7	5.77	0.05	0.18	0.47
5	P8	6.53	0.04	0.46	0.5
5	P9	7	0.92	0.95	1.04
5	P10	6.46	0.25	0.97	0.89
5	P11	7.9	1.05	2.31	2.41
5	P12	7.13	0.57	1.62	1.61
5	P13	6.05	0.26	0.54	0.55
5	P14	6.62	0.51	1.04	1.11
5	P15	6.12	0.15	0.65	0.65
5	P16	6.81	0.7	1.2	1.26
5	P17	6.65	3.25	0.84	1.07
5	P18	6.1	0.14	0.56	0.6
5	P19	5.48	0.02	0.58	0.5
5	P20	5.64	0.36	0.38	0.33
5	P21	6.03	0.78	0.41	0.44
5	P22	6.15	0.24	0.59	0.61
5	P23	6.48	2.5	0.76	0.85
5	P24	6.99	0.23	1.29	1.36
6	P1	6.87	0.6	1.4	1.41
6	P2	6.01	0.19	0.66	0.65
6	P3	7.13	1.15	1.61	1.69
6	P4	6.69	0.63	1.11	1.05
6	P5	6.25	0.62	0.73	0.72
6	P6	6.08	0.61	1.03	0.87
6	P7	5.8	0.6	0.56	0.68
6	P8	6.15	0.12	0.42	0.47
6	P9	6.15	0.09	0.4	0.59
6	P10	6.17	0.05	0.71	0.67
6	P11	6.21	0.14	0.71	0.61
6	P12	6.22	2.05	0.52	0.51
6	P13	6.08	0.37	0.43	0.5
6	P14	6.2	0.01	0.48	0.47
6	P15	6.37	0.2	0.7	0.65
6	P16	6.37	0.56	0.77	0.57
6	P17	6.01	0.03	0.58	0.54
6	P18	6.1	0.08	0.46	0.5
6	P19	5.67	0.13	0.49	0.53
6	P20	4.94	0.1	0.08	0.17
6	P21	6.91	0.49	1.03	1.12
6	P22	6.02	0.11	0.56	0.56
6	P23	6.21	0.31	0.81	0.92
6	P24	5.96	0.11	0.64	0.63
7	P1	6.2	0.32	0.52	0.52

7	P2	6.37	0.21	0.66	0.64
7	P3	6.17	0.14	0.57	0.55
7	P4	5.89	0	0.31	0.23
7	P5	6.9	0.82	1.1	1.3
7	P6	5.4	0.15	0.24	0.18
7	P7	5.81	0.38	0.38	0.22
7	P8	7	1	1.26	2.64
7	P9	5.88	0.21	0.5	0.38
7	P10	5.91	0.18	0.36	0.28
7	P11	5.97	0.81	0.25	0.24
7	P12	5.97	0.15	0.25	0.16
7	P13	6.26	0.36	0.64	0.64
7	P14	6.44	0.3	0.76	0.82
7	P15	6.19	0.06	0.27	0.39
7	P16	6.31	0.17	0.43	0.4
7	P17	6.5	0.26	0.74	0.68
7	P18	6.91	0.38	0.79	0.85
7	P19	5.76	0.48	0.43	0.33
7	P20	7.23	2.05	2.12	2.12
7	P21	6.52	0.45	0.99	1.03
7	P22	6.48	0.02	0.94	0.98
7	P23	7.8	1.06	2.08	2.23
7	P24	8	1.01	1.12	1.9
8	P1	6.8	0.15	1.13	1.17
8	P2	7.91	1.86	2.33	2.34
8	P3	6.66	0.4	0.56	0.67
8	P4	6.2	0.5	0.4	0.4
8	P5	6.47	0.42	0.51	0.67
8	P6	6.32	0.91	0.72	0.92
8	P7	6.91	1.01	1.02	0.13
8	P8	6.63	0.64	0.59	0.65
8	P9	6.69	0.78	0.95	0.93
8	P10	7.06	0.84	1.42	1.27
8	P11	7.56	1.19	1.83	1.81
8	P12	6.63	0.32	1.02	0.9
8	P13	6.43	0.38	0.74	0.81
8	P14	6.63	0.81	0.9	0.82
8	P15	6.34	0.06	0.24	0.49
8	P16	6.59	0.02	1.02	0.93
8	P17	6.18	0.41	0.59	0.58
8	P18	6.06	0.04	0.38	0.41
8	P19	6.22	0.08	0.49	0.58
8	P20	5.77	0.08	0.05	0.86
8	P21	6.76	0.67	0.83	0.81
8	P22	6.32	0.48	0.66	0.56
8	P23	7.86	1.86	2.34	2.4
8	P24	6.56	0.51	0.9	0.87

DATA Continued**LLCR Durability-250 cycles:**

	mOhm values	Actual	Delta	Delta	Delta
Board	Position	Initial	250 Cycles	Thermal	Humidity
1	P1	5.64	0.39	0.59	0.54
1	P2	5.64	0.25	0.42	0.48
1	P3	5.98	0.61	0.73	0.61
1	P4	5.77	0.18	0.25	0.18
1	P5	5.89	0.34	0.39	0.05
1	P6	5.73	0.6	0.62	0.2
1	P7	5.6	0.34	0.28	0.05
1	P8	6.26	0.39	0.52	0.46
1	P9	6.24	0.42	0.61	0.61
1	P10	6.24	0.29	0.65	0.67
1	P11	6.43	0.85	0.91	0.94
1	P12	6.23	0.32	0.67	0.83
1	P13	6.08	0.05	0.37	0.28
1	P14	6.05	0.21	0.52	0.4
1	P15	6.04	0.29	0.48	0.41
1	P16	5.78	0.09	0.29	0.18
1	P17	5.73	0.23	0.35	0.19
1	P18	5.89	0.21	0.34	0.37
1	P19	5.32	0.09	0.27	0.22
1	P20	5.22	0.07	0.21	0.15
1	P21	5.89	0.55	0.58	0.63
1	P22	5.73	0.22	0.51	0.31
1	P23	5.57	0.1	0.38	0.27
1	P24	5.71	0.28	0.5	0.45
2	P1	6.08	0.14	0.28	0.38
2	P2	5.92	0.07	0.33	0.32
2	P3	5.91	0.03	0.1	0.11
2	P4	6.04	0	0.17	0.24
2	P5	5.87	0.02	0.14	0.07
2	P6	5.04	0.62	0.5	0.56
2	P7	5.41	0.08	0.22	0.09
2	P8	6.03	0.19	0.48	0.53
2	P9	5.85	0.02	0.17	0.25
2	P10	5.84	0.09	0.44	0.34
2	P11	5.6	0.04	0.17	0.2
2	P12	5.79	0.09	0.08	0.19
2	P13	5.69	0.24	0.42	0.19
2	P14	5.97	0.37	0.6	0.37
2	P15	5.74	0.11	0.45	0.34
2	P16	5.95	0.26	0.54	0.55
2	P17	6.11	0.53	0.71	0.81
2	P18	6.24	0.09	0.61	0.84
2	P19	5.59	0.02	0.01	0.19
2	P20	4.91	0.56	0.86	0.49
2	P21	6.01	0.2	0.45	0.51

2	P22	6.03	0.32	0.4	0.43
2	P23	6.04	0.26	0.51	0.44
2	P24	6.43	0.55	0.72	0.73
3	P1	8.13	2.34	2.73	2.68
3	P2	6	0.3	0.53	0.47
3	P3	8.7	2.67	2.95	2.89
3	P4	6.25	0.58	0.72	0.73
3	P5	6.2	0.44	0.46	0.36
3	P6	5.85	0.89	0.84	0.75
3	P7	7.25	2.18	1.73	1.68
3	P8	6.26	0.24	0.6	0.53
3	P9	8.3	2.59	2.68	2.83
3	P10	6.95	1.07	1.43	1.51
3	P11	6.82	1.19	1.5	1.42
3	P12	7.3	1.5	1.84	1.79
3	P13	6.45	0.71	0.95	0.99
3	P14	7.01	0.75	1.45	1.52
3	P15	6.31	0.43	0.71	0.77
3	P16	6.45	0.67	0.92	1.01
3	P17	6.53	0.61	0.95	0.91
3	P18	7.19	1.3	1.55	1.63
3	P19	6.01	0.78	0.87	0.9
3	P20	5.85	0.56	0.7	0.67
3	P21	6.35	0.29	0.75	0.77
3	P22	6.17	0.52	0.7	0.62
3	P23	6.17	0.49	0.72	0.55
3	P24	6.12	0.41	0.69	0.62
4	P1	6.18	0.21	0.7	0.74
4	P2	6.27	0.23	0.84	0.84
4	P3	6.4	0.84	0.97	0.85
4	P4	6.06	0.41	0.32	0.29
4	P5	5.69	0.33	0.17	0.13
4	P6	5.51	0.4	0.09	0.14
4	P7	7.62	2.7	2.56	2.67
4	P8	5.95	0.19	0.24	0.1
4	P9	6.27	0.23	0.71	0.54
4	P10	6.91	1.11	1.34	1.38
4	P11	6.24	0.32	0.55	0.58
4	P12	7.18	1.13	1.47	1.58
4	P13	6	0.13	0.55	0.55
4	P14	5.99	0.04	0.65	0.58
4	P15	6.7	0.8	1.08	1.13
4	P16	6.8	0.4	1.21	1.3
4	P17	5.96	0.58	0.53	0.53
4	P18	5.98	0.31	0.36	0.31
4	P19	5.23	0.06	0.16	0.24
4	P20	5.53	0.07	0.2	0.12
4	P21	5.7	0.03	0.41	0.41
4	P22	6.14	0.34	0.74	0.69
4	P23	5.82	0.07	0.56	0.53

4	P24	6.5	0.48	0.99	1.04
5	P1	7.09	1.2	1.77	1.89
5	P2	6.11	0.38	0.87	0.91
5	P3	7.04	0.53	1.77	1.54
5	P4	6.67	0.11	0.98	0.87
5	P5	6.65	1.17	1.28	1.15
5	P6	5.72	0.49	0.73	0.62
5	P7	5.49	0.28	0.1	0.31
5	P8	6.87	1.01	1.01	0.97
5	P9	6.47	0.3	0.9	0.67
5	P10	6.06	0.48	0.72	0.66
5	P11	6.58	0.57	1.15	1.08
5	P12	6.3	0.5	0.69	0.8
5	P13	7.31	1.38	2	1.91
5	P14	7.23	1.13	1.64	1.53
5	P15	7.43	1.46	1.79	1.63
5	P16	6.99	0.94	1.5	1.39
5	P17	6.09	0.42	0.63	0.69
5	P18	6.02	0.45	0.53	0.62
5	P19	5.72	0.51	0.52	0.52
5	P20	5.3	0.3	0.13	0.4
5	P21	6.77	1.26	1.35	1.47
5	P22	6.52	0.93	1.35	1.42
5	P23	6.33	0.73	1.19	1.13
5	P24	7.39	1.43	2.18	2.19
6	P1	6.28	0.38	1	1
6	P2	8.3	2.27	2.86	2.89
6	P3	6.63	0.84	1.11	1.23
6	P4	6.54	0.76	0.73	0.84
6	P5	7.08	1.23	1.48	1.28
6	P6	5.58	0.58	0.56	0.58
6	P7	5.21	0.87	0.66	0.54
6	P8	8.1	1.85	2.51	3
6	P9	7.77	1.92	2.35	2.29
6	P10	6.66	1.12	1.28	1.36
6	P11	6.78	1.31	1.57	1.48
6	P12	6.24	0.47	0.84	0.94
6	P13	6.85	1.12	1.55	1.5
6	P14	6.57	0.85	1.1	0.97
6	P15	6.92	1.47	1.66	1.49
6	P16	6.5	0.93	1.13	1
6	P17	6.4	0.67	0.95	0.73
6	P18	6.49	0.12	0.9	0.82
6	P19	5.39	0.89	0.8	0.8
6	P20	6.05	0.9	1.24	1.16
6	P21	7.19	1.39	1.86	1.88
6	P22	6.4	0.91	1.29	1.19
6	P23	6.35	0.67	0.99	0.98
6	P24	6.66	0.68	1.13	1.2
7	P1	7.49	1.03	1.56	1.61

7	P2	7.11	0.84	1.25	1.24
7	P3	6.72	0.77	1.04	0.97
7	P4	6.92	0.75	0.98	1.01
7	P5	7.15	1.15	1.15	1.19
7	P6	6.09	0.18	0.03	0.23
7	P7	6.06	1.67	1.09	1.02
7	P8	7.81	1.33	1.86	1.82
7	P9	7.22	1.19	1.48	1.52
7	P10	6.19	0.08	0.64	0.69
7	P11	6.08	0.09	0.54	0.51
7	P12	6.2	0.3	0.61	0.65
7	P13	6.81	0.82	1.13	1.14
7	P14	6.69	0.37	0.78	0.82
7	P15	6.62	0.53	0.9	0.9
7	P16	6.43	0.27	0.77	0.8
7	P17	6.32	0.33	0.69	0.68
7	P18	6.67	0.17	0.79	0.83
7	P19	5.3	0.11	0.34	0.2
7	P20	5.53	0.11	0.19	0.21
7	P21	7	1.05	1.15	1.17
7	P22	7.97	1.2	1.85	1.95
7	P23	7.34	1.25	1.66	1.64
7	P24	7.18	0.97	1.29	1.35
8	P1	7.22	1.07	1.78	1.83
8	P2	6.72	0.64	1.08	0.92
8	P3	6.49	0.58	1.19	1.18
8	P4	6.5	0.9	1.2	1.1
8	P5	6.05	0.58	0.65	0.58
8	P6	5.53	0.36	0.52	0.55
8	P7	6.09	0.77	0.92	0.93
8	P8	6.39	0.47	0.62	0.79
8	P9	6.7	0.66	0.95	0.84
8	P10	7.22	1.13	1.54	1.59
8	P11	7.53	1.67	1.95	1.96
8	P12	7.93	1.96	2.27	2.34
8	P13	9	2.85	3.49	3.5
8	P14	6.92	0.93	1.29	1.09
8	P15	6.96	0.57	1.43	1.36
8	P16	6.83	1.02	1.32	1.24
8	P17	7.56	1.56	1.84	1.81
8	P18	7.75	1.51	2.02	1.95
8	P19	7.72	2.4	2.54	2.62
8	P20	7.33	2.61	2.58	2.63
8	P21	6.91	0.88	1.41	1.42
8	P22	7.54	1.39	2.12	2.06
8	P23	6.36	0.54	1	0.97
8	P24	6.95	1.27	1.65	1.62

DATA Continued**LLCR Durability-500 cycles:**

	mOhm values	Actual	Delta	Delta	Delta
Board	Position	Initial	500 Cycles	Thermal	Humidity
1	P1	6.16	0.83	1	0.86
1	P2	6.14	0.63	0.48	0.39
1	P3	6.01	0.35	0.37	0.27
1	P4	6.21	0.07	0.03	0.01
1	P5	6.08	0.1	0.17	0.2
1	P6	5.64	0.35	0.39	0.2
1	P7	5.64	0.17	0.33	0.3
1	P8	6.17	0.38	0.52	0.58
1	P9	5.96	0.03	0.33	0.27
1	P10	6.21	0.15	0.77	0.76
1	P11	6.38	0.48	0.88	0.79
1	P12	6.01	0.45	0.56	0.48
1	P13	6.11	0.06	0.45	0.4
1	P14	6.23	0.22	0.44	0.49
1	P15	5.91	0.07	0.1	0.12
1	P16	5.87	0.16	0.01	0.02
1	P17	6.11	0.11	0.37	0.35
1	P18	6.5	0.41	0.38	0.18
1	P19	5.63	0.07	0.18	0.17
1	P20	5.44	0.1	0.52	0.47
1	P21	5.82	0.13	0.26	0.11
1	P22	5.71	0.18	0.27	0.17
1	P23	5.7	0.46	0.26	0.21
1	P24	6.15	0.39	0.59	0.57
2	P1	7.17	0.94	1.61	1.44
2	P2	6.61	0.76	1.11	0.83
2	P3	5.81	0.21	0.49	0.34
2	P4	5.9	0.07	0.06	0.67
2	P5	5.83	0.29	0.15	0.66
2	P6	5.29	0.15	0.02	0.72
2	P7	5.71	0.12	0.6	0.21
2	P8	6.07	0.37	0.51	0.4
2	P9	6.48	0.34	0.66	0.17
2	P10	6.02	0.57	0.83	0.5
2	P11	6.24	0.56	1.09	0.93
2	P12	6.14	0.69	0.79	0.55
2	P13	5.97	0.39	0.7	0.44
2	P14	5.93	0.58	0.77	0.59
2	P15	5.85	0.48	0.57	0.59
2	P16	5.92	0.42	0.63	0.39
2	P17	5.83	0.44	0.57	0.42
2	P18	5.99	0.1	0.38	0.22
2	P19	5.66	0.23	0.01	0.24
2	P20	5.86	0.63	0.21	0.29
2	P21	7.34	1.59	1.82	1.65

2	P22	5.87	0.29	0.56	0.36
2	P23	5.95	0.45	0.28	0.16
2	P24	5.98	0.11	0.26	0.02
3	P1	7.15	1.29	1.71	1.62
3	P2	6.59	1.09	1.47	1.39
3	P3	6.94	1.15	1.81	1.51
3	P4	7.02	1.15	1.1	0.98
3	P5	7.6	2.02	2.04	1.9
3	P6	6.99	1.76	2.46	1.77
3	P7	6.21	1.07	1.25	1.08
3	P8	6.08	0.64	0.85	0.84
3	P9	6.07	0.48	0.73	0.63
3	P10	6.22	0.49	1.02	1.1
3	P11	6.28	0.59	1.2	1.17
3	P12	6.16	0.87	1.12	1.09
3	P13	6.68	1	1.3	1.2
3	P14	6.81	1.3	1.54	1.41
3	P15	6.12	0.49	0.89	0.77
3	P16	5.96	0.46	0.6	0.55
3	P17	6.07	0.8	0.79	0.61
3	P18	7.03	1.49	1.66	1.44
3	P19	5.7	0.82	0.84	0.64
3	P20	5.69	0.82	0.84	0.71
3	P21	7.32	1.29	1.42	1.38
3	P22	6.05	0.81	0.95	0.86
3	P23	5.83	0.39	0.69	0.59
3	P24	5.75	0.08	0.42	0.39
4	P1	5.91	0.28	0.72	0.64
4	P2	5.74	0.23	0.38	0.42
4	P3	5.89	0.15	0.59	0.56
4	P4	5.83	0.11	0.42	0.35
4	P5	5.57	0.01	0.05	0.01
4	P6	5.19	0.09	0.04	0.09
4	P7	5.9	0.58	0.32	0.35
4	P8	5.68	0.13	0.13	0.15
4	P9	5.73	0.32	0.55	0.5
4	P10	5.61	0.45	0.6	0.58
4	P11	5.64	0.44	0.6	0.53
4	P12	5.65	0.15	0.54	0.49
4	P13	5.63	0.32	0.57	0.39
4	P14	5.88	0.02	0.64	0.37
4	P15	5.86	0.08	0.66	0.47
4	P16	6.01	0.41	0.64	0.54
4	P17	6.16	0.7	0.89	0.82
4	P18	6.47	0.82	1.14	1.1
4	P19	5.85	0.79	0.97	0.57
4	P20	5.47	0.96	0.99	0.54
4	P21	7.41	1.54	1.74	1.7
4	P22	6.03	0.31	0.72	0.62
4	P23	6.08	0.43	0.86	0.86

4	P24	5.7	0.25	0.4	0.39
5	P1	5.98	0.22	0.41	0.11
5	P2	5.9	0.31	0.66	0.39
5	P3	6.29	0.54	0.91	0.56
5	P4	5.86	0.4	0.27	0.04
5	P5	6.14	0.26	0.56	0.27
5	P6	5.53	0.57	0.23	0.08
5	P7	5.8	0.27	0.29	0.2
5	P8	6.17	0.43	0.74	0.52
5	P9	6.5	0.69	1.03	0.81
5	P10	6.12	0.23	0.54	0.24
5	P11	5.9	0.16	0.44	0.21
5	P12	6.1	0.02	0.59	0.1
5	P13	6.07	0.33	0.52	0.22
5	P14	6.07	0.21	0.52	0.22
5	P15	5.9	0.44	0.05	0.51
5	P16	5.98	0.46	0.6	0.33
5	P17	5.7	0.19	0.14	0.21
5	P18	5.79	0.09	0.33	0.12
5	P19	5.54	0.12	0.22	0.11
5	P20	5.54	0.7	0.78	0.35
5	P21	5.75	0.46	0.65	0.24
5	P22	5.75	0.03	0.42	0.13
5	P23	5.63	0.34	0.07	0.04
5	P24	5.62	0.12	0.27	0.05
6	P1	5.98	0.02	0.25	0.25
6	P2	5.89	0.05	0.34	0.29
6	P3	5.95	0.33	0.4	0.32
6	P4	5.97	0.01	0.26	0.18
6	P5	5.74	0.18	0.18	0.01
6	P6	5.36	0.04	0.15	0.09
6	P7	5.44	0.1	0.13	1.11
6	P8	5.95	0.08	0.21	0.05
6	P9	5.96	0.23	0.34	0.29
6	P10	6.01	0.46	0.59	0.58
6	P11	5.73	0.06	0.15	0.18
6	P12	5.97	0.34	0.46	0.43
6	P13	6.02	0.06	0.6	0.5
6	P14	5.88	0.37	0.54	0.43
6	P15	5.69	0.06	0.29	0.13
6	P16	5.71	0.11	0.31	0.27
6	P17	5.71	0.11	0.19	0.12
6	P18	5.98	0.97	0.34	0.08
6	P19	5.29	0.11	0.11	0.54
6	P20	5.47	0.59	0.68	0.41
6	P21	6.65	0.79	0.76	0.54
6	P22	5.89	0.42	0.49	0.36
6	P23	5.89	0.26	0.4	0.16
6	P24	5.99	0.03	0.2	0.13
7	P1	5.53	0.08	0.27	0.17

7	P2	5.69	0.04	0.32	0.25
7	P3	5.59	0.1	0.22	0.09
7	P4	5.81	0.29	0.39	0.4
7	P5	5.64	0.11	0	0.07
7	P6	5.53	0.43	0.56	0.37
7	P7	4.47	1.31	1.12	1.14
7	P8	5.95	0.02	0.21	0.17
7	P9	5.72	0.14	0.17	0.18
7	P10	5.63	0.08	0.23	0.15
7	P11	5.63	0.09	0.14	0.1
7	P12	5.85	0.29	0.47	0.51
7	P13	5.83	0.54	0.43	0.48
7	P14	5.59	0.28	0.42	0.36
7	P15	5.91	0.21	0.52	0.34
7	P16	5.42	0.07	0.3	0.27
7	P17	5.63	0.19	0.34	0.31
7	P18	5.85	0.31	0.6	0.52
7	P19	4.36	0.44	0.2	0.38
7	P20	5.01	0.35	0.49	0.34
7	P21	5.42	0.35	0.43	0.43
7	P22	5.36	0.31	0.46	0.23
7	P23	5.34	0.01	0.24	0.18
7	P24	5.54	0.27	0.45	0.45
8	P1	5.86	0.18	0.5	0.41
8	P2	5.97	0.55	0.92	0.62
8	P3	5.51	0.18	0.42	0.01
8	P4	6.2	0.61	0.8	0.53
8	P5	5.62	0.23	0.07	0.16
8	P6	5.62	0.91	0.95	0.76
8	P7	5.47	0.42	0.48	0.42
8	P8	5.82	0.2	0.29	0.15
8	P9	5.93	0.48	0.66	0.41
8	P10	5.75	0.42	0.59	0.41
8	P11	5.75	0.44	0.57	0.42
8	P12	6.4	0.99	1.02	0.82
8	P13	5.88	0.27	0.35	0.34
8	P14	5.85	0.18	0.12	0.18
8	P15	6.26	0.18	0.42	0.38
8	P16	6.12	0.39	0.39	0.39
8	P17	5.68	0.04	0.01	0.04
8	P18	6.22	0.17	0.43	0.48
8	P19	5.37	0.05	0.13	0.18
8	P20	5.54	0.2	0.62	1.36
8	P21	5.61	0.3	0.29	0.26
8	P22	5.77	0.26	0.57	0.52
8	P23	6.17	0.49	0.91	0.95
8	P24	5.84	0.27	0.61	0.6

DATA Continued**LLCR thermal aging**

	mOhm values	Actual	Delta
Board	Position	Initial	Thermal age
1	P1	7.16	0.28
1	P2	7.05	0.1
1	P3	7.89	0.44
1	P4	7.33	0.25
1	P5	6.64	0.89
1	P6	6.32	0.29
1	P7	6.54	0.12
1	P8	6.71	0.11
1	P9	6.66	0.07
1	P10	7.31	0.27
1	P11	7.88	0.64
1	P12	7.04	0.2
1	P13	6.62	0.17
1	P14	6.32	0.05
1	P15	6.83	0.25
1	P16	6.34	0.12
1	P17	7.3	0.3
1	P18	6.64	0.23
1	P19	5.99	0.09
1	P20	6.13	0.04
1	P21	6.78	0.03
1	P22	6.76	0.06
1	P23	7.24	0.18
1	P24	6.7	0.14
2	P1	7.67	0.71
2	P2	6.93	0.49
2	P3	6.33	0.08
2	P4	6.69	0.19
2	P5	7.28	0.57
2	P6	5.9	0.15
2	P7	6.32	0.37
2	P8	6.47	0.18
2	P9	6.33	0.08
2	P10	6.79	0.61
2	P11	6.5	0.26
2	P12	6.39	0.16
2	P13	6.57	0.21
2	P14	6.68	0.45
2	P15	6.44	0.13
2	P16	6.41	0.27
2	P17	6.48	0.16
2	P18	6.73	0.14
2	P19	5.98	0.25
2	P20	6.16	0.35
2	P21	6.57	0.38

2	P22	7.44	1.02
2	P23	7.06	0.56
2	P24	6.84	0.49
3	P1	6.39	0.08
3	P2	6.46	0.08
3	P3	6.55	0.11
3	P4	6.06	0.04
3	P5	7.05	0.45
3	P6	5.96	0.09
3	P7	6.14	0.06
3	P8	6.37	0.26
3	P9	6.8	0.53
3	P10	5.95	0.38
3	P11	6.11	0.47
3	P12	6.2	0.56
3	P13	6.26	0.03
3	P14	6.33	0.15
3	P15	6.79	0.46
3	P16	6.35	0.12
3	P17	6.18	0.14
3	P18	6.61	0.15
3	P19	6.09	0.25
3	P20	6.36	0.27
3	P21	6.94	0.5
3	P22	6.62	0.19
3	P23	7.08	0.31
3	P24	6.5	0
4	P1	6.23	0.14
4	P2	5.74	0.43
4	P3	6.27	0.06
4	P4	6.06	0.13
4	P5	5.59	0.02
4	P6	5.08	0.29
4	P7	5.82	0.25
4	P8	6.56	0.13
4	P9	6.89	0.32
4	P10	6.04	0.1
4	P11	6.01	0.28
4	P12	6.39	0.09
4	P13	6.02	0.27
4	P14	5.89	0.39
4	P15	5.96	0.05
4	P16	6.01	0.23
4	P17	5.89	0.45
4	P18	6.07	0.09
4	P19	6.24	0.37
4	P20	5.08	0.4
4	P21	6.17	0.24
4	P22	6.2	0.13
4	P23	5.63	0.22

4	P24	6.03	0.02
5	P1	6.94	0.61
5	P2	5.79	0.16
5	P3	6.76	0.66
5	P4	6.9	0.57
5	P5	7.39	0.7
5	P6	5.85	0.22
5	P7	5.2	0.09
5	P8	8.75	2.33
5	P9	7.61	1.11
5	P10	6.09	0.19
5	P11	5.63	0.08
5	P12	6.49	0.13
5	P13	6.54	0.41
5	P14	6.47	0.4
5	P15	6.78	0.4
5	P16	7.09	0.57
5	P17	6.79	0.51
5	P18	9.16	2.64
5	P19	5.2	0.21
5	P20	5.65	0.2
5	P21	6.52	0.39
5	P22	6.12	0.4
5	P23	5.93	0.03
5	P24	5.79	0.05
6	P1	6.23	0.05
6	P2	6.16	0.01
6	P3	6.23	0.08
6	P4	6.48	0.03
6	P5	6.03	0.02
6	P6	5.49	0.15
6	P7	5.81	0.19
6	P8	6.49	0.17
6	P9	6.36	0.36
6	P10	6.58	0.15
6	P11	6.63	0.14
6	P12	5.93	0.09
6	P13	5.91	0.01
6	P14	5.89	0.03
6	P15	6.26	0.16
6	P16	5.8	0.1
6	P17	6.55	0.08
6	P18	6.42	0.16
6	P19	5.13	0.12
6	P20	6.03	0.18
6	P21	6.44	0.08
6	P22	6.13	0.13
6	P23	6.23	0.19
6	P24	6.05	0.06
7	P1	6.38	0.41

7	P2	6.34	0.02
7	P3	6.55	0.45
7	P4	6.37	0.15
7	P5	6.12	0.17
7	P6	5.5	0.19
7	P7	5.71	0.07
7	P8	7.86	1.05
7	P9	9.35	2.37
7	P10	7.1	0.63
7	P11	6.79	0.41
7	P12	6.72	0.34
7	P13	6.15	0.03
7	P14	6.67	0.23
7	P15	6.29	0.35
7	P16	6.26	0.3
7	P17	6.19	0.37
7	P18	6.5	0.25
7	P19	5.64	0.02
7	P20	5.73	0.28
7	P21	6.67	0.61
7	P22	6.15	0.07
7	P23	6.43	0.38
7	P24	6.83	0.54
8	P1	5.77	0.22
8	P2	6.63	0.58
8	P3	6.89	0.48
8	P4	5.32	0.47
8	P5	5.82	0.26
8	P6	5.45	0.4
8	P7	6.13	0.18
8	P8	6.98	0.23
8	P9	7.39	0.72
8	P10	6.49	0.6
8	P11	7.21	0.84
8	P12	5.98	0.15
8	P13	5.75	0.18
8	P14	6.65	0.55
8	P15	6.49	0.12
8	P16	6.35	0.27
8	P17	7.04	0.26
8	P18	7.1	0.05
8	P19	5.56	0.6
8	P20	5.8	0.16
8	P21	6.51	0.29
8	P22	5.94	0.19
8	P23	6.25	0.14
8	P24	5.9	0.13

DATA Continued**LLCR Gas Tight**

	mOhm values	Actual	Delta
Board	Position	Initial	Gas Tight
1	P1	6.42	0.04
1	P2	7.33	0.3
1	P3	5.95	0.11
1	P4	6.9	0.03
1	P5	5.91	0.16
1	P6	5.61	0.27
1	P7	5.52	0.1
1	P8	6.16	0.08
1	P9	6.4	0.01
1	P10	6.41	0.07
1	P11	6.44	0.1
1	P12	6.17	0.06
1	P13	6.8	0.03
1	P14	6.43	0.01
1	P15	6.61	0
1	P16	5.94	0.01
1	P17	6.2	0.04
1	P18	6.65	0.03
1	P19	6.34	0.03
1	P20	5.51	0.02
1	P21	6.9	0.23
1	P22	6.86	0.05
1	P23	7.3	0.05
1	P24	6.61	0.04
2	P1	6.86	0.06
2	P2	7.07	0.04
2	P3	6.85	0.04
2	P4	7.02	0.12
2	P5	6.68	0.07
2	P6	5.87	0.06
2	P7	5.92	0.09
2	P8	6.63	0.01
2	P9	6.62	0.11
2	P10	6.62	0.16
2	P11	6.77	0.09
2	P12	6.83	0.06
2	P13	6.32	0.03
2	P14	6.35	0.07
2	P15	6.32	0
2	P16	6.23	0.04
2	P17	6.56	0.06
2	P18	6.52	0.02
2	P19	5.83	0.19
2	P20	6.5	0.15
2	P21	7.08	0.05

2	P22	7.07	0.05
2	P23	7.62	0.13
2	P24	7.3	0.09
3	P1	6.22	0.1
3	P2	6.18	0.12
3	P3	6.56	0.06
3	P4	6.57	0.03
3	P5	6.17	0.13
3	P6	5.93	0.06
3	P7	5.94	0.1
3	P8	6.8	0.07
3	P9	6.41	0.03
3	P10	6.41	0.06
3	P11	6.32	0.15
3	P12	6.63	0.02
3	P13	5.92	0.04
3	P14	5.93	0.01
3	P15	6.11	0.06
3	P16	5.9	0.1
3	P17	6.16	0
3	P18	6.24	0.1
3	P19	5.64	0.01
3	P20	7.01	0.28
3	P21	6.28	0.07
3	P22	6.66	0.04
3	P23	6.55	0.03
3	P24	6.03	0.35
4	P1	6.05	0.01
4	P2	6.07	0.05
4	P3	6.22	0.06
4	P4	6.16	0.1
4	P5	5.96	0
4	P6	5.95	0.18
4	P7	5.47	0.13
4	P8	6.4	0.04
4	P9	5.89	0.02
4	P10	5.98	0.01
4	P11	6.15	0.01
4	P12	6.16	0.04
4	P13	6.53	0.03
4	P14	6.2	0.04
4	P15	5.81	0.04
4	P16	6.45	0.01
4	P17	5.93	0.01
4	P18	6.51	0
4	P19	5.86	0.19
4	P20	6.13	0.1
4	P21	6.03	0.01
4	P22	6.13	0.07
4	P23	6.09	0.03

4	P24	6.14	0.04
5	P1	6.17	0.08
5	P2	6.14	0.09
5	P3	6.15	0.15
5	P4	6.2	0.08
5	P5	5.87	0.11
5	P6	6.11	0.04
5	P7	5.9	0.08
5	P8	6.66	0.06
5	P9	6.67	0.08
5	P10	6.45	0.17
5	P11	7.14	0.06
5	P12	6.58	0.02
5	P13	6.35	0.11
5	P14	6.05	0.05
5	P15	6.08	0.1
5	P16	6.27	0.03
5	P17	6.19	0.12
5	P18	6.65	0.12
5	P19	5.54	0.1
5	P20	5.73	0.07
5	P21	5.95	0.11
5	P22	5.83	0.08
5	P23	6.37	0.04
5	P24	6.95	0.12
6	P1	6.16	0.18
6	P2	6.01	0.07
6	P3	7.27	0.13
6	P4	6.24	0.1
6	P5	6.11	0.23
6	P6	6.15	0.19
6	P7	6.34	0.04
6	P8	6.2	0.16
6	P9	6.23	0.06
6	P10	6.71	0.06
6	P11	5.94	0.12
6	P12	6.49	0.17
6	P13	6.05	0.11
6	P14	6.15	0.1
6	P15	6.01	0.05
6	P16	6.04	0.05
6	P17	5.88	0.12
6	P18	6.17	0.04
6	P19	5.45	0.1
6	P20	5.83	0.22
6	P21	6.03	0.05
6	P22	5.84	0.08
6	P23	6	0.03
6	P24	6.32	0.11
7	P1	5.66	0.07

7	P2	5.93	0.11
7	P3	6.41	0.09
7	P4	6.49	0.13
7	P5	6.2	0.09
7	P6	7.91	0.14
7	P7	5.89	0.12
7	P8	6.46	0.01
7	P9	6.1	0.02
7	P10	6.02	0.11
7	P11	6.18	0.06
7	P12	6.28	0.02
7	P13	6.39	0.17
7	P14	6.18	0.05
7	P15	5.86	0.02
7	P16	6	0.03
7	P17	5.67	0.03
7	P18	6.73	0.05
7	P19	5.71	0.15
7	P20	5.77	0.12
7	P21	6.27	0.05
7	P22	6.46	0.06
7	P23	6.37	0.05
7	P24	6.7	0.1
8	P1	7.26	0.06
8	P2	6.27	0.09
8	P3	6.81	0.07
8	P4	6.3	0
8	P5	6.58	0.17
8	P6	6.04	0.01
8	P7	5.86	0.01
8	P8	6.24	0.04
8	P9	6.14	0.07
8	P10	6.46	0.03
8	P11	6.09	0
8	P12	6.75	0
8	P13	6.91	0.01
8	P14	6.53	0.01
8	P15	6.33	0.06
8	P16	6.48	0.03
8	P17	6.53	0.05
8	P18	6.5	0.09
8	P19	5.33	0.09
8	P20	5.82	0.22
8	P21	7.3	0.14
8	P22	7.64	0.19
8	P23	6.52	0.1
8	P24	7.02	0.03

Data Continued**LLCR S&V:**

	mOhm values	Actual	Delta
Board	Position	Initial	Shock / Vibe
1	P1	6.79	0.12
1	P2	7.31	0.2
1	P3	9.17	1.37
1	P4	7.83	0.68
1	P5	7.21	0.96
1	P6	5.97	0.47
1	P7	6.14	0.83
1	P8	6.77	0.17
1	P9	6.89	1.05
1	P10	7.67	0.35
1	P11	8.05	0.67
1	P12	7.31	0.36
1	P13	6.68	0.04
1	P14	7.06	0.08
1	P15	6.62	0.02
1	P16	7.36	0.6
1	P17	7.26	0.82
1	P18	7.51	0.89
1	P19	6.53	1.13
1	P20	6.16	0.21
1	P21	7.12	0.6
1	P22	7.25	0.3
1	P23	8.25	0.49
1	P24	7.15	0.06
2	P1	8.71	1.8
2	P2	7.05	0.01
2	P3	6.42	0.1
2	P4	6.57	0.42
2	P5	7.3	1.94
2	P6	5.07	0.32
2	P7	5.45	0.04
2	P8	6.92	0.2
2	P9	6.37	0.09
2	P10	6.06	1.23
2	P11	5.6	1.77
2	P12	5.77	0.74
2	P13	6.3	1.03
2	P14	5.75	0.22
2	P15	6.03	0.34
2	P16	6.74	0.29
2	P17	5.96	0.39
2	P18	6.75	0.34
2	P19	5.64	0.28
2	P20	5.52	0.77
2	P21	6.11	0.19
2	P22	6.16	0.24

2	P23	5.78	0.4
2	P24	6.56	0.31
3	P1	6.2	0
3	P2	6.38	0.03
3	P3	6.16	0.1
3	P4	6.07	0.11
3	P5	6.23	0.17
3	P6	5.89	0.34
3	P7	5.78	0.68
3	P8	6.61	0.03
3	P9	6.06	0.05
3	P10	6.33	0.14
3	P11	6.25	0.12
3	P12	6.5	0.16
3	P13	6.31	0.15
3	P14	5.99	0.13
3	P15	6.09	0.11
3	P16	6.98	0.29
3	P17	6.49	0.09
3	P18	7.23	0.33
3	P19	6.08	0.81
3	P20	6.34	0.75
3	P21	6.51	0.02
3	P22	6.29	0.15
3	P23	6.36	0.07
3	P24	7.12	0.2
4	P1	6.49	0.76
4	P2	6.2	0.26
4	P3	6.51	0.04
4	P4	6.85	0.02
4	P5	6.83	0.4
4	P6	5.1	0.45
4	P7	6.9	1.69
4	P8	7.21	0.68
4	P9	7	0.15
4	P10	6.11	0.87
4	P11	7	0.31
4	P12	6.48	0.75
4	P13	7.3	0.58
4	P14	7.26	0.2
4	P15	6.92	0.14
4	P16	6.82	0.1
4	P17	6.48	0.22
4	P18	6.77	0.09
4	P19	6.14	0.74
4	P20	5.72	0.77
4	P21	7.35	0.33
4	P22	6.67	0.34
4	P23	6.59	0.4
4	P24	6.79	2.24

5	P1	6.19	0.26
5	P2	6.28	0.37
5	P3	6.99	0.15
5	P4	8.43	0.19
5	P5	7.04	0.69
5	P6	5.79	0.13
5	P7	5.78	0.23
5	P8	6.95	0.69
5	P9	7.69	1.05
5	P10	6.99	0.58
5	P11	6.46	0
5	P12	6.33	0.38
5	P13	6.42	0.59
5	P14	6.51	0.54
5	P15	6.73	0.42
5	P16	6.96	0.3
5	P17	6.64	0.41
5	P18	6.29	0.32
5	P19	5.18	0.05
5	P20	5.93	0.54
5	P21	6.87	0.34
5	P22	6.19	0.12
5	P23	6.76	0.3
5	P24	6.12	0.04
6	P1	6.21	0.13
6	P2	6.62	0.04
6	P3	6.74	0.62
6	P4	6.34	0.37
6	P5	6.09	0.04
6	P6	5.81	0.71
6	P7	5.94	0.98
6	P8	6.25	0.45
6	P9	6.93	0.96
6	P10	8.08	0.79
6	P11	6.08	0.14
6	P12	6.39	0.26
6	P13	5.88	0.04
6	P14	6.16	0.13
6	P15	8.42	1.08
6	P16	6.55	0.32
6	P17	6.77	0.56
6	P18	6.33	0.18
6	P19	6.17	1.01
6	P20	6.44	0.83
6	P21	7.25	0.67
6	P22	6.48	0.15
6	P23	6.57	0.14
6	P24	7.1	0.18
7	P1	7.32	0.21
7	P2	6.44	0.08

7	P3	6.23	0
7	P4	6.39	0.37
7	P5	5.88	0.26
7	P6	5.26	0.27
7	P7	6.04	0.55
7	P8	6.99	0.88
7	P9	7.19	1.03
7	P10	6.17	0.17
7	P11	6.36	0.3
7	P12	6.76	0.19
7	P13	5.91	0.45
7	P14	6.53	0.1
7	P15	6.72	0.87
7	P16	6.2	0.61
7	P17	6.54	0.64
7	P18	6.96	1.09
7	P19	5.89	0.89
7	P20	5.65	0.45
7	P21	6.38	0.46
7	P22	6.46	0.05
7	P23	6.06	0.36
7	P24	6.24	0.67
8	P1	6.41	0.32
8	P2	6.41	0.03
8	P3	6.45	0.43
8	P4	6.8	0.79
8	P5	6.06	0.35
8	P6	5.55	0.49
8	P7	5.87	0.75
8	P8	6.32	0.53
8	P9	6.5	0.5
8	P10	6.24	0.28
8	P11	6.35	0.24
8	P12	6.1	0.25
8	P13	6.17	0.2
8	P14	7.16	0.21
8	P15	6.43	0.26
8	P16	6.3	0.37
8	P17	7.26	1.13
8	P18	6.7	0.62
8	P19	6.26	1.01
8	P20	6.91	1.36
8	P21	6.57	0.61
8	P22	6.74	0.35
8	P23	5.91	0.07
8	P24	5.9	0.08

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: 2010-12-14, Next Cal: 2011-12-13**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 #:** 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