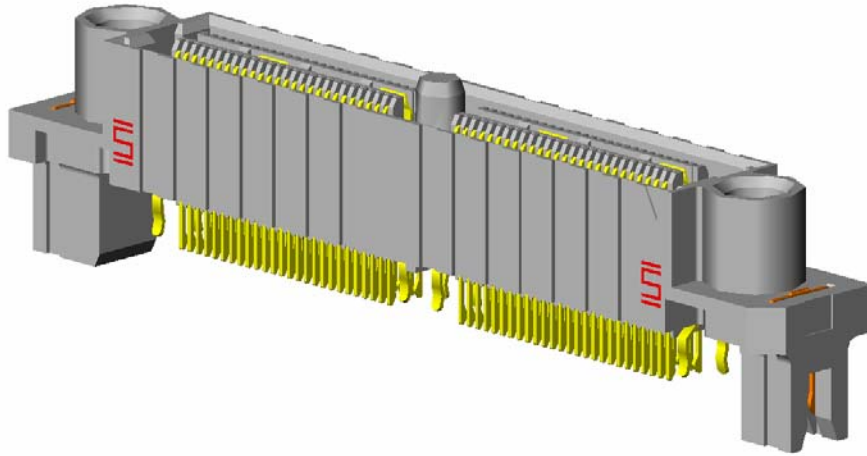




Project Number:		Tracking Code: TC0717--1340	
Requested by: Kevin Meredith		Date: 4/24/2007	Product Rev: 1
Part #: QFS-052-01-SL-D-EM2		Lot #: na	Tech: Tony Wagoner/Tori Meek
Eng: Troy Cook			
Part description: QFS-EM			Qty to test: 45
Test Start: 04/30/2007		Test Completed: 6/27/2007	



QFS-EM2 DVT REPORT

QFS-052-01-SL-D-EM2 (10 u" Gold – SL Finish) mated with QMS-052-11-X-D

QFS-052-01-S-D-EM2 (30 u" Gold – S Finish) mated with QMS-052-11-X-D

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

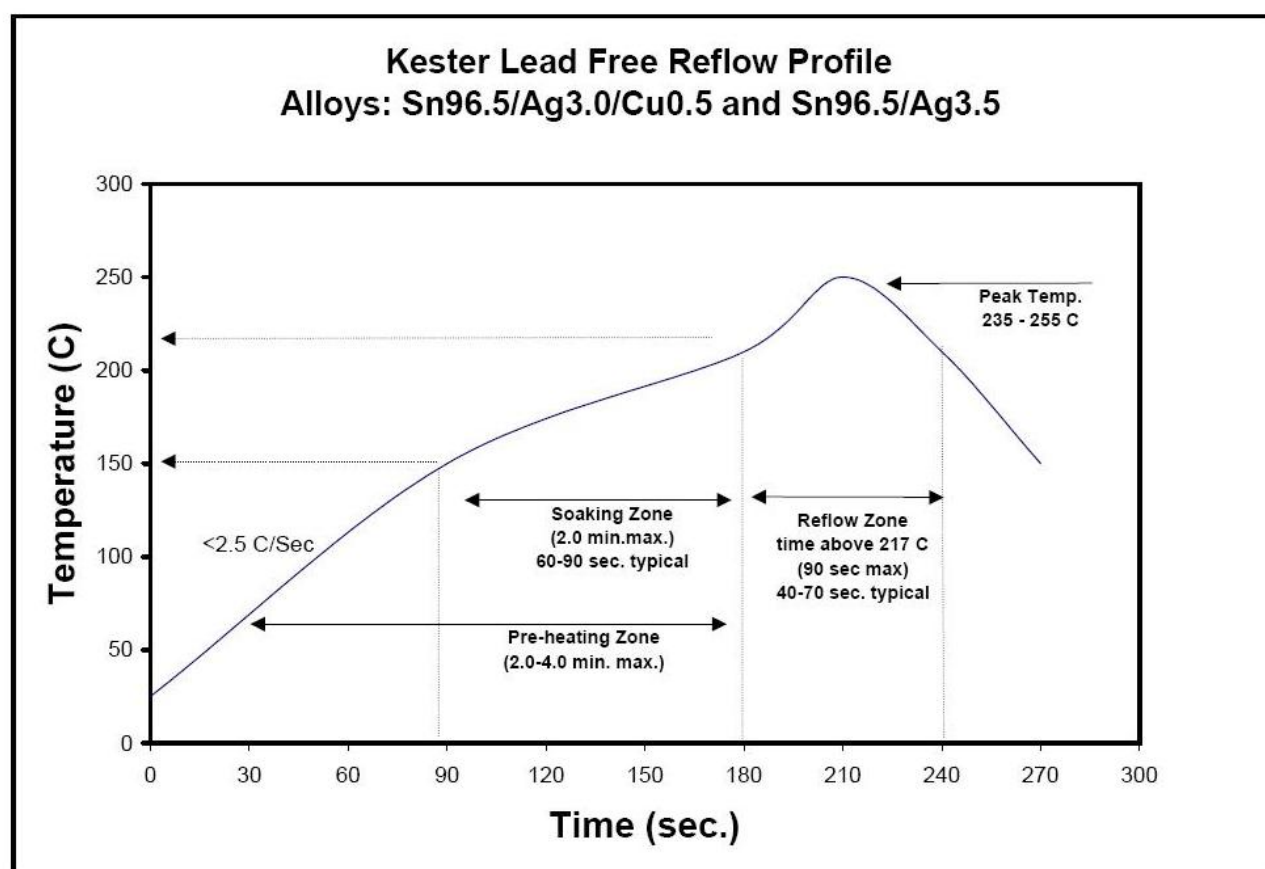
To perform the following tests: see test plan QFS-EM Test Seq 050105

APPLICABLE DOCUMENTS

Standards: EIA Publication 364

TEST SAMPLES AND PREPARATION

- 1) All materials were manufactured in accordance with the applicable product specification.
- 2) All test samples were identified and encoded to maintain traceability throughout the test sequences.
- 3) After soldering, the parts to be used for LLCR and DWV/IR testing were cleaned according to TLWI-0001.
- 4) Either an automated cleaning procedure or an ultrasonic cleaning procedure may be used.
- 5) The automated procedure is used with aqueous compatible soldering materials.
- 6) Parts not intended for testing LLCR and DWV/IR are visually inspected and cleaned if necessary.
- 7) Any additional preparation will be noted in the individual test sequences.
- 8) Solder Information: Lead free
- 9) Re-Flow Time/Temp: See accompanying profile.
- 10) Internal Test PCBs used: PCB-100679-TST-02

OVEN PROFILE (Soldering Parts to Test Boards)

FLOWCHARTS

Current Carrying Capacity

TEST STEP	GROUP A 1 board min 6 Contacts in series, clustered if possible
01	CCC

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

Mating/Unmating/Normal Force

TEST STEP	GROUP A 10 Boards 100 Cycles	GROUP B1 Individual Contacts (30) min	GROUP B2 Individual Contacts (30) min
01	Contact Meas.	Setup Approve	Setup Approve
02	Mating / Unmating	Normal Force	Thermal Aging (Mated)
03	Data Review	Data Review	Normal Force
04	100 Cycles		
05	Mating / Unmating		
06	Contact Meas.		
07	Data Review		
08	Thermal Aging (Mated)		
09	Mating / Unmating		
10	Contact Meas.		
11	Data Review		
12	Humidity (Mated)		
13	Mating / Unmating		
14	Contact Meas.		

Thermal Aging = EIA-364-17, Test Condition 4, 105 deg C;

Time Condition 'B' (250 hours)

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

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

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

Mating/Un-Mating Forces = EIA-364-13

Normal Force = EIA-364-04

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

FLOWCHARTS Continued**IR / DWV**

TEST STEP	GROUP A 2 Boards Ambient	GROUP B1 2 Boards Ambient	GROUP B2 2 Boards Thermal	GROUP B3 2 Boards Humidity
01	IR	DWV/Working Voltage	Thermal Aging	Humidity
02	Data Review		DWV/Working Voltage	DWV/Working Voltage
03	Thermal Aging			
04	IR			
05	Data Review			
06	Humidity			
07	IR			

Thermal Aging = EIA-364-17, Test Condition 4, 105 deg C;

Time Condition 'B' (250 hours)

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

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

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

IR = EIA-364-21

DWV = EIA-364-20

Durability/Thermal Age/Cyclic Humidity

TEST STEP	GROUP A 200 Points 30 Micro-Inch Au 100 Cycles	GROUP B 175 Points 30 Micro-Inch Au 100 Cycles
01	LLCR-1	LLCR-1
02	Data Review	Data Review
03	100 Cycles	100 Cycles
04	LLCR-2	LLCR-2
05	Data Review	Data Review
06	Thermal Age	Thermal Age
07	LLCR-3	LLCR-3
08	Data Review	Data Review
09	Cyclic Humidity	Cyclic Humidity
10	LLCR-4	LLCR-4

Thermal Aging = EIA-364-17, Test Condition 4, 105 deg C;

Time Condition 'B' (250 hours)

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

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

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

LLCR = EIA-364-23, LLCR

use Keithley 580 in the dry circuit mode, 10 mA Max

FLOWCHARTS Continued**Gas Tight**

TEST STEP	GROUP A 200 Points (min)
01	LLCR-1
02	Gas Tight
03	LLCR-2

Gas Tight = EIA-364-36

LLCR = EIA-364-23, LLCR

use Keithley 580 in the dry circuit mode, 10 mA Max

Mating/Unmating (1 & 4 Bank Only)

TEST STEP	GROUP A - 1 Bank 5 Samples - 10 Cycles Only	GROUP B - 4 Bank 5 Samples - 10 Cycles Only
01	Mating/Unmating	Mating/Unmating
02	5 Cycles	5 Cycles
03	Mating/Unmating	Mating/Unmating
04	5 Cycles	5 Cycles
05	Mating/Unmating	Mating/Unmating

Mating/Un-Mating Forces = EIA-364-13

ATTRIBUTE DEFINITIONS

The following is a brief, simplified description of attributes.

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) Connectors are sometimes mated and all samples are pre-conditioned at ambient.

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) Connectors are sometimes mated and all samples are pre-conditioned at ambient.

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. 85° C
 - c. 95° C
 - d. 115° C
- 8) Typically, neighboring contacts (in close proximity to maximize heat build up) are energized.
- 9) The thermocouple (or temperature measuring probe) will be positioned at a location to sense the maximum temperature in the vicinity of the heat generation area.
- 10) A computer program, *TR 803.exe*, ensures accurate stability for data acquisition.
- 11) Hook-up wire cross section is larger than the cross section of any connector leads/PC board traces, jumpers, etc.
- 12) Hook-up wire length is longer than the minimum specified in the referencing standard.

CONTACT GAPS:

- 1) Contact gaps 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
 - ii. Electrification Time 2.0 minutes
 - iii. Test Voltage (500 VDC) corresponds to calibration settings for measuring resistances.
- 2) MEASUREMENTS:
- 3) When the specified test voltage is applied (VDC), the insulation resistance shall not be less than 5000 megohms.

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

To determine if the sockets can operate at its rated voltage and withstand momentary over potentials due to switching, surges, and other similar phenomenon. Separate samples are used to evaluate the effect of environmental stresses so not to influence the readings from arcing that occurs during the measurement process.

- 1) PROCEDURE:
 - a. Reference document: EIA-364-20, *Withstanding Voltage Test Procedure for Electrical Connectors*.
 - b. Test Conditions:
 - i. Between Adjacent Contacts
 - 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).

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 less than 10.
 - 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-----1.4 A per contact with 6 adjacent contacts powered

QFS Contact Gaps

- Initial
 - Min-----.1282"
 - Max-----.1326"
- After 100 Cycles
 - Min-----.1275"
 - Max-----.1321"
- Thermal
 - Min-----.1254"
 - Max-----.1290"
- Humidity
 - Min-----.1253"
 - Max-----.1287"

QMS Contact Gaps

- Initial
 - Min-----.1154"
 - Max-----.1194"
- After 100 Cycles
 - Min-----.1154"
 - Max-----.1197"
- Thermal
 - Min-----.1167"
 - Max-----.1222"
- Humidity
 - Min-----.1168"
 - Max-----.1233"

Mating – Unmating Forces

- Initial
 - Mating
 - Min-----5.9 Lbs.
 - Max-----8.1 Lbs.
 - Unmating
 - Min-----3.9 Lbs.
 - Max-----5.8 Lbs.
- After 100 Cycles
 - Mating
 - Min-----7.7 Lbs.
 - Max-----9.5 Lbs.
 - Unmating
 - Min-----5.6 Lbs.
 - Max-----8.2 Lbs.

- **Thermal**
 - **Mating**
 - **Min**-----2.4 Lbs.
 - **Max**-----3.8 Lbs.
 - **Unmating**
 - **Min**-----2.4 Lbs.
 - **Max**-----3.2 Lbs.
- **Humidity**
 - **Mating**
 - **Min**-----2.8 Lbs.
 - **Max**-----4.4 Lbs.
 - **Unmating**
 - **Min**-----2.4 Lbs.
 - **Max**-----4.0 Lbs.

Normal Force at .015" deflection

- **Initial**
 - **Min**-----116.3 Grams Ave.Set--.0004"
 - **Max**-----139.4 Grams
- **Thermal**
 - **Min**-----97.8 Grams
 - **Max**-----126.6 Grams

Insulation Resistance minimums, IR

- **Initial**
 - **Mated**-----100,000 Meg Ω -----Pass
 - **Unmated**-----100,000 Meg Ω
- **Thermal**
 - **Mated**-----50,000 Meg Ω
 - **Unmated**-----50,000 Meg Ω
- **Humidity**
 - **Mated**-----10,000 Meg Ω
 - **Unmated**-----100,000 Meg Ω

Dielectric Withstanding Voltage minimums, DWV

- **Initial**
 - **Breakdown**
 - **Mated**-----1,080 VAC
 - **Unmated**-----960 VAC
 - **DWV**
 - **Mated**-----810 VAC
 - **Unmated**-----720 VAC
 - **Working voltage**
 - **Mated**-----270 VAC
 - **Unmated**-----240 VAC
- **Thermal**
 - **Breakdown**
 - **Mated**-----1,000 VAC
 - **Unmated**-----1,120 VAC
 - **DWV**
 - **Mated**-----750 VAC
 - **Unmated**-----840 VAC

- o Working voltage
 - Mated -----250 VAC
 - Unmated-----280 VAC
- Humidity
 - o Breakdown
 - Mated -----1,040 VAC
 - Unmated-----780 VAC
 - o DWV
 - Mated -----780 VAC
 - Unmated-----585 VAC
 - o Working voltage
 - Mated -----260 VAC
 - Unmated-----195 VAC

10 MICRO-INCH GOLD - LLCR Durability (175 LLCR test points)

- Initial ----- 30.4 mOhms Max
- Durability, 100 Cycles
 - o <= +5.0 mOhms ----- 175 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
- Thermal
 - o <= +5.0 mOhms ----- 174 Points ----- Stable
 - o +5.1 to +10.0 mOhms ----- 0 Points ----- Minor
 - o +10.1 to +15.0 mOhms ----- 1 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
 - o
- Humidity
 - o <= +5.0 mOhms ----- 172 Points ----- Stable
 - o +5.1 to +10.0 mOhms ----- 3 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

30 MICRO-INCH GOLD - LLCR Durability (200 LLCR test points)

- Initial ----- 40.8 mOhms Max
- Durability, 100 Cycles
 - o <= +5.0 mOhms ----- 200 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
- Thermal
 - o <= +5.0 mOhms ----- 200 Points ----- Stable
 - o +5.1 to +10.0 mOhms ----- 2 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

- **Humidity**

o	<= +5.0 mOhms -----	195 Points -----	Stable
o	+5.1 to +10.0 mOhms -----	4 Points -----	Minor
o	+10.1 to +15.0 mOhms -----	1 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 (200 LLCR test points)

- **Initial** ----- 28.6 mOhms Max

- **Gas-Tight**

o	<= +5.0 mOhms -----	171 Points -----	Stable
o	+5.1 to +10.0 mOhms -----	19 Points -----	Minor
o	+10.1 to +15.0 mOhms -----	10 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

SUPPLEMENTAL TESTING
Mating/Unmating (1 & 4 Bank Only)
Mating – Unmating Forces (1 Bank)

- **Initial**

- o **Mating**

- **Min** ----- 4.2 Lbs.
- **Max** ----- 6.0 Lbs.

- o **Unmating**

- **Min** ----- 3.2 Lbs.
- **Max** ----- 6.1 Lbs.

- **After 5 Cycles**

- o **Mating**

- **Min** ----- 4.0 Lbs.
- **Max** ----- 5.3 Lbs.

- o **Unmating**

- **Min** ----- 2.9 Lbs.
- **Max** ----- 5.4 Lbs.

- **After 10 Cycles**

- o **Mating**

- **Min** ----- 3.7 Lbs.
- **Max** ----- 4.9 Lbs.

- o **Unmating**

- **Min** ----- 2.8 Lbs.
- **Max** ----- 5.2 Lbs.

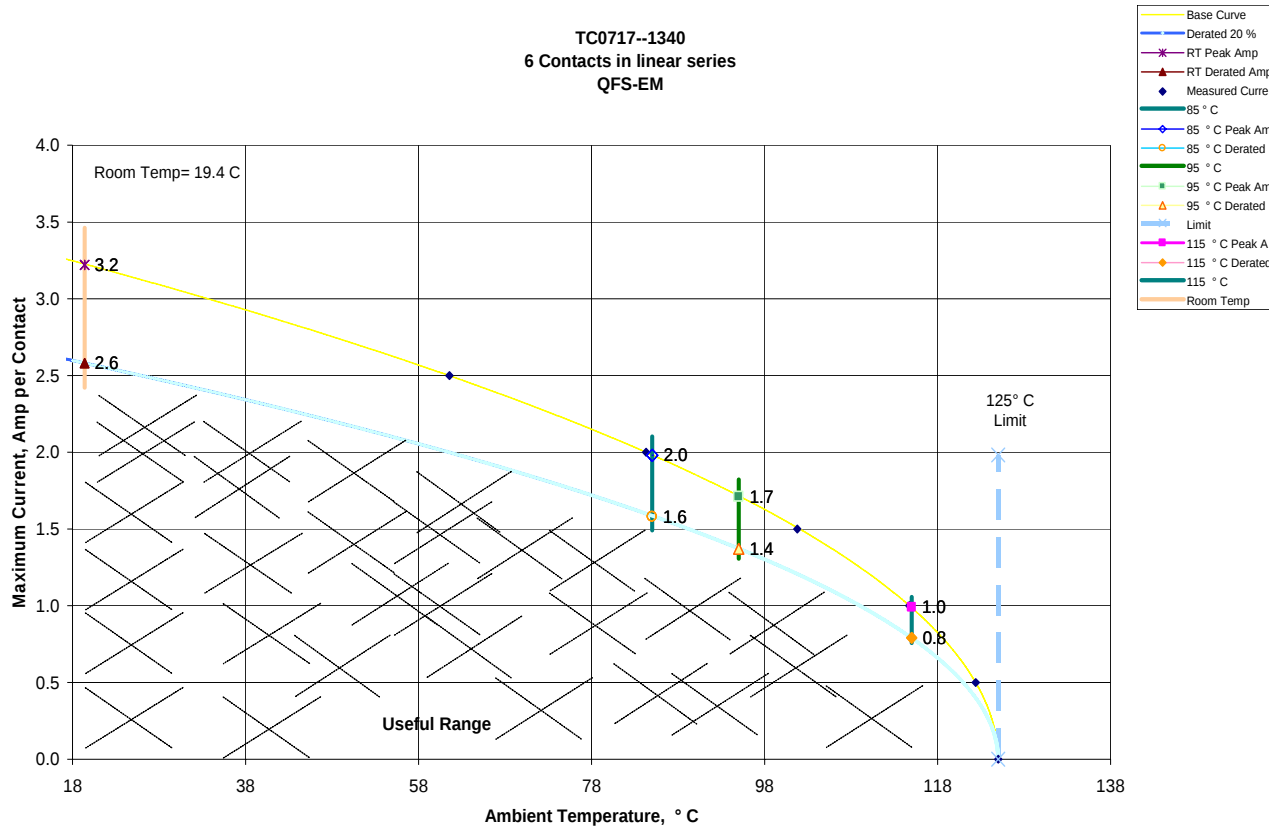
Mating – Unmating Forces (4 Bank)

- **Initial**
 - **Mating**
 - **Min** -----13.3 Lbs.
 - **Max** -----15.6 Lbs.
 - **Unmating**
 - **Min** ----- 8.9 Lbs.
 - **Max** -----12.0 Lbs.
- **After 5 Cycles**
 - **Mating**
 - **Min** -----11.6 Lbs.
 - **Max** -----16.6 Lbs.
 - **Unmating**
 - **Min** ----- 8.6 Lbs.
 - **Max** -----10.7 Lbs.
- **After 10 Cycles**
 - **Mating**
 - **Min** -----11.5 Lbs.
 - **Max** -----15.5 Lbs.
 - **Unmating**
 - **Min** ----- 7.9 Lbs.
 - **Max** ----- 9.9 Lbs.

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) Six adjacent contacts powered in a linear configuration.



DATA SUMMARIES Continued**CONTACT GAPS:****QFS CONTACTS:**

Initial		After 100 Cycles		After Thermals		After Humidity	
Measurements in inches		Measurements in inches		Measurements in inches		Measurements in inches	
<i>Minimum</i>	0.1282	<i>Minimum</i>	0.1275	<i>Minimum</i>	0.1254	<i>Minimum</i>	0.1252
<i>Maximum</i>	0.1326	<i>Maximum</i>	0.1321	<i>Maximum</i>	0.1290	<i>Maximum</i>	0.1290
<i>Average</i>	0.1309	<i>Average</i>	0.1305	<i>Average</i>	0.1276	<i>Average</i>	0.1273
<i>St. Dev.</i>	0.0007	<i>St. Dev.</i>	0.0007	<i>St. Dev.</i>	0.0006	<i>St. Dev.</i>	0.0006
<i>Count</i>	260	<i>Count</i>	260	<i>Count</i>	260	<i>Count</i>	260

QMS CONTACTS:

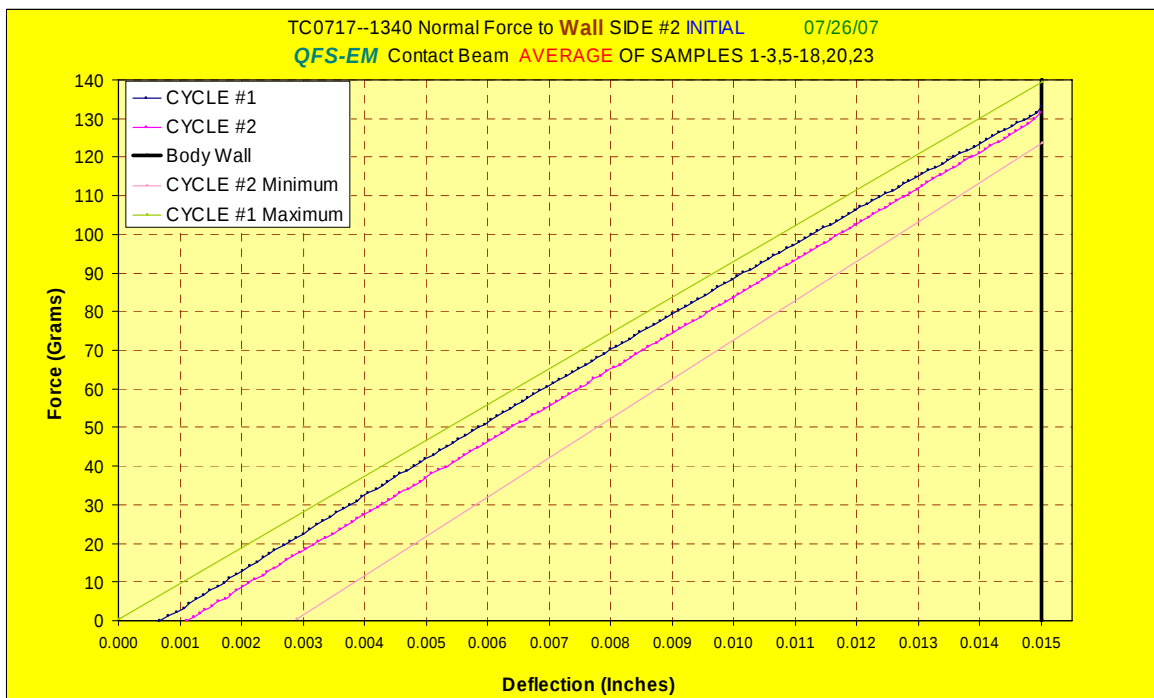
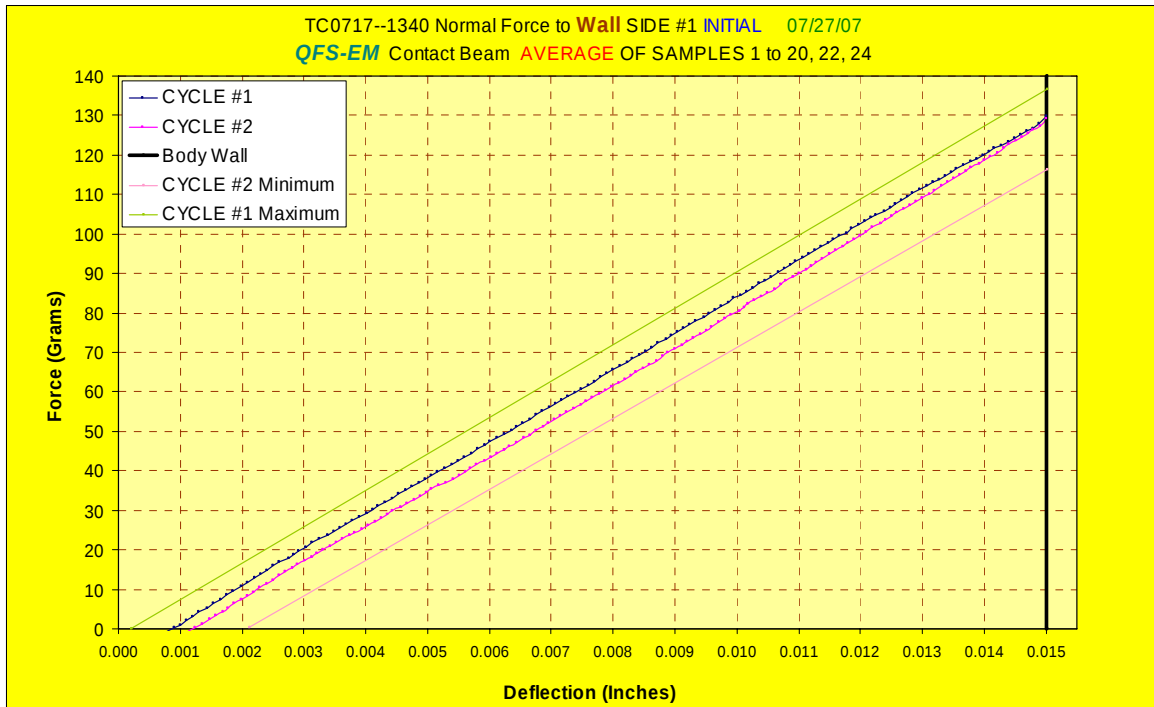
Initial		After 100 Cycles		After Thermals		After Humidity	
Measurements in inches		Measurements in inches		Measurements in inches		Measurements in inches	
<i>Minimum</i>	0.1154	<i>Minimum</i>	0.1154	<i>Minimum</i>	0.1167	<i>Minimum</i>	0.1168
<i>Maximum</i>	0.1194	<i>Maximum</i>	0.1197	<i>Maximum</i>	0.1222	<i>Maximum</i>	0.1233
<i>Average</i>	0.1174	<i>Average</i>	0.1175	<i>Average</i>	0.1197	<i>Average</i>	0.1200
<i>St. Dev.</i>	0.0008	<i>St. Dev.</i>	0.0009	<i>St. Dev.</i>	0.0015	<i>St. Dev.</i>	0.0015
<i>Count</i>	260	<i>Count</i>	260	<i>Count</i>	260	<i>Count</i>	260

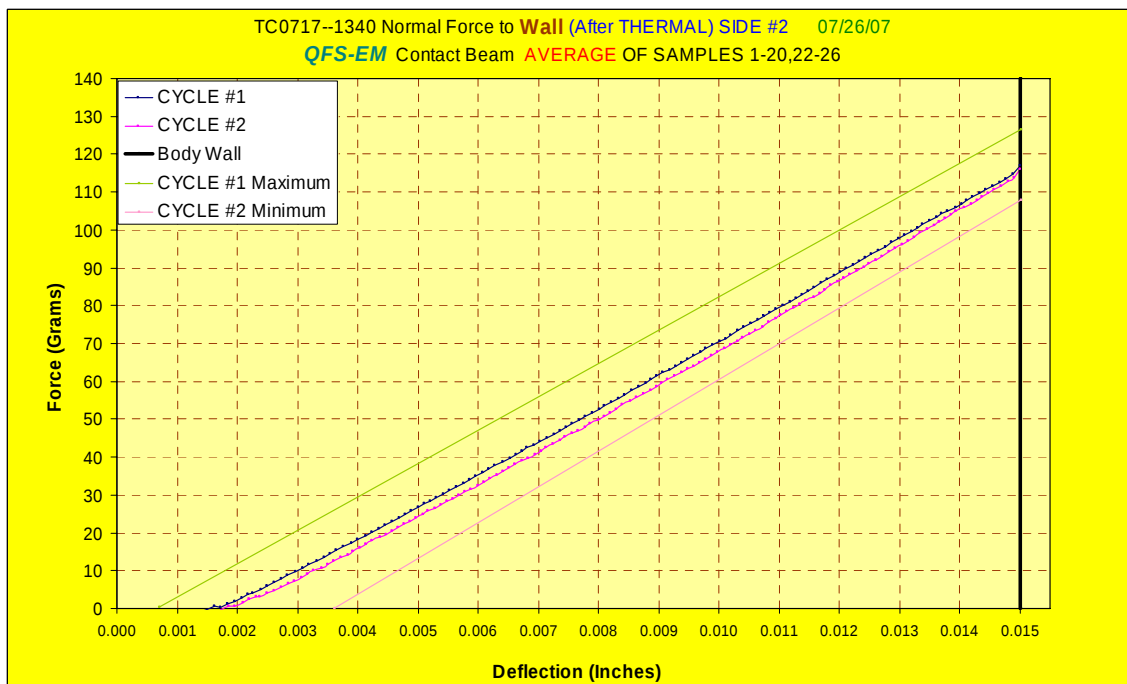
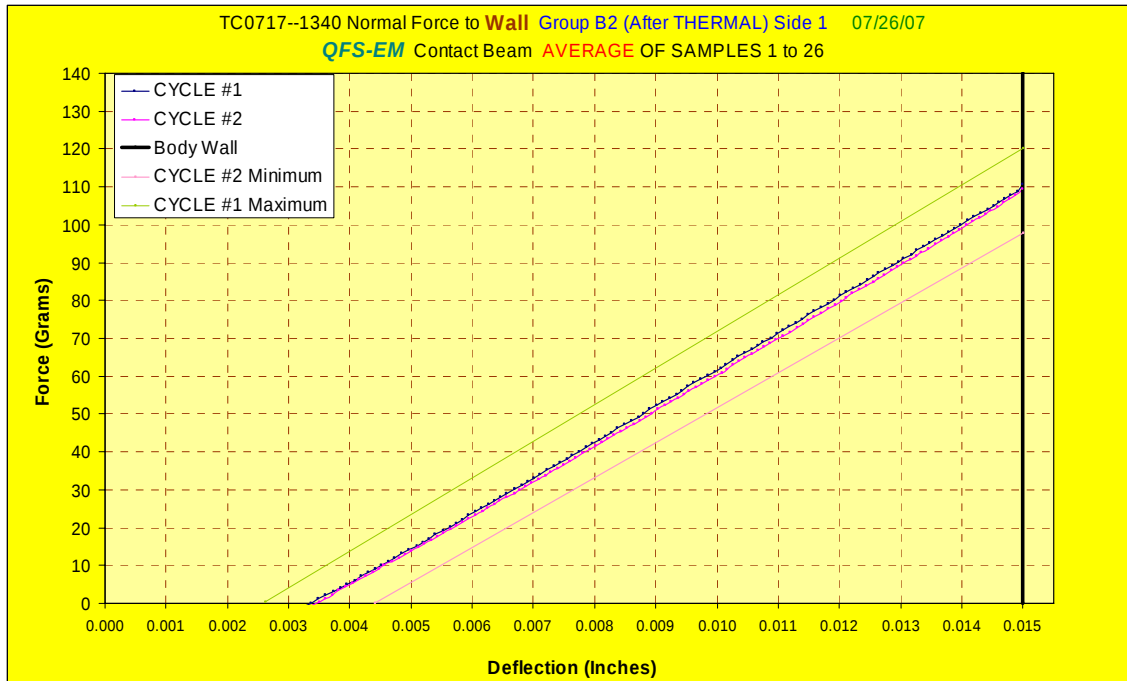
MATING/UNMATING:

	Initial				After 100 Cycles			
	Mating		Unmating		Mating		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	94.2	5.89	61.9	3.87	121.9	7.62	89.1	5.57
Maximum	129.1	8.1	92.6	5.8	151.8	9.5	131.4	8.2
Average	117.8	7.4	81.8	5.1	138.4	8.6	114.1	7.1
	After Thermal				After Humidity			
	Mating		Unmating		Mating		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	38.4	2.4	38.4	2.4	45.3	2.8	37.6	2.4
Maximum	60.2	3.8	50.7	3.2	71.0	4.4	63.5	4.0
Average	49.3	3.1	44.9	2.8	53.7	3.4	49.8	3.1

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

- 1) Calibrated force gauges are used along with computer controlled positioning equipment.
- 2) Typically, 8-10 readings are taken and the averages reported.



DATA SUMMARIES Continued

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

	Initial, Meg Ohms		Thermal, Meg Ohms		Humidity, Meg Ohms	
	Mated	Unmated	Mated	Unmated	Mated	Unmated
	<u>Insulation Resistance</u>	<u>Insulation Resistance</u>	<u>Insulation Resistance</u>	<u>Insulation Resistance</u>	<u>Insulation Resistance</u>	<u>Insulation Resistance</u>
	100000	100000	50000	100000	55000	51500
	100000	100000	50000	100000	10000	3000
Average	100000	100000	50000	100000	100000	100000
Min						
Max						

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

	Initial, VAC Mated			Initial, VAC Unmated		
	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>
	1080	810	270	960	720	240
	1080	810	270	960	720	240
	1080	810	270	960	720	240
Average						
Min						
Max						

	Thermal, VAC Mated			Thermal, VAC Unmated		
	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>
	1000	750	250	1120	840	280
	1000	750	250	1120	840	280
	1000	750	250	1120	840	280
Average						
Min						
Max						

	Mated			Humidity, VAC Unmated		
	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>
	1040	780	260	780	585	195
	1040	780	260	780	585	195
	1040	780	260	780	585	195
Average						
Min						
Max						

DATA SUMMARIES Continued**LLCR:**

- 1) A total of 200 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

10 MICRO-INCH GOLD - LLCR Durability

Date	Jul. 24 2007	Jul. 24 2007	Aug. 06 2007	Aug. 17 2007
Room Temp C	21	21	22	22
RH	49%	53%	41%	64%
Name	Troy Cook	Troy Cook	Tori Meek	Tony Wagoner
mOhm values	Actual Initial	Delta 100 Cycles	Delta Thermal	Delta Humidity
Average	28.0	-0.3	1.1	1.6
St. Dev.	0.9	0.7	1.4	1.5
Min	23.5	-2.1	-1.7	-1.2
Max	30.4	2.9	10.4	8.9
Count	175	175	175	175

30 MICRO-INCH GOLD - LLCR Durability

Date	Jul. 24 2007	Jul. 24 2007	Aug. 06 2007	Aug. 17 2007
Room Temp C	21	22	22	22
RH	46%	52%	49%	64%
Name	Troy Cook	Troy Cook	Tony Wagoner	Tony Wagoner
mOhm values	Actual Initial	Delta 100 Cycles	Delta Thermal	Delta Humidity
Average	28.0	-0.6	0.6	1.2
St. Dev.	1.3	0.8	1.1	1.7
Min	25.7	-2.6	-2.3	-2.4
Max	40.8	2.1	3.3	10.2
Count	200	200	200	200

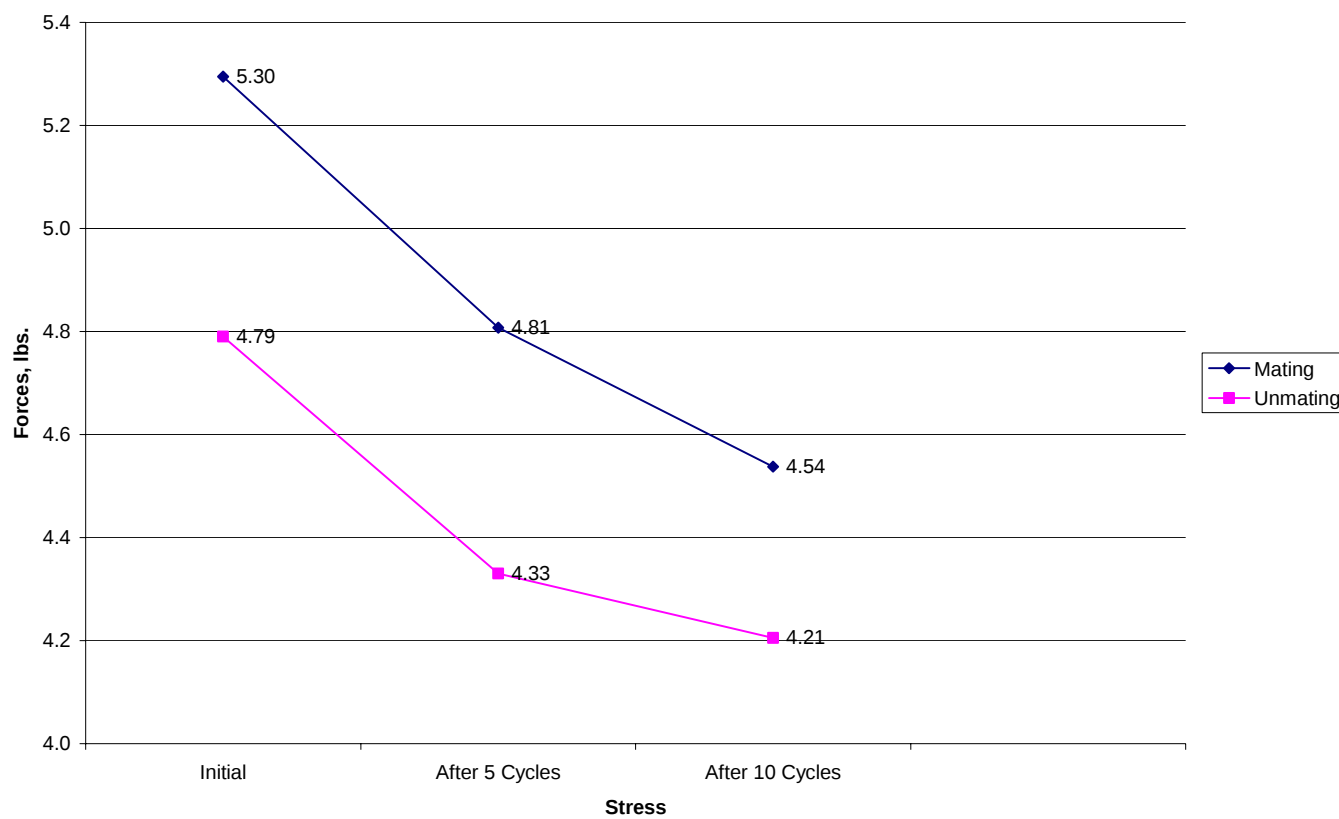
DATA SUMMARIES Continued**GAS TIGHT:**

- 1) A total of 200 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

Date	Apr. 30 2007	May 09 2007
Room Temp C	24	23
RH	31%	56%
Name	Tori Meek	Tori Meek
mOhm values	Actual Initial	Delta Gas Tight
Average	26.0	3.3
St. Dev.	1.3	2.5
Min	17.0	-0.3
Max	28.6	13.3
Count	200	200

SUPPLEMENTAL TESTS**MATING-UNMATING - ONE (1) BANK ONLY:**

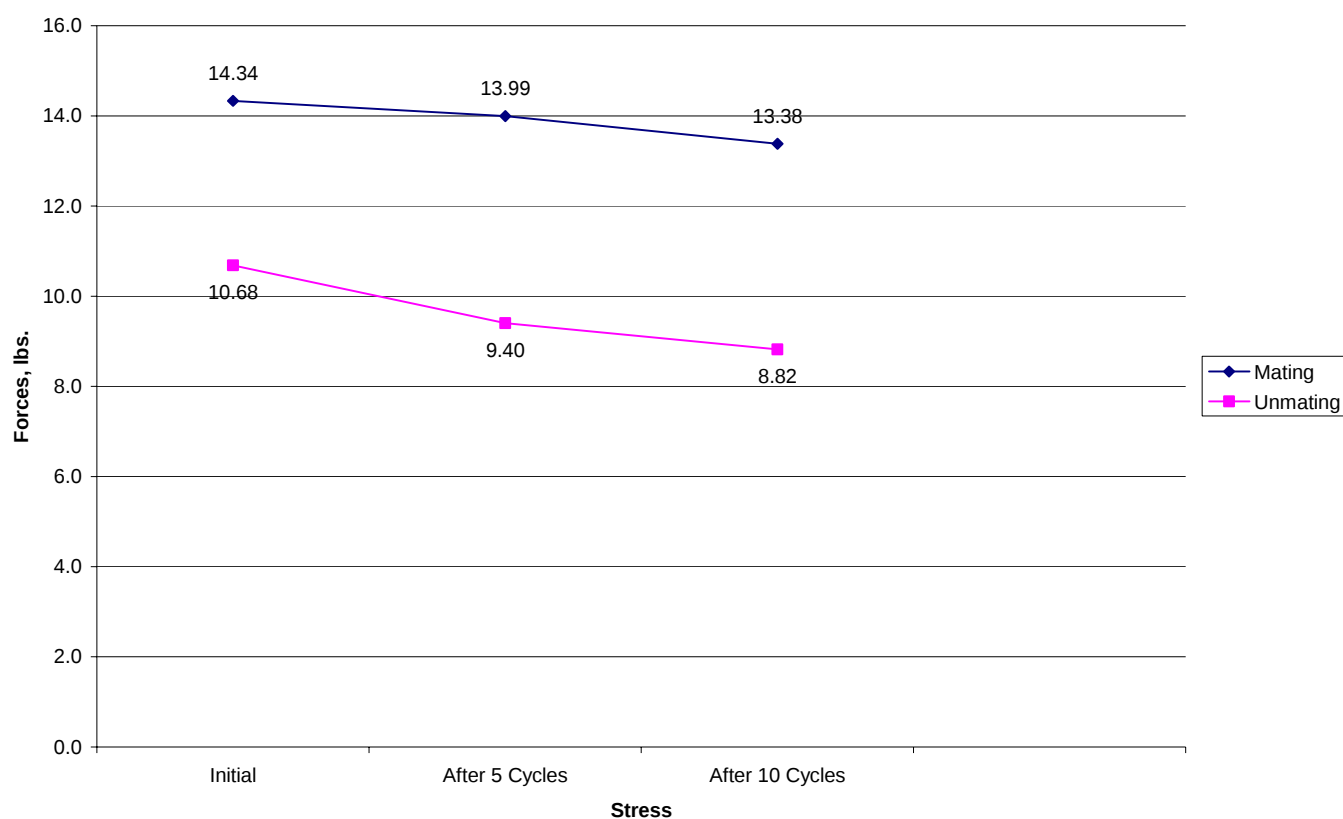
	Initial				After 5 Cycles			
	Mating		Unmating		Mating		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	67.2	4.20	51.7	3.23	63.5	3.97	45.8	2.86
Maximum	95.2	6.0	98.1	6.1	84.0	5.3	86.7	5.4
Average	84.7	5.3	76.6	4.8	76.9	4.8	69.3	4.3
	After 10 Cycles							
	Mating		Unmating					
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)				
Minimum	59.7	3.7	44.2	2.8				
Maximum	78.6	4.9	83.2	5.2				
Average	72.6	4.5	67.3	4.2				

DATA SUMMARIES Continued**Mating/Unmating Compare**

DATA SUMMARIES Continued**MATING-UNMATING - FOUR (4) BANK :**

	Initial				After 5 Cycles			
	Mating		Unmating		Mating		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	212.8	13.30	143.0	8.94	185.8	11.61	137.0	8.56
Maximum	249.1	15.6	192.3	12.0	265.6	16.6	170.9	10.7
Average	229.4	14.3	170.9	10.7	223.9	14.0	150.4	9.4

	After 10 Cycles			
	Mating		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	183.7	11.5	125.6	7.9
Maximum	247.8	15.5	158.1	9.9
Average	214.1	13.4	141.1	8.8

Mating/Unmating Compare

DATA

CONTACT GAPS:

QFS CONTACT GAPS:

Initial						After 100 Cycles					
Measurements in inches						Measurements in inches					
Sample#	B1	B2	B3	B4	B5	Sample#	B1	B2	B3	B4	B5
1	0.1288	0.1286	0.1291	0.1293	0.1289	1	0.129	0.1288	0.129	0.129	0.129
2	0.1302	0.1308	0.1303	0.1302	0.1305	2	0.13	0.1305	0.13	0.13	0.13
3	0.1313	0.1313	0.1305	0.1309	0.1312	3	0.131	0.1314	0.13	0.13	0.13
4	0.1309	0.1311	0.1304	0.1309	0.1309	4	0.131	0.1308	0.13	0.13	0.13
5	0.1309	0.1312	0.1307	0.131	0.1316	5	0.131	0.1311	0.13	0.13	0.131
6	0.1305	0.1305	0.1305	0.1304	0.1311	6	0.13	0.1304	0.13	0.13	0.13
7	0.1314	0.1317	0.1311	0.1309	0.1321	7	0.131	0.1313	0.131	0.13	0.131
8	0.1315	0.1317	0.1312	0.1312	0.132	8	0.13	0.1313	0.131	0.131	0.131
9	0.131	0.131	0.1305	0.1308	0.1315	9	0.131	0.1307	0.13	0.131	0.131
10	0.1313	0.1316	0.1313	0.1312	0.1318	10	0.131	0.1312	0.131	0.131	0.131
11	0.1315	0.1314	0.1319	0.1309	0.1315	11	0.131	0.1311	0.132	0.131	0.131
12	0.1319	0.1315	0.1314	0.1313	0.1322	12	0.132	0.1313	0.131	0.131	0.132
13	0.1314	0.1308	0.1305	0.1308	0.1317	13	0.131	0.1308	0.13	0.13	0.131
14	0.131	0.131	0.1307	0.1304	0.1312	14	0.131	0.1308	0.13	0.13	0.131
15	0.1306	0.1308	0.1305	0.1308	0.1317	15	0.13	0.1308	0.13	0.131	0.131
16	0.1311	0.1312	0.1308	0.1311	0.132	16	0.131	0.131	0.13	0.131	0.132
17	0.1314	0.1313	0.1308	0.1308	0.1321	17	0.131	0.131	0.13	0.13	0.132
18	0.1308	0.131	0.1306	0.1306	0.132	18	0.13	0.1307	0.13	0.13	0.132
19	0.1306	0.131	0.1304	0.1302	0.1317	19	0.13	0.1306	0.13	0.13	0.131
20	0.1288	0.1293	0.1287	0.1288	0.1298	20	0.129	0.1289	0.128	0.129	0.13
21	0.1303	0.13	0.1296	0.1299	0.131	21	0.13	0.1296	0.129	0.13	0.131
22	0.1302	0.1306	0.1304	0.1304	0.1316	22	0.13	0.1303	0.13	0.13	0.131
23	0.1309	0.1312	0.1309	0.1307	0.1318	23	0.13	0.1307	0.131	0.131	0.131
24	0.1296	0.1308	0.1306	0.1302	0.1319	24	0.13	0.1304	0.13	0.13	0.132
25	0.1297	0.13	0.1298	0.1297	0.1306	25	0.13	0.1296	0.13	0.13	0.13
26	0.1292	0.1292	0.1294	0.1295	0.13	26	0.13	0.1293	0.13	0.129	0.13
27	0.1294	0.1292	0.1291	0.1291	0.1293	27	0.129	0.1288	0.129	0.129	0.129
28	0.1304	0.1308	0.1303	0.1302	0.1311	28	0.13	0.1301	0.13	0.13	0.131
29	0.1304	0.1309	0.1307	0.1303	0.131	29	0.13	0.1302	0.13	0.13	0.13
30	0.1313	0.1313	0.1313	0.1309	0.1315	30	0.131	0.1306	0.131	0.131	0.131
31	0.1307	0.1311	0.1308	0.1308	0.1306	31	0.13	0.1305	0.131	0.13	0.13
32	0.1301	0.1303	0.1299	0.1301	0.13	32	0.13	0.1296	0.13	0.13	0.13
33	0.1307	0.1313	0.1304	0.1307	0.1313	33	0.13	0.1308	0.13	0.13	0.131
34	0.1309	0.1317	0.1309	0.1309	0.1313	34	0.131	0.1312	0.131	0.131	0.131
35	0.1309	0.1315	0.1311	0.1306	0.1314	35	0.131	0.1313	0.131	0.13	0.131
36	0.1311	0.132	0.1317	0.1312	0.1321	36	0.131	0.1318	0.131	0.131	0.132
37	0.1308	0.1309	0.1307	0.1307	0.131	37	0.131	0.1306	0.13	0.131	0.131
38	0.1312	0.1317	0.1314	0.131	0.132	38	0.131	0.1313	0.131	0.131	0.132
39	0.1305	0.1313	0.1307	0.1305	0.1323	39	0.13	0.131	0.13	0.13	0.132
40	0.1304	0.1311	0.131	0.1303	0.1308	40	0.13	0.1307	0.131	0.13	0.131
41	0.1308	0.1311	0.1318	0.1312	0.1309	41	0.13	0.1307	0.132	0.131	0.131
42	0.1308	0.1313	0.1312	0.1316	0.1311	42	0.13	0.1309	0.131	0.132	0.131
43	0.1311	0.1316	0.131	0.1316	0.1315	43	0.131	0.1311	0.131	0.131	0.131

44	0.1309	0.1314	0.1319	0.1311	0.1312	44	0.13	0.1309	0.131	0.131	0.131
45	0.131	0.1312	0.1319	0.1306	0.1309	45	0.13	0.1306	0.132	0.13	0.131
46	0.1305	0.1309	0.1313	0.1305	0.1307	46	0.13	0.1305	0.131	0.13	0.131
47	0.1319	0.1302	0.1311	0.1299	0.13	47	0.132	0.1296	0.131	0.13	0.13
48	0.1324	0.1313	0.1315	0.1308	0.1316	48	0.132	0.1308	0.131	0.13	0.131
49	0.1301	0.1304	0.1307	0.1303	0.1308	49	0.13	0.1299	0.13	0.13	0.13
50	0.1313	0.1317	0.1318	0.1311	0.1323	50	0.131	0.1312	0.131	0.131	0.132
51	0.132	0.1319	0.1324	0.1313	0.1326	51	0.132	0.1311	0.132	0.131	0.132
52	0.131	0.1308	0.1282	0.1305	0.1311	52	0.131	0.1301	0.128	0.13	0.131
After Thermals						After Humidity					
Measurements in inches						Measurements in inches					
Sample#	B1	B2	B3	B4	B5	Sample#	B1	B2	B3	B4	B5
1	0.1266	0.1266	0.127	0.1271	0.1265		0.126	0.1258	0.127	0.127	0.126
2	0.1271	0.1275	0.1272	0.127	0.1267		0.127	0.127	0.127	0.127	0.127
3	0.128	0.1279	0.1272	0.1271	0.127		0.127	0.127	0.126	0.126	0.127
4	0.1272	0.127	0.1266	0.1269	0.1266		0.127	0.1274	0.126	0.127	0.126
5	0.1274	0.1275	0.1272	0.1272	0.127		0.127	0.1275	0.127	0.127	0.127
6	0.1272	0.1271	0.1271	0.127	0.1267		0.127	0.1273	0.127	0.127	0.127
7	0.1278	0.128	0.1275	0.1274	0.1276		0.127	0.1282	0.127	0.127	0.127
8	0.128	0.1282	0.1277	0.1279	0.1277		0.128	0.1283	0.128	0.128	0.128
9	0.1277	0.128	0.1275	0.1275	0.1271		0.127	0.128	0.127	0.127	0.127
10	0.1278	0.1281	0.1275	0.1278	0.128		0.127	0.1283	0.127	0.128	0.128
11	0.1284	0.1282	0.128	0.1278	0.1277		0.128	0.1284	0.128	0.128	0.127
12	0.1286	0.1284	0.128	0.128	0.1282		0.128	0.1285	0.128	0.128	0.128
13	0.1279	0.1278	0.1274	0.1276	0.1278		0.127	0.1281	0.127	0.127	0.127
14	0.128	0.128	0.1276	0.1274	0.1276		0.127	0.1282	0.127	0.127	0.127
15	0.1276	0.1277	0.1273	0.1277	0.1277		0.127	0.1276	0.127	0.127	0.127
16	0.128	0.1279	0.1275	0.1278	0.1286		0.128	0.1281	0.127	0.127	0.128
17	0.1284	0.128	0.1275	0.1274	0.1281		0.128	0.1282	0.127	0.127	0.128
18	0.1278	0.1276	0.1273	0.1271	0.1284		0.127	0.128	0.127	0.127	0.128
19	0.1275	0.1276	0.127	0.1269	0.1275		0.127	0.1278	0.127	0.127	0.127
20	0.1264	0.1262	0.126	0.1259	0.1264		0.126	0.1264	0.126	0.126	0.126
21	0.1275	0.1269	0.127	0.1268	0.1272		0.127	0.1272	0.127	0.127	0.127
22	0.127	0.1273	0.1273	0.127	0.1277		0.127	0.1276	0.127	0.127	0.128
23	0.128	0.1279	0.1281	0.1273	0.1275		0.128	0.1281	0.128	0.127	0.128
24	0.1264	0.1279	0.1277	0.1272	0.1277		0.126	0.1278	0.128	0.127	0.125
25	0.1268	0.1275	0.1274	0.1269	0.127		0.126	0.1273	0.127	0.127	0.127
26	0.1273	0.1276	0.128	0.1272	0.1272		0.127	0.1268	0.127	0.127	0.127
27	0.1264	0.1262	0.1266	0.1266	0.1264		0.126	0.1264	0.127	0.127	0.126
28	0.1274	0.1268	0.1271	0.1266	0.1271		0.127	0.1271	0.127	0.126	0.127
29	0.1272	0.1266	0.1265	0.1267	0.1269		0.127	0.1267	0.126	0.126	0.127
30	0.1275	0.127	0.1271	0.1269	0.1274		0.126	0.1271	0.127	0.127	0.127
31	0.1269	0.1272	0.1272	0.1269	0.1269		0.127	0.1271	0.127	0.127	0.127
32	0.1271	0.1276	0.1265	0.1265	0.1264		0.127	0.1266	0.126	0.127	0.126
33	0.1278	0.1278	0.1271	0.1272	0.1278		0.128	0.1278	0.127	0.127	0.128
34	0.128	0.1282	0.1277	0.1275	0.1278		0.127	0.1277	0.128	0.127	0.128
35	0.1277	0.128	0.1276	0.1274	0.1279		0.127	0.1278	0.127	0.127	0.128
36	0.1282	0.1288	0.1282	0.1277	0.1282		0.128	0.1289	0.128	0.128	0.128
37	0.1283	0.1278	0.1275	0.1276	0.1276		0.128	0.1279	0.127	0.127	0.128
38	0.1284	0.1283	0.1281	0.1279	0.1283		0.128	0.1284	0.128	0.127	0.128
39	0.1281	0.1274	0.1277	0.1275	0.1287		0.128	0.1287	0.127	0.126	0.129
40	0.1281	0.1281	0.1282	0.1276	0.1278		0.128	0.1285	0.128	0.126	0.128
41	0.1284	0.1275	0.1287	0.1277	0.1275		0.128	0.128	0.129	0.127	0.128
42	0.1284	0.1284	0.1279	0.1286	0.1277		0.128	0.1283	0.128	0.128	0.128

43	0.1285	0.1285	0.1278	0.1285	0.1279		0.128	0.1282	0.128	0.128	0.128
44	0.1282	0.1284	0.1284	0.1281	0.1278		0.128	0.128	0.128	0.128	0.128
45	0.1283	0.1283	0.1289	0.1277	0.1277		0.128	0.1283	0.129	0.127	0.128
46	0.128	0.1283	0.1282	0.1279	0.1278		0.128	0.1283	0.128	0.127	0.128
47	0.1289	0.1277	0.1281	0.1276	0.1276		0.129	0.1274	0.128	0.127	0.128
48	0.1285	0.1284	0.1283	0.1279	0.1283		0.128	0.1282	0.128	0.128	0.128
49	0.1273	0.1274	0.1273	0.1275	0.1271		0.127	0.1271	0.127	0.127	0.127
50	0.1279	0.1282	0.1281	0.1276	0.1282		0.128	0.1278	0.128	0.127	0.128
51	0.1284	0.1282	0.129	0.1278	0.1284		0.128	0.128	0.129	0.128	0.128
52	0.1281	0.1273	0.1254	0.1271	0.1272		0.128	0.1269	0.125	0.127	0.127

QMS CONTACT GAPS:

Initial						After 100 Cycles					
Measurements in inches						Measurements in inches					
Sample#	B1	B2	B3	B4	B5	Sample#	B1	B2	B3	B4	B5
1	0.1288	0.1286	0.1291	0.1293	0.1289	1	0.1288	0.1288	0.129	0.129	0.129
2	0.1302	0.1308	0.1303	0.1302	0.1305	2	0.1296	0.1305	0.13	0.13	0.13
3	0.1313	0.1313	0.1305	0.1309	0.1312	3	0.1307	0.1314	0.13	0.13	0.13
4	0.1309	0.1311	0.1304	0.1309	0.1309	4	0.1306	0.1308	0.13	0.13	0.13
5	0.1309	0.1312	0.1307	0.131	0.1316	5	0.1307	0.1311	0.13	0.13	0.131
6	0.1305	0.1305	0.1305	0.1304	0.1311	6	0.1302	0.1304	0.13	0.13	0.13
7	0.1314	0.1317	0.1311	0.1309	0.1321	7	0.1312	0.1313	0.131	0.13	0.131
8	0.1315	0.1317	0.1312	0.1312	0.132	8	0.1304	0.1313	0.131	0.131	0.131
9	0.131	0.131	0.1305	0.1308	0.1315	9	0.1309	0.1307	0.13	0.131	0.131
10	0.1313	0.1316	0.1313	0.1312	0.1318	10	0.1311	0.1312	0.131	0.131	0.131
11	0.1315	0.1314	0.1319	0.1309	0.1315	11	0.1313	0.1311	0.132	0.131	0.131
12	0.1319	0.1315	0.1314	0.1313	0.1322	12	0.1315	0.1313	0.131	0.131	0.132
13	0.1314	0.1308	0.1305	0.1308	0.1317	13	0.1312	0.1308	0.13	0.13	0.131
14	0.131	0.131	0.1307	0.1304	0.1312	14	0.1308	0.1308	0.13	0.13	0.131
15	0.1306	0.1308	0.1305	0.1308	0.1317	15	0.1303	0.1308	0.13	0.131	0.131
16	0.1311	0.1312	0.1308	0.1311	0.132	16	0.131	0.131	0.13	0.131	0.132
17	0.1314	0.1313	0.1308	0.1308	0.1321	17	0.1313	0.131	0.13	0.13	0.132
18	0.1308	0.131	0.1306	0.1306	0.132	18	0.1304	0.1307	0.13	0.13	0.132
19	0.1306	0.131	0.1304	0.1302	0.1317	19	0.13	0.1306	0.13	0.13	0.131
20	0.1288	0.1293	0.1287	0.1288	0.1298	20	0.1285	0.1289	0.128	0.129	0.13
21	0.1303	0.13	0.1296	0.1299	0.131	21	0.1299	0.1296	0.129	0.13	0.131
22	0.1302	0.1306	0.1304	0.1304	0.1316	22	0.1301	0.1303	0.13	0.13	0.131
23	0.1309	0.1312	0.1309	0.1307	0.1318	23	0.1304	0.1307	0.131	0.131	0.131
24	0.1296	0.1308	0.1306	0.1302	0.1319	24	0.1295	0.1304	0.13	0.13	0.132
25	0.1297	0.13	0.1298	0.1297	0.1306	25	0.1296	0.1296	0.13	0.13	0.13
26	0.1292	0.1292	0.1294	0.1295	0.13	26	0.1296	0.1293	0.13	0.129	0.13
27	0.1294	0.1292	0.1291	0.1291	0.1293	27	0.129	0.1288	0.129	0.129	0.129
28	0.1304	0.1308	0.1303	0.1302	0.1311	28	0.13	0.1301	0.13	0.13	0.131
29	0.1304	0.1309	0.1307	0.1303	0.131	29	0.1298	0.1302	0.13	0.13	0.13
30	0.1313	0.1313	0.1313	0.1309	0.1315	30	0.1305	0.1306	0.131	0.131	0.131
31	0.1307	0.1311	0.1308	0.1308	0.1306	31	0.1301	0.1305	0.131	0.13	0.13
32	0.1301	0.1303	0.1299	0.1301	0.13	32	0.1296	0.1296	0.13	0.13	0.13
33	0.1307	0.1313	0.1304	0.1307	0.1313	33	0.1304	0.1308	0.13	0.13	0.131
34	0.1309	0.1317	0.1309	0.1309	0.1313	34	0.1305	0.1312	0.131	0.131	0.131
35	0.1309	0.1315	0.1311	0.1306	0.1314	35	0.1306	0.1313	0.131	0.13	0.131
36	0.1311	0.132	0.1317	0.1312	0.1321	36	0.1307	0.1318	0.131	0.131	0.132

37	0.1308	0.1309	0.1307	0.1307	0.131	37	0.1305	0.1306	0.13	0.131	0.131
38	0.1312	0.1317	0.1314	0.131	0.132	38	0.1308	0.1313	0.131	0.131	0.132
39	0.1305	0.1313	0.1307	0.1305	0.1323	39	0.13	0.131	0.13	0.13	0.132
40	0.1304	0.1311	0.131	0.1303	0.1308	40	0.13	0.1307	0.131	0.13	0.131
41	0.1308	0.1311	0.1318	0.1312	0.1309	41	0.1304	0.1307	0.132	0.131	0.131
42	0.1308	0.1313	0.1312	0.1316	0.1311	42	0.1304	0.1309	0.131	0.132	0.131
43	0.1311	0.1316	0.131	0.1316	0.1315	43	0.1307	0.1311	0.131	0.131	0.131
44	0.1309	0.1314	0.1319	0.1311	0.1312	44	0.1304	0.1309	0.131	0.131	0.131
45	0.131	0.1312	0.1319	0.1306	0.1309	45	0.1304	0.1306	0.132	0.13	0.131
46	0.1305	0.1309	0.1313	0.1305	0.1307	46	0.1301	0.1305	0.131	0.13	0.131
47	0.1319	0.1302	0.1311	0.1299	0.13	47	0.1317	0.1296	0.131	0.13	0.13
48	0.1324	0.1313	0.1315	0.1308	0.1316	48	0.132	0.1308	0.131	0.13	0.131
49	0.1301	0.1304	0.1307	0.1303	0.1308	49	0.1297	0.1299	0.13	0.13	0.13
50	0.1313	0.1317	0.1318	0.1311	0.1323	50	0.1308	0.1312	0.131	0.131	0.132
51	0.132	0.1319	0.1324	0.1313	0.1326	51	0.1315	0.1311	0.132	0.131	0.132
52	0.131	0.1308	0.1282	0.1305	0.1311	52	0.1306	0.1301	0.128	0.13	0.131
After Thermals						After Humidity					
Measurements in inches						Measurements in inches					
Sample#	B1	B2	B3	B4	B5	Sample#	B1	B2	B3	B4	B5
1	0.1266	0.1266	0.127	0.1271	0.1265		0.1261	0.1258	0.127	0.127	0.126
2	0.1271	0.1275	0.1272	0.127	0.1267		0.1268	0.127	0.127	0.127	0.127
3	0.128	0.1279	0.1272	0.1271	0.127		0.1273	0.127	0.126	0.126	0.127
4	0.1272	0.127	0.1266	0.1269	0.1266		0.1269	0.1274	0.126	0.127	0.126
5	0.1274	0.1275	0.1272	0.1272	0.127		0.1269	0.1275	0.127	0.127	0.127
6	0.1272	0.1271	0.1271	0.127	0.1267		0.1266	0.1273	0.127	0.127	0.127
7	0.1278	0.128	0.1275	0.1274	0.1276		0.1274	0.1282	0.127	0.127	0.127
8	0.128	0.1282	0.1277	0.1279	0.1277		0.1276	0.1283	0.128	0.128	0.128
9	0.1277	0.128	0.1275	0.1275	0.1271		0.1272	0.128	0.127	0.127	0.127
10	0.1278	0.1281	0.1275	0.1278	0.128		0.1274	0.1283	0.127	0.128	0.128
11	0.1284	0.1282	0.128	0.1278	0.1277		0.1278	0.1284	0.128	0.128	0.127
12	0.1286	0.1284	0.128	0.128	0.1282		0.128	0.1285	0.128	0.128	0.128
13	0.1279	0.1278	0.1274	0.1276	0.1278		0.1273	0.1281	0.127	0.127	0.127
14	0.128	0.128	0.1276	0.1274	0.1276		0.1274	0.1282	0.127	0.127	0.127
15	0.1276	0.1277	0.1273	0.1277	0.1277		0.1271	0.1276	0.127	0.127	0.127
16	0.128	0.1279	0.1275	0.1278	0.1286		0.1275	0.1281	0.127	0.127	0.128
17	0.1284	0.128	0.1275	0.1274	0.1281		0.1279	0.1282	0.127	0.127	0.128
18	0.1278	0.1276	0.1273	0.1271	0.1284		0.1273	0.128	0.127	0.127	0.128
19	0.1275	0.1276	0.127	0.1269	0.1275		0.127	0.1278	0.127	0.127	0.127
20	0.1264	0.1262	0.126	0.1259	0.1264		0.1259	0.1264	0.126	0.126	0.126
21	0.1275	0.1269	0.127	0.1268	0.1272		0.1272	0.1272	0.127	0.127	0.127
22	0.127	0.1273	0.1273	0.127	0.1277		0.1266	0.1276	0.127	0.127	0.128
23	0.128	0.1279	0.1281	0.1273	0.1275		0.1277	0.1281	0.128	0.127	0.128
24	0.1264	0.1279	0.1277	0.1272	0.1277		0.126	0.1278	0.128	0.127	0.125
25	0.1268	0.1275	0.1274	0.1269	0.127		0.1264	0.1273	0.127	0.127	0.127
26	0.1273	0.1276	0.128	0.1272	0.1272		0.1266	0.1268	0.127	0.127	0.127
27	0.1264	0.1262	0.1266	0.1266	0.1264		0.1264	0.1264	0.127	0.127	0.126
28	0.1274	0.1268	0.1271	0.1266	0.1271		0.1273	0.1271	0.127	0.126	0.127
29	0.1272	0.1266	0.1265	0.1267	0.1269		0.1272	0.1267	0.126	0.126	0.127
30	0.1275	0.127	0.1271	0.1269	0.1274		0.1262	0.1271	0.127	0.127	0.127
31	0.1269	0.1272	0.1272	0.1269	0.1269		0.1268	0.1271	0.127	0.127	0.127
32	0.1271	0.1276	0.1265	0.1265	0.1264		0.1267	0.1266	0.126	0.127	0.126
33	0.1278	0.1278	0.1271	0.1272	0.1278		0.1276	0.1278	0.127	0.127	0.128
34	0.128	0.1282	0.1277	0.1275	0.1278		0.1274	0.1277	0.128	0.127	0.128
35	0.1277	0.128	0.1276	0.1274	0.1279		0.1273	0.1278	0.127	0.127	0.128

36	0.1282	0.1288	0.1282	0.1277	0.1282		0.128	0.1289	0.128	0.128	0.128
37	0.1283	0.1278	0.1275	0.1276	0.1276		0.1277	0.1279	0.127	0.127	0.128
38	0.1284	0.1283	0.1281	0.1279	0.1283		0.1277	0.1284	0.128	0.127	0.128
39	0.1281	0.1274	0.1277	0.1275	0.1287		0.1279	0.1287	0.127	0.126	0.129
40	0.1281	0.1281	0.1282	0.1276	0.1278		0.1278	0.1285	0.128	0.126	0.128
41	0.1284	0.1275	0.1287	0.1277	0.1275		0.1282	0.128	0.129	0.127	0.128
42	0.1284	0.1284	0.1279	0.1286	0.1277		0.1282	0.1283	0.128	0.128	0.128
43	0.1285	0.1285	0.1278	0.1285	0.1279		0.1283	0.1282	0.128	0.128	0.128
44	0.1282	0.1284	0.1284	0.1281	0.1278		0.1281	0.128	0.128	0.128	0.128
45	0.1283	0.1283	0.1289	0.1277	0.1277		0.1278	0.1283	0.129	0.127	0.128
46	0.128	0.1283	0.1282	0.1279	0.1278		0.128	0.1283	0.128	0.127	0.128
47	0.1289	0.1277	0.1281	0.1276	0.1276		0.129	0.1274	0.128	0.127	0.128
48	0.1285	0.1284	0.1283	0.1279	0.1283		0.1282	0.1282	0.128	0.128	0.128
49	0.1273	0.1274	0.1273	0.1275	0.1271		0.1272	0.1271	0.127	0.127	0.127
50	0.1279	0.1282	0.1281	0.1276	0.1282		0.1278	0.1278	0.128	0.127	0.128
51	0.1284	0.1282	0.129	0.1278	0.1284		0.1278	0.128	0.129	0.128	0.128
52	0.1281	0.1273	0.1254	0.1271	0.1272		0.1277	0.1269	0.125	0.127	0.127

MATING-UNMATING:

Sample#	Initial				After 100 Cycles			
	Mating		Unmating		Mating		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
1	94.2	5.89	73.1	4.57	121.9	7.62	110.4	6.90
2	119.2	7.45	89.3	5.58	137.1	8.57	120.7	7.54
3	129.1	8.07	87.8	5.49	133.9	8.37	115.8	7.24
4	123.2	7.70	85.0	5.31	147.0	9.19	114.0	7.12
5	118.6	7.41	61.9	3.87	128.3	8.02	89.1	5.57
6	121.9	7.62	76.2	4.76	130.1	8.13	107.4	6.71
7	118.4	7.40	81.1	5.07	136.8	8.55	102.2	6.39
8	115.2	7.20	92.6	5.79	151.8	9.49	131.4	8.21
9	115.4	7.21	88.3	5.52	147.5	9.22	130.2	8.14
10	122.9	7.68	82.6	5.16	149.0	9.31	119.4	7.46
Sample#	After Thermals				After Humidity			
	Mating		Unmating		Mating		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
1	44.8	2.80	39.0	2.44	45.6	2.85	37.6	2.35
2	52.2	3.26	43.4	2.71	49.0	3.06	46.9	2.93
3	60.2	3.76	50.7	3.17	49.9	3.12	49.1	3.07
4	49.3	3.08	46.9	2.93	50.1	3.13	45.8	2.86
5	54.7	3.42	42.2	2.64	71.0	4.44	63.5	3.97
6	46.9	2.93	45.0	2.81	60.0	3.75	57.4	3.59
7	46.4	2.90	46.4	2.90	62.2	3.89	58.1	3.63
8	50.7	3.17	49.4	3.09	45.3	2.83	45.0	2.81
9	49.4	3.09	47.7	2.98	55.8	3.49	52.5	3.28
10	38.4	2.40	38.4	2.40	48.0	3.00	41.9	2.62

DATA Continued**NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):****INSULATION RESISTANCE (IR):**

<u>Sample #</u>	<u>Initial, Meg Ohms</u>		<u>Thermal, Meg Ohms</u>		<u>Humidity, Meg Ohms</u>	
	<u>Mated</u>	<u>Unmated</u>	<u>Mated</u>	<u>Unmated</u>	<u>Mated</u>	<u>Unmated</u>
	<u>Insulation Resistance</u>	<u>Insulation Resistance</u>	<u>Insulation Resistance</u>	<u>Insulation Resistance</u>	<u>Insulation Resistance</u>	<u>Insulation Resistance</u>
1	100000	100000	50000	100000	10000	3000
2	100000	100000	50000	100000	100000	100000

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

<u>Sample #</u>	<u>Initial, VAC Mated</u>			<u>Initial, VAC Unmated</u>		
	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>
1				960	720	240
2	1080	810	270			

<u>Sample #</u>	<u>Thermal, VAC Mated</u>			<u>Thermal, VAC Unmated</u>		
	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>
1				1120	840	280
2	1000	750	250			

<u>Sample #</u>	<u>Humidity, VAC Mated</u>			<u>Humidity, VAC Unmated</u>		
	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>
1				780	585	195
2	1040	780	260			

DATA Continued**LLCR:****10 MICRO-INCH GOLD - LLCR Durability**

mOhm values		Actual	Delta	Delta	Delta
Board	Position	Initial	100 Cycles	Thermal	Humidity
1	P1	23.5	2.9	3.9	5.1
1	P2	26.9	0.2	2.6	2.3
1	P3	28.3	-0.6	1.5	1.8
1	P4	28.0	-0.3	1.4	1.4
1	P5	27.6	-0.4	1.4	1.8
1	P6	27.2	-0.3	0.7	3.3
1	P7	27.6	-1.2	0.3	0.0
1	P8	28.5	-1.4	-1.7	-0.3
1	P9	29.2	-1.4	-1.3	0.0
1	P10	29.7	-1.8	-0.9	-0.3
1	P11	29.3	-1.3	-0.8	0.1
1	P12	29.3	-1.2	-0.8	-0.8
1	P13	29.7	-1.2	-0.8	-0.6
1	P14	29.6	-1.7	-1.4	0.9
1	P15	29.8	-1.7	-1.4	-1.0
1	P16	28.5	-0.9	1.0	-0.3
1	P17	27.8	-0.2	0.8	0.9
1	P18	27.8	-0.8	-0.8	0.6
1	P19	28.7	-1.4	-0.8	-0.2
1	P20	27.1	-0.3	0.8	1.5
1	P21	28.1	-0.9	1.6	2.0
1	P22	27.9	-0.5	2.0	1.8
1	P23	28.2	0.4	1.7	1.9
1	P24	26.6	-0.1	1.9	3.2
1	P25	26.3	0.1	1.5	3.8
2	P1	27.6	-0.5	0.8	-0.1
2	P2	27.6	-0.6	2.1	-0.1
2	P3	28.2	-0.6	2.3	2.7
2	P4	27.9	-0.3	1.8	3.8
2	P5	27.4	-0.3	2.1	1.5
2	P6	27.6	-0.4	0.8	0.6
2	P7	27.8	-0.4	0.7	2.3
2	P8	27.8	-0.2	1.3	3.6
2	P9	27.9	-0.6	0.5	0.6
2	P10	28.3	-0.8	1.3	1.3
2	P11	28.2	-0.5	0.6	1.7
2	P12	28.4	-1.0	0.7	1.4
2	P13	29.3	-0.8	1.0	1.0
2	P14	28.8	-0.9	1.1	1.9

2	P15	28.9	-0.7	1.4	2.4
2	P16	27.9	0.0	0.5	1.5
2	P17	27.9	-0.1	0.5	0.9
2	P18	28.3	-0.4	0.4	0.2
2	P19	28.6	-0.9	-0.3	-0.1
2	P20	27.1	-0.4	0.8	0.8
2	P21	27.8	0.4	3.2	2.0
2	P22	28.3	-0.9	1.9	2.2
2	P23	28.1	-0.4	2.4	0.8
2	P24	27.4	-0.4	0.5	1.1
2	P25	27.4	0.8	0.3	1.4
3	P1	27.2	-0.5	0.2	1.5
3	P2	28.8	-0.9	0.1	0.8
3	P3	27.7	0.7	2.6	4.4
3	P4	27.3	-0.1	2.5	3.6
3	P5	27.8	-0.3	1.8	4.4
3	P6	27.0	-0.5	1.2	3.1
3	P7	26.9	-0.2	1.2	1.3
3	P8	27.8	-0.2	0.4	0.6
3	P9	28.3	-1.0	0.3	0.1
3	P10	27.8	0.1	1.1	0.2
3	P11	28.0	-0.4	0.6	0.6
3	P12	29.2	-0.5	-0.5	-1.0
3	P13	28.8	-0.1	0.1	1.8
3	P14	28.2	-0.3	0.8	1.3
3	P15	29.0	-0.7	-0.3	0.4
3	P16	28.7	-0.3	0.1	-0.5
3	P17	28.6	-1.1	-0.4	0.3
3	P18	26.7	0.1	0.6	1.4
3	P19	27.7	-0.5	0.3	0.8
3	P20	27.0	-0.4	0.9	1.6
3	P21	28.4	-0.9	1.4	2.2
3	P22	27.8	-0.1	2.0	2.6
3	P23	28.4	-1.0	1.4	2.1
3	P24	26.7	-0.4	1.5	2.9
3	P25	26.4	-0.2	1.2	3.1
4	P1	26.6	0.5	2.5	2.9
4	P2	27.2	0.1	3.2	2.8
4	P3	28.3	-0.2	3.7	2.2
4	P4	27.7	-0.1	2.3	2.7
4	P5	27.6	-0.1	2.1	2.0
4	P6	27.1	0.3	2.9	1.7
4	P7	28.5	-1.4	0.2	-0.6
4	P8	29.8	-1.7	-0.6	-1.1
4	P9	29.2	-0.9	-1.2	2.0
4	P10	29.4	-0.8	-0.3	-0.6
4	P11	30.2	-1.4	-1.4	-1.2
4	P12	29.4	-0.6	-1.3	-0.6
4	P13	29.5	-0.6	-0.5	-0.1

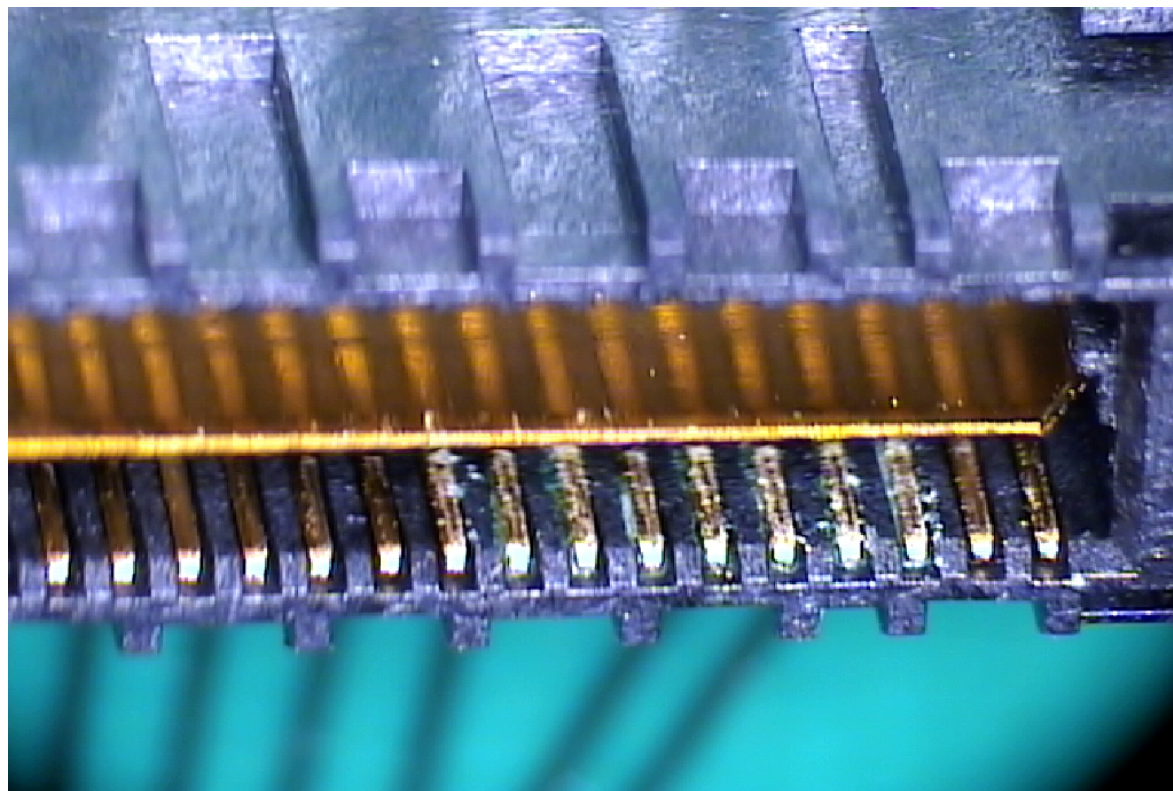
4	P14	29.3	-0.8	-0.2	-0.3
4	P15	29.7	-1.0	0.9	1.6
4	P16	28.8	0.0	-0.5	2.2
4	P17	28.5	-0.5	0.4	0.3
4	P18	28.4	-0.9	0.1	-0.3
4	P19	28.6	-1.2	-1.0	0.4
4	P20	27.2	-0.4	2.0	0.9
4	P21	28.2	-0.1	2.8	3.2
4	P22	28.1	-0.4	3.1	3.8
4	P23	28.1	0.1	2.1	2.4
4	P24	27.7	-0.1	2.6	2.9
4	P25	27.3	-0.4	2.5	3.0
5	P1	27.7	-0.6	1.9	0.3
5	P2	29.0	-2.1	0.9	1.3
5	P3	28.8	-1.1	1.7	3.7
5	P4	29.1	-1.8	1.3	0.6
5	P5	28.5	-0.5	1.6	2.1
5	P6	27.6	-0.5	1.2	1.0
5	P7	28.0	-0.5	0.1	-0.1
5	P8	27.6	0.0	0.9	1.2
5	P9	28.6	-0.9	0.0	-0.2
5	P10	29.2	-0.8	1.3	0.0
5	P11	28.9	-0.4	0.7	0.0
5	P12	28.6	0.3	0.8	1.3
5	P13	29.1	-0.1	0.7	0.4
5	P14	29.0	-0.5	1.3	-0.1
5	P15	28.9	-1.0	2.0	0.9
5	P16	28.1	0.5	0.9	1.8
5	P17	27.9	0.0	1.0	1.3
5	P18	27.4	0.2	1.3	1.1
5	P19	27.8	-0.1	0.8	0.7
5	P20	27.8	-0.7	0.8	0.4
5	P21	28.6	-0.4	2.2	1.1
5	P22	29.2	-1.7	1.7	1.9
5	P23	28.1	-0.3	3.4	2.9
5	P24	28.1	-1.4	1.8	1.1
5	P25	27.5	-0.8	2.1	0.7
7	P1	27.4	0.4	-0.3	2.0
7	P2	27.9	0.5	-0.4	1.0
7	P3	28.1	0.8	0.0	2.1
7	P4	27.7	0.6	0.9	1.5
7	P5	27.7	0.6	0.6	0.3
7	P6	26.3	0.7	-0.6	-0.1
7	P7	27.5	0.9	1.6	4.6
7	P8	27.0	2.2	10.4	8.9
7	P9	28.0	0.5	2.5	2.7
7	P10	28.6	1.0	3.1	3.7
7	P11	28.3	0.9	2.5	2.5
7	P12	29.1	-0.6	0.9	1.4

Tracking Code: TC0717--1340	Part #: QFS-052-01-SL-D-EM2
Part description: QFS-EM	

7	P13	28.3	0.1	3.1	2.9
7	P14	28.9	0.3	1.7	3.0
7	P15	28.5	0.1	2.4	3.1
7	P16	28.2	0.4	2.2	2.0
7	P17	28.0	-0.1	2.2	2.6
7	P18	27.3	0.8	1.7	1.7
7	P19	27.5	0.2	0.8	1.4
7	P20	26.8	-0.2	-0.4	2.5
7	P21	27.6	0.0	0.0	5.2
7	P22	27.6	1.5	-0.1	1.4
7	P23	26.9	0.0	1.1	1.4
7	P24	26.6	0.4	0.5	0.8
7	P25	25.9	0.6	0.1	4.9
8	P1	26.9	-0.3	1.9	2.9
8	P2	27.5	-0.2	0.3	1.9
8	P3	27.7	0.3	3.1	3.5
8	P4	27.3	0.3	2.1	3.3
8	P5	27.7	-0.2	1.0	1.7
8	P6	27.1	-1.0	0.8	3.8
8	P7	26.9	0.4	1.1	1.8
8	P8	27.3	0.6	4.4	3.3
8	P9	27.6	0.2	1.4	1.0
8	P10	28.4	0.2	1.2	2.5
8	P11	28.2	0.0	0.3	0.4
8	P12	28.4	0.1	-0.1	0.7
8	P13	30.4	-1.1	-1.5	0.4
8	P14	28.7	-0.3	1.9	0.1
8	P15	27.8	0.9	-0.1	1.3
8	P16	28.1	-0.1	-0.1	0.6
8	P17	28.5	-1.1	-0.9	-0.3
8	P18	27.3	0.0	-0.2	2.3
8	P19	27.6	0.3	0.5	1.4
8	P20	27.2	-0.4	1.7	2.6
8	P21	27.8	-0.2	1.7	2.1
8	P22	28.0	0.2	2.8	3.7
8	P23	27.6	-0.6	3.0	2.5
8	P24	27.0	-0.9	0.8	3.3
8	P25	26.8	-0.7	2.0	2.4

NOTE: Sample #6 was removed from the data (25 points) due to contamination which was found in the contact area (see photo below).

This contamination dramatically affected the measurements for the sample.



30 MICRO-INCH GOLD - LLCR Durability

mOhm values		Actual	Delta	Delta	Delta
Board	Position	Initial	100 Cycles	Thermal	Humidity
1	P1	26.5	0.0	1.6	2.3
1	P2	26.9	1.6	1.6	3.1
1	P3	27.3	-0.3	2.5	2.5
1	P4	27.8	0.0	1.2	0.6
1	P5	27.3	0.0	2.1	2.2
1	P6	28.8	-1.0	-0.1	-0.6
1	P7	27.7	-0.5	0.0	0.2
1	P8	26.4	-0.3	0.1	1.4
1	P9	27.7	-0.8	0.6	0.6
1	P10	30.5	-2.5	-2.1	-0.8
1	P11	28.6	-1.4	0.4	-1.4
1	P12	29.9	-1.6	-1.3	3.0
1	P13	28.1	-0.3	0.9	1.2
1	P14	27.9	-0.4	-0.5	1.3
1	P15	27.6	0.3	-0.1	1.6
1	P16	27.5	-0.3	0.4	1.7

Tracking Code: TC0717--1340	Part #: QFS-052-01-SL-D-EM2
Part description: QFS-EM	

1	P17	27.5	-0.4	1.1	0.7
1	P18	27.4	-0.8	-0.3	-0.1
1	P19	26.9	-0.5	0.4	0.8
1	P20	27.5	-0.8	1.2	1.2
1	P21	27.4	-0.4	2.4	3.9
1	P22	28.2	0.2	2.2	1.4
1	P23	28.1	0.0	0.9	2.0
1	P24	27.9	-1.3	-0.3	0.6
1	P25	26.9	0.4	1.0	0.5
2	P1	26.8	-0.1	0.6	2.2
2	P2	27.1	0.1	0.8	2.1
2	P3	27.7	-0.5	1.6	4.1
2	P4	27.0	0.9	2.7	3.0
2	P5	27.3	0.3	1.4	1.0
2	P6	27.8	-0.8	1.0	1.0
2	P7	40.8	-1.5	-0.2	0.1
2	P8	28.0	-0.4	-0.3	0.8
2	P9	28.3	-0.3	-0.2	0.6
2	P10	28.9	-1.6	-1.0	2.9
2	P11	28.2	-0.2	-0.2	3.6
2	P12	27.8	-0.5	0.5	1.5
2	P13	28.2	-0.6	-0.5	2.3
2	P14	29.6	-2.1	-1.4	-0.3
2	P15	28.9	-1.2	-0.5	1.3
2	P16	28.3	2.1	-0.6	1.1
2	P17	27.5	0.0	0.4	2.0
2	P18	26.3	0.8	1.6	2.9
2	P19	27.1	0.5	0.0	1.4
2	P20	26.8	-0.3	1.3	1.2
2	P21	27.7	-0.3	0.4	1.1
2	P22	27.7	-0.2	3.3	3.5
2	P23	27.7	-0.6	0.8	1.0
2	P24	26.4	-0.3	1.2	2.9
2	P25	26.8	-0.7	0.5	1.2
3	P1	26.8	0.0	1.5	1.0
3	P2	27.1	-0.6	1.4	1.4
3	P3	28.0	-0.8	2.8	2.6
3	P4	27.9	-0.4	1.2	2.3
3	P5	27.0	-0.3	1.2	1.7
3	P6	27.0	-0.9	1.5	0.6
3	P7	28.1	-0.1	-0.9	-0.4
3	P8	27.2	0.4	0.1	2.1
3	P9	27.6	-0.3	0.5	4.8
3	P10	28.3	-0.8	0.0	0.0
3	P11	28.6	-1.2	-1.1	0.2
3	P12	28.6	-1.0	-0.7	-0.5
3	P13	30.1	-1.6	-1.6	6.3
3	P14	28.7	-1.0	-0.7	1.7
3	P15	27.8	-0.3	0.1	2.0

3	P16	27.4	-0.1	0.3	0.2
3	P17	28.2	-0.6	1.2	0.0
3	P18	27.6	-0.3	0.3	0.1
3	P19	30.4	-2.6	-1.5	-2.4
3	P20	26.8	-0.3	0.6	1.5
3	P21	28.9	-0.9	2.4	2.6
3	P22	29.2	-1.4	-0.4	0.9
3	P23	27.1	0.0	2.4	1.5
3	P24	27.5	-0.6	0.4	0.9
3	P25	30.4	-1.9	1.2	-2.0
4	P1	25.7	-0.2	1.7	1.8
4	P2	26.3	-0.4	2.0	2.9
4	P3	28.5	-1.1	1.1	0.7
4	P4	26.9	-0.7	1.3	1.8
4	P5	27.0	-0.6	0.6	1.3
4	P6	27.2	-0.7	-0.2	0.6
4	P7	26.0	0.0	0.9	2.6
4	P8	26.2	0.0	1.5	2.4
4	P9	26.3	-0.1	1.4	3.8
4	P10	26.8	-0.3	0.8	3.6
4	P11	27.5	-0.6	1.0	1.1
4	P12	27.7	-0.1	1.2	0.7
4	P13	28.8	0.3	-0.3	-0.9
4	P14	28.0	-0.9	-0.2	0.1
4	P15	28.4	-0.6	0.1	-1.1
4	P16	27.5	-0.7	0.3	0.5
4	P17	29.2	-2.0	-1.2	-0.3
4	P18	27.8	-0.2	1.0	1.3
4	P19	27.9	0.0	2.3	1.5
4	P20	27.1	-1.0	0.1	-0.4
4	P21	26.6	-0.5	1.3	1.7
4	P22	27.2	-0.5	1.0	1.5
4	P23	26.2	-0.4	0.4	1.5
4	P24	26.0	-0.2	0.9	1.9
4	P25	26.0	-0.6	0.5	0.6
5	P1	27.6	-0.4	0.6	1.3
5	P2	27.6	-0.5	1.1	1.8
5	P3	28.9	-1.4	1.6	1.3
5	P4	28.2	-0.9	0.8	2.4
5	P5	28.0	-0.4	1.9	2.2
5	P6	27.3	-0.5	1.5	0.7
5	P7	27.2	-0.6	0.2	1.6
5	P8	29.2	-2.3	-1.5	-0.4
5	P9	28.0	-0.8	0.3	0.2
5	P10	28.6	-1.5	-0.7	0.0
5	P11	28.5	-1.3	-0.2	0.1
5	P12	28.3	-0.8	0.2	3.2
5	P13	30.1	-2.4	-1.1	-1.3
5	P14	29.6	-1.5	-0.2	-0.7

5	P15	28.1	-0.2	0.1	0.5
5	P16	28.9	-1.6	0.1	0.4
5	P17	28.1	-1.3	0.7	5.6
5	P18	27.9	-0.9	0.1	-0.9
5	P19	28.6	-0.9	-1.4	0.0
5	P20	27.9	-0.7	2.2	0.1
5	P21	28.7	-0.6	1.9	1.2
5	P22	27.9	0.0	1.4	1.7
5	P23	28.0	-0.2	1.6	0.9
5	P24	27.7	-1.2	1.1	0.1
5	P25	27.2	-0.4	1.3	0.7
6	P1	27.1	-0.8	0.2	0.1
6	P2	28.1	-0.8	2.2	0.5
6	P3	29.9	-1.9	-0.8	-0.5
6	P4	29.5	-1.9	1.9	0.5
6	P5	28.7	-0.6	-0.3	1.0
6	P6	27.8	-0.4	0.1	1.1
6	P7	27.5	-0.1	1.2	1.2
6	P8	27.8	-0.4	0.0	-0.3
6	P9	28.4	-0.9	1.7	-0.6
6	P10	29.2	-0.6	1.4	0.9
6	P11	27.6	0.8	3.1	9.3
6	P12	29.5	-0.2	1.3	0.8
6	P13	29.9	-0.3	2.2	-0.1
6	P14	29.5	-0.9	0.3	-0.9
6	P15	30.6	-1.4	-0.6	2.0
6	P16	28.1	0.4	1.8	1.1
6	P17	27.6	0.3	2.5	1.8
6	P18	27.9	0.6	1.5	8.3
6	P19	27.1	0.9	2.4	10.2
6	P20	28.7	-1.7	-0.6	0.0
6	P21	28.0	-0.3	0.8	2.5
6	P22	29.7	-1.7	-1.1	0.4
6	P23	28.5	-0.3	0.9	0.7
6	P24	28.5	-1.3	-0.4	1.1
6	P25	30.3	-1.9	-2.3	-1.0
7	P1	27.0	-0.1	0.6	1.7
7	P2	27.3	-0.3	1.2	1.9
7	P3	28.4	-0.9	0.9	0.6
7	P4	27.6	-0.6	1.3	2.0
7	P5	27.1	0.3	2.0	3.0
7	P6	29.5	-2.3	-1.6	-1.6
7	P7	27.3	-0.9	-0.6	0.2
7	P8	27.0	-0.4	0.7	1.9
7	P9	27.6	-0.9	0.9	1.8
7	P10	29.0	-0.9	-0.2	1.8
7	P11	28.1	-1.4	0.4	0.1
7	P12	28.3	-0.3	0.6	0.5
7	P13	29.4	-1.9	0.3	3.9

Tracking Code: TC0717--1340	Part #: QFS-052-01-SL-D-EM2
Part description: QFS-EM	

7	P14	29.5	-2.0	1.5	0.0
7	P15	30.0	-2.2	2.2	0.3
7	P16	28.3	-1.1	2.9	0.3
7	P17	28.3	-1.2	2.3	0.6
7	P18	28.7	-2.0	-1.7	-1.1
7	P19	27.9	-0.8	-1.0	-0.9
7	P20	27.5	-0.5	-0.5	0.0
7	P21	27.2	-0.4	0.2	2.9
7	P22	28.9	-1.8	-0.3	0.7
7	P23	27.7	-0.5	-0.2	0.5
7	P24	27.8	-0.7	-0.6	0.5
7	P25	27.8	-0.8	-0.2	0.1
8	P1	27.7	-1.1	-0.6	1.8
8	P2	28.3	-1.9	-1.0	0.6
8	P3	29.7	-2.6	-1.9	-0.9
8	P4	28.7	-1.4	-0.6	0.8
8	P5	28.1	-0.6	-0.4	0.3
8	P6	27.7	-1.5	-0.9	0.0
8	P7	27.0	0.0	1.4	1.0
8	P8	28.5	-1.0	1.5	-0.5
8	P9	28.2	0.1	1.1	-0.3
8	P10	28.7	0.2	2.2	0.5
8	P11	28.8	-0.6	1.6	3.2
8	P12	30.4	-1.7	-1.2	-1.3
8	P13	27.9	1.2	1.6	0.5
8	P14	28.6	-0.5	1.7	1.1
8	P15	27.9	1.2	1.2	0.6
8	P16	27.9	1.4	1.9	0.6
8	P17	28.3	-0.3	1.8	0.2
8	P18	27.2	0.8	2.0	1.5
8	P19	27.0	0.8	1.7	0.7
8	P20	28.9	-2.0	-1.9	-1.2
8	P21	28.3	-1.2	-0.5	0.8
8	P22	28.0	0.3	2.4	2.7
8	P23	28.4	-0.5	1.1	1.6
8	P24	27.2	-0.5	1.1	1.0
8	P25	27.2	-0.7	0.0	0.4

GAS TIGHT:

mOhm values		Actual	Delta
Board	Position	Initial	Gas Tight
1	P1	24.9	4.6
1	P2	26.1	3.9
1	P3	27.1	0.5
1	P4	25.5	2.3
1	P5	25.5	3.4

Tracking Code: TC0717--1340	Part #: QFS-052-01-SL-D-EM2
Part description: QFS-EM	

1	P6	24.9	3.9
1	P7	25.0	0.7
1	P8	25.9	0.6
1	P9	25.4	1.4
1	P10	25.4	1.3
1	P11	26.0	2.9
1	P12	26.8	1.3
1	P13	27.0	0.1
1	P14	26.3	3.2
1	P15	27.8	1.4
1	P16	27.4	0.7
1	P17	26.6	3.5
1	P18	25.2	1.6
1	P19	24.9	0.7
1	P20	25.3	3.2
1	P21	25.2	3.2
1	P22	25.6	2.3
1	P23	26.1	0.7
1	P24	25.3	3.2
1	P25	24.8	3.1
2	P1	25.4	2.4
2	P2	24.8	3.7
2	P3	26.5	4.5
2	P4	26.3	5.8
2	P5	25.3	8.9
2	P6	26.5	6.3
2	P7	24.8	3.1
2	P8	24.9	10.3
2	P9	25.3	3.6
2	P10	24.9	5.9
2	P11	26.9	3.0
2	P12	26.1	2.4
2	P13	25.8	4.8
2	P14	25.7	2.3
2	P15	26.4	2.3
2	P16	25.6	2.6
2	P17	25.8	3.7
2	P18	26.4	0.8
2	P19	25.5	0.5
2	P20	24.7	3.5
2	P21	25.7	4.4
2	P22	26.1	4.1
2	P23	25.4	2.9
2	P24	25.6	2.9
2	P25	24.7	7.6
3	P1	25.6	4.1
3	P2	27.0	2.1
3	P3	27.2	2.5
3	P4	26.0	4.5

Tracking Code: TC0717--1340	Part #: QFS-052-01-SL-D-EM2
Part description: QFS-EM	

3	P5	25.5	1.8
3	P6	25.6	2.5
3	P7	24.9	1.4
3	P8	24.7	5.4
3	P9	26.0	1.2
3	P10	25.5	1.9
3	P11	25.9	2.5
3	P12	26.8	2.9
3	P13	25.0	1.9
3	P14	25.6	2.6
3	P15	26.7	1.8
3	P16	26.3	1.1
3	P17	17.3	0.7
3	P18	17.0	0.9
3	P19	25.3	0.5
3	P20	25.6	2.4
3	P21	27.7	1.2
3	P22	27.2	1.4
3	P23	26.6	0.5
3	P24	26.3	1.1
3	P25	26.7	0.5
4	P1	24.9	4.2
4	P2	24.8	2.8
4	P3	26.0	5.1
4	P4	26.2	3.2
4	P5	25.8	3.5
4	P6	25.5	2.4
4	P7	25.1	4.1
4	P8	27.3	3.2
4	P9	25.6	2.9
4	P10	27.1	0.4
4	P11	26.4	1.0
4	P12	26.6	1.3
4	P13	27.1	1.1
4	P14	26.2	2.9
4	P15	27.5	1.2
4	P16	26.8	3.3
4	P17	25.8	3.5
4	P18	27.1	2.3
4	P19	26.1	1.4
4	P20	25.0	3.0
4	P21	25.9	4.4
4	P22	25.9	2.5
4	P23	26.3	2.2
4	P24	25.1	2.3
4	P25	25.2	3.9
5	P1	24.6	4.8
5	P2	26.1	2.6
5	P3	27.0	3.0

Tracking Code: TC0717--1340	Part #: QFS-052-01-SL-D-EM2
Part description: QFS-EM	

5	P4	25.7	4.7
5	P5	28.6	0.6
5	P6	26.4	2.0
5	P7	25.0	1.7
5	P8	25.4	2.3
5	P9	25.3	1.4
5	P10	25.4	2.9
5	P11	27.1	3.0
5	P12	26.4	1.8
5	P13	25.7	2.7
5	P14	26.6	1.1
5	P15	25.3	1.4
5	P16	25.8	4.6
5	P17	27.0	-0.2
5	P18	28.6	-0.1
5	P19	25.3	0.8
5	P20	25.6	2.7
5	P21	25.4	2.3
5	P22	25.7	2.1
5	P23	25.8	4.2
5	P24	25.6	2.5
5	P25	24.8	2.9
6	P1	25.9	11.0
6	P2	25.3	3.8
6	P3	26.5	6.9
6	P4	25.9	5.2
6	P5	26.7	2.8
6	P6	27.2	7.5
6	P7	24.4	10.7
6	P8	25.9	11.7
6	P9	25.9	11.4
6	P10	25.7	12.3
6	P11	25.5	11.3
6	P12	26.8	12.2
6	P13	27.0	7.2
6	P14	26.6	4.6
6	P15	26.3	11.7
6	P16	25.2	3.0
6	P17	27.7	2.6
6	P18	26.1	4.3
6	P19	24.9	5.1
6	P20	25.5	-0.3
6	P21	26.3	1.5
6	P22	27.6	5.3
6	P23	26.4	3.4
6	P24	26.6	1.5
6	P25	25.5	2.5
7	P1	25.3	6.6
7	P2	25.5	5.8

Tracking Code: TC0717--1340	Part #: QFS-052-01-SL-D-EM2
Part description: QFS-EM	

7	P3	26.6	3.9
7	P4	27.4	2.5
7	P5	25.9	5.6
7	P6	24.9	5.7
7	P7	27.7	2.7
7	P8	28.1	1.2
7	P9	28.1	2.1
7	P10	28.3	3.8
7	P11	27.8	2.3
7	P12	27.6	2.4
7	P13	27.9	2.6
7	P14	26.7	1.7
7	P15	27.1	1.8
7	P16	26.8	2.4
7	P17	27.6	0.8
7	P18	26.7	1.5
7	P19	26.4	1.9
7	P20	24.6	4.3
7	P21	25.6	4.5
7	P22	25.4	4.6
7	P23	26.7	4.4
7	P24	24.9	4.1
7	P25	24.6	4.7
8	P1	25.4	4.4
8	P2	25.4	3.2
8	P3	25.7	4.0
8	P4	26.0	3.0
8	P5	26.2	5.2
8	P6	25.2	3.4
8	P7	25.7	5.9
8	P8	26.0	3.7
8	P9	27.1	2.2
8	P10	26.3	1.7
8	P11	28.3	3.8
8	P12	27.4	1.3
8	P13	27.2	5.0
8	P14	27.0	2.0
8	P15	26.2	4.7
8	P16	26.4	1.2
8	P17	26.0	4.2
8	P18	25.3	2.4
8	P19	25.7	13.3
8	P20	27.6	0.7
8	P21	25.4	4.6
8	P22	27.5	2.0
8	P23	25.8	2.6
8	P24	25.5	2.9
8	P25	25.6	3.5

DATA (continued)**SUPPLEMENTAL****MATING-UNMATING ONE (1) BANK:**

Sample#	Initials				After 5 Cycles			
	Mating		Unmating		Mating		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
1	95.2	5.95	98.1	6.13	84.0	5.25	86.7	5.42
2	67.2	4.20	51.7	3.23	63.5	3.97	45.8	2.86
3								
4	88.6	5.54	82.1	5.13	82.9	5.18	77.8	4.86
5	87.8	5.49	74.7	4.67	77.3	4.83	66.9	4.18
	After 10 Cycles				-			
	Mating		Unmating					
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)				
1	78.6	4.91	83.2	5.20				
2	59.7	3.73	44.2	2.76				
3								
4	76.5	4.78	75.5	4.72				
5	75.7	4.73	66.2	4.14				

MATING-UNMATING FOUR (4) BANK:

Sample#	Initial				After 5 Cycles			
	Mating		Unmating		Mating		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
1	212.8	13.30	176.8	11.05	185.8	11.61	147.7	9.23
2	222.7	13.92	168.3	10.52	216.6	13.54	155.2	9.70
3	223.8	13.99	143.0	8.94	211.5	13.22	137.0	8.56
4	249.1	15.57	192.3	12.02	265.6	16.60	141.3	8.83
5	238.4	14.90	174.2	10.89	240.0	15.00	170.9	10.68
Sample#	After 10 Cycles							
	Mating		Unmating					
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)				
1	183.7	11.48	141.9	8.87				
2	204.2	12.76	151.5	9.47				
3	208.5	13.03	125.6	7.85				
4	247.8	15.49	128.3	8.02				
5	226.4	14.15	158.1	9.88				

EQUIPMENT AND CALIBRATION SCHEDULES**Equipment #:** THL-02**Description:** Temperature/Humidity Chart Recorder**Manufacturer:** Dickson**Model:** THDX**Serial #:** 00120351**Accuracy:** Temp: +/- 1C; Humidity: +/-2% RH (0 - 60%) +/- 3% RH (61 - 95%).

... Last Cal: 06/16/07, Next Cal: 06/16/08

Equipment #: MO-02**Description:** Multimeter /Data Acquisition System**Manufacturer:** Keithley**Model:** 2700**Serial #:** 0780546**Accuracy:** See Manual

... Last Cal: 06/22/07, Next Cal: 06/22/08

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

... Last Cal: 01/31/07, Next Cal: 01/31/08

Equipment #: PS-01**Description:** System Power Supply**Manufacturer:** Hewlett Packard**Model:** HP 6033A**Serial #:** (HP) 3329A-07330**Accuracy:** See Manual

... Last Cal: 06/22/07, Next Cal: 06/22/08

Equipment #: TC090601-109/118**Description:** IC Thermocouple-109/118**Manufacturer:** Samtec**Model:****Serial #:** TC090601-109/118**Accuracy:** +/- 1 degree C

... Last Cal: , Next Cal:

Equipment #: OGP-01**Description:** 6"X 6" Video Measuring Machine**Manufacturer:** Optical Gauging Products**Model:** Smartscope 200 CFOV**Serial #:** SF2001956**Accuracy:** See Manual

... Last Cal: 03/13/07, Next Cal: 03/13/08

Equipment #: TCT-03**Description:** Dillon Quantrol TC2 Test Stand**Manufacturer:** Dillon Quantrol**Model:** TC2**Serial #:** 02-1033-03**Accuracy:** Speed Accuracy: +/- 5% of indicated speed; Speed Accuracy: +/- 5% of indicated speed;
... Last Cal: 5/12/07, Next Cal: 5/12/08**Equipment #:** LC-250N (icell)**Description:** 250 Newton load cell for Dillon Quantrol test stand**Manufacturer:** Dillon Quantrol**Model:** icell**Serial #:** 04-0020-08**Accuracy:** .10 % of Capacity

... Last Cal: 5/24/2007, Next Cal: 5/24/2008

Equipment #: OV-03**Description:** Cascade Tek Forced Air Oven**Manufacturer:** Cascade Tek**Model:** TFO-5**Serial #:** 0500100**Accuracy:** Temp. Stability: +/- .1C/C change in ambient

... Last Cal: 06/62/07, Next Cal: 06/22/08

Equipment #: THC-01**Description:** Temperature/Humidity Chamber**Manufacturer:** Thermotron**Model:** SM-8-7800**Serial #:** 30676**Accuracy:** See Manual

... Last Cal: 8/18/2006, Next Cal: 8/18/2007

Equipment #: LC-5N(icell)**Description:** 5 N Load Cell for Dillon Quantrol**Manufacturer:** Dillon Quantrol**Model:** icell**Serial #:** 00120351**Accuracy:** .10% of capacity

... Last Cal: 6/13/06, Next Cal: 6/13/07

Equipment #: HPM-01**Description:** Hipot Megommeter**Manufacturer:** Hipotronics**Model:** H306B-A**Serial #:** M9905004**Accuracy:** 2 % Full Scale Accuracy

... Last Cal: 06/22/07, Next Cal: 06/22/08

Tracking Code: TC0717--1340	Part #: QFS-052-01-SL-D-EM2
Part description: QFS-EM	

Equipment #: MO-01

Description: Micro-Ohmmeter

Manufacturer: Keithley

Model: 580

Serial #: 0772740

Accuracy: See Manual

... Last Cal: 06/22/07, Next Cal: 06/22/08

Equipment #: MO-03

Description: Multimeter /Data Acquisition System

Manufacturer: Keithley

Model: 2700

Serial #: 0791975

Accuracy: See Manual

... Last Cal: 06/22/07, Next Cal: 06/22/08

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