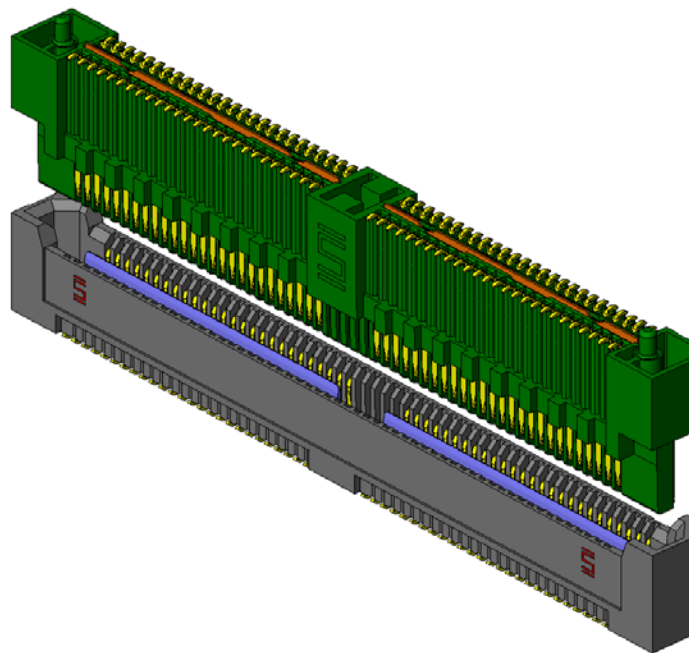




Project Number: Design Verification Test		Tracking Code: TC0915—2399_Report Rev 1	
Requested by: Corey Rose		Date: 9/23/2009	Product Rev: 2
Part #: QRM8-052-05.0-L-D-A / QRF8-052-05.0-L-D-A		Lot #: 04/09/09	Tech: Rodney Riley Gary Lomax Troy Cook
Eng: Eric Mings Mark Shireman			
Part description: Q-Rate Terminal / Socket Assembly			Qty to test: 100
Test Start: 04/09/2009		Test Completed: 8/31/2009	



Design Verification Test Report

PART DESCRIPTION

QRM8-052-05.0-L-D-A / QRF8-052-05.0-L-D-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

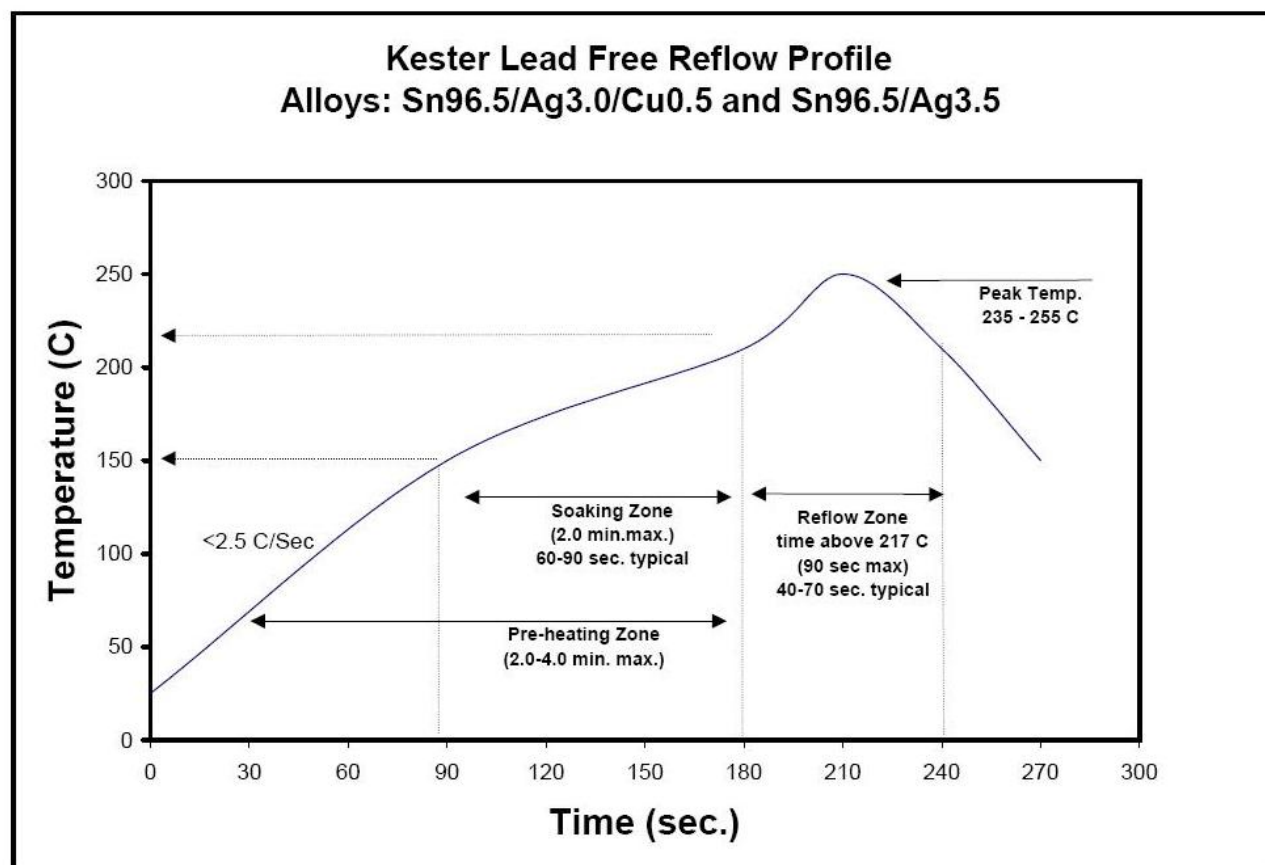
To perform the following tests: Design verification test. See test plan.

APPLICABLE DOCUMENTS

Standards: EIA Publication 364

TEST SAMPLES AND PREPARATION

- 1) All materials were manufactured in accordance with the applicable product specification.
- 2) All test samples were identified and encoded to maintain traceability throughout the test sequences.
- 3) After soldering, the parts to be used for LLCR and DWV/IR testing were cleaned according to TLWI-0001.
- 4) Either an automated cleaning procedure or an ultrasonic cleaning procedure may be used.
- 5) The automated procedure is used with aqueous compatible soldering materials.
- 6) Parts not intended for testing LLCR and DWV/IR are visually inspected and cleaned if necessary.
- 7) Any additional preparation will be noted in the individual test sequences.
- 8) Solder Information: Lead Free
- 9) Re-Flow Time/Temp: See accompanying profile.
- 10) Samtec Test PCBs used: PCB-101611-TST-XX

TYPICAL OVEN PROFILE (Soldering Parts to Test Boards)

FLOWCHARTS**Gas Tight**

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

Gas Tight = EIA-364-36A

LLCR = EIA-364-23, LLCR

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

Mating/Unmating/Gaps/Normal Force/Deflection Force

TEST STEP	GROUP A 10 Boards	GROUP B1 Individual Contacts (30) min	GROUP B2 Individual Contacts (30) min
01	Contact Gaps	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 Gaps		
07	Data Review		
08	Thermal Aging (Mated)		
09	Mating / Unmating		
10	Contact Gaps		
11	Data Review		
12	Humidity (Mated)		
13	Contact Gaps		
14	Mating / Unmating		

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 to 98% RH)

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

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

Normal Force = EIA-364-04

(Perpendicular) displacement Force = 12.7 mm/min +/- 6 mm/min

Spec is 50 N @ 1 mm displacement

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

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 B 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 Aging (both sets unmated)
03				IR & DWV at test voltage (on both mated sets and on each connector unmated)
04				Cyclic Humidity (both sets unmated)
05				IR & DWV at test voltage (on both mated sets and on each connector unmated)

* - DWV on group B to be performed at Test Voltage

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

Thermal Aging = EIA-364-17, Test Condition 4 (105 °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 to 98% RH)

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

IR = EIA-364-21

DWV = EIA-364-20, Test Condition 1

Durability/Thermal Age/Cyclic Humidity

TEST STEP	GROUP A 184 Signals & 16 Grounds 100 Cycles
01	LLCR-1
02	Data Review
03	100 Cycles
04	LLCR-2
05	Data Review
06	Thermal Age
07	LLCR-3
08	Data Review
09	Cyclic Humidity
10	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 to 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

Current Carrying Capacity

TEST STEP	GROUP A 3 Mated Assemblies 2 CONTACTS POWERED	GROUP B 3 Mated Assemblies 4 CONTACTS POWERED	GROUP C 3 Mated Assemblies 6 CONTACTS POWERED	GROUP D 3 Mated Assemblies 8 CONTACTS POWERED	GROUP E 3 Mated Assemblies ALL CONTACTS POWERED
01	CCC	CCC	CCC	CCC	CCC

(TIN PLATING) - Tabulate calculated current at RT, 65° C, 75° C and 95° C

after derating 20% and based on 105° C

(GOLD PLATING) - Tabulate calculated current at RT, 85° C, 95° C and 115° C

after derating 20% and based on 125° C

CCC, Temp rise = EIA-364-70

Current Carrying Capacity

TEST STEP	GROUP A 3 Mated Assemblies 1 GROUND PLANE POWERED	GROUP B 3 Mated Assemblies 2 GROUND PLANES 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

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) All test samples are pre-conditioned at ambient.
- 5) All test samples are exposed to environmental stressing in the mated condition.

HUMIDITY:

- 1) Reference document: EIA-364-31, *Humidity Test Procedure for Electrical Connectors*.
- 2) Test Condition B, 240 Hours.
- 3) Method III, +25° C to + 65° C, 90% to 98% Relative Humidity excluding sub-cycles 7a and 7b.
- 4) All samples are pre-conditioned at ambient.
- 5) All test samples are exposed to environmental stressing in the mated condition.

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.

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.

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

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

- 1) PROCEDURE:
 - a. Reference document: EIA-364-20, *Withstanding Voltage Test Procedure for Electrical Connectors*.
 - b. Test Conditions:
 - i. Between Adjacent Contacts or Signal-to-Ground
 - ii. Barometric Test Condition 1
 - iii. Rate of Application 500 V/Sec
 - iv. Test Voltage (VAC) until breakdown occurs
- 2) MEASUREMENTS/CALCULATIONS
 - a. The breakdown voltage shall be measured and recorded.
 - b. The dielectric withstanding voltage shall be recorded as 75% of the minimum breakdown voltage.
 - c. The working voltage shall be recorded as one-third (1/3) of the dielectric withstanding voltage (one-fourth of the breakdown voltage).

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-----2.2A per contact with 2 adjacent contacts powered
- CCC for a 30°C Temperature Rise-----1.8A per contact with 4 adjacent contacts powered
- CCC for a 30°C Temperature Rise-----1.6A per contact with 6 adjacent contacts powered
- CCC for a 30°C Temperature Rise-----1.4A per contact with 8 adjacent contacts powered
- CCC for a 30°C Temperature Rise-----0.6A per contact with all adjacent contacts powered

- CCC for a 30°C Temperature Rise-----8.5A per ground plane (GP) with 1 GP powered
- CCC for a 30°C Temperature Rise-----8.1A per ground plane (GP) with 2 adjacent GP's powered

- CCC for a 30°C Temperature Rise-----0.6A per contact with all contacts and GP's powered

Contact Gaps – QRM8

- Initial
 - Min-----2.0180 mm
 - Max -----2.1340 mm
- After 100 Cycles
 - Min-----2.0258 mm
 - Max -----2.1598 mm
- Thermal
 - Min-----2.0020 mm
 - Max -----2.0880 mm
- Humidity
 - Min-----1.8398 mm
 - Max -----2.1138 mm

Contact Gaps – QRF8

- Initial
 - Min-----1.3767 mm
 - Max -----1.6066 mm
- After 100 Cycles
 - Min-----1.4279 mm
 - Max -----1.5738 mm
- Thermal
 - Min-----1.5960 mm
 - Max -----1.7820 mm
- Humidity
 - Min-----1.6099 mm
 - Max -----1.7978 mm

Mating – Unmating Forces

- **Initial**
 - **Mating**
 - **Min** ----- 4.93 Lbs
 - **Max** ----- 5.60 Lbs
 - **Unmating**
 - **Min** ----- 2.31 Lbs
 - **Max** ----- 3.20 Lbs
- **After 25 Cycles**
 - **Mating**
 - **Min** ----- 4.59 Lbs
 - **Max** ----- 5.40 Lbs
 - **Unmating**
 - **Min** ----- 2.52 Lbs
 - **Max** ----- 3.50 Lbs
- **After 50 Cycles**
 - **Mating**
 - **Min** ----- 4.48 Lbs
 - **Max** ----- 5.30 Lbs
 - **Unmating**
 - **Min** ----- 2.70 Lbs
 - **Max** ----- 3.70 Lbs
- **After 75 Cycles**
 - **Mating**
 - **Min** ----- 4.47 Lbs
 - **Max** ----- 5.50 Lbs
 - **Unmating**
 - **Min** ----- 2.65 Lbs
 - **Max** ----- 4.00 Lbs
- **After 100 Cycles**
 - **Mating**
 - **Min** ----- 4.37 Lbs
 - **Max** ----- 5.50 Lbs
 - **Unmating**
 - **Min** ----- 2.69 Lbs
 - **Max** ----- 4.10 Lbs
- **Thermal**
 - **Mating**
 - **Min** ----- 1.50 Lbs
 - **Max** ----- 2.10 Lbs
 - **Unmating**
 - **Min** ----- 1.24 Lbs
 - **Max** ----- 1.90 Lbs
- **Humidity**
 - **Mating**
 - **Min** ----- 1.78 Lbs
 - **Max** ----- 2.40 Lbs
 - **Unmating**
 - **Min** ----- 1.25 Lbs
 - **Max** ----- 1.80 Lbs

Contact Normal Force at .0156" deflection

- **Initial**
 - **Min**-----93.10 g **Set ---- 0.0028"**
 - **Max** -----97.60 g **Set ---- 0.0033"**
- **Thermal**
 - **Min**-----88.60 g
 - **Max** -----91.90 g

Ground Plane Normal Force at .0042" deflection

- **Initial**
 - **Min**-----48.10 g **Set ---- 0.0000"**
 - **Max** -----71.00 g **Set ---- 0.0005"**
- **Thermal**
 - **Min**-----26.10 g
 - **Max** -----47.60 g

Insulation Resistance minimums, IR

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

Dielectric Withstanding Voltage minimums, DWV

- **Minimums**
 - **Breakdown Voltage**-----860 VAC
 - **Test Voltage**-----645 VAC
 - **Working Voltage**-----215 VAC
- **Initial DWV** -----Passed
- **Thermal DWV**-----Passed
- **Humidity DWV**-----Passed

LLCR Durability (225 LLCR test points)

- **Initial** ----- 22.8 mOhms Max
- **Durability, 100 Cycles**
 - o <= +5.0 mOhms ----- 225 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 ----- 213 Points ----- Stable
 - o +5.1 to +10.0 mOhms ----- 11 Points ----- Minor
 - o +10.1 to +15.0 mOhms ----- 1 Point ----- 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 ----- 217 Points ----- Stable
 - o +5.1 to +10.0 mOhms ----- 8 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

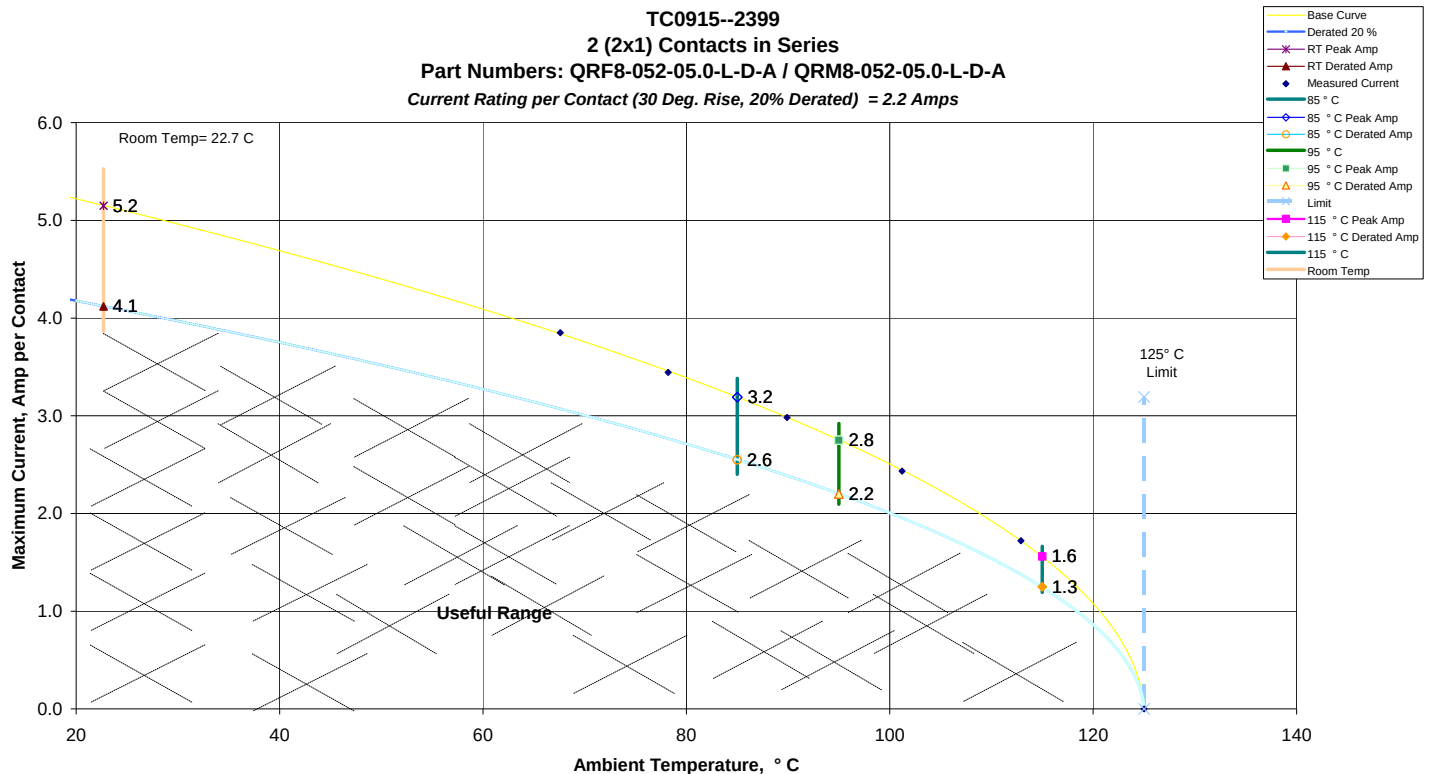
LLCR Gas Tight (200 LLCR test points)

- **Initial** ----- 27.1 mOhms Max
- **Gas-Tight**
 - o <= +5.0 mOhms ----- 199 Points ----- Stable
 - o +5.1 to +10.0 mOhms ----- 1 Point ----- 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

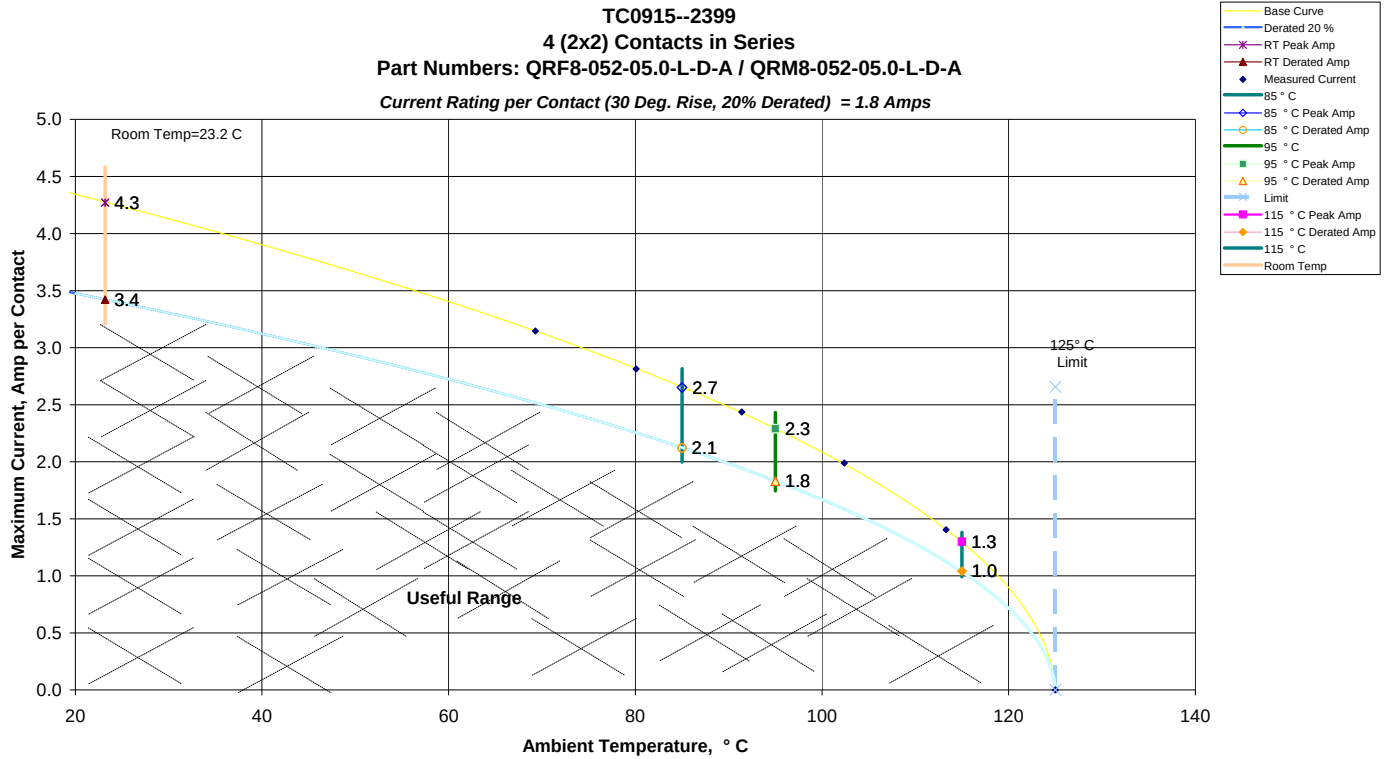
DATA SUMMARIES

TEMPERATURE RISE (Current Carrying Capacity, CCC):

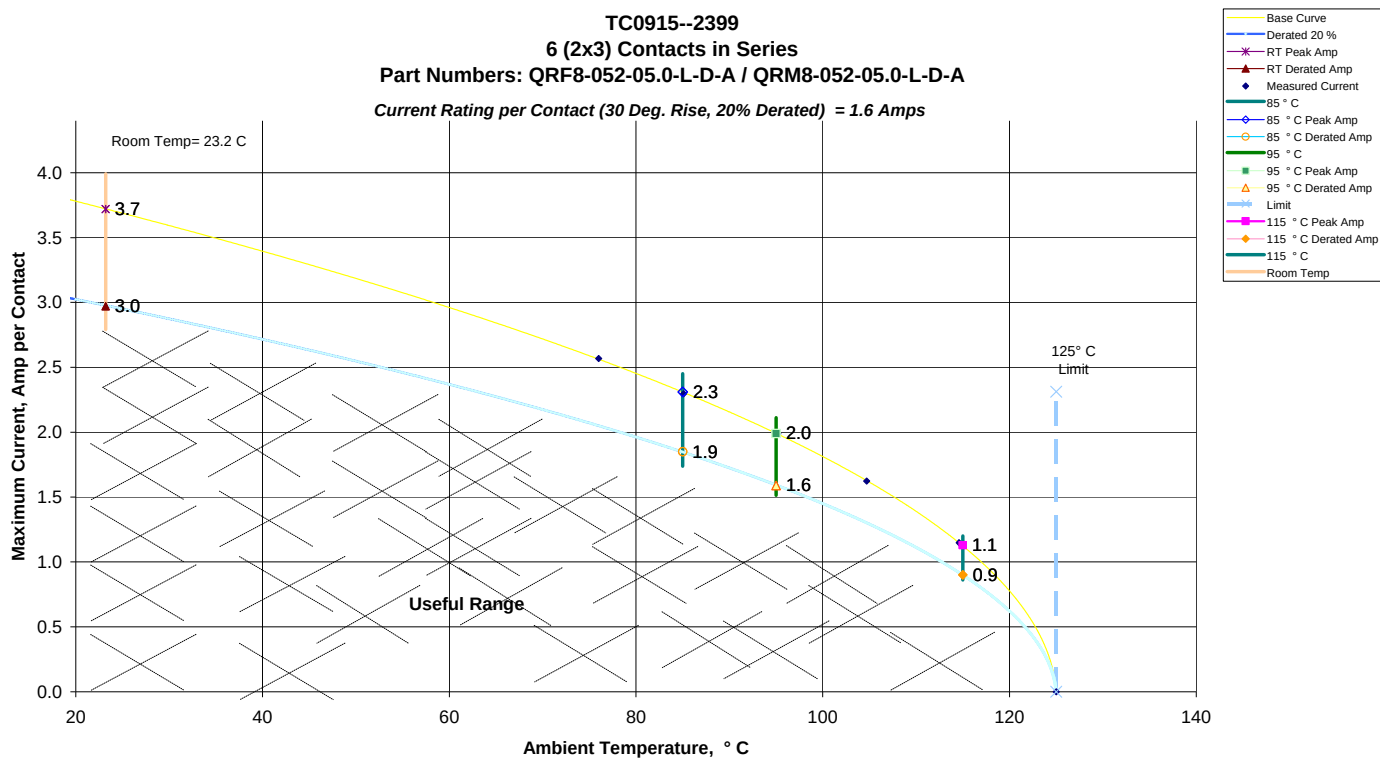
- 1) High quality thermocouples whose temperature slopes track one another were used for temperature monitoring.
- 2) The thermocouples were placed at a location to sense the maximum temperature generated during testing.
- 3) Temperature readings recorded are those for which three successive readings, 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



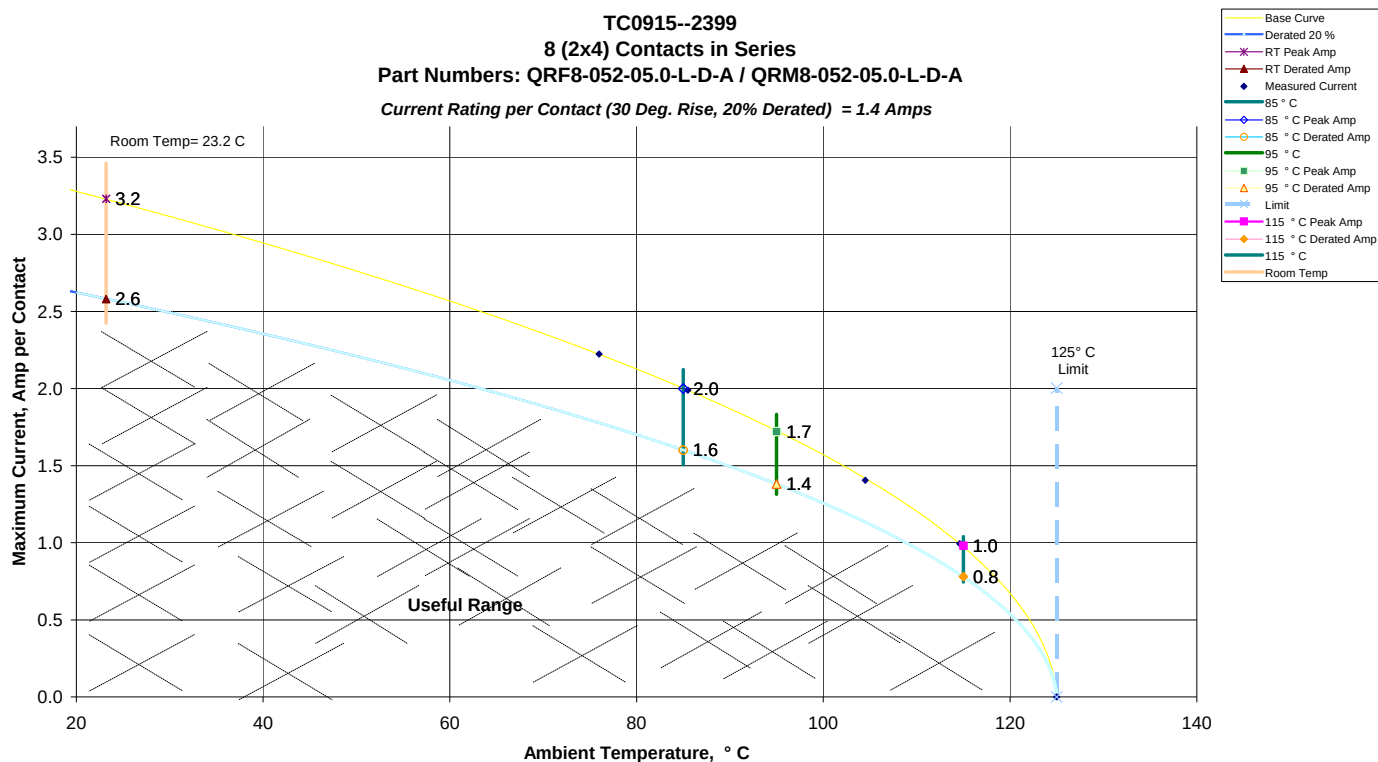
b. Linear configuration with 4 adjacent conductors/contacts powered



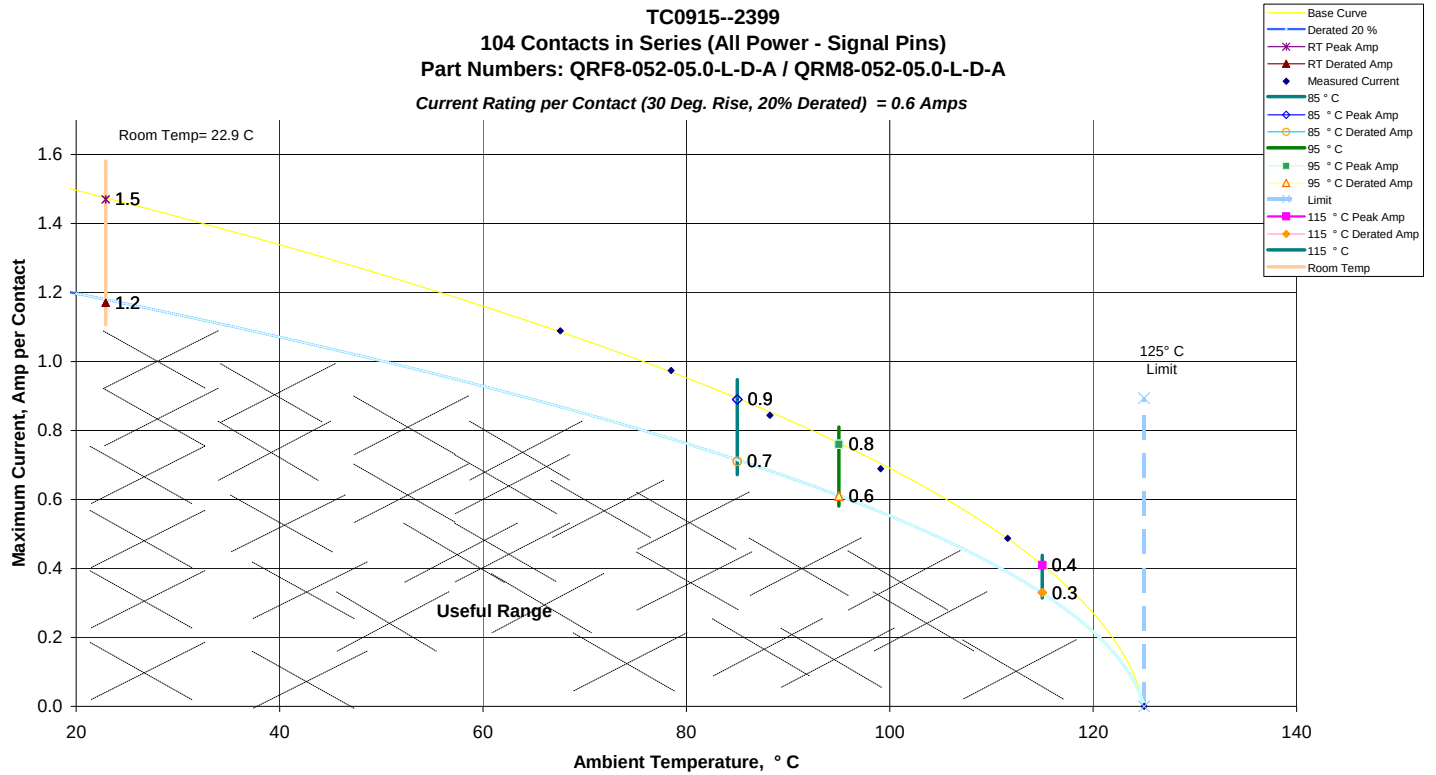
c. Linear configuration with 6 adjacent conductors/contacts powered



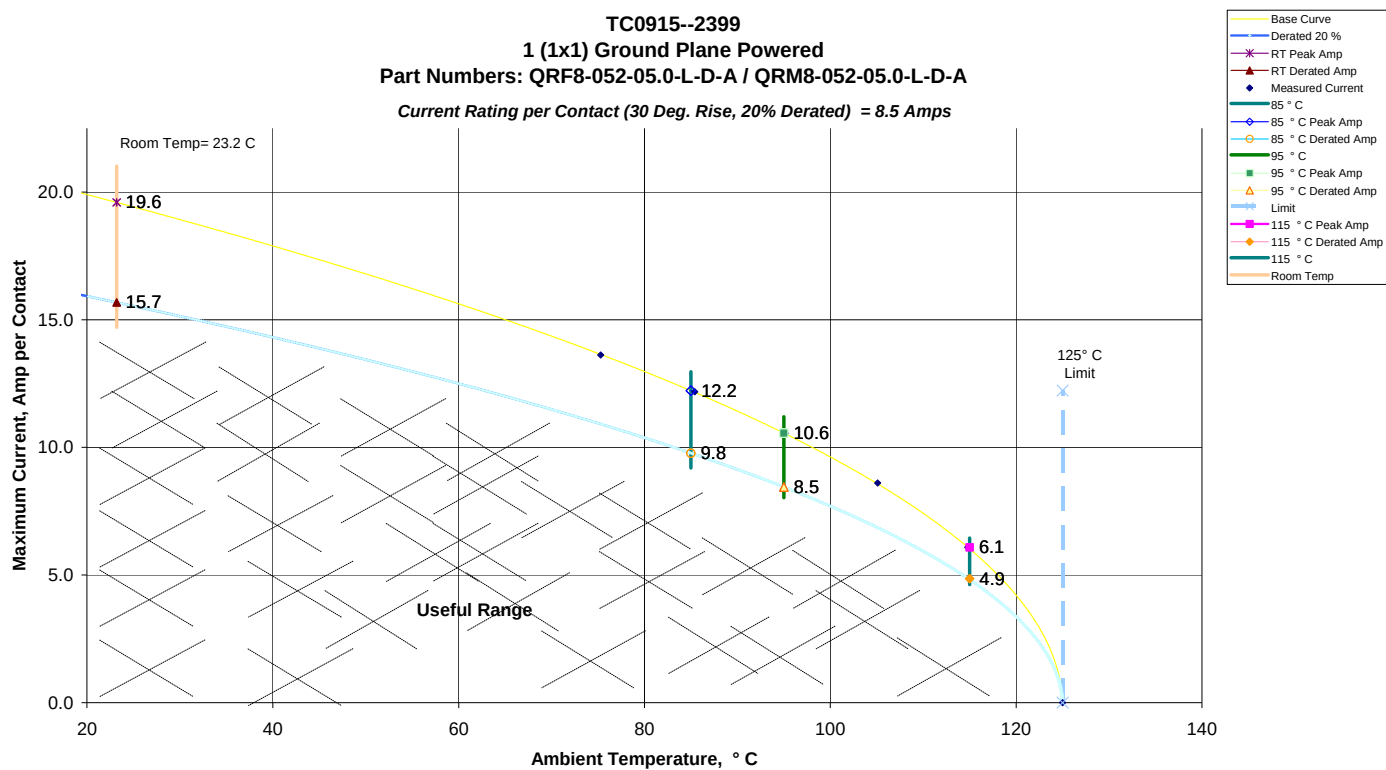
d. Linear configuration with 8 adjacent conductors/contacts powered



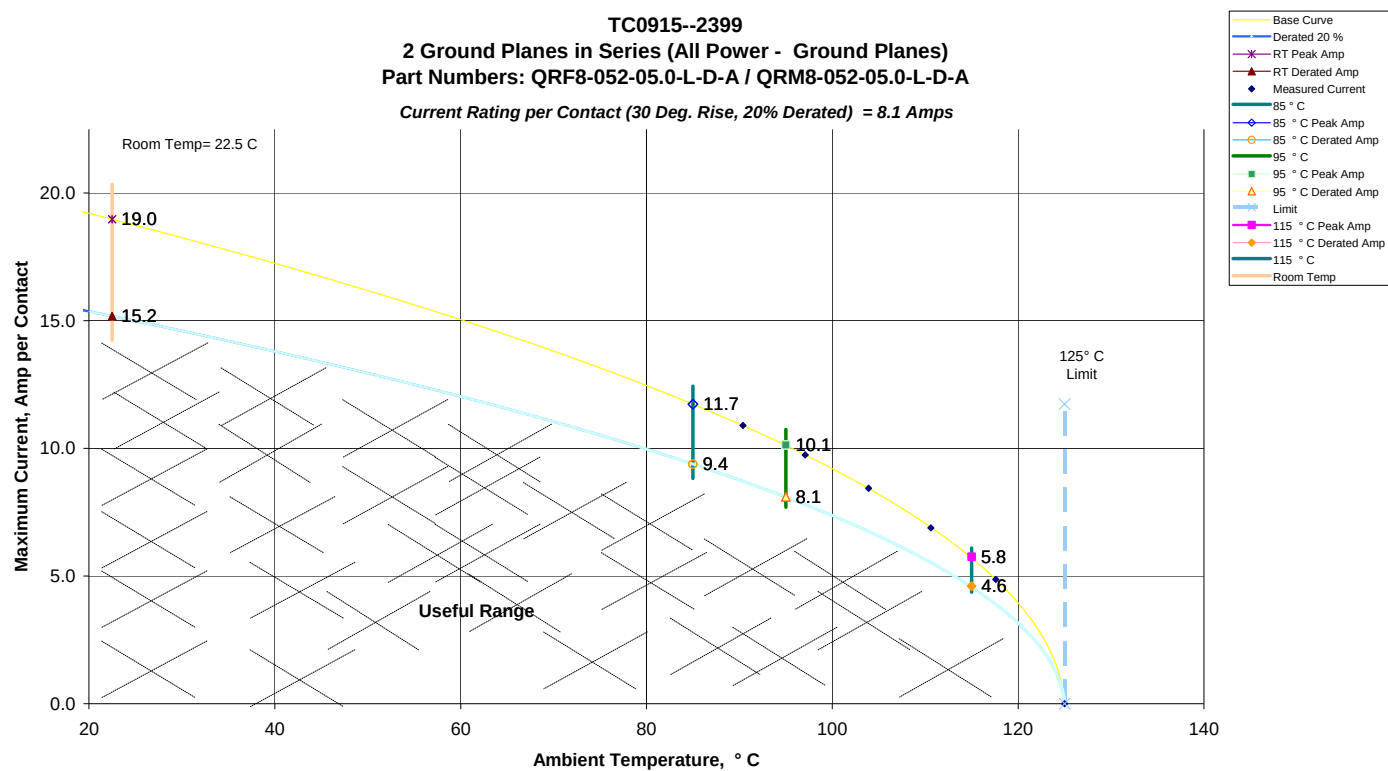
e. Linear configuration with all adjacent conductors/contacts powered



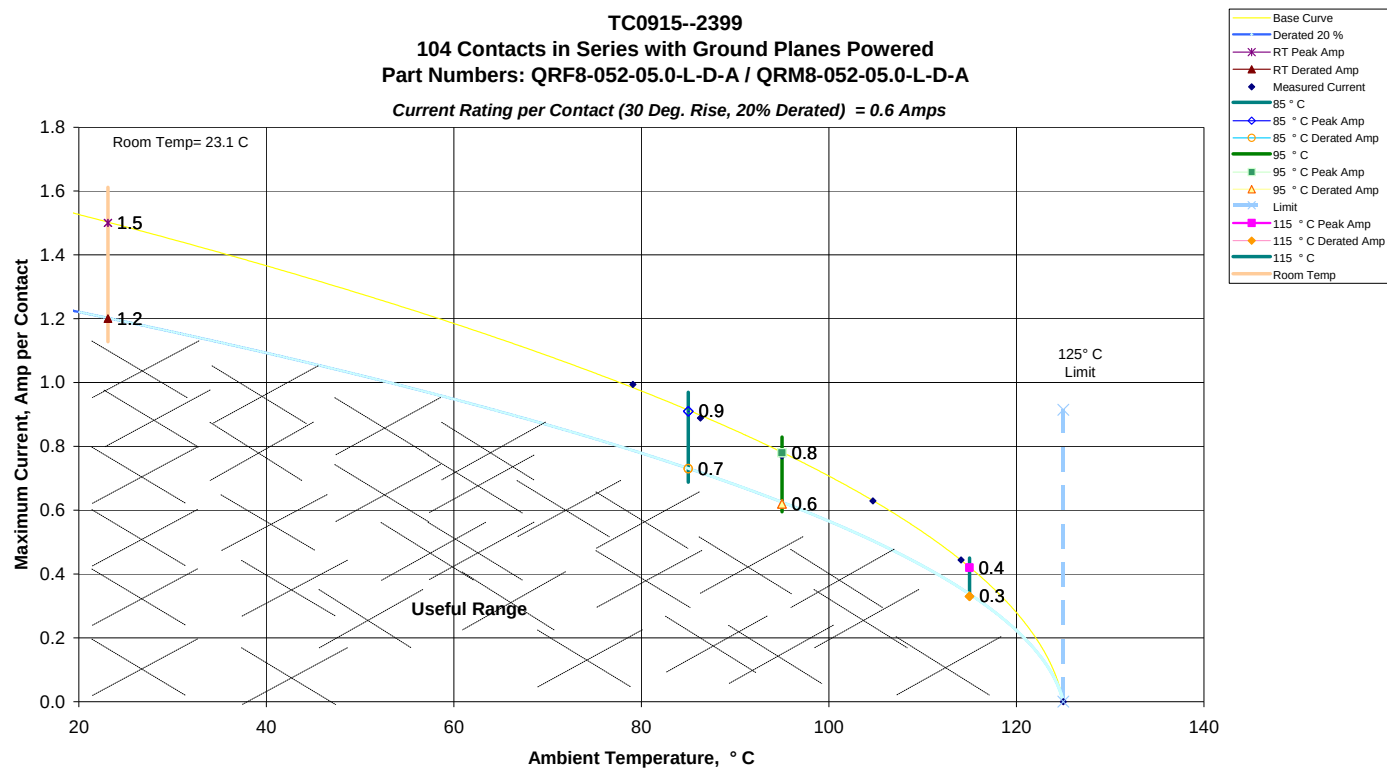
f. Linear configuration with 1 ground plane powered



g. Linear configuration with 2 ground planes powered



h. Linear configuration with all adjacent contacts and ground planes powered



CONTACT GAPS:**QRM8**

Initial		After 100 Cycles		Thermal		Humidity	
Measured in mm		Measured in mm		Measured in mm		Measured in mm	
Minimum	2.0180	Minimum	2.0258	Minimum	2.0020	Minimum	1.8398
Maximum	2.1340	Maximum	2.1598	Maximum	2.0880	Maximum	2.1138
Average	2.0778	Average	2.0859	Average	2.0452	Average	2.0581
St. Dev.	0.0202	St. Dev.	0.0214	St. Dev.	0.0166	St. Dev.	0.0232
Count	520	Count	520	Count	520	Count	520

QRF8

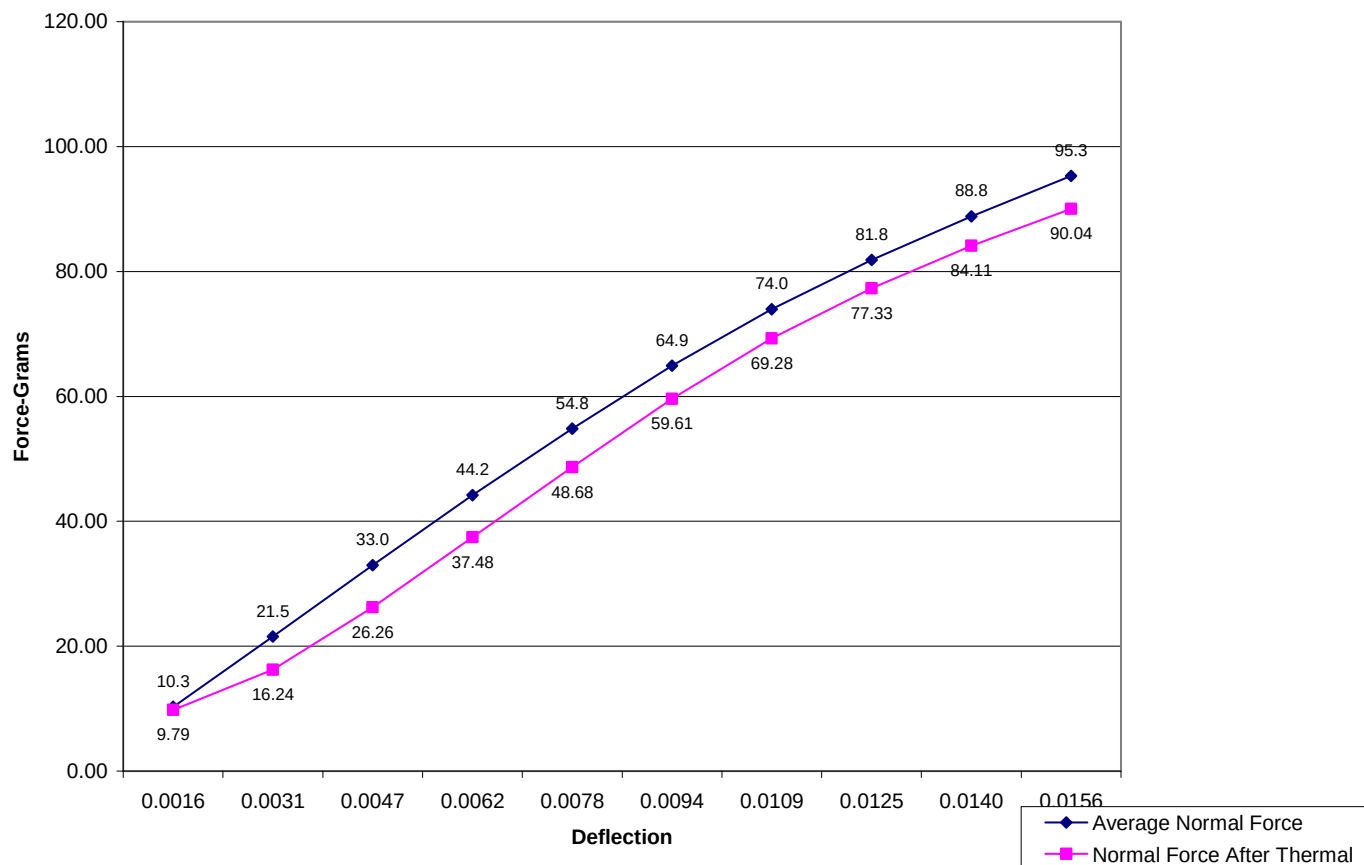
Initial		After 100 Cycles		Thermal		Humidity	
Measured in mm		Measured in mm		Measured in mm		Measured in mm	
Minimum	1.3767	Minimum	1.4279	Minimum	1.5960	Minimum	1.6099
Maximum	1.6066	Maximum	1.5738	Maximum	1.7820	Maximum	1.7978
Average	1.4660	Average	1.5136	Average	1.7012	Average	1.7176
St. Dev.	0.0371	St. Dev.	0.0221	St. Dev.	0.0365	St. Dev.	0.0358
Count	520	Count	520	Count	520	Count	520

MATING/UNMATING:

	Initial				After 25 Cycles			
	Mating		Unmating		Mating		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	78.9	4.93	37.0	2.31	73.4	4.59	40.3	2.52
Maximum	90.2	5.6	50.4	3.2	86.4	5.4	55.2	3.5
Average	84.0	5.2	42.4	2.6	78.8	4.9	47.1	2.9
	After 50 Cycles				After 75 Cycles			
	Mating		Unmating		Mating		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	71.7	4.48	43.2	2.70	71.5	4.47	42.4	2.65
Maximum	85.4	5.3	58.7	3.7	87.8	5.5	63.2	4.0
Average	78.3	4.9	49.5	3.1	78.3	4.9	50.1	3.1
	After 100 Cycles				After Thermals			
	Mating		Unmating		Mating		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	69.9	4.37	43.0	2.69	24.0	1.50	19.8	1.24
Maximum	88.0	5.5	66.1	4.1	33.6	2.1	29.6	1.9
Average	78.2	4.9	49.9	3.1	28.2	1.8	22.5	1.4
	After Humidity							
	Mating		Unmating					
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)				
Minimum	28.5	1.78	20.0	1.25				
Maximum	38.0	2.4	29.0	1.8				
Average	34.3	2.1	25.4	1.6				

CONTACT NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):

- 1) Calibrated force gauges are used along with computer controlled positioning equipment.
- 2) For Normal force 8-10 measurements are taken and the averages reported.

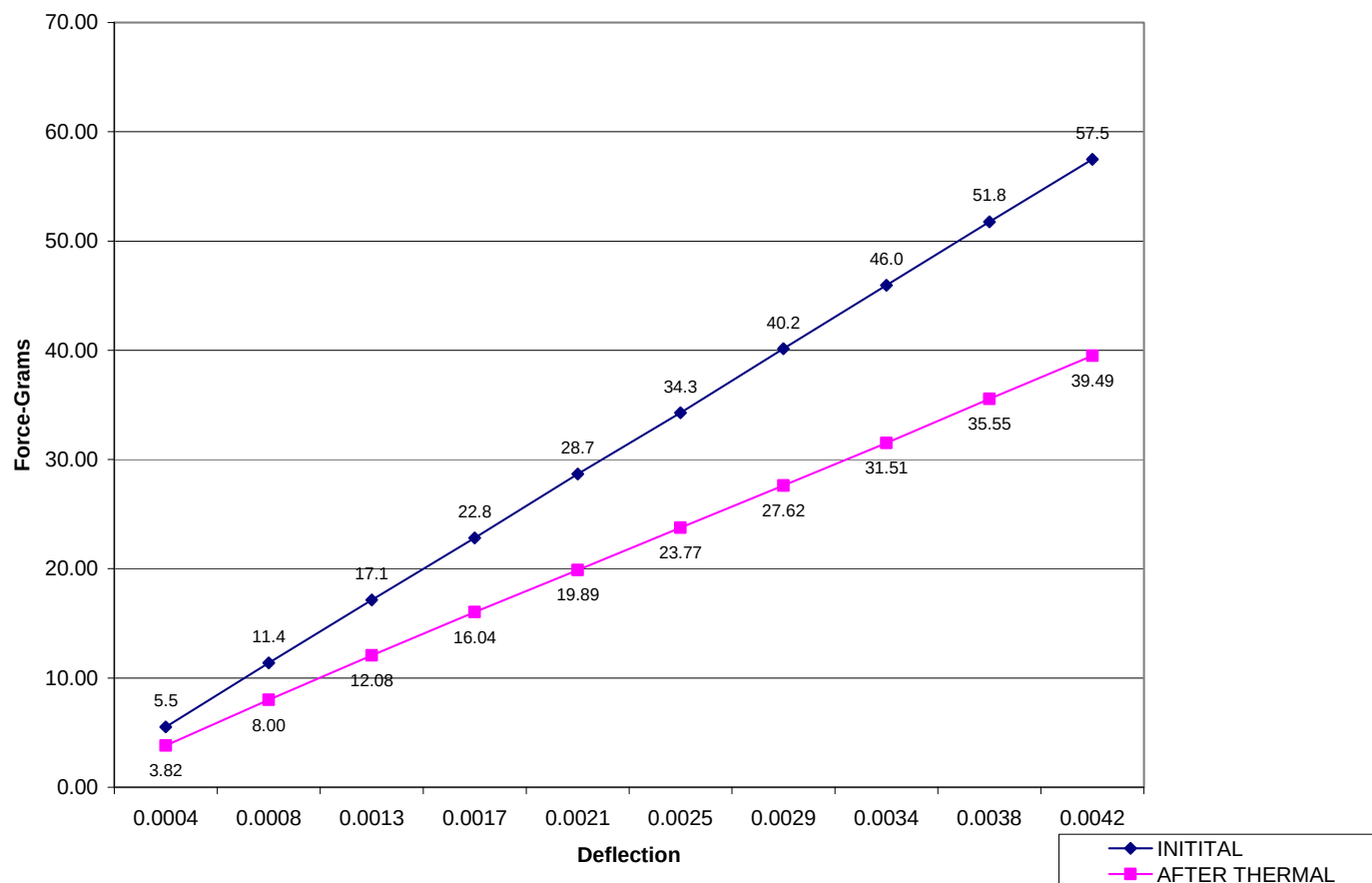
Normal Force - Average

Initial	Deflections in inches Forces in Grams										
	<u>0.0016</u>	<u>0.0031</u>	<u>0.0047</u>	<u>0.0062</u>	<u>0.0078</u>	<u>0.0094</u>	<u>0.0109</u>	<u>0.0125</u>	<u>0.0140</u>	<u>0.0156</u>	<i>SET</i>
Averages	10.04	21.25	32.61	43.81	54.48	64.65	73.77	81.70	88.75	95.37	0.0031
Min	8.40	19.40	30.70	42.10	52.50	62.40	71.70	79.70	87.00	93.10	0.0028
Max	11.10	22.30	33.70	45.30	56.10	66.80	76.70	84.30	90.90	97.60	0.0033
St. Dev	0.657	0.757	0.763	0.797	0.820	1.091	1.301	1.258	1.174	1.369	0.0001
Count	12	12	12	12	12	12	12	12	12	12	12

After Thermals	Deflections in inches Forces in Grams										
	<u>0.0016</u>	<u>0.0031</u>	<u>0.0047</u>	<u>0.0062</u>	<u>0.0078</u>	<u>0.0094</u>	<u>0.0109</u>	<u>0.0125</u>	<u>0.0140</u>	<u>0.0156</u>	<i>SET</i>
Averages	9.79	16.24	26.26	37.48	48.68	59.61	69.28	77.33	84.11	90.04	0.0026
Min	9.10	15.30	24.30	34.00	45.20	57.40	67.70	75.90	82.70	88.60	0.0022
Max	10.30	16.80	27.40	38.90	50.60	62.10	71.30	79.20	86.20	91.90	0.0028
St. Dev	0.353	0.440	0.952	1.428	1.501	1.400	1.133	1.157	1.111	0.950	0.0002
Count	12	12	12	12	12	12	12	12	12	12	12

GROUND PLANE NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):

- 1) Calibrated force gauges are used along with computer controlled positioning equipment.
- 2) For Normal force 8-10 measurements are taken and the averages reported.

Normal Force - Average

Initial	Deflections in inches Forces in Grams										
Averages Min Max St. Dev Count	<u>0.0004</u>	<u>0.0008</u>	<u>0.0013</u>	<u>0.0017</u>	<u>0.0021</u>	<u>0.0025</u>	<u>0.0029</u>	<u>0.0034</u>	<u>0.0038</u>	<u>0.0042</u>	<i>SET</i>
	5.53	11.39	17.14	22.82	28.67	34.28	40.15	45.95	51.77	57.48	0.0002
	3.70	7.80	12.60	16.90	21.80	26.40	31.50	37.20	42.30	48.10	0.0000
	9.10	17.50	24.70	31.20	38.60	45.10	52.20	58.00	64.60	71.00	0.0005
	1.587	2.701	3.480	4.058	4.680	5.142	5.707	6.019	6.619	6.988	0.0002
	10	10	10	10	10	10	10	10	10	10	10

After Thermals	Deflections in inches Forces in Grams										
Averages Min Max St. Dev Count	<u>0.0004</u>	<u>0.0008</u>	<u>0.0013</u>	<u>0.0017</u>	<u>0.0021</u>	<u>0.0025</u>	<u>0.0029</u>	<u>0.0034</u>	<u>0.0038</u>	<u>0.0042</u>	<i>SET</i>
	3.82	8.00	12.08	16.04	19.89	23.77	27.62	31.51	35.55	39.49	0.0003
	1.70	5.40	8.30	11.40	13.40	15.80	18.10	20.90	23.30	26.10	0.0000
	4.60	9.60	14.70	19.60	24.40	29.10	34.00	38.60	43.20	47.60	0.0019
	0.915	1.336	2.020	2.700	3.499	4.143	4.785	5.371	6.124	6.685	0.0006
	10	10	10	10	10	10	10	10	10	10	10

INSULATION RESISTANCE (IR):

	Pin to Pin		
	Mated	Unmated	Unmated
Minimum	QRF8/QRM8	QRF8	QRM8
Initial	100000	100000	100000
Thermal	100000	100000	100000
Humidity	100000	100000	100000

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

Voltage Rating Summary	
Minimum	QRF8/QRM8
Break Down Voltage	860
Test Voltage	645
Working Voltage	215

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

LLCR:

- 1) A total of 225 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

SIGNALS

Date	Aug. 04 2009	Aug. 06 2009	Aug. 18 2009	Aug. 31 2009
Room Temp C	23	23	24	23
RH	50%	50%	41%	42%
Name	Lomax	Lomax	RILEY	Lomax
mOhm values	Actual Initial	Delta 100 Cycles	Delta Thermal	Delta Humidity
Average	17.4	-0.3	2.0	1.8
St. Dev.	1.0	0.9	2.0	1.7
Min	15.6	-3.9	-2.7	-3.9
Max	22.8	2.0	10.4	6.8
Count	207	207	207	207

GROUNDS

Date	Aug. 04 2009	Aug. 06 2009	Aug. 18 2009	Aug. 31 2009
Room Temp C	23	23	24	23
RH	50%	50%	41%	42%
Name	Lomax	Lomax	RILEY	Lomax
mOhm values	Actual Initial	Delta 100 Cycles	Delta Thermal	Delta Humidity
Average	3.0	-0.2	0.5	0.6
St. Dev.	0.2	0.2	1.1	0.8
Min	2.6	-0.5	-0.5	-0.5
Max	3.4	0.2	4.7	2.9
Count	18	18	18	18

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

SIGNALS

Date	Apr. 28 2009	Apr. 28 2009
Room Temp C	23	23
RH	42%	47%
Name	RILEY	RILEY
mOhm values	Actual Initial	Delta Gas Tight
Average	18.3	-0.5
St. Dev.	1.9	0.9
Min	15.6	-6.3
Max	27.1	1.4
Count	184	184

GROUNDS

Date	Apr. 28 2009	Apr. 28 2009
Room Temp C	23	23
RH	42%	47%
Name	RILEY	RILEY
mOhm values	Actual Initial	Delta Gas Tight
Average	2.6	0.0
St. Dev.	0.2	0.1
Min	2.3	-0.1
Max	2.9	0.2
Count	16	16

DATA**CONTACT GAPS:****QRM8**

Initial		Measured in mm								
Pos.#	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
1	2.078	2.096	2.102	2.1	2.1	2.098	2.1	2.082	2.112	2.1
2	2.066	2.074	2.078	2.086	2.086	2.054	2.072	2.06	2.086	2.074
3	2.048	2.07	2.074	2.08	2.07	2.066	2.052	2.07	2.064	2.07
4	2.056	2.066	2.074	2.078	2.074	2.06	2.058	2.056	2.068	2.074
5	2.056	2.064	2.058	2.074	2.062	2.056	2.068	2.058	2.054	2.062
6	2.066	2.078	2.062	2.078	2.074	2.062	2.078	2.066	2.07	2.056
7	2.058	2.066	2.072	2.068	2.064	2.054	2.076	2.058	2.056	2.064
8	2.068	2.07	2.068	2.08	2.074	2.066	2.066	2.058	2.06	2.07
9	2.068	2.072	2.082	2.08	2.078	2.07	2.072	2.072	2.066	2.076
10	2.086	2.078	2.088	2.108	2.092	2.082	2.092	2.084	2.082	2.086
11	2.086	2.084	2.086	2.096	2.082	2.1	2.09	2.076	2.084	2.082
12	2.114	2.1	2.102	2.106	2.084	2.108	2.106	2.108	2.098	2.102
13	2.086	2.084	2.09	2.096	2.092	2.102	2.078	2.072	2.084	2.082
14	2.076	2.05	2.054	2.092	2.072	2.06	2.076	2.054	2.07	2.068
15	2.066	2.068	2.062	2.092	2.066	2.052	2.064	2.058	2.056	2.056
16	2.04	2.046	2.062	2.082	2.068	2.052	2.06	2.062	2.064	2.062
17	2.054	2.044	2.056	2.076	2.066	2.054	2.058	2.048	2.044	2.056
18	2.064	2.062	2.056	2.068	2.08	2.054	2.06	2.058	2.056	2.06
19	2.054	2.048	2.06	2.068	2.056	2.04	2.052	2.052	2.054	2.052
20	2.062	2.052	2.064	2.068	2.07	2.068	2.062	2.062	2.07	2.064
21	2.084	2.078	2.098	2.086	2.084	2.086	2.076	2.068	2.078	2.088
22	2.076	2.076	2.09	2.08	2.09	2.072	2.086	2.076	2.084	2.07
23	2.094	2.102	2.11	2.112	2.104	2.094	2.092	2.09	2.096	2.1
24	2.092	2.092	2.106	2.08	2.1	2.09	2.084	2.08	2.09	2.08
25	2.032	2.086	2.088	2.086	2.092	2.082	2.08	2.072	2.088	2.092
26	2.092	2.094	2.092	2.096	2.074	2.094	2.092	2.086	2.09	2.094
27	2.114	2.108	2.106	2.104	2.108	2.102	2.112	2.102	2.108	2.102
28	2.072	2.064	2.074	2.058	2.06	2.072	2.052	2.062	2.058	2.05
29	2.058	2.054	2.068	2.068	2.058	2.048	2.05	2.066	2.066	2.05
30	2.064	2.05	2.072	2.064	2.062	2.058	2.054	2.04	2.06	2.048
31	2.044	2.048	2.044	2.056	2.048	2.062	2.032	2.04	2.052	2.042
32	2.054	2.05	2.056	2.04	2.054	2.054	2.018	2.042	2.054	2.04
33	2.062	2.054	2.066	2.06	2.06	2.066	2.05	2.06	2.058	2.06
34	2.054	2.06	2.046	2.044	2.062	2.072	2.058	2.054	2.06	2.06
35	2.066	2.086	2.07	2.074	2.092	2.074	2.054	2.054	2.08	2.078
36	2.066	2.078	2.072	2.056	2.084	2.076	2.068	2.064	2.082	2.072
37	2.066	2.086	2.064	2.066	2.076	2.076	2.078	2.072	2.084	2.07
38	2.076	2.098	2.072	2.076	2.088	2.084	2.08	2.074	2.086	2.074
39	2.082	2.08	2.07	2.084	2.076	2.076	2.054	2.068	2.076	2.074
40	2.084	2.08	2.076	2.076	2.058	2.074	2.066	2.074	2.074	2.074

41	2.06	2.098	2.088	2.082	2.084	2.084	2.066	2.086	2.084	2.068
42	2.07	2.09	2.072	2.082	2.082	2.076	2.066	2.088	2.072	2.062
43	2.076	2.09	2.09	2.072	2.08	2.08	2.062	2.08	2.088	2.084
44	2.084	2.106	2.092	2.088	2.1	2.098	2.088	2.096	2.098	2.082
45	2.104	2.082	2.108	2.102	2.094	2.098	2.098	2.104	2.108	2.098
46	2.106	2.114	2.112	2.12	2.092	2.114	2.114	2.12	2.112	2.096
47	2.1	2.12	2.126	2.114	2.112	2.114	2.102	2.116	2.12	2.108
48	2.106	2.132	2.126	2.12	2.118	2.128	2.122	2.126	2.134	2.096
49	2.102	2.122	2.124	2.12	2.128	2.134	2.13	2.122	2.12	2.12
50	2.082	2.104	2.104	2.106	2.11	2.122	2.11	2.09	2.112	2.07
51	2.068	2.074	2.082	2.078	2.094	2.078	2.066	2.084	2.082	2.072
52	2.072	2.076	2.098	2.084	2.08	2.084	2.07	2.082	2.078	2.076

After 100 Cycles

Measured in mm

Pos.#	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
1	2.1158	2.1078	2.1238	2.1178	2.1118	2.1138	2.1018	2.1178	2.1158	2.1138
2	2.0638	2.1058	2.0898	2.0798	2.0958	2.0978	2.0818	2.0838	2.1218	2.0998
3	2.0698	2.0938	2.0898	2.0838	2.0938	2.0878	2.0778	2.0798	2.0298	2.1018
4	2.0738	2.0778	2.0838	2.0658	2.0798	2.0698	2.0718	2.0658	2.0898	2.0778
5	2.0778	2.0658	2.0758	2.0718	2.0878	2.0698	2.0658	2.0658	2.0858	2.0778
6	2.0838	2.0938	2.0658	2.0898	2.1038	2.0778	2.0698	2.0718	2.0898	2.0758
7	2.0938	2.0838	2.0578	2.0838	2.0738	2.0658	2.0698	2.0698	2.0838	2.0938
8	2.0838	2.0818	2.0838	2.0918	2.0698	2.0838	2.0798	2.0738	2.0698	2.0718
9	2.0898	2.0718	2.0678	2.0758	2.0718	2.0718	2.0798	2.0978	2.0258	2.0778
10	2.1058	2.0938	2.0958	2.0998	2.0958	2.1038	2.0978	2.1018	2.0938	2.0958
11	2.1018	2.0978	2.0958	2.0978	2.0998	2.1038	2.0878	2.0958	2.1058	2.0998
12	2.1098	2.0998	2.1178	2.1158	2.1178	2.1078	2.1158	2.1218	2.1118	2.1058
13	2.0938	2.0838	2.0758	2.0878	2.0758	2.0998	2.0838	2.1118	2.1138	2.0838
14	2.0798	2.0678	2.0698	2.0658	2.0618	2.0898	2.0418	2.0798	2.1038	2.0778
15	2.0858	2.0698	2.0618	2.0658	2.0698	2.0758	2.0698	2.0838	2.0918	2.0738
16	2.0598	2.0658	2.0698	2.0638	2.0698	2.0818	2.0738	2.0858	2.0918	2.0818
17	2.0658	2.0598	2.0578	2.0598	2.0538	2.0598	2.0478	2.0738	2.0878	2.0518
18	2.0658	2.0638	2.0538	2.0698	2.0738	2.0818	2.0778	2.0838	2.0798	2.0758
19	2.0698	2.0578	2.0538	2.0558	2.0418	2.0678	2.0438	2.0618	2.0838	2.0538
20	2.0718	2.0658	2.0738	2.0518	2.0778	2.0718	2.0618	2.0758	2.0858	2.0498
21	2.0918	2.0798	2.0838	2.0838	2.0958	2.1018	2.0838	2.0938	2.0838	2.0798
22	2.0958	2.0858	2.0958	2.0818	2.0938	2.1078	2.0998	2.1058	2.0978	2.0918
23	2.1118	2.0958	2.0978	2.0918	2.0958	2.1178	2.0918	2.1078	2.1098	2.0938
24	2.0978	2.0978	2.0998	2.0938	2.1058	2.1058	2.0838	2.1058	2.0898	2.1018
25	2.1138	2.0778	2.0798	2.0818	2.0938	2.1018	2.0958	2.0998	2.0698	2.1098
26	2.1038	2.0898	2.0918	2.0898	2.0958	2.1238	2.1118	2.1198	2.0998	2.1078
27	2.1098	2.0978	2.1178	2.1018	2.0998	2.1058	2.0998	2.1158	2.1198	2.0938
28	2.0638	2.0578	2.0598	2.0618	2.0538	2.0578	2.0878	2.0698	2.0518	2.0818
29	2.0718	2.0538	2.0558	2.0598	2.0798	2.0618	2.0718	2.0618	2.0638	2.0698
30	2.0678	2.0598	2.0558	2.0518	2.0798	2.0638	2.0638	2.0618	2.0758	2.0738
31	2.0458	2.0538	2.0518	2.0478	2.0478	2.0518	2.0538	2.0478	2.0578	2.0618
32	2.0578	2.0538	2.0718	2.0378	2.0698	2.0558	2.0478	2.0478	2.0598	2.0578
33	2.0658	2.0478	2.0558	2.0558	2.0598	2.0698	2.0518	2.0718	2.0618	2.0598
34	2.0658	2.0578	2.0618	2.0498	2.0778	2.0778	2.0718	2.0598	2.0478	2.0678

35	2.0838	2.0678	2.0898	2.0798	2.0878	2.1018	2.0958	2.0738	2.0958	2.0818
36	2.0818	2.0578	2.0838	2.0538	2.0938	2.0758	2.1058	2.0738	2.0538	2.0898
37	2.0738	2.0678	2.0858	2.0558	2.0898	2.0698	2.0798	2.0878	2.0638	2.0638
38	2.0818	2.0938	2.1018	2.0818	2.1018	2.0818	2.0878	2.0838	2.0918	2.0818
39	2.0798	2.0718	2.0758	2.0718	2.0678	2.0818	2.0378	2.0678	2.0638	2.0658
40	2.0918	2.0898	2.0818	2.0798	2.0938	2.0818	2.0738	2.0738	2.0918	2.0798
41	2.0898	2.0978	2.0978	2.0858	2.0858	2.0778	2.0938	2.0958	2.0858	2.0838
42	2.0898	2.0938	2.0958	2.0718	2.0878	2.0918	2.0878	2.0698	2.0938	2.0558
43	2.0858	2.0938	2.0878	2.0698	2.0978	2.0718	2.0738	2.0758	2.0878	2.0818
44	2.0838	2.1198	2.0978	2.0818	2.1078	2.1098	2.1158	2.0898	2.0898	2.0838
45	2.1018	2.1138	2.1038	2.1058	2.1038	2.0998	2.1118	2.1038	2.1098	2.0858
46	2.0818	2.1258	2.1238	2.1058	2.1138	2.1018	2.0978	2.0918	2.1018	2.1138
47	2.0998	2.1278	2.1278	2.1058	2.1198	2.1118	2.1358	2.1118	2.1058	2.1158
48	2.1098	2.1418	2.1238	2.1178	2.1398	2.1458	2.1598	2.1238	2.1218	2.1398
49	2.1298	2.1398	2.1438	2.1178	2.1338	2.1318	2.1418	2.1098	2.1318	2.1098
50	2.1098	2.1218	2.1178	2.0938	2.1298	2.1298	2.1258	2.0938	2.1058	2.1218
51	2.0918	2.0958	2.1058	2.0738	2.1078	2.1218	2.0918	2.0718	2.0938	2.1158
52	2.0818	2.0818	2.0958	2.0738	2.0978	2.0898	2.0998	2.0898	2.0998	2.1078

After Thermal

Measured in mm

Pos.#	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
1	2.074	2.06	2.086	2.082	2.078	2.072	2.072	2.07	2.076	2.08
2	2.058	2.046	2.052	2.046	2.04	2.038	2.048	2.036	2.058	2.064
3	2.048	2.048	2.042	2.044	2.034	2.044	2.05	2.044	2.044	2.044
4	2.05	2.046	2.046	2.036	2.042	2.034	2.03	2.032	2.05	2.044
5	2.032	2.036	2.032	2.034	2.034	2.03	2.038	2.026	2.04	2.028
6	2.048	2.052	2.032	2.056	2.054	2.048	2.046	2.044	2.044	2.058
7	2.042	2.036	2.024	2.04	2.038	2.04	2.032	2.03	2.044	2.042
8	2.038	2.034	2.044	2.042	2.034	2.06	2.046	2.042	2.046	2.044
9	2.048	2.034	2.036	2.042	2.044	2.042	2.046	2.05	2.04	2.042
10	2.06	2.06	2.066	2.064	2.064	2.066	2.064	2.056	2.076	2.072
11	2.062	2.058	2.07	2.062	2.056	2.06	2.056	2.06	2.066	2.058
12	2.078	2.068	2.08	2.08	2.074	2.074	2.074	2.072	2.066	2.07
13	2.066	2.05	2.056	2.068	2.066	2.072	2.06	2.064	2.06	2.058
14	2.042	2.032	2.024	2.032	2.036	2.044	2.03	2.034	2.048	2.04
15	2.046	2.032	2.028	2.036	2.044	2.03	2.03	2.034	2.054	2.032
16	2.034	2.024	2.024	2.022	2.032	2.03	2.02	2.034	2.04	2.026
17	2.018	2.026	2.018	2.026	2.02	2.026	2.018	2.022	2.036	2.02
18	2.034	2.026	2.03	2.026	2.036	2.048	2.028	2.046	2.032	2.032
19	2.032	2.026	2.03	2.03	2.024	2.026	2.014	2.026	2.022	2.02
20	2.022	2.02	2.026	2.026	2.026	2.024	2.012	2.028	2.018	2.022
21	2.04	2.024	2.032	2.03	2.03	2.03	2.026	2.034	2.03	2.034
22	2.034	2.05	2.046	2.034	2.038	2.044	2.05	2.044	2.052	2.054
23	2.054	2.058	2.048	2.056	2.038	2.048	2.052	2.052	2.06	2.044
24	2.044	2.04	2.052	2.052	2.054	2.058	2.06	2.046	2.054	2.046
25	2.062	2.04	2.046	2.052	2.056	2.058	2.06	2.054	2.042	2.052
26	2.066	2.064	2.062	2.056	2.066	2.074	2.072	2.072	2.05	2.072
27	2.066	2.066	2.076	2.064	2.072	2.08	2.082	2.072	2.078	2.08
28	2.022	2.036	2.034	2.032	2.032	2.042	2.036	2.028	2.034	2.034

29	2.04	2.03	2.028	2.026	2.03	2.032	2.028	2.03	2.044	2.05
30	2.036	2.026	2.038	2.012	2.032	2.028	2.028	2.028	2.048	2.048
31	2.014	2.02	2.026	2.002	2.024	2.018	2.024	2.014	2.02	2.036
32	2.014	2.026	2.032	2.006	2.024	2.03	2.024	2.038	2.024	2.03
33	2.02	2.03	2.034	2.008	2.028	2.036	2.028	2.03	2.016	2.026
34	2.026	2.03	2.036	2.024	2.036	2.054	2.046	2.028	2.016	2.034
35	2.056	2.05	2.046	2.028	2.052	2.062	2.054	2.038	2.046	2.054
36	2.032	2.038	2.036	2.004	2.04	2.024	2.044	2.024	2.014	2.024
37	2.048	2.048	2.044	2.036	2.048	2.058	2.058	2.044	2.038	2.038
38	2.05	2.044	2.054	2.04	2.054	2.066	2.07	2.05	2.04	2.052
39	2.042	2.036	2.038	2.018	2.034	2.032	2.04	2.032	2.038	2.034
40	2.046	2.056	2.044	2.028	2.05	2.042	2.05	2.038	2.048	2.038
41	2.048	2.06	2.042	2.04	2.05	2.048	2.05	2.05	2.048	2.054
42	2.04	2.052	2.044	2.022	2.038	2.042	2.044	2.042	2.034	2.034
43	2.036	2.05	2.04	2.028	2.038	2.046	2.042	2.036	2.03	2.04
44	2.042	2.05	2.042	2.032	2.048	2.06	2.056	2.044	2.052	2.052
45	2.04	2.052	2.038	2.038	2.048	2.058	2.05	2.05	2.046	2.05
46	2.052	2.058	2.046	2.038	2.046	2.05	2.052	2.052	2.048	2.056
47	2.058	2.074	2.054	2.038	2.066	2.064	2.078	2.058	2.056	2.062
48	2.072	2.08	2.074	2.064	2.08	2.076	2.082	2.062	2.068	2.082
49	2.076	2.08	2.08	2.052	2.07	2.074	2.082	2.066	2.076	2.078
50	2.066	2.078	2.08	2.052	2.064	2.074	2.052	2.064	2.06	2.088
51	2.044	2.052	2.044	2.03	2.044	2.05	2.048	2.036	2.05	2.06
52	2.054	2.052	2.068	2.034	2.034	2.068	2.064	2.058	2.05	2.074

After Humidity

Measured in mm

Pos.#	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
1	2.0858	2.0958	2.1058	2.1138	2.0978	2.0898	2.1098	2.0958	2.0938	2.1018
2	2.0958	2.0938	2.0658	2.0778	2.0818	2.0698	2.0758	2.0698	2.0698	2.0878
3	2.0718	2.0658	2.0758	2.0598	2.0758	2.0458	2.0598	2.0538	2.0718	2.0638
4	2.0778	2.0778	2.0598	2.0538	2.0478	2.0598	2.0698	2.0658	2.0638	2.0678
5	2.0658	2.0518	2.0338	2.0598	2.0438	2.0598	2.0458	2.0458	2.0618	2.0518
6	2.0798	2.0758	2.0438	2.0678	2.0638	2.0518	2.0598	2.0598	2.0418	2.0578
7	2.0718	2.0738	2.0598	2.0538	2.0638	2.0218	2.0658	2.0578	2.0578	2.0758
8	2.0738	2.0578	2.0538	2.0578	2.0598	2.0578	2.0638	2.0658	2.0558	2.0678
9	2.0838	2.0558	2.0558	2.0518	2.0698	2.0658	2.0718	2.0418	2.0598	2.0698
10	2.1058	2.0778	2.0838	2.0938	2.0718	2.0738	2.0898	2.0678	2.0778	2.0878
11	2.0838	2.0758	2.0778	2.0818	2.0818	2.0638	2.0698	2.0678	2.0818	2.0778
12	2.1018	2.0958	2.0998	2.0978	2.0918	2.0938	2.0998	2.1038	2.0858	2.1058
13	2.0958	2.0818	2.0758	2.0838	2.0758	2.0818	2.0798	2.0958	2.0778	2.0978
14	2.0598	2.0538	2.0578	2.0578	2.0578	2.0378	2.0418	2.0438	2.0758	2.0438
15	2.0678	2.0538	2.0418	2.0618	2.0498	2.0318	2.0618	2.0498	2.0758	2.0398
16	2.0398	2.0338	2.0398	2.0418	2.0438	2.0378	2.0498	2.0538	2.0638	1.9958
17	2.0538	2.0398	2.0378	2.0378	2.0458	2.0278	2.0338	2.0398	2.0478	2.0398
18	2.0698	2.0358	2.0498	2.0458	2.0518	2.0478	2.0498	1.9898	2.0538	2.0478
19	2.0598	2.0178	2.0378	2.0538	2.0258	2.0218	2.0278	2.0258	2.0358	2.0318
20	2.0478	2.0218	2.0478	2.0458	2.0398	2.0378	2.0338	2.0298	2.0298	1.9818
21	2.0478	2.0298	2.0478	2.0618	2.0398	2.0478	2.0398	2.0478	2.0218	2.0398
22	2.0778	2.0578	2.0618	2.0698	2.0518	2.0598	2.0638	2.0678	2.0518	2.0498

23	2.0818	2.0678	2.0638	2.0658	2.0578	2.0438	2.0738	2.0698	2.0738	2.0598
24	2.0698	2.0758	2.0558	2.0698	2.0638	2.0558	2.0738	2.0678	2.0638	2.0118
25	2.0758	2.0758	2.0518	2.0638	2.0558	2.0578	2.0618	2.0638	2.0498	1.8838
26	2.0898	2.0858	2.0598	2.0798	2.0778	2.0738	2.0918	2.0858	2.0618	2.0738
27	2.0738	2.0878	2.0658	2.0798	2.0698	2.0838	2.0818	2.0998	2.0818	2.0858
28	2.0558	2.0638	2.0558	2.0578	2.0658	2.0318	2.0418	2.0658	2.0538	2.0298
29	2.0558	2.0578	2.0498	2.0438	2.0698	2.0458	2.0558	2.0458	2.0478	2.0458
30	2.0518	2.0678	2.0718	2.0418	2.0738	2.0378	2.0578	2.0498	2.0638	2.0498
31	2.0438	2.0498	2.0418	1.9818	2.0558	2.0258	2.0518	2.0158	2.0418	2.0398
32	2.0378	2.0458	2.0458	2.0178	2.0458	2.0318	2.0538	2.0378	2.0338	2.0558
33	2.0578	2.0598	2.0398	2.0078	2.0598	2.0478	2.0498	2.0358	2.0478	2.0418
34	2.0618	2.0558	2.0398	2.0178	2.0498	2.0658	2.0618	2.0518	2.0538	2.0458
35	2.0578	2.0618	2.0618	2.0438	2.0538	2.0598	2.0698	2.0598	2.0478	2.0698
36	2.0618	2.0578	2.0598	2.0218	2.0638	2.0558	2.0558	2.0298	2.0418	2.0298
37	2.0518	2.0658	2.0438	2.0278	2.0518	2.0358	2.0678	2.0438	2.0438	2.0398
38	2.0658	2.0558	2.0598	2.0498	2.0938	2.0458	2.0758	2.0498	2.0358	2.0518
39	2.0678	2.0498	2.0538	2.0238	2.0578	2.0258	2.0398	2.0318	2.0438	2.0338
40	2.0518	2.0418	2.0438	2.0318	2.0618	2.0378	2.0598	2.0518	2.0298	2.0318
41	2.0578	2.0418	2.0758	2.0498	2.0618	2.0458	2.0718	2.0478	2.0498	2.0498
42	2.0558	2.0638	2.0658	2.0518	2.0618	2.0618	2.0678	2.0338	2.0398	1.9738
43	2.0498	2.0518	2.0478	2.0538	2.0418	2.0498	2.0618	2.0478	2.0318	2.0598
44	2.0778	2.0658	2.0718	2.0578	2.0498	2.0538	2.0698	2.0418	2.0378	2.0498
45	2.0718	2.0638	2.0478	2.0658	2.0478	2.0558	2.0618	2.0478	2.0618	2.0458
46	2.0638	2.0518	2.0598	2.0438	2.0578	2.0398	2.0658	2.0598	2.0498	2.0578
47	2.0718	2.0638	2.0598	2.0598	2.0758	2.0598	2.0718	2.0638	2.0318	2.0538
48	2.0898	2.0978	2.0658	2.0738	2.0918	2.0738	2.0858	2.0638	2.0698	2.0298
49	2.0738	2.0798	2.0598	2.0778	2.0798	2.0858	2.0778	2.0758	2.0598	2.0818
50	2.0838	2.0758	2.0918	2.0738	2.0818	2.0778	2.0778	2.0718	2.0818	2.1038
51	2.0758	2.0398	2.0498	2.0498	2.0638	2.0478	2.0538	2.0478	2.0738	2.0698
52	2.0838	2.0638	2.0698	2.0598	2.0698	2.0598	2.0878	2.0598	2.0738	1.8398

QRF8

Initial		Measured in mm								
Pos.#	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
1	1.40892	1.52699	1.45039	1.40817	1.43231	1.40016	1.4273	1.41444	1.40145	1.43599
2	1.39023	1.39583	1.43076	1.38786	1.55012	1.38649	1.3959	1.51139	1.38411	1.41554
3	1.3885	1.39237	1.42129	1.38873	1.40887	1.41834	1.37668	1.39459	1.38676	1.4372
4	1.41264	1.44973	1.43158	1.41419	1.43841	1.40715	1.4203	1.41764	1.40887	1.42259
5	1.41773	1.43793	1.44457	1.41747	1.43939	1.41289	1.40399	1.41114	1.40902	1.41495
6	1.42951	1.4867	1.46389	1.42577	1.44764	1.4424	1.42441	1.42658	1.43478	1.43129
7	1.44094	1.47195	1.47526	1.4401	1.4601	1.43996	1.42962	1.42372	1.44578	1.43506
8	1.46258	1.51186	1.49505	1.45514	1.48601	1.45803	1.44984	1.44089	1.46235	1.46025
9	1.4747	1.50024	1.5021	1.45668	1.48462	1.47123	1.45965	1.45135	1.45705	1.46848
10	1.46482	1.49085	1.49318	1.44965	1.47847	1.54894	1.4524	1.45243	1.4601	1.46672
11	1.47253	1.48986	1.49402	1.44994	1.48375	1.45969	1.45781	1.44435	1.46471	1.47257
12	1.48454	1.49861	1.51512	1.46468	1.48175	1.46929	1.4633	1.45507	1.47633	1.46875
13	1.49245	1.50029	1.52334	1.46578	1.49988	1.47428	1.46512	1.46747	1.48614	1.48973
14	1.46994	1.48241	1.4976	1.45173	1.46645	1.46268	1.44782	1.5402	1.46702	1.46624
15	1.48659	1.4985	1.52143	1.46812	1.49722	1.48032	1.46309	1.4596	1.48194	1.4796
16	1.4716	1.48013	1.498	1.44793	1.47583	1.45777	1.45391	1.44659	1.47513	1.46472
17	1.49084	1.49231	1.51499	1.46715	1.48145	1.47616	1.45914	1.45882	1.48623	1.48617
18	1.45451	1.47424	1.50505	1.45444	1.46136	1.46504	1.46416	1.436	1.4746	1.47393
19	1.45371	1.45451	1.47972	1.43668	1.45428	1.4532	1.43684	1.4333	1.46037	1.45186
20	1.46356	1.46751	1.49501	1.57882	1.46519	1.45554	1.4512	1.43375	1.46243	1.45588
21	1.44835	1.44631	1.46878	1.4452	1.44656	1.55432	1.4301	1.41538	1.45503	1.44972
22	1.45499	1.47121	1.49059	1.45572	1.45976	1.447	1.44623	1.42498	1.45287	1.45799
23	1.44609	1.45878	1.47493	1.47372	1.46301	1.44431	1.44225	1.44267	1.44638	1.46498
24	1.44255	1.58979	1.47065	1.55093	1.45782	1.43083	1.43346	1.54931	1.42619	1.45246
25	1.43794	1.44687	1.47216	1.44977	1.44669	1.47201	1.43454	1.43681	1.42253	1.46289
26	1.45627	1.4717	1.48369	1.47096	1.4916	1.45491	1.45787	1.46686	1.44044	1.48578
27	1.45256	1.47815	1.47631	1.46044	1.45928	1.47637	1.45804	1.45979	1.44167	1.47581
28	1.43312	1.48984	1.45571	1.45595	1.4462	1.47375	1.44494	1.5545	1.43364	1.45241
29	1.4272	1.51558	1.46109	1.44622	1.42588	1.57368	1.44163	1.53948	1.43949	1.42682
30	1.42042	1.47328	1.46035	1.57312	1.42899	1.43786	1.45574	1.46717	1.43169	1.42309
31	1.43574	1.44697	1.46869	1.44215	1.44025	1.57509	1.4467	1.52444	1.4423	1.43773
32	1.42904	1.47026	1.46216	1.56358	1.44026	1.47194	1.45904	1.54092	1.45383	1.45199
33	1.43018	1.46051	1.45965	1.43992	1.4349	1.45472	1.45631	1.53996	1.4515	1.44303
34	1.44697	1.48144	1.47725	1.44909	1.44583	1.55307	1.46093	1.4452	1.46214	1.47566
35	1.45286	1.47202	1.49939	1.49773	1.47437	1.56947	1.48397	1.45827	1.48151	1.45001
36	1.45734	1.5077	1.50087	1.45837	1.46585	1.4613	1.47463	1.44967	1.47257	1.45722
37	1.46797	1.48934	1.50519	1.46121	1.47543	1.48266	1.47687	1.55894	1.47963	1.46322
38	1.47413	1.50599	1.50646	1.47003	1.46725	1.49626	1.47589	1.47889	1.48623	1.55676
39	1.47146	1.48751	1.51588	1.47874	1.47314	1.60658	1.49801	1.56073	1.50947	1.4919
40	1.47777	1.52054	1.52651	1.47092	1.46701	1.59538	1.47749	1.4867	1.48909	1.48257
41	1.46533	1.48387	1.54059	1.47113	1.46612	1.50439	1.46832	1.55739	1.49395	1.45214
42	1.45989	1.49825	1.51038	1.47278	1.45689	1.46799	1.45933	1.55298	1.48616	1.48439
43	1.4611	1.48132	1.49424	1.48272	1.45452	1.51378	1.46275	1.5445	1.48876	1.46073
44	1.45344	1.58987	1.49136	1.46351	1.45174	1.60655	1.46472	1.55313	1.48612	1.45506

45	1.46059	1.50213	1.48692	1.45875	1.45158	1.46163	1.46025	1.57125	1.48973	1.45753
46	1.45478	1.58836	1.47703	1.46601	1.45254	1.46602	1.46301	1.47941	1.48123	1.46748
47	1.45107	1.46376	1.46153	1.44662	1.43312	1.48465	1.46156	1.56686	1.4749	1.43983
48	1.44838	1.46526	1.44578	1.45692	1.42839	1.45133	1.4473	1.44857	1.45909	1.54445
49	1.43921	1.4555	1.43047	1.44736	1.43766	1.55979	1.44233	1.53101	1.45711	1.42355
50	1.44265	1.55392	1.41725	1.44472	1.42968	1.43342	1.438	1.44511	1.42853	1.43148
51	1.4557	1.5068	1.44246	1.44418	1.43657	1.43972	1.44739	1.44214	1.44274	1.43974
52	1.46895	1.46334	1.46794	1.53083	1.44867	1.44934	1.46455	1.45128	1.44469	1.45329

After 100 Cycles

Measured in mm

Pos.#	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
1	1.5298	1.5538	1.5358	1.5498	1.5538	1.5218	1.5178	1.5218	1.5218	1.5178
2	1.4998	1.4978	1.4838	1.5098	1.4858	1.4838	1.4858	1.4798	1.4998	1.4798
3	1.4878	1.4898	1.4778	1.4818	1.4798	1.4738	1.4678	1.4738	1.4838	1.4798
4	1.4918	1.4619	1.4718	1.4778	1.4878	1.4738	1.4659	1.4878	1.4758	1.4778
5	1.4838	1.4639	1.4619	1.4698	1.4758	1.4818	1.4778	1.4539	1.4698	1.4778
6	1.5138	1.5038	1.4898	1.4938	1.4818	1.5058	1.4898	1.4778	1.4858	1.4858
7	1.5158	1.5158	1.4818	1.5038	1.4778	1.4898	1.4838	1.4838	1.4958	1.4898
8	1.5338	1.5278	1.4918	1.5258	1.5078	1.5038	1.4938	1.4938	1.5098	1.4998
9	1.5538	1.5418	1.5238	1.5358	1.5218	1.5278	1.4998	1.5038	1.5198	1.5078
10	1.5358	1.5358	1.4958	1.5298	1.5178	1.5038	1.5218	1.4818	1.5038	1.5158
11	1.5338	1.5298	1.5038	1.5458	1.5298	1.5098	1.5118	1.4998	1.5178	1.5178
12	1.5458	1.5498	1.5258	1.5518	1.5358	1.5258	1.5118	1.4978	1.5218	1.5278
13	1.5378	1.5498	1.5198	1.5438	1.5318	1.5298	1.5178	1.5078	1.5418	1.5458
14	1.5418	1.5498	1.5058	1.5398	1.5158	1.5318	1.5118	1.4978	1.5238	1.5258
15	1.5458	1.5538	1.5178	1.5578	1.5338	1.5298	1.5218	1.5058	1.5238	1.5338
16	1.5438	1.5398	1.4958	1.5358	1.5038	1.4978	1.5118	1.5198	1.5098	1.5378
17	1.5318	1.5538	1.5078	1.5458	1.5298	1.5278	1.5098	1.5058	1.5238	1.5478
18	1.5078	1.5338	1.4898	1.5298	1.4938	1.5058	1.5158	1.4898	1.5138	1.5258
19	1.5038	1.5218	1.4918	1.5218	1.4978	1.5118	1.4718	1.4878	1.4958	1.5058
20	1.5038	1.5278	1.5098	1.5138	1.5138	1.5058	1.5018	1.4878	1.5038	1.5098
21	1.5038	1.5118	1.4938	1.5198	1.5118	1.5018	1.4858	1.4938	1.4958	1.5038
22	1.5058	1.5278	1.5018	1.4998	1.5058	1.5098	1.4998	1.4838	1.4938	1.5098
23	1.4998	1.5118	1.5158	1.5178	1.5058	1.5118	1.5158	1.4978	1.5118	1.5038
24	1.5298	1.5278	1.5178	1.5178	1.5098	1.5018	1.5158	1.5138	1.5198	1.5138
25	1.5358	1.5398	1.5178	1.5298	1.5178	1.5138	1.5218	1.5278	1.5278	1.5098
26	1.5518	1.5538	1.5558	1.5658	1.5438	1.5598	1.5578	1.5578	1.5558	1.5478
27	1.5658	1.5598	1.5598	1.5578	1.5518	1.5678	1.5538	1.5698	1.5598	1.5598
28	1.5198	1.5158	1.5178	1.5178	1.4998	1.5058	1.5018	1.5038	1.5278	1.5138
29	1.5258	1.5178	1.5018	1.4998	1.4798	1.5038	1.4978	1.5218	1.5078	1.5138
30	1.5038	1.5238	1.5118	1.4838	1.4898	1.5158	1.5018	1.4958	1.4878	1.5118
31	1.5118	1.5138	1.4938	1.4678	1.4978	1.4978	1.5078	1.4918	1.4898	1.4778
32	1.5058	1.4958	1.4898	1.4978	1.4798	1.4878	1.5238	1.4858	1.4978	1.4998
33	1.4958	1.4958	1.5078	1.4619	1.4858	1.4858	1.5178	1.5018	1.4998	1.5098
34	1.5018	1.5138	1.4918	1.4978	1.4998	1.5038	1.5098	1.5038	1.5018	1.5078
35	1.5078	1.5398	1.5038	1.4279	1.5198	1.5078	1.5278	1.5038	1.5018	1.5298
36	1.5278	1.5358	1.5118	1.5118	1.5058	1.5078	1.5278	1.5158	1.5158	1.5098
37	1.5298	1.5418	1.5158	1.5178	1.4938	1.5198	1.5198	1.5258	1.5178	1.5358
38	1.5358	1.5398	1.5258	1.5098	1.5358	1.5238	1.5178	1.5158	1.5038	1.5258

39	1.5378	1.5378	1.5358	1.5018	1.5238	1.5198	1.5338	1.5158	1.5078	1.5438
40	1.5398	1.5538	1.5218	1.5278	1.5238	1.5378	1.5378	1.5138	1.5078	1.5278
41	1.5418	1.5578	1.5138	1.5058	1.5138	1.5238	1.5278	1.5198	1.5138	1.5258
42	1.5278	1.5378	1.5358	1.5018	1.5298	1.5178	1.5158	1.5138	1.5238	1.5178
43	1.5238	1.5478	1.4958	1.5058	1.5118	1.5118	1.5138	1.4898	1.5158	1.5198
44	1.5278	1.5218	1.5078	1.4918	1.5138	1.5318	1.4998	1.4958	1.5098	1.5278
45	1.5278	1.5278	1.5138	1.5018	1.5178	1.5158	1.4978	1.5038	1.4998	1.5238
46	1.5218	1.5238	1.5138	1.5138	1.4998	1.5038	1.5038	1.5018	1.5018	1.5218
47	1.5038	1.5098	1.4938	1.4738	1.5138	1.4998	1.5218	1.4838	1.5018	1.5038
48	1.5138	1.5098	1.5118	1.4778	1.4998	1.5118	1.5118	1.4858	1.4978	1.4958
49	1.5158	1.5038	1.5238	1.4918	1.5138	1.5038	1.5198	1.4858	1.4978	1.5058
50	1.5078	1.5078	1.5218	1.5078	1.5218	1.5158	1.5238	1.5038	1.5018	1.5038
51	1.5358	1.5478	1.5258	1.5158	1.5358	1.5198	1.5398	1.5338	1.5238	1.5098
52	1.5558	1.5738	1.5578	1.5618	1.5718	1.5578	1.5578	1.5658	1.5598	1.5538

After Thermal

Measured in mm

Pos.#	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
1	1.648	1.668	1.648	1.644	1.644	1.642	1.632	1.63	1.636	1.626
2	1.634	1.652	1.624	1.618	1.62	1.628	1.618	1.61	1.624	1.596
3	1.64	1.642	1.636	1.638	1.626	1.63	1.624	1.624	1.644	1.602
4	1.658	1.664	1.65	1.658	1.65	1.644	1.632	1.65	1.66	1.632
5	1.678	1.684	1.662	1.662	1.658	1.67	1.652	1.658	1.662	1.642
6	1.7	1.7	1.678	1.68	1.672	1.688	1.674	1.68	1.684	1.678
7	1.718	1.72	1.702	1.706	1.68	1.694	1.682	1.69	1.704	1.68
8	1.73	1.744	1.722	1.726	1.714	1.724	1.708	1.706	1.728	1.706
9	1.746	1.754	1.732	1.736	1.72	1.738	1.728	1.728	1.738	1.71
10	1.744	1.748	1.724	1.728	1.722	1.728	1.728	1.728	1.734	1.7
11	1.742	1.744	1.718	1.738	1.718	1.732	1.728	1.716	1.736	1.702
12	1.754	1.776	1.73	1.738	1.744	1.744	1.734	1.736	1.744	1.728
13	1.75	1.768	1.732	1.764	1.75	1.75	1.736	1.74	1.754	1.73
14	1.752	1.758	1.726	1.734	1.714	1.742	1.72	1.726	1.74	1.712
15	1.75	1.782	1.736	1.764	1.734	1.75	1.742	1.742	1.742	1.73
16	1.73	1.754	1.726	1.734	1.72	1.734	1.724	1.724	1.742	1.724
17	1.738	1.766	1.732	1.734	1.748	1.746	1.73	1.718	1.752	1.732
18	1.734	1.76	1.72	1.732	1.72	1.74	1.72	1.714	1.746	1.716
19	1.71	1.732	1.7	1.712	1.694	1.72	1.7	1.698	1.712	1.708
20	1.712	1.738	1.718	1.706	1.712	1.728	1.708	1.7	1.722	1.702
21	1.694	1.714	1.694	1.684	1.698	1.69	1.68	1.678	1.7	1.686
22	1.704	1.726	1.702	1.696	1.684	1.71	1.696	1.674	1.706	1.696
23	1.682	1.7	1.684	1.68	1.678	1.678	1.682	1.674	1.692	1.666
24	1.682	1.686	1.678	1.678	1.666	1.67	1.67	1.67	1.684	1.65
25	1.656	1.672	1.666	1.658	1.656	1.666	1.654	1.658	1.658	1.644
26	1.662	1.654	1.662	1.658	1.66	1.654	1.644	1.66	1.678	1.636
27	1.654	1.66	1.648	1.65	1.652	1.652	1.66	1.664	1.662	1.648
28	1.64	1.662	1.642	1.642	1.632	1.642	1.646	1.65	1.646	1.632
29	1.67	1.678	1.664	1.656	1.65	1.658	1.674	1.66	1.658	1.66
30	1.678	1.69	1.676	1.668	1.664	1.674	1.674	1.678	1.676	1.664
31	1.7	1.718	1.696	1.69	1.682	1.682	1.694	1.696	1.698	1.692
32	1.696	1.71	1.694	1.684	1.678	1.686	1.694	1.688	1.692	1.692

33	1.696	1.712	1.698	1.69	1.69	1.688	1.706	1.69	1.69	1.708
34	1.714	1.74	1.714	1.706	1.708	1.706	1.71	1.702	1.708	1.706
35	1.74	1.766	1.736	1.734	1.724	1.72	1.73	1.724	1.716	1.74
36	1.744	1.764	1.738	1.728	1.726	1.726	1.718	1.72	1.734	1.724
37	1.74	1.762	1.736	1.742	1.734	1.724	1.73	1.726	1.72	1.732
38	1.738	1.766	1.754	1.726	1.746	1.716	1.726	1.732	1.726	1.738
39	1.75	1.766	1.756	1.742	1.728	1.744	1.746	1.724	1.738	1.762
40	1.754	1.782	1.752	1.736	1.742	1.75	1.728	1.734	1.724	1.75
41	1.75	1.774	1.742	1.732	1.738	1.728	1.718	1.722	1.724	1.744
42	1.736	1.75	1.744	1.722	1.72	1.728	1.706	1.724	1.726	1.738
43	1.744	1.756	1.742	1.72	1.728	1.734	1.718	1.72	1.746	1.744
44	1.736	1.744	1.738	1.722	1.72	1.73	1.726	1.72	1.72	1.732
45	1.738	1.742	1.728	1.714	1.712	1.714	1.716	1.72	1.724	1.738
46	1.732	1.74	1.73	1.712	1.712	1.706	1.716	1.698	1.706	1.732
47	1.712	1.722	1.71	1.688	1.696	1.708	1.696	1.686	1.688	1.69
48	1.702	1.714	1.708	1.686	1.682	1.708	1.694	1.68	1.694	1.708
49	1.688	1.682	1.694	1.68	1.67	1.682	1.684	1.67	1.676	1.684
50	1.668	1.69	1.67	1.666	1.67	1.666	1.676	1.66	1.654	1.668
51	1.678	1.682	1.666	1.66	1.666	1.668	1.67	1.66	1.66	1.662
52	1.652	1.686	1.67	1.666	1.666	1.664	1.662	1.672	1.664	1.65

After Humidity

Measured in mm

Pos.#	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
1	1.6679	1.6959	1.6599	1.6579	1.6619	1.6579	1.6399	1.6619	1.6579	1.6499
2	1.6499	1.6839	1.6419	1.6499	1.6579	1.6539	1.6419	1.6359	1.6479	1.6239
3	1.6619	1.6799	1.6519	1.6479	1.6419	1.6479	1.6479	1.6439	1.6279	1.6259
4	1.6879	1.6639	1.6579	1.6699	1.6599	1.6579	1.6619	1.6519	1.6799	1.6599
5	1.7039	1.6839	1.6759	1.6899	1.6799	1.6699	1.6799	1.6699	1.6759	1.6599
6	1.7199	1.7099	1.6719	1.7019	1.6859	1.6959	1.6899	1.6919	1.6939	1.6959
7	1.7299	1.7139	1.6979	1.7239	1.7079	1.7239	1.6959	1.7019	1.7179	1.7019
8	1.7399	1.7439	1.7039	1.7399	1.7179	1.7259	1.7199	1.7099	1.7399	1.7179
9	1.7299	1.7339	1.7239	1.7599	1.7559	1.7399	1.7459	1.7239	1.7599	1.7279
10	1.7299	1.7399	1.7239	1.7479	1.7399	1.7379	1.7299	1.7339	1.7479	1.7299
11	1.7619	1.7339	1.7419	1.7539	1.7439	1.7559	1.7199	1.7479	1.7479	1.6979
12	1.7439	1.7559	1.7339	1.7559	1.7439	1.7439	1.7399	1.7319	1.7559	1.7459
13	1.7818	1.7698	1.7379	1.7658	1.7658	1.7539	1.7379	1.7479	1.7678	1.7499
14	1.7698	1.7439	1.7299	1.7519	1.7559	1.7519	1.7319	1.7279	1.7658	1.7359
15	1.7519	1.7599	1.7239	1.7658	1.7559	1.7499	1.7419	1.7179	1.7658	1.7379
16	1.7599	1.7519	1.7359	1.7499	1.7698	1.7359	1.7479	1.7439	1.7738	1.7479
17	1.7499	1.7658	1.7379	1.7639	1.7579	1.7499	1.7479	1.7399	1.7698	1.7499
18	1.7539	1.7379	1.7319	1.7279	1.7219	1.7459	1.7379	1.7279	1.7619	1.7459
19	1.7419	1.7259	1.7059	1.7299	1.7219	1.7419	1.7179	1.7159	1.7319	1.6999
20	1.7219	1.7399	1.7099	1.7219	1.7299	1.7419	1.7319	1.7139	1.7519	1.7059
21	1.7339	1.7259	1.7099	1.7179	1.7239	1.7199	1.7179	1.7099	1.7379	1.6979
22	1.7059	1.7199	1.7039	1.7019	1.7199	1.7159	1.7099	1.6979	1.7279	1.7019
23	1.7259	1.7059	1.7019	1.6979	1.7019	1.7059	1.7079	1.6999	1.7219	1.7019
24	1.7039	1.6979	1.6799	1.6959	1.6999	1.6779	1.6779	1.6759	1.6959	1.6759
25	1.6979	1.6839	1.6739	1.6919	1.6779	1.6859	1.6799	1.6559	1.6579	1.6559
26	1.6679	1.6779	1.6759	1.6779	1.6759	1.6859	1.6699	1.6579	1.6099	1.6639

27	1.6599	1.6699	1.6699	1.6579	1.6659	1.6699	1.6799	1.6759	1.6639	1.6699
28	1.6719	1.6639	1.6559	1.6579	1.6619	1.6679	1.6759	1.6679	1.6619	1.6619
29	1.6679	1.7059	1.6739	1.6619	1.6679	1.6599	1.6799	1.6719	1.6779	1.6799
30	1.6779	1.7139	1.6759	1.6839	1.6759	1.6779	1.7099	1.6859	1.6839	1.6919
31	1.7099	1.7299	1.7019	1.6999	1.7019	1.7019	1.7059	1.6959	1.6919	1.7039
32	1.7159	1.7279	1.7199	1.7039	1.7179	1.7039	1.7079	1.7119	1.7219	1.7279
33	1.7079	1.7279	1.7299	1.7079	1.7159	1.6999	1.7199	1.7119	1.7159	1.7199
34	1.7159	1.7559	1.7399	1.7139	1.7259	1.7199	1.7379	1.7239	1.7319	1.7279
35	1.7339	1.7758	1.7499	1.7399	1.7419	1.7419	1.7559	1.7439	1.7459	1.7499
36	1.7639	1.7858	1.7439	1.7539	1.7419	1.7459	1.7459	1.7519	1.7539	1.7639
37	1.7579	1.7858	1.7519	1.7718	1.7539	1.7579	1.7559	1.7539	1.7299	1.7439
38	1.7519	1.7858	1.7619	1.7539	1.7658	1.7479	1.7519	1.7599	1.7359	1.7639
39	1.7579	1.7958	1.7678	1.7599	1.7539	1.7599	1.7619	1.7459	1.7519	1.7758
40	1.7639	1.7918	1.7619	1.7459	1.7559	1.7658	1.7579	1.7419	1.7479	1.7738
41	1.7658	1.7978	1.7579	1.7479	1.7619	1.7339	1.7379	1.7459	1.7339	1.7658
42	1.7619	1.7738	1.7718	1.7499	1.7439	1.7479	1.7459	1.7439	1.7479	1.7698
43	1.7499	1.7599	1.7299	1.7519	1.7519	1.7698	1.7499	1.7259	1.7539	1.7818
44	1.7579	1.7738	1.7339	1.7439	1.7379	1.7579	1.7419	1.7399	1.7239	1.7658
45	1.7459	1.7678	1.7359	1.7339	1.7499	1.7479	1.7439	1.7259	1.7419	1.7678
46	1.7499	1.7559	1.7319	1.7379	1.7379	1.7479	1.7359	1.7259	1.7279	1.7539
47	1.7519	1.7299	1.6999	1.7159	1.7119	1.7379	1.7339	1.6999	1.6979	1.7379
48	1.7339	1.7179	1.7159	1.7059	1.7099	1.7239	1.7219	1.6999	1.7019	1.7339
49	1.7139	1.7019	1.6959	1.7139	1.6839	1.7159	1.7019	1.6959	1.7019	1.7219
50	1.6999	1.6979	1.6979	1.6979	1.6899	1.6899	1.7039	1.6819	1.6659	1.6859
51	1.6859	1.7079	1.6879	1.6819	1.6919	1.6839	1.6919	1.6859	1.6779	1.6959
52	1.6619	1.7099	1.6919	1.6839	1.6919	1.6919	1.6739	1.6719	1.6779	1.6779

MATING/UNMATING:

Sample#	Initial		After 25 Cycles		After 50 Cycles		After 75 Cycles		After 100 Cycles		After Thermals		After Humidity	
	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating
1	4.95	2.72	4.95	3.11	5.04	3.44	5.15	3.47	4.82	2.86	1.97	1.45	2.01	1.39
2	4.93	2.70	4.72	2.91	4.73	2.98	4.75	2.97	4.75	2.95	1.68	1.28	1.78	1.30
3	5.24	2.55	4.83	2.94	4.83	3.02	4.85	3.14	4.84	3.10	1.62	1.37	2.27	1.81
4	5.64	3.15	5.40	3.45	5.34	3.67	5.49	3.95	5.50	4.13	2.10	1.85	1.99	1.46
5	5.58	2.87	5.18	3.12	5.10	3.24	5.07	3.37	5.19	3.45	1.98	1.43	2.20	1.63
6	5.27	2.49	5.04	2.98	5.01	3.09	4.89	2.99	5.02	3.12	1.70	1.33	2.37	1.81
7	5.38	2.64	5.03	2.93	4.98	3.12	4.89	3.07	4.93	3.12	1.80	1.38	2.31	1.69
8	5.10	2.31	4.63	2.52	4.48	2.70	4.47	2.65	4.53	2.69	1.55	1.28	2.38	1.79
9	5.29	2.67	4.90	2.86	4.87	2.86	4.89	2.95	4.92	3.01	1.70	1.48	2.07	1.72
10	5.11	2.37	4.59	2.59	4.54	2.84	4.50	2.78	4.37	2.73	1.50	1.24	2.09	1.25

CONTACT NORMAL FORCE (TESTED IN THE HOUSING), Initial:

Sample #	Deflections in inches, Forces in Grams										
	0.0016	0.0031	0.0047	0.0062	0.0078	0.0094	0.0109	0.0125	0.0140	0.0156	SET
1	9.7	21.2	32.7	44.1	54.9	64.8	73.6	81.1	87.7	95.3	0.0031
2	9.6	20.7	32.6	43.7	54.2	63.9	73.0	81.4	88.5	94.5	0.0031
3	10.3	21.6	32.7	43.5	54.1	64.7	74.0	81.9	88.7	94.7	0.0030
4	9.9	20.9	32.4	43.4	54.4	64.8	73.8	81.6	88.8	97.2	0.0032
5	10.0	21.0	32.4	44.0	54.8	64.7	73.9	82.0	89.2	96.6	0.0032
6	10.0	21.2	32.4	43.4	54.9	66.8	76.7	84.3	90.9	96.5	0.0028
7	10.3	21.5	32.6	43.5	54.3	65.0	74.0	81.7	88.5	94.4	0.0032
8	10.2	21.7	33.2	44.7	54.8	65.0	74.7	82.7	89.4	95.4	0.0031
9	10.4	21.3	32.3	43.6	54.3	63.6	72.0	80.0	87.7	93.9	0.0032
10	10.6	22.2	33.7	45.3	56.1	65.8	74.6	83.0	90.7	97.6	0.0032
11	11.1	22.3	33.6	44.4	54.5	64.3	73.2	81.0	87.9	95.2	0.0031
12	8.4	19.4	30.7	42.1	52.5	62.4	71.7	79.7	87.0	93.1	0.0033

CONTACT NORMAL FORCE (TESTED IN THE HOUSING), After Thermals:

Sample #	Deflections in inches, Forces in Grams										
	0.0016	0.0031	0.0047	0.0062	0.0078	0.0094	0.0109	0.0125	0.0140	0.0156	SET
1	9.7	16.1	24.9	35.6	46.8	58.4	69.7	78.3	84.9	90.5	0.0022
2	9.1	15.7	24.3	34.0	45.2	57.4	68.4	76.9	83.7	89.9	0.0022
3	10.1	16.4	26.1	38.5	50.3	62.1	71.3	79.1	85.6	91.1	0.0025
4	10.2	16.3	26.0	37.4	49.6	60.7	69.9	77.7	84.3	90.1	0.0026
5	10.3	16.7	27.4	38.9	50.6	61.2	70.6	79.2	86.2	91.9	0.0028
6	9.5	15.3	25.4	36.8	48.3	58.5	67.7	75.9	82.7	88.6	0.0027
7	10.1	16.8	27.1	38.1	48.8	59.6	69.9	77.7	84.4	90.4	0.0027
8	9.9	16.7	26.7	37.4	48.2	59.3	68.6	76.2	82.9	88.9	0.0028
9	9.5	15.9	26.8	38.2	49.3	59.6	69.0	77.0	84.1	90.2	0.0027
10	9.9	16.4	27.0	38.6	49.7	61.1	70.1	77.8	84.5	90.2	0.0025
11	9.6	16.4	26.6	38.5	49.0	58.9	67.9	76.0	83.1	89.9	0.0028
12	9.6	16.2	26.8	37.7	48.4	58.5	68.3	76.2	82.9	88.8	0.0028

GROUND PLANE NORMAL FORCE (TESTED IN THE HOUSING), Initial:

Deflections in inches, Forces in Grams

Sample #	0.0004	0.0008	0.0013	0.0017	0.0021	0.0025	0.0029	0.0034	0.0038	0.0042	SET
1	3.7	7.8	12.6	16.9	21.8	26.4	31.5	37.2	42.3	48.1	0.0005
2	4.6	9.7	14.7	20.1	25.6	30.7	36.1	41.1	46.3	51.1	0.0004
3	5.3	10.5	15.9	21.0	26.6	32.0	37.5	42.9	48.0	53.5	0.0002
4	5.0	10.9	16.6	23.1	29.8	35.8	42.2	48.6	55.3	61.5	0.0000
5	4.1	9.3	14.2	19.6	25.1	31.1	37.2	42.7	48.7	54.1	0.0002
6	6.8	13.0	20.3	26.7	32.7	38.6	45.3	52.5	59.5	65.8	0.0001
7	6.2	13.1	18.9	25.1	31.0	36.9	42.4	48.1	53.8	59.4	0.0000
8	6.0	11.9	17.6	22.9	28.1	33.0	38.4	43.9	49.0	54.5	0.0000
9	4.5	10.2	15.9	21.6	27.4	33.2	38.7	44.5	50.2	55.8	0.0002
10	9.1	17.5	24.7	31.2	38.6	45.1	52.2	58.0	64.6	71.0	0.0002

GROUND PLANE NORMAL FORCE (TESTED IN THE HOUSING), After Thermals:

Deflections in inches, Forces in Grams

Sample #	0.0004	0.0008	0.0013	0.0017	0.0021	0.0025	0.0029	0.0034	0.0038	0.0042	SET
1	4.6	9.6	14.7	19.6	24.4	29.1	34.0	38.6	43.2	47.6	0.0000
2	2.7	5.4	8.3	11.4	14.8	18.3	21.8	25.3	28.5	31.8	0.0002
3	4.5	8.9	13.2	17.5	21.2	25.2	28.7	32.5	35.9	39.6	0.0003
4	4.0	7.9	12.0	15.9	20.1	24.2	28.3	32.5	37.2	41.6	0.0001
5	1.7	5.9	8.9	11.5	13.4	15.8	18.1	20.9	23.3	26.1	0.0019
6	4.1	8.4	13.3	17.6	22.4	26.6	31.2	35.5	40.2	44.7	0.0002
7	3.8	9.0	13.7	18.5	23.5	28.3	32.4	37.3	42.4	47.0	0.0005
8	4.2	8.1	12.2	15.9	19.2	22.5	26.0	29.2	33.5	37.3	0.0000
9	4.3	8.5	12.3	16.1	19.6	23.5	27.2	30.8	34.3	38.0	0.0001
10	4.3	8.3	12.2	16.4	20.3	24.2	28.5	32.5	37.0	41.2	0.0001

INSULATION RESISTANCE (IR):

Initial Insulation Resistance		
Measured In Meg Ohms		

Pin to Pin			
Mated		Unmated	
X		X	X
Sample#	QRF8/QRM8	QRF8	QRM8
1	100,000	100,000	100,000
2	100,000	100,000	100,000

Thermal Insulation Resistance		
Measured In Meg Ohms		

Pin to Pin			
Mated		Unmated	
X		X	X
Sample#	QRF8/QRM8	QRF8	QRM8
1	100,000	100,000	100,000
2	100,000	100,000	100,000

Humidity Insulation Resistance		
Measured In Meg Ohms		

Pin to Pin			
Mated		Unmated	
X		X	X
Sample#	QRF8/QRM8	QRF8	QRM8
1	100,000	100,000	100,000
2	100,000	100,000	100,000

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

Initial DWV	
Test Voltage= 645	

Pin to Pin			
Mated		Unmated	
Sample#	QRF8/QRM8	QRF8	QRM8
1	645	645	645
2	645	645	645

Thermal Test Voltage	
Test Voltage= 645	

Pin to Pin			
Mated		Unmated	
Sample#	QRF8/QRM8	QRF8	QRM8
1	645	645	645
2	645	645	645

Humidity Test Voltage	
Test Voltage= 645	

Pin to Pin			
Mated		Unmated	
Sample#	QRF8/QRM8	QRF8	QRM8
1	645	645	645
2	645	645	645

LLCR:**SIGNALS**

	mOhm values	Actual	Delta	Delta	Delta
Board	Position	Initial	100 Cycles	Thermal	Humidity
1	P1	18.0	-0.7	2.7	-0.1
1	P2	16.7	-0.2	2.8	2.2
1	P3	16.0	0.6	2.1	0.9
1	P4	16.7	0.8	1.6	2.4
1	P5	15.9	-0.3	-0.3	0.0
1	P6	15.9	0.0	0.7	0.3
1	P7	16.0	0.1	1.0	2.8
1	P8	17.1	1.6	1.9	2.3
1	P9	17.0	1.0	2.7	1.6
1	P10	18.0	0.0	2.5	2.3
1	P11	17.1	0.6	1.4	1.9
1	P12	18.0	-0.2	0.2	1.1
1	P13	17.4	-0.3	1.6	0.8
1	P16	18.4	-1.0	1.5	-0.6
1	P17	17.6	-1.0	1.1	-0.2
1	P18	17.4	-0.6	0.3	-0.9
1	P19	16.1	-0.6	0.7	3.8
1	P20	18.1	-2.2	-1.6	-1.1
1	P21	17.1	0.2	1.6	-0.7
1	P22	19.5	-2.9	-1.6	-2.7
1	P23	17.3	-0.1	1.0	1.1
1	P24	17.6	-0.5	2.3	0.3
1	P25	16.3	-0.7	-0.5	-0.8
4	P1	18.6	-1.3	2.6	-0.8
4	P2	17.4	-0.4	4.3	2.2
4	P3	17.1	-0.7	3.7	1.8
4	P4	17.2	-0.5	4.5	3.4
4	P5	17.0	-0.6	1.7	3.2
4	P6	16.0	0.3	1.6	2.1
4	P7	16.7	-0.7	2.1	4.4
4	P8	17.3	-1.0	7.3	2.3
4	P9	17.4	0.4	5.6	4.3
4	P10	18.2	-0.8	4.3	2.1
4	P11	18.4	0.6	8.0	2.9
4	P12	17.4	-1.0	1.5	1.3
4	P13	16.8	-0.1	3.7	2.1
4	P16	18.0	1.5	6.2	2.0
4	P17	16.6	0.3	2.9	1.6
4	P18	16.7	0.2	2.6	0.8
4	P19	16.8	-0.1	1.1	0.8
4	P20	17.0	-0.7	2.3	3.7
4	P21	16.7	-0.2	3.6	1.9

4	P22	16.6	0.3	3.0	3.1
4	P23	18.0	-1.5	3.2	1.0
4	P24	16.6	0.2	3.5	2.0
4	P25	16.9	-0.5	4.7	1.1
5	P1	17.5	0.0	2.5	0.3
5	P2	18.1	-0.7	0.0	0.4
5	P3	18.0	-1.6	0.2	-0.1
5	P4	18.4	-1.0	1.4	1.4
5	P5	17.2	-0.4	3.4	0.6
5	P6	16.4	0.1	0.9	1.2
5	P7	16.8	0.1	1.2	6.8
5	P8	16.8	0.1	2.5	3.2
5	P9	17.0	-0.1	1.4	3.2
5	P10	18.2	1.0	4.0	4.4
5	P11	18.3	0.1	2.6	1.8
5	P12	16.8	1.3	6.3	4.2
5	P13	17.3	0.5	3.3	2.1
5	P16	19.3	1.7	5.2	4.1
5	P17	18.3	1.1	3.5	0.4
5	P18	17.9	-0.2	0.4	0.1
5	P19	19.8	-3.3	-1.5	1.3
5	P20	17.1	-0.9	0.6	2.8
5	P21	17.4	0.4	2.4	0.3
5	P22	17.0	-0.1	4.1	2.0
5	P23	18.0	-1.0	10.4	4.7
5	P24	16.7	0.1	2.4	2.4
5	P25	16.3	0.9	4.1	3.5
6	P1	17.8	-0.4	1.1	3.4
6	P2	17.4	0.5	1.2	0.8
6	P3	17.7	-0.8	0.0	-0.7
6	P4	17.2	0.7	0.2	0.9
6	P5	16.3	0.2	0.9	1.6
6	P6	16.0	0.0	0.9	0.9
6	P7	16.6	-0.2	0.8	0.9
6	P8	16.7	0.0	6.2	2.2
6	P9	16.7	0.1	3.6	5.3
6	P10	18.7	-0.3	2.6	1.6
6	P11	17.6	0.3	5.9	1.3
6	P12	17.4	0.4	1.7	2.1
6	P13	17.4	0.5	1.7	3.0
6	P16	17.9	1.0	3.7	2.8
6	P17	17.8	-0.1	1.0	2.1
6	P18	17.0	0.3	3.5	3.8
6	P19	16.0	-0.1	1.5	2.2
6	P20	16.9	-0.9	-0.2	-0.5
6	P21	16.4	-0.1	2.8	1.5
6	P22	17.9	-1.5	1.1	2.1
6	P23	18.3	-1.3	5.6	2.3
6	P24	17.2	-0.2	1.0	6.7
6	P25	17.0	-1.1	0.1	0.8

7	P1	17.0	-0.1	2.4	2.3
7	P2	17.0	0.3	2.5	2.0
7	P3	16.8	-0.3	1.4	1.1
7	P4	17.2	1.1	1.7	2.5
7	P5	15.7	0.0	0.7	3.3
7	P6	16.2	0.4	1.4	1.8
7	P7	15.9	0.5	3.4	1.6
7	P8	17.6	-0.1	0.8	-0.3
7	P9	16.7	0.4	2.1	2.3
7	P10	17.3	0.6	4.5	2.8
7	P11	18.2	0.3	1.8	1.2
7	P12	18.1	1.0	0.8	0.0
7	P13	16.9	1.2	3.6	1.7
7	P16	17.8	0.2	2.2	1.2
7	P17	17.6	0.0	3.6	3.6
7	P18	17.2	0.1	3.2	2.5
7	P19	16.8	-0.5	1.8	5.7
7	P20	16.4	0.0	1.2	3.6
7	P21	16.7	-0.2	4.0	2.7
7	P22	17.3	-0.5	3.4	0.9
7	P23	17.1	0.3	1.1	0.7
7	P24	16.7	0.1	1.3	0.3
7	P25	16.7	-0.4	-0.3	-0.4
8	P1	17.3	0.0	9.1	1.5
8	P2	17.8	-0.7	1.4	1.7
8	P3	17.9	-0.4	2.3	1.3
8	P4	18.1	0.0	1.0	0.8
8	P5	17.3	-0.2	0.1	1.2
8	P6	16.2	0.2	1.2	1.2
8	P7	16.6	-0.5	0.8	3.4
8	P8	16.4	0.3	1.9	3.4
8	P9	17.6	-0.4	0.6	1.2
8	P10	17.7	0.5	4.7	3.9
8	P11	17.8	1.1	1.7	2.2
8	P12	17.2	0.1	2.9	2.5
8	P13	16.7	0.1	2.5	2.3
8	P16	18.0	-0.1	3.9	1.7
8	P17	17.5	-0.3	3.0	6.5
8	P18	18.4	-1.1	-0.6	5.0
8	P19	16.2	-0.3	0.3	2.3
8	P20	17.0	-0.7	3.2	1.3
8	P21	17.4	-0.4	1.4	0.2
8	P22	17.7	-0.7	2.5	0.3
8	P23	17.7	-1.1	4.5	0.0
8	P24	17.5	-0.6	4.2	0.2
8	P25	16.3	-0.4	0.5	1.6
9	P1	21.4	-2.8	-1.1	-1.2
9	P2	20.3	-1.7	0.4	0.3
9	P3	17.6	-0.6	-0.2	2.0
9	P4	18.4	-1.9	-1.2	1.4

9	P5	16.3	-0.2	0.5	4.3
9	P6	16.1	-0.3	0.4	2.1
9	P7	16.7	-0.8	0.5	1.6
9	P8	17.3	-0.3	0.2	2.2
9	P9	17.4	-0.9	-0.3	1.2
9	P10	17.7	-0.6	0.1	4.7
9	P11	18.9	-0.6	-1.1	-0.6
9	P12	18.9	-0.9	-0.5	1.6
9	P13	20.2	-3.1	-0.6	0.8
9	P16	21.0	-2.7	-2.1	-2.6
9	P17	17.9	-1.0	2.8	2.1
9	P18	17.2	0.5	1.9	1.6
9	P19	16.5	-0.5	-0.1	0.1
9	P20	17.2	-1.1	1.0	0.9
9	P21	20.7	-3.9	-2.4	-2.9
9	P22	18.4	-1.8	2.7	0.1
9	P23	18.3	-1.8	-0.4	-0.4
9	P24	19.0	-3.0	-1.0	-1.5
9	P25	16.3	-0.8	-0.2	0.5
10	P1	18.1	-1.1	1.2	3.6
10	P2	17.4	-0.8	1.6	3.3
10	P3	17.3	-0.9	1.0	1.3
10	P4	17.0	0.1	2.1	4.6
10	P5	15.6	0.0	1.3	1.1
10	P6	16.0	-0.2	0.5	1.0
10	P7	16.5	-0.1	0.5	2.3
10	P8	17.1	-0.5	2.1	3.1
10	P9	18.7	-2.2	0.1	0.1
10	P10	18.6	0.8	2.0	2.2
10	P11	19.5	-1.7	-0.9	-0.7
10	P12	22.8	-1.6	-2.7	-3.9
10	P13	17.8	-0.6	1.1	1.4
10	P16	18.7	-0.3	1.8	4.9
10	P17	17.7	0.1	1.6	2.7
10	P18	19.7	-2.6	-1.0	1.3
10	P19	16.3	-0.3	1.2	1.2
10	P20	16.8	-0.6	0.5	5.9
10	P21	18.2	-1.4	0.2	-0.3
10	P22	18.6	0.5	3.6	2.8
10	P23	18.4	-1.0	0.8	2.9
10	P24	18.2	-1.8	-0.8	-1.3
10	P25	16.0	-0.2	0.1	0.7
11	P1	17.7	0.1	3.9	1.3
11	P2	18.4	-0.1	4.7	5.3
11	P3	18.6	-1.0	1.9	0.8
11	P4	17.8	-0.1	2.7	5.2
11	P5	16.8	-0.3	2.9	3.9
11	P6	16.0	0.5	1.4	2.6
11	P7	16.3	0.8	2.4	1.9
11	P8	17.1	1.5	3.7	3.0

11	P9	16.8	1.3	4.6	4.5
11	P10	17.0	2.0	3.2	4.8
11	P11	18.3	0.0	2.0	2.6
11	P12	17.9	0.1	2.0	2.5
11	P13	17.3	0.0	4.4	2.8
11	P16	18.1	0.0	2.5	4.4
11	P17	17.2	0.3	2.9	4.0
11	P18	17.0	0.4	2.9	2.7
11	P19	15.7	0.0	1.4	3.2
11	P20	16.4	-0.1	2.3	1.6
11	P21	17.1	0.1	2.6	2.6
11	P22	18.0	-0.3	1.9	0.8
11	P23	16.7	0.2	4.2	2.8
11	P24	18.1	0.4	7.3	1.9
11	P25	17.6	-0.2	0.8	0.0

GROUPS

	mOhm values	Actual	Delta	Delta	Delta
Board	Position	Initial	100 Cycles	Thermal	Humidity
1	P14	2.7	-0.5	-0.4	-0.3
1	P15	2.6	-0.5	-0.5	-0.5
4	P14	2.8	0.2	4.7	2.9
4	P15	2.8	-0.2	0.8	0.2
5	P14	3.0	-0.1	0.4	1.0
5	P15	3.0	-0.1	1.0	1.5
6	P14	2.9	-0.1	0.2	0.5
6	P15	3.1	-0.3	-0.2	0.4
7	P14	3.0	-0.2	0.0	0.7
7	P15	3.1	-0.4	-0.2	-0.2
8	P14	3.4	-0.3	0.1	0.0
8	P15	3.1	-0.5	0.3	-0.2
9	P14	3.0	-0.2	0.0	0.9
9	P15	3.0	-0.2	-0.1	0.4
10	P14	3.0	0.1	0.9	0.2
10	P15	2.7	-0.1	0.3	1.0
11	P14	3.2	-0.1	0.4	1.2
11	P15	3.3	-0.1	0.6	0.3

GAS TIGHT:**SIGNALS**

	mOhm values	Actual	Delta
Board	Position	Initial	Gas Tight
1	P1	20.9	-3.4
1	P2	18.7	-0.2
1	P3	18.5	-1.2
1	P4	17.6	-0.4
1	P5	16.4	-0.3
1	P6	15.7	-0.2
1	P7	20.6	-2.6
1	P8	16.8	-0.5
1	P9	18.7	-0.7
1	P10	20.8	-1.4
1	P11	18.4	-1.1
1	P12	20.0	-0.8
1	P13	18.6	-0.1
1	P16	19.9	-1.0
1	P17	17.9	-1.1
1	P18	17.3	-0.9
1	P19	15.8	-0.1
1	P20	16.7	-0.8
1	P21	17.7	-0.9
1	P22	18.8	-0.1
1	P23	17.6	-0.8
1	P24	18.2	-0.1
1	P25	16.8	-0.3
2	P1	21.6	-2.8
2	P2	21.1	-1.3
2	P3	16.9	-0.3
2	P4	18.0	-0.5
2	P5	15.9	-0.1
2	P6	16.5	-0.7
2	P7	17.3	-0.8
2	P8	19.5	-1.2
2	P9	26.2	-1.8
2	P10	19.0	-0.7
2	P11	19.5	-0.3
2	P12	21.6	-1.3
2	P13	21.2	-0.5
2	P16	18.7	0.4
2	P17	21.0	-1.3
2	P18	18.1	-0.1
2	P19	16.6	-0.1
2	P20	16.4	-0.2
2	P21	18.2	-0.2

2	P22	18.7	0.5
2	P23	18.4	0.5
2	P24	18.8	0.2
2	P25	16.2	0.4
3	P1	19.7	0.1
3	P2	18.0	-0.3
3	P3	18.3	-0.1
3	P4	17.1	0.1
3	P5	16.0	-0.2
3	P6	15.8	-0.1
3	P7	16.5	-0.1
3	P8	18.5	-0.4
3	P9	16.7	0.0
3	P10	18.6	0.4
3	P11	17.2	0.4
3	P12	24.4	-2.5
3	P13	20.2	-0.4
3	P16	17.4	-0.1
3	P17	17.6	0.0
3	P18	17.9	-0.1
3	P19	16.5	-0.1
3	P20	16.4	-0.1
3	P21	17.2	-0.2
3	P22	18.6	-0.5
3	P23	17.3	0.0
3	P24	18.1	-0.1
3	P25	16.7	0.5
4	P1	18.6	-0.5
4	P2	21.1	-2.6
4	P3	17.9	-1.0
4	P4	18.0	-0.6
4	P5	15.9	-0.2
4	P6	15.9	-0.2
4	P7	16.8	-0.5
4	P8	18.0	0.0
4	P9	17.4	-0.4
4	P10	20.1	-1.4
4	P11	16.9	-0.1
4	P12	20.5	-0.2
4	P13	20.6	0.5
4	P16	19.1	0.3
4	P17	17.7	-0.6
4	P18	16.6	0.2
4	P19	15.9	-0.3
4	P20	15.6	0.0
4	P21	17.2	0.4
4	P22	17.8	-0.3
4	P23	16.8	0.3
4	P24	16.7	0.4

4	P25	15.9	-0.1
5	P1	20.0	-1.6
5	P2	20.4	-1.2
5	P3	17.9	-0.3
5	P4	18.5	-1.4
5	P5	16.6	-0.6
5	P6	16.9	-0.1
5	P7	19.8	-2.4
5	P8	18.7	-1.5
5	P9	17.7	-1.2
5	P10	26.2	-6.3
5	P11	18.3	-1.3
5	P12	19.0	-0.8
5	P13	19.6	0.7
5	P16	18.3	0.1
5	P17	20.7	-1.6
5	P18	17.1	-0.6
5	P19	16.4	-0.3
5	P20	15.7	-0.2
5	P21	18.0	-0.5
5	P22	17.0	-0.4
5	P23	17.1	0.7
5	P24	17.8	0.1
5	P25	16.4	0.0
6	P1	18.4	0.0
6	P2	19.7	-0.9
6	P3	18.3	-0.6
6	P4	17.7	-0.3
6	P5	16.4	-0.1
6	P6	16.4	-0.2
6	P7	16.6	-0.3
6	P8	18.5	0.3
6	P9	17.4	-0.3
6	P10	23.1	-1.5
6	P11	18.5	-0.8
6	P12	27.1	-4.9
6	P13	20.6	-0.7
6	P16	20.0	-0.2
6	P17	17.9	-0.2
6	P18	17.9	-0.3
6	P19	16.9	0.0
6	P20	16.9	-0.7
6	P21	17.9	-0.3
6	P22	18.3	-0.4
6	P23	18.6	-1.3
6	P24	18.0	-0.7
6	P25	16.1	-0.2
7	P1	19.6	0.2
7	P2	20.7	1.0

7	P3	17.4	0.9
7	P4	17.4	-0.1
7	P5	16.1	-0.1
7	P6	16.5	-0.1
7	P7	17.0	-0.1
7	P8	16.9	-0.4
7	P9	17.4	0.5
7	P10	18.0	-0.3
7	P11	22.0	-1.1
7	P12	19.2	0.4
7	P13	20.9	-2.2
7	P16	22.0	-2.1
7	P17	18.4	-0.4
7	P18	18.6	-0.3
7	P19	17.4	-0.2
7	P20	16.1	-0.4
7	P21	19.0	-0.4
7	P22	18.9	0.9
7	P23	17.6	0.1
7	P24	18.4	0.2
7	P25	17.8	0.0
8	P1	17.8	0.9
8	P2	17.9	-0.1
8	P3	17.1	-0.2
8	P4	17.9	-0.2
8	P5	16.3	-0.4
8	P6	16.7	-0.5
8	P7	17.7	-0.5
8	P8	17.0	-0.6
8	P9	18.7	-0.6
8	P10	20.3	-1.6
8	P11	18.8	-0.4
8	P12	18.8	-0.4
8	P13	18.0	0.0
8	P16	19.2	1.4
8	P17	19.0	-0.4
8	P18	18.8	-0.5
8	P19	16.6	-0.2
8	P20	16.7	0.0
8	P21	19.0	-1.0
8	P22	20.6	0.4
8	P23	17.6	1.1
8	P24	17.4	0.7
8	P25	16.2	0.4

GROUNDS

	mOhm values	Actual	Delta
Board	Position	Initial	Gas Tight
1	P14	2.3	0.0
1	P15	2.3	0.0
2	P14	2.6	-0.1
2	P15	2.6	0.0
3	P14	2.9	-0.1
3	P15	2.7	0.0
4	P14	2.5	-0.1
4	P15	2.4	0.0
5	P14	2.5	-0.1
5	P15	2.3	0.2
6	P14	2.6	0.0
6	P15	2.6	0.0
7	P14	2.9	0.0
7	P15	2.8	0.0
8	P14	2.5	0.0
8	P15	2.6	0.0

EQUIPMENT AND CALIBRATION SCHEDULES**Equipment #:** MO-01**Description:** Micro-Ohmmeter**Manufacturer:** Keithley**Model:** 580**Serial #:** 0772740**Accuracy:** See Manual

... Last Cal: 06/16/09, Next Cal: 06/16/2010

Equipment #: MO-03**Description:** Multimeter /Data Acquisition System**Manufacturer:** Keithley**Model:** 2700**Serial #:** 0791975**Accuracy:** See Manual

... Last Cal: 06/16/09, Next Cal: 06/16/2010

Equipment #: MO-04**Description:** Multimeter /Data Acquisition System**Manufacturer:** Keithley**Model:** 2700**Serial #:** 0798688**Accuracy:** See Manual - DO NOT USE UNTIL CALIBRATED.

... Last Cal: 04/06/09, Next Cal: 04/06/2010

Equipment #: MO-06**Description:** Micro-Ohmmeter**Manufacturer:** Keithley**Model:** 580**Serial #:** 1110525**Accuracy:** See Manual

... Last Cal: 06/16/2009, Next Cal: 06/16/2010

Equipment #: MO-07**Description:** Multimeter / Data Acquisition System**Manufacturer:** Keithley**Model:** 2700**Serial #:** 1116559**Accuracy:** See Manual

... Last Cal: 6/16/2009, Next Cal: 6/16/2010

Equipment #: MV-05**Description:** 6" x 6" Video Measuring Machine**Manufacturer:** Micro-Vu**Model:** M3010838**Serial #:** V9344**Accuracy:** See Manual

... Last Cal: 02/10/2009, Next Cal: 02/10/2010

Equipment #: MV-08**Description:** 6" x 6" Video Measuring Machine**Manufacturer:** Micro-Vu**Model:** M3010898**Serial #:** V9472**Accuracy:** See Manual See Manual

... Last Cal: 02/10/2009, Next Cal: 02/10/2010

Equipment #: TCT-01**Description:** Test Stand**Manufacturer:** Chatillon**Model:** TCD-1000**Serial #:** 05 23 00 02**Accuracy:** Speed Accuracy: +/-5% of max speed; Displacement: +/- .5% or +/- .005, whichever is greater.

... Last Cal: 8/12/08, Next Cal: 8/12/09

Equipment #: TCT-04**Description:** Dillon Quantrol TC21 25-1000 mm/min series test stand**Manufacturer:** Dillon Quantrol**Model:** TC2 I series test stand**Serial #:** 04-1041-04**Accuracy:** Speed Accuracy: +/- 5% of indicated speed; Speed Accuracy: +/- 5% of indicated speed;

... Last Cal: 5/12/2009, Next Cal: 5/12/2010

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: 06/17/2009, Next Cal: 06/17/2010

Equipment #: HPM-01**Description:** Hipot Megommeter**Manufacturer:** Hipotronics**Model:** H306B-A**Serial #:** 0772740**Accuracy:** 2 % Full Scale Accuracy

... Last Cal: 11/24/08, Next Cal: 11/24/09

Equipment #: RS-09**Description:** Current Shunt**Manufacturer:** Empro**Model:** HA10050**Serial #:** HA10050-1**Accuracy:** +/- 0.25% of RDG

... Last Cal: 05/14/2009, Next Cal: 05/14/2010