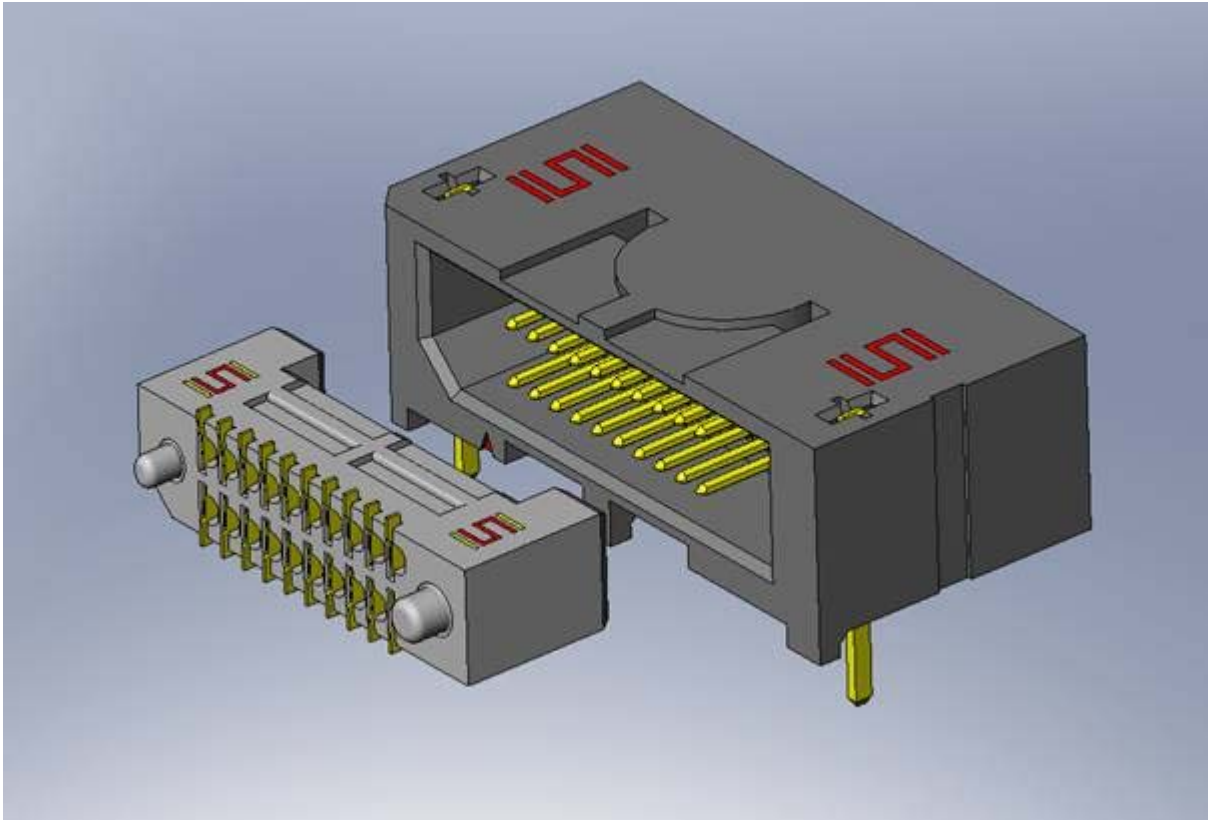




|                                                |  |                                   |                                      |
|------------------------------------------------|--|-----------------------------------|--------------------------------------|
| Project Number:                                |  | Tracking Code: TC0839-TEM-DH-1979 |                                      |
| Requested by: Brandon Harpenau                 |  | Date: 12/11/2008                  | Product Rev: 1                       |
| Part #: TEM-125-02-DH1-S-D/SEM-125-03.0-S-D-WT |  | Lot #: 1                          | Tech: Rodney Riley<br>Eng: Troy Cook |
| Part description: TEM/SEM                      |  |                                   | Qty to test: 100                     |
| Test Start: 09/22/2008                         |  | Test Completed: 12/8/2008         |                                      |



## DESIGN VERIFICATION TESTING

### PART DESCRIPTION

**TEM-125-02-DH1-S-D/SEM-125-03.0-S-D-WT**

## **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**

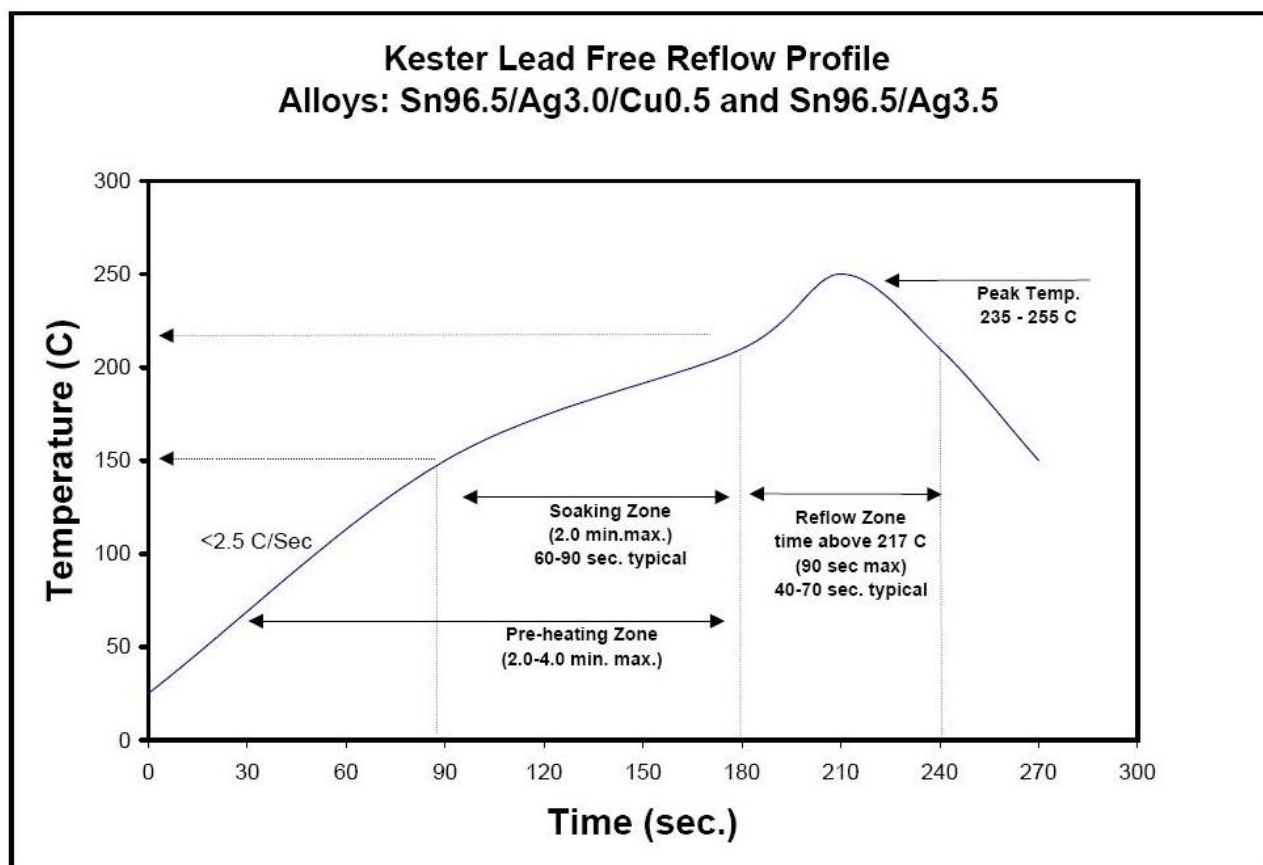
To perform the following tests: Complete DVT.

## **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-101404-TST-XX, PCB-101408-TST-XX

**TYPICAL OVEN PROFILE (Soldering Parts to Test Boards)**

## FLOWCHARTS

### Current Carrying Capacity

3 Mated Assemblies Each

| TEST<br>STEP | GROUP A<br>3 Mated Assemblies<br>2 CONTACTS POWERED | GROUP B<br>3 Mated Assemblies<br>4 CONTACTS POWERED | GROUP C<br>3 Mated Assemblies<br>6 CONTACTS POWERED | GROUP D<br>3 Mated Assemblies<br>8 CONTACTS POWERED | GROUP E<br>3 Mated Assemblies<br>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

### Mating/Unmating/Gaps/Normal Force/Deflection Force

| TEST<br>STEP | GROUP A<br>10 Boards<br>25 Position |
|--------------|-------------------------------------|
| 01           | Contact Gaps                        |
| 02           | Mating / Unmating                   |
| 03           | Data Review                         |
| 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

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

**FLOWCHARTS Continued****IR / DWV**

| TEST STEP | GROUP A<br>2 Boards<br>Ambient | GROUP B1<br>2 Boards<br>Ambient | GROUP B2<br>2 Boards<br>Thermal | GROUP B3<br>2 Boards<br>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 to 98% RH)

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

IR = EIA-364-21

DWV = EIA-364-20

**Gas Tight**

| TEST STEP | GROUP A<br>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

**FLOWCHARTS Continued****Durability/Thermal Age/Cyclic Humidity**

| <b>TEST<br/>STEP</b> | <b>GROUP A<br/>200 Points<br/>100 Cycles</b> |
|----------------------|----------------------------------------------|
| <b>01</b>            | LLCR-1                                       |
| <b>02</b>            | Data Review                                  |
| <b>03</b>            | 100 Cycles                                   |
| <b>04</b>            | LLCR-2                                       |
| <b>05</b>            | Data Review                                  |
| <b>06</b>            | Thermal Age                                  |
| <b>07</b>            | LLCR-3                                       |
| <b>08</b>            | Data Review                                  |
| <b>09</b>            | Cyclic Humidity                              |
| <b>10</b>            | 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

## 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.

**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. 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 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  $50^{\circ}\text{C}$
    - 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-----2.5A per contact with 2 adjacent contacts powered
- CCC for a 30°C Temperature Rise-----1.9A 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-----1.5A per contact with 8 adjacent contacts powered
- CCC for a 30°C Temperature Rise-----0.8A per contact with all adjacent contacts powered

### Contact Gaps

- Initial
  - Min-----0.099
  - Max-----0.140
- After 100 Cycles
  - Min-----0.112
  - Max-----0.151
- Thermal
  - Min-----0.137
  - Max-----0.247
- Humidity
  - Min-----0.140
  - Max-----0.237

### Mating – Unmating Forces

- Initial
  - Mating
    - Min-----4.1 lbs
    - Max-----6.7 lbs
  - Unmating
    - Min-----2.5 lbs
    - Max-----4.2 lbs
- After 100 Cycles
  - Mating
    - Min-----3.9 lbs
    - Max-----5.6 lbs
  - Unmating
    - Min-----2.8 lbs
    - Max-----3.9 lbs
- Thermal
  - Mating
    - Min-----3.0 lbs
    - Max-----5.0 lbs
  - Unmating
    - Min-----2.1 lbs
    - Max-----4.0 lbs
- Humidity
  - Mating
    - Min-----3.2 lbs
    - Max-----4.9 lbs
  - Unmating
    - Min-----2.3 lbs
    - Max-----3.5 lbs

**Insulation Resistance minimums, IR**

- **Initial**
  - Mated-----100,000 Meg  $\Omega$  ----- Pass
- **Thermal**
  - Mated-----100,000 Meg  $\Omega$
- **Humidity**
  - Mated-----100,000 Meg  $\Omega$

**Dielectric Withstanding Voltage minimums, DWV**

- **Initial**
  - **Breakdown**
    - Mated -----1,100 VAC
    - Unmated-----1,200 VAC
  - **DWV**
    - Mated -----825 VAC
    - Unmated-----900 VAC
  - **Working voltage**
    - Mated -----275 VAC
    - Unmated-----300 VAC
- **Thermal**
  - **Breakdown**
    - Mated -----1,150 VAC
    - Unmated-----1,250VAC
  - **DWV**
    - Mated -----863 VAC
    - Unmated-----938 VAC
  - **Working voltage**
    - Mated -----288 VAC
    - Unmated-----313 VAC
- **Humidity**
  - **Breakdown**
    - Mated -----1,020 VAC
    - Unmated-----1,250 VAC
  - **DWV**
    - Mated -----765 VAC
    - Unmated-----938 VAC
  - **Working voltage**
    - Mated -----255 VAC
    - Unmated-----313 VAC

**LLCR Durability (200 LLCR test points)**

- **Initial** ----- 14.8 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 ----- 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
- **Humidity**
  - 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

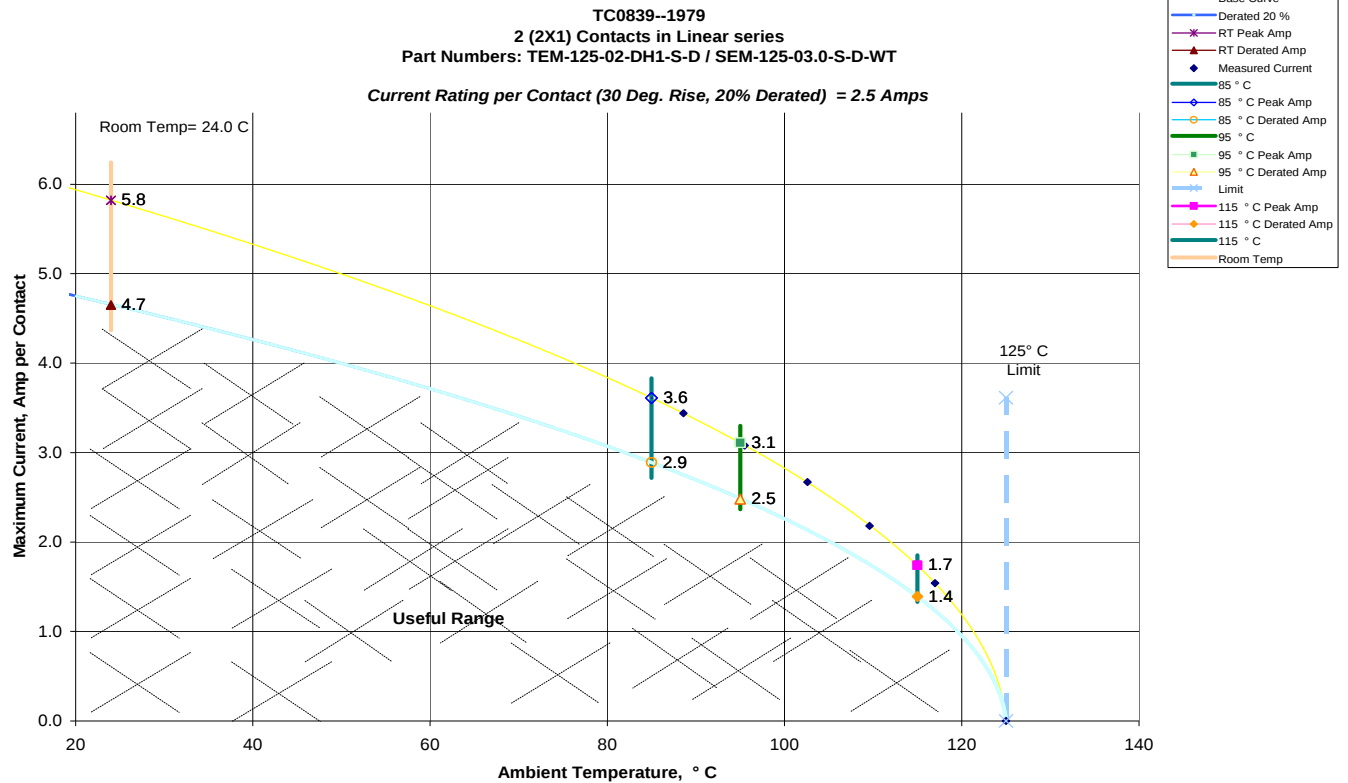
**LLCR Gas Tight (200 LLCR test points)**

- **Initial** ----- 15.4 mOhms Max
- **Gas-Tight**
  - 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

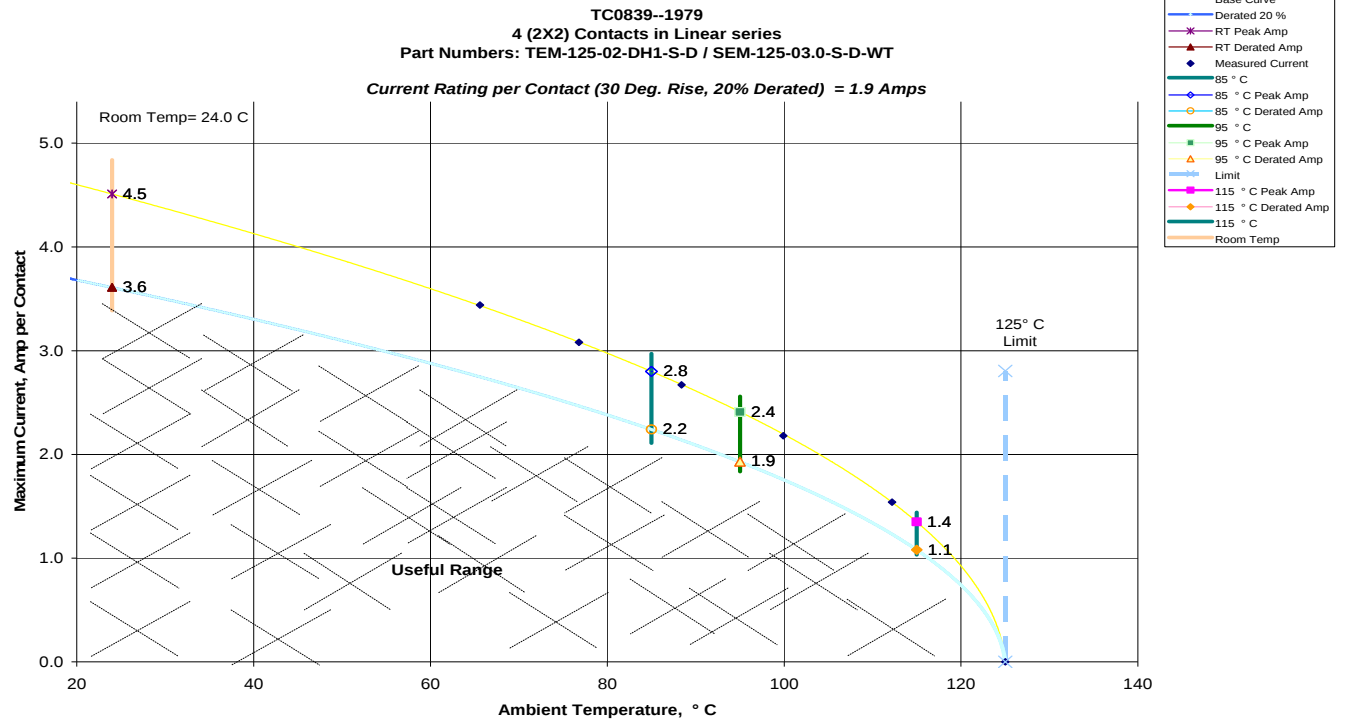
## DATA SUMMARIES

### TEMPERATURE RISE (Current Carrying Capacity, CCC):

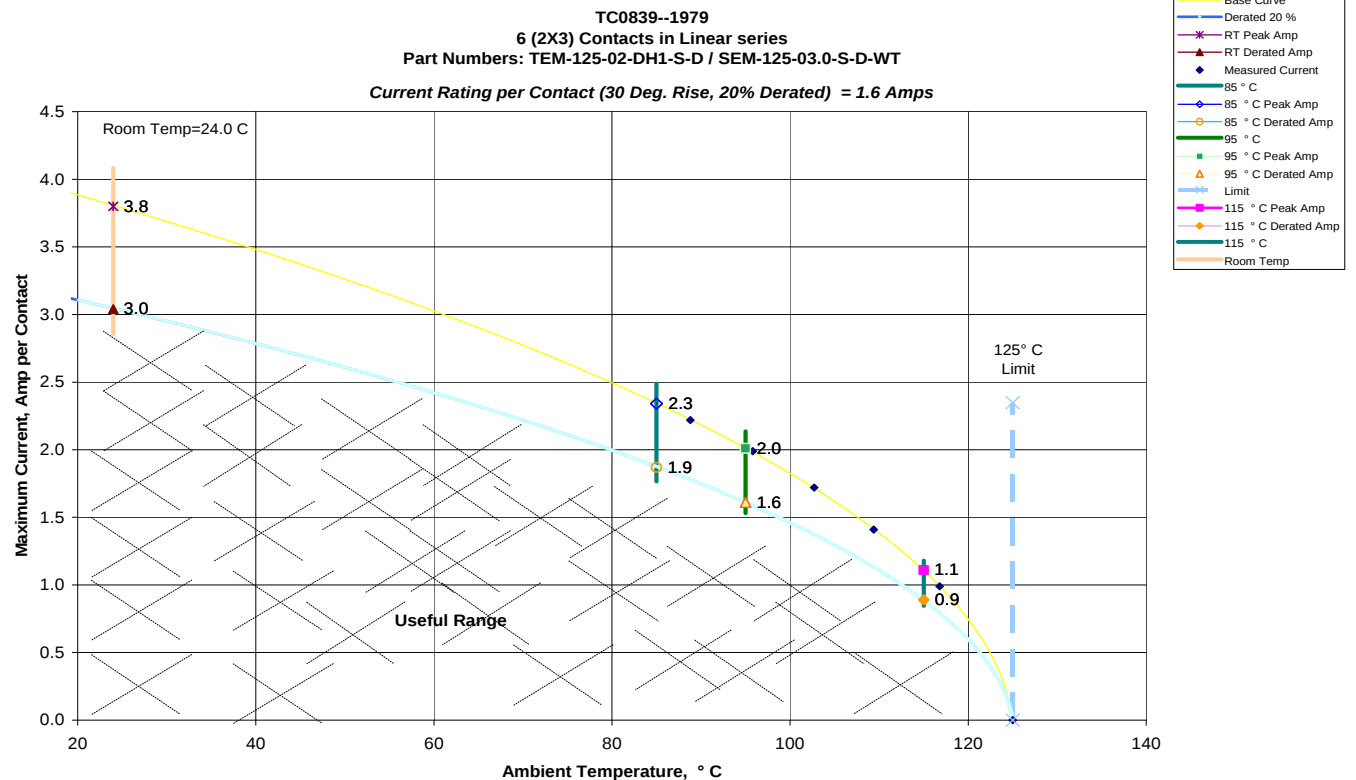
- 1) High quality thermocouples whose temperature slopes track one another were used for temperature monitoring.
- 2) The thermocouples were placed at a location to sense the maximum temperature generated during testing.
- 3) Temperature readings recorded are those for which three successive readings,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



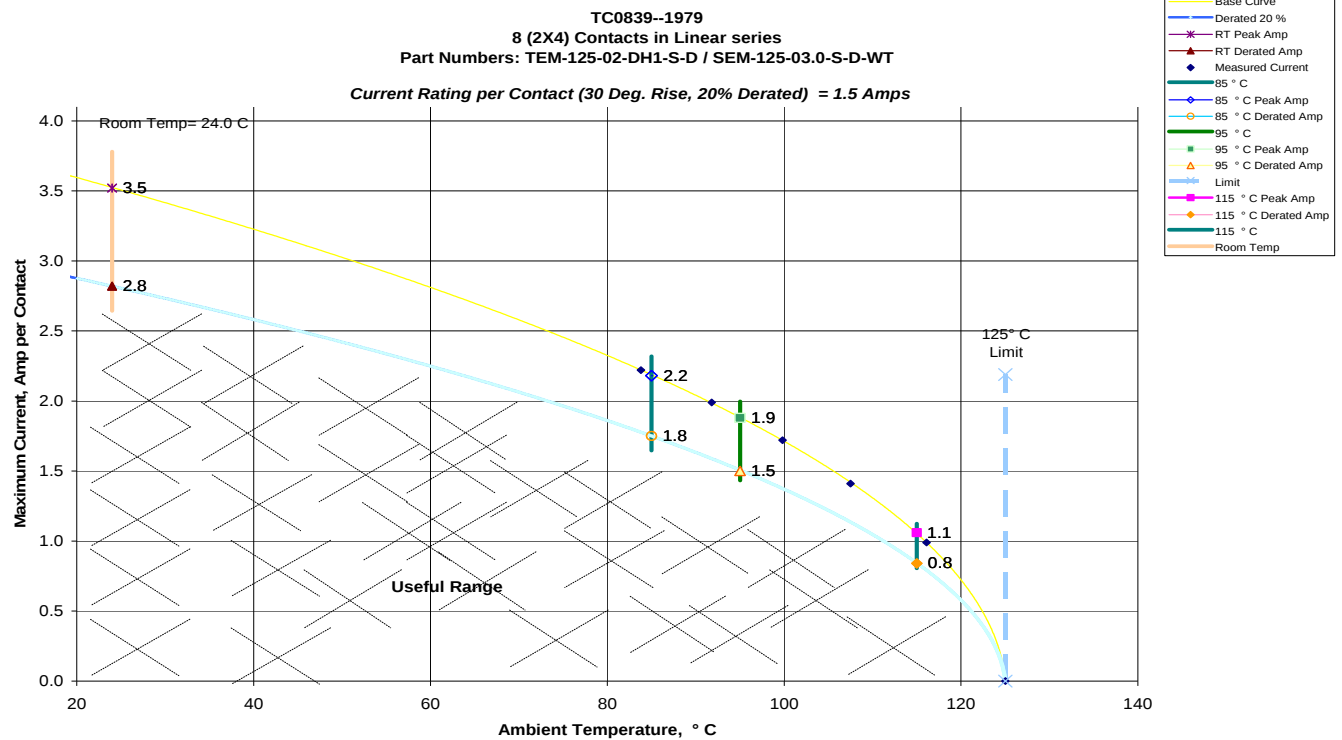
## b. Linear configuration with 4 adjacent conductors/contacts powered



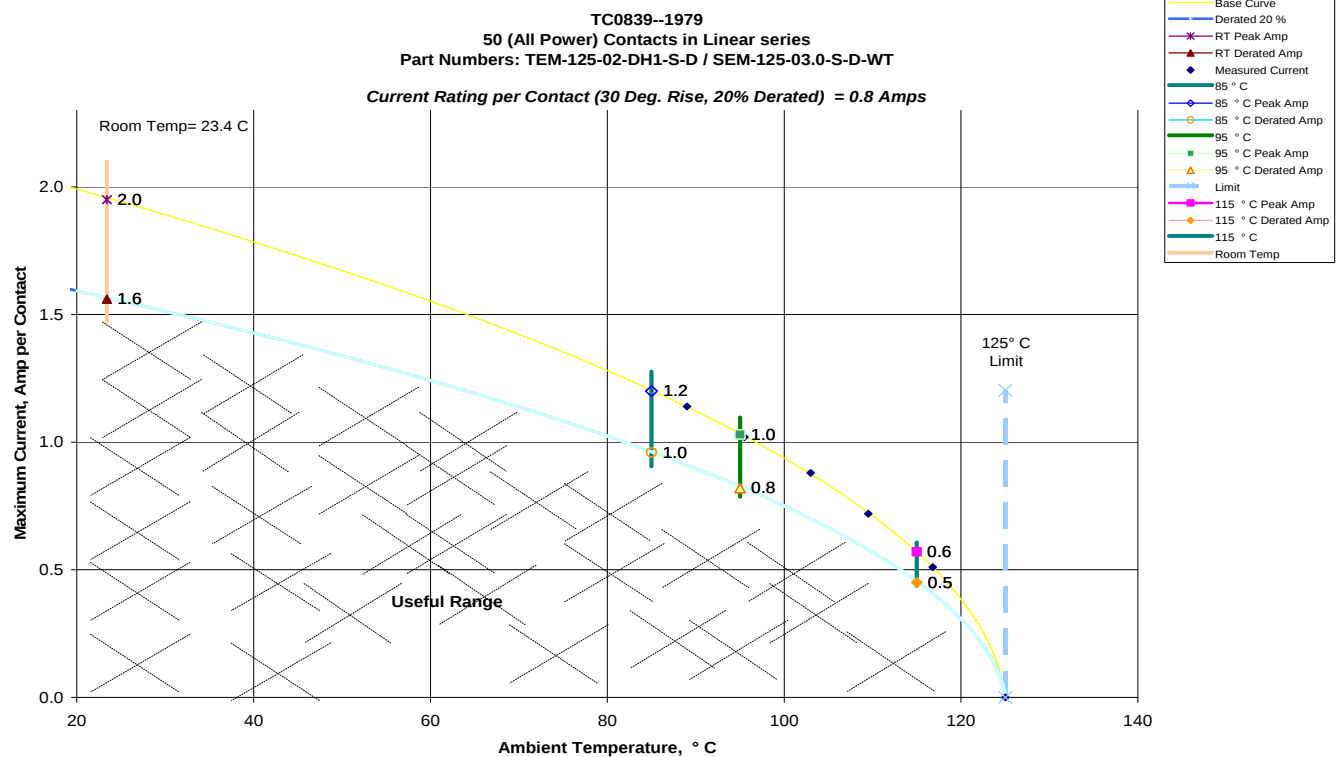
## c. Linear configuration with 6 adjacent conductors/contacts powered



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



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



**DATA SUMMARIES Continued****CONTACT GAPS:**

| Initial         |        | After 100 Cycles |        | After Thermal   |        | After Humidity  |        |
|-----------------|--------|------------------|--------|-----------------|--------|-----------------|--------|
| Measured in mm  |        | Measured in mm   |        | Measured in mm  |        | Measured in mm  |        |
| <i>Minimum</i>  | 0.0987 | <i>Minimum</i>   | 0.1115 | <i>Minimum</i>  | 0.1373 | <i>Minimum</i>  | 0.1397 |
| <i>Maximum</i>  | 0.1399 | <i>Maximum</i>   | 0.1511 | <i>Maximum</i>  | 0.2470 | <i>Maximum</i>  | 0.2372 |
| <i>Average</i>  | 0.1199 | <i>Average</i>   | 0.1293 | <i>Average</i>  | 0.1557 | <i>Average</i>  | 0.1554 |
| <i>St. Dev.</i> | 0.0108 | <i>St. Dev.</i>  | 0.0081 | <i>St. Dev.</i> | 0.0089 | <i>St. Dev.</i> | 0.0082 |
| <i>Count</i>    | 250    | <i>Count</i>     | 250    | <i>Count</i>    | 250    | <i>Count</i>    | 250    |

**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) |
| Minimum        | 65.8          | 4.1         | 39.5        | 2.5         | 62.9             | 3.9         | 45.1        | 2.8         |
| Maximum        | 107.2         | 6.7         | 66.9        | 4.2         | 88.8             | 5.6         | 63.0        | 3.9         |
| <b>Average</b> | <b>79.3</b>   | <b>5.0</b>  | <b>49.2</b> | <b>3.1</b>  | <b>74.0</b>      | <b>4.6</b>  | <b>53.2</b> | <b>3.3</b>  |
|                | After Thermal |             |             |             | After Humidity   |             |             |             |
|                | Mating        |             | Unmating    |             | Mating           |             | Unmating    |             |
|                | Force (Oz)    | Force (Lbs) | Force (Oz)  | Force (Lbs) | Force (Oz)       | Force (Lbs) | Force (Oz)  | Force (Lbs) |
| Minimum        | 47.4          | 3.0         | 33.1        | 2.1         | 51.4             | 3.2         | 37.0        | 2.3         |
| Maximum        | 80.0          | 5.0         | 63.4        | 4.0         | 77.6             | 4.9         | 55.5        | 3.5         |
| <b>Average</b> | <b>59.4</b>   | <b>3.7</b>  | <b>41.9</b> | <b>2.6</b>  | <b>63.0</b>      | <b>3.9</b>  | <b>44.0</b> | <b>2.7</b>  |

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

|          | Pin-Pin |
|----------|---------|
|          | Mated   |
| Minimum  | TEM/SEM |
| Initial  | 100,000 |
| Thermal  | 100,000 |
| Humidity | 100,000 |

**DIELECTRIC WITHSTANDING VOLTAGE (DWV):**

|                          |          | Pin-Pin |         |
|--------------------------|----------|---------|---------|
|                          |          | Mated   | Unmated |
| Minimum                  |          | TEM/SEM | SEM     |
| <b>Breakdown Voltage</b> | Initial  | 1,100   | 1,200   |
|                          | Thermal  | 1,150   | 1,250   |
|                          | Humidity | 1,020   | 1,250   |
| <b>DWV</b>               | Initial  | 825     | 900     |
|                          | Thermal  | 863     | 938     |
|                          | Humidity | 765     | 938     |
| <b>Working Voltage</b>   | Initial  | 275     | 300     |
|                          | Thermal  | 288     | 313     |
|                          | Humidity | 255     | 313     |

**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

| mOhm values | Actual Initial | Delta 100 Cycles | Delta Thermal | Delta Humidity |
|-------------|----------------|------------------|---------------|----------------|
| Average     | 12.4           | -0.2             | -0.2          | 0.3            |
| St. Dev.    | 1.0            | 0.8              | 0.7           | 1.1            |
| Min         | 10.4           | -2.9             | -2.1          | -2.5           |
| Max         | 14.8           | 1.7              | 2.9           | 3.5            |
| Count       | 200            | 200              | 200           | 200            |

**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

| mOhm values | Actual Initial | Delta Gas Tight |
|-------------|----------------|-----------------|
| Average     | 12.2           | 0.1             |
| St. Dev.    | 1.0            | 0.7             |
| Min         | 10.4           | -2.5            |
| Max         | 15.4           | 1.8             |
| Count       | 200            | 200             |

## DATA

## CONTACT GAPS:

| Initial<br>Measured in mm |         |         |         |         |         | After 100 Cycles<br>Measured in mm |         |         |         |         |         |
|---------------------------|---------|---------|---------|---------|---------|------------------------------------|---------|---------|---------|---------|---------|
| Pos.#                     | B1      | B2      | B3      | B4      | B5      | Pos.#                              | B1      | B2      | B3      | B4      | B5      |
| 1                         | 0.12842 | 0.1234  | 0.12767 | 0.12997 | 0.13549 | 1                                  | 0.13532 | 0.12957 | 0.13464 | 0.13713 | 0.1384  |
| 2                         | 0.10652 | 0.10496 | 0.10799 | 0.11209 | 0.10794 | 2                                  | 0.12025 | 0.11832 | 0.12144 | 0.12202 | 0.11996 |
| 3                         | 0.12814 | 0.12207 | 0.12326 | 0.12473 | 0.13169 | 3                                  | 0.13568 | 0.12905 | 0.1291  | 0.13003 | 0.13828 |
| 4                         | 0.11088 | 0.10385 | 0.11614 | 0.10308 | 0.10963 | 4                                  | 0.12193 | 0.11512 | 0.1265  | 0.11347 | 0.12025 |
| 5                         | 0.13369 | 0.12746 | 0.12828 | 0.13277 | 0.13738 | 5                                  | 0.14069 | 0.13353 | 0.13542 | 0.13487 | 0.14317 |
| 6                         | 0.11792 | 0.11403 | 0.10784 | 0.1091  | 0.11157 | 6                                  | 0.12964 | 0.12527 | 0.12154 | 0.12064 | 0.12408 |
| 7                         | 0.12958 | 0.1239  | 0.13127 | 0.12827 | 0.12743 | 7                                  | 0.13748 | 0.13132 | 0.13924 | 0.13541 | 0.13536 |
| 8                         | 0.11224 | 0.10673 | 0.10769 | 0.10931 | 0.11500 | 8                                  | 0.12369 | 0.11786 | 0.12014 | 0.12079 | 0.12716 |
| 9                         | 0.13921 | 0.12743 | 0.1359  | 0.1263  | 0.12358 | 9                                  | 0.14459 | 0.13363 | 0.14215 | 0.13153 | 0.13058 |
| 10                        | 0.11858 | 0.10367 | 0.10568 | 0.10096 | 0.10911 | 10                                 | 0.12894 | 0.11642 | 0.11969 | 0.11147 | 0.12188 |
| 11                        | 0.13101 | 0.12684 | 0.13267 | 0.12464 | 0.12054 | 11                                 | 0.13706 | 0.13263 | 0.14139 | 0.1338  | 0.12738 |
| 12                        | 0.11123 | 0.10523 | 0.11266 | 0.10111 | 0.11432 | 12                                 | 0.12476 | 0.11747 | 0.12593 | 0.11308 | 0.126   |
| 13                        | 0.1353  | 0.12928 | 0.12393 | 0.12559 | 0.12633 | 13                                 | 0.14219 | 0.13389 | 0.13183 | 0.13217 | 0.1331  |
| 14                        | 0.11947 | 0.11082 | 0.09871 | 0.11281 | 0.108   | 14                                 | 0.13121 | 0.12154 | 0.11787 | 0.12284 | 0.12196 |
| 15                        | 0.13366 | 0.12997 | 0.12788 | 0.13137 | 0.12816 | 15                                 | 0.13955 | 0.13622 | 0.13732 | 0.13676 | 0.13508 |
| 16                        | 0.10896 | 0.10268 | 0.10764 | 0.11396 | 0.10734 | 16                                 | 0.11991 | 0.11456 | 0.12353 | 0.12502 | 0.11908 |
| 17                        | 0.13034 | 0.13801 | 0.12599 | 0.13132 | 0.13991 | 17                                 | 0.1377  | 0.14304 | 0.13439 | 0.138   | 0.14776 |
| 18                        | 0.11075 | 0.1135  | 0.1018  | 0.11295 | 0.11587 | 18                                 | 0.12339 | 0.12517 | 0.11916 | 0.12521 | 0.12652 |
| 19                        | 0.13067 | 0.13751 | 0.12944 | 0.12461 | 0.13121 | 19                                 | 0.13674 | 0.14309 | 0.13727 | 0.13396 | 0.13925 |
| 20                        | 0.11232 | 0.11655 | 0.11445 | 0.10725 | 0.10965 | 20                                 | 0.12398 | 0.12553 | 0.12797 | 0.11864 | 0.12324 |
| 21                        | 0.12776 | 0.13261 | 0.12762 | 0.13029 | 0.12933 | 21                                 | 0.13426 | 0.14307 | 0.13589 | 0.13463 | 0.1337  |
| 22                        | 0.11159 | 0.10814 | 0.11099 | 0.10819 | 0.11389 | 22                                 | 0.12287 | 0.11941 | 0.12559 | 0.11771 | 0.12694 |
| 23                        | 0.12867 | 0.13192 | 0.13226 | 0.12582 | 0.12963 | 23                                 | 0.13517 | 0.13648 | 0.13834 | 0.13423 | 0.13525 |
| 24                        | 0.11654 | 0.11132 | 0.11124 | 0.1098  | 0.10671 | 24                                 | 0.12664 | 0.12181 | 0.12668 | 0.11881 | 0.12137 |
| 25                        | 0.12586 | 0.1364  | 0.13398 | 0.12868 | 0.13291 | 25                                 | 0.13196 | 0.14092 | 0.14129 | 0.13307 | 0.13971 |
| 26                        | 0.11414 | 0.11564 | 0.10925 | 0.11061 | 0.11171 | 26                                 | 0.1239  | 0.12496 | 0.12496 | 0.11983 | 0.12441 |
| 27                        | 0.13521 | 0.12721 | 0.13153 | 0.13359 | 0.13000 | 27                                 | 0.1388  | 0.13293 | 0.13952 | 0.1384  | 0.1374  |
| 28                        | 0.11519 | 0.10531 | 0.10858 | 0.1146  | 0.10969 | 28                                 | 0.12605 | 0.1184  | 0.12476 | 0.12417 | 0.12219 |
| 29                        | 0.13084 | 0.13278 | 0.13022 | 0.13194 | 0.1301  | 29                                 | 0.13579 | 0.1375  | 0.13863 | 0.13606 | 0.13831 |
| 30                        | 0.1141  | 0.11606 | 0.10945 | 0.11622 | 0.11072 | 30                                 | 0.12463 | 0.12541 | 0.1255  | 0.1247  | 0.12351 |
| 31                        | 0.13554 | 0.12813 | 0.12577 | 0.12702 | 0.1249  | 31                                 | 0.1404  | 0.13559 | 0.13138 | 0.13211 | 0.13226 |
| 32                        | 0.11571 | 0.10407 | 0.10339 | 0.11024 | 0.11038 | 32                                 | 0.12576 | 0.11684 | 0.12019 | 0.12006 | 0.12258 |
| 33                        | 0.13335 | 0.13244 | 0.12788 | 0.13419 | 0.12742 | 33                                 | 0.13735 | 0.13803 | 0.13397 | 0.13756 | 0.13277 |
| 34                        | 0.11727 | 0.10595 | 0.10075 | 0.11244 | 0.10713 | 34                                 | 0.12666 | 0.11941 | 0.1216  | 0.12145 | 0.12126 |
| 35                        | 0.12969 | 0.13061 | 0.12695 | 0.12607 | 0.12164 | 35                                 | 0.13433 | 0.13568 | 0.13323 | 0.13164 | 0.13301 |
| 36                        | 0.11693 | 0.10909 | 0.10372 | 0.108   | 0.10447 | 36                                 | 0.12783 | 0.12069 | 0.12055 | 0.11768 | 0.11889 |
| 37                        | 0.13451 | 0.13311 | 0.12819 | 0.13174 | 0.12912 | 37                                 | 0.14019 | 0.14664 | 0.13406 | 0.137   | 0.13793 |
| 38                        | 0.11938 | 0.10954 | 0.10853 | 0.1119  | 0.10701 | 38                                 | 0.12793 | 0.11967 | 0.12471 | 0.12168 | 0.11274 |
| 39                        | 0.13066 | 0.13217 | 0.13268 | 0.13026 | 0.13082 | 39                                 | 0.13588 | 0.13742 | 0.14013 | 0.13469 | 0.13631 |
| 40                        | 0.10824 | 0.11066 | 0.10756 | 0.11763 | 0.11012 | 40                                 | 0.11954 | 0.12137 | 0.12102 | 0.12637 | 0.12224 |
| 41                        | 0.13334 | 0.13557 | 0.12796 | 0.12665 | 0.13108 | 41                                 | 0.13722 | 0.14224 | 0.13461 | 0.13165 | 0.13606 |
| 42                        | 0.11476 | 0.11074 | 0.11023 | 0.11997 | 0.10739 | 42                                 | 0.12451 | 0.12375 | 0.12576 | 0.12838 | 0.12037 |
| 43                        | 0.12628 | 0.13168 | 0.12806 | 0.13081 | 0.13389 | 43                                 | 0.13182 | 0.13849 | 0.1357  | 0.13492 | 0.1396  |
| 44                        | 0.11705 | 0.12077 | 0.10659 | 0.11601 | 0.10689 | 44                                 | 0.1282  | 0.13036 | 0.12039 | 0.15107 | 0.12548 |
| 45                        | 0.12813 | 0.12744 | 0.13117 | 0.13105 | 0.13151 | 45                                 | 0.13295 | 0.13251 | 0.13656 | 0.13884 | 0.13758 |
| 46                        | 0.11063 | 0.11651 | 0.10494 | 0.10604 | 0.11073 | 46                                 | 0.12054 | 0.12736 | 0.11831 | 0.11564 | 0.12242 |
| 47                        | 0.1263  | 0.13135 | 0.13011 | 0.12825 | 0.13076 | 47                                 | 0.13288 | 0.13834 | 0.13782 | 0.1348  | 0.13699 |
| 48                        | 0.10347 | 0.11491 | 0.10358 | 0.10509 | 0.10882 | 48                                 | 0.11833 | 0.1265  | 0.119   | 0.11766 | 0.12098 |
| 49                        | 0.12572 | 0.13023 | 0.13223 | 0.12135 | 0.12147 | 49                                 | 0.13069 | 0.13732 | 0.14052 | 0.13069 | 0.12764 |
| 50                        | 0.10423 | 0.10993 | 0.11162 | 0.10363 | 0.10142 | 50                                 | 0.11762 | 0.12358 | 0.12735 | 0.11588 | 0.11642 |

## DATA Continued

| After Thermal  |         |         |         |         |         | After Humidity |         |         |         |         |         |
|----------------|---------|---------|---------|---------|---------|----------------|---------|---------|---------|---------|---------|
| Measured in mm |         |         |         |         |         | Measured in mm |         |         |         |         |         |
| Pos.#          | B1      | B2      | B3      | B4      | B5      | Pos.#          | B1      | B2      | B3      | B4      | B5      |
| 1              | 0.15937 | 0.15379 | 0.15726 | 0.15996 | 0.1684  | 1              | 0.15636 | 0.15439 | 0.16121 | 0.16123 | 0.16695 |
| 2              | 0.14791 | 0.14639 | 0.15093 | 0.15109 | 0.14993 | 2              | 0.14952 | 0.1474  | 0.15247 | 0.15231 | 0.15068 |
| 3              | 0.15981 | 0.15241 | 0.15729 | 0.15762 | 0.164   | 3              | 0.1609  | 0.15356 | 0.15091 | 0.1521  | 0.16211 |
| 4              | 0.14864 | 0.14345 | 0.15377 | 0.14034 | 0.1482  | 4              | 0.15109 | 0.14307 | 0.15331 | 0.14777 | 0.14443 |
| 5              | 0.16185 | 0.15773 | 0.16077 | 0.16409 | 0.16954 | 5              | 0.16884 | 0.15829 | 0.15444 | 0.1628  | 0.16808 |
| 6              | 0.15356 | 0.15072 | 0.14815 | 0.14963 | 0.15327 | 6              | 0.15146 | 0.15099 | 0.15017 | 0.1514  | 0.1528  |
| 7              | 0.15825 | 0.15465 | 0.164   | 0.15995 | 0.16185 | 7              | 0.1624  | 0.15708 | 0.16515 | 0.16327 | 0.1609  |
| 8              | 0.14961 | 0.14593 | 0.14904 | 0.1537  | 0.15369 | 8              | 0.15709 | 0.14669 | 0.15034 | 0.15249 | 0.15305 |
| 9              | 0.16591 | 0.15643 | 0.17133 | 0.15834 | 0.15967 | 9              | 0.16634 | 0.15775 | 0.16389 | 0.1586  | 0.15462 |
| 10             | 0.15509 | 0.14449 | 0.14676 | 0.14338 | 0.15093 | 10             | 0.15326 | 0.14497 | 0.14702 | 0.1445  | 0.15068 |
| 11             | 0.15994 | 0.162   | 0.1639  | 0.16176 | 0.15799 | 11             | 0.16782 | 0.15407 | 0.16132 | 0.16093 | 0.15543 |
| 12             | 0.15032 | 0.14491 | 0.15253 | 0.14497 | 0.1602  | 12             | 0.15195 | 0.14535 | 0.15148 | 0.1459  | 0.15467 |
| 13             | 0.1635  | 0.15895 | 0.15745 | 0.157   | 0.1615  | 13             | 0.16473 | 0.1584  | 0.15773 | 0.15897 | 0.16062 |
| 14             | 0.15662 | 0.14864 | 0.14514 | 0.15054 | 0.15348 | 14             | 0.14723 | 0.14903 | 0.14516 | 0.15148 | 0.15295 |
| 15             | 0.16204 | 0.16032 | 0.15877 | 0.16056 | 0.16297 | 15             | 0.15986 | 0.1612  | 0.16015 | 0.15544 | 0.158   |
| 16             | 0.14686 | 0.14198 | 0.14938 | 0.15133 | 0.14741 | 16             | 0.15129 | 0.14265 | 0.14917 | 0.15257 | 0.14911 |
| 17             | 0.15901 | 0.1709  | 0.15962 | 0.16122 | 0.17078 | 17             | 0.16234 | 0.16382 | 0.16074 | 0.15742 | 0.16901 |
| 18             | 0.15135 | 0.15057 | 0.14722 | 0.15156 | 0.15492 | 18             | 0.14871 | 0.14974 | 0.14677 | 0.15178 | 0.15541 |
| 19             | 0.15629 | 0.16538 | 0.16105 | 0.15854 | 0.16489 | 19             | 0.16241 | 0.1662  | 0.16202 | 0.15837 | 0.16557 |
| 20             | 0.1513  | 0.15197 | 0.15193 | 0.15221 | 0.15062 | 20             | 0.15116 | 0.15258 | 0.15186 | 0.15061 | 0.1507  |
| 21             | 0.15684 | 0.17371 | 0.16034 | 0.16507 | 0.16085 | 21             | 0.15723 | 0.17111 | 0.15967 | 0.15613 | 0.1606  |
| 22             | 0.14929 | 0.14768 | 0.15244 | 0.14766 | 0.15439 | 22             | 0.1495  | 0.1464  | 0.15259 | 0.14786 | 0.15406 |
| 23             | 0.15859 | 0.16427 | 0.16469 | 0.15997 | 0.16126 | 23             | 0.16776 | 0.16184 | 0.16157 | 0.15754 | 0.15958 |
| 24             | 0.15145 | 0.14929 | 0.15516 | 0.15008 | 0.14826 | 24             | 0.23719 | 0.14857 | 0.15447 | 0.15049 | 0.1478  |
| 25             | 0.1547  | 0.16408 | 0.16372 | 0.15714 | 0.16487 | 25             | 0.16378 | 0.16355 | 0.16339 | 0.15551 | 0.16463 |
| 26             | 0.15203 | 0.15178 | 0.15035 | 0.14776 | 0.15285 | 26             | 0.14521 | 0.15172 | 0.15055 | 0.14783 | 0.15402 |
| 27             | 0.16141 | 0.17002 | 0.16314 | 0.17032 | 0.16827 | 27             | 0.17118 | 0.16853 | 0.16275 | 0.16574 | 0.16186 |
| 28             | 0.15256 | 0.14762 | 0.15045 | 0.15254 | 0.15026 | 28             | 0.15257 | 0.14733 | 0.14982 | 0.15025 | 0.1501  |
| 29             | 0.15696 | 0.16105 | 0.16125 | 0.1605  | 0.16295 | 29             | 0.15943 | 0.15727 | 0.16102 | 0.15846 | 0.16313 |
| 30             | 0.15183 | 0.15372 | 0.15088 | 0.15245 | 0.15274 | 30             | 0.14677 | 0.15424 | 0.1508  | 0.15275 | 0.1524  |
| 31             | 0.16188 | 0.15789 | 0.15752 | 0.15767 | 0.15976 | 31             | 0.15738 | 0.15917 | 0.16124 | 0.15312 | 0.15998 |
| 32             | 0.16293 | 0.1449  | 0.14667 | 0.1498  | 0.15175 | 32             | 0.15072 | 0.1452  | 0.14701 | 0.14913 | 0.15135 |
| 33             | 0.15933 | 0.16059 | 0.15837 | 0.16092 | 0.16379 | 33             | 0.16073 | 0.16108 | 0.15845 | 0.15912 | 0.15844 |
| 34             | 0.15273 | 0.14628 | 0.14941 | 0.15039 | 0.14792 | 34             | 0.15209 | 0.14619 | 0.15307 | 0.14833 | 0.14826 |
| 35             | 0.15817 | 0.1591  | 0.15671 | 0.1546  | 0.15578 | 35             | 0.16157 | 0.15898 | 0.15528 | 0.15467 | 0.15656 |
| 36             | 0.15149 | 0.14759 | 0.14863 | 0.14898 | 0.14822 | 36             | 0.15476 | 0.14852 | 0.14808 | 0.14752 | 0.14716 |
| 37             | 0.16146 | 0.16125 | 0.15842 | 0.15976 | 0.16366 | 37             | 0.15799 | 0.16036 | 0.15816 | 0.15834 | 0.16451 |
| 38             | 0.15227 | 0.14801 | 0.15008 | 0.14915 | 0.1445  | 38             | 0.14959 | 0.14766 | 0.15114 | 0.14815 | 0.14724 |
| 39             | 0.15892 | 0.15832 | 0.16322 | 0.16228 | 0.15956 | 39             | 0.16126 | 0.16204 | 0.16345 | 0.15697 | 0.15829 |
| 40             | 0.14585 | 0.14986 | 0.14974 | 0.15192 | 0.15125 | 40             | 0.15048 | 0.14925 | 0.14816 | 0.15295 | 0.15132 |
| 41             | 0.24699 | 0.16214 | 0.15868 | 0.15656 | 0.16301 | 41             | 0.16053 | 0.1585  | 0.15547 | 0.15623 | 0.16185 |
| 42             | 0.1498  | 0.1501  | 0.15136 | 0.15473 | 0.14911 | 42             | 0.15026 | 0.14994 | 0.15109 | 0.15477 | 0.1483  |
| 43             | 0.15813 | 0.16101 | 0.15997 | 0.16481 | 0.1638  | 43             | 0.16549 | 0.15982 | 0.15723 | 0.15741 | 0.16396 |
| 44             | 0.1535  | 0.15534 | 0.14733 | 0.15075 | 0.14821 | 44             | 0.14806 | 0.15686 | 0.14769 | 0.15043 | 0.14672 |
| 45             | 0.15614 | 0.15616 | 0.16232 | 0.16089 | 0.16136 | 45             | 0.16064 | 0.15518 | 0.15946 | 0.16014 | 0.16125 |
| 46             | 0.14713 | 0.15242 | 0.14498 | 0.17485 | 0.1504  | 46             | 0.15239 | 0.15233 | 0.14744 | 0.13968 | 0.15565 |
| 47             | 0.15459 | 0.16108 | 0.16145 | 0.15998 | 0.16017 | 47             | 0.1609  | 0.16112 | 0.16156 | 0.15974 | 0.15983 |
| 48             | 0.14395 | 0.15191 | 0.14539 | 0.14554 | 0.13729 | 48             | 0.14817 | 0.15246 | 0.14792 | 0.14542 | 0.14779 |
| 49             | 0.15169 | 0.16095 | 0.16237 | 0.15524 | 0.15419 | 49             | 0.15793 | 0.16145 | 0.16189 | 0.15327 | 0.15486 |
| 50             | 0.1445  | 0.14878 | 0.15372 | 0.14449 | 0.14814 | 50             | 0.15103 | 0.1488  | 0.15418 | 0.1444  | 0.1474  |

**DATA Continued****MATING/UNMATING:**

| <b>Sample#</b> | <b>Initial</b> |                 | <b>After 100 Cycles</b> |                 | <b>After Thermal</b> |                 | <b>After Humidity</b> |                 |
|----------------|----------------|-----------------|-------------------------|-----------------|----------------------|-----------------|-----------------------|-----------------|
|                | <u>Mating</u>  | <u>Unmating</u> | <u>Mating</u>           | <u>Unmating</u> | <u>Mating</u>        | <u>Unmating</u> | <u>Mating</u>         | <u>Unmating</u> |
| 1              | 4.90           | 3.00            | 3.93                    | 2.82            | 3.26                 | 2.62            | 3.62                  | 2.64            |
| 2              | 4.86           | 2.79            | 4.44                    | 3.38            | 3.41                 | 2.28            | 3.65                  | 2.87            |
| 3              | 5.12           | 3.17            | 4.80                    | 3.44            | 3.50                 | 2.07            | 3.37                  | 2.44            |
| 4              | 4.11           | 2.47            | 4.12                    | 2.82            | 2.96                 | 2.13            | 3.21                  | 2.47            |
| 5              | 5.38           | 3.86            | 4.57                    | 2.98            | 5.00                 | 3.96            | 4.85                  | 3.47            |
| 6              | 4.32           | 2.69            | 4.68                    | 3.40            | 3.52                 | 2.43            | 3.86                  | 2.53            |
| 7              | 6.70           | 4.18            | 5.55                    | 3.94            | 3.96                 | 2.67            | 4.58                  | 3.06            |
| 8              | 4.98           | 2.96            | 4.69                    | 3.14            | 3.73                 | 2.63            | 4.01                  | 2.31            |
| 9              | 4.29           | 2.58            | 4.57                    | 3.54            | 3.67                 | 2.47            | 4.31                  | 2.63            |
| 10             | 4.93           | 3.02            | 4.91                    | 3.76            | 4.09                 | 2.90            | 3.91                  | 3.05            |

**INSULATION RESISTANCE (IR):**

| Sample # | <b>Pin-Pin</b> |                |                |
|----------|----------------|----------------|----------------|
|          | Initial        | Thermal        | Humidity       |
|          | <b>TEM/SEM</b> | <b>TEM/SEM</b> | <b>TEM/SEM</b> |
| 1        | 100,000        | 100,000        | 100,000        |
| 2        | 100,000        | 100,000        | 100,000        |
| 3        | 100,000        | 100,000        | 100,000        |
| 4        | 100,000        | 100,000        | 100,000        |

**DIELECTRIC WITHSTANDING VOLTAGE (DWV):**

| Minimum         | Sample # | <b>Pin-Pin</b> |            |
|-----------------|----------|----------------|------------|
|                 |          | Unmated        | Unmated    |
|                 |          | <b>TEM/SEM</b> | <b>SEM</b> |
| <b>Initial</b>  | 1        | 1,100          | 1,250      |
|                 | 2        | 1,180          | 1,200      |
| <b>Thermal</b>  | 1        | 1,150          | 1,250      |
|                 | 2        | 1,200          | 1,250      |
| <b>Humidity</b> | 1        | 1,020          | 1,250      |
|                 | 2        | 1,040          | 1,250      |

**DATA Continued****LLCR:**

|       | mOhm<br>values | Actual  | Delta      | Delta   | Delta    |
|-------|----------------|---------|------------|---------|----------|
| Board | Position       | Initial | 100 Cycles | Thermal | Humidity |
| 1     | P1             | 13.1    | -0.6       | 0.3     | 0.7      |
| 1     | P2             | 14.1    | -1.0       | -0.3    | 1.4      |
| 1     | P3             | 14.0    | -1.0       | -0.8    | -0.2     |
| 1     | P4             | 13.4    | 0.0        | -0.5    | 2.0      |
| 1     | P5             | 13.0    | 0.2        | 0.1     | 0.7      |
| 1     | P6             | 13.1    | -0.5       | -0.3    | 2.2      |
| 1     | P7             | 12.5    | 0.2        | -0.8    | 2.3      |
| 1     | P8             | 12.0    | 0.4        | 0.3     | 2.4      |
| 1     | P9             | 13.1    | -1.7       | -1.1    | 0.5      |
| 1     | P10            | 11.5    | 0.1        | 0.9     | 1.4      |
| 1     | P11            | 11.7    | 1.4        | 0.1     | 2.4      |
| 1     | P12            | 11.6    | -0.1       | 0.3     | 1.9      |
| 1     | P13            | 11.9    | 0.2        | 0.0     | 2.3      |
| 1     | P14            | 11.5    | 0.2        | 0.0     | 1.7      |
| 1     | P15            | 11.4    | -0.1       | 0.0     | 3.2      |
| 1     | P16            | 11.1    | 1.1        | 0.4     | 2.1      |
| 1     | P17            | 11.6    | 0.9        | 0.6     | 2.4      |
| 1     | P18            | 11.5    | 1.0        | 0.5     | 0.3      |
| 1     | P19            | 14.3    | 0.5        | -1.3    | -0.8     |
| 1     | P20            | 12.4    | 0.3        | 0.7     | 2.3      |
| 1     | P21            | 12.6    | 0.7        | 1.3     | 1.7      |
| 1     | P22            | 12.6    | 0.1        | -0.2    | 2.0      |
| 1     | P23            | 13.2    | 0.2        | 0.3     | 1.0      |
| 1     | P24            | 12.8    | -0.1       | 0.2     | -0.2     |
| 1     | P25            | 13.7    | -0.1       | -0.5    | -1.1     |
| 2     | P1             | 12.9    | -1.2       | -0.1    | 0.1      |
| 2     | P2             | 12.8    | -0.7       | -0.3    | 0.4      |
| 2     | P3             | 12.8    | -0.1       | -0.4    | 0.6      |
| 2     | P4             | 12.6    | 0.4        | 0.3     | 3.0      |
| 2     | P5             | 13.6    | -1.0       | -1.0    | -1.0     |
| 2     | P6             | 14.0    | -1.0       | -0.9    | 0.7      |
| 2     | P7             | 11.8    | -0.9       | -0.1    | -0.4     |
| 2     | P8             | 12.7    | -1.1       | 0.0     | -0.6     |
| 2     | P9             | 13.5    | -1.8       | -1.6    | -0.7     |
| 2     | P10            | 11.9    | -0.1       | 0.5     | -0.3     |
| 2     | P11            | 12.6    | 1.1        | 0.3     | -0.6     |
| 2     | P12            | 12.1    | 1.3        | 1.0     | -0.2     |
| 2     | P13            | 14.6    | -2.9       | -1.7    | -0.5     |
| 2     | P14            | 12.1    | -0.6       | -0.8    | -0.2     |
| 2     | P15            | 12.2    | -0.9       | -1.0    | -0.5     |
| 2     | P16            | 12.1    | -1.0       | -1.0    | -0.9     |

|   |     |      |      |      |      |
|---|-----|------|------|------|------|
| 2 | P17 | 11.5 | -0.6 | -0.6 | -0.4 |
| 2 | P18 | 11.8 | -0.5 | -0.2 | -0.4 |
| 2 | P19 | 10.5 | 0.5  | 0.6  | 0.0  |
| 2 | P20 | 12.4 | -0.4 | -0.2 | 2.6  |
| 2 | P21 | 12.8 | -1.1 | -0.3 | 0.8  |
| 2 | P22 | 12.8 | -0.5 | -0.4 | 0.3  |
| 2 | P23 | 12.7 | -1.1 | -0.8 | 0.5  |
| 2 | P24 | 12.5 | 0.0  | -0.3 | 1.3  |
| 2 | P25 | 13.8 | -1.8 | -1.3 | -1.6 |
| 3 | P1  | 12.6 | 0.1  | -0.8 | -0.3 |
| 3 | P2  | 12.0 | 0.9  | 0.3  | 0.9  |
| 3 | P3  | 13.7 | -1.9 | -1.7 | -1.3 |
| 3 | P4  | 12.9 | -0.7 | -1.2 | -0.3 |
| 3 | P5  | 14.2 | -1.5 | -1.3 | -2.2 |
| 3 | P6  | 12.9 | 0.1  | -0.4 | 0.1  |
| 3 | P7  | 11.4 | -0.5 | -0.3 | 0.3  |
| 3 | P8  | 11.2 | 1.7  | 0.0  | 0.5  |
| 3 | P9  | 11.7 | -0.9 | -1.2 | -0.4 |
| 3 | P10 | 12.4 | 0.7  | -1.4 | -1.4 |
| 3 | P11 | 13.0 | 0.0  | -1.7 | -1.8 |
| 3 | P12 | 11.6 | 0.2  | 0.0  | -0.5 |
| 3 | P13 | 13.8 | -0.6 | -1.6 | -1.7 |
| 3 | P14 | 11.7 | 0.3  | -0.5 | 0.0  |
| 3 | P15 | 10.5 | 0.2  | -0.2 | 0.1  |
| 3 | P16 | 11.0 | 0.2  | -0.6 | -0.1 |
| 3 | P17 | 10.7 | 0.0  | -0.2 | 1.3  |
| 3 | P18 | 10.9 | 0.8  | 2.5  | 1.3  |
| 3 | P19 | 11.7 | -1.0 | -1.0 | -0.6 |
| 3 | P20 | 11.6 | -0.3 | -0.2 | 1.1  |
| 3 | P21 | 12.3 | -0.3 | -0.2 | 0.4  |
| 3 | P22 | 12.7 | -0.6 | -1.0 | 0.2  |
| 3 | P23 | 13.1 | 0.1  | -0.7 | 0.9  |
| 3 | P24 | 12.3 | -0.3 | -0.6 | 3.5  |
| 3 | P25 | 11.5 | 0.7  | 2.9  | 3.4  |
| 4 | P1  | 12.8 | -0.3 | 0.0  | 3.4  |
| 4 | P2  | 14.0 | -1.4 | -0.7 | -0.8 |
| 4 | P3  | 13.4 | -0.6 | -0.1 | 2.5  |
| 4 | P4  | 13.3 | -0.5 | 0.1  | 0.8  |
| 4 | P5  | 13.7 | -0.8 | -0.1 | 0.1  |
| 4 | P6  | 13.5 | -0.1 | 0.0  | 1.0  |
| 4 | P7  | 14.7 | -2.1 | -2.0 | 0.0  |
| 4 | P8  | 13.8 | -1.9 | -1.3 | 0.3  |
| 4 | P9  | 12.6 | 0.0  | -0.2 | 0.2  |
| 4 | P10 | 12.6 | -0.5 | 1.1  | -0.3 |
| 4 | P11 | 12.2 | 0.4  | 0.4  | 2.1  |
| 4 | P12 | 12.8 | -0.5 | -1.0 | 1.3  |
| 4 | P13 | 11.5 | 0.7  | 0.6  | 2.4  |
| 4 | P14 | 11.1 | 0.5  | 0.4  | 1.7  |
| 4 | P15 | 11.5 | 0.3  | 1.0  | 0.9  |

|   |     |      |      |      |      |
|---|-----|------|------|------|------|
| 4 | P16 | 11.2 | 0.4  | 0.8  | 2.1  |
| 4 | P17 | 11.1 | 0.3  | 0.9  | 0.8  |
| 4 | P18 | 11.9 | -0.5 | 0.3  | -0.2 |
| 4 | P19 | 11.9 | 0.4  | 0.9  | 0.2  |
| 4 | P20 | 13.0 | -0.1 | 0.4  | 0.3  |
| 4 | P21 | 12.4 | 0.5  | 0.9  | 2.2  |
| 4 | P22 | 12.8 | -0.5 | -0.1 | 0.3  |
| 4 | P23 | 12.3 | 0.3  | 0.0  | 0.5  |
| 4 | P24 | 12.5 | 0.2  | 0.1  | -0.3 |
| 4 | P25 | 12.3 | 0.0  | -0.1 | -0.3 |
| 5 | P1  | 13.5 | -1.3 | -1.7 | 0.0  |
| 5 | P2  | 13.2 | -0.6 | -0.9 | -0.5 |
| 5 | P3  | 12.8 | 1.2  | -0.8 | -0.7 |
| 5 | P4  | 13.0 | 0.6  | -0.3 | -1.1 |
| 5 | P5  | 13.9 | -0.6 | -1.3 | -0.8 |
| 5 | P6  | 13.7 | -0.8 | -0.3 | 0.2  |
| 5 | P7  | 11.0 | 0.6  | 0.0  | 0.4  |
| 5 | P8  | 11.6 | 0.5  | -0.5 | 1.0  |
| 5 | P9  | 11.2 | 0.8  | 0.3  | 0.8  |
| 5 | P10 | 11.4 | 0.6  | -0.1 | -0.1 |
| 5 | P11 | 11.4 | 1.7  | 0.9  | 0.8  |
| 5 | P12 | 13.6 | -1.2 | -2.1 | -1.5 |
| 5 | P13 | 14.8 | -2.4 | -1.6 | -0.1 |
| 5 | P14 | 12.2 | -1.0 | -1.0 | -0.5 |
| 5 | P15 | 11.9 | -0.3 | -0.6 | 0.3  |
| 5 | P16 | 11.6 | 0.2  | 0.5  | 0.5  |
| 5 | P17 | 12.0 | 0.1  | -0.2 | -0.6 |
| 5 | P18 | 12.0 | 0.9  | -0.1 | -0.7 |
| 5 | P19 | 12.0 | 0.3  | 0.5  | -0.9 |
| 5 | P20 | 11.8 | -0.2 | -0.2 | 0.5  |
| 5 | P21 | 12.4 | -0.1 | -0.5 | 0.2  |
| 5 | P22 | 13.0 | -0.4 | -0.3 | -0.1 |
| 5 | P23 | 12.0 | 0.2  | 0.4  | 0.0  |
| 5 | P24 | 14.5 | 0.5  | -1.2 | -0.9 |
| 5 | P25 | 14.5 | -1.4 | -0.9 | -2.1 |
| 6 | P1  | 13.1 | 0.5  | -0.2 | 0.9  |
| 6 | P2  | 13.6 | -0.9 | -0.7 | -0.5 |
| 6 | P3  | 14.0 | -0.5 | 0.6  | -1.3 |
| 6 | P4  | 12.3 | -0.5 | -0.1 | 0.0  |
| 6 | P5  | 14.3 | -2.2 | -1.4 | -0.5 |
| 6 | P6  | 13.2 | -1.2 | -0.8 | -0.1 |
| 6 | P7  | 12.8 | -0.5 | -1.4 | -1.7 |
| 6 | P8  | 12.3 | -0.3 | 0.1  | -0.9 |
| 6 | P9  | 12.0 | -1.2 | -1.0 | -1.2 |
| 6 | P10 | 12.1 | -1.4 | -0.3 | -1.1 |
| 6 | P11 | 12.3 | -0.8 | -0.5 | -0.5 |
| 6 | P12 | 11.6 | -0.8 | -0.2 | -0.4 |
| 6 | P13 | 11.4 | -0.7 | 0.5  | -0.6 |
| 6 | P14 | 11.4 | -1.2 | -0.7 | 0.2  |

|   |     |      |      |      |      |
|---|-----|------|------|------|------|
| 6 | P15 | 10.4 | -0.2 | 0.4  | 1.0  |
| 6 | P16 | 11.7 | -1.0 | -0.5 | -0.6 |
| 6 | P17 | 11.3 | -0.7 | -0.5 | -0.1 |
| 6 | P18 | 10.8 | -0.2 | 0.4  | -0.7 |
| 6 | P19 | 12.3 | -1.2 | -1.1 | -1.9 |
| 6 | P20 | 12.2 | -0.9 | -0.1 | 0.3  |
| 6 | P21 | 12.3 | -1.1 | 0.0  | -0.1 |
| 6 | P22 | 12.8 | -1.0 | 0.4  | 0.2  |
| 6 | P23 | 12.5 | -1.0 | 0.6  | 0.2  |
| 6 | P24 | 12.5 | -0.4 | -0.4 | -0.9 |
| 6 | P25 | 13.3 | -0.3 | -1.1 | -0.3 |
| 7 | P1  | 12.6 | 1.4  | 0.7  | 1.1  |
| 7 | P2  | 12.9 | 1.1  | 0.4  | 0.9  |
| 7 | P3  | 11.8 | -0.2 | 0.0  | 0.0  |
| 7 | P4  | 13.0 | -0.7 | -0.5 | 0.1  |
| 7 | P5  | 12.8 | 1.2  | 0.1  | 1.5  |
| 7 | P6  | 13.1 | 0.8  | 0.0  | -0.4 |
| 7 | P7  | 11.0 | 0.2  | 0.0  | 0.0  |
| 7 | P8  | 12.1 | 0.2  | -0.2 | -0.2 |
| 7 | P9  | 10.9 | 0.0  | -0.2 | 0.1  |
| 7 | P10 | 11.5 | 0.1  | 0.0  | 0.3  |
| 7 | P11 | 12.9 | -0.9 | -0.8 | -1.4 |
| 7 | P12 | 12.4 | -0.6 | -1.3 | -0.9 |
| 7 | P13 | 12.1 | 0.2  | 0.2  | 0.2  |
| 7 | P14 | 10.5 | 0.3  | 0.2  | -0.1 |
| 7 | P15 | 10.9 | 0.3  | 0.0  | -0.1 |
| 7 | P16 | 10.6 | 1.2  | 1.0  | 0.1  |
| 7 | P17 | 11.0 | 0.2  | 0.1  | -1.0 |
| 7 | P18 | 11.5 | 0.2  | -0.1 | -0.4 |
| 7 | P19 | 11.6 | 0.2  | -1.1 | -1.1 |
| 7 | P20 | 12.8 | 0.1  | -0.2 | 0.0  |
| 7 | P21 | 12.9 | -0.3 | -0.5 | 0.0  |
| 7 | P22 | 12.7 | -0.2 | 0.3  | -0.6 |
| 7 | P23 | 13.7 | -1.1 | -1.6 | -1.2 |
| 7 | P24 | 13.4 | -0.2 | -0.6 | -1.2 |
| 7 | P25 | 12.3 | -0.3 | -0.3 | -0.5 |
| 8 | P1  | 13.3 | -0.6 | -0.4 | -0.8 |
| 8 | P2  | 13.3 | 0.6  | 0.0  | 0.8  |
| 8 | P3  | 12.5 | 0.0  | 0.3  | 0.5  |
| 8 | P4  | 12.2 | 0.4  | 0.3  | 1.0  |
| 8 | P5  | 13.9 | -0.4 | -0.6 | 0.7  |
| 8 | P6  | 13.1 | 0.5  | -0.2 | 1.0  |
| 8 | P7  | 11.9 | -0.2 | -0.1 | -0.2 |
| 8 | P8  | 12.4 | 0.0  | 0.0  | -0.2 |
| 8 | P9  | 12.1 | -0.4 | 0.5  | 0.7  |
| 8 | P10 | 11.9 | -0.3 | -0.3 | 0.5  |
| 8 | P11 | 12.7 | -0.4 | -0.2 | 0.4  |
| 8 | P12 | 12.7 | -1.2 | -1.1 | -0.7 |
| 8 | P13 | 12.3 | -0.1 | 0.4  | 0.0  |

|                                   |                                                |
|-----------------------------------|------------------------------------------------|
| Tracking Code: TC0839-TEM-DH-1979 | Part #: TEM-125-02-DH1-S-D/SEM-125-03.0-S-D-WT |
| Part description: TEM/SEM         |                                                |

|   |     |      |      |      |      |
|---|-----|------|------|------|------|
| 8 | P14 | 11.6 | -0.1 | 0.2  | 0.6  |
| 8 | P15 | 11.3 | -0.4 | -0.1 | 0.4  |
| 8 | P16 | 11.4 | -0.6 | -0.3 | 0.3  |
| 8 | P17 | 10.9 | 0.2  | 0.6  | 1.2  |
| 8 | P18 | 11.0 | 0.0  | 0.5  | 0.7  |
| 8 | P19 | 11.3 | -0.5 | 0.4  | 1.0  |
| 8 | P20 | 12.7 | 0.0  | 0.2  | 1.5  |
| 8 | P21 | 11.7 | -0.1 | 0.3  | 1.5  |
| 8 | P22 | 12.3 | 0.1  | -0.1 | 1.0  |
| 8 | P23 | 12.8 | -0.4 | 0.0  | 1.0  |
| 8 | P24 | 12.4 | -0.2 | 0.0  | 0.9  |
| 8 | P25 | 14.4 | -1.8 | -0.7 | -2.5 |

**DATA Continued****GAS TIGHT:**

|       | mOhm<br>values | Actual  | Delta     |
|-------|----------------|---------|-----------|
| Board | Position       | Initial | Gas Tight |
| 1     | P1             | 12.2    | 1.0       |
| 1     | P2             | 12.1    | 0.9       |
| 1     | P3             | 11.9    | 1.2       |
| 1     | P4             | 11.9    | 0.5       |
| 1     | P5             | 11.8    | 0.9       |
| 1     | P6             | 12.7    | 0.9       |
| 1     | P7             | 11.2    | 0.8       |
| 1     | P8             | 11.4    | 0.6       |
| 1     | P9             | 10.7    | 0.9       |
| 1     | P10            | 10.8    | 0.4       |
| 1     | P11            | 11.0    | 0.5       |
| 1     | P12            | 11.7    | 0.4       |
| 1     | P13            | 11.1    | 0.0       |
| 1     | P14            | 11.5    | 0.6       |
| 1     | P15            | 11.0    | 0.0       |
| 1     | P16            | 10.9    | 0.7       |
| 1     | P17            | 10.4    | 0.7       |
| 1     | P18            | 10.4    | 1.2       |
| 1     | P19            | 11.0    | -0.1      |
| 1     | P20            | 12.2    | -0.3      |
| 1     | P21            | 14.1    | -1.0      |
| 1     | P22            | 13.4    | 0.6       |
| 1     | P23            | 12.4    | -0.3      |
| 1     | P24            | 13.1    | -0.2      |
| 1     | P25            | 12.0    | -0.1      |
| 2     | P1             | 12.9    | 0.5       |
| 2     | P2             | 12.7    | 1.2       |
| 2     | P3             | 14.1    | 0.8       |
| 2     | P4             | 12.6    | 0.9       |
| 2     | P5             | 13.8    | -0.1      |
| 2     | P6             | 13.7    | 0.4       |
| 2     | P7             | 11.4    | 0.6       |
| 2     | P8             | 11.8    | 0.3       |
| 2     | P9             | 12.2    | -0.1      |
| 2     | P10            | 10.7    | 0.2       |
| 2     | P11            | 12.8    | -0.2      |
| 2     | P12            | 12.0    | 0.5       |
| 2     | P13            | 12.4    | -0.3      |
| 2     | P14            | 11.7    | 0.0       |
| 2     | P15            | 11.5    | 0.6       |
| 2     | P16            | 11.8    | -0.2      |

|   |     |      |      |
|---|-----|------|------|
| 2 | P17 | 11.2 | -0.1 |
| 2 | P18 | 11.3 | 1.0  |
| 2 | P19 | 15.0 | -1.9 |
| 2 | P20 | 13.0 | 0.6  |
| 2 | P21 | 12.2 | 0.6  |
| 2 | P22 | 12.4 | 0.6  |
| 2 | P23 | 14.1 | 0.2  |
| 2 | P24 | 13.6 | 0.1  |
| 2 | P25 | 13.8 | -0.2 |
| 3 | P1  | 12.5 | -0.1 |
| 3 | P2  | 12.4 | 0.4  |
| 3 | P3  | 12.8 | -0.2 |
| 3 | P4  | 12.2 | 0.6  |
| 3 | P5  | 12.7 | 0.0  |
| 3 | P6  | 12.4 | 0.4  |
| 3 | P7  | 11.4 | -0.1 |
| 3 | P8  | 11.1 | -0.3 |
| 3 | P9  | 10.8 | 0.3  |
| 3 | P10 | 11.0 | 0.0  |
| 3 | P11 | 12.3 | -1.0 |
| 3 | P12 | 11.0 | -0.1 |
| 3 | P13 | 10.9 | -0.2 |
| 3 | P14 | 10.8 | -0.2 |
| 3 | P15 | 10.5 | -0.2 |
| 3 | P16 | 10.7 | 0.0  |
| 3 | P17 | 10.9 | -0.2 |
| 3 | P18 | 11.1 | -0.2 |
| 3 | P19 | 11.3 | -0.2 |
| 3 | P20 | 12.6 | 0.0  |
| 3 | P21 | 13.0 | -0.1 |
| 3 | P22 | 13.0 | 0.2  |
| 3 | P23 | 13.5 | 0.1  |
| 3 | P24 | 12.4 | 0.0  |
| 3 | P25 | 13.3 | -1.1 |
| 4 | P1  | 12.7 | 0.4  |
| 4 | P2  | 14.0 | 0.1  |
| 4 | P3  | 12.6 | 1.0  |
| 4 | P4  | 12.5 | 0.7  |
| 4 | P5  | 14.8 | -0.3 |
| 4 | P6  | 13.1 | 0.7  |
| 4 | P7  | 12.2 | -0.1 |
| 4 | P8  | 11.7 | 0.6  |
| 4 | P9  | 11.6 | 0.6  |
| 4 | P10 | 11.6 | 0.1  |
| 4 | P11 | 11.6 | 0.0  |
| 4 | P12 | 12.7 | -0.7 |
| 4 | P13 | 12.3 | -0.3 |
| 4 | P14 | 11.7 | 0.0  |
| 4 | P15 | 10.9 | 0.2  |

|   |     |      |      |
|---|-----|------|------|
| 4 | P16 | 10.8 | 0.1  |
| 4 | P17 | 10.7 | 0.0  |
| 4 | P18 | 11.0 | 0.2  |
| 4 | P19 | 10.9 | -0.1 |
| 4 | P20 | 12.1 | 0.4  |
| 4 | P21 | 13.2 | 0.5  |
| 4 | P22 | 12.0 | 0.2  |
| 4 | P23 | 12.4 | 0.1  |
| 4 | P24 | 12.4 | 0.6  |
| 4 | P25 | 12.4 | -0.4 |
| 5 | P1  | 11.7 | 0.6  |
| 5 | P2  | 12.6 | 1.3  |
| 5 | P3  | 12.4 | 1.2  |
| 5 | P4  | 12.4 | 0.9  |
| 5 | P5  | 12.8 | 0.7  |
| 5 | P6  | 12.8 | 0.7  |
| 5 | P7  | 10.7 | 0.2  |
| 5 | P8  | 11.3 | 0.4  |
| 5 | P9  | 11.5 | 0.6  |
| 5 | P10 | 11.1 | 0.1  |
| 5 | P11 | 12.2 | 0.1  |
| 5 | P12 | 12.1 | 0.8  |
| 5 | P13 | 14.2 | -0.2 |
| 5 | P14 | 10.8 | 0.9  |
| 5 | P15 | 10.6 | 0.3  |
| 5 | P16 | 11.1 | 0.8  |
| 5 | P17 | 10.8 | 1.8  |
| 5 | P18 | 11.1 | 0.7  |
| 5 | P19 | 11.2 | -0.3 |
| 5 | P20 | 12.1 | 0.8  |
| 5 | P21 | 12.4 | 1.1  |
| 5 | P22 | 12.6 | -0.2 |
| 5 | P23 | 12.9 | -0.8 |
| 5 | P24 | 12.4 | 0.6  |
| 5 | P25 | 11.4 | 0.0  |
| 6 | P1  | 13.1 | 0.6  |
| 6 | P2  | 13.2 | -0.2 |
| 6 | P3  | 12.6 | 0.0  |
| 6 | P4  | 12.4 | 1.1  |
| 6 | P5  | 12.7 | 0.5  |
| 6 | P6  | 13.2 | 0.4  |
| 6 | P7  | 11.8 | -0.2 |
| 6 | P8  | 12.5 | 0.2  |
| 6 | P9  | 11.6 | 0.3  |
| 6 | P10 | 12.0 | 0.8  |
| 6 | P11 | 12.1 | -0.4 |
| 6 | P12 | 10.9 | 0.1  |
| 6 | P13 | 11.5 | -0.2 |
| 6 | P14 | 11.6 | -0.2 |

|   |     |      |      |
|---|-----|------|------|
| 6 | P15 | 11.7 | 1.0  |
| 6 | P16 | 11.2 | -0.3 |
| 6 | P17 | 11.3 | 0.1  |
| 6 | P18 | 11.9 | -0.7 |
| 6 | P19 | 11.3 | -0.4 |
| 6 | P20 | 13.2 | 0.1  |
| 6 | P21 | 12.8 | -0.3 |
| 6 | P22 | 12.4 | 0.0  |
| 6 | P23 | 14.1 | -0.8 |
| 6 | P24 | 15.4 | -0.7 |
| 6 | P25 | 12.4 | -0.3 |
| 7 | P1  | 13.5 | 1.4  |
| 7 | P2  | 13.1 | 1.1  |
| 7 | P3  | 12.8 | 0.7  |
| 7 | P4  | 14.4 | 0.3  |
| 7 | P5  | 13.2 | 1.3  |
| 7 | P6  | 14.2 | 0.8  |
| 7 | P7  | 12.0 | 1.1  |
| 7 | P8  | 11.7 | 1.1  |
| 7 | P9  | 11.1 | 1.8  |
| 7 | P10 | 12.3 | 1.3  |
| 7 | P11 | 12.1 | 0.1  |
| 7 | P12 | 13.0 | -0.9 |
| 7 | P13 | 12.6 | -1.3 |
| 7 | P14 | 11.8 | 0.0  |
| 7 | P15 | 11.5 | -0.7 |
| 7 | P16 | 11.2 | 0.1  |
| 7 | P17 | 11.4 | -0.5 |
| 7 | P18 | 11.1 | 0.2  |
| 7 | P19 | 11.6 | -0.3 |
| 7 | P20 | 12.5 | 0.8  |
| 7 | P21 | 13.1 | 0.1  |
| 7 | P22 | 12.7 | -0.1 |
| 7 | P23 | 13.6 | 0.7  |
| 7 | P24 | 12.5 | 0.0  |
| 7 | P25 | 13.6 | -1.2 |
| 8 | P1  | 14.3 | -2.5 |
| 8 | P2  | 13.6 | -0.4 |
| 8 | P3  | 12.7 | -0.2 |
| 8 | P4  | 14.0 | -0.8 |
| 8 | P5  | 13.8 | -0.5 |
| 8 | P6  | 14.0 | 0.6  |
| 8 | P7  | 12.1 | -0.6 |
| 8 | P8  | 14.0 | -2.3 |
| 8 | P9  | 12.3 | -0.7 |
| 8 | P10 | 14.0 | -1.1 |
| 8 | P11 | 12.3 | -0.5 |
| 8 | P12 | 13.9 | -1.0 |
| 8 | P13 | 13.3 | -1.9 |

|                                   |                                                |
|-----------------------------------|------------------------------------------------|
| Tracking Code: TC0839-TEM-DH-1979 | Part #: TEM-125-02-DH1-S-D/SEM-125-03.0-S-D-WT |
| Part description: TEM/SEM         |                                                |

|   |     |      |      |
|---|-----|------|------|
| 8 | P14 | 11.7 | -0.4 |
| 8 | P15 | 12.0 | -0.6 |
| 8 | P16 | 11.6 | -0.3 |
| 8 | P17 | 11.3 | 0.3  |
| 8 | P18 | 11.6 | -0.6 |
| 8 | P19 | 11.9 | -0.4 |
| 8 | P20 | 12.5 | 1.0  |
| 8 | P21 | 12.3 | 0.5  |
| 8 | P22 | 13.2 | 0.0  |
| 8 | P23 | 12.4 | -0.2 |
| 8 | P24 | 13.0 | 0.2  |
| 8 | P25 | 13.1 | -0.4 |

**EQUIPMENT AND CALIBRATION SCHEDULES****Equipment #:** PS-07**Description:** 20 V, 120 A DC Power Supply - AutoRanging SO/HPIB**Manufacturer:** Hewlett Packard / Agilent**Model:** AT-6031A**Serial #:** 2721A00648**Accuracy:** See Manual Current Carrying Capacity (CCC) Chamber

... Last Cal: 10/25/2007, Next Cal: 10/25/2008

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

... Last Cal: 03/10/08, Next Cal: 03/10/09

**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; Displacement: +/- 5 micrometers.

... Last Cal: 5/18/07, Next Cal: 5/18/08

**Equipment #:** OGP-02**Description:** Automatic Video Measuring System, 18" (X) x 18" (Y) x 12" (Z)**Manufacturer:** Optical Gaging Products (OGP)**Model:** Smartscope Flash**Serial #:** SVL 5001462**Accuracy:** See Manual

... Last Cal: 03/13/2007, Next Cal: 03/13/2008

**Equipment #:** TC111307-(001 - 017)**Description:** CCC Chamber Thermocouples**Manufacturer:** Samtec**Model:****Serial #:** TC111307-(001 - 017)**Accuracy:** +/- 1 Deg.

... Last Cal: 11/30/2007, Next Cal: 11/30/2008

**Equipment #:** STG-01**Description:** Hipot Megomter Safety Test Cage**Manufacturer:** Hipotronics**Model:** TC-25**Serial #:** M9910141**Accuracy:** N/A

... Last Cal: No Calibration Required, Next Cal:

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

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

**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

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

... Last Cal: 06/22/2007, Next Cal: 06/22/2008

**Equipment #:** MO-07**Description:** Multimeter / Data Acquisition System**Manufacturer:** Keithley**Model:** 2700**Serial #:** 2721A00648**Accuracy:** See Manual

... Last Cal: 6/22/2007, Next Cal: 6/22/2008

**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

|                                   |                                                |
|-----------------------------------|------------------------------------------------|
| Tracking Code: TC0839-TEM-DH-1979 | Part #: TEM-125-02-DH1-S-D/SEM-125-03.0-S-D-WT |
| Part description: TEM/SEM         |                                                |

**Equipment #:** THC-01

**Description:** Temperature/Humidity Chamber

**Manufacturer:** Thermotron

**Model:** SM-8-7800

**Serial #:** 30676

**Accuracy:** See Manual

... Last Cal: 9/21/2007, Next Cal: 9/21/2008

**Equipment #:**

**Description:**

**Manufacturer:**

**Model:**

**Serial #:**

**Accuracy:**

... Last Cal: , Next Cal: