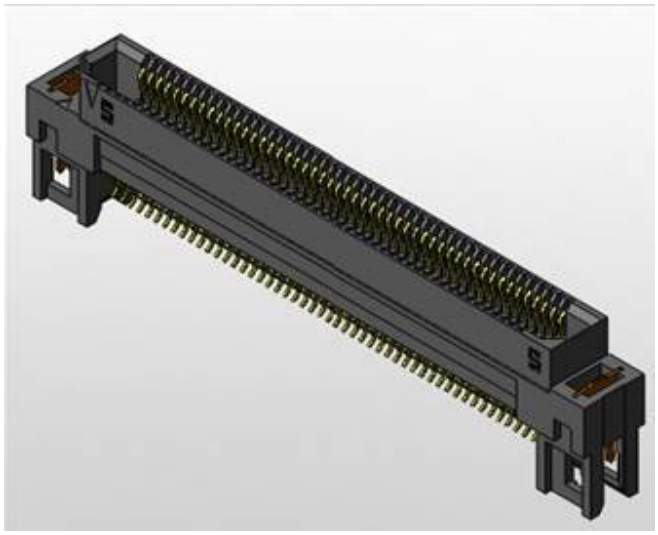
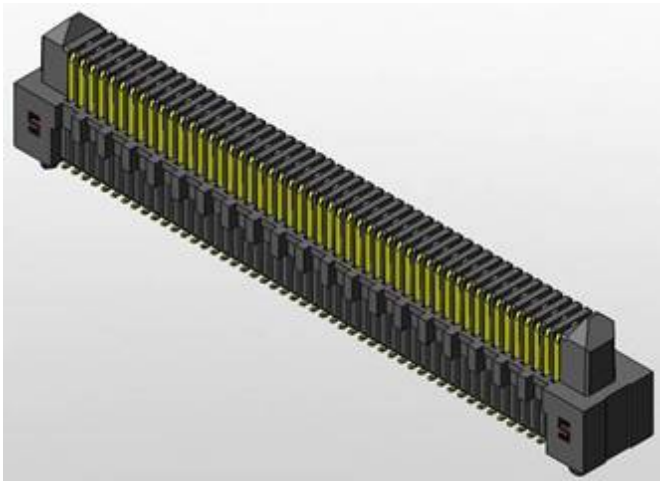
Project Number:	Tracking Code: TC0812--1632 & TC0828--1862		
Requested by: Kevin Meredith	Date: 9/29/2008	Product Rev: 0	
Part #: ERF8-050-L-D-EM2/ ERM8-050-05.0-L-DV	Lot #: na	Tech: Rodney Riley & Gary Lomax	Eng: Troy Cook
Part description: ERF8-050-L-D-EM2/ ERM8-050-05.0-L-DV			Qty to test: 51
Test Start: 08/18/2008	Test Completed: 6/30/2008		





DVT Report

PART DESCRIPTION

ERF8-050-L-D-EM2/ ERM8-050-05.0-L-DV

CERTIFICATION

All instruments and measuring equipment were calibrated to National Institute for Standards and Technology (NIST) traceable standards according to IS0 10012-l and ANSI/NCSL 2540-1, as applicable.

SCOPE

To perform the following tests: DVT

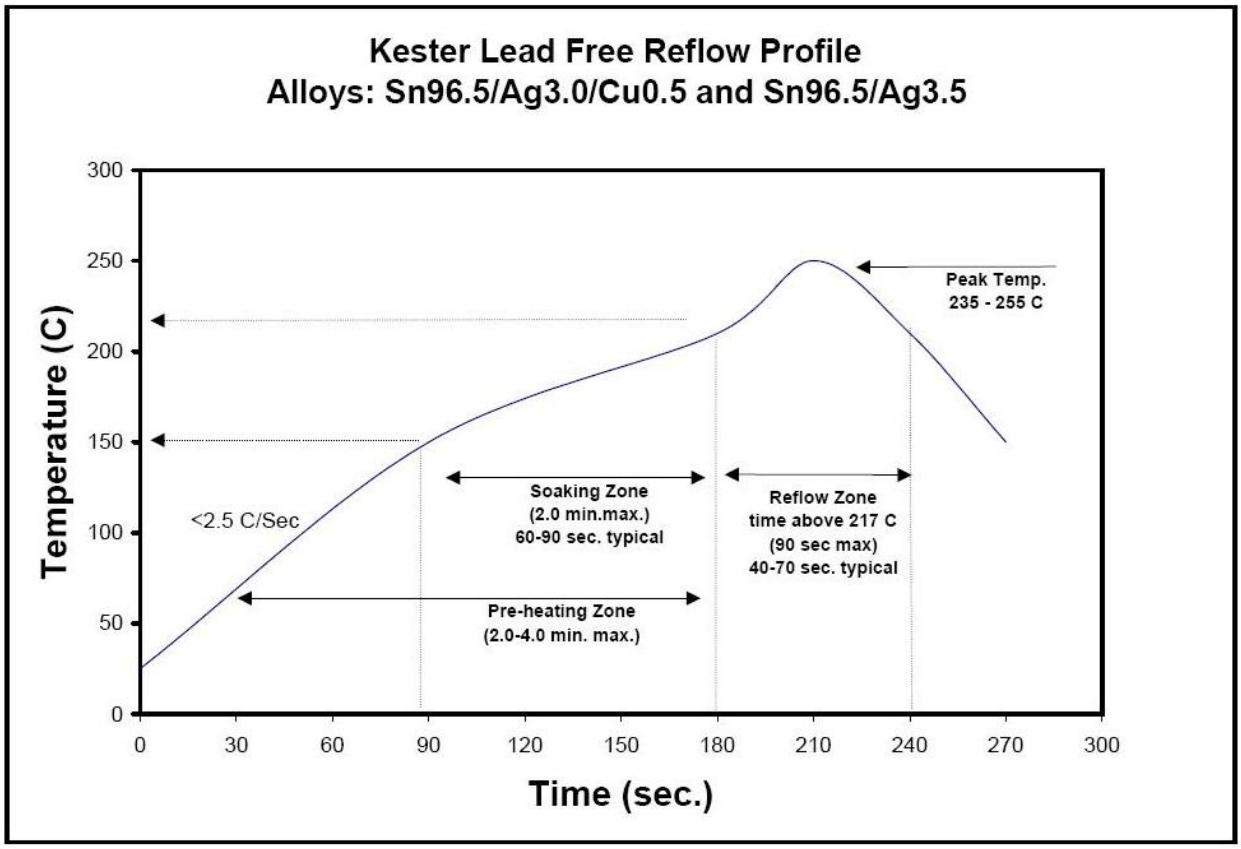
APPLICABLE DOCUMENTS

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-101123-TST-XX, PCB-101141-TST-XX

TYPICAL OVEN PROFILE (Soldering Parts to Test Boards)



FLOWCHARTS

Current Carrying Capacity

3 Mated Assemblies Each

TEST STEP	GROUP A 3 Mated Assembies 1 CONTACT POWERED	GROUP B 3 Mated Assembies 2 CONTACTS POWERED	GROUP C 3 Mated Assembies 3 CONTACTS POWERED	GROUP D 3 Mated Assembies 4 CONTACTS POWERED	GROUP E 3 Mated Assembies 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 STEP	GROUP A1 10 Boards ERF8-050-S-EM2 soldered to 1.42 thick PCB	GROUP A2 10 Boards ERF8-050-S-EM2 soldered to 1.73 thick PCB	GROUP B1 Individual Contacts (30) min	GROUP B2 Individual Contacts (30) min
01	Thermal Aging (Mated)	Contact Gaps	**Setup Approve**	**Setup Approve**
02	Mating / Unmating	Mating / Unmating	Normal Force	Thermal Aging (Mated)
03	Data Review	Data Review	Data Review	Normal Force
04	100 Cycles	100 Cycles		
05	Mating / Unmating	Mating / Unmating		
06	Contact Gaps	Contact Gaps		
07	Data Review	Data Review		
08	Thermal Aging (Mated)	Thermal Aging (Mated)		
09	Mating / Unmating	Mating / Unmating		
10	Contact Gaps	Contact Gaps		
11	Data Review	Data Review		
12	Humidity (Mated)	Humidity (Mated)		
13	Contact Gaps	Contact Gaps		
14	Mating / Unmating	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

FLOWCHARTS Continued

Durability/Thermal Age/Cyclic Humidity

TEST STEP	GROUP A 200 Points 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

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

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

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.

LLCR:

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

GAS TIGHT:

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

1) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets.*
2) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
3) The following guidelines are used to categorize the changes in LLCR as a result from stressing
    a. <= +5.0 mOhms: ---------- Stable
    b. +5.1 to +10.0 mOhms:---------- Minor
    c. +10.1 to +15.0 mOhms: ---------- Acceptable
    d. +15.1 to +50.0 mOhms: ---------- Marginal
    e. +50.1 to +2000 mOhms: ---------- Unstable
    f. >+2000 mOhms:---------- Open Failure
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^{o} C
        ix. The final LLCR shall be conducted within 1 hour after drying.

NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):

1) Reference document: EIA-364-04, *Normal Force Test Procedure for Electrical Connectors*.
2) The contacts shall be tested in the connector housing.
3) If necessary, a "window" shall be made in the connector body to allow a probe to engage and deflect the contact at the same attitude and distance (plus 0.05 mm [0.002"]) as would occur in actual use.
4) The connector housing shall be placed in a holding fixture that does not interfere with or otherwise influence the contact force or deflection.
5) Said holding fixture shall be mounted on a floating, adjustable, X-Y table on the base of the Dillon TC^2, computer controlled test stand with a deflection measurement system accuracy of 5.0 µm (0.0002").
6) The nominal deflection rate shall be 5 mm (0.2")/minute.
7) Unless otherwise noted a minimum of five contacts shall be tested.
8) The force/deflection characteristic to load and unload each contact shall be repeated five times.
9) The system shall utilize the TC^2 software in order to acquire and record the test data.
10) The permanent set of each contact shall be measured within the TC^2 software.
11) The acquired data shall be graphed with the deflection data on the X-axis and the force data on the Y-axis and a print out will be stored with the Tracking Code paperwork.

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 ----------1.7A per contact with 4 adjacent contacts powered**
- **CCC for a 30°C Temperature Rise ----------1.5A per contact with 6 adjacent contacts powered**
- **CCC for a 30°C Temperature Rise ----------1.3A per contact with 8 adjacent contacts powered**
- **CCC for a 30°C Temperature Rise ----------0.6A per contact with all contacts powered**

Contact Gaps

- **Initial**
  - **Min ---------- 2.37 mm**
  - **Max ---------- 2.52 mm**
- **After 100 Cycles**
  - **Min ---------- 2.53 mm**
  - **Max ---------- 2.64 mm**
- **Thermal**
  - **Min ---------- 2.49 mm**
  - **Max ---------- 2.57 mm**
- **Humidity**
  - **Min ---------- 2.60 mm**
  - **Max ---------- 2.70 mm**

Mating – Unmating Forces

- **Initial**
  - **Mating**
    - **Min ---------- 2.3 lbs.**
    - **Max---------- 4.1 lbs.**
  - **Unmating**
    - **Min ---------- 2.1 lbs.**
    - **Max---------- 4.4 lbs.**
- **After 100 Cycles**
  - **Mating**
    - **Min ---------- 2.4 lbs.**
    - **Max---------- 3.7 lbs.**
  - **Unmating**
    - **Min ---------- 4.0 lbs.**
    - **Max---------- 5.4 lbs.**
- **Thermal**
  - **Mating**
    - **Min ---------- 4.7 lbs.**
    - **Max---------- 5.7 lbs.**
  - **Unmating**
    - **Min ---------- 2.4 lbs.**
    - **Max---------- 3.5 lbs.**
- **Humidity**
  - **Mating**
    - **Min ---------- 4.9 lbs.**
    - **Max---------- 6.4 lbs.**
  - **Unmating**
    - **Min ---------- 1.8 lbs.**
    - **Max---------- 3.6 lbs.**

Normal Force at .018" deflection

- **Initial**
  - **Min----------80.1 gm Set -------.0023"**
  - **Max ----------88.2 gm Set -------.0033"**

Normal Force at .014" deflection

- **Thermal**
  - **Min----------71.5 gm**
  - **Max ----------79.3 gm**

LLCR Durability (200 LLCR test points)

- **Initial---------- 33.9 mOhms Max**
- **Durability, 100 Cycles**
  - **<= +5.0 mOhms ---------- 200 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms----------0 Points ---------- Minor**
  - **+10.1 to +15.0 mOhms ----------0 Points ---------- Acceptable**
  - **+15.1 to +50.0 mOhms ----------0 Points ---------- Marginal**
  - **+50.1 to +2000 mOhms----------0 Points ---------- Unstable**
  - **>+2000 mOhms----------0 Points ---------- Open Failure**
- **Thermal**
  - **<= +5.0 mOhms ---------- 200 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms----------0 Points ---------- Minor**
  - **+10.1 to +15.0 mOhms ----------0 Points ---------- Acceptable**
  - **+15.1 to +50.0 mOhms ----------0 Points ---------- Marginal**
  - **+50.1 to +2000 mOhms----------0 Points ---------- Unstable**
  - **>+2000 mOhms----------0 Points ---------- Open Failure**
- **Humidity**
  - **<= +5.0 mOhms ---------- 197 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms----------1 Points ---------- Minor**
  - **+10.1 to +15.0 mOhms ----------0 Points ---------- Acceptable**
  - **+15.1 to +50.0 mOhms ----------2 Points ---------- Marginal**
  - **+50.1 to +2000 mOhms----------0 Points ---------- Unstable**
  - **>+2000 mOhms----------0 Points ---------- Open Failure**

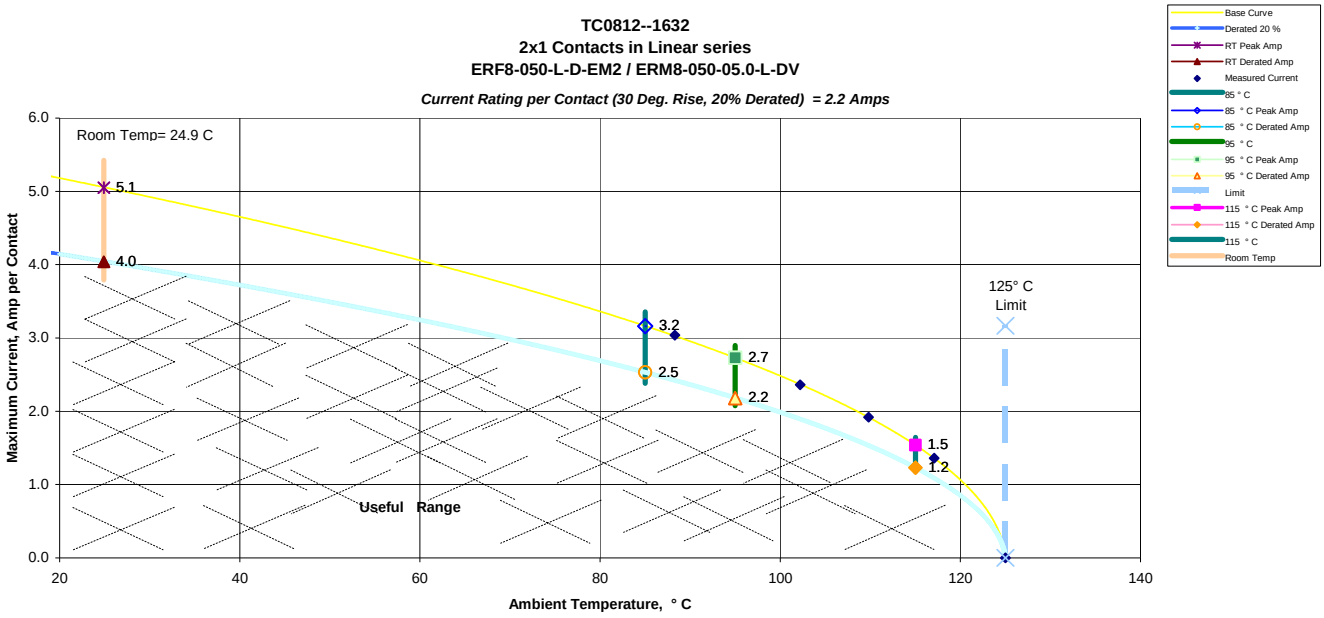
LLCR Gas Tight (200 LLCR test points)

- **Initial---------- 36.0 mOhms Max**
- **Gas-Tight**
  - **<= +5.0 mOhms ---------- 200 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms----------0 Points ---------- Minor**
  - **+10.1 to +15.0 mOhms ----------0 Points ---------- Acceptable**
  - **+15.1 to +50.0 mOhms ----------0 Points ---------- Marginal**
  - **+50.1 to +2000 mOhms----------0 Points ---------- Unstable**
  - **>+2000 mOhms----------0 Points ---------- Open Failure**

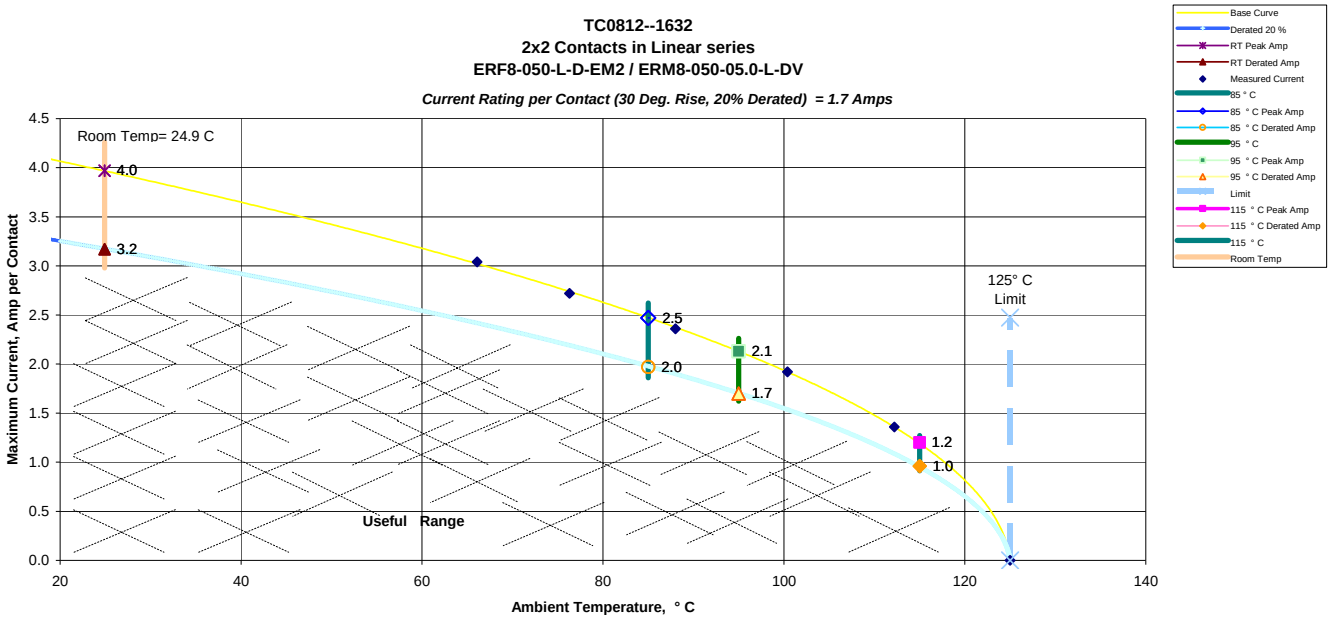
DATA SUMMARIES

TEMPERATURE RISE (Current Carrying Capacity, CCC):

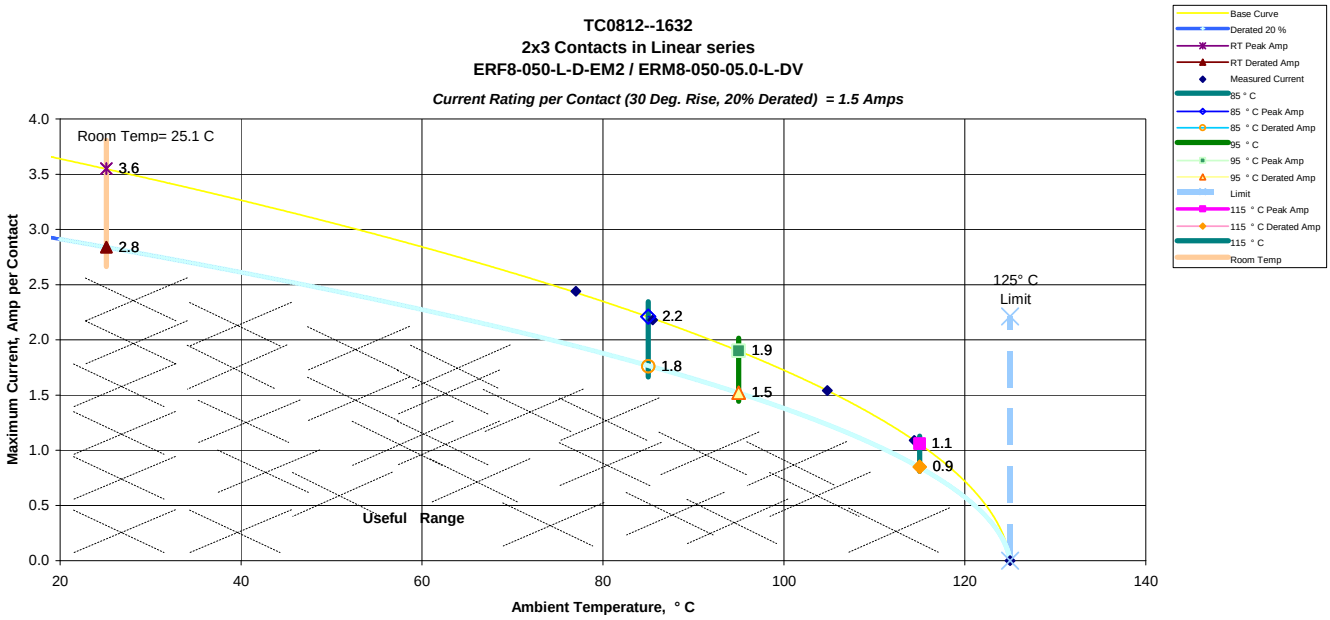
1) High quality thermocouples whose temperature slopes track one another were used for temperature monitoring.
2) The thermocouples were placed at a location to sense the maximum temperature generated during testing.
3) Temperature readings recorded are those for which three successive readings, 15 minutes apart, differ less than 1° C (computer controlled data acquisition).
4) Adjacent contacts were powered:
    a. Linear configuration with 2 adjacent contacts powered



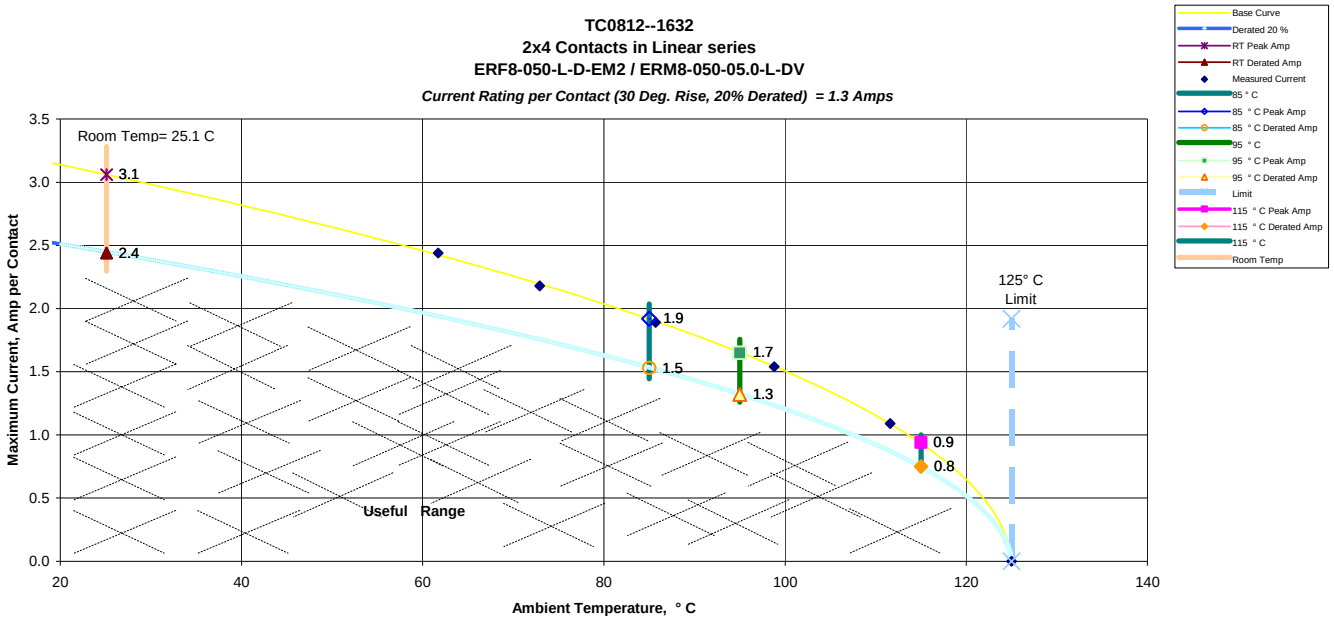
b. Linear configuration with 4 adjacent contacts powered



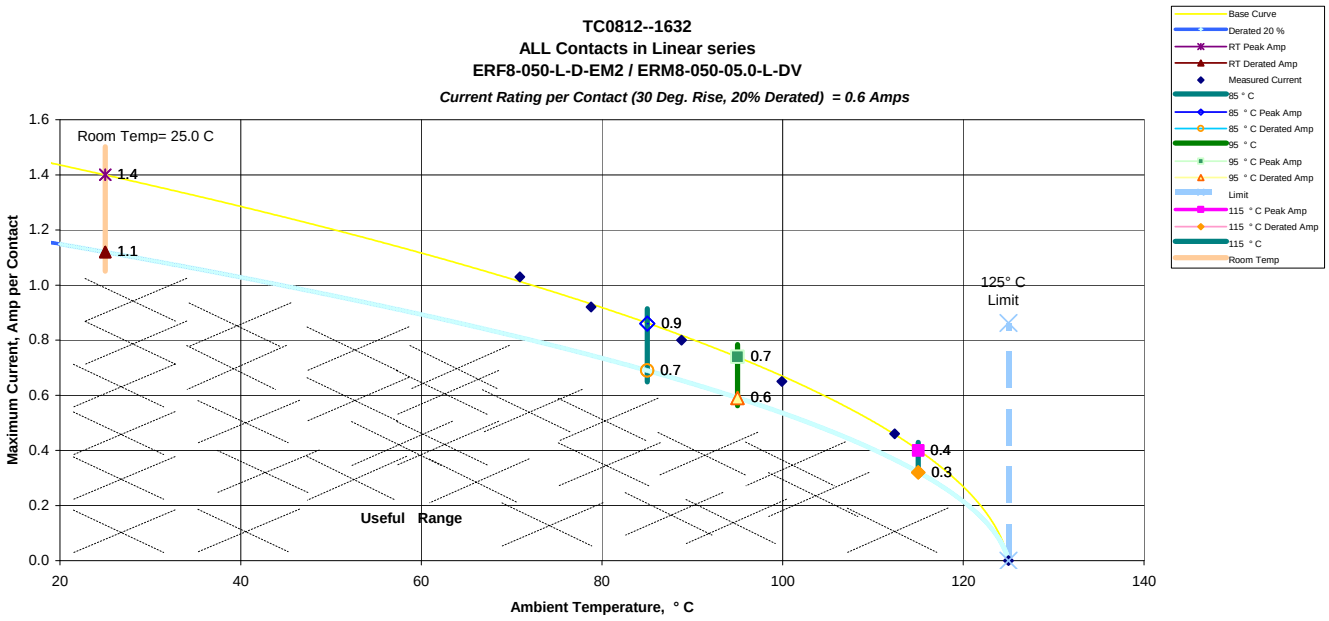
c. Linear configuration with 6 adjacent contacts powered



d. Linear configuration with 8 adjacent contacts powered



e. Linear configuration with all 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	
Minimum	2.3680	***Minimum***	2.5340	***Minimum***	2.4940	***Minimum***	2.5962
Maximum	2.5200	***Maximum***	2.6480	***Maximum***	2.5680	***Maximum***	2.6972
Average	2.4825	***Average***	2.5952	***Average***	2.5397	***Average***	2.6534
St. Dev.	0.0190	***St. Dev.***	0.0196	***St. Dev.***	0.0117	***St. Dev.***	0.0182
Count	500	***Count***	500	***Count***	500	***Count***	500

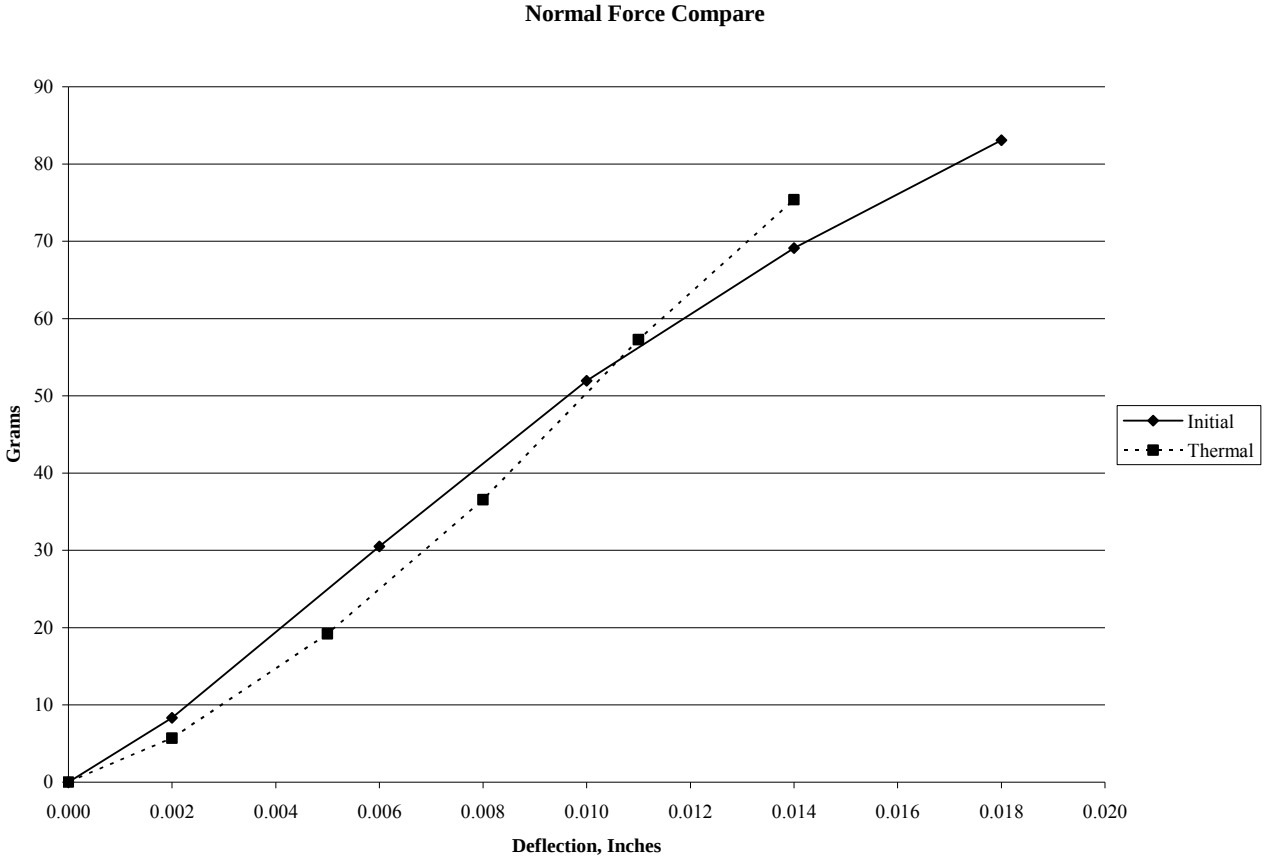
MATING/UNMATING:

	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	36.8	2.30	34.2	2.14	37.8	2.36	63.7	3.98
Maximum	65.3	4.1	69.6	4.4	59.7	3.7	85.8	5.4
Average	49.2	**3.1**	43.3	**2.7**	48.8	**3.0**	73.3	**4.6**
	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	75.5	4.72	37.6	2.35	79.0	4.94	28.0	1.75
Maximum	91.4	5.7	55.2	3.5	101.9	6.4	56.8	3.6
Average	81.3	**5.1**	42.9	**2.7**	90.3	**5.6**	35.6	**2.2**

DATA SUMMARIES Continued

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.



Initial	Deflections in inches Forces in Grams					
	0.002	**0.006**	**0.010**	**0.014**	**0.018**	**SET**
Averages	8.31	30.50	51.96	69.11	83.10	0.0030
Min	7.00	25.80	44.30	63.30	80.10	0.0023
Max	10.10	35.00	57.50	73.30	88.20	0.0033
St. Dev	1.08	3.16	4.20	3.56	2.74	0.0003
Count	8	8	8	8	8	8

Thermal	Deflections in inches, Forces in Grams					
	0.002	**0.005**	**0.008**	**0.011**	**0.014**	**SET**
Averages	5.68	19.19	36.54	57.26	75.40	0.0000
Min	4.10	16.70	32.80	53.40	71.50	0.0000
Max	6.40	21.40	40.60	61.40	79.30	0.0000
St. Dev	0.72	2.06	3.03	3.14	2.95	0.0000
Count	8	8	8	8	8	8

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. <= +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	29.3	-0.4	-0.2	0.3
St. Dev.	2.1	0.5	0.6	3.1
Min	24.7	-2.2	-2.2	-2.0
Max	33.9	0.9	2.7	29.4
Count	200	200	200	200

DATA SUMMARIES Continued

GAS TIGHT:

1) A total of 200 points were measured.
2) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets.*
3) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
4) The following guidelines are used to categorize the changes in LLCR as a result from stressing.
   a. <= +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	29.7	0.2
St. Dev.	1.8	1.1
Min	25.4	-6.4
Max	36.0	3.9
Count	200	200

DATA

CONTACT GAPS:

Initial										
Measured in mm										
Pos.#	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B10**
1	2.466	2.492	2.458	2.466	2.48	2.478	2.484	2.472	2.482	2.478
2	2.48	2.486	2.464	2.468	2.496	2.482	2.486	2.484	2.492	2.48
3	2.482	2.498	2.478	2.472	2.492	2.498	2.494	2.492	2.484	2.486
4	2.496	2.502	2.5	2.496	2.508	2.502	2.518	2.52	2.502	2.516
5	2.504	2.52	2.494	2.498	2.512	2.51	2.516	2.512	2.478	2.516
6	2.492	2.498	2.48	2.486	2.496	2.5	2.51	2.492	2.506	2.506
7	2.496	2.506	2.5	2.492	2.504	2.5	2.504	2.494	2.502	2.482
8	2.482	2.488	2.484	2.476	2.488	2.49	2.508	2.484	2.504	2.488
9	2.498	2.504	2.484	2.5	2.504	2.51	2.518	2.51	2.508	2.498
10	2.51	2.492	2.488	2.494	2.506	2.5	2.506	2.494	2.504	2.504
11	2.502	2.49	2.482	2.478	2.5	2.508	2.506	2.51	2.494	2.51
12	2.492	2.49	2.464	2.47	2.492	2.504	2.504	2.498	2.494	2.492
13	2.484	2.484	2.466	2.48	2.488	2.484	2.504	2.49	2.448	2.486
14	2.51	2.486	2.474	2.494	2.492	2.5	2.502	2.5	2.496	2.496
15	2.496	2.49	2.474	2.49	2.506	2.504	2.514	2.494	2.484	2.49
16	2.48	2.486	2.458	2.458	2.478	2.474	2.486	2.478	2.482	2.478
17	2.488	2.484	2.45	2.466	2.496	2.486	2.496	2.472	2.478	2.478
18	2.468	2.47	2.446	2.462	2.466	2.464	2.476	2.468	2.464	2.47
19	2.49	2.502	2.462	2.48	2.472	2.484	2.502	2.48	2.416	2.474
20	2.496	2.488	2.468	2.486	2.49	2.488	2.484	2.492	2.474	2.484
21	2.5	2.506	2.484	2.488	2.49	2.504	2.504	2.502	2.368	2.5
22	2.496	2.502	2.48	2.5	2.49	2.492	2.502	2.496	2.488	2.476
23	2.484	2.478	2.464	2.492	2.488	2.484	2.47	2.492	2.476	2.484
24	2.494	2.492	2.464	2.494	2.49	2.478	2.486	2.474	2.472	2.394
25	2.486	2.494	2.488	2.49	2.456	2.508	2.51	2.496	2.444	2.474
26	2.482	2.5	2.47	2.486	2.49	2.492	2.496	2.498	2.478	2.492
27	2.484	2.5	2.462	2.5	2.496	2.496	2.492	2.496	2.49	2.488
28	2.468	2.484	2.446	2.478	2.474	2.498	2.478	2.47	2.472	2.478
29	2.496	2.504	2.474	2.5	2.498	2.506	2.502	2.51	2.498	2.496
30	2.494	2.508	2.484	2.496	2.49	2.496	2.496	2.506	2.486	2.504
31	2.478	2.49	2.468	2.47	2.456	2.48	2.48	2.49	2.484	2.482
32	2.47	2.47	2.456	2.462	2.488	2.47	2.47	2.482	2.478	2.466
33	2.448	2.466	2.444	2.446	2.45	2.454	2.45	2.468	2.466	2.462
34	2.462	2.472	2.452	2.462	2.47	2.478	2.456	2.472	2.462	2.47
35	2.476	2.482	2.458	2.482	2.484	2.492	2.476	2.486	2.48	2.472
36	2.47	2.474	2.46	2.468	2.452	2.49	2.472	2.482	2.466	2.474
37	2.464	2.482	2.47	2.482	2.486	2.496	2.476	2.502	2.484	2.482
38	2.466	2.46	2.442	2.452	2.472	2.462	2.45	2.462	2.454	2.452
39	2.498	2.472	2.454	2.47	2.486	2.492	2.474	2.49	2.482	2.474
40	2.476	2.474	2.446	2.484	2.49	2.48	2.472	2.48	2.468	2.472
41	2.494	2.496	2.464	2.482	2.496	2.486	2.486	2.5	2.454	2.464
42	2.496	2.492	2.47	2.486	2.486	2.48	2.466	2.498	2.478	2.488
43	2.474	2.474	2.44	2.468	2.474	2.474	2.464	2.48	2.422	2.464
44	2.478	2.476	2.458	2.472	2.482	2.484	2.474	2.486	2.466	2.494
45	2.496	2.492	2.458	2.49	2.496	2.484	2.488	2.498	2.482	2.484
46	2.49	2.502	2.472	2.502	2.482	2.494	2.486	2.492	2.48	2.496
47	2.504	2.504	2.482	2.508	2.496	2.502	2.496	2.504	2.476	2.488
48	2.482	2.488	2.462	2.49	2.476	2.48	2.47	2.488	2.454	2.482
49	2.484	2.496	2.46	2.482	2.482	2.488	2.45	2.492	2.424	2.484
50	2.44	2.448	2.41	2.44	2.43	2.436	2.418	2.438	2.436	2.426

DATA Continued

After 100 Cycles

Measured in mm

Pos.#	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
1	2.614	2.648	2.586	2.584	2.636	2.628	2.634	2.624	2.63	2.614
2	2.608	2.61	2.576	2.576	2.626	2.612	2.608	2.612	2.622	2.598
3	2.61	2.614	2.582	2.582	2.624	2.612	2.608	2.614	2.612	2.604
4	2.614	2.624	2.602	2.59	2.616	2.62	2.628	2.628	2.62	2.622
5	2.614	2.622	2.604	2.582	2.618	2.62	2.624	2.628	2.624	2.618
6	2.602	2.602	2.59	2.58	2.604	2.62	2.612	2.614	2.622	2.608
7	2.608	2.602	2.596	2.588	2.62	2.616	2.612	2.614	2.624	2.606
8	2.598	2.608	2.59	2.58	2.612	2.62	2.628	2.61	2.63	2.606
9	2.61	2.616	2.598	2.596	2.624	2.622	2.634	2.628	2.63	2.624
10	2.614	2.622	2.6	2.606	2.622	2.62	2.626	2.62	2.626	2.63
11	2.606	2.588	2.58	2.578	2.612	2.612	2.608	2.624	2.612	2.622
12	2.586	2.598	2.56	2.57	2.594	2.608	2.604	2.614	2.6	2.598
13	2.584	2.588	2.564	2.57	2.59	2.584	2.606	2.606	2.594	2.598
14	2.616	2.6	2.584	2.592	2.608	2.61	2.618	2.616	2.618	2.612
15	2.596	2.594	2.576	2.58	2.612	2.602	2.616	2.612	2.6	2.6
16	2.576	2.578	2.552	2.56	2.58	2.576	2.59	2.584	2.6	2.594
17	2.58	2.57	2.544	2.548	2.582	2.578	2.59	2.582	2.584	2.582
18	2.564	2.56	2.534	2.55	2.57	2.568	2.58	2.576	2.57	2.57
19	2.576	2.586	2.546	2.554	2.572	2.578	2.598	2.582	2.58	2.588
20	2.588	2.582	2.562	2.564	2.588	2.586	2.598	2.594	2.592	2.588
21	2.618	2.616	2.602	2.602	2.624	2.628	2.636	2.63	2.632	2.626
22	2.62	2.612	2.6	2.6	2.614	2.624	2.626	2.626	2.622	2.622
23	2.608	2.594	2.582	2.602	2.614	2.612	2.606	2.624	2.612	2.62
24	2.612	2.602	2.584	2.604	2.612	2.606	2.612	2.614	2.612	2.624
25	2.612	2.606	2.592	2.598	2.614	2.612	2.628	2.624	2.614	2.62
26	2.6	2.608	2.588	2.596	2.606	2.608	2.61	2.616	2.61	2.606
27	2.602	2.604	2.58	2.606	2.606	2.606	2.612	2.62	2.614	2.616
28	2.6	2.598	2.58	2.594	2.588	2.614	2.608	2.606	2.606	2.612
29	2.614	2.61	2.592	2.61	2.606	2.614	2.624	2.626	2.624	2.624
30	2.616	2.618	2.606	2.604	2.602	2.612	2.616	2.626	2.618	2.624
31	2.588	2.59	2.568	2.568	2.582	2.59	2.588	2.602	2.596	2.596
32	2.582	2.576	2.546	2.572	2.584	2.578	2.58	2.59	2.586	2.58
33	2.576	2.572	2.554	2.566	2.562	2.576	2.578	2.586	2.576	2.59
34	2.576	2.58	2.562	2.566	2.57	2.586	2.58	2.59	2.578	2.588
35	2.592	2.584	2.568	2.578	2.578	2.588	2.592	2.596	2.594	2.594
36	2.584	2.574	2.566	2.574	2.576	2.592	2.594	2.594	2.586	2.596
37	2.58	2.586	2.574	2.582	2.572	2.598	2.586	2.604	2.592	2.606
38	2.568	2.57	2.552	2.548	2.572	2.58	2.562	2.578	2.576	2.59
39	2.588	2.58	2.57	2.576	2.578	2.594	2.588	2.592	2.59	2.6
40	2.576	2.582	2.564	2.584	2.576	2.59	2.576	2.588	2.59	2.598
41	2.582	2.582	2.56	2.576	2.582	2.584	2.58	2.592	2.584	2.592
42	2.584	2.59	2.566	2.586	2.576	2.584	2.57	2.594	2.58	2.6
43	2.576	2.574	2.558	2.582	2.57	2.578	2.58	2.584	2.582	2.586
44	2.586	2.59	2.562	2.57	2.582	2.598	2.58	2.594	2.588	2.612
45	2.588	2.59	2.564	2.574	2.582	2.586	2.584	2.596	2.592	2.596
46	2.586	2.6	2.57	2.596	2.582	2.598	2.592	2.608	2.588	2.612
47	2.598	2.594	2.582	2.598	2.596	2.596	2.598	2.596	2.592	2.604
48	2.598	2.6	2.584	2.596	2.582	2.596	2.592	2.592	2.584	2.606
49	2.598	2.6	2.572	2.588	2.582	2.604	2.58	2.594	2.596	2.608
50	2.572	2.572	2.544	2.554	2.558	2.582	2.556	2.564	2.578	2.568

DATA Continued

After Thermal
Measured in mm

Pos.#	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
1	2.524	2.524	2.524	2.532	2.528	2.526	2.528	2.53	2.53	2.53
2	2.55	2.56	2.56	2.568	2.56	2.56	2.568	2.564	2.556	2.562
3	2.552	2.558	2.558	2.556	2.558	2.55	2.558	2.554	2.556	2.554
4	2.536	2.53	2.532	2.538	2.526	2.538	2.538	2.54	2.522	2.544
5	2.542	2.544	2.538	2.542	2.544	2.541	2.546	2.54	2.544	2.552
6	2.512	2.53	2.522	2.524	2.522	2.524	2.524	2.524	2.522	2.524
7	2.54	2.538	2.54	2.536	2.544	2.546	2.546	2.538	2.538	2.542
8	2.544	2.548	2.546	2.554	2.544	2.556	2.556	2.546	2.542	2.554
9	2.552	2.552	2.552	2.56	2.558	2.56	2.556	2.558	2.556	2.552
10	2.546	2.548	2.552	2.548	2.542	2.554	2.548	2.546	2.548	2.55
11	2.542	2.548	2.546	2.545	2.542	2.549	2.546	2.544	2.546	2.544
12	2.546	2.554	2.554	2.552	2.546	2.55	2.546	2.546	2.54	2.546
13	2.542	2.54	2.542	2.548	2.544	2.548	2.546	2.546	2.546	2.546
14	2.554	2.556	2.55	2.546	2.554	2.556	2.556	2.562	2.556	2.558
15	2.538	2.536	2.53	2.533	2.538	2.536	2.538	2.53	2.536	2.532
16	2.54	2.542	2.542	2.538	2.544	2.54	2.542	2.54	2.542	2.542
17	2.546	2.542	2.546	2.542	2.55	2.552	2.554	2.552	2.54	2.546
18	2.544	2.544	2.54	2.542	2.542	2.552	2.552	2.546	2.544	2.548
19	2.544	2.54	2.538	2.54	2.544	2.541	2.548	2.544	2.54	2.556
20	2.544	2.546	2.546	2.552	2.544	2.544	2.542	2.548	2.54	2.55
21	2.532	2.534	2.542	2.54	2.534	2.53	2.536	2.536	2.538	2.536
22	2.544	2.546	2.542	2.55	2.546	2.548	2.55	2.538	2.542	2.548
23	2.544	2.55	2.548	2.547	2.544	2.543	2.544	2.546	2.546	2.552
24	2.546	2.546	2.542	2.552	2.544	2.55	2.542	2.548	2.548	2.538
25	2.538	2.54	2.538	2.537	2.54	2.537	2.544	2.536	2.534	2.536
26	2.534	2.524	2.524	2.528	2.526	2.524	2.532	2.53	2.522	2.524
27	2.526	2.526	2.532	2.528	2.53	2.526	2.536	2.528	2.532	2.524
28	2.524	2.526	2.528	2.528	2.52	2.522	2.534	2.528	2.522	2.534
29	2.536	2.536	2.534	2.54	2.542	2.537	2.53	2.538	2.538	2.536
30	2.546	2.544	2.55	2.548	2.536	2.55	2.538	2.546	2.546	2.55
31	2.514	2.522	2.518	2.52	2.516	2.514	2.522	2.518	2.524	2.514
32	2.54	2.53	2.538	2.536	2.534	2.536	2.538	2.528	2.53	2.536
33	2.544	2.546	2.54	2.542	2.548	2.54	2.55	2.55	2.546	2.548
34	2.536	2.536	2.538	2.528	2.54	2.532	2.534	2.534	2.538	2.536
35	2.528	2.534	2.53	2.526	2.53	2.53	2.534	2.528	2.526	2.526
36	2.544	2.538	2.538	2.536	2.536	2.54	2.538	2.536	2.534	2.538
37	2.55	2.55	2.55	2.543	2.548	2.545	2.55	2.548	2.546	2.55
38	2.53	2.528	2.524	2.536	2.532	2.532	2.53	2.542	2.522	2.532
39	2.54	2.538	2.54	2.536	2.53	2.538	2.528	2.538	2.524	2.542
40	2.528	2.522	2.522	2.532	2.524	2.534	2.52	2.528	2.53	2.532
41	2.556	2.538	2.546	2.55	2.546	2.556	2.552	2.544	2.554	2.554
42	2.554	2.554	2.562	2.56	2.552	2.56	2.554	2.554	2.554	2.556
43	2.55	2.542	2.538	2.548	2.548	2.542	2.536	2.54	2.542	2.544
44	2.548	2.556	2.55	2.56	2.552	2.556	2.554	2.554	2.554	2.554
45	2.54	2.55	2.55	2.548	2.55	2.544	2.546	2.548	2.548	2.542
46	2.548	2.54	2.546	2.548	2.542	2.54	2.544	2.542	2.544	2.55
47	2.532	2.522	2.526	2.523	2.532	2.524	2.522	2.524	2.526	2.528
48	2.54	2.54	2.536	2.536	2.54	2.53	2.54	2.534	2.538	2.534
49	2.52	2.52	2.524	2.514	2.518	2.514	2.526	2.518	2.52	2.52
50	2.504	2.506	2.508	2.52	2.502	2.508	2.506	2.494	2.502	2.514

DATA Continued

After Humidity										
Measured in mm										
Pos.#	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B10**
1	2.67772	2.69673	2.63971	2.63323	2.68372	2.66721	2.69723	2.65972	2.67922	2.67322
2	2.66371	2.66022	2.64322	2.62724	2.67122	2.65771	2.65473	2.66373	2.66872	2.65671
3	2.66221	2.66622	2.64072	2.63623	2.67722	2.65921	2.66373	2.65322	2.66622	2.68622
4	2.67772	2.68673	2.66323	2.64274	2.66572	2.66072	2.67623	2.67523	2.66572	2.68272
5	2.66771	2.68222	2.66523	2.64775	2.66221	2.67322	2.66823	2.66972	2.66272	2.67922
6	2.66771	2.66472	2.64723	2.63924	2.64871	2.65871	2.65223	2.66772	2.66522	2.67222
7	2.66671	2.65822	2.65223	2.65525	2.66421	2.67122	2.65573	2.65872	2.68222	2.66521
8	2.66621	2.67672	2.64672	2.64375	2.66271	2.66021	2.67373	2.65822	2.68372	2.66922
9	2.67172	2.66672	2.66123	2.66025	2.68222	2.67322	2.67824	2.67223	2.67872	2.68122
10	2.68172	2.68223	2.67073	2.66175	2.67822	2.66372	2.66923	2.66972	2.67522	2.67872
11	2.66471	2.65522	2.64922	2.64375	2.67022	2.66322	2.65273	2.66522	2.65872	2.67972
12	2.65421	2.64822	2.63072	2.63025	2.64771	2.65321	2.64723	2.66072	2.66872	2.66122
13	2.65521	2.64772	2.63622	2.63675	2.65271	2.64571	2.65623	2.66122	2.65122	2.65871
14	2.67822	2.65572	2.64372	2.65425	2.66322	2.65721	2.66273	2.66573	2.66172	2.67372
15	2.66822	2.66222	2.63122	2.64424	2.66822	2.66022	2.66273	2.66323	2.66472	2.66722
16	2.65021	2.64172	2.61772	2.62373	2.63421	2.63271	2.64073	2.64222	2.65072	2.65271
17	2.64221	2.64122	2.61272	2.61625	2.64621	2.64121	2.64472	2.63822	2.64271	2.63721
18	2.6327	2.62021	2.59821	2.61324	2.6352	2.62321	2.62822	2.62271	2.62721	2.63821
19	2.64921	2.65172	2.60872	2.62224	2.63671	2.63321	2.64923	2.63671	2.64371	2.64821
20	2.66622	2.64121	2.62472	2.63475	2.64221	2.63921	2.64973	2.65022	2.64822	2.64171
21	2.68022	2.68473	2.66172	2.66775	2.67922	2.67522	2.68524	2.68123	2.69123	2.68372
22	2.67471	2.69023	2.66023	2.66624	2.66822	2.66972	2.67424	2.67823	2.67872	2.67722
23	2.67472	2.66822	2.65222	2.65676	2.67422	2.66272	2.65823	2.68073	2.67972	2.67572
24	2.67522	2.67072	2.65023	2.67876	2.67072	2.66122	2.66723	2.66172	2.66722	2.66822
25	2.68022	2.66772	2.65323	2.67076	2.68022	2.66672	2.67224	2.68473	2.66872	2.67472
26	2.66972	2.67572	2.65472	2.66075	2.66872	2.66322	2.67324	2.66973	2.67622	2.66372
27	2.67422	2.66622	2.64822	2.66675	2.67472	2.66272	2.66573	2.68273	2.67622	2.67122
28	2.66021	2.65672	2.63472	2.65825	2.64721	2.66722	2.65373	2.65822	2.65872	2.65522
29	2.67822	2.67522	2.66523	2.67476	2.67222	2.67422	2.68023	2.69173	2.68623	2.68722
30	2.67672	2.67172	2.67423	2.66776	2.66472	2.66872	2.67473	2.68323	2.68072	2.67922
31	2.65571	2.65772	2.62872	2.63075	2.65171	2.64471	2.64323	2.66022	2.65372	2.64871
32	2.64121	2.64021	2.61322	2.63475	2.64171	2.63921	2.63423	2.65323	2.64822	2.63971
33	2.64221	2.64422	2.62422	2.63325	2.62019	2.63571	2.63072	2.64722	2.64422	2.64721
34	2.65221	2.63872	2.62622	2.62524	2.63271	2.64471	2.62672	2.64822	2.63421	2.65421
35	2.65271	2.64822	2.62472	2.62974	2.64521	2.64571	2.64923	2.65372	2.65522	2.65421
36	2.64671	2.63972	2.62572	2.63425	2.64421	2.65021	2.64823	2.65673	2.64572	2.65522
37	2.63971	2.64372	2.62772	2.65125	2.63571	2.65522	2.64623	2.65973	2.65972	2.66272
38	2.63821	2.63321	2.61722	2.60024	2.63621	2.64721	2.61673	2.64572	2.63271	2.63571
39	2.65972	2.64772	2.62422	2.63275	2.64721	2.66622	2.63723	2.64873	2.64472	2.65922
40	2.64421	2.64322	2.62372	2.64125	2.64521	2.65372	2.63123	2.65073	2.63822	2.64971
41	2.64571	2.64922	2.61672	2.64175	2.65121	2.64171	2.63523	2.65072	2.63821	2.66472
42	2.65121	2.65222	2.63022	2.64275	2.64671	2.64622	2.63122	2.64772	2.63021	2.65972
43	2.63671	2.63722	2.61572	2.62675	2.62721	2.64271	2.62923	2.63972	2.63321	2.63821
44	2.65171	2.64372	2.61922	2.63125	2.64871	2.65522	2.63523	2.64022	2.65122	2.67822
45	2.64821	2.64922	2.62522	2.62174	2.64371	2.64521	2.64573	2.65173	2.64522	2.65772
46	2.64871	2.65672	2.62872	2.64124	2.64221	2.65722	2.64373	2.65123	2.64272	2.66672
47	2.66322	2.66022	2.63973	2.65225	2.65672	2.64672	2.64923	2.65973	2.64772	2.65621
48	2.66072	2.65872	2.64323	2.64825	2.64821	2.65572	2.64773	2.65622	2.65122	2.66172
49	2.65972	2.66172	2.62822	2.64975	2.63921	2.65922	2.64173	2.65722	2.64622	2.66722
50	2.61871	2.62621	2.60072	2.60274	2.6112	2.62071	2.59622	2.60621	2.62271	2.6142

DATA Continued

MATING/UNMATING:

	Initial		After 100 Cycles		After Thermal		After Humidity	
Sample#	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating
1	4.08	4.35	2.36	4.54	5.67	3.45	4.94	3.55
2	2.30	2.36	2.40	4.49	5.02	2.68	6.03	2.48
3	2.44	3.80	2.43	5.36	5.71	2.61	6.37	2.59
4	2.57	2.64	2.77	4.87	5.11	2.89	5.80	2.21
5	2.48	2.40	2.57	4.38	4.94	2.64	5.76	1.97
6	3.17	2.14	3.30	4.08	4.85	2.61	5.36	1.78
7	3.34	2.24	3.53	3.98	4.72	2.35	5.35	1.75
8	3.50	2.41	3.70	4.28	4.76	2.44	5.32	1.78
9	3.41	2.17	3.73	4.76	4.94	2.51	5.74	2.04
10	3.46	2.58	3.69	5.06	5.11	2.61	5.77	2.07

DATA Continued

NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):

Initial	Deflections in inches Forces in Grams					
Sample #	**0.002**	**0.006**	**0.010**	**0.014**	**0.018**	***SET***
1	8.10	30.70	51.30	67.40	80.10	0.00230
2	9.40	34.80	56.80	73.30	85.80	0.00320
3	7.60	29.10	50.90	67.00	80.30	0.00290
4	7.00	28.70	50.70	67.90	81.90	0.00290
5	10.10	35.00	57.50	73.10	88.20	0.00330
6	8.30	28.70	50.20	68.30	82.10	0.00310
7	8.80	31.20	54.00	72.60	83.10	0.00320
8	7.20	25.80	44.30	63.30	83.30	0.00300

Thermal	Deflections in inches Forces in Grams					
Sample #	**0.002**	**0.005**	**0.008**	**0.011**	**0.014**	***SET***
1	5.60	17.30	33.90	53.40	71.50	0.00000
2	6.40	20.90	40.60	61.40	79.30	0.00000
3	5.60	16.70	33.60	54.60	73.30	0.00000
4	5.90	21.40	39.60	60.60	78.40	0.00000
5	5.60	18.60	35.50	57.00	75.10	0.00000
6	4.10	16.80	32.80	53.90	73.10	0.00000
7	5.80	21.20	39.30	60.00	78.50	0.00000
8	6.40	20.60	37.00	57.20	74.00	0.00000

DATA Continued

LLCR:

	mOhm values	Actual	Delta	Delta	Delta
Board	Position	Initial	100 Cycles	Thermal	Humidity
1	P1	28.0	0.4	0.1	0.5
1	P2	28.2	0.4	0.4	3.0
1	P3	29.0	0.0	-0.1	-0.1
1	P4	29.5	-0.6	-0.4	-0.6
1	P5	29.8	0.2	0.4	0.5
1	P6	28.5	0.0	0.1	0.0
1	P7	29.0	0.0	0.3	0.4
1	P8	29.3	0.6	0.4	0.3
1	P9	29.6	0.4	0.5	0.8
1	P10	29.7	0.3	0.4	0.6
1	P11	30.2	0.4	0.5	0.4
1	P12	30.7	-0.3	0.0	0.0
1	P13	30.5	0.0	0.3	0.3
1	P14	30.6	-0.1	-0.1	0.1
1	P15	30.4	0.0	0.3	0.0
1	P16	29.5	0.0	0.1	1.5
1	P17	30.0	-0.3	-0.4	0.4
1	P18	29.4	-0.4	-0.2	0.0
1	P19	29.0	0.2	0.2	0.2
1	P20	29.0	-0.8	-0.8	-0.5
1	P21	29.7	-0.3	0.3	-0.6
1	P22	29.8	-0.6	0.2	-0.6
1	P23	29.2	-0.7	0.0	-1.0
1	P24	28.9	-0.2	0.1	-0.7
1	P25	28.5	-0.9	-0.7	-1.0
2	P1	27.5	0.2	0.9	1.1
2	P2	28.4	-0.4	-0.4	-0.7
2	P3	27.6	0.1	0.3	-0.3
2	P4	28.2	-0.3	0.1	-0.3
2	P5	28.8	-0.3	0.1	-0.8
2	P6	27.7	-0.1	0.6	0.6
2	P7	27.6	0.0	0.4	1.0
2	P8	29.2	-1.2	-0.7	-1.2
2	P9	28.4	-0.7	-0.3	-0.3
2	P10	29.0	-0.4	-0.4	-0.6
2	P11	29.8	-0.8	-1.0	-1.4
2	P12	29.1	0.1	0.0	1.5
2	P13	29.3	0.2	-0.1	0.0
2	P14	29.1	0.8	0.5	1.4
2	P15	30.2	-1.0	-0.9	-1.0
2	P16	29.5	-0.4	-0.2	-0.4

2	P17	28.8	0.0	0.5	0.1
2	P18	31.2	-2.2	-1.9	-2.0
2	P19	29.3	-0.8	-0.1	-0.5
2	P20	28.6	-0.1	-0.3	-0.4
2	P21	29.6	-0.2	0.2	-0.4
2	P22	28.6	0.3	0.6	3.2
2	P23	28.9	-0.2	0.0	1.4
2	P24	28.6	-0.3	0.3	-0.3
2	P25	28.8	-0.6	0.0	0.4
3	P1	28.5	-0.5	0.6	0.6
3	P2	28.9	0.2	0.7	1.2
3	P3	29.4	0.1	0.8	0.2
3	P4	29.9	0.0	0.9	0.2
3	P5	31.8	-0.8	2.7	-1.3
3	P6	28.9	0.3	0.4	0.2
3	P7	29.0	-0.4	-0.2	-0.1
3	P8	29.9	0.1	0.5	28.4
3	P9	29.5	0.0	0.2	0.2
3	P10	29.7	0.5	0.4	0.8
3	P11	30.5	-0.1	0.1	0.1
3	P12	31.2	-0.5	-0.7	-0.4
3	P13	30.2	-0.5	-0.4	-0.7
3	P14	30.0	0.0	0.5	0.1
3	P15	30.0	-0.5	0.2	-0.6
3	P16	29.2	0.0	0.7	0.7
3	P17	29.2	-0.3	0.3	-0.2
3	P18	29.4	-0.6	-0.2	0.5
3	P19	29.7	-1.1	-0.8	-0.1
3	P20	28.9	-0.8	-0.2	-0.5
3	P21	29.8	-0.4	-0.1	-0.7
3	P22	29.4	-0.5	-0.1	29.4
3	P23	29.0	-0.3	-0.2	1.3
3	P24	29.6	-1.3	-1.5	-1.6
3	P25	28.5	-0.4	-0.1	0.0
4	P1	29.6	0.6	0.0	0.4
4	P2	29.7	0.6	0.7	1.7
4	P3	31.1	0.1	-0.1	0.7
4	P4	31.3	-0.1	0.1	0.1
4	P5	32.2	-0.6	-0.5	-0.7
4	P6	30.1	0.2	0.8	0.3
4	P7	30.1	0.6	-0.1	0.0
4	P8	30.3	0.6	0.4	0.2
4	P9	30.8	0.2	-0.1	-0.5
4	P10	30.5	0.9	0.5	0.3
4	P11	31.0	0.6	1.0	0.6
4	P12	31.4	0.9	1.2	0.5
4	P13	31.9	-0.3	0.1	0.2
4	P14	31.8	0.0	0.0	0.2
4	P15	32.0	0.1	-0.2	0.8

4	P16	31.0	0.2	-0.1	0.3
4	P17	31.5	0.1	0.2	1.0
4	P18	32.1	-1.2	-0.9	-0.5
4	P19	31.5	-0.7	-0.3	0.0
4	P20	30.9	0.0	0.3	0.6
4	P21	32.4	-0.7	-0.4	-0.4
4	P22	32.2	-0.7	-0.4	-0.2
4	P23	31.9	-1.0	0.4	-0.4
4	P24	31.3	-0.8	0.1	6.6
4	P25	31.6	-0.6	-0.1	-0.3
5	P1	31.1	-0.6	-0.8	-0.3
5	P2	32.2	-1.7	-1.8	-1.3
5	P3	32.2	-0.6	-0.5	-0.1
5	P4	33.9	-1.9	-2.0	-1.8
5	P5	33.0	-0.9	-0.4	-0.3
5	P6	31.3	-0.3	-0.4	-0.3
5	P7	31.7	-0.4	-0.4	-0.7
5	P8	32.5	-0.4	-0.6	-0.8
5	P9	32.5	-0.6	-0.5	-0.3
5	P10	32.9	-0.2	-0.4	-0.5
5	P11	32.7	-0.2	-0.2	-0.3
5	P12	33.3	-0.1	0.5	0.0
5	P13	33.8	-0.7	-0.4	-0.4
5	P14	33.9	-1.1	-0.4	-0.8
5	P15	33.2	-1.0	-0.1	-0.3
5	P16	33.9	-1.0	-0.2	-0.6
5	P17	32.7	-0.7	-0.1	0.1
5	P18	32.6	-0.1	-0.1	-0.2
5	P19	32.3	-0.5	0.0	-0.1
5	P20	31.7	-0.1	-0.6	-0.7
5	P21	33.1	-0.3	-0.1	-0.2
5	P22	32.5	-0.1	-0.5	-0.2
5	P23	32.1	0.0	-0.4	-0.2
5	P24	31.6	-0.3	-0.8	-0.2
5	P25	30.9	-0.4	-0.3	-0.4
6	P1	26.3	-1.3	-1.4	-0.8
6	P2	25.5	-0.5	-0.3	-0.1
6	P3	27.1	-1.7	-1.4	-1.3
6	P4	26.2	-0.4	-0.3	-0.1
6	P5	26.8	-0.8	-0.5	0.2
6	P6	26.5	-0.1	-0.3	-0.1
6	P7	26.7	-0.5	-0.6	4.0
6	P8	26.8	0.4	0.0	1.7
6	P9	26.4	0.3	0.4	0.2
6	P10	27.8	-0.3	-0.3	-0.6
6	P11	26.8	-0.1	0.5	0.4
6	P12	27.3	0.2	0.1	-0.2
6	P13	27.7	-0.4	-0.4	1.3
6	P14	27.7	-0.1	-0.1	3.1

6	P15	26.5	0.4	-0.2	0.1
6	P16	27.6	-0.4	-0.1	-0.6
6	P17	27.2	-0.3	-0.6	-0.4
6	P18	26.9	-0.3	-0.1	0.0
6	P19	27.0	-0.1	0.1	0.6
6	P20	26.6	-0.6	-0.6	-0.3
6	P21	26.6	-1.0	-0.7	-0.3
6	P22	25.9	-0.5	-0.4	-0.5
6	P23	26.6	-1.5	-0.9	-0.9
6	P24	26.0	-1.4	-0.7	1.8
6	P25	26.1	-1.0	-0.7	-1.0
7	P1	28.8	-0.7	-0.3	-0.7
7	P2	29.2	-0.8	0.1	-0.5
7	P3	29.5	-0.6	-0.1	-0.2
7	P4	29.9	-0.6	-0.2	-0.3
7	P5	29.9	-0.5	0.5	0.0
7	P6	29.1	-0.2	-0.2	-0.3
7	P7	30.0	-0.8	-0.5	-0.7
7	P8	30.1	-0.5	-0.1	-0.5
7	P9	30.5	-0.2	-0.1	-0.2
7	P10	30.8	-0.2	-0.4	-0.4
7	P11	30.9	-0.1	0.3	0.3
7	P12	31.0	-0.2	-0.2	-0.5
7	P13	31.0	0.0	0.4	1.6
7	P14	31.3	-0.4	-0.3	-1.1
7	P15	31.1	-0.5	-0.2	-0.9
7	P16	31.3	-0.6	-0.2	0.1
7	P17	30.6	-0.3	0.2	-0.3
7	P18	30.4	-0.2	-0.1	0.0
7	P19	30.1	-0.2	-0.2	0.6
7	P20	29.8	0.1	0.3	-0.2
7	P21	30.3	-0.6	-0.1	2.7
7	P22	30.0	0.2	0.2	-0.7
7	P23	29.7	-0.3	0.8	2.2
7	P24	29.9	-1.2	-1.5	-1.4
7	P25	29.1	-0.2	-0.1	-0.7
8	P1	26.4	-0.5	-0.3	-0.8
8	P2	27.1	-0.9	-0.5	3.8
8	P3	27.2	-0.3	-0.2	1.6
8	P4	26.7	-0.2	-0.5	-0.1
8	P5	28.1	-1.1	-0.9	-1.5
8	P6	25.5	-1.2	-0.9	1.7
8	P7	24.7	-0.8	-0.5	-0.4
8	P8	25.8	-1.4	-1.3	0.1
8	P9	25.2	-0.9	-0.5	-1.0
8	P10	24.9	-0.3	-0.3	0.1
8	P11	25.3	-0.4	-0.5	0.7
8	P12	25.8	-1.3	-0.8	-0.9
8	P13	25.5	-0.6	-0.5	0.3

8	P14	25.8	-1.4	-1.2	-1.6
8	P15	27.2	-2.2	-2.2	-1.9
8	P16	25.7	-0.6	-0.7	-0.4
8	P17	25.4	-0.6	-0.2	0.0
8	P18	25.5	-0.8	-1.1	-1.4
8	P19	25.1	-0.2	-0.3	0.0
8	P20	24.9	-0.5	-0.8	-0.8
8	P21	27.2	-0.9	-0.1	-1.0
8	P22	27.5	-0.8	-0.4	2.5
8	P23	27.5	-1.5	-1.6	-1.7
8	P24	26.7	-0.8	-0.6	0.2
8	P25	26.6	-0.4	-0.4	-0.5

DATA Continued

GAS TIGHT:

	mOhm values	Actual	Delta
Board	Position	Initial	Gas Tight
1	P1	29.7	1.5
1	P2	30.7	0.5
1	P3	30.5	1.4
1	P4	32.1	-0.1
1	P5	31.6	1.2
1	P6	29.2	0.4
1	P7	28.2	1.5
1	P8	29.6	0.8
1	P9	29.6	0.5
1	P10	29.7	1.1
1	P11	29.7	1.4
1	P12	30.1	1.2
1	P13	30.0	0.0
1	P14	31.1	-0.3
1	P15	30.2	-0.1
1	P16	30.0	0.1
1	P17	29.9	-0.1
1	P18	29.9	0.0
1	P19	29.2	0.0
1	P20	28.9	1.1
1	P21	32.2	-0.7
1	P22	31.3	1.2
1	P23	31.6	0.2
1	P24	30.8	0.9
1	P25	30.5	-0.4
2	P1	29.3	-1.3
2	P2	30.3	-2.0
2	P3	30.3	-1.3
2	P4	36.0	-6.4
2	P5	31.8	-1.4
2	P6	29.4	-0.1
2	P7	29.1	-0.1
2	P8	31.3	-1.5
2	P9	31.0	-1.7
2	P10	31.4	-0.9
2	P11	31.3	-0.7
2	P12	31.7	-1.1
2	P13	31.2	-0.6
2	P14	30.6	0.3
2	P15	30.4	0.1
2	P16	30.1	0.5
2	P17	29.8	-0.3

2	P18	29.9	1.3
2	P19	29.1	0.4
2	P20	29.6	-0.2
2	P21	30.0	-0.5
2	P22	28.8	1.4
2	P23	29.2	-0.4
2	P24	28.0	1.2
2	P25	27.9	0.8
3	P1	27.7	1.2
3	P2	29.2	-0.6
3	P3	29.5	0.1
3	P4	29.0	0.2
3	P5	29.0	0.5
3	P6	29.0	0.3
3	P7	28.4	0.2
3	P8	29.2	0.2
3	P9	29.1	0.2
3	P10	29.5	0.8
3	P11	29.4	0.0
3	P12	30.0	0.2
3	P13	29.7	0.0
3	P14	30.9	-0.5
3	P15	29.2	0.5
3	P16	29.9	-0.2
3	P17	28.8	0.1
3	P18	29.9	0.3
3	P19	28.0	0.4
3	P20	28.7	0.4
3	P21	29.0	0.5
3	P22	28.2	1.7
3	P23	28.4	0.9
3	P24	27.6	2.9
3	P25	27.6	1.2
4	P1	26.8	1.6
4	P2	27.6	0.8
4	P3	27.0	2.0
4	P4	27.8	0.6
4	P5	27.9	2.2
4	P6	28.5	3.9
4	P7	28.9	1.3
4	P8	29.6	1.5
4	P9	29.9	0.7
4	P10	30.3	0.6
4	P11	29.9	1.0
4	P12	31.2	-0.5
4	P13	30.5	0.2
4	P14	30.8	0.5
4	P15	30.6	-0.5
4	P16	31.7	-0.6

4	P17	30.5	-0.2
4	P18	31.1	-1.1
4	P19	30.3	-1.0
4	P20	30.4	-1.6
4	P21	29.6	-1.7
4	P22	28.6	-0.5
4	P23	28.7	-1.5
4	P24	27.9	-0.7
4	P25	28.4	-0.6
5	P1	31.5	1.9
5	P2	32.2	1.8
5	P3	32.5	2.1
5	P4	34.6	-0.3
5	P5	33.8	1.8
5	P6	29.1	2.0
5	P7	29.4	1.4
5	P8	30.7	1.3
5	P9	30.0	1.3
5	P10	31.2	0.9
5	P11	30.8	0.6
5	P12	31.6	0.1
5	P13	31.7	-0.6
5	P14	31.8	0.3
5	P15	31.5	-0.7
5	P16	32.1	-0.8
5	P17	31.6	-1.0
5	P18	32.4	-1.3
5	P19	30.7	-1.1
5	P20	30.4	-0.6
5	P21	35.3	-1.4
5	P22	34.7	-0.2
5	P23	34.9	-1.8
5	P24	33.3	-0.4
5	P25	33.2	-1.1
6	P1	29.4	0.5
6	P2	30.1	-0.3
6	P3	30.0	0.9
6	P4	30.6	0.1
6	P5	31.0	0.8
6	P6	28.3	0.8
6	P7	27.7	0.4
6	P8	29.0	1.0
6	P9	28.6	0.3
6	P10	29.1	0.2
6	P11	28.5	0.6
6	P12	29.1	1.2
6	P13	28.7	0.2
6	P14	29.3	1.0
6	P15	28.5	-0.1

6	P16	28.7	1.5
6	P17	28.3	-0.3
6	P18	28.3	1.2
6	P19	27.6	0.6
6	P20	28.7	-0.1
6	P21	31.8	-1.1
6	P22	30.2	1.1
6	P23	30.1	-0.3
6	P24	29.2	1.4
6	P25	28.7	0.6
7	P1	30.0	0.9
7	P2	31.0	0.8
7	P3	31.6	0.6
7	P4	32.2	0.3
7	P5	32.3	0.8
7	P6	28.7	1.5
7	P7	28.9	0.6
7	P8	29.9	0.2
7	P9	29.4	0.5
7	P10	31.1	-0.9
7	P11	30.0	0.6
7	P12	31.0	0.1
7	P13	31.8	-1.3
7	P14	31.5	-1.1
7	P15	30.1	-0.1
7	P16	29.8	1.1
7	P17	29.2	0.3
7	P18	32.7	-2.8
7	P19	29.2	-0.3
7	P20	29.6	-0.4
7	P21	33.3	-0.4
7	P22	31.7	0.9
7	P23	31.9	-0.4
7	P24	30.6	1.3
7	P25	30.4	-0.1
8	P1	26.0	-0.1
8	P2	25.9	0.1
8	P3	26.3	-0.1
8	P4	26.2	0.2
8	P5	26.6	0.7
8	P6	27.0	1.3
8	P7	27.0	0.4
8	P8	27.4	1.3
8	P9	27.2	1.1
8	P10	28.3	0.2
8	P11	27.6	0.8
8	P12	28.2	0.4
8	P13	27.8	0.2
8	P14	28.6	-0.4

8	P15	28.0	0.2
8	P16	28.3	0.4
8	P17	27.4	0.4
8	P18	27.9	-0.3
8	P19	27.1	0.6
8	P20	28.1	0.0
8	P21	26.9	-0.1
8	P22	26.4	0.1
8	P23	26.0	1.1
8	P24	25.9	0.6
8	P25	25.4	0.6

EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: LC-25N
Description: 25 N Load Cell
Manufacturer: Dillon
Model: TC2 Load Cell
Serial #: 5373
Accuracy: See Manual
… Last Cal: 2/13/04, Next Cal: 2/13/05

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 #: OGP-01
Description: 6"X 6" Video Measuring Machine
Manufacturer: Optical Gauging Products
Model: Smartscope 200 CFOV
Serial #: SF2001956
Accuracy: See Manual
… Last Cal: 03/13/07, Next Cal: 03/13/08

Equipment #: TC111307-(001 - 017)
Description: CCC Chamber Thermocouples
Manufacturer: Samtec
Model:
Serial #: TC111307-(001 - 017)
Accuracy: +/- 1 Deg. +/- 1 Deg.
… Last Cal: 11/30/2007, Next Cal: 11/30/2008

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: 5/24/07, Next Cal: 5/31/08

Equipment #: MO-01
Description: Micro-Ohmeter
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 #: OV-03
Description: Cascade Tek Forced Air Oven
Manufacturer: Cascade Tek
Model: TFO-5
Serial #: M9905004
Accuracy: Temp. Stability: +/-.1C/C change in ambient
… Last Cal: 06/62/07, Next Cal: 06/22/08

Equipment #: THC-04
Description: Temperature/Humidity Chamber
Manufacturer: Thermotron
Model: SM-8-3800
Serial #: 37782
Accuracy: See Manual
… Last Cal: 09/21/2007, Next Cal: 09/21/2008

Equipment #: Null
Description:
Manufacturer:
Model:
Serial #:
Accuracy:
… Last Cal: , Next Cal: