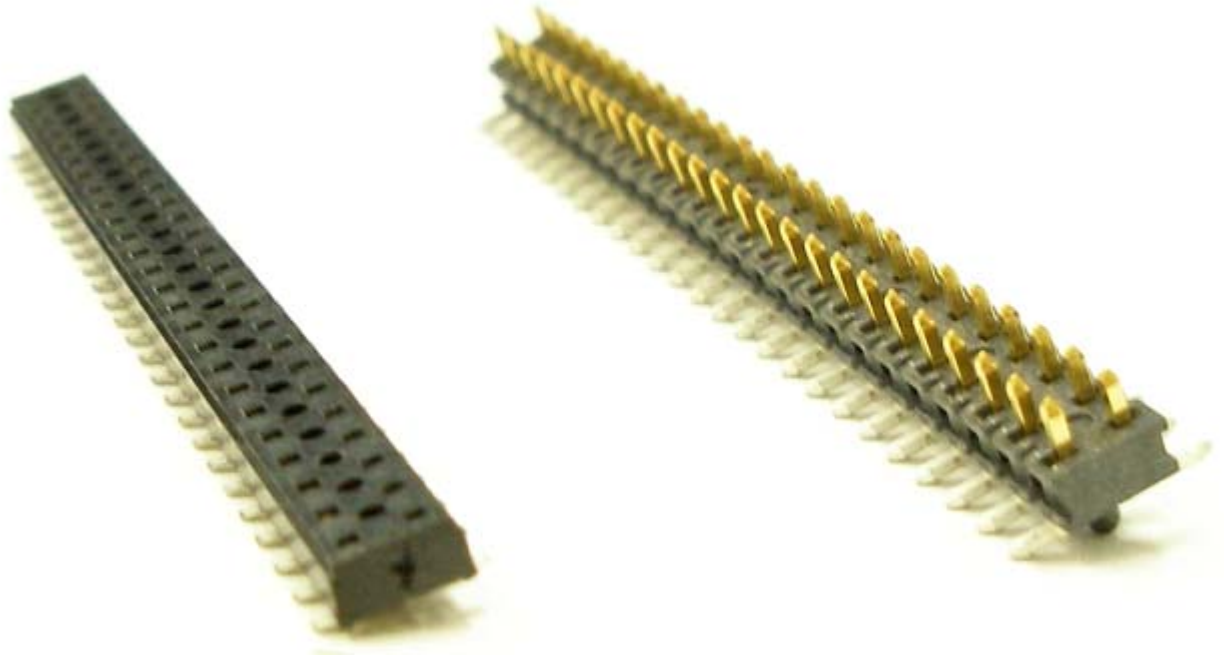
Project Number:	Tracking Code: TC095-CLT-2210		
Requested by: Bryon Saylor	Date: 3/31/2009	Product Rev: BD	
Part #: CLT-125-02-S-D-A/TMMH-125-04-S-DV-A	Lot #: 1/8/09	Tech: Rodney Riley, Gary Lomax, & Daniel Linton	Eng: Troy Cook
Part description: CLT/TMMH			Qty to test: 60
Test Start: 01/27/2009	Test Completed: 3/24/2009		



EXTENDED LIFE PRODUCTS TEST REPORT

PART DESCRIPTION

CLT-125-02-S-D-A/TMMH-125-04-S-DV-A

CERTIFICATION

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

SCOPE

To perform the following tests: Test to current ELP test plan for 100, 250, 500, and 1,000 cycles. Process with leaded paste to PCB-100563-TST-XX.

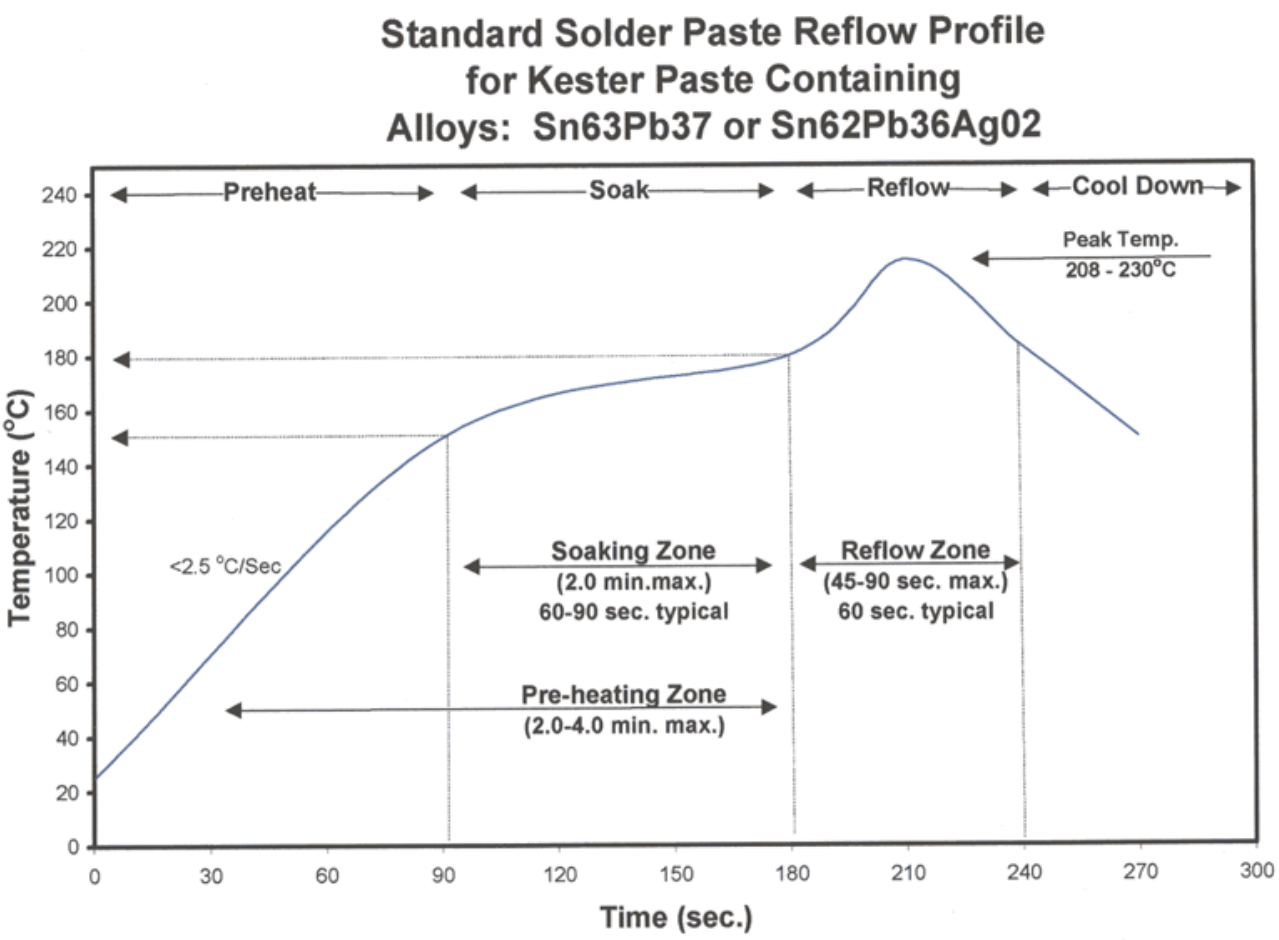
APPLICABLE DOCUMENTS

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
9) Re-Flow Time/Temp: See accompanying profile.
10) Samtec Test PCBs used: PCB-100563-TST-XX

TYPICAL OVEN PROFILE (Soldering Parts to Test Boards)



FLOWCHARTS

Durability

TEST STEP	GROUP A 200 Points - 8 Samples 100 Cycles	GROUP B 200 Points - 8 Samples 250 Cycles
01	LLCR-1	LLCR-1
02	100 Cycles	250 Cycles
03	LLCR-2	LLCR-2
04	Data Review	Data Review
05	Thermals	Thermals
06	LLCR-3	LLCR-3
07	Data Review	Data Review
08	Humidity	Humidity
09	LLCR-4	LLCR-4

LLCR = EIA-364-23, LLCR
use Keithley 580 in the dry circuit mode, 10 mA Max
Cycling Rate = 500 +/- 50 per hour
Pass Criteria for LLCR = Less than 15 m-Ohm change in resistance.
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

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.

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

RESULTS

LLCR Durability (250 LLCR test points)

- **Initial ---------- 7.5 mOhms Max**
- **Durability, 100 Cycles**
  - **<= +5.0 mOhms ---------- 250 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 ---------- 250 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 ---------- 250 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**

LLCR Durability (220 LLCR test points)

- **Initial ---------- 8.0 mOhms Max**
- **Durability, 250 Cycles**
  - **<= +5.0 mOhms ---------- 220 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 ---------- 220 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 ---------- 216 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms ---------- 1 Points ---------- Minor**
  - **+10.1 to +15.0 mOhms ---------- 2 Points ---------- Acceptable**
  - **+15.1 to +50.0 mOhms ---------- 1 Points ---------- Marginal**
  - **+50.1 to +2000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+2000 mOhms ---------- 0 Points ---------- Open Failure**

DATA SUMMARIES

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

Date	Feb. 09 2009	Feb. 10 2009	Feb. 24 2009	Mar. 11 2009
Room Temp C	25	25	23	25
RH	25%	30%	26%	31%
Name	Marshall	Lomax	Marshall	Lomax
mOhm values	**Actual Initial**	**Delta 100 Cycles**	**Delta Thermal**	**Delta Humidity**
Average	6.3	-0.3	0.6	0.0
St. Dev.	0.3	0.7	1.1	0.8
Min	5.8	-1.8	-1.2	-1.6
Max	7.5	3.1	4.5	3.4
Count	220	220	220	220

Date	Feb. 09 2009	Feb. 11 2009	Feb. 24 2009	Mar. 11 2009
Room Temp C	25	24	24	25
RH	25%	39%	25%	30%
Name	Marshall	Marshall	Marshall	Lomax
mOhm values	**Actual Initial**	**Delta 250 Cycles**	**Delta Thermal**	**Delta Humidity**
Average	6.3	-0.5	0.7	0.7
St. Dev.	0.3	0.6	1.3	2.3
Min	5.6	-2.0	-1.3	-1.6
Max	8.0	2.8	4.8	24.4
Count	220	220	220	219

DATA

LLCR:

	mOhm values	Actual	Delta	Delta	Delta
Board	Position	Initial	100 Cycles	Thermal	Humidity
1	P1	7.2	2.6	4.5	1.6
1	P2	6.0	-0.4	-0.1	-0.1
1	P3	6.1	-0.3	1.0	0.8
1	P4	6.2	-0.6	0.2	0.3
1	P5	6.3	-0.2	3.8	1.5
1	P9	6.4	2.3	3.2	1.5
1	P10	6.2	-0.3	0.3	-0.1
1	P11	6.4	-0.5	0.1	-0.4
1	P12	6.1	-0.4	0.2	-0.1
1	P13	6.5	-0.7	0.2	-0.6
1	P14	6.3	-0.3	0.0	-0.4
1	P15	6.5	-0.6	-0.2	-0.8
1	P16	6.7	-0.7	-0.4	-0.9
1	P17	6.3	-0.4	0.2	-0.5
1	P18	6.5	2.0	1.4	0.9
1	P19	6.4	2.1	2.8	2.1
1	P20	6.5	2.2	2.7	2.3
1	P21	6.3	2.0	2.1	2.4
1	P22	6.3	-0.7	-0.5	0.0
1	P23	6.8	-1.1	-0.9	-0.5
1	P24	6.6	-0.9	-0.5	0.4
1	P25	6.3	2.5	2.8	2.5
2	P1	6.2	-0.6	-0.2	0.0
2	P2	6.2	-0.4	-0.1	0.0
2	P3	6.8	-0.6	-0.7	0.0
2	P4	6.0	-0.3	0.2	0.3
2	P5	6.1	0.0	0.4	0.4
2	P9	6.3	3.1	2.2	2.7
2	P10	6.2	-0.1	2.2	-0.1
2	P11	6.3	2.8	3.8	2.5
2	P12	6.4	0.5	0.3	-0.4
2	P13	6.3	1.0	1.1	0.0
2	P14	6.4	-0.3	1.1	-0.5
2	P15	6.3	-0.1	0.8	-0.5
2	P16	7.1	-0.2	1.5	-1.2
2	P17	6.3	-0.1	1.6	-0.4
2	P18	6.2	-0.1	1.4	-0.3
2	P19	6.0	-0.2	1.5	-0.1
2	P20	6.6	-0.7	1.2	-0.6
2	P21	6.0	-0.3	0.3	0.7
2	P22	6.2	-0.2	0.8	1.8
2	P23	6.1	-0.3	1.0	0.4

2	P24	5.9	0.3	0.2	1.3
2	P25	6.1	-0.1	3.4	-0.3
3	P1	5.8	-0.2	0.5	0.0
3	P2	5.8	-0.3	4.4	1.3
3	P3	5.9	-0.5	4.4	0.7
3	P4	5.9	-0.3	1.6	-0.1
3	P5	5.9	-0.3	1.3	0.0
3	P9	6.0	-0.2	0.3	-0.2
3	P10	5.8	0.0	1.4	-0.1
3	P11	6.1	-0.2	0.9	-0.3
3	P12	6.0	-0.1	0.8	-0.3
3	P13	6.3	-0.3	0.1	-0.5
3	P14	6.2	-0.2	0.5	-0.1
3	P15	5.9	0.0	0.6	-0.1
3	P16	6.0	-0.2	0.3	-0.1
3	P17	6.1	-0.2	0.5	0.0
3	P18	6.0	-0.1	1.3	0.3
3	P19	6.0	-0.2	0.6	0.1
3	P20	6.1	-0.3	0.5	-0.1
3	P21	6.0	-0.4	1.2	1.2
3	P22	5.9	-0.4	0.6	1.7
3	P23	6.0	-0.4	0.9	2.3
3	P24	6.1	-0.5	0.1	2.3
3	P25	5.9	-0.2	2.2	0.3
4	P1	6.2	-0.1	1.8	0.0
4	P2	6.6	-0.2	4.2	-0.3
4	P3	6.3	-0.5	3.0	-0.1
4	P4	6.5	-0.1	3.0	-0.4
4	P5	6.5	-0.5	0.8	-0.6
4	P9	6.3	-0.4	1.2	1.1
4	P10	7.3	-1.4	-0.4	-0.7
4	P11	6.5	-0.2	0.5	-0.1
4	P12	6.7	-0.6	-0.1	-0.7
4	P13	6.4	-0.4	-0.2	-0.6
4	P14	6.3	0.0	0.4	-0.1
4	P15	6.3	-0.2	-0.1	-0.5
4	P16	6.1	-0.3	0.3	-0.1
4	P17	6.1	-0.5	0.0	-0.4
4	P18	7.0	-1.1	-0.2	-0.7
4	P19	6.4	-0.9	-0.4	-0.3
4	P20	6.5	-0.9	-0.4	-0.3
4	P21	6.4	-0.8	0.4	0.0
4	P22	6.5	-0.8	0.6	0.3
4	P23	5.8	-0.1	0.3	0.8
4	P24	6.1	-0.3	0.0	-0.1
4	P25	6.3	-0.6	0.0	3.4
5	P1	5.9	-0.3	3.0	0.1
5	P2	6.1	-0.1	1.5	0.5
5	P3	6.0	0.1	1.2	0.7

5	P4	6.0	0.0	2.1	0.8
5	P5	5.9	-0.1	3.9	0.4
5	P9	6.3	-0.2	1.2	-0.4
5	P10	7.1	-0.5	0.6	-1.2
5	P11	6.5	0.0	2.2	-0.7
5	P12	6.4	-0.1	0.3	-0.7
5	P13	6.3	-0.1	0.5	-0.4
5	P14	6.4	-0.2	-0.1	-0.5
5	P15	6.5	-0.1	-0.2	-0.6
5	P16	6.3	0.1	0.1	-0.5
5	P17	6.4	-0.2	-0.2	-0.5
5	P18	6.6	0.2	0.1	-0.2
5	P19	6.8	0.1	-0.3	-0.2
5	P20	6.5	-0.1	-0.3	-0.2
5	P21	6.6	-0.5	0.9	0.9
5	P22	6.4	-0.4	0.2	0.9
5	P23	6.8	0.4	0.4	0.6
5	P24	6.6	-0.3	0.6	1.3
5	P25	5.9	0.0	-0.1	0.1
6	P1	6.2	-0.4	0.9	-0.4
6	P2	6.5	0.0	0.8	-0.5
6	P3	6.6	-0.8	0.3	-0.7
6	P4	6.5	-0.5	0.6	-0.6
6	P5	7.2	-1.2	-0.8	-1.5
6	P9	6.3	-0.9	0.2	-0.3
6	P10	6.3	-0.8	0.7	-0.4
6	P11	7.2	-1.8	-0.8	-1.3
6	P12	6.6	-1.0	-0.2	-0.7
6	P13	6.6	-1.3	-0.5	-0.9
6	P14	6.5	-1.0	-0.6	-0.6
6	P15	6.8	-1.4	-1.1	-1.1
6	P16	6.2	-0.8	-0.7	-0.7
6	P17	6.6	-1.2	-0.7	-0.7
6	P18	6.5	-0.7	0.6	0.7
6	P19	6.6	-1.0	0.9	2.4
6	P20	5.9	-0.5	0.8	1.4
6	P21	6.8	-1.0	-0.4	-0.6
6	P22	6.2	-0.4	0.0	-0.1
6	P23	6.5	-0.7	-0.2	-0.2
6	P24	6.6	-0.7	-0.3	-0.6
6	P25	5.9	-0.4	0.3	0.4
7	P1	6.3	-0.5	0.6	-0.5
7	P2	5.9	-0.3	2.2	0.1
7	P3	6.2	-0.3	2.1	-0.1
7	P4	6.0	-0.3	2.9	0.2
7	P5	6.3	-0.4	0.6	-0.4
7	P9	6.3	-0.3	3.1	2.0
7	P10	6.0	-0.5	1.1	1.2
7	P11	6.2	-0.6	1.3	0.1

7	P12	6.0	-0.3	0.6	0.2
7	P13	6.0	-0.1	0.1	-0.2
7	P14	6.0	-0.2	1.0	0.1
7	P15	6.0	-0.5	0.2	-0.4
7	P16	6.0	-0.4	0.7	-0.2
7	P17	6.0	-0.4	0.4	-0.3
7	P18	6.2	-0.4	2.1	0.4
7	P19	6.1	-0.4	2.9	0.3
7	P20	6.1	-0.3	1.3	0.5
7	P21	6.0	-0.1	2.5	0.1
7	P22	6.4	-0.2	0.9	-0.2
7	P23	5.9	0.0	1.3	0.0
7	P24	6.2	-0.1	0.5	-0.1
7	P25	6.0	-0.4	0.7	0.4
8	P1	6.3	-0.6	1.1	0.0
8	P2	6.7	-0.6	1.4	1.3
8	P3	6.7	-1.0	-0.2	-0.4
8	P4	6.6	-0.9	0.4	-0.1
8	P5	6.2	-0.6	0.0	-0.2
8	P9	6.5	-0.4	0.9	-0.2
8	P10	6.4	-0.6	0.0	-0.4
8	P11	6.2	-0.2	0.5	-0.2
8	P12	6.3	-0.3	0.3	-0.4
8	P13	6.4	-0.3	-0.1	-0.7
8	P14	7.3	-1.3	-1.2	-1.6
8	P15	6.3	-0.4	-0.1	-0.6
8	P16	6.8	-0.9	-0.4	-1.2
8	P17	6.4	-0.5	0.1	-0.7
8	P18	7.2	-1.1	-1.1	-1.3
8	P19	6.8	-0.8	-0.6	-0.9
8	P20	6.4	-0.5	-0.4	-0.4
8	P21	6.3	-0.4	-0.4	0.0
8	P22	6.6	-0.6	-0.5	-0.4
8	P23	6.3	-0.2	-0.2	0.4
8	P24	6.9	-0.9	-0.9	-0.8
8	P25	6.5	-0.2	-0.5	-0.6
9	P1	6.2	0.0	0.6	-0.2
9	P2	6.9	-1.1	3.2	1.2
9	P3	7.5	-1.4	-1.0	-1.2
9	P4	7.5	-1.6	-0.8	-0.7
9	P5	6.7	-0.7	-0.6	-0.6
9	P9	6.4	-0.8	-0.5	0.2
9	P10	6.6	-1.2	-0.3	0.8
9	P11	6.0	-0.4	0.1	0.3
9	P12	6.5	-1.0	-0.4	0.0
9	P13	6.4	-0.9	0.0	-0.1
9	P14	6.3	-0.7	0.0	-0.5
9	P15	6.4	-0.6	0.0	-0.5
9	P16	6.2	-0.6	-0.2	-0.3

9	P17	6.4	-0.6	-0.3	-0.3
9	P18	6.5	-0.8	0.3	0.3
9	P19	6.2	-0.4	0.4	2.5
9	P20	6.3	-0.6	0.5	0.0
9	P21	7.5	-1.2	-0.6	-0.4
9	P22	7.1	-1.1	-0.4	-0.1
9	P23	6.6	-0.5	0.0	-0.2
9	P24	6.6	-0.6	-0.2	-0.3
9	P25	6.2	-0.4	0.4	-0.1
10	P1	6.6	-0.7	-0.1	-0.4
10	P2	6.5	1.2	0.3	-0.3
10	P3	6.6	-0.4	0.4	-0.4
10	P4	6.3	0.2	0.1	-0.4
10	P5	6.4	-0.5	-0.2	-0.6
10	P9	6.2	-0.5	0.6	0.7
10	P10	6.1	-0.1	-0.2	-0.2
10	P11	6.2	-0.3	0.1	0.1
10	P12	6.0	0.1	-0.1	-0.2
10	P13	6.2	0.1	-0.4	-0.7
10	P14	6.1	-0.2	-0.2	-0.5
10	P15	6.3	-0.3	-0.6	-0.8
10	P16	6.2	-0.3	-0.4	-0.6
10	P17	6.2	-0.2	-0.4	-0.4
10	P18	6.0	-0.2	0.2	0.3
10	P19	6.1	-0.3	0.6	0.7
10	P20	6.2	-0.7	0.0	-0.1
10	P21	6.5	-0.5	0.1	-0.4
10	P22	6.3	-0.2	0.2	0.0
10	P23	6.8	-0.3	-0.4	-0.8
10	P24	6.2	-0.1	0.2	-0.3
10	P25	6.0	-0.2	1.1	0.9

	mOhm values	**Actual**	**Delta**	**Delta**	**Delta**
Board	**Position**	**Initial**	**250 Cycles**	**Thermal**	**Humidity**
1	P1	5.8	2.3	3.2	2.6
1	P2	6.0	0.0	0.8	4.3
1	P3	5.9	0.1	0.7	2.7
1	P4	6.4	-0.3	0.1	2.7
1	P5	6.4	-0.4	0.2	0.1
1	P9	6.2	-0.4	0.9	3.0
1	P10	6.2	-0.3	1.9	1.8
1	P11	6.4	-0.5	0.4	1.1
1	P12	6.6	-0.5	0.1	0.2
1	P13	6.1	-0.5	-0.1	0.3
1	P14	6.1	2.6	2.7	2.7
1	P15	6.3	-0.2	0.0	0.1
1	P16	6.1	-0.6	-0.4	-0.1
1	P17	6.2	2.7	2.8	3.3
1	P18	6.5	-0.9	-0.3	0.4

1	P19	6.6	-0.6	-0.3	0.6
1	P20	6.4	-0.2	0.0	0.4
1	P21	6.1	2.8	3.4	3.6
1	P22	6.1	2.4	3.0	3.1
1	P23	6.1	2.7	3.4	3.2
1	P24	6.1	2.3	3.3	2.9
1	P25	6.0	-0.1	0.3	1.5
2	P1	6.2	-0.8	-0.2	-0.5
2	P2	6.3	-0.3	0.7	-0.3
2	P3	6.1	-0.2	0.5	0.0
2	P4	6.2	-0.5	0.3	-0.2
2	P5	6.9	-0.9	-0.4	-0.9
2	P9	6.9	-1.4	-0.9	-1.2
2	P10	8.0	-2.0	-1.2	-1.6
2	P11	6.5	-0.9	0.7	-0.2
2	P12	6.5	-0.5	0.9	0.7
2	P13	6.3	-0.6	0.9	0.3
2	P14	6.9	-1.3	0.9	-0.5
2	P15	7.7	-1.9	-0.5	-1.5
2	P16	6.3	-0.7	0.3	-0.4
2	P17	6.8	-1.0	0.2	-0.6
2	P18	6.9	-0.6	-0.1	-0.7
2	P19	6.8	-0.5	4.1	1.4
2	P20	6.9	-0.9	1.2	1.4
2	P21	6.8	-0.7	-0.6	-0.5
2	P22	6.7	-0.6	-0.6	-0.7
2	P23	6.6	-0.4	-0.5	-0.5
2	P24	7.0	-0.5	-1.1	-1.1
2	P25	6.6	-0.8	0.0	1.5
3	P1	5.7	-0.4	0.5	-0.1
3	P2	6.2	-0.7	0.7	-0.5
3	P3	6.0	-0.4	0.6	-0.2
3	P4	6.0	-0.4	0.6	-0.4
3	P5	6.2	-0.4	1.2	-0.3
3	P9	6.0	-0.1	0.9	0.2
3	P10	6.2	-0.6	0.8	-0.1
3	P11	6.2	-0.4	1.0	0.0
3	P12	5.9	-0.3	1.2	0.6
3	P13	5.9	-0.2	0.5	0.3
3	P14	6.3	-0.6	0.5	-0.2
3	P15	6.2	-0.3	0.7	-0.1
3	P16	6.0	0.1	0.6	-0.1
3	P17	6.1	-0.1	0.7	0.3
3	P18	6.1	-0.4	1.9	0.9
3	P19	6.5	-0.8	3.3	1.5
3	P20	6.1	-0.3	2.8	0.9
3	P21	5.9	-0.3	0.3	0.0
3	P22	6.1	-0.5	-0.1	-0.1
3	P23	5.9	-0.3	0.2	0.2

3	P24	6.4	-0.4	-0.1	-0.4
3	P25	6.1	-0.6	2.2	-0.2
4	P1	5.6	-0.5	1.3	0.4
4	P2	6.1	-0.7	4.0	1.1
4	P3	5.8	-0.4	4.8	2.1
4	P4	6.3	-0.6	4.3	1.2
4	P5	6.1	-0.6	1.1	0.2
4	P9	6.2	-0.6	0.2	-0.3
4	P10	6.5	-0.7	0.0	-0.6
4	P11	6.6	-0.9	-0.2	-0.8
4	P12	6.3	-0.7	-0.1	-0.6
4	P13	6.3	-0.5	-0.1	-0.5
4	P14	6.2	-0.4	0.2	-0.4
4	P15	6.2	-0.3	0.4	-0.4
4	P16	6.2	-0.4	0.1	-0.6
4	P17	6.6	-0.3	0.2	-0.8
4	P18	6.5	-0.7	2.1	-0.5
4	P19	6.3	-0.6	0.5	-0.4
4	P20	6.0	-0.3	1.1	-0.1
4	P21	6.4	-1.1	2.3	1.5
4	P22	6.6	-0.7	2.5	1.7
4	P23	6.3	-0.7	2.0	1.3
4	P24	6.3	-1.0	-0.1	2.4
4	P25	6.1	-0.4	0.7	-0.6
5	P1	6.1	-0.6	1.3	1.4
5	P2	6.1	-0.8	1.0	1.0
5	P3	5.9	-0.6	0.9	0.6
5	P4	6.3	-1.0	0.5	0.3
5	P5	6.4	-1.1	0.3	0.2
5	P9	6.2	-0.6	-0.5	-0.5
5	P10	6.1	-0.5	-0.3	-0.3
5	P11	6.6	-0.9	-0.9	-0.9
5	P12	6.2	-0.5	-0.5	-0.6
5	P13	6.3	-0.6	-0.5	-0.5
5	P14	6.5	-0.7	-0.5	-0.4
5	P15	6.5	-0.7	-0.8	-0.7
5	P16	6.3	-0.6	-0.7	-0.7
5	P17	6.8	-0.8	-0.9	-0.9
5	P18	6.1	-0.3	0.0	0.0
5	P19	6.9	-0.6	-0.6	-0.6
5	P20	6.3	-0.2	-0.3	-0.3
5	P21	6.7	-1.1	0.5	2.4
5	P22	6.3	-0.9	0.1	1.7
5	P23	6.3	-0.6	0.0	2.2
5	P24	6.0	-0.5	0.1	0.7
5	P25	6.2	-0.5	-0.3	-0.2
6	P1	6.0	-0.5	1.6	0.4
6	P2	7.1	-1.6	3.7	-0.5
6	P3	6.1	-0.4	0.7	0.0

6	P4	6.2	-0.6	0.8	-0.2
6	P5	6.4	-0.8	1.2	-0.4
6	P9	6.2	-0.5	1.3	1.4
6	P10	6.0	-0.3	0.9	0.7
6	P11	6.1	-0.3	0.9	0.7
6	P12	6.3	-0.8	1.3	0.4
6	P13	6.1	-0.5	0.7	0.3
6	P14	6.3	-0.8	0.3	-0.2
6	P15	6.7	-0.9	0.0	-0.3
6	P16	6.3	-0.7	1.7	0.2
6	P17	6.4	-0.6	1.7	0.3
6	P18	6.4	-0.4	2.5	0.9
6	P19	6.0	-0.3	4.7	4.1
6	P20	6.1	-0.2	1.8	1.4
6	P21	6.9	-1.0	-0.3	-1.1
6	P22	7.4	-1.3	-0.5	-1.4
6	P23	6.8	-0.7	0.2	-1.1
6	P24	6.4	-0.5	0.1	-0.7
6	P25	6.2	-0.2	3.5	2.0
7	P1	6.0	-0.9	0.8	3.4
7	P2	5.9	-0.7	3.9	7.6
7	P3	6.2	-0.9	2.4	3.7
7	P4	6.0	-0.7	1.4	4.5
7	P5	6.4	-1.0	1.6	1.1
7	P9	6.4	-1.1	4.1	3.0
7	P10	6.8	-1.2	2.9	2.7
7	P11	6.1	-0.7	0.7	0.7
7	P12	6.2	-0.7	3.9	2.6
7	P13	6.3	-0.7	3.5	0.9
7	P14	6.3	-0.7	1.1	0.1
7	P15	6.1	-0.5	1.6	0.0
7	P16	6.2	-0.9	0.2	-0.4
7	P17	6.1	-0.5	1.0	-0.1
7	P18	6.2	-0.7	0.1	2.5
7	P19	6.2	-0.7	1.2	2.9
7	P20	6.1	-0.6	-0.2	2.9
7	P21	6.3	-0.7	1.3	5.0
7	P22	6.2	-0.6	2.9	24.4
7	P23	7.1	-1.3	0.1	0.3
7	P24	6.1	-0.7	0.4	1.9
7	P25	6.2	-0.5	0.0	1.7
8	P1	6.1	-0.6	0.2	-0.2
8	P2	6.0	-0.3	0.3	0.0
8	P3	6.3	-0.7	-0.1	-0.2
8	P4	5.9	-0.2	0.5	0.1
8	P5	6.3	-0.5	0.0	-0.4
8	P9	6.4	-0.5	0.4	1.0
8	P10	6.6	-0.7	0.7	1.1
8	P11	6.9	-1.1	0.6	0.9

8	P12	6.5	-0.7	2.9	11.3
8	P13	6.3	-0.6	1.9	0.5
8	P14	6.4	-0.6	-0.4	-0.6
8	P15	6.4	-0.5	3.5	1.4
8	P16	6.4	-0.8	-0.1	-0.3
8	P17	6.5	-0.8	-0.3	-0.3
8	P18	6.4	-0.7	3.2	2.1
8	P19	6.4	-0.8	2.9	1.8
8	P20	6.2	-0.7	2.5	1.9
8	P21	6.1	-0.3	-0.1	0.0
8	P22	6.2	-0.4	-0.2	0.0
8	P23	5.9	-0.1	0.3	0.3
8	P24	6.1	-0.2	0.1	0.1
8	P25	6.4	-0.6	2.6	1.6
9	P1	5.9	0.0	0.3	0.6
9	P2	6.0	-0.6	1.0	1.4
9	P3	6.6	-1.0	0.0	-0.1
9	P4	6.4	-0.9	0.0	-0.1
9	P5	6.2	-0.5	0.9	0.7
9	P9	6.1	-0.4	-0.3	0.0
9	P10	6.2	-0.8	-0.5	-0.5
9	P11	6.1	-0.4	-0.1	-0.1
9	P12	6.1	-0.5	-0.2	-0.2
9	P13	6.1	-0.5	-0.3	-0.4
9	P14	6.2	-0.7	-0.6	-0.7
9	P15	6.1	-0.5	-0.3	-0.4
9	P16	6.1	-0.4	-0.4	-0.4
9	P17	6.1	-0.6	-0.4	-0.5
9	P18	6.2	-0.5	-0.5	-0.4
9	P19	6.1	-0.6	-0.5	-0.4
9	P20	6.0	-0.4	-0.4	-0.3
9	P21	6.3	-0.5	0.4	2.6
9	P22	6.3	-0.8	0.3	2.6
9	P23	6.6	-1.1	-0.5	0.9
9	P24	6.2	-0.6	0.0	1.8
9	P25	6.1	-0.6	-0.5	-0.4
10	P1	6.4	-0.8	-0.5	-0.9
10	P2	6.2	-0.9	-0.2	-0.7
10	P3	6.2	-1.0	-0.3	-0.7
10	P4	6.7	-1.4	-0.3	-1.1
10	P5	6.7	-1.3	-0.6	-1.2
10	P9	6.5	-1.2	-0.6	-0.7
10	P10	6.3	-1.0	-0.1	-0.4
10	P11	6.2	-0.9	-0.1	-0.5
10	P12	6.2	-0.9	0.0	-0.1
10	P13	6.1	-0.9	-0.1	-0.5
10	P14	6.2	-0.2	0.8	0.1
10	P15	6.5	-1.0	1.9	0.6
10	P16	6.2	-0.7	1.0	0.9

10	P17	6.1	-0.7	0.4	-0.4
10	P18	6.4	-0.5	0.5	0.1
10	P19	6.5	-0.9	0.1	0.5
10	P20	6.6	-0.3	-0.3	0.3
10	P21	6.5	-0.6	-0.1	-0.2
10	P22	7.2	-1.3	-1.3	-1.5
10	P23	6.8	-0.9	-0.5	-1.0
10	P24	6.3	-0.4	-0.3	-0.3
10	P25	6.3	-0.7	3.1	11.5

EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: MO-06
Description: Micro-Ohmeter
Manufacturer: Keithley
Model: 580
Serial #: 1110525
Accuracy: See Manual
… Last Cal: 06/17/2008, Next Cal: 06/17/2009

Equipment #: MO-07
Description: Multimeter / Data Acquistion System
Manufacturer: Keithley
Model: 2700
Serial #: 1116559
Accuracy: See Manual
… Last Cal: 6/17/2008, Next Cal: 6/17/2009

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: 5/06/08, Next Cal: 5/06/09

Equipment #: MO-01
Description: Micro-Ohmeter
Manufacturer: Keithley
Model: 580
Serial #: 0772740
Accuracy: See Manual
… Last Cal: 06/17/08, Next Cal: 06/17/09

Equipment #: MO-03
Description: Multimeter /Data Acquisition System
Manufacturer: Keithley
Model: 2700
Serial #: 0791975
Accuracy: See Manual
… Last Cal: 06/17/08, Next Cal: 06/17/09

Equipment #: THC-01
Description: Temperature/Humidity Chamber
Manufacturer: Thermotron
Model: SM-8-7800
Serial #: 30676
Accuracy: See Manual
… Last Cal: 9/21/2008, Next Cal: 9/21/2009

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 Temp. Stability: +/-.1C/C change in ambient … Last Cal: 06/62/08, Next Cal: 06/22/09