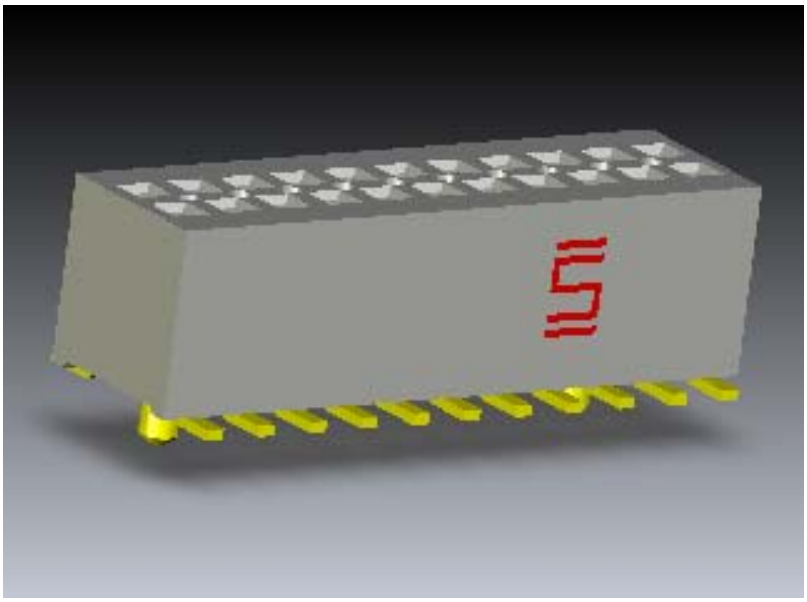
Project Number:	Tracking Code: TC0838-ELP-1942		
Requested by: Neal Patterson	Date: 11/21/2008	Product Rev: na	
Part #: MLE-130-01-H-DV-A / FTMH-130-02-H-DV-A	Lot #: na	Tech: Gary Lomax & Rodney Riley	Eng: Troy Cook
Part description: MLE/FTMH			Qty to test: 60
Test Start: 09/15/2008	Test Completed: 11/14/2008		



PART DESCRIPTION

MLE-130-01-H-DV-A

Mated with FTMH-130-02-H-DV-A

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: Test to Samtec ELP Test Plan of 250, 500 Cycles. 8 samples per group. Plating documentation to be completed prior to testing.

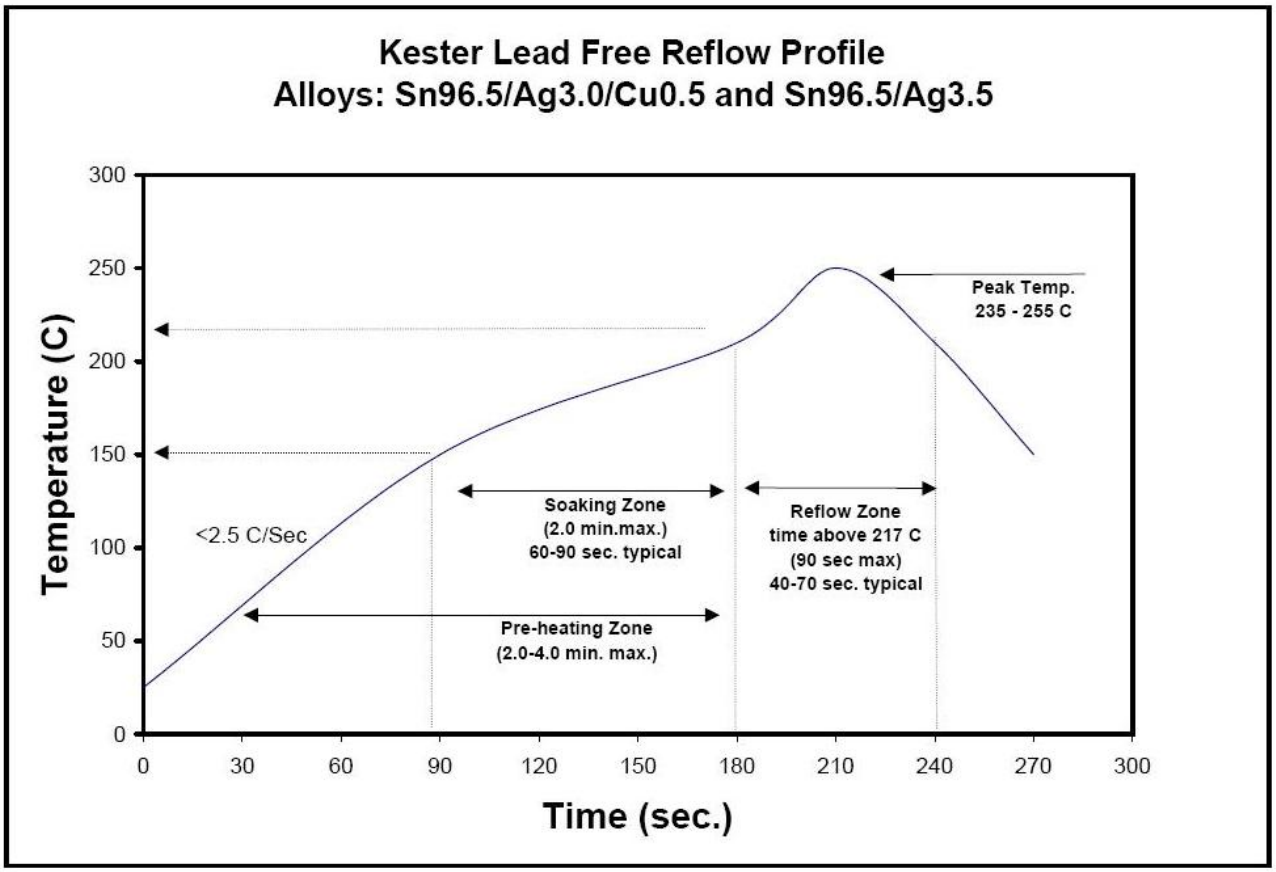
APPLICABLE DOCUMENTS

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-100169-TST-XX

TYPICAL OVEN PROFILE (Soldering Parts to Test Boards)



FLOWCHARTS

Durability

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

FLOWCHARTS Continued

Durability

TEST STEP	GROUP A 200 Points - 8 Samples 500 Cycles
01	LLCR-1
02	500 Cycles
03	LLCR-2
04	Data Review
05	Thermals
06	LLCR-3
07	Data Review
08	Humidity
09	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 (200 LLCR test points)

- **Initial ---------- 13.1 mOhms Max**
- **Durability, 250 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 ---------- 198 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 ---------- 1 Points ---------- Marginal**
  - **+50.1 to +2000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+2000 mOhms ---------- 0 Points ---------- Open Failure**
- **Humidity**
  - **<= +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**

LLCR Durability (200 LLCR test points)

- **Initial ---------- 15.1 mOhms Max**
- **Durability, 500 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 ---------- 199 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 ---------- 0 Points ---------- Marginal**
  - **+50.1 to +2000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+2000 mOhms ---------- 0 Points ---------- Open Failure**
- **Humidity**
  - **<= +5.0 mOhms ---------- 199 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**

***Position #6 of board #6 was removed from data due to debris in the contact area.**

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

mOhm values	Actual Initial	Delta 250 Cycles	Delta Thermal	Delta Humidity
Average	10.3	-0.4	0.5	-0.2
St. Dev.	0.7	0.8	2.1	0.9
Min	9.1	-4.0	-2.5	-3.4
Max	13.1	1.9	25.9	3.5
Count	200	200	200	200

mOhm values	Actual Initial	Delta 500 Cycles	Delta Thermal	Delta Humidity
Average	10.5	-0.4	0.2	-0.3
St. Dev.	0.8	0.9	1.1	1.1
Min	9.2	-4.9	-4.1	-4.3
Max	15.1	3.2	6.0	4.8
Count	200	200	200	199

DATA

LLCR:

	mOhm values	Actual	Delta	Delta	Delta
Board	Position	Initial	250 Cycles	Thermal	Humidity
1	P1	9.7	-0.2	0.4	0.5
1	P2	10.7	-0.5	0.4	-0.1
1	P3	9.9	-0.1	0.4	0.0
1	P4	10.6	-0.2	0.3	0.1
1	P5	11.0	-0.4	1.0	0.2
1	P6	11.4	-0.3	-0.3	1.3
1	P7	10.2	0.1	0.0	-0.2
1	P8	10.3	0.0	0.2	0.1
1	P9	10.7	-0.2	1.1	0.2
1	P10	10.7	-0.4	0.1	0.3
1	P11	11.4	-0.7	1.5	-0.5
1	P12	10.8	0.2	1.1	-0.3
1	P13	10.7	0.1	0.2	-0.3
1	P14	11.3	-0.6	0.8	-0.2
1	P15	12.0	-0.6	0.4	-0.8
1	P16	11.6	-0.8	0.2	0.1
1	P17	10.7	0.3	0.6	-0.2
1	P18	12.2	-1.2	-0.4	-0.9
1	P19	11.5	-0.5	0.3	-0.5
1	P20	10.6	1.1	1.3	1.1
1	P21	10.3	-0.4	0.1	-0.3
1	P22	10.4	-0.4	1.2	0.4
1	P23	12.2	-1.7	-0.5	-0.1
1	P24	11.4	-1.0	-0.8	-0.6
1	P25	10.6	-0.9	4.3	3.5
2	P1	9.1	0.3	0.4	0.1
2	P2	9.6	0.3	0.4	0.1
2	P3	10.0	0.6	0.1	-0.1
2	P4	10.0	-0.4	-0.2	-0.6
2	P5	9.6	-0.1	0.4	-0.1
2	P6	10.1	0.1	0.3	0.3
2	P7	9.7	1.1	0.9	1.9
2	P8	9.7	0.1	0.1	0.0
2	P9	9.7	0.6	1.3	0.1
2	P10	9.6	0.1	0.5	-0.1
2	P11	9.8	0.3	0.6	0.0
2	P12	9.7	0.0	0.4	-0.4
2	P13	9.7	0.1	0.6	-0.2
2	P14	9.8	0.9	2.8	0.1
2	P15	9.9	-0.1	0.7	-0.4
2	P16	11.1	-0.7	-0.1	0.7
2	P17	10.7	-0.8	0.3	0.7

2	P18	9.7	0.7	0.9	0.4
2	P19	10.2	-0.5	-0.2	1.1
2	P20	10.1	-0.8	-0.6	-0.6
2	P21	10.2	-0.5	0.2	-0.3
2	P22	10.7	-1.1	-0.1	-0.1
2	P23	10.1	-0.5	0.3	0.2
2	P24	10.0	-0.5	-0.1	-0.4
2	P25	10.1	-0.5	0.0	2.3
3	P1	12.7	-1.0	-1.1	0.0
3	P2	9.6	0.1	1.1	1.1
3	P3	12.1	-2.2	0.8	-1.7
3	P4	9.9	-0.4	1.7	-0.3
3	P5	10.8	-0.7	3.4	0.2
3	P6	11.1	-0.4	-0.2	0.5
3	P7	10.6	0.4	-0.5	-0.5
3	P8	10.5	-1.0	0.1	-0.6
3	P9	9.8	-0.1	0.1	-0.2
3	P10	9.4	-0.1	0.3	-0.1
3	P11	10.3	-0.4	-0.2	-0.5
3	P12	10.0	-0.4	0.2	-0.3
3	P13	10.3	-0.6	0.5	-0.7
3	P14	9.9	0.0	0.5	-0.7
3	P15	10.4	-0.3	-0.3	-0.9
3	P16	10.4	-0.3	1.7	-0.5
3	P17	10.4	-0.2	3.8	0.3
3	P18	9.9	-0.5	0.6	-0.6
3	P19	10.4	-0.9	0.9	0.1
3	P20	10.2	-0.5	0.0	0.3
3	P21	10.9	-1.2	0.8	-1.4
3	P22	10.5	-1.1	0.7	-1.1
3	P23	9.9	-0.7	0.0	-0.4
3	P24	10.5	-1.2	0.3	-0.2
3	P25	9.7	-0.3	0.4	0.5
4	P1	9.3	0.4	0.3	0.2
4	P2	9.8	0.5	0.3	0.1
4	P3	9.6	0.0	0.6	-0.2
4	P4	9.7	-0.1	1.0	-0.2
4	P5	9.9	0.0	1.0	-0.4
4	P6	9.5	0.1	0.3	0.4
4	P7	9.5	0.1	-0.1	0.0
4	P8	9.7	-0.2	-0.2	0.8
4	P9	9.4	0.0	0.1	-0.3
4	P10	9.5	0.6	1.0	0.2
4	P11	9.8	0.3	2.9	0.6
4	P12	10.2	-0.2	0.9	-0.3
4	P13	9.7	0.3	25.9	1.8
4	P14	9.5	0.2	1.0	-0.2
4	P15	10.1	0.2	1.2	0.1
4	P16	9.4	0.5	1.2	1.0

4	P17	9.3	0.7	0.6	0.0
4	P18	9.3	0.6	0.6	0.5
4	P19	10.5	-1.2	-0.6	3.1
4	P20	9.2	0.2	0.1	0.2
4	P21	9.6	-0.4	0.3	0.5
4	P22	9.5	0.0	0.2	0.1
4	P23	9.8	0.2	0.1	-0.1
4	P24	9.5	0.6	0.6	0.9
4	P25	9.3	0.2	0.3	0.5
5	P1	12.3	1.9	-2.2	-2.0
5	P2	9.9	0.0	-0.3	0.0
5	P3	10.1	0.0	0.2	-0.8
5	P4	10.8	-0.8	-0.1	-0.9
5	P5	10.1	-0.5	0.3	-0.9
5	P6	10.0	0.8	0.5	0.5
5	P7	9.7	0.1	0.4	-0.6
5	P8	10.2	-0.3	0.7	-0.9
5	P9	9.9	-0.5	5.1	-0.2
5	P10	10.0	0.0	0.4	-0.5
5	P11	10.4	0.0	0.3	-0.6
5	P12	9.9	0.0	0.7	-0.9
5	P13	9.9	-0.1	1.7	-0.5
5	P14	10.0	0.0	2.3	-0.8
5	P15	9.8	-0.1	1.6	-0.4
5	P16	10.2	0.4	3.3	0.1
5	P17	10.5	0.0	1.1	1.0
5	P18	9.7	0.1	0.5	0.3
5	P19	10.1	0.1	2.1	0.3
5	P20	10.0	0.3	0.2	0.5
5	P21	10.0	-0.1	0.4	-0.3
5	P22	11.0	-0.3	-0.5	-0.6
5	P23	10.1	-0.2	1.0	-0.3
5	P24	9.8	-0.3	-0.1	-0.1
5	P25	10.1	-0.3	-0.2	-0.1
6	P1	10.9	-1.0	0.5	1.2
6	P2	9.9	-0.1	0.1	1.0
6	P3	9.4	-0.1	1.4	0.7
6	P4	9.9	-0.6	1.4	0.3
6	P5	10.6	-1.0	0.6	-0.9
6	P6	9.7	-0.4	0.0	0.1
6	P7	10.3	-0.6	-0.2	-0.1
6	P8	9.9	-0.5	-0.1	-0.7
6	P9	9.7	-0.3	0.0	-0.5
6	P10	10.5	-0.5	-0.3	-1.1
6	P11	9.8	-0.1	0.4	-0.7
6	P12	9.8	0.3	0.1	-0.5
6	P13	10.3	0.1	0.0	-0.4
6	P14	9.8	0.1	-0.1	-0.6
6	P15	9.5	0.2	0.8	0.0

6	P16	10.0	-0.1	0.5	-0.2
6	P17	9.9	0.5	1.4	0.1
6	P18	10.3	-0.1	0.0	0.0
6	P19	9.8	0.7	1.1	0.5
6	P20	9.9	0.3	1.0	0.6
6	P21	10.1	-0.1	0.9	0.7
6	P22	9.6	-0.4	0.2	-0.1
6	P23	10.2	-0.4	-0.1	-0.4
6	P24	9.7	0.0	0.9	-0.5
6	P25	9.3	0.9	0.5	1.1
7	P1	10.1	-1.0	-0.5	-0.7
7	P2	10.3	-1.1	-0.7	-1.2
7	P3	11.0	-1.9	-0.9	-1.3
7	P4	10.6	-1.5	-0.6	-1.4
7	P5	11.4	-2.3	-1.1	-2.1
7	P6	11.0	-1.7	-1.5	-2.0
7	P7	10.9	-1.7	-1.1	-1.1
7	P8	12.1	-2.5	-0.5	-2.6
7	P9	12.3	-2.9	-1.8	-3.0
7	P10	10.7	-1.5	-0.7	-1.7
7	P11	11.0	-1.7	0.2	-1.1
7	P12	13.1	-4.0	-2.5	-3.4
7	P13	10.6	-1.3	-0.4	-1.3
7	P14	11.1	-1.6	-0.3	-1.3
7	P15	9.8	0.6	0.9	0.2
7	P16	10.2	-0.5	0.9	-0.6
7	P17	10.5	0.2	0.7	-0.5
7	P18	12.0	-1.3	-0.5	-0.9
7	P19	11.3	0.1	-0.4	-0.6
7	P20	9.8	0.4	0.3	0.0
7	P21	11.1	-1.3	0.4	0.6
7	P22	10.1	-0.6	0.1	0.2
7	P23	10.8	-1.5	-1.4	-1.4
7	P24	11.9	-2.6	-1.3	-1.8
7	P25	10.4	-0.2	0.1	0.6
8	P1	10.4	-0.9	1.7	1.0
8	P2	10.3	-1.2	0.6	-0.7
8	P3	12.1	-2.7	-1.7	-1.3
8	P4	9.9	-0.8	0.5	0.3
8	P5	10.8	-1.6	-0.6	-0.9
8	P6	10.6	-0.8	0.9	0.4
8	P7	10.7	-1.4	-0.7	-0.7
8	P8	10.6	-1.1	-0.8	0.1
8	P9	11.8	-2.2	-1.9	-0.5
8	P10	10.2	-0.9	-0.1	-0.5
8	P11	10.7	-1.1	0.3	-0.8
8	P12	10.0	-0.7	0.2	-0.2
8	P13	10.6	-0.9	-0.4	-0.1
8	P14	10.4	-0.1	-0.8	-0.5

8	P15	10.7	-1.0	-0.7	-1.1
8	P16	10.4	-0.1	1.1	0.2
8	P17	11.5	-1.7	-0.1	-1.7
8	P18	10.3	0.0	0.2	0.8
8	P19	10.7	-0.5	0.1	-0.3
8	P20	11.0	-1.5	-0.1	-1.3
8	P21	9.6	-0.3	0.7	-0.2
8	P22	10.4	-0.7	1.2	-0.2
8	P23	10.8	-1.1	-0.5	-0.1
8	P24	9.5	-0.3	0.3	0.2
8	P25	10.3	-1.0	-0.1	-0.4

	mOhm values	Actual	Delta	Delta	Delta
Board	**Position**	**Initial**	**500 Cycles**	**Thermal**	**Humidity**
1	P1	9.8	-0.2	0.0	-0.1
1	P2	9.2	0.1	0.7	0.3
1	P3	9.8	-0.3	0.2	0.6
1	P4	10.0	-0.4	0.0	0.2
1	P5	9.4	0.2	1.1	1.2
1	P6	9.6	-0.4	-0.3	-0.5
1	P7	12.0	-2.8	-2.0	-2.7
1	P8	10.4	-1.1	-0.5	-1.3
1	P9	9.8	-0.5	0.1	-0.7
1	P10	10.4	-0.1	0.1	-0.8
1	P11	9.5	-0.2	0.4	-0.8
1	P12	9.3	0.0	0.4	-0.4
1	P13	10.2	-0.4	0.5	-1.0
1	P14	9.5	-0.3	0.5	-0.2
1	P15	9.7	-0.6	0.4	-0.7
1	P16	9.7	0.3	0.2	-0.3
1	P17	9.4	0.3	2.1	0.0
1	P18	10.1	-0.7	0.9	-0.6
1	P19	12.1	-1.4	-1.6	-1.9
1	P20	11.3	-1.3	-0.7	-0.9
1	P21	10.4	-0.5	0.2	-0.3
1	P22	9.7	-0.1	0.9	-0.2
1	P23	9.6	-0.1	0.7	0.5
1	P24	9.9	0.2	0.9	0.7
1	P25	9.5	-0.6	-0.4	1.3
2	P1	9.8	-0.2	0.3	0.6
2	P2	10.8	-0.6	-0.1	-0.2
2	P3	10.4	-0.4	0.1	0.1
2	P4	10.3	-0.2	0.0	-0.1
2	P5	10.1	0.0	0.4	0.1
2	P6	10.7	-1.3	-0.9	-0.9
2	P7	10.2	-0.4	0.3	0.5
2	P8	10.2	-0.2	0.2	0.1
2	P9	10.5	-0.5	0.5	-0.3
2	P10	10.5	-0.4	0.5	4.2

2	P11	9.9	0.1	0.7	-0.1
2	P12	10.2	0.3	0.8	4.8
2	P13	10.0	0.4	2.4	1.3
2	P14	10.6	0.7	1.6	-0.4
2	P15	10.8	-0.1	0.6	-1.1
2	P16	10.4	0.1	3.0	-0.9
2	P17	10.6	0.2	2.1	-0.3
2	P18	10.4	-0.1	1.0	0.0
2	P19	10.4	0.1	0.6	-0.1
2	P20	10.1	-0.2	0.1	-0.1
2	P21	9.9	-0.2	0.0	0.0
2	P22	11.0	-1.4	-1.0	-0.4
2	P23	10.2	0.3	0.4	-0.3
2	P24	10.1	-0.2	0.1	-0.1
2	P25	9.6	-0.1	0.0	0.0
3	P1	12.2	-2.2	-1.6	-1.5
3	P2	9.8	-0.2	0.3	-0.3
3	P3	11.7	-0.8	-0.9	-1.6
3	P4	9.8	0.3	0.7	0.1
3	P5	10.7	-0.5	0.0	-0.9
3	P6	9.8	-0.6	-0.4	-0.2
3	P7	10.7	-0.8	0.0	0.0
3	P8	9.9	-0.5	-0.1	-0.2
3	P9	10.0	-0.6	0.0	-0.3
3	P10	10.2	-0.7	0.2	-0.9
3	P11	10.0	-0.2	-0.4	-0.9
3	P12	9.6	-0.3	0.1	-0.5
3	P13	10.4	-0.5	0.0	-1.1
3	P14	11.8	-0.6	-0.9	-2.4
3	P15	9.8	0.3	0.7	-0.4
3	P16	10.1	0.4	0.4	-0.5
3	P17	11.6	-0.5	1.4	-0.2
3	P18	9.9	0.0	0.6	-0.1
3	P19	9.5	0.6	1.0	0.5
3	P20	9.9	0.8	1.1	0.9
3	P21	10.1	-0.6	1.2	1.4
3	P22	12.2	-2.2	-0.9	-1.6
3	P23	9.9	-0.7	-0.3	-0.7
3	P24	10.5	-0.6	0.3	-0.3
3	P25	10.0	-0.9	-0.2	-0.7
4	P1	10.3	-0.7	-0.1	1.1
4	P2	10.1	-0.1	-0.3	0.0
4	P3	14.7	-4.1	-4.1	-3.2
4	P4	11.1	-0.3	-0.4	-0.3
4	P5	15.1	-4.9	-3.1	-4.3
4	P6	10.6	-0.7	-0.6	0.3
4	P7	10.6	-0.8	-0.5	-0.6
4	P8	11.1	-0.8	-0.4	-0.6
4	P9	10.6	0.0	-0.6	-0.6

4	P10	10.5	-0.6	0.0	0.4
4	P11	11.0	-1.1	-0.8	-0.8
4	P12	10.5	-0.1	2.5	0.2
4	P13	10.4	-0.4	0.4	-0.3
4	P14	10.2	-0.2	0.2	0.1
4	P15	10.3	0.2	1.6	0.1
4	P16	10.2	0.1	0.6	0.0
4	P17	10.4	-0.3	0.7	-0.1
4	P18	10.3	-0.2	0.1	-0.2
4	P19	10.2	-0.3	0.1	-0.1
4	P20	10.1	-0.4	-0.3	-0.3
4	P21	10.5	-0.2	-0.4	-0.4
4	P22	10.3	0.0	0.2	-0.1
4	P23	10.4	-0.2	1.3	1.3
4	P24	10.2	0.0	0.7	0.7
4	P25	10.2	0.7	0.3	0.4
5	P1	10.5	-1.0	-0.7	0.3
5	P2	10.5	-1.0	-0.3	1.0
5	P3	10.2	-0.3	-0.1	1.3
5	P4	12.4	-2.4	-2.6	-0.7
5	P5	10.0	-0.3	-0.1	0.9
5	P6	10.5	-0.7	-0.3	-0.4
5	P7	11.2	-1.2	-1.2	-0.8
5	P8	9.9	-0.2	0.1	-0.2
5	P9	10.1	-0.4	-0.3	-0.3
5	P10	12.4	-2.1	-1.8	-2.7
5	P11	10.4	0.5	0.1	-0.4
5	P12	10.5	-0.2	-0.1	-0.9
5	P13	11.6	-1.6	-1.1	-2.1
5	P14	9.9	0.4	1.5	-0.6
5	P15	10.3	0.3	0.4	-0.7
5	P16	9.9	1.7	2.3	0.3
5	P17	10.1	0.6	1.9	0.3
5	P18	10.2	0.7	2.1	0.6
5	P19	10.1	0.7	1.0	0.4
5	P20	10.7	0.3	0.3	-0.4
5	P21	9.9	-1.0	0.1	-0.4
5	P22	9.5	-0.7	0.5	0.5
5	P23	9.7	-0.8	-0.1	-0.4
5	P24	10.1	-0.7	-0.5	-0.1
5	P25	9.3	-0.2	0.2	-0.3
6	P1	9.9	-0.1	0.3	2.9
6	P2	9.8	0.6	0.8	1.3
6	P3	10.0	0.2	0.1	0.0
6	P4	9.9	-0.2	-0.2	-0.3
6	P5	10.7	-0.7	0.1	-0.5
6	P6	10.2	-0.7	-0.7	o
6	P7	10.2	0.3	0.2	0.4
6	P8	10.2	-0.6	-0.5	-0.5

6	P9	10.0	0.1	0.6	0.3
6	P10	11.3	-0.8	-0.8	-0.6
6	P11	10.4	0.9	0.7	0.4
6	P12	13.0	-3.0	-2.8	-3.0
6	P13	11.0	-0.9	-1.0	-1.2
6	P14	10.5	-0.6	-0.3	-1.0
6	P15	10.4	0.3	1.1	-0.1
6	P16	10.7	0.8	0.6	-0.5
6	P17	10.6	0.1	0.3	-0.4
6	P18	11.4	-0.6	0.5	-0.7
6	P19	10.5	-0.4	-0.2	-0.7
6	P20	10.0	0.6	1.0	0.3
6	P21	9.8	-0.1	0.6	-0.1
6	P22	10.0	-0.1	0.9	1.0
6	P23	11.1	-1.0	0.2	-0.2
6	P24	10.8	-1.4	-0.6	-1.3
6	P25	10.1	-0.3	0.5	1.2
7	P1	9.9	-0.2	-0.1	0.1
7	P2	9.8	-0.3	0.1	-0.2
7	P3	10.0	-0.2	1.5	0.5
7	P4	9.9	-0.7	1.2	0.7
7	P5	10.7	0.1	2.0	1.4
7	P6	10.2	-0.6	-0.3	-0.6
7	P7	10.2	-0.8	-0.2	-0.7
7	P8	10.2	-0.9	-0.4	-0.4
7	P9	10.0	-0.6	-0.4	-0.8
7	P10	11.3	-1.0	-0.7	-1.0
7	P11	10.4	-0.5	-0.3	-0.9
7	P12	13.0	-2.1	-1.4	-2.9
7	P13	11.0	-1.1	-0.3	-0.4
7	P14	10.5	0.4	1.2	0.5
7	P15	10.4	0.4	0.7	0.1
7	P16	10.7	3.2	6.0	0.7
7	P17	10.6	0.9	2.9	0.0
7	P18	11.4	0.0	0.9	-0.6
7	P19	10.5	-0.7	-0.1	-0.6
7	P20	10.0	0.1	0.6	0.2
7	P21	9.8	0.0	3.0	0.8
7	P22	10.0	-0.5	0.4	-0.9
7	P23	11.1	-1.8	-0.1	-1.1
7	P24	10.8	-1.1	0.2	0.6
7	P25	10.1	-0.7	-0.1	-0.8
8	P1	10.4	-1.6	-1.6	-1.5
8	P2	10.6	-1.8	-1.2	2.0
8	P3	10.1	-0.9	-0.6	-1.2
8	P4	13.6	-3.7	-2.6	-2.8
8	P5	10.0	-0.6	-0.4	-1.1
8	P6	12.2	-2.5	-2.2	-2.6
8	P7	10.4	-0.8	-0.3	-0.9

8	P8	10.4	-0.4	-0.2	-0.7
8	P9	10.2	-0.8	0.1	-0.7
8	P10	10.4	-0.6	-0.5	-1.2
8	P11	10.4	-0.5	-0.1	-1.1
8	P12	10.7	-0.3	-0.2	-1.4
8	P13	10.4	-0.8	-0.3	-1.4
8	P14	10.9	0.9	1.3	0.0
8	P15	10.3	-0.2	0.8	-1.1
8	P16	10.4	0.9	1.1	-0.6
8	P17	10.9	0.4	2.7	0.3
8	P18	12.4	-1.3	3.0	-1.5
8	P19	10.2	-0.1	0.5	-0.6
8	P20	12.9	-2.3	-0.8	-2.9
8	P21	10.6	-0.8	0.5	-1.0
8	P22	9.9	-0.5	-0.1	-1.0
8	P23	9.6	-0.4	0.0	-0.7
8	P24	9.8	-0.6	-0.3	-0.9
8	P25	10.6	-1.1	-0.8	-1.2

EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: TCT-04
Description: Dillon Quantrol TC21 25-1000 mm/min series test stand
Manufacturer: Dillon Quantrol
Model: TC2 I series test stand
Serial #: 04-1041-04
Accuracy: Speed Accuracy: +/- 5% of indicated speed; Speed Accuracy: +/- 5% of indicated speed;
… Last Cal: 05/18/2007, Next Cal: 05/18/2008

Equipment #: MO-06
Description: Micro-Ohmeter
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 Acquistion System
Manufacturer: Keithley
Model: 2700
Serial #: 1116559
Accuracy: See Manual
… Last Cal: 6/22/2007, Next Cal: 6/22/2008

Equipment #: TCT-05
Description: TCT-225 Frame with TLC Console
Manufacturer: Chatillon
Model: TCD-225
Serial #: TCD 0071
Accuracy: See Manual See Manual
… Last Cal: 06/01/2008, Next Cal: 06/01/2009

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