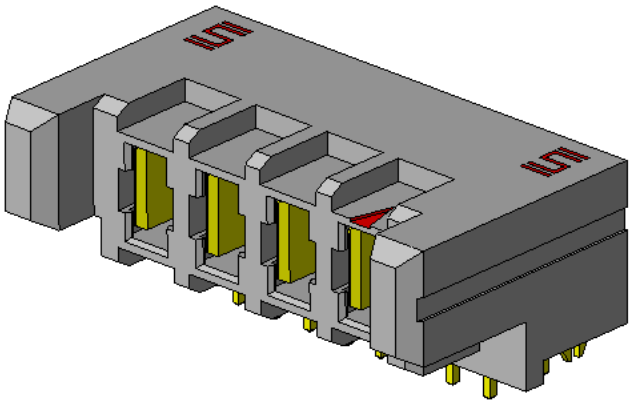
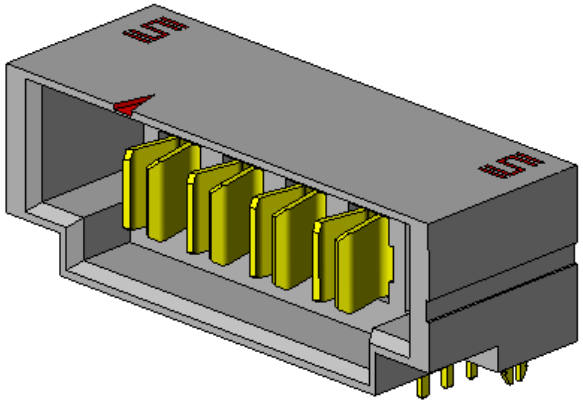
Project Number: Design Verification Test	Tracking Code: TC0921—2494_Report Rev 2	
Requested by: Brandon Harpenau	Date: 5/29/2013	Product Rev: UPS – Rev 3 , UPT – Rev 3
Part #: UPS-08-XX-L-RA-LC / UPT-08-XX-L-RA-LC	Tech: Rodney Riley, Gary Lomax, Troy Cook	Eng: Eric Mings Mark Shireman
Part description: Micro Power Strip		Qty to test: 60
Test Start: 05/19/2009	Test Completed: 8/6/2009	





Design Verification Test Report

PART DESCRIPTION

UPS-08-XX-L-RA-LC / UPT-08-XX-L-RA-LC

REVISION HISTORY

DATA	REV.NUM.	DESCRIPTION	ENG
1/7/2013	**1**	**Initial Issue**	**PC**
5/23/2013	**2**	**Insert new CCC graph**	**TW**

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 plan attached to e-mail.

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 Wave Solder
9) Samtec Test PCBs used: PCB-101692-TST-XX / PCB-101849-TST-XX

FLOWCHARTS

Gas Tight

TEST STEP	GROUP A 80 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

IR & DWV

TEST STEP	GROUP A1 2 Mated Sets Break Down - Pin to Pin	GROUP A2 2 Unmated of Part # Being Tested Break Down - Pin to Pin	GROUP A3 2 Unmated of Mating Part # Break Down - Pin to Pin	GROUP B 2 Mated Sets Pin to Pin
01	DWV/Break Down Voltage	DWV/Break Down Voltage	DWV/Break Down Voltage	IR & DWV at test voltage (on both mated sets and on each connector unmated)
02				Thermal Aging (both sets unmated)
03				IR & DWV at test voltage (on both mated sets and on each connector unmated)
04				Cyclic Humidity (both sets unmated)
05				IR & DWV at test voltage (on both mated sets and on each connector unmated)

*** - DWV on group B to be performed at Test Voltage**
DWV test voltage is equal to 75% of the lowest break down voltage from group A1, A2 or A3
Thermal Aging = EIA-364-17, Test Condition 4 (105 °C)
Time Condition 'B' (250 hours)
Humidity = EIA-364-31, Test Condition B (240 Hours)
and Method III (+25° C to +65° C @ 90%RH to 98% RH)
ambient pre-condition and delete steps 7a and 7b
IR = EIA-364-21
DWV = EIA-364-20, Test Condition 1

Mating/Unmating/Gaps/Normal Force/Deflection Force

TEST STEP	GROUP A 10 Boards (each position submitted)	GROUP B1 Individual Contacts (8-10 min)
01	Contact Gaps	Setup Approve
02	Mating / Unmating (smallest, middle, largest positions)	Normal Force (in the body unless otherwise specified)
03	25 Cycles	
04	Clean w/Compressed Air	
05	Mating / Unmating (smallest, middle, largest positions)	
06	25 Cycles (50 Total)	
07	Clean w/Compressed Air	
08	Mating / Unmating (smallest, middle, largest positions)	
09	25 Cycles (75 Total)	
10	Clean w/Compressed Air	
11	Mating / Unmating (smallest, middle, largest positions)	
12	25 Cycles (100 Total)	
13	Clean w/Compressed Air	
14	Mating / Unmating (smallest, middle, largest positions)	
15	Contact Gaps	
16	Thermal Aging (Mated)	
17	Mating / Unmating (smallest, middle, largest positions)	
18	Contact Gaps	
19	Cyclic Humidity (Mated)	
20	Mating / Unmating (smallest, middle, largest positions)	
21	Contact Gaps	

Thermal Aging = EIA-364-17, Test Condition 4 (105 °C)
Time Condition 'B' (250 hours)
Humidity = EIA-364-31, Test Condition B (240 Hours)
and Method III (+25 °C to +65 °C @ 90%RH to 98% RH)
ambient pre-condition and delete steps 7a and 7b
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

Durability/Thermal Age/Cyclic Humidity

TEST STEP	GROUP A 80 Points 100 Cycles
01	LLCR-1
02	100 Cycles
03	Clean Mating Interface
04	LLCR-2
05	Thermal Age (Mated and undisturbed)
06	LLCR-3
07	Cyclic Humidity (Mated and undisturbed)
08	LLCR-4

Thermal Aging = EIA-364-17, Test Condition 4, 105 deg C;
Time Condition 'B' (250 hours)
Humidity =EIA-364-31, Test Condition B (240 Hours)
and Method III (+25 ° C to +65 ° C @ 90%RH to 98% RH)
ambient pre-condition and delete steps 7a and 7b
LLCR = EIA-364-23, LLCR
use Keithley 580 in the dry circuit mode, 10 mA Max

Current Carrying Capacity

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 & Contact Resistance

(TIN PLATING) - Tabulate calculated current at RT, 65° C, 75° C and 95° C
after derating 20% and based on 105° C
(GOLD PLATING) - Tabulate calculated current at RT, 85° C, 95° C and 115° C
after derating 20% and based on 125° C
CCC, Temp rise = EIA-364-70

Current Cycling

TEST STEP	GROUP A 8 Mated Assembies ALL CONTACTS POWERED
01	Current Cycle, 500 cycles at 125% of Rated current

Current Cycle = EIA 364-55, Condition "B", Method #4
Test at Current 125% of Rated Current
Measure at 30 minutes into 45 minute cycle
Measure Voltage Drop on 5 random contacts

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.

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.

INSULATION RESISTANCE (IR):

To determine the resistance of insulation materials to leakage of current through or on the surface of these materials when a DC potential is applied.

1) PROCEDURE:
    a. Reference document: EIA-364-21, *Insulation Resistance Test Procedure for Electrical Connectors*.
    b. Test Conditions:
        i. Between Adjacent Contacts or Signal-to-Ground
        ii. Electrification Time 2.0 minutes
        iii. Test Voltage (500 VDC) corresponds to calibration settings for measuring resistances.
2) MEASUREMENTS:
3) When the specified test voltage is applied (VDC), the insulation resistance shall not be less than 5000 megohms.

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

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

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

LLCR:

1) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
2) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
3) The following guidelines are used to categorize the changes in LLCR as a result from stressing
    a. <= +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.

SUPPLEMENTAL TESTS

CURRENT CYCLING:

1) Reference document: EIA-364-55, *Current Cycling Test Procedure for Electrical Connectors*.
2) Reference document: EIA-364-06, *Contact Resistance Test Procedure for Electrical Connectors*.
    a. This is a four-wire measurement.
3) An uninterruptible Power Supply maintained power to appropriate equipment.
    a. A microprocessor controlled cycling fixture maintained accurate duty-cycle timing for test duration.
    b. A calibrated constant current source provided consistent DC power during ON cycles

TEST RESULTS

CURRENT CARRYING CAPACITY (CCC) RESULTS

- **There was no evidence of physical damage to the test samples as tested.**
- **The following is a summary of the observed data:**

Temperature Rise, CCC at a 20% de-rating

- **CCC for a 30°C Temperature Rise ----------23.5A per contact with 1 contact powered**
- **CCC for a 30°C Temperature Rise ----------20.1A per contact with 2 adjacent contacts powered**
- **CCC for a 30°C Temperature Rise ----------16.9A per contact with 3 adjacent contacts powered**
- **CCC for a 30°C Temperature Rise ----------15.5A per contact with 4 adjacent contacts powered**
- **CCC for a 30°C Temperature Rise ----------13.3A per contact with all adjacent contacts powered**

Contact Gaps

UPS 2 Position

- **Initial**
  - **Min ---------- 1.690 mm**
  - **Max ---------- 1.804 mm**
- **After 100 Cycles**
  - **Min ---------- 1.706 mm**
  - **Max ---------- 1.786 mm**
- **Thermal**
  - **Min ---------- 1.714 mm**
  - **Max ---------- 1.794 mm**
- **Humidity**
  - **Min ---------- 1.724 mm**
  - **Max ---------- 1.796 mm**

UPT 2 Position

- **Initial**
  - **Min ---------- 2.100 mm**
  - **Max ---------- 2.216 mm**
- **After 100 Cycles**
  - **Min ---------- 2.100 mm**
  - **Max ---------- 2.188 mm**
- **Thermal**
  - **Min ---------- 2.016 mm**
  - **Max ---------- 2.126 mm**
- **Humidity**
  - **Min ---------- 2.032 mm**
  - **Max ---------- 2.110 mm**

Contact Gaps

UPS 8 Position

- **Initial**
  - **Min---------- 1.710 mm**
  - **Max ---------- 1.816 mm**
- **Thermal**
  - **Min---------- 1.726 mm**
  - **Max ---------- 1.800 mm**
- **Humidity**
  - **Min---------- 1.726 mm**
  - **Max ---------- 1.804 mm**

UPT 8 Position

- **Initial**
  - **Min---------- 2.094 mm**
  - **Max ---------- 2.212 mm**
- **After 100 Cycles**
  - **Min---------- 2.070 mm**
  - **Max ---------- 2.142 mm**
- **Thermal**
  - **Min---------- 2.066 mm**
  - **Max ---------- 2.134 mm**
- **Humidity**
  - **Min---------- 2.020 mm**
  - **Max ---------- 2.100 mm**

Mating – Unmating Forces

2 Position

- **Initial**
  - **Mating**
    - **Min ---------- 1.42 Lbs**
    - **Max---------- 2.30 Lbs**
  - **Unmating**
    - **Min ---------- 0.91 Lbs**
    - **Max---------- 1.60 Lbs**
- **After 25 Cycles**
  - **Mating**
    - **Min ---------- 1.37 Lbs**
    - **Max---------- 2.30 Lbs**
  - **Unmating**
    - **Min ---------- 0.85 Lbs**
    - **Max---------- 2.00 Lbs**
- **After 50 Cycles**
  - **Mating**
    - **Min ---------- 1.38 Lbs**
    - **Max---------- 2.10 Lbs**
  - **Unmating**
    - **Min ---------- 0.93 Lbs**
    - **Max---------- 1.80 Lbs**
- **After 75 Cycles**
  - **Mating**
    - **Min ---------- 1.40 Lbs**
    - **Max---------- 2.20 Lbs**
  - **Unmating**
    - **Min ---------- 0.92 Lbs**
    - **Max---------- 2.10 Lbs**
- **After 100 Cycles**
  - **Mating**
    - **Min ---------- 1.42 Lbs**
    - **Max---------- 2.30 Lbs**
  - **Unmating**
    - **Min ---------- 1.03 Lbs**
    - **Max---------- 2.20 Lbs**
- **Thermal**
  - **Mating**
    - **Min ---------- 1.15 Lbs**
    - **Max---------- 1.40 Lbs**
  - **Unmating**
    - **Min ---------- 0.73 Lbs**
    - **Max---------- 1.40 Lbs**
- **Humidity**
  - **Mating**
    - **Min ---------- 1.17 Lbs**
    - **Max---------- 1.60 Lbs**
  - **Unmating**
    - **Min ---------- 0.71 Lbs**
    - **Max---------- 1.60 Lbs**

Mating – Unmating Forces

8 Position

- **Initial**
  - **Mating**
    - **Min ---------- 5.55 Lbs**
    - **Max---------- 9.40 Lbs**
  - **Unmating**
    - **Min ---------- 3.27 Lbs**
    - **Max---------- 5.50 Lbs**
- **After 25 Cycles**
  - **Mating**
    - **Min ---------- 5.36 Lbs**
    - **Max---------- 8.40 Lbs**
  - **Unmating**
    - **Min ---------- 3.21 Lbs**
    - **Max---------- 6.00 Lbs**
- **After 50 Cycles**
  - **Mating**
    - **Min ---------- 5.47 Lbs**
    - **Max---------- 8.40 Lbs**
  - **Unmating**
    - **Min ---------- 3.39 Lbs**
    - **Max---------- 6.20 Lbs**
- **After 75 Cycles**
  - **Mating**
    - **Min ---------- 5.67 Lbs**
    - **Max---------- 8.50 Lbs**
  - **Unmating**
    - **Min ---------- 3.52 Lbs**
    - **Max---------- 6.50 Lbs**
- **After 100 Cycles**
  - **Mating**
    - **Min ---------- 5.89 Lbs**
    - **Max---------- 8.60 Lbs**
  - **Unmating**
    - **Min ---------- 3.64 Lbs**
    - **Max---------- 6.90 Lbs**
- **Thermal**
  - **Mating**
    - **Min ---------- 5.13 Lbs**
    - **Max---------- 6.40 Lbs**
  - **Unmating**
    - **Min ---------- 3.78 Lbs**
    - **Max---------- 5.00 Lbs**
- **Humidity**
  - **Mating**
    - **Min ---------- 4.53 Lbs**
    - **Max---------- 5.70 Lbs**
  - **Unmating**
    - **Min ---------- 3.39 Lbs**
    - **Max---------- 5.50 Lbs**

Normal Force at .0105" deflection

- **Initial**
  - **Min ---------- 1246.00 g Set ----- 0.0007"**
  - **Max ---------- 1872.10 g Set ----- 0.0012"**

Insulation Resistance minimums, IR Pin-to-Pin

- **Initial**
  - **Mated ---------- 100,000 Meg Ω ---------- Pass**
  - **Unmated ---------- 100,000 Meg Ω ---------- Pass**
- **Thermal**
  - **Mated ---------- 100,000 Meg Ω ---------- Pass**
  - **Unmated ---------- 100,000 Meg Ω ---------- Pass**
- **Humidity**
  - **Mated ---------- 30,000 Meg Ω ---------- Pass**
  - **Unmated ---------- 50,000 Meg Ω ---------- Pass**

Dielectric Withstanding Voltage minimums, DWV

- **Minimums**
  - **Breakdown Voltage ---------- 1500 VAC**
  - **Test Voltage ---------- 1125 VAC**
  - **Working Voltage ---------- 375 VAC**
- **Initial DWV ---------- Passed**
- **Thermal DWV ---------- Passed**
- **Humidity DWV ---------- Passed**

LLCR Durability (80 LLCR test points)

- **Initial ---------- 1.10 mOhms Max**
- **Durability, 100 Cycles**
  - **<= +5.0 mOhms ---------- 80 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 ---------- 80 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 ---------- 80 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 Gas Tight (80 LLCR test points)

- **Initial ----------0.9 mOhms Max**
- **Gas-Tight**
  - **<= +5.0 mOhms ----------80 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**

SUPPLEMENTAL TESTING

Current Cycling – 500 Cycles, 45 minutes ON and 15 minutes OFF

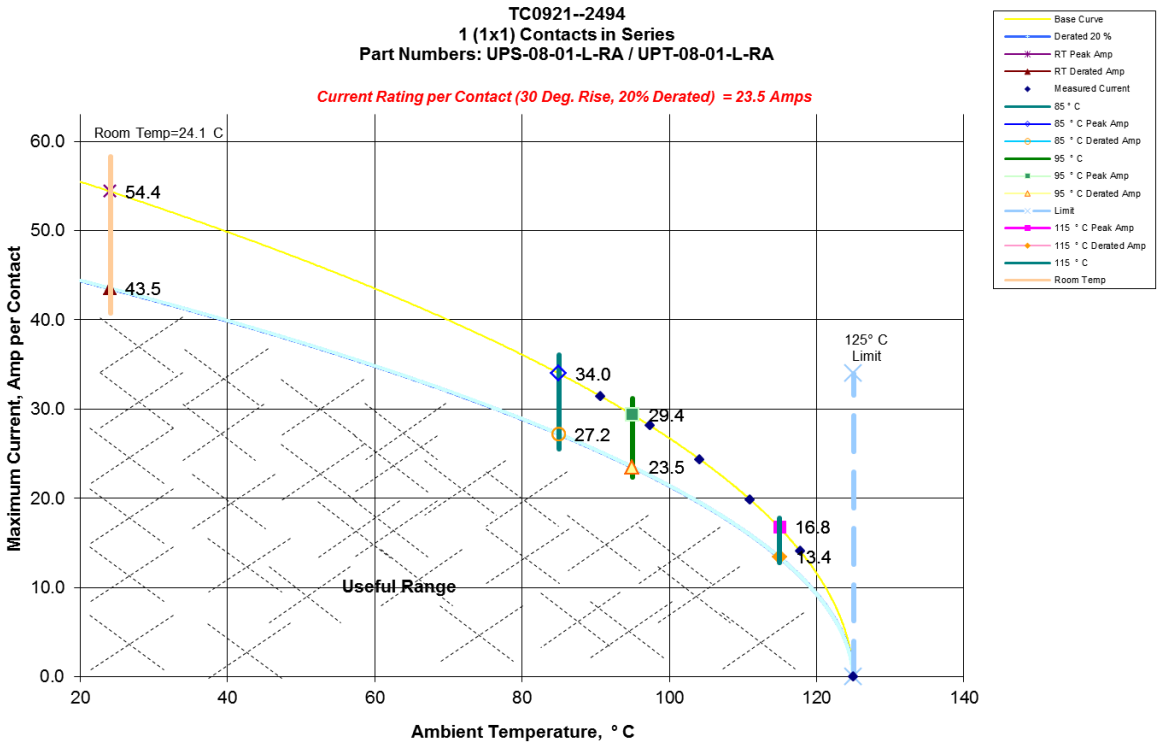
- **Test Current ----------16.70 A**
- **Contact Resistances, Measured 40 minutes into the FIRST cycle and every 25th cycle thereafter**
  - **Initial**
    - **Min ---------- 0.45 mOhms**
    - **Max---------- 0.65 mOhms**
  - **Final**
    - **Min ---------- 0.44 mOhms**
    - **Max---------- 0.64 mOhms**
- **Temperature Change, Measured 30 minutes into the FIRST and LAST ON cycle**
  - **Initial Temperature Change ----------31.3°C**
  - **Final Temperature Change ----------31.0°C**

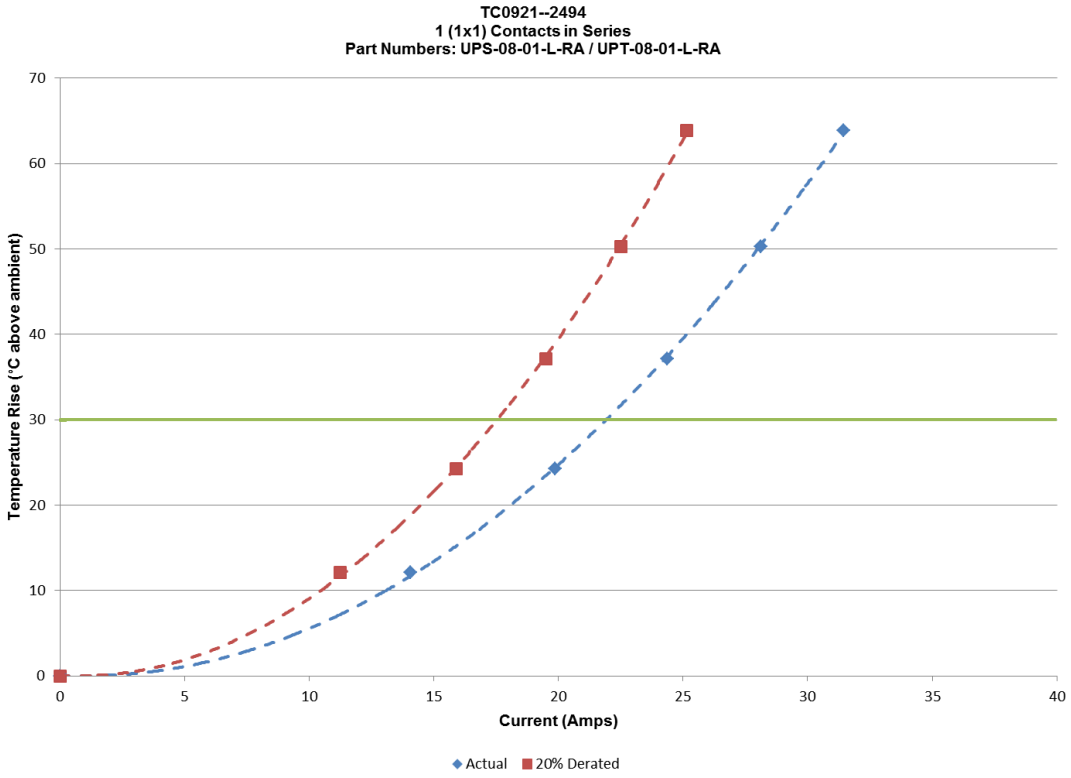
DATA SUMMARIES

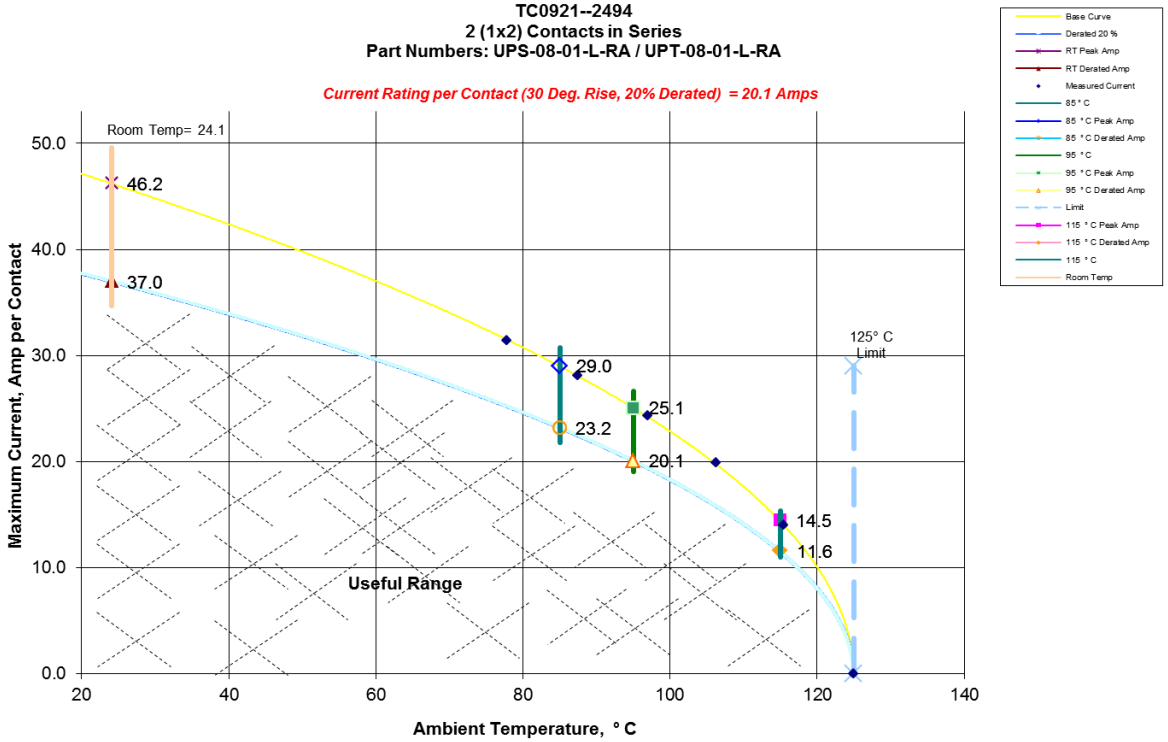
TEMPERATURE RISE (Current Carrying Capacity, CCC):

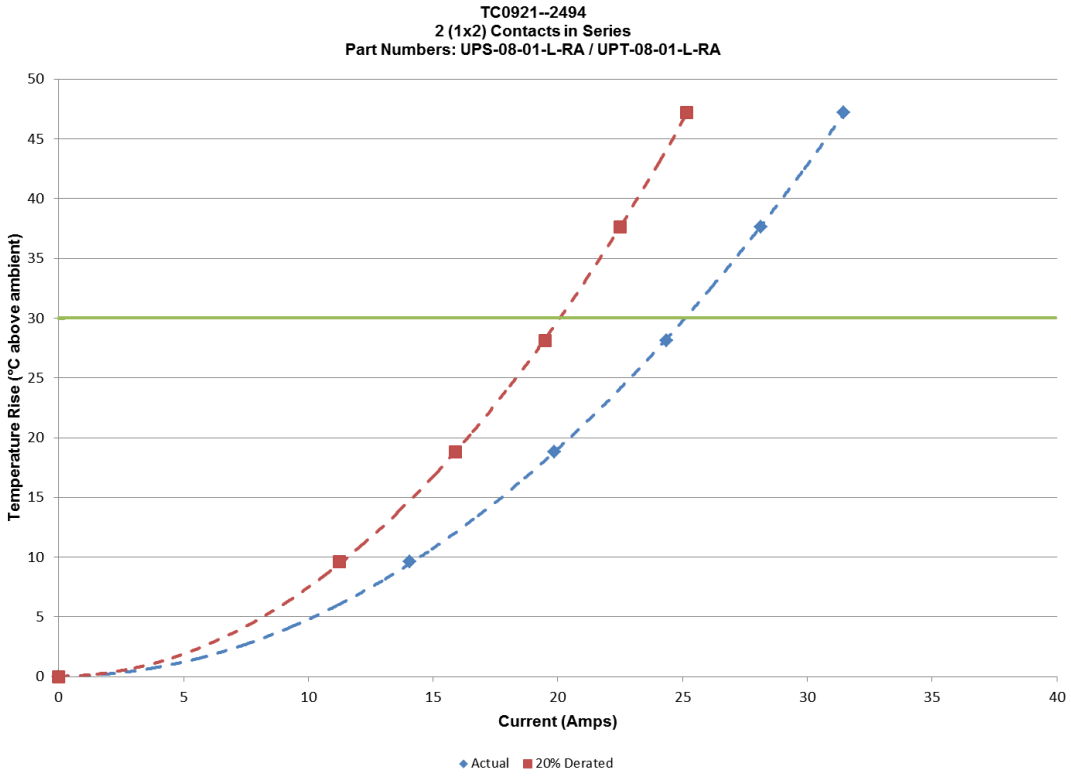
1) High quality thermocouples whose temperature slopes track one another were used for temperature monitoring.
2) The thermocouples were placed at a location to sense the maximum temperature generated during testing.
3) Temperature readings recorded are those for which three successive readings, 15 minutes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

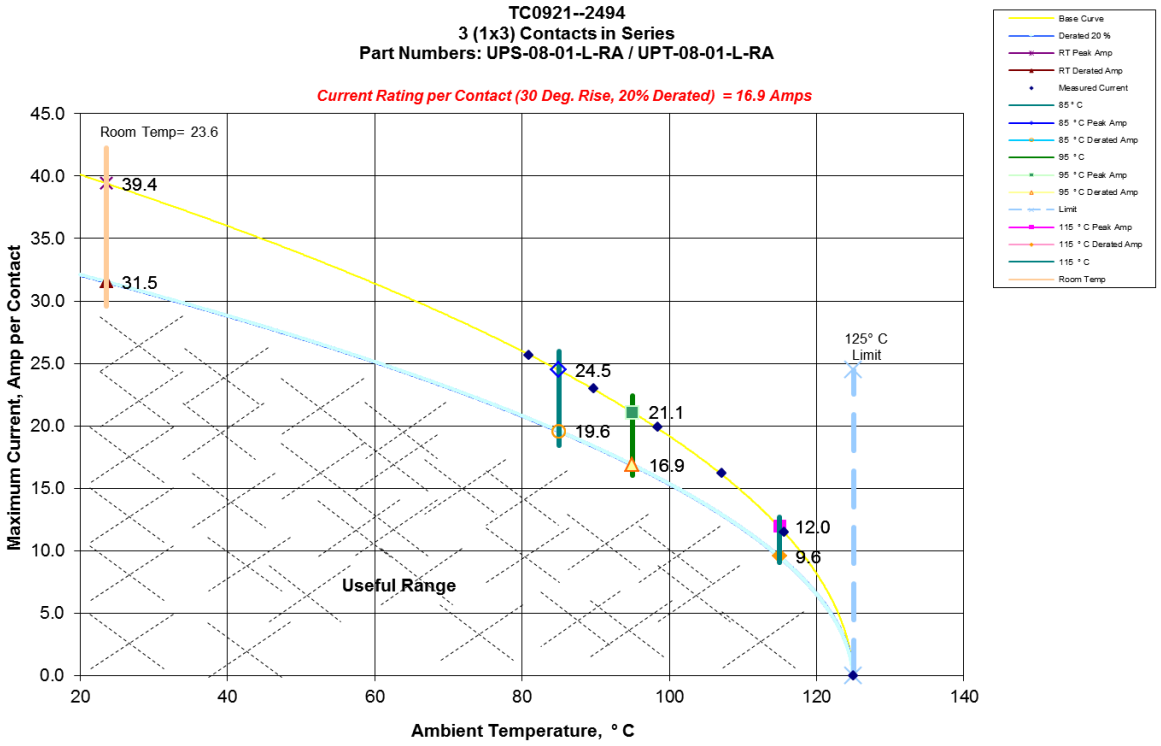
CURRENT CARRYING CAPACITY DATA

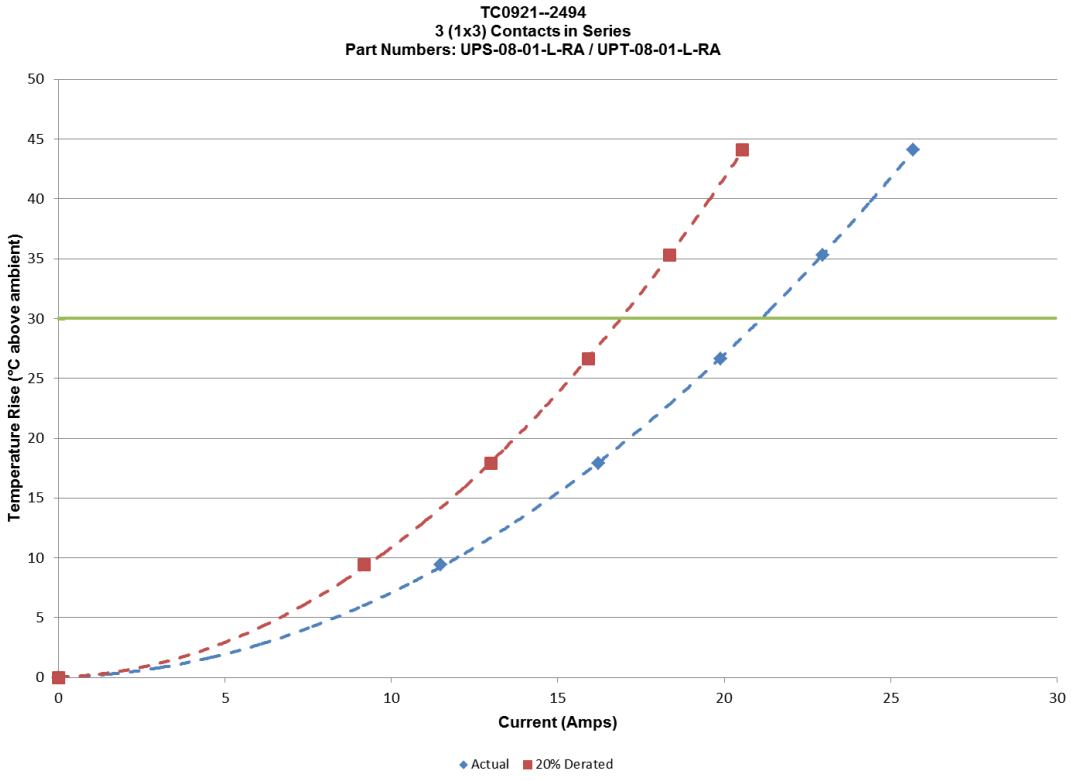


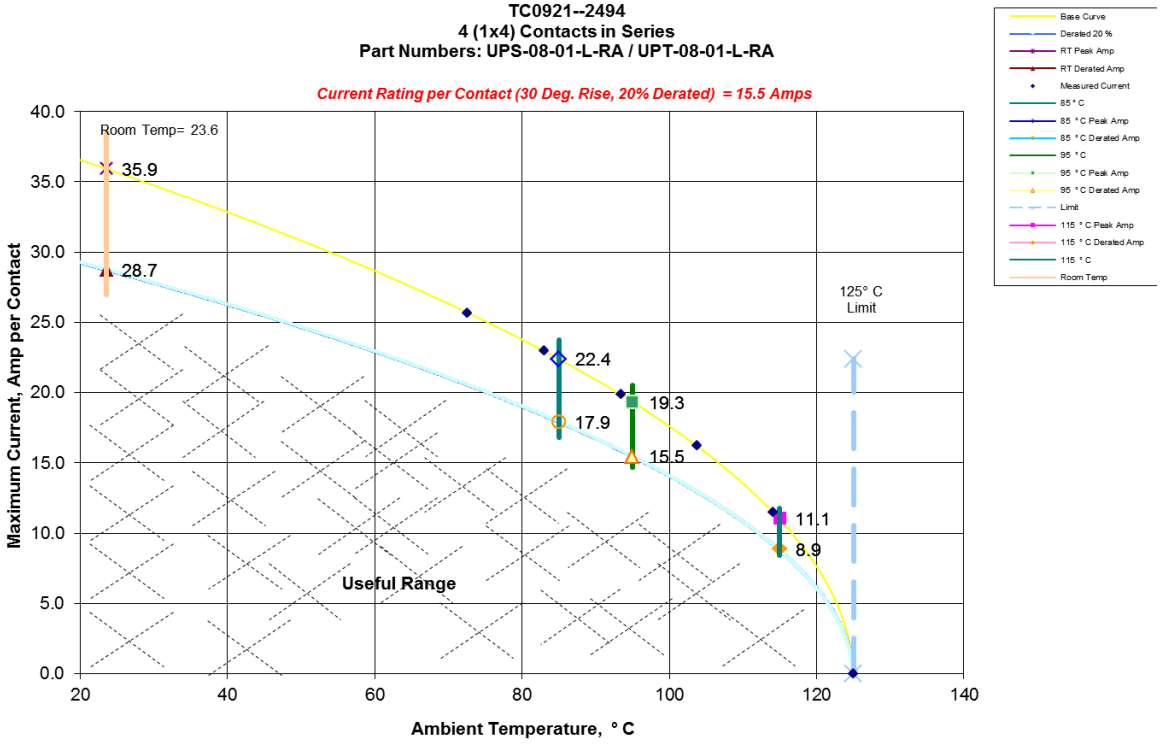


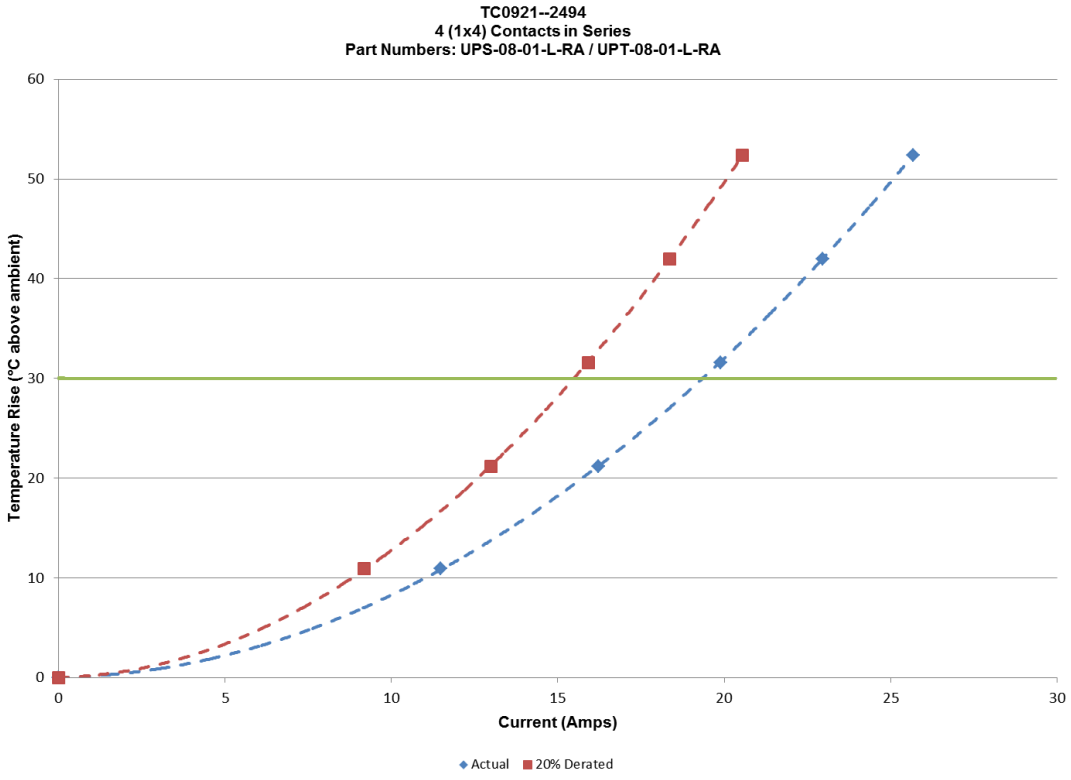

TC0921--2494
2 (1x2) Contacts in Series
Part Numbers: UPS-08-01-L-RA / UPT-08-01-L-RA
Current Rating per Contact (30 Deg. Rise, 20% Derated) = 20.1 Amps
Room Temp= 24.1
46.2
37.0
29.0
23.2
25.1
20.1
14.5
11.6
125° C Limit
Useful Range
Maximum Current, Amp per Contact
Ambient Temperature, ° C
Base Curve
Derated 20 %
RT Peak Amp
RT Derated Amp
Measured Current
85 ° C
85 ° C Peak Amp
85 ° C Derated Amp
95 ° C
95 ° C Peak Amp
95 ° C Derated Amp
Limit
115 ° C Peak Amp
115 ° C Derated Amp
115 ° C
Room Temp

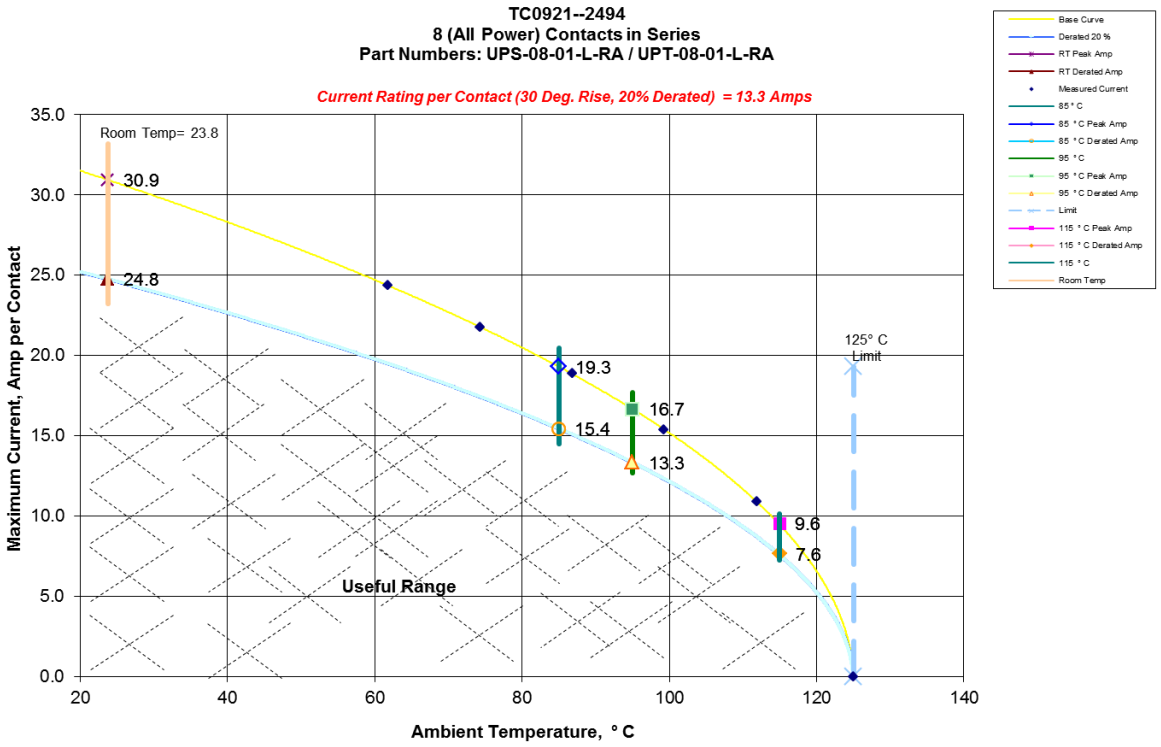

TC0921--2494
2 (1x2) Contacts in Series
Part Numbers: UPS-08-01-L-RA / UPT-08-01-L-RA
Temperature Rise (°C above ambient)
Current (Amps)
Actual
20% Derated

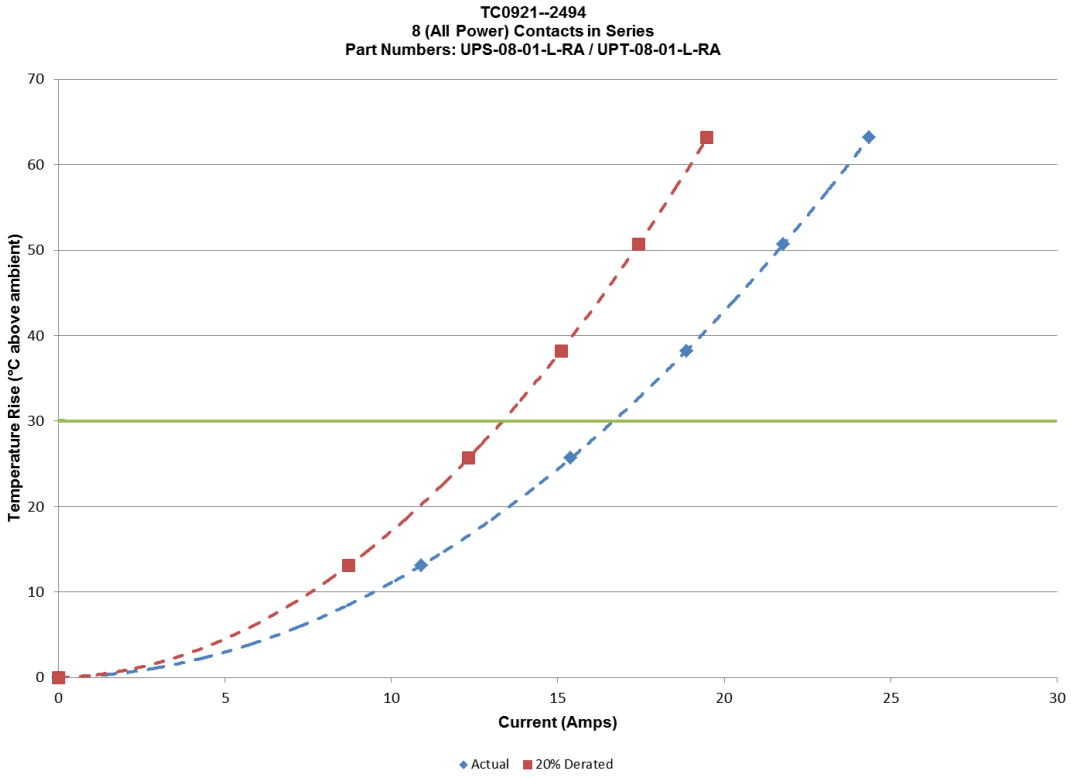

TC0921--2494
3 (1x3) Contacts in Series
Part Numbers: UPS-08-01-L-RA / UPT-08-01-L-RA
Current Rating per Contact (30 Deg. Rise, 20% Derated) = 16.9 Amps
Room Temp= 23.6
39.4
31.5
24.5
19.6
21.1
16.9
12.0
9.6
125° C Limit
Useful Range
Maximum Current, Amp per Contact
Ambient Temperature, ° C
Base Curve
Derated 20 %
RT Peak Amp
RT Derated Amp
Measured Current
85 ° C
85 ° C Peak Amp
85 ° C Derated Amp
95 ° C
95 ° C Peak Amp
95 ° C Derated Amp
Limit
115 ° C Peak Amp
115 ° C Derated Amp
115 ° C
Room Temp


TC0921--2494
3 (1x3) Contacts in Series
Part Numbers: UPS-08-01-L-RA / UPT-08-01-L-RA
Temperature Rise (°C above ambient)
Current (Amps)
Actual
20% Derated


TC0921--2494
4 (1x4) Contacts in Series
Part Numbers: UPS-08-01-L-RA / UPT-08-01-L-RA
Current Rating per Contact (30 Deg. Rise, 20% Derated) = 15.5 Amps
Room Temp= 23.6
35.9
28.7
22.4
17.9
19.3
15.5
11.1
8.9
125° C
Limit
Useful Range
Maximum Current, Amp per Contact
Ambient Temperature, ° C
Base Curve
Derated 20 %
RT Peak Amp
RT Derated Amp
Measured Current
85 ° C
85 ° C Peak Amp
85 ° C Derated Amp
95 ° C
95 ° C Peak Amp
95 ° C Derated Amp
Limit
115 ° C Peak Amp
115 ° C Derated Amp
115 ° C
Room Temp


TC0921--2494
4 (1x4) Contacts in Series
Part Numbers: UPS-08-01-L-RA / UPT-08-01-L-RA
Temperature Rise (°C above ambient)
Current (Amps)
Actual
20% Derated


TC0921--2494
8 (All Power) Contacts in Series
Part Numbers: UPS-08-01-L-RA / UPT-08-01-L-RA
Current Rating per Contact (30 Deg. Rise, 20% Derated) = 13.3 Amps
Room Temp= 23.8
30.9
24.8
19.3
15.4
16.7
13.3
9.6
7.6
125° C Limit
Useful Range
Maximum Current, Amp per Contact
Ambient Temperature, ° C
Base Curve
Derated 20 %
RT Peak Amp
RT Derated Amp
Measured Current
85 ° C
85 ° C Peak Amp
85 ° C Derated Amp
95 ° C
95 ° C Peak Amp
95 ° C Derated Amp
Limit
115 ° C Peak Amp
115 ° C Derated Amp
115 ° C
Room Temp


TC0921--2494
8 (All Power) Contacts in Series
Part Numbers: UPS-08-01-L-RA / UPT-08-01-L-RA
Temperature Rise (°C above ambient)
Current (Amps)
Actual
20% Derated

CONTACT GAPS:

UPS 2 Position

Initial		After 100 Cycles		After Thermal		After Humidity	
Units:	mm	Units:	mm	Units:	mm	Units:	mm
Minimum	1.6900	*Minimum*	1.7060	*Minimum*	1.7142	*Minimum*	1.7242
Maximum	1.8040	*Maximum*	1.7860	*Maximum*	1.7942	*Maximum*	1.7962
Average	1.7575	*Average*	1.7438	*Average*	1.7558	*Average*	1.7678
St. Dev.	0.0292	*St. Dev.*	0.0214	*St. Dev.*	0.0248	*St. Dev.*	0.0191
Count	20	*Count*	20	*Count*	20	*Count*	20

UPT 2 Position

Initial		After 100 Cycles		After Thermal		After Humidity	
Units:	mm	Units:	mm	Units:	mm	Units:	mm
Minimum	2.1000	*Minimum*	2.1000	*Minimum*	2.0163	*Minimum*	2.0323
Maximum	2.2160	*Maximum*	2.1880	*Maximum*	2.1263	*Maximum*	2.1103
Average	2.1571	*Average*	2.1341	*Average*	2.0760	*Average*	2.0626
St. Dev.	0.0268	*St. Dev.*	0.0245	*St. Dev.*	0.0306	*St. Dev.*	0.0205
Count	20	*Count*	20	*Count*	20	*Count*	20

UPS 8 Position

Initial		After Thermal		After Humidity	
Units:	mm	Units:	mm	Units:	mm
Minimum	1.7100	*Minimum*	1.7262	*Minimum*	1.7262
Maximum	1.8160	*Maximum*	1.8002	*Maximum*	1.8042
Average	1.7560	*Average*	1.7603	*Average*	1.7673
St. Dev.	0.0211	*St. Dev.*	0.0145	*St. Dev.*	0.0160
Count	80	*Count*	80	*Count*	80

UPT 8 Position

Initial		After 100 Cycles		After Thermal		After Humidity	
Units:	mm	Units:	mm	Units:	mm	Units:	mm
Minimum	2.0940	*Minimum*	2.0700	*Minimum*	2.0660	*Minimum*	2.0203
Maximum	2.2120	*Maximum*	2.1420	*Maximum*	2.1340	*Maximum*	2.1003
Average	2.1475	*Average*	2.1081	*Average*	2.1063	*Average*	2.0604
St. Dev.	0.0244	*St. Dev.*	0.0158	*St. Dev.*	0.0123	*St. Dev.*	0.0182
Count	80	*Count*	80	*Count*	80	*Count*	80

MATING/UNMATING:

2 Position

	Initial				After 25 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	22.7	1.42	14.6	0.91	21.9	1.37	13.6	0.85
Maximum	36.0	2.3	25.8	1.6	37.1	2.3	32.0	2.0
Average	26.8	**1.7**	17.7	**1.1**	26.1	**1.6**	19.1	**1.2**

	After 50 Cycles				After 75 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	22.1	1.38	14.9	0.93	22.4	1.40	14.7	0.92
Maximum	33.4	2.1	28.2	1.8	35.8	2.2	32.8	2.1
Average	26.4	**1.6**	19.7	**1.2**	28.6	**1.8**	21.7	**1.4**

	After 100 Cycles				After Thermals			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	22.7	1.42	16.5	1.03	18.4	1.15	11.7	0.73
Maximum	36.2	2.3	35.4	2.2	22.7	1.4	21.6	1.4
Average	29.6	**1.8**	23.3	**1.5**	20.7	**1.3**	15.5	**1.0**

	After Humidity			
	Mating		**Unmating**	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	18.7	1.17	11.4	0.71
Maximum	25.4	1.6	24.8	1.6
Average	20.6	**1.3**	15.1	**0.9**

MATING/UNMATING:

8 Position

	Initial				After 25 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	88.8	5.55	52.3	3.27	85.8	5.36	51.4	3.21
Maximum	150.7	9.4	88.5	5.5	134.6	8.4	95.4	6.0
Average	113.3	**7.1**	67.6	**4.2**	104.9	**6.6**	71.6	**4.5**

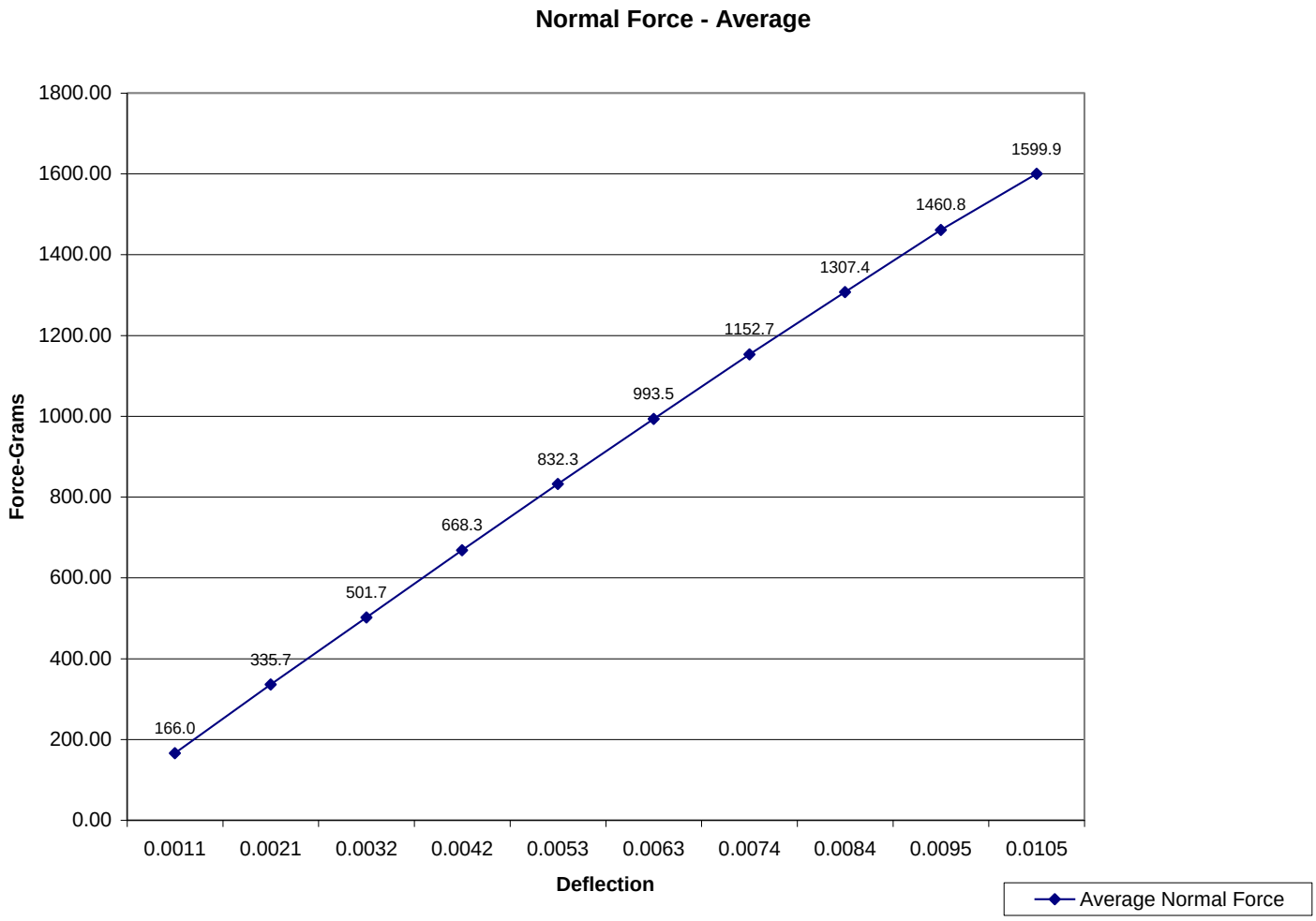
	After 50 Cycles				After 75 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	87.5	5.47	54.2	3.39	90.7	5.67	56.3	3.52
Maximum	134.7	8.4	98.4	6.2	135.8	8.5	104.6	6.5
Average	107.3	**6.7**	76.4	**4.8**	109.9	**6.9**	80.4	**5.0**

	After 100 Cycles				After Thermals			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	94.2	5.89	58.2	3.64	82.1	5.13	60.5	3.78
Maximum	138.2	8.6	109.6	6.9	102.3	6.4	79.5	5.0
Average	112.6	**7.0**	83.8	**5.2**	93.9	**5.9**	69.3	**4.3**

	After Humidity			
	Mating		**Unmating**	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	72.5	4.53	54.2	3.39
Maximum	91.8	5.7	88.2	5.5
Average	84.3	**5.3**	71.2	**4.4**

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										
	0.0011	**0.0021**	**0.0032**	**0.0042**	**0.0053**	**0.0063**	**0.0074**	**0.0084**	**0.0095**	**0.0105**	***SET***
Averages	**166.00**	**335.70**	**501.67**	**668.27**	**832.25**	**993.50**	**1152.73**	**1307.43**	**1460.77**	**1599.90**	0.0008
Min	131.80	271.70	404.00	534.00	657.10	780.30	900.50	1016.90	1133.50	1246.00	0.0007
Max	200.30	404.00	604.30	807.00	1007.40	1202.00	1396.50	1580.70	1757.50	1872.10	0.0012
St. Dev	22.544	42.379	63.301	84.662	106.868	129.487	152.574	172.913	190.253	193.370	0.0002
Count	10	10	10	10	10	10	10	10	10	10	10

INSULATION RESISTANCE (IR):

	Pin to Pin		
	Mated	Unmated	Unmated
Minimum	**UPT/UPS**	**UPT**	**UPS**
Initial	100000	100000	100000
Thermal	100000	100000	100000
Humidity	30000	90000	50000

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

Voltage Rating Summary	
Minimum	**UPT/UPS**
Break Down Voltage	1500
Test Voltage	1125
Working Voltage	375

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

LLCR:

1) A total of 80 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	Jun. 02 2009	Jun. 08 2009	Jun. 19 2009	Jun. 30 2009
Room Temp C	25	23	23.5	23.9
RH	38%	50%	42%	42%
Name	Riley	Lomax	Troy Cook	Troy Cook
mOhm values	**Actual Initial**	**Delta 100 Cycles**	**Delta Thermal**	**Delta Humidity**
Average	0.8	0.0	-0.1	0.0
St. Dev.	0.1	0.0	0.0	0.1
Min	0.6	-0.2	-0.2	-0.2
Max	1.1	0.1	0.0	0.1
Count	80	80	80	80

GAS TIGHT:

1) A total of 80 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	Jun. 03 2009	Jun. 03 2009
Room Temp C	24	24
RH	50%	41%
Name	Lomax	Lomax
mOhm values	**Actual Initial**	**Delta Gas Tight**
Average	0.7	0.0
St. Dev.	0.1	0.1
Min	0.6	-0.2
Max	0.9	0.3
Count	80	80

DATA

CONTACT GAPS:

UPS 2 Position

Initial										
Units: mm										
Pos.#	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B10**
1	1.778	1.764	1.742	1.78	1.782	1.746	1.718	1.794	1.728	1.804
2	1.752	1.748	1.758	1.762	1.78	1.802	1.752	1.744	1.69	1.726
After 100 Cycles										
Units: mm										
Pos.#	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B10**
1	1.756	1.758	1.728	1.76	1.77	1.722	1.722	1.754	1.716	1.786
2	1.772	1.732	1.74	1.736	1.746	1.768	1.746	1.724	1.706	1.734
After Thermal										
Units: mm										
Pos.#	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B10**
1	1.7922	1.7622	1.7222	1.7762	1.7762	1.7542	1.7162	1.7902	1.7402	1.7882
2	1.7482	1.7522	1.7342	1.7662	1.7582	1.7942	1.7482	1.7422	1.7142	1.7402
After Humidity										
Units: mm										
Pos.#	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B10**
1	1.756	1.758	1.728	1.76	1.77	1.722	1.722	1.754	1.716	1.786
2	1.772	1.732	1.74	1.736	1.746	1.768	1.746	1.724	1.706	1.734

UPT 2 Position

Initial										
Units: mm										
Pos.#	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B10**
1	2.156	2.1	2.138	2.144	2.152	2.178	2.128	2.162	2.15	2.19
2	2.142	2.166	2.178	2.144	2.14	2.148	2.166	2.14	2.216	2.204
After 100 Cycles										
Units: mm										
Pos.#	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B10**
1	2.138	2.108	2.102	2.118	2.122	2.188	2.158	2.132	2.14	2.134
2	2.102	2.124	2.126	2.112	2.16	2.158	2.14	2.148	2.1	2.172
After Thermal										
Units: mm										
Pos.#	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B10**
1	2.0823	2.0983	2.1003	2.1063	2.0743	2.1263	2.0783	2.0263	2.0363	2.0883
2	2.0623	2.0983	2.1023	2.1043	2.0343	2.1043	2.0623	2.0563	2.0163	2.0623
After Humidity										
Units: mm										
Pos.#	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B10**
1	2.138	2.108	2.102	2.118	2.122	2.188	2.158	2.132	2.14	2.134
2	2.102	2.124	2.126	2.112	2.16	2.158	2.14	2.148	2.1	2.172

UPS 8 Position

Initial										
Units: mm										
Pos.#	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B10**
1	1.724	1.754	1.75	1.768	1.778	1.774	1.754	1.758	1.776	1.722
2	1.752	1.71	1.764	1.784	1.756	1.754	1.752	1.766	1.776	1.768
3	1.75	1.734	1.754	1.776	1.788	1.754	1.738	1.766	1.78	1.766
4	1.746	1.71	1.728	1.778	1.75	1.726	1.768	1.784	1.816	1.75
5	1.75	1.756	1.788	1.77	1.75	1.726	1.78	1.74	1.78	1.734
6	1.748	1.754	1.758	1.76	1.746	1.764	1.77	1.764	1.808	1.74
7	1.718	1.744	1.74	1.73	1.73	1.724	1.762	1.764	1.738	1.746
8	1.754	1.718	1.74	1.768	1.758	1.774	1.752	1.768	1.792	1.768
After Thermal										
Units: mm										
Pos.#	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B10**
1	1.7502	1.7702	1.7602	1.7542	1.7822	1.7722	1.7682	1.7622	1.7802	1.7442
2	1.7662	1.7302	1.7482	1.7782	1.7662	1.7442	1.7582	1.7602	1.7542	1.7722
3	1.7502	1.7522	1.7602	1.7742	1.7802	1.7522	1.7422	1.7562	1.7602	1.7662
4	1.7522	1.7362	1.7482	1.7742	1.7602	1.7422	1.7782	1.7522	1.7522	1.7602
5	1.7622	1.7702	1.7802	1.7662	1.7642	1.7262	1.7822	1.7782	1.7642	1.7302
6	1.7582	1.7582	1.7542	1.7722	1.7642	1.7662	1.7722	1.7782	1.7722	1.7442
7	1.7342	1.7502	1.7482	1.7482	1.7462	1.7362	1.7822	1.7642	1.7422	1.7642
8	1.7722	1.7362	1.7482	1.7662	1.7602	1.7702	1.7642	1.7742	1.8002	1.7762
After Humidity										
Units: mm										
Pos.#	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B10**
1	1.7402	1.7582	1.7702	1.7522	1.7782	1.7862	1.7742	1.7642	1.7842	1.7342
2	1.7762	1.7262	1.7602	1.7862	1.7702	1.7682	1.7622	1.7782	1.7822	1.7882
3	1.7762	1.7622	1.7502	1.7962	1.7762	1.7622	1.7482	1.7802	1.7802	1.7802
4	1.7702	1.7482	1.7402	1.7842	1.7662	1.7542	1.7762	1.7582	1.7722	1.7642
5	1.7702	1.7762	1.7842	1.7842	1.7822	1.7442	1.8042	1.7862	1.7862	1.7462
6	1.7642	1.7702	1.7482	1.7782	1.7622	1.7622	1.7862	1.7682	1.7882	1.7462
7	1.7542	1.7562	1.7602	1.7582	1.7442	1.7482	1.7802	1.7602	1.7542	1.7562
8	1.7742	1.7342	1.7602	1.7842	1.7622	1.7762	1.7602	1.7722	1.8002	1.7602

UPT 8 Position

Initial										
Units: mm										
Pos.#	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B10**
1	2.154	2.142	2.152	2.136	2.2	2.13	2.164	2.158	2.14	2.156
2	2.128	2.144	2.126	2.122	2.16	2.094	2.138	2.2	2.154	2.15
3	2.15	2.116	2.102	2.136	2.144	2.166	2.136	2.14	2.158	2.15
4	2.15	2.12	2.154	2.158	2.146	2.102	2.212	2.148	2.152	2.196
5	2.142	2.122	2.178	2.112	2.184	2.14	2.15	2.168	2.144	2.192
6	2.14	2.146	2.15	2.172	2.128	2.108	2.158	2.148	2.148	2.164
7	2.114	2.14	2.144	2.15	2.166	2.132	2.13	2.148	2.116	2.194
8	2.136	2.128	2.15	2.142	2.134	2.138	2.198	2.106	2.162	2.194

After 100 Cycles										
Units: mm										
Pos.#	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B10**
1	2.122	2.118	2.09	2.102	2.086	2.112	2.128	2.132	2.098	2.126
2	2.108	2.118	2.096	2.11	2.108	2.078	2.118	2.124	2.116	2.11
3	2.128	2.112	2.094	2.118	2.086	2.142	2.122	2.118	2.122	2.104
4	2.086	2.122	2.12	2.104	2.094	2.082	2.1	2.122	2.092	2.088
5	2.07	2.096	2.132	2.1	2.118	2.126	2.136	2.136	2.096	2.092
6	2.114	2.12	2.094	2.098	2.098	2.114	2.102	2.124	2.116	2.086
7	2.09	2.098	2.11	2.11	2.118	2.11	2.112	2.112	2.08	2.106
8	2.116	2.12	2.128	2.102	2.12	2.094	2.072	2.112	2.092	2.118

After Thermal										
Units: mm										
Pos.#	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B10**
1	2.118	2.118	2.106	2.1	2.096	2.102	2.088	2.12	2.096	2.098
2	2.108	2.13	2.108	2.104	2.112	2.084	2.106	2.116	2.122	2.096
3	2.11	2.11	2.11	2.11	2.094	2.116	2.12	2.118	2.11	2.094
4	2.122	2.106	2.108	2.118	2.082	2.094	2.108	2.122	2.108	2.088
5	2.114	2.128	2.112	2.09	2.108	2.122	2.11	2.134	2.096	2.086
6	2.112	2.108	2.096	2.116	2.118	2.108	2.102	2.124	2.108	2.092
7	2.104	2.092	2.104	2.104	2.12	2.1	2.106	2.118	2.084	2.092
8	2.11	2.104	2.11	2.09	2.116	2.11	2.066	2.112	2.104	2.098

After Humidity										
Units: mm										
Pos.#	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B10**
1	2.122	2.118	2.09	2.102	2.086	2.112	2.128	2.132	2.098	2.126
2	2.108	2.118	2.096	2.11	2.108	2.078	2.118	2.124	2.116	2.11
3	2.128	2.112	2.094	2.118	2.086	2.142	2.122	2.118	2.122	2.104
4	2.086	2.122	2.12	2.104	2.094	2.082	2.1	2.122	2.092	2.088
5	2.07	2.096	2.132	2.1	2.118	2.126	2.136	2.136	2.096	2.092
6	2.114	2.12	2.094	2.098	2.098	2.114	2.102	2.124	2.116	2.086
7	2.09	2.098	2.11	2.11	2.118	2.11	2.112	2.112	2.08	2.106
8	2.116	2.12	2.128	2.102	2.12	2.094	2.072	2.112	2.092	2.118

MATING/UNMATING:

2 Position

	Initial		After 25 Cycles		After 50 Cycles		After 75 Cycles		After 100 Cycles		After Thermals		After Humidity	
Sample#	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating
1	1.42	0.96	1.39	0.88	1.42	0.93	1.45	0.96	1.49	1.12	1.28	0.93	1.20	0.79
2	1.56	0.94	1.37	0.91	1.38	0.96	1.40	0.97	1.42	1.05	1.16	0.82	1.17	0.72
3	1.55	0.94	1.54	1.10	1.54	1.28	2.12	1.68	2.25	1.90	1.39	1.04	1.29	1.07
4	1.56	0.96	1.63	0.85	1.65	0.93	1.68	0.92	1.74	1.03	1.42	0.95	1.33	0.82
5	1.72	1.50	1.70	1.78	1.63	1.66	1.94	2.05	2.17	2.21	1.36	1.35	1.22	0.76
6	1.68	1.25	1.60	1.19	1.64	1.33	1.76	1.42	1.80	1.42	1.34	0.92	1.27	0.99
7	1.67	0.96	1.55	0.99	1.56	1.06	1.60	1.13	1.59	1.14	1.25	0.81	1.28	0.71
8	1.61	0.91	1.52	0.96	1.52	0.95	1.53	1.01	1.61	1.09	1.15	0.73	1.33	1.01
9	2.25	1.61	2.32	2.00	2.09	1.76	2.24	1.82	2.26	1.77	1.23	1.23	1.21	1.02
10	1.76	1.03	1.67	1.29	2.06	1.45	2.14	1.62	2.16	1.84	1.39	0.94	1.59	1.55

8 Position

	Initial		After 25 Cycles		After 50 Cycles		After 75 Cycles		After 100 Cycles		After Thermals		After Humidity	
Sample#	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating
1	7.38	5.53	6.75	5.96	7.11	6.14	7.37	6.38	7.58	6.47	6.40	4.97	5.60	5.28
2	6.92	3.83	6.71	4.11	6.90	4.34	7.00	4.72	7.13	5.12	6.13	4.24	5.44	4.13
3	7.05	4.14	6.66	4.89	6.84	5.65	7.00	6.11	7.13	6.45	5.87	4.70	5.49	4.90
4	6.53	4.43	6.20	4.67	6.24	4.99	6.47	5.19	6.64	5.53	5.64	4.65	5.31	5.51
5	6.59	3.60	6.04	3.95	6.23	4.26	6.41	4.43	6.51	4.65	5.13	3.78	4.95	3.75
6	7.05	4.24	6.06	4.61	6.28	4.65	6.42	5.10	6.67	4.94	5.50	4.25	5.30	4.33
7	5.55	3.27	5.36	3.21	5.47	3.39	5.67	3.52	5.89	3.64	5.76	4.01	4.53	3.39
8	8.00	4.52	7.23	3.86	7.11	4.11	7.20	4.17	7.42	4.40	6.24	4.50	5.74	4.51
9	9.42	5.17	8.41	5.77	8.42	6.15	8.49	6.54	8.64	6.85	6.25	4.22	5.41	4.64
10	6.30	3.52	6.16	3.74	6.44	4.09	6.65	4.09	6.76	4.30	5.74	4.02	4.94	4.05

NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):

Initial — **Deflections in inches, Forces in Grams**

Sample #	0.0011	0.0021	0.0032	0.0042	0.0053	0.0063	0.0074	0.0084	0.0095	0.0105	*SET*
1	170.6	331.4	486.9	646.1	801.3	941.3	1077.7	1213.8	1361.4	1512.0	0.0007
2	187.2	379.0	565.1	753.1	934.3	1117.0	1294.4	1469.4	1638.2	1777.7	0.0008
3	166.5	330.0	491.3	656.2	820.4	980.8	1141.0	1303.6	1457.6	1608.6	0.0007
4	186.7	368.1	550.2	727.3	911.4	1089.5	1266.9	1435.7	1604.6	1752.4	0.0008
5	142.7	288.3	433.5	581.4	723.9	861.1	1002.4	1139.7	1276.5	1409.4	0.0008
6	200.3	404.0	604.3	807.0	1007.4	1202.0	1396.5	1580.7	1757.5	1872.1	0.0007
7	147.5	296.2	441.8	587.5	735.3	881.8	1020.8	1162.7	1307.6	1447.6	0.0007
8	148.7	328.7	505.7	680.7	853.9	1031.2	1203.8	1369.6	1536.7	1686.6	0.0009
9	131.8	271.7	404.0	534.0	657.1	780.3	900.5	1016.9	1133.5	1246.0	0.0012
10	178.0	359.6	533.9	709.4	877.5	1050.0	1223.3	1382.2	1534.1	1686.6	0.0007

INSULATION RESISTANCE (IR):

Initial Insulation Resistance
Measured In Meg Ohms

	Pin to Pin		
	Mated	Unmated	
	X	X	X
Sample#	UPT/UPS	UPT	UPS
1	100,000	100,000	100,000
2	100,000	100,000	100,000

Thermal Insulation Resistance
Measured In Meg Ohms

	Pin to Pin		
	Mated	Unmated	
	X	X	X
Sample#	UPT/UPS	UPT	UPS
1	100000	100000	100000
2	100000	100000	100000

Humidity Insulation Resistance
Measured In Meg Ohms

	Pin to Pin		
	Mated	Unmated	
	X	X	X
Sample#	UPT/UPS	UPT	UPS
1	30000	100000	50000
2	50000	90000	100000

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

Initial DWV
Test Voltage= 1125

	Pin to Pin		
	Mated	Unmated	
Sample#	UPT/UPS	UPT	UPS
1	1125	1125	1125
2	1125	1125	1125

Thermal Test Voltage
Test Voltage= 1125

	Pin to Pin		
	Mated	Unmated	
Sample#	UPT/UPS	UPT	UPS
1	1125	1125	1125
2	1125	1125	1125

Humidity Test Voltage
Test Voltage= 1125

	Pin to Pin		
	Mated	Unmated	
Sample#	UPT/UPS	UPT	UPS
1	1125	1125	1125
2	1125	1125	1125

LLCR:

Board	mOhm values Position	Actual Initial	Delta 100 Cycles	Delta Thermal	Delta Humidity
1	P1	0.8	0.0	0.0	0.1
1	P2	0.7	0.0	0.0	0.0
1	P3	0.7	0.0	-0.1	0.0
1	P4	0.8	0.0	0.0	0.0
1	P5	0.9	0.0	0.0	0.1
1	P6	0.9	0.0	0.0	0.0
1	P7	0.9	0.0	0.0	0.1
1	P8	0.8	0.0	0.0	0.0
2	P1	0.8	0.0	0.0	0.0
2	P2	0.9	0.0	0.0	0.0
2	P3	0.7	0.0	0.0	0.0
2	P4	0.8	0.0	-0.1	-0.1
2	P5	0.7	0.0	0.0	0.0
2	P6	0.6	0.0	0.0	0.1
2	P7	0.6	0.0	0.0	0.0
2	P8	0.7	0.0	0.0	0.0
3	P1	0.7	0.0	0.0	0.0
3	P2	0.7	0.0	0.0	0.0
3	P3	0.7	0.0	0.0	0.0
3	P4	0.7	0.0	0.0	0.0
3	P5	0.7	0.0	0.0	0.0
3	P6	0.6	0.0	0.0	0.0
3	P7	0.6	0.0	-0.1	0.0
3	P8	0.6	0.0	0.0	-0.1
4	P1	0.7	0.0	0.0	0.0
4	P2	0.9	-0.1	-0.1	-0.1
4	P3	0.9	0.0	-0.1	0.0
4	P4	1.0	0.0	-0.1	0.0
4	P5	0.8	-0.1	-0.1	-0.1
4	P6	0.9	0.0	-0.1	-0.1
4	P7	0.9	-0.1	-0.1	-0.1
4	P8	0.8	0.0	-0.1	-0.1
5	P1	0.7	-0.1	-0.1	-0.1
5	P2	0.7	0.0	-0.1	0.0
5	P3	0.6	0.0	-0.1	0.0
5	P4	0.6	0.0	-0.1	0.0
5	P5	0.7	0.0	-0.2	0.0
5	P6	0.6	0.0	-0.1	0.0
5	P7	0.6	0.1	0.0	0.0
5	P8	0.7	0.0	-0.1	0.0

6	P1	0.8	0.0	0.0	0.0
6	P2	0.7	0.0	0.0	0.0
6	P3	0.8	-0.2	-0.2	-0.2
6	P4	0.8	-0.1	-0.1	-0.1
6	P5	0.7	0.0	0.0	0.0
6	P6	0.8	0.0	0.0	0.0
6	P7	0.9	0.0	0.0	0.0
6	P8	0.9	0.0	-0.1	0.0
7	P1	0.8	0.0	-0.1	-0.1
7	P2	0.7	0.0	-0.1	-0.1
7	P3	0.7	-0.1	-0.1	-0.1
7	P4	0.7	-0.1	-0.1	-0.1
7	P5	0.7	0.0	-0.1	-0.1
7	P6	0.7	0.0	-0.1	-0.1
7	P7	0.7	0.0	-0.1	-0.1
7	P8	0.7	0.0	-0.1	-0.1
8	P1	0.8	-0.1	-0.1	-0.1
8	P2	0.8	0.0	0.0	0.0
8	P3	0.8	0.0	-0.1	0.0
8	P4	0.7	0.0	0.0	0.0
8	P5	0.7	0.0	-0.1	-0.1
8	P6	0.9	0.0	-0.1	0.0
8	P7	0.8	-0.1	-0.1	-0.1
8	P8	0.9	-0.1	-0.1	-0.1
9	P1	0.9	0.0	0.0	0.0
9	P2	0.8	0.0	-0.1	-0.1
9	P3	0.8	-0.1	-0.1	-0.1
9	P4	0.9	-0.1	-0.1	-0.1
9	P5	1.1	-0.2	-0.2	-0.2
9	P6	1.1	-0.2	-0.2	-0.2
9	P7	0.9	-0.1	-0.1	-0.1
9	P8	1.0	-0.1	-0.1	-0.1
10	P1	0.7	0.0	0.0	0.0
10	P2	0.7	-0.1	-0.1	-0.1
10	P3	0.7	0.0	-0.1	-0.1
10	P4	0.7	0.0	-0.1	-0.1
10	P5	0.7	0.0	0.0	0.0
10	P6	0.7	0.0	0.0	0.0
10	P7	0.7	0.0	-0.1	-0.1
10	P8	0.7	0.0	0.0	0.0

GAS TIGHT:

	mOhm values	Actual	Delta
Board	Position	Initial	Gas Tight
1	P1	0.7	0.0
1	P2	0.7	0.0
1	P3	0.7	0.0
1	P4	0.7	0.0
1	P5	0.7	0.0
1	P6	0.7	0.0
1	P7	0.7	0.0
1	P8	0.7	0.0
2	P1	0.9	0.0
2	P2	0.7	0.0
2	P3	0.7	0.1
2	P4	0.7	0.0
2	P5	0.9	0.0
2	P6	0.8	0.0
2	P7	0.7	0.0
2	P8	0.8	0.0
3	P1	0.8	0.0
3	P2	0.8	0.0
3	P3	0.8	0.0
3	P4	0.7	-0.1
3	P5	0.7	0.0
3	P6	0.7	0.0
3	P7	0.6	0.0
3	P8	0.7	0.1
4	P1	0.9	0.0
4	P2	0.8	0.0
4	P3	0.7	0.0
4	P4	0.7	0.0
4	P5	0.7	0.0
4	P6	0.7	0.0
4	P7	0.7	0.0
4	P8	0.8	-0.1
5	P1	0.8	0.1
5	P2	0.7	0.1
5	P3	0.8	-0.1
5	P4	0.7	0.1
5	P5	0.8	0.0
5	P6	0.8	0.2
5	P7	0.8	0.2
5	P8	0.7	0.3

6	P1	0.9	-0.2
6	P2	0.8	-0.1
6	P3	0.7	0.0
6	P4	0.8	-0.1
6	P5	0.8	0.0
6	P6	0.9	-0.1
6	P7	0.9	-0.2
6	P8	0.9	-0.2
7	P1	0.8	-0.1
7	P2	0.7	0.0
7	P3	0.6	0.0
7	P4	0.7	0.0
7	P5	0.7	0.0
7	P6	0.8	0.0
7	P7	0.6	0.1
7	P8	0.8	0.0
8	P1	0.8	0.0
8	P2	0.7	0.0
8	P3	0.7	0.0
8	P4	0.7	0.0
8	P5	0.7	-0.1
8	P6	0.7	0.0
8	P7	0.8	-0.1
8	P8	0.7	0.0
9	P1	0.8	0.0
9	P2	0.7	0.1
9	P3	0.6	0.0
9	P4	0.7	0.1
9	P5	0.7	0.0
9	P6	0.7	0.1
9	P7	0.7	0.0
9	P8	0.6	0.0
10	P1	0.8	0.0
10	P2	0.6	0.1
10	P3	0.6	0.0
10	P4	0.7	0.0
10	P5	0.7	0.0
10	P6	0.7	0.0
10	P7	0.7	0.0
10	P8	0.8	0.0

EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: MO-08
Description: Model 2750 Multimeter/Switch System (Integra Series)
Manufacturer: Keithley
Model: 2750
Serial #: WDC-875194
Accuracy: See Manual
… Last Cal: 11/24/2008, Next Cal: 11/24/2009

Equipment #: RS-07
Description: Current Shunt
Manufacturer: Empro
Model: HA5050
Serial #: HA5050-7
Accuracy: +/- 0.25% of RDG
… Last Cal: 05/14/2009, Next Cal: 05/14/2010

Equipment #: MO-04
Description: Multimeter /Data Acquisition System
Manufacturer: Keithley
Model: 2700
Serial #: 0798688
Accuracy: See Manual - DO NOT USE UNTIL CALIBRATED.
… Last Cal: 04/06/09, Next Cal: 04/06/2010

Equipment #: RS-09
Description: Current Shunt
Manufacturer: Empro
Model: HA10050
Serial #: HA10050-1
Accuracy: +/- 0.25% of RDG
… Last Cal: 05/14/2009, Next Cal: 05/14/2010

Equipment #: MO-01
Description: Micro-Ohmeter
Manufacturer: Keithley
Model: 580
Serial #: 0772740
Accuracy: See Manual
… Last Cal: 06/16/09, Next Cal: 06/16/2010

Equipment #: MO-03
Description: Multimeter /Data Acquisition System
Manufacturer: Keithley
Model: 2700
Serial #: 0791975
Accuracy: See Manual
… Last Cal: 06/16/09, Next Cal: 06/16/2010

Equipment #: TCT-03
Description: Dillon Quantrol TC2 Test Stand
Manufacturer: Dillon Quantrol
Model: TC2
Serial #: 02-1033-03
Accuracy: Speed Accuracy: +/- 5% of indicated speed; Speed Accuracy: +/- 5% of indicated speed;
… Last Cal: 5/12/2009, Next Cal: 5/6/2010

Equipment #: TCT-05
Description: TCT-225 Frame with TLC Console
Manufacturer: Chatillon
Model: TCD-225-0200
Serial #: TC 0071
Accuracy: See Manual See Manual
… Last Cal: 7/14/2008, Next Cal: 7/14/2009

Equipment #: TCT-04
Description: Dillon Quantrol TC21 25-1000 mm/min series test stand
Manufacturer: Dillon Quantrol
Model: TC2 I series test stand
Serial #: 04-1041-04
Accuracy: Speed Accuracy: +/- 5% of indicated speed; Speed Accuracy: +/- 5% of indicated speed;
… Last Cal: 5/12/2009, Next Cal: 5/12/2010

Equipment #: MV-05
Description: 6" x 6" Video Measuring Machine
Manufacturer: Micro-Vu
Model: M3010838
Serial #: V9344
Accuracy: See Manual
… Last Cal: 02/10/2009, Next Cal: 02/10/2010

Equipment #: MV-06
Description: 6" x 6" Video Measuring Machine
Manufacturer: Micro-Vu
Model: M3010898
Serial #: WDC-875194
Accuracy: See Manual
… Last Cal: 02/10/2009, Next Cal: 02/10/2010

Equipment #: OV-03
Description: Cascade Tek Forced Air Oven
Manufacturer: Cascade Tek
Model: TFO-5
Serial #: 0500100
Accuracy: Temp. Stability: +/-.1C/C change in ambient
… Last Cal: 06/17/2009, Next Cal: 06/17/2010

Equipment #: THC-01
Description: Temperature/Humidity Chamber
Manufacturer: Thermotron
Model: SM-8-7800
Serial #: 30676
Accuracy: See Manual
… Last Cal: 04/07/2009, Next Cal: 04/07/2010

Equipment #: THC-04
Description: Temperature/Humidity Chamber
Manufacturer: Thermotron
Model: SM-8-3800
Serial #: 37782
Accuracy: See Manual
… Last Cal: 04/07/2009, Next Cal: 04/07/2010

Equipment #: THC-03
Description: Temperture/Humidity Chamber (SJR Room - Unit #2)
Manufacturer: Thermotron
Model: SE-1000-10-10
Serial #: 37551
Accuracy: See Manual (For SJR Testing)
… Last Cal: 08/19/2008, Next Cal: 08/19/2008