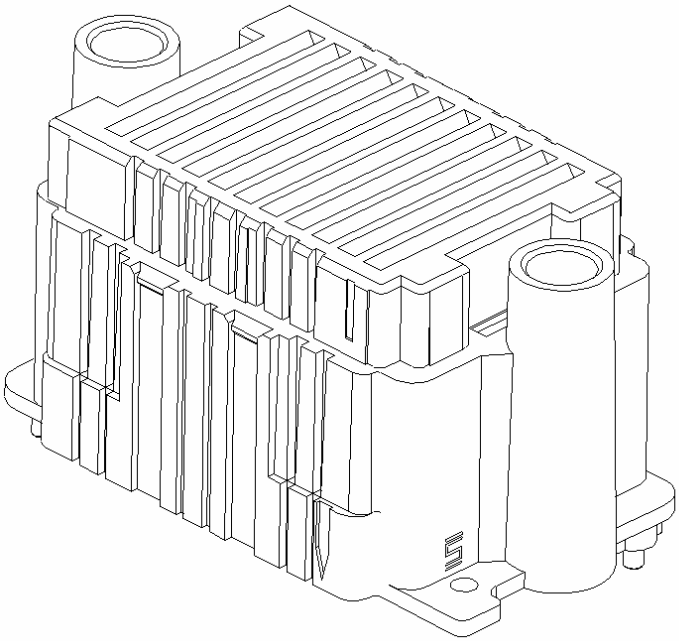
Project Number:	Tracking Code: TC076--1260		
Requested by: Corey Rose	Date: 2/6/2007	Product Rev: 3	
Part #: HDAM-23-17.0-S-13-2 HDAF-23-18.0-S-13-2_HDAM-23-17.0-S-13-2	Lot #: 01/26/07	Tech: Tony Wagoner/Tori Meek	Eng: Troy Cook
Part description: HDMezz			Qty to test: 50
Test Start: 02/07/2007	Test Completed: 4/6/2007		



PART DESCRIPTION

HDAM/HDAF DVT Report

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 per test plan

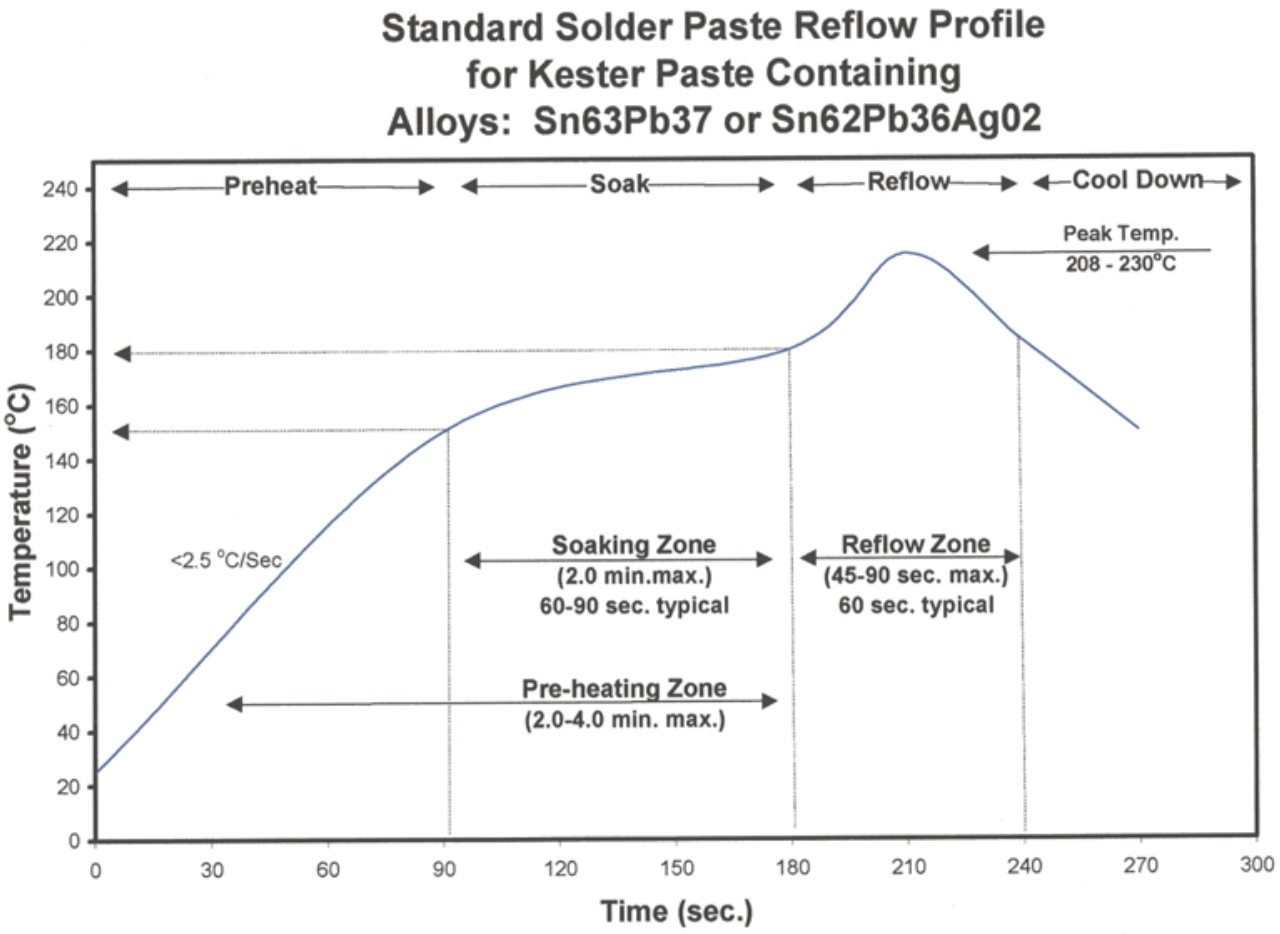
APPLICABLE DOCUMENTS

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) Internal Test PCBs used: PCB-100430-TST-XX

OVEN PROFILE (Soldering Parts to Test Boards)



FLOWCHARTS

Current Carrying Capacity

TEST STEP	GROUP A 1 board min 6 Contacts in series- Linear Pin to Pin	GROUP B 1 board min 6 Contacts in series- Linear Row to Row
01	CCC	CCC

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

TEST STEP	GROUP A1 10 Boards HDAF-23-18.0-S-1/HDAM-23-17.0-S-1	GROUP A2 10 Boards HDAF-11-18.0-S-1/HDAM-11-17.0-S-1	GROUP B1 Individual Contacts (30) min	GROUP B2 Individual Contacts (30) min
01	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			
07	Data Review	Data Review		
08	Thermal Aging (Mated)	Thermal Aging (Mated)		
09	Mating / Unmating	Mating / Unmating		
10	Contact Gaps			
11	Data Review	Data Review		
12	Humidity (Mated)	Humidity (Mated)		
13	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

IR / DWV

TEST STEP	GROUP A 2 Boards Ambient	GROUP B1 2 Boards Ambient	GROUP B2 2 Boards Thermal	GROUP B3 2 Boards Humidity
01	IR	DWV/Working Voltage	Thermal Aging	Humidity
02	Data Review		DWV/Working Voltage	DWV/Working Voltage
03	Thermal Aging			
04	IR			
05	Data Review			
06	Humidity			
07	IR			

Thermal Aging = EIA-364-17, Test Condition 4, 105 deg C;
Time Condition 'B' (250 hours)
Humidity =EIA-364-31, Test Condition B (240 Hours)
and Method III (+25 ° C to +65 ° C @ 90%RH to 98% RH)
ambient pre-condition and delete steps 7a and 7b
IR = EIA-364-21
DWV = EIA-364-20

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

FLOWCHARTS Continued

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) Connectors are sometimes mated and all samples are pre-conditioned at ambient.

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) Connectors are sometimes mated and all samples are pre-conditioned at ambient.

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 GAP:

1) Contact gaps 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 OUTSIDE THE HOUSING):

1) Reference document: EIA-364-04, *Normal Force Test Procedure for Electrical Connectors*.
2) The contacts shall be tested in the loose state, *not* inserted in connector housing.
3) The contacts shall be prepared to allow access to the spring member at the same attitude and deflection level as would occur in actual use.
4) In the event that portions of the contact prevent insertion of the test probe and/or deflection of the spring member under evaluation, said material shall be removed leaving the appropriate contact surfaces exposed.
5) In the case of multi-tine contacts, each tine shall be tested independently on separate samples as required.
6) The connector housing shall be simulated, if required, in order to provide an accurate representation of the actual contact system performance.
7) A holding fixture shall be fashioned to allow the contact to be properly deflected.
8) 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 µm (0.0002").
9) The probe shall be attached to a Dillon P/N 49761-0105, 5 N (1.1 Lb) load cell providing an accuracy of ± 0.2%.
10) The nominal deflection rate shall be 5 mm (0.2")/minute.
11) Unless otherwise noted a minimum of five contacts shall be tested.
12) The force/deflection characteristic to load and unload each contact shall be repeated five times.
13) The system shall utilize the TC^2 software in order to acquire and record the test data.
14) The permanent set of each contact shall be measured within the TC^2 software.
15) 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
        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
   ii. Rate of Application 500 V/Sec
   iii. Test Voltage (VAC) until breakdown occurs

2) MEASUREMENTS/CALCULATIONS
   a. The breakdown voltage shall be measured and recorded.
   b. The dielectric withstanding voltage shall be recorded as 75% of the minimum breakdown voltage.
   c. The working voltage shall be recorded as one-third (1/3) of the dielectric withstanding voltage (one-fourth of the breakdown voltage).

LLCR:

1) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
2) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
3) The following guidelines are used to categorize the changes in LLCR as a result from stressing
   a. <= +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 less than 10.
      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.

RESULTS

Temperature Rise, CCC at a 20% de-rating

- **CCC for a 30°C Temperature Rise----------3.4 A per contact with 6 adjacent contacts powered (P-P)**
- **CCC for a 30°C Temperature Rise----------1.8 A per contact with 6 adjacent contacts powered (R-R)**

Contact Gaps (23 Pos. Only) (REF: TC0725—1379)

- **Initial**
  - **Min----------.094 mm**
  - **Max----------.201 mm**
- **After 100 Cycles**
  - **Min----------.082 mm**
  - **Max----------.1745 mm**
- **Thermal**
  - **Min----------.094 mm**
  - **Max----------.1845 mm**
- **Humidity**
  - **Min----------.058 mm**
  - **Max----------.134 mm**

Mating – Unmating Forces

23 Position - HDAF/HDAM (REF: TC0725—1379)

- **Initial**
  - **Mating**
    - **Min----------30.4 Lbs.**
    - **Max----------38.9 Lbs.**
  - **Unmating**
    - **Min----------28.8 Lbs.**
    - **Max----------34.9 Lbs.**
- **After 100 Cycles**
  - **Mating**
    - **Min----------27.2 Lbs.**
    - **Max----------37.9 Lbs.**
  - **Unmating**
    - **Min----------26.0 Lbs.**
    - **Max----------34.8 Lbs.**
- **Thermal**
  - **Mating**
    - **Min----------21.0 Lbs.**
    - **Max----------25.5 Lbs.**
  - **Unmating**
    - **Min----------16.7 Lbs.**
    - **Max----------19.9 Lbs.**
- **Humidity**
  - **Mating**
    - **Min----------21.9 Lbs.**
    - **Max----------27.5 Lbs.**
  - **Unmating**
    - **Min----------16.7 Lbs.**
    - **Max----------21.5 Lbs.**

11 Position - HDAF/HDAM

- **Initial**
  - **Mating**
    - **Min ----------15.1 Lbs.**
    - **Max----------18.3 Lbs.**
  - **Unmating**
    - **Min ----------13.4 Lbs.**
    - **Max----------16.5 Lbs.**
- **After 100 Cycles**
  - **Mating**
    - **Min ----------16.5 Lbs.**
    - **Max----------19.8 Lbs.**
  - **Unmating**
    - **Min ----------13.1 Lbs.**
    - **Max----------17.6 Lbs.**
- **Thermal**
  - **Mating**
    - **Min ----------14.0 Lbs.**
    - **Max----------36.6 Lbs.**
  - **Unmating**
    - **Min ----------12.1 Lbs.**
    - **Max----------22.6 Lbs.**
- **Humidity**
  - **Mating**
    - **Min ----------11.0 Lbs.**
    - **Max----------22.7 Lbs.**
  - **Unmating**
    - **Min ---------- 7.6 Lbs.**
    - **Max----------14.8 Lbs.**

Normal Force at .008" Deflection

- **Initial**
  - **Min----------34.2 grams Set -------.0002"**
  - **Max ----------38.3 grams Set -------.0004"**
- **Thermal**
  - **Min----------34.2 grams**
  - **Max ----------40.3 grams**

Insulation Resistance minimums, IR (REF: TC0725—1379)

- **Initial**
  - **Mated---------- 15,000 Meg Ω ---------- Pass**
  - **Unmated ---------- 15,000 Meg Ω**
- **Thermal**
  - **Mated---------- 25,000 Meg Ω**
  - **Unmated ---------- 25,000 Meg Ω**
- **Humidity**
  - **Mated----------100,000 Meg Ω**
  - **Unmated ----------100,000 Meg Ω**

Dielectric Withstanding Voltage minimums, DWV (REF: TC0725—1379)

- **Initial**
  - **Breakdown**
    - **Mated ----------920 VAC**
    - **Unmated----------800 VAC**
  - **DWV**
    - **Mated ----------690 VAC**
    - **Unmated----------600 VAC**
  - **Working voltage**
    - **Mated ----------230 VAC**
    - **Unmated----------200 VAC**
- **Thermal**
  - **Breakdown**
    - **Mated ----------1,180 VAC**
    - **Unmated----------1,160 VAC**
  - **DWV**
    - **Mated ----------885 VAC**
    - **Unmated----------870 VAC**
  - **Working voltage**
    - **Mated ----------295 VAC**
    - **Unmated----------290 VAC**
- **Humidity**
  - **Breakdown**
    - **Mated ----------1,100 VAC**
    - **Unmated----------1,120 VAC**
  - **DWV**
    - **Mated ----------825 VAC**
    - **Unmated----------840 VAC**
  - **Working voltage**
    - **Mated ----------275 VAC**
    - **Unmated----------280 VAC**

LLCR Durability (200 LLCR test points) (REF: TC0725—1379)

- **Initial ---------- 10.9 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 ----------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**

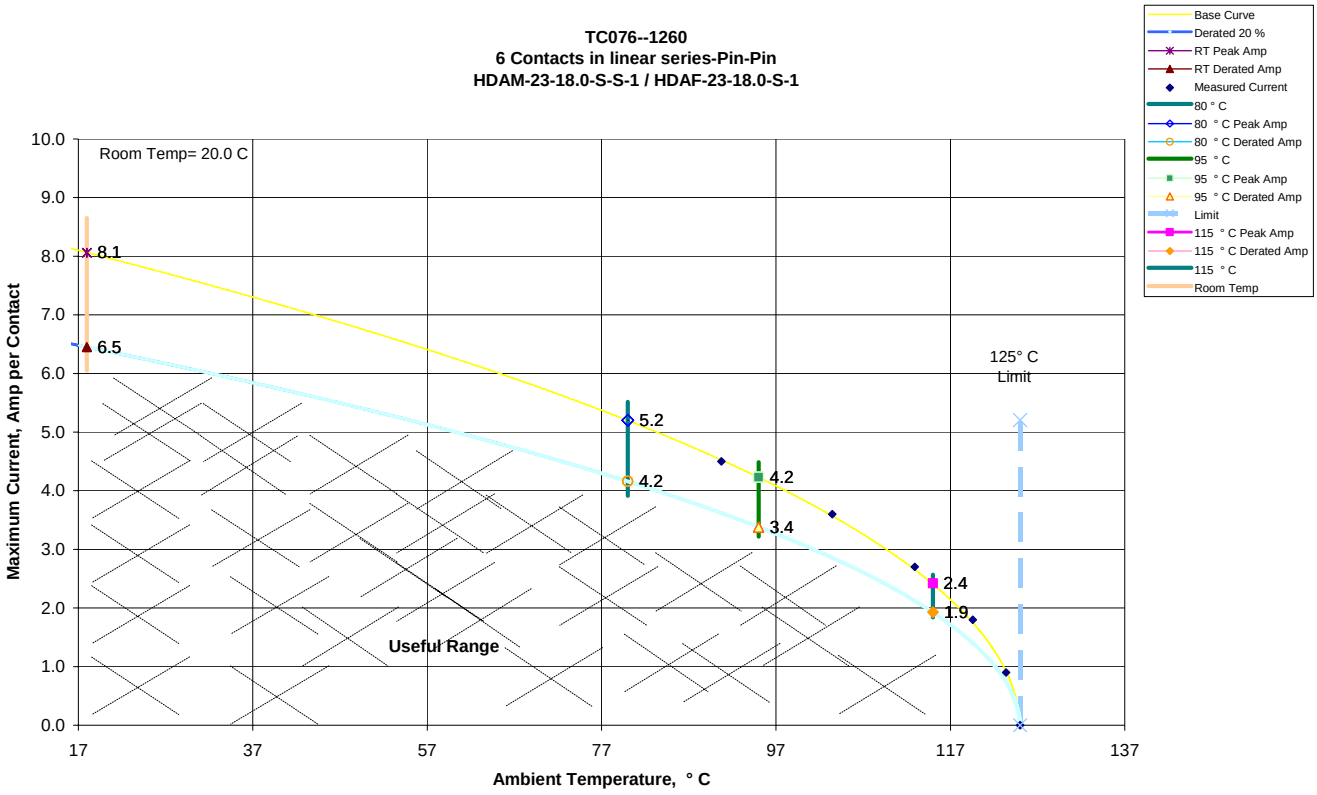
LLCR Gas Tight (200 LLCR test points)

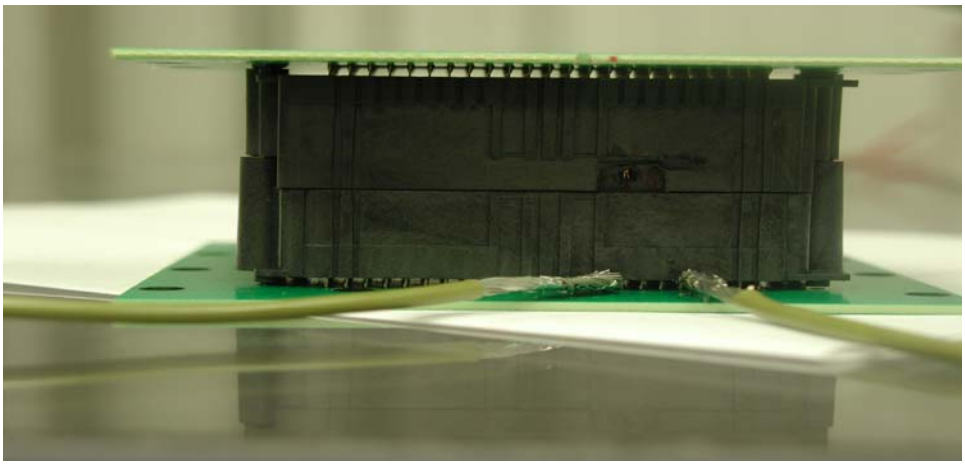
- **Initial---------- 19.1 mOhms Max**
- **Gas-Tight**
  - **<= +5.0 mOhms ----------200 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms----------0 Points ---------- Minor**
  - **+10.1 to +15.0 mOhms ----------0 Points ---------- Acceptable**
  - **+15.1 to +50.0 mOhms ----------0 Points ---------- Marginal**
  - **+50.1 to +2000 mOhms----------0 Points ---------- Unstable**
  - **>+2000 mOhms----------0 Points ---------- Open Failure**

DATA SUMMARIES

TEMPERATURE RISE (Current Carrying Capacity, CCC):

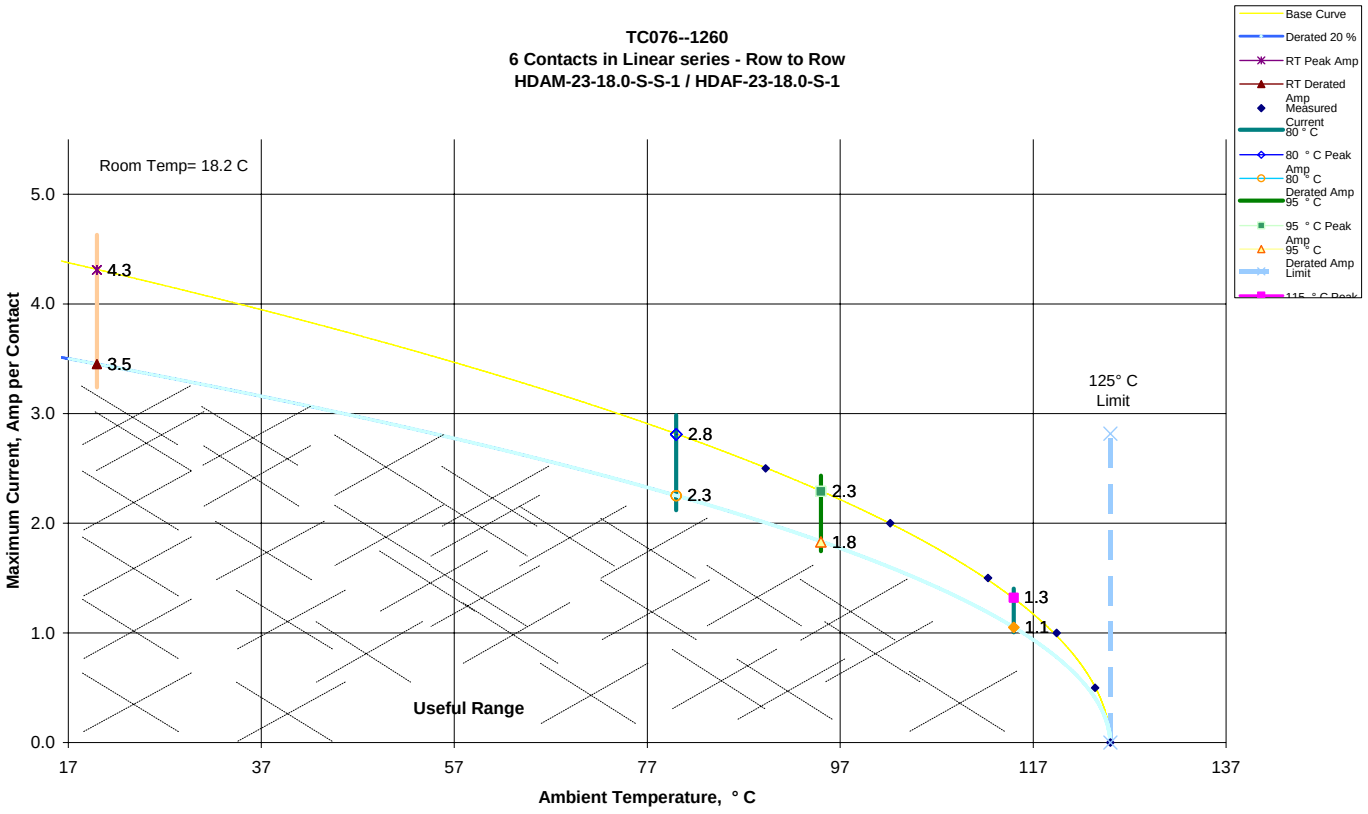
1) High quality thermocouples whose temperature slopes track one another were used for temperature monitoring.
2) The thermocouples were placed at a location to sense the maximum temperature generated during testing.
3) Temperature readings recorded are those for which three successive readings, 15 minutes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

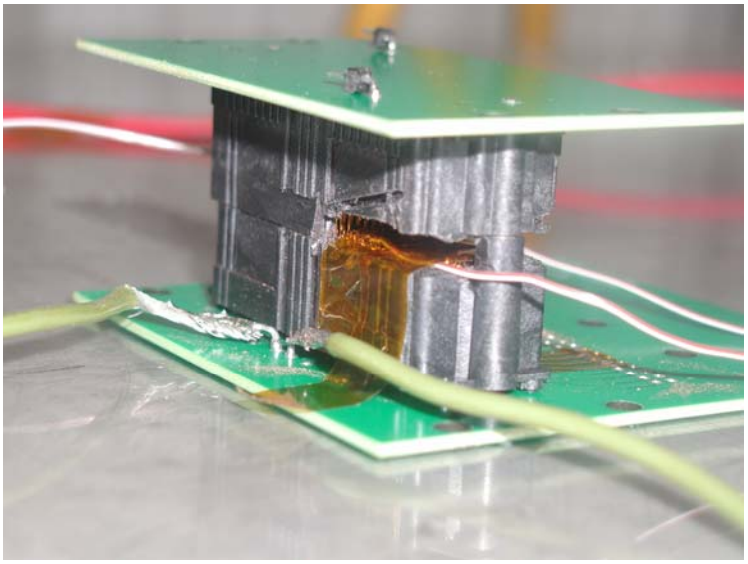




DATA SUMMARIES Continued

b. Linear configuration with SIX adjacent conductors/contacts powered – Row to Row (See photo below)





DATA SUMMARIES Continued

CONTACT GAP: (REF: TC0725—1379)

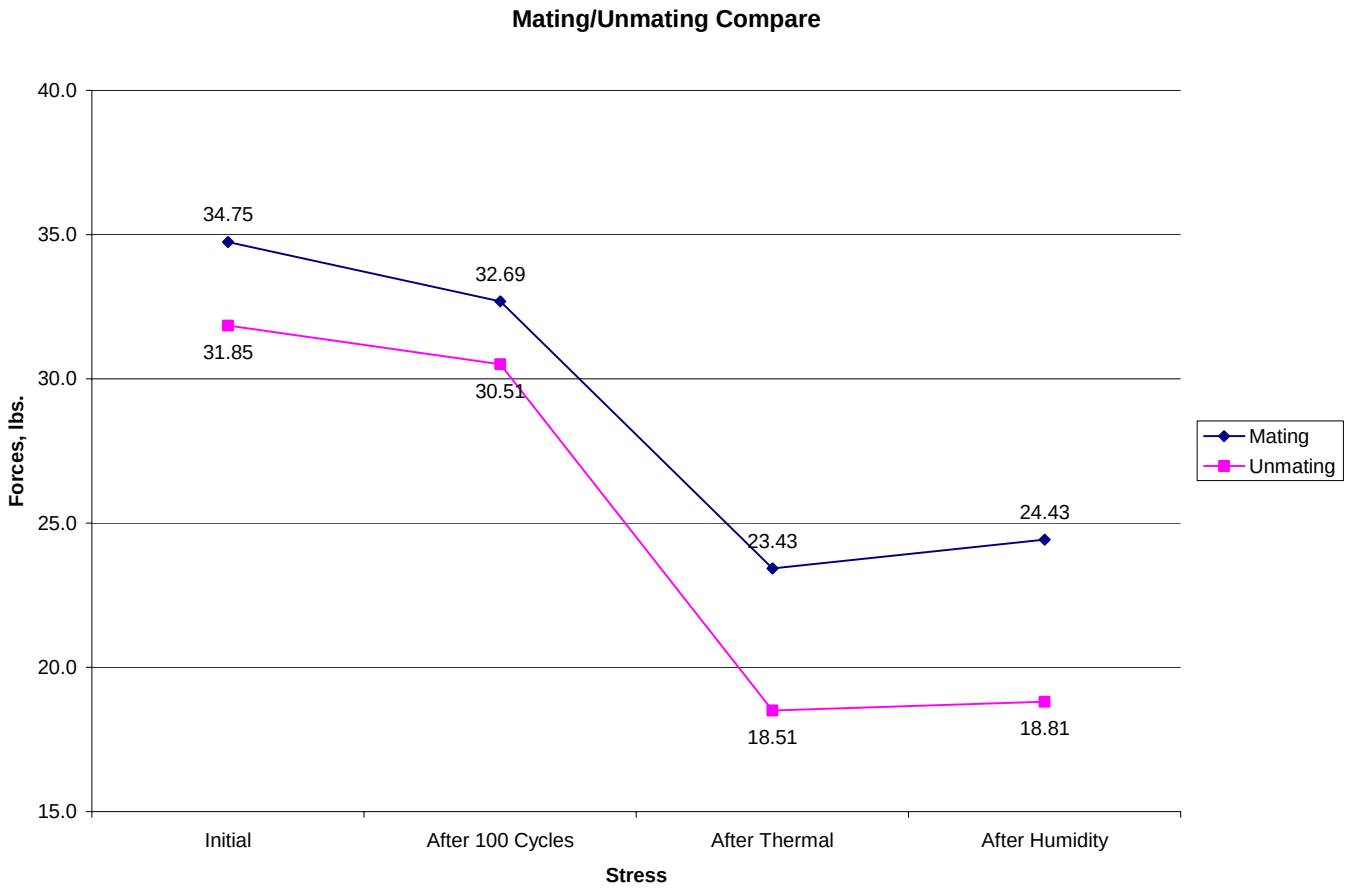
Initial		After 100 Cycles		After Thermal		After Humidity	
Measurements in mm.		Measurements in mm.		Measurements in mm.		Measurements in mm.	
Minimum	0.0940	*Minimum*	0.0820	*Minimum*	0.0940	*Minimum*	0.0580
Maximum	0.2010	*Maximum*	0.1745	*Maximum*	0.1835	*Maximum*	0.1340
Average	0.1419	*Average*	0.1262	*Average*	0.1412	*Average*	0.0957
St. Dev.	0.0230	*St. Dev.*	0.0196	*St. Dev.*	0.0220	*St. Dev.*	0.0161
Count	130	*Count*	130	*Count*	130	*Count*	130

MATING/UNMATING: (REF: TC0725—1379)

23 Position Data:

	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	486.1	30.38	461.3	28.83	434.6	27.16	415.4	25.96
Maximum	*622.9*	*38.9*	*558.2*	*34.9*	*606.1*	*37.9*	*556.6*	*34.8*
Average	***555.9***	***34.7***	***509.6***	***31.8***	***523.0***	***32.7***	***488.1***	***30.5***
	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	335.5	21.0	267.5	16.7	351.0	21.9	267.5	16.7
Maximum	*407.4*	*25.5*	*318.6*	*19.9*	*440.0*	*27.5*	*344.0*	*21.5*
Average	***374.9***	***23.4***	***296.1***	***18.5***	***390.9***	***24.4***	***301.0***	***18.8***

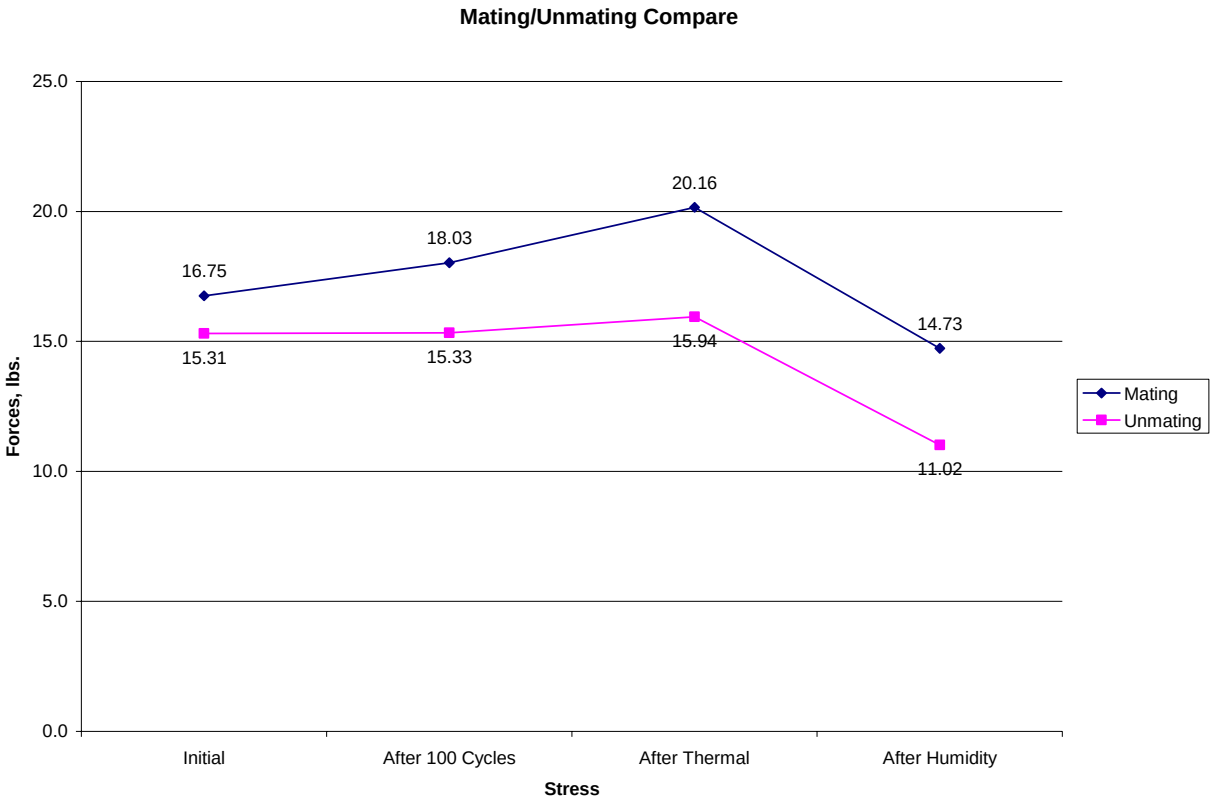
DATA SUMMARIES Continued



11 Position Data:

	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	241.3	15.08	214.7	13.42	264.5	16.53	14.5	13.14
Maximum	*293.3*	*18.3*	*264.0*	*16.5*	*316.8*	*19.8*	*281.4*	*17.6*
Average	***268.0***	***16.8***	***244.9***	***15.3***	***288.4***	***18.0***	***223.6***	***15.3***
	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	223.5	14.0	193.8	12.1	176.3	11.0	121.9	7.6
Maximum	*586.1*	*36.6*	*361.6*	*22.6*	*363.5*	*22.7*	*236.6*	*14.8*
Average	***322.5***	***20.2***	***255.1***	***15.9***	***235.6***	***14.7***	***176.3***	***11.0***

DATA SUMMARIES Continued



NORMAL FORCE (FOR CONTACTS TESTED OUTSIDE THE HOUSING):

1) Calibrated force gauges are used along with computer controlled positioning equipment.
2) Typically, 8-10 readings are taken and the averages reported.

Initial	Deflections in inches Forces in Grams					
	0.001	0.002	0.004	0.006	0.008	#REF!
Averages	3.65	8.13	17.22	26.22	35.93	0.0003
Min	2.92	7.33	16.17	25.00	34.18	0.0002
Max	4.62	8.86	18.72	27.55	38.26	0.0004
St. Dev	0.50	0.41	0.65	0.72	1.09	0.0001
Count	16	16	16	16	16	16

Thermals	Deflections in inches Forces in Grams					
	0.001	0.002	0.004	0.006	0.008	#REF!
Averages	3.61	8.40	17.89	27.68	37.33	0.0002
Min	2.56	5.97	13.84	23.67	34.23	0.0001
Max	4.32	9.39	20.05	30.30	40.34	0.0003
St. Dev	0.50	0.84	1.33	1.76	1.88	0.0001
Count	16	16	16	16	16	16

DATA SUMMARIES Continued

INSULATION RESISTANCE (IR): (REF: TC0725—1379)

	Initial, Meg Ohms		Thermal, Meg Ohms		Humidity, Meg Ohms	
	Signal-Signal		Signal-Signal		Signal-Signal	
	Mated	Unmated	Mated	Unmated	Mated	Unmated
	Insulation Resistance	Insulation Resistance	Insulation Resistance	Insulation Resistance	Insulation Resistance	Insulation Resistance
Average	15000	15000	25000	37500	100000	100000
Min	15000	15000	25000	25000	100000	100000
Max	15000	15000	25000	50000	100000	100000

DIELECTRIC WITHSTANDING VOLTAGE (DWV): (REF: TC0725—1379)

	Signal to Signal					
	Initial, VAC Mated			Initial, VAC Unmated		
	Breakdown Voltage	DWV	Working Voltage	Breakdown Voltage	DWV	Working Voltage
Average	920	690	230	800	600	200
Min	920	690	230	800	600	200
Max	920	690	230	800	600	200
	Signal to Signal					
	Thermal, VAC Mated			Thermal, VAC Unmated		
	Breakdown Voltage	DWV	Working Voltage	Breakdown Voltage	DWV	Working Voltage
Average	1180	885	295	1160	870	290
Min	1180	885	295	1160	870	290
Max	1180	885	295	1160	870	290
	Signal to Signal					
	Humidity, VAC Mated			Humidity, VAC Unmated		
	Breakdown Voltage	DWV	Working Voltage	Breakdown Voltage	DWV	Working Voltage
Average	1100	825	275	1120	840	280
Min	1100	825	275	1120	840	280
Max	1100	825	275	1120	840	280

DATA SUMMARIES Continued

LLCR: (REF: TC0725—1379)

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

Date	Jun. 25 2007	Jun. 27 2007	Jul. 10 2007	Jul. 20 2007
Room Temp C	24	24	22	23
RH	47%	45%	46%	49%
Name	Tony Wagoner	Tony Wagoner	Troy Cook	Tony Wagoner
mOhm values	**Actual** **Initial**	**Delta** **After 100 Cycles**	**Delta** **After Thermals**	**Delta** **After Humidity**
Average	10.4	0.0	0.0	-0.1
St. Dev.	0.1	0.1	0.2	0.2
Min	10.1	-0.4	-0.5	-0.6
Max	10.9	0.4	0.9	0.6
Count	200	200	200	200

GAS TIGHT:

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

DATA SUMMARIES Continued

	Feb. 09 2007	Apr. 09 2007
Date		
Room Temp C	24	20
RH	23%	25%
Name	Tori Meek	Tony Wagoner
mOhm values	**Actual Initial**	**Delta Gas Tight**
Average	11.2	0.1
St. Dev.	1.5	0.8
Min	9.2	-5.6
Max	19.1	4.2
Count	200	200

DATA

CONTACT GAP: (REF: TC0725—1379)

Initial
Measurements in mm.

Pos.#	Sample#1	Sample#2	Sample#3	Sample#4	Sample#5	Sample#6	Sample#7	Sample#8	Sample#9	Sample#10
1	0.1685	0.1835	0.1785	0.1890	0.1805	0.1695	0.1925	0.2010	0.1750	0.1955
2	0.1539	0.1650	0.1550	0.1695	0.1655	0.1625	0.1780	0.1730	0.1530	0.1795
3	0.1500	0.1610	0.1585	0.1735	0.1575	0.1555	0.1755	0.1650	0.1450	0.1620
4	0.1515	0.1555	0.1600	0.1640	0.1665	0.1550	0.1675	0.1635	0.1455	0.1655
5	0.1335	0.1485	0.1450	0.1485	0.1530	0.1505	0.1545	0.1555	0.1285	0.1555
6	0.1259	0.1260	0.1275	0.1355	0.1365	0.1335	0.1420	0.1415	0.1140	0.1395
7	0.1129	0.1200	0.1225	0.1200	0.1270	0.1170	0.1245	0.1230	0.1085	0.1335
8	0.1065	0.1225	0.1145	0.1275	0.1335	0.1310	0.1345	0.1235	0.1055	0.1205
9	0.1055	0.1180	0.1155	0.1340	0.1225	0.1270	0.1325	0.1280	0.0985	0.1240
10	0.1065	0.1115	0.1060	0.1165	0.1150	0.1175	0.1245	0.1205	0.0990	0.1150
11	0.1150	0.1095	0.1050	0.1215	0.1200	0.1145	0.1315	0.1300	0.0940	0.1255
12	0.1295	0.1395	0.1350	0.1410	0.1470	0.1555	0.1525	0.1605	0.1165	0.1470
13	0.1545	0.1520	0.1550	0.1625	0.1600	0.1625	0.1760	0.1755	0.1375	0.1685

After 100 Cycles
Measurements in mm.

Sample#	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
1	0.1540	0.1650	0.1625	0.1665	0.1605	0.1505	0.1740	0.1745	0.1495	0.1685
2	0.1420	0.1495	0.1410	0.1530	0.1405	0.1425	0.1520	0.1545	0.1345	0.1545
3	0.1260	0.1440	0.1415	0.1385	0.1415	0.1395	0.1485	0.1455	0.1225	0.1450
4	0.1340	0.1365	0.1405	0.1425	0.1510	0.1425	0.1415	0.1435	0.1240	0.1475
5	0.1180	0.1260	0.1265	0.1315	0.1345	0.1315	0.1330	0.1350	0.1130	0.1455
6	0.1100	0.1155	0.1140	0.1215	0.1235	0.1185	0.1205	0.1225	0.1005	0.1295
7	0.1000	0.1085	0.1075	0.1085	0.1165	0.1080	0.1220	0.1115	0.0945	0.1190
8	0.1060	0.1095	0.1300	0.1125	0.1165	0.1160	0.1195	0.1105	0.0925	0.1075
9	0.0920	0.1060	0.1085	0.1150	0.1075	0.1140	0.1165	0.1170	0.0925	0.1165
10	0.0880	0.0995	0.0995	0.1015	0.1030	0.1020	0.1125	0.1050	0.0915	0.1070
11	0.0960	0.1025	0.0975	0.1020	0.1045	0.1075	0.1195	0.1215	0.0820	0.1135
12	0.1120	0.1205	0.1195	0.1245	0.1335	0.1285	0.1355	0.1405	0.1025	0.1420
13	0.1200	0.1435	0.1385	0.1430	0.1390	0.1535	0.1545	0.1570	0.1255	0.1595

After Thermals
Measurements in mm.

Sample#	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
1	0.1685	0.1835	0.1785	0.1745	0.1805	0.1695	0.1781	0.175	0.175	0.1685
2	0.1539	0.165	0.155	0.1695	0.1655	0.1625	0.178	0.173	0.153	0.1795
3	0.15	0.161	0.1585	0.1735	0.1575	0.1555	0.1755	0.165	0.145	0.162
4	0.1515	0.1555	0.16	0.164	0.1665	0.155	0.1675	0.1635	0.1455	0.1655
5	0.1335	0.1485	0.145	0.1485	0.153	0.1505	0.1545	0.1555	0.1285	0.1555
6	0.1259	0.126	0.1275	0.1355	0.1365	0.1335	0.142	0.1415	0.114	0.1395
7	0.1129	0.12	0.1225	0.12	0.127	0.117	0.1245	0.123	0.1085	0.1335
8	0.1065	0.1225	0.1145	0.1275	0.1335	0.131	0.1345	0.1235	0.1055	0.1205
9	0.1055	0.118	0.1155	0.134	0.1225	0.127	0.1325	0.128	0.0985	0.124
10	0.1065	0.1115	0.106	0.1165	0.115	0.1175	0.1245	0.1205	0.099	0.115
11	0.115	0.1095	0.105	0.1215	0.12	0.1145	0.1315	0.13	0.094	0.1255
12	0.1295	0.1395	0.135	0.141	0.147	0.1555	0.1525	0.1605	0.1165	0.147
13	0.1545	0.152	0.155	0.1625	0.16	0.1625	0.176	0.1755	0.1375	0.1685

After Humidity

Measurements in mm.										
Sample#	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
1	0.1180	0.1220	0.1220	0.1240	0.1260	0.1180	0.1280	0.1340	0.1080	0.1260
2	0.1100	0.1160	0.1040	0.1120	0.1100	0.1100	0.1140	0.1180	0.1000	0.1140
3	0.1120	0.1140	0.1020	0.1180	0.1040	0.1060	0.1160	0.1060	0.0940	0.1100
4	0.1020	0.1100	0.1060	0.1080	0.1080	0.1080	0.1100	0.1100	0.0940	0.1080
5	0.0880	0.1000	0.0980	0.1000	0.1000	0.1020	0.1040	0.1040	0.0820	0.1060
6	0.0840	0.0920	0.0840	0.0900	0.0940	0.0900	0.0960	0.0920	0.0760	0.0960
7	0.0800	0.0820	0.0800	0.0820	0.0840	0.0900	0.0920	0.0840	0.0700	0.0880
8	0.0760	0.0820	0.0780	0.0820	0.0860	0.0860	0.0860	0.0800	0.0680	0.0820
9	0.0720	0.0820	0.0800	0.0840	0.0840	0.0860	0.0880	0.0840	0.0660	0.0860
10	0.0720	0.0760	0.0720	0.0780	0.0740	0.0780	0.0820	0.0780	0.0620	0.0760
11	0.0760	0.0760	0.0720	0.0800	0.0760	0.0760	0.0860	0.0860	0.0580	0.0820
12	0.0960	0.0940	0.0940	0.0940	0.1060	0.1060	0.1060	0.1040	0.0720	0.1060
13	0.1220	0.1120	0.1120	0.1060	0.1120	0.1180	0.1220	0.1200	0.0980	0.1120

MATING/UNMATING: (REF: TC0725—1379)

23 Position Data:

	Initial				After 100 Cycles			
	Mating		Unmating		Mating		Unmating	
Sample#	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
1	498.6	31.16	501.4	31.34	434.6	27.16	425.1	26.57
2	486.1	30.38	477.6	29.85	535.7	33.48	488.5	30.53
3	546.7	34.17	512.5	32.03	559.7	34.98	518.7	32.42
4	571.5	35.72	538.4	33.65	582.4	36.40	556.6	34.79
5	526.2	32.89	502.2	31.39	606.1	37.88	552.2	34.51
6	593.1	37.07	556.3	34.77	594.7	37.17	554.2	34.64
7	622.9	38.93	558.2	34.89	498.6	31.16	495.0	30.94
8	615.7	38.48	489.9	30.62	488.6	30.54	415.4	25.96
9	517.9	32.37	461.3	28.83	440.2	27.51	417.4	26.09
10	580.6	36.29	497.9	31.12	489.4	30.59	457.6	28.60

	After Thermal				After Humidity			
	Mating		Unmating		Mating		Unmating	
Sample#	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
1	338.7	21.17	297.0	18.56	440.0	27.50	344.0	21.50
2	359.7	22.48	303.7	18.98	437.0	27.31	314.9	19.68
3	407.4	25.46	291.2	18.20	385.8	24.11	287.2	17.95
4	367.0	22.94	277.3	17.33	351.0	21.94	298.2	18.64
5	407.0	25.44	318.6	19.91	383.7	23.98	307.2	19.20
6	392.5	24.53	316.8	19.80	401.3	25.08	307.4	19.21
7	398.2	24.89	318.2	19.89	374.6	23.41	289.8	18.11
8	374.2	23.39	283.8	17.74	390.2	24.39	298.1	18.63
9	335.5	20.97	267.5	16.72	372.8	23.30	295.5	18.47
10	368.3	23.02	287.2	17.95	372.3	23.27	267.5	16.72

DATA Continued

11 Position Data:

	Initial				After 100 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
Sample#	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
1	287.5	17.97	241.3	15.08	284.2	17.76	242.9	15.18
2	241.3	15.08	239.2	14.95	270.2	16.89	251.7	15.73
3	282.7	17.67	241.3	15.08	269.9	16.87	235.0	14.69
4	269.8	16.86	257.8	16.11	316.8	19.80	281.4	17.59
5	292.0	18.25	264.0	16.50	276.6	17.29	210.2	13.14
6	293.3	18.33	252.0	15.75	298.2	18.64	231.4	14.46
7	247.4	15.46	236.8	14.80	264.5	16.53	14.5	14.47
8	242.1	15.13	214.7	13.42	301.1	18.82	233.9	14.62
9	245.3	15.33	243.2	15.20	293.4	18.34	259.7	16.23
10	279.0	17.44	258.6	16.16	309.4	19.34	275.0	17.19
	After Thermal				After Humidity			
	Mating		**Unmating**		**Mating**		**Unmating**	
Sample#	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
1	247.2	15.45	193.8	12.11	197.3	12.33	121.9	7.62
2	301.4	18.84	250.6	15.66	230.2	14.39	173.3	10.83
3	290.9	18.18	245.4	15.34	292.5	18.28	189.1	11.82
4	247.0	15.44	227.2	14.20	258.4	16.15	193.3	12.08
5	270.1	16.88	248.5	15.53	213.4	13.34	184.5	11.53
6	491.2	30.70	361.6	22.60	239.5	14.97	183.0	11.44
7	223.5	13.97	199.4	12.46	176.3	11.02	143.7	8.98
8	253.0	15.81	221.0	13.81	205.8	12.86	178.9	11.18
9	314.9	19.68	269.3	16.83	179.5	11.22	158.6	9.91
10	586.1	36.63	333.9	20.87	363.5	22.72	236.6	14.79

DATA Continued

NORMAL FORCE (FOR CONTACTS TESTED OUTSIDE THE HOUSING):

Initial	Deflections in inches Forces in Grams					
Sample #	0.001	0.002	0.004	0.006	0.008	*SET*
1	4.11	8.35	17.70	27.04	37.58	0.00020
2	3.26	7.84	16.68	25.85	35.37	0.00030
3	3.43	8.18	17.02	25.85	35.03	0.00020
4	3.09	8.18	16.51	25.51	36.05	0.00030
5	3.26	8.35	17.36	26.19	36.73	0.00030
6	3.26	7.84	17.36	26.36	35.37	0.00030
7	3.77	8.35	17.19	26.19	36.05	0.00030
8	3.26	7.67	16.85	25.68	35.20	0.00040
9	4.11	8.69	18.72	27.55	38.26	0.00020
10	4.45	8.86	18.04	27.55	37.41	0.00020
11	4.62	8.35	17.87	27.04	36.22	0.00020
12	3.60	8.01	17.19	26.02	35.88	0.00020
13	2.92	7.33	16.17	25.00	34.18	0.00030
14	3.77	7.84	16.85	25.68	35.20	0.00020
15	4.11	8.52	17.53	26.02	35.37	0.00020
16	3.43	7.67	16.51	26.02	35.03	0.00030

Thermals	Deflections in inches Forces in Grams					
Sample #	0.001	0.002	0.004	0.006	0.008	*SET*
1	4.11	9.39	20.05	30.30	40.34	0.00020
2	2.97	8.56	18.70	29.16	39.30	0.00020
3	4.11	9.28	18.29	29.98	40.02	0.00010
4	3.38	8.25	18.08	29.47	38.89	0.00020
5	3.49	8.15	17.36	26.78	38.47	0.00020
6	3.80	8.66	19.01	29.05	38.37	0.00010
7	4.01	9.18	18.60	28.33	37.44	0.00020
8	4.32	8.97	18.91	28.64	37.95	0.00020
9	2.56	5.97	13.84	23.67	34.23	0.00030
10	3.59	8.46	18.19	28.23	38.27	0.00020
11	3.07	7.21	17.05	26.05	36.09	0.00030
12	2.97	7.94	17.56	26.36	35.88	0.00020
13	3.90	8.87	18.08	26.78	35.37	0.00030
14	3.59	8.35	17.36	26.47	35.57	0.00020
15	3.70	8.46	17.46	26.57	35.47	0.00030
16	4.11	8.66	17.67	26.98	35.57	0.00030

DATA Continued

INSULATION RESISTANCE (IR): (REF: TC0725—1379)

	Initial, Meg Ohms		Thermal, Meg Ohms		Humidity, Meg Ohms	
	Signal-Signal		Signal-Signal		Signal-Signal	
	Mated	Unmated	Mated	Unmated	Mated	Unmated
Sample #	Insulation Resistance	Insulation Resistance	Insulation Resistance	Insulation Resistance	Insulation Resistance	Insulation Resistance
1	15000	15000	25000	50000	100000	100000
2	15000	15000	25000	25000	100000	100000

DIELECTRIC WITHSTANDING VOLTAGE (DWV): (REF: TC0725—1379)

	Signal to Signal					
	Initial, VAC Mated			Initial, VAC Unmated		
Sample #	Breakdown Voltage	DWV	Working Voltage	Breakdown Voltage	DWV	Working Voltage
1				800	600	200
2	920	690	230			

	Signal to Signal					
	Thermal, VAC Mated			Thermal, VAC Unmated		
Sample #	Breakdown Voltage	DWV	Working Voltage	Breakdown Voltage	DWV	Working Voltage
1				1160	870	290
2	1180	885	295			

	Signal to Signal					
	Humidity, VAC Mated			Humidity, VAC Unmated		
Sample #	Breakdown Voltage	DWV	Working Voltage	Breakdown Voltage	DWV	Working Voltage
1				1120	840	280
2	1100	825	275			

DATA Continued

LLCR: **(REF: TC0725—1379)**

Board	Position	Initial	After 100 Cycles	After Thermals	After Humidity
1	P1	10.2	0.2	0.1	0.1
1	P2	10.5	-0.1	0.1	-0.1
1	P3	10.4	0.1	0.1	0.0
1	P4	10.3	0.1	0.9	0.0
1	P5	10.4	-0.1	0.1	-0.1
1	P6	10.5	-0.2	0.2	0.0
1	P7	10.5	-0.2	0.2	0.0
1	P8	10.4	0.0	0.3	0.0
1	P9	10.5	0.0	0.1	0.0
1	P10	10.5	-0.1	-0.1	0.0
1	P11	10.6	-0.2	-0.1	-0.1
1	P12	10.5	-0.1	-0.2	-0.1
1	P13	10.5	-0.1	-0.1	0.0
1	P14	10.4	0.1	0.0	0.0
1	P15	10.5	0.1	0.0	0.1
1	P16	10.5	-0.1	-0.1	-0.1
1	P17	10.5	0.0	0.0	0.0
1	P18	10.4	0.1	0.0	0.2
1	P19	10.6	0.0	-0.2	-0.1
1	P20	10.5	0.0	0.0	0.2
1	P21	10.4	0.1	-0.1	0.1
1	P22	10.8	0.0	-0.5	0.6
1	P23	10.4	0.1	0.0	0.1
1	P24	10.5	0.1	0.1	-0.1
1	P25	10.3	0.0	0.0	0.0
2	P1	10.7	-0.4	-0.4	-0.4
2	P2	10.3	0.1	-0.1	0.0
2	P3	10.7	-0.1	0.0	-0.2
2	P4	10.3	0.1	0.1	0.0
2	P5	10.4	0.0	-0.1	-0.1
2	P6	10.3	0.1	0.0	0.0
2	P7	10.4	0.1	-0.1	-0.1
2	P8	10.5	0.1	-0.2	-0.2
2	P9	10.7	-0.3	-0.4	-0.3
2	P10	10.4	0.2	-0.1	0.1
2	P11	10.3	0.1	0.0	0.1
2	P12	10.4	0.0	-0.1	0.0
2	P13	10.4	0.1	0.0	0.1
2	P14	10.3	0.1	0.0	0.1
2	P15	10.4	0.0	-0.2	0.0
2	P16	10.5	-0.1	-0.1	-0.1

2	P17	10.5	0.0	-0.2	0.0
2	P18	10.3	0.0	0.0	-0.1
2	P19	10.4	0.1	0.1	-0.2
2	P20	10.4	0.0	-0.1	-0.2
2	P21	10.4	0.0	0.0	-0.2
2	P22	10.3	0.1	0.2	0.0
2	P23	10.4	0.0	0.1	0.1
2	P24	10.4	-0.3	0.0	-0.2
2	P25	10.3	-0.1	0.1	-0.2
3	P1	10.4	0.1	-0.1	0.0
3	P2	10.5	-0.3	0.0	-0.3
3	P3	10.4	0.0	-0.1	0.0
3	P4	10.4	-0.1	0.0	-0.1
3	P5	10.3	0.1	0.3	0.0
3	P6	10.7	-0.2	-0.1	-0.4
3	P7	10.6	0.0	-0.1	-0.2
3	P8	10.4	-0.1	0.1	-0.3
3	P9	10.5	-0.3	-0.1	-0.5
3	P10	10.4	-0.2	-0.1	-0.3
3	P11	10.7	-0.3	-0.4	-0.4
3	P12	10.4	0.0	-0.1	-0.1
3	P13	10.4	-0.1	-0.1	-0.2
3	P14	10.4	-0.1	-0.1	-0.2
3	P15	10.5	-0.2	-0.2	-0.3
3	P16	10.5	-0.2	-0.4	-0.2
3	P17	10.4	0.0	-0.3	0.0
3	P18	10.3	0.0	-0.1	0.1
3	P19	10.8	-0.4	-0.5	-0.5
3	P20	10.3	0.2	0.2	0.1
3	P21	10.2	0.2	0.1	0.1
3	P22	10.4	0.0	0.0	-0.1
3	P23	10.2	0.0	0.1	-0.1
3	P24	10.4	0.1	-0.2	0.0
3	P25	10.2	0.1	0.4	0.0
4	P1	10.3	0.0	-0.3	-0.1
4	P2	10.4	0.2	-0.1	0.0
4	P3	10.7	-0.1	-0.4	-0.3
4	P4	10.5	-0.2	-0.4	-0.3
4	P5	10.4	0.0	-0.3	-0.2
4	P6	10.3	0.0	-0.1	-0.2
4	P7	10.4	0.0	-0.3	-0.1
4	P8	10.3	-0.1	-0.1	-0.2
4	P9	10.4	-0.3	-0.3	-0.4
4	P10	10.3	-0.2	0.0	-0.3
4	P11	10.3	0.0	0.0	-0.1
4	P12	10.2	0.0	0.0	-0.1
4	P13	10.2	0.0	0.0	-0.1
4	P14	10.3	0.0	0.0	-0.1
4	P15	10.3	-0.1	-0.1	-0.1

4	P16	10.3	-0.2	-0.3	-0.2
4	P17	10.4	0.0	-0.4	-0.2
4	P18	10.3	-0.2	-0.2	-0.4
4	P19	10.3	-0.2	0.1	-0.3
4	P20	10.2	0.0	0.1	-0.1
4	P21	10.1	0.0	0.3	-0.1
4	P22	10.1	0.0	0.2	-0.1
4	P23	10.2	0.2	0.4	0.0
4	P24	10.3	-0.1	0.1	-0.2
4	P25	10.2	-0.1	0.3	-0.2
5	P1	10.5	-0.1	-0.1	-0.1
5	P2	10.6	-0.1	-0.2	0.0
5	P3	10.3	0.3	0.2	0.3
5	P4	10.3	0.3	0.0	0.2
5	P5	10.4	0.4	0.0	0.5
5	P6	10.3	0.2	0.1	0.2
5	P7	10.6	-0.3	-0.1	0.0
5	P8	10.6	-0.1	-0.1	0.2
5	P9	10.3	0.3	0.2	0.4
5	P10	10.5	0.0	-0.1	0.2
5	P11	10.5	-0.1	-0.1	0.2
5	P12	10.4	0.0	0.3	0.2
5	P13	10.6	-0.1	0.1	0.2
5	P14	10.5	-0.1	0.1	0.2
5	P15	10.3	0.0	0.3	0.1
5	P16	10.6	-0.3	0.2	-0.2
5	P17	10.5	0.0	0.2	0.1
5	P18	10.5	0.1	0.3	0.0
5	P19	10.4	0.1	0.1	0.1
5	P20	10.2	0.1	0.2	0.1
5	P21	10.2	0.1	0.7	0.1
5	P22	10.4	-0.2	0.1	-0.1
5	P23	10.4	0.0	0.1	0.1
5	P24	10.3	0.0	0.3	0.1
5	P25	10.3	0.1	0.2	0.0
6	P1	10.3	0.1	0.0	0.1
6	P2	10.4	-0.1	-0.1	-0.1
6	P3	10.3	0.4	0.1	0.1
6	P4	10.5	-0.2	-0.1	-0.1
6	P5	10.4	0.0	0.0	0.1
6	P6	10.3	-0.1	-0.1	-0.1
6	P7	10.4	0.1	-0.2	-0.1
6	P8	10.5	-0.1	-0.1	-0.2
6	P9	10.4	-0.1	-0.1	-0.1
6	P10	10.5	-0.1	-0.2	-0.1
6	P11	10.5	-0.1	-0.1	-0.1
6	P12	10.6	-0.3	-0.3	-0.4
6	P13	10.6	-0.1	-0.2	-0.2
6	P14	10.3	0.0	-0.1	-0.1

6	P15	10.4	-0.1	-0.1	-0.2
6	P16	10.4	-0.1	0.0	-0.1
6	P17	10.5	-0.1	-0.2	-0.2
6	P18	10.5	0.0	-0.2	-0.2
6	P19	10.5	-0.2	0.0	-0.3
6	P20	10.4	-0.1	0.0	-0.2
6	P21	10.4	0.1	0.1	0.0
6	P22	10.4	-0.1	0.0	-0.1
6	P23	10.6	-0.2	-0.2	-0.2
6	P24	10.4	0.0	0.0	-0.1
6	P25	10.3	0.0	0.1	0.0
7	P1	10.3	0.1	0.1	0.1
7	P2	10.4	0.1	0.0	0.1
7	P3	10.5	0.0	0.0	0.1
7	P4	10.6	-0.1	-0.2	0.0
7	P5	10.3	0.1	0.0	0.2
7	P6	10.3	0.0	0.0	0.1
7	P7	10.6	-0.2	-0.4	-0.3
7	P8	10.6	0.0	-0.2	-0.1
7	P9	10.5	0.0	-0.2	-0.1
7	P10	10.4	-0.1	-0.1	-0.1
7	P11	10.5	-0.1	-0.1	-0.2
7	P12	10.5	0.0	-0.1	0.0
7	P13	10.6	-0.2	-0.2	-0.2
7	P14	10.4	0.2	0.0	0.1
7	P15	10.4	0.1	-0.1	0.0
7	P16	10.5	-0.1	-0.2	-0.1
7	P17	10.4	0.0	0.1	-0.1
7	P18	10.4	-0.1	0.1	-0.1
7	P19	10.6	-0.3	-0.4	-0.5
7	P20	10.3	0.0	0.0	0.0
7	P21	10.5	-0.1	-0.1	-0.1
7	P22	10.6	-0.3	0.0	-0.2
7	P23	10.4	0.0	0.1	0.2
7	P24	10.3	0.1	0.1	0.1
7	P25	10.3	0.1	0.3	0.0
8	P1	10.1	0.3	0.3	0.1
8	P2	10.2	-0.1	0.2	0.1
8	P3	10.2	0.2	0.2	0.1
8	P4	10.3	0.0	0.1	-0.1
8	P5	10.3	0.1	0.2	0.0
8	P6	10.4	0.2	0.3	-0.1
8	P7	10.9	-0.3	-0.4	-0.6
8	P8	10.5	0.3	0.0	-0.2
8	P9	10.6	0.0	-0.2	-0.3
8	P10	10.5	-0.1	-0.1	-0.3
8	P11	10.4	-0.1	0.1	-0.2
8	P12	10.2	0.0	0.2	-0.1
8	P13	10.4	-0.1	-0.1	-0.2

8	P14	10.3	0.1	0.0	0.0
8	P15	10.6	-0.1	-0.3	-0.3
8	P16	10.5	-0.1	-0.2	-0.3
8	P17	10.3	0.1	0.2	0.0
8	P18	10.4	0.2	0.1	-0.1
8	P19	10.5	0.2	-0.2	-0.2
8	P20	10.4	0.2	0.0	0.1
8	P21	10.4	0.0	0.0	-0.1
8	P22	10.4	-0.1	0.1	0.0
8	P23	10.4	0.0	0.0	-0.1
8	P24	10.2	0.0	0.2	0.1
8	P25	10.3	0.0	0.3	0.0

GAS TIGHT:

mOhm values		Actual	Delta
Board	Position	Initial	Gas Tight
1	P1	10.2	-0.1
1	P2	11.4	-0.1
1	P3	10.5	0.1
1	P4	10.4	0.3
1	P5	10.3	0.2
1	P6	10.4	0.2
1	P7	10.5	0.0
1	P8	10.4	0.0
1	P9	10.3	0.0
1	P10	10.5	-0.2
1	P11	10.2	0.0
1	P12	10.4	0.0
1	P13	10.8	0.3
1	P14	10.4	0.1
1	P15	10.4	0.2
1	P16	10.3	0.2
1	P17	10.5	0.3
1	P18	10.7	-0.1
1	P19	10.4	0.1
1	P20	10.4	0.0
1	P21	10.5	0.1
1	P22	10.7	0.1
1	P23	10.9	0.1
1	P24	10.2	-0.1
1	P25	11.1	0.0
2	P1	10.6	-0.1
2	P2	12.7	0.1
2	P3	10.6	0.2
2	P4	10.6	0.0

2	P5	11.4	0.9
2	P6	10.5	0.1
2	P7	10.7	0.0
2	P8	10.5	0.0
2	P9	11.0	0.0
2	P10	11.5	0.1
2	P11	11.1	0.0
2	P12	11.2	0.0
2	P13	11.2	-0.2
2	P14	11.2	-0.2
2	P15	11.2	-0.2
2	P16	11.4	-0.2
2	P17	10.9	0.0
2	P18	11.1	-0.2
2	P19	11.2	-0.3
2	P20	10.8	-0.1
2	P21	11.1	-0.1
2	P22	10.9	-0.1
2	P23	11.2	0.0
2	P24	10.4	-0.1
2	P25	11.9	0.1
3	P1	11.4	-0.1
3	P2	12.8	-0.5
3	P3	12.3	-0.5
3	P4	11.9	-0.3
3	P5	13.4	0.0
3	P6	10.4	0.5
3	P7	11.4	1.4
3	P8	10.5	0.2
3	P9	10.7	-0.2
3	P10	10.4	0.1
3	P11	10.4	0.0
3	P12	10.5	0.2
3	P13	11.0	0.1
3	P14	11.2	0.8
3	P15	10.5	0.2
3	P16	10.5	0.1
3	P17	10.5	0.2
3	P18	10.4	0.1
3	P19	10.5	-0.2
3	P20	10.5	-0.1
3	P21	10.6	0.1
3	P22	10.7	-0.1
3	P23	10.9	0.0
3	P24	9.9	0.0
3	P25	11.1	0.0
4	P1	9.2	2.4
4	P2	12.2	0.6
4	P3	11.5	1.0

4	P4	11.3	1.5
4	P5	10.6	0.6
4	P6	10.8	0.1
4	P7	10.6	-0.1
4	P8	10.4	0.0
4	P9	10.6	0.1
4	P10	10.4	0.2
4	P11	10.8	0.3
4	P12	11.0	0.2
4	P13	10.8	-0.1
4	P14	10.7	0.1
4	P15	10.6	0.0
4	P16	10.7	0.0
4	P17	10.7	0.0
4	P18	10.7	0.0
4	P19	10.9	-0.3
4	P20	10.6	0.0
4	P21	10.7	0.0
4	P22	11.0	0.1
4	P23	11.2	0.2
4	P24	10.0	0.4
4	P25	11.6	-0.1
5	P1	10.5	-0.1
5	P2	11.5	0.1
5	P3	10.2	0.3
5	P4	10.4	0.2
5	P5	10.5	0.0
5	P6	10.4	-0.1
5	P7	10.3	-0.1
5	P8	10.5	-0.1
5	P9	10.6	0.0
5	P10	10.3	0.0
5	P11	10.5	0.0
5	P12	10.4	0.0
5	P13	10.9	-0.1
5	P14	10.5	0.0
5	P15	10.5	0.0
5	P16	10.4	-0.1
5	P17	10.6	-0.1
5	P18	10.4	-0.1
5	P19	10.5	0.0
5	P20	10.5	0.0
5	P21	10.8	0.0
5	P22	10.9	0.0
5	P23	11.0	0.2
5	P24	10.1	0.3
5	P25	11.6	0.1
6	P1	10.3	-0.2
6	P2	11.8	0.0

6	P3	10.4	-0.1
6	P4	10.6	-0.2
6	P5	10.5	0.2
6	P6	10.7	-0.2
6	P7	10.5	0.0
6	P8	10.7	-0.2
6	P9	10.7	-0.2
6	P10	10.4	-0.1
6	P11	10.5	0.0
6	P12	10.6	0.0
6	P13	10.8	-0.1
6	P14	10.6	-0.1
6	P15	10.4	-0.1
6	P16	10.7	-0.1
6	P17	10.4	-0.1
6	P18	10.5	-0.2
6	P19	10.6	-0.2
6	P20	10.5	0.0
6	P21	10.7	0.0
6	P22	10.7	0.0
6	P23	10.8	-0.1
6	P24	10.1	0.0
6	P25	11.2	0.0
7	P1	11.2	0.0
7	P2	10.3	0.3
7	P3	12.9	-1.1
7	P4	10.5	-0.1
7	P5	11.5	-0.4
7	P6	10.5	-0.1
7	P7	10.6	-0.1
7	P8	10.6	-0.2
7	P9	10.7	-0.2
7	P10	10.5	-0.2
7	P11	10.5	-0.1
7	P12	10.6	-0.2
7	P13	11.1	-0.2
7	P14	10.8	-0.2
7	P15	10.7	-0.3
7	P16	10.6	-0.2
7	P17	10.8	-0.2
7	P18	10.7	-0.2
7	P19	10.6	-0.1
7	P20	10.8	-0.2
7	P21	11.0	-0.2
7	P22	11.2	-0.3
7	P23	13.3	-2.3
7	P24	10.1	0.1
7	P25	11.7	-0.2
8	P1	10.1	1.3

8	P2	10.3	1.9
8	P3	11.0	4.0
8	P4	15.6	-0.1
8	P5	14.0	4.2
8	P6	19.0	1.7
8	P7	16.3	-0.3
8	P8	14.2	2.8
8	P9	13.3	1.0
8	P10	19.1	-5.6
8	P11	12.0	0.0
8	P12	11.8	1.2
8	P13	11.8	-0.2
8	P14	12.4	0.6
8	P15	11.4	2.5
8	P16	14.7	2.0
8	P17	13.7	1.3
8	P18	15.4	-1.1
8	P19	15.6	-0.1
8	P20	17.8	0.2
8	P21	14.5	0.2
8	P22	16.3	-0.6
8	P23	10.9	0.2
8	P24	12.2	-2.1
8	P25	12.2	-1.5

EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: THL-02
Description: Temperature/Humidity Chart Recorder
Manufacturer: Dickson
Model: THDX
Serial #: 00120351
Accuracy: Temp: +/- 1C; Humidity: +/-2% RH (0 - 60%) +/- 3% RH (61 - 95%).
… Last Cal: 06/16/06, Next Cal: 06/16/07

Equipment #: MO-02
Description: Multimeter /Data Acquisition System
Manufacturer: Keithley
Model: 2700
Serial #: 0780546
Accuracy: See Manual
… Last Cal: 05/12/06, Next Cal: 05/12/07

Equipment #: MO-04
Description: Multimeter /Data Acquisition System
Manufacturer: Keithley
Model: 2700
Serial #: 0798688
Accuracy: See Manual
… Last Cal: 01/31/07, Next Cal: 01/31/08

Equipment #: TC090601-109/118
Description: IC Thermocouple-109/118
Manufacturer: Samtec
Model:
Serial #: TC090601-109/118
Accuracy: +/- 1 degree C
… Last Cal: , Next Cal:

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: 04/12/06, Next Cal: 04/12/07
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: 5/12/06, Next Cal: 5/12/07

Equipment #: LC-250N (icell)
Description: 250 Newton load cell for Dillon Quantrol test stand
Manufacturer: Dillon Quantrol
Model: icell
Serial #: 04-0020-08
Accuracy: .10 % of Capacity .10 % of Capacity
… Last Cal: 5/10/2006, Next Cal: 5/10/2007

Equipment #: THC-01
Description: Temperature/Humidity Chamber
Manufacturer: Thermotron
Model: SM-8-7800
Serial #: 30676
Accuracy: See Manual
… Last Cal: 8/18/2006, Next Cal: 8/18/2007

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: 05/12/06, Next Cal: 05/12/07

Equipment #: LC-5N(icell)
Description: 5 N Load Cell for Dillon Quantrol
Manufacturer: Dillon Quantrol
Model: icell
Serial #: 02-0159-03
Accuracy: .10% of capacity
… Last Cal: 6/13/06, Next Cal: 6/13/07

Equipment #: HPM-01
Description: Hipot Megommeter
Manufacturer: Hipotronics
Model: H306B-A
Serial #: 00120351
Accuracy: 2 % Full Scale Accuracy
… Last Cal: 5/12/06, Next Cal: 05/12/07

Equipment #: MO-01
Description: Micro-Ohmeter
Manufacturer: Keithley
Model: 580
Serial #: 0772740
Accuracy: See Manual
… Last Cal: 05/12/06, Next Cal: 05/12/07

Equipment #: MO-03
Description: Multimeter /Data Acquisition System
Manufacturer: Keithley
Model: 2700
Serial #: 0791975
Accuracy: See Manual
… Last Cal: 05/12/06, Next Cal: 05/12/07

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