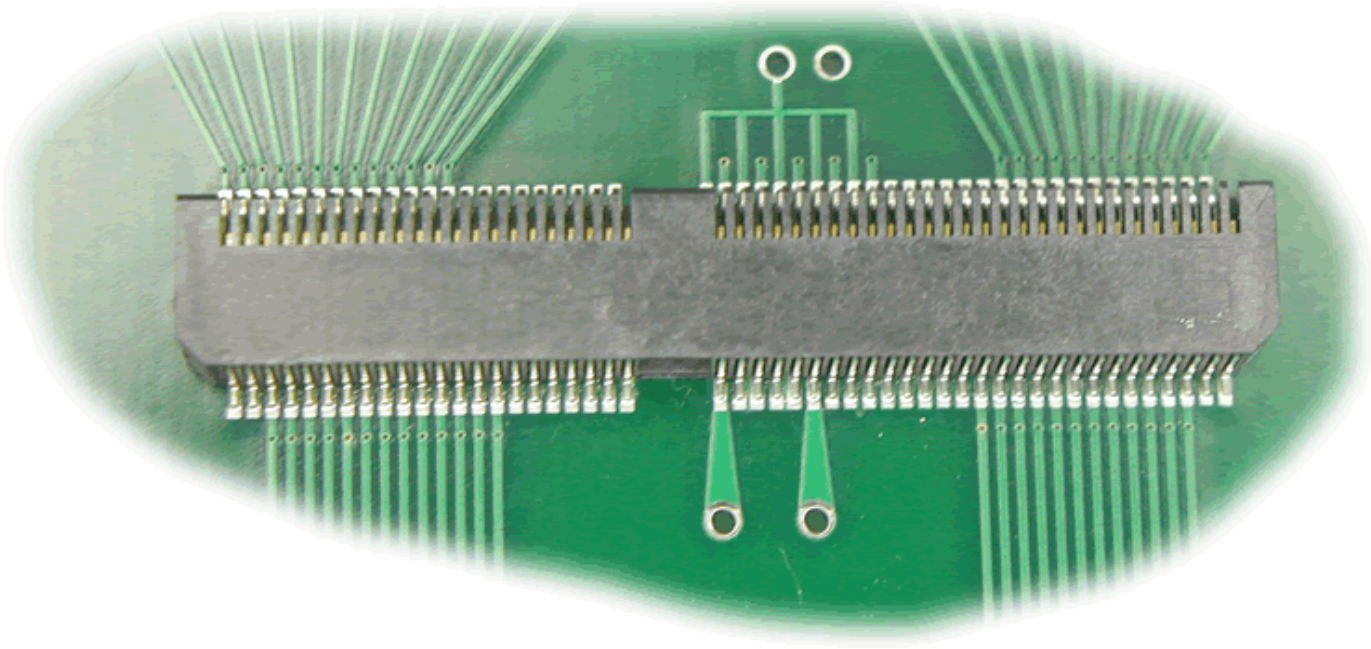
Project Number: NA	Tracking Code: 0211--0635		
Requested by: Corey Rose	Date: 3/13/02	Product Rev: 5	
Part #: MECT-150-01-M-D-RA1	Lot #: FAS	Tech: Troy Cook	Eng: John Tozier
Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		



DVT

PART DESCRIPTION

MECT-150-01-M-D-RA1

Project Number: NA	Tracking Code: 0211--0635		
Requested by: Corey Rose	Date: 3/13/02	Product Rev: 5	
Part #: MECT-150-01-M-D-RA1	Lot #: FAS	Tech: Troy Cook	Eng: John Tozier
Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

CERTIFICATION

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

SCOPE

To perform the following tests: DVT

APPLICABLE DOCUMENTS

Standards: EIA Publication 364

TEST SAMPLES AND PREPARATION

1) All materials were manufactured in accordance with the applicable product specification.
2) All test samples were identified and encoded to maintain traceability throughout the test sequences.
3) After soldering, the parts to be used for LLCR testing were cleaned according to TLWI-0001:
   a) Sample test boards are to be ultrasonically cleaned after test lead attachment, preparation and/or soldering using the following process.
   b) Immerse the sample test boards into the Branson 3510 cleaner which contains Kyzen Ionox HC1 (or equivalent) cleaning solution with the following conditions:
      i) Temperature: 55° C+/- 5° C
      ii) Frequency: 40 KHz
      iii) Immersion Time: 5 to 10 Minutes
   c) Sample test boards are then slowly removed and placed into the Branson 3510 cleaner which contains deionized water with the following conditions:
      i) Temperature: 55° C +/- 5° C
      ii) Frequency: 40 KHz
      iii) Immersion Time: 5 to 10 Minutes
   d) Sample test boards are then removed and placed in a beaker, on a hot plate with a magnetic stirrer containing deionized water warmed to 55° C +/- 5° C for 1/2 to 1 minute (Use 55° C as target)
   e) Upon removal, the sample test boards are then rinsed for 1/2 to 1 minute in room temperature free flowing deionized water.
   f) After the final rinse, the sample test boards are to be dried in an air-circulating oven for 10 to 15 minutes at 50° C +/- 5° C (Use 50° C as target)
   g) Sample test boards are then allowed to set and recover to room ambient condition prior to testing.
4) Parts not intended for testing LLCR and DWV/IR are visually inspected and cleaned if necessary.
5) Any additional preparation will be noted in the individual test procedures.

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Test Start: 04/12/02	Test Completed: 6/6/02		

FLOWCHART

TEST STEP	GROUP 1a 10 Boards 1.1 mm card Mother/daughter mechanical with thermal/humidity	GROUP 1b 10 Boards 0.9 mm card Mother/daughter mechanical with thermal/humidity	GROUP 2a CONTACTS Individual Contacts	GROUP 2b CONTACTS Individual Contacts
01	Contact Gaps	Contact Gaps	Normal Force	Thermal Aging
02	Mating / Unmating	Mating / Unmating		Normal Force
03	100 Cycles	100 Cycles		
04	Mating / Unmating	Mating / Unmating		
05	Contact Gaps	Contact Gaps		
06	Thermal Aging	Thermal Aging		
07	Mating / Unmating	Mating / Unmating		
08	Contact Gaps	Contact Gaps		
09	Humidity	Humidity		
10	Contact Gaps	Contact Gaps		
11	Mating / Unmating	Mating / Unmating		

Thermal Aging = EIA-364-17, 105 deg C, Condition 'C' for 500 hours

Humidity =EIA-364-31, Test Condition B (240 Hours)

and Method III (+25 ° C to +65 ° C @ 90%RH to 98% RH)

delete steps 7a and 7b

Project Number: NA	Tracking Code: 0211--0635		
Requested by: Corey Rose	Date: 3/13/02	Product Rev: 5	
Part #: MECT-150-01-M-D-RA1	Lot #: FAS	Tech: Troy Cook	Eng: John Tozier
Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

FLOWCHART continued

TEST STEP	GROUP 1 200 test points 0.9 mm card Contact durability with thermal/humidity
01	LLCR-1
02	Mating / Unmating
03	100 Cycles
04	Mating / Unmating
05	LLCR-2
06	Thermal Aging
07	LLCR-3
08	Humidity
09	LLCR-4

Thermal Aging = EIA-364-17, Test Condition 4 (105 deg C), Test Time Condition B (250 hours)

Humidity =EIA-364-31, Test Condition B (240 Hours)

and Method III (+25 deg C to +65 deg C @ 90%RH to 98% RH)…

delete steps 7a and 7b

Project Number: NA	Tracking Code: 0211--0635		
Requested by: Corey Rose	Date: 3/13/02	Product Rev: 5	
Part #: MECT-150-01-M-D-RA1	Lot #: FAS	Tech: Troy Cook	Eng: John Tozier
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Test Start: 04/12/02	Test Completed: 6/6/02		

FLOWCHART continued

TEST STEP	GROUP 1 1 board min 6 Contacts in series, 0.9 mm card Mother/daughter electrical
01	CCC

CCC: Tabulate calculated current at RT, 60 and 75 degrees C after dreading 20% and based on 105 deg C

TEST STEP	GROUP 1 5 boards min 0.9 mm card Connector Shear	GROUP 2 5 boards min 0.9 mm card Connector Shear/LLCR	GROUP 3 5 boards min 0.9 mm card Connector Shear/LLCR
01	Shear test-1	LLCR-1	LLCR-1
02		Shear test (.5X Shear-1)	Shear test (.75X Shear-1)
03		LLCR-2	LLCR-2

Shear test-1: push on edge of Daughter card

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Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

ATTRIBUTE DEFINITION

Following is a brief, simplified description of each attribute measured.

THERMAL AGING:

1) EIA-364-17, *Temperature Life with or without Electrical Load Test Procedure for Electrical Connectors.*
   a) Test Condition 4 at 105° C.
   b) Test Time Condition B or C (250 hours or 500 hours respectively) See Flowcharts.
2) Connectors are mated.

CYCLIC HUMIDITY:

1) Reference document: EIA-364-31, *Humidity Test Procedure for Electrical Connectors.*
   a) Test Condition B, 240 Hours.
   b) Method III, +25° C to + 65° C, 90% to 95% Relative Humidity excluding sub-cycles 7a and 7b.

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) 60 ^{o} C
   c) 75 ^{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.

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Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

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) A Figure depicts the test probe and contact configuration.
5) 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.
6) In the case of multi-tine contacts, each tine shall be tested independently on separate samples as required.
7) The connector housing shall be simulated, if required, in order to provide an accurate representation of the actual contact system performance.
8) A holding fixture shall be fashioned to allow the contact to be properly deflected.
9) 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”).
10) 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%.
11) The nominal deflection rate shall be 5 mm (0.2”)/minute.
12) Unless otherwise noted a minimum of five contacts shall be tested.
13) The force/deflection characteristic to load and unload each contact shall be repeated five times.
14) The system shall utilize the TC^2 software in order to acquire and record the test data.
15) The permanent set of each contact shall be measured within the TC^2 software.
16) 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.

CONTACT GAPS:

1) Gaps formed by the contacts 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.

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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 durability
   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 mOhms: Unstable
   f) >+2000 mOhms: Open Failure

SUPPLEMENTAL TEST: Shear Force/LLCR Test , measure LLCR changes for different forces.

1) Measure initial LLCR.
2) Determine the shear necessary to dislocate the contacts from their normal soldered position.
   a) LLCR readings become 'open' failures.
3) Apply shear force equal to ½ the value determined to dislocate the contacts.
   a) Record LLCR readings.
4) Apply shear force equal to ¾ the value determined to dislocate the contacts.
   a) Record LLCR readings.
5) Apply the LLCR criteria to determine quality of this test:
   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 mOhms: Unstable
   f) >+2000 mOhms: Open Failure

Project Number: NA	Tracking Code: 0211--0635		
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Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

RESULTS

- **Two Contacts (Top and Bottom), produced from multi-out dies (two). Each part identified by "Non-Line" or "Line" for trace-ability.**

Durability/Environmental Testing (200 LLCR test points)

- **Temp Rise, at 80°C, relative to 125°C----------2.0 A**
- **Normal Force deflected to 0.4 mm - Averages**
  - **Initial**
    - **Top Non-Line ----------106.23 grams**
      - **Set----------0.036 mm 2nd Cycle, 0.048 mm 5th Cycle**
    - **Top Line----------99.38 grams**
      - **Set----------0.029 mm 2nd Cycle, 0.043 mm 5th Cycle**
    - **Bottom Non-Line ----------148.14 grams**
      - **Set----------0.149 mm 2nd Cycle, 0.165 mm 5th Cycle**
    - **Bottom Line ----------148.74 grams**
      - **Set----------0.149 mm 2nd Cycle, 0.164 mm 5th Cycle**
  - **After Thermal**
    - **Top Non-Line ----------130.76 grams**
      - **Set----------0.039 2nd Cycle, 0.046 5th Cycle**
    - **Top Line----------122.56 grams**
      - **Set----------0.030 2nd Cycle, 0.037 5th Cycle**
    - **Bottom Non-Line ----------192.52 grams**
      - **Set----------0.143 2nd Cycle, 0.158 5th Cycle**
    - **Bottom Line ----------183.72 grams**
      - **Set----------0.143 2nd Cycle, 0.162 5th Cycle**
- **Contact Gaps**
  - **0.9 mm card ----------1.043 ± 0.009 mm Range of Mean card thickness**
    - **Initial----------0.43 mm**
    - **After 100 Cycles ----------0.51 mm**
    - **After Thermal (mated) ----------0.69 mm**
    - **After Humidity (mated)----------0.69 mm**
  - **1.1 mm card ----------1.068 ± 0.011 mm Range of Mean card thickness**
    - **Initial----------0.46 mm**
    - **After 100 Cycles ----------0.51 mm**
    - **After Thermal----------0.69 mm**
    - **After Humidity----------0.69 mm**

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Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

RESULTS continued

- **Mating Forces 0.9 mm Card**
  - **Initial ----------13.35 lbs**
  - **After 100 Cycles ----------13.13 lbs**
  - **After Thermal ----------6.67 lbs**
  - **After Humidity ----------7.79 lbs**
- **Unmating Forces 0.9 mm card**
  - **Initial ----------9.43 lbs**
  - **After 100 Cycles ----------9.12 lbs**
  - **After Thermal ----------5.62 lbs**
  - **After Humidity ----------5.70 lbs**
- **Mating Forces 1.1 mm Card**
  - **Initial ----------14.31 lbs**
  - **After 100 Cycles ----------13.76 lbs**
  - **After Thermal ----------6.94 lbs**
  - **After Humidity ----------7.40 lbs**
- **Unmating Forces 1.1 mm card**
  - **Initial ----------11.61 lbs**
  - **After 100 Cycles ----------10.91 lbs**
  - **After Thermal ----------5.87 lbs**
  - **After Humidity ----------4.87 lbs**

- **LLCR before Stressing, 0.9 mm Card ----------< 14.7 mOhms**
- **LLCR after 100 Cycles Durability ----------Changes < 0.4 mOhms ---------- Stable**
- **LLCR after Thermal----------Changes < 1.8 mOhms---------- Stable**
- **LLCR after Humidity----------Changes < 5.4 mOhms---------- Minor**

Supplementary Testing

- **Shear Force, 0.9 mm Card ----------136.6 lbs**
- **LLCR before Stressing (200 points, 4 boards) ----------< 15.6 mOhms**
- **LLCR after 50% Shear Force**
  - **50 points, one board ----------Used for setup … destroyed ---------- NA**
  - **150 points, three boards ----------Changes <0.4 mOhms---------- Stable**
- **LLCR after 75% Shear Force (200 points, 4 boards)--Changes < 0.8mOhms---------- Stable**

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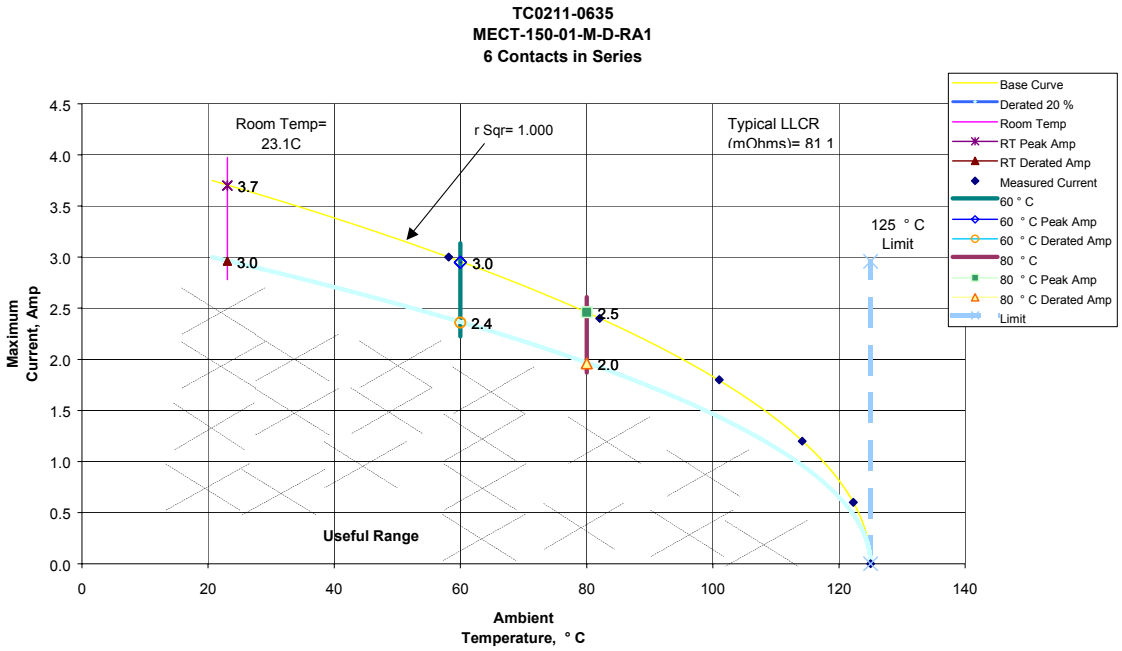
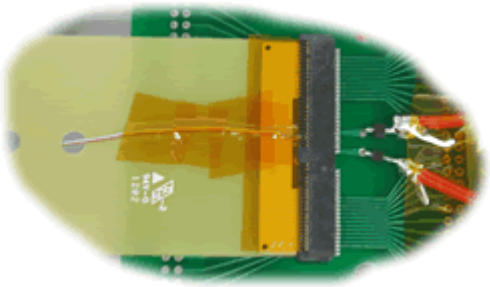
Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

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) Six contacts in series were tested.





T- Rise Test Set-Up

Project Number: NA	Tracking Code: 0211--0635		
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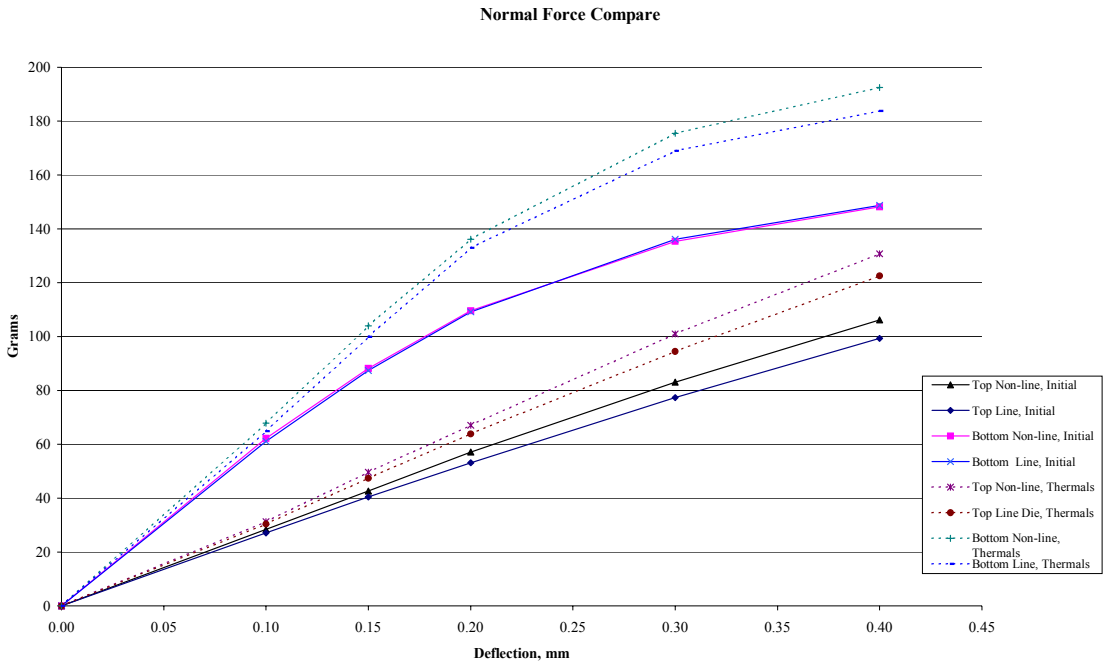
Part #: MECT-150-01-M-D-RA1	Lot #: FAS	Tech: Troy Cook	Eng: John Tozier
Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

NORMAL FORCE (FOR CONTACTS TESTED OUTSIDE THE HOUSING):

1) Calibrated force gauges were used along with computer controlled positioning equipment.
2) Typically, 5-10 readings were taken and the averages reported.



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Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

NORMAL FORCE (FOR CONTACTS TESTED OUTSIDE THE HOUSING) continued:

TOP, Non-Line Initial
Deflections in mm, Forces in Grams

	0.1000	0.1500	0.2000	0.3000	0.4000	SET 2nd Cycle	SET 5th Cycle
Averages	28.40	42.70	57.10	83.08	106.23	0.036	0.048
Min	25.28	39.07	53.52	78.81	102.80	0.022	0.031
Max	30.45	45.13	60.90	89.55	112.80	0.045	0.060
St. Dev	1.59	1.83	2.17	2.89	2.92	0.008	0.009
Count	10	10	10	10	10	10	10

TOP, Line Initial
Deflections in mm, Forces in Grams

	0.1000	0.1500	0.2000	0.3000	0.4000	SET 2nd Cycle	SET 5th Cycle
Averages	27.02	40.41	53.11	77.32	99.38	0.029	0.043
Min	25.61	39.07	51.22	75.52	96.12	0.014	0.026
Max	27.91	41.37	54.51	79.79	101.50	0.041	0.060
St. Dev	0.79	0.79	1.14	1.50	1.89	0.010	0.011
Count	10	10	10	10	10	10	10

BOTTOM, Non-Line Initial
Deflections in mm, Forces in Grams

	0.1000	0.1500	0.2000	0.3000	0.4000	SET 2nd Cycle	SET 5th Cycle
Averages	62.20	88.20	109.60	135.40	148.14	0.149	0.165
Min	56.42	81.94	103.40	128.50	141.00	0.143	0.161
Max	66.39	91.70	114.60	140.40	153.30	0.153	0.169
St. Dev	3.82	3.83	4.23	4.97	4.99	0.005	0.004
Count	5	5	5	5	5	5	5

BOTTOM, Line Initial
Deflections in mm, Forces in Grams

	0.1000	0.1500	0.2000	0.3000	0.4000	SET 2nd Cycle	SET 5th Cycle
Averages	61.15	87.43	109.22	136.16	148.74	0.149	0.164
Min	57.31	81.94	103.90	130.30	141.90	0.146	0.159
Max	64.96	91.70	113.20	142.30	154.70	0.151	0.171
St. Dev	2.91	3.75	3.67	5.19	5.74	0.002	0.005
Count	5	5	5	5	5	5	5

Project Number: NA	Tracking Code: 0211--0635		
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NORMAL FORCE (FOR CONTACTS TESTED OUTSIDE THE HOUSING) continued:

TOP, Non-Line Thermal

Deflections in mm, Forces in Grams

	0.1000	0.1500	0.2000	0.3000	0.4000	SET 2nd Cycle	SET 5th Cycle
Averages	31.30	49.62	67.06	100.97	130.76	0.039	0.046
Min	30.09	47.73	63.25	92.36	122.20	0.025	0.028
Max	33.43	51.40	69.79	104.50	135.80	0.063	0.074
St. Dev	1.45	1.30	2.41	4.91	5.16	0.015	0.018
Count	5	5	5	5	5	5	5

TOP, Line Thermal

Deflections in mm, Forces in Grams

	0.1000	0.1500	0.2000	0.3000	0.4000	SET 2nd Cycle	SET 5th Cycle
Averages	30.42	47.42	63.87	94.45	122.56	0.030	0.037
Min	29.88	46.18	61.70	91.97	119.90	0.012	0.025
Max	31.04	48.51	65.97	97.01	125.00	0.040	0.049
St. Dev	0.44	0.93	1.57	2.12	2.30	0.010	0.008
Count	5	5	5	5	5	5	5

BOTTOM, Non-Line Thermal

Deflections in mm, Forces in Grams

	0.1000	0.1500	0.2000	0.3000	0.4000	SET 2nd Cycle	SET 5th Cycle
Averages	67.86	103.92	136.16	175.50	192.52	0.143	0.158
Min	64.66	99.82	130.40	171.90	187.70	0.137	0.148
Max	70.45	106.90	140.30	179.10	197.00	0.151	0.169
St. Dev	2.42	2.60	3.89	3.39	4.15	0.006	0.008
Count	5	5	5	5	5	5	5

BOTTOM, Line Thermal

Deflections in mm, Forces in Grams

	0.1000	0.1500	0.2000	0.3000	0.4000	SET 2nd Cycle	SET 5th Cycle
Averages	64.83	99.92	132.88	168.90	183.72	0.143	0.162
Min	57.28	94.15	124.20	162.30	177.30	0.137	0.153
Max	74.63	111.40	148.10	182.10	192.80	0.150	0.173
St. Dev	6.68	6.80	9.13	7.90	5.97	0.005	0.008
Count	5	5	5	5	5	5	5

Project Number: NA	Tracking Code: 0211--0635		
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Test Start: 04/12/02	Test Completed: 6/6/02		

CONTACT GAPS using 0.9 mm Card:

Initial

OGP tolerance 0.01	Nominal	Minimum	Maximum
Contact Height Spec:	0.45	0.30	0.60
Contact Height with Tolerances:	*0.45*	*0.29*	*0.59*

Measurements in mm

	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
Minimum	0.43	0.44	0.44	0.44	0.44	0.43	0.44	0.44	0.43	0.44
Maximum	0.51	0.49	0.49	0.49	0.48	0.48	0.49	0.49	0.50	0.48
Average	*0.45*	*0.46*	*0.46*	*0.45*	*0.46*	*0.45*	*0.46*	*0.46*	*0.45*	*0.46*
St. Dev.	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.02*	*0.01*
Count	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*

After Mating 100 Cycles

Measurements in mm

	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
Minimum	0.49	0.51	0.48	0.47	0.47	0.47	0.48	0.48	0.49	0.48
Maximum	0.54	0.56	0.53	0.52	0.53	0.53	0.53	0.57	0.56	0.52
Average	*0.51*	*0.53*	*0.50*	*0.49*	*0.49*	*0.49*	*0.50*	*0.51*	*0.51*	*0.50*
St. Dev.	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.02*	*0.02*	*0.01*
Count	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*

After Thermal

Measurements in mm

	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
Minimum	0.66	0.68	0.67	0.64	0.65	0.66	0.65	0.66	0.68	0.66
Maximum	0.70	0.72	0.71	0.68	0.69	0.69	0.69	0.71	0.72	0.68
Average	*0.68*	*0.70*	*0.69*	*0.66*	*0.67*	*0.68*	*0.67*	*0.68*	*0.69*	*0.67*
St. Dev.	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*
Count	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*

After Humidity

Measurements in mm

	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
Minimum	0.65	0.68	0.66	0.64	0.65	0.67	0.65	0.66	0.68	0.66
Maximum	0.70	0.72	0.71	0.67	0.69	0.69	0.68	0.71	0.72	0.68
Average	*0.67*	*0.70*	*0.68*	*0.66*	*0.67*	*0.68*	*0.66*	*0.68*	*0.70*	*0.67*
St. Dev.	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*
Count	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*

Project Number: NA	Tracking Code: 0211--0635		
Requested by: Corey Rose	Date: 3/13/02	Product Rev: 5	
Part #: MECT-150-01-M-D-RA1	Lot #: FAS	Tech: Troy Cook	Eng: John Tozier
Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

CONTACT GAPS using 1.1 mm Card:

Initial

OGP tolerance 0.01	Nominal	Minimum	Maximum
Contact Height Spec:	0.45	0.30	0.60
Contact Height with Tolerances:	*0.45*	*0.29*	*0.59*

Measurements in mm

	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
Minimum	0.44	0.45	0.43	0.43	0.43	0.42	0.43	0.44	0.44	0.42
Maximum	0.51	0.50	0.50	0.48	0.47	0.48	0.50	0.48	0.49	0.50
Average	*0.46*	*0.46*	*0.45*	*0.45*	*0.45*	*0.45*	*0.45*	*0.45*	*0.46*	*0.44*
St. Dev.	*0.02*	*0.01*	*0.02*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*
Count	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*

After Mating 100 Cycles

Measurements in mm

	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
Minimum	0.49	0.48	0.47	0.48	0.48	0.50	0.49	0.49	0.50	0.47
Maximum	0.55	0.53	0.54	0.53	0.54	0.54	0.54	0.53	0.55	0.53
Average	*0.51*	*0.50*	*0.49*	*0.49*	*0.50*	*0.51*	*0.51*	*0.50*	*0.51*	*0.49*
St. Dev.	*0.02*	*0.01*	*0.02*	*0.01*	*0.02*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*
Count	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*

After Humidity

Measurements in mm

	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
Minimum	0.67	0.65	0.65	0.64	0.66	0.69	0.70	0.69	0.70	0.67
Maximum	0.70	0.69	0.69	0.68	0.69	0.72	0.74	0.74	0.75	0.70
Average	*0.68*	*0.67*	*0.67*	*0.66*	*0.68*	*0.71*	*0.71*	*0.71*	*0.71*	*0.68*
St. Dev.	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*
Count	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*

Project Number: NA	Tracking Code: 0211--0635		
Requested by: Corey Rose	Date: 3/13/02	Product Rev: 5	
Part #: MECT-150-01-M-D-RA1	Lot #: FAS	Tech: Troy Cook	Eng: John Tozier
Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

MATING/UNMATING 0.9 mm Card:

Initial, 0.9 mm Card
First Cycle

	Mating		Ummating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	198.2	12.4	138.5	8.7
Maximum	*229.2*	*14.3*	*183.9*	*11.5*
Average	***213.6***	***13.3***	***150.9***	***9.4***

Before Environment, 0.9 mm Card
After 100 Cycles

	Mating		Ummating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	181.5	11.3	132.0	8.3
Maximum	*231.2*	*14.5*	*177.1*	*11.1*
Average	***210.1***	***13.1***	***145.9***	***9.1***

After Thermal, 0.9 mm Card

	Mating		Ummating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	87.4	5.5	69.4	4.3
Maximum	*129.9*	*8.1*	*106.2*	*6.6*
Average	***106.7***	***6.7***	***89.9***	***5.6***

After Humidity, 0.9 mm Card

	Mating		Ummating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	111.7	7.0	76.5	4.8
Maximum	*131.8*	*8.2*	*105.9*	*6.6*
Average	***124.6***	***7.8***	***91.2***	***5.7***

Project Number: NA	Tracking Code: 0211--0635		
Requested by: Corey Rose	Date: 3/13/02	Product Rev: 5	
Part #: MECT-150-01-M-D-RA1	Lot #: FAS	Tech: Troy Cook	Eng: John Tozier
Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

MATING/UNMATING 1.1 mm Card:

Initial, 1.1 mm Card
First Cycle

	Mating		Ummating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	213.1	13.3	157.1	9.8
Maximum	*254.8*	*15.9*	*224.5*	*14.0*
Average	***228.9***	***14.3***	***185.8***	***11.6***

Before Environment, 1.1 mm Card
After 100 Cycles

	Mating		Ummating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	200.9	12.6	151.4	9.5
Maximum	*239.8*	*15.0*	*212.8*	*13.3*
Average	***220.1***	***13.8***	***174.5***	***10.9***

After Thermal, 1.1 mm Card

	Mating		Ummating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	90.9	5.7	76.8	4.8
Maximum	*129.9*	*8.1*	*106.6*	*6.7*
Average	***111.0***	***6.9***	***94.0***	***5.9***

After Humidity, 1.1 mm Card

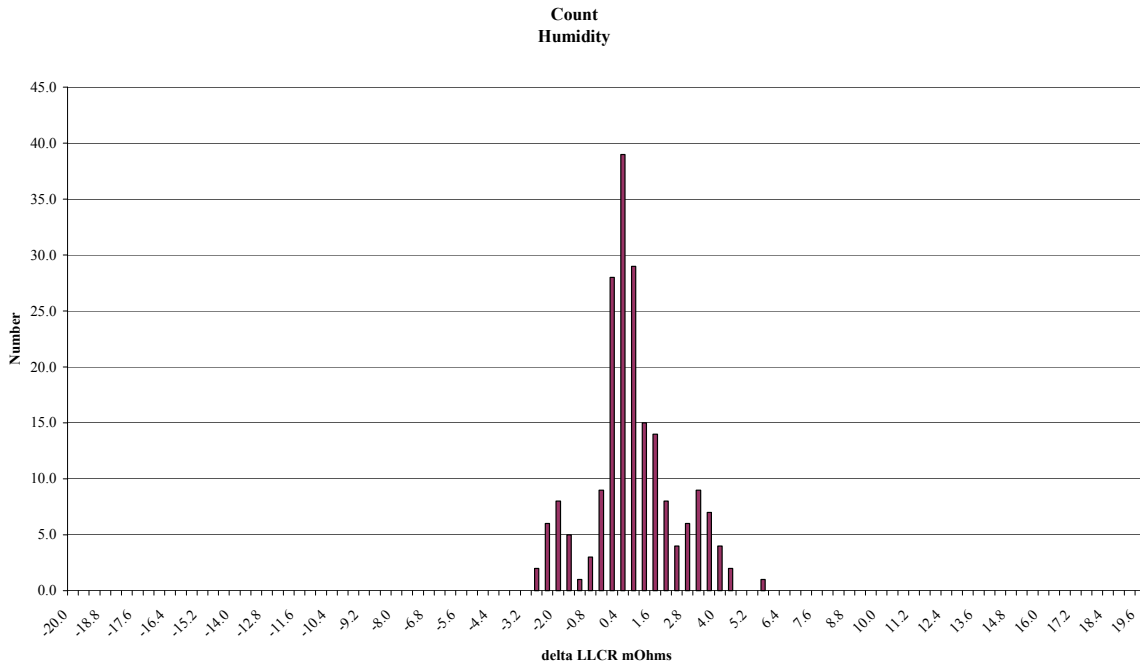
	Mating		Ummating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	92.5	5.8	60.2	3.8
Maximum	*132.5*	*8.3*	*92.5*	*5.8*
Average	***118.3***	***7.4***	***77.9***	***4.9***

Project Number: NA	Tracking Code: 0211--0635		
Requested by: Corey Rose	Date: 3/13/02	Product Rev: 5	
Part #: MECT-150-01-M-D-RA1	Lot #: FAS	Tech: Troy Cook	Eng: John Tozier
Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

LLCR, 0.9 mm Card:

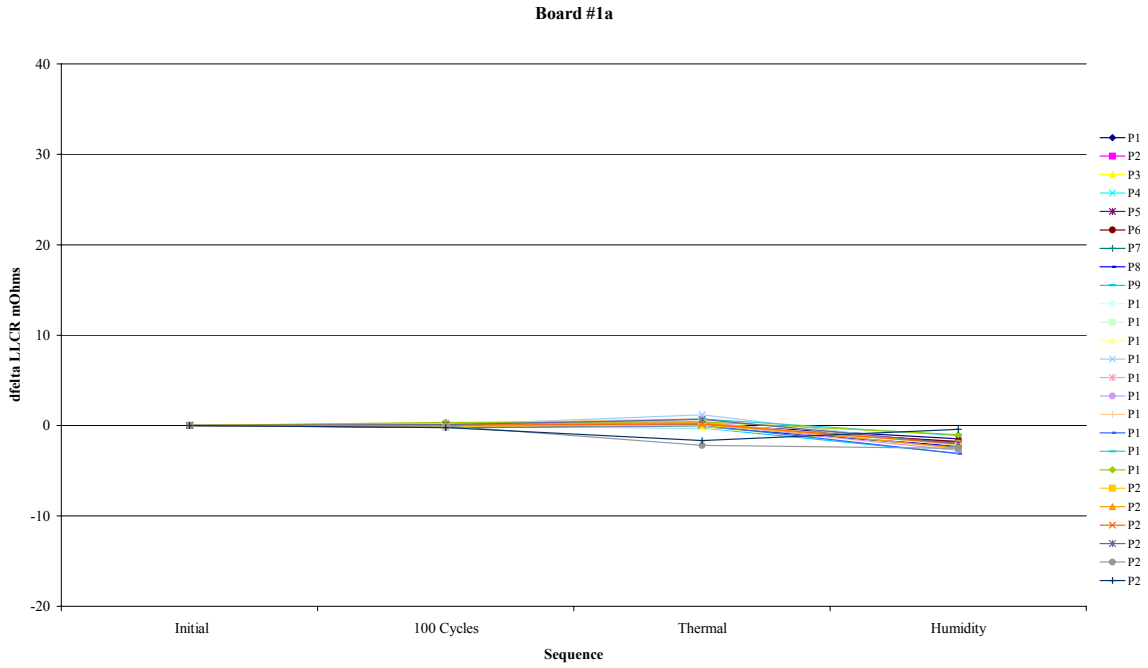
1) A total of 200 points were measured.
2) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets.*
3) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
4) The following guidelines are used to categorize the changes in LLCR resulting from durability.
   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 mOhms: Unstable
   f) >+2000 mOhms: Open Failure

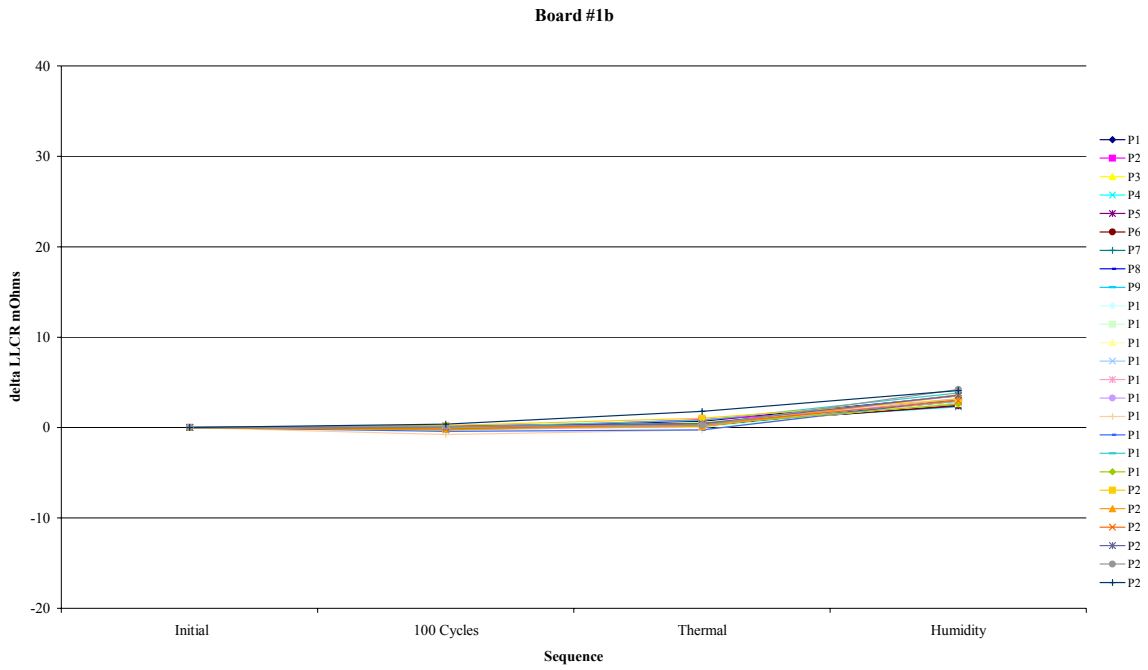
mOhm values	Actual Initial	Delta 100 Cycles	Delta Thermal	Delta Humidity
Average	12.3	-0.2	0.2	0.6
St. Dev.	1.4	0.3	0.5	1.5
Min	10.1	-1.0	-2.5	-3.1
Max	14.7	0.4	1.8	5.4
Count	200	200	200	200



Project Number: NA	Tracking Code: 0211--0635		
Requested by: Corey Rose	Date: 3/13/02	Product Rev: 5	
Part #: MECT-150-01-M-D-RA1	Lot #: FAS	Tech: Troy Cook	Eng: John Tozier
Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

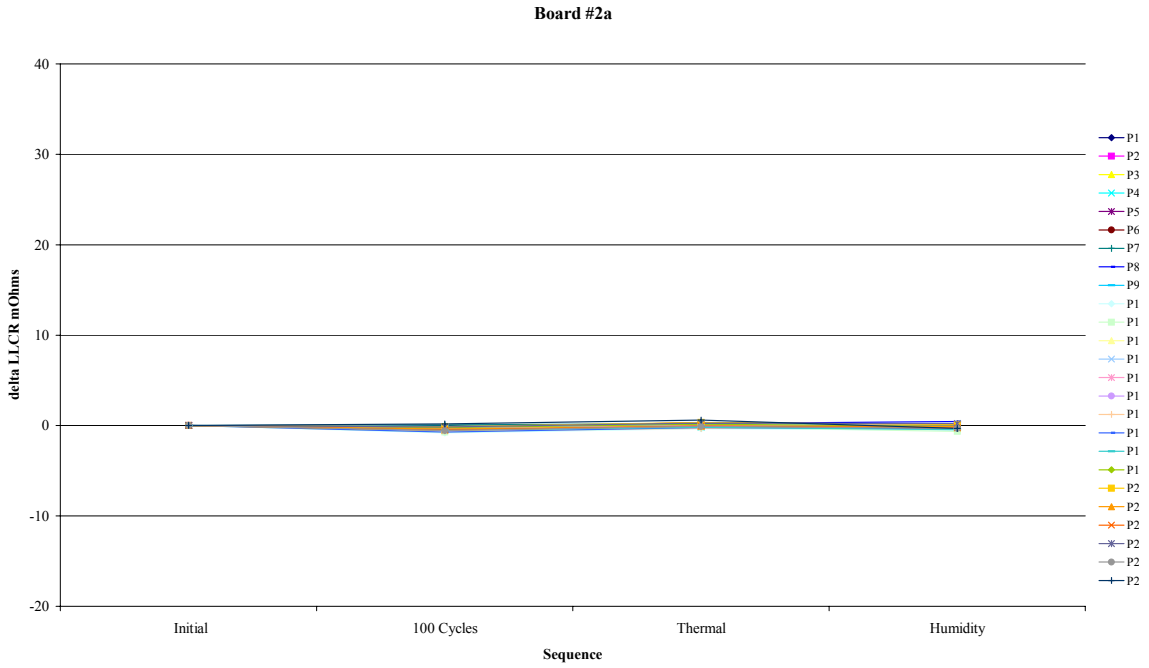
LLCR, 0.9 mm Card continued:

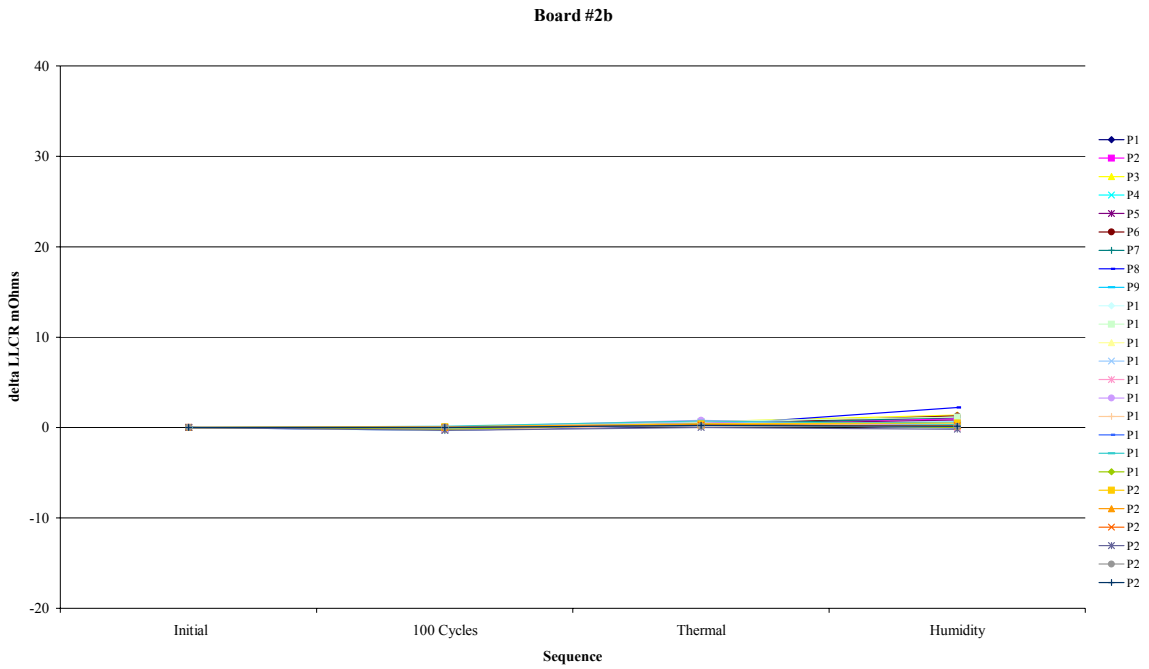




Project Number: NA	Tracking Code: 0211--0635		
Requested by: Corey Rose	Date: 3/13/02	Product Rev: 5	
Part #: MECT-150-01-M-D-RA1	Lot #: FAS	Tech: Troy Cook	Eng: John Tozier
Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

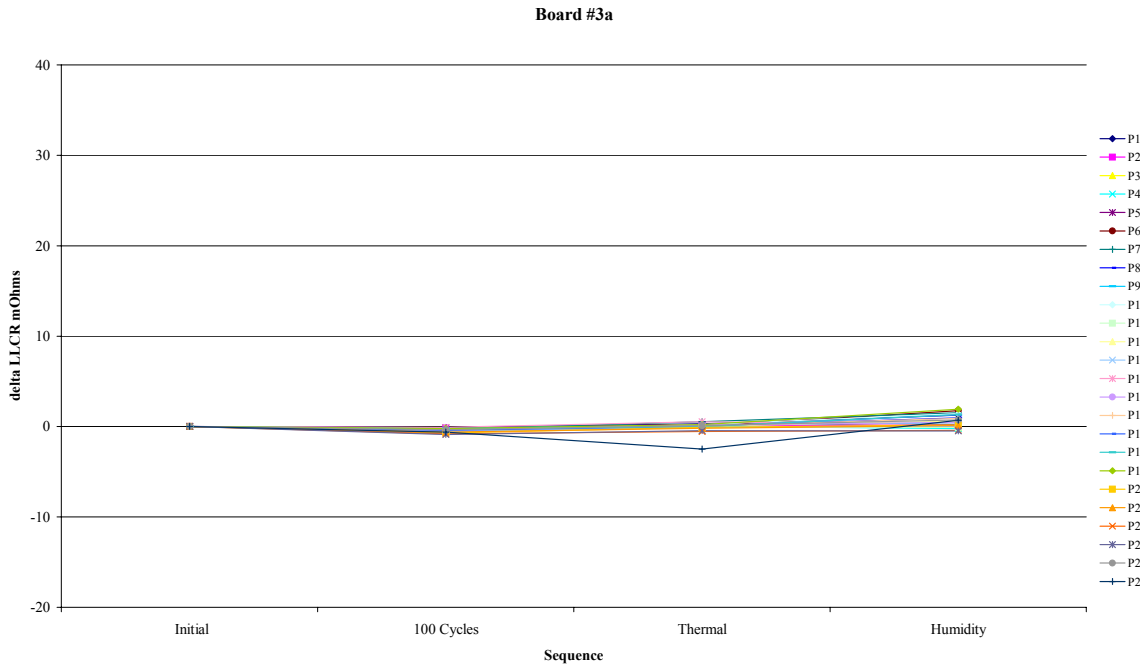
LLCR, 0.9 mm Card continued:

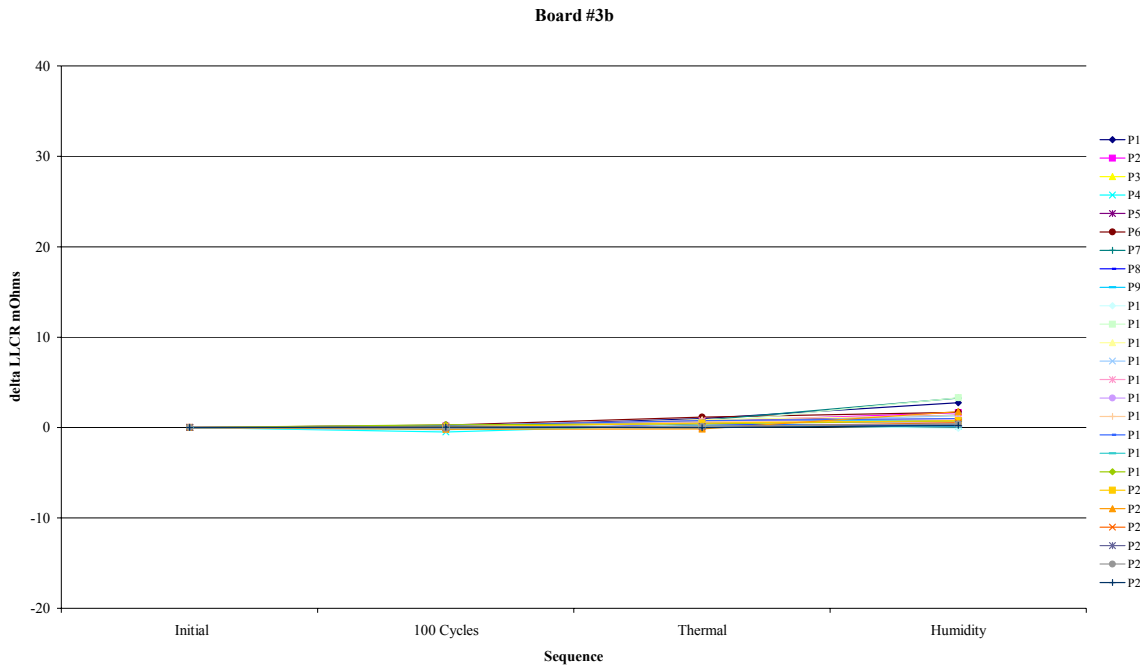




Project Number: NA	Tracking Code: 0211--0635		
Requested by: Corey Rose	Date: 3/13/02	Product Rev: 5	
Part #: MECT-150-01-M-D-RA1	Lot #: FAS	Tech: Troy Cook	Eng: John Tozier
Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

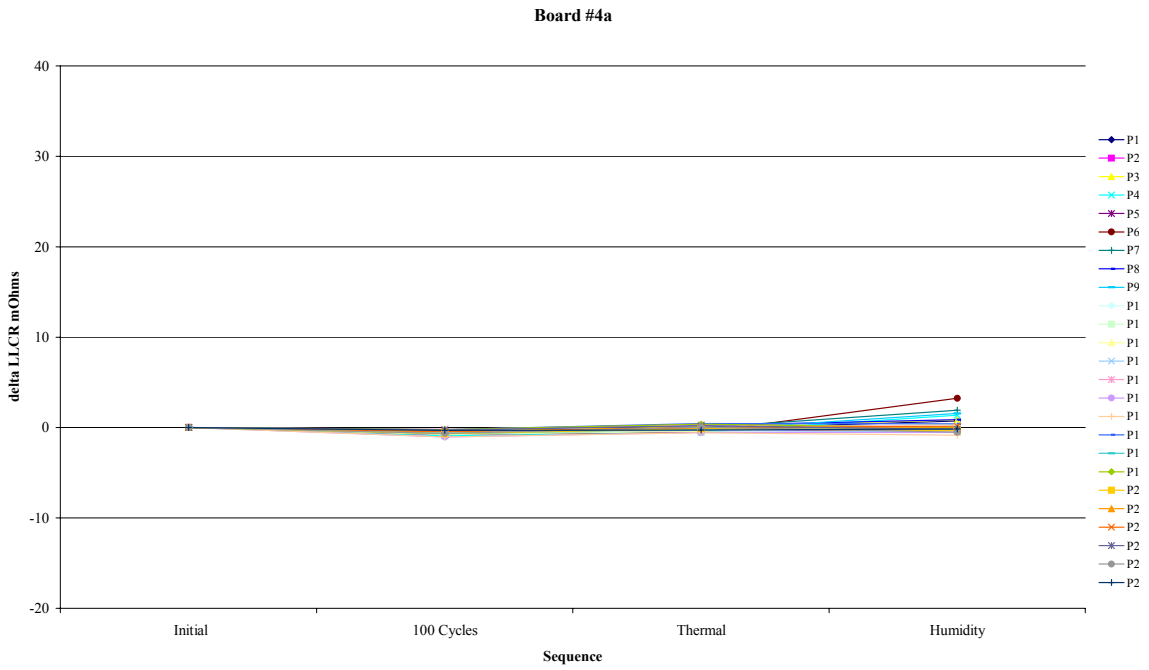
LLCR, 0.9 mm Card continued:

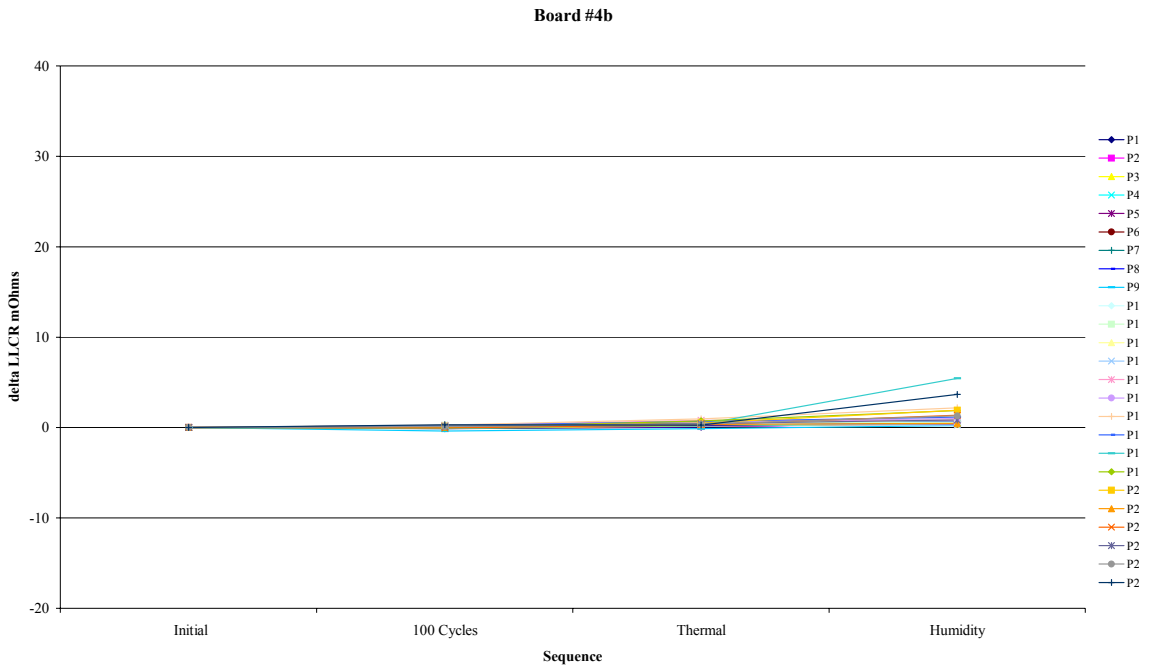




Project Number: NA	Tracking Code: 0211--0635		
Requested by: Corey Rose	Date: 3/13/02	Product Rev: 5	
Part #: MECT-150-01-M-D-RA1	Lot #: FAS	Tech: Troy Cook	Eng: John Tozier
Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

LLCR, 0.9 mm Card continued:





Project Number: NA	Tracking Code: 0211--0635		
Requested by: Corey Rose	Date: 3/13/02	Product Rev: 5	
Part #: MECT-150-01-M-D-RA1	Lot #: FAS	Tech: Troy Cook	Eng: John Tozier
Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

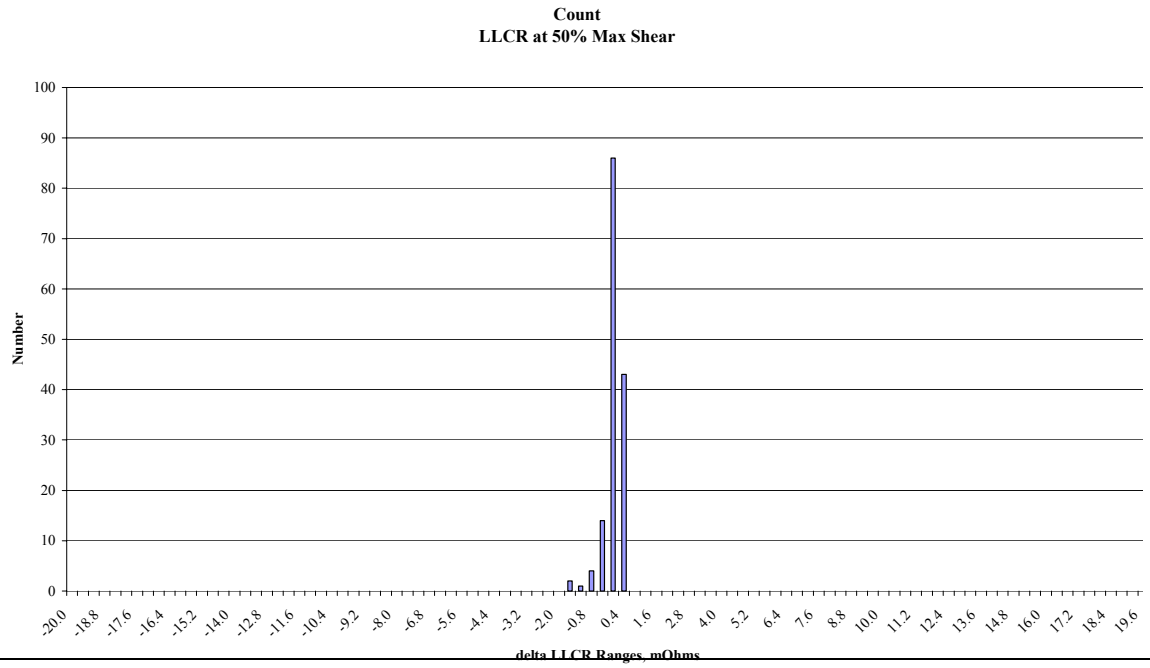
SUPPLEMENTAL TESTS:

Shear Force/LLCR Tests to determine effect of different forces as they affect LLCR
One board, 50 positions was destroyed during set-up.

LLCR, 0.9 mm Card:

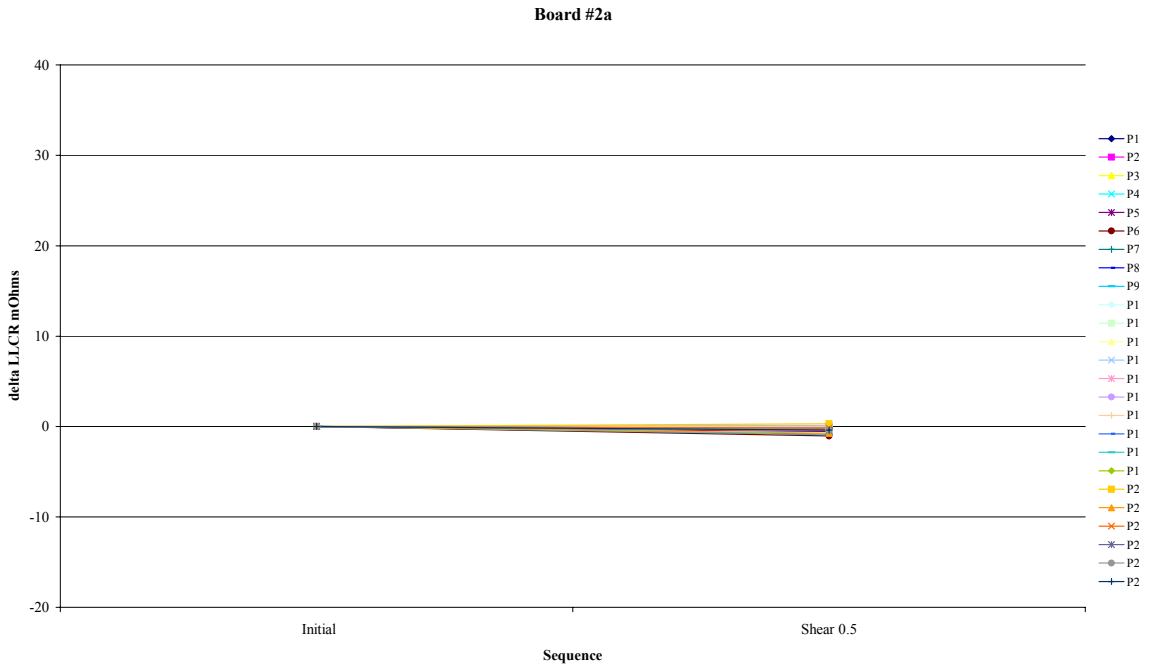
1) A total of 150 points were measured.
2) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets.*
3) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition
4) The following guidelines are used to categorize the changes in LLCR resulting from durability.
   (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 mOhms: Unstable
   (f) >+2000 mOhms: Open Failure

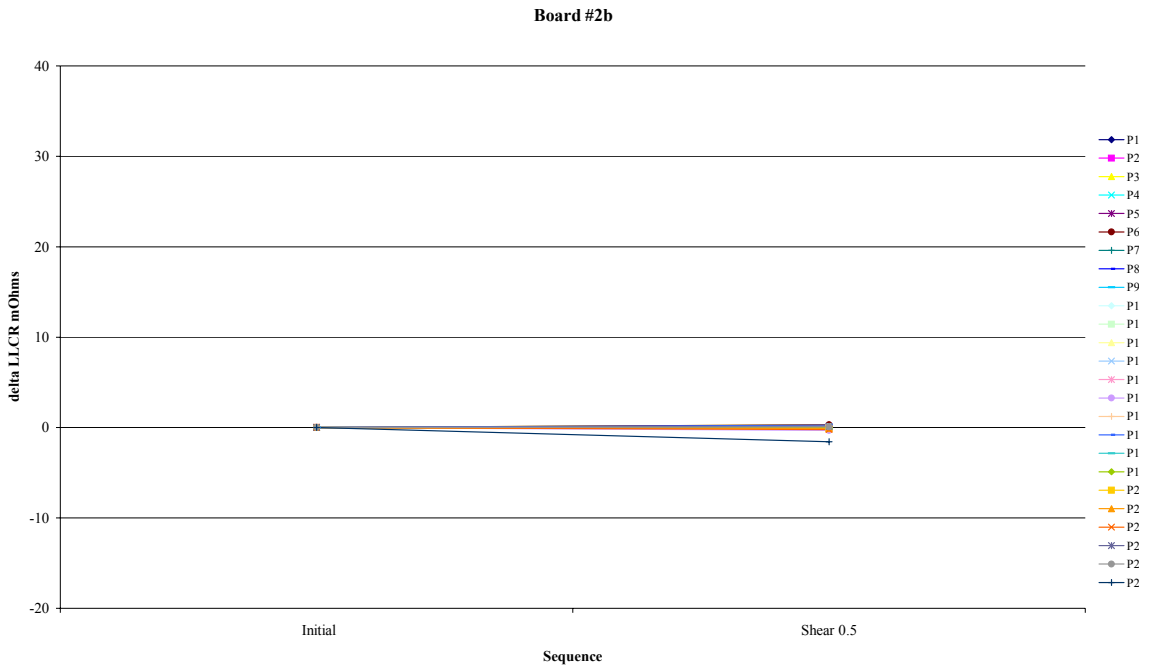
mOhm values	Actual Initial	Delta Shear 0.5
Average	12.7	-0.2
St. Dev.	1.6	0.3
Min	10.5	-2.0
Max	15.6	0.4
Count	200	150



Project Number: NA	Tracking Code: 0211--0635		
Requested by: Corey Rose	Date: 3/13/02	Product Rev: 5	
Part #: MECT-150-01-M-D-RA1	Lot #: FAS	Tech: Troy Cook	Eng: John Tozier
Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

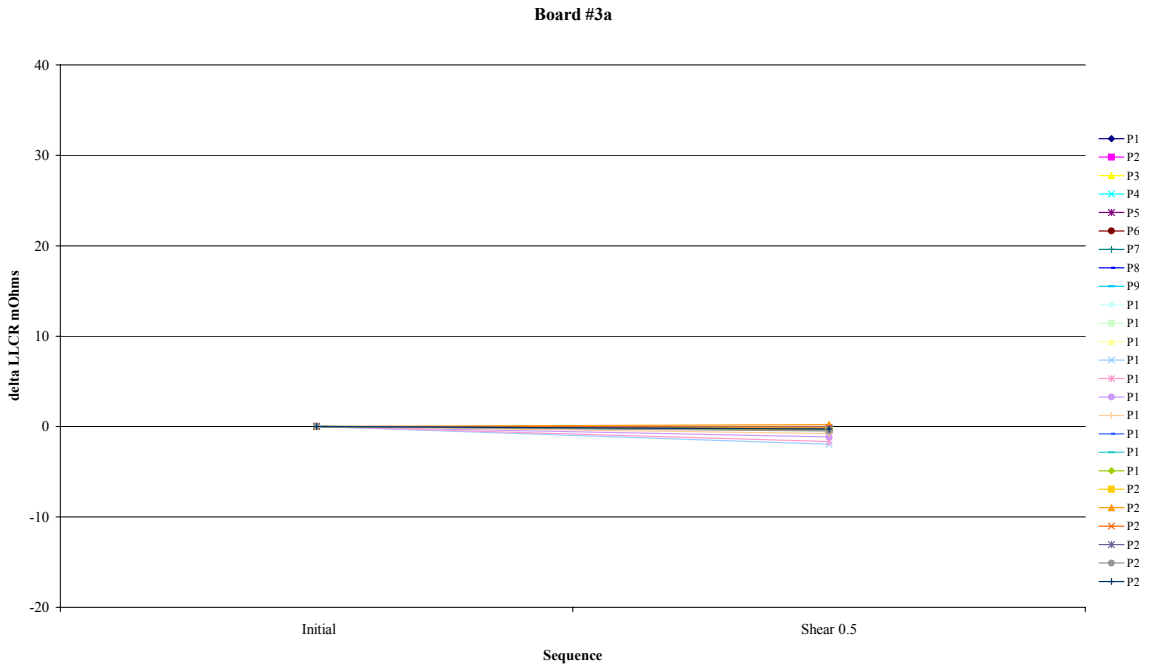
SUPPLEMENTAL TESTS continued:

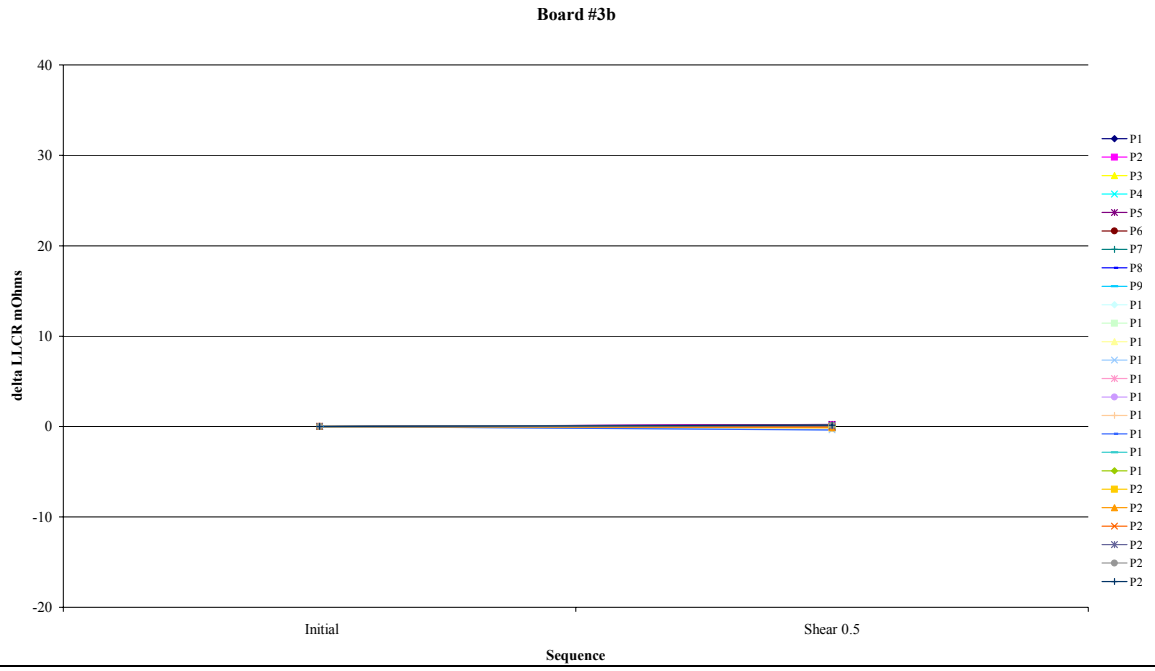




Project Number: NA	Tracking Code: 0211--0635		
Requested by: Corey Rose	Date: 3/13/02	Product Rev: 5	
Part #: MECT-150-01-M-D-RA1	Lot #: FAS	Tech: Troy Cook	Eng: John Tozier
Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

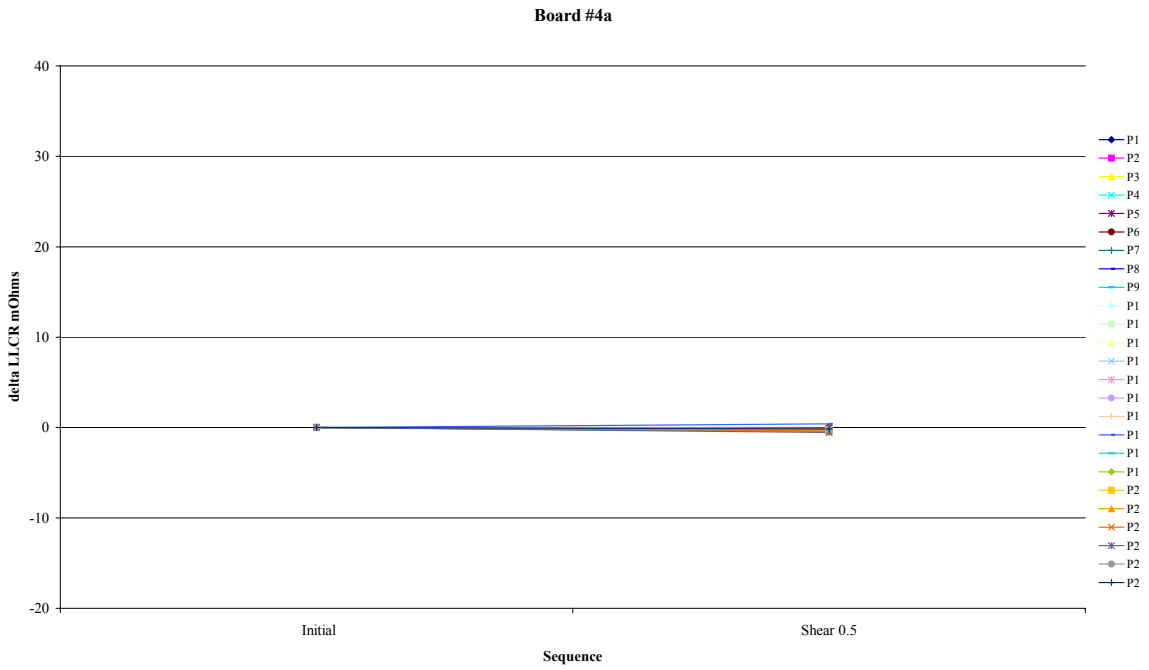
SUPPLEMENTAL TESTS continued:

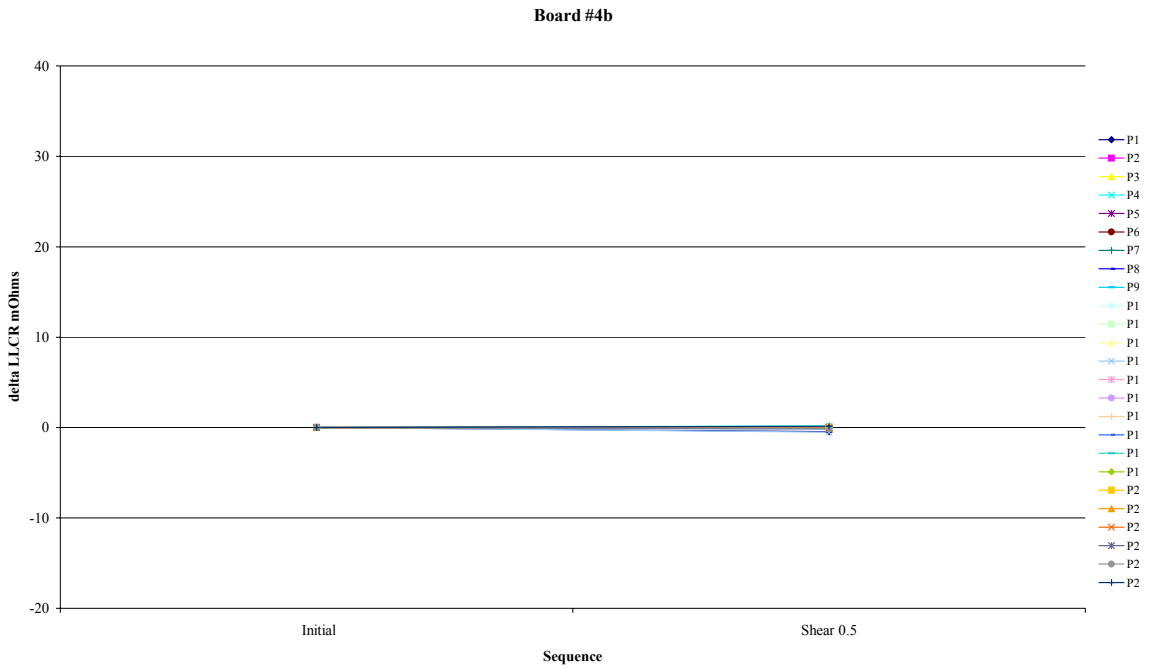




Project Number: NA	Tracking Code: 0211--0635		
Requested by: Corey Rose	Date: 3/13/02	Product Rev: 5	
Part #: MECT-150-01-M-D-RA1	Lot #: FAS	Tech: Troy Cook	Eng: John Tozier
Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

SUPPLEMENTAL TESTS continued:





Project Number: NA	Tracking Code: 0211--0635		
Requested by: Corey Rose	Date: 3/13/02	Product Rev: 5	
Part #: MECT-150-01-M-D-RA1	Lot #: FAS	Tech: Troy Cook	Eng: John Tozier
Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: 20
Description: Temperature/Humidity Chart Recorder
Manufacturer: Dickson
Model: THDX
Serial #: 9316255
Accuracy: Temp: +/- 1C; Humidity: +/-2% RH (0 - 60%) +/- 3% RH (61 - 95%).
… Last Cal: 6/15/01, Next Cal: 6/15/02

Equipment #: 26
Description: 6"X 6" Video Measuring Machine
Manufacturer: Optical Gauging Products
Model: Smartscope 200 CFOV
Serial #: SF2001956
Accuracy: See Manual
… Last Cal: 8/01, Next Cal: 8/02

Equipment #: 18
Description: Test Stand
Manufacturer: Chatillon
Model: TCD-1000
Serial #: 05 23 00 02
Accuracy: Speed Accuracy: +/-5% of max speed; Displacement: +/-.5% or +/-.005, whichever is greater.
… Last Cal: 6/15/01, Next Cal: 6/15/02

Equipment #: 2
Description: Chatillon Remote Load Gage
Manufacturer: Chatillon
Model: DFGRS-R-ND
Serial #: A38240
Accuracy: +/- 0.3% of Full Scale +/- 1 LSC
… Last Cal: 6/14/01, Next Cal: 6/14/02

Equipment #: 52
Description: Chatillon 50 Lb. Remote Load Cell
Manufacturer: Chatillon
Model: Remote Load Cell
Serial #: F31963
Accuracy: +/- .01 Lb.
… Last Cal: 11/26/02, Next Cal: 12/26/03

Project Number: NA	Tracking Code: 0211--0635		
Requested by: Corey Rose	Date: 3/13/02	Product Rev: 5	
Part #: MECT-150-01-M-D-RA1	Lot #: FAS	Tech: Troy Cook	Eng: John Tozier
Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

Equipment #: 15
Description: Cascade Tek Forced Air Oven
Manufacturer: Cascade Tek
Model: TFO-5
Serial #: 0500100
Accuracy: Temp. Stability: +/-.1C/C change in ambient
… Last Cal: 6/14/01, Next Cal: 6/14/02

Equipment #: 24
Description: Temperature/Humidity Chamber
Manufacturer: Thermotron
Model: SM-8-7800
Serial #: 30676
Accuracy: See Manual
… Last Cal: 5/13/02, Next Cal: 5/13/03

Equipment #: 19
Description: Test Stand
Manufacturer: Dillon
Model: PCM
Serial #: 280769
Accuracy: Speed Accuracy: +/- 5% of indicated speed; Displacement: +/- 5 micrometers.
… Last Cal: 6/15/01, Next Cal: 6/15/02

Equipment #: 9
Description: 5 N Load Cell
Manufacturer: Dillon
Model: TC2 Load Cell
Serial #: 5370
Accuracy: +/- 0.2% of Full Scale +/- 1 LSC
… Last Cal: 5/6/02, Next Cal: 5/6/03

Equipment #: 11
Description: Micro-Ohmeter
Manufacturer: Keithley
Model: 580
Serial #: 0772740
Accuracy: See Manual
… Last Cal: 6/14/01, Next Cal: 6/14/02

Project Number: NA	Tracking Code: 0211--0635		
Requested by: Corey Rose	Date: 3/13/02	Product Rev: 5	
Part #: MECT-150-01-M-D-RA1	Lot #: FAS	Tech: Troy Cook	Eng: John Tozier
Part description: MECT			Qty to test: 50
Test Start: 04/12/02	Test Completed: 6/6/02		

Equipment #: 13
Manufacturer: Keithley
Model: 2700
Serial #: 0791975
Accuracy: See Manual
… Last Cal: 6/14/01, Next Cal: 6/14/02

Equipment #: 16
Description: System Power Supply
Manufacturer: Hewlett Packard
Model: HP 6033A
Serial #: (HP) 3329A-07330
Accuracy: See Manual
… Last Cal: 6/14/01, Next Cal: 6/14/02

Equipment #: 12
Description: Multimeter /Data Acquisition System
Manufacturer: Keithley
Model: 2700
Serial #: 0780546
Accuracy: See Manual
… Last Cal: 6/14/01, Next Cal: 6/14/02

Equipment #: 7
Description: Chatillon 1000 Lb Load Cell
Manufacturer: Chatillon
Model: Remote-1000
Serial #: E31399
Accuracy: +/- 0.3% of Full Scale +/- 1 LSC
… Last Cal: 6/14/01, Next Cal: 6/14/02