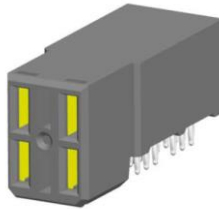




Project Number: Design Qualification Test Report	Tracking Code: 1627082_Report_Rev_2
Requested by: Tyler Lang	Date: 9/18/2020
Part #: EPTS-2-P-D-RA-04/EPTT-2-P-11.5-D-RA	
Part description: EPTS/EPTT	Tech: Troy Cook
Test Start: 8/9/2018	Test Completed: 9/4/2018



(Actual part not depicted)

DESIGN QUALIFICATION TEST REPORT

EPTS/EPTT

EPTS-2-P-D-RA-04/EPTT-2-P-11.5-D-RA

Tracking Code: 1627082_Report_Rev_2	Part #: EPTS-2-P-D-RA-04/EPTT-2-P-11.5-D-RA
Part description: EPTS/EPTT	

REVISION HISTORY

DATA	REV.NUM.	DESCRIPTION	ENG
1/4/2018	1	Initial Issue	KH
4/9/2020	2	Updated the CCC charts	PC

CERTIFICATION

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

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SCOPE

To perform the following tests: Design Qualification test. Please see 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) Solder Information: Press Fit
- 4) Samtec Test PCBs used: PCB-109271-TST-XX, PCB-109272-TST-XX, PCB-109273-TST-XX,
PCB-109497-TST-XX

FLOWCHARTS

Gas Tight

Group 1

EPTS-2-P-D-RA-04

EPTT-2-P-11.5-D-RA

8 Assemblies

Tin (Immersion) .0315" PTH

Step	Description
1.	LLCR ⁽²⁾
2.	Gas Tight ⁽¹⁾
3.	LLCR ⁽²⁾ Max Delta = 15 mOhm

Compliant Pin ONLY

Group 2

EPTS-2-P-D-RA-04

EPTT-2-P-11.5-D-RA

30 Contacts Minimum

EPTS TERMINAL Tin (Immersion) .0315"
PTH

Step	Description
1.	LLCR ⁽²⁾
2.	Gas Tight ⁽¹⁾
3.	LLCR ⁽²⁾ Max Delta = 1 mOhm

Group 3

EPTS-2-P-D-RA-04

EPTT-2-P-11.5-D-RA

30 Contacts Minimum

EPTT CONTACT Tin (Immersion) .0315"
PTH

Step	Description
1.	LLCR ⁽²⁾
2.	Gas Tight ⁽¹⁾
3.	LLCR ⁽²⁾ Max Delta = 1 mOhm

(1) Gas Tight = EIA-364-36

(2) LLCR = EIA-364-23

Open Circuit Voltage = 20 mV Max

Test Current = 100 mA Max

Normal Force

Group 1

EPTS-2-P-D-RA-04

EPTT-2-P-11.5-D-RA

8 Contacts Minimum

8 Power Beams (Wide) W/o Thermals-
Tin (Immersion) .0315" PTH*Note: Test 8 Power Beams-Wide
minimum*

Step	Description
1.	Contact Gaps
2.	Normal Force ⁽¹⁾ Deflection = 0.0081 " Expected Force at Max Deflection = 0 g <i>Note: Deflection number given (.0081) is Nominal Deflection</i>

Group 2

EPTS-2-P-D-RA-04

EPTT-2-P-11.5-D-RA

8 Contacts Minimum

8 Power Beams (Narrow) W/o Thermals-
Tin (Immersion) .0315" PTH*Note: Test 8 Power Beams-Narrow
minimum*

Step	Description
1.	Contact Gaps
2.	Normal Force ⁽¹⁾ Deflection = 0.0081 " Expected Force at Max Deflection = 0 g <i>Note: Deflection number given (.0081) is Nominal Deflection</i>

Group 3

EPTS-2-P-D-RA-04

EPTT-2-P-11.5-D-RA

8 Contacts Minimum

8 Power Beams (Wide) With Thermals-
Tin (Immersion) .0315" PTH*Note: Test 8 Power Beams-Wide
minimum*

Step	Description
1.	Contact Gaps
2.	Thermal Age ⁽²⁾
3.	Contact Gaps
4.	Normal Force ⁽¹⁾ Deflection = 0.0081 " Expected Force at Max Deflection = 0 g <i>Note: Deflection number given (.0081) is Nominal Deflection</i>

Group 4

EPTS-2-P-D-RA-04

EPTT-2-P-11.5-D-RA

8 Contacts Minimum

8 Power Beams (Narrow) With Thermals-
Tin (Immersion) .0315" PTH*Note: Test 8 Power Beams-Narrow
minimum*

Step	Description
1.	Contact Gaps
2.	Thermal Age ⁽²⁾
3.	Contact Gaps
4.	Normal Force ⁽¹⁾ Deflection = 0.0081 " Expected Force at Max Deflection = 0 g <i>Note: Deflection number given (.0081) is Nominal Deflection</i>

(1) Normal Force = EIA-364-04

(2) Thermal Age = EIA-364-17

Test Condition = 4 (105°C)

Time Condition = B (250 Hours)

FLOWCHARTS Continued**Thermal Aging**Group 1

EPTS-2-P-D-RA-04

EPTT-2-P-11.5-D-RA

8 Assemblies

Tin (Immersion) .0315" PTH

Step Description

1. Contact Gaps
2. Mating/Unmating Force (2)
3. LLCR (1)
4. Thermal Age (3)
5. LLCR (1)
Max Delta = 15 mOhm
6. Mating/Unmating Force (2)
7. Contact Gaps

Compliant Pin ONLYGroup 2

EPTS-2-P-D-RA-04

EPTT-2-P-11.5-D-RA

30 Contacts Minimum

EPTS TERMINAL Tin (Immersion) .0315"
PTH**Step Description**

1. LLCR (1)
2. Thermal Age (3)
3. LLCR (1)
Max Delta = 1 mOhm

Group 3

EPTS-2-P-D-RA-04

EPTT-2-P-11.5-D-RA

30 Contacts Minimum

EPTT CONTACT Tin (Immersion) .0315"
PTH**Step Description**

1. LLCR (1)
2. Thermal Age (3)
3. LLCR (1)
Max Delta = 1 mOhm

(1) LLCR = EIA-364-23

Open Circuit Voltage = 20 mV Max

Test Current = 100 mA Max

(2) Mating/Unmating Force = EIA-364-13

(3) Thermal Age = EIA-364-17

Test Condition = 4 (105°C)

Time Condition = B (250 Hours)

FLOWCHARTS Continued**Mating/Unmating/Durability**Group 1

EPTS-2-P-D-RA-04

EPTT-2-P-11.5-D-RA

8 Assemblies

Tin (Immersion) .0315" PTH

Step	Description
1.	Contact Gaps
2.	LLCR (2)
3.	Mating/Unmating Force (3)
4.	Cycles Quantity = 25 Cycles
5.	Mating/Unmating Force (3)
6.	Cycles Quantity = 25 Cycles
7.	Mating/Unmating Force (3)
8.	Cycles Quantity = 25 Cycles
9.	Mating/Unmating Force (3)
10.	Cycles Quantity = 25 Cycles
11.	Mating/Unmating Force (3)
12.	Contact Gaps
13.	LLCR (2) Max Delta = 15 mOhm
14.	Thermal Shock (4)
15.	LLCR (2) Max Delta = 15 mOhm
16.	Humidity (1)
17.	LLCR (2) Max Delta = 15 mOhm
18.	Mating/Unmating Force (3)

Compliant Pin ONLYGroup 2

EPTS-2-P-D-RA-04

EPTT-2-P-11.5-D-RA

30 Contacts Minimum

EPTS TERMINAL Tin (Immersion) .0315"
PTH

Step	Description
1.	LLCR (2)
2.	Thermal Shock (4)
3.	LLCR (2) Max Delta = 1 mOhm
4.	Humidity (1)
5.	LLCR (2) Max Delta = 1 mOhm

Group 3

EPTS-2-P-D-RA-04

EPTT-2-P-11.5-D-RA

30 Contacts Minimum

EPTT CONTACT Tin (Immersion) .0315"
PTH

Step	Description
1.	LLCR (2)
2.	Thermal Shock (4)
3.	LLCR (2) Max Delta = 1 mOhm
4.	Humidity (1)
5.	LLCR (2) Max Delta = 1 mOhm

(1) Humidity = EIA-364-31

Test Condition = B (240 Hours)

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

Test Exceptions: ambient pre-condition and delete steps 7a and 7b

(2) LLCR = EIA-364-23

Open Circuit Voltage = 20 mV Max

Test Current = 100 mA Max

(3) Mating/Unmating Force = EIA-364-13

(4) Thermal Shock = EIA-364-32

Exposure Time at Temperature Extremes = 1/2 Hour

Method A, Test Condition = I (-55°C to +85°C)

Test Duration = A-3 (100 Cycles)

FLOWCHARTS Continued**IR/DWV****Pin-to-Pin**Group 1

EPTS-2-P-D-RA-04
EPTT-2-P-11.5-D-RA
2 Assemblies

Group 2

EPTS-2-P-D-RA-04

2 Assemblies

Group 3

EPTT-2-P-11.5-D-RA
2 Assemblies

Group 4

EPTS-2-P-D-RA-04
EPTT-2-P-11.5-D-RA
2 Assemblies

Step	Description
1.	DWV Breakdown ⁽²⁾

Step	Description
1.	DWV Breakdown ⁽²⁾

Step	Description
1.	DWV Breakdown ⁽²⁾

Step	Description
1.	IR ⁽⁴⁾
2.	DWV at Test Voltage ⁽¹⁾
3.	Thermal Shock ⁽⁵⁾
4.	IR ⁽⁴⁾
5.	DWV at Test Voltage ⁽¹⁾
6.	Humidity ⁽³⁾
7.	IR ⁽⁴⁾
8.	DWV at Test Voltage ⁽¹⁾

Row-to-RowGroup 5

EPTS-2-P-D-RA-04
EPTT-2-P-11.5-D-RA
2 Assemblies

Group 6

EPTS-2-P-D-RA-04

2 Assemblies

Group 7

EPTT-2-P-11.5-D-RA
2 Assemblies

Group 8

EPTS-2-P-D-RA-04
EPTT-2-P-11.5-D-RA
2 Assemblies

Step	Description
1.	DWV Breakdown ⁽²⁾

Step	Description
1.	DWV Breakdown ⁽²⁾

Step	Description
1.	DWV Breakdown ⁽²⁾

Step	Description
1.	IR ⁽⁴⁾
2.	DWV at Test Voltage ⁽¹⁾
3.	Thermal Shock ⁽⁵⁾
4.	IR ⁽⁴⁾
5.	DWV at Test Voltage ⁽¹⁾
6.	Humidity ⁽³⁾
7.	IR ⁽⁴⁾
8.	DWV at Test Voltage ⁽¹⁾

- (1) DWV at Test Voltage = EIA-364-20
Test Condition = 1 (Sea Level)
DWV test voltage is equal to 75% of the lowest breakdown voltage
Test voltage applied for 60 seconds
- (2) DWV Breakdown = EIA-364-20
Test Condition = 1 (Sea Level)
DWV test voltage is equal to 75% of the lowest breakdown voltage
Test voltage applied for 60 seconds
- (3) Humidity = EIA-364-31
Test Condition = B (240 Hours)
Test Method = III (+25°C to +65°C @ 90% RH to 98% RH)
Test Exceptions: ambient pre-condition and delete steps 7a and 7b
- (4) IR = EIA-364-21
Test Condition = 500 Vdc, 2 Minutes Max
- (5) Thermal Shock = EIA-364-32
Exposure Time at Temperature Extremes = 1/2 Hour
Method A, Test Condition = I (-55°C to +85°C)
Test Duration = A-3 (100 Cycles)

FLOWCHARTS Continued**Current Carrying Capacity**

<u>Group 1</u>		<u>Group 2</u>		<u>Group 3</u>	
EPTS-2-P-D-RA-04		EPTS-2-P-D-RA-04		EPTS-2-P-D-RA-04	
EPTT-2-P-11.5-D-RA		EPTT-2-P-11.5-D-RA		EPTT-2-P-11.5-D-RA	
4 Pins Powered		2 Pins Powered		2 Pins Powered	
Power Pins Tin (Immersion) .0315" PTH		Power Pins Tin (Immersion) .0315" PTH		Power Pins Tin (Immersion) .0315" PTH	
		Side-Side		Top-Bottom	
Step	Description	Step	Description	Step	Description
1.	CCC (1) Rows = 2 Number of Positions = 2	1.	CCC (1) Rows = 1 Number of Positions = 2	1.	CCC (1) Rows = 2 Number of Positions = 1

(1) CCC = EIA-364-70

Method 2, Temperature Rise Versus Current Curve

(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

FLOWCHARTS Continued**Mechanical Shock/Random Vibration/LLCR**Group 1

EPTS-2-P-D-RA-04

EPTT-2-P-11.5-D-RA

8 Assemblies

Tin (Immersion) .0315" PTH

Step Description

1. LLCR ⁽¹⁾
2. Mechanical Shock ⁽²⁾
3. Random Vibration ⁽³⁾
4. LLCR ⁽¹⁾
Max Delta = 15 mOhm

Compliant Pin ONLYGroup 2

EPTS-2-P-D-RA-04

EPTT-2-P-11.5-D-RA

30 Contacts Minimum

EPTS TERMINAL Tin (Immersion) .0315"
PTH**Step Description**

1. LLCR ⁽¹⁾
2. Random Vibration ⁽³⁾
3. LLCR ⁽¹⁾
Max Delta = 1 mOhm

Group 3

EPTS-2-P-D-RA-04

EPTT-2-P-11.5-D-RA

30 Contacts Minimum

EPTT CONTACT Tin (Immersion) .0315"
PTH**Step Description**

1. LLCR ⁽¹⁾
2. Random Vibration ⁽³⁾
3. LLCR ⁽¹⁾
Max Delta = 1 mOhm

(1) LLCR = EIA-364-23

Open Circuit Voltage = 20 mV Max

Test Current = 100 mA Max

(2) Mechanical Shock = EIA-364-27

Test Condition = C (100 G Peak, 6 milliseconds, Half Sine)

Number of Shocks = 3 Per Direction, Per Axis, 18 Total

(3) Random Vibration = EIA-364-28

Condition = VB (7.56 gRMS Average, 2 Hours/Axis)

Mechanical Shock/Random Vibration/Event DetectionGroup 1

EPTS-2-P-D-RA-04

EPTT-2-P-11.5-D-RA

8 Assemblies

Tin (Immersion) .0315" PTH

Step Description

1. Nanosecond Event Detection
(Mechanical Shock) ⁽¹⁾
2. Nanosecond Event Detection
(Random Vibration) ⁽²⁾

(1) Nanosecond Event Detection (Mechanical Shock)

Use EIA-364-87 for Nanosecond Event Detection:

Test Condition = F (50 nanoseconds at 10 ohms)

Use EIA-364-27 for Mechanical Shock:

Test Condition = C (100 G Peak, 6 milliseconds, Half Sine)

Number of Shocks = 3 Per Direction, Per Axis, 18 Total

(2) Nanosecond Event Detection (Random Vibration)

Use EIA-364-87 for Nanosecond Event Detection:

Test Condition = F (50 nanoseconds at 10 ohms)

Use EIA-364-28 for Random Vibration:

Condition = VB (7.56 gRMS Average, 2 Hours/Axis)

FLOWCHARTS Continued

Pressfit Hole Evaluation

Group 1 EPTS-2-P-D-RA-04		Group 2 EPTT-2-P-11.5-D-RA		Group 3 EPTS-2-P-D-RA-04		Group 4 EPTT-2-P-11.5-D-RA	
30 Contacts Minimum EPTS TERMINAL Tin (Immersion) .0275" PTH		30 Contacts Minimum EPTT CONTACT Tin (Immersion) .0275" PTH		30 Contacts Minimum EPTS TERMINAL Tin (Immersion) .0315" PTH		30 Contacts Minimum EPTT CONTACT Tin (Immersion) .0315" PTH	
Step	Description	Step	Description	Step	Description	Step	Description
1.	Insertion Force Rate = 2.54 mm/min Note: Pin 1	1.	Insertion Force Rate = 2.54 mm/min Note: Pin 1	1.	Insertion Force Rate = 2.54 mm/min Note: Pin 1	1.	Insertion Force Rate = 2.54 mm/min Note: Pin 1
2.	Retention Force Rate = 2.54 mm/min Note: Pin 1	2.	Retention Force Rate = 2.54 mm/min Note: Pin 1	2.	Retention Force Rate = 2.54 mm/min Note: Pin 1	2.	Retention Force Rate = 2.54 mm/min Note: Pin 1
3.	Cycles Quantity = 1 Note: Pin 2	3.	Cycles Quantity = 1 Note: Pin 2	3.	Cycles Quantity = 1 Note: Pin 2	3.	Cycles Quantity = 1 Note: Pin 2
4.	Insertion Force Rate = 2.54 mm/min Note: Pin 3	4.	Insertion Force Rate = 2.54 mm/min Note: Pin 3	4.	Insertion Force Rate = 2.54 mm/min Note: Pin 3	4.	Insertion Force Rate = 2.54 mm/min Note: Pin 3
5.	Retention Force Rate = 2.54 mm/min Note: Pin 3	5.	Retention Force Rate = 2.54 mm/min Note: Pin 3	5.	Retention Force Rate = 2.54 mm/min Note: Pin 3	5.	Retention Force Rate = 2.54 mm/min Note: Pin 3
6.	Hole Integrity Note: Check for Distortion of the PTH according to EIA-364-96	6.	Hole Integrity Note: Check for Distortion of the PTH according to EIA-364-96	6.	Hole Integrity Note: Check for Distortion of the PTH according to EIA-364-96	6.	Hole Integrity Note: Check for Distortion of the PTH according to EIA-364-96
Group 5 EPTS-2-P-D-RA-04		Group 6 EPTT-2-P-11.5-D-RA		Group 7 EPTS-2-P-D-RA-04		Group 8 EPTT-2-P-11.5-D-RA	
30 Contacts Minimum EPTS TERMINAL Tin (Immersion) .0275" PTH		30 Contacts Minimum EPTT CONTACT Tin (Immersion) .0275" PTH		30 Contacts Minimum EPTS TERMINAL Tin (Immersion) .0315" PTH		30 Contacts Minimum EPTT CONTACT Tin (Immersion) .0315" PTH	
Step	Description	Step	Description	Step	Description	Step	Description
1.	LLCR (1) Note: Part 1	1.	LLCR (1) Note: Part 1	1.	LLCR (1) Note: Part 1	1.	LLCR (1) Note: Part 1
2.	Cycles Quantity = 1 Note: Part 2	2.	Cycles Quantity = 1 Note: Part 2	2.	Cycles Quantity = 1 Note: Part 2	2.	Cycles Quantity = 1 Note: Part 2
3.	LLCR (1) Max Delta = 1 mOhm Note: Part 3	3.	LLCR (1) Max Delta = 1 mOhm Note: Part 3	3.	LLCR (1) Max Delta = 1 mOhm Note: Part 3	3.	LLCR (1) Max Delta = 1 mOhm Note: Part 3
4.	Hole Integrity Note: Check for Distortion of the PTH according to EIA-364-96	4.	Hole Integrity Note: Check for Distortion of the PTH according to EIA-364-96	4.	Hole Integrity Note: Check for Distortion of the PTH according to EIA-364-96	4.	Hole Integrity Note: Check for Distortion of the PTH according to EIA-364-96

(1) LLCR = EIA-364-23

Open Circuit Voltage = 20 mV Max

Test Current = 100 mA Max

ATTRIBUTE DEFINITIONS

The following is a brief, simplified description of attributes.

THERMAL SHOCK:

- 1) EIA-364-32, *Thermal Shock (Temperature Cycling) Test Procedure for Electrical Connectors*.
- 2) Test Condition 1: -55°C to +85°C
- 3) Test Time: ½ hour dwell at each temperature extreme
- 4) Number of Cycles: 100
- 5) All test samples are pre-conditioned at ambient.
- 6) All test samples are exposed to environmental stressing in the mated condition.

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.

MECHANICAL SHOCK (Specified Pulse):

- 1) Reference document: EIA-364-27, *Mechanical Shock Test Procedure for Electrical Connectors*
- 2) Test Condition C
- 3) Peak Value: 100 G
- 4) Duration: 6 Milliseconds
- 5) Wave Form: Half Sine
- 6) Velocity: 12.3 ft/s
- 7) Number of Shocks: 3 Shocks / Direction, 3 Axis (18 Total)

VIBRATION:

- 1) Reference document: EIA-364-28, *Vibration Test Procedure for Electrical Connectors*
- 2) Test Condition V, Letter B
- 3) Power Spectral Density: 0.04 G² / Hz
- 4) G 'RMS': 7.56
- 5) Frequency: 50 to 2000 Hz
- 6) Duration: 2.0 Hours per axis (3 axis total)

NANOSECOND-EVENT DETECTION:

- 1) Reference document: EIA-364-87, *Nanosecond-Event Detection for Electrical Connectors*
- 2) Prior to test, the samples were characterized to assure the low nanosecond event being monitored will trigger the detector.
- 3) After characterization it was determined the test samples could be monitored for 50 nanosecond events

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.

ATTRIBUTE DEFINITIONS Continued

The following is a brief, simplified description of attributes

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 TC², 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 TC² software in order to acquire and record the test data.
- 10) The permanent set of each contact shall be measured within the TC² 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.

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 four temperature points are reported:
 - a. Ambient
 - b. 65° C
 - c. 75° C
 - d. 95° 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.

ATTRIBUTE DEFINITIONS Continued

The following is a brief, simplified description of attributes

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. $\leq +5.0$ 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) The following guidelines are used to categorize the changes in LLCR for compliant pin only
 - a. $\leq +0.33$ mOhms: -----Stable
 - b. $> +0.33$ to $+0.66$ mOhms:-----Minor
 - c. $+0.67$ to $+1$ mOhms: -----Acceptable
 - d. $>+1$ mOhms: -----Unstable

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. $\leq +5.0$ 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° C
 - ix. The final LLCR shall be conducted within 1 hour after drying.
- 5) The following guidelines are used to categorize the changes in LLCR for compliant pin only
 - a. $\leq +0.33$ mOhms: -----Stable
 - b. $> +0.33$ to $+0.66$ mOhms:-----Minor
 - c. $>+0.67$ to $+1$ mOhms:-----Acceptable
 - d. $>+1$ mOhms: -----Unstable

ATTRIBUTE DEFINITIONS Continued

The following is a brief, simplified description of attributes

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).

RESULTS

Temperature Rise, CCC at a 20% de-rating

- CCC for a 30°C Temperature Rise-----17.3 A per contact with 2 contacts (1 Row/2 Pins, Side to Side) powered
- CCC for a 30°C Temperature Rise-----16.5 A per contact with 2 contacts (2 Rows/1 Pin, Top to Bottom)) powered
- CCC for a 30°C Temperature Rise-----15.7 A per contact with 4 contacts (2 Rows/2 Positions) powered

Mating/Unmating Forces:

Thermal Aging Group

- Initial
 - Mating
 - Min ----- 3.71 Lbs
 - Max----- 4.43 Lbs
 - Unmating
 - Min ----- 2.08 Lbs
 - Max----- 2.76 Lbs
- After Thermal
 - Mating
 - Min ----- 2.95 Lbs
 - Max----- 3.11 Lbs
 - Unmating
 - Min ----- 1.43 Lbs
 - Max----- 1.62 Lbs

RESULTS Continued**Mating/Unmating Forces:****Mating/Unmating Durability Group**

- **Initial**
 - **Mating**
 - Min ----- 3.41 Lbs
 - Max ----- 4.28 Lbs
 - **Unmating**
 - Min ----- 2.55 Lbs
 - Max ----- 2.94 Lbs
- **After 25 Cycles**
 - **Mating**
 - Min ----- 3.56 Lbs
 - Max ----- 4.54 Lbs
 - **Unmating**
 - Min ----- 2.46 Lbs
 - Max ----- 2.74 Lbs
- **After 50 Cycles**
 - **Mating**
 - Min ----- 3.79 Lbs
 - Max ----- 4.67 Lbs
 - **Unmating**
 - Min ----- 2.61 Lbs
 - Max ----- 3.00 Lbs
- **After 75 Cycles**
 - **Mating**
 - Min ----- 3.79 Lbs
 - Max ----- 4.82 Lbs
 - **Unmating**
 - Min ----- 2.83 Lbs
 - Max ----- 3.33 Lbs
- **After 100 Cycles**
 - **Mating**
 - Min ----- 3.74 Lbs
 - Max ----- 5.05 Lbs
 - **Unmating**
 - Min ----- 2.89 Lbs
 - Max ----- 3.75 Lbs
- **After Humidity**
 - **Mating**
 - Min ----- 3.16 Lbs
 - Max ----- 3.56 Lbs
 - **Unmating**
 - Min ----- 1.77 Lbs
 - Max ----- 2.72 Lbs

RESULTS Continued**Normal Force at 0.0081inch deflection****Wide Beams**

- **Initial**
 - **Min**-----406.50 gf **Set** ---- 0.0001 in
 - **Max**-----591.90 gf **Set** ---- 0.0005 in
- **Thermal**
 - **Min**-----297.00 gf **Set** ---- 0.0019 in
 - **Max**-----406.00 gf **Set** ---- 0.0024 in

Narrow Beams

- **Initial**
 - **Min**-----230.50 gf **Set** ---- 0.0000 in
 - **Max**-----293.90 gf **Set** ---- 0.0005 in
- **Thermal**
 - **Min**-----169.50 gf **Set** ---- 0.0022 in
 - **Max**-----210.50 gf **Set** ---- 0.0023 in

Compliant pin Insertion/Withdrawal Forces**TIN 0.0275" PTH EPTS TERMINAL**

- **Initial**
 - **Insertion**
 - **Min**-----7.64 Lbs
 - **Max**-----9.43 Lbs
 - **Withdrawal**
 - **Min**-----4.36 Lbs
 - **Max**-----6.80 Lbs
- **After 3 Cycles**
 - **Insertion**
 - **Min**-----6.17 Lbs
 - **Max**-----8.64 Lbs
 - **Withdrawal**
 - **Min**-----3.56 Lbs
 - **Max**-----6.20 Lbs

TIN 0.0275" PTH EPTT CONTACT

- **Initial**
 - **Insertion**
 - **Min**-----6.38 Lbs
 - **Max**-----8.68 Lbs
 - **Withdrawal**
 - **Min**-----4.08 Lbs
 - **Max**-----6.14 Lbs
- **After 3 Cycles**
 - **Insertion**
 - **Min**-----6.50 Lbs
 - **Max**-----9.18 Lbs
 - **Withdrawal**
 - **Min**-----4.26 Lbs
 - **Max**-----6.62 Lbs

RESULTS Continued**TIN 0.0315" PTH EPTS TERMINAL**

- **Initial**
 - **Insertion**
 - **Min** ----- 5.01 Lbs
 - **Max** ----- 6.33 Lbs
 - **Withdrawal**
 - **Min** ----- 4.08 Lbs
 - **Max** ----- 5.24 Lbs
- **After 3 Cycles**
 - **Insertion**
 - **Min** ----- 5.26 Lbs
 - **Max** ----- 6.59 Lbs
 - **Withdrawal**
 - **Min** ----- 4.01 Lbs
 - **Max** ----- 5.48 Lbs

TIN 0.0315" PTH EPTT CONTACT

- **Initial**
 - **Insertion**
 - **Min** ----- 4.00 Lbs
 - **Max** ----- 5.53 Lbs
 - **Withdrawal**
 - **Min** ----- 3.08 Lbs
 - **Max** ----- 4.24 Lbs
- **After 3 Cycles**
 - **Insertion**
 - **Min** ----- 4.30 Lbs
 - **Max** ----- 5.89 Lbs
 - **Withdrawal**
 - **Min** ----- 3.27 Lbs
 - **Max** ----- 4.38 Lbs

RESULTS Continued**Insulation Resistance minimums, IR****Pin to Pin**

- **Initial**
 - Mated-----45000 Meg Ω ----- Passed
 - Unmated -----45000 Meg Ω ----- Passed
- **Thermal**
 - Mated-----45000 Meg Ω ----- Passed
 - Unmated -----45000 Meg Ω ----- Passed
- **Humidity**
 - Mated-----45000 Meg Ω ----- Passed
 - Unmated -----45000 Meg Ω ----- Passed

Row to Row

- **Initial**
 - Mated-----45000 Meg Ω ----- Passed
 - Unmated -----45000 Meg Ω ----- Passed
- **Thermal**
 - Mated-----45000 Meg Ω ----- Passed
 - Unmated -----45000 Meg Ω ----- Passed
- **Humidity**
 - Mated-----45000 Meg Ω ----- Passed
 - Unmated -----45000 Meg Ω ----- Passed

Dielectric Withstanding Voltage minimums, DWV

- **Minimums**
 - Breakdown Voltage----- 2124 VAC
 - Test Voltage ----- 1595 VAC
 - Working Voltage -----530 VAC

Pin to Pin

- Initial DWV -----Passed
- Thermal DWV-----Passed
- Humidity DWV-----Passed

Row to Row

- Initial DWV -----Passed
- Thermal DWV-----Passed
- Humidity DWV-----Passed

RESULTS Continued**LLCR Gas Tight (32 LLCR test points)**

- Initial -----2.15 mOhms Max
- Gas-Tight
 - <= +5.0 mOhms -----32 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 (32 compliant pin LLCR test points)**TIN 0.0315" PTH EPTS TERMINAL**

- Initial -----0.04 mOhms Max
- Gas Tight
 - <= +0.33 mOhms -----32 Points ----- Stable
 - +0.34 to +0.66 mOhms -----0 Points ----- Minor
 - +0.67 to +1.0 mOhms -----0 Points ----- Acceptable
 - >1.00 mOhms -----0 Points ----- Unstable

TIN 0.0315" PTH EPTT CONTACT

- Initial -----0.17 mOhms Max
- Gas Tight
 - <= +0.33 mOhms -----32 Points ----- Stable
 - +0.34 to +0.66 mOhms -----0 Points ----- Minor
 - +0.67 to +1.0 mOhms -----0 Points ----- Acceptable
 - >1.00 mOhms -----0 Points ----- Unstable

LLCR Thermal Aging (32 LLCR test points)

- Initial -----1.11 mOhms Max
- Thermal Aging
 - <= +5.0 mOhms -----32 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 Thermal Aging (32 compliant pin LLCR test points)**TIN 0.0315" PTH EPTS TERMINAL**

- Initial -----0.05 mOhms Max
- Gas Tight
 - <= +0.33 mOhms -----32 Points ----- Stable
 - +0.34 to +0.66 mOhms -----0 Points ----- Minor
 - +0.67 to +1.0 mOhms -----0 Points ----- Acceptable
 - >1.00 mOhms -----0 Points ----- Unstable

TIN 0.0315" PTH EPTT CONTACT

- Initial -----0.17 mOhms Max
- Gas Tight
 - <= +0.33 mOhms -----32 Points ----- Stable
 - +0.34 to +0.66 mOhms -----0 Points ----- Minor
 - +0.67 to +1.0 mOhms -----0 Points ----- Acceptable
 - >1.00 mOhms -----0 Points ----- Unstable

RESULTS Continued**LLCR Durability (32 LLCR test points)**

- **Initial** -----1.23 mOhms Max
- **Durability, 100 Cycles**
 - <= +5.0 mOhms -----32 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 -----32 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 -----32 Points ----- Stable
 - +5.1 to +10.0 mOhms -----0 Points ----- Minor
 - +10.1 to +15.0 mOhms -----0 Points ----- Acceptable
 - +15.1 to +50.0 mOhms -----0 Points ----- Marginal
 - +50.1 to +2000 mOhms -----0 Points ----- Unstable
 - >+2000 mOhms -----0 Points ----- Open Failure

LLCR Durability (32 compliant pin LLCR test points)**TIN 0.0315" PTH EPTS TERMINAL**

- **Initial** -----0.04 mOhms Max
- **Thermal shock**
 - <= +0.33 mOhms -----32 Points ----- Stable
 - +0.34 to +0.66 mOhms -----0 Points ----- Minor
 - +0.67 to +1.0 mOhms -----0 Points ----- Acceptable
 - >1.00 mOhms -----0 Points ----- Unstable
- **Humidity**
 - <= +0.33 mOhms -----32 Points ----- Stable
 - +0.34 to +0.66 mOhms -----0 Points ----- Minor
 - +0.67 to +1.0 mOhms -----0 Points ----- Acceptable
 - >1.00 mOhms -----0 Points ----- Unstable

TIN 0.0315" PTH EPTT CONTACT

- **Initial** -----0.17 mOhms Max
- **Thermal shock**
 - <= +0.33 mOhms -----32 Points ----- Stable
 - +0.34 to +0.66 mOhms -----0 Points ----- Minor
 - +0.67 to +1.0 mOhms -----0 Points ----- Acceptable
 - >1.00 mOhms -----0 Points ----- Unstable
- **Humidity**
 - <= +0.33 mOhms -----32 Points ----- Stable
 - +0.34 to +0.66 mOhms -----0 Points ----- Minor
 - +0.67 to +1.0 mOhms -----0 Points ----- Acceptable
 - >1.00 mOhms -----0 Points ----- Unstable

RESULTS Continued**LLCR Shock & Vibration (32 LLCR test points)**

- **Initial** -----1.21 mOhms Max
- **Shock &Vibration**
 - <= +5.0 mOhms -----32 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

Mechanical Shock & Random Vibration:

- **Shock**
 - **No Damage**-----Pass
 - **50 Nanoseconds**-----Pass
- **Vibration**
 - **No Damage**-----Pass
 - **50 Nanoseconds**-----Pass

LLCR Shock & Vibration (32 compliant pin LLCR test points)**TIN 0.0315" PTH EPTS TERMINAL**

- **Initial** -----0.05 mOhms Max
- **Shock &Vibration**
 - <= +0.33 mOhms -----31 Points -----Stable
 - +0.34 to +0.66 mOhms -----1 Points -----Minor
 - +0.67 to +1.0 mOhms -----0 Points -----Acceptable
 - >1.00 mOhms -----0 Points -----Unstable

TIN 0.0315" PTH EPTT CONTACT

- **Initial** -----0.15 mOhms Max
- **Shock &Vibration**
 - <= +0.33 mOhms -----32 Points -----Stable
 - +0.34 to +0.66 mOhms -----0 Points -----Minor
 - +0.67 to +1.0 mOhms -----0 Points -----Acceptable
 - >1.00 mOhms -----0 Points -----Unstable

RESULTS Continued**Pressfit Hole Evaluation: LLCR (32 LLCR test points)****EPTS TERMINAL Tin (immersion) 0.0275" PTH**

- Initial -----0.03 mOhms Max
- After 1 cycle
 - <= +0.33 mOhms -----32 Points ----- Stable
 - +0.34 to +0.66 mOhms -----0 Points ----- Minor
 - +0.67 to +1 mOhms -----0 Points ----- Acceptable
 - >+1 mOhms -----0 Points ----- Unstable

EPTT CONTACT Tin (immersion) 0.0275" PTH

- Initial -----0.04 mOhms Max
- After 1 cycle
 - <= +0.33 mOhms -----32 Points ----- Stable
 - +0.34 to +0.66 mOhms -----0 Points ----- Minor
 - +0.67 to +1 mOhms -----0 Points ----- Acceptable
 - >+1 mOhms -----0 Points ----- Unstable

EPTS TERMINAL Tin (immersion) 0.0315" PTH

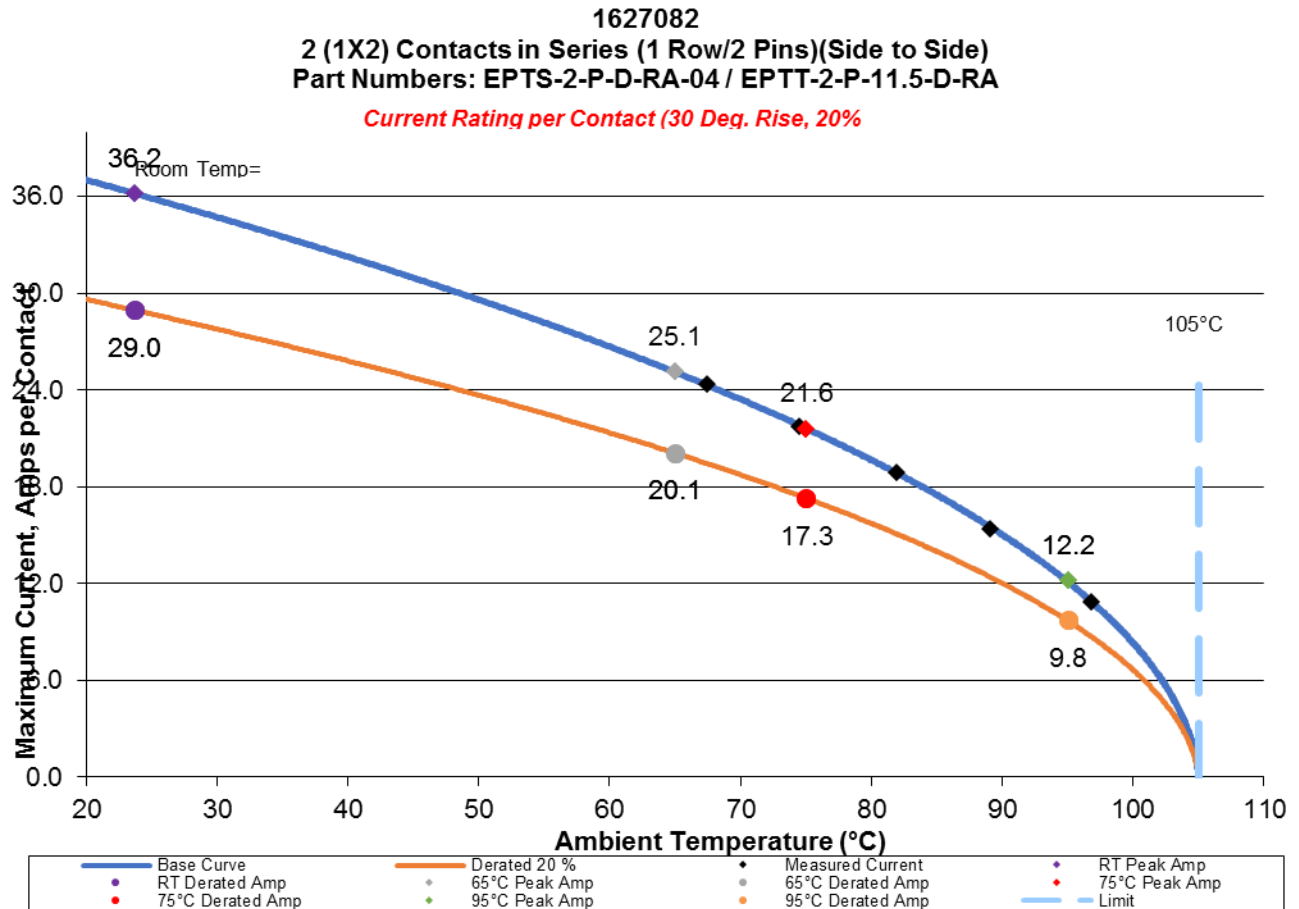
- Initial -----0.03 mOhms Max
- After 1 cycle
 - <= +0.33 mOhms -----32 Points ----- Stable
 - +0.34 to +0.66 mOhms -----0 Points ----- Minor
 - +0.67 to +1 mOhms -----0 Points ----- Acceptable
 - >+1 mOhms -----0 Points ----- Unstable

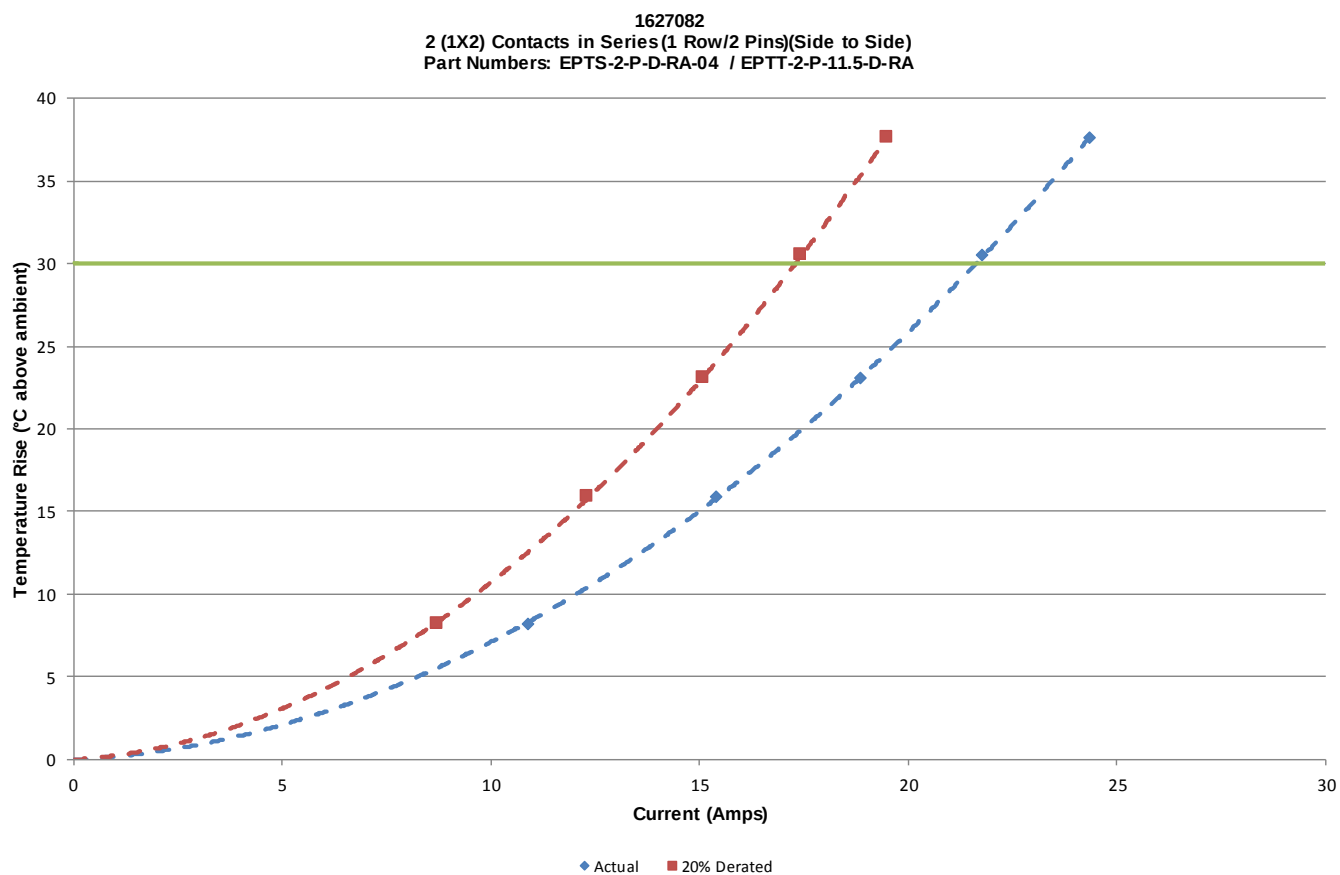
EPTT CONTACT Tin (immersion) 0.0315" PTH

- Initial -----0.03 mOhms Max
- After 1 cycle
 - <= +0.33 mOhms -----32 Points ----- Stable
 - +0.34 to +0.66 mOhms -----0 Points ----- Minor
 - +0.67 to +1 mOhms -----0 Points ----- Acceptable
 - >+1 mOhms -----0 Points ----- Unstable

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. 2 Contacts powered (1 Row/2 Pins, Side to Side)





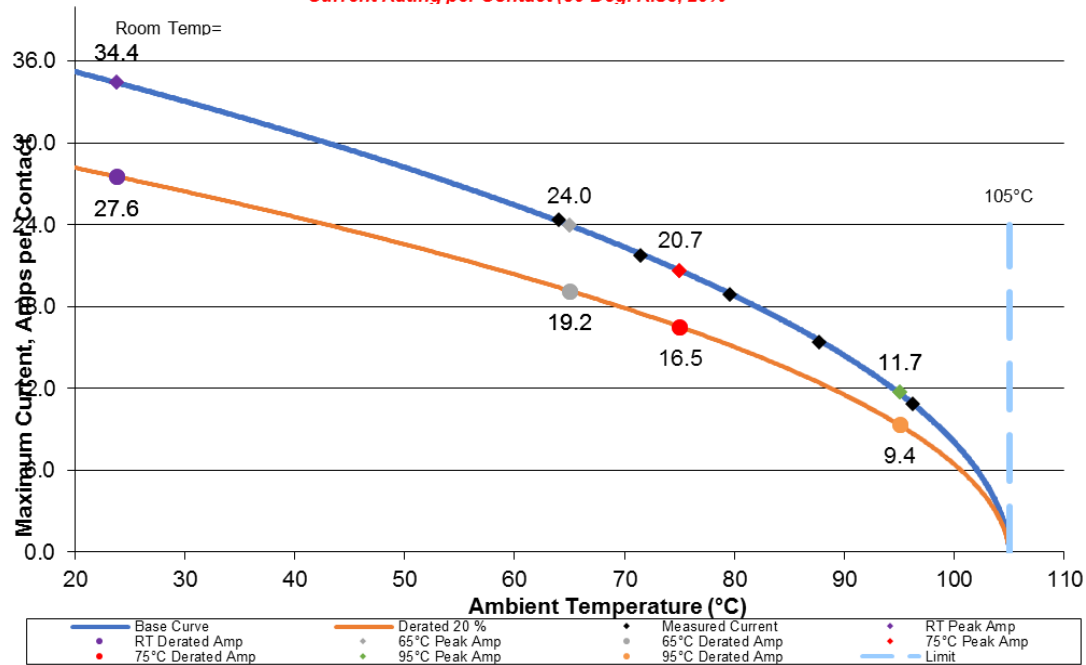
DATA SUMMARIES Continued

b. 2 Contacts powered (2 Row/1 Pins, Top to Bottom)

1627082

2 (2X1) Contacts in Series(2 Rows/1 Pin)(Top to Bottom)

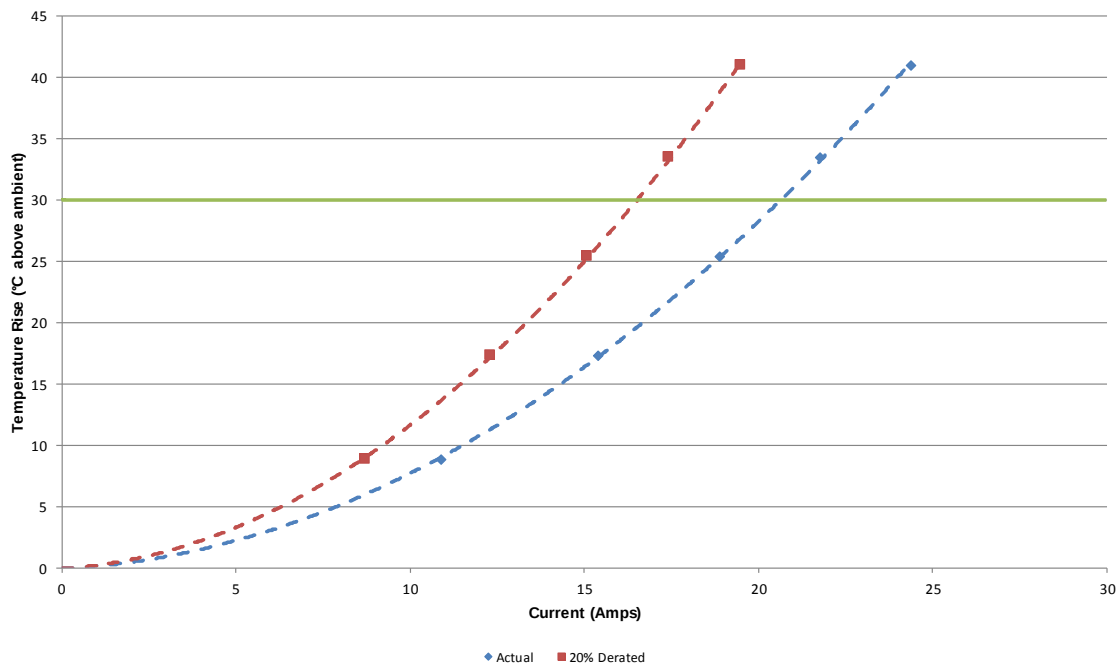
Part Numbers: EPTS-2-P-D-RA-04 / EPTT-2-P-11.5-D-RA

Current Rating per Contact (30 Deg. Rise, 20%)

1627082

2 (2X1) Contacts in Series(2 Rows/1 Pin)(Top to Bottom)

Part Numbers: EPTS-2-P-D-RA-04 / EPTT-2-P-11.5-D-RA



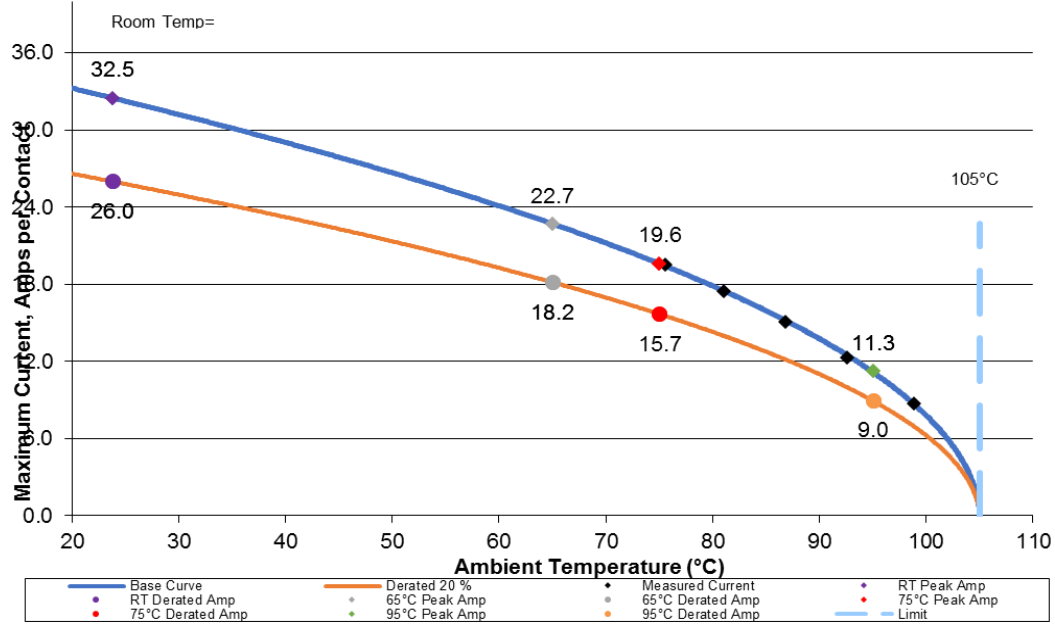
DATA SUMMARIES Continued

c. All Contacts powered (2 rows/2 positions)

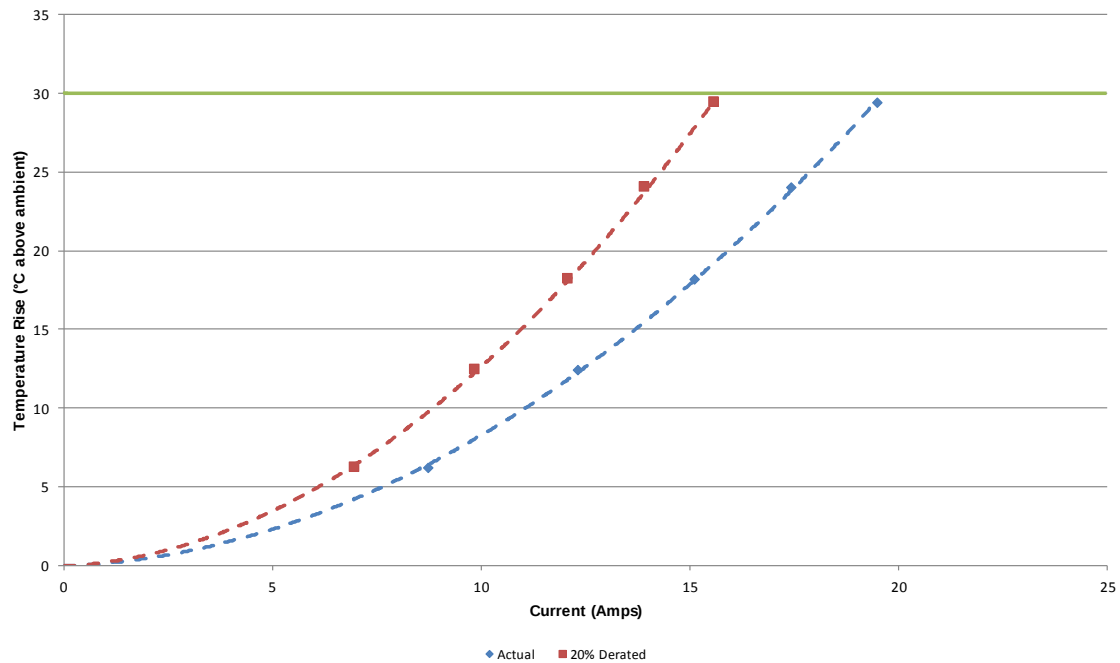
1627082

4 (All Power)(2X2) Contacts in Series(2 Rows/2 Positions)

Part Numbers: EPTS-2-P-D-RA-04 / EPTT-2-P-11.5-D-RA

Current Rating per Contact (30 Deg. Rise, 20%)

1627082

4 (All Power)(2X2) Contacts in Series(2 Rows/2 Positions)
Part Numbers: EPTS-2-P-D-RA-04 / EPTT-2-P-11.5-D-RA

DATA SUMMARIES Continued**Mating\Unmating Force:
Thermal Aging Group**

	Initial				After Thermals			
	Mating		Unmating		Mating		Unmating	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	16.50	3.71	9.25	2.08	13.12	2.95	6.36	1.43
Maximum	19.70	4.43	12.28	2.76	13.83	3.11	7.21	1.62
Average	18.31	4.12	10.82	2.43	13.50	3.04	6.87	1.55
St Dev	1.12	0.25	1.02	0.23	0.23	0.05	0.29	0.07
Count	8	8	8	8	8	8	8	8

Mating\Unmating Durability Group

	Initial				25 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	15.17	3.41	11.34	2.55	15.83	3.56	10.94	2.46
Maximum	19.04	4.28	13.08	2.94	20.19	4.54	12.19	2.74
Average	16.81	3.78	12.08	2.72	17.43	3.92	11.70	2.63
St Dev	1.27	0.29	0.61	0.14	1.58	0.35	0.40	0.09
Count	8	8	8	8	8	8	8	8

	50 Cycles				75 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	16.86	3.79	11.61	2.61	16.86	3.79	12.59	2.83
Maximum	20.77	4.67	13.34	3.00	21.44	4.82	14.81	3.33
Average	18.57	4.18	12.78	2.87	19.19	4.31	13.64	3.07
St Dev	1.52	0.34	0.57	0.13	1.69	0.38	0.67	0.15
Count	8	8	8	8	8	8	8	8

	100 Cycles				Humidity			
	Mating		Unmating		Mating		Unmating	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	16.64	3.74	12.85	2.89	14.05	3.16	7.86	1.77
Maximum	22.46	5.05	16.68	3.75	15.83	3.56	12.09	2.72
Average	19.94	4.48	14.46	3.25	14.91	3.35	9.91	2.23
St Dev	1.94	0.44	1.16	0.26	0.67	0.15	1.68	0.38
Count	8	8	8	8	8	8	8	8

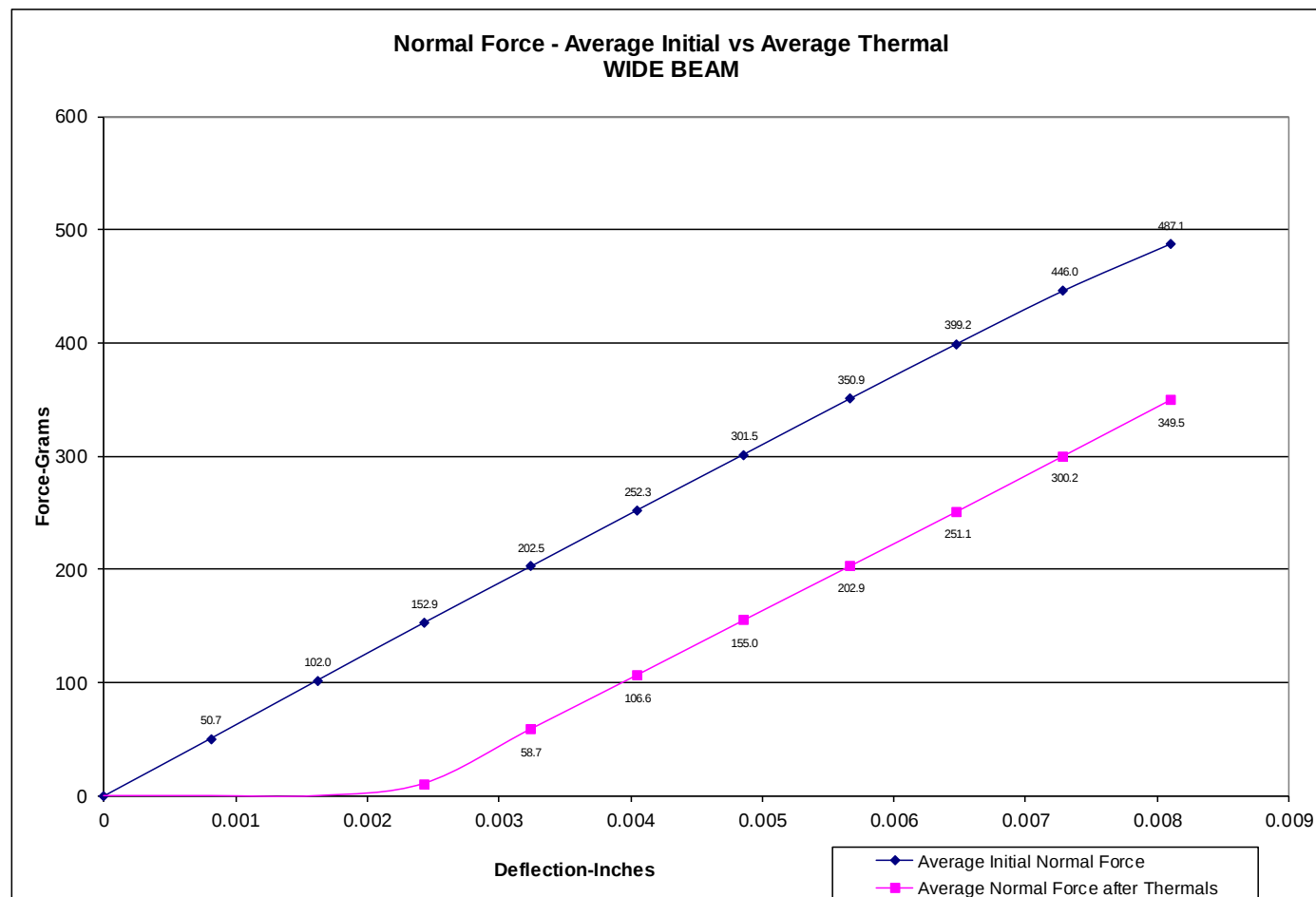
DATA SUMMARIES Continued**NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):**

- 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.

Wide Beams

Initial	Deflections in inches Forces in Grams										
	0.0008	0.0016	0.0024	0.0032	0.0041	0.0049	0.0057	0.0065	0.0073	0.0081	SET
Averages	50.65	102.01	152.89	202.53	252.33	301.53	350.89	399.23	446.04	487.08	0.0002
Min	38.20	78.60	120.60	161.90	202.90	245.80	287.60	329.20	370.80	406.50	0.0001
Max	67.60	135.50	200.30	263.00	324.20	382.40	439.80	495.70	547.20	591.90	0.0005
St. Dev	11.494	22.449	31.857	40.437	48.923	55.725	63.500	70.365	75.724	81.231	0.0002
Count	8	8	8	8	8	8	8	8	8	8	8

After Thermals	Deflections in inches Forces in Grams										
	0.0008	0.0016	0.0024	0.0032	0.0041	0.0049	0.0057	0.0065	0.0073	0.0081	SET
Averages	0.00	0.00	10.78	58.74	106.55	155.01	202.93	251.05	300.23	349.51	0.0022
Min	0.00	0.00	3.30	41.10	80.20	124.00	166.00	210.10	253.50	297.00	0.0019
Max	0.00	0.00	22.10	67.70	123.30	178.20	236.90	293.00	348.80	406.00	0.0024
St. Dev	0.000	0.000	5.525	9.649	16.164	22.044	29.004	35.391	41.233	46.893	0.0002
Count	8	8	8	8	8	8	8	8	8	8	8

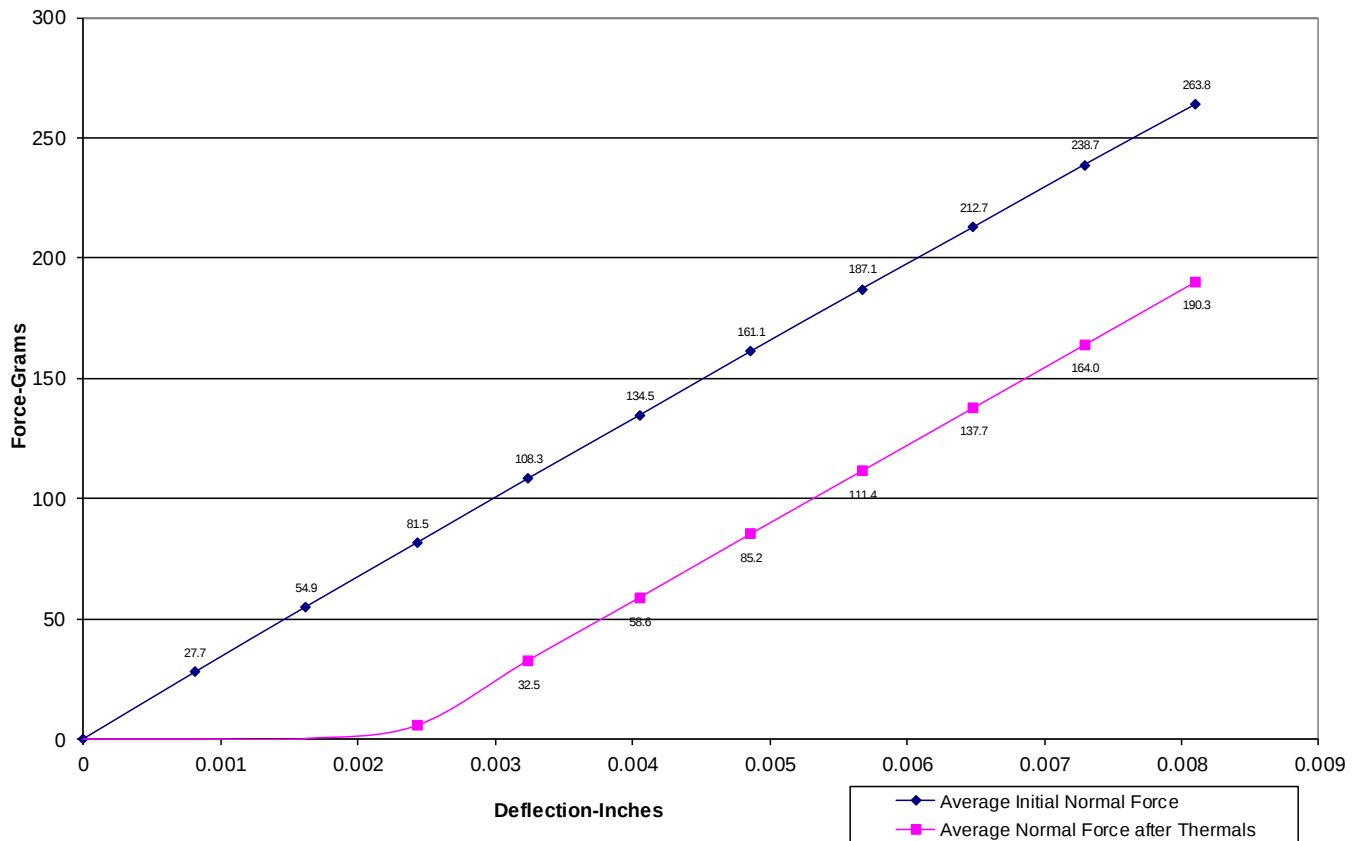


DATA SUMMARIES Continued**Narrow Beams**

Initial	Deflections in inches Forces in Grams										
	<u>0.0008</u>	<u>0.0016</u>	<u>0.0024</u>	<u>0.0032</u>	<u>0.0041</u>	<u>0.0049</u>	<u>0.0057</u>	<u>0.0065</u>	<u>0.0073</u>	<u>0.0081</u>	<i>SET</i>
Averages	27.69	54.89	81.54	108.31	134.51	161.10	187.13	212.69	238.67	263.82	0.0002
Min	24.20	48.00	71.20	95.30	118.10	140.30	163.20	185.10	208.30	230.50	0.0000
Max	30.80	62.30	91.90	122.30	150.60	181.30	209.00	236.90	266.10	293.90	0.0005
St. Dev	2.426	5.312	7.715	10.034	12.344	15.005	16.865	18.878	20.999	22.476	0.0002
Count	12	12	12	12	12	12	12	12	12	12	12

After Thermals	Deflections in inches Forces in Grams										
	<u>0.0008</u>	<u>0.0016</u>	<u>0.0024</u>	<u>0.0032</u>	<u>0.0041</u>	<u>0.0049</u>	<u>0.0057</u>	<u>0.0065</u>	<u>0.0073</u>	<u>0.0081</u>	<i>SET</i>
Averages	0.00	0.00	5.38	32.50	58.63	85.24	111.43	137.69	163.95	190.28	0.0023
Min	0.00	0.00	3.50	27.70	50.50	74.40	98.70	122.40	146.20	169.50	0.0022
Max	0.00	0.00	8.50	36.50	66.10	94.20	123.80	153.10	180.70	210.50	0.0023
St. Dev	0.000	0.000	1.553	2.645	4.814	7.039	8.867	11.177	12.919	15.240	0.0000
Count	12	12	12	12	12	12	12	12	12	12	12

**Normal Force - Average Initial vs Average Thermal
NARROW BEAMS**



DATA SUMMARIES Continued**Compliant pin Insertion/Retention Forces****TIN 0.0275" PTH EPTS TERMINAL**

Cycle 1		Cycle 3	
Insertion Force Summary		Insertion Force Summary	
Minimum	7.64	Minimum	6.17
Maximum	9.43	Maximum	8.64
Average	8.42	Average	7.42
Cycle 1		Cycle 3	
Withdrawal Force Summary		Withdrawal Force Summary	
Minimum	4.36	Minimum	3.56
Maximum	6.80	Maximum	6.20
Average	5.75	Average	5.33

TIN 0.0275" PTH EPTT CONTACT

Cycle 1		Cycle 3	
Insertion Force Summary		Insertion Force Summary	
Minimum	6.38	Minimum	6.50
Maximum	8.68	Maximum	9.18
Average	7.39	Average	7.93
Cycle 1		Cycle 3	
Withdrawal Force Summary		Withdrawal Force Summary	
Minimum	4.08	Minimum	4.26
Maximum	6.14	Maximum	6.62
Average	4.93	Average	5.43

TIN 0.0315" PTH EPTS TERMINAL

Cycle 1		Cycle 3	
Insertion Force Summary		Insertion Force Summary	
Minimum	5.01	Minimum	5.26
Maximum	6.33	Maximum	6.59
Average	5.57	Average	5.88
Cycle 1		Cycle 3	
Withdrawal Force Summary		Withdrawal Force Summary	
Minimum	4.08	Minimum	4.01
Maximum	5.24	Maximum	5.48
Average	4.63	Average	4.71

TIN 0.0315" PTH EPTT CONTACT

Cycle 1		Cycle 3	
Insertion Force Summary		Insertion Force Summary	
Minimum	4.00	Minimum	4.30
Maximum	5.53	Maximum	5.89
Average	4.66	Average	5.09
Cycle 1		Cycle 3	
Withdrawal Force Summary		Withdrawal Force Summary	
Minimum	3.08	Minimum	3.27
Maximum	4.24	Maximum	4.38
Average	3.66	Average	3.81

DATA SUMMARIES Continued**INSULATION RESISTANCE (IR):**

Pin to Pin			
	Mated	Unmated	Unmated
Minimum	EPTS/EPTT	EPTS	EPTT
Initial	45000	45000	45000
Thermal	45000	45000	45000
Humidity	45000	45000	45000

Row to Row			
	Mated	Unmated	Unmated
Minimum	EPTS/EPTT	EPTS	EPTT
Initial	45000	45000	45000
Thermal	45000	45000	45000
Humidity	45000	45000	45000

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

Voltage Rating Summary	
Minimum	EPTS/EPTT
Break Down Voltage	2124
Test Voltage	1595
Working Voltage	530

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

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

DATA SUMMARIES Continued**LLCR Durability:**

- 1) A total of 32 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. $\leq +5.0$ 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
- 5) The following guidelines are used to categorize the changes in LLCR for compliant pin only
 - a. $\leq +0.33$ mOhms: -----Stable
 - b. $> +0.33$ to $+0.66$ mOhms: -----Minor
 - c. $+0.67$ to $+1$ mOhms: -----Acceptable
 - d. $>+1$ mOhms: -----Unstable

LLCR Measurement Summaries by Pin Type				
Date	8/9/2018	8/10/2018	8/15/2018	9/4/2018
Room Temp (Deg C)	23	23	23	23
Rel Humidity (%)	46	45	44	47
Technician	Troy Cook	Troy Cook	Troy Cook	Troy Cook
mOhm values	Actual Initial	Delta 100 Cycles	Delta Therm Shck	Delta Humidity
Pin Type 1: Signal				
Average	0.97	0.11	0.14	0.15
St. Dev.	0.11	0.12	0.08	0.14
Min	0.78	0.01	0.00	0.01
Max	1.23	0.61	0.31	0.75
Summary Count	32	32	32	32
Total Count	32	32	32	32

LLCR Delta Count by Category						
	Stable	Minor	Acceptable	Marginal	Unstable	Open
mOhms	≤ 5	$>5 \text{ \& } \leq 10$	$>10 \text{ \& } \leq 15$	$>15 \text{ \& } \leq 50$	$>50 \text{ \& } \leq 1000$	>1000
100 Cycles	32	0	0	0	0	0
Therm Shck	32	0	0	0	0	0
Humidity	32	0	0	0	0	0

DATA SUMMARIES Continued**EPTS Compliant LLCR**

LLCR Measurement Summaries by Pin Type			
Date	8/9/2018	8/15/2018	9/4/2018
Room Temp (Deg C)	23	23	23
Rel Humidity (%)	46	43	41
Technician	Troy Cook	Troy Cook	Troy Cook
mOhm values	Actual Initial	Delta Thermal Shock	Delta Humidity
Pin Type 1: Signal			
Average	0.02	0.01	0.01
St. Dev.	0.01	0.01	0.01
Min	0.01	0.00	0.00
Max	0.04	0.03	0.04
Summary Count	32	32	32
Total Count	32	32	32

LLCR Delta Count by Category				
	Stable	Minor	Acceptable	Unstable
mOhms	<=.33	>.33 & <=.66	>.67 & <=1	>1
Therm Shck	32	0	0	0
Humidity	32	0	0	0

EPTT Compliant LLCR

LLCR Measurement Summaries by Pin Type			
Date	8/9/2018	8/15/2018	9/4/2018
Room Temp (Deg C)	23	23	23
Rel Humidity (%)	46	43	41
Technician	Troy Cook	Troy Cook	Troy Cook
mOhm values	Actual Initial	Delta Thermal Shock	Delta Humidity
Pin Type 1: Signal			
Average	0.13	0.02	0.03
St. Dev.	0.02	0.02	0.02
Min	0.10	0.00	0.00
Max	0.17	0.07	0.07
Summary Count	32	32	32
Total Count	32	32	32

LLCR Delta Count by Category				
	Stable	Minor	Acceptable	Unstable
mOhms	<=.33	>.33 & <=.66	>.67 & <=1	>1
Therm Shck	32	0	0	0
Humidity	32	0	0	0

DATA SUMMARIES Continued**LLCR Thermal Aging:**

- 1) A total of 32 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. $\leq +5.0$ 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
- 5) The following guidelines are used to categorize the changes in LLCR for compliant pin only
 - a. $\leq +0.33$ mOhms: -----Stable
 - b. $> +0.33$ to $+0.66$ mOhms:-----Minor
 - c. $+0.67$ to $+1$ mOhms: -----Acceptable
 - d. $>+1$ mOhms: -----Unstable

LLCR Measurement Summaries by Pin Type				
Date	8/9/2018	8/20/2018		
Room Temp (Deg C)	23	23		
Rel Humidity (%)	46	45		
Technician	Troy Cook	Troy Cook		
mOhm values	Actual Initial	Delta Thermal	Delta	Delta
Pin Type 1: Signal				
Average	0.91	0.10		
St. Dev.	0.07	0.10		
Min	0.78	0.00		
Max	1.11	0.47		
Summary Count	32	32		
Total Count	32	32		

LLCR Delta Count by Category						
	Stable	Minor	Acceptable	Marginal	Unstable	Open
mOhms	≤ 5	$>5 \text{ \& } \leq 10$	$>10 \text{ \& } \leq 15$	$>15 \text{ \& } \leq 50$	$>50 \text{ \& } \leq 1000$	>1000
Thermal	32	0	0	0	0	0

DATA SUMMARIES Continued**EPTS Compliant LLCR**

<i>LLCR Measurement Summaries by Pin Type</i>				
Date	8/9/2018	8/20/2018		
Room Temp (Deg C)	23	23		
Rel Humidity (%)	46	45		
Technician	Troy Cook	Troy Cook		
mOhm values	Actual Initial	Delta Thermal	Delta	Delta
Pin Type 1: Signal				
Average	0.02	0.01		
St. Dev.	0.01	0.01		
Min	0.01	0.00		
Max	0.05	0.03		
Summary Count	32	32		
Total Count	32	32		

<i>LLCR Delta Count by Category</i>				
	Stable	Minor	Acceptable	Unstable
mOhms	<=.33	>.33 & <=.66	>.67 & <=1	>1
Thermal	32	0	0	0

EPTT Compliant LLCR

<i>LLCR Measurement Summaries by Pin Type</i>				
Date	8/9/2018	8/20/2018		
Room Temp (Deg C)	23	23		
Rel Humidity (%)	46	45		
Technician	Troy Cook	Troy Cook		
mOhm values	Actual Initial	Delta Thermal	Delta	Delta
Pin Type 1: Signal				
Average	0.13	0.03		
St. Dev.	0.02	0.02		
Min	0.10	0.00		
Max	0.17	0.07		
Summary Count	32	32		
Total Count	32	32		

<i>LLCR Delta Count by Category</i>				
	Stable	Minor	Acceptable	Unstable
mOhms	<=.33	>.33 & <=.66	>.67 & <=1	>1
Thermal	32	0	0	0

DATA SUMMARIES Continued**LLCR Gas Tight:**

- 1) A total of 32 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. $\leq +5.0$ 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
- 5) The following guidelines are used to categorize the changes in LLCR for compliant pin only
 - a. $\leq +0.33$ mOhms: -----Stable
 - b. $> +0.33$ to $+0.66$ mOhms: -----Minor
 - c. $+0.67$ to $+1$ mOhms: -----Acceptable
 - d. $>+1$ mOhms: -----Unstable

LLCR Measurement Summaries by Pin Type				
Date	8/7/2018	8/14/2018		
Room Temp (Deg C)	23	23		
Rel Humidity (%)	46	43		
Technician	Troy Cook	Troy Cook		
mOhm values	Actual	Delta	Delta	Delta
	Initial	Acid Vapor		
Pin Type 1: Signal				
Average	1.05	0.14		
St. Dev.	0.25	0.14		
Min	0.78	0.00		
Max	2.15	0.67		
Summary Count	32	32		
Total Count	32	32		

LLCR Delta Count by Category						
	Stable	Minor	Acceptable	Marginal	Unstable	Open
mOhms	≤ 5	$>5 \text{ \& } \leq 10$	$>10 \text{ \& } \leq 15$	$>15 \text{ \& } \leq 50$	$>50 \text{ \& } \leq 1000$	>1000
Acid Vapor	32	0	0	0	0	0

DATA SUMMARIES Continued**ERTS Compliant LLCR**

LLCR Measurement Summaries by Pin Type				
Date	8/8/2018	8/14/2018		
Room Temp (Deg C)	23	23		
Rel Humidity (%)	42	43		
Technician	Troy Cook	Troy Cook		
mOhm values	Actual Initial	Delta Acid Vapor	Delta	Delta
Pin Type 1: Signal				
Average	0.02	0.01		
St. Dev.	0.01	0.01		
Min	0.01	0.00		
Max	0.04	0.04		
Summary Count	32	32		
Total Count	32	32		

LLCR Delta Count by Category				
	Stable	Minor	Acceptable	Unstable
mOhms	<=.33	>.33 & <=.66	>.67 & <=1	>1
Acid Vapor	32	0	0	0

ERTT Compliant LLCR

LLCR Measurement Summaries by Pin Type				
Date	8/8/2018	8/14/2018		
Room Temp (Deg C)	23	23		
Rel Humidity (%)	42	43		
Technician	Troy Cook	Troy Cook		
mOhm values	Actual Initial	Delta Acid Vapor	Delta	Delta
Pin Type 1: Signal				
Average	0.14	0.01		
St. Dev.	0.02	0.01		
Min	0.09	0.00		
Max	0.17	0.02		
Summary Count	32	32		
Total Count	32	32		

LLCR Delta Count by Category				
	Stable	Minor	Acceptable	Unstable
mOhms	<=.33	>.33 & <=.66	>.67 & <=1	>1
Acid Vapor	32	0	0	0

DATA SUMMARIES Continued**LLCR Shock & Vibration:**

- 1). A total of 32 points were measured.
- 2). EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
- 3). The following guidelines are used to categorize the changes in LLCR as a result from stressing.
 - a. $\leq +5.0$ 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). The following guidelines are used to categorize the changes in LLCR for compliant pin only
 - a. $\leq +0.33$ mOhms: -----Stable
 - b. $> +0.33$ to $+0.66$ mOhms: -----Minor
 - c. $+0.67$ to $+1$ mOhms: -----Acceptable
 - d. $>+1$ mOhms: -----Unstable

LLCR Measurement Summaries by Pin Type				
Date	9/25/2018	9/28/2018		
Room Temp (Deg C)	23	23		
Rel Humidity (%)	48	43		
Technician	Troy Cook	Troy Cook		
mOhm values	Actual Initial	Delta Shock-Vib	Delta	Delta
Pin Type 1: Signal				
Average	0.97	0.09		
St. Dev.	0.11	0.06		
Min	0.77	0.01		
Max	1.21	0.23		
Summary Count	32	32		
Total Count	32	32		

LLCR Delta Count by Category						
	Stable	Minor	Acceptable	Marginal	Unstable	Open
mOhms	≤ 5	$>5 \text{ \& } \leq 10$	$>10 \text{ \& } \leq 15$	$>15 \text{ \& } \leq 50$	$>50 \text{ \& } \leq 1000$	>1000
Shock-Vib	32	0	0	0	0	0

Nanosecond Event Detection:

Shock and Vibration Event Detection Summary	
Contacts tested	32
Test Condition	C, 100g's, 6ms, Half-Sine
Shock Events	0
Test Condition	V-B, 7.56 rms g
Vibration Events	0
Total Events	0

DATA SUMMARIES Continued**EPTS Compliant LLCR**

<i>LLCR Measurement Summaries by Pin Type</i>				
Date	9/25/2018	9/28/2018		
Room Temp (Deg C)	23	23		
Rel Humidity (%)	48	43		
Technician	Troy Cook	Troy Cook		
mOhm values	Actual Initial	Delta Shock-Vib	Delta	Delta
<i>Pin Type 1: Signal</i>				
Average	0.03	0.04		
St. Dev.	0.01	0.09		
Min	0.01	0.00		
Max	0.05	0.47		
Summary Count	32	32		
Total Count	32	32		

<i>LLCR Delta Count by Category</i>				
	Stable	Minor	Acceptable	Unstable
mOhms	<=.33	>.33 & <=.66	>.67 & <=1	>1
Shock-Vib	31	1	0	0

EPTT Compliant LLCR

<i>LLCR Measurement Summaries by Pin Type</i>				
Date	9/25/2018	9/28/2018		
Room Temp (Deg C)	23	23		
Rel Humidity (%)	48	43		
Technician	Troy Cook	Troy Cook		
mOhm values	Actual Initial	Delta Shock-Vib	Delta	Delta
<i>Pin Type 1: Signal</i>				
Average	0.12	0.01		
St. Dev.	0.01	0.01		
Min	0.10	0.00		
Max	0.15	0.02		
Summary Count	32	32		
Total Count	32	32		

<i>LLCR Delta Count by Category</i>				
	Stable	Minor	Acceptable	Unstable
mOhms	<=.33	>.33 & <=.66	>.67 & <=1	>1
Shock-Vib	32	0	0	0

DATA SUMMARIES Continued**Pressfit Hole Evaluation: LLCR**

- 1) A total of 32 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 for compliant pin only
 - a. $\leq +0.33$ mOhms: -----Stable
 - b. $> +0.33$ to $+0.66$ mOhms: -----Minor
 - c. $+0.67$ to $+1$ mOhms: -----Acceptable
 - d. $>+1$ mOhms: -----Unstable

EBTS Terminal Tin(immersion) 0.0275" PTH

LLCR Measurement Summaries by Pin Type		
Date	12/3/2018	12/4/2018
Room Temp (Deg C)	23	23
Rel Humidity (%)	35	35
Technician	Aaron M./John C.	Aaron M./John C.
mOhm values	Actual Initial	Delta 1 Cycle
Pin Type 1: Signal		
Average	0.02	0.01
St. Dev.	0.00	0.01
Min	0.01	0.00
Max	0.03	0.02
Summary Count	32	32
Total Count	32	32

LLCR Delta Count by Category				
	Stable	Minor	Acceptable	Unstable
mOhms	$\leq .33$	$>.34 \text{ \& } \leq .66$	$>.67 \text{ \& } \leq 1$	>1
1 Cycle	32	0	0	0

EBTT Contact Tin (immersion) 0.0275" PTH

LLCR Measurement Summaries by Pin Type		
Date	12/3/2018	12/4/2018
Room Temp (Deg C)	23	23
Rel Humidity (%)	35	35
Technician	Aaron M./John C.	Aaron M./John C.
mOhm values	Actual Initial	Delta 1 Cycle
Pin Type 1: Signal		
Average	0.02	0.01
St. Dev.	0.01	0.00
Min	0.00	0.00
Max	0.04	0.02
Summary Count	32	32
Total Count	32	32

LLCR Delta Count by Category				
	Stable	Minor	Acceptable	Unstable
mOhms	$\leq .33$	$>.34 \text{ \& } \leq .66$	$>.67 \text{ \& } \leq 1$	>1
1 Cycle	32	0	0	0

DATA SUMMARIES Continued**EBTS Terminal Tin(immersion) 0.0315" PTH**

LLCR Measurement Summaries by Pin Type		
Date	12/3/2018	12/4/2018
Room Temp (Deg C)	23	23
Rel Humidity (%)	35	35
Technician	Aaron M./John C.	Aaron M./John C.
mOhm values	Actual Initial	Delta 1 Cycle
Pin Type 1: Signal		
Average	0.02	0.01
St. Dev.	0.01	0.00
Min	0.01	0.00
Max	0.03	0.01
Summary Count	32	32
Total Count	32	32

LLCR Delta Count by Category				
	Stable	Minor	Acceptable	Unstable
mOhms	<=.33	>.34 & <=.66	>.67 & <=1	>1
1 Cycle	32	0	0	0

EBTT Contact Tin (immersion) 0.0315" PTH

LLCR Measurement Summaries by Pin Type		
Date	12/3/2018	12/4/2018
Room Temp (Deg C)	23	23
Rel Humidity (%)	35	35
Technician	Aaron M./John C.	Aaron M./John C.
mOhm values	Actual Initial	Delta 1 Cycle
Pin Type 1: Signal		
Average	0.02	0.01
St. Dev.	0.01	0.01
Min	0.01	0.00
Max	0.03	0.02
Summary Count	32	32
Total Count	32	32

LLCR Delta Count by Category				
	Stable	Minor	Acceptable	Unstable
mOhms	<=.33	>.34 & <=.66	>.67 & <=1	>1
1 Cycle	32	0	0	0

EQUIPMENT AND CALIBRATION SCHEDULES**Equipment #:** TCT-07**Description:** Automated Test Stand**Manufacturer:** Chatillon/Lloyd**Model:** LF Plus**Serial #:** LF1310**Accuracy:** See Manual

... Last Cal: 11/14/2018, Next Cal: 11/14/2019

Equipment #: HPT-01**Description:** Hipot Safety Tester**Manufacturer:** Vitrek**Model:** V73**Serial #:** 019808**Accuracy:**

... Last Cal: 05/15/2018, Next Cal: 05/15/2019

Equipment #: MO-04**Description:** Multimeter /Data Acquisition System**Manufacturer:** Keithley**Model:** 2700**Serial #:** 0798688**Accuracy:** See Manual

... Last Cal: 09/11/2018, Next Cal: 09/11/2019

Equipment #: PS-02**Description:** Power Supply**Manufacturer:** Hewlett-Packer**Model:** 6033A**Serial #:** N/A**Accuracy:** See Manual

... Last Cal: NOT CALIBRATED

Equipment #: MO-10**Description:** Model 2750 Multimeter/Switch System (Integra Series)**Manufacturer:** Keithley**Model:** 2750**Serial #:** 1215161**Accuracy:** See Manual

... Last Cal: 09/11/2018, Next Cal: 09/11/2019

Equipment #: THC-05**Description:** Temperature/Humidity Chamber (Chamber Room)**Manufacturer:** Thermotron**Model:** SM-8-3800**Serial #:** 05 23 00 02**Accuracy:** See Manual

... Last Cal: 11/14/2018, Next Cal: 05/31/2019

EQUIPMENT AND CALIBRATION SCHEDULES**Equipment #:** TSC-01**Description:** Vertical Thermal Shock Chamber**Manufacturer:** Cincinnati Sub Zero**Model:** VTS-3-6-6-SC/AC**Serial #:** 10-VT14993**Accuracy:** See Manual

... Last Cal: 06/30/2018, Next Cal: 06/30/2019

Equipment #: OV-05**Description:** Forced Air Oven, 5 Cu. Ft., 120 V (Chamber Room)**Manufacturer:** Sheldon Mfg.**Model:** CE5F**Serial #:** 02008008**Accuracy:** +/- 5 deg. C

... Last Cal: 02/18/2018, Next Cal: 02/18/2019

Equipment #: SVC-01**Description:** Shock & Vibration Table**Manufacturer:** Data Physics**Model:** LE-DSA-10-20K**Serial #:** 10037**Accuracy:** See Manual

... Last Cal: 04/22/2018, Next Cal: 04/22/2019

Equipment #: ACLM-01**Description:** Accelerometer**Manufacturer:** PCB Piezotronics**Model:** 352C03**Serial #:** 115819**Accuracy:** See Manual

... Last Cal: 07/18/2018, Next Cal: 07/18/2019

Equipment #: ED-03**Description:** Event Detector**Manufacturer:** Analysis Tech**Model:** 32EHD**Serial #:** 1100604**Accuracy:** See Manual

... Last Cal: 10/31/2018, Next Cal: 10/31/2019