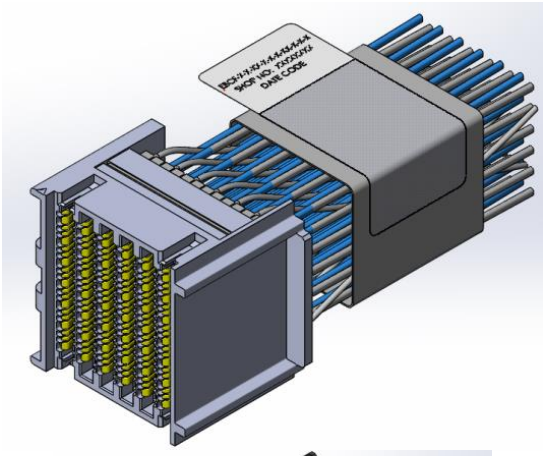
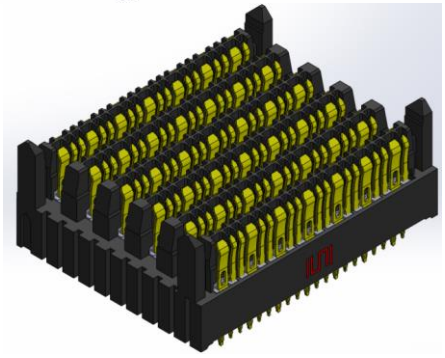
Project Number: Design Qualification Test Report	Tracking Code: 2566715_Report_Rev_1
Requested by: Chad Humphres	Date: 3/4/2021
Part #: EBCF-1-6-12-V-1-XX-X-X/EBTM-6-12-2.0-S-VT-1	
Part description: EBCF/EBTM	Tech: John Crawford and Aaron McKim
Test Start: 11/2/2020	Test Completed: 12/31/2020





DESIGN QUALIFICATION TEST REPORT

EBCF/EBTM
EBCF-1-6-12-V-1-XX-X-X/EBTM-6-12-2.0-S-VT-1

REVISION HISTORY

DATA	REV.NUM.	DESCRIPTION	ENG
3/4/2021	**1**	**Initial Issue**	**KH**

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.

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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) After soldering, the parts to be used for LLCR and DWV/IR testing were cleaned according to CO-SC-WI-3029.
4) Either an automated cleaning procedure or an ultrasonic cleaning procedure may be used.
5) The automated procedure is used with aqueous compatible soldering materials.
6) Parts not intended for testing LLCR and DWV/IR are visually inspected and cleaned if necessary.
7) Any additional preparation will be noted in the individual test sequences.
8) Solder Information: Lead Free
9) Samtec Test PCBs used: PCB-108420-TST/PCB-110381-TST/PCB-108424-TST

FLOWCHARTS

Gas Tight

Group 1

EBCF-1-6-12-V-1-XX-X-X

EBTM-6-12-2.0-S-VT-1 / EBCL-6-12

3 Assemblies

Note: 100% LLCR

Note: Parts used for test HDR-215758-01 -EBCF

Note: Must use EBCL-6-12 on mating EBTM PCB.

Note: Fixture AT-3050-803-206 to be applied to End 2 of the cable assembly for LLCR Testing. This helps to fixture the edge cards in place. See attachment AT-3050-803-206 for reference.

Step	Description
1.	LLCR (2) *Note: Please separate twinax and coax readings when reporting*
2.	Gas Tight (1)
3.	LLCR (2) Max Delta = 15 mOhm *Note: Please separate twinax and coax readings when reporting*

(1) Gas Tight = EIA-364-36

(2) LLCR = EIA-364-23
Open Circuit Voltage = 20 mV Max
Test Current = 100 mA Max

FLOWCHARTS Continued

Normal Force

Group 1
EBCF-1-6-12-V-1-XX-X-X
8 Contacts Minimum
Signal Without Thermals Wafer A

Step	Description
1.	Contact Gaps
2.	Normal Force (1) Deflection = 0.0118 " Expected Force at Max Deflection = 55 g

Group 2
EBCF-1-6-12-V-1-XX-X-X
8 Contacts Minimum
Ground Without Thermals Wafer A

Step	Description
1.	Contact Gaps
2.	Normal Force (1) Deflection = 0.0118 " Expected Force at Max Deflection = 50 g

Group 3
EBCF-1-6-12-V-1-XX-X-X
EBTM-6-12-2.0-S-VT-1
8 Contacts Minimum
Signal With Thermals Wafer A

Step	Description
1.	Contact Gaps
2.	Thermal Age (2)
3.	Contact Gaps
4.	Normal Force (1) Deflection = 0.0118 " Expected Force at Max Deflection = 55 g

Group 4
EBCF-1-6-12-V-1-XX-X-X
EBTM-6-12-2.0-S-VT-1
8 Contacts Minimum
Ground With Thermals Wafer A

Step	Description
1.	Contact Gaps
2.	Thermal Age (2)
3.	Contact Gaps
4.	Normal Force (1) Deflection = 0.0118 " Expected Force at Max Deflection = 50 g

Group 5
EBCF-1-6-12-V-1-XX-X-X
8 Contacts Minimum
Signal Without Thermals Wafer B

Step	Description
1.	Contact Gaps
2.	Normal Force (1) Deflection = 0.0118 " Expected Force at Max Deflection = 55 g

Group 6
EBCF-1-6-12-V-1-XX-X-X
8 Contacts Minimum
Ground Without Thermals Wafer B

Step	Description
1.	Contact Gaps
2.	Normal Force (1) Deflection = 0.0118 " Expected Force at Max Deflection = 50 g

Group 7
EBCF-1-6-12-V-1-XX-X-X
EBTM-6-12-2.0-S-VT-1
8 Contacts Minimum
Signal With Thermals Wafer B

Step	Description
1.	Contact Gaps
2.	Thermal Age (2)
3.	Contact Gaps
4.	Normal Force (1) Deflection = 0.0118 " Expected Force at Max Deflection = 55 g

Group 8
EBCF-1-6-12-V-1-XX-X-X
EBTM-6-12-2.0-S-VT-1
8 Contacts Minimum
Ground With Thermals Wafer B

Step	Description
1.	Contact Gaps
2.	Thermal Age (2)
3.	Contact Gaps
4.	Normal Force (1) Deflection = 0.0118 " Expected Force at Max Deflection = 50 g

(1) Normal Force = EIA-364-04

(2) Thermal Age = EIA-364-17
Test Condition = 4 (105°C)
Time Condition = B (250 Hours)

Latch Retention

Group 1
EBCF-1-6-12-V-1-12-V-1
EBTM-6-12-2.0-S-VT-1 / EBCL-6-12
4 Assemblies

Step	Description
1.	Cable Pull *Note: Pull cable with up to 50 lbs of pull force or until latch fails. Record result.*

FLOWCHARTS Continued

Mating/Unmating/Durability

Group 1
EBCF-1-6-12-V-1-XX-X-X
EBTM-6-12-2.0-S-VT-1 / EBCL-6-12
3 Assemblies

Note: 100% LLCR
Note: Parts used for test HDR-215758-01 -EBCF
Note: Must use EBCL-6-12 on mating EBTM PCB.
Note: Fixture AT-3050-803-206 to be applied to End 2 of the cable assembly for LLCR Testing. This helps to fixture the edge cards in place. See attachment AT-3050-803-206 for reference.

Step	Description
1.	Contact Gaps *Note: Check each end and middle of each row*
2.	LLCR (2) *Note: Please separate twinax and coax when reporting*
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 *Note: Check each end and middle of each row*
13.	LLCR (2) Max Delta = 15 mOhm *Note: Please separate twinax and coax when reporting*
14.	Thermal Shock (4) - Non Standard
15.	LLCR (2) Max Delta = 15 mOhm *Note: Please separate twinax and coax when reporting*
16.	Humidity (1)
17.	LLCR (2) Max Delta = 15 mOhm *Note: Please separate twinax and coax when reporting*
18.	Mating/Unmating Force (3)

(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 = Other
Exposure Time at Temperature Extremes = 1/2 Hour
Method A, Test Condition = I (-40°C to +85°C)
Test Duration = A-3 (100 Cycles)
Twinax cable (TX-34100CU-T01-S) is only rated down to -40°C

FLOWCHARTS Continued

Mechanical Shock/Random Vibration/LLCR

Group 1
EBCF-1-6-12-V-1-XX-X-X
EBTM-6-12-2.0-S-VT-1 / EBCL-6-12
3 Assemblies

Note: 100% LLCR
Note: Parts used for test HDR-215758-01 -EBCF
Note: Must use EBCL-6-12 on mating EBTM PCB.
Note: Fixture AT-3050-803-206 to be applied to End 2 of the cable assembly for LLCR Testing. This helps to fixture the edge cards in place. See attachment AT-3050-803-206 for reference.

Step	Description
1.	LLCR (1) *Note: Please separate twinax and coax when reporting*
2.	Mechanical Shock (2)
3.	Random Vibration (3)
4.	LLCR (1) Max Delta = 15 mOhm *Note: Please separate twinax and coax when reporting*

(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)

FLOWCHARTS Continued

Mechanical Shock/Random Vibration/Event Detection

Group 1
EBCF-1-6-12-V-1-XX-X-X
EBTM-6-12-2.0-S-VT-1 / EBCL-6-12
60 Points

Note: Parts used for test HDR-215758-01 -EBCF
Note: Must use EBCL-6-12 on mating EBTM PCB.

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

Cable Pull

Group 1
EBCF-1-6-12-V-1-12-V-1
EBTM-6-12-2.0-S-VT-1 / EBCL-6-12
4 Assemblies
Vertical - 0°
Note: Must use EBCL-6-12 on mating EBTM PCB.

Step	Description
1.	Cable Pull (1)

Group 2
EBCF-1-6-12-V-1-12-V-1
EBTM-6-12-2.0-S-VT-1 / EBCL-6-12
4 Assemblies
Vertical - 90° Lateral
Note: Must use EBCL-6-12 on mating EBTM PCB.

Step	Description
1.	Cable Pull (1)

Group 3
EBCF-1-6-12-V-1-12-V-1
EBTM-6-12-2.0-S-VT-1 / EBCL-6-12
4 Assemblies
Vertical - 90° Vertical
Note: Must use EBCL-6-12 on mating EBTM PCB.

Step	Description
1.	Cable Pull (1)

Group 4
EBCF-1-6-12-V-1-12-R-1-L
EBTM-6-12-2.0-S-VT-1-L
4 Assemblies
RA - 90° Lateral
Note: Must use EBCL-6-12 on mating EBTM PCB.

Step	Description
1.	Cable Pull (1)

Group 5
EBCF-1-6-12-V-1-12-R-1-L
EBTM-6-12-2.0-S-VT-1-L
4 Assemblies
RA - 90° Vertical
Note: Must use EBCL-6-12 on mating EBTM PCB.

Step	Description
1.	Cable Pull (1)

(1) Cable Pull = EIA-364-38
Measure and Record Force Required to Failure
Failure = Discontinuity >1 microsecond at 10 ohms

Cable Flex

Group 1
EBCF-1-6-12-V-1-12-V-1
EBTM-6-12-2.0-S-VT-1 / EBCL-6-12
4 Assemblies
Vertical - 90° Vertical
Note: Must use EBCL-6-12 on mating EBTM PCB.

Step	Description
1.	IR (3)
2.	DWV at Test Voltage (2) *Note: Use Test Voltage from EBCM (Test Request: 2337694)*
3.	Cable Flex (1)
4.	Visual Inspection
5.	IR (3)
6.	DWV at Test Voltage (2) *Note: Use Test Voltage from EBCM (Test Request: 2337694)*

Group 2
EBCF-1-6-12-V-1-12-V-1
EBTM-6-12-2.0-S-VT-1 / EBCL-6-12
4 Assemblies
Vertical - 90° Lateral
Note: Must use EBCL-6-12 on mating EBTM PCB.

Step	Description
1.	IR (3)
2.	DWV at Test Voltage (2) *Note: Use Test Voltage from EBCM (Test Request: 2337694)*
3.	Cable Flex (1)
4.	Visual Inspection
5.	IR (3)
6.	DWV at Test Voltage (2) *Note: Use Test Voltage from EBCM (Test Request: 2337694)*

Group 3
EBCF-1-6-12-V-1-12-R-1-L
EBTM-6-12-2.0-S-VT-1-L
4 Assemblies
RA - 90° Vertical
Note: Must use EBCL-6-12 on mating EBTM PCB.

Step	Description
1.	IR (3)
2.	DWV at Test Voltage (2) *Note: Use Test Voltage from EBCM (Test Request: 2337694)*
3.	Cable Flex (1)
4.	Visual Inspection
5.	IR (3)
6.	DWV at Test Voltage (2) *Note: Use Test Voltage from EBCM (Test Request: 2337694)*

Group 4
EBCF-1-6-12-V-1-12-R-1-L
EBTM-6-12-2.0-S-VT-1-L
4 Assemblies
RA - 90° Lateral
Note: Must use EBCL-6-12 on mating EBTM PCB.

Step	Description
1.	IR (3)
2.	DWV at Test Voltage (2) *Note: Use Test Voltage from EBCM (Test Request: 2337694)*
3.	Cable Flex (1)
4.	Visual Inspection
5.	IR (3)
6.	DWV at Test Voltage (2) *Note: Use Test Voltage from EBCM (Test Request: 2337694)*

(1) Cable Flex = EIA-364-41
Circular Jacket Cable - to be tested 90° each direction (180° total)
Flat Cable - to be tested 70° each direction (140° total)
Monitor continuity during flex testing
Failure = Discontinuity >1 microsecond at 10 ohms

(2) 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

(3) IR = EIA-364-21
Test Condition = 500 Vdc, 2 Minutes Max

ATTRIBUTE DEFINITIONS

The following is a brief, simplified description of attributes.

THERMAL:

1) EIA-364-17, *Temperature Life with or without Electrical Load Test Procedure for Electrical Connectors.*
2) Test Condition 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.

THERMAL SHOCK:

1) EIA-364-32, *Thermal Shock (Temperature Cycling) Test Procedure for Electrical Connectors.*
2) Test Condition I: -40°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.

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 Per Direction, Per 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 G^2 / 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

LLCR:

1) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
2) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
3) The following guidelines are used to categorize the changes in LLCR as a result from stressing
    a. <= +5.0 mOhms: ----------Stable
    b. +5.1 to +10.0 mOhms:----------Minor
    c. +10.1 to +15.0 mOhms: ----------Acceptable
    d. +15.1 to +50.0 mOhms: ----------Marginal
    e. +50.1 to +1000 mOhms: ----------Unstable
    f. >+1000 mOhms:----------Open Failure

GAS TIGHT:

To provide method for evaluating the ability of the contacting surfaces in preventing penetration of harsh vapors which might lead to oxide formation that may degrade the electrical performance of the contact system.

1) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
2) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
3) The following guidelines are used to categorize the changes in LLCR as a result from stressing
    a. <= +5.0 mOhms:----------Stable
    b. +5.1 to +10.0 mOhms:----------Minor
    c. +10.1 to +15.0 mOhms: ----------Acceptable
    d. +15.1 to +50.0 mOhms: ----------Marginal
    e. +50.1 to +1000 mOhms:----------Unstable
    f. >+1000 mOhms:----------Open Failure
4) Procedure:
    a. Reference document: EIA-364-36, *Test Procedure for Determination of Gas-Tight Characteristics for Electrical Connectors, Sockets and/or Contact Systems*.
    b. Test Conditions:
        i. Class II--- Mated pairs of contacts assembled to their plastic housings.
        ii. Reagent grade Nitric Acid shall be used of sufficient volume to saturate the test chamber
        iii. The ratio of the volume of the test chamber to the surface area of the acid shall be 10:1.
        iv. The chamber shall be saturated with the vapor for at least 15 minutes before samples are added.
        v. Exposure time, 55 to 65 minutes.
        vi. The samples shall be no closer to the chamber walls than 1 inches and no closer to the surface of the acid than 3 inches.
        vii. The samples shall be dried after exposure for a minimum of 1 hour.
        viii. Drying temperature 50^{o} C
        ix. The final LLCR shall be conducted within 1 hour after drying.

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 1000 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).

LATCH RETENTION:

Pull cable with up to 50 lbs of pull force or until latch fails, record result.

ATTRIBUTE DEFINITIONS Continued

The following is a brief, simplified description of attributes

CABLE PULL:

1) Secure cable near center and pull on connector
    a. At 90°, in-line with cable
    b. At 0°, in-line with cable

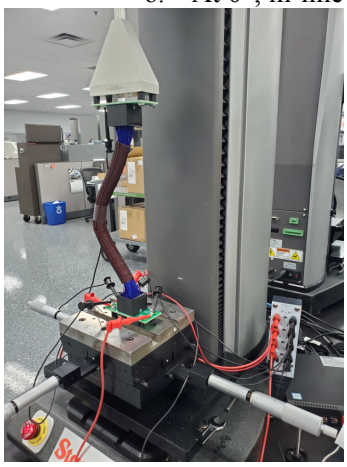


Fig. 1
0° Connector pull

Fig. 2
90° Lateral Connector pull

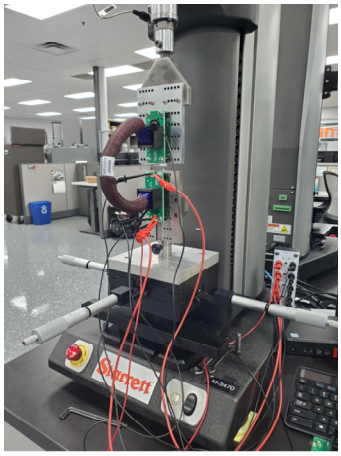


Fig. 3
90° Vertical Connector pull

CABLE DURABILITY:

1) Oscillate and monitor electrical continuity for open circuit indication.
    a. ± 70°Flex Mode, bend up to 500 cycles. load on cable end.

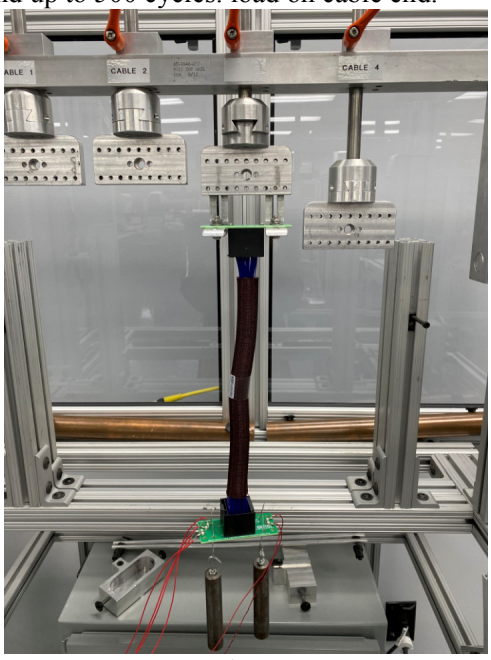


Fig. 4
(Setup picture)

RESULTS

Mating – Unmating Forces

Mating/Unmating Durability Group

- **Initial**
  - **Mating**
    - **Min ----------12.63 lbs**
    - **Max----------12.94 lbs**
  - **Unmating**
    - **Min ---------- 7.10 lbs**
    - **Max---------- 7.35 lbs**
- **After 25 Cycles**
  - **Mating**
    - **Min ----------13.58 lbs**
    - **Max----------13.90 lbs**
  - **Unmating**
    - **Min ---------- 8.37 lbs**
    - **Max---------- 8.78 lbs**
- **After 50 Cycles**
  - **Mating**
    - **Min ----------13.99 lbs**
    - **Max----------14.24 lbs**
  - **Unmating**
    - **Min ---------- 8.68 lbs**
    - **Max---------- 9.12 lbs**
- **After 75 Cycles**
  - **Mating**
    - **Min ----------13.97 lbs**
    - **Max----------14.45 lbs**
  - **Unmating**
    - **Min ---------- 8.84 lbs**
    - **Max---------- 9.39 lbs**
- **After 100 Cycles**
  - **Mating**
    - **Min ----------14.22 lbs**
    - **Max----------14.58 lbs**
  - **Unmating**
    - **Min ---------- 8.95 lbs**
    - **Max---------- 9.54 lbs**
- **After Humidity**
  - **Mating**
    - **Min ----------10.20 lbs**
    - **Max----------10.28 lbs**
  - **Unmating**
    - **Min ---------- 6.77 lbs**
    - **Max---------- 7.21 lbs**

RESULTS Continued

Normal Force

Normal Force at 0.0118 inches deflection

Group 1&3 Signal wafer A

- **Initial**
  - **Min ----------45.70 g Set ----- 0.0000 inch**
  - **Max ----------51.60 g Set ----- 0.0002 inch**
- **Thermal**
  - **Min ----------31.50 g Set ------ 0.0023 inch**
  - **Max ----------40.00 g Set ------ 0.0039 inch**

Group 2&4 Ground wafer A

- **Initial**
  - **Min ----------59.20 g Set ----- 0.0000 inch**
  - **Max ----------62.40 g Set ----- 0.0000 inch**
- **Thermal**
  - **Min ----------41.80 g Set ------ 0.0010 inch**
  - **Max ----------50.40 g Set ------ 0.0023 inch**

Group 5&7 Signal wafer B

- **Initial**
  - **Min ----------57.20 g Set ----- 0.0000 inch**
  - **Max ----------72.30 g Set ----- 0.0000 inch**
- **Thermal**
  - **Min ----------33.50 g Set ------ 0.0024 inch**
  - **Max ----------50.00 g Set ------ 0.0040 inch**

Group 6&8 Ground wafer B

- **Initial**
  - **Min ----------61.90 g Set ----- 0.0000 inch**
  - **Max ----------65.70 g Set ----- 0.0000 inch**
- **Thermal**
  - **Min ----------44.80 g Set ------ 0.0014 inch**
  - **Max ----------53.80 g Set ------ 0.0030 inch**

Cable Pull force

- **Vertical - 0° Pull**
  - **Min ----------14.37 lbs**
  - **Max ----------38.91 lbs**
- **Vertical - 90° Lateral Pull**
  - **Min ----------13.87 lbs**
  - **Max ----------47.04 lbs**
- **Vertical - 90° Vertical Pull**
  - **Min ----------11.19 lbs**
  - **Max ----------22.24 lbs**
- **RA - 90° Lateral Pull**
  - **Min ----------13.80 lbs**
  - **Max ----------20.22 lbs**
- **RA - 90° Vertical Pull**
  - **Min ---------- 6.69 lbs**
  - **Max ----------16.98 lbs**

RESULTS Continued

Cable Flex:

Insulation Resistance minimums, IR

Group 1 Vertical - 90° Vertical

Pin to Pin

- **Initial**
  - **Mated----------45000 Meg Ω ---------- Passed**
- **After 500 flex cycles**
  - **Mated----------45000 Meg Ω ---------- Passed**

Row to Row

- **Initial**
  - **Mated----------45000 Meg Ω ---------- Passed**
- **After 500 flex cycles**
  - **Mated----------45000 Meg Ω ---------- Passed**

Pin to Ground

- **Initial**
  - **Mated----------45000 Meg Ω ---------- Passed**
- **After 500 flex cycles**
  - **Mated----------45000 Meg Ω ---------- Passed**

Group 2 Vertical - 90° Lateral

Pin to Pin

- **Initial**
  - **Mated----------45000 Meg Ω ---------- Passed**
- **After 500 flex cycles**
  - **Mated----------45000 Meg Ω ---------- Passed**

Row to Row

- **Initial**
  - **Mated----------45000 Meg Ω ---------- Passed**
- **After 500 flex cycles**
  - **Mated----------45000 Meg Ω ---------- Passed**

Pin to Ground

- **Initial**
  - **Mated----------45000 Meg Ω ---------- Passed**
- **After 500 flex cycles**
  - **Mated----------45000 Meg Ω ---------- Passed**

RESULTS Continued

Insulation Resistance minimums, IR

Group 3 RA - 90° Vertical

Pin to Pin

- **Initial**
  - **Mated----------45000 Meg Ω ---------- Passed**
- **After 500 flex cycles**
  - **Mated----------45000 Meg Ω ---------- Passed**

Row to Row

- **Initial**
  - **Mated----------45000 Meg Ω ---------- Passed**
- **After 500 flex cycles**
  - **Mated----------45000 Meg Ω ---------- Passed**

Pin to Ground

- **Initial**
  - **Mated----------45000 Meg Ω ---------- Passed**
- **After 500 flex cycles**
  - **Mated----------45000 Meg Ω ---------- Passed**

Group 4 RA - 90° Lateral

Pin to Pin

- **Initial**
  - **Mated----------45000 Meg Ω ---------- Passed**
- **After 500 flex cycles**
  - **Mated----------45000 Meg Ω ---------- Passed**

Row to Row

- **Initial**
  - **Mated----------45000 Meg Ω ---------- Passed**
- **After 500 flex cycles**
  - **Mated----------45000 Meg Ω ---------- Passed**

Pin to Ground

- **Initial**
  - **Mated----------45000 Meg Ω ---------- Passed**
- **After 500 flex cycles**
  - **Mated----------45000 Meg Ω ---------- Passed**

RESULTS Continued

Dielectric Withstanding Voltage minimums, DWV

- **Test Voltage ----------398 VAC**

Group 1 Vertical - 90° Vertical

Pin to Pin

- **Initial DWV ----------Passed**
- **After 500 Flex cycles DWV ----------Passed**

Row to Row

- **Initial DWV ----------Passed**
- **After 500 Flex cycles DWV ----------Passed**

Pin to Ground

- **Initial DWV ----------Passed**
- **After 500 Flex cycles DWV ----------Passed**

Group 2 Vertical - 90° Lateral

Pin to Pin

- **Initial DWV ----------Passed**
- **After 500 Flex cycles DWV ----------Passed**

Row to Row

- **Initial DWV ----------Passed**
- **After 500 Flex cycles DWV ----------Passed**

Pin to Ground

- **Initial DWV ----------Passed**
- **After 500 Flex cycles DWV ----------Passed**

Group 3 RA - 90° Vertical

Pin to Pin

- **Initial DWV ----------Passed**
- **After 500 Flex cycles DWV ----------Passed**

Row to Row

- **Initial DWV ----------Passed**
- **After 500 Flex cycles DWV ----------Passed**

Pin to Ground

- **Initial DWV ----------Passed**
- **After 500 Flex cycles DWV ----------Passed**

Group 4 RA - 90° Lateral

Pin to Pin

- **Initial DWV ----------Passed**
- **After 500 Flex cycles DWV ----------Passed**

Row to Row

- **Initial DWV ----------Passed**
- **After 500 Flex cycles DWV ----------Passed**

Pin to Ground

- **Initial DWV ----------Passed**
- **After 500 Flex cycles DWV ----------Passed**

Latch Retention:

- **Min----------36.79 lbs----------Latch failed**
- **Max ----------41.49 lbs----------Latch failed**

RESULTS Continued

LLCR Gas Tight (3 ground and 468 signal LLCR test points)

Ground pin

- **Initial ---------- 16.77 mOhms Max**
- **Gas-Tight**
  - **<= +5.0 mOhms----------3 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 +1000 mOhms----------0 Points ---------- Unstable**
  - **>+1000 mOhms----------0 Points ---------- Open Failure**

Signal pin – HS (432 LLCR test points)

- **Initial ----------366.65 mOhms Max**
- **Gas-Tight**
  - **<= +5.0 mOhms----------427 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms----------5 Points ---------- Minor**
  - **+10.1 to +15.0 mOhms ----------0 Points ---------- Acceptable**
  - **+15.1 to +50.0 mOhms ----------0 Points ---------- Marginal**
  - **+50.1 to +1000 mOhms----------0 Points ---------- Unstable**
  - **>+1000 mOhms----------0 Points ---------- Open Failure**

Signal pin – LS (36 LLCR test points)

- **Initial ----------304.00 mOhms Max**
- **Gas-Tight**
  - **<= +5.0 mOhms---------- 36 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 +1000 mOhms----------0 Points ---------- Unstable**
  - **>+1000 mOhms----------0 Points ---------- Open Failure**

RESULTS Continued

LLCR Mating-Unmating Durability (3 Ground and 468 signal LLCR test points)

Ground pin

- **Initial ---------- 12.63 mOhms Max**
- **Durability 100 cycles**
  - **<= +5.0 mOhms----------3 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 +1000 mOhms----------0 Points ---------- Unstable**
  - **>+1000 mOhms----------0 Points ---------- Open Failure**
- **Thermal**
  - **<= +5.0 mOhms----------0 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms----------3 Points ---------- Minor**
  - **+10.1 to +15.0 mOhms ----------0 Points ---------- Acceptable**
  - **+15.1 to +50.0 mOhms ----------0 Points ---------- Marginal**
  - **+50.1 to +1000 mOhms----------0 Points ---------- Unstable**
  - **>+1000 mOhms----------0 Points ---------- Open Failure**
- **Humidity**
  - **<= +5.0 mOhms----------0 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms----------3 Points ---------- Minor**
  - **+10.1 to +15.0 mOhms ----------0 Points ---------- Acceptable**
  - **+15.1 to +50.0 mOhms ----------0 Points ---------- Marginal**
  - **+50.1 to +1000 mOhms----------0 Points ---------- Unstable**
  - **>+1000 mOhms----------0 Points ---------- Open Failure**

Signal pin – HS (432 LLCR test points)

- **Initial ----------367.62 mOhms Max**
- **Durability 100 cycles**
  - **<= +5.0 mOhms----------429 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms----------3 Points ---------- Minor**
  - **+10.1 to +15.0 mOhms ----------0 Points ---------- Acceptable**
  - **+15.1 to +50.0 mOhms ----------0 Points ---------- Marginal**
  - **+50.1 to +1000 mOhms----------0 Points ---------- Unstable**
  - **>+1000 mOhms----------0 Points ---------- Open Failure**
- **Thermal**
  - **<= +5.0 mOhms----------427 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms----------5 Points ---------- Minor**
  - **+10.1 to +15.0 mOhms ----------0 Points ---------- Acceptable**
  - **+15.1 to +50.0 mOhms ----------0 Points ---------- Marginal**
  - **+50.1 to +1000 mOhms----------0 Points ---------- Unstable**
  - **>+1000 mOhms----------0 Points ---------- Open Failure**
- **Humidity**
  - **<= +5.0 mOhms----------420 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms---------- 11 Points ---------- Minor**
  - **+10.1 to +15.0 mOhms ----------1 Points ---------- Acceptable**
  - **+15.1 to +50.0 mOhms ----------0 Points ---------- Marginal**
  - **+50.1 to +1000 mOhms----------0 Points ---------- Unstable**
  - **>+1000 mOhms----------0 Points ---------- Open Failure**

RESULTS Continued

Signal pin – LS (36 LLCR test points)

- **Initial ----------309.17 mOhms Max**
- **Durability 100 cycles**
  - **<= +5.0 mOhms---------- 36 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 +1000 mOhms----------0 Points ---------- Unstable**
  - **>+1000 mOhms----------0 Points ---------- Open Failure**
- **Thermal**
  - **<= +5.0 mOhms---------- 36 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 +1000 mOhms----------0 Points ---------- Unstable**
  - **>+1000 mOhms----------0 Points ---------- Open Failure**
- **Humidity**
  - **<= +5.0 mOhms---------- 35 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms----------1 Points ---------- Minor**
  - **+10.1 to +15.0 mOhms ----------0 Points ---------- Acceptable**
  - **+15.1 to +50.0 mOhms ----------0 Points ---------- Marginal**
  - **+50.1 to +1000 mOhms----------0 Points ---------- Unstable**
  - **>+1000 mOhms----------0 Points ---------- Open Failure**

RESULTS Continued

LLCR Shock & Vibration (3 Ground and 468 signal LLCR test points)

Ground pin

- **Initial ---------- 13.72 mOhms Max**
- **Shock &Vibration**
  - **<= +5.0 mOhms----------3 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 +1000 mOhms----------0 Points ---------- Unstable**
  - **>+1000 mOhms----------0 Points ---------- Open Failure**

Signal pin – HS (432 LLCR test points)

- **Initial ----------367.88 mOhms Max**
- **Shock &Vibration**
  - **<= +5.0 mOhms----------426 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms----------5 Points ---------- Minor**
  - **+10.1 to +15.0 mOhms ----------1 Points ---------- Acceptable**
  - **+15.1 to +50.0 mOhms ----------0 Points ---------- Marginal**
  - **+50.1 to +1000 mOhms----------0 Points ---------- Unstable**
  - **>+1000 mOhms----------0 Points ---------- Open Failure**

Signal pin – LS (36 LLCR test points)

- **Initial ----------306.54 mOhms Max**
- **Shock &Vibration**
  - **<= +5.0 mOhms---------- 36 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 +1000 mOhms----------0 Points ---------- Unstable**
  - **>+1000 mOhms----------0 Points ---------- Open Failure**

Mechanical Shock & Random Vibration:

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

DATA SUMMARIES

MATING/UNMATING:

Mating/Unmating Durability Group

	Initial				After 25 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	56.18	12.63	31.58	7.10	60.40	13.58	37.23	8.37
Maximum	57.56	12.94	32.69	7.35	61.83	13.90	39.05	8.78
Average	56.76	**12.76**	32.07	**7.21**	60.95	**13.70**	38.24	**8.60**
St Dev	0.72	0.16	0.57	0.13	0.77	0.17	0.93	0.21
Count	3	3	3	3	3	3	3	3

	After 50 Cycles				After 75 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	62.23	13.99	38.61	8.68	62.14	13.97	39.32	8.84
Maximum	63.34	14.24	40.57	9.12	64.27	14.45	41.77	9.39
Average	62.70	**14.10**	39.87	**8.96**	63.32	**14.24**	40.39	**9.08**
St Dev	0.57	0.13	1.09	0.25	1.09	0.24	1.25	0.28
Count	3	3	3	3	3	3	3	3

	After 100 Cycles				After Humidity			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	63.25	14.22	39.81	8.95	45.37	10.20	30.11	6.77
Maximum	64.85	14.58	42.43	9.54	45.73	10.28	32.07	7.21
Average	64.02	**14.39**	41.20	**9.26**	45.50	**10.23**	30.97	**6.96**
St Dev	0.80	0.18	1.32	0.30	0.19	0.04	1.00	0.22
Count	3	3	3	3	3	3	3	3

DATA SUMMARIES Continued

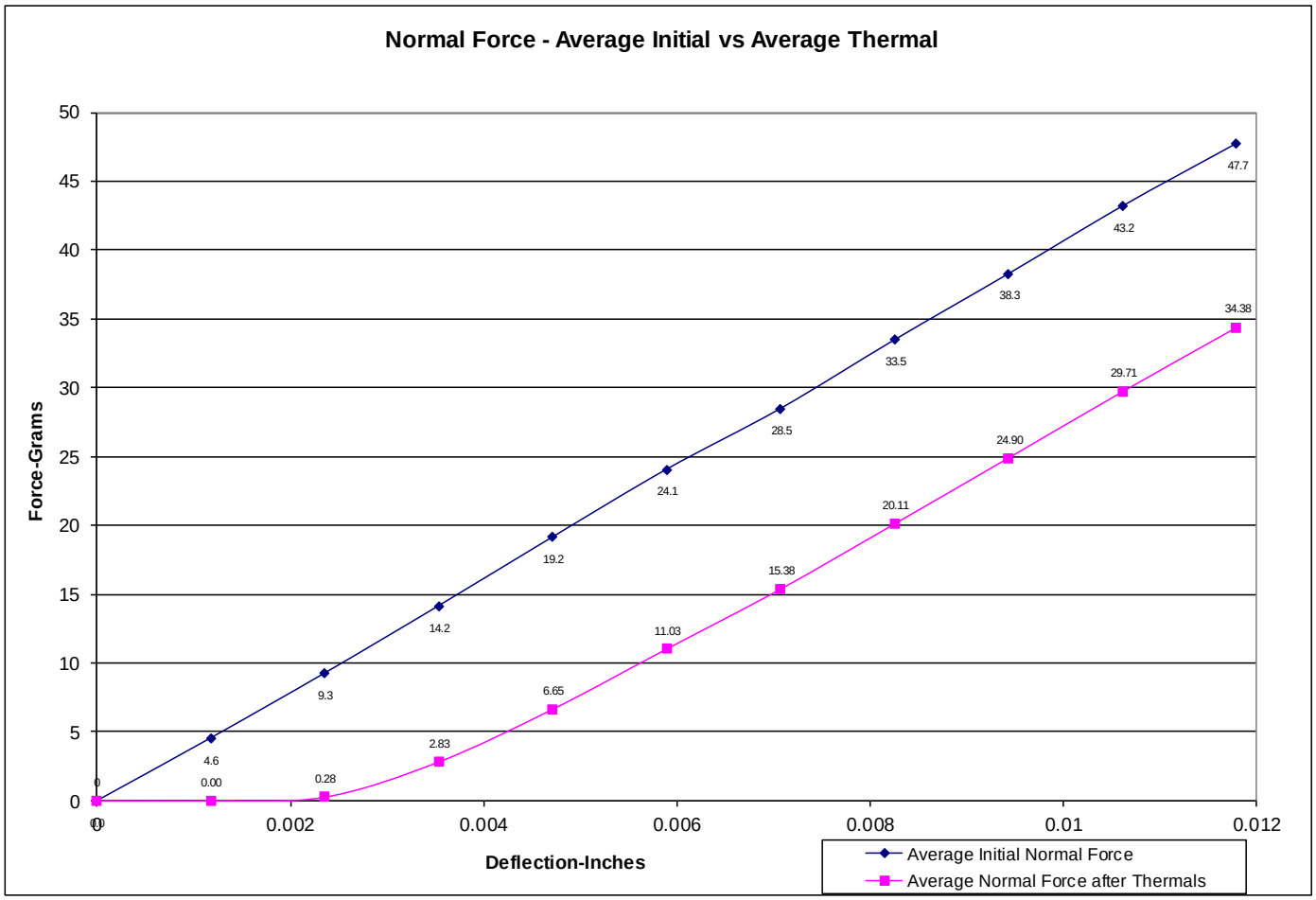
NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):

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.

Group 1&3 Signal wafer A

Initial	Deflections in inches Forces in Grams										
	0.0012	**0.0024**	**0.0035**	**0.0047**	**0.0059**	**0.0071**	**0.0083**	**0.0094**	**0.0106**	**0.0118**	***SET***
Averages	4.56	9.28	14.16	19.16	24.08	28.49	33.48	38.28	43.19	47.74	0.0001
Min	3.90	8.10	12.90	18.00	22.80	27.30	32.20	36.70	41.50	45.70	0.0000
Max	5.10	10.60	15.90	21.20	26.40	31.20	36.40	41.50	46.70	51.60	0.0002
St. Dev	0.453	0.800	0.877	1.010	1.120	1.252	1.360	1.548	1.712	1.896	0.0001
Count	8	8	8	8	8	8	8	8	8	8	8

After Thermals	Deflections in inches Forces in Grams										
	0.0012	**0.0024**	**0.0035**	**0.0047**	**0.0059**	**0.0071**	**0.0083**	**0.0094**	**0.0106**	**0.0118**	***SET***
Averages	0.00	0.28	2.83	6.65	11.03	15.38	20.11	24.90	29.71	34.38	0.0029
Min	-0.10	0.00	0.00	3.50	7.70	12.30	16.90	21.70	26.70	31.50	0.0023
Max	0.10	1.20	5.00	9.40	14.20	19.00	24.60	30.10	35.00	40.00	0.0039
St. Dev	0.076	0.413	1.639	1.865	2.119	2.114	2.385	2.585	2.597	2.703	0.0005
Count	8	8	8	8	8	8	8	8	8	8	8



DATA SUMMARIES Continued

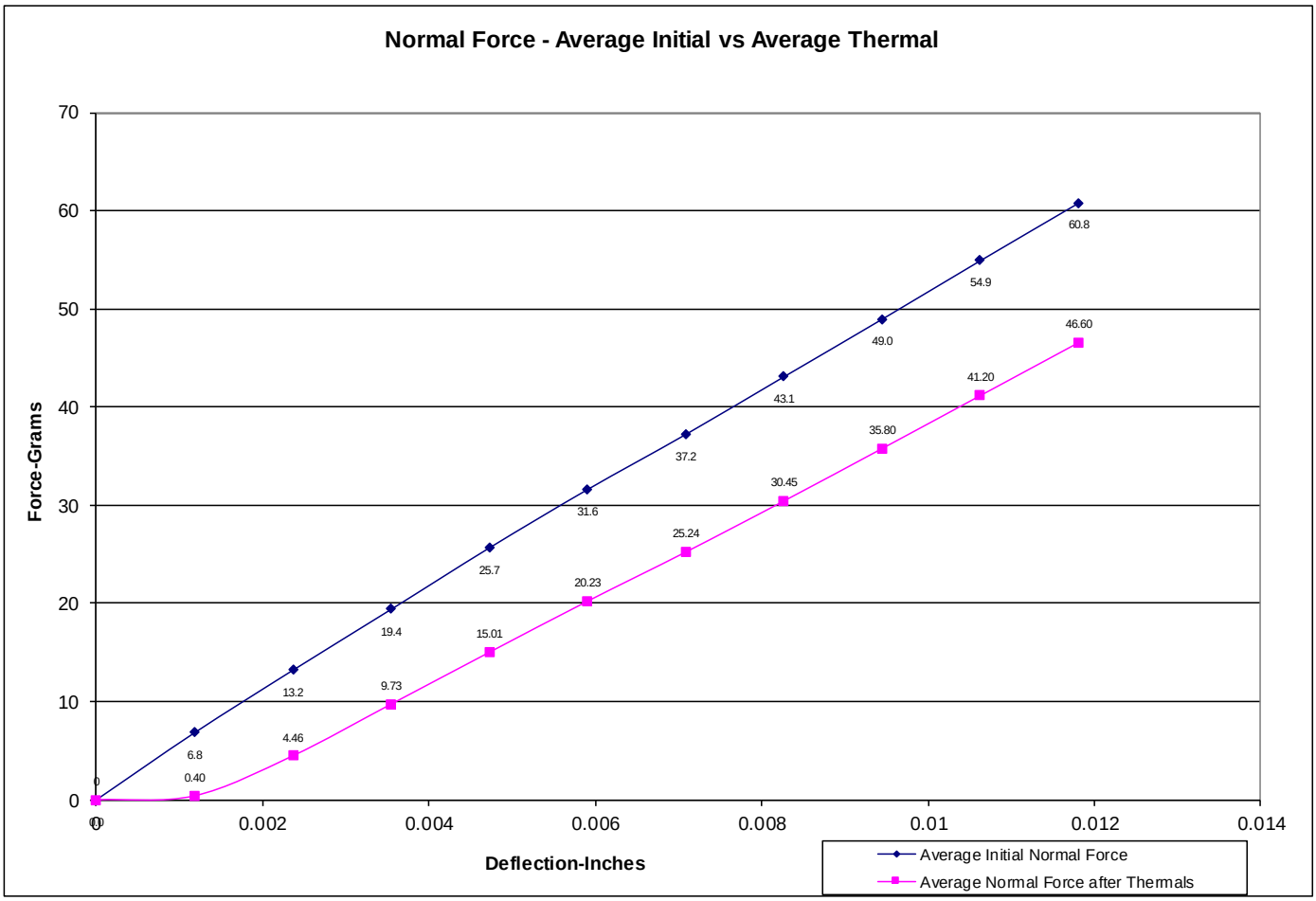
NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):

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.

Group 2&4 Ground wafer A

Initial	Deflections in inches Forces in Grams										
	0.0012	**0.0024**	**0.0035**	**0.0047**	**0.0059**	**0.0071**	**0.0083**	**0.0094**	**0.0106**	**0.0118**	***SET***
Averages	6.84	13.20	19.40	25.66	31.61	37.23	43.10	48.96	54.93	60.79	0.0000
Min	6.40	12.30	18.60	25.00	31.00	36.40	42.00	47.70	53.50	59.20	0.0000
Max	7.20	14.20	20.40	26.90	32.80	38.40	44.60	50.60	56.50	62.40	0.0000
St. Dev	0.267	0.646	0.672	0.674	0.645	0.680	0.804	0.875	0.886	0.922	0.0000
Count	8	8	8	8	8	8	8	8	8	8	8

After Thermals	Deflections in inches Forces in Grams										
	0.0012	**0.0024**	**0.0035**	**0.0047**	**0.0059**	**0.0071**	**0.0083**	**0.0094**	**0.0106**	**0.0118**	***SET***
Averages	0.40	4.46	9.73	15.01	20.23	25.24	30.45	35.80	41.20	46.60	0.0016
Min	0.00	1.20	6.10	11.30	16.20	21.30	26.70	31.60	36.80	41.80	0.0010
Max	1.80	7.70	13.10	18.60	24.00	28.90	34.30	39.70	45.10	50.40	0.0023
St. Dev	0.657	2.111	2.225	2.339	2.519	2.576	2.715	2.900	3.001	3.121	0.0004
Count	8	8	8	8	8	8	8	8	8	8	8



DATA SUMMARIES Continued

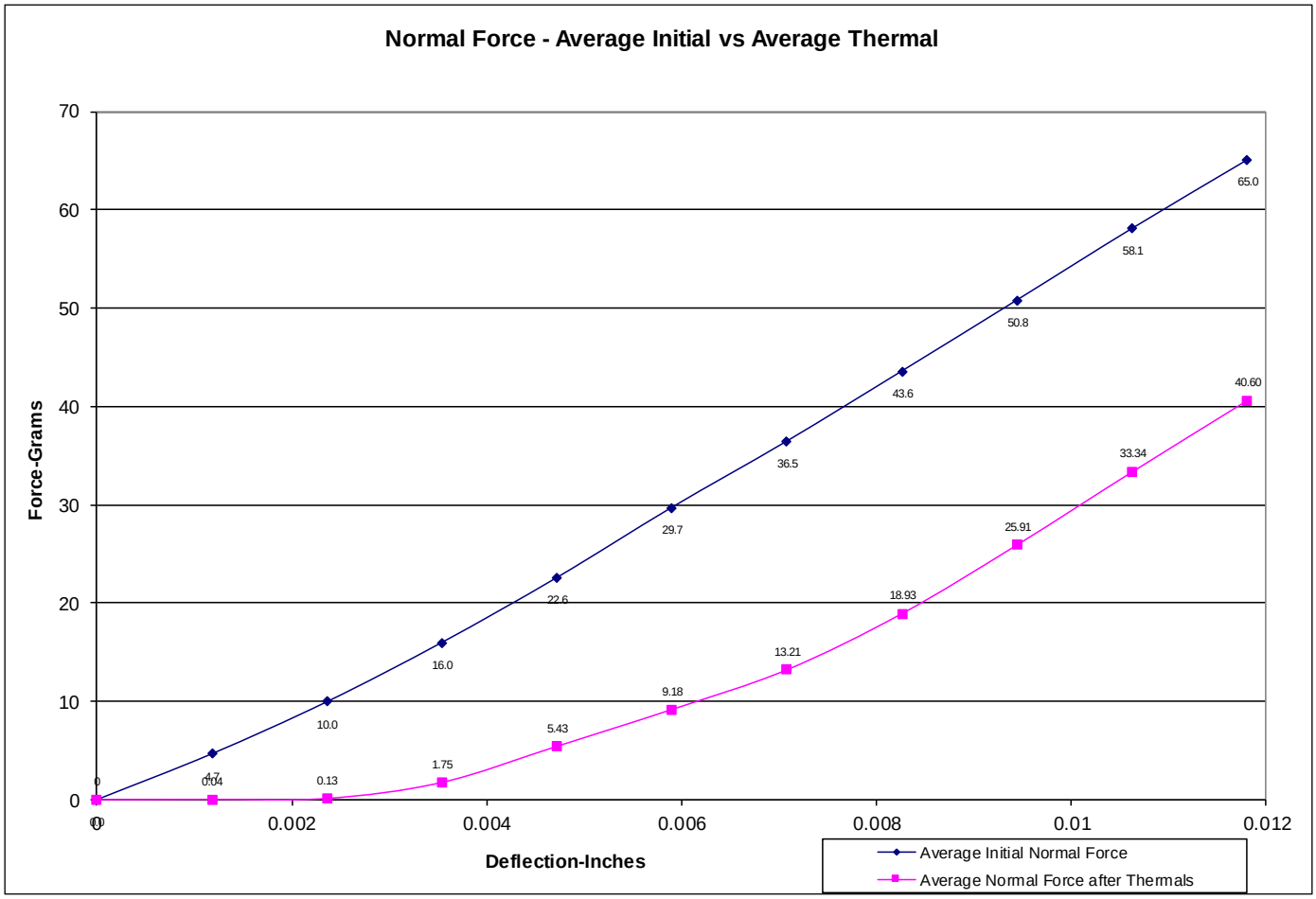
NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):

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.

Group 5&7 Signal wafer B

Initial	Deflections in inches Forces in Grams										
	0.0012	**0.0024**	**0.0035**	**0.0047**	**0.0059**	**0.0071**	**0.0083**	**0.0094**	**0.0106**	**0.0118**	***SET***
Averages	4.66	9.95	15.98	22.58	29.71	36.45	43.58	50.79	58.06	65.03	0.0000
Min	3.70	7.40	12.40	18.30	25.30	31.80	37.90	44.20	50.70	57.20	0.0000
Max	5.80	12.10	18.90	25.80	33.40	40.90	48.80	56.80	64.50	72.30	0.0000
St. Dev	0.746	1.705	2.445	2.917	3.148	3.481	3.936	4.397	4.681	5.078	0.0000
Count	8	8	8	8	8	8	8	8	8	8	8

After Thermals	Deflections in inches Forces in Grams										
	0.0012	**0.0024**	**0.0035**	**0.0047**	**0.0059**	**0.0071**	**0.0083**	**0.0094**	**0.0106**	**0.0118**	***SET***
Averages	0.04	0.13	1.75	5.43	9.18	13.21	18.93	25.91	33.34	40.60	0.0033
Min	0.00	-0.10	-0.10	3.30	6.50	9.50	13.80	19.70	26.40	33.50	0.0024
Max	0.10	0.90	4.40	7.70	12.30	18.30	25.80	34.00	42.00	50.00	0.0040
St. Dev	0.052	0.324	1.500	1.502	1.984	3.040	4.236	4.897	5.195	5.443	0.0005
Count	8	8	8	8	8	8	8	8	8	8	8



DATA SUMMARIES Continued

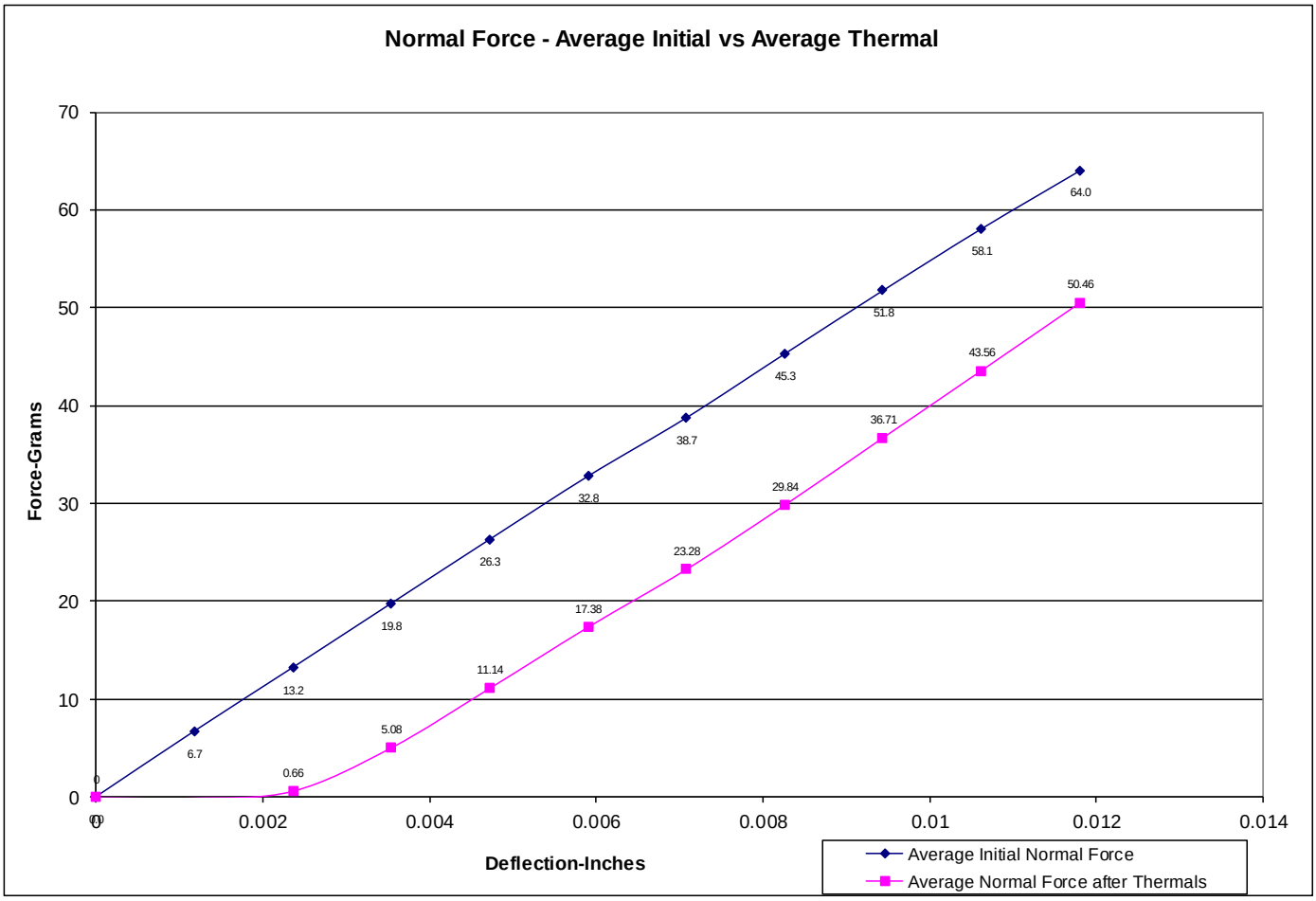
NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):

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.

Group 6&8 Ground wafer B

Initial	Deflections in inches Forces in Grams										
	0.0012	**0.0024**	**0.0035**	**0.0047**	**0.0059**	**0.0071**	**0.0083**	**0.0094**	**0.0106**	**0.0118**	***SET***
Averages	6.71	13.21	19.76	26.30	32.76	38.74	45.28	51.76	58.06	64.00	0.0000
Min	6.30	12.60	18.80	25.20	31.40	37.00	43.30	49.80	55.90	61.90	0.0000
Max	7.10	14.00	20.70	27.50	34.30	40.50	47.20	53.60	59.90	65.70	0.0000
St. Dev	0.280	0.533	0.785	0.875	1.112	1.251	1.337	1.304	1.371	1.276	0.0000
Count	8	8	8	8	8	8	8	8	8	8	8

After Thermals	Deflections in inches Forces in Grams										
	0.0012	**0.0024**	**0.0035**	**0.0047**	**0.0059**	**0.0071**	**0.0083**	**0.0094**	**0.0106**	**0.0118**	***SET***
Averages	-0.04	0.66	5.08	11.14	17.38	23.28	29.84	36.71	43.56	50.46	0.0023
Min	-0.10	-0.10	0.10	5.20	11.70	17.60	23.90	30.70	37.80	44.80	0.0014
Max	0.10	4.90	10.70	16.30	22.10	27.70	33.80	40.60	47.00	53.80	0.0030
St. Dev	0.074	1.728	3.034	3.160	3.004	3.043	3.034	3.083	2.897	2.869	0.0006
Count	8	8	8	8	8	8	8	8	8	8	8



DATA SUMMARIES Continued

Cable Pull Force:

Vertical - 0° Pull

	Force (lbs)
Minimum	**14.37**
Maximum	38.91
Average	30.13

Vertical - 90° Lateral Pull

	Force (lbs)
Minimum	**13.87**
Maximum	47.04
Average	32.52

Vertical - 90° Vertical Pull

	Force (lbs)
Minimum	**11.19**
Maximum	22.24
Average	16.02

RA - 90° Lateral Pull

	Force (lbs)
Minimum	**13.80**
Maximum	20.22
Average	16.88

RA - 90° Vertical Pull

	Force (lbs)
Minimum	**6.69**
Maximum	16.98
Average	12.78

DATA SUMMARIES Continued

Cable Flex:

Insulation Resistance minimums, IR

Group 1 Vertical - 90° Vertical

Pin to Pin	
Mated	
Minimum	
Initial	45000
After 500 Flex Cycles	45000

Row to Row	
Mated	
Minimum	
Initial	45000
After 500 Flex Cycles	45000

Pin to Ground	
Mated	
Minimum	
Initial	45000
After 500 Flex Cycles	45000

Group 2 Vertical - 90° Lateral

Pin to Pin	
Mated	
Minimum	
Initial	45000
After 500 Flex Cycles	45000

Row to Row	
Mated	
Minimum	
Initial	45000
After 500 Flex Cycles	45000

Pin to Ground	
Mated	
Minimum	
Initial	45000
After 500 Flex Cycles	45000

DATA SUMMARIES Continued

Group 3 RA - 90° Vertical

Pin to Pin	
Mated	
Minimum	
Initial	45000
After 500 Flex Cycles	45000

Row to Row	
Mated	
Minimum	
Initial	45000
After 500 Flex Cycles	45000

Pin to Ground	
Mated	
Minimum	
Initial	45000
After 500 Flex Cycles	45000

Group 4 RA - 90° Lateral

Pin to Pin	
Mated	
Minimum	
Initial	45000
After 500 Flex Cycles	45000

Row to Row	
Mated	
Minimum	
Initial	45000
After 500 Flex Cycles	45000

Pin to Ground	
Mated	
Minimum	
Initial	45000
After 500 Flex Cycles	45000

DATA SUMMARIES Continued

Dielectric Withstanding Voltage minimums, DWV

Voltage Rating Summary	
Minimum	**EBCF/EBTM**
Test Voltage	398

Group 1 Vertical - 90° Vertical

Pin to Pin	
Initial Test Voltage	Passed
After 500 Flex Cycles Test Voltage	Passed

Row to Row	
Initial Test Voltage	Passed
After 500 Flex Cycles Test Voltage	Passed

Pin to Ground	
Initial Test Voltage	Passed
After 500 Flex Cycles Test Voltage	Passed

Group 2 Vertical - 90° Lateral

Pin to Pin	
Initial Test Voltage	Passed
After 500 Flex Cycles Test Voltage	Passed

Row to Row	
Initial Test Voltage	Passed
After 500 Flex Cycles Test Voltage	Passed

Pin to Ground	
Initial Test Voltage	Passed
After 500 Flex Cycles Test Voltage	Passed

DATA SUMMARIES Continued

Group 3 RA - 90° Vertical

Pin to Pin	
Initial Test Voltage	Passed
After 500 Flex Cycles Test Voltage	Passed

Row to Row	
Initial Test Voltage	Passed
After 500 Flex Cycles Test Voltage	Passed

Pin to Ground	
Initial Test Voltage	Passed
After 500 Flex Cycles Test Voltage	Passed

Group 4 RA - 90° Lateral

Pin to Pin	
Initial Test Voltage	Passed
After 500 Flex Cycles Test Voltage	Passed

Row to Row	
Initial Test Voltage	Passed
After 500 Flex Cycles Test Voltage	Passed

Pin to Ground	
Initial Test Voltage	Passed
After 500 Flex Cycles Test Voltage	Passed

Latch Retention:

	Force (lbs)
Minimum	**36.79**
Maximum	41.49
Average	38.83

Sample #	Force (lbs)	Comments
49	37.218	Latch failed at 37.218lbs.
50	36.788	Latch failed at 36.788lbs.
51	39.805	Latch failed at 39.805lbs.
52	41.492	Latch failed at 41.492lbs.

DATA SUMMARIES Continued

LLCR Mating-Unmating Durability:

1) A total of 3 ground and 468 signal points were measured.
2) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets.*
3) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
4) The following guidelines are used to categorize the changes in LLCR as a result from stressing.
   a. <= +5.0 mOhms: ----------Stable
   b. +5.1 to +10.0 mOhms:----------Minor
   c. +10.1 to +15.0 mOhms: ----------Acceptable
   d. +15.1 to +50.0 mOhms: ----------Marginal
   e. +50.1 to +1000 mOhms: ----------Unstable
   f. >+1000 mOhms:----------Open Failure

LLCR Measurement Summaries by Pin Type				
Date	11/2/2020	11/13/2020	11/30/2020	12/14/2020
Room Temp (Deg C)	22	23	22	23
Rel Humidity (%)	37	35	39	38
Technician	John Crawford	John Crawford	John Crawford	John Crawford
mOhm values	**Actual Initial**	**Delta 100 Cycles**	**Delta Thermal Shock**	**Delta Humidity**
Bussed Cable	**Pin Type 1: HS Signal**			
Average	346.74	0.81	1.15	1.31
St. Dev.	7.18	0.86	1.10	1.35
Min	330.65	0.00	0.00	0.00
Max	367.62	7.77	7.26	10.80
Summary Count	432	432	432	432
Total Count	432	432	432	432
	Pin Type 2: LS Signal			
Average	298.67	0.62	0.83	1.06
St. Dev.	4.45	0.44	0.44	1.16
Min	290.10	0.08	0.02	0.04
Max	309.17	1.62	1.91	5.68
Summary Count	36	36	36	36
Total Count	36	36	36	36
	Pin Type 3: Ground			
Average	11.68	1.74	7.23	7.57
St. Dev.	1.46	0.72	1.57	1.40
Min	9.99	1.04	5.50	5.96
Max	12.63	2.47	8.55	8.45
Summary Count	3	3	3	3
Total Count	3	3	3	3

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
100 Cycles	**468**	**3**	**0**	**0**	**0**	**0**
Thermal Shock	**463**	**8**	**0**	**0**	**0**	**0**
Humidity	**455**	**15**	**1**	**0**	**0**	**0**

DATA SUMMARIES Continued

LLCR Gas Tight:

1) A total of 3 ground and 468 signal points were measured.
2) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets.*
3) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
4) The following guidelines are used to categorize the changes in LLCR as a result from stressing.
   a. <= +5.0 mOhms: ----------Stable
   b. +5.1 to +10.0 mOhms: ----------Minor
   c. +10.1 to +15.0 mOhms:----------Acceptable
   d. +15.1 to +50.0 mOhms:----------Marginal
   e. +50.1 to +1000 mOhms: ----------Unstable
   f. >+1000 mOhms:----------Open Failure

LLCR Measurement Summaries by Pin Type				
Date	12/29/2020	12/30/2020		
Room Temp (Deg C)	22	23		
Rel Humidity (%)	41	38		
Technician	John Crawford	Aaron McKim		
mOhm values	**Actual Initial**	**Delta Acid Vapor**	**Delta**	**Delta**
Pin Type 1: HS Signal				
Average	329.52	1.67		
St. Dev.	8.93	1.10		
Min	309.49	0.01		
Max	366.65	6.86		
Summary Count	432	432		
Total Count	432	432		
Pin Type 2: LS Signal				
Average	278.43	1.61		
St. Dev.	9.65	0.92		
Min	266.65	0.26		
Max	304.00	3.33		
Summary Count	36	36		
Total Count	36	36		
Pin Type 3: Ground				
Average	15.71	1.37		
St. Dev.	0.95	0.84		
Min	14.95	0.44		
Max	16.77	2.08		
Summary Count	3	3		
Total Count	3	3		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Acid Vapor	**466**	**5**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

LLCR Shock &Vibration:

1). A total of 3 ground and 468 signal 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. <= +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 +1000 mOhms ----------Unstable
   f. >+1000 mOhms: ----------Open Failure

	LLCR Measurement Summaries by Pin Type		
Date	11/12/2020	12/22/2020	
Room Temp (Deg C)	22	23	
Rel Humidity (%)	37	38	
Technician	John Crawford	John Crawford	
mOhm values	**Actual Initial**	**Delta Shock and Vib.**	**Delta**
Bussed Cable	**Pin Type 1: HS Signal**		
Average	347.40	1.18	
St. Dev.	7.11	1.20	
Min	331.77	0.00	
Max	367.88	12.12	
Summary Count	432	432	
Total Count	432	432	
	Pin Type 2: LS Signal		
Average	298.85	0.64	
St. Dev.	3.61	0.40	
Min	290.69	0.01	
Max	306.54	1.53	
Summary Count	36	36	
Total Count	36	36	
	Pin Type 3: Ground		
Average	10.70	2.04	
St. Dev.	2.64	1.49	
Min	8.80	0.73	
Max	13.72	3.66	
Summary Count	3	3	
Total Count	3	3	

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Shock-Vib	**465**	**5**	**1**	**0**	**0**	**0**

DATA SUMMARIES Continued

Nanosecond Event Detection:

Shock and Vibration Event Detection Summary	
Contacts tested	60
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

EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: TCT-04
Description: Dillon Quantrol TC21 25-1000 mm/min series test stand
Manufacturer: Dillon Quantrol
Model: TC2 I series test stand
Serial #: 04-1041-04
Accuracy: Speed Accuracy: +/- 5% of indicated speed; Speed Accuracy: +/- 5% of indicated speed;
… Last Cal: 05/29/2020, Next Cal: 05/29/2021

Equipment #: MO-11
Description: Switch/Multimeter
Manufacturer: Keithley
Model: 3706
Serial #: 120169
Accuracy: See Manual
… Last Cal: 09/11/2020, Next Cal: 09/11/2021

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: 11/14/2020, Next Cal: 11/14/2021

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: 06/30/2020, Next Cal: 06/30/2021

Equipment #: HPT-01
Description: Hipot Safety Tester
Manufacturer: Vitrek
Model: V73
Serial #: 019808
Accuracy:
… Last Cal: 05/15/2020, Next Cal: 05/15/2021

EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: SVC-01
Description: Shock & Vibration Table
Manufacturer: Data Physics
Model: LE-DSA-10-20K
Serial #: 10037
Accuracy: See Manual
… Last Cal: 04/22/2020, Next Cal: 04/22/2021

Equipment #: ACLM-01
Description: Accelerometer
Manufacturer: PCB Piezotronics
Model: 352C03
Serial #: 115819
Accuracy: See Manual
… Last Cal: 07/18/2020, Next Cal: 07/18/2021

Equipment #: ED-03
Description: Event Detector
Manufacturer: Analysis Tech
Model: 32EHD
Serial #: 1100604
Accuracy: See Manual
… Last Cal: 10/31/2020, Next Cal: 10/31/2021