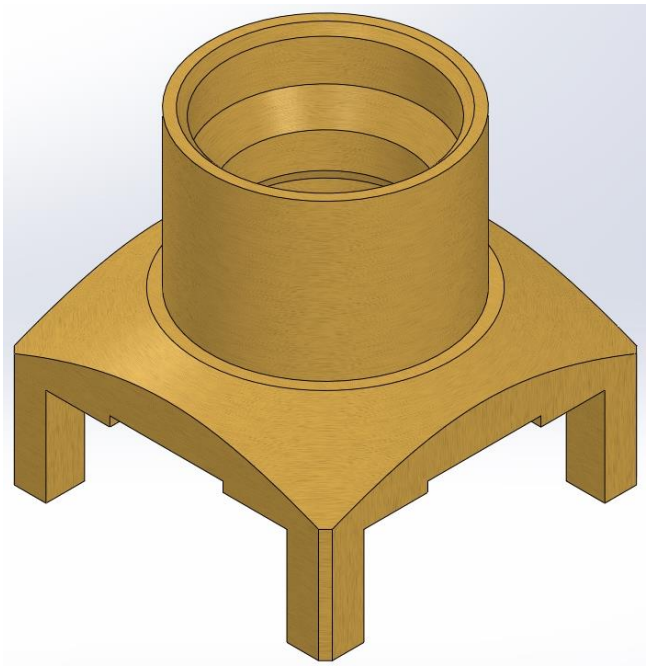
Project Number: Design Qualification Test Report	Tracking Code: CR-936201_Report_Rev_3
Requested by: Joe Huang	Date: 5/11/2024
Part #: SMP-PX-P-HG-ST-THX	
Part description: SMP THROUGH HOLE PLUG	Tech: Peter Chen
Test Start: 9/10/2023	Test Completed: 10/11/2023



DESIGN QUALIFICATION TEST REPORT

SMP-PX-P-HG-ST-THX
SMP THROUGH HOLE PLUG

REVISION HISTORY

DATA	REV.NUM.	DESCRIPTION	ENG
10/16/2023	**1**	**Initial Issue**	**PC**
12/21/2023	**2**	**Update the test plan**	**PC**
4/16/2024	**3**	**Update the test plan**	**PC**

CERTIFICATION

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

SCOPE

To perform the following tests: Design Qualification test. Please see test plan.

APPLICABLE DOCUMENTS

Standards: EIA-364 and MIL-STD-202-301

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 IR_DWV testing were cleaned according to TLWI-0001.
4) Either an automated cleaning procedure or an ultrasonic cleaning procedure may be used.
5) The automated procedure is used with aqueous compatible soldering materials.
6) Parts not intended for testing LLCR and IR_DWV are visually inspected and cleaned if necessary.
7) Any additional preparation will be noted in the individual test sequences.
8) Solder Information: Lead Free

FLOWCHARTS

Mating/Unmating/Durability

Group 1 SMP-PF-P-HG-ST-TH3 SMP-J-B-HG-ST-0896 6 Assemblies *Note: PF 100cycles, Engagement Force <= 68N, Disengagement Force >= 22N.*		Group 2 SMP-PL-P-HG-ST-TH3 SMP-J-B-HG-ST-0896 6 Assemblies *Note: PL 500cycles, Engagement Force <= 45N, Disengagement Force >= 9N.*		Group 3 SMP-PS-P-HG-ST-TH3 SMP-J-B-HG-ST-0896 6 Assemblies *Note: PS 1000cycles, Engagement Force <= 9N, Disengagement Force >= 2.2N.*	
Step	**Description**	**Step**	**Description**	**Step**	**Description**
1.	Interface Gaging *Note: Measure and record center contact to reference plane using a drop gage. (Nominal .051" +/- .002")*	1.	Interface Gaging *Note: Measure and record center contact to reference plane using a drop gage. (Nominal .051" +/- .002")*	1.	Interface Gaging *Note: Measure and record center contact to reference plane using a drop gage. (Nominal .051" +/- .002")*
2.	LLCR (1) *Note: Signal and ground*	2.	LLCR (1) *Note: Signal and ground*	2.	LLCR (1) *Note: Signal and ground*
3.	Cycles Quantity = 100 Cycles	3.	Cycles Quantity = 500 Cycles	3.	Cycles Quantity = 1000 Cycles
4.	Air Blow Debris *Note: Blow debris from the interface surfaces at intervals. Solvents or tools shall not be used for cleaning.*	4.	Air Blow Debris *Note: Blow debris from the interface surfaces at intervals. Solvents or tools shall not be used for cleaning.*	4.	Air Blow Debris *Note: Blow debris from the interface surfaces at intervals. Solvents or tools shall not be used for cleaning.*
5.	LLCR (1) Max Delta = 15 mOhm *Note: Signal and ground*	5.	LLCR (1) Max Delta = 15 mOhm *Note: Signal and ground*	5.	LLCR (1) Max Delta = 15 mOhm *Note: Signal and ground*
6.	Interface Gaging *Note: Measure and record center contact to reference plane using a drop gage. (Nominal .051" +/- .002")*	6.	Interface Gaging *Note: Measure and record center contact to reference plane using a drop gage. (Nominal .051" +/- .002")*	6.	Interface Gaging *Note: Measure and record center contact to reference plane using a drop gage. (Nominal .051" +/- .002")*
7.	Visual Inspection *Note: Visually inspect plating. Take a photo if LLCR failed*	7.	Visual Inspection *Note: Visually inspect plating. Take a photo if LLCR failed*	7.	Visual Inspection *Note: Visually inspect plating. Take a photo if LLCR failed*

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

FLOWCHARTS Continued

IR/DWV

Note: CONNECTORS TESTED AFTER SOLDERED TO .062" BOARD

Pin-to-Ground

Group 1	Group 2
SMP-PF-P-HG-ST-TH3	SMP-PF-P-HG-ST-TH3
RF405-00SJ7-505050-0305	RF405-00SJ7-505050-0305
2 Assemblies	8 Assemblies

Step	Description
1.	DWV Breakdown (2) - Non Standard

Step	Description
1.	IR (3) - Non Standard
2.	DWV at Test Voltage (1) - Non Standard Test Voltage = 500 V
3.	Thermal Shock (4) - Non Standard
4.	IR (3) - Non Standard
5.	DWV at Test Voltage (1) - Non Standard Test Voltage = 500 V

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(1) DWV at Test Voltage = Other
500 Vrms min. at sea level per DSCC 94008
DWV test voltage is equal to 75% of the lowest breakdown voltage
Test voltage applied for 60 seconds per DSCC-94008

(2) DWV Breakdown = Other
Record breakdown voltage. (Data only)

(3) IR = Other
5000 megohms min per DSCC 94008
MIL-PRF-39012

(4) Thermal Shock = Other
MIL-STD-202-107
Test condition B per DSCC 94008. Exception - high temperature to be +165°C. Visual inspection for damage.

FLOWCHARTS Continued

Mechanical Shock/Random Vibration/Event Detection

Note: CONNECTORS TESTED AFTER SOLDERED TO .062" BOARD

Group 1
SMP-PF-P-HG-ST-TH3
RF405-00SJ7-505050-0305
8 Assemblies

Step	Description
1.	LLCR (1) - Non Standard *Note: Signal and ground*
2.	Mechanical Shock *Note: MIL-STD-202, Method 213, Test Condition I. EXCEPTION - 50 ns max. electrical interruption.*
3.	Nanosecond Event Detection (Mechanical Shock) (2) - Non Standard
4.	High Frequency Vibration *Note: MIL-STD-202 Method 204, Test Condition D(20g peak) per DSCC 94008. expectation - 50 ns max. electrical interruption.*
5.	LLCR (1) - Non Standard MAX DELTA = 15 mOhm *Note: Signal and ground*

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

(2) Nanosecond Event Detection (Mechanical Shock) = Other
Test condition I per DSCC 94008 (100g). EXCEPTION: 50 ns max. electrical interruption.
MIL-STD-202-213

FLOWCHARTS Continued

Pull/Shear

Note: CONNECTORS TESTED AFTER SOLDERED TO BOARD. USE TEST BOARD FROM PREVIOUS TESTS OR IPG TEST BOARD.

Group 2
SMP-PF-P-HG-ST-TH3

5 Assemblies

Note: .062" PCB

Step	Description
1.	Connector Shear *Note: SHEAR TO DESTRUCT, PARALLEL TO BOARD.* *Record failure force (data only).*

Group 4
SMP-PF-P-HG-ST-TH4

5 Assemblies

Note: .093" PCB

Step	Description
1.	Connector Shear *Note: SHEAR TO DESTRUCT, PARALLEL TO BOARD.* *Record failure force (data only).*

Center Contact Retention

Group 1
SMP-PF-P-HG-ST-TH3

5 Assemblies

Note: Minimum Force

Step	Description
1.	Interface Gaging *Note: Measure and record center contact to reference plane using a drop gage BEFORE mating to the mating part. (Nominal .051" +/- .002")*
2.	Apply Minimum Force *Note: Push the bottom of contact toward the interface.* *Minimum Force = 1.5 pounds per DSCC 94008*
3.	Interface Gaging *Note: Measure and record center contact to reference plane.* *(Nominal .051" +/- .002")*

Group 2
SMP-PF-P-HG-ST-TH3

5 Assemblies

Note: Push Out Force

Step	Description
1.	Apply Push Out Force *Note: Push the bottom of contact toward the interface until it was pushed out.* *Record maximum force.* *Crosshead speed range 0.5–5.0 mm/min will be sufficiant.*

Group 3
SMP-PF-P-HG-ST-TH3

5 Assemblies

Note: Push Out Force

Step	Description
1.	Apply Push Out Force *Note: Push the top of contact toward the bottom until it was pushed out.* *Record maximum force.* *Crosshead speed range 0.5–5.0 mm/min will be sufficiant.*

FLOWCHARTS Continued

Insulator Retention

Group 1
SMP-PF-P-HG-ST-TH3

5 Assemblies

Note: Push Out Force

Step	Description
1.	Apply Push Out Force *Note: Push the bottom of insulator toward the interface until it was pushed out.* *Record maximum force.* *Crosshead speed range 0.5–5.0 mm/min will be sufficiant.*

ATTRIBUTE DEFINITIONS

The following is a brief, simplified description of attributes.

THERMAL SHOCK:

1) MIL-STD-202-107, Thermal *Shock (Temperature Cycling) Test Procedure for Electrical Connectors.*
2) Test Condition I: -55℃ to +165℃
3) Test Time: ½ hour dwell at each temperature extreme
4) Number of Cycles: 10
5) All test samples are pre-conditioned at ambient.
6) All test samples are exposed to environmental stressing in the mated condition.

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

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: MIL-PRF-39012, 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.

ATTRIBUTE DEFINITIONS

The following is a brief, simplified description of attributes

MECHANICAL SHOCK (Specified Pulse):

1) Reference document: MIL-STD-202-213, *Mechanical Shock Test Procedure for Electrical Connectors*
2) Test Condition G
3) Peak Value: 100 G
4) Duration: 6 Milliseconds
5) Wave Form: Sawtooth
6) Velocity: 12.3 ft/s
7) Number of Shocks: 3 Shocks / Direction, 3 Axis (18 Total)

VIBRATION:

1) Reference document: MIL-STD-202-204, *Vibration Test Procedure for Electrical Connectors*
2) Test Condition V, Letter B
3) Power Spectral Density: 0.10 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: MIL-STD-202, *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

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: MIL-STD-202-301, *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).

ATTRIBUTE DEFINITIONS

The following is a brief, simplified description of attributes

Center Contact Retention:

Push the top/bottom of contact toward the interface until it was pushed out. Record maximum force.

Insulator Retention:

Push the bottom of insulator toward the interface until it was pushed out. Record maximum force.

PULL/Shear:

Shear to destruct, Parallel to board. Record failure force

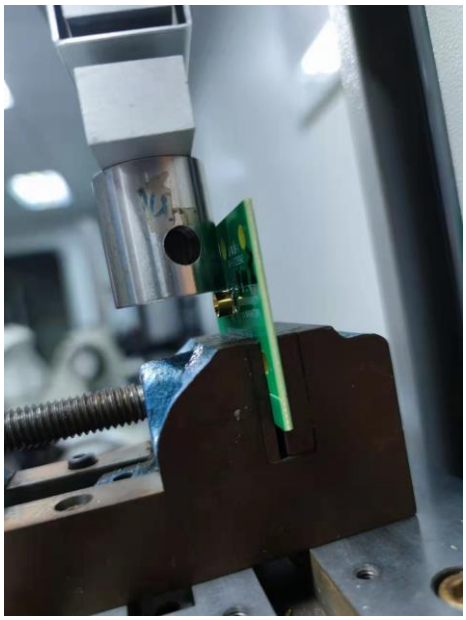

Fig. 1

RESULTS

Center Contact Retention:

Group 2

- **Min ---------- 8.15 lbs**
- **Max---------- 8.84 lbs**

Group 4

- **Min ---------- 8.39 lbs**
- **Max---------- 8.85 lbs**

Insulator Retention:

- **Min ---------- 7.12 lbs**
- **Max----------10.91 lbs**

Pull/Shear:

Group 2

- **Min---------- 152.74 lbs**
- **Max ---------- 174.50 lbs**

Group 4

- **Min---------- 162.68 lbs**

Max ---------- 172.26 lbs

Interface Gaging

Mating/Unmating Durability Group

SMP-PF

Initial

- **Min---------- 0.0510 Inch**
- **Max ---------- 0.0530 Inch**

After 100 cycles

- **Min---------- 0.0510 Inch**
- **Max ---------- 0.0520 Inch**

SMP-PL

Initial

- **Min---------- 0.0510 Inch**
- **Max ---------- 0.0530 Inch**

After 500 cycles

- **Min---------- 0.0510 Inch**
- **Max ---------- 0.0520 Inch**

SMP-PS

Initial

- **Min---------- 0.0510 Inch**
- **Max ---------- 0.0530 Inch**

After 1000 cycles

- **Min---------- 0.0515 Inch**
- **Max ---------- 0.0525 Inch**

Center Contact Retention Group

SMP-PF

Initial

- **Min---------- 0.0515 Inch**
- **Max ---------- 0.0520 Inch**

After 1.5 lbs Pull

- **Min---------- 0.0515 Inch**
- **Max ---------- 0.0520 Inch**

RESULTS Continued

IR_DWV

Insulation Resistance minimums, IR

Pin to Ground

- **Initial**
  - **Mated ---------- 45000 Meg Ω ---------- Passed**
- **Thermal Shock**
  - **Mated ---------- 45000 Meg Ω ---------- Passed**

Dielectric Withstanding Voltage minimums, DWV

- **Minimums**
  - **Breakdown Voltage ---------- 1321 VAC**

Pin to Ground

- **Initial DWV ---------- Passed**
- **Thermal DWV ---------- Passed**

DWV Mating/Unmating Durability Group

- **Minimums**
  - **Test Voltage ---------- 500 VAC**

Pin to Ground

- **Initial DWV ---------- Passed**

RESULTS Continued

LLCR Durability (6 signal and 6 ground LLCR test points)

SMP-PF

Signal Pin

- **Initial ---------- 7.71 mOhms Max**

Ground Pin

- **Initial ---------- 0.63 mOhms Max**
- **Durability, 100 Cycles**
  - **<= +5.0 mOhms ---------- 12 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**

SMP-PL

Signal Pin

- **Initial ---------- 8.49 mOhms Max**

Ground Pin

- **Initial ---------- 0.62 mOhms Max**
- **Durability, 100 Cycles**
  - **<= +5.0 mOhms ---------- 12 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**

SMP-PS

Signal Pin

- **Initial ---------- 7.33 mOhms Max**

Ground Pin

- **Initial ---------- 0.60 mOhms Max**
- **Durability, 100 Cycles**
  - **<= +5.0 mOhms ---------- 12 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 Shock & Vibration (8 signal and 8 ground LLCR test points)

Signal Pin

- **Initial ---------- 8.49 mOhms Max**

Ground Pin

- **Initial ---------- 0.62 mOhms Max**
- **Shock &Vibration**
  - **<= +5.0 mOhms ---------- 16 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**

DATA SUMMARIES

Center Contact Retention:

Push Bottom

	Force (lbs)
Minimum	**8.15**
Maximum	8.84
Average	8.51

Push Top

	Force (lbs)
Minimum	**8.39**
Maximum	8.85
Average	8.66

Insulator Retention:

	Force (lbs)
Minimum	**7.12**
Maximum	10.91
Average	9.06

Pull/Shear:

0.062" PCB

	Force (lbs)
Minimum	**152.74**
Maximum	174.50
Average	165.55

0.093" PCB

	Force (lbs)
Minimum	**162.68**
Maximum	172.26
Average	167.85

DATA SUMMARIES Continued

IR_DWV
INSULATION RESISTANCE (IR):

	Pin to Ground		
	Mated	Unmated	Unmated
Minimum	**SMP/RF405**	**SMP**	**RF405**
Initial	45000	Not Tested	Not Tested
Thermal	45000	Not Tested	Not Tested

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

Voltage Rating Summary	
Minimum	**SMP/RF405**
Break Down Voltage	1321
Test Voltage	500

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

INTERFACE GAGING
Mating/Unmating Durability Group
SMP-PF

Gaging (0.049/0.053)(inch)			
SMP-PF	**Initial**	**After Cycles**	**Delta**
1	0.0510	0.0515	0.0005
2	0.0515	0.0515	0.0000
3	0.0530	0.0510	0.0020
4	0.0530	0.0520	0.0010
5	0.0525	0.0515	0.0010
6	0.0525	0.0510	0.0015

DATA SUMMARIES Continued

SMP-PL

Gaging (0.049/0.053)(inch)			
SMP-PL	Initial	After Cycles	Delta
1	0.0530	0.0510	0.0020
2	0.0515	0.0510	0.0005
3	0.0515	0.0515	0.0000
4	0.0510	0.0520	0.0010
5	0.0525	0.0510	0.0015
6	0.0510	0.0515	0.0005

SMP-PS

Gaging (0.049/0.053)(inch)			
SMP-PS	Initial	After Cycles	Delta
1	0.0520	0.0515	0.0005
2	0.0510	0.0515	0.0005
3	0.0520	0.0525	0.0005
4	0.0510	0.0520	0.0015
5	0.0525	0.0515	0.0010
6	0.0530	0.0525	0.0005

Center Contact Retention

Gaging (0.045/0.055)(inch)			
SMP-PF	Initial	After pull	Delta
1	0.0520	0.0520	0.0000
2	0.0515	0.0520	0.0005
3	0.0515	0.0515	0.0000
4	0.0515	0.0520	0.0005
5	0.0515	0.0515	0.0000

DATA SUMMARIES Continued

LLCR Durability:

1) A total of 6 signal and 6 ground 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

SMP-PF

	LLCR Measurement Summaries by Pin Type			
Date	9/26/2023	10/10/2023		
Room Temp (Deg C)	23	23		
Rel Humidity (%)	54	54		
Technician	Peter Chen	Peter Chen		
mOhm values	Actual **Initial**	**Delta Cycles**	**Delta Therm Shck**	**Delta Humidity**
	Pin Type: Signal 1			
Average	7.22	1.41		
St. Dev.	0.39	1.02		
Min	6.62	0.1		
Max	7.71	2.71		
Summary Count	6	6		
Total Count	6	6		
	Pin Type: GND 1			
Average	0.58	0.22		
St. Dev.	0.03	0.09		
Min	0.55	0.05		
Max	0.63	0.31		
Summary Count	6	6		
Total Count	6	6		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Cycles	**12**	**0**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

SMP-PL

	LLCR Measurement Summaries by Pin Type			
Date	9/26/2023	10/10/2023		
Room Temp (Deg C)	23	23		
Rel Humidity (%)	54	54		
Technician	Peter Chen	Peter Chen		
mOhm values	Actual **Initial**	**Delta Cycles**	**Delta Therm Shck**	**Delta Humidity**
	Pin Type: Signal 1			
Average	7.64	0.85		
St. Dev.	0.66	1.03		
Min	6.56	0.03		
Max	8.49	2.55		
Summary Count	6	6		
Total Count	6	6		
	Pin Type: GND 1			
Average	0.49	0.22		
St. Dev.	0.08	0.17		
Min	0.41	0.05		
Max	0.62	0.51		
Summary Count	6	6		
Total Count	6	6		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Cycles	**12**	**0**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

SMP-PS

	LLCR Measurement Summaries by Pin Type			
Date	9/26/2023	10/10/2023		
Room Temp (Deg C)	23	23		
Rel Humidity (%)	51	54		
Technician	Peter Chen	Peter Chen		
mOhm values	Actual **Initial**	**Delta Cycles**	**Delta Therm Shck**	**Delta Humidity**
	Pin Type: Signal 1			
Average	6.9	2.74		
St. Dev.	0.38	0.78		
Min	6.48	1.8		
Max	7.33	4.13		
Summary Count	6	6		
Total Count	6	6		
	Pin Type: GND 1			
Average	0.53	0.05		
St. Dev.	0.07	0.04		
Min	0.39	0		
Max	0.6	0.09		
Summary Count	6	6		
Total Count	6	6		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Cycles	**12**	**0**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

LLCR Shock &Vibration:

1). A total of 8 signal and 8 ground 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	7/10/2023	8/4/2023		
Room Temp (Deg C)	23	22		
Rel Humidity (%)	53	48		
Technician	Richard Ison	Richard Ison		
mOhm values	Actual **Initial**	**Delta Shock-Vib**		
	Pin Type: Signal 1			
Average	54.29	0.47		
St. Dev.	0.38	0.29		
Min	53.89	0.2		
Max	54.9	1.05		
Summary Count	8	8		
Total Count	8	8		
	Pin Type: GND 1			
Average	8.27	0.55		
St. Dev.	0.06	0.23		
Min	8.18	0.37		
Max	8.39	1.07		
Summary Count	8	8		
Total Count	8	8		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Shock-Vib	**16**	**0**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

Nanosecond Event Detection:

Shock and Vibration Event Detection Summary	
Contacts tested	16
Test Condition	I, 100g's, 6ms, Sawtooth
Shock Events	0
Total Events	0

EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: HZ-TCT-01
Description: Normal force analyzer
Manufacturer: Mecmesin Multitester
Model: Mecmesin Multitester 2.5-i
Serial #: 08-1049-04
Accuracy: Last Cal: 4/26/2024, Next Cal: 4/25/2025

Equipment #: HZ-TSC-01
Description: Vertical Thermal Shock Chamber
Manufacturer: Cincinnatti Sub Zero
Model: VTS-3-6-6-SC/AC
Serial #: 10-VT14994
Accuracy: See Manual
… Last Cal: 06/28/2023, Next Cal: 06/27/2024

Equipment #: HZ-HPM-01
Description: NA9636H
Manufacturer: Ainuo
Model: 6031A
Serial #: 089601091
Accuracy: Last Cal: 3/7/2024, Next Cal: 3/6/2025

Equipment #: SVC-01
Description: Shock & Vibration Table
Manufacturer: Data Physics
Model: LE-DSA-10-20K
Serial #: 10037
Accuracy: See Manual
… Last Cal: 11/31/2023, Next Cal: 11/31/2024

Equipment #: ACLM-01
Description: Accelerometer
Manufacturer: PCB Piezotronics
Model: 352C03
Serial #: 115819
Accuracy: See Manual
… Last Cal: 07/09/2023, Next Cal: 07/09/2024

Equipment #: ED-03
Description: Event Detector
Manufacturer: Analysis Tech
Model: 32EHD
Serial #: 1100604
Accuracy: See Manual
… Last Cal: 06/04/2023, Next Cal: 06/04/2024