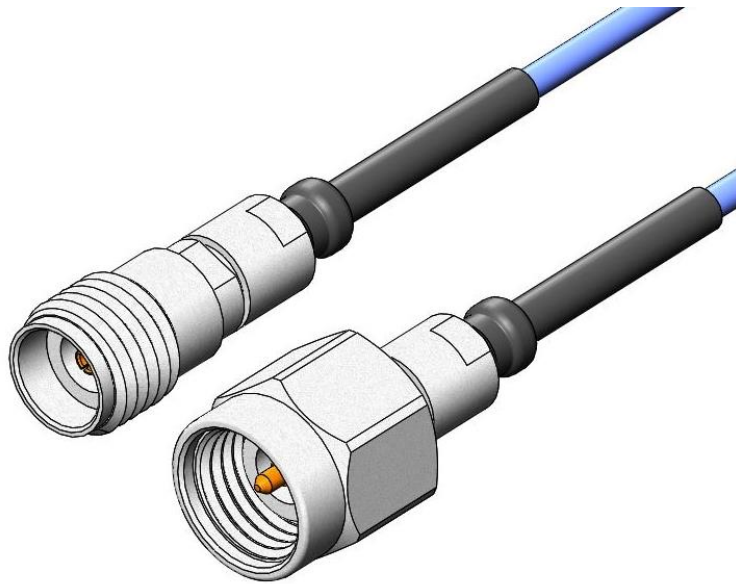




Project Number: Design Qualification Test Report	Tracking Code: 2179694_Report_Rev_1
Requested by: Alvin Wang	Date: 3/19/2020
Part #: RF047-A-92SJ-92SJ-0152 /RF047-A-92SP-92SP-0152	Tech: Tony Wagoner
Part description: RF047-A-92SJ/ RF047-A-92SP	Qty to test: 50
Test Start: 11/10/2019	Test Completed: 11/30/2019



## Design Qualification Test Report

**RF047-A-92SJ/ RF047-A-92SP  
RF047-A-92SJ-92SJ-0152 /RF047-A-92SP-92SP-0152**

Tracking Code: 2179694_Report_Rev_1	Part #: RF047-A-92SJ-92SJ-0152 /RF047-A-92SP-92SP-0152
Part description: RF047-A-92SJ/ RF047-A-92SP	

**REVISION HISTORY**

<b>DATA</b>	<b>REV.NUM.</b>	<b>DESCRIPTION</b>	<b>ENG</b>
1/6/2020	1	Initial Issue	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) After soldering, the parts to be used for LLCR and DWV/IR testing were cleaned according to TLWI-0001.
- 4) Either an automated cleaning procedure or an ultrasonic cleaning procedure may be used.
- 5) The automated procedure is used with aqueous compatible soldering materials.
- 6) Parts not intended for testing LLCR and DWV/IR are visually inspected and cleaned if necessary.
- 7) Any additional preparation will be noted in the individual test sequences.
- 8) Samtec Test PCBs used: PCB-109167-TST.

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

RF047-A-92SJ-505050-0152

RF047-A-92SP-505050-0152

4 Assemblies

Step	Description
1.	Length & Mass
2.	Interface Gaging
3.	DWV at Test Voltage (1) - Non Standard DWV = 500 VAC
4.	LLCR (2) - Non Standard <i>Note: Signal and ground.</i>
5.	Cycles Quantity = 500 Cycles <i>Note: By hand. Torque each time to 8 in-lbs. Rotate plug coupling nut only. Do not rotate entire assembly. MIL-PRF-39012, Paragraph. 4.6.12</i>
6.	LLCR (2) - Non Standard Max Delta = 15 mOhm <i>Note: Signal and ground.</i>
7.	Interface Gaging

(1) DWV at Test Voltage = Other

Test Condition = 1 (Sea Level) Test voltage applied for 60 seconds  
MIL-PRF-39012, Paragraph. 4.6.14 per MIL-STD-202-301

(2) LLCR = Other

Open Circuit Voltage = 20 mV Max  
Test Current = 100 mA Max  
MIL-PRF-39012, Paragraph 4.6.13 except current to be 100mA nominal and voltage to be 20 mV maximum.

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

RF047-A-92SJ-505050-1000

RF047-A-92SP-505050-1000

4 Assemblies

*Note: For STEP 6, please put the following additional cable assemblies in the thermal shock chamber (ride along parts).*

*Plug & jack versions are mated with dust caps (Yellow) on open ends.*

*Plug version: RF047A-92SJ-92SJ-1000 (4 PCS)*

*Jack version: RF047A-92SP-92SP-1000 (4 PCS)*

Step	Description
1.	Length & Mass
2.	Interface Gaging
3.	IR (2) - Non Standard
4.	DWV at Test Voltage (1) - Non Standard Test Voltage = 500 VAC
5.	LLCR (3) - Non Standard <i>Note: Signal and ground.</i>
6.	Thermal Shock (4) - Non Standard
7.	IR (2) - Non Standard
8.	DWV at Test Voltage (1) - Non Standard Test Voltage = 500 VAC
9.	LLCR (3) - Non Standard Max Delta = 15 mOhm <i>Note: Signal and ground.</i>
10.	Interface Gaging

**(1) DWV at Test Voltage = Other**

Test Condition = 1 (Sea Level) Test voltage applied for 60 seconds  
MIL-PRF-39012, Paragraph. 4.6.14 per MIL-STD-202-301

**(2) IR = Other**

Test Condition = 500V DC, 2 Minutes Max  
MIL-PRF-39012, Paragraph 4.6.8 per MIL-STD-202-302

**(3) LLCR = Other**

Open Circuit Voltage = 20 mV Max  
Test Current = 100 mA Max  
MIL-PRF-39012, Paragraph 4.6.13 except current to be 100mA nominal and voltage to be 20 mV maximum.

**(4) Thermal Shock = Other**

Exposure Time at Temperature Extremes = 1/2 Hour  
Test Condition = I (-65°C to +125°C)  
Test Duration = test condition B except 10 cycles instead of 5.  
MIL-PRF-39012, Paragraph. 4.6.17 per MIL-STD-202-107

**FLOWCHARTS Continued****Cable Pull**Group 1

RF047-A-92SJ-505050-0152

2 Assemblies  
0 Degrees

Step	Description
1.	Cable Retention (2) - Non Standard <i>Note: Pull-to-destruct.</i>

Group 2

RF047-A-92SP-505050-0152

2 Assemblies  
0 Degrees

Step	Description
1.	Cable Retention (2) - Non Standard <i>Note: Pull-to-destruct.</i>

Group 3

RF047-A-92SJ-505050-0152

RF047-A-92SP-505050-0152

4 Assemblies  
0 Degrees

Step	Description
1.	Length & Mass
2.	Interface Gaging
3.	LLCR (3) - Non Standard <i>Note: Signal and ground.</i>
4.	Cable Retention (1) - Non Standard <i>Note: Apply 5 pounds (2.3 kg) for Cable Retention test.</i>
5.	LLCR (3) - Non Standard <i>Note: Signal and ground.</i>
6.	Interface Gaging

(1) Cable Retention = Other  
Apply 10 pounds (4.6 kg) for Cable Retention test.  
MIL-PRF-30192, Paragraph 4.6.21

(2) Cable Retention = Other  
Pull-to-destruct.  
MIL-PRF-30192, Paragraph 4.6.21

(3) LLCR = Other  
Open Circuit Voltage = 20 mV Max  
Test Current = 100 mA Max  
MIL-PRF-39012, Paragraph 4.6.13 except current to be 100mA nominal and voltage to be 20 mV maximum.

## 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: -65°C to +125°C
- 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.

### 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.

### 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-STD-202-302, *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 Continued

The following is a brief, simplified description of attributes

### 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. Rate of Application 500 V/Sec
  - iii. Test Voltage (VAC) until breakdown occurs

#### 2) MEASUREMENTS/CALCULATIONS

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

### CABLE PULL:

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



Fig. 1

0° Connector pull, notice the electrical continuity hook-up wires.

**RESULTS**

**Cable Pull force**

- **0° Pull**
  - SJ**
    - **Min** -----12.00 lbs
    - **Max** -----12.82 lbs
  - SP**
    - **Min** -----15.46 lbs
    - **Max** -----15.49 lbs

**Durability DWV**

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

**Signal Pin to Ground Pin**

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

**Insulation Resistance minimums, IR**

**Signal Pin to Ground Pin**

- **Initial**
  - **Mated** -----45000 Meg  $\Omega$  ----- Passed
- **Thermal Shock**
  - **Mated** -----45000 Meg  $\Omega$  ----- Passed

**Dielectric Withstanding Voltage minimums, DWV**

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

**Signal Pin to Ground Pin**

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

**RESULTS Continued****Length & Mass****Mating/Unmating Durability Group****Length****SJ**

- **Min** ----- 153.2 mm
- **Max** ----- 156.3 mm

**SP**

- **Min** ----- 153.2 mm
- **Max** ----- 156.3 mm

**Mass****SJ**

- **Min** ----- 2.477 g
- **Max** ----- 2.494 g

**SP**

- **Min** ----- 3.520 g
- **Max** ----- 3.565 g

**IR/DWV Group****Length****SJ**

- **Min** ----- 995.0 mm
- **Max** ----- 1008.0 mm

**SP**

- **Min** ----- 995.0 mm
- **Max** ----- 1008.0 mm

**Mass****SJ**

- **Min** ----- 7.018 g
- **Max** ----- 7.081 g

**SP**

- **Min** ----- 8.060 g
- **Max** ----- 8.159 g

**Cable Pull Group****Length****SJ**

- **Min** ----- 154.0 mm
- **Max** ----- 154.8 mm

**SP**

- **Min** ----- 154.0 mm
- **Max** ----- 154.0 mm

**Mass****SJ**

- **Min** ----- 2.480 g
- **Max** ----- 2.490 g

**SP**

- **Min** ----- 3.567 g
- **Max** ----- 3.580 g

**RESULTS Continued****Interface Gaging****Mating/Unmating Durability Group****SJ****Initial**

- **Min** ----- 0.00035 inch
- **Max** ----- 0.00138 inch

**After 500 cycles**

- **Min** ----- 0.00016 inch
- **Max** ----- 0.00063 inch

**SP****Initial**

- **Min** ----- 0.00205 inch
- **Max** ----- 0.00272 inch

**After 500 cycles**

- **Min** ----- 0.00004 inch
- **Max** ----- 0.00283 inch

**IR/DWV Group****SJ****Initial**

- **Min** ----- 0.00024 inch
- **Max** ----- 0.00055 inch

**After 500 cycles**

- **Min** ----- 0.00020 inch
- **Max** ----- 0.00079 inch

**SP****Initial**

- **Min** ----- 0.00016 inch
- **Max** ----- 0.00252 inch

**After 500 cycles**

- **Min** ----- 0.00028 inch
- **Max** ----- 0.00236 inch

**Cable Pull Group****SJ****Initial**

- **Min** ----- 0.00020 inch
- **Max** ----- 0.00118 inch

**After 500 cycles**

- **Min** ----- 0.00059 inch
- **Max** ----- 0.00079 inch

**SP****Initial**

- **Min** ----- 0.00008 inch
- **Max** ----- 0.00028 inch

**After 500 cycles**

- **Min** ----- 0.00047 inch
- **Max** ----- 0.00079 inch

**RESULTS Continued****LLCR Durability (4 signal and 4 GND LLCR test points)****Signal pin**

- Initial ----- 80.55 mOhms Max

**GND pin**

- Initial ----- 28.38 mOhms Max
- After 500 cycles
  - <= +5.0 mOhms ----- 8 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

**LLCR IR\_DWV (4 signal and 4 GND LLCR test points)****Signal pin**

- Initial ----- 555.89 mOhms Max

**GND pin**

- Initial ----- 201.88 mOhms Max
- After Thermal Shock
  - <= +5.0 mOhms ----- 1 Points ----- Stable
  - +5.1 to +10.0 mOhms ----- 0 Points ----- Minor
  - +10.1 to +15.0 mOhms ----- 3 Points ----- Acceptable
  - +15.1 to +50.0 mOhms ----- 4 Points ----- Marginal
  - +50.1 to +1000 mOhms ----- 0 Points ----- Unstable
  - >+1000 mOhms ----- 0 Points ----- Open Failure

**LLCR Cable Pull (3 signal and 3 GND LLCR test points)****Signal pin**

- Initial ----- 80.82 mOhms Max

**GND pin**

- Initial ----- 30.01 mOhms Max
- After Retention force
  - <= +5.0 mOhms ----- 6 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

**DATA SUMMARIES****Cable Pull Force:  
0° Pull**

<b>92SJ</b>	<b>Force (lbs)</b>
Minimum	12.00
Maximum	12.82
Average	12.41

<b>92SP</b>	<b>Force (lbs)</b>
Minimum	15.46
Maximum	15.49
Average	15.48

**Durability DWV**

<b>Pin to Ground</b>	
<b>Initial Test Voltage</b>	Pass

**INSULATION RESISTANCE (IR):**

	<b>Pin to Ground</b>
	<b>Mated</b>
Minimum	<b>RF047A-92SJ/RF047A-92SP</b>
<b>Initial</b>	45000
<b>Thermal Shock</b>	45000

**DIELECTRIC WITHSTANDING VOLTAGE (DWV):**

<b>Pin to Ground</b>	
<b>Initial Test Voltage</b>	Pass
<b>After Thermal Shock Test Voltage</b>	Pass

**DATA SUMMARIES Continued****LENGTH & MASS****Mating/Unmating Durability Group**

92SJ	Length (mm)	Mass (g)
1	153.2	2.483
2	156.3	2.477
3	153.2	2.488
4	156.3	2.494
Min	153.2	2.477
Max	156.3	2.494
Avg	154.8	2.485

92SP	Length (mm)	Mass (g)
1	153.2	3.565
2	156.3	3.520
3	156.3	3.637
4	156.3	3.550
Min	153.2	3.520
Max	156.3	3.565
Avg	155.5	3.568

**IR/DWV Group**

92SJ	Length (mm)	Mass (g)
1	1008	7.081
2	1005	7.018
3	1006	7.031
4	995	7.031
Min	995	7.018
Max	1008	7.081
Avg	1003.5	7.040

92SP	Length (mm)	Mass (g)
1	1008	8.159
2	1005	8.138
3	1005	8.108
4	995	8.060
Min	995	8.060
Max	1008	8.159
Avg	1003.3	8.116

**DATA SUMMARIES Continued****Cable Pull Group**

92SJ	Length (mm)	Mass (g)
1	154.0	2.487
2	154.0	2.480
3	154.8	2.490
Min	154.0	2.480
Max	154.8	2.490
Avg	154.3	2.486

92SP	Length (mm)	Mass (g)
1	154.0	3.567
2	154.0	3.572
3	154.0	3.580
Min	154.0	3.567
Max	154.0	3.580
Avg	154.0	3.573

**DATA SUMMARIES Continued****INTERFACE GAGING****Mating/Unmating Durability Group**

Gaging (.003 / .000) (in)			
92SJ	Initial	500 Cycles	Deltas
1	0.00059	0.00051	0.00008
2	0.00138	0.00016	0.00122
3	0.00114	0.00063	0.00051
4	0.00035	0.00024	0.00012
Min	0.00035	0.00016	0.00008
Max	0.00138	0.00063	0.00122
Avg	0.00087	0.00038	0.00048

Gaging (.003 / .000) (in)			
92SP	Initial	500 Cycles	Deltas
1	0.00240	0.00213	0.00028
2	0.00272	0.00283	0.00283
3	0.00236	0.00004	0.00232
4	0.00205	0.00157	0.00047
Min	0.00205	0.00004	0.00028
Max	0.00272	0.00283	0.00283
Avg	0.00238	0.00164	0.00148

**IR/DWV Group**

Gaging (.003 / .000) (in)			
92SJ	Initial	500 Cycles	Deltas
1	0.00051	0.00075	0.00024
2	0.00024	0.00079	0.00055
3	0.00055	0.00051	0.00004
4	0.00024	0.00020	0.00004
Min	0.00024	0.00020	0.00004
Max	0.00055	0.00079	0.00055
Avg	0.00039	0.00056	0.00022

Gaging (.003 / .000) (in)			
92SP	Initial	500 Cycles	Deltas
1	0.00016	0.00028	0.00012
2	0.00165	0.00095	0.0007
3	0.00244	0.00236	0.00008
4	0.00252	0.00236	0.00016
Min	0.00016	0.00028	0.00008
Max	0.00252	0.00236	0.00070
Avg	0.00170	0.00149	0.00027

**DATA SUMMARIES Continued****Cable Pull Group**

<b>Gaging (.003 / .000) (in)</b>			
<b>92SJ</b>	<b>Initial</b>	<b>500 Cycles</b>	<b>Deltas</b>
1	0.00118	0.00059	0.00060
2	0.00020	0.00079	0.00055
3	0.00031	0.00075	0.00043
Min	0.00020	0.00059	0.00043
Max	0.00118	0.00079	0.00060
Avg	0.00056	0.00071	0.00053

<b>Gaging (.003 / .000) (in)</b>			
<b>92SP</b>	<b>Initial</b>	<b>500 Cycles</b>	<b>Deltas</b>
1	0.00008	0.00047	0.00039
2	0.00012	0.00055	0.00043
3	0.00028	0.00079	0.00051
Min	0.00008	0.00047	0.00039
Max	0.00028	0.00079	0.00051
Avg	0.00016	0.00060	0.00044

### DATA SUMMARIES Continued

**LLCR Durability:**

- 1) A total of 4 signal and 4 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.  $\leq +5.0$  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  $+1000$  mOhms -----Unstable
  - f.  $>+1000$  mOhms:-----Open Failure

LLCR Measurement Summaries by Pin Type			
Date	11/12/2019	11/26/2019	
Room Temp (Deg C)	22	22	
Rel Humidity (%)	37	32	
Technician	Tony Wagoner	Tony Wagoner	
<b>mOhm values</b>	Actual	<b>Delta</b>	
	Initial	<b>after 500 Cycles</b>	
<b>Pin Type: Signal 1</b>			
Average	80.08	0.73	
St. Dev.	0.34	0.76	
Min	79.76	0.1	
Max	80.55	1.67	
Summary Count	4	4	
Total Count	4	4	
<b>Pin Type: GND 1</b>			
Average	28.07	1.62	
St. Dev.	0.46	0.57	
Min	27.39	0.93	
Max	28.38	2.1	
Summary Count	4	4	
Total Count	4	4	

LLCR Delta Count by Category						
	Stable	Minor	Acceptable	Marginal	Unstable	Open
<b>mOhms</b>	$\leq 5$	$>5 \ \& \ \leq 10$	$>10 \ \& \ \leq 15$	$>15 \ \& \ \leq 50$	$>50 \ \& \ \leq 1000$	$>1000$
<b>after 500 Cycles</b>	8	0	0	0	0	0

**DATA SUMMARIES Continued****LLCR DWV**

- 1) A total of 4 signal and 4 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.  $\leq +5.0$  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  $+1000$  mOhms -----Unstable
  - f.  $>+1000$  mOhms:-----Open Failure

LLCR Measurement Summaries by Pin Type				
Date	12/12/2019	12/19/2019		
Room Temp (Deg C)	22	23		
Rel Humidity (%)	35	37		
Technician	Tony Wagoner	Tony Wagoner		
mOhm values	Actual	<b>Delta</b>		
	Initial	<b>Thermal Shock</b>		
Pin Type: Signal 1				
Average	550.9	9.36		
St. Dev.	4.74	4.96		
Min	545.73	2.11		
Max	555.89	12.99		
Summary Count	4	4		
Total Count	4	4		
Pin Type: GND 1				
Average	198.64	38.47		
St. Dev.	3.38	2.88		
Min	195.7	34.88		
Max	201.88	41.26		
Summary Count	4	4		
Total Count	4	4		

LLCR Delta Count by Category						
	Stable	Minor	Acceptable	Marginal	Unstable	Open
mOhms	$\leq 5$	$>5$ & $\leq 10$	$>10$ & $\leq 15$	$>15$ & $\leq 50$	$>50$ & $\leq 1000$	$>1000$
Thermal Shock	1	0	3	4	0	0

### DATA SUMMARIES Continued

**LLCR Cable Pull:**

- 1) A total of 3 signal and 3 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.  $\leq +5.0$  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  $+1000$  mOhms: -----Unstable
  - f.  $>+1000$  mOhms:-----Open Failure

LLCR Measurement Summaries by Pin Type				
Date	11/11/2019	11/12/2019		
Room Temp (Deg C)	23	22		
Rel Humidity (%)	38	37		
Technician	Tony Wagoner	Tony Wagoner		
<b>mOhm values</b>	<b>Actual</b>	<b>Delta</b>		
	<b>Initial</b>	<b>after 5lb Retention</b>		
Pin Type: Signal 1				
Average	80.53	0.66		
St. Dev.	0.41	0.92		
Min	80.06	0.12		
Max	80.82	1.72		
Summary Count	3	3		
Total Count	3	3		
Pin Type: GND 1				
Average	29.3	0.69		
St. Dev.	1	0.24		
Min	28.15	0.55		
Max	30.01	0.97		
Summary Count	3	3		
Total Count	3	3		

LLCR Delta Count by Category						
	Stable	Minor	Acceptable	Marginal	Unstable	Open
<b>mOhms</b>	<b><math>\leq 5</math></b>	<b><math>&gt;5 \ \&amp; \ \leq 10</math></b>	<b><math>&gt;10 \ \&amp; \ \leq 15</math></b>	<b><math>&gt;15 \ \&amp; \ \leq 50</math></b>	<b><math>&gt;50 \ \&amp; \ \leq 1000</math></b>	<b><math>&gt;1000</math></b>
<b>after 5lb Retention</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

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

... Last Cal: 05/15/2019, Next Cal: 05/15/2020

**Equipment #:** MO-11**Description:** Switch/Multimeter**Manufacturer:** Keithley**Model:** 3706**Serial #:** 120169**Accuracy:** See Manual

... Last Cal: 09/11/2019, Next Cal: 09/11/2020

**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: 06/30/2019, Next Cal: 06/30/2020