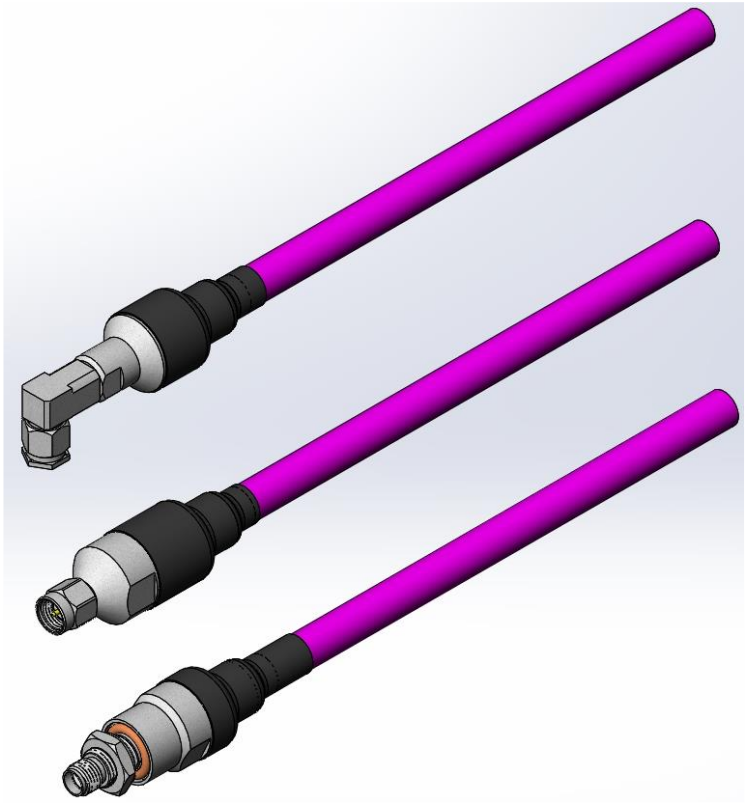
Project Number: Design Qualification Test Report	Tracking Code: 2901505_Report_Rev_1
Requested by: Joe Huang	Date: 8/23/2021
Part #: RF280-01SP-505050-0152/RF280-01BJ-505050-0152/RF280-01RP-505050-0152	
Part description: RF280 SMA CABLE ASSEMBLY	Tech: Kason He
Test Start: 7/20/2021	Test Completed: 8/4/2021



DESIGN QUALIFICATION TEST REPORT

RF280 SMA CABLE ASSEMBLY
RF280-01SP-505050-0152/RF280-01BJ-505050-0152/RF280-01RP-505050-0152

REVISION HISTORY

DATA	REV.NUM.	DESCRIPTION	ENG
8/23/2021	**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.

SCOPE

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

APPLICABLE DOCUMENTS

Standards: EIA Publication 364, MIL-PRF-39012.

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) Parts not intended for testing LLCR and DWV/IR are visually inspected and cleaned if necessary.
4) Any additional preparation will be noted in the individual test sequences.

FLOWCHARTS

IR/DWV

Pin-to-Ground

Group 1

RF280-01SP-505050-0152

RF280-01BJ-505050-0152

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 (Brown) on open ends.

Plug version: RF280-01SP-01SP-1000 (4 PCS)
Jack version: RF280-01BJ-01BJ-1000 (4PCS)

Step	Description
1.	Length & Mass
2.	Interface Gaging
3.	IR (2) - Non Standard
4.	DWV at Test Voltage (1) - Non Standard Test Voltage = 500 V
5.	LLCR (3) - Non Standard *Note: Signal and ground.*
6.	Thermal Shock (4) - Non Standard
7.	IR (2) - Non Standard
8.	DWV at Test Voltage (1) - Non Standard Test Voltage = 500 V
9.	LLCR (3) - Non Standard *Note: Signal and ground.*
10.	Interface Gaging

Group 2

RF280-01RP-505050-0152

RF280-01BJ-505050-0152

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 (Brown) on open ends.

Plug version: RF280-01RP-01RP-1000 (4 PCS)
Jack version: RF280-01BJ-01BJ-1000 (4PCS)

Step	Description
1.	Length & Mass
2.	Interface Gaging
3.	IR (2) - Non Standard
4.	DWV at Test Voltage (1) - Non Standard Test Voltage = 500 V
5.	LLCR (3) - Non Standard *Note: Signal and ground.*
6.	Thermal Shock (4) - Non Standard
7.	IR (2) - Non Standard
8.	DWV at Test Voltage (1) - Non Standard Test Voltage = 500 V
9.	LLCR (3) - Non Standard *Note: Signal and ground.*
10.	Interface Gaging

(1) DWV at Test Voltage = Other
Test Condition = 1 (Sea Level) Test voltage applied for 60 seconds
MIL-PRF-39012, Paragraph 4.6.8 per MIL-STD-202-302

(2) IR = Other
Test Condition = 500 Vdc, 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
Method A, Test Condition = I (-55°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
RF280-01SP-505050-0152
2 Assemblies
0 Degrees

Step	Description
1.	Cable Retention (2) - Non Standard *Note: Pull-to-destruct.*

Group 2
RF280-01BJ-505050-0152
2 Assemblies
0 Degrees

Step	Description
1.	Cable Retention (2) - Non Standard *Note: Pull-to-destruct.*

Group 3
RF280-01SP-505050-0152
RF280-01BJ-505050-0152
4 Assemblies
0 Degrees

Step	Description
1.	Length & Mass
2.	Interface Gaging
3.	LLCR (3) - Non Standard *Note: Signal and ground.*
4.	Cable Retention (1) - Non Standard *Note: Apply 20 pounds (9.2kg) for Cable Retention test.*
5.	LLCR (3) - Non Standard *Note: Signal and ground.*
6.	Interface Gaging

Group 4
RF280-01RP-505050-0152
2 Assemblies
0 Degrees

Step	Description
1.	Cable Retention (2) - Non Standard *Note: Pull-to-destruct.*

Group 5
RF280-01RP-505050-0152
RF280-01BJ-505050-0152
4 Assemblies
0 Degrees

Step	Description
1.	Length & Mass
2.	Interface Gaging
3.	LLCR (3) - Non Standard *Note: Signal and ground.*
4.	Cable Retention (1) - Non Standard *Note: Apply 20 pounds (9.2kg) for Cable Retention test.*
5.	LLCR (3) - Non Standard *Note: Signal and ground.*
6.	Interface Gaging

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(1) Cable Retention = Other
Apply 20 pounds (9.26kg) 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-PRF-39012, paragraph. 4.6.17 per MIL-STD-202-107.
2) Test Condition I: -55℃ to +125℃
3) Test Time: ½ hour dwell at each temperature extreme
4) Test Duration: test condition B except 10 cycles instead of 5.
5) All test samples are pre-conditioned at ambient.
6) All test samples are exposed to environmental stressing in the mated condition.

LLCR:

1) MIL-PRF-39012, Paragraph 4.6.13 except current to be 100 mA nominal and voltage to be 20 mV maximum.
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

CABLE RETENTION:

1) Apply 20 pounds (9.26 kg) for cable retention test.
2) Pull to destruct.
3) MIL-PRF-30192, paragraph. 4.6.21.

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: MIL-PRF-39012, paragraph. 4.6.8 per MIL-STD-202-302.
    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: MIL-PRF-39012, paragraph. 4.6.14 per MIL-STD-202-301.
    b. Test Conditions:
        i. Between Adjacent Contacts or Signal-to-Ground
        ii. Barometric Test Condition 1(Sea Level) Test voltage applied for 60 seconds.
        iii. Rate of Application 500 V/Sec
        iv. Test Voltage (VAC) until breakdown occurs
2) MEASUREMENTS/CALCULATIONS
    a. The breakdown voltage shall be measured and recorded.
    b. The dielectric withstanding voltage shall be recorded as 75% of the minimum breakdown voltage.
    c. The working voltage shall be recorded as one-third (1/3) of the dielectric withstanding voltage (one-fourth of the breakdown voltage).

RESULTS

Cable Pull force

- **0° Pull**

Group 1 RF280-01SP-505050-0152

- **Min ---------- 171.25 lbs**
- **Max ---------- 172.57 lbs**

Group 2 RF280-01BJ-505050-0152

- **Min ---------- 169.24 lbs**
- **Max ---------- 182.02 lbs**

Group 4 RF280-01RP-505050-0152

- **Min ---------- 154.44 lbs**
- **Max ---------- 163.63 lbs**

Insulation Resistance minimums, IR

Group 1 RF280-01SP-505050-0152/RF280-01BJ-505050-0152

Pin to Ground

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

Group 2 RF280-01RP-505050-0152/RF280-01BJ-505050-0152

Pin to Ground

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

Dielectric Withstanding Voltage minimums, DWV

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

Group 1 RF280-01SP-505050-0152/RF280-01BJ-505050-0152

Pin to Ground

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

Group 2 RF280-01RP-505050-0152/RF280-01BJ-505050-0152

Pin to Ground

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

RESULTS Continued

Length & Mass

IR/DWV Group

Group 1 RF280-01SP-505050-0152/RF280-01BJ-505050-0152

Length

01SP

- **Min ---------- 155.00 mm**
- **Max ---------- 156.00 mm**

01BJ

- **Min ---------- 155.00 mm**
- **Max ---------- 156.00 mm**

Mass

01SP

- **Min ----------46.91 g**
- **Max ----------47.80 g**

01BJ

- **Min ----------41.70 g**
- **Max ----------41.81 g**

Group 2 RF280-01RP-505050-0152/RF280-01BJ-505050-0152

Length

01RP

- **Min ---------- 155.00 mm**
- **Max ---------- 156.00mm**

01BJ

- **Min ---------- 155.00 mm**
- **Max ---------- 155.00 mm**

Mass

01RP

- **Min ----------41.82 g**
- **Max ----------42.10 g**

01BJ

- **Min ----------41.66 g**
- **Max ----------41.84 g**

RESULTS Continued

Cable Pull Group

Group 3 RF280-01SP-505050-0152/RF280-01BJ-505050-0152

Length

01SP

- **Min ---------- 155.00 mm**
- **Max ---------- 155.00 mm**

01BJ

- **Min ---------- 155.00 mm**
- **Max ---------- 156.00 mm**

Mass

01SP

- **Min ----------47.46 g**
- **Max ----------47.68 g**

01BJ

- **Min ----------41.70 g**
- **Max ----------41.82 g**

Group 5 RF280-01RP-505050-0152/RF280-01BJ-505050-0152

Length

01RP

- **Min ---------- 155.00 mm**
- **Max ---------- 155.00 mm**

01BJ

- **Min ---------- 155.00 mm**
- **Max ---------- 156.00 mm**

Mass

01RP

- **Min ----------41.79 g**
- **Max ----------42.10 g**

01BJ

- **Min ----------41.57 g**
- **Max ----------41.82 g**

RESULTS Continued

Interface Gaging

IR/DWV Group

Group 1 RF280-01SP-505050-0152/RF280-01BJ-505050-0152

01SP

Initial

- **Min ---------- 0.0845 mm**
- **Max ---------- 0.0861 mm**

After Thermal Shock

- **Min ---------- 0.0821 mm**
- **Max ---------- 0.0890 mm**

01BJ

Initial

- **Min ---------- 0.0313 mm**
- **Max ---------- 0.0376 mm**

After Thermal Shock

- **Min ---------- 0.0320 mm**
- **Max ---------- 0.0360 mm**

Group 2 RF280-01RP-505050-0152/RF280-01BJ-505050-0152

01RP

Initial

- **Min ---------- 0.0224 mm**
- **Max ---------- 0.0435 mm**

After Thermal Shock

- **Min ---------- 0.0340 mm**
- **Max ---------- 0.0470 mm**

01BJ

Initial

- **Min ---------- 0.0312 mm**
- **Max ---------- 0.0510 mm**

After Thermal Shock

- **Min ---------- 0.0320 mm**
- **Max ---------- 0.0520 mm**

RESULTS Continued

Cable Pull Group

Group 3 RF280-01SP-505050-0152/RF280-01BJ-505050-0152

01SP

Initial

- **Min ---------- 0.0862 mm**
- **Max ---------- 0.0980 mm**

After Retention (20 lbs)

- **Min ---------- 0.0820 mm**
- **Max ---------- 0.0861 mm**

01BJ

Initial

- **Min ---------- 0.0310 mm**
- **Max ---------- 0.0398 mm**

After Retention (20 lbs)

- **Min ---------- 0.0330 mm**
- **Max ---------- 0.0530 mm**

Group 5 RF280-01RP-505050-0152/RF280-01BJ-505050-0152

01RP

Initial

- **Min ---------- 0.0430 mm**
- **Max ---------- 0.0537 mm**

After Retention (20 lbs)

- **Min ---------- 0.0340 mm**
- **Max ---------- 0.0530 mm**

01BJ

Initial

- **Min ---------- 0.0356 mm**
- **Max ---------- 0.0456 mm**

After Retention (20 lbs)

- **Min ---------- 0.0340 mm**
- **Max ---------- 0.0540 mm**

RESULTS Continued

LLCR IR/DWV (4 ground and 4 signal LLCR test points)

Group 1 RF280-01SP-505050-0152/RF280-01BJ-505050-0152

Ground pin

- **Initial ---------- 5.87 mOhms Max**
- **After Thermal Shock**
  - **<= +5.0 mOhms ---------- 4 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

- **Initial ---------- 2.72 mOhms Max**
- **After Thermal Shock**
  - **<= +5.0 mOhms ---------- 4 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**

Group 2 RF280-01RP-505050-0152/RF280-01BJ-505050-0152

Ground pin

- **Initial ---------- 5.97 mOhms Max**
- **After Thermal Shock**
  - **<= +5.0 mOhms ---------- 4 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

- **Initial ---------- 4.39 mOhms Max**
- **After Thermal Shock**
  - **<= +5.0 mOhms ---------- 4 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 Cable Pull (4 ground and 4 signal LLCR test points)

Group 3 RF280-01SP-505050-0152/RF280-01BJ-505050-0152

Ground pin

- **Initial ---------- 5.75 mOhms Max**
- **After Retention (20 lbs)**
  - **<= +5.0 mOhms ---------- 4 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

- **Initial ---------- 2.90 mOhms Max**
- **After Retention (20 lbs)**
  - **<= +5.0 mOhms ---------- 4 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**

Group 5 RF280-01RP-505050-0152/RF280-01BJ-505050-0152

Ground pin

- **Initial ---------- 6.12 mOhms Max**
- **After Retention (20 lbs)**
  - **<= +5.0 mOhms ---------- 4 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

- **Initial ---------- 4.47 mOhms Max**
- **After Retention (20 lbs)**
  - **<= +5.0 mOhms ---------- 4 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

INSULATION RESISTANCE (IR):

Group 1 RF280-01SP-505050-0152/RF280-01BJ-505050-0152

	Pin to Ground
	Mated
Minimum	RF280-01SP/RF280-01BJ
Initial	45000
Thermal Shock	45000

Group 2 RF280-01RP-505050-0152/RF280-01BJ-505050-0152

	Pin to Ground
	Mated
Minimum	RF280-01RP/RF280-01BJ
Initial	45000
Thermal Shock	45000

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

Voltage Rating Summary	
Minimum	RF280/RF280
Test Voltage	500

Group 1 RF280-01SP-505050-0152/RF280-01BJ-505050-0152

Pin to Ground	
Initial Test Voltage	Pass
After Thermal ShockTest Voltage	Pass

Group 2 RF280-01RP-505050-0152/RF280-01BJ-505050-0152

Pin to Ground	
Initial Test Voltage	Pass
After Thermal ShockTest Voltage	Pass

DATA SUMMARIES Continued

Cable Pull Force:

0° Pull

Group 1 RF280-01SP-505050-0152

	Force (lbs)
Minimum	**171.25**
Maximum	172.57
Average	171.91

Group 2 RF280-01BJ-505050-0152

	Force (lbs)
Minimum	**169.24**
Maximum	182.02
Average	175.63

Group 4 RF280-01RP-505050-0152

	Force (lbs)
Minimum	**154.44**
Maximum	163.63
Average	159.04

DATA SUMMARIES Continued

LENGTH & MASS

IR/DWV Group

Group 1 RF280-01SP-505050-0152/RF280-01BJ-505050-0152

01SP	Length (mm)	Mass (g)
1	155.00	47.57
2	155.00	46.91
3	156.00	47.55
4	156.00	47.80

01BJ	Length (mm)	Mass (g)
1	155.00	41.79
2	156.00	41.80
3	155.00	41.70
4	155.00	41.81

Group 2 RF280-01RP-505050-0152/RF280-01BJ-505050-0152

01RP	Length (mm)	Mass (g)
1	156.00	41.89
2	155.00	41.82
3	156.00	42.10
4	156.00	42.00

01BJ	Length (mm)	Mass (g)
1	155.00	41.78
2	155.00	41.84
3	155.00	41.78
4	155.00	41.66

DATA SUMMARIES Continued

Cable Pull Group

Group 3 RF280-01SP-505050-0152/RF280-01BJ-505050-0152

Group 3		
01SP	Length (mm)	Mass (g)
1	155.00	47.62
2	155.00	47.68
3	155.00	47.63
4	155.00	47.46

Group 3		
01BJ	Length (mm)	Mass (g)
1	156.00	41.70
2	155.00	41.82
3	155.00	41.79
4	155.00	41.71

Group 5 RF280-01RP-505050-0152/RF280-01BJ-505050-0152

Group 5		
01RP	Length (mm)	Mass (g)
1	155.00	41.96
2	155.00	42.10
3	155.00	41.79
4	155.00	41.93

Group 5		
01BJ	Length (mm)	Mass (g)
1	156.00	41.57
2	156.00	41.78
3	155.00	41.72
4	155.00	41.82

DATA SUMMARIES Continued

INTERFACE GAGING

IR/DWV Group

Group 1 RF280-01SP-505050-0152/RF280-01BJ-505050-0152

Gaging (0.08 /0.23)(mm)			
01SP	Initial	Post Ther Shock	Delta
1	0.0860	0.0870	0.0010
2	0.0855	0.0890	0.0035
3	0.0861	0.0870	0.0009
4	0.0845	0.0821	0.0024

Gaging (0.13 /0.03)(mm)			
01BJ	Initial	Post Ther Shock	Delta
1	0.0324	0.0330	0.0006
2	0.0313	0.0360	0.0047
3	0.0335	0.0340	0.0005
4	0.0376	0.0320	0.0056

Group 2 RF280-01RP-505050-0152/RF280-01BJ-505050-0152

Gaging (0.08 /-0.00)(mm)			
01RP	Initial	Post Ther Shock	Delta
1	0.0224	0.0351	0.0127
2	0.0313	0.0340	0.0027
3	0.0435	0.0410	0.0025
4	0.0371	0.0470	0.0099

Gaging (0.13 /0.03)(mm)			
01BJ	Initial	Post Ther Shock	Delta
1	0.0411	0.0490	0.0079
2	0.0510	0.0520	0.0010
3	0.0421	0.0400	0.0021
4	0.0312	0.0320	0.0008

DATA SUMMARIES Continued

Cable Pull Group

Group 3 RF280-01SP-505050-0152/RF280-01BJ-505050-0152

Gaging (0.08 /0.23)(mm)			
01SP	Initial	Retention	Delta
1	0.0870	0.0861	0.0009
2	0.0902	0.0860	0.0042
3	0.0862	0.0820	0.0042
4	0.0980	0.0830	0.0150

Gaging (0.13 /0.03)(mm)			
01BJ	Initial	Retention	Delta
1	0.0340	0.0450	0.0110
2	0.0310	0.0330	0.0020
3	0.0380	0.0530	0.0150
4	0.0398	0.0440	0.0042

Group 5 RF280-01RP-505050-0152/RF280-01BJ-505050-0152

Gaging (0.08 /-0.00)(mm)			
01RP	Initial	Retention	Delta
1	0.0531	0.0340	0.0191
2	0.0465	0.0530	0.0065
3	0.0537	0.0450	0.0087
4	0.0430	0.0340	0.0090

Gaging (0.13 /0.03)(mm)			
01BJ	Initial	Retention	Delta
1	0.0356	0.0340	0.0016
2	0.0456	0.0500	0.0044
3	0.0426	0.0480	0.0054
4	0.0436	0.0540	0.0104

DATA SUMMARIES Continued

LLCR IR/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. <= +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

Group 1 RF280-01SP-505050-0152/RF280-01BJ-505050-0152

LLCR Measurement Summaries by Pin Type				
Date	7/22/2021	7/30/2021		
Room Temp (Deg C)	22	22		
Rel Humidity (%)	50	50		
Technician	Kason He	Kason He		
mOhm values	Actual **Initial**	**Delta Thermal Shock**		
Pin Type: Signal 1				
Average	2.59	0.17		
St. Dev.	0.14	0.18		
Min	2.40	0.01		
Max	2.72	0.39		
Summary Count	4	4		
Total Count	4	4		
Pin Type: GND 1				
Average	5.40	0.11		
St. Dev.	0.60	0.07		
Min	4.55	0.05		
Max	5.87	0.18		
Summary Count	4	4		
Total Count	4	4		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
After Thermal Shock	**8**	**0**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

Group 2 RF280-01RP-505050-0152/RF280-01BJ-505050-0152

	LLCR Measurement Summaries by Pin Type			
Date	7/22/2021	7/30/2021		
Room Temp (Deg C)	22	22		
Rel Humidity (%)	50	50		
Technician	Kason He	Kason He		
mOhm values	Actual **Initial**	**Delta Thermal Shock**		
	Pin Type: Signal 1			
Average	4.24	0.26		
St. Dev.	0.21	0.45		
Min	3.95	0.00		
Max	4.39	0.93		
Summary Count	4	4		
Total Count	4	4		
	Pin Type: GND 1			
Average	5.57	0.19		
St. Dev.	0.31	0.09		
Min	5.24	0.08		
Max	5.97	0.27		
Summary Count	4	4		
Total Count	4	4		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
After Thermal Shock	**8**	**0**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

LLCR Cable Pull:

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. <= +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

Group 3 RF280-01SP-505050-0152/RF280-01BJ-505050-0152

LLCR Measurement Summaries by Pin Type				
Date	8/4/2021/2021	8/4/2021		
Room Temp (Deg C)	22	22		
Rel Humidity (%)	50	50		
Technician	Kason He	Kason He		
mOhm values	Actual **Initial**	**Delta 20 lbf Retention**		
Pin Type: Signal 1				
Average	2.76	0.11		
St. Dev.	0.11	0.08		
Min	2.65	0.00		
Max	2.90	0.17		
Summary Count	4	4		
Total Count	4	4		
Pin Type: GND 1				
Average	5.58	0.14		
St. Dev.	0.12	0.04		
Min	5.50	0.10		
Max	5.75	0.19		
Summary Count	4	4		
Total Count	4	4		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
After 20 lbf Retention	**8**	**0**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

Group 5 RF280-01RP-505050-0152/RF280-01BJ-505050-0152

LLCR Measurement Summaries by Pin Type				
Date	8/4/2021	8/4/2021		
Room Temp (Deg C)	22	22		
Rel Humidity (%)	50	50		
Technician	Kason He	Kason He		
mOhm values	Actual **Initial**	**Delta 20 lbf Retention**		
Pin Type: Signal 1				
Average	4.39	0.07		
St. Dev.	0.06	0.05		
Min	4.34	0.02		
Max	4.47	0.13		
Summary Count	4	4		
Total Count	4	4		
Pin Type: GND 1				
Average	5.67	0.24		
St. Dev.	0.37	0.25		
Min	5.37	0.06		
Max	6.12	0.60		
Summary Count	4	4		
Total Count	4	4		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
After 20 lbf Retention	**8**	**0**	**0**	**0**	**0**	**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: 3/4/2021, Next Cal: 3/3/2022

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: 04/15/2021, Next Cal: 04/14/2022

Equipment #: DG-HPT-01
Description: Hipot Safety Tester
Manufacturer: Vitrek
Model: V73
Serial #: 025866
Accuracy:
… Last Cal: 04/15/2021, Next Cal: 04/14/2022

Equipment #: HZ-MO-05
Description: Micro-ohmmeter
Manufacturer: Keithley
Model: 3706
Serial #: 1285188
Accuracy: Last Cal: 12/17/2020, Next Cal: 12/16/2021