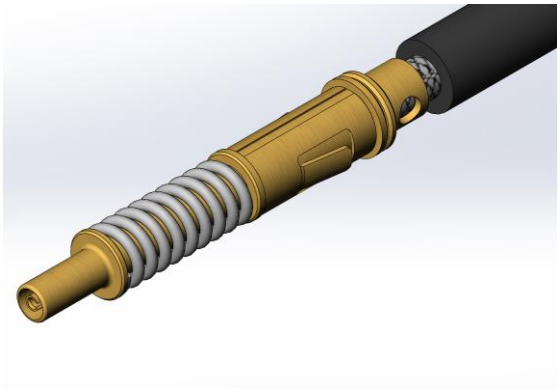
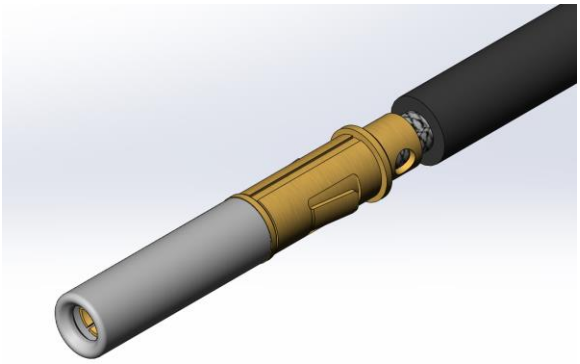
Project Number: Design Qualification Test Report	Tracking Code: CR-1398501_Report_Rev_1
Requested by: Kevin Chiang	Date: 4/1/2026
Part #: RF047-A-20VP-505050-0152/RF047-A-20VS-505050-0152	
Part description: RF047/RF047	Tech: Keney Chen
Test Start: 1/20/2026	Test Completed: 1/30/2026





DESIGN QUALIFICATION TEST REPORT

RF047/RF047

RF047-A-20VP-505050-0152/RF047-A-20VS-505050-0152

REVISION HISTORY

DATA	REV.NUM.	DESCRIPTION	ENG
2/3/2026	**1**	**Initial Issue**	**KC**

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.

All contents contained herein are the property of Samtec. No portion of this report, in part or in full shall be reproduced without prior written approval of Samtec.

SCOPE

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

APPLICABLE DOCUMENTS

Standards: 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

Cable Pull

Group 1
RF047-A-20VP-505050-0152

5 Assemblies
0 Degrees

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

Group 2
RF047-A-20VS-505050-0152

5 Assemblies
0 Degrees

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

Group 3
RF047-A-20VP-505050-0152

5 Assemblies
0 Degrees

Step	Description
1.	Length & Mass
2.	Interface Gaging
3.	LLCR (3) - Non Standard *Note: Signal and ground.*
4.	Thermal Shock (4) - Non Standard
5.	LLCR (3) - Non Standard Max Delta = 15 mOhm *Note: Signal and ground.*
6.	Cable Retention (1) - Non Standard *Note: Apply 5 pounds (2.3 kg) for Cable Retention test.*
7.	LLCR (3) - Non Standard Max Delta = 15 mOhm *Note: Signal and ground.*
8.	Interface Gaging

Group 4
RF047-A-20VS-505050-0152

5 Assemblies
0 Degrees

Step	Description
1.	Length & Mass
2.	Interface Gaging
3.	LLCR (3) - Non Standard *Note: Signal and ground.*
4.	Thermal Shock (4) - Non Standard
5.	LLCR (3) - Non Standard Max Delta = 15 mOhm *Note: Signal and ground.*
6.	Cable Retention (1) - Non Standard *Note: Apply 5 pounds (2.3 kg) for Cable Retention test.*
7.	LLCR (3) - Non Standard Max Delta = 15 mOhm *Note: Signal and ground.*
8.	Interface Gaging

(1) Cable Retention = Other
Apply 5 pounds (2.3 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.

(4) Thermal Shock = Other
Exposure Time at Temperature Extremes = 1/2 Hour
Method A, Test Condition = III (-55°C to +125°C) EXCEPT: -55°C LOW.
Test Duration = A-3 (100 Cycles)

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°C to +125°C
3) Test Time: ½ hour dwell at each temperature extreme
4) All test samples are pre-conditioned at ambient.
5) 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 5 pounds (2.3 kg) for cable retention test.
2) Pull to destruct.
3) MIL-PRF-30192, paragraph. 4.6.21.

RESULTS

Cable Pull force

- **0° Pull**

Group 1 RF047-A-20VP-505050-0152

- **Min ----------15.51 lbs**
- **Max ----------16.84 lbs**

Group 2 RF047-A-20VS-505050-0152

- **Min ----------15.14 lbs**
- **Max ----------16.74 lbs**

Interface Gaging

RF047-20VP

Initial

- **Min ---------- 0.0025 Inch**
- **Max ---------- 0.0030 Inch**

After Retention

- **Min ---------- 0.0025 Inch**
- **Max ---------- 0.0040 Inch**

RF047-20VS

Initial

- **Min ---------- 0.0505 Inch**
- **Max ---------- 0.0510 Inch**

After Retention

- **Min ---------- 0.0505 Inch**
- **Max ---------- 0.0510 Inch**

LLCR Cable Pull (5 ground and 5 signal LLCR test points)

Signal pin

- **Initial ----------100.26 mOhms Max**

Ground pin

- **Initial ---------- 26.47 mOhms Max**
- **After Thermal Shock**
  - **<= +5.0 mOhms----------9 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**
- **After 5lb Retention**
  - **<= +5.0 mOhms----------9 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**

DATA SUMMARIES

Cable Pull Force:

0° Pull

Group 1 RF047-A-20VP-505050-0152

	Force (lbs)
Minimum	**15.51**
Maximum	16.84
Average	16.20

Group 2 RF047-A-20VS-505050-0152

	Force (lbs)
Minimum	**15.14**
Maximum	16.74
Average	15.73

INTERFACE GAGING

Cable Pull Group

Gaging			
20VP	**Initial**	**Retention**	**Delta**
1	0.0025	0.0035	0.0010
2	0.0025	0.0030	0.0005
3	0.0030	0.0025	0.0005
4	0.0025	0.0040	0.0015
5	0.0025	0.0025	0.0000

Gaging			
20VS	**Initial**	**Retention**	**Delta**
1	0.0505	0.0505	0.0000
2	0.0510	0.0510	0.0000
3	0.0505	0.0510	0.0005
4	0.0505	0.0510	0.0005
5	0.0510	0.0505	0.0005

DATA SUMMARIES Continued

LLCR Cable Pull:

1) A total of 5 signal and 5 ground points were measured.
2) MIL-PRF-39012, Paragraph 4.6.13, *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	1/20/2026	1/28/2026	1/29/2026	
Room Temp (Deg C)	20	20	20	
Rel Humidity (%)	50	50	50	
Technician	Keney Chen	Keney Chen	Keney Chen	
mOhm values	**Actual** **Initial**	**Delta** **after Thermal Shock**	**Delta** **after 5lb Retention**	
	Pin Type: Signal 1			
Average	97.11	2.47	2.68	
St. Dev.	2.04	1.77	2.21	
Min	95.23	1.1	0.71	
Max	100.26	5.42	6	
Summary Count	5	5	5	
Total Count	5	5	5	
	Pin Type: GND 1			
Average	25.44	3.49	3.75	
St. Dev.	0.62	0.66	0.58	
Min	24.96	3.01	3.14	
Max	26.47	4.62	4.55	
Summary Count	5	5	5	
Total Count	5	5	5	

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	**9**	**1**	**0**	**0**	**0**	**0**
after 5lb Retention	**9**	**1**	**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: 3/4/2025, Next Cal: 3/3/2026

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: 04/16/2025, Next Cal: 04/15/2026

Equipment #: DG-HPT-01
Description: Hipot Safety Tester
Manufacturer: Vitrek
Model: V73
Serial #: 025866
Accuracy:
… Last Cal: 04/16/2025, Next Cal: 04/15/2026

Equipment #: HZ-MO-05
Description: Micro-ohmmeter
Manufacturer: Keithley
Model: 3706
Serial #: 1285188
Accuracy: Last Cal: 12/17/2025, Next Cal: 12/16/2026