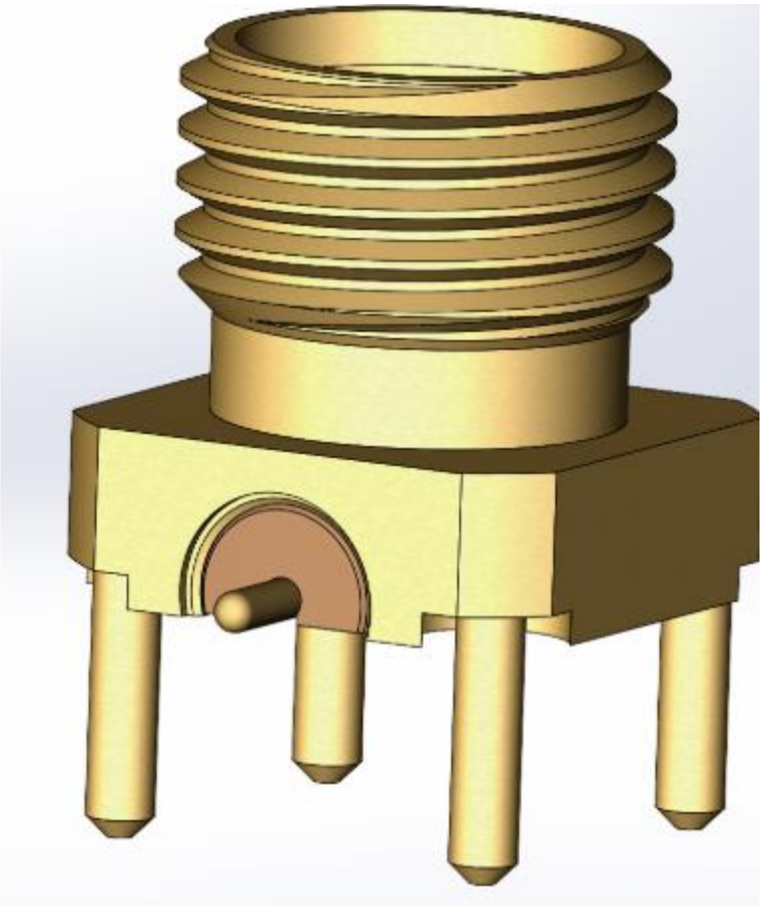
Project Number: Design Qualification Test Report	Tracking Code: CR-1230506_Report_Rev_1
Requested by: Joe Huang	Date: 2/14/2025
Part #: SMPMT-PF-P-EG-ST-MT-1	
Part description: SMPM Threaded Plugs Mixed Technology	Tech: Keney Chen
Test Start: 12/11/2024	Test Completed: 12/12/2024



DESIGN QUALIFICATION TEST REPORT

SMPM Threaded Plugs Mixed Technology
SMPMT-PF-P-EG-ST-MT-1

REVISION HISTORY

DATA	REV.NUM.	DESCRIPTION	ENG
2/14/2025	**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.

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SCOPE

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

APPLICABLE DOCUMENTS

Standards: EIA-364 and 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
SMPMT-PF-P-EG-ST-MT-1
RF086-MTSJ-505050-0305
5 Assemblies

Step	Description
1.	IR (2) - Non Standard
2.	DWV at Test Voltage (1) - Non Standard Test Voltage = 500 V
3.	LLCR (3)
4.	Thermal Shock (4) - Non Standard
5.	IR (2) - Non Standard
6.	DWV at Test Voltage (1) - Non Standard Test Voltage = 500 V
7.	LLCR (3) Max Delta = 15 mOhm

(1) DWV at Test Voltage = Other
325 V rms min. at sea level
per DSCC 10020

(2) IR = Other
MIL-PRF-39012
5,000 megohms minimum per DSCC 10020

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

(4) Thermal Shock = Other
MIL-STD-202-107, Test condition B
-65 to 125°C (except high temperature to be +165°C or maximum high) per DSCC 10020

ATTRIBUTE DEFINITIONS

The following is a brief, simplified description of attributes.

THERMAL SHOCK:

1) MIL-STD-202-107, Test Condition B, *Thermal Shock (Temperature Cycling) Test Procedure for Electrical Connectors.*
2) Test Condition 1: -65°C to +165°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.

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, 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: At sea level per DSCC 10020.
    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

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

Pin to Ground

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

LLCR IR/DWV (5 ground and 5 signal LLCR test points)

Ground pin

- **Initial ---8.52 mOhms Max**
- **Thermal Shock**
    - **<= +5.0 mOhms---5 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 -- 31.25 mOhms Max**
- **Thermal Shock**
    - **<= +5.0 mOhms---5 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):

	Pin to Ground
	Mated
Minimum	**RF086-SMPMT**
Initial	45000
Thermal Shock	45000

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

Voltage Rating Summary	
Minimum	**RF086-SMPMT**
Test Voltage	500

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

DATA SUMMARIES Continued

LLCR IR/DWV:

1) A total of 5 signal and 5 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

	LLCR Measurement Summaries by Pin Type			
Date	12/11/2024	12/12/2024		
Room Temp (Deg C)	22	22		
Rel Humidity (%)	50	50		
Technician	Keney Chen	Keney Chen		
mOhm values	Actual **Initial**	**Delta** **Thermal Shock**		
	Pin Type: Signal 1			
Average	30.45	0.64		
St. Dev.	0.9669	0.5299		
Min	29.02	0		
Max	31.25	1.39		
Summary Count	5	5		
Total Count	5	5		
	Pin Type: GND 1			
Average	8.462	0.528		
St. Dev.	0.0719	0.1203		
Min	8.35	0.42		
Max	8.52	0.73		
Summary Count	5	5		
Total Count	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	**10**	**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: 3/4/2024, Next Cal: 3/3/2025

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: 04/16/2024, Next Cal: 04/15/2025

Equipment #: DG-HPT-01
Description: Hipot Safety Tester
Manufacturer: Vitrek
Model: V73
Serial #: 025866
Accuracy:
… Last Cal: 04/16/2024, Next Cal: 04/15/2025

Equipment #: HZ-MO-05
Description: Micro-ohmmeter
Manufacturer: Keithley
Model: 3706
Serial #: 1285188
Accuracy: Last Cal: 12/17/2024, Next Cal: 12/16/2025