



VALIDATION TEST REPORT

5GL ANTENNA

	Name	Date
Prepared by	YJ Teoh	17-Jul-2024
Checked by	Harry Liu	17-Jul-2024
Approved by	WT Ng	17-Jul-2024

1. INTRODUCTION

1.1 Purpose

Testing was performed on 5GL Antenna to determine its conformance to the requirements as per Test program 108-161432

1.2 Scope

This report covers the results of electrical and mechanical performance tests of 5GL Antenna. Testing was performed between 18-Jun-2024 and 08-Jul-24.

1.3 Reference Documents

- 109-19030
- 108-161432

1.4 Test Specimens

The test specimens were representative of normal production lots, and the following part numbers were used for test.

Table 1: Test Specimens

Description	Part Number
ANTENNA INTERNAL PW-LPN TYPE #6 SCREW	L000575-01
ANTENNA, 5GL CW-HW TYPE WHIP -SMA	L000576-01
ANTENNA, 5GL PW, LP	L000939-01

1.5 Qualification Test Sequence

Table 2: Qualification Test Sequence

TEST OR EXAMINATION	TEST GROUP (a)					
	1	2	3	4	5	6
	TEST SEQUENCE (b)					
Initial examination of product	1	1	1	1	1	1
V.S.W.R	2	2,5	2,5	2,5	2,5	2,5
Efficiency	3	3,6	3,6	3,6	3,6	3,6
Damp Heat cyclic		4				
Rapid change of temperature			4			
Heat age test				4		
Cold storage					4	
Corrosion, Salt Mist						4
Final examination of product	4	7	7	7	7	7

1.6 Requirements and Test Procedure

Para.	TEST DESCRIPTION	REQUIREMENT	PROCEDURE
3.5.1.	Initial examination of product	Meets requirements of product drawing.	Visual, dimensional and functional per applicable inspection plan. In acc. With IEC60512-1-1 Magnification 100x

3.5.2	Final examination of product	Meets visual requirements.	Visual, dimensional and functional per applicable inspection.
-------	------------------------------	----------------------------	---

ELECTRICAL

3.5.3.	VSWR	Low and high band-edge frequency (It depends on the RF test jig condition) should be in range of product drawing specification.	Measured VSWR with dedicated network analyzer. In acc. With TE Connectivity Test Specification 109-19030 See Fig. 1&2
--------	------	---	---

MECHANICAL

3.5.5.	Examination of product	Meets requirements of product drawings admit of appearances and their section to be not occurred the antennas performance damages as a special case	No physical damage to cause antenna performance degradation.
--------	------------------------	---	--

ENVIRONMENTAL

3.5.6.	Damp Heat cyclic	No physical damage allowed. (Meet 3.5.2) Meet VSWR (item 3.5.3) Meet Efficiency (item 3.5.4)	-20/65°C 12hrs / 12hrs cycles RH 95% -10 cycles In acc. With IEC60512-11-12
3.5.7.	Rapid change of temperature	No physical damage allowed. (Meet 3.5.2) Meet VSWR (item 3.5.3) Meet Efficiency (item 3.5.4)	-20/+65°C 30 min / 30 min, 10 cycles. In acc. with IEC 60512-11-4 and IEC 68-2-14.
3.5.8.	Heat age test	No physical damage allowed. (Meet 3.5.2) Meet VSWR (item 3.5.3) Meet Efficiency (item 3.5.4)	Temperature 65°C. Duration: 240 hours. In acc. with IEC 60512-11-10.
3.5.9.	Cold storage	No physical damage allowed. (Meet 3.5.2) Meet VSWR (item 3.5.3) Meet Efficiency (item 3.5.4)	Temperature: -20°C. Duration: 240 hours. In acc. with IEC 60512-11-6
3.5.10.	Corrosion, Salt Mist	No physical damage allowed. (Meet 3.5.2) Meet VSWR (item 3.5.3) Meet Efficiency (item 3.5.4)	+35°C, 5%NaCl, duration 48 hours.(Make sure proper rinsing occurs) In acc. with IEC 60512-11-6

Product Category: Antenna

Product Series Name: L000575-01

Product Model Part No.: C-1114

Quantity Tested: 1 pc

Date of Testing:

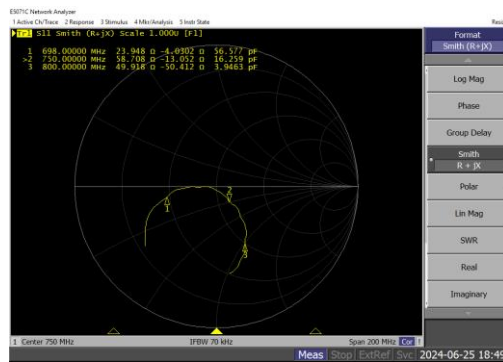
Test Required: 50 Ω

Test Result: PASS

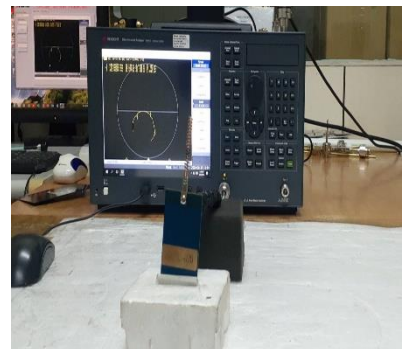
Test Product:



Test Picture:



Test Method:



Product Category: Antenna

Product Series Name: L000576-01

Product Model Part No.: C-1115

Quantity Tested: 1 pc

Date of Testing:

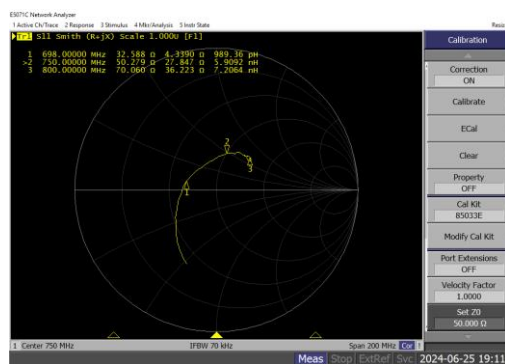
Test Required: 50 Ω

Test Result: PASS

Test Product:



Test Picture:



Test Method:



Test by: Linda

Product Category: Antenna

Product Series Name: L000939-01

Product Model Part No.: C-1114-1

Quantity Tested: 1 pc

Date of Testing:

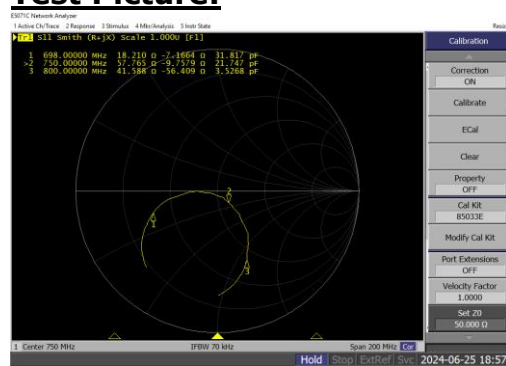
Test Required: 50 Ω

Test Result: PASS

Test Product:



Test Picture:



Test Method:



Test by: Linda

Product Category: Antenna

Product Series Name: L000575-01

Product Model Part No.: C-1114

Quantity Tested: 1 pc

Date of Testing: 6/26-7/6, 2024

Test Required: Damp Heat cycles

Test Result: PASS

Product Picture:



Test by: Linda



1. Test Method / Specification

Test standard: IEC 60512-11-12

Sample condition: Unpacked

Temperature: -20°C/65°C 12 hrs / 12 hrs cycles
RH 95% -10 cycles

Inspection items:

- Visual inspection before and after test

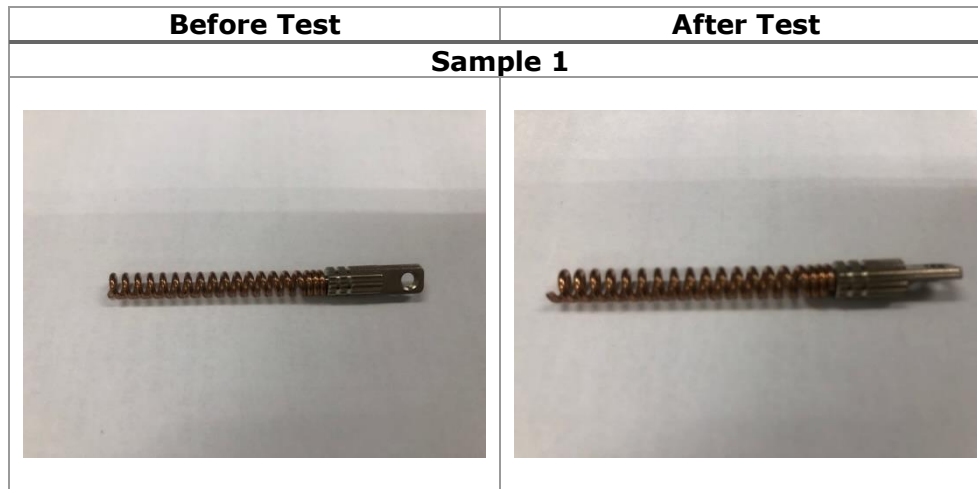
Test setup

2. Test Results

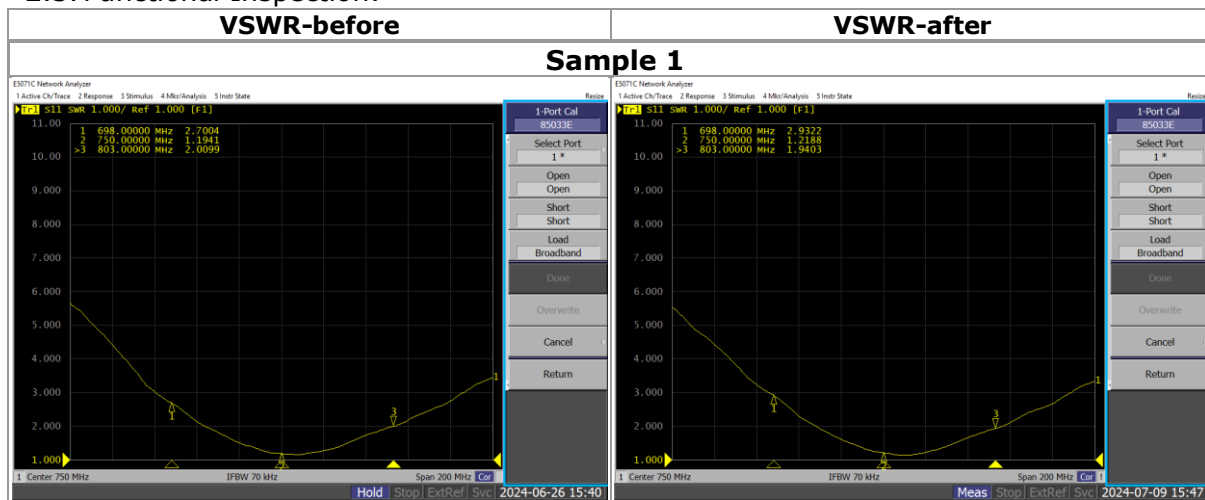
2.1. Visual Inspection

Item No.	Visual Inspection	PASS/FAIL
Sample 1	No rust or peeling off	PASS

2.2. Test Pictures



2.3. Functional Inspection:



3. Conclusion

The test result for C-1114 shows PASS.

Product Category: Antenna

Product Series Name: L000576-01

Product Model Part No.: C-1115

Quantity Tested: 1 pc

Date of Testing: 6/26-7/6, 2024

Test Required: Damp Heat cycles

Test Result: PASS

Product Picture:



Test by: Linda



1. Test Method / Specification

Test standard: IEC 60512-11-12

Sample condition: Unpacked

Temperature: -20°C/65°C 12 hrs / 12 hrs cycles
RH 95% -10 cycles

Inspection items:
- Visual inspection before and after test

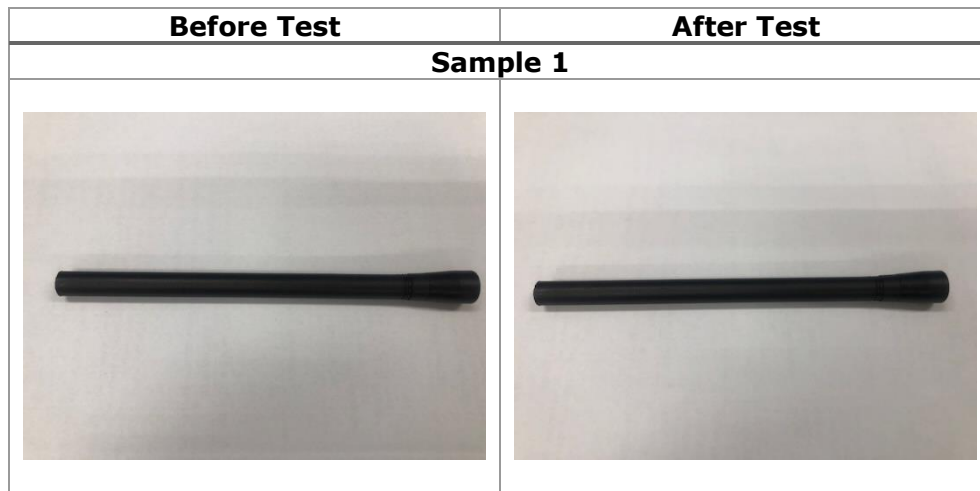
Test setup

2. Test Results

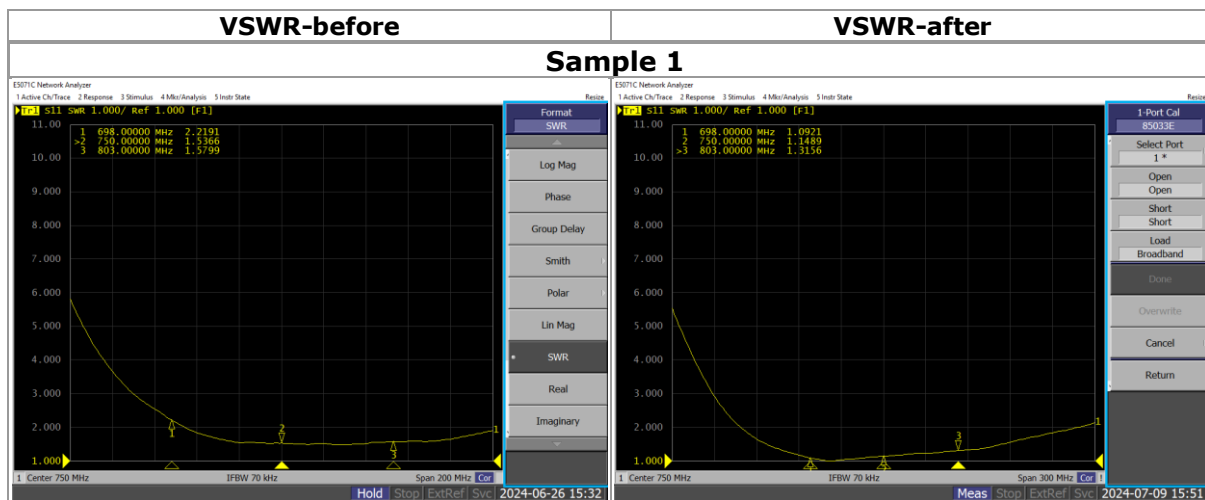
2.1. Visual Inspection

Item No.	Visual Inspection	PASS/FAIL
Sample 1	No rust or peeling off	PASS

2.2. Test Pictures



2.3. Functional Inspection:



3. Conclusion

The test result for C-1115 shows PASS.

Product Category: Antenna

Product Series Name: L000939-01

Product Model Part No.: C-1114-1

Quantity Tested: 1 pc

Date of Testing: 6/26-7/6, 2024

Test Required: Damp Heat cycles

Test Result: PASS

Product Picture:



Test by: Linda



1. Test Method / Specification

Test standard: IEC 60512-11-12

Sample condition: Unpacked

Temperature: -20°C/65°C 12 hrs / 12 hrs cycles
RH 95% -10 cycles

Inspection items:

- Visual inspection before and after test

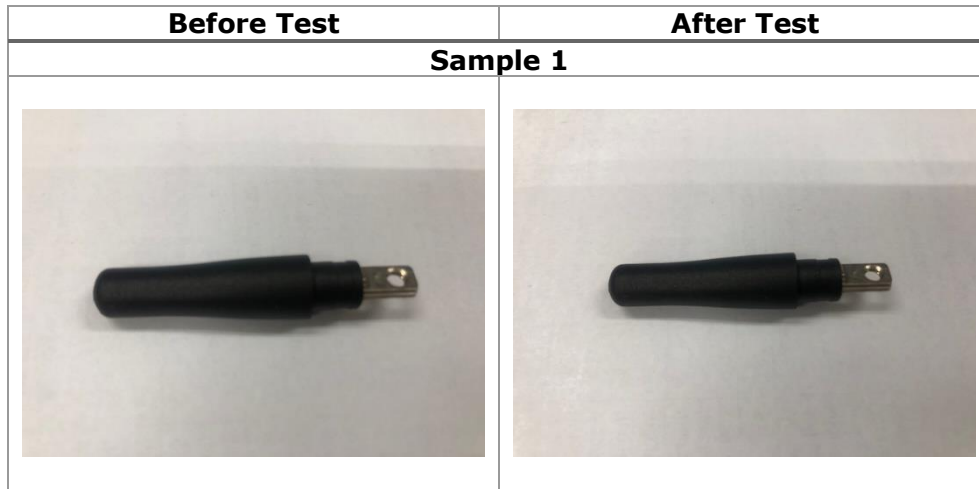
Test setup

2. Test Results

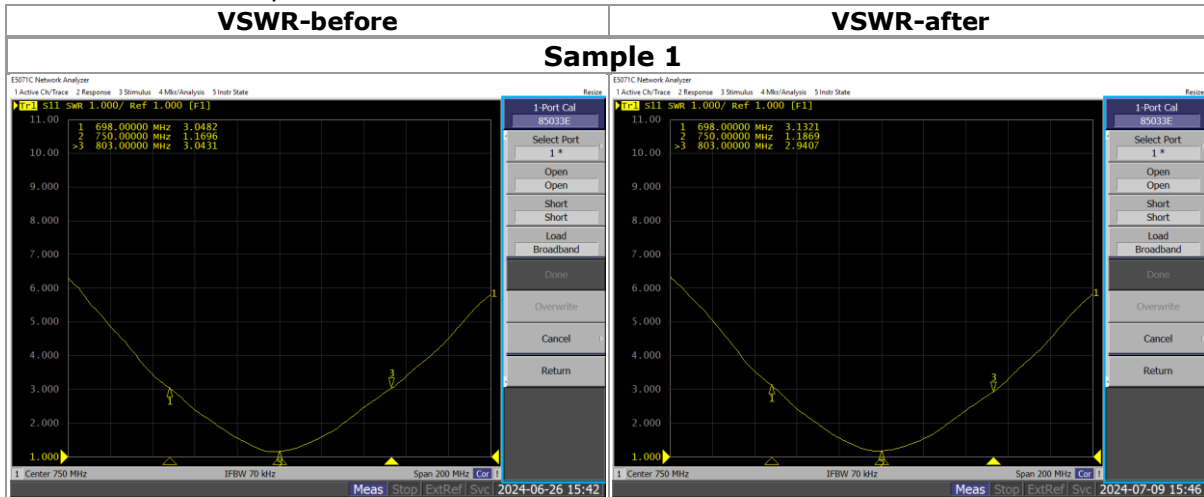
2.1. Visual Inspection

Item No.	Visual Inspection	PASS/FAIL
Sample 1	No rust or peeling off	PASS

2.2. Test Pictures



2.3. Functional Inspection:



3. Conclusion

The test result for C-1114-1 shows PASS.

Product Category: Antenna

Product Series Name: L000575-01

Product Model Part No.: C-1114

Quantity Tested: 1 pc

Date of Testing: 7/8-7/9, 2024

Test Required: Rapid change of temperature

Test Result: PASS

Product Picture:



Test by: Linda

1. Test Method / Specification

Test standard: IEC 60512-11-4 and IEC 68-2-14

Sample condition: Unpacked

Temperature: -20°C/+65°C 30 min / 30 min 10 cycles

Inspection items:

- Visual inspection before and after test

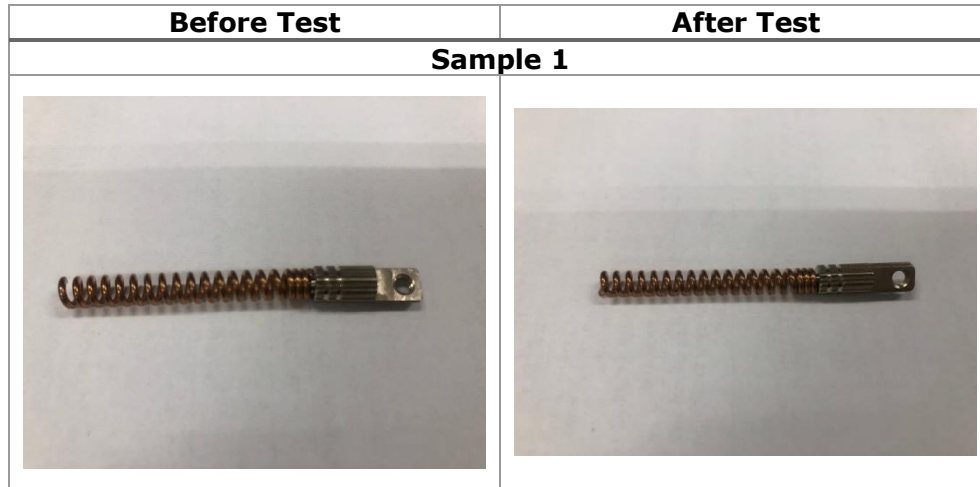
Test setup

2. Test Results

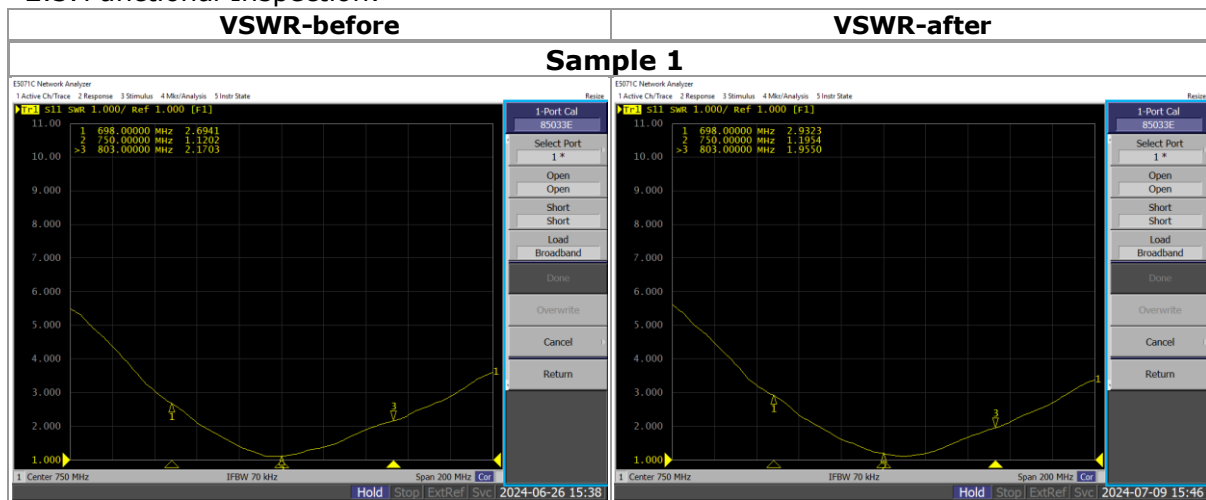
2.1. Visual Inspection

Item No.	Visual Inspection	PASS/FAIL
Sample 1	No rust or peeling off	PASS

2.2. Test Pictures



2.3. Functional Inspection:



3. Conclusion

The test result for C-1114 shows PASS.

Product Category: Antenna

Product Series Name: L000576-01

Product Model Part No.: C-1115

Quantity Tested: 1 pc

Date of Testing: 7/8-7/9, 2024

Test Required: Rapid change of temperature

Test Result: PASS

Product Picture:



Test by: Linda



1. Test Method / Specification

Test standard: IEC 60512-11-4 and IEC 68-2-14

Sample condition: Unpacked

Temperature: -20°C/+65°C 30 min / 30 min 10 cycles

Inspection items:
- Visual inspection before and after test

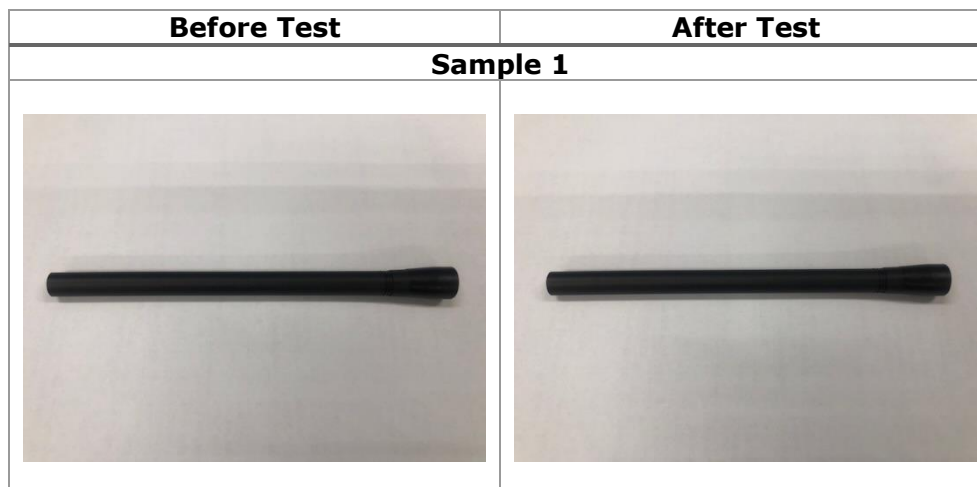
Test setup

2. Test Results

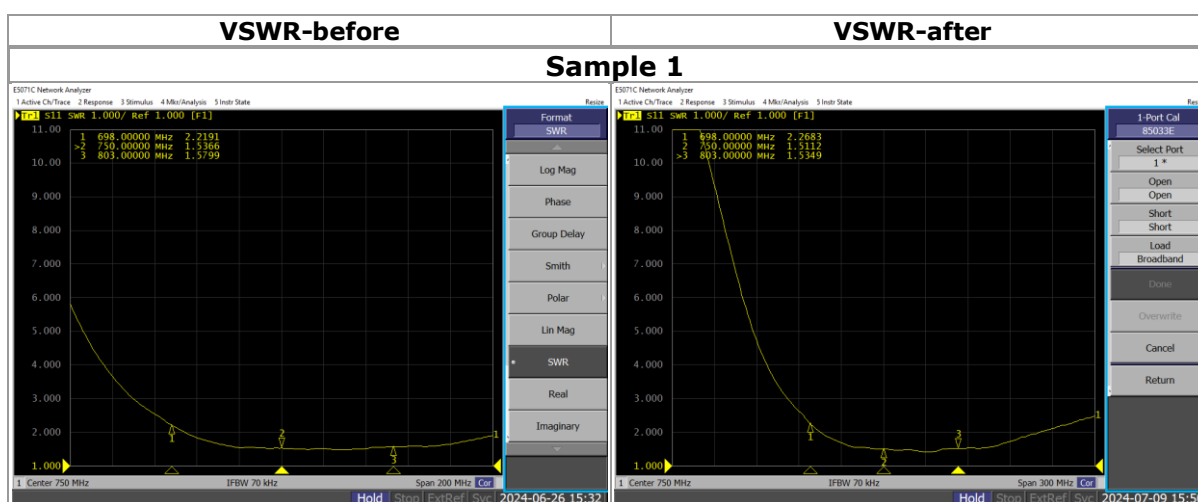
2.1. Visual Inspection

Item No.	Visual Inspection	PASS/FAIL
Sample 1	No rust or peeling off	PASS

2.2. Test Pictures



2.3. Functional Inspection:



3. Conclusion

The test result for C-1115 shows PASS.

Product Category: Antenna

Product Series Name: L000939-01

Product Model Part No.: C-1114-1

Quantity Tested: 1 pc

Date of Testing: 7/8-7/9, 2024

Test Required: Rapid change of temperature

Test Result: PASS

Product Picture:



Test by: Linda

1. Test Method / Specification

Test standard: IEC 60512-11-4 and IEC 68-2-14

Sample condition: Unpacked

Temperature: -20°C/+65°C 30 min / 30 min 10 cycles

Inspection items:
- Visual inspection before and after test

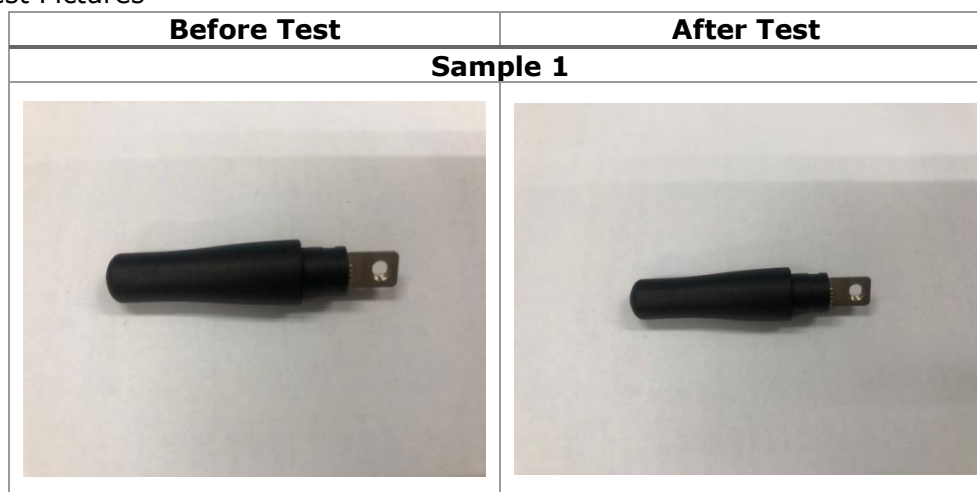
Test setup

2. Test Results

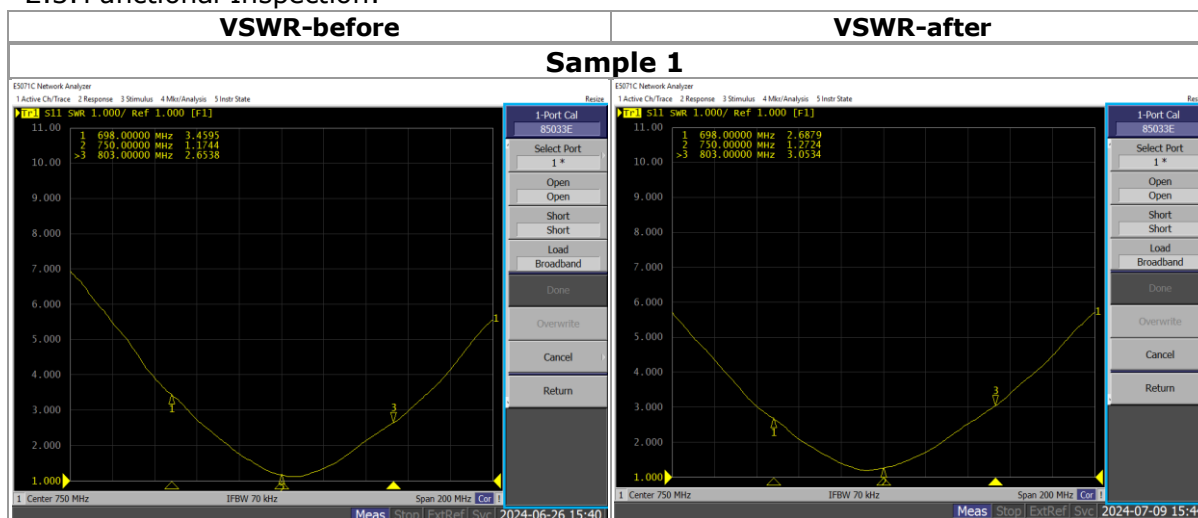
2.1. Visual Inspection

Item No.	Visual Inspection	PASS/FAIL
Sample 1	No rust or peeling off	PASS

2.2. Test Pictures



2.3. Functional Inspection:



3. Conclusion

The test result for C-1114-1 shows PASS.

Product Category: Antenna

Product Series Name: L000575-01

Product Model Part No.: C-1114

Quantity Tested: 1 pc

Date of Testing: 6/25-7/5, 2024

Test Required: Heat age test

Test Result: PASS

Product Picture:



Test by: Linda



1. Test Method / Specification

Test standard: IEC 60512-11-10

Sample condition: Unpacked

Temperature: 65°C

Duration: 240 hours

Inspection items:

- Visual inspection before and after test

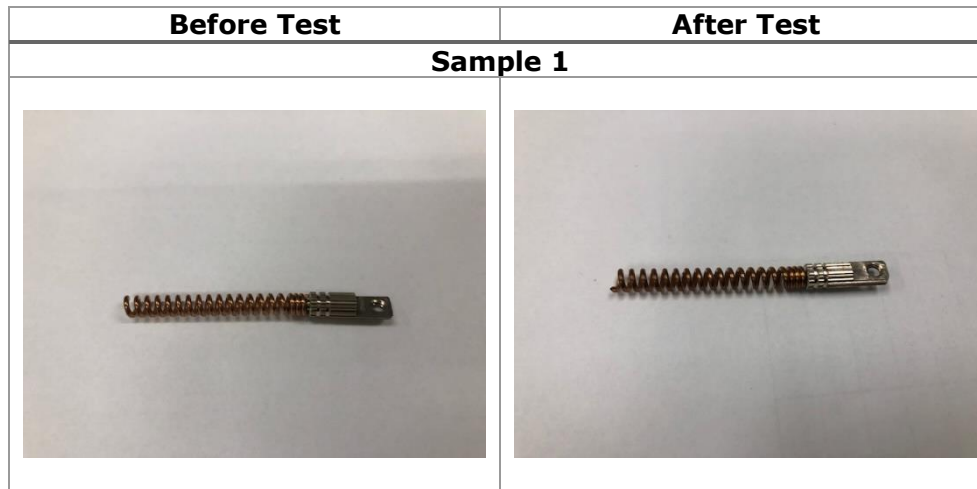
Test setup

2. Test Results

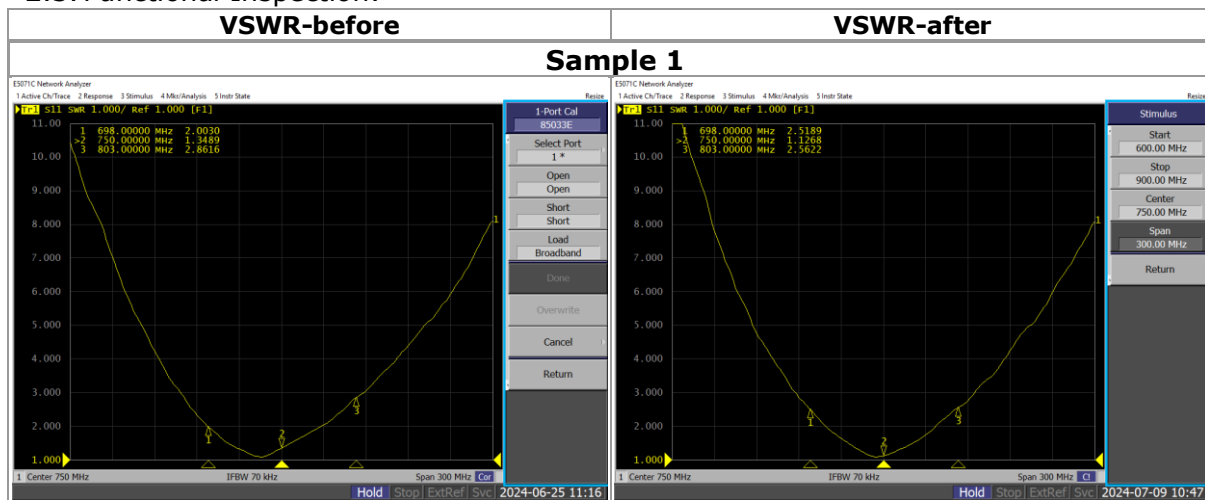
2.1. Visual Inspection

Item No.	Visual Inspection	PASS/FAIL
Sample 1	No rust or peeling off	PASS

2.2. Test Pictures



2.3. Functional Inspection:



3. Conclusion

The test result for C-1114 shows PASS.

Product Category: Antenna

Product Series Name: L000576-01

Product Model Part No.: C-1115

Quantity Tested: 1 pc

Date of Testing: 6/25-7/5, 2024

Test Required: Heat age test

Test Result: PASS

Product Picture:



Test by: Linda



1. Test Method / Specification

Test standard: IEC 60512-11-10

Sample condition: Unpacked

Temperature: 65°C

Duration: 240 hours

Inspection items:

- Visual inspection before and after test

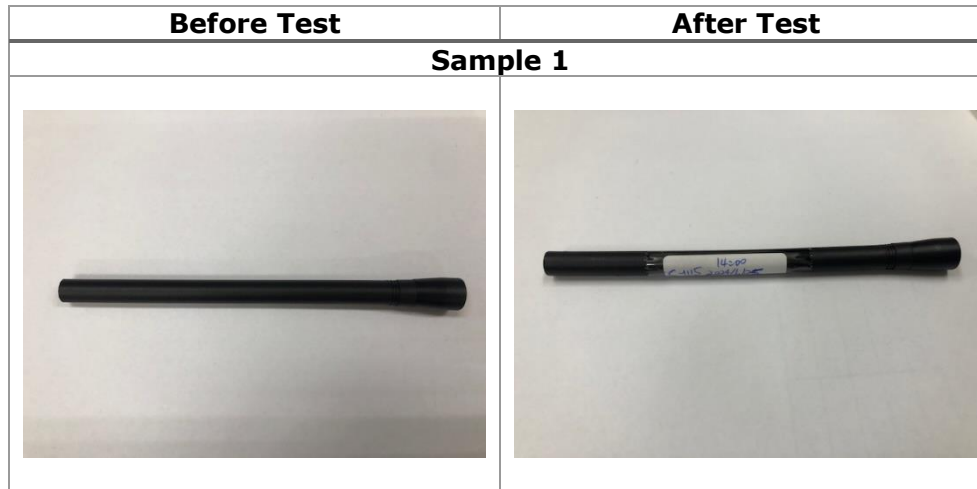
Test setup

2. Test Results

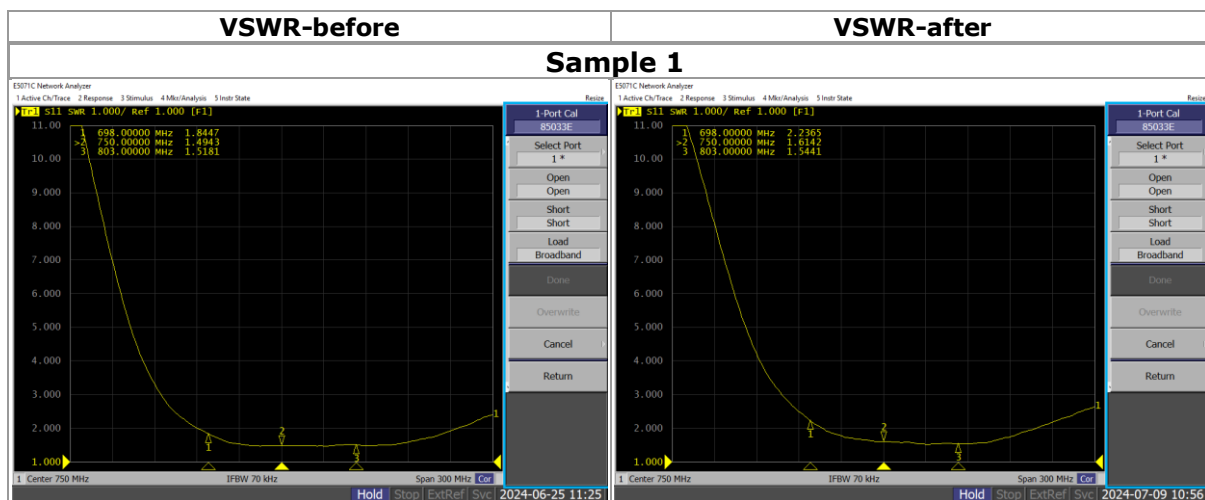
2.1. Visual Inspection

Item No.	Visual Inspection	PASS/FAIL
Sample 1	No rust or peeling off	PASS

2.2. Test Pictures



2.3. Functional Inspection:



3. Conclusion

The test result for C-1115 shows PASS.

Product Category: Antenna

Product Series Name: L000939-01

Product Model Part No.: C-1114-1

Quantity Tested: 1 pc

Date of Testing: 6/25-7/5, 2024

Test Required: Heat age test

Test Result: PASS

Product Picture:



Test by: Linda



1. Test Method / Specification

Test standard: IEC 60512-11-10

Sample condition: Unpacked

Temperature: 65°C

Duration: 240 hours

Inspection items:

- Visual inspection before and after test

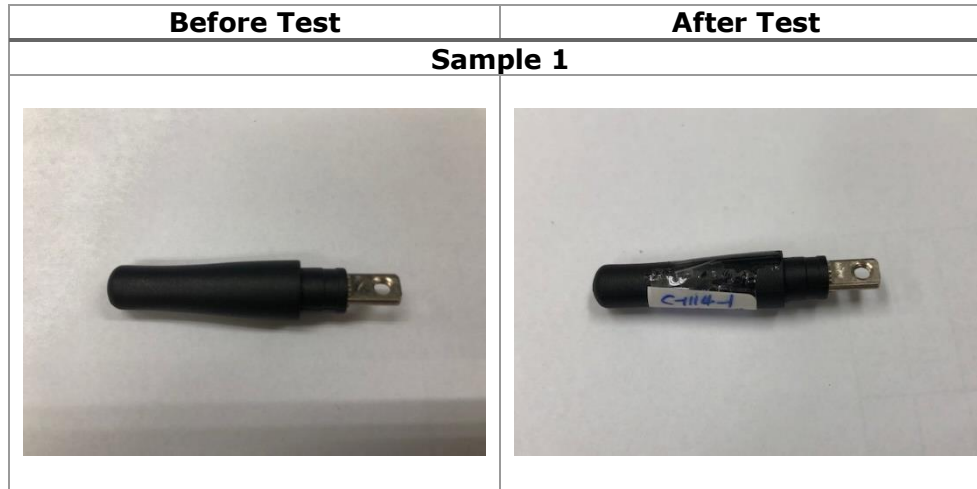
Test setup

2. Test Results

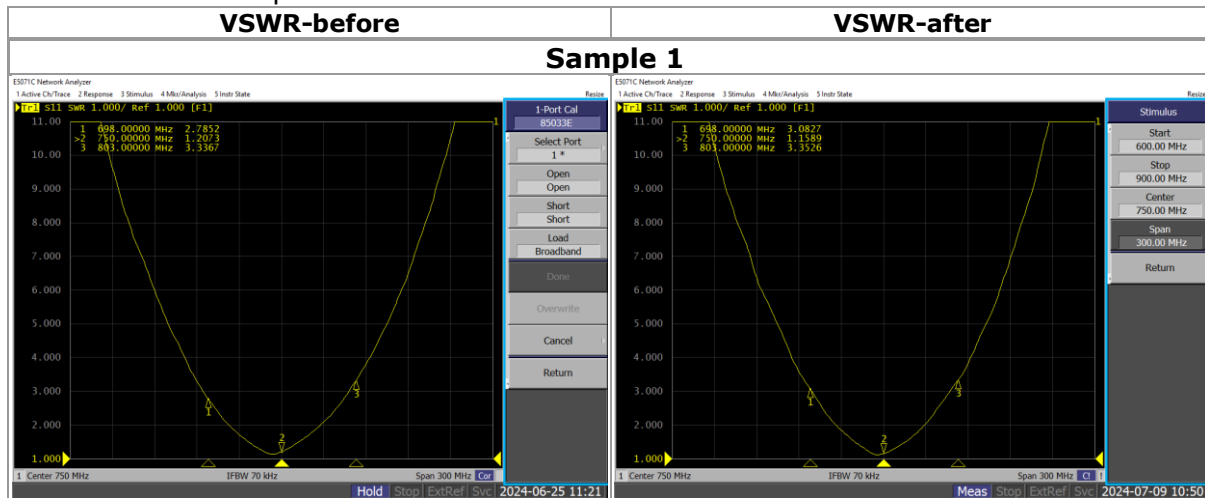
2.1. Visual Inspection

Item No.	Visual Inspection	PASS/FAIL
Sample 1	No rust or peeling off	PASS

2.2. Test Pictures



2.3. Functional Inspection:



3. Conclusion

The test result for C-1114-1 shows PASS.

Product Category: Antenna

Product Series Name: L000575-01

Product Model Part No.: C-1114

Quantity Tested: 1 pc

Date of Testing: 6/25-7/5, 2024

Test Required: Cold storage

Test Result: PASS

Product Picture:



Test by: Linda



1. Test Method / Specification

Test standard: IEC 60512-11-6

Sample condition: Unpacked

Temperature: -20°C

Duration: 240 hours

Inspection items:

- Visual inspection before and after test

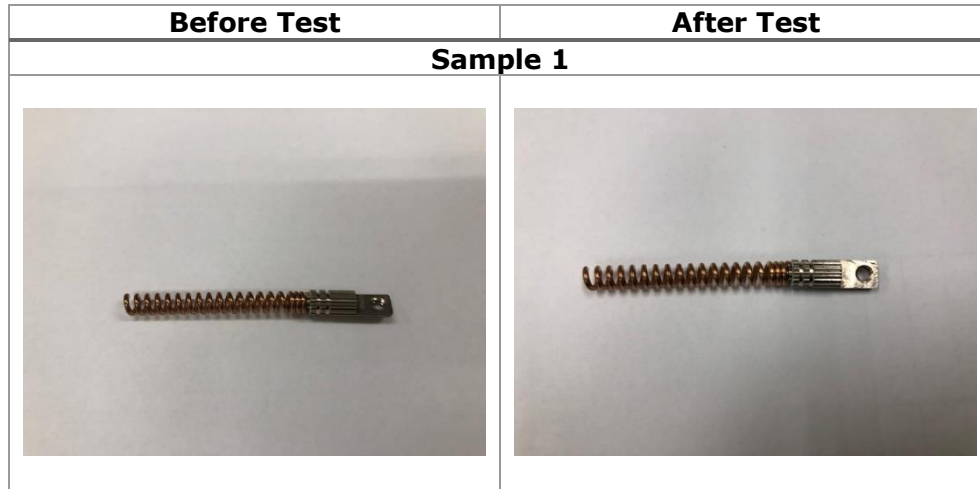
Test setup

2. Test Results

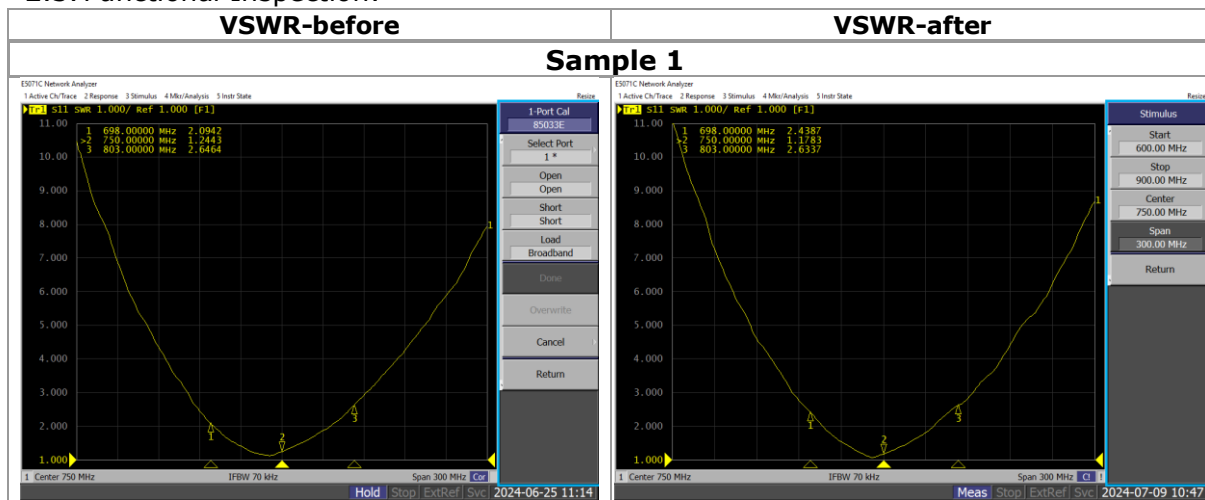
2.1. Visual Inspection

Item No.	Visual Inspection	PASS/FAIL
Sample 1	No rust or peeling off	PASS

2.2. Test Pictures



2.3. Functional Inspection:



3. Conclusion

The test result for C-1114 shows PASS.

Product Category: Antenna

Product Series Name: L000576-01

Product Model Part No.: C-1115

Quantity Tested: 1 pc

Date of Testing: 6/25-7/5, 2024

Test Required: Cold storage

Test Result: PASS

Product Picture:



Test by: Linda

1. Test Method / Specification

Test standard: IEC 60512-11-6

Sample condition: Unpacked

Temperature: -20°C

Duration: 240 hours

Inspection items:

- Visual inspection before and after test

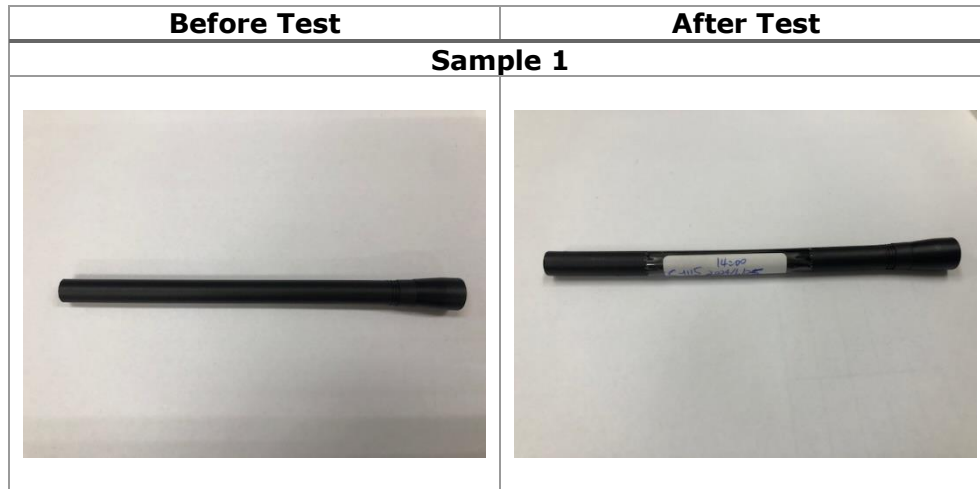
Test setup

2. Test Results

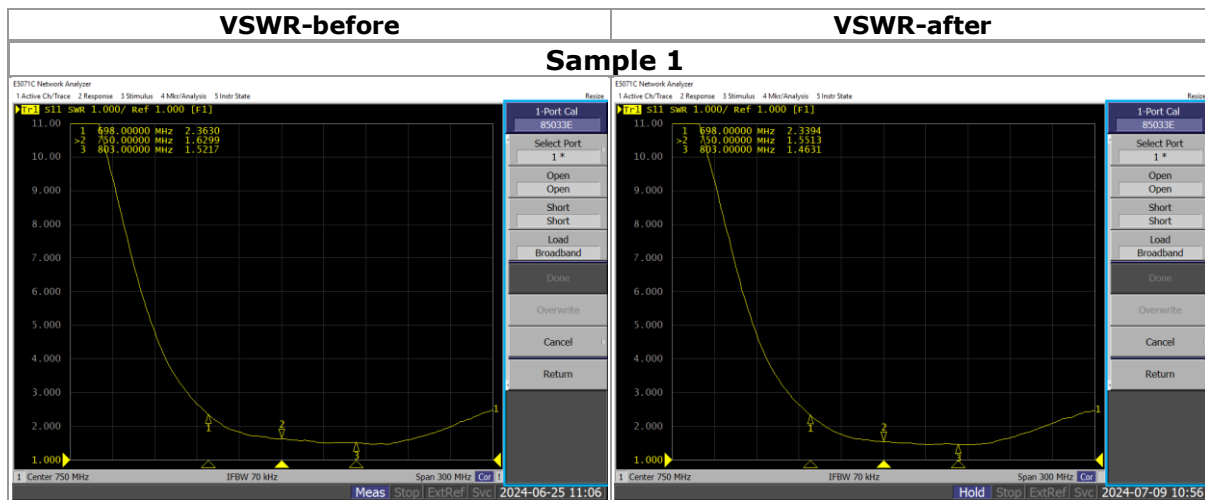
2.1. Visual Inspection

Item No.	Visual Inspection	PASS/FAIL
Sample 1	No rust or peeling off	PASS

2.2. Test Pictures



2.3. Functional Inspection:



3. Conclusion

The test result for C-1115 shows PASS.

Product Category: Antenna

Product Series Name: L000939-01

Product Model Part No.: C-1114-1

Quantity Tested: 1 pc

Date of Testing: 6/25-7/5, 2024

Test Required: Cold storage

Test Result: PASS

Product Picture:



Test by: Linda



1. Test Method / Specification

Test standard: IEC 60512-11-6

Sample condition: Unpacked

Temperature: -20°C

Duration: 240 hours

Inspection items:

- Visual inspection before and after test

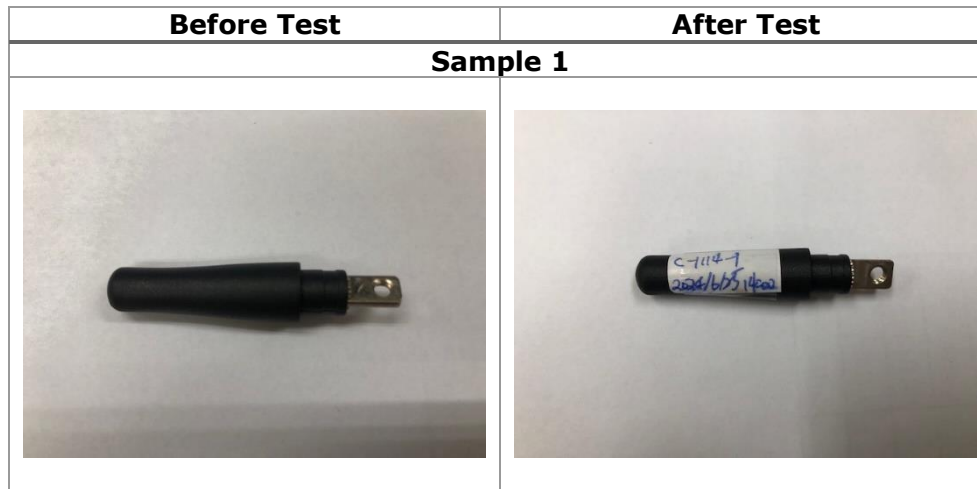
Test setup

2. Test Results

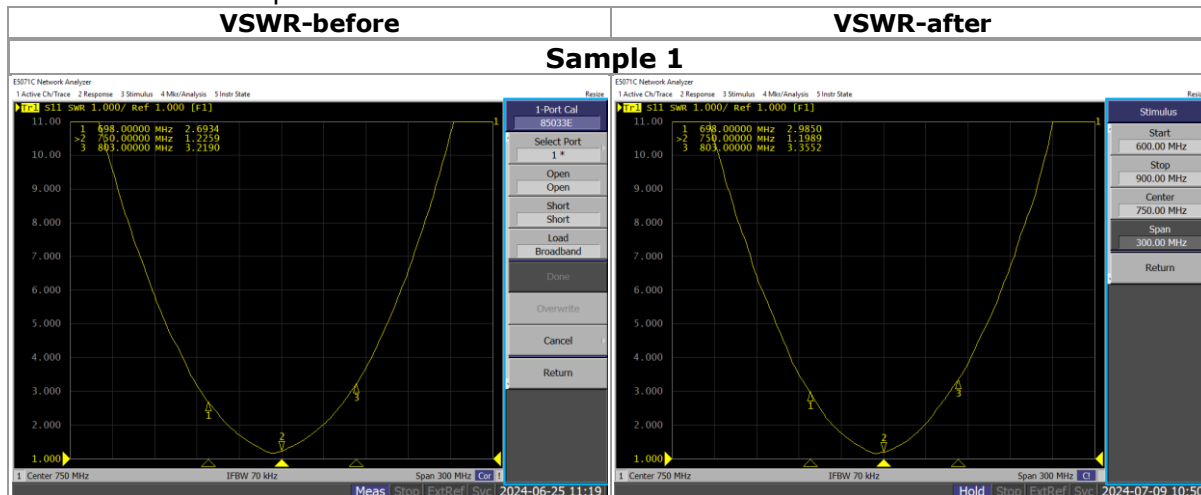
2.1. Visual Inspection

Item No.	Visual Inspection	PASS/FAIL
Sample 1	No rust or peeling off	PASS

2.2. Test Pictures



2.3. Functional Inspection:



3. Conclusion

The test result for C-1114-1 shows PASS.

Product Category: Antenna

Product Series Name: L000575-01

Product Model Part No.: C-1114

Quantity Tested: 1 pc

Date of Testing: 6/25-27, 2024

Test Required: Corrosion Salt Mist

Test Result: PASS

Product Picture:



Test by: Linda

1. Test Method / Specification

Test standard: IEC 60512-11-6

Sample condition: Unpacked

Temperature: 35°C

Salt Concentration: 5%

Duration: 48 hours

Inspection items:

- Visual inspection before and after test

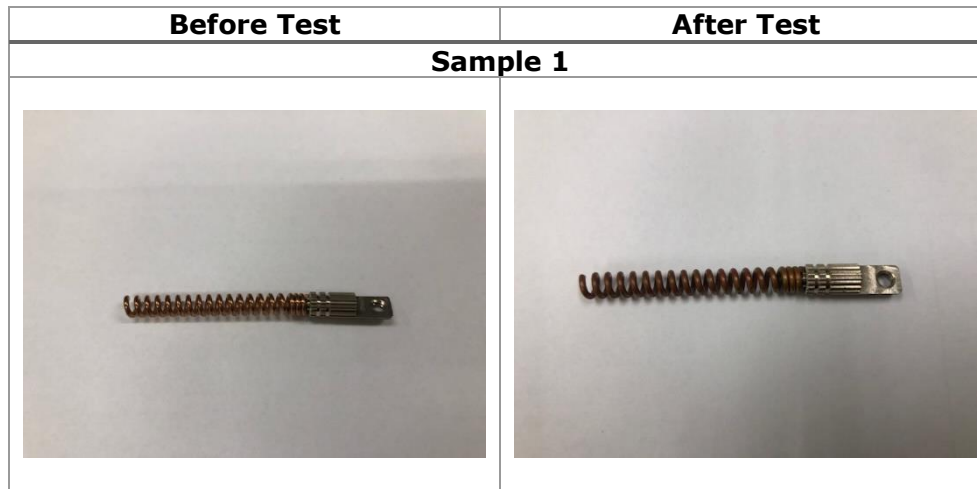
Test setup

2. Test Results

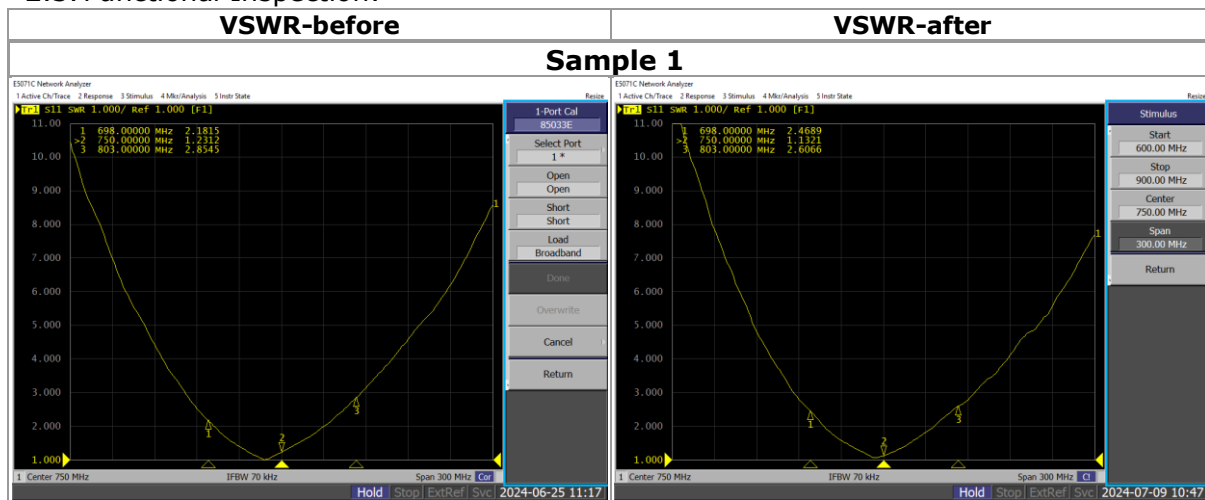
2.1. Visual Inspection

Item No.	Visual Inspection	PASS/FAIL
Sample 1	No rust or peeling off	PASS

2.2. Test Pictures



2.3. Functional Inspection:



3. Conclusion

The test result for C-1114 shows PASS.

Product Category: Antenna

Product Series Name: L000576-01

Product Model Part No.: C-1115

Quantity Tested: 1 pc

Date of Testing: 6/25-27, 2024

Test Required: Corrosion Salt Mist

Test Result: PASS

Product Picture:



Test by: Linda



1. Test Method / Specification

Test standard: IEC 60512-11-6

Sample condition: Unpacked

Temperature: 35°C

Salt Concentration: 5%

Duration: 48 hours

Inspection items:

- Visual inspection before and after test

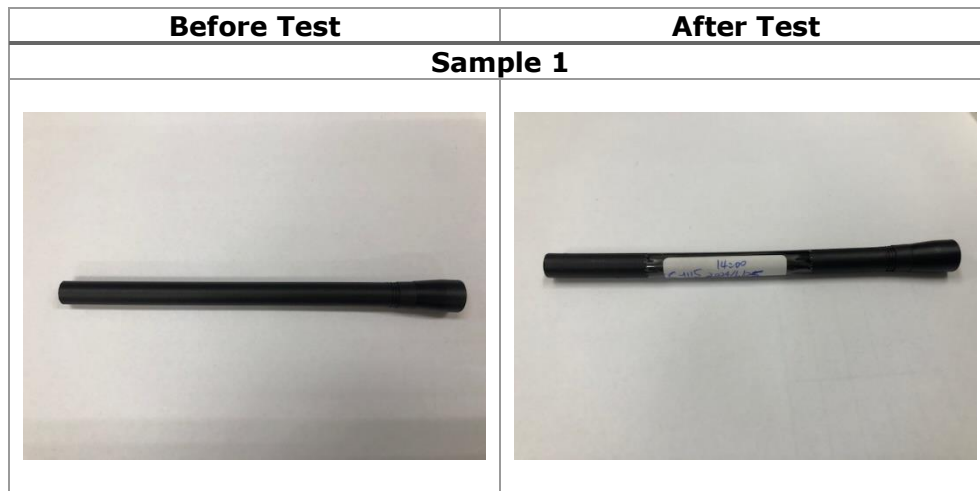
Test setup

2. Test Results

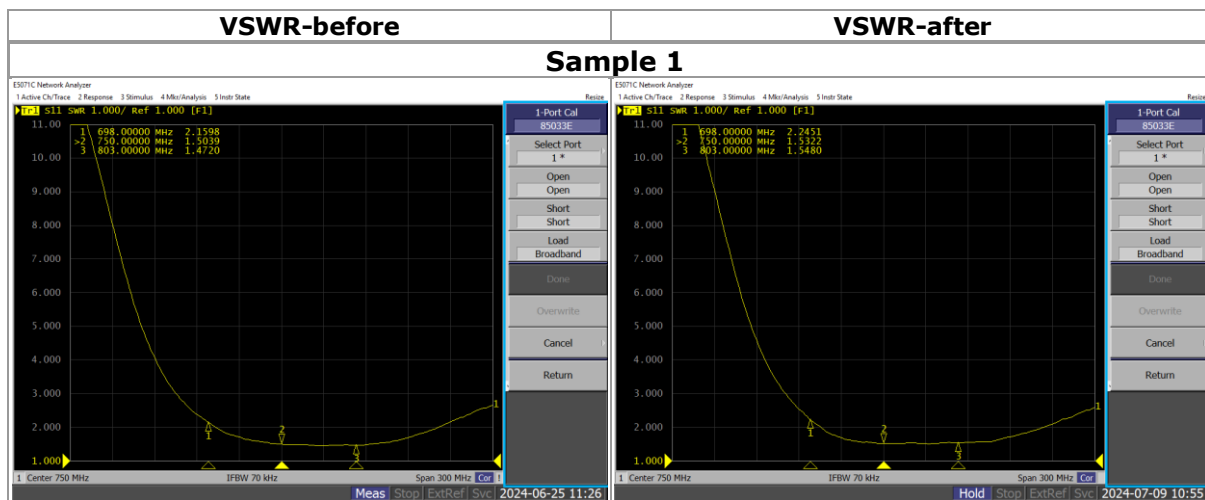
2.1. Visual Inspection

Item No.	Visual Inspection	PASS/FAIL
Sample 1	No rust or peeling off	PASS

2.2. Test Pictures



2.3. Functional Inspection:



3. Conclusion

The test result for C-1115 shows PASS.

Product Category: Antenna

Product Series Name: L000939-01

Product Model Part No.: C-1114-1

Quantity Tested: 1 pc

Date of Testing: 6/25-27, 2024

Test Required: Corrosion Salt Mist

Test Result: PASS

Product Picture:



Test by: Linda



1. Test Method / Specification

Test standard: IEC 60512-11-6

Sample condition: Unpacked

Temperature: 35°C

Salt Concentration: 5%

Duration: 48 hours

Inspection items:

- Visual inspection before and after test

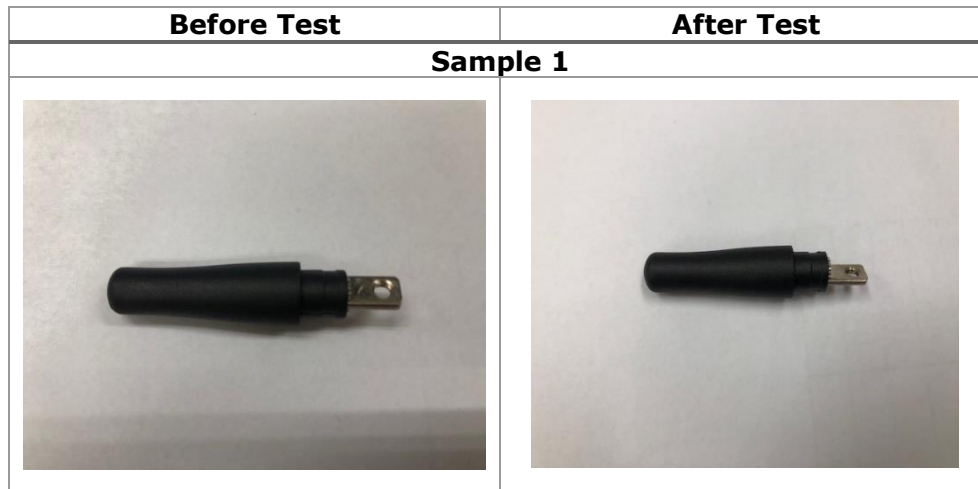
Test setup

2. Test Results

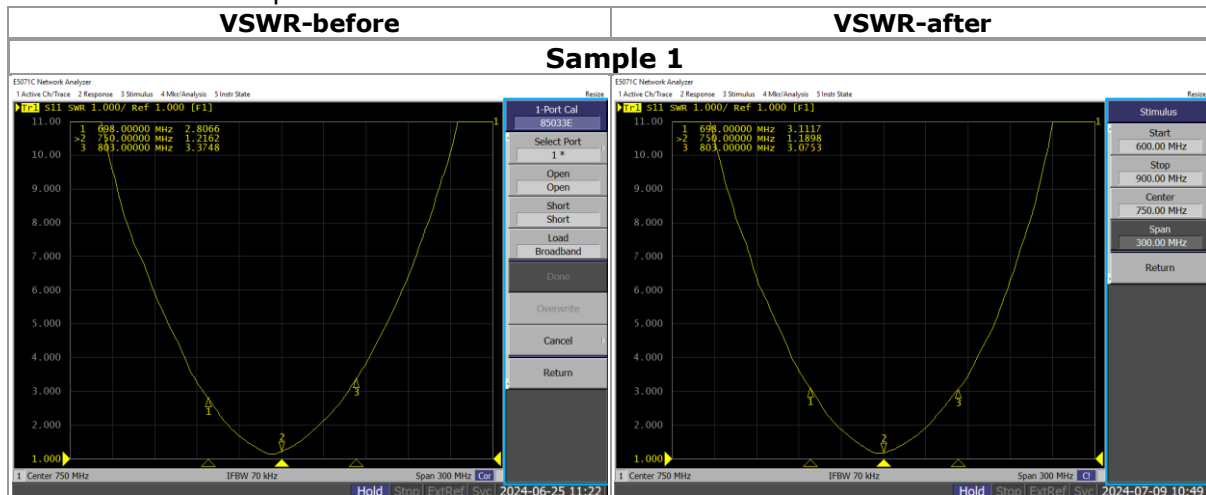
2.1. Visual Inspection

Item No.	Visual Inspection	PASS/FAIL
Sample 1	No rust or peeling off	PASS

2.2.



2.3. Functional Inspection:



3. Conclusion

The test result for C-1114-1 shows PASS.