501-61148

Validation Test Report

Standard Stamping TYPE Antenna

October 11, 2018.

Tested & Reported By	Reviewed By	Approved By	Test Date	From October 05, 2018 To October 10, 2018
			Classification	Unrestricted

TE Korea Engineering Validation and Reliability Test Center

● TE CONNECTIVITY RELIABILITY TEST REPORT

Test Name : Validation for Standard Stamping TYPE Antenna

1. Introduction

1-1 Purpose

Testing was performed on the Standard Stamping TYPE Antenna to determine if it conformance to the requirements of Product Specification 108-61419, Rev.A

1-2 Scope

This report covers the electrical, environmental performance requirements of the Standard Stamping TYPE Antenna.
The testing was performed between October 05, 2018 and October 10, 2018.

1-3 Test Samples

The test samples were randomly selected from normal current production lots.

P/N	Description
2108964-1	Stamping Element FOR WiFi Antenna

1-4 Conclusion

The Standard Stamping TYPE Antenna meets the electrical and environmental performance requirements of Product Specification 108-61419, Rev.A

1-5 Attachment

1) Test Sequence
2) Requirements and Test Procedure
3) Test Result
4) Photograph of Test

1) Test Sequence

TEST OR EXAMINATION	TEST GROUP (a)						
	1	2	3	4	5	6	7
	TEST SEQUENCE (b)						
Initial examination of product	1	1	1	1	1	1	1
V.S.W.R	2			2,4	2,4	2,4	2,4
Solderability		2					
Resistance of reflow heat			2				
Heat Resistance				3			
Cold Resistance					3		
Humidity (Steady state)						3	
Temperature Cycle							3
Final examination of product	3	3	3	5	5	5	5

2) 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 10x
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 (per functional antenna frequency band) should be in range of product drawing specification.	Measured 50Ω system of Network Analyzer with dedicated VSWR test See Fig.1 & 2
		MECHANICAL	
3.5.4.	Examination of product	Meets requirements of product drawings	No physical damage to cause antenna
		admit of appearances and stamping section to be not occurred the antenna performance damages as a special case	performance degradation.
		ENVIRONMENTAL	
3.5.5.	Solderability	Wet solder coverage: 90% Min.	Solder Temperature: 245+/-3℃
3.5.6.	Resistance of reflow heat	No physical damage allowed. (Meet 3.5.2)	Temperature profile: as shown in Fig.3 Peak: 250℃
3.5.7.	Heat Resistance	No physical damage allowed. (Meet 3.5.2) Meet VSWR (item 3.5.3)	85±3℃ for 96hr. Then in shall be subjected to standard atmospheric condition for 1hr, after which measurement shall be made.
3.5.8.	Cold Resistance	No physical damage allowed. (Meet 3.5.2) Meet VSWR (item 3.5.3)	-40±3℃ for 48hr. Then in shall be subjected to standard atmospheric condition for 1hr, after which measurement shall be made.

3.5.9.	Humidity (Steady state)	No physical damage allowed. (Meet 3.5.2) Meet VSWR (item 3.5.3)	85±3℃ and 90 ~ 95% R.H for 96hr. Then in shall be subjected to standard atmospheric condition for 1hr, after which measurement shall be made.
3.5.10.	Temperature Cycle	No physical damage allowed. (Meet 3.5.2) Meet VSWR (item 3.5.3)	-40±3℃/30min, Room temp: 10 ~ 15min. 85±3℃/30min, Room temp: 10 ~ 15min. Making this a cycle, repeat 5 cycles. Then in shall be subjected to standard atmospheric condition for 1hr, after which measurement shall be made.

3) Test Result

- Test Group 1

NO.	Test Items	Test Condition	Acceptance criteria		Unit	Test Result					Min.	Max.	Avg.	Judgment
						S1	S2	S3	S4	S5				
1	Examination of Product	Initial	No physical damage.		-	OK	OK	OK	OK	OK	-	-	-	OK
		Final				OK	OK	OK	OK	OK	-	-	-	OK
2	VSWR	Initial	VSWR<3, at 2400~2500MHz	2400MHz	-	1.74	1.75	1.74	1.75	1.75	1.74	1.75	1.75	OK
				2500MHz		1.58	1.60	1.57	1.58	1.59	1.57	1.60	1.58	OK

- Test Group 2

NO.	Test Items	Test Condition	Acceptance criteria	Unit	Test Result					Min.	Max.	Avg.	Judgment
					S1	S2	S3	S4	S5				
1	Examination of Product	Initial	No physical damage.	-	OK	OK	OK	OK	OK	-	-	-	OK
		Final			OK	OK	OK	OK	OK	-	-	-	OK
2	Solderability	Initial	Wet solder coverage:90%Min.	-	OK	OK	OK	OK	OK	-	-	-	OK

- Test Group 3

NO.	Test Items	Test Condition	Acceptance criteria	Unit	Test Result					Min.	Max.	Avg.	Judgment
					S1	S2	S3	S4	S5				
1	Examination of Product	Initial	No physical damage.	-	OK	OK	OK	OK	OK	-	-	-	OK
		Final			OK	OK	OK	OK	OK	-	-	-	OK
2	Resistance of reflow heat	Initial	No physical damage.	-	OK	OK	OK	OK	OK	-	-	-	OK

- Test Group 4

NO.	Test Items	Test Condition	Acceptance criteria		Unit	Test Result					Min.	Max.	Avg.	Judgment
						S1	S2	S3	S4	S5				
1	Examination of Product	Initial	No physical damage.		-	OK	OK	OK	OK	OK	-	-	-	OK
		Final				OK	OK	OK	OK	OK	-	-	-	OK
2	VSWR	Initial	VSWR<3, at 2400~2500MHz	2400MHz	-	1.74	1.75	1.74	1.75	1.75	1.74	1.75	1.75	OK
				2500MHz		1.58	1.62	1.57	1.58	1.59	1.57	1.62	1.59	OK
		After Heat resistance	VSWR<3, at 2400~2500MHz	2400MHz		1.73	1.74	1.74	1.74	1.75	1.73	1.75	1.74	OK
				2500MHz		1.59	1.60	1.58	1.59	1.58	1.58	1.60	1.59	OK
3	Heat resistance	Initial	No physical damage.		-	OK	OK	OK	OK	OK	-	-	-	OK

- Test Group 5

NO.	Test Items	Test Condition	Acceptance criteria		Unit	Test Result					Min.	Max.	Avg.	Judgment
						S1	S2	S3	S4	S5				
1	Examination of Product	Initial	No physical damage.		-	OK	OK	OK	OK	OK	-	-	-	OK
		Final				OK	OK	OK	OK	OK	-	-	-	OK
2	VSWR	Initial	VSWR<3, at 2400~2500MHz	2400MHz	-	1.77	1.56	1.57	1.61	1.56	1.56	1.77	1.61	OK
				2500MHz		1.49	1.38	1.33	1.44	1.38	1.33	1.49	1.40	OK
		After Cold resistance	VSWR<3, at 2400~2500MHz	2400MHz		1.78	1.57	1.57	1.63	1.58	1.57	1.78	1.63	OK
				2500MHz		1.49	1.40	1.35	1.46	1.40	1.35	1.49	1.42	OK
3	Cold resistance	Initial	No physical damage.		-	OK	OK	OK	OK	OK	-	-	-	OK

- *Test Group 6*

NO.	Test Items	Test Condition	Acceptance criteria		Unit	Test Result					Min.	Max.	Avg.	Judgment
						S1	S2	S3	S4	S5				
1	Examination of Product	Initial	No physical damage.		-	OK	OK	OK	OK	OK	-	-	-	OK
		Final				OK	OK	OK	OK	OK	-	-	-	OK
2	VSWR	Initial	VSWR<3, at 2400~2500MHz	2400MHz	-	1.72	1.76	1.72	1.74	1.77	1.72	1.77	1.74	OK
				2500MHz		1.60	1.59	1.57	1.62	1.62	1.57	1.62	1.60	OK
		After Humidity	VSWR<3, at 2400~2500MHz	2400MHz		1.74	1.76	1.75	1.76	1.78	1.74	1.78	1.76	OK
				2500MHz		1.59	1.54	1.56	1.60	1.60	1.54	1.60	1.58	OK
3	Humidity(steady state)	Initial	No physical damage.		-	OK	OK	OK	OK	OK	-	-	-	OK

- *Test Group 7*

NO.	Test Items	Test Condition	Acceptance criteria		Unit	Test Result					Min.	Max.	Avg.	Judgment
						S1	S2	S3	S4	S5				
1	Examination of Product	Initial	No physical damage.		-	OK	OK	OK	OK	OK	-	-	-	OK
		Final				OK	OK	OK	OK	OK	-	-	-	OK
2	VSWR	Initial	VSWR<3, at 2400~2500MHz	2400MHz	-	1.76	1.77	1.72	1.82	1.82	1.72	1.82	1.78	OK
				2500MHz		1.60	1.55	1.52	1.59	1.60	1.52	1.60	1.57	OK
		After Temperature cycle	VSWR<3, at 2400~2500MHz	2400MHz		1.75	1.76	1.75	1.79	1.80	1.75	1.80	1.77	OK
				2500MHz		1.59	1.56	1.56	1.58	1.58	1.56	1.59	1.57	OK
3	Temperature cycle	Initial	No physical damage.		-	OK	OK	OK	OK	OK	-	-	-	OK

4) Photograph of Test

NO.	Test Items	Photograph	Remark
1	Solderability		-
2	Heat resistance		-
3	Cold resistance		-

NO.	Test Items	Photograph	Remark
4	Humidity		-
5	Temperatrue cycle		-
6	Resistance of reflow heat		-