chanhvinh.com

Title **Qualification Plan for External Antennas**

1. SCOPE

1.1. Content

This specification describes characteristic, tests and quality requirements for the TE Connectivity (TE) STANDARD external TYPE ANTENNA

1.2. Qualification

Unless otherwise specified when tests are performed on the subject product line, shall meet the requirement of the test description by specified procedure and measurement method in Figure 1 ~ Figure 4 of example shall be used.

All inspections shall be performed using the applicable inspection plan and product drawing.

1.3. Qualification Test Results

For a successful qualification test for that product line, refer to 501-XXXXX qualification test report in paragraph 2.1.

1.4. Revision Summary

Revisions to this specification include :

- Initial release of specification.

2. APPLICABLE DOCUMENTS AND FORMS

The following documents and forms constitute a part of this specification to the extent specified herein. Unless otherwise indicated, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of the specification and the reference documents, this specification shall take precedence.

2.1. TE Documents

- TE-Parts Product drawing of External antenna
- 109-19030 TE Test Specification “Determination of Change in Antenna RF Performance”
- 501-XXXXX Qualification Test Report

2.2. Industry Documents

- IEC 60512 Basic testing procedures and measuring methods for electromechanical components, and electronic equipment.
- IEC 60068 Basic environmental testing procedures.

3. REQUIREMENTS

3.1. Design and Construction

Product shall be of the design, construction, materials and physical dimensions specified on the applicable product drawing.

3.2. Materials and Finished

3.2.1 External Antenna (if applicable)

A. Coil - Refer to applicable product drawing

B. Connector - Refer to applicable product drawing

© 2024 TE Connectivity family of companies
All Rights Reserved
| Indicates Change

*Trademark. TE Connectivity, TE connectivity (logo), and TE (logo) are trademarks. Other logos, product, and/or company names may be trademarks of their respective owners.

chanhvinh.com

3.3. Ratings

Characteristic Impedance	Temperature
50Ω (Reference)	-30℃ to 75℃ (Operation) -30℃ to 75℃ (storage)

3.4. Performance Requirements and Test Descriptions

The Product shall be designed to meet the electrical, mechanical and environmental performance requirement specified in Paragraph 3.6.

All tests shall be performed in the room temperature, unless otherwise specified.
Unless otherwise specified, all tests are performed at ambient environmental conditions per IEC specification 60068-1 clause 5.3 and if applicable performed with each antenna loaded inside its dedicated fixture (antenna in mated condition inside the fixture).

3.5. Test Requirements and Procedures Summary

Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

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. 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
		MECHANICAL	
3.5.4.	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	
3.5.5.	Damp Heat cyclic	No physical damage allowed. (Meet 3.5.2) Meet VSWR (item 3.5.3)	75℃ 12hrs / 12hrs cycles RH 93%±2% -10 cycles
3.5.6.	Rapid change of temperature	No physical damage allowed. (Meet 3.5.2) Meet VSWR (item 3.5.3)	-30/+75°C 30 min / 30 min, 10 cycles.

chanhvinh.com

3.5.7.	Heat age test	No physical damage allowed. (Meet 3.5.2) Meet VSWR (item 3.5.3)	Temperature 75°C. Duration: 48 hours.
3.5.8.	Cold storage	No physical damage allowed. (Meet 3.5.2) Meet VSWR (item 3.5.3)	Temperature: -30°C. Duration: 48 hours.
3.5.9.	Corrosion, Salt Mist	No physical damage allowed. (Meet 3.5.2) Meet VSWR (item 3.5.3)	+35°C, 5%NaCl, duration 48 hours.(Make sure proper rinsing occurs)

NOTE
Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the Product Qualification and Requalification Test Sequence shown in Paragraph 3.6.

3.6. Product Qualification and Requalification 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	2,4	2,4	2,4	2,4	2,4
Damp Heat cyclic		3				
Rapid change of temperature			3			
Heat age test				3		
Cold storage					3	
Corrosion, Salt Mist						3
Final examination of product	4	5	5	5	5	5

NOTE
(a) See a paragraph 4.1.A.
(b) Numbers indicate sequence in which tests are performed.

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Specimen Selection

Samples shall be prepared in accordance with applicable instructions and shall be selected random from current production. Unless details to perform test require otherwise, plugs shall be terminated on cables according to applicable instructions and requirements specified in appropriate Application Specification and Instruction Sheet.

Unless otherwise specified all tests group shall consist of a minimum of 6 antennas of applicable type. In case of multi-cavity molded parts, each test group should include at least one antenna per cavity.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in paragraph 3.6.

chanhvinh.com

4.2. Requalification Testing

If changes significantly affecting form, fit or function are made to product or manufacturing process, product assurance shall coordinate re-qualification testing, consisting of all or part of original testing sequence as determined by product, quality and reliability engineering.

4.3. Acceptance

Acceptance is based on verification that product meets requirements of Para 3.5. Failures attributed to equipment, test set-up, test sub-components or operator deficiencies shall not disqualify the product. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before re-submittal.

4.4. Quality Conformance Inspection

Applicable TE Connectivity quality inspection plan will specify sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with applicable product drawing and this specification.

5. FIRURES (EXAMPLE)

5.1. Measurement Method of V.S.W.R

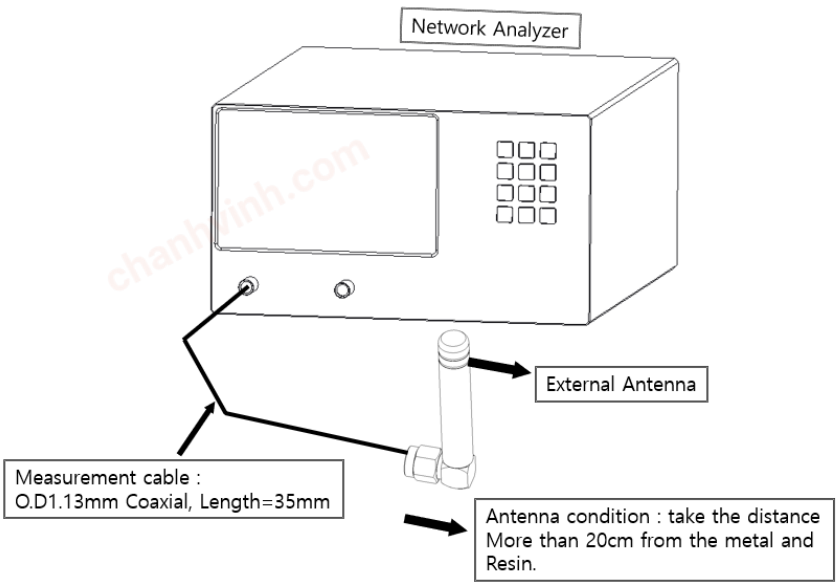


Figure 1 - VSWR Test

6. HISTORY

LTR	REVISION RECORD	PREPARED BY	APPROVED BY	DATE
1	Initial release	DW PARK	NG.WEITAT	24-JUN-24