Title	Qualification Plan for LTE Dongle

1. SCOPE

1.1. Content

This specification covers the performance, tests and quality requirements for the LTE dongle.

1.2. Qualification

When tests are performed the following specifications and standards shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

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 LTE dongle

2.2. Industry Standard

EIA-364 : Electrical Connector/Socket test procedures including Environmental Classifications.

A.   MIL_STD_202

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

Materials used in the construction of product shall be as specified on the applicable product drawing.

3.3. Ratings

A. Operating Temperature Range : 0℃ to +50℃

B. Storage Temperature Range : -20℃ to +60℃

3.4. Performance Requirements and Test Descriptions

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Table 1.
All tests shall be performed in the room temperature, unless otherwise specified.

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PRODUCT INFORMATION 1-800-522-6752

3.5.   Test Requirements and Procedures Summary

1)   Cable Assembly

Para.	TEST DESCRIPTION	REQUIREMENT	PROCEDURE
3.5.1	Examination of Product for cable assembly	Meets requirements of product drawing. No physical damage. No abnormality in the electrical function.	EIA 364-18 Visual, dimensional and functional inspection per applicable inspection
Requirements			
3.5.2	Durability	No physical damage.	EIA 364-09 Type-A : 200 cycles per hour. 3,000times. Type-C : 10,000times.
3.5.3	Bending test	No physical damage No intermittent or open connections.	EIA-364-41 Weight :500g, Angle : ± 60°(Total 120°), 30cycles/min. 2000times.
3.5.4	High Temperature & High Humidity	No changes in color, peeling, falling, fading. No abnormality in the electrical function.	75±3ºC, 90~95% RH for 96Hrs Then in shall be subjected to standard atmospheric condition for 1hr, after which measurement shall be made.

2)   Product itself

Para.	TEST DESCRIPTION	REQUIREMENT	PROCEDURE
3.5.1	Examination of Product for product itself	Meets requirements of product drawing. No physical damage. No abnormality in the electrical function.	Visual, dimensional and functional inspection per applicable inspection
Requirements			
3.5.5	High Temperature & High Humidity	No changes in color, peeling, falling, fading. No abnormality in the electrical function.	75±3ºC, 90~95% RH for 96Hrs Then in shall be subjected to standard atmospheric condition for 1hr, after which measurement shall be made.
3.5.6	Drop test	No crack. No abnormality in the electrical function.	Height : 1m, Concrete floor, Drop sequences : Top → Bottom → Front → Back → Right → Left

Table 1. Test requirement and Procedure Summary

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

1)   Cable Assembly

TEST OR EXAMINATION	TEST GROUP (a)		
	1	**2**	**3**
	TEST SEQUENCE (b)		
Examination of Product for cable assembly	1,3	1,3	1,3
Durability	2		
Bending test		2	
High temperature & High humidity			2
Group size	2pcs	2pcs	2pcs

2)   Product itself

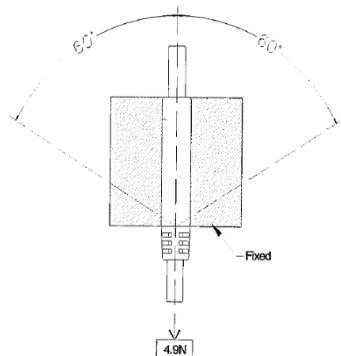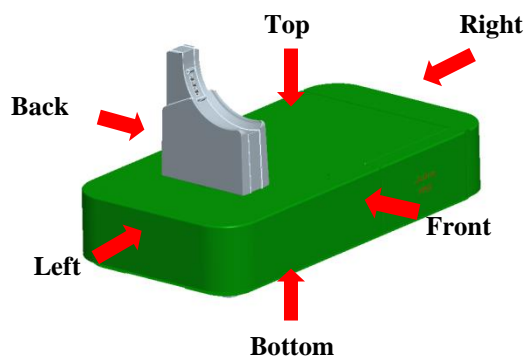| TEST OR EXAMINATION	TEST GROUP (a)	
	1	**2**
	TEST SEQUENCE (b)	
Examination of Product for product itself	1,3	1,3
High temperature & High humidity	2	
Drop test		2
Group size	2pcs	2pcs

NOTE

(a) Numbers indicate sequence in which tests are performed.

4.   FIGURES(EXAMPLE)

4.1.   Bending test

4.2.   Drop test

5.   HISTORY

LTR	REVISION RECORD	PREPARED BY	APPROVED BY	DATE
A	Initial release	Hoo Shin	Amos Cheah	31-AUG-21
A1	Change the temperature to 75°C	Hoo Shin	Amos Cheah	1-SEP-22
A2	Change the durability test cycle	Hoo Shin	Amos Cheah	10-SEP-22
A3	Update history table & Approver	Hoo Shin	Amos Cheah	11-SEP-22

6. APPENDIX

Pass / Fail Criteria for HTHH / Drop test

Hardware -Board Level Test Plan

Project Name	LTE Dongle Project	Project ID			
Board ID	LTE Dongle PCB	Prepared by			
Test Equipment required		Prepared on		Modified on	

Test ID	Module & Case Scenario	HLD ID/ Req ID	Description (test condition, Setup and Ref des details)	Input Values & Board section	Output Parameter (Probe point)
	Visual inspection				
1	Check for surface imperfections on the plastic casing		1. Check surface deformity: Outer and inner surfaces. 2. Check for imperfections, dents, allignemnt of edges. 3. Check for any visual damage to the internal components (Traces, IC's, Antenna)		No deformities externally or internally
	Reliability Assesment software				
2	Automated software to check the functionality		Connection Status; IMEI Number; SIM Number; Module Info; Pen Drive Access; LTE Connectivity; GNSS Connectivity; SW Package	1.Connect DUT to the test software 2. Enter the serial number 3. Press "Run all Test" button	Software GUI will specify Pass/ Fail
	Anritsu Automated test				
3	Automated software to check the performance		LTE non-signalling test for Band: 2, 4, 12	1. Position DUT in the sheild box 2. Connect DUT to the computer 3. Load the test scripts and run the automated test.	Software GUI will specify Pass/ Fail
4	Automated software to check the performance		GPS test		Software GUI will specify Pass/ Fail