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## QSFP Double Density 800 2XN Cage

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### 1. SCOPE

#### 1.1. Content

This specification defines performance, test and quality requirements for the QSFP Double Density 800 2XN cage

#### 1.2. Qualification

When tests are performed on the subject product line, procedures specified in Table 1 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 the specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the reference documents, this specification shall take precedence.

#### 2.1. TE Documents

- 114-60028 Application Specification
- 501-134127 Qualification Test Report
- 108-160303 QSFP-DD 112 stacked connector specification

#### 2.2. Industry Documents

- EIA-364 Electrical Connector/Socket Test Procedures Including Environmental Classifications

#### 2.3. Reference Document

- 109-197 Test Specification (TE Test Specification vs EIA and IEC Test Methods)

### 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. Operating Temperature

-55 to 65°C

#### 3.3. Performance and Test Description

The product is designed to meet electrical, mechanical and environmental performance specified in this paragraph as tested per test sequence specified in Paragraph 3.7. Unless otherwise specified, all tests are performed at ambient environmental conditions and are performed with connectors in fully mated condition.

#### 3.4. Test Requirements and Procedures Summary

**Table 1**

Test Description	Requirement	Procedure
Initial examination of product	Meets requirements of product drawing.	EIA-364-18. Visual examination and dimensional (C of C) inspection per product drawing.
Final examination of product	Meets visual requirements.	EIA-364-18. Visual examination.
<b>MECHANICAL</b>		
Durability	100 cycles for QSFPDD Module See note	EIA-364-9. Mate and un-mate specimens. Include latching/release function as intended. Rate: 300 cycles/hour (max). 100 cycles with QSFPDD Module with a maximum of 50 cycles per Module.
Mating force	90 N maximum for QSFP DD module	EIA-364-13, Method A. Measure force to mate cable plug into QSFP DD connector including cage. 25.4mm/min
Un-mating force	50 N maximum for QSFP DD module	EIA-364-13, Method A. Measure force to unmate cable plug from QSFP DD connector including cage by pulling at latching release feature. 25.4mm/min.
Compliant pin insertion force	44.5 N maximum per pin	Spec 109-41. Measure force necessary to push cage into the host board at a maximum rate of 12.7 mm [.50 inch] per minute. Remove small rear pins when testing the big front pins, and remove big front pins when testing small rear pins.
Compliant pin retention force	9.5 N minimum per front pin 1.0 N minimum per rear pin	TE Spec 109-30. Measure force necessary to remove cage from the host board at a maximum rate of 12.7 mm [.50 inch] per minute. Remove small rear pins when testing the big front pins, and remove big front pins when testing small rear pins.
Cage latch Strength	125 N minimum.	EIA 364-98. Measure fore necessary to remove module from cage assembly with latches enabled.
Rotational cable pull	33.4 N minimum without displacement of cage assembly from PCB.	Load cable module into connector with cage assembly applied to PCB with attached bezel. Rotate cable 40 degrees toward PCB, and then rotate 360 degrees with the load still applied at a speed of 15 seconds for 1 revolution.
Module Retention	No damage to module and displacement of cage below $\leq 90$ N	Load cable module into connector with cage assembly applied to PCB with attached bezel. Apply specified axial load to engaged module at a maximum rate of 6.35 mm [.25 inch] per minute and hold 1 minute to very module retention and cag latch strength.
<b>ENVIRONMENTAL</b>		
Temperature life (preconditioning).	See Note.	EIA-364-17, Method A, Test condition 4. Test subject specimens mated to blank transceivers to 105°C for 72 hours.

Table 1 End



**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 Table 2.

Test Frames

Test-frames shall provide mechanical stability of the cage in relation to its mating parts and shall cover the requirements specified in the TE Application Specification.

3.5. Product Qualification and Requalification Test Sequence

**Table 2**

Test or Examination	Test Group (a)		
	1	2	3
	Test Sequence (b)		
Initial examination of product	1	1	1
Durability	4		
Mating force	2,5		
Un-mating force	3,6		
Rotational cable pull	8		
Module retention force	7		
Cage Latch Strength			3
Temperature life(Precondition)			2(c)(d)
Compliant pin insertion force		2	
Compliant pin retention force		3	
Final examination of product	9	4	4



**NOTE**

- (a) See paragraph 4.1.A.
- (b) Numbers indicate sequence in which tests are performed.
- (c) Precondition specimens with 20 durability cycles with latches engaged.
- (d) Mated to blank transceivers (no components added to cable connector PCB)

**4. QUALITY ASSURANCE PROVISIONS**

4.1. Qualification testing

A. Sample selection

Samples shall be prepared in accordance with applicable instructions and shall be selected at random from current production. Unless otherwise specified, all test groups shall consist of a minimum of 5 cages of which 30% min ports shall be tested.

B. Test sequence

Qualification inspection shall be verified by testing samples as specified in Paragraph 3.5

4.2. Requalification Testing

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

4.3. Acceptance

Acceptance is based upon verification that product meets requirements of Paragraph 3.4. Failures attributed to equipment, test set-up, applied customer components or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken and samples resubmitted for requalification. Testing to confirm corrective action is required before resubmittal.

4.4. Quality conformance inspection

Applicable TE 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.