SFP Cage Assemblies

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the TE Connectivity (TE) Small Form-factor Pluggable (SFP) 1 and 2 piece cage assemblies.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 1 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

1.3. Qualification Test Results

Successful qualification testing on the subject product line was completed on 28Aug00 and 16Aug02. The Qualification Test Report number for this testing is 501-495. This documentation is on file at and available from Engineering Practices and Standards (EPS).
1 piece stainless steel version parts were completed on 20Nov13,the Qualification Test Report number for the testing is 501-128801. Which is on file at and available from the Engineering Assurance Product Testing Laboratory.

2. APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, 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 this specification and the referenced documents, this specification shall take precedence.

2.1. TE Documents

- 109-197: TE Test Specifications vs EIA and IEC Test Methods
- 501-495: Qualification Test Report
- 501-128801: Qualification Test Report For Stainless Steel One Piece version

2.2. Commercial Standard

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

3. REQUIREMENTS

3.1. Design and Construction

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

3.2. Materials

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

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3.3. Ratings

- Voltage: 120 volts AC
- Current: Signal application only
- Temperature: -55 to 85°C

3.4. Performance and Test Description

Product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. Unless otherwise specified, all tests shall be performed at ambient environmental conditions per EIA-364.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Initial examination of product.	Meets requirements of product drawing.	EIA-364. Visual and dimensional inspection per product drawing.
Final examination of product.	Meets visual requirements.	EIA-364. Visual inspection.
ELECTRICAL		
Dry circuit resistance.	35 milliohms maximum.	EIA-364-23. Subject mated specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage.
MECHANICAL		
Solderability.	Solderable areas shall have a minimum of 95% solder coverage.	EIA-638.
Cable pull.	100 N [22.5 lbf] minimum. See Note.	Load module with cable into a cage soldered to a test board, with attached bezel. Apply specified load in axial direction, rotate cable 45 degrees from cable axis, and remove load.
Durability	See Note.	EIA-364-9. Plug and unplug specimens for 100 cycles for two-piece specimens, and 200 cycles for one-piece specimens at a maximum rate of 600 cycles per hour with latch retention feature operable.
Height of latch.	Change in height shall be 0.8 mm [.031 in] maximum. See Note.	Measure latch height.
Insertion force.	35 N [7.9 lbf] maximum. See Note.	EIA-364-13. Measure force necessary to mate specimens at a maximum rate of 12.7 mm [.5 in] per minute.
Press-fit insertion force.	500 N [112.4 lbf] maximum.	Press cage onto board.

Figure 1 (continued)

Test Description	Requirement	Procedure
Press-fit extraction force.	80 N [18 lbf] minimum.	Extract cage from board.
Module retention.	180 N [40.5 lbf] minimum. See Note.	EIA 364-13. Determine module retention with latch engaged, at a maximum rate of 12.7 mm [.5 in] per minute.
ENVIRONMENTAL		
Humidity-temperature cycling.	See Note.	EIA-364-31. Subject mated specimens to 24 cycles between 25 ± 3°C at 80 ± 3% RH, and 65 ± 3°C at 50 ± 3% RH. Ramp time shall be .5 hour. Dwell times shall be 1 hour.
Temperature life.	See Note.	EIA-364-17. Subject mated specimens to 115°C for 432 hours.

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 Figure 2.*

Figure 1 (end)

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
Dry circuit resistance			2,4			
Solderability		2				
Cable pull	6					
Durability	4		3			
Height of latch	2,5					
Insertion force	3					
Press-fit insertion force.				2	2	2
Press-fit extraction force.				3	4	4
Module retention	7					
Humidity-temperature cycling.					3	
Temperature life.						3
Final examination of product	8	3	5	4	5	5

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

Figure 2

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Specimen Selection

Specimens shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. Test groups 1 and 3 shall each consist of 5, one-piece cage assemblies and 5, two-piece cage assemblies. Test group 2 shall consist of 5 solderable cage assemblies. Test groups 4, 5 and 6 shall each consist of 5 press-fit cage assemblies.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 2.

4.2. Requalification Testing

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

4.3. Acceptance

Acceptance is based on verification that the product meets the requirements of Figure 1. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken and specimens resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

4.4. Quality Conformance Inspection

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