



FullAXS Mini Cable Assembly and Connector

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the TE Connectivity connector series FullAXS mini.

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(s) and product drawing(s).

1.3. Successful qualification testing on the subject product line was completed in 30 Mar 2016. The Qualification Test Report number for this testing is 501-32039. This documentation is on file and available from Engineering Practices and Standards (EPS).

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 Connectivity (TE) Documents

- A. 102-950 : Quality Specification (Qualification of Separable Interface Connectors).
- B. 109-1 : General requirements for Testing.
- C. 114-32138 : Application Specification.
- D. 501-32039 : Qualification Test Report.

2.2. Commercial / Industry Standards

- IEC-61300 : Fibre optic interconnecting devices and passive components - Basic test and measurement procedures
- IEC-60512 : Electromechanical components for electronic equipment; basic testing procedures and measuring methods
- IEC 60529 : Degree of Protection Provided by Enclosures (IP Code).

2.3. Reference Document

109-197: Test Specification (TE Test Specifications versus EIA and IEC Test Methods).

3. REQUIREMENTS

3.1. Design and Construction

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

3.2. Materials

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

3.3. Ratings

- A. Operating Temperature: -40°C to +85°C
- B. Installation temperature: -20°C to +60°C
- C. Storage temperature : -40°C to +70°C
- D. Ingress protection per IEC 60529: IP65, IP67
- E. Flammability Rating: UL94-V0 for plastic materials.
- F. UV resistance

3.4. Performance and Test Description

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

3.5. Test Requirements and Procedures Summary

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

| Test Description | Test Condition / Requirement | Procedure |
|-------------------------------------|---|--------------------------------|
| Visual Inspection/ Functional Check | No damage | IEC 61300-3-35 |
| Attenuation | IL≤0.5 dB at 1310nm and 1550nm, RL ≥50 dB. | IEC 61300-3-4 |
| MECHANICAL | | |
| Mechanical strength straight | The bulkhead/chassis connector with cable connector inserted, shall handle the force: A - Min. 100N straight load, 120s. B - Min. 150N straight load, 120s. On cable Requirement: A -Without any negative effect on signal performance. Δ IL≤ 0.2 dB during and after test at 1310nm and 1550nm, RL >=50 dB after test B - Without any negative effect on the cable-connector or chassis connector. | IEC 61300-2-4 |
| Mechanical strength Side Load | 150N side load 90°, 120s. On cable Without any negative effect on signal performance. Δ IL≤ 0.2 dB during and after test at 1310nm and 1550nm, RL >=50 dB after test | IEC 61300-2-4 |
| Vibration | 10-150-10 Hz sweeping, 1 octave/min., displacement 0.75mm Peak/acceleration. 10 g, in each of 3 mutual perpendicular axes. 3 x 20 sweep cycles. No Physical damage. | IEC 60512-6-4 IEC 60512-6-4 |
| Torsion | Min. 15N straight load, 25 cycles ± 180° 0.3 meter from connector Δ IL ≤ 0.2 dB, During and after test, RL ≥ 50 dB: Final test, | IEC 61300-2-5 |
| Cold Operation | -20°C. Duration 16hrs, 3 mechanical operation cycles directly afterwards without conditioning. Requirement: No damage or broken shells after test | IEC 61300-2-17 |

| Test Description | Test Condition / Requirement | Procedure |
|-----------------------|---|---|
| Durability | 100 times mechanical operation Measure locking torque and unlocking on force bulkhead. Locking : < 200N • cm Unlocking: > 30N • cm EOL | IEC-61300-2-15 |
| Drop Test (Free fall) | 1 drop per test sample, random location 0,75 m drop height per test temperature, No damage | IEC 61300-2-12 IEC 60512-7-1 |
| ENVIRONMENTAL | | |
| Ingress IP65 | No ingress of dust. No ingress of water by jets | IEC 60529 |
| Ingress IP67 | No ingress of dust. No ingress of water by immersion | IEC 60529 |
| Change of Temperature | -40C to +85C, 1.5hours of duration at extremes, transition time 2 hours, 12 cycles, mated condition | EIA 364-32C IEC 60512-11-4 IEC 61300-22-2 |
| UV resistant | To be determined | ISO 4892-3 |
| Salt spray | Salt solution 5% NaCl pH 6,5 – 7,2 Duration 96 h. | EIA 364-26B Condition A |

i **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

3.6. Product Qualification and Requalification Test Sequence

| Test or Examination | Test Method | Test Group (a) | | | |
|---|-------------------------------|-------------------|----|----|---|
| | | 1 | 2 | 3 | 4 |
| | | Test Sequence (b) | | | |
| Visual Inspection | IEC 61300-3-35 | 1 | 1 | 1 | 1 |
| Attenuation | IEC 61300-3-4 | 2 | 4 | 2 | 3 |
| Change of temperature | IEC 61300-2-22 | 3 | 2 | | |
| Mechanical strength straight | IEC 61300-2-4 | | 10 | | 6 |
| Mechanical strength Side Load | IEC 61300-2-4 | 9 | | 10 | |
| Vibration | IEC 61300-2-6 | | 3 | 3 | |
| Torsion | IEC 61300-2-5 | | | | 2 |
| UV Resistance (Resistance to solar radiation) | ISO 4892-2 | | | 4 | |
| Cold Operation | IEC 61300-2-17 IEC 60512-6 | 4 | 5 | 5 | |
| Durability | IEC 61300-2-15 | 5 | 6 | | 5 |

| | | | | | |
|-----------------------|---------------------------------|---|---|---|---|
| Drop Test (Free fall) | IEC 61300-2-12 IEC 60512-7-1 | | | | 4 |
| IpX5 | IEC 60529 | 6 | 7 | 7 | |
| IPX7 | IEC 60529 | 7 | 8 | 8 | |
| IP6X Dust tight | IEC 60529 | 8 | 9 | 9 | |
| Salt spray | EIA 364-26B Condition A | | | 6 | |



- (a) 4 Groups of test samples, each 5 pcs
- (b) Numbers indicate sequence in which tests are performed.

Figure 2

QUALITY ASSURANCE PROVISIONS

3.6. Qualification Testing

A. Specimen Selection

Specimens shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. Each test group shall consist of a minimum of 5 specimens.

B. Test Sequence

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

3.7. 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.

3.8. 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.

3.9. 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.