
Vertical AMC Card Edge Connector

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the TE Connectivity (TE) Vertical AMC Card Edge Connector.

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. Successful qualification testing on the subject product line was completed on 01Jul08. The Qualification Test Report number for this testing is 501-709. This documentation is on file at 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 Documents

- 114-13180: Application Specification (Vertical Card Edge Connector for Micro TCA Applications)
- 501-709: Qualification Test Report (Vertical AMC Card Edge Connector)

2.2. Industry Standards

- EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications
- GR-1217-CORE: Generic Requirements for Separable Electrical Connectors Used in Telecommunications Hardware
- IEC 60512: Electromechanical Components For Electronic Equipment; Basic Testing Procedures and Measuring Methods Part 1: General

2.3. Reference Document

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

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.

3.3. Ratings

- Voltage: 1.7 to 1.9 volts DC
- Current: Signal application only
- Temperature: -40 to 85°C
- Humidity: 10 to 90% RH, non-condensing

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.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Visual examination.	Meets requirements of product drawing and Application Specification 114-13180.	IEC 60512-1-1. Visual and dimensional (C of C) inspection per product drawing. (Connector interface, interface dimensions of plug-in card, creepage and clearance distances).
ELECTRICAL		
Contact resistance.	60 milliohms maximum initial. 15 milliohms maximum change.	IEC 60512-2-1. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage.
Insulation resistance.	100 megohms minimum between all conductors and ground. 10 megohms minimum between all conductors and between ground after moisture.	IEC 60512-3-1. 100 volts DC. Mated module PCB.
Voltage proof.	One minute hold with no breakdown or flashover.	IEC 60512-4-1. Mated plug-in cards. 100 volts AC between differential pair conductors mutually and ground; between general purpose conductors mutually and ground; and between power conductors mutually and ground.
Current carrying capacity.	30°C maximum temperature rise at specified current.	IEC 60512-5-2. Mated connectors, all lines driven simultaneously. 0.3 ampere per ground conductor; 0.4 ampere per general purpose conductor; and 1.44 amperes per power conductor.

Figure 1 (continued)

Test Description	Requirement	Procedure
MECHANICAL		
Sinusoidal vibration.	No discontinuities of 1 microsecond or longer duration. See Note.	IEC 60512-6-4. Frequency 10 to 500 Hz, amplitude 0.35 mm or 50 m/s, full duration 3 x 8 hours in 3 mutually perpendicular planes (32 sweepings in each direction).
Mechanical shock.	No discontinuities of 1 microsecond or longer duration. See Note.	IEC 60512-6-3. Subject mated specimens to 30 G's half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.
Mechanical operation.	See Note.	IEC 60512-5, Test 9a. Ten cycles at a maximum rate of 10 mm per second. Five second rest in the unmated condition. Replace test card after 50 cycles.
Engaging/separating forces.	100 N maximum engaging force. 65 N maximum separating force.	IEC 60512-13-1. Maximum rate of 10 mm per second.
Minute disturbance.	See Note.	Unmate and mate each specimen a distance of approximately 0.1 mm.
ENVIRONMENTAL		
Thermal shock.	See Note.	EIA-364-32, Test Condition I. Subject mated specimens to 5 cycles between -55 and 85°C. 30 minute dwells at each temperature extreme and 1 minute maximum transfer time between temperature extremes.
Humidity/temperature cycling.	See Note.	EIA-364-31, Method III. Subject mated specimens to 50 cycles between 25 and 65°C at 80 to 100% RH. According to GR-1217-CORE, Section 6.3.4, R6-64.
Temperature life, 300 hour.	See Note.	EIA-364-17, Method A, Test Condition 4. Subject mated specimens to 105°C for 300 hours. Two hour recovery time.

Figure 1 (continued)

Test Description	Requirement	Procedure
Temperature life, 1000 hour.	See Note.	EIA-364-17, Method A, Test Condition 4, Test Time Condition D. Subject mated specimens to 90°C for 1000 hours. Two hour recovery time.
Mixed flowing gas.	See Note.	EIA-364-65, Class IIA. Subject specimens to environmental Class IIA for 20 days (first 10 days unmated, remaining 10 days mated). Measure contact resistance after 5, 10, and 15 days of exposure.
Dust	See Note.	EIA-364-91. Unmated and unmounted connectors + module PCBs. Benign dust concentration of 300g/m ³ of chamber volume, flow rate of 300 meters per minute and an exposure time of 1 hour. According to GR-1217-CORE, Sections 9.1.1.1 and 9.1.1.2.

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
	Test Sequence (b)				
Visual examination	1,21	1,13	1,10	1,5	1,3
Contact resistance	2,5,7,9,11,13,15,17,19	2,4,6,8,10,12		2,4	
Insulation resistance			2,8		
Voltage proof			3,9		
Current carrying capacity					2
Vibration (sinusoidal)		7			
Mechanical shock		9			
Mechanical operation	4,18	3,11	4,7		
Engaging/separating forces	3,20				
Minute disturbance	16				
Thermal shock			5		
Humidity/temperature cycling			6		
Temperature life, 300 hour	6				
Temperature life, 1000 hour				3	
Mixed flowing gas	8,10,12,14(c)				
Dust		5			

NOTE

- (a) See paragraph 4.1.A.
- (b) Numbers indicate sequence in which tests are performed.
- (c) First 10 days unmated, remaining 10 days mated. Measure contact resistance after 5, 10, and 15 days of exposure.

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. 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.

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.