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EIA STANDARD

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Vibration Test Procedure for Electrical Connectors and Sockets

EIA-364-28F

(Revision of EIA-364-28E)

January 2011



Electronic Components Industry Association

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(From Standards Proposal No. 5382.04, formulated under the cognizance of the CE-2.0 Committee on EIA National Connector and Sockets Standards)

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CONTENTS

Clause		Page
1	Introduction	1
1.1	Scope	1
1.2	Object	1
1.3	Applicable documents	1
1.4	Definitions	1
2	Test resources	2
2.1	Equipment	2
3	Test specimen	3
4	Test procedure	4
4.1	Test conditions I, II, III and IV	4
4.2	Test conditions V, VI and VII	10
5	Details to be specified	16
6	Test documentation	17
Table		
1	Vibration conditions	4
2	Values for test condition V	13
3	Values for test condition VI	14
4	Values for test condition VII	15
Figure		
1	Mounting axis definitions	2
2	Vibration test curves - high frequency (displacement in mm)	6
3	Vibration test curves - high frequency (displacement in inches)	7
4	Test condition V, random vibration test curve envelope	13
5	Test condition VI, random vibration test curve envelope	14
6	Test condition VII, random vibration test curve envelope	15

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TEST PROCEDURE No. 28F

VIBRATION TEST PROCEDURE
FOR
ELECTRICAL CONNECTORS AND SOCKETS

(From EIA Standards Proposal No. 5212, formulated under the cognizance EIA CE-2.0 Committee on National Connector Standards, and previously published in EIA-364-28E.)

1 Introduction**1.1 Scope**

The standard test procedure details a method to assess the ability of electrical connector components to withstand specified severities of vibration.

1.2 Object

The object of this test is to determine the effects of vibration within the predominant or random vibration frequency ranges and magnitudes that may be encountered during the life of the connector.

1.3 Applicable documents

The following documents form a part of this standard to the extent indicated herein. In the event of conflict between the requirements of this standard and the referenced documents, this standard takes precedence.

1.3.1 EIA standards

EIA-364-46: Microsecond Discontinuity Test Procedure for Electrical Connectors, Contacts and Sockets

EIA-364-87: Nanosecond Event Detection for Electrical Connectors, Contacts and Sockets

1.4 Definitions**1.4.1 Axis**

The following mounting axis definitions shall be employed during the performance of this test. Figure 1 indicates a pictorial view of the axis definitions. The referencing document shall indicate the fixturing required or the axis definitions if different than as stated in figure 1. Axis definitions for symmetrical, square and “free” connectors shall be defined in the Detail Specification.

1.4.1.1 X-axis

Along the longitudinal length of the test sample

1.4.1.2 Y-axis

The axis perpendicular to the longitudinal length of the sample (transverse direction).

1.4.1.3 Z-axis

The axis perpendicular to the fixture seating plane attached to the test table.

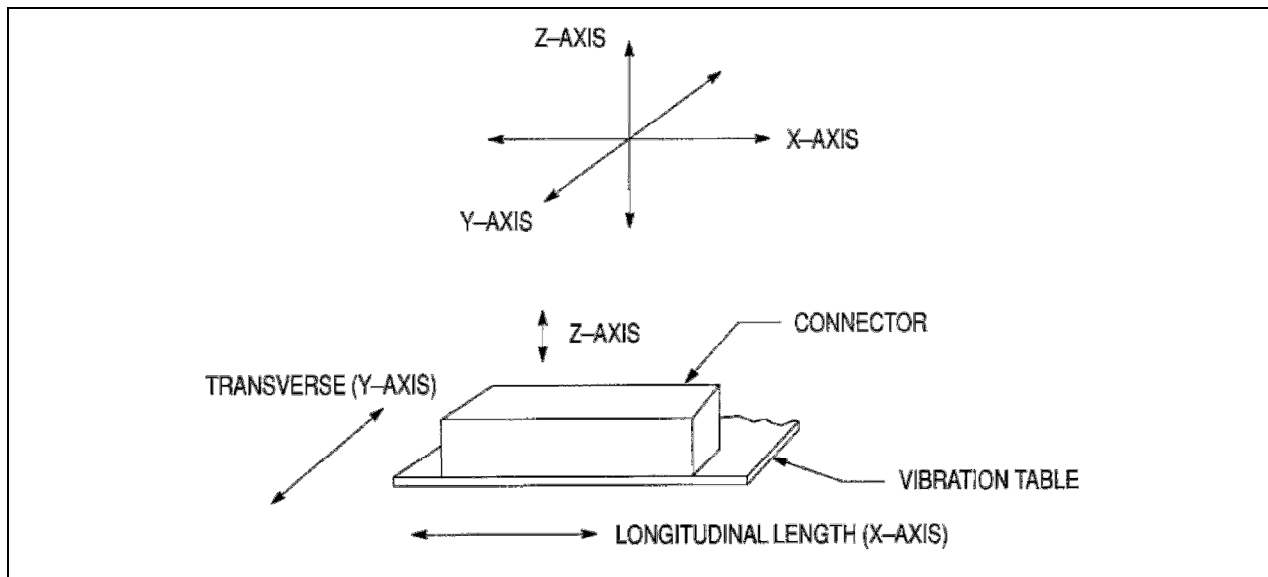


Figure 1 - Mounting axis definitions

1.4.2 The term g_n

This term is the SI unit for the standard acceleration due to the earth's gravity, which itself varies with altitude and geographic latitude.

NOTE — In this standard the value of g_n is 9.81 m/s^2 .

2. Test resources

2.1 Equipment

2.1.1 The monitoring transducer shall be calibrated against a standard transducer having an accuracy of $\pm 2\%$. The vibration system consisting of the vibration machine, together with its auxiliary test equipment, shall be capable of generating either a sinusoidal or random excitation.

2.1.2 Test equipment for random vibration shall produce random excitation that possesses a gaussian (normal) amplitude distribution, except that the acceleration magnitudes of the peak values may be limited to a minimum of three times the rms [three-sigma (3σ) limits].

3 Test specimen

3.1 A vibration test sample shall be a fully wired connector consisting of one of the following, as applicable;

3.1.1 A connector plug and its mating connector receptacle.

3.1.2 A printed circuit connector receptacle and its mating connector board(s).

3.1.3 An integral, functional connector assembly.

3.2 Each test sample shall be prepared with wire and other materials or processes, simulating application assembly of the sample. If normal connector mating is dependent upon forces external to the connector, then such forces and mounting arrangement shall be as closely duplicated as possible (example: printed circuit connectors). If mating is achieved with normal locking means, then only normal locking means shall be used.

3.3 Method of mounting

3.3.1 Test conditions I, II, III and IV (sinusoidal evaluation conditions)

The specimen shall be attached to a fixture capable of transmitting the vibration conditions specified. The test fixture shall be designed so that resonant vibration inherent in the fixture within the frequency range specified for the test shall be minor. The magnitude of the applied vibration shall be monitored on the test fixture near the specimen mounting points. The test specimen shall be mounted rigidly to the test fixture as specified and shall simulate as closely as possible the normal mounting of the specimen. A minimum of 200 mm (approx 8 in) of wire or cable shall be unsupported on both ends of the connector. For specimens with attached brackets, one of the vibration-test directions shall be parallel to the mounting surface of the bracket. Vibration input shall be monitored on the mounting fixture in the proximity of the support points of the specimen.

3.3.2 Test conditions V, VI and VII (random excitation conditions)

The specimen shall be mounted as specified. The orientation of the specimen or direction of application of the applied vibration motion shall be specified in one or more directions. If the order of application of the different directions is critical, it also shall be specified. Any special test fixtures or jigs required to run the test shall be specified in sufficient detail to assure reproducibility of the input motion applied to the specimen. These details shall include the dimensions, the materials, temper, etc., as applicable.