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EIA STANDARD

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Shell-to-Shell and Shell-to-Bulkhead Resistance Test Procedure for Electrical Connectors

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ELECTRONIC INDUSTRIES ALLIANCE

**Electronic Components, Assemblies, Equipment & Supplies
Association**



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(From Standards Proposal No. 2907-A, formulated under the cognizance of the CE-2.0 National Connector Standards Committee.)

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TEST PROCEDURE No. 83

SHELL-TO-SHELL AND SHELL-TO-BULKHEAD RESISTANCE TEST PROCEDURE FOR ELECTRICAL CONNECTORS

(From EIA Standards Proposal No. 2907-A, formulated under the cognizance EIA CE-2.0 Committee on National Connector Standards.)

1 Introduction

1.1 Scope

This standard test procedure applies to mated plugs and receptacles or mated plugs and receptacles mounted to a bulkhead with conductive shells and/or mounting flange.

1.2 Object

The object of this procedure is to determine the electrical bonding of mated plugs and receptacles or the electrical bonding of mated plug and receptacles mounted to a bulkhead.

2 Test resources

2.1 Equipment

2.1.1 Voltmeter

Capable of measuring the applied voltage within $\pm 2\%$.

2.1.2 Ammeter

Capable of measuring the applied current within $\pm 1\%$.

2.1.3 Regulated current power supply

Capable of delivering up to 1.0 ampere ± 0.1 ampere.

2.1.4 Test probes with spherical end of 1.27 mm (0.050 in) minimum radius shall be used to make voltage measurements on the mated connectors or connector bodies to mounting surfaces.

2.2 Fixture

Mounting fixture for testing mated connectors shall be of a nonconductive material and may be adjustable to accept various mated connectors.

3 Test specimen

3.1 Description

The test specimen shall consist of a mated connector (plug and receptacle) or a mated connector mounted to a conductive surface (bulkhead). Test specimen shall be wired or unwired as specified in the referencing document. When assessing shell-to-shell resistance the mated connectors shall be placed on a nonconductive surface.

3.2 Preparation

Connectors to be tested shall be free from foreign matter that can affect their operation.

4 Test procedure

Unless otherwise specified, a test current of 1.0 +/- 0.1 ampere dc at 1.5 volts maximum shall be caused to pass through the mated connector or through the mated connector and the mounting surface (bulkhead). The test probe shall not puncture or otherwise damage the connector finish.

4.1 Shell-to-shell resistance

Unless otherwise specified, the voltage drop across the mated connector shall be measured from a point on the rear accessory thread on the plug to the mounting flange on the receptacle. On square flange receptacles the point of measurement shall be adjacent to the mounting hole. On single hole mount receptacles the point of measurement shall be adjacent to the o-ring on the front or mounting side of the flange.

4.2 Mated connector to bulkhead resistance

Unless otherwise specified, the voltage drop across the receptacle mounted to the bulkhead shall be measured from a point on the rear accessory thread on the plug to a point on the bulkhead next to the mounting flange. Be careful that the probe does not touch the mounting flange.

5 Details to be specified

The following details shall be specified in the referencing document.

- 5.1 Number of specimens to be tested
- 5.2 Test current if other than specified herein
- 5.3 Point of voltage drop measurement if other than specified herein
- 5.4 Allowable voltage drop
- 5.5 Wired or unwired connectors; see 3.1
- 5.6 Receptacle mounting, if applicable

6 Test documentation

Documentation shall contain the details specified in clause 5, with any exceptions, and the following:

- 6.1 Title of test
- 6.2 Specimen description including fixture, if applicable
- 6.3 Test equipment used, and date of last and next calibration
- 6.4 Values and observations
- 6.5 Name of operator and date of test

EIA Document Improvement Proposal

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