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### Electrostatic discharge (ESD) sensitivity testing machine model (MM)

**PUBLICLY AVAILABLE SPECIFICATION**



INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION



Reference number  
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# EIA/JEDEC STANDARD

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## Test Method A115-A

### Electrostatic Discharge (ESD) Sensitivity Testing Machine Model (MM)

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ELECTRONIC INDUSTRIES ASSOCIATION

ENGINEERING DEPARTMENT



## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTROSTATIC DISCHARGE (ESD) SENSITIVITY  
TESTING MACHINE MODEL (MM)**

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**TEST METHOD A115A****ELECTROSTATIC DISCHARGE (ESD) SENSITIVITY TESTING  
MACHINE MODEL (MM)**

(From JEDEC Council Ballot JCB-97-10, formulated under the cognizance of JC-14.1 Committee on Reliability Test Methods for Packaged Devices.)

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**1 Purpose**

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This method establishes a standard procedure for testing and classifying microcircuits according to their susceptibility to damage or degradation by exposure to a defined Machine Model (MM) electrostatic discharge (ESD). The objective is to provide reliable, repeatable MM ESD test results so that accurate classifications can be performed.

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**2 Apparatus**

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This test method requires the following equipment.

**2.1 An ESD Pulse Simulator and a Device Under Test (DUT) socket** equivalent to the circuit of figure 1. The simulator must be capable of supplying pulses with the characteristics required by figure 2 and figure 3.

**2.2 Oscilloscope**

The oscilloscope and amplifier combination shall have a 350 MHz minimum single-shot bandwidth and a visual writing speed of 4 cm/ns minimum.

**2.3 Current probe**

The current probe shall have a minimum pulse-current bandwidth of 350 MHz. A current probe (transformer and cable with a nominal length of 1 meter) with a 1 GHz bandwidth and a current rating of 12 amperes maximum pulse-current is recommended.

**2.4 Evaluation Leads**

An 18 AWG tinned copper wire is recommended for the short waveform verification test. The lead length should be as short as practicable to span the distance between the two farthest pins in the socket while passing through the current probe. The ends of the 18 AWG wire may be ground to a point where clearance is needed to make contact on fine pitch socket pins.

A 500 ohm  $\pm 1\%$ , 1000 volt, low inductance resistor shall be used for initial system checkout and periodic system recalibration.

Test Method A115-A  
(Revision of Test Method A115)