SLOVENSKI STANDARD
SIST EN 61340-3-2:2002

01-september-2002

Electrostatics - Part 3-2: Methods for simulation of electrostatic effects - Machine model (MM) - Component testing

Electrostatics -- Part 3-2: Methods for simulation of electrostatic effects - Machine model (MM) - Component testing

Elektrostatik -- Teil 3-2: Verfahren zur Simulation elektrostatischer Entladung - Machine Model (MM) - Bauelementeprüfung

Electrostatique -- Partie 3-2: Méthodes pour la simulation des effets électrostatiques - Modèles de machine (MM) - Essais des composants

Ta slovenski standard je istoveten z: **EN 61340-3-2:2002**

ICS:

17.220.99	Drugi standardi v zvezi z elektriko in magnetizmom	Other standards related to electricity and magnetism

SIST EN 61340-3-2:2002 **en**

EUROPEAN STANDARD **EN 61340-3-2**

NORME EUROPÉENNE

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English version

Electrostatics
Part 3-2: Methods for simulation of electrostatic effects - Machine model (MM) - Component testing
(IEC 61340-3-2:2002)

Electrostatique
Partie 3-2: Méthodes pour la simulation des effets électrostatiques - Modèles de machine (MM) - Essais des composants
(CEI 61340-3-2:2002)

Elektrostatik
Teil 3-2: Verfahren zur Simulation elektrostatischer Entladung - Machine Model (MM) - Bauelementeprüfung
(IEC 61340-3-2:2002)

This European Standard was approved by CENELEC on 2002-05-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CENELEC
European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

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Foreword

The text of document 101/132/FDIS, future edition 1 of IEC 61340-3-2, prepared by IEC TC 101, Electrostatics, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61340-3-2 on 2002-05-01.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2003-02-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2005-05-01

Endorsement notice

The text of the International Standard IEC 61340-3-2:2002 was approved by CENELEC as a European Standard without any modification.

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Electrostatique –

Partie 3-2:
Méthodes pour la simulation des effets électrostatiques – Modèles de machine (MM) – Essais des composants

Electrostatics –

Part 3-2:
Methods for simulation of electrostatic effects – Machine model (MM) – Component testing

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROSTATICS –

Part 3-2: Methods for simulation of electrostatic effects – Machine model (MM) – Component testing

FOREWORD

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International Standard IEC 61340-3-2 has been prepared by IEC technical committee 101: Electrostatics.

The text of this standard is based on the following documents:

FDIS	Report on voting
101/132/FDIS	101/137/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

The committee has decided that the contents of this publication will remain unchanged until 2007. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

INTRODUCTION

Electrostatic discharges occur frequently in the environment. Electrical and electronic equivalent models are used to simulate electrostatic discharges in a controlled manner to allow study and prediction of hazards or damage. This standard provides a description of the modern version of a machine model (MM). Component damage caused by the MM is often similar to that caused by the human body model (HBM), but occurs at significantly lower voltage level.

ELECTROSTATICS –

Part 3-2: Methods for simulation of electrostatic effects – Machine model (MM) – Component testing

1 Scope

This part of IEC 61340 describes the discharge current waveforms used to define the MM and the basic equipment requirements used to develop these waveforms. Test parameters are defined for testing and classifying the electrostatic discharge (ESD) sensitivity of non-powered devices to the MM.

The purpose of this standard is to establish a test model that will replicate MM failures and will define the MM transient current discharge waveform and all necessary test parameters to ensure reliable, reproducible test results. Reproducible data will allow accurate comparisons of MM ESD sensitivity levels.

2 Definitions

For the purpose of this part of IEC 61340, the definitions given in 61340-3-1 apply.

3 Equipment

3.1 MM ESD waveform generator

This equipment applies a MM electrostatic current discharge pulse to a component under test. The equivalent circuit and tester evaluation loads are illustrated in figure 1.

3.2 Waveform verification equipment

Equipment capable of verifying the MM current waveform pulse is defined in this standard. This equipment includes but is not limited to an waveform recording system, a high voltage resistor, and a current transducer.

3.2.1 Waveform recording system

The waveform recording system shall have a minimum single shot bandwidth of 350 MHz.

3.2.2 Evaluation loads

Two evaluation loads are necessary to verify the functionality of the waveform generator:

a) load 1: a shorting wire;

b) load 2: a 500 Ω ± 1 %, 1 000 V, low inductance resistor.

The lead length of the evaluation loads (shorting wire or resistor) shall be as short as possible consistent with connecting evaluation load to the appropriate reference pins (A and B in figure 1) or to any other pins while passing through the current transducer.

3.2.3 Current transducer

The current transducer shall have a minimum bandwidth of 350 MHz.

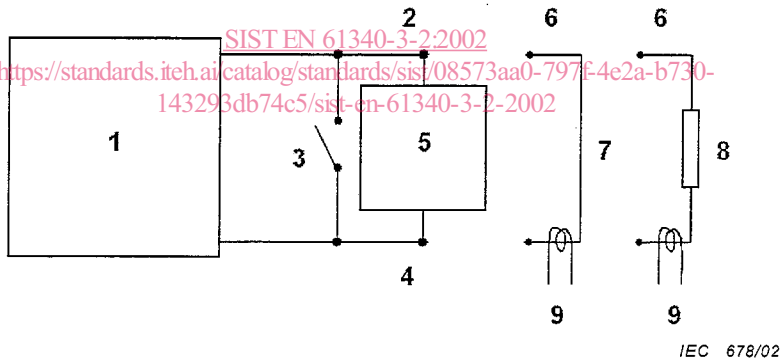
4 MM current waveform requirements

4.1 General

For electronic component testing, MM ESD waveform generator qualification shall ensure waveform integrity of the discharge current through both a short-circuit and a resistive load. The short-circuit waveform requirements are specified in figure 2 for all positive and negative voltages defined in table 1 while the resistive load waveform requirements for ±400 V are shown in figure 3 and table 1.

4.2 Waveform qualification and verification

Equipment qualification shall be performed during initial acceptance testing. Re-qualification is required whenever equipment repairs are made that may affect the waveform. Additionally, the waveforms shall be verified periodically. The highest pin count test fixture board should be used. In case the waveform no longer meets the limits in table 1 and figures 2 and 3, all ESD testing performed after previous satisfactory waveform check shall be considered invalid.



Key

1	MM ESD waveform generator (nominally 200 pF)	6	Evaluation load
2	Terminal A	7	Shorting wire
3	Switch	8	Resistance R = 500 Ω
4	Terminal B	9	Current transducer
5	Component under test		

Figure 1 – MM ESD waveform generator equivalent

Requirements for figure 1:

1. The evaluation loads (7, 8) are specified in 3.2.2.
2. The current transducer (9) is specified in 3.2.3.