# SLOVENSKI STANDARD
# SIST EN 62433-4:2016

**01-december-2016**

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**Modeliranje integriranih vezij (IC) za elektromagnetno združljivost (EMC) - 4. del: Modeli integriranih vezij za vedenjsko simulacijo RF odpornosti - Modeliranje odpornosti integriranih vezij proti prevajanim motnjam (ICIM-CI) (IEC 62433-4:2016)**

EMC IC modelling - Part 4: Models of Integrated Circuits for RF Immunity behavioural simulation - Conducted Immunity modelling (ICIM-CI) (IEC 62433-4:2016)



EMC IC modelling - Part 2: Models of Integrated Circuits for EMI behavioural simulation - Conducted Emissions modelling (ICEM-CE) (IEC 62433-4:2016)



**Ta slovenski standard je istoveten z: EN 62433-4:2016**

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**ICS:**

| | | |
|---|---|---|
| 31.200 | Integrirana vezja, mikroelektronika | Integrated circuits. Microelectronics |
| 33.100.20 | Imunost | Immunity |

**SIST EN 62433-4:2016** **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN 62433-4

October 2016

ICS 31.200

English Version

# EMC IC modelling - Part 4: Models of integrated circuits for RF immunity behavioural simulation - Conducted immunity modelling (ICIM-CI) (IEC 62433-4:2016)

Modèles de circuits intégrés pour la CEM - Partie 4: Modèles de circuits intégrés pour la simulation du comportement d'immunité aux radiofréquences - Modélisation de l'immunité conduite (ICIM-CI) (IEC 62433-4:2016)

EMV-IC-Modellierung - Teil 4: Modelle integrierter Schaltungen für die Simulation des Verhaltens der HF-Störfestigkeit - Modellierung der Störfestigkeit gegen leitungsgeführte Störungen (ICIM-CI) (IEC 62433-4:2016)

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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**



Ref. No. EN 62433-4:2016 E

## European foreword

The text of document 47A/988/FDIS, future edition 1 of IEC 62433-4, prepared by SC 47A “Integrated circuits” of IEC/TC 47 “Semiconductor devices” was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62433-4:2016.

The following dates are fixed:

| | | |
|---|---|---|
| • latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement | (dop) | 2017-04-21 |
| • latest date by which the national standards conflicting with the document have to be withdrawn | (dow) | 2019-10-21 |

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## Endorsement notice

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# Annex ZA
(normative)

## Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu

| Publication | Year | Title | EN/HD | Year |
|---|---|---|---|---|
| IEC 62132-1 | - | Circuits intégrés - Mesure de l'immunité électromagnétique - Partie 1: Conditions générales et définitions | EN 62132-1 | - |
| IEC 62132-4 | - | Circuits intégrés - Mesure de l'immunité électromagnétique 150 kHz à 1 GHz - Partie 4: Méthode d'injection directe de puissance RF | EN 62132-4 | - |
| IEC 62433-2 | - | Modèles de circuits intégrés pour la CEM - Partie 2: Modèles de circuits intégrés pour la simulation du comportement lors de perturbations électromagnétiques - Modélisation des émissions conduites (ICEM-CE) | EN 62433-2 | - |
| ISO 8879 | 1986 | Traitement de l'information - Systèmes bureautiques - Langage normalisé de balisage généralisé (SGML) | - | - |
| ISO/IEC 646 | 1991 | Technologies de l'information - Jeu ISO de caractères codés à 7 éléments pour l'échange d'information | - | - |
| CISPR 17 | - | Méthodes de mesure des caractéristiques d'antiparasitage des dispositifs de filtrage CEM passifs | EN 55017 | - |

# IEC 62433-4

Edition 1.0 2016-05

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

colour inside

## EMC IC modelling –
## Part 4: Models of integrated circuits for RF immunity behavioural simulation – Conducted immunity modelling (ICIM-CI)



## Modèles de circuits intégrés pour la CEM –
## Partie 4: Modèles de circuits intégrés pour la simulation du comportement d'immunité aux radiofréquences – Modélisation de l'immunité conduite (ICIM-CI)

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## FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.

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International Standard IEC 62433-4 has been prepared by subcommittee 47A: Integrated circuits, of IEC technical committee 47: Semiconductor devices.

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

| FDIS | Report on voting |
|---|---|
| 47A/988/FDIS | 47A/989/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 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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

**IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

# EMC IC MODELLING –

## Part 4: Models of integrated circuits for RF immunity behavioural simulation – Conducted immunity modelling (ICIM-CI)

## 1 Scope

This part of IEC 62433 specifies a flow for deriving a macro-model to allow the simulation of the conducted immunity levels of an integrated circuit (IC). This model is commonly called Integrated Circuit Immunity Model – Conducted Immunity, ICIM-CI. It is intended to be used for predicting the levels of immunity to conducted RF disturbances applied on IC pins.

In order to evaluate the immunity threshold of an electronic device, this macro-model will be inserted in an electrical circuit simulation tool.

This macro-model can be used to model both analogue and digital ICs (input/output, digital core and supply). This macro-model does not take into account the non-linear effects of the IC.

The added value of ICIM-CI is that it could also be used for immunity prediction at board and system level through simulations.



This part of IEC 62433 has two main parts:

- the electrical description of ICIM-CI macro-model elements;
- a universal data exchange format called CIML based on XML. This format allows ICIM-CI to be encoded in a more useable and generic form for immunity simulation.



## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62132-1, *Integrated circuits – Measurement of electromagnetic immunity – Part 1: General conditions and definitions*

IEC 62132-4, *Integrated circuits – Measurement of electromagnetic immunity 150 kHz to 1 GHz – Part 4: Direct RF power injection method*

IEC 62433-2, *EMC IC modelling – Part 2: Models of integrated circuits for EMI behavioural simulation – Conducted emissions modelling (ICEM-CE)*

ISO 8879: 1986, *Information processing – Text and office systems – Standard Generalized Markup Language (SGML)*

ISO/IEC 646: 1991, *Information technology – ISO 7-bit coded character set for information interchange (7-Bit ASCII)*

CISPR 17, *Methods of measurement of the suppression characteristics of passive EMC filtering devices*