

<b>STN</b>	<b>EMC IC modelovanie</b> <b>Časť 6: Modely integrovaných obvodov na</b> <b>simuláciu správania pri impulznej odolnosti</b> <b>Modelovanie odolnosti proti impulznému vedeniu</b> <b>(ICIM-CPI)</b>	<b>STN</b> <b>EN IEC 62433-6</b>  35 8728
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EMC IC modelling - Part 6: Models of integrated circuits for pulse immunity behavioural simulation - Conducted pulse immunity modelling (ICIM-CPI)

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 03/21

Obsahuje: EN IEC 62433-6:2020, IEC 62433-6:2020

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EUROPEAN STANDARD

**EN IEC 62433-6**

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November 2020

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English Version

**EMC IC modelling - Part 6: Models of integrated circuits for  
Pulse immunity behavioural simulation - Conducted Pulse  
Immunity (ICIM-CPI)  
(IEC 62433-6:2020)**

Modèles de circuits intégrés pour la CEM - Partie 6:  
Modèles de circuits intégrés pour la simulation du  
comportement d'immunité aux impulsions - Modélisation de  
l'immunité aux impulsions conduites (ICIM-CPI)  
(IEC 62433-6:2020)

EMV-IC-Modellierung - Teil 6: Modelle integrierter  
Schaltungen für die Simulation des Verhaltens bei  
Störfestigkeit gegen Impulse - Modellierung der  
Störfestigkeit gegen leitungsgeführte Impulse (ICIM-CPI)  
(IEC 62433-6:2020)

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**EN IEC 62433-6:2020 (E)****European foreword**

The text of document 47A/1090/CDV, future edition 1 of IEC 62433-6, 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 IEC 62433-6:2020.

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) 2021-07-27
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IEC 62433-2:2017	NOTE	Harmonized as EN 62433-2:2017 (not modified)
CISPR 16-1-4:2019	NOTE	Harmonized as EN IEC 55016-1-4:2019 (not modified)
CISPR 17	NOTE	Harmonized as EN 55017

## Annex ZA (normative)

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

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where 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](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61000-4-2	-	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	EN 61000-4-2	-
IEC 61000-4-4	-	Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	EN 61000-4-4	-
IEC 62215-3	-	Integrated circuits - Measurement of impulse immunity - Part 3: Non-synchronous transient injection method	EN 62215-3	-
IEC 62433-1	-	EMC IC modelling - Part 1: General modelling framework	EN IEC 62433-1	-
IEC 62433-4	-	EMC IC modelling - Part 4: Models of integrated circuits for RF immunity behavioural simulation - Conducted immunity modelling (ICIM-CI)	EN 62433-4	-
IEC 62615	-	Electrostatic discharge sensitivity testing - Transmission line pulse (TLP) - Component level	-	-



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# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**EMC IC modelling –**

**Part 6: Models of integrated circuits for pulse immunity behavioural simulation –  
Conducted pulse immunity modelling (ICIM-CPI)**

**Modèles de circuits intégrés pour la CEM –**

**Partie 6: Modèles de circuits intégrés pour la simulation du comportement  
d'immunité aux impulsions – Modélisation de l'immunité aux impulsions  
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Edition 1.0 2020-09

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



## EMC IC modelling –

### Part 6: Models of integrated circuits for pulse immunity behavioural simulation – Conducted pulse immunity modelling (ICIM-CPI)

## Modèles de circuits intégrés pour la CEM –

### Partie 6: Modèles de circuits intégrés pour la simulation du comportement d'immunité aux impulsions – Modélisation de l'immunité aux impulsions conduites (ICIM-CPI)

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## CONTENTS

FOREWORD .....	5
1 Scope .....	7
2 Normative references .....	7
3 Terms, definitions, abbreviated terms and conventions .....	8
3.1 Terms and definitions .....	8
3.2 Abbreviated terms .....	11
3.3 Conventions .....	11
4 Philosophy .....	11
5 ICIM-CPI model structure .....	12
5.1 General .....	12
5.2 PPN .....	14
5.2.1 Typical structure of a PPN .....	14
5.2.2 PDN description .....	15
5.2.3 NLB description .....	16
5.3 FB description .....	16
6 CPIML format .....	18
6.1 General .....	18
6.2 CPIML structure .....	19
6.3 Global elements .....	20
6.4 Header section .....	20
6.5 Lead_definitions section .....	20
6.6 Macromodels section .....	21
6.7 Validity section .....	22
6.8 PDN .....	22
6.9 NLB .....	22
6.9.1 General .....	22
6.9.2 Attribute definitions .....	23
6.9.3 Data description .....	24
6.10 FB .....	25
6.10.1 General .....	25
6.10.2 Attribute definitions .....	26
6.10.3 Data description .....	30
Annex A (informative) Extraction of model components .....	34
A.1 General .....	34
A.2 PPN description .....	34
A.3 PDN Extraction .....	34
A.3.1 General .....	34
A.3.2 S/Z/Y-parameter measurement .....	34
A.3.3 Conventional one-port method .....	35
A.3.4 Two-port method for low impedance measurement .....	35
A.3.5 Two-port method for high impedance measurement .....	36
A.4 NLB extraction .....	36
A.4.1 General .....	36
A.4.2 TLP test method .....	37
A.5 FB extraction .....	39
A.5.1 General .....	39

A.5.2	Example of FB data in case of test criteria type = Class E_IC .....	39
A.5.3	Example of FB data in case of test criteria type = Class C_IC .....	41
Annex B (informative)	NLB implementation techniques in a circuit simulator .....	42
B.1	General.....	42
B.2	NLB modelling based on a R/I table .....	42
B.3	NLB modelling based on a switch based model .....	42
B.4	NLB modelling based on physical device model .....	43
Annex C (informative)	Example of ICIM-CPI model .....	45
C.1	General.....	45
C.2	Example of Power switch ICIM-CPI model.....	45
C.2.1	General .....	45
C.2.2	CPI model.....	45
C.2.3	ICIM-CPI model use .....	48
C.3	Example of 32-bit microcontroller ICIM-CPI model .....	50
C.3.1	General .....	50
C.3.2	CPI model.....	51
Bibliography	.....	54
Figure 1	– Structure of the ICIM-CPI model.....	13
Figure 2	– Example of an ICIM-CPI model of an electronic board.....	14
Figure 3	– Structure of a typical PPN .....	15
Figure 4	– Characteristics of a voltage pulse entering the DI during a TLP test.....	17
Figure 5	– Example of defect monitored at the OO when a disturbance is applied to the DI.....	18
Figure 6	– CPIML inheritance hierarchy .....	19
Figure 7	– Example of a NLB external file .....	25
Figure 8	– Example of an external FB file .....	33
Figure A.1	– Conventional one-port S-parameters measurement.....	35
Figure A.2	– Two-port method for low impedance measurement .....	35
Figure A.3	– Two-port method for high impedance measurement .....	36
Figure A.4	– Example of I/V measurements to extract NLB .....	37
Figure A.5	– TLP method set-up (not powered IC) .....	38
Figure A.6	– Example of NLB extraction using standard TLP pulse .....	38
Figure A.7	– Graphs for identification of IC failure mechanism for destruction prediction.....	40
Figure B.1	– NLB model based on a R/I table.....	42
Figure B.2	– Example of a generic model architecture based on switches for NLB behavioural modelling .....	43
Figure B.3	– Example of core MOS large signal model of the GGNMOS .....	43
Figure C.1	– Use of the ICIM-CPI model for simulation .....	45
Figure C.2	– Power switch V/I curve for 50 ns-pulse width .....	46
Figure C.3	– Power switch ICIM-CPI model.....	46
Figure C.4	– Power switch ICIM-CPI model use for ESD protection design .....	49
Figure C.5	– Calculated voltage at Power switch pin for different ESD protection capacitor values.....	49
Figure C.6	– Voltage at Power switch pin for fog lamp left and right sides.....	50
Figure C.7	– Example of 32-bit microcontroller protection devices .....	50

Table 1 – Attributes of <i>Lead</i> tag in the <i>Lead_definitions</i> section .....	20
Table 2 – Compatibility between the <i>Mode</i> and <i>Type</i> fields for correct CPIML annotation.....	21
Table 3 – Definition of the <i>Lead</i> tag for <i>Nlb</i> section .....	22
Table 4 – Default values of <i>Unit_voltage</i> and <i>Unit_current</i> .....	24
Table 5 – Allowed file extensions for <i>Data_files</i> .....	24
Table 6 – Definition of the <i>Lead</i> tag in <i>Fb</i> section .....	26
Table 7 – <i>Table</i> sub-attributes definition .....	27
Table 8 – <i>Pulse_characteristics</i> parameters definition.....	27
Table 9 – <i>Test_criteria</i> parameters definition .....	28
Table A.1 – Example of FB data corresponding to Class E <sub>IC</sub> failure.....	41
Table A.2 – Example of FB data corresponding to Class C <sub>IC</sub> failure .....	41
Table C.1 – Synthesis Peak voltage and Energy for different pulse widths .....	46

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## EMC IC MODELLING –

**Part 6: Models of integrated circuits for pulse immunity behavioural simulation – Conducted pulse immunity modelling (ICIM-CPI)**

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International Standard IEC 62433-6 has been prepared by subcommittee 47A: Integrated circuits, of IEC technical committee 47: Semiconductor devices.

The text of this International Standard is based on the following documents:

CDV	Report on voting
47A/1090/CDV	47A/1098/RVC

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

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 62433 series, published under the general title *EMC IC modelling*, can be found on the IEC website.

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

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## EMC IC MODELLING –

### Part 6: Models of integrated circuits for pulse immunity behavioural simulation – Conducted pulse immunity modelling (ICIM-CPI)

#### 1 Scope

The objective of this part of IEC 62433 is to describe the extraction flow for deriving an immunity macro-model of an Integrated Circuit (IC) against conducted Electrostatic Discharge (ESD) according to IEC 61000-4-2 and Electrical Fast Transients (EFT) according to IEC 61000-4-4.

The model addresses physical damages due to overvoltage, thermal damage and other failure modes. Functional failures can also be addressed.

This model allows the immunity simulation of the IC in an application. This model is commonly called "Integrated Circuit Immunity Model Conducted Pulse Immunity", ICIM-CPI.

The described approach is suitable for modelling analogue, digital and mixed-signal ICs. Several terminals of an IC can be part of a single model (e.g. input, output and supply pins). The implementation of the model is capable of representing the non-linear behaviour of overvoltage protection circuits.

The model can be implemented for the use in different software tools for circuit simulation in time-domain. The described modelling approach allows simulating device failure due to ESD or EFT at component and system level considering all components necessary for the immunity simulation of an IC, such as a PCB or external protection elements.

This document demonstrates, in detail, the construction of models in a defined XML-based format which is suitable for the exchange of models without any deeper knowledge of the semiconductor circuit. However, the model functionality can be implemented in different formats including, but not limited to, tables, SPICE[1]<sup>1</sup> netlists, hardware description languages such as VHDL-AMS [2] and Verilog-AMS [3].

This document provides:

- the description of ICIM-CPI macro-model elements representing electrical, thermal or logical behaviour of the IC.
- a universal data exchange format based on XML.

#### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61000-4-2, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

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<sup>1</sup> Numbers in square brackets refer to the bibliography.

IEC 61000-4-4, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*

IEC 62215-3, *Integrated circuits – Measurement of impulse immunity – Part 3: Non-synchronous transient injection method*

IEC 62433-1, *EMC IC modelling – Part 1: General modelling framework*

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

IEC 62615, *Electrostatic discharge sensitivity testing – Transmission line pulse (TLP) – Component level*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**