

---

**Elektromagnetna združljivost (EMC) – 4-19. del: Preskušanje in merilne tehnike – Preskus odpornosti proti prevajanim motnjam skupne zvrsti v frekvenčnem območju od 2 kHz do 150 kHz na izmeničnih napajalnih vhodih (IEC 61000-4-19:2014)**

Electromagnetic compatibility (EMC) -- Part 4-19: Testing and measurement techniques - Test for immunity to conducted, differential mode disturbances and signalling in the frequency range 2 kHz to 150 kHz at a.c. power ports

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

Compatibilité Électromagnétique (CEM) - Partie 4-19: Techniques d'essai et de mesure - Essai pour l'immunité aux perturbations conduites en mode différentiel et à la signalisation dans la bande de fréquence de 2 kHz à 150 kHz, aux entrée de puissance à courant alternatif

**Ta slovenski standard je istoveten z: EN 61000-4-19:2014**

---

**ICS:**

33.100.20      Imunost                                      Immunity

**SIST EN 61000-4-19:2014**                                      **en**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN 61000-4-19:2014](#)

<https://standards.iteh.ai/catalog/standards/sist/29a22775-461e-44a8-b893-9f774f098b48/sist-en-61000-4-19-2014>

EUROPEAN STANDARD

**EN 61000-4-19**

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 2014

ICS 33.100.20

English Version

**Electromagnetic compatibility (EMC) - Part 4-19: Testing and measurement techniques - Test for immunity to conducted, differential mode disturbances and signalling in the frequency range 2 kHz to 150 kHz at a.c. power ports (IEC 61000-4-19:2014)**

Compatibilité électromagnétique (CEM) - Partie 4-19: Techniques d'essai et de mesure - Essai pour l'immunité aux perturbations conduites en mode différentiel et à la signalisation dans la gamme de fréquences de 2 kHz à 150 kHz, aux accès de puissance à courant alternatif (CEI 61000-4-19:2014)

Elektromagnetische Verträglichkeit (EMV) - Teil 4-19: Prüf- und Messverfahren - Prüfung der Störfestigkeit an Wechselstrom-Netzanschlüssen gegen leitungsgeführte symmetrische Störgrößen und Störgrößen aus der Signalübertragung im Frequenzbereich von 2 kHz bis 150 kHz (IEC 61000-4-19:2014)

## iTeh STANDARD PREVIEW

This European Standard was approved by CENELEC on 2014-06-11. 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 CEN-CENELEC Management Centre or to any CENELEC member.

[https://standards.iteh.ai/catalog/standards/sist/29a22775-461e-44a8-b893-](https://standards.iteh.ai/catalog/standards/sist/29a22775-461e-44a8-b893-9f774f098b48/sist-en-61000-4-19-2014)

[9f774f098b48/sist-en-61000-4-19-2014](https://standards.iteh.ai/catalog/standards/sist/29a22775-461e-44a8-b893-9f774f098b48/sist-en-61000-4-19-2014)

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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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**

## Foreword

The text of document 77A/845/FDIS, future edition 1 of IEC 61000-4-19, prepared by SC 77A "EMC – Low frequency phenomena", of IEC/TC 77 "Electromagnetic compatibility" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61000-4-19:2014.

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) 2015-03-11
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-06-11

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

The text of the International Standard IEC 61000-4-19:2014 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60068-1	NOTE	Harmonized as EN 60068-1.
IEC 61000-2-2:2002	NOTE	Harmonized as EN 61000-2-2:2002 (not modified).
IEC 61000-2-12:2003	NOTE	Harmonized as EN 61000-2-12:2003 (not modified).
CISPR 14-1:2005 + A1:2008 + A2:2011	NOTE	Harmonized as EN 55014-1:2006 (not modified) + A1:2009 (not modified) + A2:2011 (not modified).
CISPR 15:2013	NOTE	Harmonized as EN 55015:2013 (not modified).

## 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](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61000-4-13 + A1	2002 2009	Electromagnetic compatibility (EMC) - Part 4-13: Testing and measurement techniques - Harmonics and interharmonics including mains signalling at a.c. power port, low frequency immunity tests	EN 61000-4-13 + A1	2002 2009
IEC 61000-4-16 + A1 + A2	1998 2001 2009	Electromagnetic compatibility (EMC) - Part 4-16: Testing and measurement techniques - Test for immunity to conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz	EN 61000-4-16 + A1 + A2	1998 2004 2011

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN 61000-4-19:2014](https://standards.iteh.ai/catalog/standards/sist/29a22775-461e-44a8-b893-9f774f098b48/sist-en-61000-4-19-2014)

<https://standards.iteh.ai/catalog/standards/sist/29a22775-461e-44a8-b893-9f774f098b48/sist-en-61000-4-19-2014>



IEC 61000-4-19

Edition 1.0 2014-05

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



BASIC EMC PUBLICATION  
PUBLICATION FONDAMENTALE EN CEM

**Electromagnetic compatibility (EMC) –  
Part 4-19: Testing and measurement techniques – Test for immunity to  
conducted, differential mode disturbances and signalling in the frequency range  
2 kHz to 150 kHz at a.c. power ports**

<https://standards.iteh.ai/catalog/standards/sist/29a22775-461e-44a8-b893-25347028140e/en-61000-4-19-2014>

**Compatibilité électromagnétique (CEM) –  
Partie 4-19: Techniques d'essai et de mesure – Essai pour l'immunité aux  
perturbations conduites en mode différentiel et à la signalisation dans la gamme  
de fréquences de 2 kHz à 150 kHz, aux accès de puissance à courant alternatif**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

PRICE CODE  
CODE PRIX



ICS 33.100.20

ISBN 978-2-8322-1565-4

**Warning! Make sure that you obtained this publication from an authorized distributor.  
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

## CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references .....	7
3 Terms and definitions .....	8
3.1 Terms and definitions.....	8
3.2 Abbreviations.....	9
4 General .....	9
5 Test levels and wave profiles in the frequency range 2 kHz to 150 kHz .....	10
5.1 Test levels for differential voltage testing .....	10
5.1.1 General .....	10
5.1.2 Test wave profile with CW pulses with pause.....	11
5.1.3 Test wave profile with rectangularly modulated pulses.....	12
5.2 Test levels for differential current testing .....	12
5.2.1 General .....	12
5.2.2 Test wave profile with CW pulses with pause.....	13
5.2.3 Test wave profile with rectangularly modulated pulses.....	13
6 Test equipment.....	13
6.1 Test generators .....	13
6.1.1 General .....	13
6.1.2 Characteristics and performance of the generator for the differential voltage test.....	14
6.1.3 Characteristics and performance of the generator for the differential current test.....	14
6.2 Verification of the characteristics of the test generators .....	15
6.2.1 General .....	15
6.2.2 Verification of the generators.....	15
6.2.3 Verification of the coupling/decoupling network .....	16
7 Test setups.....	17
7.1 Test setup for differential mode voltage testing.....	17
7.2 Test setup for differential mode current test.....	18
8 Test procedure .....	18
8.1 General.....	18
8.2 Laboratory reference conditions .....	19
8.2.1 Climatic conditions .....	19
8.2.2 Electromagnetic conditions.....	19
8.3 Execution of the test .....	19
9 Evaluation of test results .....	19
10 Test report.....	20
Annex A (informative) Interference sources, victims and effects.....	21
Annex B (informative) Selection of test levels .....	25
Annex C (informative) Testing electricity meters guideline .....	27
C.1 Example of the basic structure of a test generator for differential current testing.....	27
C.2 Example of a test circuit.....	28



C.3 Example of a realized setup including schematics .....	29
Annex D (informative) Test wave profiles .....	30
Bibliography .....	31
Figure 1 – Frequency vs. amplitude profile for differential voltage testing .....	11
Figure 2 – Test wave profile with CW pulses with pause .....	12
Figure 3 – Test wave profile with rectangularly modulated pulses for differential voltage testing .....	12
Figure 4 – Example of a simplified circuit diagram with the major elements of the differential voltage test generator .....	14
Figure 5 – Test setup for verification of the CDN in a 10 $\Omega$ measurement system .....	16
Figure 6 – Limit for the damping characteristics measured in a 10 $\Omega$ measurement system .....	17
Figure 7 – Example of test setup for differential mode voltage testing with auxiliary equipment .....	17
Figure 8 – Example of test setup for differential mode current testing .....	18
Figure A.1 – Standards dealing with voltage levels due to non-intentional emissions in the frequency range 2 kHz to 150 kHz .....	23
Figure A.2 – Standards dealing with voltage levels due to intentional emissions in the frequency range 2 kHz to 150 kHz .....	24
Figure C.1 – Simplified circuit of a differential current test generator .....	27
Figure C.2 – Example of a test circuit .....	28
Figure C.3 – Example for a realized test set up .....	29
<a href="https://standards.iteh.ai/catalog/standards/sist/29a22775-461e-44a8-b893-7100-4-19:2014">https://standards.iteh.ai/catalog/standards/sist/29a22775-461e-44a8-b893-7100-4-19:2014</a>	
Table 1 – Test levels in the 2 kHz to 150 kHz frequency range for differential voltage testing .....	10
Table 2 – Test levels in the 2 kHz to 150 kHz frequency range for differential current testing .....	13

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTROMAGNETIC COMPATIBILITY (EMC) –****Part 4-19: Testing and measurement techniques – Test for immunity to conducted, differential mode disturbances and signalling in the frequency range 2 kHz to 150 kHz at a.c. power ports**

## 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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61000-4-19 has been prepared by subcommittee 77A: EMC – Low frequency phenomena, of IEC technical committee 77: Electromagnetic compatibility.

It forms Part 4-19 of IEC 61000. It has the status of a basic EMC publication in accordance with IEC Guide 107.

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

FDIS	Report on voting
77A/845/FDIS	77A/854/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.

A list of all parts in the IEC 61000 series, published under the general title *Electromagnetic compatibility (EMC)*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site 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.

**iTeh STANDARD PREVIEW**  
(standards.iteh.ai)

**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.**

<http://www.iteh.ai/sist-en-61000-4-19-2014>  
9f774f098b48/sist-en-61000-4-19-2014

## INTRODUCTION

IEC 61000 is published in separate parts, according to the following structure:

### **Part 1: General**

General considerations (introduction, fundamental principles)  
Definitions, terminology

### **Part 2: Environment**

Description of the environment  
Classification of the environment  
Compatibility levels

### **Part 3: Limits**

Emission limits  
Immunity limits (in so far as they do not fall under the responsibility of the product committees)

### **Part 4: Testing and measurement techniques**

Measurement techniques  
Testing techniques

### **Part 5: Installation and mitigation guidelines**

Installation guidelines  
Mitigation methods and devices

### **Part 6: Generic standards**

### **Part 9: Miscellaneous**

Each part is further subdivided into several parts, published either as international standards or as technical specifications or technical reports, some of which have already been published as sections. Others are published with the part number followed by a dash and a second number identifying the subdivision (example: IEC 61000-6-1).

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN 61000-4-19:2014](#)

<http://standards.iteh.ai/catalog/standards/sist/29a22775-461e-44a8-b893-9f774f098b48/sist-en-61000-4-19-2014>