



# SLOVENSKI STANDARD oSIST prEN 50529-3:2009

01-januar-2009

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Conducted transmission networks -- Part 3: Power line communication (mains network-based)

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Ta slovenski standard je istoveten z: <sup>oSIST prEN 50529-3:2009</sup>**prEN 50529-3:2008**  
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**ICS:**

33.040.20      Prenosni sistem      Transmission systems

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**DRAFT**  
**prEN 50529-3**

November 2008

ICS

English version

**Conducted transmission networks -  
Part 3: Power line communication (mains network-based)**

To be completed

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This draft European Standard is submitted to CENELEC members for CENELEC enquiry.  
Deadline for CENELEC: 2009-04-17.

It has been drawn up by the CENELEC/ETSI JWG EMC.

If this draft becomes a European Standard, 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.

[oSIST prEN 50529-3:2009](#)

This draft European Standard was established by CENELEC 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.

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

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.

**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**

1

## Foreword

2 This draft European Standard was prepared by the Joint CENELEC – ETSI Working Group  
3 “EMC of conducted transmission networks”. It is submitted to the CENELEC enquiry.

4 This draft European Standard has been prepared under Mandate M/313 given to CENELEC  
5 by the European Commission and the European Free Trade Association and covers essential  
6 requirements of EC Directive 2004/108/EC <sup>1)</sup>. See Annex ZZ.

7

8 **JWG note 1:** In order to ensure due consensus from the stakeholders of both CENELEC and  
9 ETSI, this document is circulated to a simultaneous public enquiry in both organizations.

10 With a message dated 26 May 2005 to the CENELEC President, the ETSI Director General  
11 has confirmed that the subsequent vote and publication of the document will be assigned to  
12 CENELEC.

13

14 **JWG note 2:** The attention of national committees is drawn in particular to the list of exclusion  
15 frequencies contained in this draft standard. The JWG would particularly welcome comments  
16 on the suitability of these to each Member State and suggestions on how variations between  
17 countries might be covered in a harmonised standard.

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1) Directive 2004/108/EC of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC, OJ L 390, 31.12.2004, p. 24-37

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## 45 Introduction

46 The present document is part of the multi-part EMC standard specifying limits and methods of  
47 measurement for emissions emanating from wire-line telecommunication networks and  
48 immunity of those networks by means of references to harmonised product standards in  
49 combination with good engineering practice.

50 The applicability period of this standard is limited to 3 years (from publication date); at the  
51 end of this period, the experiences gained from the application of this standard will be  
52 reviewed and the requirements changed if judged necessary.

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## 53 1 Scope and object

54 This EMC standard specifies limits and methods of measurement for emissions originating  
55 from within powerline telecommunication networks and the immunity of those networks,  
56 including their in-premises extensions by references to harmonised product standards in  
57 combination with good engineering practice, when installed and operated as intended.

58 This standard covers the frequency range 9 kHz to 400 GHz. To date, it specifies limits and  
59 methods of measurement for conducted and radiated disturbances from telecommunication  
60 networks in the frequency range 150 kHz to 6 GHz. The assessment of a network needs to be  
61 performed only in the frequency ranges where limits are defined.

62 The emission limits set in this standard do not apply to the wanted emissions from embedded  
63 radio links within the network.

64 The requirements have been selected so as to ensure that electromagnetic disturbances  
65 generated by a network, or parts thereof, operating normally do not exceed a level that could  
66 prevent other equipment from operating as intended. Fault conditions of the network are not  
67 taken into account.

## 68 2 Normative references

69 The following referenced documents are indispensable for the application of this document.  
70 For dated references, only the edition cited applies. For undated references, the latest edition  
71 of the referenced document (including any amendments) applies.

EN 55022:2006 + A1:2007	Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement (CISPR 22:2005, mod. + A1:2005)
EN 55024:1998 + A1:2001 + A2:2003	Information technology equipment – Immunity characteristics – Limits and methods of measurement (CISPR 24:1997, mod. + A1:2001 + A2:2002)
EN 50412-2-1:2005	Power line communication apparatus and systems used in low-voltage installations in the frequency range 1,6 MHz to 30 MHz – Part 2-1: Residential, commercial and industrial environment – Immunity requirements
ETSI EN 300 386:2005 (V1.3.3) 2)	Electromagnetic compatibility and Radio spectrum Matters (ERM); Telecommunication network equipment; ElectroMagnetic Compatibility (EMC) requirements
IEC 60050-161:1990 + A1:1997 + A2:1998	International Electrotechnical Vocabulary – Chapter 161: Electromagnetic compatibility

2) Superseded by ETSI EN 300 386:2008 (V1.4.1), Electromagnetic compatibility and Radio spectrum Matters (ERM); Telecommunication network equipment; ElectroMagnetic Compatibility (EMC) requirements.

## 72 3 Terms, definitions and abbreviations

### 73 3.1 Terms and definitions

74 For the purposes of this document, the following terms and definitions apply.

#### 75 3.1.1

##### 76 **access network**

77 part of the telecommunications network between the telecommunications centre and the  
78 Network Termination Point

#### 79 3.1.2

##### 80 **disturbance field strength**

81 field strength produced at a given location by an electromagnetic disturbance, measured  
82 under specified conditions

83 [IEV 161-04-02]

#### 84 3.1.3

##### 85 **electromagnetic disturbance**

86 any electromagnetic phenomenon which may degrade the performance of a device,  
87 equipment or system, or adversely affect living or inert matter

88 NOTE An electromagnetic disturbance may be an electromagnetic noise, an unwanted signal or a change in the  
89 propagation medium itself.

90 [IEV 161-01-05]

#### 91 3.1.4

##### 92 **electronic communications network**

93 means transmission systems and, where applicable, switching or routing equipment and other  
94 resources which permit the conveyance of signals by wire, by radio, by optical or by other  
95 electromagnetic means, including satellite networks, fixed (circuit- and packet-switched,  
96 including Internet) and mobile terrestrial networks, electricity cable systems, to the extent that  
97 they are used for the purpose of transmitting signals, networks used for radio and television  
98 broadcasting, and cable TV networks, irrespective of the type of information conveyed

99 [Derived from art.2.a) of Directive 2002/21/EC [1] (Framework Directive)]

#### 100 3.1.5

##### 101 **emission**

102 phenomenon by which electromagnetic energy emanates from a source

103 [IEV 161-01-08]

#### 104 3.1.6

##### 105 **equipment**

106 for the purposes of this standard 'equipment' means any apparatus or fixed installation

#### 107 3.1.7

##### 108 **immunity (to a disturbance)**

109 ability of a device, equipment or system to perform without degradation in the presence of an  
110 electromagnetic disturbance

111 [IEV 161-01-20]

#### 112 3.1.8

##### 113 **network cable**

114 cable infrastructure (transmission line) used to connect together equipment



115 **3.1.9**  
 116 **powerline telecommunications network**  
 117 wire-line telecommunications network that uses power lines to provide telecommunication  
 118 services such as telephony, facsimile and broadband services

119 **3.1.10**  
 120 **radio (frequency) disturbance**  
 121 electromagnetic disturbance having components in the radio frequency range

122 [IEV 161-01-13]

123 **3.1.11**  
 124 **wire-line telecommunication network**  
 125 combination of equipment and passive devices (network cables, connectors) interconnected  
 126 together to constitute the wire-line part of an electronic communications network

## 127 **3.2 Abbreviations**

128 For the purposes of this document, the following abbreviations apply.

129 CENELEC European Committee for Electrotechnical Standardization

130 CISPR International Special Committee on Radio Interference

131 EMC Electromagnetic Compatibility

132 ETSI European Telecommunications Standards Institute

133 IEC International Electrotechnical Commission  
[https://standards.iteh.ai/catalog/standards/sist/e76195e7-6e5d-4160-981c-](https://standards.iteh.ai/catalog/standards/sist/e76195e7-6e5d-4160-981c-e7bba0fdb8b/osist-pren-50529-3-2009)

134 IEV International Electrotechnical Vocabulary

135 ITE Information Technology Equipment

136 NTP Network Termination Point

137 TV Television

## 138 **4 Requirements for networks**

### 139 **4.1 Introduction**

140 A network or a network segment is deemed to be compliant to the present standard

141 – if all equipment directly connected to the network or network segment meets the  
 142 requirements defined in 4.1 for immunity and 4.2 for emission, taking into account the  
 143 properties of the network or network segment, and

144 – if the network or network segment has been installed and maintained according to good  
 145 engineering practice and this practice is documented. Examples of good engineering  
 146 practice are given in Annex A.

## 147 4.2 Immunity requirements

148 Power line communication apparatus and systems shall meet the requirements of following  
149 immunity standards:

- 150 – from 150 kHz to 1 600 kHz: EN 55024;
- 151 – from 1 600 kHz to 30 MHz: EN 50412-2-1;
- 152 – from 30 MHz to 1 GHz: EN 55024.

153 NOTE To make the radiated immunity test more realistic, it is recommended that the connection between the EUT  
154 and the AE is made up of wiring as close as possible to wiring used in actual mains network for which the  
155 equipment is intended. This wiring should establish a typical level of attenuation between nodes of the powerline  
156 equipment being tested.

## 157 4.3 Emission requirements

### 158 4.3.1 With PLT function inactive

159 When PLT function is turned off, power line communication apparatus and systems shall meet  
160 the requirements of EN 55022.

### 161 4.3.2 With PLT function active

#### 162 4.3.2.1 General

163 Below 1,6 MHz, the conducted emission levels on the PLT port shall not exceed the limits  
164 specified in EN 55022.

165 Between 1,6 MHz and 30 MHz, PLT signal transmitter should use the minimum power level  
166 required, given the intended transfer rate and the local circumstances (existing noise level  
167 attenuation, etc.); such power level shall not exceed - 50 dBm/Hz.

168 When the PLT function is active the equipment shall avoid causing harmful interference with  
169 broadcast and other services operating in PLT frequency range by using one or more of the  
170 following methods:

- 171 – frequency exclusion (also called static notching);
- 172 – adaptive or dynamic notching.

173 NOTE More than one of the above methods may be required to provide adequate protection.

174 Such methods shall be applied at the frequencies given in Tables 1 and 2.