SLOVENSKI STANDARD
SIST EN 50561-1:2014

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Nadomešča:
SIST EN 55022:2011
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Aparati za komunikacije po elektroenergetskih vodih pri nizkonapetostnih inštalacijah - Karakteristike radijskih motenj - Omejitve in merilne metode - 1. del: Aparati za domačo uporabo

Power line communication apparatus used in low voltage installations - Radio disturbance characteristics - Limits and methods of measurement - Part 1: Apparatus for in-home use

Kommunikationsgeräte auf elektrischen Niederspannungsnetzen - Funkstöreigenschaften - Grenzwerte und Messverfahren - Teil 1: Geräte für die Verwendung im Heimbereich

Appareils de communication par courant porteur utilisés dans les installations basse tension - Caractéristiques de perturbations radioélectriques - Limites et méthodes de mesure - Partie 1: Appareils pour usage intérieur

Ta slovenski standard je istoveten z: **EN 50561-1:2013**

ICS:

33.100.01	Elektromagnetna združljivost na splošno	Electromagnetic compatibility in general
97.030	Električni aparati za dom na splošno	Domestic electrical appliances in general

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EUROPEAN STANDARD

NORME EUROPÉENNE

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EN 50561-1

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English version

Power line communication apparatus used in low-voltage installations - Radio disturbance characteristics - Limits and methods of measurement - Part 1: Apparatus for in-home use

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CENELEC

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

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Contents

Page

Foreword

This document (EN 50561-1:2013) has been prepared by CLC/TC 210, "Electromagnetic compatibility (EMC)".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2014-10-09
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2016-10-09

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZZ, which is an integral part of this document.

The scope is extended to the whole radio-frequency range from 9 kHz to 400 GHz, but limits are formulated only in restricted frequency bands, which are considered sufficient to reach adequate emission levels to protect radio broadcast and telecommunication services and to allow other apparatus to operate as intended at reasonable distance.

Introduction

The European Committee for Electrotechnical Standardization (CENELEC) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent given in EN 50561-1:2013.

CENELEC takes no position concerning the evidence, validity and scope of this patent right.

The holder of this patent right has assured CENELEC that he is willing to negotiate licenses under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with CENELEC. Information may be obtained from:

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Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights other than those identified above. CENELEC shall not be held responsible for identifying any or all such patent rights

1 Scope

This part of EN 50561 specifies limits and methods of measurement of radio disturbance characteristics for in-home communication apparatus that use the low-voltage power installation as the transmission medium. This part of EN 50561 applies to equipment that communicate over this medium in the frequency range 1,606 5 MHz to 30 MHz.

NOTE Similar equipment that communicate outside this frequency range is under study and will be covered by another European Standard.

Procedures are given for the measurement of signals generated by the equipment and limits are specified for the frequency range 9 kHz to 400 GHz. No measurement is required at frequencies where no limit is specified.

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.

EN 55022:2010 + AC:2011, *Information technology equipment — Radio disturbance characteristics — Limits and methods of measurement (CISPR 22:2008, modified)*

EN 55016-1-1:2010, *Specification for radio disturbance and immunity measuring apparatus and methods — Part 1-1: Radio disturbance and immunity measuring apparatus — Measuring apparatus (CISPR 16-1-1:2010 + corrigendum Oct. 2011)*

EN 55016-1-2:2004, *Specification for radio disturbance and immunity measuring apparatus and methods — Part 1-2: Radio disturbance and immunity measuring apparatus — Ancillary equipment — Conducted disturbances (CISPR 16-1-2:2003)*

EN 55016-4-2:2004 [1], *Specification for radio disturbance and immunity measuring apparatus and methods — Part 4-2: Uncertainties, statistics and limit modelling — Uncertainty in EMC measurements (CISPR 16-4-2:2003)*

The Radio Regulations, ITU, Edition of 2008

ITU-R Recommendation BS.560-3 [2], *Radio-frequency protection ratios in LF, MF and HF broadcasting*

ITU-R Recommendation BS.703, *Characteristics of AM sound broadcasting reference receivers for planning purposes*

ITU-R Recommendation BS.1615 [3], *"Planning parameters" for digital sound broadcasting at frequencies below 30 MHz*

1) EN 55016-4-2:2004 is superseded by EN 55016-4-2:2011, *Specification for radio disturbance and immunity measuring apparatus and methods — Part 4-2: Uncertainties, statistics and limit modelling — Measurement instrumentation uncertainty (CISPR 16-4-2:2011)*

2) BS.560-3 is superseded by BS.560-4, *Radio-frequency protection ratios in LF, MF and HF broadcasting*

3) BS.1615 is superseded by BS.1615-1, *"Planning parameters" for digital sound broadcasting at frequencies below 30 MHz*

3 Terms and definitions

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

3.1
AC mains power port
port that connects to the low voltage AC mains power network for the sole purpose of supplying electrical energy to the EUT

3.2
AC mains output port
port of the EUT that provides AC mains power to other apparatus

3.3
Artificial Mains Network
AMN
network providing a defined impedance at high frequencies across the power feed at the point of measurement of the terminal voltage, and also providing isolation of the circuit under test from the ambient noise on the power lines

Note 1 to entry: Such a network with a nominal impedance of 50 Ω/50 µH or 50 Ω/50 µH + 5 Ω is defined in EN 55016-1-2:2004, 4.3.

3.4
Associated Equipment
AE
equipment needed to maintain the data traffic on the cable attached to the EUT port under test and (or) to maintain the normal operation of the EUT during the test

Note 1 to entry: The AE can be another ITE, a traffic simulator or a connection to a network. The AE can be situated close to the measurement set-up, outside the measurement room or be represented by the connection to a network. The AE may be physically located outside the test area. The AE should not have any appreciable influence on the test results.

3.5
Equipment Under Test
EUT
representative equipment used for evaluation purposes

3.6
Impedance Stabilisation Network
ISN
symmetrical network for the measurement of the launched common mode disturbance signal transmitted by the EUT

3.7
in-Home PLC apparatus
PLC apparatus that connects to the low voltage AC mains power network and intended to be linked to other PLC apparatus connected in the same home

3.8
Information Technology Equipment
ITE
any equipment:

a) which has a primary function of either (or a combination of) entry, storage, display, retrieval, transmission, processing, switching, or control, of data and of telecommunication messages and which may be equipped with one or more terminal ports typically operated for the transfer of information,

b) with a rated supply voltage not exceeding 600 V

Note 1 to entry: ITE includes, for example, data processing equipment, office machines, electronic business equipment and telecommunication equipment.

Note 2 to entry: Any equipment (or part of the ITE equipment) which has a primary function of radio transmission and/or reception according to the ITU Radio Regulations is excluded from the scope of this European Standard.

Note 3 to entry: Any equipment which has a function of radio transmission and/or reception according to the definitions of the ITU Radio Regulations should fulfil the national radio regulations, whether or not this European Standard is also valid.

3.9
PLC apparatus
apparatus with a PLC port

Note 1 to entry: PLC apparatus are also called PLT apparatus.

3.10
PLC port

port that connects to the low voltage AC mains power network for the purpose of data transfer and communication, and may also supply electrical energy to the EUT

Note 1 to entry: PLC ports are also called PLT ports.

3.11
telecommunications/network port
point of connection for voice, data and signalling transfers intended to interconnect widely-dispersed systems via such means as direct connection to multi-user telecommunications networks (e.g. public switched telecommunications networks (PSTN) integrated services digital networks (ISDN), x-type digital subscriber lines (xDSL), etc.), local area networks (e.g. Ethernet, Token Ring, etc.) and similar networks

Note 1 to entry: A port generally intended for interconnection of components of an ITE system under test (e.g. RS-232, IEEE Standard 1284 (parallel printer), Universal Serial Bus (USB), IEEE Standard 1394 (“Fire Wire”), etc.) and used in accordance with its functional specifications (e.g. for the maximum length of cable connected to it), is not considered to be a telecommunications/network port under this definition.

Note 2 to entry: A PLC port is not considered a telecommunications network port in the sense of Definition 3.11.

3.12
user data
data originated from or destined to another device

3.13
‘valid’ radio broadcast service
radio broadcast service for which the field strength of the wanted radio signal at the location of the radio broadcast receiver is either at or above the minimum usable field strength level of 40 dB(µV/m) as defined by the ITU Radio Regulations and ITU-R Recommendation BS.703

4 Requirement for conducted disturbances at AC mains power ports

The AC mains power ports of the EUT shall comply with the Class B limits, using the measurement conditions and the methodology defined in EN 55022 for mains terminals.

5 Requirement for conducted disturbances at telecommunication/network ports

The Telecommunications/network ports of the EUT shall comply with the Class B limits, using the measurement conditions and the methodology defined in EN 55022 for these ports.

6 Requirements for conducted disturbances and communications signals at PLC ports

6.1 General requirements

The PLC port of the EUT shall comply with the following requirements:

In any operating condition, the unsymmetrical disturbances from the PLC port shall not exceed the disturbance limits given in Table 1 between 150 kHz and 1,606 5 MHz using the methods and procedures given in 9.1.

When user data is being transmitted by the PLC port the disturbances from the PLC port may exceed the disturbance limits of Table 1 at frequencies between 1,606 5 MHz and 30 MHz provided that within

— all the excluded frequency ranges given in Table A.1, the level of the transmitted signals shall comply with the disturbance limits given in Table 1 using the methods and procedures given in 9.1,

— all the excluded frequency ranges given in Table A.2, the level of the transmitted signals shall comply

  - either with the disturbance limits given in Table 1 using the methods and procedures given in 9.1,
  - or with the dynamic frequency exclusion requirements given in 6.2.

Without user data transmission, the unsymmetrical disturbances from the PLC port shall comply with the disturbance limits given in Table 1 between 150 kHz and 30 MHz using the methods and procedures given in 9.1.

The maximum transmitted signal from the PLC port shall not exceed the maximum values given in Table 2 measured using the methods and procedures given in 9.2.

The PLC port shall implement a dynamic power control function for the purpose of minimising the probability of radio disturbance whilst still maintaining communication. The dynamic power control function shall be capable of reducing the output power to the maximum levels given in Table 2 measured using the methods and procedures given in 9.2.

In order to ensure the inherent symmetry of the PLC port it shall, in all operating conditions, comply with the disturbance limits given in Table 1 using the methods and procedures given in 9.4.

Table 1 — Limits for conducted disturbances

Frequency range MHz	**Limits** dB(μV)	
	Quasi-peak	**Average**
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50
NOTE 1 The lower limit applies at the transition frequencies. NOTE 2 The limit decreases linearly with the logarithm of the frequency in the range 0,15 MHz to 0,50 MHz.		