BS EN 50529-1:2010

BSI Standards Publication

EMC Network Standard

Part 1: Wire-line telecommunications networks using telephone wires

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National foreword

This British Standard is the UK implementation of EN 50529-1:2010.

The UK participation in its preparation was entrusted to Technical Committee GEL/210/11, EMC product standards.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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EMC Network Standard - Part 1: Wire-line telecommunications networks using telephone wires

Norme CEM pour les réseaux de télécommunications - Partie 1 : Réseaux de télécommunications filaires utilisant des câbles téléphoniques

EMV-Norm für Übertragungsnetze - Teil 1: Leitungsgebundene Übertragungsnetze, die Telekommunikationsleitungen nutzen

CENELEC

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Foreword

This European Standard was prepared by the Joint CENELEC – ETSI Working Group “EMC of conducted transmission networks”. It was submitted to the formal vote and was approved by CENELEC as EN 50529-1 on 2010-11-01.

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

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2011-11-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2013-11-01

This European Standard has been prepared under Mandate M/313 given to CENELEC and ETSI by the European Commission and the European Free Trade Association and covers essential requirements of EC Directive 2004/108/EC [1)]. See Annex ZZ.

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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.

Contents

Introduction

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

1 Scope

This EMC standard specifies requirements for emissions originating from within wire-line telecommunication networks using telephone wires and the immunity of those networks, including their in-premises extensions by references to harmonised EMC product standards and other standards with EMC requirements in combination with good engineering practice, when installed and operated as intended.

This standard covers the frequency range 9 kHz to 400 GHz. The assessment of a network needs to be performed only in the frequency ranges where limits are defined in the relevant product standards.

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

The requirements have been selected so as to ensure that electromagnetic disturbances generated by a network, or parts thereof, operating normally do not exceed a level above which radio and telecommunications equipment or other equipment cannot operate as intended. Fault conditions of the network are not taken into account.

2 Normative references

The following referenced documents are indispensable for the application 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.

EN 55022:2006 [2)] + A1:2007	Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement (CISPR 22:2005, mod. + A1:2005)
EN 55024:1998 [2)] + A1:2001 + A2:2003	Information technology equipment – Immunity characteristics – Limits and methods of measurement (CISPR 24:1997, mod. + A1:2001 + A2:2002)
ETSI EN 300 386: V1.4.1 (2008-04) [2)]	Electromagnetic compatibility and Radio spectrum Matters (ERM); Telecommunication network equipment; ElectroMagnetic Compatibility (EMC) requirements
ETSI EN 301 489 series	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services
ETSI TR 101 651 (V1.1.1)	ElectroMagnetic Compatibility and Radio Spectrum Matters (ERM) – Classification of the electromagnetic environment conditions for equipment in telecommunication networks
IEC 60050-161:1990 + A1:1997 + A2:1998	International Electrotechnical Vocabulary – Chapter 161: Electromagnetic compatibility
EN 50121-4:2006 [2) 3)] + corrigendum May 2008	Railway applications - Electromagnetic compatibility – Part 4: Emission and immunity of the signalling and te lecommunications apparatus
EN 55013:2001 [2)]	Sound and television broadcast receivers and associated equipment - Radio disturbance characteristics - Limits and methods of measurement (CISPR 13:2001, mod.)
EN 55020:2007 [2)]	Sound and television broadcast receivers and associated equipment - Immunity characteristics - Limits and methods of measurement (CISPR 20:2006)

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2) And all previous editions listed in the OJEC.

3) This only applies to railway networks or parts thereof.

3 Terms, definitions and abbreviations

3.1 Terms and definitions

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

3.1.1
(electromagnetic) disturbance
any electromagnetic phenomenon which may degrade the performance of a device, equipment or system, or adversely affect living or inert matter

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

[IEV 161-01-05]

3.1.2
electronic communications network
means transmission systems and, where applicable, switching or routing equipment and other resources which permit the conveyance of signals by wire, by radio, by optical or by other electromagnetic means, including satellite networks, fixed (circuit- and packet-switched, including Internet) and mobile terrestrial networks, electricity cable systems, to the extent that they are used for the purpose of transmitting signals, networks used for radio and television broadcasting, and cable television networks, irrespective of the type of information conveyed

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

3.1.3
emission
phenomenon by which electromagnetic energy emanates from a source

[IEV 161-01-08]

3.1.4
equipment
for the purposes of this standard ‘equipment’ means any apparatus or fixed installation

3.1.5
immunity (to a disturbance)
ability of a device, equipment or system to perform without degradation in the presence of an electromagnetic disturbance

[IEV 161-01-20]

3.1.6
network cable
cable infrastructure (transmission line) used to connect together equipment

3.1.7
wire-line telecommunication network
combination of equipment and passive devices (network cables, connectors) interconnected together to constitute the wire-line part of an electronic communications network. The present standard also applies to the wire-line portion of a radio network

3.2 Abbreviations

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

CENELEC European Committee for Electrotechnical Standardization

CISPR International Special Committee on Radio Interference

EMC Electromagnetic Compatibility

ETSI European Telecommunications Standards Institute

IEC International Electrotechnical Commission

IEV International Electrotechnical Vocabulary

4 Requirements for networks

4.1 Introduction

Assuming that apparatus meet the EMC requirements defined in the applicable EMC product standards a network or a network segment using telephone wires is deemed to be compliant to the present standard provided that:

- all apparatus when first connected directly to the network or network segment meets the requirements defined in the version of EMC product standards listed in Table 1 applicable when that apparatus was placed on the market, for both emission and immunity taking into account the properties of the network or network segment;
- the apparatus is installed according to the manufacturer's instructions;
- the network or network segment has been built, configured and maintained according to good engineering practice to achieve electromagnetic compatibility and this practice is documented. Examples of good engineering practice meeting the criteria above are given in Annex A.

4.2 Apparatus for wire-line telecommunications networks using telephone wires

All apparatus installed in the network shall comply with all EMC requirements for emission and immunity of the appropriate standards listed in Table 1.

Table 1 – Harmonised EMC standards for apparatus using telephone wires

Standards No.	Title
ETSI EN 300 386	Electromagnetic compatibility and Radio spectrum Matters (ERM); Telecommunication network equipment; ElectroMagnetic Compatibility (EMC) requirements
ETSI EN 301 489 series	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services
EN 55022	Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement (CISPR 22)
EN 55024	Information technology equipment – Immunity characteristics – Limits and methods of measurement (CISPR 24)
EN 50121-4 This only applies to railway networks or parts thereof.	Railway applications - Electromagnetic compatibility – Part 4: Emission and immunity of the signalling and telecommunications apparatus
EN 55013	Sound and television broadcast receivers and associated equipment - Radio disturbance characteristics - Limits and methods of measurement (CISPR 13)
EN 55020	Sound and television broadcast receivers and associated equipment - Immunity characteristics - Limits and methods of measurement (CISPR 20)

Annex A
(informative)

Example of good engineering practice

For a traditional telecommunication network good EMC engineering practice means the following:

a) Only connecting apparatus found to be compliant against the relevant EMC standards using an appropriate representation of the cable type to which the apparatus is required to be connected. For example not connecting apparatus that was tested for compliance with a screened network cable to a network that is built of unscreened cable.

b) Apparatus should be earthed and bonded in accordance with the manufacturer's installation instructions.

NOTE E.g. in accordance with ETSI EN 300 253.

c) Traditional network cable routes should be separated as far as possible from AC power network cabling in order to minimise coupling of electromagnetic disturbances from the power network into the telecommunications network.

d) At the time of first connecting the apparatus to the network, steps should be taken to ensure that the network cable is free from faults.

e) During the installation of any new network infrastructure (for example new cable routes) consideration should be given to locating it as far as possible away from any existing fixed radio receiving antennas.

Annex ZZ
(informative)

Coverage of Essential Requirements of EC Directives

This European Standard has been prepared under a mandate given to CENELEC and ETSI by the European Commission and the European Free Trade Association and within its scope the standard covers essential requirements as given in Annex I of the EC Directive 2004/108/EC.

Compliance with this standard provides one means of conformity for fixed installations with the specified essential requirements of the Directive concerned.

WARNING: Other requirements and other EC Directives may be applicable to the fixed installations falling within the scope of this standard.

Bibliography

[1] Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive), OJ L 108, 24.4.2002, p. 33-50

[2] ETSI EN 300 253 (V2.1.1) Environmental Engineering (EE); Earthing and bonding of telecommunications equipment in telecommunication centres

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