

Specification for

Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment

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British Standard

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This British Standard was published under the authority of the Standards Board and comes into effect on 30 September 1991

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The following BSI references relate to the work on this standard:
Committee reference GEL/110
Draft for comment 85/28746 DC

ISBN 0 580 20031 0

Amendments issued since publication

Amd. No.	Date	Comments

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National foreword

This British Standard has been prepared under the direction of the General Electrotechnical Standards Policy Committee and is the English language version of EN 55011, “Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment”, which endorses CISPR 11:1990 (modified) “Limits and methods of measurement of electromagnetic disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment”, published by the International Special Committee on Radio Interference (CISPR). This standard supersedes BS 4809:1972, which is withdrawn. The CENELEC common modifications have been incorporated at the appropriate places in the text of CISPR 11:1990. They are marked by a vertical line at the left-hand margin. The foreword and preface of CISPR 11:1990 and the deleted parts of the original CISPR text which do not form part of the text of EN 55011 have been quoted in National appendix NA. Annexes designated “normative” are part of the body of the standard. Annexes designated “informative” are given for information only. National appendices are designated “informative”.

Council Directive 89/336/EEC, dated 3 May 1989 (generally referred to as the EMC directive), is intended to limit the interference caused by electromagnetic disturbances resulting from the operation of electrical and electronic apparatus.

Although the directive requires the member states of the EC to implement it on 1 January 1992, the EC Commission has introduced a proposed amendment to provide a transition period of 4 years ending 31 December 1995.

During this proposed transition period, manufacturers of electro-technical products would have the option either to conform to the Directive, with effect from 1 January 1992, or to continue to comply with existing national regulations. Any such national regulations in force within a member state before 1 January 1992 could continue to apply until 31 December 1995 when they would have to be repealed. During this period, products manufactured in one member state which do not conform to the directive would therefore continue to be required to comply with the regulations of the member state in which they are marketed.

In 3.2, 3.4, 4.2 and 5.3 of this standard, a reference is made to “National Authorities”. For the United Kingdom the body responsible for regulating radio use and investigating interference to radiocommunications is:

Radio Investigation Service
Radiocommunications Agency
Waterloo Bridge House
Waterloo Road
London SE1 8UA
Telephone 071 215 2169
Fax 071 928 3691

For the purposes of this British Standard, any references to IEC page numbers in the text should be ignored.

Cross-references. Details of international standards quoted in this British Standard for which there is an identical or technically equivalent British Standard are given in national appendix NC.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations. Attention is drawn to The Wireless Telegraphy (Control of Interference from Electro-Medical Apparatus) Regulations 1963 S.I. 1963/1985, and The Wireless Telegraphy (Control of Interference from Radio-Frequency Heating Apparatus) Regulations 1971 S.I. 1971/1675.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, the EN title page, pages 2 to 26 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

English version

Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment

(CISPR 11:1990, modified)

Limites et méthodes de mesure des caractéristiques de perturbations radioélectriques des appareils industriels, scientifiques et médicaux (ISM) à fréquence radioélectrique
(CISPR 11:1990, modifiée)

Grenzwerte und Meßverfahren für Funkstörungen von industriellen, wissenschaftlichen und medizinischen Hochfrequenz-geräten (ISM Geräten)
(CISPR 11:1990, modifiziert)

This European Standard was approved by CENELEC on 12 June 1989. 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 Central Secretariat or to any CENELEC member.

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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

Foreword

This European Standard has been prepared by the CENELEC Subcommittee SC 110A, EMC Products.

The text of the draft was approved by CENELEC as EN 55011 on 12 June 1989.

This European Standard replaces the Harmonization Document HD 344 S1:1975.

When the International Standard CISPR 11:1990 was published, SC 110A decided to replace the text of the draft by an endorsement of this publication with common modifications.

The following dates are applicable:

- latest date of publication of an identical national standard (dop) 1991-09-15
- latest date of withdrawal of conflicting standards (dow) 1991-09-15

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1 Scope and object

1.1 The limits and methods of measurement laid down in this publication apply to industrial, scientific and medical (ISM) equipment as defined in Clause 3, and to spark erosion equipment.

1.2 The assessment of conformity of equipment tested on a test site shall be in accordance with the specifications of Clause 6. For equipment in series production, there shall be 80 % confidence that at least 80 % of manufactured items comply with the limits given. The statistical assessment procedure is specified in subclause 6.3. For small scale production the application of the statistical assessment may not always be economical. In such cases the assessment procedure contained in subclause 6.2 may be applied. Measurement results obtained for an equipment measured in its place of use and not on a test site shall relate to that installation only, and shall not be considered representative of any other installation and so shall not be used for the purpose of a statistical assessment.

1.3 Procedures are given for the measurement of radio frequency disturbances and limits are laid down within the frequency range 9 kHz to 400 GHz.

1.4 Requirements for lighting apparatus are contained in EN 55015.

2 Definitions

2.1

ISM qualifies equipment or appliances designed to generate and/or use locally radio frequency energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of telecommunications and information technology and other applications covered by other CENELEC EMC Standards

2.2

for the purposes of this publication the definitions contained in IEC 50(161) apply

2.3

electromagnetic radiation

for the purposes of this publication the extended definition contained in IEC 50(161), which includes near field and induction phenomena, shall apply

2.4

the boundary of the equipment under test is defined by an imaginary straight line periphery describing a simple geometric configuration encompassing the equipment under test. All interconnecting cables shall be included within this boundary

2.5

low voltage

a set of voltage levels used for the distribution of electricity and whose upper limit is 1 000 V ac rms

2.6

frequencies designated for ISM use

certain frequencies are designated by the International Telecommunication Union (ITU) for use as fundamental frequencies for ISM equipment

3 National measures and frequencies designated for ISM use

3.1 The limits have been determined on a probabilistic basis taking into account the likelihood of interference. In cases of interference additional provisions may be required.

3.2 National Authorities may allow the installation and use of Class A apparatus in a domestic establishment or in an establishment connected directly to domestic electricity power supplies, with whatever national measures they consider necessary.

3.3 The frequencies designated for ISM use are listed in Table Ia.

In some CENELEC countries different or additional frequencies may be designated for ISM equipment. These frequencies are listed in Table Ib.

The limits for terminal voltages and radiation do not apply to these ISM frequencies. If ISM equipment uses fundamental frequencies other than the ITU or nationally designated frequencies the limits for terminal voltage and radiation in this Standard apply also to the fundamental frequencies.

3.4 When ISM equipment cannot be brought in conformity with the limits of Table V, the National Authorities shall be notified by the manufacturer or importer before the equipment is being placed on the market.

For equipment measured on a test site the notification shall be accompanied by the results of the measurements. For equipment measured in situ the user shall inform the National Authorities of the installation of the equipment before it is set into operation.

National Authorities may apply whatever national measures they consider necessary to protect radio communications.