SLOVENSKI STANDARD

SIST EN 62226-1:2005

junij 2005

Izpostavljenost električnim in magnetnim poljem v nizkem in srednjem frekvenčnem obsegu – Metode za izračunavanje trenutne gostote in notranjega induciranega električnega polja v človeškem telesu – 1. del: Splošno

Exposure to electric or magnetic fields in the low and intermediate frequency range – Methods for calculating the current density and internal electric field induced in the human body – Part 1: General

ICS 13.280; 17.220.20

Referenčna številka
SIST EN 62226-1:2005(en)

EUROPEAN STANDARD **EN 62226-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM March 2005

ICS 17.220.20

English version

Exposure to electric or magnetic fields in the low and intermediate frequency range – Methods for calculating the current density and internal electric field induced in the human body Part 1: General

(IEC 62226-1:2004)

Exposition aux champs électriques ou magnétiques à basse et moyenne fréquence – Méthodes de calcul des densités de courant induit et des champs électriques induits dans le corps humain Partie 1: Généralités (CEI 62226-1:2004)

Sicherheit in elektrischen oder magnetischen Feldern im niedrigen und mittleren Frequenzbereich - Verfahren zur Berechnung der induzierten Körperstromdichte und des im menschlichen Körper induzierten elektrischen Feldes Teil 1: Allgemeines (IEC 62226-1:2004)

This European Standard was approved by CENELEC on 2005-02-01. 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.

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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

Ref. No. EN 62226-1:2005 E

Foreword

The text of document 106/78/FDIS, future edition 1 of IEC 62226-1, prepared by IEC TC 106, Methods for the assessment of electric, magnetic and electromagnetic fields associated with human exposure, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62226-1 on 2005-02-01.

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)	2005-11-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2008-02-01

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Endorsement notice

The text of the International Standard IEC 62226-1:2004 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:

CISPR 11	NOTE	Harmonized in EN 55011 series (modified).
CISPR 14	NOTE	Harmonized in EN 55014 series (not modified).
CISPR 16	NOTE	Harmonized in EN 55016 series (not modified).

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NORME INTERNATIONALE

INTERNATIONAL STANDARD

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Première édition
First edition
2004-11

Exposition aux champs électriques ou magnétiques à basse et moyenne fréquence – Méthodes de calcul des densités de courant induit et des champs électriques induits dans le corps humain –

Partie 1: Généralités

Exposure to electric or magnetic fields in the low and intermediate frequency range – Methods for calculating the current density and internal electric field induced in the human body –

Part 1: General

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International Electrotechnical Commission
Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

EXPOSURE TO ELECTRIC OR MAGNETIC FIELDS IN THE LOW AND INTERMEDIATE FREQUENCY RANGE – METHODS FOR CALCULATING THE CURRENT DENSITY AND INTERNAL ELECTRIC FIELD INDUCED IN THE HUMAN BODY –

Part 1: General

FOREWORD

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International Standard IEC 62226 has been prepared by IEC technical committee 106: Methods for the assessment of electric, magnetic and electromagnetic fields associated with human exposure.

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

FDIS	Report on voting
106/78/FDIS	106/82/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.

This International Standard constitutes Part 1 of the IEC 62226 series, which will regroup several international standards and technical reports within the framework of the calculation of induced current densities and internal electric fields, and will be published under the general title *Exposure to electric or magnetic fields in the low and intermediate frequency range - Methods for calculating the current density and internal electric field induced in the human body.*

This series is planned to be published according to the following structure:

Part 1: General

Part 2: Exposure to magnetic fields

- Part 2-1 : 2D models
- Part 2-2 : 3D models
- Part 2-3 : Guidelines for practical use of coupling factors

Part 3: Exposure to electric fields

- Part 3-1: Analytical and 2D numerical models
- Part 3-2: 3D numerical models

Part 4: Electrical parameters of human living tissues (Technical Report)

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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.

INTRODUCTION

Public interest concerning human exposure to electric and magnetic fields has led international and national organisations to propose limits based on recognised adverse effects.

This standard applies to the frequency range for which the exposure limits are based on the induction of voltages or currents in human body, when exposed to electric and magnetic fields. This frequency range covers the low and intermediate frequencies, up to 100 kHz. Some methods described in this standard can be used at higher frequencies under specific conditions.

The exposure limits based on biological and medical experimentation about these fundamental induction phenomena are usually called “basic restrictions”. They include safety factors.

The induced electrical quantities are not directly measurable, so simplified derived limits are also proposed. These limits, called “reference levels”, are given in terms of external electric and magnetic fields. They are based on very simple models of coupling between external fields and the body. These derived limits are conservative.

Sophisticated models for calculating induced currents in the body have been used and are the subject of a number of scientific publications. These use numerical 3D electromagnetic field computation codes and detailed models of the internal structure with specific electrical characteristics of each tissue within the body. However such models are still developing; the electrical conductivity data available at present has considerable shortcomings; and the spatial resolution of models is still advancing. Such models are therefore still considered to be in the field of scientific research and at present it is not considered that the results obtained from such models should be fixed indefinitely within standards. However it is recognised that such models can and do make a useful contribution to the standardisation process, especially for product standards in which particular cases of exposure are considered. When results from such models are used in standards, the results should be reviewed from time to time to ensure they continue to reflect the current status of the science.