Evaluation of human exposure to electromagnetic fields from short range devices (SRDs) in various applications over the frequency range 0 GHz to 300 GHz - Part 1: Fields produced by devices used for electronic article surveillance, radio frequency identification and similar systems

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 62369-1:2009 sisaldab Euroopa standardi EN 62369-1:2009 ingliskeelset teksti.	This Estonian standard EVS-EN 62369-1:2009 consists of the English text of the European standard EN 62369-1:2009.
Standard on kinnitatud Eesti Standardikeskuse 30.04.2009 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 30.04.2009 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 13.03.2009.	Date of Availability of the European standard text 13.03.2009.
Standard on kättesaadav Eesti standardiorganisatsioonist.	The standard is available from Estonian standardisation organisation.

ICS 33.050

Võtmesõnad:

EUROPEAN STANDARD

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English version

Evaluation of human exposure to electromagnetic fields from short range devices (SRDs) in various applications over the frequency range 0 GHz to 300 GHz - Part 1: Fields produced by devices used for electronic article surveillance, radio frequency identification and similar systems

(IEC 62369-1:2008)

Evaluation de l'exposition humaine aux champs électromagnétiques produits par les dispositifs radio à courte portée dans la plage de fréquence 0 GHz à 300 GHz - Partie 1: Champs produits par les dispositifs utilisés pour la surveillance électronique des objets, l'identification par radiofréquence et les systèmes similaires (CEI 62369-1:2008)

Ermittlung der Exposition von Personen gegenüber elektromagnetischen Feldern im Frequenzbereich 0 GHz bis 300 GHz durch Geräte mit kurzer Reichweite für verschiedene Anwendungen - Teil 1: Felder, die durch Geräte erzeugt werden, die zur elektronischen Artikelüberwachung, Hochfrequenz-Identifizierung und für ähnliche Anwendungen verwendet werden (IEC 62369-1:2008)

CENELEC

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

Central Secretariat: avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 62369-1:2009 E

Foreword

The text of the International Standard IEC 62369-1:2008, prepared by IEC TC 106, Methods for the assessment of electric, magnetic and electromagnetic fields associated with human exposure, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 62369-1 on 2009-03-01 without any modification.

This European Standard supersedes EN 50357:2001.

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)	2010-03-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2012-03-01

Endorsement notice

The text of the International Standard IEC 62369-1:2008 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:

IEC 61566	NOTE	Harmonized as EN 61566:1997 (not modified).
IEC 62209-1	NOTE	Harmonized as EN 62209-1:2006 (not modified).
IEC 62311	NOTE	Harmonized as EN 62311:2008 (modified).
ISO/IEC 17025	NOTE	Harmonized as EN ISO/IEC 17025:2005 (not modified).

CONTENTS

INTRODUCTION

Electromagnetic fields interact with the human body and other biological systems through a number of physical mechanisms. The main mechanisms of interaction are based on nervous system effects and heating. These effects are dependent on frequency and are defined by biologically relevant quantities. Based on these scientifically established health effects, there are international, regional and sometimes national exposure requirements. These are set as basic restrictions on quantities, which are not necessarily directly measurable, and contain high safety factors to ensure a high level of protection. These quantities may be determined either by calculation for each case, or by measuring a reference value that has a pre-derived relationship to them, usually under worst-case, far-field conditions. Respect of the reference value will ensure respect of the relevant basic restriction, except in some specific near field situations which would normally be identified or highlighted within the applicable exposure guidelines. If the measured quantity exceeds the reference value, it does not necessarily follow that the basic restriction is also exceeded. Under those circumstances, more detailed evaluation techniques will be necessary which are specific to that type of equipment and exposure.

This document is part of a multi-part standard covering the evaluation of human exposure to electromagnetic fields from short range devices (SRDs) in various applications over the frequency range from 0 GHz to 300 GHz.

EVALUATION OF HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS FROM SHORT RANGE DEVICES (SRDS) IN VARIOUS APPLICATIONS OVER THE FREQUENCY RANGE 0 GHz to 300 GHz –

Part 1: Fields produced by devices used for electronic article surveillance, radio frequency identification and similar systems

1 Scope

This part of IEC 62369 presents procedures for the evaluation of human exposure to electromagnetic fields (EMFs) from devices used in electronic article surveillance (EAS), radio frequency identification (RFID) and similar applications. It adopts a staged approach to facilitate compliance assessment. The first stage (Stage 1) is a simple measurement against the appropriate derived reference values. Stage 2 is a more complex series of measurements or calculations, coupled with analysis techniques. Stage 3 requires detailed modelling and analysis for comparison with the basic restrictions. When assessing any device, the most appropriate method for the exposure situation may be used.

At the time of writing this International Standard, electronic article surveillance, radio frequency identification and similar systems do not normally operate at frequencies below 1 Hz or above 10 GHz. EMF exposure guidelines and standards can cover a wider range of frequencies, so clarification on the required range is included as part of the evaluation procedures.

The devices covered by this document normally have non-uniform field patterns. Often these devices have a very rapid reduction of field strength with distance and operate under near-field conditions where the relationship between electric and magnetic fields is not constant. This, together with typical exposure conditions for different device types, is detailed in Annex A.

Annex B contains comprehensive information to assist with numerical modelling of the exposure situation. It includes both homogeneous and anatomical models as well as the electrical properties of tissue.

This International Standard does not include limits. Limits can be obtained from separately published human exposure guidelines. Different guidelines and limit values may apply in different regions. Linked into the guidelines are usually methods for summation across wider frequency ranges and for multiple exposure sources. These shall be used. A simplified method for summation of multiple sources is contained in Annex C. This has to be used with care as it is simplistic and will overestimate the exposure; however it is useful as a guide, when the results of different evaluations are in different units of measure which are not compatible.

Different countries and regions have different guidelines for handling the uncertainties from the evaluation. Annex D provides information on the two most common methods.

A bibliography at the end of this standard provides general information as well as useful I information for the measurement of electromagnetic fields. See [1],[2],[3],[4],[5],[6][1)].

Similar national or international standards may be used as an alternative.

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1) Figures between brackets refer to the bibliography.

2 Normative references

None.