IEC 62311

Edition 2.0 2019-04

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz to 300 GHz)

Évaluation des équipements électroniques et électriques en relation avec les restrictions d'exposition humaine aux champs électromagnétiques (0 Hz à 300 GHz)

IEC 62311:2019-04(en-fr)

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CONTENTS

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ASSESSMENT OF ELECTRONIC AND ELECTRICAL EQUIPMENT RELATED TO HUMAN EXPOSURE RESTRICTIONS FOR ELECTROMAGNETIC FIELDS (0 Hz to 300 GHz)

FOREWORD

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International Standard IEC 62311 has been prepared by IEC technical committee 106: Methods for the assessment of electric, magnetic and electromagnetic fields associated with human exposure.

This second edition cancels and replaces the first edition published in 2007. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) a clear distinction between intentional and unintentional radiators has been introduced;
b) the exposure to non-uniform fields is considered;
c) the treatment of uncertainty for the assessment procedures has been improved;
d) various summation regimes are described in Annex A;
e) the information from meanwhile published basic standards has been used and hence all informative annexes of the previous edition have been removed.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
106/480/FDIS	106/486/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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ASSESSMENT OF ELECTRONIC AND ELECTRICAL EQUIPMENT RELATED TO HUMAN EXPOSURE RESTRICTIONS FOR ELECTROMAGNETIC FIELDS (0 Hz to 300 GHz)

1 Scope

This document applies to electronic and electrical equipment for which no dedicated product standard or product family standard regarding human exposure to electromagnetic fields applies. It covers equipment with intentional or non-intentional radiators as well as a combination thereof.

This document provides assessment methods and criteria to evaluate equipment against limits on exposure of people related to electric, magnetic and electromagnetic fields. The frequency range covered is from 0 Hz to 300 GHz.

NOTE 1 Further guidance concerning the application of this document and its relationship to other EMF standards is given in Figure 1.

This document does not specify limits expressed by means of basic restrictions and/or reference levels. Such limits are subject to the applied assessment scheme, for example by means of regional limits.

NOTE 2 The assessment methods and criteria to evaluate equipment against basic restrictions or reference levels can be used with regard to either general public or occupational exposure.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 60050-161:1990*, International Electrotechnical Vocabulary – Chapter 161: Electromagnetic compatibility* (available at http://www.electropedia.org)

IEC 62232:2017*, Determination of RF field strength, power density and SAR in the vicinity of radiocommunication base stations for the purpose of evaluating human exposure*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-161 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1.1
averaging time
t_{avg}
<for human exposure to electromagnetic fields> appropriate time interval over which exposure is averaged for purposes of determining compliance

3.1.2
basic restriction
restriction on exposure to time-varying electric, magnetic and electromagnetic fields that is based directly on established health effects

Note 1 to entry: Examples of basic restrictions can be found in Annex II of the Council Recommendation 1999/519/EC [1], ICNIRP Guidelines ([2], [3]), IEEE Std C95.6 [4] and IEEE Std C95.1 [5].

3.1.3
contact current
<for human body> current flowing into the body resulting from contact with a conductive object in an electromagnetic field

Note 1 to entry: This is the localized current flow into the body (usually the hand, for a light brushing contact).

3.1.4
current density
J
current per unit cross-sectional area flowing inside the human body as a result of exposure to electromagnetic fields

3.1.5
duty factor
<for human exposure to electromagnetic fields> ratio of pulse duration to the pulse period of a periodic pulse train

Note 1 to entry: A duty factor can also be considered as a measure of the temporal transmission characteristic of an intermittently transmitting RF source such as a paging antenna by dividing average transmission duration by the average period for transmissions.

Note 2 to entry: A duty factor of 1,0 corresponds to continuous operation.

3.1.6
effective radiated power
ERP
product of the power supplied by a radio transmitter to an antenna and the gain of this antenna relative to a half-wave dipole in a given direction

[SOURCE: IEC 60050-713:1998, 713-09-26]

3.1.7
electric field strength
E
vector field quantity E which exerts on any charged particle at rest a force F equal to the product of E and the electric charge Q of the particle

[SOURCE: IEC 60050-121:1998, 121-11-18]

3.1.8
exposure
situation that occurs wherever a person is subjected to electric, magnetic or electromagnetic fields

Note 1 to entry: The word “exposure” is also commonly used to mean “exposure level” (see 3.1.9).