AS/NZS 62233:2021

STANDARDS NEW ZEALAND
TE MANA TAUTĪKANGA O AOTEAROA

STANDARDS Australia

Australian/New Zealand Standard™

Measurement methods for electromagnetic fields of household appliances and similar apparatus with regard to human exposure (IEC 62233:2005 (ED.1.0) MOD)

AS/NZS 62233:2021

This Joint Australian/New Zealand Standard™ was prepared by Joint Technical Committee TE-007, Human Exposure to Electromagnetic Fields. It was approved on behalf of the Council of Standards Australia on 16 April 2021 and by the New Zealand Standards Approval Board on 4 May 2021.

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The following are represented on Committee TE-007:

Australian Centre for Radiofrequency Bioeffects Research
Australian Industry Group
Australian Mobile Telecommunications Association
Australian Radiation Protection and Nuclear Safety Agency
Commercial Radio Australia
Communications, Electrical and Plumbing Union — Electrical Division
Department of Defence (Australian Government)
Electrical Engineers Association of NZ
Engineers Australia
Ministry of Health (NZ)
National Measurement Institute
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Australian/New Zealand Standard™

Measurement methods for electromagnetic fields of household appliances and similar apparatus with regard to human exposure (IEC 62233:2005 (ED.1.0) MOD)

First published as AS/NZS 62233:2021.

Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee TE-007, Human Exposure to Electromagnetic Fields.

The objective of this document is to define methods for evaluating the electric field strength and magnetic flux density around household and similar electrical appliances, including the conditions during testing as well as measuring distances and positions. This document deals with electromagnetic fields up to 300 GHz.

Appliances may incorporate motors, heating elements or their combination, may contain electric or electronic circuitry, and may be powered by the mains, by batteries, or by any other electrical power source.

Appliances include such equipment as household electrical appliances, electric tools and electric toys. Appliances not intended for normal household use but which nevertheless may be approached by the public, or may be used by laymen, are within the scope of this standard.

This document does not apply to—

(a) apparatus designed exclusively for heavy industrial purposes;

(b) apparatus intended to be part of the fixed electrical installation of buildings (such as fuses,

(c) circuit breakers, cables and switches);

(d) radio and television receivers, audio and video equipment, and electronic music instruments;

(e) medical electrical appliances;

(f) personal computers and similar equipment;

(g) radio-transmitters; and

(h) apparatus designed to be used exclusively in vehicles.

This document includes specific elements to assess human exposure as follows:

(i) Definition of sensor.

(ii) Definition of measuring methods.

(iii) Definition of operating mode for appliance under test.

(iv) Definition of measuring distance and position.

This document is an adoption with national modifications, and has been reproduced from, IEC 62233:2005, *Measurement methods for electromagnetic fields of household appliances and similar apparatus with regard to human exposure*.

The modifications are additional requirements and are set out in Appendix ZZ, which has been added at the end of the source text.

Appendix ZZ lists the variations to IEC 62233:2005 for the application of this document in Australia and New Zealand.

As this document has been reproduced from an International Standard the following applies:

(A) In the source text “this International Standard” should read “this document”.

(B) A full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

MEASUREMENT METHODS FOR ELECTROMAGNETIC FIELDS OF HOUSEHOLD APPLIANCES AND SIMILAR APPARATUS WITH REGARD TO HUMAN EXPOSURE

FOREWORD

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International Standard IEC 62233 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
106/99/FDIS	106/103/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.

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

This standard establishes a suitable evaluation method for determining the electromagnetic fields in the space around the equipment mentioned in the scope, and defines standardized operating conditions and measuring distances.

This document is designed as one method for measurement and assessment of electromagnetic (EM) fields and their potential effect on the human body by reference to exposure standards. Existing exposure standards, e.g. ICNIRP'98 [11][1)], IEEE C95.1-1999 [22] and IEEE C95.6-2002 [12], present rules for the exposure of humans to EM fields. The simplest and more practical levels [limits] with which to comply are limits (suitably time-averaged in some cases) on the electric (E) and magnetic (B) fields, measured in the absence of the human to be exposed to these fields. These limits are called maximum permissible exposure levels, IEEE-based levels, or reference levels (ICNIRP). Suitable definitions and specified measurement techniques are applied in any exposure compliance measurement or assessment. Compliance with maximum permissible exposure or reference levels is sufficient for positive assessment of meeting these levels as specified in the appropriate exposure standard.

This document addresses the additional measurement and calculation techniques which permit determination of compliance under one set of specified circumstance, without reference to time of exposure or actual exposure conditions. This document is not meant to supplant definitions and procedures specified in exposure standards but is aimed at supplementing the procedure already specified for compliance with exposure.

1) Figures in square brackets refer to the Bibliography.

MEASUREMENT METHODS FOR ELECTROMAGNETIC FIELDS OF HOUSEHOLD APPLIANCES AND SIMILAR APPARATUS WITH REGARD TO HUMAN EXPOSURE

1 Scope

This International Standard deals with electromagnetic fields up to 300 GHz and defines methods for evaluating the electric field strength and magnetic flux density around household and similar electrical appliances, including the conditions during testing as well as measuring distances and positions.

Appliances may incorporate motors, heating elements or their combination, may contain electric or electronic circuitry, and may be powered by the mains, by batteries, or by any other electrical power source.

Appliances include such equipment as household electrical appliances, electric tools and electric toys.

Appliances not intended for normal household use but which nevertheless may be approached by the public, or may be used by laymen, are within the scope of this standard.

This standard does not apply to:

– apparatus designed exclusively for heavy industrial purposes;
– apparatus intended to be part of the fixed electrical installation of buildings (such as fuses, circuit breakers, cables and switches);
– radio and television receivers, audio and video equipment, and electronic music instruments;
– medical electrical appliances;
– personal computers and similar equipment;
– radio transmitters;
– apparatus designed to be used exclusively in vehicles;

The fields of multifunction equipment which is subjected simultaneously to different clauses of this standard and/or other standards shall be assessed using the provisions of each clause/standard for the relevant functions in operation.

Abnormal operation of the appliances is not taken into consideration.

This standard includes specific elements to assess human exposure:

– definition of sensor;
– definition of measuring methods;
– definition of operating mode for appliance under test;
– definition of measuring distance and position.

The measurement methods specified are valid from 10 Hz to 400 kHz. In the frequency range above 400 kHz and below 10 Hz appliances in the scope of this standard are deemed to comply without testing unless otherwise specified in IEC 60335 series.