



## DRAFT TANZANIA STANDARD

(Draft for comments only)

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**Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Part 1: Devices used next to the ear (Frequency range of 300 MHz to 6 GHz)**

**TANZANIA BUREAU OF STANDARDS**

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## 1 National Foreword

This draft Tanzania Standard is being prepared by the Communication Equipment Technical Committee, under the supervision of the Electrotechnical divisional standards committee (EDC)

This draft Tanzania Standard is an adoption of the International Standard **IEC 62209-1: 2016** *Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Part 1: Devices used next to the ear (Frequency range of 300 MHz to 6 GHz)*, Which has been prepared by the International Electrotechnical Commission.

## 2 Terminology and conventions

Some terminologies and certain conventions are not identical with those used in Tanzania standards; attention is drawn especially to the following: -

- a) The comma has been used as a decimal marker for metric dimensions. In Tanzania Standards, it is current practice to use “full point” on the baseline as the decimal marker.
- b) Where the words “International Standard(s)” appear, referring to this standard they should read “Tanzania Standard(s)”.

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

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**Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices –  
Part 1: Devices used next to the ear (Frequency range of 300 MHz to 6 GHz)**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**MEASUREMENT PROCEDURE FOR THE ASSESSMENT OF SPECIFIC  
ABSORPTION RATE OF HUMAN EXPOSURE TO RADIO FREQUENCY  
FIELDS FROM HAND-HELD AND BODY-MOUNTED WIRELESS  
COMMUNICATION DEVICES –****Part 1: Devices used next to the ear  
(Frequency range of 300 MHz to 6 GHz)**

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 62209-1 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 2005. This edition constitutes a technical revision.

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

- a) Extension of the frequency range to 300 MHz to 6 GHz.
- b) Fast SAR methods.

- c) Test reduction techniques.
- d) SAR measurements of terminals with multiple antennas and multiple transmitters.
- e) Deviation of dielectric characteristics of the tissue-equivalent liquids is relaxed up to 10 %.
- f) Uncertainty evaluation guidelines for temperature and dielectric parameter deviations of tissue-equivalent liquids.
- g) Addition of the following annexes:
  - Annex K (informative) Measurement uncertainty of specific fast SAR methods and fast SAR examples
  - Annex L (informative) SAR test reduction supporting information
  - Annex M (informative) Applying the head SAR test procedures
  - Annex N (informative) Studies for potential hand effects on head SAR
  - Annex O (informative) Quick start guide.

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

FDIS	Report on voting
106/361/FDIS	106/365/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.

In this standard, the following print types are used:

- specific test protocols: in *italic* type.

A list of all parts in the IEC 62209 series, published under the general title *Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices*, can be found on the IEC website.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

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## INTRODUCTION

IEC TC 106 has the scope to prepare International Standards on measurement and calculation methods used to assess human exposure to electric, magnetic and electromagnetic fields. IEC TC 106 has developed this part of IEC 62209 to provide procedures to evaluate the specific absorption rate (SAR) of human exposures due to electromagnetic field (EMF) transmitting devices when held close to the ear. The types of devices include but are not limited to mobile telephones, cordless telephones, headphones, etc., which are used close to the ear. The IEC TC 106 standards do not deal with the exposure limits. Conformity assessment depends on the policy of national regulatory bodies.

While basic restrictions on SAR in the ICNIRP Guidelines [64]<sup>1</sup> go up to 10 GHz, the frequency range for this part of IEC 62209 is limited to an upper end frequency of 6 GHz since current wireless handsets operate below this frequency.

IEC TC 106 and IEEE/ICES TC34<sup>2</sup> worked together formally through common membership to achieve the goal of harmonization, between IEC TC 106 Maintenance Team 1 for this part of IEC 62209 and IEEE/ICES TC34 for IEEE Std 1528 [66]. During the process a primary effort involved was to harmonize these two standards.

To aid the user of this part of IEC 62209, a quick start guide has been prepared and included as an informative annex (see Annex O). The quick start guide is not a substitute for following the detailed procedure of the standard.

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<sup>1</sup> Numbers in square brackets refer to the Bibliography.

<sup>2</sup> The International Committee on Electromagnetic Safety of the IEEE.

# MEASUREMENT PROCEDURE FOR THE ASSESSMENT OF SPECIFIC ABSORPTION RATE OF HUMAN EXPOSURE TO RADIO FREQUENCY FIELDS FROM HAND-HELD AND BODY-MOUNTED WIRELESS COMMUNICATION DEVICES –

## Part 1: Devices used next to the ear (Frequency range of 300 MHz to 6 GHz)

### 1 Scope

This part of IEC 62209 specifies protocols and test procedures for measurement of the peak spatial-average SAR induced inside a simplified model of the head with defined reproducibility. It applies to certain electromagnetic field (EMF) transmitting devices that are positioned next to the ear, where the radiating structures of the device are in close proximity to the human head, such as mobile phones, cordless phones, certain headsets, etc. These protocols and test procedures provide a conservative estimate with limited uncertainty for the peak-spatial SAR that would occur in the head for a significant majority of people during normal use of these devices. The applicable frequency range is from 300 MHz to 6 GHz.

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 17043:2010, *Conformity assessment – General requirements for proficiency testing*

ISO/IEC 17025:2005, *General requirements for the competence of testing and calibration laboratories*

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

#### 3.1

##### **axial isotropy**

maximum deviation of the SAR measured when rotating around the major axis of the probe while it is exposed to a wave impinging from a direction along its major axis

#### 3.2

##### **conducted power**

power delivered by the power amplifier to a matched load

#### 3.3

##### **frequency band**

transmitting frequency range associated with a specific wireless operating mode