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Responsible committee: GEL/106 Human exposure to low frequency and high frequency electromagnetic radiation

Interested committees:

Title: BS EN IEC/IEEE 62209-1528/AMD1 Amendment 1 - Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-worn wireless communication devices - Human models, instrumentation and

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- ii) affects other national standard(s)
- iii) requires additional national guidance or information

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



106/686/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER:

IEC/IEEE 62209-1528/AMD1 ED1

DATE OF CIRCULATION:

2025-02-07

CLOSING DATE FOR VOTING:

2025-05-02

SUPERSEDES DOCUMENTS:

106/629B/RR

IEC TC 106 : METHODS FOR THE ASSESSMENT OF ELECTRIC, MAGNETIC AND ELECTROMAGNETIC FIELDS ASSOCIATED WITH HUMAN EXPOSURE

SECRETARIAT:

Germany

SECRETARY:

Mr Alexander Prokop

OF INTEREST TO THE FOLLOWING COMMITTEES:

TC 9,TC 27,TC 29,TC 34,SC 62A,SC 62B,TC 69,TC 77,TC 79,TC 96,TC 100,TC 124,CISPR

HORIZONTAL FUNCTION(S):

ASPECTS CONCERNED:

☐ SUBMITTED FOR CENELEC PARALLEL VOTING

☒ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

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TITLE:

Amendment 1 - Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-worn wireless communication devices - Human models, instrumentation and procedures (Frequency range of 4 MHz to 10 GHz)

PROPOSED STABILITY DATE: 2027

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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 1528: Human models, instrumentation, and procedures (Frequency range of 4 MHz to 10 GHz)

AMENDMENT 1

FOREWORD

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Amendment 1 to IEC/IEEE 62209-1528:2020 has been prepared by IEC technical committee 106: Methods for the assessment of electric, magnetic and electromagnetic fields associated with human exposure, in cooperation with the International Committee on Electromagnetic Safety of the IEEE Standards Association.

This document is published as an IEC/IEEE Dual Logo standard.

The text of this amendment is based on the following IEC documents:

Draft	Report on voting
XX/XX/FDIS	XX/XX/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this amendment is English.

This document was drafted in accordance with the rules given in the ISO/IEC Directives, Part 2, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications/.

The IEC Technical Committee and IEEE Technical Committee have decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION to the (CD, CDV)
(not to be included in final publication)

Product compliance RF exposure assessment standards need periodic amendments to respond to fast-evolving mobile communication technologies.

In accordance with IEC TC 106 plenary decisions and agreement of IEEE/ICES TC34 to amend IEC/IEEE 62209-1528:2020, a revision project was registered by circulation of the review report 106/629/RR on 2023-11-24 (informally known as “RR1” in TC 106; also supplemented by editorial updates in 106/629A/RR and 106/629B/RR). The RR1 review report also included draft text from a Canada NC input on hand SAR testing, and draft text following from a Finland NC request on testing of motion sensor-based SAR mitigation. An additional document-for-comment for the amendment project, 106/637/DC (informally known as “RR2”), was circulated on 2024-02-23 dealing with time-period averaged SAR, proximity sensor, separation distance, and SAR test reduction.

In summary, this amendment of IEC/IEEE 62209-1528:2020, based on the preceding RR1 and RR2 documents, addresses the following items:

- 1) Hand SAR: New subclauses with a) applicability check, b) test procedure
- 2) Motion sensors: a) new section with a SAR measurement procedure, and b) annex on sensor validations
- 3) Amendment of proximity sensor subclause
- 4) Time-period averaged SAR measurement procedure revised and updated.
- 5) Flat phantom separation distance, and test reductions for SAM phantom test configurations based on flat phantom SAR test data

Subdivision numbering in 106/629/RR or 106/637/DC	Subdivision numbering in this draft
6.3 (RR)	7.11.1 – renumbered and merged
7.2.4.1.1 (RR)	n/a – next-to-ear hand SAR now in 7.11 not 7.2
7.2.4.1.2 (DC Annex 2)	7.2.4.1.2
7.2.4.1.13	7.11
7.6 (DC Annex 1)	7.6
7.7 (DC Annex 3)	7.7
	7.9.3.1
7.9.3.7 (DC Annex 2)	7.9.3.7 and Annex X
7.10 (RR)	7.10
	7.11 – renumber of RR 7.2.4.1.13
Annex X (RR)	Annex Y – renumber of RR Annex X
	Annex X – associated with 7.9.3.7

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 1528: Human models, instrumentation, and procedures (Frequency range of 4 MHz to 10 GHz)

AMENDMENT 1

7 Protocol for SAR assessment

7.2 Measurement preparation

7.2.4 Positioning of the DUT relative to the phantom

Replace the existing entire 7.2.4.1.2 using the following:

7.2.4.1.2 DUT-to-phantom separation distance

When measuring against the flat phantom, the DUT-to-phantom separation distance may be set according to the following hierarchy.

- a) Regulatory requirements: If there are national regulatory requirements that specify the DUT separation distance to the phantom, the DUT shall be positioned according to these requirements.
- b) “Intended use distance” specified by device manufacturer: If there are no regulatory requirements, the intended use condition or distance specified by the manufacturer shall be used. This information shall be aligned with the user documentation of the DUT.
- c) Default separation distance: If there are neither regulatory requirements nor a manufacturer specification of an intended use distance, the DUT shall be measured with each accessible face at a distance of $d_{\min} = 0$ mm from the surface of the phantom according to 7.11.

NOTE A more detailed rationale for a separation distance of 0 mm is under consideration for future maintenance of this standard.

The applicable separation distance may be determined with the carry accessory attached to the DUT, when such condition is tested; see 7.2.4.1.5.

Care should be taken to ensure precise positioning at the applicable separation distances, for example by using calibrated gauge blocks or similar means to ensure repeatability.

206 ***Replace the existing entire 7.6 using the following:***

207 **7.6 Time-period averaged SAR**

208 **7.6.1 General**

209 Subclause 7.6 specifies the test procedures for assessing the time-period averaged SAR
210 (TPAS)⁴ when the DUT uses time-period averaged power control algorithms, i.e. dynamic power
211 control and exposure time averaging (DPC-ETA) algorithms (see 7.6.3; also [143]). The
212 applicable time-averaging period is specified in various international guidelines. This test
213 procedure differs from the general SAR test procedures specified in 7.4 that are applicable for
214 DUTs that do not have time-period averaged power control algorithms. Requirements and a
215 procedure for assessing the TPAS are provided in 7.6.2 to 7.6.4.⁵ The procedure can be applied
216 if the following requirements are met:

- 217 a) The power control algorithms in the DUT shall not be alterable or accessible by the user.
218 b) The DUT manufacturer shall provide sufficient documentation about the power control
219 algorithms and their implementation.
220 c) The DUT manufacturer shall validate that the time-averaged power of each test condition
221 set by the algorithm results in conservative SAR assessments.

222 If the preceding requirements are not met, the SAR shall be assessed at the maximum output
223 power level, in accordance with 7.4.

224 NOTE 1 The procedures described in 7.6.2 to 7.6.4 are used for testing devices with dynamic power control. In
225 other words, their output power is dynamically controlled based on changes in the network and transmission
226 conditions and use conditions: instantaneous and time-averaged output power, frequency band, currently active
227 transmission antenna, device position (head or body), etc.

228 NOTE 2 In addition, IEC TR 63424-1 [143] provides detailed guidance on the validation of DPC-ETA algorithms
229 through conducted power measurement, radiated power measurement, or SAR measurement.

230 NOTE 3 It is possible that the applicable regulations include published detailed guidance and requirements to
231 validate DPC-ETA algorithms. It is also possible that the applicable regulations specify testing at the maximum
232 available output power; or some devices, maximum power is based on hardware-implemented time-averaged output
233 power control algorithms. and is used in testing.

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⁴ While not used in IEC TR 63424-1:2024 [143], the term, definition, and abbreviation TPAS are retained in this document for consistency with IEC/IEEE 62209-1528:2020, but is subject to change in the next revision.

⁵ NOTE 4 Time-period averaged SAR procedures are no longer based on the evaluation of a TX factor, as done in IEC/IEEE 62209-1528:2020. The approach of this document is more versatile than applying a scaling factor, for example when evaluating simultaneous transmission or multiple inputs from proximity or motion sensors.