SLOVENSKI STANDARD
SIST EN IEC/IEEE 62209-1528:2022/oprA1:2025
01-april-2025

Merilni postopki za ocenjevanje stopnje specifične absorpcije pri izpostavljenosti ljudi elektromagnetnim sevanjem brezžičnih komunikacijskih naprav, ki se držijo v roki ali pritrdijo na telo - 1528. del: Človeški modeli, instrumenti in postopki (frekvenčno območje od 4 MHz do 10 GHz) - Dopolnilo A1

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)

Procédure de mesure pour l'évaluation du débit d'absorption spécifique de l'exposition humaine aux champs radiofréquence produits par les dispositifs de communications sans fil tenus à la main ou portés près du corps - Partie 1528: Modèles humains, instrumentation et procédures (plage de fréquences comprise entre 4 MHz et 10 GHz)

Ta slovenski standard je istoveten z: **EN IEC/IEEE 62209-1528:2021/prA1:2025**

ICS:

13.280	Varstvo pred sevanjem	Radiation protection
33.050.10	Telefonska oprema	Telephone equipment

SIST EN IEC/IEEE 62209-1528:2022/oprA1:2025 **en**

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

NOTE FROM TC/SC OFFICERS:

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

AMENDMENT 1

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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

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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 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.

Replace the existing entire 7.6 using the following:

7.6 Time-period averaged SAR

7.6.1 General

Subclause 7.6 specifies the test procedures for assessing the time-period averaged SAR (TPAS)[4] when the DUT uses time-period averaged power control algorithms, i.e. dynamic power control and exposure time averaging (DPC-ETA) algorithms (see 7.6.3; also [143]). The applicable time-averaging period is specified in various international guidelines. This test procedure differs from the general SAR test procedures specified in 7.4 that are applicable for DUTs that do not have time-period averaged power control algorithms. Requirements and a procedure for assessing the TPAS are provided in 7.6.2 to 7.6.4.[5] The procedure can be applied if the following requirements are met:

a) The power control algorithms in the DUT shall not be alterable or accessible by the user.

b) The DUT manufacturer shall provide sufficient documentation about the power control algorithms and their implementation.

c) The DUT manufacturer shall validate that the time-averaged power of each test condition set by the algorithm results in conservative SAR assessments.

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

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

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

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

[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.

7.6.2 Exposure conditions and test positions

The TPAS shall be assessed separately for each frequency band and operating mode. Two approaches are considered, depending on whether the device is capable of detecting and distinguishing its usage position (e.g. by detecting head and body-worn positions according to audio routing to the earpiece of a device during an audio call).

a) If the different usage positions are not detected and not distinguished by the device, the maximum time-averaged power setting and corresponding TPAS among all applicable test/use positions and conditions, including all head, body-worn, and other positions, shall be used to determine compliance. This is the most conservative and simple approach that applies to all use conditions.

b) Otherwise, the SAR test positions may be grouped as follows:

   1) Head test positions: The maximum time-averaged power setting and corresponding TPAS among all head test positions (left cheek, left tilt, right cheek, and right tilt), corresponding to audio calls, is used to determine head exposure SAR compliance.

   2) Other test positions: The maximum time-averaged power setting and corresponding TPAS among all other applicable test positions, when there is no audio call, is used to determine non-head exposure SAR compliance.

7.6.3 SAR measurements

SAR shall be measured for all required test positions and conditions as specified in 7.2.4, and for each test condition set by the TPAS algorithm, resulting in different SAR levels. The output power shall be set to the time-averaged power level P_{limit} of the DPC-ETA algorithm. The time-averaged power levels used shall be reported for all test conditions. These TPAS results are compared directly against the applicable SAR limit to determine compliance. See Figure 29 for illustration of P_{limit}, other relevant DPC-ETA algorithm parameters, and the output power characteristics.

During SAR measurements, the DPC-ETA power control algorithms in the DUT can be disabled. Disabling the power control algorithms typically requires a specific radio configuration on the DUT, using specific test samples or specific test methods.

If the power control algorithm cannot be disabled at the maximum output power level, the SAR shall be measured at a lower output power where the power control algorithm does not limit or change the power during measurement, and the measured psSAR shall be scaled to correspond to P_{limit}.

Similarly, setting the output transmit power to the time-averaged power level P_{limit} typically requires specific test samples where this power is set as maximum instantaneous power, to support repeatable power level-setting during SAR testing, especially when transmission is controlled by a base station simulator.