



BSI Standards Publication

**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 – Vector measurement-based systems
(Frequency range of 30 MHz to 6 GHz)**

National foreword

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PRE-STANDARD



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 – Vector measurement-based systems (Frequency range of 30 MHz to 6 GHz)

INTERNATIONAL
ELECTROTECHNICAL
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CONTENTS

FOREWORD.....	7
INTRODUCTION.....	9
1 Scope.....	10
2 Normative references	10
3 Terms and definitions	11
4 Symbols and abbreviated terms.....	11
5 Overview of the measurement procedure.....	11
6 Measurement system specifications.....	13
6.1 General requirements	13
6.2 Phantom specifications	15
6.2.1 Head Phantom specifications – shell	15
6.2.2 Body Phantom specifications – shell.....	15
6.2.3 Tissue-equivalent medium material properties	15
6.3 Hand and Device holder considerations	16
6.4 Measurement system requirements.....	16
6.4.1 General	16
6.4.2 Single probe measurement system specifications	16
6.4.3 Array measurement system specifications	16
6.5 Device holder specification	17
6.6 Reconstruction algorithm and peak spatial-averaging specifications	18
7 Protocol for SAR assessment	18
7.1 Measurement preparation	18
7.1.1 Preparation of tissue-equivalent medium	18
7.1.2 System check	19
7.1.3 Preparation of the device under test	19
7.1.4 Operating modes	19
7.1.5 Position of the DUT in relation to the phantom	19
7.1.6 Positions of the DUT in relation to the flat phantom for large DUT	19
7.1.7 Test frequencies for DUT.....	20
7.2 Tests to be performed.....	21
7.3 General measurement procedure.....	22
7.3.1 Measurement procedure for single probe systems	22
7.3.2 Measurement procedure for array systems	22
7.4 SAR measurements for simultaneous transmission	22
7.4.1 SAR measurements for non-correlated signals	22
7.4.2 SAR measurements for correlated signals	23
8 Uncertainty estimation	24
8.1 General.....	24
8.2 Requirements on the uncertainty evaluation.....	25
8.3 Description of uncertainty models	25
9 Measurement report	30
Annex A (normative) Phantom specifications	31
A.1 SAM phantom specifications	31
A.1.1 SAM phantom geometry.....	31
A.1.2 SAM Phantom shell	35
A.1.3 Tissue Equivalent Medium	36

A.2	Flat phantom specifications.....	37
A.3	Specific phantoms.....	38
A.4	Tissue-equivalent medium	39
Annex B	(normative) Calibration and characterization of dosimetric probes.....	40
B.1	Introduction.....	40
B.2	Types of calibration.....	40
B.2.1	Amplitude calibration with analytical fields	40
B.2.2	Amplitude and phase calibration by transfer calibration	41
B.2.3	Amplitude and phase calibration using numerical reference	42
Annex C	(informative) Field Reconstruction Techniques	45
C.1	Introduction.....	45
C.2	Objective of Field Reconstruction Techniques.....	45
C.3	Background.....	45
C.4	Reconstruction Techniques.....	47
C.4.1	Expansion Techniques.....	47
C.4.2	Source Reconstruction Techniques.....	48
C.4.3	Source Base Function Decomposition.....	48
C.4.4	Phase Reconstruction.....	48
C.4.5	Other Approaches.....	48
C.5	Source reconstruction and SAR estimation from fields measured outside the phantom.....	49
Annex D	(normative) SAR measurement system verification and validation.....	50
D.1	Introduction.....	50
D.1.1	Objectives and purpose of <i>system check</i>	50
D.1.2	Objectives of <i>system validation</i>	50
D.2	SAR measurement setup and procedure for <i>system check</i> and <i>system validation</i>	51
D.2.1	General	51
D.2.2	Power measurement setups.....	52
D.2.3	Procedure to normalize the measured SAR.....	53
D.2.4	Power measurement uncertainty.....	55
D.3	<i>System check</i>	56
D.3.1	<i>System check</i> antennas and test conditions.....	56
D.3.2	System check acceptance criteria.....	56
D.4	<i>System validation</i>	57
D.4.1	Requirements for <i>system validation</i> antennas and test conditions	57
D.4.2	Test positions for <i>system validation</i>	58
D.4.3	<i>System validation</i> procedure based on peak spatial-average SAR	61
D.4.4	Validation acceptance criteria	70
Annex E	(informative) Interlaboratory comparisons	71
E.1	Purpose	71
E.2	Monitor laboratory.....	71
E.3	Phantom set-up	71
E.4	Reference devices	71
E.5	Power set-up	71
E.6	Interlaboratory comparison – Procedure.....	72
Annex F	(normative) Validation antennas.....	73
F.1	Introduction.....	73
F.2	Standard dipole antenna	73

F.3	VPIFA	75
F.4	2-PEAK CPIFA.....	80
F.5	Additional antennas	83
Annex G (normative) Calibration of Reference Antennas.....		85
G.1	Introduction.....	85
G.2	Parameters or quantities and ranges to be determined by calibration method	86
G.3	Reference Antenna Calibration Setup	86
G.4	Reference Antenna Calibration procedure.....	87
G.4.1	Verification of Return Loss.....	87
G.4.2	Calibration of Reference Antennas: Step-by-Step Procedure	87
G.4.3	Uncertainty Budget of Reference Antenna Calibration.....	88
Annex H (normative) General considerations on uncertainty estimation		93
H.1	Concept of uncertainty estimation	93
H.2	Type A and Type B evaluation	94
H.3	Degrees of freedom and coverage factor	94
H.4	Combined and expanded uncertainties.....	95
H.5	Analytical reference functions	96
Annex I (normative) Evaluation of the measurement system uncertainty		99
I.1	Measuring system uncertainties to be specified by the manufacturer	99
I.1.1	Calibration <i>CF</i>	99
I.1.2	Vector probe or vector probe-array isotropy <i>ISO</i>	99
I.1.3	Mutual sensor coupling <i>MSC</i>	100
I.1.4	Scattering within the array <i>AS</i>	100
I.1.5	System linearity <i>LIN</i>	102
I.1.6	Sensitivity limit <i>SL</i>	102
I.1.7	Boundary effect <i>BE</i>	102
I.1.8	Readout electronics <i>RE</i>	103
I.1.9	Response time <i>RT</i>	103
I.1.10	Probe positioning <i>PP</i>	103
I.1.11	Sampling error <i>SE</i>	104
I.1.12	Array boundaries <i>AB</i>	105
I.1.13	Phantom shell <i>PS</i>	105
I.1.14	Tissue-equivalent material parameters <i>MAT</i>	106
I.1.15	Phantom Homogeneity <i>HOM</i>	108
I.2	Uncertainty of post-processing algorithms.....	108
I.2.1	Introduction	108
I.2.2	Evaluation of uncertainty due to reconstruction <i>REC</i>	108
I.2.3	Impact of noise on interpolation and extrapolation <i>POL</i>	109
I.2.4	SAR Averaging <i>SAV</i>	109
I.2.5	SAR scaling <i>SARS</i>	109
I.2.6	SAR correction for deviations in permittivity and conductivity <i>SC</i>	109
I.3	Measuring system errors which are dependent on the DUT	111
I.3.1	Introduction	111
I.3.2	Probe or probe-array coupling with the DUT <i>PAC</i>	111
I.3.3	Modulation Response <i>MOD</i>	112
I.3.4	Integration time <i>IT</i>	112
I.3.5	Measurement system drift and noise <i>DN</i>	112
I.4	DUT-related errors or validation antenna related errors and environmental factors	114

1.4.1	Device holder <i>DH</i>	114
1.4.2	Device Positioning <i>DP</i>	115
1.4.3	Measured SAR drift <i>SD</i>	115
1.4.4	RF ambient conditions <i>AC</i>	115
1.4.5	Measurement system immunity/secondary reception <i>MSI</i>	115
1.4.6	Deviation of experimental antennas <i>DEX</i>	116
1.4.7	Other uncertainty contributions when using validation antennas <i>OVS</i>	116
	Bibliography.....	117
	Figure 1 – Evaluation plan checklist.....	12
	Figure 2 – Illustration of the shape and orientation relative to a curved phantom surface of the distorted cubic volume for computing peak spatial-average SAR	18
	Figure 3 – Measurements performed by shifting a large device over the efficient measurement area of the system including overlapping areas – in this case: 6 tests performed	20
	Figure A.1 – Illustration of dimensions in Table A.1 and Table A.2.....	32
	Figure A.2 – Close up side view of phantom showing the ear region	34
	Figure A.3 – Side view of the phantom showing relevant markings, dimensions are in mm....	34
	Figure A.4 – Cross-sectional view of SAM at the reference plane.....	36
	Figure A.5 – Sagittally bisected phantom with extended perimeter, used for single probe systems	37
	Figure A.6 – Dimensions of the elliptical phantom	38
	Figure C.1 – Coordinate system for 2D planar measurement-system	46
	Figure C.2 – Generic configuration of SAR measurement system.....	46
	Figure C.3 – Schematic representation of 2D planar measurement-based SAR system and its coordinate system	48
	Figure C.4 – Source Reconstruction outside the phantom	49
	Figure D.1 – A Recommended power measurement setup for system check and system validation	52
	Figure D.2 – Equipment setup for measurement of forward power P_{fc}	53
	Figure D.3 – Equipment setup for measuring the shorted reverse coupled power P_{RCS}	54
	Figure D.4 – Equipment setup for measuring the power with the Reference antenna connected	54
	Figure D.5 – <i>System check</i> and validation locations for the flat phantom for minimal device specs (the minimal L and W shall be 160 mm x 80 mm)	59
	Figure D.6 – <i>System check</i> and validation locations for the head phantom.....	60
	Figure D.7 – Definition of rotation angles for dipoles	61
	Figure F.1 – Mechanical details of the standard dipole.....	75
	Figure F.2 – VPIFA validation antenna.....	77
	Figure F.3 – Masks for positioning VPIFAs.....	78
	Figure F.4 – Peak CPIFA at 2450 MHz	82
	Figure F.5 – Tuning structure and matching structure	82
	Figure G.1 – Measurement setup for waveguide calibration of dosimetric probe, and similar setup (same tissue-equivalent liquid, dielectric spacer, power sensors and coupler) for antenna calibration.....	86
	Figure G.2 – Setup for calibration of a reference antenna	87

Figure I.1 – Illustration of the SAR measurements during 8 hours and the centered moving average 113

Table 1 – Evaluation plan checklist 13

Table 2 – Uncertainty budget template for the evaluation of the measurement system uncertainty of the 1 g or 10 g psSAR to be carried out by the system manufacturer (N = normal, R = rectangular) 27

Table 3 – Uncertainty budget template for evaluating the uncertainty in the measured value of 1 g SAR or 10 g SAR from a DUT (N = normal, R = rectangular)..... 28

Table 4 – Uncertainty budget template for evaluating the uncertainty in the measured value of 1 g SAR or 10 g SAR from a validation antenna (N = normal, R = rectangular) 29

Table 5 – Uncertainty budget template for evaluating the uncertainty in the measured value of 1 g SAR or 10 g SAR from the *system check* (N = normal, R = rectangular)..... 30

Table A.1 – Dimensions used in deriving SAM phantom from the ARMY 90th percentile male head data (Gordon et al.[61]) 33

Table A.2 – Additional SAM dimensions compared with selected dimensions from the ARMY 90th-percentile male head data (Gordon et al. [61]) – Specialist head measurement section 33

Table A.3 – Dielectric properties of the tissue-equivalent medium 39

Table B.1 – Uncertainty analysis of single-probe calibration in waveguide 41

Table B.2 – Uncertainty analysis of transfer calibration of array systems 42

Table B.3 – Uncertainty analysis of transfer calibration of array systems 44

Table D.1 – Modulations and multiplexing methods used by radio systems 58

Table D.2a – Peak spatial SAR (psSAR) averaged over 1g and 10g values for the flat phantom filled with tissue simulating material for the antennas defined in Annex F. Modulations are as defined in Table D.1 62

Table D.2b – Peak spatial SAR (psSAR) averaged over 1g and 10g values for antenna generating two peaks on the flat phantom filled with tissue simulating material for the antennas defined in Annex F. Modulations are as defined in Table D.1 64

Table D.3a – Peak spatial SAR (psSAR) averaged over 1g and 10g values on the head left and right phantom for the antennas defined in Annex F. Modulations are as defined in Table D.1 65

Table D.3b – Peak spatial SAR (psSAR) averaged over 1g and 10g values for antenna generating two peaks on the head left and right phantom for the antennas defined in Annex F. Modulations are as defined in Table D.1 69

Table F.1 – Mechanical dimensions of the reference dipoles 74

Table F.2 – Dimensions for VPIFA antennas at different frequencies 79

Table F.3 – Electric properties for the dielectric layers for VPIFA antennas 79

Table F.4 – Thickness of substrates and planar metallization 83

Table F.5 – Dielectric properties for FR4 83

Table F.6 – Lengths for the different components 83

Table G.1 – Example uncertainty budget for reference antenna (DIPOLE) calibration for 1g and 10g averaged SAR (750 MHz – 3 GHz) 90

Table G.2 – Example uncertainty budget for reference antenna calibration (PIFA) for 1 g and 10 g averaged SAR (750 MHz – 3 GHz) 91

Table G.3 – Example uncertainty budget for reference antenna (DIPOLE) calibration for 1g and 10g averaged SAR (3 – 6 GHz) 92

Table H.1 – Parameters of analytical reference functions and associated reference peak 10g SAR value. Reference peak 1g SAR value is 1 W/kg for every function 98

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 –****Vector measurement-based systems
(Frequency range of 30 MHz to 6 GHz)**

FOREWORD

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IEC PAS 63151 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 PAS is based on the following document:

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Following publication of this PAS, which is a pre-standard publication, the technical committee or subcommittee concerned may transform it into an International Standard.

This PAS shall remain valid for an initial maximum period of 3 years starting from the publication date. The validity may be extended for a single period up to a maximum of 3 years, at the end of which it shall be published as another type of normative document, or shall be withdrawn.

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

A bilingual version of this publication may be issued at a later date.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This Publicly Available Specification (PAS) specifies the requirements for vector measurement-based systems to measure the Specific Absorption Rate (SAR) of devices that are used in close proximity to the human body or head.

This PAS is published in order to make available the current state of the technology. It is planned to publish a standard as Part 3 of the IEC 62209 series. When IEC 62209-3 is published this PAS will be withdrawn.

This PAS acknowledges the need for fast and accurate systems to determine the human exposure to radio frequency fields from hand-held and body mounted wireless communication devices.

As SAR measurement systems are used for showing compliance with national and international exposure limits the test procedures have to be standardized. The standardization is necessary to achieve comparable results for the approval process.

Vector measurement-based systems and protocols can differ from traditional SAR measurement systems and protocols. These systems use more advanced field reconstruction methods, allowing the application of indirect measurement approaches in which the SAR is evaluated in three dimensions from a limited number of measurement points which may be located in a limited part of the volume of interest, or even outside this volume. Such new SAR assessment approaches result in significantly reduced SAR measurement times.

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 –

Vector measurement-based systems (Frequency range of 30 MHz to 6 GHz)

1 Scope

This Publicly Available Specification (PAS) specifies protocols and test procedures for the reproducible measurement of the peak spatial-average specific absorption rate (psSAR) induced inside a simplified model of the head or the body by radio-frequency (RF) transmitting devices, with a defined uncertainty. It provides requirements for systems using vector measurement-based systems. Such systems determine the psSAR by 3D field reconstruction within the volume of interest by specifying the requirements for the measurement system, calibration, uncertainty assessment and validation methods. The protocols and procedures apply for a significant majority of people including children during use of hand-held and body-worn wireless communication devices.

This PAS is applicable to any wireless communication device intended to be used at a position near the human head or body at distances up to and including 200 mm. This PAS can be employed to evaluate SAR compliance of different types of wireless communication devices used next to the ear, in front of the face, mounted on the body, combined with other RF-transmitting or non-transmitting devices or accessories (e.g. belt-clip), or embedded in garments. The overall applicable frequency range is from 30 MHz to 6 GHz.

The system validation procedures provided within this PAS cover frequencies from 600 MHz to 6 GHz.

NOTE Some specifications (e.g., validation antennas and other procedures or requirements) are not yet defined over the full frequency range within the scope of this document but will be included in a future revision.

The device categories covered include but are not limited to mobile telephones, cordless microphones, auxiliary broadcast devices and radio transmitters in personal computers, desktop, laptop devices, multi-band, multi-antenna, and push-to-talk devices.

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.

ISO/IEC Guide 98-3, *Uncertainty of measurement – Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)*

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

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)*