

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



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)

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Procédure de mesure pour l'évaluation du débit d'absorption spécifique de l'exposition humaine aux champs radiofréquences produits par les dispositifs de communications sans fil tenus à la main ou portés près du corps –

Partie 1: Dispositifs utilisés à proximité de l'oreille (Plage de fréquences de 300 MHz à 6 GHz)



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## CONTENTS

FOREWORD.....	11
INTRODUCTION.....	13
1 Scope.....	14
2 Normative references .....	14
3 Terms and definitions .....	14
4 Symbols and abbreviations .....	19
4.1 Physical quantities .....	19
4.2 Constants .....	20
4.3 Abbreviations .....	20
5 Measurement system specifications .....	20
5.1 General requirements.....	20
5.2 Phantom specifications (shell and liquid) .....	22
5.3 Hand and device holder considerations.....	23
5.4 Scanning system requirements .....	23
5.5 Device holder specifications .....	23
5.6 Characteristics of the readout electronics .....	24
6 Protocol for SAR assessment.....	24
6.1 General.....	24
6.2 Measurement preparation.....	24
6.2.1 Preparation of tissue-equivalent liquid and <i>system check</i> .....	24
6.2.2 Preparation of the wireless device under test (DUT).....	25
6.2.3 Operating modes.....	26
6.2.4 Positioning of the DUT in relation to the phantom .....	27
6.2.5 Test frequencies for DUT .....	34
6.3 Tests to be performed .....	34
6.4 Measurement procedure.....	36
6.4.1 General .....	36
6.4.2 General procedure .....	37
6.4.3 SAR measurements of handsets with multiple antennas or multiple transmitters.....	39
6.5 Post-processing of SAR measurement data .....	45
6.5.1 Interpolation.....	45
6.5.2 Extrapolation .....	46
6.5.3 Definition of the averaging volume.....	46
6.5.4 Searching for the maxima.....	46
6.6 Fast SAR testing.....	46
6.6.1 General .....	46
6.6.2 Fast SAR measurement procedure A.....	47
6.6.3 Fast SAR testing of required frequency bands .....	49
6.6.4 Fast SAR measurement procedure B.....	50
6.7 SAR test reduction .....	52
6.7.1 General requirements.....	52
6.7.2 Test reduction for different operating modes in the same frequency band using the same wireless technology .....	53
6.7.3 Test reduction based on characteristics of DUT design .....	54
6.7.4 Test reduction based on SAR level analysis.....	55

6.7.5	Test reduction based on simultaneous multi-band transmission considerations .....	57
7	Uncertainty estimation .....	58
7.1	General considerations.....	58
7.1.1	Concept of uncertainty estimation.....	58
7.1.2	Type A and Type B evaluation.....	59
7.1.3	Degrees of freedom and coverage factor .....	59
7.2	Components contributing to uncertainty .....	60
7.2.1	General .....	60
7.2.2	Calibration of the SAR probes .....	60
7.2.3	Contribution of mechanical constraints .....	65
7.2.4	Phantom shell.....	66
7.2.5	Device positioning and holder uncertainties .....	67
7.2.6	Tissue-equivalent liquid parameter uncertainty .....	69
7.2.7	Uncertainty in SAR correction for deviations in permittivity and conductivity.....	72
7.2.8	Measured SAR drift.....	74
7.2.9	RF ambient conditions.....	75
7.2.10	Contribution of post-processing .....	76
7.2.11	SAR scaling uncertainty .....	81
7.2.12	Deviation of experimental sources .....	82
7.2.13	Other uncertainty contributions when using <i>system validation</i> sources .....	82
7.3	Calculation of the uncertainty budget.....	83
7.3.1	Combined and expanded uncertainties .....	83
7.3.2	Maximum expanded uncertainty .....	83
7.4	Uncertainty of fast SAR methods based on specific measurement procedures and post-processing techniques .....	92
7.4.1	General .....	92
7.4.2	Measurement uncertainty evaluation.....	92
8	Measurement report .....	101
8.1	General.....	101
8.2	Items to be recorded in the measurement report .....	101
Annex A (normative)	Phantom specifications .....	104
A.1	Rationale for the SAM phantom shape.....	104
A.2	SAM phantom specifications.....	104
A.2.1	General .....	104
A.2.2	Phantom shell.....	108
A.3	Flat phantom specifications .....	110
A.4	Tissue-equivalent liquids .....	111
Annex B (normative)	Calibration and characterization of dosimetric probes .....	113
B.1	Introductory remarks .....	113
B.2	Linearity.....	114
B.3	Assessment of the sensitivity of the dipole sensors .....	114
B.3.1	General .....	114
B.3.2	Two-step calibration procedures.....	114
B.3.3	One step calibration procedures.....	120
B.3.4	Coaxial calorimeter method .....	124
B.4	Isotropy .....	126
B.4.1	Axial isotropy .....	126

B.4.2	Hemispherical isotropy .....	126
B.5	Lower detection limit .....	131
B.6	Boundary effects .....	131
B.7	Response time .....	131
Annex C (normative)	Post-processing techniques .....	132
C.1	Extrapolation and interpolation schemes .....	132
C.1.1	Introductory remarks .....	132
C.1.2	Interpolation schemes .....	132
C.1.3	Extrapolation schemes .....	132
C.2	Averaging scheme and maximum finding .....	132
C.2.1	Volume average schemes .....	132
C.2.2	Extrude method of averaging .....	132
C.2.3	Maximum peak SAR finding and uncertainty estimation .....	133
C.3	Example implementation of parameters for scanning and data evaluation .....	133
C.3.1	General .....	133
C.3.2	Area scan measurement requirements .....	133
C.3.3	Zoom scan .....	133
C.3.4	Extrapolation .....	134
C.3.5	Interpolation .....	134
C.3.6	Integration .....	134
Annex D (normative)	SAR measurement system verification .....	135
D.1	Overview .....	135
D.2	<i>System check</i> .....	135
D.2.1	Purpose .....	135
D.2.2	Phantom set-up .....	136
D.2.3	<i>System check</i> source .....	136
D.2.4	<i>System check</i> source input power measurement .....	137
D.2.5	<i>System check</i> procedure .....	138
D.3	<i>System validation</i> .....	139
D.3.1	Purpose .....	139
D.3.2	Phantom set-up .....	139
D.3.3	<i>System validation</i> sources .....	139
D.3.4	Reference dipole input power measurement .....	140
D.3.5	<i>System validation</i> procedure .....	140
D.3.6	Numerical target SAR values .....	141
D.4	Fast SAR method <i>system validation</i> and <i>system check</i> .....	144
D.4.1	General .....	144
D.4.2	Fast SAR method <i>system validation</i> .....	144
D.4.3	Fast SAR method <i>system check</i> .....	145
Annex E (normative)	Interlaboratory comparisons .....	146
E.1	Purpose .....	146
E.2	Phantom set-up .....	146
E.3	Reference wireless handsets .....	146
E.4	Power set-up .....	146
E.5	Interlaboratory comparison – Procedure .....	147
Annex F (informative)	Definition of a phantom coordinate system and a device under test coordinate system .....	148
Annex G (informative)	SAR <i>system validation</i> sources .....	150

G.1	Standard dipole source .....	150
G.2	Standard waveguide source .....	151
Annex H (informative)	Flat phantom .....	153
Annex I (informative)	Example recipes for phantom head tissue-equivalent liquids .....	156
I.1	Overview .....	156
I.2	Ingredients.....	156
I.3	Tissue-equivalent liquid formulas (permittivity/conductivity).....	157
Annex J (informative)	Measurement of the dielectric properties of liquids and uncertainty estimation .....	160
J.1	Introductory remarks .....	160
J.2	Measurement techniques.....	160
J.2.1	General .....	160
J.2.2	Instrumentation .....	160
J.2.3	General principles .....	160
J.3	Slotted coaxial transmission line.....	161
J.3.1	General .....	161
J.3.2	Equipment set-up.....	161
J.3.3	Measurement procedure.....	161
J.4	Contact coaxial probe.....	162
J.4.1	General .....	162
J.4.2	Equipment set-up.....	162
J.4.3	Measurement procedure.....	164
J.5	TEM transmission line .....	164
J.5.1	General .....	164
J.5.2	Equipment set-up.....	164
J.5.3	Measurement procedure.....	165
J.6	Dielectric properties of reference liquids .....	166
Annex K (informative)	Measurement uncertainty of specific fast SAR methods and fast SAR examples .....	169
K.1	General.....	169
K.2	Measurement uncertainty evaluation.....	169
K.2.1	General .....	169
K.2.2	Probe calibration and system calibration drift.....	170
K.2.3	Isotropy .....	170
K.2.4	Sensor positioning uncertainty.....	171
K.2.5	Sensor location sensitivity .....	171
K.2.6	Mutual sensor coupling .....	172
K.2.7	Sensor coupling with the DUT .....	172
K.2.8	Measurement system immunity / secondary reception.....	172
K.2.9	Deviations in phantom shape.....	172
K.2.10	Spatial variation in dielectric parameters .....	173
K.3	Fast SAR examples.....	178
K.3.1	General .....	178
K.3.2	Example 1: Tests for one frequency band and mode .....	179
K.3.3	Example 2: Tests over multiple frequency bands and modes .....	183
K.3.4	Example 3: Tests for one frequency band and mode (Procedure B).....	186
K.3.5	Example 4: Tests over multiple frequency bands and modes (Procedure B).....	190
Annex L (informative)	SAR test reduction supporting information .....	194

L.1	General.....	194
L.2	Test reduction based on characteristics of DUT design .....	194
L.2.1	General .....	194
L.2.2	Statistical analysis overview.....	194
L.2.3	Analysis results.....	195
L.2.4	Conclusions .....	198
L.2.5	Expansion to multi transmission antennas .....	198
L.2.6	Test reduction based on analysis of SAR results on other signal modulations .....	198
L.3	Test reduction based on SAR level analysis.....	200
L.3.1	General .....	200
L.3.2	Statistical analysis .....	201
L.3.3	Test reduction applicability example .....	204
L.4	Other statistical approaches to search for the high SAR test conditions .....	205
L.4.1	General .....	205
L.4.2	Test reductions based on a design of experiments (DOE) .....	205
L.4.3	Analysis of unstructured data .....	206
Annex M (informative)	Applying the head SAR test procedures .....	207
Annex N (informative)	Studies for potential hand effects on head SAR .....	210
N.1	Overview .....	210
N.2	Background.....	210
N.2.1	General .....	210
N.2.2	Hand phantoms.....	211
N.3	Summary of experimental studies.....	211
N.3.1	General.....	211
N.3.2	Experimental studies using fully compliant SAR measurement systems .....	211
N.3.3	Experimental studies using other SAR measurement systems .....	211
N.4	Summary of computational studies .....	212
N.5	Conclusions .....	212
Annex O (informative)	Quick start guide .....	213
O.1	General.....	213
O.2	Quick start guide high level flow-chart .....	213
Bibliography	.....	217

Figure 1 – Vertical and horizontal reference lines and reference Points A, B on two example device types: a full touch screen smart phone (top) and a keyboard handset (bottom) .....	29
Figure 2 – Cheek position of the wireless device on the left side of SAM where the device shall be maintained for the phantom test set-up .....	32
Figure 3 – Tilt position of the wireless device on the left side of SAM .....	32
Figure 4 – An alternative form factor DUT and standard coordinate and reference points applied .....	33
Figure 5 – Block diagram of the tests to be performed .....	36
Figure 6 – Orientation of the probe with respect to the line normal to the phantom surface, shown at two different locations .....	39
Figure 7 – Measurement procedure for different types of correlated signals .....	45
Figure 8 – The Fast SAR measurement procedure B. ....	52
Figure 9 – Modified chart of 6.4.2.....	57



Figure 10 – Orientation and surface of the averaging volume relative to the phantom surface .....	81
Figure A.1 – Illustration of dimensions in Table A.1 and Table A.2 .....	105
Figure A.2 – Close-up side view of phantom showing the ear region .....	107
Figure A.3 – Side view of the phantom showing relevant markings .....	107
Figure A.4 – Sagittally bisected phantom with extended perimeter (shown placed on its side as used for device SAR tests) .....	109
Figure A.5 – Picture of the phantom showing the central strip .....	109
Figure A.6 – Cross-sectional view of SAM at the reference plane .....	110
Figure A.7 – Dimensions of the elliptical phantom .....	111
Figure B.1 – Experimental set-up for assessment of the sensitivity (conversion factor) using a vertically-oriented rectangular waveguide .....	118
Figure B.2 – Illustration of the antenna gain evaluation set-up .....	121
Figure B.3 – Schematic of the coaxial calorimeter system .....	125
Figure B.4 – Set-up to assess spherical isotropy deviation in tissue-equivalent liquid .....	127
Figure B.5 – Alternative set-up to assess spherical isotropy deviation in tissue-equivalent liquid .....	128
Figure B.6 – Experimental set-up for the hemispherical isotropy assessment .....	129
Figure B.7 – Conventions for dipole position ( $\xi$ ) and polarization ( $\theta$ ) .....	129
Figure B.8 – Measurement of hemispherical isotropy with reference antenna .....	130
Figure C.1 – Extrude method of averaging .....	133
Figure C.2 – Extrapolation of SAR data to the inner surface of the phantom based on a fourth-order least-square polynomial fit of the measured data (squares) .....	134
Figure D.1 – Test set-up for the system check .....	137
Figure F.1 – Example reference coordinate system for the left ERP of the SAM phantom .....	148
Figure F.2 – Example coordinate system on the device under test .....	149
Figure G.1 – Mechanical details of the standard dipole .....	151
Figure G.2 – Standard waveguide source (dimensions are according to Table G.2) .....	152
Figure H.1 – Dimensions of the flat phantom set-up used for deriving the minimal phantom dimensions for $W$ and $L$ for a given phantom depth $D$ .....	154
Figure H.2 – FDTD predicted uncertainty in the 10 g peak spatial-average SAR as a function of the dimensions of the flat phantom compared with an infinite flat phantom, at 800 MHz .....	154
Figure J.1 – Slotted line set-up .....	161
Figure J.2 – An open-ended coaxial probe with inner and outer radii $a$ and $b$ , respectively .....	163
Figure J.3 – TEM line dielectric test set-up [143] .....	165
Figure K.1 – SAR values for twelve hypothetical test configurations measured in the same frequency band and modulation (e.g. GSM 900 MHz) using a hypothetical full SAR (full SAR) and two fast SAR (fast SAR 1 and fast SAR 2) evaluations .....	178
Figure L.1 – Distribution of "Tilt/Cheek" .....	195
Figure L.2 – SAR relative to SAR in position with maximum SAR in GSM mode .....	200
Figure L.3 – Two points identifying the minimum distance between the position of the interpolated maximum SAR and the points at $0,6 \times SAR_{\max}$ .....	201
Figure L.4 – Histogram for $D_{\min}$ in the case of GSM 900 and iso-level at $0,6 \times SAR_{\max}$ .....	202
Figure L.5 – Histogram for random variable $Factor_{1g1800}$ .....	203

Figure O.1 – Quick guide flow-chart .....	214
Table 1 – Area scan parameters.....	38
Table 2 – Zoom scan parameters .....	38
Table 3 – Example method to determine the combined SAR value using Alternative 1 .....	43
Table 4 – Threshold values $TH(f)$ used in this proposed test reduction protocol.....	56
Table 5 – Example uncertainty template and example numerical values for dielectric constant ( $\epsilon'_r$ ) and conductivity ( $\sigma$ ) measurement.....	71
Table 6 – Uncertainty of Formula (41) as a function of the maximum change in permittivity or conductivity.....	73
Table 7 – Parameters for the reference function $f_1$ in Formula (48) .....	77
Table 8 – Uncertainties relating to the deviations of the parameters of the standard waveguide source from theory.....	82
Table 9 – Other uncertainty contributions relating to the dipole sources described in Annex G. ....	83
Table 10 – Other uncertainty contributions relating to the standard waveguide sources described in Annex G.....	83
Table 11 – Example of measurement uncertainty evaluation template for handset SAR test..	85
Table 12 – Example of measurement uncertainty evaluation template for <i>system validation</i> .....	88
Table 13 – Example of measurement repeatability evaluation template for <i>system check</i> (applicable for one system).....	90
Table 14 – Measurement uncertainty budget for relative fast SAR tests .....	97
Table 15 – Measurement uncertainty budget for <i>system check</i> using fast SAR methods .....	99
Table A.1 – Dimensions used in deriving SAM phantom from the ARMY 90th percentile male head data (Gordon et al. [56]).....	106
Table A.2 – Additional SAM dimensions compared with selected dimensions from the ARMY 90th-percentile male head data (Gordon et al. [56]) – specialist head measurement section.....	106
Table A.3 – Dielectric properties of the head tissue-equivalent liquid .....	112
Table B.1 – Uncertainty analysis for transfer calibration using temperature probes.....	116
Table B.2 – Guidelines for designing calibration waveguides .....	119
Table B.3 – Uncertainty analysis of the probe calibration in waveguide .....	120
Table B.4 – Uncertainty template for evaluation of reference antenna gain.....	122
Table B.5 – Uncertainty template for calibration using reference antenna.....	123
Table B.6 – Uncertainty components for probe calibration using thermal methods .....	126
Table D.1 – Numerical target SAR values (W/kg) for standard dipole and flat phantom.....	142
Table D.2 – Numerical target SAR values for waveguides specified in Clause G.2 placed in contact with flat phantom [94].....	143
Table G.1 – Mechanical dimensions of the reference dipoles .....	150
Table G.2 – Mechanical dimensions of the standard waveguide.....	152
Table H.1 – Parameters used for calculation of reference SAR values in Table D.1 .....	155
Table I.1 – Suggested recipes for achieving target dielectric parameters: 300 MHz to 900 MHz.....	157
Table I.2 – Suggested recipes for achieving target dielectric parameters: 1 450 MHz to 2 000 MHz.....	158

Table I.3 – Suggested recipes for achieving target dielectric parameters: 2 100 MHz to 5 800 MHz .....	159
Table J.1 – Parameters for calculating the dielectric properties of various reference liquids .....	167
Table J.2 – Dielectric properties of reference liquids at 20 °C .....	167
Table K.1 – Measurement uncertainty budget for relative fast SAR tests complying with Annex K requirements, for tests performed within one frequency band and modulation.....	174
Table K.2 – Measurement uncertainty budget for <i>system check</i> using fast SAR methods complying with Annex K requirements .....	176
Table K.3 – Measurements conducted according to Step a) .....	179
Table K.4 – Measurements conducted according to Step b) .....	180
Table K.5 – Measurements conducted according to Step c) .....	180
Table K.6 – Measurements conducted according to 6.4.2, Step 2).....	181
Table K.7 – Measurements conducted according to 6.4.2, Step 3).....	182
Table K.8 – Measurements conducted according to 6.4.2, Step 4).....	182
Table K.9 – Fast SAR measurements conducted according to Step a).....	183
Table K.10 – Fast SAR measurements showing highest SAR value according to Step b) ...	184
Table K.11 – Full SAR measurements conducted according to Step b).....	184
Table K.12 – Fast SAR measurements showing values according to requirements in Step c) .....	185
Table K.13 – Full SAR measurements conducted according to Step c) .....	185
Table K.14 – Fast SAR measurements showing values according to requirements in Step e) .....	186
Table K.15 – Full SAR measurements conducted according to Step e).....	186
Table K.16 – Measurements conducted according to Step a) .....	187
Table K.17 – Measurements conducted according to Step b) .....	188
Table K.18 – Measurements conducted according to Step c) .....	188
Table K.19 – Measurements conducted according to Step e) .....	189
Table K.20 – Measurements conducted according to Step f) .....	190
Table K.21 – Fast SAR measurements conducted according to Step a).....	191
Table K.22 – Full SAR measurements conducted according to Step b).....	191
Table K.23 – Full SAR measurements conducted according to Step e).....	192
Table K.24 – Full SAR measurements conducted according to Step e).....	193
Table L.1 – The number of handsets used for the statistical study.....	195
Table L.2 – Statistical analysis results of $P(\text{Tilt/Cheek} > x)$ for various $x$ values .....	196
Table L.3 – Statistical analysis results of $P(\text{Tilt/Cheek} > x)$ for 1 g and 10 g peak spatial-average SAR .....	196
Table L.4 – Statistical analysis results of $P(\text{Tilt/Cheek} > x)$ for various antenna locations.....	197
Table L.5 – Statistical analysis results of $P(\text{Tilt/Cheek} > x)$ for various frequency bands.....	197
Table L.6 – Statistical analysis results of $P(\text{Tilt/Cheek} > x)$ for various device types.....	198
Table L.7 – Distance $D_{\min}^*$ for various iso-level values .....	202
Table L.8 – Experimental thresholds to have a 95 % probability that the maximum measured SAR value from the area scan will also have a peak spatial-average SAR.....	203
Table L.9 – SAR values from the area scan (GSM 900 band).....	204
Table L.10 – SAR values from the area scan (GSM 900 band).....	205

Table M.1 – SAR results tables for example test results – GSM 850.....	207
Table M.2 – SAR results table for example test results – GSM 900 .....	208
Table M.3 – SAR results table for example test results – GSM 1800 .....	208
Table M.4 – SAR results table for example test results – GSM 1900 .....	209
Table O.1 – Quick start guide: SAR evaluation steps .....	215

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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

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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.

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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.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website 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.

**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

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.