
Translated English of Chinese Standard: YD/T1644.2-2011

www.ChineseStandard.net

Sales@ChineseStandard.net

YD

COMMUNICATIONS INDUSTRY STANDARD

OF THE PEOPLE'S REPUBLIC OF CHINA

ICS 33.100

M 04

YD/T 1644.2-2011

Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)

手持和身体佩戴使用的无线通信设备对人体的电磁照射 人体模型、仪器和规程 第2部分：靠近身体使用的无线通信设备的比吸收率 (SAR) 评估规程 (频率范围 30MHz ~ 6GHz)

IEC 62209-2:2010-03, IDT

YD/T 1644.2-2011 How to BUY & immediately GET a full-copy of this standard?

1. www.ChineseStandard.net;
2. Search --> Add to Cart --> Checkout (3-steps);
3. No action is required - Full-copy of this standard will be automatically & immediately delivered to your EMAIL address in 0~25 minutes.
4. Support: Sales@ChineseStandard.net. Wayne, Sales manager

Issued on: December 20, 2012

Implemented on: February 1, 2012

Issued by: Ministry of Industry and Information Technology of the PRC

Table of Contents

Foreword.....	4
Introduction	5
1 Scope.....	7
2 Normative references.....	8
3 Terms and definitions	8
4 Symbols and abbreviated terms.....	13
4.1 Physical quantities	13
4.2 Constants	13
4.3 Abbreviations.....	13
5 Measurement system specifications	14
5.1 General requirements	14
5.2 Phantom specifications (shell and liquid)	15
5.3 Measurement instrumentation system specifications.....	18
6 Protocol for SAR evaluation	20
6.1 Measurement preparation	20
6.2 Tests to be performed.....	34
6.3 Measurement procedure	39
6.4 Post-processing	44
7 Uncertainty estimation	45
7.1 General considerations	45
7.2 Components contributing to uncertainty.....	47
7.3 Uncertainty estimation.....	72
8 Measurement report.....	79
8.1 General	79
Annex A (informative) Phantom rationale.....	82
Annex B (normative) Measurement system verification	86
Annex C (informative) Fast SAR testing	98
Annex D (informative) Standard sources and phantoms for system validation	

.....	101
Annex E (informative) Example recipes for phantom tissue-equivalent liquids	
.....	108
Annex F (normative) SAR correction for deviations of complex permittivity from targets.....	111
Annex G (informative) Hands-free kit testing	114
Annex H (informative) Skin SAR enhancement factor	117
Annex I (informative) Tissue-equivalent liquid dielectric property measurements and measurement uncertainty estimation	121
Annex J (informative) Testing compliance for the exposure of the hand	123
Annex K (informative) Test reduction	125
Annex L (normative) Power scaling procedure	128
Annex M (informative) Rationale for probe parameters	130
Bibliography	133

Foreword

This Part is one of “Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - human models, instrumentation, and procedures”, which is intended to consist of the following parts:

- Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz);
- Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz).

This Part is identical to International Electrotechnical Commission IEC 62209-2 (1st version, March 2010) “Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)”.

This Part is proposed and is under the jurisdiction of China Communications Standards Association.

Drafting organizations of this Part: Institute of Telecommunications under Ministry of Industry and Information Technology of the PRC, China Mobile Communications Corporation, China Telecommunications Corporation, Huawei Technology Co., Ltd., Nokia Communications Co., Ltd., Hangzhou Motorola Mobile Communication Device Co., Ltd., Nanjing Ericsson Panda Communication Co., Ltd.

Main drafters of this Part: Qi Dianyuan, Lin Hao, Sun Qian, Lin Jun, Yang Jun.

Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)

1 Scope

This Part is applicable to any wireless communication device capable of transmitting electromagnetic fields (EMF) intended to be used at a position near the human body, in the manner described by the manufacturer, with the radiating part(s) of the device at distances up to and including 200 mm from a human body, i.e. when held in the hand or in front of the face, mounted on the body, combined with other transmitting or non-transmitting devices or accessories (e.g. belt-clip, camera or Bluetooth add-on), or embedded in garments. For transmitters used in close proximity to the human ear, the procedures of YD/T 1644.1 (IEC 62209-1:2005) are applicable.

This Part is applicable for radio frequency exposure in the frequency range of 30 MHz to 6 GHz, and may be used to measure simultaneous exposures from multiple radio sources used in close proximity to human body. Definitions and evaluation procedures are provided for the following general categories of device types: body-mounted, body-supported, desktop, front-of-face, hand-held, laptop, limb-mounted, multi-band, push-to-talk, clothing-integrated. The types of devices considered include but are not limited to mobile telephones, cordless microphones, auxiliary broadcast devices and radio transmitters in personal computers.

This Part gives guidelines for a reproducible and conservative measurement methodology for determining the compliance of wireless devices with the SAR limits.

Because studies suggest that exclusion of features to represent a hand in human models constitutes a conservative case scenario for SAR in the trunk and the head, a representation of a hand is not included if the device is intended to be used next to the head or supported on or near the torso [73], [80]. This Part does not apply for exposures from transmitting or non-transmitting implanted medical devices. This Part does not apply for exposure from devices at distances greater than 200 mm away from

the human body.

This Part makes cross-reference to YD/T 1644.1 (IEC 62209-1:2005) where complete clauses or subclauses apply, along with any changes specified.

2 Normative references

The following referenced documents are indispensable for the application 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.

YD/T 1644.1-2007 Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)

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

3 Terms and definitions

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

3.1

Accessory

Optional component that can be used in conjunction with a transmitting device.

Accessories for mobile phones, wireless transmitting devices, wireless receiving devices or wireless transceiving devices, or two-way radios include the following:

- a) accessories for holding, affixing, or otherwise carrying, wearing or attaching the device, as well as providing spacing from the body (e.g. a belt-clip, wrist-strap or any other body strap, or lanyard for wearing the device as necklace);
- b) electronic accessories for performing tasks or which provide features (e.g., GPS modules, outboard printers, MP3 players, cameras or viewing devices);
- c) electronic accessories providing audio or video input or output (e.g., headsets, microphones, cameras);
- d) accessories providing enhanced RF capability to the device (e.g., replacement or auxiliary antennas);