



National Institute of  
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# Fast SAR Application to the SAR Compliance Test in Japan

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# Radio Radiation Protection Guideline and SAR Compliance Test in Japan

- ▶ SAR compliance limit in Japan
- ▶ Based on **the Radio Radiation Protection Guideline**
  - harmonize to the international guidelines such as ICNIRP



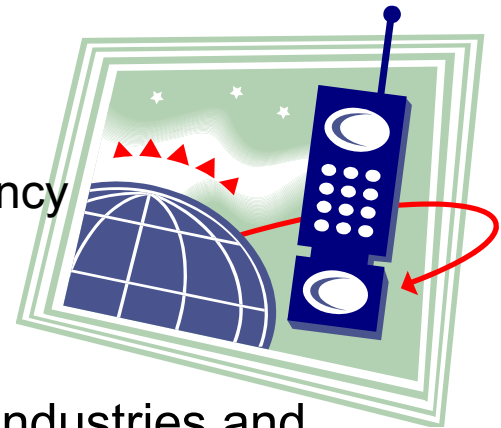
## Local SAR limit

- ▶ Applied to the terminals that used close to the human body (mobile phone, etc.)
- ▶ Peak spatial averaged SAR of the arbitrary tissue of 10g mass for 6-min average shall not exceed 2 W/kg

# SAR Compliance Regulation in Japan

## 1. Head(Mobile Phones)

- ▶ Radio Act, Ordinance Regulating Radio Equipment, Article 14-2 :
  - Object: Portable wireless device used by side of the head (Notification No.323)
  - Measurement procedure: Not. No.324 and No. 88
  - Comply to IEC 62209-1(2005) (revised in 2014).
  - Frequency: 300MHz-3GHz
  - Measurement condition: 4 positions at the test frequency
  - Phantom shape: Human head (SAM)
- ▶ Background
  - 1998: voluntary-standard by Association of Radio Industries and Businesses (revised in 2002)
  - 2002: SAR compliance test have been obligated by the Radio Act
  - 2006: revised to harmonize with the IEC 62209-1 (Not. No.628)



# SAR Compliance Regulation in Japan

## 2. Body (Body-Worn Equipment)

- ▶ Radio Act, Ordinance Regulating Radio Equipment, Art. 14-2 :
  - Object: Portable wireless device used close to the body (Not. No.323)
  - Measurement procedure: Not. No.324 and No. 88
  - Comply to IEC 62209-2(2010) (revised in 2014).
  - Frequency: 30MHz-6GHz
  - Measurement condition: Possible all positions of usage
  - Phantom shape: Flat-bottomed phantom
- ▶ Other technical aspects
  - Measurement of multi-frequency emission at the same time
  - SAR compensation caused by the difference of liquid electric constants
  - Screening of testing conditions
    - Fast SAR method (in IEC 62209-2 6.2.4 , Annex C Fast SAR)



# Future SAR Compliance Test in Japan

- ▶ Revision of the head SAR test method in IEC standard:
  - Revision of the head SAR test (IEC 62209-1) is in progress



Therefore

- ▶ Revision of the Japanese domestic regulation has started:
  - Discussion has started in a work group of Information and Communications Council in MIC (March, 2015).
  - Topics :
    - Frequency extension
    - Simultaneous emission of multiple telecommunication signal
    - Screening of testing conditions (Fast SAR, Test reduction) etc.
  - Approval of Fast SAR that uses different hardware and/or measurement principle from the conventional standard to the SAR compliance test is not yet decided

# Technical Problems Concerning Fast SAR Introduction to SAR Compliance

1. Validity of measurement result
  - Is the result always equivalent to that obtained by a conventional SAR system?
2. Clarity of the measurement principle
  - Is a theoretical evaluation by the third party of the measurement result possible?
3. Calibration and operation check of the equipment
  - Are there detailed uncertainty evaluation items and evaluation method?

Further examination is necessary for these problems





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Thank you very much!