



Mobile Manufacturers
Forum

Regional Seminar for countries of the CIS "Strategic and political aspects of humane use of telecommunications / ICT"

ONAT, Odessa, Ukraine

19-21 March 2014

MOBILE PHONES, EMF & HEALTH: INTERNATIONAL ASPECTS

Thomas Barmüller, Director EMEA
Mobile Manufacturers Forum



- About the MMF
- World Health Organization on EMF & Health
- SAR Limit – Mobile Phones
- SAR Reporting Phase I
- 5-Continents-Survey on SAR Consumer Awareness
- SAR Reporting Phase II

- International association of radio equipment manufacturers
 - Representing around 80% of global handset sales
 - The providers of the majority of global network infrastructure
- Association's focus:
 - health and safety
 - accessibility
 - anti-counterfeit
- Key areas of activity:
 - research and standards support
 - regulatory harmonisation
 - public communications

MMF Members

- Alcatel Mobile Phones
- Apple
- Cisco
- Ericsson
- Intel
- LG
- Microsoft
- Motorola Mobility
- Motorola Solutions
- Nokia
- Samsung
- Sony

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- **World Health Organization on EMF & Health**
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WHO: International EMF Project

WHO | World Health Organization

www.who.int/peh-emf/en/#

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Electromagnetic fields (EMF)

- EMF Home
- About electromagnetic fields
- EMF Project
- Research
- Standards
- EMF publications & information resources
- Meetings

Electromagnetic fields



Electromagnetic fields of all frequencies represent one of the most common and fastest growing environmental influences, about which anxiety and speculation are spreading. All populations are now exposed to varying degrees of EMF, and the levels will continue to increase as technology advances.

The EMF Project

The EMF Project is open to any WHO Member State government, i.e. department of health, or representatives of other national institutions.

Quick links

- Publications
- Contact us

WHO recommends ICNIRP Limits


WHO | Standards and Guidelines

www.who.int/peh-emf/standards/en/index.html

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- EMF Home
- About electromagnetic fields
- EMF Project
- Research
- Standards**
- EMF publications & information resources
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Standards and Guidelines


See also

- EMF World Wide Standards Database
- Framework for developing health-based EMF standards
- Model Legislation


A number of national and international organizations have formulated guidelines establishing limits for occupational and residential EMF exposure. The exposure limits for EMF fields developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) - a non-governmental organization formally recognised by WHO, were developed following reviews of all the peer-reviewed scientific literature, including thermal and non-thermal effects. The standards are based on evaluations of biological effects that have been established to have health consequences. The main conclusion from the WHO reviews is that EMF exposures below the limits recommended in the ICNIRP international guidelines do not appear to have any known consequence on health.

The International EMF Project has compiled a worldwide standards database limiting

Quick links

- Publications
- Contact us 

Participating countries & entities in EMF Project



WHAT'S NEW!

- ↓ International Stakeholder Seminar

WHO endorses ICNIRP Exposure Limits

WHO | Standards and Guidelines

www.who.int/peh-emf/standards/en/index.html

Reader

“A number of national and international organizations have formulated guidelines establishing limits for occupational and residential EMF exposure. The exposure limits for EMF fields developed by the [International Commission on Non-Ionizing Radiation Protection \(ICNIRP\)](#) - a non-governmental organization formally recognised by WHO, were developed following reviews of all the peer-reviewed scientific literature, including thermal and non-thermal effects. The standards are based on evaluations of biological effects that have been established to have health consequences. The main conclusion from the WHO reviews is that EMF exposures below the limits recommended in the ICNIRP international guidelines do not appear to have any known consequence on health.”

“Because disparities in EMF standards around the world has caused increasing public anxiety about EMF exposures from the introduction of new technologies, WHO commenced a process of harmonization of electromagnetic fields (EMF) standards worldwide.”

health.

WHAT'S NEW!

↓ International Stakeholder Seminar

ICNIRP Exposure Limits and Rationale widely adopted

- **Science-based approach prevails** as countries around the world have adopted ICNIRP limits.
- Those countries have **reviewed and accepted the scientific rationale** underpinning the ICNIRP approach.
- ITU* recommends:
“**If such limits do not exist**, or if they do not cover the frequencies of interest, then **ICNIRP limits** (Appendix I) **should be used.**”

*ITU-T K.52 (12/04) - Guidance on complying with limits for human exposure to electromagnetic fields, see also K.52 Corrigendum 1 (05/2009)

ICNIRP Specific Absorption Rate (SAR) Limits

Exposure Characteristic	Whole Body averaged Specific Absorption Rate	Local SAR averaged over 10 g of tissue	
		Head & Trunk	Limbs (arms, legs)
Workers' exposure	0.4 W/kg	10 W/kg	20 W/kg
General Public exposure	0.08 W/kg	2 W/kg	4 W/kg



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Electromagnetic fields and public health: mobile phones

Fact sheet N°193
June 2011

Key facts

- Mobile phone use is ubiquitous with an estimated 4.6 billion subscriptions globally.
- The electromagnetic fields produced by mobile phones are classified by the International Agency for Research on Cancer as possibly carcinogenic to humans.
- Studies are ongoing to more fully assess potential long-term effects of mobile phone use.
- WHO will conduct a formal risk assessment of all studied health outcomes from radiofrequency fields exposure by 2012.

Mobile or cellular phones are now an integral part of modern telecommunications. In many countries, over half the population use mobile phones and the market is growing rapidly. At the end of 2009, there were an estimated 4.6 billion subscriptions

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For more information contact:

WHO Media centre
Telephone: +41 22 791 2222
E-mail: mediainquiries@who.int

Related link

[Interphone study on mobile phone use and brain cancer risk \[pdf 176kb\]](#)

[The International Electromagnetic Fields Project](#)

[Electromagnetic fields: base stations and wireless technologies](#)



Are there any health effects?

To date, no adverse health effects have been established as being caused by mobile phone use.

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Related link

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[EMF Project](#)

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[Standards](#)

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[Meetings](#)

Electromagnetic fields and public health



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Base stations and wireless technologies

Backgrounder
May 2006

Mobile telephony is now commonplace around the world. This wireless technology relies upon an extensive network of fixed antennas, or base stations, relaying information with radiofrequency (RF) signals. Over 1.4 million base stations exist worldwide and the number is increasing significantly with the introduction of third generation technology.

Other wireless networks that allow high-speed internet access and services, such as wireless local area networks (WLANs), are also increasingly common in homes, offices, and many public areas (airports, schools, residential and urban areas). As the number of base stations and local wireless networks increases, so does the RF exposure of the population. Recent surveys have shown that the RF exposures from base stations range from 0.002% to 2% of the levels of international exposure guidelines, depending on a variety of factors such as the proximity to the antenna and the surrounding environment. This is lower or comparable to RF exposures from radio or television broadcast transmitters.



Conclusions

Considering the very low exposure levels and research results collected to date, there is no convincing scientific evidence that the weak RF signals from base stations and wireless networks cause adverse health effects.

Standards

EMF publications & information resources

Meetings

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- SAR Reporting Phase I
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- SAR Reporting Phase II

SAR ?

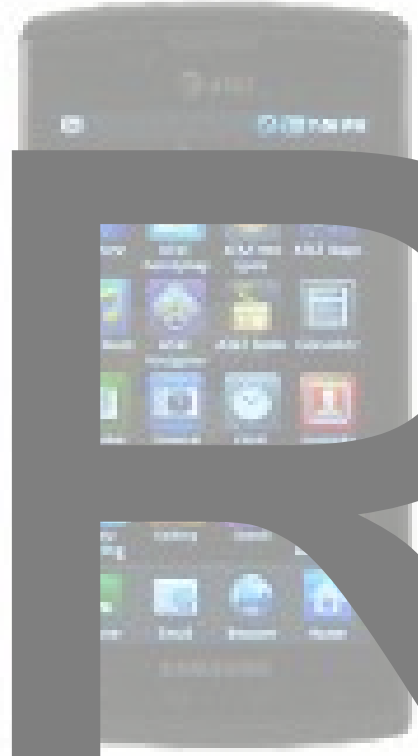
Specific Absorption Rate

Measured in:

Watts / kg



Head+Trunk



S A R

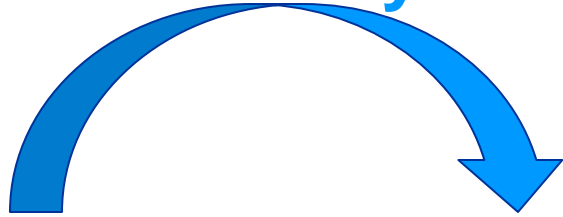
ICNIRP SAR Limit: Mobile Phones

Exposure Characteristic	Whole Body averaged Specific Absorption Rate	Local SAR averaged over 10 g of tissue	
		Head & Trunk	Limbs (arms, legs)
Workers' exposure	0.4 W/kg	10 W/kg	20 W/kg
General Public exposure	0.08 W/kg	2 W/kg	4 W/kg

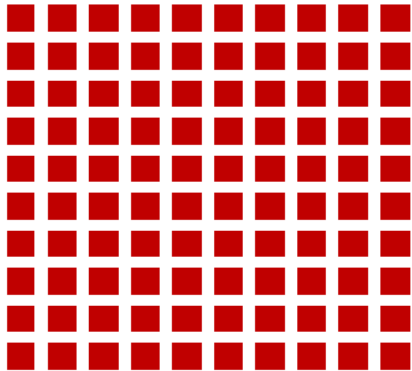
■ = 1 Watt / kg

■ = 1 Watt / kg

50-fold safety factor



Established
Adverse Health
Effect:

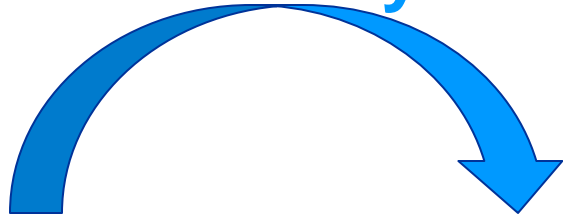


**All compliant mobile phones
are equally safe.**

Adaptive Power Control



50-fold safety factor

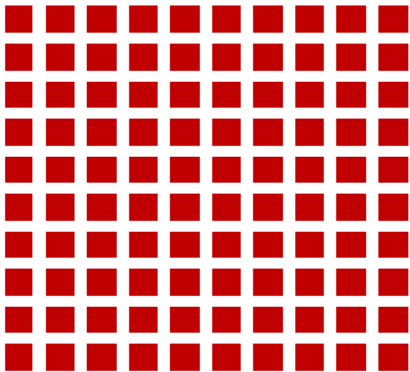


Established
Adverse Health
Effect:

ICNIRP SAR Limit
General Public
Head+Trunk:

Exposure technically
minimized by:

Adaptive
Power
Control



**All compliant mobile phones
are equally safe.**

SAR Compliance Testing

- 2 measurement standards in place:
 - IEC 62209-1 (head, no separation distance)
 - IEC 62209-2 (trunk = body-worn, separation distance of up to 25 mm can apply)
- Mobile phones are tested for compliance at the highest possible power level.
- Video on SAR testing:



- Get more info at: www.emfexplained.info/?ID=24898

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- Home
- About Us
- Publications
- Research
- Wireless Devices
 - Health Overview
 - Fact Sheets
 - SAR Information
 - Consumer Charter
 - EMF Video
- How Networks Operate
- E-Learning
- Links

SAR Information

Information on Specific
To communicate with the being used. Government scientific organizations, g

What is SAR?
SAR stands for Specific A using a mobile phone. T level of the phone while o required to reach the net lower.

Does a lower SAR mean
No. Variations in SAR do models, all mobile phone

How can I learn more ab
The EMF Explained webs provides a short video cli



- Home
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 - Design & innovation
 - About us
 - Support
-
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 - People & planet
 - Investors & financials
 - Press
 - Careers
 - Developers
 - Events

- People & planet
 - News
 - Sustainable devices
 - Apps & services
 - Environmental & social impact
 - Strategy & reports
 - EMF & health
 - SAR information
 - How mobile communications work
 - Radio waves and you
 - Research & regulation
 - Making informed choices

SAR information

What is a SAR value?

Every mobile phone model is tested for radio wave emissions. Using an internationally standardised method that meets government and regulatory requirements, a measurement is made to determine how much electromagnetic energy is absorbed by body tissue. This gives the SAR (specific absorption rate) value. Governmental and regulatory agencies have established SAR limits under which cell phone use has been determined by them to be safe. All Nokia phones are designed to comply with the relevant governmental SAR level.

Important user information

Features of phone models are sometimes revised or improved during production. This could lead to a situation where the same phone type appears to have different SAR values. If so, please refer to the user guide shipped with your phone to see the SAR value of your phone.

Find the SAR value for your phone

Use our service (provided in several languages) to check the SAR value and certification information for your Nokia mobile phone.

Location:

Language:

Phone Model:

How to find your phone model

- Simply remove the battery from your phone, and the model is printed on the label inside
- On some phone models the model number may be printed on the outside of the phone or on the SIM card tray

MOTOROLA

MOTOROLA RAZR™

User Manuals

LIFE. POWERED.

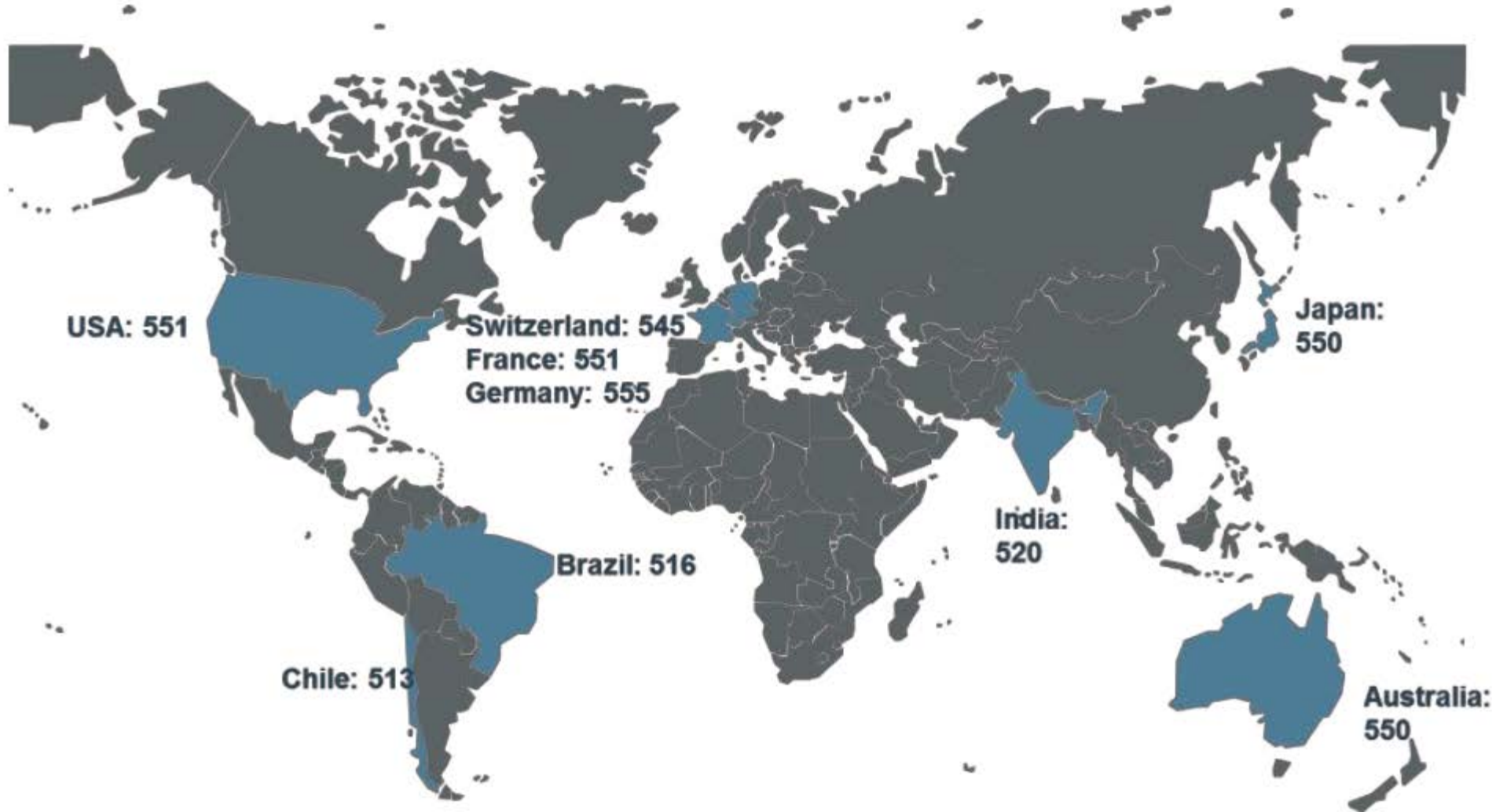
Experience gathered since 2001

- Little real interest from consumers based on
 - web-site stats,
 - enquiries to help-lines or
 - evident at retail level.

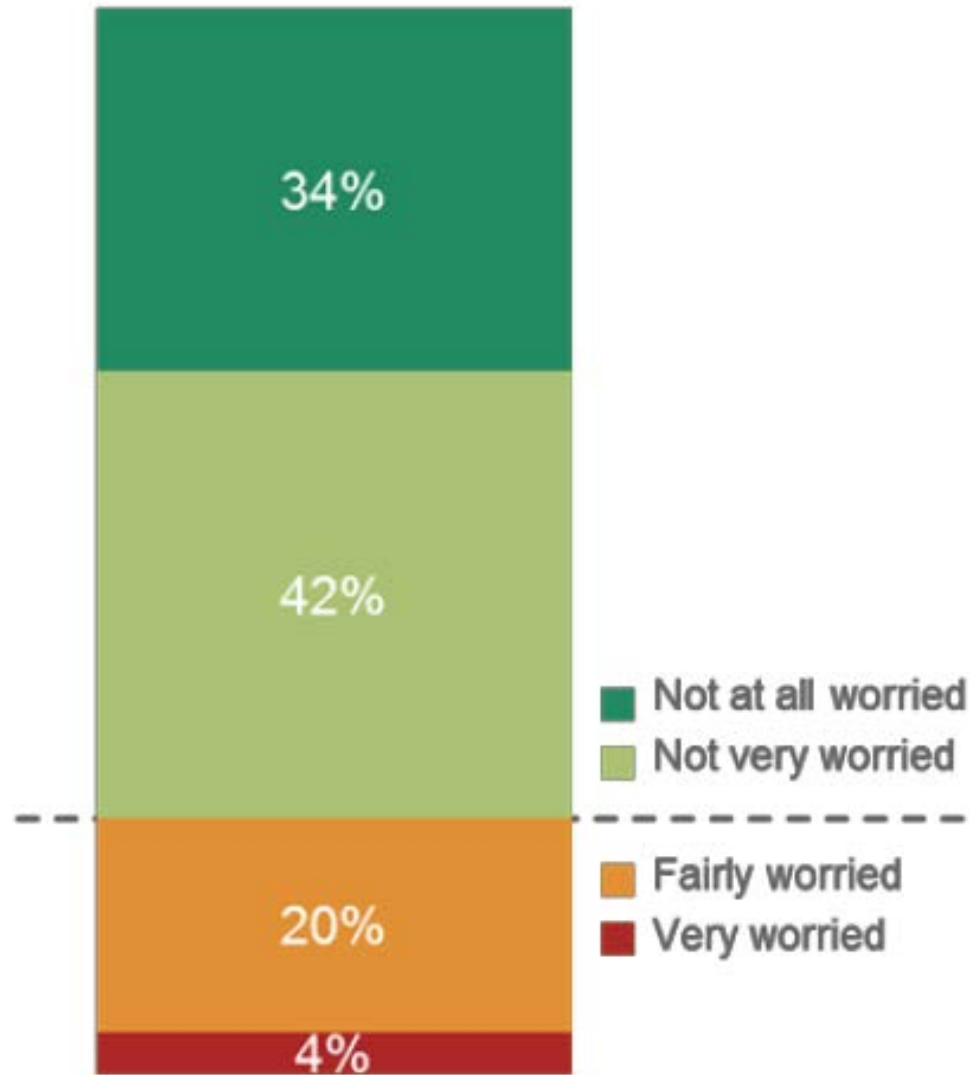
- Supported by conclusions from 9 country Survey of Public Awareness on SAR

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5 Continents, 9 Countries

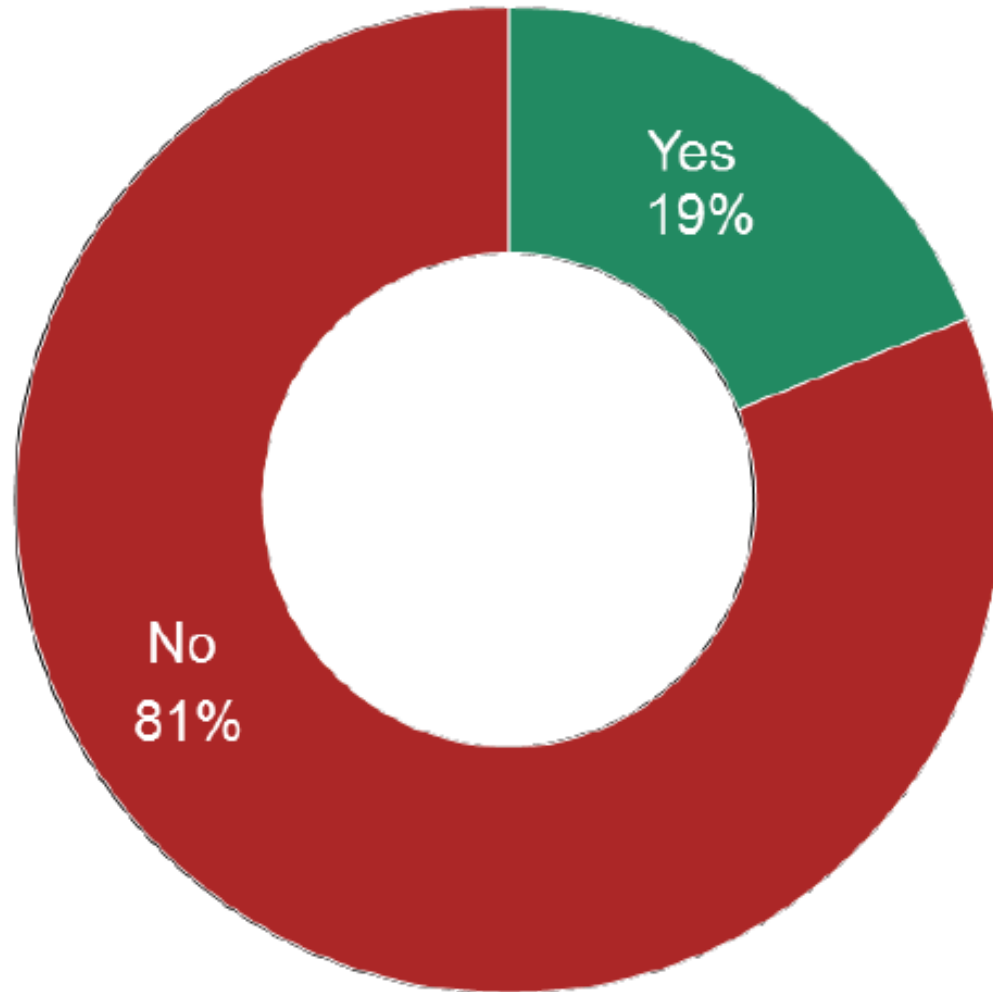


Level of Concern about Health Risks



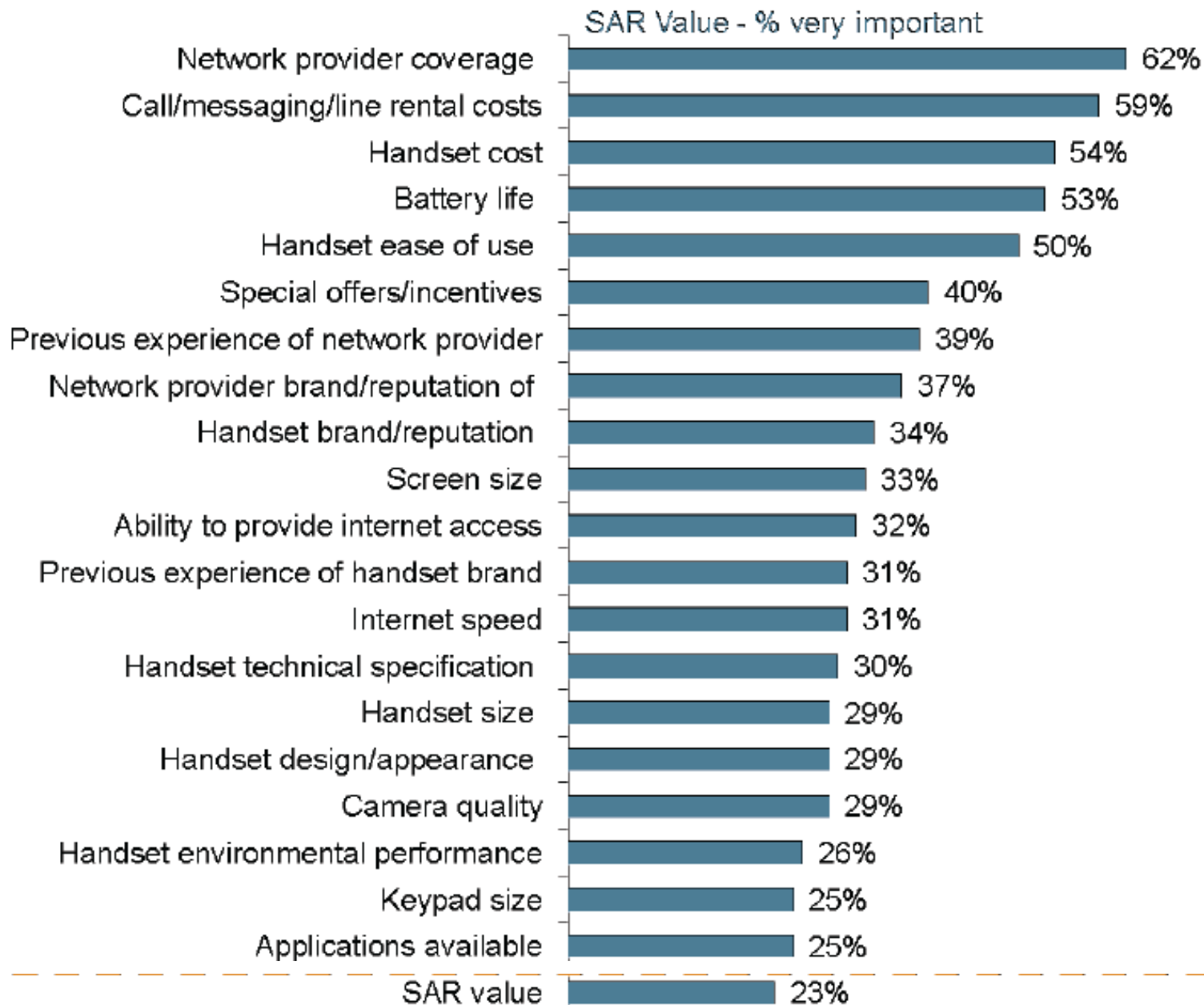
Concern about
health risks

Number of Users that requested Health Information



Looked at or requested information
about health risks of mobile phones

Buying a mobile: What's important?



1. **SAR** value was by far the **least important** of the 21 pre-specified factors which determine the choice of mobile phones.
2. Just **under one quarter** of people stated that they were 'fairly' (20%) or 'very' (4%) **worried about possible health risks** associated with using mobile phones.
3. **Less than 20%** of people **look at or request information** about possible health risks **when buying** a handset.

4. **A quarter of people** claim to have **heard of SAR**; however, **understanding** of both what SAR is and accurate knowledge of compliance testing values **is extremely limited.**
5. **Only** a small proportion (**18%**) **know where to find SAR information** for their mobile phone.
6. Most users (**73%**) **do not know how to reduce exposure** to radio signals from using a mobile phone.

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- **SAR Reporting Phase II**

SAR Reporting Phase II: 3 Key Elements

- The inclusion of one **additional information note** in the front part of the user manual.
- The development of **SARTick website** to provide comprehensive information source on SAR issues.
- **Modification of the existing SAR information text** in the user manual.

Key Element

“Additional Front Section Info”



SAR

www.sar-tick.com

This product meets applicable national SAR limits of <2.0W/kg or 1.6W/kg>. The specific maximum SAR values can be found in the ~~xxxx~~ section of this user guide.

When carrying the product or using it while worn on your body, either use an approved accessory such as a holster or otherwise maintain a distance of xx cm from the body to ensure compliance with RF exposure requirements. Note that the product may be transmitting even if you are not making a phone call.

Key Element “www.sartick.com”

➤ comprehensive info source on SAR issues

➤ The **MMF** is working with consumer groups in a number of countries to help educate consumers on SAR issues and to promote awareness of [SARTick.com](http://www.sartick.com) website.



(www.sartick.com as well as www.sar-tick.com will work)

Key Element

“Modified SAR Information Text”

THIS DEVICE MEETS INTERNATIONAL GUIDELINES FOR EXPOSURE TO RADIO WAVES

Your mobile device is a radio transmitter and receiver. It is designed not to exceed the limits for exposure to radio waves (radio frequency electromagnetic fields) recommended by international guidelines. The guidelines were developed by an independent scientific organization (ICNIRP) and include a substantial safety margin designed to assure the safety of all persons, regardless of age and health.

The radio wave exposure guidelines use a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit for mobile devices is 2 W/kg. Tests for SAR are conducted using standard operating positions with the device transmitting at its highest certified power level in all tested frequency bands. The highest SAR values under the ICNIRP guidelines for this device model are:

Maximum SAR for this model and conditions under which it was recorded.		
Head SAR	UMTS 1900 + Wi-Fi + Bluetooth	x.xx
Body-worn SAR	GSM 1800 + Wi-Fi + Bluetooth	x.xx

During use, the actual SAR values for this device are usually well below the values stated above. This is because, for purposes of system efficiency and to minimize interference on the network, the operating power of your mobile device is automatically decreased when full power is not needed for the call. The lower the power output of the device, the lower its SAR value.

Body-worn SAR testing has been carried out <using an approved accessory or> at a separation distance of x.x cm. To meet RF exposure guidelines during body-worn operation, the device should be <in the approved accessory or> positioned at least this distance away from the body. If you are not using <an approved accessory> ensure that whatever product is used is free of any metal and that it positions the phone the indicated distance away from the body.

Organizations such as the World Health Organization and the US Food and Drug Administration have stated that if people are concerned and want to reduce their exposure they could use a hands-free device or reduce the amount of time spent on the phone.

For more information.....

SAR Summary Table

Maximum SAR for this model and conditions under which it was recorded:

(1) Head SAR	UMTS 1900 + Wi-Fi + Bluetooth	x.xx Watts/kg
(2) Body-worn SAR	UMTS 1800 + Wi-Fi + Bluetooth	x.xx Watts/kg

(1) Measured according to IEC 62209-1, no separation distance applies

(2) Measured according to IEC 62209-2, separation distance can apply

WHO and FDA Reference

- The text also includes **WHO** and FDA **information on reducing exposure** should a user wish to do so (quote):

“Organizations such as the World Health Organization and the US Food and Drug Administration have stated that if people are concerned and want to reduce their exposure they could **use a hands-free device** or **reduce** the amount of **time spent on the phone.**”

Summary “SAR Reporting Phase II”

- Expands a **decade-long commitment** to SAR reporting
- “SAR Reporting Phase II” consists of :
 - An **additional SAR section and pictogram** at the **up front** in user manuals
 - The development of **SAR-Tick website** for consumers
 - **Existing SAR information text modified**
- These changes and additions provide:
 - Additional information for consumers in user manuals
 - Additional online information resources for consumers
 - A solution for politically driven SAR discussions
- Licencing of SAR-Tick pictogram and texts possible

Thank you.

Questions? Further Information needed?



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www.mmfai.org

Since December 2006:

MMF's Director for Europe, Middle East and Africa

2001 – 2006:

Managing Director, Forum Mobilkommunikation, Austrian national trade organisation

1990 – 1999:

Member of the Austrian Federal Parliament, focused on infrastructure issues, telecommunication, renewable energy and environment

1990: Master of Laws, University of Graz, Austria.