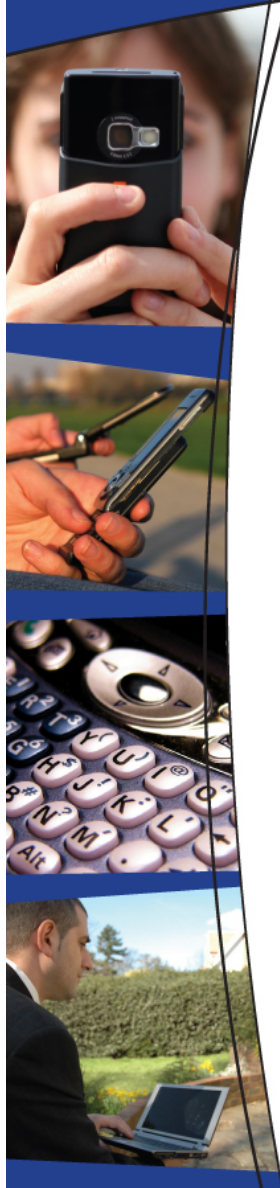


**Workshop on Electromagnetic Fields and Health Effects:
From Science to Policy and Public Awareness**
Conciliating Scientific Findings and Uncertainties in Policy Making
27-28 March 2014, Cotsen Hall, Athens, Greece

MOBILE PHONES: CONSUMER INFORMATION ON SAR

Thomas Barmüller, Director EMEA
Mobile Manufacturers Forum



- About the MMF
- SAR Reporting Phase I + II
- Why compliant mobiles are equally safe

About the MMF

- International association of radio equipment manufacturers
 - Representing the majority 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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SAR Reporting Phase I:

2001-2010

SAR Information

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

What is SAR?
SAR stands for Specific A
using a mobile phone. T
level of the phone while c
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 di

http://www.nokia.com/global/about-nokia/people-and-planet/emf-health/emf-and-health/

NOKIA

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: Austria

Language: German

Phone Model: Please choose

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



EN

MOTOROLA RAZR™

User Manuals

LIFE. POWERED.

Experience since 2001

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

SAR Reporting Phase II: ongoing

SAR Reporting Phase II: 3 Key Elements

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

Key Element 1: SAR-Tick Website

➤ 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 2: 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 3: 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

Reference to World Health Organisation

- 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 :
 - The development of SARTick website for consumers
 - An additional SAR section and pictogram at the up front in user manuals
 - 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

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SAR ?

Specific Absorption Rate

Measured in:
Watts / kg



Head+Trunk



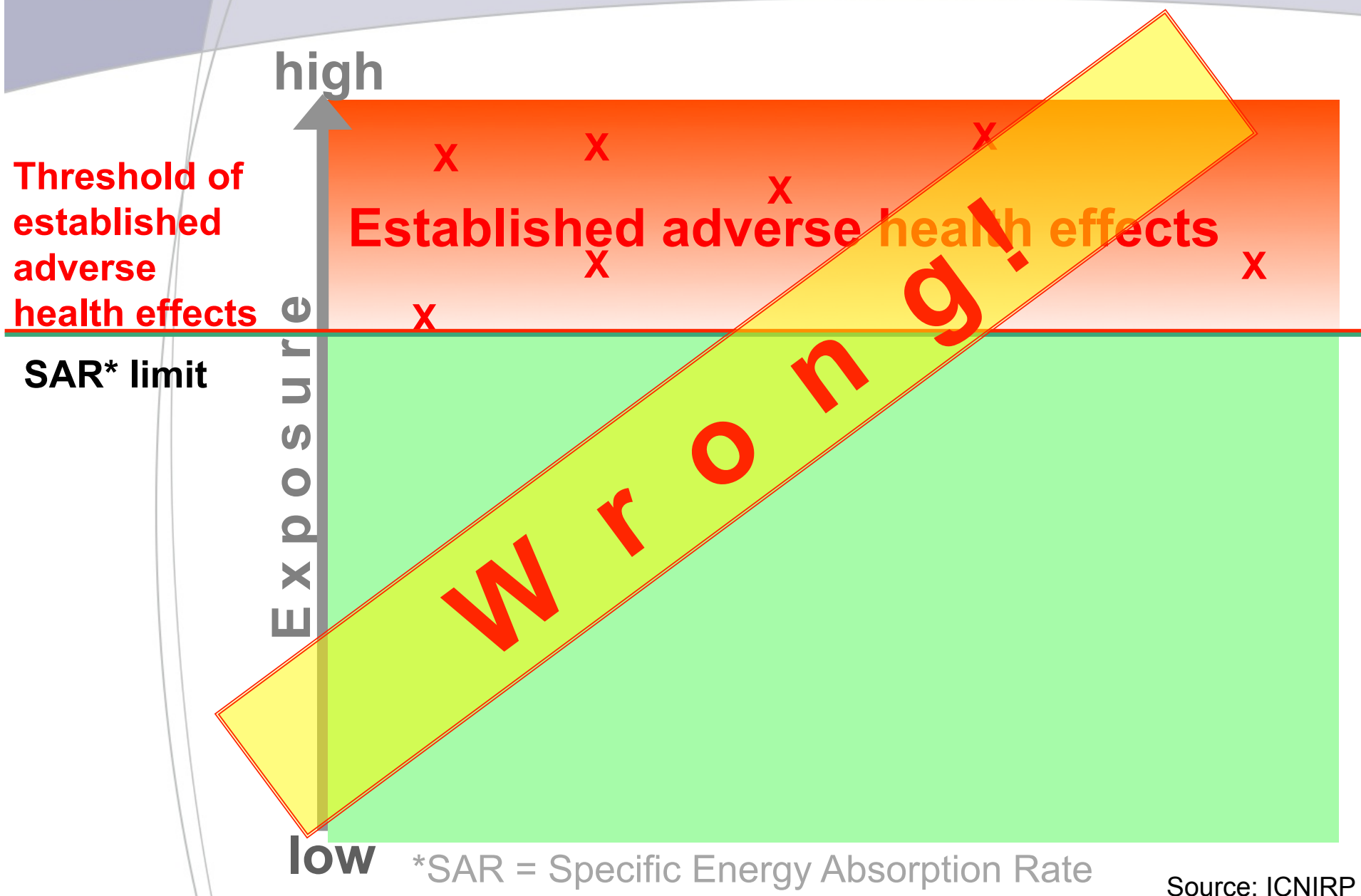
ICNIRP SAR Limit: Mobile Phones

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

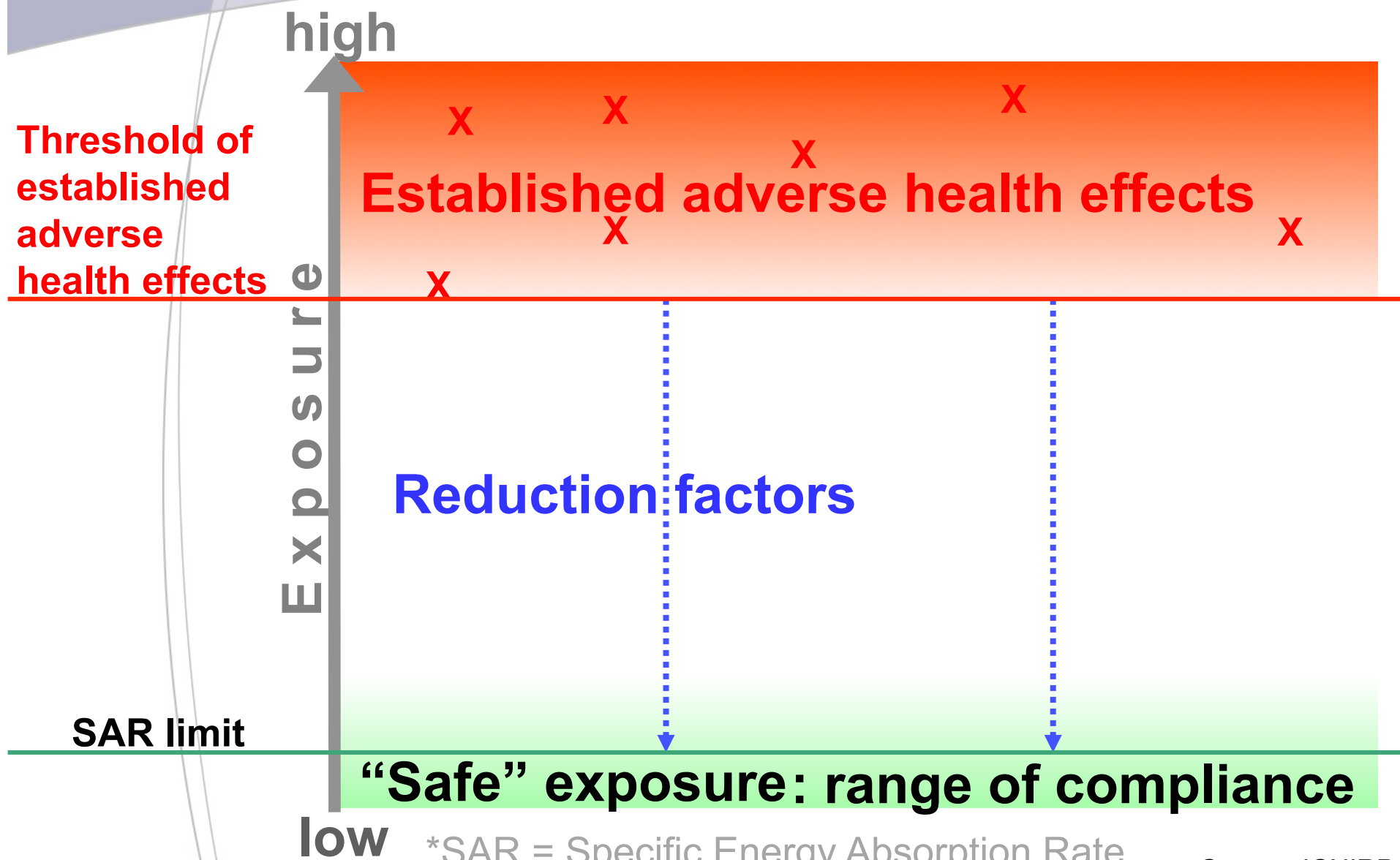
Guidelines for Limiting Exposure to Time-varying Electric, Magnetic and Electromagnetic Fields (up to 300 GHz).” Health Physics, April 1998, vol.74, number 4, pp. 494-522

SAR Limit and Established Adverse Health Effects

Misinterpretation of SAR* limit (2 W/kg)



SAR* limit (2 W/kg) correctly explained



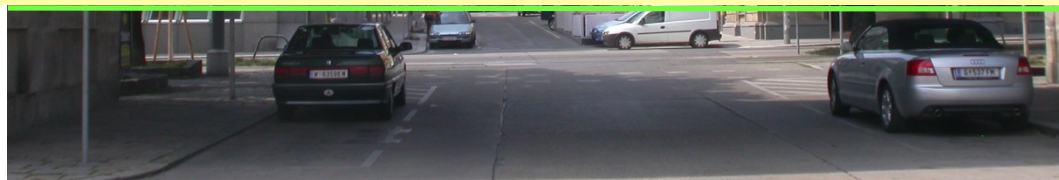
Explaining SAR: Metaphor 'Bridge'

Clearance = threshold of established adverse health effects

Maximum permissible height = SAR limit



...but to show
the right proportions you will need ...



Explaining SAR: Metaphor 'Bridge'

Threshold of established adverse health effects

R
e
d
u
c
t
i
o
n

f
a
c
t
o
r
s

Occupational SAR limit for
head and trunk: 10 W/kg

General public SAR limit
for head and trunk: 2 W/kg

All mobile phones below 2 W/kg are equally safe.

Mobile Phones: SAR Compliance Testing

- 2 measurement standards in place:
 - IEC 62209-1 (head, no separation distance)
 - IEC 62209-2 (trunk = body-worn, separation distance 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

?

**Choose a low
SAR phone**

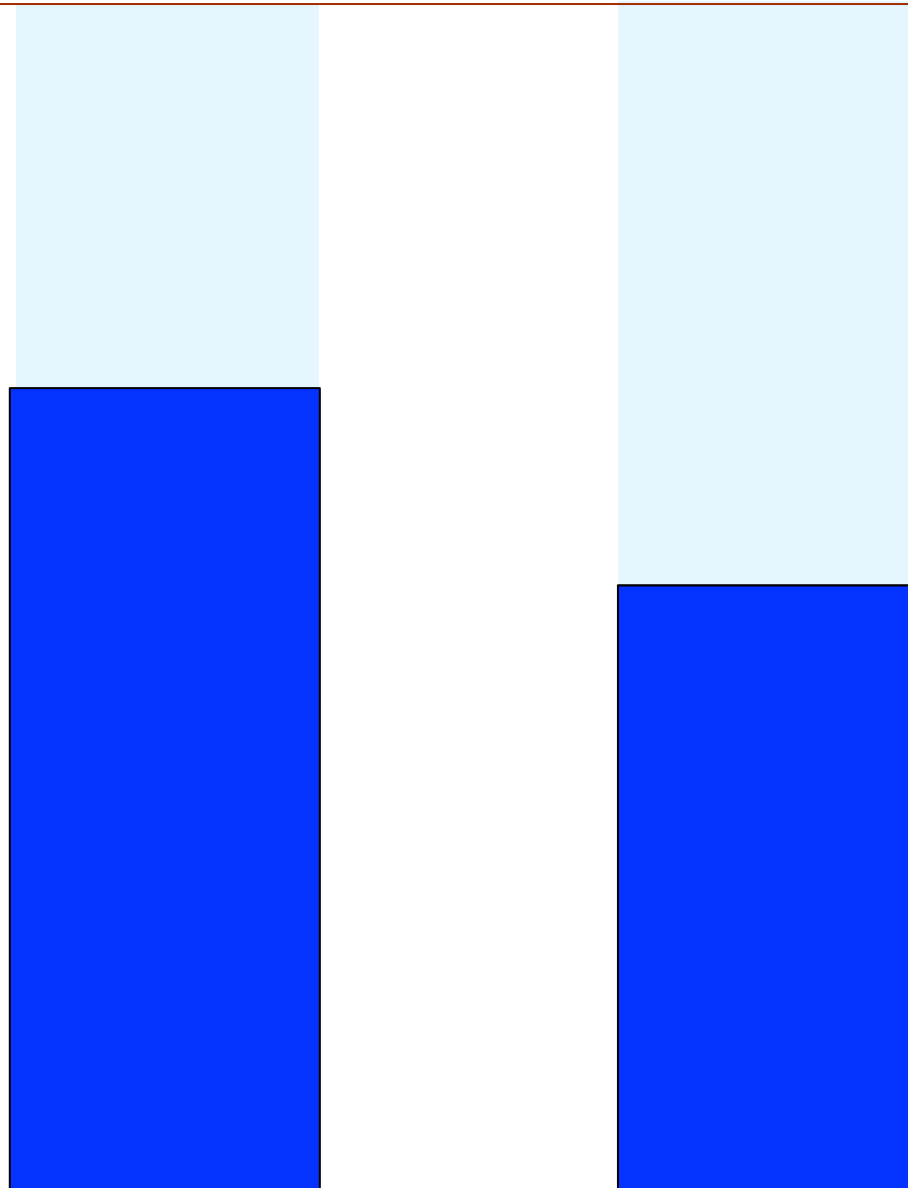
?

Choose a low SAR phone! ... Really?

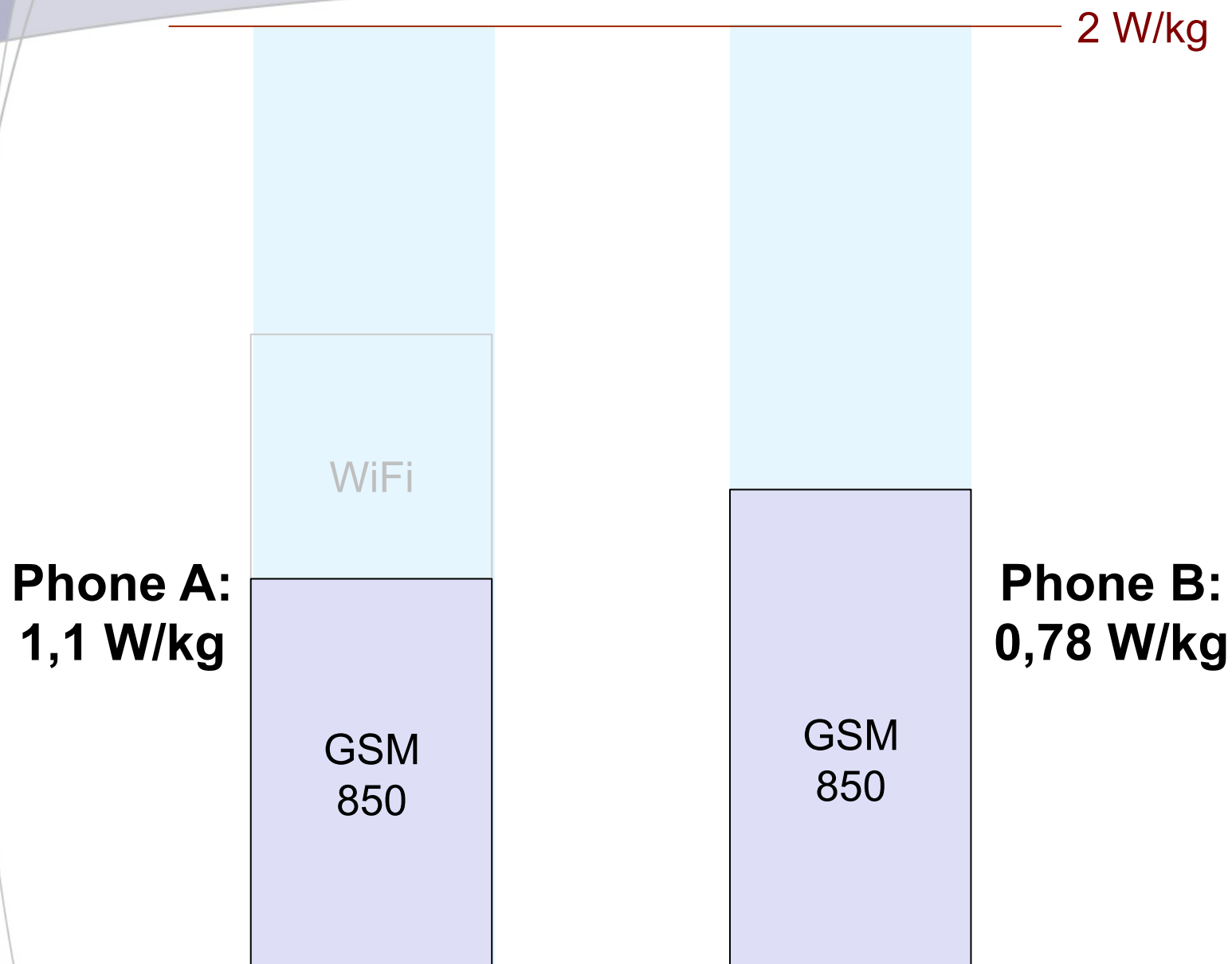
2 W/kg

**Phone A:
1,1 W/kg**

**Phone B:
0,78 W/kg**



Choose a low SAR phone! ... Really?



Choose a low SAR phone! ... Really?

2 W/kg

“SAR value” is for compliance only!
“SAR value” does not tell “daily exposure”!

Phone A:
1,1 W/kg

WiFi

GSM
850

Phone B:
0,78 W/kg

GSM
850

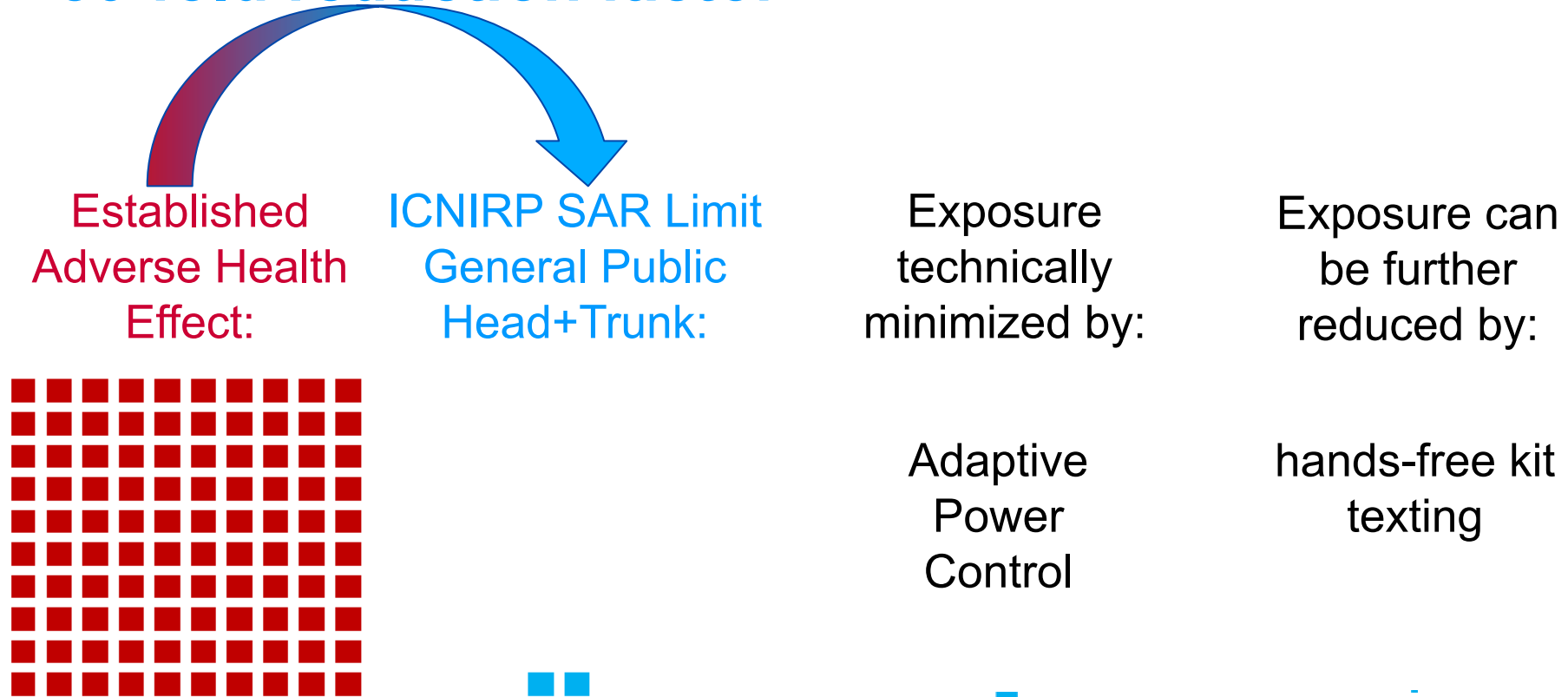
**SAR value:
compliance ✓**

~~**daily exposure**~~

■ = 1 Watt / kg

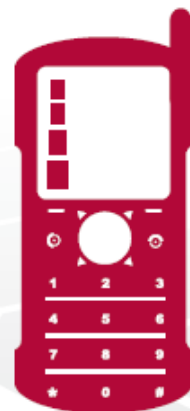
■ = 1 Watt / kg

50-fold reduction factor



All compliant mobile phones are equally safe.

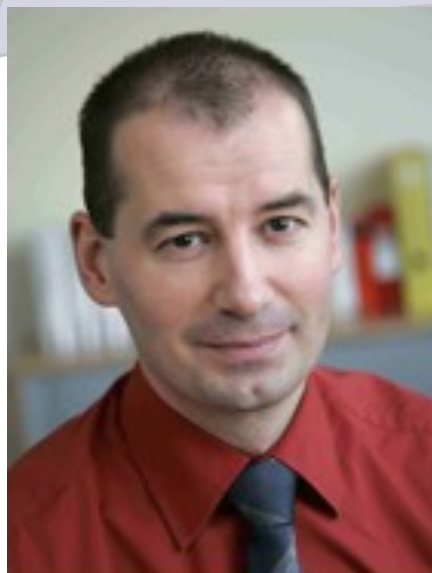
Adaptive Power Control



**Better connection,
lower transmit power,
longer talk time**

Thank you.

Questions? Further Information needed?



Thomas Barmüller

thomas.barmueller@mmfai.info

Mobile +43 (664) 386 51 23

Diamant Building, 80 Blvd. A. Reyers

B-1030 Brussels, Belgium

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.

This paper was produced for a meeting organized by Health & Consumers DG and represents the views of its author on the subject. These views have not been adopted or in any way approved by the Commission and should not be relied upon as a statement of the Commission's or Health & Consumers DG's views. The European Commission does not guarantee the accuracy of the data included in this paper, nor does it accept responsibility for any use made thereof.