

**Technology.
Impact.
Safety.**

Simply A1.



A1 provides the best mobile network in Austria

We take this responsibility very seriously, ensuring that our customers receive the best voice quality and that the network planning is in harmony with people and the environment. To guarantee this we have professionals on board: our EMF-Team. These are specialists in electromagnetic fields and their effects. This team advises us on the topics of mobile communications and health, safety, technology and exposure limits.

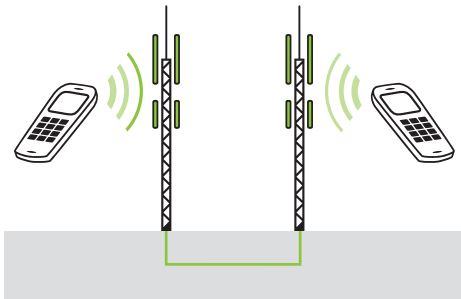
Do you have questions or need information?
You can reach the EMF-Team at: emf@A1.net

Hannes Ametsreiter
CEO of A1 Telekom Austria AG

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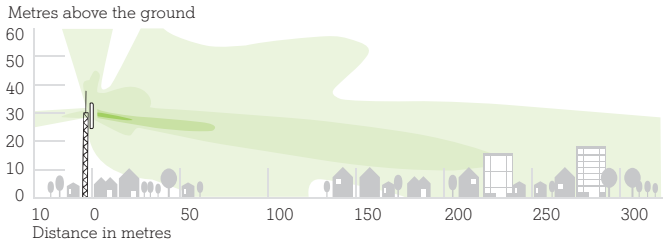
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How mobile communication works



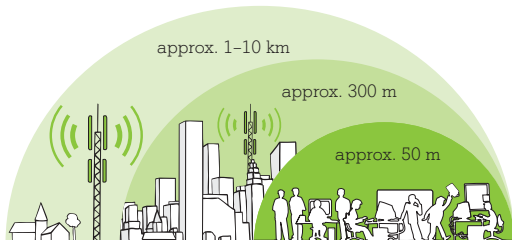
Whenever you make a call on your mobile phone, it sends weak signals to the nearest mobile base station. From here the conversation goes to the base station nearest to the person you are talking to.

How radio waves spread



Radio signals from a mobile base station spread in a similar way to the light from a lighthouse; not much light is visible at the very base of the lighthouse. It's the same for mobile communication systems – the radio signals are very weak directly below the transmitter. The definition of exposure is the strength of incoming radio signals in a specific location. The A1 field simulator provides information about the emission of a base station (A1.net/fieldsimulator).

The range of base stations



These are ranges of typical base stations in built-up areas. UMTS-base stations have less range than GSM-plants.

A base station can transmit a certain amount of data and a certain number of calls simultaneously. This means that the greater the number of mobile phones used, the more base stations are required. There are therefore more base stations in a city than in the countryside. Thus, the range of a transmitter in a city (urban area) is lower than in the countryside.

What does mobile communication have in common with street light?



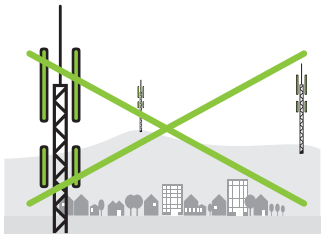
The theory that applies to mobile networks is the same as that which applies to street lighting; the more lights you have, the less need there is for each individual light – they complement each other. It is similar for mobile communication; the more base stations there are, the less transmitting power each station requires.

Greater connections - less transmitting power



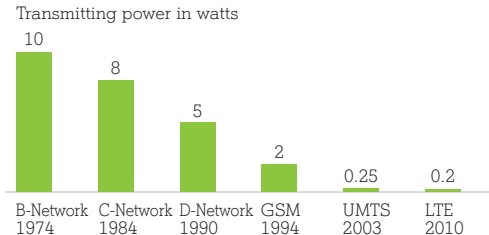
The better the connection between a mobile phone and base station, the less energy the phone needs. Therefore, a well-developed mobile network means fewer emissions when making calls.

Sensible sites for mobile systems



This means that base stations have to go where people make calls. And this means there have to be stations in residential areas. This reduces emissions. If a base station is further away, the connection is weaker and the phone needs to send stronger signals, resulting in stronger emissions at the ear.

Less exposure through new mobile technology



This is how the maximum transmitting power of mobile phones has changed

New technologies such as UMTS also reduce emissions. For a good connection today, phones need much less transmitting power than in the past, since they work more efficiently. But the decisive factor in relation to emissions at the ear is the network quality: the better the mobile network, the lower the exposure.

Exposure limits for mobile communication



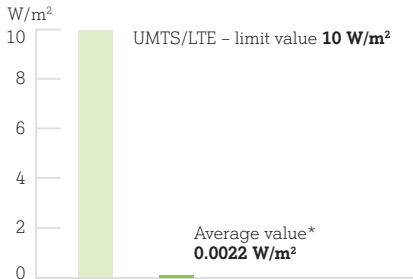
WHO exposure limits in ÖVE/ÖNORM E 8850

At 800 MHz (LTE)	4 W/m ²
At 900 MHz (GSM)	4.5 W/m ²
At 1,800 MHz (GSM)	9 W/m ²
Over 2,000 MHz (UMTS, LTE)	10 W/m ²



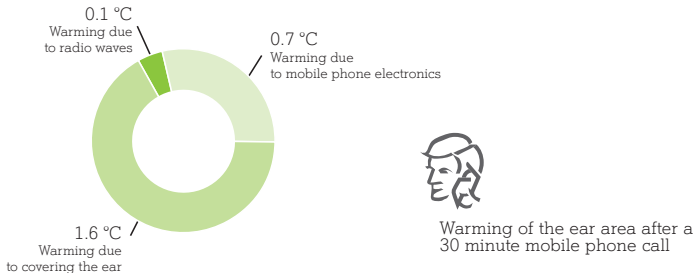
The World Health Organization (WHO) specifies upper emissions limits for radio applications. The European Union and Austria also advise these limits. For your safety, A1 stays below these values by multiple factors.

Mobile communication exposure in Austria



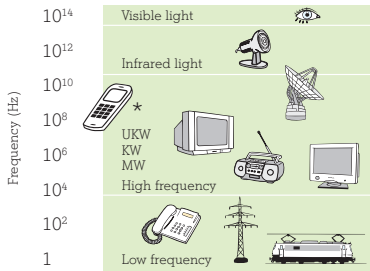
The measurements carried out by the Federal Ministry for Transport, Innovation and Technology (BMVIT) in 2012, show that exposure values in Austria are well below the limits recommended by the WHO. The emissions for UMTS only require 0.022 % of the exposure limits - and are therefore 4,500 times lower.

Limits for mobile phones: the SAR value



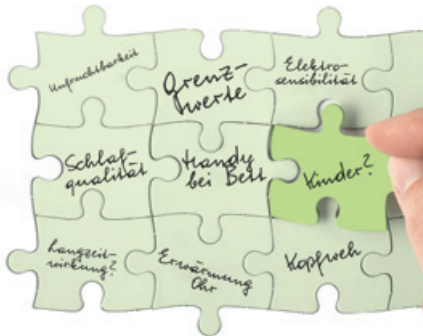
The specific absorption rate – the so-called SAR value – specifies how much transmitting power of a mobile phone is absorbed by the body. The SAR limit value ensures that the ear is heated up by less than 0.1 °C when using the mobile phone. Phones must not exceed the maximum SAR limit value of 2 watts per kilogram of body weight.

Frequency spectrum of electromagnetic fields



The frequency ranges for mobile communication are close to those used by other daily-used radio applications such as TV or radio. These radio applications have been around for a long time and are proven to be harmless.

Are mobile communications safe?



Current research on the topic of mobile communication and health is like an incomplete puzzle; there has already been a lot of research but some parts of the puzzle are still missing. Overall, a picture is emerging, namely that there is no reason to expect adverse health effects. There are currently some independent international research programs in progress to answer outstanding questions.

The best mobile network for an emergency:
A1.net/sicherheit

Questions for the EMF-Team:
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