

## The New Fifth Generation Mobile Phone Standard

The latest mobile communications standard is currently being introduced all over the world. In its final expansion, 5G would increase the potential data volume by a factor of 100. This would allow entire films to be downloaded from the Internet to the smartphone in just a few seconds in top quality. With 5G, up to 7 trillion (!) end devices could be permanently connected worldwide. This goes far beyond mere mobile communication: The birth of the “Internet of Things” is imminent. Washing machines, refrigerators, energy metres (Smart Home), street lamps (Smart City), surveillance cameras and microphones (Smart Security) could suddenly communicate and exchange data wirelessly. With 5G, autonomous mobility (smart mobility) is also to be made possible, autonomous cars and tractors without a driver would dominate the road and landscape. The almost infinite amounts of data collected are stored in a “cloud”. Where this is located and who has actual access to this data, no one can possibly say. 5G lays the foundations for perfecting the permanent monitoring and control of technical devices—and of people(!).

### Who Really Wants and Who Needs 5G?

Research and development never stands still. The technical progress of the past decades is immense, opens new horizons and can make our lives much easier. The major question, however, is who this technology ultimately serves and what goals are pursued. Is it all about the big business, with no regard for loss? It is not primarily the users who demand higher transfer capacities. One of the driving forces behind 5G is the mobile phone and electronics industry, who have a vested interest in selling new devices and subscriptions at an ever-increasing rate and in covering our planet with additional antenna infrastructure. Governments or intelligence agencies are also interested in knowing as much as possible about their citizens and monitoring them around the clock. In China, surveillance has been practiced for a long time, and also in Western countries so-called “tracing apps” are now to be introduced as a result of the corona pandemic: Smartphone apps which record each step and provide the data to the authorities. Data giants such as

Google or Amazon can multiply their revenues from the saving, use and trading of personal data, the more information the users disclose about themselves. Thus, large parts of industry and the economy expect 5G to be a real (monetary) blessing. What is less well known: 30 to 50 % of the data downloaded from the Internet is pornographic content! So this branch of industry is also looking forward to 5G.



### 5G: Higher Frequencies, More Antennas, More Radiation

In order to satisfy these “needs” mentioned above, the mobile communications infrastructure needs to be massively expanded. What innovations does 5G entail?

- Higher bandwidth: Compared to today’s standards, up to 100 times more data can be transmitted in the same time.
- Higher frequencies: 4G works with frequencies up to 2.4 GHz (gigahertz; billions of polarity reversals per second). With 5G new frequencies up to 100 GHz are used. Incidentally, these new frequency bands are being auctioned off by the countries for millions or even billions to telecom companies—the individual nations thus earn a lot of money and make themselves dependent on the industry.

- More antennas: The higher the frequency, the shorter the wavelength. However, these short waves are almost unable to penetrate obstacles such as walls, the leaves of trees or even water droplets from the fog. This is why 5G is going along with a massive antenna expansion. To ensure coverage, it would require an antenna to be set up about every 100 metres—the number of antennas is expected to increase tenfold.
- 100 000 satellites: Today, there are perhaps 3 000 active satellites orbiting the Earth, but there are plans to add up to 100 000 5G satellites. The company SpaceX alone wants to send 4 000 satellites into orbit. The first few hundred are already in the ionosphere and are even visible to the human eye!
- Beamforming: The antennas can bundle the electromagnetic radiation (analogous to the laser beam) and direct it specifically in one direction. The antenna beam can therefore follow devices and people who are moving.
- Raising the exposure limits: In order for the 5G roll-out to be economically viable, existing exposure limits must be raised or measurement regulations relaxed.

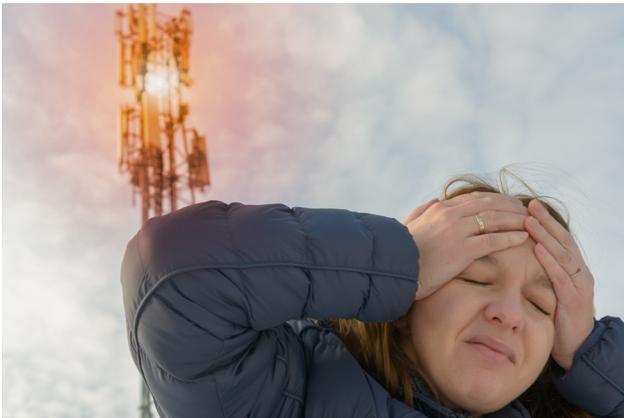
The high antenna density, the 100 000 satellites, beamforming, the huge number of end devices and the increase in exposure limits inevitably lead to an extreme increase in radiation intensity. There would no longer be any “blank spots” on our planet that would not be exposed to radiation, pollution and damage.

### Health Implications

Nobody knows what these innovations mean for the health of humans, animals and nature—there is simply insufficient experience. But there is a storm brewing: Even with today’s mobile phone technology, thousands of scientific studies show that mobile phone radiation triggers oxidative cell stress, blood changes, tinnitus, and concentration or sleep disorders. The immune system is weakened, cell communication is

impaired and fertility is reduced. In the end, cancer is fostered or even triggered. And, all this happens at radiation levels that are far below the legal exposure limits!

With the higher frequencies, the much more complex modulation types and the bundling of the 5G antenna beams, there is a danger of even more far-reaching health implications. It is particularly the short wavelengths, which are now in the millimetre range, that raise questions: The radiation no longer penetrates deep into the tissue, but is largely absorbed by the skin. What does this mean for the skin, which is our largest organ, and thus for our health?



But as if that were not enough, the animal and plant kingdoms are also increasingly suffering from radiation. Insect deaths or withered trees are the result of excessive use of microwave radiation. By the way—an antenna is nothing more than a microwave oven with an open door—thus contributing to global warming!

As early as autumn 2017, international medical associations demanded an immediate halt to the 5G expansion. It is utterly incomprehensible that a gigantic experiment is being launched with 5G without knowing the consequences. Is the possible harming of life deliberately being accepted?

### What Should We Do?

One could almost despair in view of the imminent and seemingly unstoppable 5G wave. But it does not have to come to that. The future is open and depends solely on us, on every one of us. Our thoughts, our feelings and our actions decide whether we subject our lives to a technology dictatorship or whether technology should serve life. If the negative effects of microwave technology, and especially of 5G, are finally recognised by the policy makers, this will open the doors for new research and development.

***“We recommend a curfew on the expansion of the fifth generation of telecommunications.”***

*Over 180 scientists and doctors in a single international appeal of September 2017*

So you can do valuable educational work in advance. Talk to your children, to your neighbours and to politicians you know. Write letters to the editor, lodge objections against planned antenna projects and support petitions and initiatives. Please do not give the industry a reason to argue that higher bandwidths are unavoidable due to high usage. You are a role model—whenever possible, avoid mobile phones, WiFi and wireless phones. Most wireless connections are completely unnecessary because wired solutions are possible.

Despite the gloomy outlook, stay cheerful and calm, and be aware that your own behaviour and role model function can have an unexpected effect.

*We are always happy to answer any further questions!*

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05/20



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