



Fact or fiction? The truth about 5G

November 2020

5G has been described as a “game changer” and there’s a lot of information and opinions about it. Some of it is accurate but a lot of it isn’t.

To help you separate fact from fiction we have taken a closer look at five of the 5G myths circulating today.

Myth #1: 5G is an untested, new technology

While 5G may offer significant advances in capability it is, in simple terms, the fifth generation of mobile technology—following on from 4G, 3G, 2G and 1G.

Far from being a new, untested technology, 5G—like its predecessors—operates using radio waves. These electromagnetic waves are used by many of the devices and services we use every day. This technology has been used for decades and is an integral part of our lives.

The 5G network currently runs on frequencies that are very similar to the 4G network, and will use higher frequencies in the future. The main difference is that 5G will be able to use a wider band of frequencies than previous technologies. Testing to date shows that 5G generally emits similar or even lower levels of electromagnetic energy (EME) than previous mobile technologies.

As with previous mobile technologies, 5G carriers and equipment producers are required to meet strict regulatory requirements.

Carriers in Australia have tested their 5G networks and published the results. The tests show EME from 5G networks can be comparable or lower than 3G and 4G equipment. These test results are available on carrier websites:

- [Telstra—5G and EME](#)
- [Optus—EME Safety](#)
- [Vodafone—Mobiles, base stations and health.](#)

Fact #1

The technology 5G relies on is not new; it is integral to our lives and is tested in line with strict international safety standards.

Myth #2: 5G is harmful to human health

Mobile technology is regulated in line with strict standards, based on international guidelines, and there is no evidence it is harmful to human health.

Mobile networks emit low levels of electromagnetic energy (EME). Emissions are closely regulated and do not have enough energy to cause harmful effects or damage to molecules like DNA.

The scientific research is clear. There is no evidence mobile telecommunication technologies, including 5G, are hazardous to human health.

This is the position held by the World Health Organization and supported by health authorities across the globe including here in Australia.

Fact #2

There is no evidence to suggest 5G is harmful to human health.

Myth #3: 5G uses higher frequencies which means higher radiation levels

5G technologies will use a broad range of frequency bands and recently, attention has been focused on the use of higher frequencies (>24 GHz) by mobile telecommunications networks.

As the frequency increases, its ability to transmit over distance is reduced. At higher frequencies, the signal is also more easily blocked by things such as leaves and buildings.

This means that a mobile telecommunications network using 5G technology in higher frequency ranges is going to need more transmitters to provide a continuous or reliable service to consumers. But each transmitter can run at lower power levels than those using 4G technology, which means that the level of radiation exposure from 5G will be lower.

The maximum radio frequency level that someone in the community could be exposed to from 5G (or any other signals in general community areas) is so small that no temperature rise to the body has been observed to date. Provided that the overall exposure remains below ARPANSA's standard, which is based on international guidelines, no consequences for public health are anticipated.

Fact #3

5G will operate using higher frequencies and generate lower levels of electromagnetic energy.

Myth #4: Electromagnetic energy is only emitted from telecommunications facilities

There are sources of electromagnetic energy (EME) all around us. Natural EME is generated by the sun, earth, atmosphere and even the human body.

EME can be transmitted across a vast spectrum of radio waves—from long wavelengths through medium to short wavelengths. This spectrum is used in a wide range of technologies and products we use every day. Think anything wireless or remote controlled—TV, radio, radar, weather forecasting, microwaves, laptops, smart devices, mobile phones and wi-fi. Many other everyday items also generate electromagnetic energy—such as electrical power, light bulbs, fridges, ovens, irons and vacuum cleaners.

Telecommunications is part of the electromagnetic spectrum but it is not, and has never been, the only source of EME.

Fact #4

Electromagnetic energy is emitted from a number of natural and artificial sources including but not limited to telecommunications.

Myth #5: All electromagnetic energy is dangerous

Many of the technologies, products and services we use in our day-to-day lives emit electromagnetic energy (EME). Some transmit more EME than others but all are regulated in line with strict safety standards to minimise the risk of harm.

EME from mobile phones and other wireless devices is non-ionising, which we know is very safe in low levels. In today's world, telecommunications equipment emit non-ionising EME and are closely regulated to make sure they operate at low levels and are safe for people to use. Radiofrequency (RF) EME is non-ionising, meaning that it has insufficient energy to break chemical bonds or remove electrons (ionisation).

Ionising EME interacts with matter differently but is similarly regulated to minimise the risk of harm. X-ray machines, CT scans, mammography and radiation therapy are examples of technologies that produce ionising EME. These technologies are also closely regulated to protect workers and patients.

Fact #5

Some electromagnetic energy may be dangerous in some circumstances but not that used for telecommunications.

Find out more

- Visit our [EME hub](#)
- Learn about the [science behind EME](#)