MBNL

ENABLING DIGITAL BRITAIN

5G Q&A

ANSWERS TO THE MOST ASKED QUESTIONS

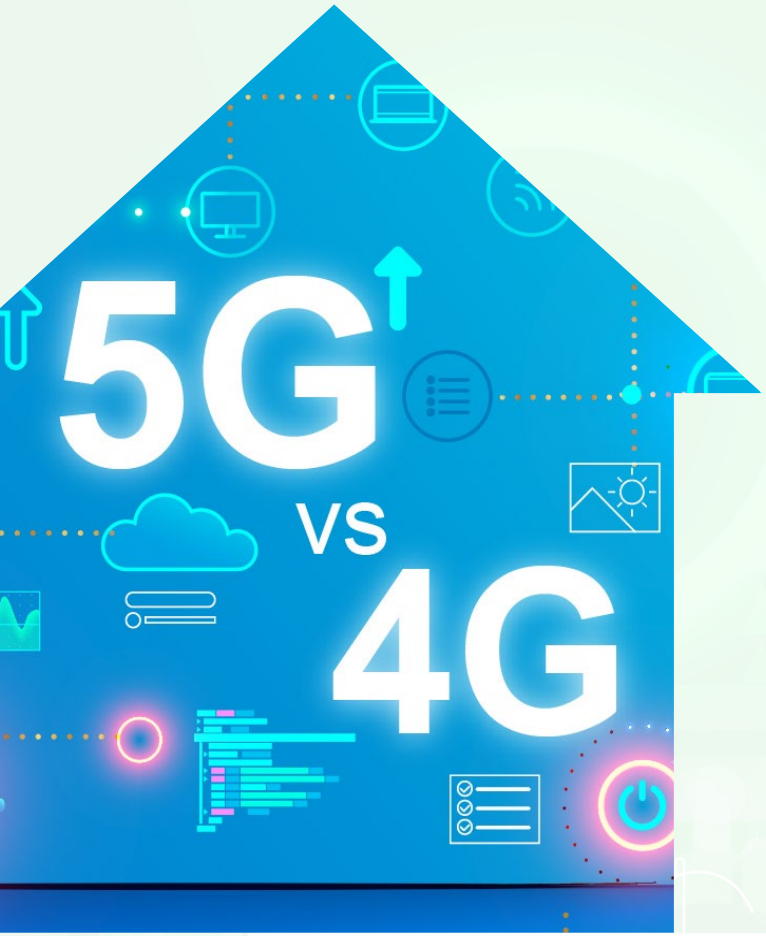
Contents

5G mobile networks have gone live in the UK and are now available in a number of cities and towns across the country. With its rollout rapidly gaining pace, how much do you know about 5G?

What is 5G, why do we need it?

5G is the fifth generation of mobile network technology. It offers much faster data download and upload speeds than existing technologies, a more reliable data connection and the ability for many more devices to access the mobile internet at the same time.

From 1G to 5G, every mobile network generation delivers faster speed and more functionality. 4G, which most of us are still using, enables us to video call and watch movies on the go. 5G offers these with significant improvements to speed and quality, but also so much more functionality beyond this. 5G is not a replacement for 4G, or 3G, but is an additional layer to the existing mobile network that will significantly enhance its overall performance.



How is 5G different from 4G?

5G is more than just faster connectivity, it has a host of unparalleled features promising a much better experience in terms of the quality and reliability of mobile internet connections. The scope this provides for increased functionality is great.

Superfast speeds, better quality

5G will be able to connect at speeds between 1Gbps and 10Gbps – up to 10 times faster than 4G. 5G offers superfast content download and at much higher resolutions, for example, a full HD movie can be downloaded in just 10 seconds on a mobile device connected to 5G.

Greater capacity for more reliable connection

5G offers significantly greater network capacity which enables many more devices to be connected at the same time, while also meeting the surging data demands arising from the growing use of mobile applications amongst customers.

Real-time connection

5G delivers real-time connection with an extraordinarily limited delay. This gives mobile users a seamless experience whether they are opening apps, browsing webpages or gaming.

What is the current status of 5G rollout in the UK?

The UK's first 5G network was launched by EE in May 2019. Since then all mobile operators in the country have introduced their 5G services in selected areas. 5G coverage in the UK is not widespread as yet but the rollout is gaining traction. The government has a target for the UK to become a world leader in 5G and for the majority of the population to be covered by a 5G signal by 2027[1].

There are a number of government-backed organisations dedicated to accelerating the rollout and commercial application of 5G, such as UK5G, West Midlands 5G, Superfast South Yorkshire and Infralink in Scotland.

1 https://www.gov.uk/guidance/building-digital-uk#current-mobile-infrastructure-projects

What benefits will 5G bring to us?

With its superfast speeds and unprecedented reliability and capacity, 5G has the potential to deliver a host of benefits to enhance our everyday life and economic growth right now and into the future. Individuals and businesses including those in the public and private sectors are set to benefit from 5G's powerful connectivity.

Here are a few examples of how 5G's benefits are already being realised:

Enhancing business productivity and creating jobs

5G's improved speed and capacity directly benefits productivity as businesses increasingly adopt remote working by their employees. According to a recent report by the Centre for Policy Studies, if 5G coverage reaches a quarter more of the population than the Government's current target of 51%, it will produce GDP gains of £41.7 billion by 2027[2]. Such economic gains will be driven by 5G-enabled technologies such as AI (artificial intelligence), Big Data, and IoT (Internet of Things), etc. This in turn will help to create more jobs across the country.

Revolutionary smart transport

With 5G network and 5G-enabled innovations, transport service providers will be able to utilise real-time transport data to predict travel patterns to improve management of traffic flow and transport network capacity. 5G's ultra-low latency and greater capacity can enable connectivity for vehicles and between vehicles and analytical devices, opening up a host of new opportunities to enhance the efficiency and safety of public and private transport, as well as reducing air pollution.

2 Upwardly Mobile: how the UK can gain the full benefits of the 5G revolution https://www.cps.org.uk/research/upwardly-mobile

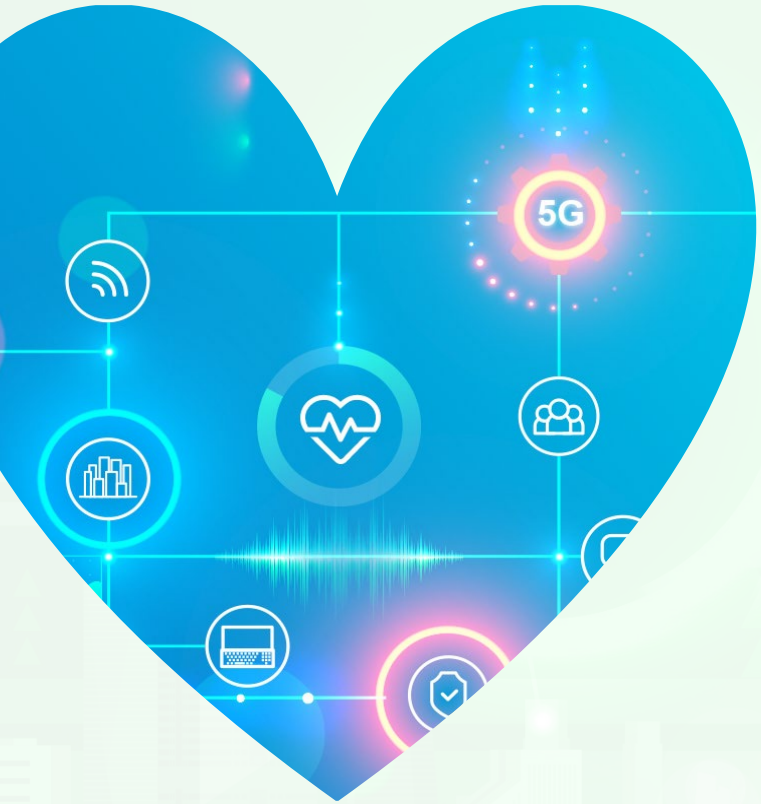
What benefits will 5G bring to us? (cont.)

Transformational remote healthcare

5G can enable a wider range of healthcare services to be offered remotely. Indeed, the COVID-19 pandemic has led to a sharp rise in access to remote healthcare services with diagnosis carried out via HD video calls between patients and medical consultants. Transformational 5G-enabled healthcare innovations such as wireless monitoring of vital signs, virtual multi-disciplinary video consultations and connected ambulances are expected to become reality in the coming decade.

Ubiquitous remote education and learning

5G and innovative technologies are making remote education and learning ubiquitous and accessible to anyone, anywhere in the world. 4G enabled students to take online lessons when schools were temporarily closed during the COVID-19 lockdown. 5G, with its ultra-low latency and enhanced capacity, can deliver much more immersive learning experiences by enabling the use of innovative technologies such as Augmented Reality to provide lifelike learning/training experiences remotely.



What implications does 5G have for health?

Like previous generations of mobile technology, 5G uses radio frequencies to transmit and receive data. Decades of research on radio frequency electromagnetic fields (RF EMF) have concluded that the only substantiated effect of RF EMF exposure relevant to human health and safety is heating of exposed tissue. Exposure to current technologies, including 5G, results in a negligible temperature rise in the human body. The human body is capable of adjusting to small temperature increases in the same way as it does when undertaking sports. Exposure to radiation emissions is not new in our modern world and many home appliances such as televisions, microwave ovens and WiFi equipment produce radiation which is classed as non-ionising. That means it does not have sufficient energy to break chemical bonds or remove electrons from atoms, as opposed to 'ionising radiation' (like X rays, gamma rays) which occurs at much higher frequencies and is generally considered hazardous to humans[3].

3 https://www.icnirp.org/en/home/home-read-more.html

Are there any health protection guidelines for 5G?

ICNIRP (International Commission on Non-Ionizing Radiation Protection) is an international body dedicated to radiation protection research and is formally recognised by the World Health Organisation (WHO). ICNIRP sets precautionary safety levels for radio frequency electromagnetic fields (RF EMF) to safeguard against all known adverse health effects to the general public. Its restrictions have been set to ensure that body temperature rise resulting from RF exposure will remain far lower than that required to adversely affect health. Accordingly, 5G exposure will not cause any harm providing operators adhere to the ICNIRP guidelines in the design of their sites.

The ICNIRP guidelines form the basis of regulatory limits for wireless radiation emissions in most parts of the world, including the UK and the EU. Mobile network operators are required to ensure that the emission levels of their signals, including those used for 5G, conform to those limits. Their sites are effectively safe by design.

How safe is 5G for public health?

ICNIRP's latest extensive study on mobile network radiation emissions, including 5G frequencies, concluded that there is no reason to believe wireless radiation causes health issues[4]. This conclusion is supported by the WHO[5]. Public Health England's latest guidance also points out that the overall radio frequencies exposure with the rollout of 5G is expected to remain low relative to guidelines and, as such, there should be no negative consequences for public health[6].

Extensive studies worldwide show that emissions from mobile base stations are far below the regulatory standards set by ICNIRP and governments. Ofcom performs regular tests to monitor radio wave emission levels at various locations throughout the UK. One recent test of 5G sites in 10 towns and cities recorded the highest level from 5G signals was only 0.039% of the maximum set out in the ICNIRP guidelines[7].

4 ICNIRP research https://www.icnirp.org/en/frequencies/radiofrequency/index.html
5 WHO guidelines https://www.who.int/peh-emf/standards/en/
6 Public Health England guidance https://www.gov.uk/government/publications/5g-technologies-radio-waves-and-health/5g-technologies-radio-waves-and-health
7 Ofcom report https://www.ofcom.org.uk/__data/assets/pdf_file/0015/190005/emf-test-summary.pdf

Is 5G related to the coronavirus?

Misinformation linking 5G to the coronavirus has been circulating in some countries since the start of the COVID-19 pandemic. These have been rebuked by the UK government[8], Ofcom[9] and the WHO[10] as ungrounded claims with no scientific basis or credible evidence. Viruses cannot travel on radio waves or mobile networks. One key point of evidence against such claims is that coronavirus is also spreading in countries that do not have 5G mobile networks.

The safety of mobile technology has been extensively researched over the past few decades. 5G, like 2G, 3G, and 4G, is a safe technology and will be a game changer in transforming our lives socially and economically.

8 Government guidance https://www.gov.uk/guidance/5g-and-coronavirus-covid-19
9 Ofcom statement https://www.ofcom.org.uk/about-ofcom/latest/features-and-news/clearing-up-myths-5g-and-coronavirus
10 WHO statement https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/myth-busters

For further information, please visit: **www.mbnl.co.uk**

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