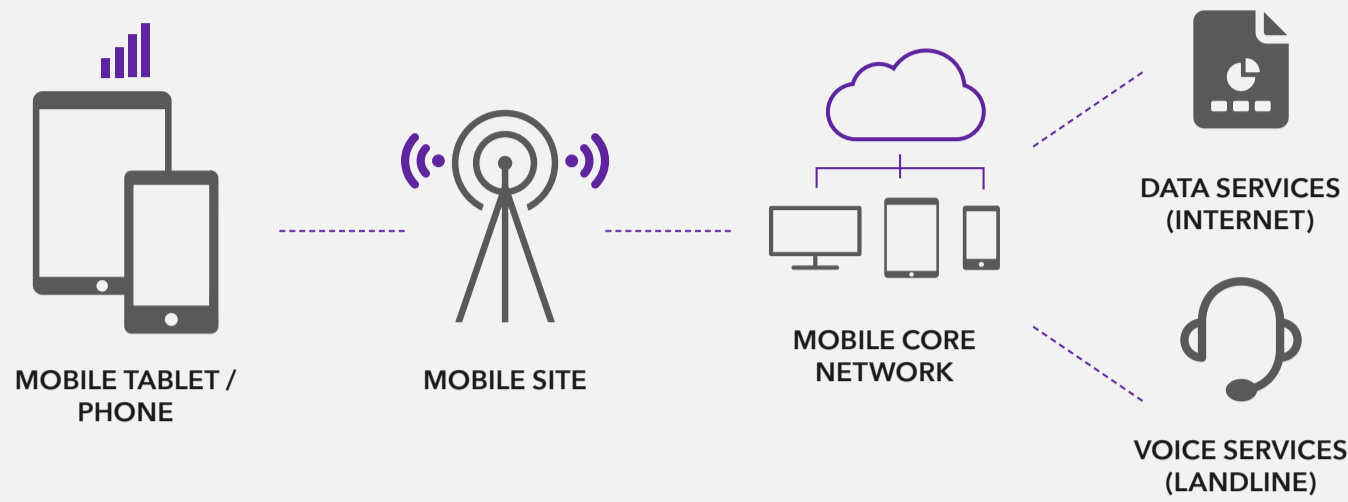


5G – The Facts

To help enable New Zealand's digital future Spark is adding new wireless infrastructure and launching 5G services. We understand that for some, adding cell sites to our network & upgrading to the latest technology standard may raise concerns due to conflicting messages about its effect on health. We would like to address those concerns by sharing the facts.

HOW YOUR DEVICE CONNECTS TO OUR NETWORK



HOW MOBILE TECHNOLOGY WORKS



Mobile technology is based on radio technology that has been used for over 100 years for a range of everyday services.

WHAT IS 5G AND WHY DO WE NEED IT?

WHAT EXACTLY IS 5G?

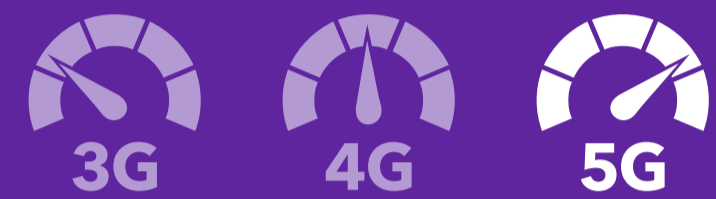
5G is the fifth generation of mobile connectivity after 3G and 4G.

5G has the potential to bring super-fast downloads, minimal latency (or lag), massive connectivity and reliability. It will open up huge possibilities for business and the way we live.

700%↑

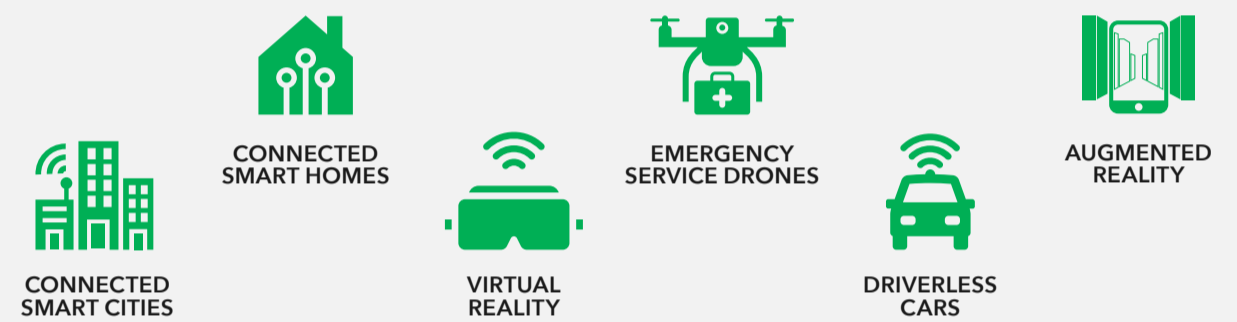
DIGITAL GROWTH

NZ has seen unprecedented growth for digital services with data usage increasing by over 700% since 2016¹. Moving to the next generation of mobile technology will be crucial to support Kiwi's appetite for digital services.



5G has the potential to bring speeds 10 times faster than 4G networks and have the capacity to support massive connectivity of multiple devices with very fast response times.

5G will enable growth in innovations like



WHERE HAS 5G BEEN DEPLOYED ALREADY?

Many countries around the world are starting to roll out 5G technology, including Australia, USA, UK, some Scandinavian countries, France, Spain, Germany, China, Japan, Russia and South Korea.²



5G AND SAFETY

Questions about health in relation to 5G are usually around perceived health concerns from electromagnetic fields (EMFs).

EMFs?

Just like TV, radio and baby monitors, mobile networks use radio waves to transmit data. Like visible light, radio waves are a type of electromagnetic radiation that sits within the non-ionising portion of the electromagnetic spectrum.³

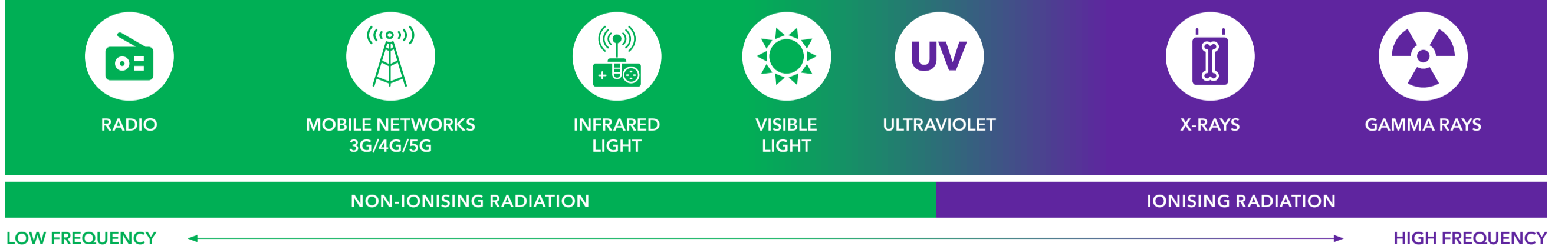
NON-IONISING RADIATION - WHAT IS IT?

Non-ionising radiation lies below the ultraviolet range of frequencies and carries low energy radiation.

"The radio waves used for 5G have frequencies that are 10,000 times too low to damage molecules - so they are called non-ionising."

– Chief Science Advisor to the Prime Minister³

WHERE 5G FITS IN THE ELECTROMAGNETIC SPECTRUM



MILLIMETRE WAVES

Spark's mobile network adheres to strict safety standards set by the NZ Ministry of Health that incorporate safety margins, and are typically only a small fraction of the exposure limit. Spark 5G will initially use radio spectrum that's been used for many years for 3G and 4G, but will eventually use radio spectrum at higher frequencies (i.e. millimetre waves).

"Millimetre waves have been widely used for many years for point-to-point communication links. Existing research into the health effects of RF fields covers all the frequency bands proposed for 5G; as noted above, the New Zealand Standard for RF field exposure also covers them".⁴

– The Ministry of Health