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# 5G Wireless Technology

## Fact Sheet

A brochure designed by the Australian Centre for Electromagnetic Bioeffects Research



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## What is 5G?

In Australia, mobile phones and a range of other communication devices operate using 3G (3<sup>rd</sup> generation) and 4G (4<sup>th</sup> generation) technologies. 5G is the new, 5<sup>th</sup> generation, of mobile communication technology.

Full commercial deployment of 5G in Australia is expected in 2020.

## How is 5G different from previous generations?

5G uses new and more efficient methods of making connections between the users' mobile device and the mobile network infrastructure carrying the call or data. Initially, 5G will operate at frequencies similar to those used by current technologies, but in future it will operate at much higher frequencies.

An important feature of the higher frequencies used by 5G technologies is that they do not travel as far from the source (they become weaker much more rapidly) than the lower frequencies currently used. This results in more superficial exposures which are mostly absorbed by the skin, as opposed to the deeper tissue exposures associated with 3G and 4G technologies.

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## Do higher frequencies and more antennas mean higher exposures?

Introducing a new technology while retaining older systems may result in a small increase in overall environmental levels from mobile network infrastructure. However, as the older systems are replaced (for example, 2G has now been switched off in Australia), this increase will gradually be reduced. In addition, while more antennas may be required to service areas where demand for the new service is high, users are closer to the mobile phone base station and therefore their devices can operate at a reduced power, reducing their exposure from their personal device.



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## Is ACEBR doing research on 5G?

Yes, several of the ACEBR research streams are addressing 5G-type exposures. While there is little reason to doubt the outcomes of past research, it is crucial to use the very latest experimental and computational techniques to be certain that no adverse effects have been overlooked. For this reason, ACEBR are currently investigating several aspects regarding the absorption and possible interaction of 5G exposures with the body.

## Is 5G covered by current exposure guidelines for mobile phone handsets?

Yes, the current guidelines in ARPANSA's exposure standard are not technology specific, and ensure safety for the frequencies that will be used by 5G.

## What about exposure from 5G base stations?

Like current 3G and 4G mobile phone base stations, new 5G base stations will be required to meet mandatory regulations that comply with ARPANSA's public exposure standard. Public information about levels from base stations can be found at [www.rfnsa.com.au](http://www.rfnsa.com.au). This database will progressively be updated as 5G base stations are rolled out.



## What do we know about 5G and health?

Extensive research has been conducted on the 5G frequencies soon to be introduced, including specifically on mobile phone applications. For future 5G frequencies, there has been extensive research on other applications using these frequencies (for example, radar and military applications) which have been using these frequencies for many decades at power levels far higher than those used in mobile telecommunications. No indication of any health impacts from exposures at the intensities related to mobile communications have been observed.

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## About ACEBR

The Australian Centre for Electromagnetic Bioeffects Research (ACEBR) is a National Health and Medical Research Council (NHMRC) Centre of Research Excellence.

## References

<https://www.arpansa.gov.au/regulation-and-licensing/regulatory-publications/radiation-protection-series/codes-and-standards/rps3>  
<https://www.rfnsa.com.au>

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