

StrataNet Guidelines to Public Health and Safety

We are approached by many people from time to time who are concerned about health and safety around our wireless equipment. This document is to outline the New Zealand standards with our equipment and to prove that our devices are risk-free and are in no way harmful to ourselves or the public.

There are many speculations about health risks such as cancer associated with mobile phones; however none of these risks have yet been proven. The wireless service that we provide in essence is standard Wi-Fi, and ultimately is no different from that of your mobile devices and computers alike.

Wi-Fi is a form of radio frequency (RF), and when brought down to the basics works in similar ways to that of TV, radio, cordless phones, and virtually anything 'wireless'. RF is all around us, whether we use wireless devices or not – and every year the wireless spectrums are becoming more filled up with radio waves. All around New Zealand; even in some of the most remote forest areas; there is bound to be some form of radio frequencies about. We can understand why there is more and more of a growing concern about health hazards when we are continually saturated by these radio waves.

The great news about Wi-Fi is that the power levels involved are nowhere near the levels as that of a cellular GSM transmission tower or FM radio transmitter. While a cellular tower may emit power levels of 50 watts, the maximum power levels that we use; and may only use by law; does not exceed 4 watts.

“It is important to remember that exposures from Wi-Fi equipment are thousands of times lower than from cellphones, so there is little or no relevance of this classification to the use of WiFi in schools.”¹

¹ Letter from the Ministry of Health to the Ministry of Education, 20 September 2011.

The growing concerns that people have is related to RF and electromagnetic radiation. Radiation is a known health concern; however it is important to note that there are vastly different levels of radiation. We all know that the radiation emitted by a cellphone is of completely different levels to that of a nuclear warhead or power plant.

“Levels of radiation from devices as absorbed by the body are measured with a standard called the ‘Specific Absorption Rate’, or SAR, which is a calculation of the energy absorbed by a person in watts per kilogram. In New Zealand, the maximum exposure permitted is 2W/kg, which is 50 times lower than the level at which the radiation has the potential to be harmful.”²

Type of Radiation

Specific Absorption Rate

Potential to be harmful (heat can be felt)	200W/kg
Maximum permitted in NZ	4W/kg
Highest radiation cellphones (avg of 20)	1.43W/kg
50 watt cellphone transmitter at 10m distance	0.365W/kg
Lowest radiation cellphones (avg of 20)	0.32W/kg
Wi-Fi device average of 0.5m and 2m distance	0.0057W/kg

Table 1³

As can be seen from the above table, being within 2 metres of a Wi-Fi device is only about 1/700th of the legal amount of radiation in NZ, and roughly 1/35000th of potential harmful radiation. This shows that our equipment runs at levels nowhere near anything of risk, running at full power. What’s more; most of our equipment is mounted on roofs or up transmission towers with highly directional signals. This dramatically reduces the radiation levels even further than the above table, which is referring to exposure from being directly in front of the equipment.

“A common concern about base station and local wireless network antennas relates to the possible long-term health effects that whole-body exposure to the RF signals may have. To date, the only health effect from RF fields identified in scientific reviews has been related to an increase in body temperature (> 1 °C) from exposure at very high field intensity found only in certain industrial facilities, such as RF heaters. The levels of RF exposure from base stations and wireless networks are so low that the temperature increases are insignificant and do not affect human health.”⁴

² “Cell Phones, Wi-Fi, and Electromagnetic Radiation” - Inside Telecommunications New Zealand, 19 December 2013.

³ “Cell Phones, Wi-Fi, and Electromagnetic Radiation” - Inside Telecommunications New Zealand, 19 December 2013.

⁴ “Electromagnetic Fields and Public Health” – World Health Organisation, May 2006.

Another thing to note about RF, is that the distance from the transmission equipment plays a major part in electromagnetic radiation. The further you are from the source; the amount of radiation is drastically reduced. Electromagnetic radiation follows the inverse-square law, which states that “A specified physical quantity or strength is inversely proportional to the square of the distance from the source of that physical quantity.”⁵

The diagram below shows how the Inverse-Square Law takes effect.

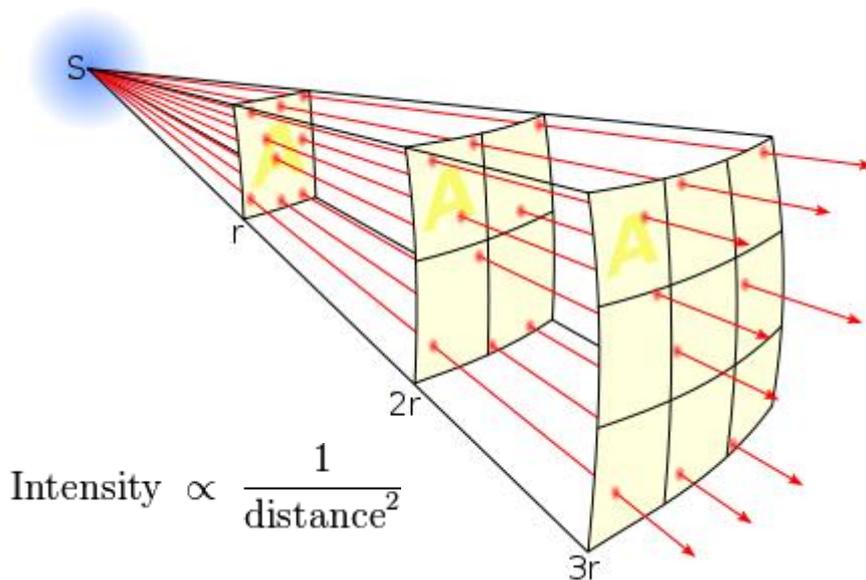


Figure 1⁶

“Considering the very low exposure levels and research results collected to date, there is no convincing scientific evidence that the weak RF signals from base stations and wireless networks cause adverse health effects.”⁷

Taking into account all of the evidence above, we can only draw the conclusion that StrataNet wireless internet poses no risk of any health and safety hazards caused by RF or electromagnetic radiation.

⁵ College Physics, Volume 2 - Just the Facts 101 by Knight, Cram101, ISBN 9780805306309.

⁶ Inverse-Square Law – Wikipedia.

⁷ “Electromagnetic Fields and Public Health” – World Health Organisation, May 2006.