

Radio waves and health

Base stations

Base stations in mobile telephony networks communicate with mobile phones using radio signals. The base station antennas are installed in such a way that the radio wave exposure in public areas is well below the established safety limits.



Radio base stations are required for mobile telephones to work. Antennas transmit and receive radio signals to and from mobile telephones near the base station. The radio waves are of the same kind as those used in radio and television broadcasting and the radio communications used for many years by the police, air traffic, shipping and transport companies.

The base station antennas are often placed high on a rooftop, in a mast or on a tower to be able to cover a wide area. In shopping malls, airports, offices, and other places with many users, the antennas are usually placed on walls or in ceilings, serving smaller areas.

The output power level is typically between 10 and 40 watts for an outdoor base station. This can be compared to television transmitters, which usually have a thousand times higher output power. Antennas mounted indoors have about the same power as ordinary mobile telephones.

Each base station can only serve a limited amount of users at a time. As the number of mobile phone users grows more base stations are needed. When there are shorter distances between base stations and mobile phone users, however, less output power is needed to communicate.

Independent expert organizations have established exposure limits for radio waves, based on many years of research. These limits include large safety margins. The World Health Organization (WHO), among others, recommends exposure limits which are adopted by national authorities.

Base station antennas direct the radio signals away from the building or mast to obtain coverage in a certain area. The intensity of the radio waves is drastically reduced with increasing distance from the base station antenna. On the ground, in houses, and other places where people reside, the exposure levels from radio base stations are normally below 1 % of the safety limits.

Only in the close vicinity of the antennas can the exposure limits sometimes be exceeded. The size of this area varies from a few centimeters for small in-building antennas up to some meters for antennas mounted in masts and on rooftops. The antennas are installed in such a way that unauthorized people do not have access to the area where the limits may be exceeded.

For more information, visit <http://www.ericsson.com/health>.