

LANCOM wireless LAN devices meet statutory guideline values for electromagnetic waves

Users of wireless technologies are frequently concerned about the possible adverse effects on their health.

Currently there is no scientific evidence to indicate any negative impact of wireless LAN radio waves on people's health.

The CE mark on LANCOM access points confirms their compliance with the statutory limits. In public discussion, the transmission power of various equipment, such as that of wireless LAN, is often compared with the transmission power of mobile or cordless telephones. However, the comparison only applies to a limited degree since the assessment must be based on various factors such as field strength, frequency and duration of exposure.

What are the statutory guideline / threshold values?

For wireless LAN devices and other wireless applications, the same provisions regarding possible adverse effects on health apply. To protect the population from high-frequency electromagnetic fields, the European standard EN 62479 outlines a legal basis that supports the reference value in the Council's Recommendation of the European Community 1999/519/EC and of the International Commission on Non-Ionizing Radiation Protection (ICNIRP). This limit for WLAN is 10 W/m^2 at 2.4 GHz. 1. ¹

German studies by the Mobile Telecommunication Research Program initiated by the Federal Office for Radiation Protection found radiation levels from wireless LANs to be scarcely detectable at below $0.1 \mu\text{W/m}^2$ to 0.2 W/m^2 . ²

Even the peak value of 0.2 W/m^2 is just one-fiftieth of the reference value recommended by the EU.

How high is the transmission power of access points?

Wireless LAN access points transmit at a maximum permissible radiated power that depends on the frequency range:

- > 0.1 W in the 2400 MHz frequency range
- > 0.2 W at between 5150 and 5350 MHz when used within enclosed spaces
- > 1 W at between 5470 and 5725 MHz when used inside and outside of enclosed spaces
- > 4 W at between 5725 and 5850 MHz when operating BFWA (Broadband Fixed Wireless Access)

Actual transmission power measured by the Mobile Telecommunication Research Program is between 0.02 and 0.04 W in the 2.4 GHz band. Maximum values are 0.08 W and thus 20 % below the permissible maximum level.

What does the specific absorption rate (SAR) specify?

The SAR is a physical quantity that measures the absorption of electromagnetic fields by biological tissue, which causes it to heat up. It is affected by two significant factors:

- > The field strength of the waves (transmission power and distance to the transmitter)
- > The duration of exposure

The field strength of electromagnetic radiation decreases by the square of the distance from the antenna. This means that at twice the distance from the transmitting antenna the radiated power is reduced to just one quarter. The distance from access points is generally several meters (in enclosed spaces) to several hundred meters (outside enclosed spaces).

Specific effects of electromagnetic waves are only relevant after a certain duration. Even when there is no data traffic, a wireless LAN access point continuously transmits a 0.5 ms signal every 100 ms (a beacon) so that other

