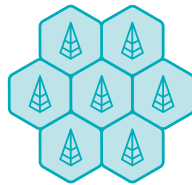# Facts about remote reading via radio communication

Heat/Cooling/Water meters

When the meter on your address is remotely read, it sends your consumption data through a concentrator to the utility via IoT/mobile communication.
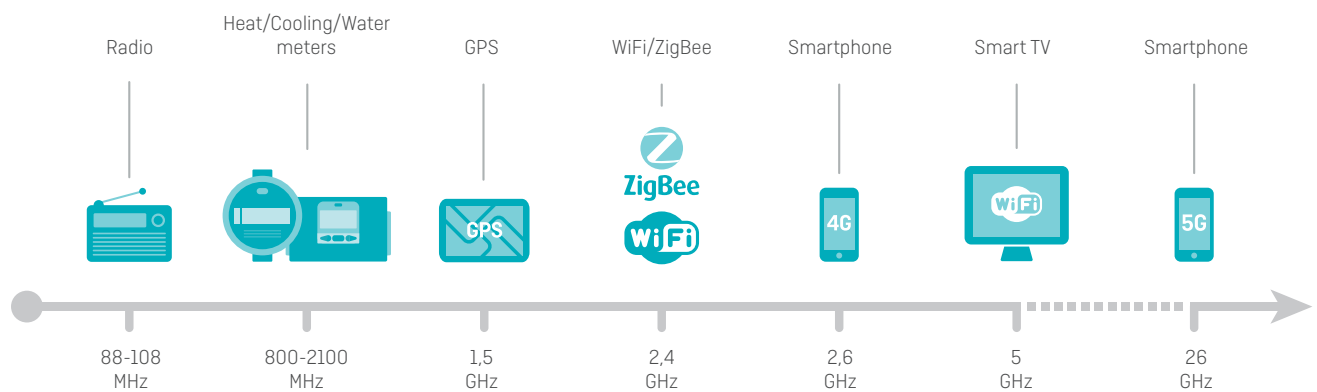

Heat/Cooling/Water meter

IoT/ Mobile communication

Reading system

What is radio communication?

Radio communication is a wireless communication type using electromagnetic waves (radio waves).
This type covers the frequency area from approx. 3 kHz to 300 GHz. Kamstrup's meters with mobile communication technologies, uses existing networks, operation in different frequency bands, ranging from 800 MHz - 2100 MHz.

Radio	Heat/Cooling/Water meters	GPS	WiFi/ZigBee	Smartphone	Smart TV	Smartphone
88-108 MHz	800-2100 MHz	1,5 GHz	2,4 GHz	2,6 GHz	5 GHz	26 GHz

The meter is just another electrical device

There are many electrical appliances that communicate wirelessly via radio waves and send out electromagnetic radiation.

Most homes already have several of these appliances, and many of them are used daily, e.g.:

- PCs and wireless Internet
- Mobile phones and tablets
- Remote controls for cars, baby phones, wireless doorbells, phones and sensors for alarms and climate control.

Electromagnetic radiation is found in a lot of places

Radiation from the meter is also known as electromagnetic energy which is spread out from any actively electricity-consuming appliance such as washing machine, micro wave ovens and other kitchen equipment. It is efficient to dampen the level of electromagnetic energy by increasing the distance to the meter.

The meter complies with all requirements for radiation

The remotely read meter is CE marked and complies with all European and national requirements for electromagnetic radiation.

In addition, independent studies show that the radiation from the remotely read meter is below the applicable limit values, defined by the independent organisation ICNIRP*.

*ICNIRP: International Commission on Non-Ionizing Radiation Protection.
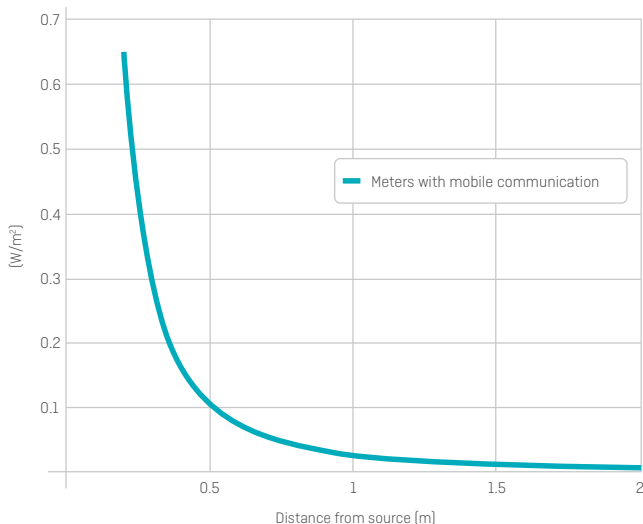
The electromagnetic radiation

When the meter sends data, the transmission power is max 200 mW.

The thermal stress of radio waves measured in W/m² over 30 minutes

For appliances, working by means of radio communication, requirements state how much the electromagnetic radiation may affect surroundings and human beings.

An example is MPE (Maximum Permissible Exposure) that states how much heat an appliance is allowed to deposit on a surface at a distance of 20 cm. The MPE limit value of the IoT meter is 4,3 W/m2. For a remotely read water meter the value is 0,0001 W/m2.
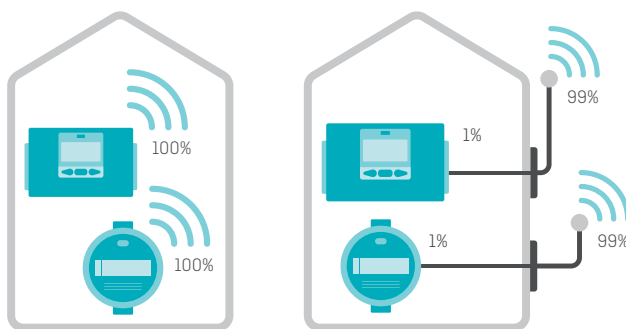
The thermal stress of radio waves decreases proportionally with the distance from the appliance.

The radiation from the meter can be minimised

The electromagnetic radiation from the meter can be minimised significantly by connecting an external antenna.

The concentrator always has an external antenna connected.

MHz	mW	MPE
MHz is an abbreviation for megahertz. 1 MHz = 1,000,000 oscillations per second.	mW is an abbreviation for milliwatt. 1 mW is 1/1000 of 1 watt.	MPE is an abbreviation for Maximum Permissible Exposure and is defined by the independent organisation ICNIRP (International Commission on Non-Ionizing Radiation Protection).