

# EMC-Shielding Systems

## Frequency and Wavelength

The electrical field strength of electromagnetic waves has the same cycle time and number of cycles per second as source. The frequency is given in Hz, kHz, MHz and GHz. The atmospheric expansion of a cycle is termed  $\lambda$  (Lambda). It is represented in length as metres. The speed  $C$  with which a wave travels through air or a vacuum is  $300,000 \text{ km/s} = 3 \cdot 10^8 \text{ m/s}$ . This is also the speed of light.

### Comparison

For example, **LW** 150 kHz

$$\lambda = \frac{c}{f} = \frac{300,000 \text{ km/s}}{150 \text{ kHz}} = \frac{3 \cdot 10^8 \text{ m/s}}{150 \cdot 10^3 \text{ Hz}} = \underline{2,000 \text{ m}}$$

with **UHF** K 60 - BT 783.25 MHz

$$\lambda = \frac{c}{f} = \frac{300,000 \text{ km/s}}{783.25 \text{ MHz}} = \frac{3 \cdot 10^8 \text{ m/s}}{783.25 \cdot 10^6 \text{ Hz}} = 0.383 \text{ m} = 38.3 \text{ cm}$$

For radio and television reception wavelength and frequency are the most important parameters that enable the user's choice of channel. A particular channel is located by its set frequency (the wavelength).