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ICNIRP GUIDELINES

The International Council on Non-Ionizing Radiation Protection (ICNIRP) guidelines provide a two-tier set of RF exposure limits. The ICNIRP standard is used in most European countries and is gaining acceptance in many other countries outside of North America.

Resources

[Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields \(up to 300 GHz\)](#)



Exposure Limits

The ICNIRP guidelines have exposure limits for electric fields and magnetic fields that are whole-body and time averaged. The higher tier is referred to as "Occupational" while the more restrictive tier is referred to as "General Population." The limits for the electric and magnetic field are very similar to the limits in the 1997 FCC Regulations. The differences occur in the two transition regions: between 1 and 30 MHz and between 300 and 2,000 MHz. At the lower frequency transition, Safety Code 6 and the ICNIRP standard have variable limits from 1 to 10 MHz. All the U.S. standards (IEEE, ANSI, FCC, ACGIH, and DOD) plus the NATO standard have variable limits from 3 to 30 MHz. And while all the North American standards have variable limits from 300 to 1,500 or 3,000 MHz—depending on the limits in the microwave region—the ICNIRP standard has variable limits from 400 to 2,000 MHz.

Exposure limits are given from DC to 300 GHz. Exposure limits for the magnetic (H) field are relaxed below 100 MHz since the exposure limits at lower frequencies are based more on electrostimulation than body heating, and both induced and contact currents are related to the strength of the electric field. There are also limits for induced currents and contact currents.

Electric Field Limits

Exposure limits for the electric field are shown in the two tables below. The tables do not include the limits below 65 kHz.

Reference Levels for Occupational Exposure

Frequency (MHz)	Electric Field (V/m)	Power Density (W/m ²)
0.065–1.0	610	
1.0–10.0	610/f	
10–400	61	10
400–2,000		f/40
2,000–300,000		50

Reference Levels for General Public Exposure

Frequency (MHz)	Electric Field (V/m)	Power Density (mW/cm ²)
0.15–1.0	610	
1.0–10.0	87/f ^{0.5}	
10–400	28	2.0
400–2,000		f/200
2,000–300,000		10

Other Limits

The limits for the magnetic field are higher below 1.0 MHz. There are also exposure limits for induced and contact currents.

