

Repeater, model Speed HPRx450

Exposure limit according to §1.1310

Limit for power density for general population/uncontrolled exposure is $f/1500 \text{ mW/cm}^2$ for 300 – 1500 MHz frequency range.

For 450 MHz the power density is equal to $450/1500 = 0.3 \text{ mW/cm}^2$

For 470 MHz the power density is equal to $470/1500 = 0.313 \text{ mW/cm}^2$

The power density $P \text{ (mW/cm}^2\text{)} = P_T / 4\pi r^2$, i.e.

$$0.3 \text{ mW/cm}^2 = P_T / 4\pi r^2, \text{ where}$$

P_T is the transmitted power, which is equal to the transmitter output power 16.33 dBm plus maximum antenna gain 3 dBi, the maximum equivalent isotropically radiated power EIRP is

$$P_T = 16.33 \text{ dBm} + 3 \text{ dBi} = 19.33 \text{ dBm} = 85.7 \text{ mW}.$$

The minimum safe distance “r”, where RF exposure does not exceed FCC permissible limit, is 4.77 cm:

$$r = \sqrt{P_T / (P \times 4\pi)} = \sqrt{85.7 / (0.3 \times 4 \times 3.14)} = 4.77 \text{ cm}$$

The public cannot be exposed to dangerous RF level.