

Environmental evaluation and exposure limit according to FCC CFR 47part 1, §1.1307, §1.1310

To confirm compliance with a safe distance for base station unit the following calculation was done.

Limit for power density for general population/uncontrolled exposure is 1 mW/cm^2 for 1500 -100000 MHz frequency range:

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

P_T is the transmitted power, which is equal to the peak transmitter output power plus maximum antenna gain.

1. The output power was summed across channels within the band - a device can transmit simultaneously on the same or different channels. The measured output power per chain shall be summed in linear units and converted back into decibels.

Output power=Tx power per chain+10log(# of Tx chains)

2. The total EIRP shall be calculated as follows:

EIRP=Tx power per chain+10log(# of Tx chains)+gain of antenna

With OMNI antenna the EIRP= 18.70 dBm + 4.77 dB + 7.4 dBi = 29.87 dBm, which is equal to 970.5 mW.
With sector antenna the EIRP= 13.50 dBm + 4.77 dB + 12 dBi = 30.27 dBm, which is equal to 1064 mW.
The max value is 1064 mW.

The power density at 40 cm (minimum safe distance stated by manufacturer in Users Manual), calculated as follows:

$$1064 \text{ mW} / 4\pi (40 \text{ cm})^2 = 0.05 \text{ mW/cm}^2 \ll 1 \text{ mW/cm}^2$$

General public cannot be exposed to dangerous RF level.