

FCC RF Exposure Requirements

General information:

Device category: Mobile per Part 2.1091

Environment: Uncontrolled Exposure

Mobile devices that operate under Part 15.247 of this chapter are subject to environmental evaluation for RF exposure prior to equipment authorization.

Antenna:

The manufacturer does specify an antenna with a gain of 2.15 dBi to be used with this device.

This device has provisions for operation in as a handheld device only.

| Configuration | Antenna p/n | Type | Freq. Band | Max. Gain (dBi) |
|---------------|-------------|------|------------|-----------------|
| handheld | Any | omni | 2400 MHz | 2.15 |
| | | | | |

Operating configuration and exposure conditions:

The conducted output power is 0.125 Watts. Typical use qualifies for a maximum duty cycle factor of <15%.

MPE Calculation:

The minimum separation distance is calculated as follows:

$$E(V/m) = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power density: } P_d(mW/cm^2) = \frac{E^2}{3770}$$

The limit for general uncontrolled exposure environment above 1500 MHz is 1.0 mW/cm².

Channel frequency: 2440 MHz
 The conducted power output is 150 m Watt.
 Antenna gain was taken as 2.15 dBi
 15% Duty cycle

W := 0.125 power in Watts D := 1 Duty Factor in decimal % (1=100%)
 E := 4.5 exposure time in minutes U := 30 (use 6 for controlled and 30 for uncontrolled)

$$W_{exp} := W \cdot D \cdot \left(\frac{E}{U} \right)$$

$$PC := \frac{E}{U}$$

PC = 0.15 percent on time

W_{exp} = 0.019 Watts

Po := 19 mWatts dBd := 0 antenna gain f := 1500 Frequency in MHz

G := dBd + 2.15 gain in dBi

$$G_n := 10^{\frac{G}{10}} \text{ gain numeric}$$

$$S := \frac{f}{1500}$$

controlled exposure

300 for controlled

1500 for uncontrolled

G_n = 1.641

S = 1

$$R := \sqrt{\frac{(P_o \cdot G_n)}{(4 \cdot \pi \cdot S)}}$$

$$R_{inches} := \frac{R}{2.54}$$

R = 1.575 distance in centimeters
 required for compliance

R_{inches} = 0.62

Conclusion:

The device complies with the MPE requirements by providing a safe separation distance of 2 cm between the antenna, including any radiating structure, and any persons when normally operated.