

4 FCC §2.1091, FCC §15.247(i), §15.407(f) – RF Exposure

4.1 Applicable Standards

According to FCC §15.247(i), Radio frequency devices operating under the provisions of this part are subject to the radio frequency radiation exposure requirements specified in §§ 1.1307(b), 1.1310, 2.1091, and 2.1093 of this chapter, as appropriate. Applications for equipment authorization of mobile or portable devices operating under this section must contain a statement confirming compliance with these requirements. Technical information showing the basis for this statement must be submitted to the Commission upon request.

According to FCC §2.1091 and §1.1310(e)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	* (100)	30
1.34-30	824/f	2.19/f	* (180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

4.2 MPE Prediction

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S = power density

P = power input to antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

4.3 MPE Result

Radio	Frequency (MHz)	Maximum Power (dBm)	Maximum Power (mW)	Antenna Gain (dBi)	Antenna Gain (Numeric)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)
2.4 Wi-Fi 2x2 MIMO	2437	20.78	119.67	2.888	1.944	0.046	1
5 Wi-Fi 2x2 MIMO	5745	22.24	167.51	4.845	3.051	0.102	1
LTE	1880	24	251.19	5.5	3.548	0.177	1

LTE module FCC ID: 2AWJ7-02100

WiFi module FCC ID: TLZ-CM276NF

Collocation

LTE + 2.4 Wi-Fi: $0.177/1 + 0.046/1 = 0.223 \leq 1.0$

LTE + 5 Wi-Fi: $0.177/1 + 0.102/1 = 0.2879 \leq 1.0$