# FCC §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

## **Applicable Standard**

According to subpart 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

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

Limits for General Population/Uncontrolled Exposure

f = frequency in MHz

\* = Plane-wave equivalent power density

## Result

#### **Calculated Formulary:**

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm2)

P = power input to the antenna (in appropriate units, e.g., mW).

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

Frequency (MHz)	Antenna Gain		Max Tune Up Conducted Power		Evaluation Distance	Power Density	MPE Limit (mW/cm <sup>2</sup> )
(11112)	(dBi)	(numeric)	(dBm)	( <b>mW</b> )	( <b>cm</b> )	$(\mathbf{mW/cm}^2)$	(111)(111)
2412-2472	5.0	3.16	18.0	63.10	20	0.04	1.0
5745-5825	5.0	3.16	9.0	7.94	20	0.005	1.0

The 2.4G Wi-Fi can't transmit with the 5.8G Wi-Fi at the same time.

Note: To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

### **Result: compliance.**

FCC Part 15.407