

**FCC §15.247 (i) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)****Applicable Standard**

According to FCC 15.247(i) and subpart §1.1307(b)(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 Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
<b>Frequency Range (MHz)</b>	<b>Electric Field Strength (V/m)</b>	<b>Magnetic Field Strength (A/m)</b>	<b>Power Density (mW/cm<sup>2</sup>)</b>	<b>Averaging Time (minutes)</b>
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

f = frequency in MHz;

\* = Plane-wave equivalent power density;

**MPE Calculation**

Predication of MPE limit at a given distance

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

S = power density (in appropriate units, e.g. mW/cm<sup>2</sup>);

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

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

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

Radio	Freq. (MHz)	MPE Limit (mW/cm <sup>2</sup> )	Output Power (mW)	Duty Cycle	Antenna Gain (dBi)	Antenna Gain (Number)	Power Density at 20 cm	% of MPE at 20 cm
Wi-Fi	2412	1.0	30.69	100%	2.6	1.8	0.011	1.1%
GPRS 8	824	0.549	1749.85	12.5%	0	1	0.04	7.29%
	1850	1.0	1205.04	12.5%	-1.0	0.79	0.06	6%
GPRS 10	824	0.549	572.80	25%	0	1	0.06	10.93%
	1850	1.0	1099.01	25%	-1.0	0.79	0.02	2%
GPRS 12	824	0.549	990.83	50%	0	1	0.04	7.29%
	1850	1.0	690.24	50%	-1.0	0.79	0.05	5%
WCDMA (Band V)	824	0.549	185.35	100%	0	1	0.04	7.29%
WCDMA (Band II)	1850	1.0	183.65	100%	-1.0	0.79	0.03	3%

The MPE calculations in the spreadsheet above demonstrates that the combination of the Wi-Fi with the GPRS/WCDMA radio defined meets the MPE requirement stated in FCC Part 1.1310 at the 20 cm distance required for mobile exposure conditions.