

FCC §15.247 (i) & §1.1307 (b) (1) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 15.247 (i) and subpart 1.1307 (b)(1), 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

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)
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

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 Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	(numeric)	(dBm)	(mW)			
GSM850 (824-849MHz)	1.6	1.4	24.5	281.8	20	0.079	0.55
PCS1900 (1850-1910)	1.6	1.4	20.5	112.2	20	0.031	1.00
WCDMA850 (824-849MHz)	1.6	1.4	23.5	223.9	20	0.062	0.55
WCDMA1900 (1850-1910)	1.6	1.4	24.0	251.2	20	0.070	1.00
Wi-Fi (2412-2462)	2.6	1.8	19.0	79.4	20	0.028	1.00
Bluetooth (2402-2480)	0.5	1.1	6.5	4.5	20	0.001	1.00

Note 1: The Tune-up power and antenna gain were declared by the applicant.

Note 2: Please refer to the report of FCC ID: UDV-1009092010008 for the max tune-up power.

Note 3: The Wi-Fi and Bluetooth have its own module, so they can transmit at the same time.

$$\sum_i \frac{S_i}{S_{Limit,i}} = 0.079/0.55 + 0.028/1 + 0.001/1 = 0.173 < 1.0$$

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

Result: Compliance