

4 FCC §15.247 (i) & §2.1091 – RF Exposure

4.1 Applicable Standard

According to FCC §15.247(i) and §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 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 Results

2.4 GHz Band:

Maximum peak output power at antenna input terminal (dBm):	27.35
Maximum peak output power at antenna input terminal (mW):	543.25
Prediction distance (cm):	20
Prediction frequency (MHz):	2437
Maximum Antenna Gain, typical (dBi):	5
Maximum Antenna Gain (numeric):	3.162
Power density of prediction frequency at 20.0 cm (mW/cm ²):	0.342
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²):	1.0

5 GHz Module:

Maximum peak output power at antenna input terminal (dBm): 25.51
Maximum peak output power at antenna input terminal (mW): 355.63
Prediction distance (cm): 20
Prediction frequency (MHz): 5240
Maximum Antenna Gain, typical (dBi): 1.9
Maximum Antenna Gain (numeric): 1.54
Power density of prediction frequency at 20.0 cm (mW/cm²): 0.109
MPE limit for uncontrolled exposure at prediction frequency (mW/cm²): 1.0

Radio Mode	Frequency (MHz)	Max Antenna Gain (dBi)	Max Conducted Power (dBm)	Power Density @ 20 cm (mW/cm ²)	% of MPE
2.4 GHz	2437	5	27.35	0.342	34.2%
5 GHz	5240	1.9	25.51	0.109	11%

The device is compliant with the requirement MPE limit for uncontrolled exposure.