4   FCC §2.1091 – RF Exposure

4.1   Applicable Standards

According to §2.1091 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.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm²)	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/f²)	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

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

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

390 ~ 430 MHz Band

Maximum peak output power at antenna input terminal (dBm):	36.02
Maximum peak output power at antenna input terminal (mW):	4000
Prediction distance (cm):	120
Prediction frequency (MHz):	390.15
Antenna Gain, typical (dBi):	5.0
Maximum Antenna Gain (numeric):	3.16
Power density at predication frequency and distance (mW/cm²):	0.07
MPE limit for uncontrolled exposure at predication frequency (mW/cm²):	0.2601

430 ~ 470 MHz Band

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Maximum peak output power at antenna input terminal (dBm):	36.1
Maximum peak output power at antenna input terminal (mW):	4073.80
Prediction distance (cm):	120
Prediction frequency (MHz):	469.85
Antenna Gain, typical (dBi):	5.0
Maximum Antenna Gain (numeric):	3.16
Power density at predication frequency and distance (mW/cm^2):	0.071
MPE limit for uncontrolled exposure at predication frequency (mW/cm^2):	0.3132

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Result

The device is compliant with the requirement MPE limit for uncontrolled exposure. The maximum power density at the distance of 120 cm is 0.0711mW/cm^2 (Limit 0.3132 mW/cm^2)