

## 4 FCC §2.1091 – RF Exposure Information

### 4.1 Applicable Standards

According to FCC §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/cm <sup>2</sup> )	Averaging Time (minutes)
<b>Limits for General Population/Uncontrolled Exposure</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

### 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): 45.6

Maximum peak output power at antenna input terminal (mW): 36307.805

Duty Cycle: 50%

Maximum Corrected output power at antenna input terminal (mW): 18153.9025

Prediction distance (cm): 120

Prediction frequency (MHz): 390.05

Antenna Gain, typical (dBi): 5.0

Cable loss (dB): 1.0

Maximum Antenna Gain+ Cable Loss (numeric): 2.512

Power density at predication frequency and distance (mW/cm<sup>2</sup>): 0.252

MPE limit for uncontrolled exposure at prediction frequency (mW/cm<sup>2</sup>): 0.26

## 430 ~ 473 MHz Band:

Maximum peak output power at antenna input terminal (dBm):	<u>45</u>
Maximum peak output power at antenna input terminal (mW):	<u>31622.777</u>
Duty Cycle:	<u>50%</u>
Maximum Corrected output power at antenna input terminal (mW):	<u>15811.3885</u>
Prediction distance (cm):	<u>120</u>
Prediction frequency (MHz):	<u>472.95</u>
Antenna Gain, typical (dBi):	<u>5.0</u>
Cable loss (dB):	<u>1.0</u>
Maximum Antenna Gain+ Cable Loss (numeric):	<u>2.512</u>
Power density at predication frequency and distance (mW/cm <sup>2</sup> ):	<u>0.220</u>
MPE limit for uncontrolled exposure at prediction frequency (mW/cm <sup>2</sup> ):	<u>0.3153</u>

### 4.3 Result

The device is compliant with the requirement MPE limit for uncontrolled exposure. 430-473 MHz maximum power density at the distance of 120 cm is 0.220 mW/cm<sup>2</sup> (Limit 0.315 mW/cm<sup>2</sup>). The 390-430 MHz maximum power density at the distance of 120 cm is 0.252 mW/cm<sup>2</sup> (Limit 0.26 mW/cm<sup>2</sup>).