

FCC §1.1307 & §2.1091 - MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Standard Applicable

According to 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

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

Test Data

Predication of MPE limit at a given distance.

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

Where:

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)

For Cellular Band:

Maximum peak output power at antenna input terminal (dBm): 32.07

Maximum peak output power at antenna input terminal (mW): 1610.6

Prediction distance (cm): 20

Prediction frequency (MHz): 836.6

Antenna Gain, typical (dBi): 2.0

Maximum Antenna Gain (numeric): 1.58

Power density at predication frequency and distance (mW/cm²): 0.507

MPE limit for uncontrolled exposure at predication frequency (mW/cm²): 0.558

For PCS Band:

Maximum peak output power at antenna input terminal (dBm):	<u>30.23</u>
Maximum peak output power at antenna input terminal (mW):	<u>1054.4</u>
Prediction distance (cm):	<u>20</u>
Prediction frequency (MHz):	<u>1880</u>
Antenna Gain, typical (dBi):	<u>2.0</u>
Maximum Antenna Gain (numeric):	<u>1.58</u>
Power density at predication frequency and distance (mW/cm ²):	<u>0.33</u>
MPE limit for uncontrolled exposure at predication frequency (mW/cm ²):	<u>1.0</u>

Conclusion

The predicted power density level at 20 cm is 0.507 mw/cm² for cellular band and 0.33 mw/cm² for PCS band, both of them are below the limit of general population, the device is operated at least 20 cm away from user's body, and the RF exposure information has been addressed on the user manual.