

§1.1307 & §2.1091 - RF EXPOSURE

Applicable Standard

According to §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

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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

Test Data

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 = output power to antenna

G= Antenna Gain

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

Cellular Band (Part 22H)Maximum peak output power at antenna input terminal (dBm): 31.82Maximum peak output power at antenna input terminal (mW): 1520.547Prediction distance (cm): 20Prediction frequency (MHz): 848.8Antenna Gain, typical (dBi): 1.58Maximum Antenna Gain (numeric): 1.4388The worst case is power density at predication frequency at 20 cm (mW/cm²): 0.435MPE limit for general population exposure at prediction frequency (mW/cm²): 0.565**PCS Band (Part 24E)**Maximum peak output power at antenna input terminal (dBm): 29.81Maximum peak output power at antenna input terminal (mW): 957.194Prediction distance (cm): 20Prediction frequency (MHz): 1850.2Antenna Gain, typical (dBi): 2.5Maximum Antenna Gain (numeric): 1.7783The worst case is power density at predication frequency at 20 cm (mW/cm²): 0.3388MPE limit for general population exposure at prediction frequency (mW/cm²): 1.0**Conclusion:**

For GSM850, the highest power density level at 20 cm is 0.435 mW/cm², which is below the uncontrolled exposure limit of 0.565 mW/cm² at 848.8 MHz.

For PCS1900, the highest power density level at 20 cm is 0.3388 mW/cm², which is below the uncontrolled exposure limit of 1.0 mW/cm² at 1850.2 MHz.

The 20 cm safety distance has been addressed in the user manual.