

FCC§1.1307 (b) (1) & §2.1091 –MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

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

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)
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

MPE Calculated :

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 = 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)

Mode	Frequency band (MHz)	Antenna Gain		Rated max output power	Cable loss (dB)	Max Tune-up Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)		(dBm)	(mW)			
uplink	698-716	9	7.94	21	2.32	18.68	73.79	20	0.117	0.465
	776-787	9	7.94	21.5	2.32	19.18	82.79	20	0.131	0.517
	824-849	9	7.94	20.5	2.75	17.75	59.57	20	0.094	0.549
	1710-1755	9	7.94	18.5	5.22	13.28	21.28	20	0.034	1.0
	1850-1915	11	12.59	20	5.42	14.58	28.71	20	0.072	1.0
downlink	728-746	7	5.01	6	1.86	4.14	2.59	20	0.003	0.485
	746-757	7	5.01	6	1.86	4.14	2.59	20	0.003	0.497
	869-894	7	5.01	10.5	2.29	8.21	6.62	20	0.007	0.579
	2110-2155	10	10.00	9	2.86	6.14	4.11	20	0.008	1.0
	1930-1995	10	10.00	8.5	2.56	5.94	3.93	20	0.008	1.0

MPE Results

Tune-Up Power Including Tolerance:

Note: Max Tune-up power= rated max output power- cable loss

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliance