

1 MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 STANDARD APPLICABLE

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Mobile device, the MPE is required.

According to §1.1310 and §2.1093 RF exposure is calculated.

Limits for Maximum Permissive Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
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
1500-15000	/	/	1.0	30

F = frequency in MHz

* = Plane-wave equipment power density

MPE Prediction (802.11a (Main))

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

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

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

1.2 MAXIMUM PERMISSIBLE EXPOSURE (MPE) EVALUATION & MPE PREDICTION

802.11a (Main)

Average Power Output (dBm)

Frequency (MHz)	Reading Power (dBm)	Output Power (W)	Limit (W)
5745.00	10.86	0.01219	1
5785.00	10.66	0.01164	1
5825.00	10.18	0.01042	1

Maximum average output power at antenna input	10.86	(dBm)
Maximum average output power at antenna input	12.18989599	(mW)
Duty cycle:	100	(%)
Maximum Pav :	12.18989599	(mW)
Antenna gain (typical):	4.78	(dBi)
Maximum antenna gain:	3.006076303	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	5745	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm ²)
Power density at predication frequency at 20 (cm)	0.0072937	(mW/cm ²)

Measurement Result

The predicted power density level at 20 cm is 0.0072937 W/cm². This is below the uncontrolled exposure limit of 1 mW/cm² at 5745MHz.

802.11n (5GHz)_20M MIMO Chain 0+ Chain1**Average Power Output (dBm)**

Frequency (MHz)	Reading Power (dBm)	Output Power (W)	Limit (W)
5745.00	14.48	0.02805	1
5785.00	14.54	0.02844	1
5825.00	13.46	0.02218	1

Maximum average output power at antenna input	14.54	(dBm)
Maximum average output power at antenna input	28.44461107	(mW)
Duty cycle:	100	(%)
Maximum Pav :	28.44461107	(mW)
Antenna gain (typical):	8.09	(dBi)
Maximum antenna gain:	6.441692655	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	5785	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.0364712	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.0364712 W/cm2. This is below the uncontrolled exposure limit of 1 mW/cm2 at 5785MHz.