

FCC MAXIMUM PERMISSIBLE EXPOSURE (MPE)

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

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

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Maximum Permissible Exposure (MPE) Evaluation (Worst Case)

802.11a Max. output power

802.11a_Main

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	MCS0	10.45	11.092	23.98	PASS
44	5220	MCS0	10.47	11.143	23.98	PASS
48	5240	MCS0	10.40	10.965	23.98	PASS
52	5260	MCS0	11.26	13.366	23.98 or $11+10\log(B) = 24.31$	PASS
60	5300	MCS0	11.03	12.677	23.98 or $11+10\log(B) = 24.34$	PASS
64	5320	MCS0	11.06	12.764	23.98 or $11+10\log(B) = 24.34$	PASS
100	5500	MCS0	10.47	11.143	23.98 or $11+10\log(B) = 24.35$	PASS
116	5580	MCS0	9.83	9.616	23.98 or $11+10\log(B) = 24.35$	PASS
140	5700	MCS0	9.46	8.831	23.98 or $11+10\log(B) = 24.33$	PASS
149	5745	MCS0	10.27	10.641	30	PASS
157	5785	MCS0	9.30	8.511	30	PASS
165	5825	MCS0	9.45	8.810	30	PASS

MPE Prediction (802.11a 5150~5250)

Average output power at antenna input terminal:	10.47	(dBm)
Average output power at antenna input terminal:	11.142945	(mW)
Duty cycle:	97.11	(%)
Maximum Pav :	10.820914	(mW)
Peak Antenna gain (Maximum):	2.63	(dBi)
Peak Antenna gain (linear):	1.8323144	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	5220	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm ²)
Power density at predication frequency at 20 (cm)	0.004	(mW/cm ²)
Measurement Result		
The predicted power density level at 20 cm is 0.004 mW/cm ² .		
This is below the uncontrolled exposure limit of 1 mW/cm ² at 5220MHz.		

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MPE Prediction (802.11a 5250~5350)

Average output power at antenna input terminal:	11.26	(dBm)
Average output power at antenna input terminal:	13.365955	(mW)
Duty cycle:	97.11	(%)
Maximum Pav :	12.979679	(mW)
Peak Antenna gain (Maximum):	2.28	(dBi)
Peak Antenna gain (linear):	1.6904409	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	5260	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.004	(mW/cm^2)
Measurement Result		
The predicted power density level at 20 cm is 0.004 mW/cm2.		
This is below the uncontrolled exposure limit of 1 mW/cm2 at 5260MHz.		

MPE Prediction (802.11a 5470~5725)

Average output power at antenna input terminal:	10.47	(dBm)
Average output power at antenna input terminal:	11.142945	(mW)
Duty cycle:	97.11	(%)
Maximum Pav :	10.820914	(mW)
Peak Antenna gain (Maximum):	4.08	(dBi)
Peak Antenna gain (linear):	2.5585859	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	5500	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.006	(mW/cm^2)
Measurement Result		
The predicted power density level at 20 cm is 0.006 mW/cm2.		
This is below the uncontrolled exposure limit of 1 mW/cm2 at 5500MHz.		

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MPE Prediction (802.11a 5725~5850)

Average output power at antenna input terminal:	10.27	(dBm)
Average output power at antenna input terminal:	10.64143	(mW)
Duty cycle:	97.11	(%)
Maximum Pav :	10.333893	(mW)
Peak Antenna gain (Maximum):	3.63	(dBi)
Peak Antenna gain (linear):	2.3067472	(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)	0.005	(mW/cm ²)
Measurement Result		
The predicted power density level at 20 cm is 0.005 mW/cm ² .		
This is below the uncontrolled exposure limit of 1 mW/cm ² at 5745MHz.		

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