

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

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Maximum Permissible Exposure (MPE) Evaluation

UNII

Cable loss = 0		Peak Power Output								Required Limit
CH	Frequency (MHz)	Data Rate								
		6	9	12	18	24	36	48	54	
36	5180	12.86	12.79	12.76	12.65	12.50	12.34	12.26	12.15	50mWatt = 17 dBm
52	5260	13.22	12.14	12.11	12.00	11.86	11.74	11.66	11.54	250mWatt = 17 dBm
64	5320	12.99	12.93	12.89	12.70	12.55	12.39	12.31	12.20	250mWatt = 17 dBm
100	5500	12.76	12.70	12.66	12.57	12.41	12.25	12.16	12.04	1 Watt = 30 dBm
116	5580	12.44	12.37	12.33	12.22	12.08	11.94	11.85	11.73	1 Watt = 30 dBm
140	5700	12.55	12.48	12.45	12.36	12.20	12.06	11.97	11.87	1 Watt = 30 dBm

MPE Prediction (802.11a)

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 peak output power at antenna input terminal:	13.22	(dBm)
Maximum peak output power at antenna input terminal:	20.9893988	(mW)
Duty cycle:	100	(%)
Maximum Pav :	20.9893988	(mW)
Antenna gain (typical):	1.9	(dBi)
Maximum antenna gain:	1.54881662	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	5260	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm ²)
Power density at predication frequency at 20 (cm)	0.0064707	(mW/cm ²)

Measurement Result

The predicted power density level at 20 cm is 0.0064707 mW/cm². This is below the uncontrolled exposure limit of 1 mW/cm² at 5260MHz.

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UNII HT20

Cable loss = 0		Peak Power Output									
CH	Frequency (MHz)	Data Rate									Required Limit
		6.5	13	19.5	26	39	52	58.5	65	72	
36	5180	13.45	13.26	13.11	12.92	12.73	12.52	12.47	12.39	12.30	50mWatt= 17 dBm
52	5260	13.82	13.65	13.51	13.33	13.13	12.93	12.88	12.80	12.57	250mWatt = 24 dBm
64	5320	13.50	13.31	13.15	12.96	12.77	12.58	12.52	12.43	12.40	250mWatt = 24 dBm
100	5500	12.56	12.39	12.24	12.05	11.86	11.65	11.60	11.51	11.78	1 Watt = 30 dBm
116	5580	12.44	12.25	12.11	11.94	11.75	11.54	11.49	11.42	11.37	1 Watt = 30 dBm
140	5700	12.63	12.46	12.30	12.12	11.93	11.72	11.68	11.60	11.50	1 Watt = 30 dBm

MPE Prediction (802.11n_20M)

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 peak output power at antenna input terminal:	13.82	(dBm)
Maximum peak output power at antenna input terminal:	24.0990543	(mW)
Duty cycle:	100	(%)
Maximum Pav :	24.0990543	(mW)
Antenna gain (typical):	3	(dBi)
Maximum antenna gain:	1.99526231	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	5260	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm ²)
Power density at predication frequency at 20 (cm)	0.0095708	(mW/cm ²)

Measurement Result

The predicted power density level at 20 cm is 0.0095708 mW/cm². This is below the uncontrolled exposure limit of 1 mW/cm² at 5260MHz.

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