

15 MAXIMUM PERMISSIBLE EXPOSURE (MPE)

15.1 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 §2.1091 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

Note: Prediction of MPE limit at a given distance

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

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

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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15.2 Maximum Permissible Exposure (MPE) Evaluation (Worst Case)

802.11n_HT20_MIMO

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
			CH 0	CH 1					
36	5180	MCS8	15.08	17.08	19.45	83.261	23.98		PASS
44	5220	MCS8	15.21	17.21	19.58	85.791	23.98		PASS
48	5240	MCS8	15.13	17.19	19.54	84.944	23.98		PASS
52	5260	MCS8	14.92	17.28	19.52	84.502	23.98	or $11+10\log(B) = 24.33$	PASS
60	5300	MCS8	14.98	17.63	19.76	89.420	23.98	or $11+10\log(B) = 24.33$	PASS
64	5320	MCS8	14.81	18.05	19.98	94.095	23.98	or $11+10\log(B) = 24.15$	PASS
100	5500	MCS8	12.78	15.26	17.45	52.541	23.98	or $11+10\log(B) = 24.32$	PASS
116	5580	MCS8	12.58	15.87	17.79	56.750	23.98	or $11+10\log(B) = 24.32$	PASS
140	5700	MCS8	12.09	14.76	16.88	46.103	23.98	or $11+10\log(B) = 24.29$	PASS
144	5720(U-NII 2C)	MCS8	12.222	11.85	14.47	32.004	23.98	or $11+10\log(B) = 23.07$	PASS
144	5720 (U-NII 3)	MCS8	4.1977	4.067	4.97	5.180	30		PASS
149	5745	MCS8	16.48	16.73	19.86	91.561	30		PASS
157	5785	MCS8	16.92	16.95	20.19	98.749	30		PASS
165	5825	MCS8	17.27	17.17	20.48	105.453	30		PASS

MPE Prediction

Max. output power including tune-up tolerancel:	20.48	(dBm)
Max. output power including tune-up tolerancel:	111.68632	(mW)
Duty cycle:	94.47	(%)
Maximum Pav :	105.51007	(mW)
Peak Antenna gain (Maximum):	4.06	(dBi)
Peak Antenna gain (linear):	2.5468303	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	5825	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1	(mW/cm ²)
Power density at predication frequency at 20 (cm) distance	0.053	(mW/cm ²)

Measurement Result

The predicted power density level at 20 cm is 0.053 mW/cm².

This is below the uncontrolled exposure limit of 1 mW/cm² at 5825MHz.

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