



FCC §15.247 (i), §2.1091 – RF Exposure

FCC ID: YWT-5M02

Applied procedures / limit

According to FCC §15.247(i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

Note: f is frequency in MHz

* = Power density limit is applicable at frequencies greater than 100 MHz

Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz

* = Plane-wave equivalent power density



2.4G

IEEE 802.11b

max possible output power (PK,conducted) : 17±1dbm

IEEE 802.11g

max possible output power (PK,conducted) : 15±1dbm

IEEE 802.11N(HT20)

max possible output power (PK,conducted) : 15±1dbm

IEEE 802.11N(HT40)

max possible output power (PK,conducted) : 12±1dbm

The max possible output power (PK,conducted) of All (IEEE 802.11b , IEEE 802.11g, IEEE 802.11n(20), IEEE 802.11n(40)) is IEEE 802.11b.

802.11b Mode			
Test Channe	Frequency	Maximum Conducted Output Power(PK)	LIMIT
	(MHz)	(dBm)	dBm
CH01	2412	17.56	30
CH06	2437	17.43	30
CH11	2462	17.67	30
802.11g Mode			
CH01	2412	15.51	30
CH06	2437	15.73	30
CH11	2462	15.62	30
802.11n-HT20 Mode			
CH01	2412	15.44	30
CH06	2437	15.36	30
CH11	2462	15.69	30
802.11n-HT40 Mode			
CH03	2422	12.81	30
CH06	2437	12.41	30
CH09	2452	12.62	30



5G

IEEE 802.11a

max possible output power (PK conducted) : $16\pm 1\text{dbm}$

IEEE 802.11N(20)

max possible output power (PK,conducted) : $14\pm 1\text{dbm}$

IEEE 802.11N(40)

max possible output power (PK conducted) : $13\pm 1\text{dbm}$

IEEE 802.11ac(20)

max possible output power (PK conducted) : $14\pm 1\text{dbm}$

IEEE 802.11ac(40)

max possible output power (PK conducted) : $13\pm 1\text{dbm}$

IEEE 802.11ac(80)

max possible output power (PK conducted) : $11\pm 1\text{dbm}$

The max possible output power (PK,conducted) of All (IEEE 802.11a , IEEE 802.11n(20), IEEE 802.11n(40), IEEE 802.11ac(20), IEEE 802.11ac(40), IEEE 802.11ac(80)) is IEEE 802.11ac(20).



Test Channel	Frequency	Maximum output (PK) (dBm)	LIMIT	Result
	(MHz)		dBm	
TX 802.11a Mode				
CH36	5180	16.68	23.98	Pass
CH40	5200	16.74	23.98	Pass
CH48	5240	16.57	23.98	Pass
TX 802.11 n20M Mode				
CH36	5180	14.710	23.98	Pass
CH40	5200	14.760	23.98	Pass
CH48	5240	14.080	23.98	Pass
TX 802.11 n40M Mode				
CH38	5190	13.870	23.98	Pass
CH46	5230	13.570	23.98	Pass
TX 802.11 AC20M Mode				
CH36	5180	14.84	23.98	Pass
CH40	5200	14.54	23.98	Pass
CH48	5240	14.25	23.98	Pass
TX 802.11 AC40M Mode				
CH38	5190	13.14	23.98	Pass
CH46	5230	13.11	23.98	Pass
TX 802.11 AC80M Mode				
CH42	5210	11.250	23.98	Pass

Test Channel	Frequency	Maximum output (PK) (dBm)	LIMIT	Result
	(MHz)		dBm	
TX 802.11a Mode				
CH 149	5745	15.51	30	Pass
CH 157	5785	15.29	30	Pass
CH 165	5825	15.38	30	Pass
TX 802.11 n20M Mode				
CH 149	5745	14.31	30	Pass
CH 157	5785	14.37	30	Pass
CH 165	5825	14.22	30	Pass
TX 802.11 AC20M Mode				
CH 149	5745	14.14	30	Pass
CH 157	5785	14.21	30	Pass
CH 165	5825	14.22	30	Pass

MPE PREDICTION

Predication of MPE limit at a given distance, Equation from 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, R=20cm



Test Result of RF Exposure Evaluation

2.4G

	Target power W/ tolerance (dBm)	Max tune up power tolerance (dBm)	Output power to antenna (mW)	Antenna Gain(dBi)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
802.11b	17±1.0	18.0	63.10	1.26 (1.0dBi)	0.01583	1.0	Pass
802.11g	15±1.0	16.0	39.81	1.26 (1.0dBi)	0.00998	1.0	Pass
802.11n20M Hz	15±1.0	16.0	39.81	1.26 (1.0dBi)	0.00998	1.0	Pass
802.11n40M Hz	12±1.0	13.0	19.95	1.26 (1.0dBi)	0.00500	1.0	Pass

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	Target power W/ tolerance (dBm)	Max tune up power toleranc e (dBm)	Output power to antenna (mW)	Antenna Gain(dBi)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
802.11a	16±1.0	17.0	50.12	1.26 (1.0dBi)	0.01258	1.0	Pass
802.11n 20MHz	14±1.0	15.0	31.62	1.26 (1.0dBi)	0.00793	1.0	Pass
802.11n 40MHz	13±1.0	14.0	25.12	1.26 (1.0dBi)	0.00630	1.0	Pass
802.11ac 20MHz	14±1.0	15.0	31.62	1.26 (1.0dBi)	0.00793	1.0	Pass
802.11ac 40MHz	13±1.0	14.0	25.12	1.26 (1.0dBi)	0.00630	1.0	Pass
802.11ac 80MHz	11±1.0	12.0	15.85	1.26 (1.0dBi)	0.00398	1.0	Pass

5.8G

	Target power W/ tolerance (dBm)	Max tune up power toleranc e (dBm)	Output power to antenna (mW)	Antenna Gain(dBi)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
802.11a	15±1.0	16.0	39.81	1.26 (1.0dBi)	0.00998	1.0	Pass
802.11n 20MHz	14±1.0	15.0	31.62	1.26 (1.0dBi)	0.00793	1.0	Pass
802.11ac 20MHz	14±1.0	15.0	31.62	1.26 (1.0dBi)	0.00793	1.0	Pass