

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

FCC ID:2AFZT-L1

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

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

TEST RESULTS

WIFI:

Test Channel	Frequency	Maximum output power. Antenna port		Maximum output power
		(PK)	(AV)	
	(MHz)	(dBm)	(dBm)	mW
TX 802.11b Mode				
CH01	2412	16.54	13.25	21.135
CH06	2437	16.25	13.36	21.677
CH11	2462	16.33	13.29	21.330
TX 802.11g Mode				
CH01	2412	15.36	13.01	19.999
CH06	2437	15.28	13.05	20.184
CH11	2462	15.58	13.21	20.941
TX 802.11n/20M Mode				
CH01	2412	14.16	12.41	17.418
CH06	2437	14.24	12.36	17.219
CH11	2462	14.36	12.02	15.922

Test Channel	Frequency	Maximum output power. Antenna port		Maximum output power
		(PK)	(AV)	
	(MHz)	(dBm)	(dBm)	mW
TX 802.11a Mode				
CH149	5745	9.76	7.02	5.035
CH157	5785	9.52	7.37	5.458
CH165	5825	9.67	7.24	5.297
TX 802.11 n20 Mode				
CH149	5745	9.31	6.42	4.385
CH157	5785	9.35	6.48	4.446
CH165	5825	9.16	6.22	4.188

Test Channel	Frequency	Maximum output power. Antenna port		Maximum output power
		(PK)	(AV)	
	(MHz)	(dBm)	(dBm)	mW
TX 802.11a Mode				
CH36	5180	13.11	11.31	13.521
CH40	5200	13.02	11.12	12.942
CH48	5240	13.25	11.33	13.583
TX 802.11 n20M Mode				
CH36	5180	12.75	10.54	11.324
CH40	5200	12.97	10.02	10.046
CH48	5240	12.84	10.36	10.864

BT

1Mbps			
Test Channel	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (mW)
CH00	2402	-2.272	0.593
CH39	2441	-1.646	0.685
CH78	2480	-1.599	0.692
2Mbps			
CH00	2402	-2.540	0.557
CH39	2441	-1.898	0.646
CH78	2480	-1.805	0.660
3Mbps			
CH00	2402	-2.512	0.561
CH39	2441	-1.914	0.644
CH78	2480	-1.828	0.656

BLE

Test Channel	Frequency	Maximum Conducted Output Power(PK)	Maximum Conducted Output Power(PK)
	(MHz)	(dBm)	mW
CH00	2402	7.25	5.309
CH19	2440	7.36	5.445
CH39	2480	7.12	5.152

Mode	Range	Maximum peak output power (dBm)	Output power (mW)	Antenna Gain (numeric)	Power Density (S) (mW/ cm ²)	Limit of Power Density (S) (mW/ cm ²)	Result
802.11b	12~14	13	19.95	1(1.26)	0.0050	1	Pass
802.11g	12~14	12	15.85	1(1.26)	0.0040	1	Pass
802.11n-HT20	11~13	12	15.85	1(1.26)	0.0040	1	Pass
5.8G							
802.11a	6~8	8	6.31	1(1.26)	0.0016	1	Pass
802.11n 20	5~7	7	5.01	1(1.26)	0.0013	1	Pass
5.2G							
802.11a	10~12	12	15.85	1(1.26)	0.0040	1	Pass
802.11n 20	10~12	11	12.59	1(1.26)	0.0032	1	Pass
BT	-3~-1	-1	0.79	1(1.26)	0.0002	1	Pass
BLE	6~8	8	6.31	1(1.26)	0.0016	1	Pass