

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

FCC ID: 2BF40-CC32K

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, R=20cm

Test Result of RF Exposure Evaluation

	Tune up Produce power	Maximum peak output power (dBm)	Output power to antenna (mW)	Antenna Gain (numeric)	Power Density (S) (mW/ cm ²)	Limit (mW / cm ²)	Result
EDR 8DPSK&MCH	7±1	8	6.3096	2.704 (4.32dBi)	0.0034	1	Pass
BLE GFSK&LCH	5±1	6	3.9811	2.958 (4.32dBi)	0.0021	1	Pass
2.4G WIFI 802.11b&2437	22±1	23	199.526 2	2.4889 (3.96dBi)	0.0988	1	Pass
5.2GWIFI 802.11n(HT20)& 5180	17±1	18	63.0957	2.5119 (4dBi)	0.0315	1	Pass
5.8GWIFI 802.11n(HT20)& 5745	12±1	13	19.9526	1.7418 (2.41dBi)	0.0069	1	Pass
LTE BAND 2	21±1	22	158.489 3	1.2647 (1.02dBi)	0.0399	1	Pass
LTE BAND 5	20±1	21	125.892 5	3.4674 (5.40dBi)	0.0869	0.6	Pass
LTE BAND 7	21±1	22	158.489 3	1.0471 (0.20dBi)	0.033	1	Pass
LTE BAND 26	25±1	26	398.107 2	3.4995 (5.44dBi)	0.277	0.5	Pass
LTE BAND 41	20±1	21	125.892 5	1.3836 (1.41dBi)	0.0347	1	Pass

BT+WIFI+LTE supported simultaneous transmission:

BT+LTE: Σ MPE Ratio = 0.0034/1+0.277/0.5=0.5574≤1,

WIFI+LTE: Σ MPE Ratio = 0.0988/1+0.277/0.5=0.6528≤1,

So passed.