

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

FCC ID: 2BWV5-S2-32

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

	Modes & Channel Freq. (MHz)	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
BLE 1M	GFSK & MCH	1±1	2	1.5849	2.1038 (3.23dBi)	0.00066	1	Pass
BLE 2M	GFSK & LCH	1±1	2	1.5849	2.1038 (3.23dBi)	0.00066	1	Pass
EDR	GFSK & MCH	3±1	4	2.5119	2.1038 (3.23dBi)	0.00105	1	Pass
2.4GWIFI	802.11n(H T40)& HCH	10±1	11	12.5893	2.1038 (3.23dBi)	0.00527	1	Pass
5.2GWIFI	802.11n20 &5240	9±1	10	10	2.2699 (3.56dBi)	0.00452	1	Pass
5.3GWIFI	802.11a20 &5280	9±1	10	10	2.2233 (3.47dBi)	0.00443	1	Pass
5.6GWIFI	802.11n40 &5670	9±1	10	10	2.0277 (3.07dBi)	0.00404	1	Pass
5.8GWIFI	802.11n40 &5755	9±1	10	10	2.3442 (3.7dBi)	0.00467	1	Pass

BT+WIFI supported simultaneous transmission:

BT+2.4GWIFI: Σ MPE Ratio =0.00105/1+0.00527/1=0.00632≤1,

BT+5GWIFI: Σ MPE Ratio =0.00105/1+0.00467/1=0.00572≤1,

So passed.