

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

FCC ID: 2BPI7-DAC2

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
2.4G WIFI	802.11b&2437	16±1	17	50.1187	1.9953 (3dBi)	0.0199	1	Pass
BLE	GFSK & HCH	2±1	3	1.9953	0.6776 (-1.69dBi)	0.0003	1	Pass
5.2GWIFI	802.11a&5240	12±1	13	19.9526	4.2658 (6.3dBi)	0.0169	1	Pass
5.8GWIFI	802.11a&5825	14±1	15	31.6228	3.2810 (5.16dBi)	0.0207	1	Pass
NFC	13.56MHz	2±1	3	1.9953	1.2589 (1dBi)	0.0005	0.009	Pass

NFC: Note: dbm=dbuv/m-95.2-2.15=100.71-95.2-2.15=3.36dBm(ERP), so the conduct peak power=3.36-1=2.36dBm

BT+WIFI +NFC supported simultaneous transmission:

BLE+2.4GWIFI+NFC: Σ MPE Ratio =0.0003/1+0.0199/1+0.0005/0.009=0.0758≤1,

BLE+5GWIFI+NFC: Σ MPE Ratio =0.0003/1+0.0207/1+0.0005/0.009=0.0766≤1,

So passed.