BCTC

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

FCC ID: 2A2I7-DW-C01E

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=0.2m

TEST RESULTS

Mode	Tune up Produce power	Maximum peak output power (dBm)	Output power to antenna (mW)	Antenna Gain (numeric)	Power Density (S) (mW/ cm2)	Limit (mW/ cm2)	Result
2.4G WIFI	12±1	13	19.953	2.19 (3.4dBi)	0.00869	1	Pass
5.1G WIFI	13±1	14	25.119	2.46 (3.91dBi)	0.01229	1	Pass
5.8G WIFI	12±1	13	19.953	2.67 (4.26dBi)	0.01334	1	Pass
BLE	1±1	2	1.585	2.19 (3.4dBi)	0.00069	1	Pass

The BLE, 2.4G WIFI, 5.1G WIFI, 5.8G WIFI can transmit at the same time. So the worst simultaneous transmitting consideration:

The ratio=0.00869/1+0.01229/1+0.01334/1+0.00069/1=0.03501≤ 1.0

Conclusion:

For the all Power Density≤ 1.0, compliance with FCC's RF Exposure