

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

FCC ID: 2BGRF-KC7

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 | Maximu m peak output power (dBm) | Output power to antenna (mW) | Antenna Gain (numeric) | Power Density (S) (mW/ cm2) | Limit (mW / cm2) | Result |
|----------|-------------------------------------|-----------------------------|--|--|------------------------------|---|-------------------------------|--------|
| BLE:1M | GFSK &2440 | 1±1 | 2 | 1.5849 | 1.3335 (1.25dBi) | 0.00042 | 1 | Pass |
| BLE:2M | GFSK &2440 | 1±1 | 2 | 1.5849 | 1.3335 (1.25dBi) | 0.00042 | 1 | Pass |
| EDR | 8DPSK &2441 | 2±1 | 3 | 1.9953 | 1.3335 (1.25dBi) | 0.00053 | 1 | Pass |
| 2.4GWIFI | 802.11g &2437 | 13±1 | 14 | 25.1189 | 2.0701 (1.42dBi) | 0.01035 | 1 | Pass |
| 5.8GWIFI | 802.11a20 &5825 | 14±1 | 15 | 31.6228 | 1.7824 (1.55dBi) | 0.00899 | 1 | Pass |

BT+WIFI supported simultaneous transmission:

BT+2.4GWIFI: Σ MPE Ratio =0.00053/1+0.01035/1=0.01088≤1,

BT+5GWIFI: Σ MPE Ratio =0.00053/1+0.00899/1=0.00952≤1,

So passed.