



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

# FCC ID:2AQA6-H7032

**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 <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> 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 <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> 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**

|      | Tune up<br>Produce<br>power | Maximu<br>m peak<br>output<br>power<br>(dBm) | Output<br>power<br>to<br>antenn<br>a<br>(mW) | Antenna<br>Gain<br>(numeric) | Power<br>Density<br>(S)<br>(mW/<br>cm2) | Limit<br>(mW<br>/<br>cm2<br>) | Result |
|------|-----------------------------|--|--|------------------------------|---|-------------------------------|--------|
| WIFI | 12±1                        | 13   | 19.95  | 1.905<br>(2.8dBi)            | 0.00756                                 | 1                             | Pass   |
| BLE  | 4±1                         | 5  | 3.16   | 1.905<br>(2.8dBi)            | 0.00120                                 | 1                             | Pass   |

**For the Max simultaneous transmission:**

|      | Power<br>Density (S)<br>(mW/ cm2) | Total Power<br>Density (S) | Limit | Result |
|------|-----------------------------------|----------------------------|-------|--------|
| BLE  | 0.00120                           | 0.00876                    | 1     | Pass   |
| WIFI | 0.00756                           |                            |       |        |

Conclusion:

For the max result :  $0.00876 \leq 1.0$ , compliance with FCC's RF Exposure